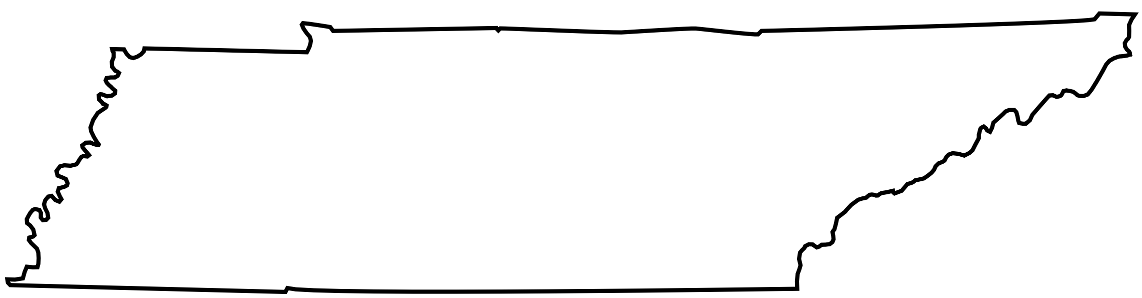
U.S. Department of the Interior
U.S. Geological Survey

Water Resources Data Tennessee Water Year 2002

By D.F. Flohr, J. W. Garrett, J.T. Hamilton, and T.D. Phillips

Water-Data Report TN-02-1



Prepared in cooperation with the
State of Tennessee and with other agencies

U.S. DEPARTMENT OF THE INTERIOR

GALE A. NORTON, SECRETARY

U.S. GEOLOGICAL SURVEY

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2003

PREFACE

This volume of the annual hydrologic data report of Tennessee is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface- and ground-water data-collection networks in each State, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and quality of water provide the hydrologic information needed by State, local, and Federal agencies, and the private sector for developing and managing our Nation's land and water resources.

This report is the culmination of a concerted effort by dedicated personnel of the U.S. Geological Survey who collected, compiled, analyzed, verified, and organized the data, and who typed, edited, and assembled the report. In addition to the authors, who had primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to Geological Survey policy and established guidelines, most of the data were collected, computed, and processed from the field offices. The following individuals supervised the collection, processing, and tabulation of the data:

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This report was prepared in cooperation with the State of Tennessee and with other agencies under the general supervision of Paul S. Hampson, Data Management Section Chief, and W. Scott Gain, District Chief, Tennessee.

May 2003
Annual-October 1, 2001 to September 30, 2002
Water Resources Data - Tennessee, Water Year 2002

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Water resources data for the 2002 water year for Tennessee consists of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of ground water. This report contains records for water discharge at 89 gaging stations; stage only for 1 gaging station, elevation and contents for 32 lakes reservoirs; water quality at 9 gaging stations and 15 wells; and water levels for 8 observation wells; and 1 precipitation station. Also included are data for 98 crest stage partial-record stations. Additional water data were collected at various stream sites not involved in the systematic data-collection program, and are published as miscellaneous measurements and analyses. These data represent that part of the National Water Data System operated by the US Geological Survey and cooperating State and Federal agencies in Tennessee.

*Tennessee, *Hydrologic data, *Surface water, *Groundwater, *Water quality, Flow rate, Gaging stations, Lake, Reservoirs, Chemical analyses, Sediment analyses, Water temperature, Sampling sites, Water level, Water analyses

UNCLASSIFIED

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SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME

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QUALITY OF PRECIPITATION

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

The following continuous-record surface-water discharge or stage-only stations (gaging stations) in Tennessee have been discontinued. Daily streamflow or stage records were collected and published for the period of record, expressed in water years, shown for each station. Those stations with an asterisk (*) after the station number are currently operated as crest-stage partial-record stations.

[Letters after station name designate type of data collected: (d) discharge, (e) elevation (stage only); Agency designations: USGS, U.S. Geological Survey; TVA, Tennessee Valley Authority]

Station name	Station number	Agency	Drainage area (mi^2)	Period of record
Red Boiling Spring at Red Boiling Springs (d)	03312250	USGS		1986
Salt Lick Creek at Red Boiling Springs (d)	03312255	USGS	12.6	1991-97
Crabapple Branch near La Follette (d)	03403718	USGS	1.07	1981-84
Indian Fork above Braytown (d)	03407804	USGS	4.32	1975-78
Green Branch near Hembree (d)	03407874	USGS	1.38	1976-78
Smoky Creek above Hembree (361240084245800) (d)	034078745	USGS	8.07	1982-83
Bills Branch near Hembree (d)	03407875	USGS	.67	1975-83
Shack Creek at Hembree (361341084253900) (d)	034078755	USGS	5.08	1982-84
Smoky Creek near Hembree (d)	03407876	USGS	17.2	1977-84
Bowling Branch above Smoky Junction (d)	03407877	USGS	2.19	1976-81
Anderson Branch near Montgomery (d)	03407881	USGS	.69	1976-80
Lowe Branch near Montgomery (d)	03407882	USGS	.92	1975-80
New River at Cordell (d)	03407908	USGS	198	10/75-77, 5/77-12/87
New River near New River (d)	03408000	USGS	314	1923-35
Long Branch near Grimsley (d)	03408600	USGS	1.11	1976-81
Crooked Creek tributary near Allardt (d)	03408810	USGS	.25	1976-79
Crooked Creek near Allardt (d)	03408815	USGS	3.62	1976-81
White Oak Creek at Sunbright (d)	03409000*	USGS	13.5	1932-33
White Oak Creek at Rugby (d)	03409400	USGS	98.0	1980-82
East Branch Bear Creek near Oneida (d)	03409700	USGS		1994-95
East Branch Bear Creek Tributary near Oneida (d)	03409710	FUSGS		1994-95
Pine Creek tributary at Oneida (d)	03410000	USGS	1.21	1932-33
South Fork Cumberland River at Leatherwood Ford (d)	03410210	USGS	806	1983-87
West Fork Obey River near Alpine (d)	03415000	USGS	115	1943-71, 1980-81
Obey River near Byrdstown (d)	03415500	USGS	445	1919-43
Obey River below Dale Hollow Dam (d)	03417000	USGS	936	1939-42, 1945-58
Roaring River near Hilham (d)	03418000	USGS	78.7	1932-75
Roaring River near Gainesboro (d)	03418188	USGS	276	1975
Cumberland River below Cordell Hull (d)	03418420	USGS	8,095	1980-97
Caney Fork at Clifty (d)	03418500	USGS	111	1931-49
Bee Creek at Herbert (d)	03419000	USGS	101	1931-37
Calfkiller River at Sparta (d)	03419500	USGS	157	1932-41
Calfkiller River below Sparta (d)	03420000	USGS	175	1940-71
Collins River at Beersheba Springs (d)	03420185	USGS	157	1994-95
Collins River near Tarlton (d)	03420200	USGS	174	1994-95
Barren Fork near Trousdale (d)	03420500	USGS	126	1932-57
Collins River near Rowland (d)	03421500	USGS	755	1916-24
Falling Water River near Cookeville (d)	03423000	USGS	67.0	1932-56
Falling Water River below Burgess Falls Dam (d)	03423152	USGS	124	1990-93
Taylor Creek near Cassville (d)	03423400	USGS	34.2	1989-93
Caney Fork below Center Hill Dam, near Lancaster (d)	03424500	USGS	2,183	1923-58
Spring Creek near Lebanon (d)	03425500	USGS	35.3	1955-61
Town Creek at Maple Street at Gallatin (d)	03425646	USGS	4.74	1984
Drakes Creek above Hendersonville (d)	03426000	USGS	19.2	1955-61
Cumberland River at Dam 3, near Old Hickory (d)	03426210	USGS	11,688	1931-42, 1947-53

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS--Continued

[Letters after station name designate type of data collected: (d) discharge, (e) elevation (stage only); Agency designations: USGS, U.S. Geological Survey; TVA, Tennessee Valley Authority]

Station name	Station number	Agency	Drainage area (mi^2)	Period of record
East Fork Stones River at Woodbury (d)	03426800*	USGS	39.1	1932-33, 1950, 1954, 1962-89
Bradley Creek at Lascassas (d)	03427000	USGS	37.0	1955-61
Bushman Creek at Pitts Lane Ford near Compton (d)	03427690	USGS	9.67	1989-92
West Fork Stones River near Murfreesboro (d)	03428000	USGS	128	1932-69
Lytle Creek at Sanbyrn Drive at Murfreesboro (d)	03428043	USGS	17.6	1990-92
Fox Camp Spring at Mankinville (d)	03428047	USGS		1978-80
West Fork Stones River at Manson Pike, at Murfreesboro (d)	03428070	USGS	165	1973-81
Stones River near Smyrna (d)	03429000	USGS	571	1925-67
Stewart Creek near Smyrna (Smyrna Airport) (d)	03429500	USGS	69.7	1953-58
Stones River below J. Percy Priest Dam (d)	03430100	USGS	892	1939-67
Collins Creek at Bell Road, near Antioch (d)	03430800	USGS	3.61	1976-77
Mill Creek near Antioch (d)	03431000	USGS	64.0	1954-61, 1964-75
Browns Creek at State Fairgrounds, at Nashville (d)	03431300	USGS	11.8	1964-75
Cumberland River at Nashville (d)	03431500	USGS	12,856	1893-54
Cummings Branch at Lickton (d)	03431517	USGS	2.40	1976-90
Whites Creek at Tucker Road, near Bordeaux (d)	03431600	USGS	51.6	1965-75
Richland Creek at Charlotte Ave, at Nashville (d)	03431700	USGS	24.3	1964-90
West Harpeth River near Leipers Fork (d)	03432500	USGS	66.9	1955-61
Red River near Portland (d)	03435030	USGS	15.1	1967-75
Red River near Adams (d)	03435500	USGS	706	1920-69
Sulphur Fork Red River near Adams (d)	03436000	USGS	186	1938-91
Piney River at Ft. Campbell, KY-TN (d)	03436420	USGS	50.2	1993-96
Little West Fork near Ft. Campbell, KY-TN (d)	03436426	USGS	128	1993-96
Cumberland River at Clarksville (lock C) (d)	03436500	USGS	15,897	1925-44
Yellow Creek near Shiloh (d)	03436700*	USGS	124	1958-80
Cumberland River at Dover (gaging station) (d)	03437000	USGS	16,437	1938-65
French Broad River near Newport (d)	03455000	TVA	1,858	1900 1901 1902-05, 1907 1920-94
Pigeon River at Hartford (d)	03461000	USGS	547	1925-48
Cosby Creek above Cosby (d)	03461200	USGS	10.1	1967-87
Pigeon River at Newport (d)	03461500	USGS TVA	666	1900-29, 1945-46, 1948-82, 1982-83
North Indian Creek near Unicoi (d)	03465000	USGS	15.9	1944-57
Muddy Fork near Leesburg (d)	03465830	USGS	13.5	1994-95
Jockey Creek near Mount Bethel Church near Limestone (d)	03466098	USGS	18.5	1994-95
Sinking Creek at Afton (d)	03466228	USGS	13.7	1977-2000
Nolichucky River below Nolichucky Dam (d) (e)	03466500	USGS	1,184	1902-09, 1919-26, 1946-73
Lick Creek near Holland Mill (d)	03466825	USGS	53.0	1994-95
Lick Creek at Mohawk (d)	03467000	USGS	220	1946-71
Nolichucky River near Morristown (d)	03467500	USGS	1,679	1921-57
Long Creek near White Pine (d)	03468050	TVA	30.8	1964-81
French Broad River below Douglas Dam (d)	03469000	USGS	4,543	1919-74
Millican Creek near Douglas Dam (d)	03469010	TVA	4.22	1942-62
Roaring Fork Creek at Hwy 441, at Gatlinburg (d)	03469282	TVA	7.23	1977-82
Dudley Creek at Gatlinburg (d)	03469390	TVA	8.84	1977-82

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS--Continued

[Letters after station name designate type of data collected: (d) discharge, (e) elevation (stage only); Agency designations: USGS, U.S. Geological Survey; TVA, Tennessee Valley Authority]

Station name	Station number	Agency	Drainage area (mi^2)	Period of record
West Prong Little Pigeon River near Pigeon Forge (d)	03469500	USGS	76.2	1946-49
		TVA		1967-69
Little Pigeon River at Sevierville (d)	03470000	USGS	353	1921-82
South Fork Holston River below South Holston Dam (d)	03476500	USGS	703	1951-74
South Fork Holston River at Bluff City (d)	03477000	USGS	813	1900-53
Beaver Creek at Bristol (d)	03478500	USGS	44.8	1932-34
Beaver Creek at Buffalo School, near Bluff City (d)	03478620	TVA	108	1934-38
Watauga River at North Carolina-Tennessee State Line (d)	03479500	USGS	152	1943-55
Watauga River at Stump Knob (d)	03480000	USGS	171	1928-31, 1934-45
Roan Creek near Neva (d)	03482000	USGS	102	1942-55
Roan Creek at Butler (d)	03482500	USGS	166	1901-02, 1934-48
Watauga River at Butler (d)	03483000	USGS	427	1900-02, 1921-48
Watauga River below Wilbur Dam (d)	03484000	USGS	471	1903-09, 1948-82
Watauga River at Siam (d)	03484110	TVA	480	1946
Doe River at Old Hopson School (d)	03484490	TVA	59.3	1967-69
Doe River at Blevins (d)	03484500	USGS	60.8	1912-15
Laurel Fork above Braemar (d)	03484900	TVA	23.0	1945-51
Laurel Fork above Hampton (d)	03484910	TVA	25.3	1948-52
Doe River at Elizabethton (d)	03485500	USGS	137	1912-16, 1921-82
Watauga River at Elizabethton (d)	03486000	USGS	692	1926-49, 1953-82
Buffalo Creek at Milligan College (d)	03486200	TVA	28.1	1965-81
Brush Creek at Johnson City (Tennessee Street) (d)	03486490	TVA	6.78	1969-73
Brush Creek at Johnson City (Elm Street) (d)	03486495	TVA	9.58	1969-72
Brush Creek at Johnson City (d)	03486500	USGS	10.3	1932-34
Fall Creek near Fort Patrick Henry Dam (d)	03486900	TVA	13.1	1953-56
South Fork Holston River at Kingsport (d)	03487500	USGS	1,935	1926-77
South Fork Holston River at Kingsport (auxiliary channel) (d)	03487501	USGS	1.0	1953-77
Reedy Creek at Orebank (d)	03487550*	USGS	36.3	1963-89
South Fork Holston River near Ridgefields Bridge, at Kingsport (d)	03487640	TVA	2,047	1968-69
Holston River at Surgoinsville (d)	03490500	USGS	2,874	1941-88
Beech Creek at Kepler (d)	03491300	USGS	47.0	1965-87
Holston River near Rogersville (d)	03491500	USGS	3,035	1901-42
Poor Valley Creek near Mooresburg (near Spruce Pine School) (d)	03491800	USGS	32.3	1958-61
Poor Valley Creek near Mooresburg (d)	03491820	TVA	43.3	1959-60
Holston River near Morristown (d)	03492000	USGS	3,244	1937-42
Mossy Spring near Jefferson City (d)	03492500	USGS		1950-59
Mossy Creek at Jefferson City (d)	03493000	USGS	30.8	1932-34
Holston River near Jefferson City (d)	03494000	USGS	3,429	1937-74
Mill Spring near Jefferson City (d)	03494500	TVA		1941-48
		USGS		1951-59
Holston River near Knoxville (d)	03495500	USGS	3,747	1930-76 1978-93
First Creek at Mineral Springs Avenue, at Knoxville (d)	03496000	USGS	15.7	1945-63
First Creek above Powers Avenue, at Knoxville (d)	03496200	USGS	17.2	1964-70
First Creek at Fifth Avenue, at Knoxville (d)	03496500	USGS	21.1	1932-34, 1945-59
Tennessee River at Knoxville (Gay Street Bridge) (d)	03497000	USGS	8,934	1900-82
Fourth Creek at Knoxville (d)	03497110	TVA	9.65	1942-43

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS--Continued

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Station name	Station number	Agency	Drainage area (mi^2)	Period of record
Little River at Walland (d)	03497500	USGS	175	1925-31
Little River near Walland (d)	03498000	USGS	192	1931-52
Pistol Creek at Maryville (d)	03499000	USGS	13.5	1932-33
Little River below Rockford Dam, at Rockford (d)	03499100	TVA	346	1940-44
Little River near Rockford (d)	03499110	TVA	352	1936-37
Ten Mile Creek near Ebenezer (d)	03499200	TVA	13.2	1941-45
Muddy Creek near Fort Loudon Dam (d)	03499600	TVA	10.7	1941-59
Little Tennessee River at Calderwood (d)	03518000	USGS	1,862	1912-19, 1921-57
Little Tennessee River below Chilhowee Dam (d)	03518300	USGS	1,987	1958-79
North Fork Citico Creek near Tellico Plains (d)	03518400	TVA	7.04	1960-71
Tellico River at Tellico Plains (d)	03518500	USGS	118	1925-82
Little Tennessee River at McGhee (d)	03519500	USGS	2,443	1905-69
Baker Creek near Greenback (d)	03519640*	USGS	16.0	1966-75
Tennessee River at Loudon (d)	03520000	USGS	12,220	1923-55
Sweetwater Creek below Sweetwater (d)	03520045	TVA	26.4	1970-81
Sweetwater Creek near Sweetwater (d)	03520050	TVA	28.2	1964-70
Big Sycamore Creek near Sneedville (d)	03528100	TVA	5.49	1935-45
Big Barren Creek near New Tazewell (d)	03528300	TVA	22.5	1935-45
White Creek near Sharps Chapel (d)	03528400	TVA	2.68	1935-72
Powell River near Arthur (d)	03532000	USGS	685	1920-82
Davis Creek near Speedwell (d)	03532100	TVA	31.2	1936-37
Big Creek near La Follette (d)	03532220	TVA	26.2	1936-38
Clinch River below Norris Dam (d)	03533000	USGS	2,913	1904-74
Clear Creek near Norris (d)	03533100	TVA	2.83	1934-38
Coal Creek at Lake City (d)	03534000*	USGS	24.5	1932-34
Buffalo Creek at Norris (d)	03534500	USGS	9.92	1947-51
Bullrun Creek near Halls Crossroads (d)	03535000	USGS	68.5	1957-86
Scarboro Creek Tributary near Haw Ridge near Oak Ridge (d)	03535102	USGS	0.41	1989-91
Scarboro Creek Tributary near Oak Ridge (d)	03535103	USGS	0.41	1989-91
Whiteoak Creek near Melton Hill (d)	03536320	USGS	1.31	1987-95
Whiteoak Creek near Wheat (d)	03536380	USGS	2.10	1986-95
Northwest Tributary near Oak Ridge (d)	03536440	USGS	0.67	1987-95
First Creek near Oak Ridge (d)	03536450	USGS	0.33	1987-96
Whiteoak Creek at ORNL, near Oak Ridge (d)	03536500	USGS	2.08	1950-55
Whiteoak Creek below Melton Valley Drive near Oak Ridge (d)	03536550	USGS	3.28	1987-96
Whiteoak Creek below ORNL, near Oak Ridge (d)	03537000	USGS	3.62	1950-53, 1955-64
Melton Branch tributary (East Seven) near Oak Ridge (d)	03537050	USGS	.24	1987-91 1992-93
Melton Branch near Melton Hill, near Oak Ridge (d)	03537100	USGS	0.52	1985-95
Melton Branch tributary (Center Seven) near Oak Ridge (d)	03537200	USGS	.07	1987-91 1992-93
Melton Branch tributary (West Seven) near Oak Ridge (d)	03537300	USGS	.15	1987-89 1992-93
Melton Branch near Oak Ridge (d)	03537500	USGS	1.48	1955-64
Whiteoak Creek at Whiteoak Dam, near Oak Ridge (d)	03538000	USGS	6.01	1953-55, 1960-64
Clinch River near Oak Ridge (d)	03538150	USGS	3,385	1937-64, 1968
Poplar Creek near Oak Ridge (d)	03538225	USGS	82.5	1960-89
East Fork Poplar Creek at Y-12 at Oak Ridge (d)	03538231	USGS	0.81	1992-96
East Fork Poplar Creek near Oak Ridge (d)	03538250	USGS	19.5	1960-88
Bear Creek at Bear Creek Road near Oak Ridge (d)	03538256	USGS	0.42	1993-96

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS--Continued

[Letters after station name designate type of data collected: (d) discharge, (e) elevation (stage only);
Agency designations: USGS, U.S. Geological Survey; TVA, Tennessee Valley Authority]

Station name	Station number	Agency	Drainage area (mi^2)	Period of record
Bear Creek at County Line near Oak Ridge (d)	03538260	USGS	1.57	1993-96
Bear Creek tributary above Bear Creek Road near Wheat (d)	035382672	USGS	.30	1986-91
Bear Creek near Wheat (d)	035382673	USGS	3.20	1986-91
Bear Creek tributary near Wheat (d)	035382677	USGS	.14	1986-89 1992-93
Bear Creek at State Hwy 95 near Oak Ridge (d)	03538270	USGS	4.34	1985-2000
Bear Creek tributary at Hwy 95 near Wheat (d)	03538272	USGS	.14	1986-89
Bear Creek at Pine Ridge near Wheat (d)	03538273	USGS	5.0	1986-91
Bear Creek near Oak Ridge (d)	03538275	USGS	7.15	1960-64
Emory River near Wartburg (d)	03538500	USGS	83.2	1934-57, 1966-68
Obed River at Crossville (d)	03538600	USGS	12.0	1950-51, 1955-85, 1991-95
Daddys Creek near Grassy Cove (d)	03539000	USGS	51.2	1925-30
Daddys Creek near Crab Orchard (d)	03539500	USGS	93.5	1931-58
Daddys Creek near Hebbertsburg (d)	03539600	USGS	139	1957-68
Clear Creek near Lancing (d)	03539750	USGS	153	1966-68
Obed River near Lancing (d)	03539800	USGS	518	1956-68, 1973-88
Crooked Fork near Wartburg (d)	03539860	USGS	50.3	1966-68
Emory River at Deermont (d)	03540000	USGS	704	1920-28
Crab Orchard Creek near Deermont (d)	03540100	USGS	33.7	1966-68
Bitter Creek near Oakdale (d)	03541300	USGS	12.6	1967-75
Kingston Creek at Kingston (d)	03541400	TVA	.74	1940-41
Whites Creek near Glen Alice (d)	03541500	USGS	108	1934-55
Whites Creek at Glen Alice (d)	03542000	USGS	120	1931-34
Piney River at Spring City (d)	03542500	USGS	95.9	1927-31
Sewee Creek near Decatur (d)	03543500	USGS	117	1934-94
Tennessee River at Breedenton (d)	03544000	USGS	17,440	1934-40
Richland Creek near Dayton (d)	03544500	USGS	50.2	1927-31, 1934-55, 1979-82
Turtletown Creek at Turtletown (d)	03556000	USGS	26.9	1934-71
Hiwassee River near McFarland (d)	03556500	USGS	1,136	1943-81
Hiwassee River near Reliance (d)	03557000	USGS	1,233	1900-14, 1918-48
Ocoee River at Copperhill (d)	03559500	USGS	352	1903-14, 1943-70
North Potato Creek tributary, Copper Basin area 6, near Ducktown (d)	03560700	TVA	.01	1940-51
Burra-burra Creek tributary, Copper Basin area 5, near Ducktown (d)	03560800	TVA	.02	1940-51
North Potato Creek near Ducktown (d)	03561000	USGS	13.0	1934-70
North Potato Creek tributary No. 2, Copper Basin area 1-W, near Ducktown (d)	03561200	TVA	.01	1942-52
North Potato Creek tributary No. 3, Copper Basin area 1-E, near Ducktown (d)	03561300	TVA	.01	1942-52
Ocoee River at McHarg (d)	03561500	USGS	447	1917-43
Walkertown Branch tributary, Copper Basin area 4, near Ducktown (d)	03561700	TVA	.01	1940-45
Ocoee River tributary, Copper Basin area 3, near Ducktown (d)	03561800	TVA	.01	1940-51
Brush Creek near Ducktown (d)	03562000	USGS	14.4	1934-42
Hiwassee River above Charleston (d)	03565000	USGS	2,001	1954-76
Chestuee Creek above Englewood (d)	03565040	TVA	14.8	1944-57

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS--Continued

[Letters after station name designate type of data collected: (d) discharge, (e) elevation (stage only); Agency designations: USGS, U.S. Geological Survey; TVA, Tennessee Valley Authority]

Station name	Station number	Agency	Drainage area (mi^2)	Period of record
Little Chestuee Creek below Wilson Station (d)	03565080	TVA	8.54	1947-57
Chestuee Creek at Zion Hill (d)	03565120	TVA	37.8	1944-62
Middle Creek below Hwy 39 near Englewood (d)	03565160	TVA	32.7	1944-62
Chestuee Creek near Athens (d)	03565200	TVA	77.9	1944-54
Chestuee Creek at Dentville (d)	03565250	USGS	114	1944-62
South Chestuee Creek near Benton (d)	03565300	USGS	31.8	1957-86
Oostanaula Creek near Sanford (d)	03565500	USGS	57.0	1954-89
Oostanaula Creek near Calhoun (d)	03565700	TVA	67.0	1940-44
Wolftever Creek near Ooltewah (d)	03566420*	USGS	18.8	1964-89
Long Savannah Creek near Snow Hill (d)	03566450	TVA	28.3	1939-44
North Chickamauga Creek at Upper Mill, near Hixson (d)	03566600	TVA	99.5	1937-43
North Chickamauga Creek near Hixson (d)	03566630	TVA	114	1937-43
South Chickamauga Creek near Chickamauga (d)	03567500	TVA	428	1928-78 1980-94
South Chickamauga Creek near McCarty (d)	03567600	TVA	458	1937-45
Sequatchie River near College Station (d)	03570650	USGS	154	1966-68
Sequatchie River near Whitwell (d)	03571000	TVA	402	1920-94
Little Sequatchie River at Sequatchie (d)	03571500*	USGS	116	1932-34
Tennessee River at South Pittsburg (d)	03571850	USGS	22,640	1930-87
Elk River near Pelham (d)	03578000	USGS	65.6	1952-88
Bradley Creek Tributary at AEDC near Manchedster	03578455	USGS		1993-96
Bradley Creek near Prairie Plains (d)	03578500	USGS	41.3	1952-60
Brumalow Creek at AEDC near Manchester (d)	03578600	USGS		1993-96
Rowland Creek at AEDC near Manchester (d)	03578970	USGS		1994-96
Elk River near Estill Springs (d)	03579100	USGS	275	1921-81
Rock Creek at Tullahoma (d)	03579620	USGS	12.3	1991-96
Boiling Fork Creek south of Cowan (d)	03580000	USGS	20.2	1932
Boiling Fork Creek above Winchester (d)	03580300	USGS	55.9	1962-70
Boiling Fork Creek at Winchester (d)	03580500	USGS	77.1	1932-34
Elk River below Tims Ford Dam (d)	03580750	USGS	534	1966-76
Jack Daniel Spring at Lynchburg (d)	03580990	USGS		1970-78
East Fork Mulberry Creek below Jack Daniel Distillery at Lynchburg (d)	03580995	USGS	23.4	1987-94
East Fork Mulberry Creek at Lynchburg (d)	03581000	USGS	23.1	1932
East Fork Mulberry Creek near Lynchburg (d)	03581100	TVA	29.5	1967-69
East Fork Mulberry Creek near Mulberry (d)	03581200	TVA	49.4	1967-69
West Fork Mulberry Creek near Booneville at Mt. Herman (d)	03581400	TVA	17.4	1967-69
West Fork Mulberry Creek at Mulberry (d)	03581500	USGS	41.2	1954-62, 1966-68
Elk River above Fayetteville (d)	03582000	USGS	827	1934-82
Union Branch below Belleville (d)	03582140	USGS	2.37	1977
Elk River near Fayetteville (d)	03582500	USGS	897	1926-34
Bradshaw Creek at Frankewing (d)	03583000	USGS	36.5	1955-61, 1966-68
Richland Creek near Cornersville (d)	03583300*	USGS	47.5	1961-68
Factory Creek (head of Big Creek) near Campbellsville (d)	03583330	USGS	38.2	1966-68
Yokley Creek near Campbellsville (d)	03583360	USGS	20.2	1966-68
Weakley Creek near Bodenham (d)	03583500	USGS	24.4	1955-61, 1966-68
Richland Creek near Pulaski (d)	03584000	USGS	366	1934-75
Elk River at Prospect (d)	03584600	USGS	1805	1904-08, 1919-94

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS--Continued

[Letters after station name designate type of data collected: (d) discharge, (e) elevation (stage only); Agency designations: USGS, U.S. Geological Survey; TVA, Tennessee Valley Authority]

Station name	Station number	Agency	Drainage area (mi^2)	Period of record
Shoal Creek at Lawrenceburg (d)	03588000	USGS	55.4	1932-34 1967-91
Chisholm Creek at Westpoint (d)	03588400	USGS	43.0	1962-88
Shoal Creek at Iron City (d)	03588500	USGS	348	1925-94
Snake Creek near Adamsville (d)	03593300	TVA	49.4	1940-59
Holland Creek near Lowryville (d)	03593700	TVA	14.9	1965-78
Horse Creek near Savannah (d)	03594000	USGS	114	1929-34
Turkey Creek near Savannah (d)	03594040	TVA	53.7	1940-59
White Oak Creek near Milledgeville (d)	03594058	TVA	46.1	1940-59
White Oak Creek at Milledgeville (d)	03594110	TVA	49.2	1961-65
Middleton Creek near Milledgeville (d)	03594120	TVA	45.5	1940-59
Indian Creek near Cerro Gordo (d)	03594160	TVA	201	1940-59
Banjo Branch near Waynesboro (d)	03594164	USGS	2.14	1988-89
Beech River near Lexington (d)	03594415	TVA	15.9	1953-63
Wolf Creek at Graper Springs (d)	03594420	TVA	11.7	1953-55
Pine Tree Branch near Lexington (d)	03594425	TVA	.14	1941-78
Harmon Creek near Lexington (d)	03594430	TVA	6.87	1953-73
Piney Creek at Hwy 104 near Lexington (d)	03594435	TVA	19.2	1953-55, 1957-73
Cane Creek near Shady Hill (d)	03594437	TVA	20.7	1966-73
Haley Creek near Chesterfield (d)	03594441	TVA	8.30	1953-55
Beech River near Chesterfield (old channel before channelization) (d)	03594445	TVA	11.5	1940-54, 1960-65
Browns Creek near Chesterfield (d)	03594450	TVA	202	1953-63
Cane Creek near Shady Hill (d)	03594455	TVA	16.8	1953-64
Cane Creek near Chesterfield (old channel before channelization) (d)	03594460	TVA	222	1940-54
Beech River near Darden (old channel before channelization) (d)	03594465	TVA	165	1954-60
Flat Creek near Middleburg (d)	03594470	TVA	13.8	1953-55
Big Creek near Darden (d)	03594475	TVA	10.6	1953-55, 1966-73
Turkey Creek near Decaturville (d)	03594480	TVA	8.40	1953-63
Turkey Creek at Middleburg Road, near Decaturville (d)	03594482	TVA	11.5	1964-73
Rushing Creek near Decaturville (d)	03594485	TVA	17.0	1953-55
Tennessee River at Perryville (d)	03594500	USGS	34,550	1931-32
Duck River near Manchester (d)	03595000	USGS	55.2	1932-34
Little Duck River at Manchester (d)	03595500	USGS	40.4	1932-34
Duck River below Manchester (d)	03596000	USGS	107	1934-88
Duck River at Normandy (d)	03596500	USGS	208	1920-31, 1972-75
Garrison Fork at Fairfield (d)	03597000	USGS	66.3	1953-58, 1966-68
Wartrace Creek at Bell Buckle (d)	03597500	USGS	16.3	1953-61, 1966-75
Wartrace Creek at Wartrace (d)	03597600	USGS	36.4	1966-68
Fall Creek near Deason (d)	03598173	USGS	16.4	1994-95
Fall Creek near Halls Mill (d)	03598179	USGS	39.0	1994-95
North Fork Creek near Poplins Crossroad (d)	03598250	USGS	71.9	1994-95
Big Rock Creek at Lewisburg (d)	03599000	USGS	24.9	1953-61, 1966-68 1995-2000
Fountain Creek near Culleoka (d)	03599430	USGS	26.9	1966-68
Fountain Creek near Fountain Heights (d)	03599450	USGS	74.0	1966-68
Rutherford Creek near Carters Creek (d)	03600000	USGS	68.8	1953-58
Rutherford Creek (No. 4) near Columbia (d)	03600100	TVA	112	1948-53

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS--Continued

[Letters after station name designate type of data collected: (d) discharge, (e) elevation (stage only); Agency designations: USGS, U.S. Geological Survey; TVA, Tennessee Valley Authority]

Station name	Station number	Agency	Drainage area (mi^2)	Period of record
Rutherford Creek (No. 3) near Columbia (d)	03600200	TVA	116	1948-49
Little Bigby Creek at Experiment Lane at Columbia (d)	03600258	USGS	42.6	1990-92
Big Bigby Creek at Sandy Hook (d)	03600500	USGS	17.5	1953-87, 1988-89
Big Bigby Creek near Mount Pleasant (d)	03601000	USGS	25.8	1953-57
Big Bigby Creek at Cross Bridges (d)	03601500	USGS	112	1938-39
Duck River at Centerville (d)	03602000	USGS	2,048	1919-55
Piney River at Vernon (d)	03602500	USGS	193	1925-93
Duck River above Hurricane Mills (d)	03603000	USGS	2,557	1925-94
Hurricane Creek at Hurricane Mills (d)	03603500	USGS	75.1	1932-33
Coon Creek near Hohenwald (d)	03604100	USGS	10.0	1967-74
Buffalo River below Lobelville (d)	03604400	USGS	702	1927-89, 1989-94
Buffalo River near Lobelville (d)	03604500	USGS	707	1987-89
Blue Creek at State Hwy 13 near Waverly (d)	03604600	TVA	24.8	1964-71
Birdsong Creek near Holladay (d)	03604800	TVA	44.9	1940-68
Trace Creek at Waverly (d)	03605500	USGS	20.1	1932-33
Cotton Creek near Camden (d)	03606400	TVA	.43	1941-45
Big Sandy River at Big Sandy (d)	03607000	USGS	379	1935-44
Clifty Creek at Clifty Creek Road near Paris (d)	03607198	USGS	8.06	1994-95
Holly Fork Creek at Nobles (d)	03607225	USGS	26.8	1994-95
Beaverdam Creek at Sulphur Well Road near Nobles (d)	03607232	USGS	6.69	1994-95
Tennessee River near Buchanan (d)	03607500	USGS	39,730	1930-43
Crooked Creek at Highway 22 near Huntingdon (d)	07024200	USGS	89.8	1994-95
Beaver Creek at Huntingdon (d)	07024300*	USGS	55.5	1946, 1948, 1952-54, 1958-88
Beaver Creek at Hwy 22 Bypass near Huntingdon (d)	07024305	USGS	58.6	1994-96
South Fork Obion River near Greenfield (d)	07024500*	USGS	383	1929-89
Rutherford Fork Obion River near Bradford (d)	07025000	USGS	201	1929-57
North Fork Obion River near Union City (d)	07025500	USGS	480	1929-71 1989-93
Obion River at U.S. Highway 51 near Obion (d)	07026040	USGS	1,875	1929-1958, 1966-1995
North Reelfoot Creek at State Hwy 22 near Clayton (d)	07026370	USGS	56.3	1980-83, 1984-89
South Reelfoot Creek near Clayton (d)	07026400	USGS	36.6	1984-89
Reelfoot Creek near Samburg (d)	07026500	USGS	110	1951-73
Reelfoot Lake near Phillippy (e)	07026690	USGS	240	1984-88
Indian Creek near Samburg (d)	07026795	USGS	8.01	1982-86
South Fork Forked Deer River at Jackson (d)	07027500	USGS	495	1929-73 1988-91
South Fork Forked Deer River at Chestnut Bluff (d)	07028000	USGS	1,003	1929-57
North Fork Forked Deer River at Trenton (d)	07028500	USGS	73.5	1950-71
Middle Fork Forked Deer River near Alamo (d)	07029000	USGS	369	1929-73
Hatchie River near Stanton (d)	07030000	USGS	1,975	1929-58
Cane Creek at Three Point (d)	07030137	USGS	79.8	1985-87
Kelly Branch near Clopton (d)	07030245	USGS	7.79	1975-76
Beaver Creek near Arlington (d)	07030250	USGS	148	1994-95
Loosahatchie River tributary at New Allen Road at Memphis (d)	07030295	USGS	1.26	1977-83
Wolf River at Rossville (d)	07030500	USGS	503	1929-72
Marys Creek at Pisgah Road, near Fisherville (d)	07031500	USGS	13.6	1955-57
Fletcher Creek near Cordova (d)	07031680	USGS	1.45	1974-83
Fletcher Creek at Whitten Road at Memphis (d)	07031683	USGS	21.4	1978-82

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS--Continued

[Letters after station name designate type of data collected: (d) discharge, (e) elevation (stage only);
Agency designations: USGS, U.S. Geological Survey; TVA, Tennessee Valley Authority]

Station name	Station number	Agency	Drainage area (mi^2)	Period of record
Unnamed tributary at Charles Bryan Road, near Cordova (d)	07031685	USGS	3.18	1975-77
Lick Creek at Dickinson Street, at Memphis (d)	07031777	USGS	2.96	1975-83
Nonconnah Creek near Germantown (d)	07032200	USGS	68.2	1969-1985 1985-1995
Johns Creek tributary at Holmes Road, near Memphis (d)	07032222	USGS	5.83	1975-85
Johns Creek at Raines Road, at Memphis (d)	07032224	USGS	19.4	1975-82, 1985
Black Bayou at Southern Avenue, at Memphis (d)	07032241	USGS	.59	1975-83
Cane Creek at East Person Avenue, at Memphis (d)	07032248	USGS	4.98	1975-85
Cypress Creek at Neely Road, at Memphis (d)	07032260	USGS	3.18	1975-85

DISCONTINUED SURFACE-WATER QUALITY STATIONS

The following stations were discontinued as continuous-record surface-water-quality stations prior to the 1991 water year. Water-quality data (daily or periodic samples with collection frequency not less than quarterly) were collected and published for the period of record shown for each station. Discontinued project stations with less than 3 years of record have not been included. Information regarding these stations may be obtained from the District Chief at the address given on the back of the title page of this report.

[Agency designations: USGS, U.S. Geological Survey; TVA, Tennessee Valley Authority.
Type of record: (B) biological, (C) chemical, (S) sediment, (T) temperature.]

Station name	Station number	Agency	Drainage area (mi^2)	Type of record	Period of record (water years)
Crabapple Branch near La Follette	03403718	USGS	1.07	C,T	1981-84
Indian Fork above Braytown	03407804	USGS	4.32	C	1975-81
New River at Stainville	03407850	USGS	66.0	C,S	1975-77, 1979-81
Green Branch near Hembree	03407874	USGS	1.38	C,S	1975-81
Smoky Creek above Hembree (361240084245800)	034078745	USGS	8.07	S	1982-83
Bills Branch near Hembree	03407875	USGS	.67	C,S	1975-83
		USGS		C,S,T	1980-83
Shack Creek at Hembree (361341084253900)	034078755	USGS	5.08	C,S,T	1982-84
Smoky Creek at Hembree	03407876	USGS	17.2	S	1978-84
		USGS		C,T	1980-84
Bowling Branch above Smoky Junction	03407877	USGS	2.19	C,S	1975-83
Smoky Creek at Smoky Junction	03407879	USGS	32.8	C,S	1975-77, 1979-81
Anderson Branch near Montgomery	03407881	USGS	.69	C	1975-81
Lowe Branch near Montgomery	03407882	USGS	.92	C	1975-81
New River at Cordell	03407908	USGS	198	C,S	1976-77, 1979-82
New River at New River	03408500	USGS	382	C,T	1977-86
		USGS		C,S	1965-67, 1975-77, 1979-81
Clear Fork near Robbins	03409500	USGS	272	T	1982-86
		USGS		C	1982, 1984-86
		USGS		C,S	1964-65, 1976-77, 1979-82, 1984
South Fork Cumberland River at Leatherwood Ford	03410210	USGS	806	C,S,T	1986
		USGS		C,S	1979-80, 1984-85
Cumberland River at Celina	03417500	USGS	7,307	C,T	1991-97
Roaring River near Hilham	03418000	USGS	78.7	T	1969-71
Roaring River above Gainesboro	03418070	USGS	210	C,S	1980-83
Cumberland River below Cordell Hull Dam	03418420	USGS	8,095	CT	1980-97
Collins River near McMinnville	03421000	USGS	640	C,S	1964-67,1979-82
Cumberland River at Carthage	03425000	USGS	10,690	C,T	1975-81
East Fork Stones River near Lascassas	03427500	USGS	262	C,T	1975-1990
West Fork Stones River near Murfreesboro	03428000	USGS	128	C	1964-68
West Fork Stones River at Manson Pike, at Murfreesboro	03428070	USGS	165	C,T	1973-82
West Fork Stones River near Smyrna	03428500	USGS	237	T	1974-1990
Richland Creek at Charlotte Avenue, at Nashville	03431700	USGS	24.3	C,S	1901, 1979-83
Harpeth River near Kingston Springs	03434500	USGS	681	C,S	1979-83
Cumberland River below Cheatham Dam	03435000	USGS	14,163	C,T	1993-97
Sulphur Fork Red River near Greenbrier	03435637	USGS	34.9	T	1976-78
Sulphur Fork Red River above Beaverdam Creek, near Springfield	03435700	USGS	49.1	T	1975-77
Sulphur Fork Red River above Springfield	03435770	USGS	65.6	C,S	1976-83
Sulphur Fork Red River near Adams	03436000	USGS	186	C,S	1964, 1979-83
Red River at Port Royal	03436100	USGS	935	C,S	1979-83
Boiling Springs at Ft. Campbell, KY-TN	03436421	USGS		C,T	1994-96
Yellow Creek near Shiloh	03436700	USGS	124	C,S	1964-65, 1979-81
French Broad River below Hot Springs, NC	03454757	USGS	1,712	C	1970-73

DISCONTINUED SURFACE-WATER QUALITY STATIONS--Continued

[Agency designations: USGS, U.S. Geological Survey; TVA, Tennessee Valley Authority.
Type of record: (B) biological, (C) chemical, (S) sediment, (T) temperature.]

Station name	Station number	Agency	Drainage area (mi^2)	Type of record	Period of record (water years)
French Broad River near Newport	03455000	TVA	1,858	C	1946-47, 1960-61, 1969-70, 1974-75, 1979-80
Muddy Fork near Leesburg	03465830	USGS	13.5	C,S,T	1993-95
Nolichucky River at Embreeville	03465500	USGS	805	C,S	1979-82
Jockey Creek near Mount Bethel Church near Limestone	03466098	USGS	18.5	C,S,T	1993-95
Big Limestone Creek near Limestone	03466208	USGS	79.0	T	1996-2000
Nolichucky River below Nolichucky Dam	03466500	TVA	1,184	C	1974-79
		TVA		T	1962
Lick Creek near Holland Mill	03466825	USGS	53.0	C,S,T	1993-95
Nolichucky River near Lowland	03467609	USGS	1,687	T	1998-2000
French Broad River at Douglas Dam (tailwater)	03468510	TVA	4,541	C	1975-80
Little Pigeon River at Sevierville	03470000	TVA	353	C	1967-68, 1970
		TVA		T	1969-74
		USGS		C,S	1979-82
French Broad River near Knoxville	03470500	USGS	5,101	C,T	1975-82
		USGS		B,C,S,T	1975-86
South Fork Holston River at South Holston Dam	03476010	TVA	703	C	1975-80
Watauga River at Stump Knob	03480000	TVA	171	T	1962
Elk River at Elk Mills	03481450	TVA	74.0	C	1975-76
Roan Creek near Doeville	03482100	TVA	110	T	1962, 1971-74
		TVA		C	1975-76
Watauga River below Watauga Dam	03483950	TVA	468	C	1973, 1975-80
Doe River at Hampton	03484800	TVA	100	T	1968-73
Doe River at Elizabethton	03485500	TVA	137	C	1967-68, 1971
		TVA		T	1954-63
		USGS		C,S	1979-82
South Fork Holston River at Boone Dam (tailwater)	03486810	TVA	1,840	C	1975-78
South Fork Holston River at Ft. Patrick Henry Dam	03487010	TVA	1,903	C	1975-80
Reedy Creek at Orebank	03487550	TVA	36.3	T	1964-66
		TVA		C	1964-67
		USGS		C,S	1979-82
Holston River near Church Hill	03490350	TVA	2,819	C	1974-78
Holston River at Surgoinsville	03490500	USGS	2,874	T	1975-82
		TVA		C	1974-80
Big Creek near Rogersville	03491000	USGS	47.3	T	1972-75, 1977-79
Beech Creek at Kepler	03491300	TVA	47.0	T	1966-68
Holston River near Rogersville	03491500	TVA	3,035	T	1966-75
Holston River at Cherokee Dam (tailwater)	03493510	TVA	3,428	C	1975-80
Holston River near Knoxville	03495500	USGS	3,747	C,B,S	1977-93
First Creek above Powers Avenue, at Knoxville	03496200	USGS	17.2	T	1969-71
Tennessee River below Knoxville	03497100	TVA	8,963	T	1970-80
Little River above Townsend	03497300	USGS	106	T	1964-82
		USGS		C	1982
Little River near Maryville	03498500	TVA	269	C	1967-68
		USGS		C,S	1979-82
Tennessee River at Fort Loudon Dam (tailwater)	03499510	TVA	9,550	C	1975-80
Little Tennessee River at Calderwood Dam	03518210	TVA	1,977	C	1977-80
Little Tennessee River below Chilhowee Dam	03518300	TVA	1,987	T	1964-78
Tellico River at Tellico Plains	03518500	TVA	118	T	1964-78
		TVA		C	1969-70, 1973-76
		USGS		C,S	1979-82
Little Tennessee River at McGhee	03519500	TVA	2,443	T	1963
Little Tennessee River near Centersville	03519740	TVA		T	1976-79
Clinch River above Tazewell	03528000	TVA	1,474	T	1962-66, 1971-75
		TVA		C	1971-80

DISCONTINUED SURFACE-WATER QUALITY STATIONS--Continued

[Agency designations: USGS, U.S. Geological Survey; TVA, Tennessee Valley Authority.
Type of record: (B) biological, (C) chemical, (S) sediment, (T) temperature.]

Station name	Station number	Agency	Drainage area (mi^2)	Type of record	Period of record (water years)
Powell River near Arthur	03532000	TVA	685	C,S	1965, 1969-72, 1974-82
		TVA		T	1963-66, 1971-75
Ollis Creek at Ivydell	03532190	TVA	13.3	C	1974-78
Clinch River below Norris Dam	03533000	TVA	2,913	C	1968-70, 1972-80
Clinch River at Coal Creek	03533500	TVA	2,921	T	1976-79
Clinch River near Clinton	03534100	TVA	2,980	C	1971-74, 1977
Clinch River at Edgemoor	03534900	TVA	3,089	C	1969-78
Bullrun Creek near Halls Crossroads	03535000	USGS	68.5	T	1967-74
Clinch River near Eaton Crossroads	03535915	TVA	3,346	T	1963-79
Poplar Creek near Oak Ridge	03538225	USGS	82.5	C,S	1961-65, 1979-81
		USGS		T	1962-65
East Fork Poplar Creek near Oak Ridge	03538250	USGS	19.5	T	1962-68
Bear Creek near Oak Ridge	03538275	USGS	7.15	T	1962-63
Emory River near Wartburg	03538500	TVA	83.2	C	1965-68, 1975-76
Obed River near Lancing	03539800	TVA	518	T	1965-66
		TVA		C	1965-68
Crooked Fork near Wartburg	03539860	TVA	50.3	C	1965-68
		USGS		C,S	1979-81
Crab Orchard Creek near Deermont	03540100	TVA	33.7	C	1966-68
		TVA		T	1967-68
		USGS		C,S	1979-81
Emory River at Oakdale	03540500	TVA	764	C,S	1965-67, 1974-81
Tennessee River at Watts Bar Dam (tailwater)	03543005	USGS	17,310	B,C,S,T	1975-86
		USGS		T,C	1976-81
Richland Creek near Dayton	03544500	TVA	50.2	C	1966-67
		USGS		C,S	1979-82
Hiwassee River near Wetmore	03557050	TVA	1,233	C	1973-74, 1976
Hiwassee River at Patty	03557400	TVA	1,358	T	1976-78
Hiwassee River near Benton	03557405	TVA	1,362	C	1978-80
Ocoee River at Parksville	03564500	TVA	595	C	1971-72, 1976-80
Oostanaula Creek near Sweetwater	03565428	USGS		C,S,T	1993-95
Oostanaula Creek below Johnson Branch near Athens	03565430	USGS		C,S,T	1993-95
Oostanaula Creek near Sanford	03565500	USGS	57.0	C,S	1979-82
Tennessee River at Sequoyah Nuclear Plant	03566404	TVA	20,630	C	1975-78
Tennessee River near Harrison Bay State Park	03566405	TVA	20,650	C	1969-73
Tennessee River at Chickamauga Dam (tailwater)	03566510	TVA	20,790	C	1975-80
Tennessee River at Nickajack Dam (tailwater gage)	03570525	TVA	21,849	C	1975-78
Sequatchie River near Dunlap	03570835	TVA	292	C	1975-78
Sequatchie River near Whitwell	03571000	TVA	402	T	1962-71
		TVA		C	1965, 1970, 1974-75
		USGS		C,S	1979-82
Sequatchie River at Whitwell Waterworks near Whitwell	03571200	TVA	410	C	1975-79
Tennessee River at South Pittsburg	03571850	USGS	22,640	T	1975-82
		USGS		C	1975-79, 1981
		USGS		B,C,S,T	1974-86
Bradley Creek Tributary at AEDC near Manchester	03578455	USGS		T	1993-95
Brumalow Creek at AEDC near Manchester	03578600	USGS		T	1993-95
Rowland Creek at AEDC near Manchester	03578970	USGS		T	1993-95
Elk River near Estill Springs	03579100	TVA	275	C	1974-78
		TVA		T	1971-77

DISCONTINUED SURFACE-WATER QUALITY STATIONS--Continued

[Agency designations: USGS, U.S. Geological Survey; TVA, Tennessee Valley Authority.
Type of record: (B) biological, (C) chemical, (S) sediment, (T) temperature.]

Station name	Station number	Agency	Drainage area (mi^2)	Type of record	Period of record (water years)
Boiling Fork Creek near Decherd	03580110	TVA	37.7	T	1975-77
Elk River below Tims Ford Dam	03580750	TVA	534	T	1971-79
		TVA		C	1966-67, 1973 1975-80
Elk River above Fayetteville	03582000	TVA	827	C	1974, 1977-80
		USGS		T	1961-64
Elk River at Fayetteville	03582400	TVA	895	T	1976-78
Cane Creek near Fayetteville	03582600	TVA	106	T	1969-73
Richland Creek near Pulaski	03584000	TVA	366	T	1965-73
Elk River near Prospect	03584500	TVA	1,784	T	1961-64
Shoal Creek at Iron City	03588500	TVA	348	C,S	1974-80
		USGS		C,S	1980-83
Tennessee River at Pickwick Landing Dam	03593005	USGS	32,820	C,T	1976-82
Beech River near Chesterfield	03594439	TVA	121	C	1969-71, 1976
Duck River below Manchester	03596000	TVA	107	C	1967-68, 1970-71
		TVA		T	1976-80
		USGS		C,S	1975, 1979-83
Duck River at Normandy	03596500	TVA	208	T	1969-75
Duck River at Shelbyville Waterworks	03597850	TVA	425	C	1975-80
Duck River near Shelbyville	03598000	TVA	481	T	1961-64, 1976-78
Duck River near Columbia	03599460	TVA	1,176	T	1974-82
Duck River at Columbia Waterworks	03599482	TVA	1,195	C	1975-80
Piney River at Vernon	03602500	TVA	193	T	1964-67
Duck River above Hurricane Mills	03603000	TVA	2,557	C	1966-67, 1974-80
		TVA		T	1961-64
Buffalo River near Flat Woods	03604000	TVA	447	T	1964-68
Buffalo River near Lobelville	03604500	TVA	707	T	1961-64
		TVA		C	1967-68, 1973-76
Trace Creek above Denver	03605555	USGS	31.9	C	1979-83
Big Sandy River at Bruceton	03606500	TVA	205	T	1971-78
		TVA		C	1968, 1970-72
		USGS		C,S	1976, 1979-83
North Reelfoot Creek at Clayton	07026360	USGS	54.7	C,S	1982-84
North Reelfoot Creek at State Hwy 22 near Clayton	07026370	USGS	56.3	C,S	1983-89
Obion River at Hwy 51 near Obion	07026040	USGS	1,875	C,S,T	1975-95
South Reelfoot Creek near Clayton	07026400	USGS	38.6	C,S	1984-89
Bayou Du Chien near Walnut Log	07026695	USGS	27.8	C,T	1986-88
Indian Creek near Samburg	07026795	USGS	8.01	C,S	1982-84
Reelfoot Lake Spillway near Tiptonville	07027002	USGS	240	C,T	1975-76, 1986-88
Mosses Creek near Pocahontas	07029410	USGS	47.6	C,S	1961, 1963, 1977-78
Hatchie River near Lacy	07029425	USGS	1,033	C,S	1977-78
Big Muddy Creek at Stanton	07030010	USGS	84.4	C,S	1977-78
Cane Creek at Ripley	07030100	USGS	33.9	S	1985-87
Cane Creek at Three Point	07030137	USGS	79.8	S	1985-87
Loosahatchie River near Arlington	07030240	USGS	262	C,S	1979-82
Wolf River at Rossville	07030500	USGS	503	C	1961, 1963-68
Nonconnah Creek near Germantown	07032200	USGS	68.2	C,S	1979-82

INTRODUCTION

The Water Resources Division of the U.S. Geological Survey (USGS), in cooperation with State, local, and Federal agencies, obtains a large amount of data pertaining to the water resources of Tennessee each water year. These data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of the State. To make these data readily available to interested parties outside the USGS, the data are published annually in this report series entitled "Water Resources Data - Tennessee."

This report consists of records of stage, discharge, and water quality of streams; stage and contents of lakes and reservoirs; and water levels and water quality of ground-water wells. This volume contains discharge records for 89 gaging stations; stage only at 1 gaging station; stage and contents at 32 lakes and reservoirs; water quality for 9 stations, and 15 wells; and water levels at 8 observation wells. Also included are data for 98 crest-stage partial-record stations. Locations of these sites are shown on figures 4 through 6. Additional water data were collected at various sites not involved in the systematic data-collection program and are published as miscellaneous measurements and miscellaneous analyses or as seepage investigations.

This series of annual reports for Tennessee began with the 1961 water year with a report that contained only data relating to the quantities of surface water. Water-quality records for water years 1964 through 1974 were similarly released either in separate reports or in conjunction with streamflow records. Beginning with the 1975 water year, the report format was changed to present, in one volume, data on quantities of surface water, quality of surface and ground water, and ground-water levels.

Prior to introduction of this series and for several years concurrent with it, water-resources data for Tennessee were published in U.S. Geological Survey Water-Supply Papers. Data on stream discharge and stage and on lake or reservoir contents and stage, through September 1960, were published annually under the title "Surface-Water Supply of the United States." For the 1961 through 1970 years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941 through 1970 water years were published annually under the title "Quality of Surface Water of the United States," and water levels for the 1935 through 1974 water years were published under the title "Ground-Water Levels in the United States." The above mentioned Water-Supply Papers may be consulted in the libraries of the principal cities of the United States and may be purchased from the Books and Open-File Reports Section, Federal Center, Box 25425, Denver, Colorado 80225.

Publications similar to this report are published annually by the USGS for all States. These official Survey reports have an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as "U.S. Geological Survey Water-Data Report TN-02-1." For archiving and general distribution, the reports for the 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the District Chief at the address given on the back of the title page or by telephone (615) 837-4700.

COOPERATION

The USGS and agencies of the State of Tennessee have had cooperative agreements for the systematic collection of streamflow records since 1918, for ground-water levels since 1946, and for water-quality records since 1960. Organizations that assisted in collecting data contained in this report through cooperative agreement with the Survey are:

- Athens Utility District
- Tennessee Department of Environment and Conservation
- Tennessee Department of Transportation
- Tennessee Wildlife Resources Agency
- Duck River Development Agency
- Harpeth Valley Utility District
- Hixson Utility District
- Savannah Valley Utility District
- Cities, Towns, or Counties;
  - Alcoa
  - Blount
  - Camden
  - Dickson
  - Franklin
  - Germantown
  - Harriman
  - Jackson
  - Knox
  - Lewisburg
  - Lincoln
  - Maryville
  - Medina
  - Memphis
  - Metropolitan Government of Nashville and Davidson County
  - Murfreesboro
  - Rogersville
  - Sevierville
  - Shelby
  - Springfield
  - Wartrace

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army, Nashville District, the Tennessee Valley Authority, and by the U.S. Department of Energy. All data are published in this report.

Organizations that supplied data are acknowledged in station descriptions.

SUMMARY OF HYDROLOGIC CONDITIONS

Surface Water

The State of Tennessee derives many benefits from an abundance of water found in many streams, rivers, and lakes throughout the area. Excluding the Mississippi River, which flows south along Tennessee's western border, the largest rivers in the State are the Tennessee and Cumberland Rivers. Other large rivers in Tennessee include the Holston, French Broad, Little Tennessee, Ocoee, Elk, Duck, Buffalo, Obion, and Hatchie Rivers. Tennessee shares the benefits of these rivers with neighboring states. Adequate water supplies in the Tennessee's river systems are dependent upon rainfall and wise management by Federal, State, and local government agencies. Streamflow data, as contained in this report, is an integral part of the wise management of the water resources of the State.

Rainfall across Tennessee was significantly above average during the calendar year 2002. Memphis recorded about 20 inches above the long-term average rainfall of 53 inches, both Nashville and Knoxville were about 10 inches above the long-term normal of 48 inches. A comparison of annual mean discharges for the 2002 water year with means for the period-of-record for unregulated streams in Tennessee indicates that streamflow recovered during the 2002 water year and was higher than the 2001 water year across the State. Streamflows in the western parts of Tennessee were well above long-term averages and almost twice the long-term average in many streams. In the central portions of Tennessee, streams and rivers were flowing at average to slightly above average rates during water year 2002. Only the streams and rivers in eastern Tennessee, particularly those flowing out of Virginia and North Carolina, were still below the long-term average flow rates. Although, recovering significantly, the dry conditions that existed for several years in this area will require continued robust rainfall conditions to return to normal.

The western portion of Tennessee was affected by several significant flood-producing storms during the 2002 water year. A general rainstorm occurring during late November and early December 2001 produced flooding that was generally a 25-year event. However, several streams had flooding that approached the 50-year recurrence interval. The National Weather Service in Memphis recorded a single-day total of over 6 inches in late November and over 70 inches of rainfall for the calendar year 2002, the third wettest year in over 100 years of record.

The central portion of Tennessee was struck by unusually heavy flooding January 23-25, 2002. The storm that produced the heavy flooding was a general rainstorm with an extremely intense leading edge that passed through middle Tennessee in the early morning hours of January 23, 2002. The storm dropped over 7 inches of rainfall and produced heavy flash flooding and generalized flooding on many rivers and streams throughout the area. Recurrence intervals for this flood ranged from about 10 to 25 years, with a select few streams approaching the 50-year event.

A few areas of middle Tennessee and most of the upper eastern parts of the State experienced a significant flood during the period from March 17-19, 2002. The storm producing this flood was a general rainstorm with intense embedded cells that produced in excess of 6 inches of rain through many watersheds in the area. In middle Tennessee, Jones Creek in Dickson County recorded a 50-year flood. In east Tennessee, many streams in the Clinch River and Holston River basins were out of their banks and recorded 10- to 20-year flood events . The Clinch River recorded a flood in excess of the 30-year recurrence interval. Most of the runoff in the Clinch River came from Virginia which received heavier rainfall amounts than Tennessee during this storm.

Ground Water

Ground-water levels at key aquifers throughout Tennessee were affected by rainfall during the 2002 water year. Ground-water levels are recorded continuously at a series of observation wells across the State (fig. 1). Water levels at well Hm:O-15 (Hamilton County) are representative of conditions in Middle and East Tennessee. Water levels were near normal during the last 8 months of the year. Wells in Hamilton County (Hm:O-15), Lauderdale County (Ld:F-4), and Shelby County (Sh:P-99) show water levels recovering with increase rain during 2002.

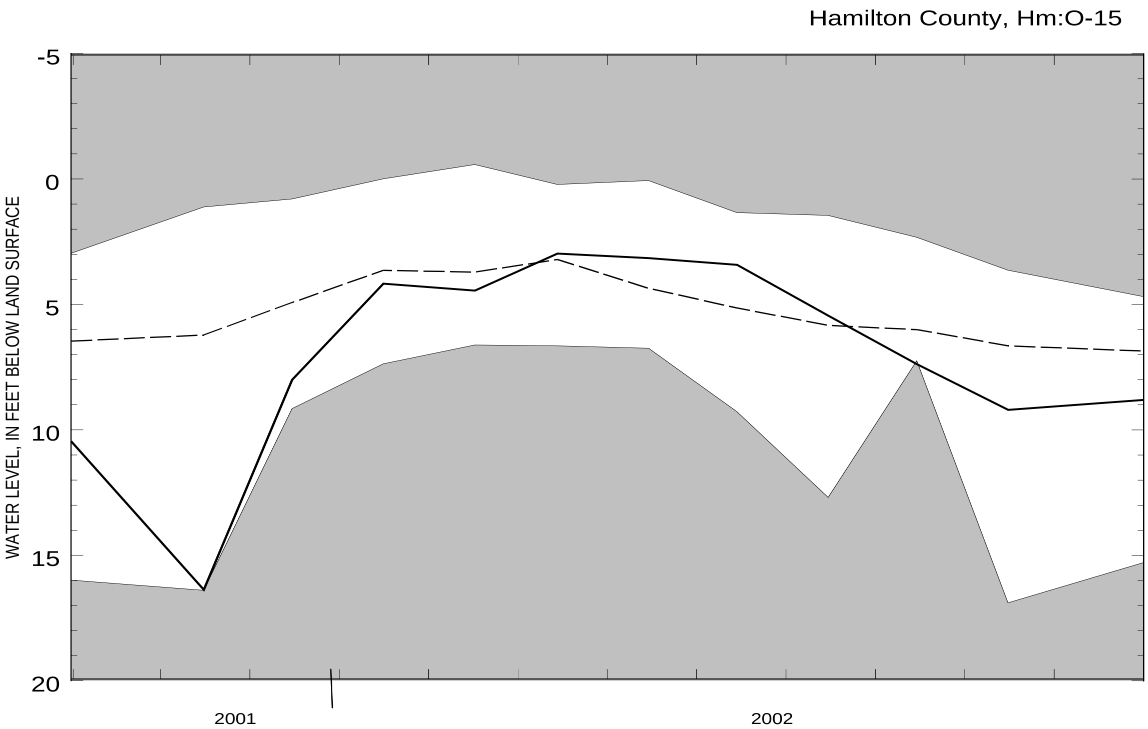
Water levels recorded from wells throughout Middle and East Tennessee generally respond faster with larger fluctuations than wells drilled into the sand and gravel aquifers of West Tennessee. Observation wells in Shelby County show that ground water levels are strongly affected by ground-water withdrawals by the City of Memphis and surrounding communities. At well Sh:Q-1 (fig. 2), near downtown Memphis, water levels declined steadily since 1972, although a slower rate of decline began in 1988. The decline in ground-water levels in the Memphis area are not indicative of a reduction in the available ground-water supplies, but the response of the aquifer to additional withdrawals. Hydrographs showing lowest monthly water levels for each of the continuous recording observation wells are included in the body of this report.

Water Quality

Water-quality data were collected at 8 surface-water sites and 28 ground-water sites during the 2002 water year. Many of these sites were sampled as part of the U.S. Geological Survey's National Water-Quality Assessment (NAWQA) Program. Other water-quality activities included:

- o Operation of four continuous monitors to measure temperature, dissolved oxygen, pH, and specific conductance in the Cumberland River Basin in support of the U.S. Army Corps of Engineers, Nashville District operations.
- o Operation of a continuous monitor to measure temperature, dissolved oxygen, pH, and specific conductance in the West Fork Stones River in support of a water-resources program in cooperation with the City of Murfreesboro, Tennessee.
- o Operation of a continuous monitor to measure temperature and dissolved oxygen in the Duck River in cooperation with the Duck River Development Agency.
- o Operation of a two continuous monitors to measure temperature, dissolved oxygen, pH, and specific conductance in the Cumberland River at Nashville in cooperation with the Davidson County Metropolitan area, Tennessee.
- o Quarterly samples at three sites for the determination of water quality in Carter's Creek in Maury County, Tennessee.

Data collected for several NAWQA sites identified low-level concentrations of pesticides in surface water and shallow ground water.



HYDROGRAPH EXPLANATION

NOTE: ALL GROUND-WATER LEVELS SHOWN REPRESENT MONTHLY MAXIMUM DEPTH TO WATER

——— CURRENT WATER YEAR DATA

— — MEDIAN FOR PERIOD OF RECORD

SHADED LINES SHOW EXTREMES FOR LOWEST WATER LEVEL RECORDED DURING THE MONTH FOR THE PERIOD OF RECORD

Figure 1. Ground-water levels for the 2002 water year compared to the maximum, minimum, and median water levels for the period of record.

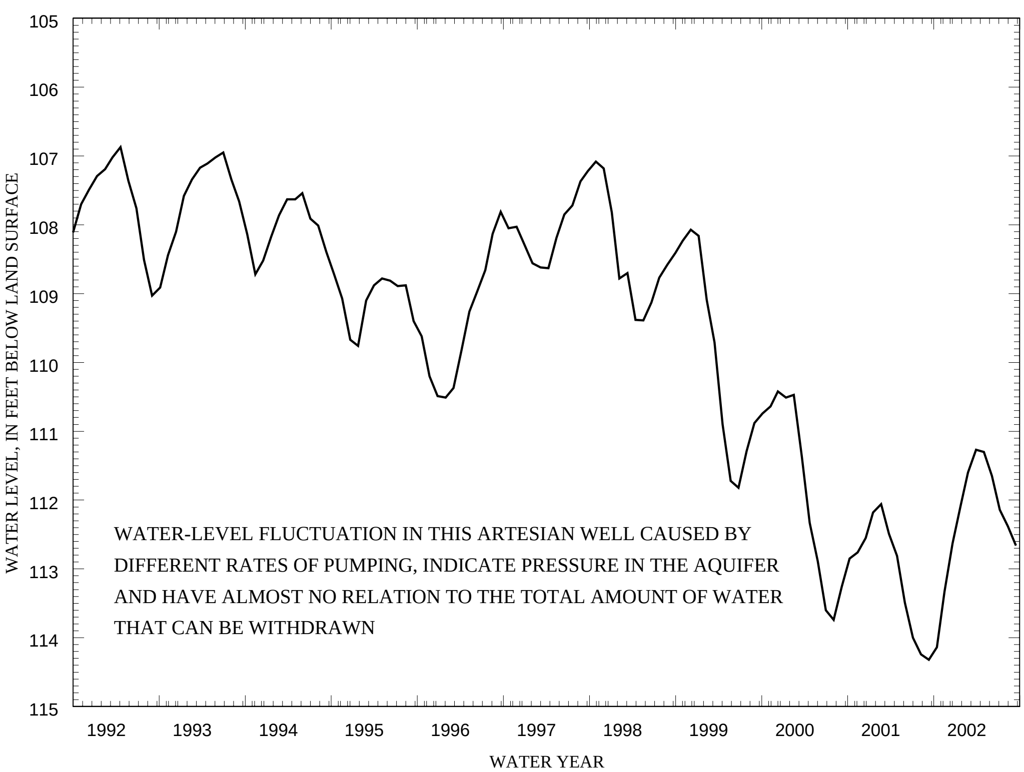


Figure 2. Hydrograph of Shelby County showing long-term decline in the water-level.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Bench-Mark Network is a network of 50 sites in small drainage basins around the country whose purpose is to provide consistent data on the streamflow representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by human activities. At 10 of these sites, water-quality information is being gathered on major ions and nutrients, primarily to assess the affects of acid deposition on stream chemistry. Additional information on the Hydrologic Benchmark Program can be found at http://water.usgs.gov/hbn/.

National Stream-Quality Accounting Network ((NASQAN) monitors the water quality of large rivers within the Nation's largest river basins. From 1995 through 1999, a network of approximately 40 stations were operated in the Mississippi, Columbia, Colorado, and Rio Grande. From 2000 through 2004, sampling was reduced to a few index stations on the Colorado and Columbia so that a network of 5 stations could be implemented on the Yukon River. Samples are collected with sufficient frequency that the flux of a wide range of constituents can be estimated. The objective of NASQAN is to characterize the water quality of these large rivers by measuring concentration and mass transport of a wide range of dissolved and suspended constituents, including nutrients, major ions, dissolved and sediment-bound heavy metals, common pesticides, and inorganic and organic forms of carbon. This information will be used (1) to describe the long-term trends and changes in concentration and transport of these constituents; (2) to test findings of the National Water-Quality Assessment Program (NAWQA); (3) to characterize processes unique to large-river systems such as storage and re-mobilization of sediments and associated contaminants; and (4) to refine existing estimates of off-continent transport of water, sediment, and chemicals for assessing human effects on the world's oceans and for determining global cycles of carbon, nutrients, and other chemicals. Additional information about the NASQAN Program can be found at http://water.usgs.gov/nasqan/.

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) provides continuous measurement and assessment of the chemical constituents in precipitation throughout the United States. As the lead federal agency, the USGS works together with over 100 organizations to provide a long-term, spatial and temporal record of atmospheric deposition generated from a network of 225 precipitation chemistry monitoring sites. This long-term, nationally consistent monitoring program, coupled with ecosystem research, provides critical information toward a national scorecard to evaluate the effectiveness of ongoing and future regulations intended to reduce atmospheric emissions and subsequent impacts to the Nation's land and water resources. Reports and other information on the NADP/NTN Program, as well as all data from the individual sites, can be found at http://bqs.usgs.gov/acidrain/.

Data from the network, as well as information about individual sites, are available through the World Wide Web at:

http://nadp.sws.uiuc.edu/

The National Water-Quality Assessment (NAWQA) Program of the U.S. Geological Survey is a long-term program with goals to describe the status and trends of water-quality conditions for a large, representative part of the Nation's ground- and surface-water resources; provide an improved understanding of the primary natural and human factors affecting these observed conditions and trends; and provide information that supports development and evaluation of management, regulatory, and monitoring decisions by other agencies.

Assessment activities are being conducted in 59 study units (major watersheds and aquifer systems) that represent a wide range of environmental settings nationwide and that account for a large percentage of the Nation's water use. A wide array of chemical constituents will be measured in ground water, surface water, streambed sediments, and fish tissues. The coordinated application of comparative hydrologic studies at a wide range of spatial and temporal scales will provide information for decision making by water-resources managers and a foundation for aggregation and comparison of findings to address water-quality issues of regional and national interest.

Communication and coordination between USGS personnel and other local, State, and federal interests are critical components of the NAWQA Program. Each study unit has a local liaison committee consisting of representatives from key federal, State, and local water resources agencies, Indian nations, and universities in the study unit. Liaison committees typically meet semiannually to discuss their information needs, monitoring plans and progress, desired information products, and opportunities to collaborate efforts among the agencies. Additional information about the NAWQA Program can be found at http://water.usgs.gov/nawqa/nawqa_html

Radiochemical Program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Tritium Network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface water. In addition to the surface water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

EXPLANATION OF RECORDS

The surface-water and ground-water records published in this report are for the 2002 water year that began October 1, 2001, and ended September 30, 2002. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, stage and content data for lakes and reservoirs, water-quality data for surface and ground water, and ground-water-level data. The locations of the stations and wells where the data were collected are shown in figures 4 through 7. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

Each data station, whether streamsite or well, in this report is assigned a unique identification number. The number usually is assigned when a station is first established and is retained for that station indefinitely. The systems used by the USGS to assign identification numbers for surface-water stations and for ground-water well sites differ, but both are based on geographic location. The "downstream order" system is used for surface-water stations and the "latitude-longitude" system is used for wells.

Downstream Order System

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a mainstream station are listed before that station. A station on a tributary that enters between two mainstream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary with respect to the stream to which it is immediately tributary is indicated by an indention in the "List of Stations" in the front of this report. Each indention represents one rank. This downstream order and system of indention show which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

Each hydrologic station and partial-record station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete number for each station such as 03540500...., which appears just to the left of the station name, includes the 2-digit part number "03" plus the multi-digit downstream order number "540500...." This downstream numbering system is used in most cases; however, in some cases latitude and longitude numbers are assigned to hydrologic stations and partial-record stations as a means of identification (See Numbering System for Wells).

Numbering system for wells

Downstream order station numbers are not assigned to wells. The well numbering system of the USGS is based on the grid system of latitude and longitude. The system provides the geographic location of the well and a unique number for each site. The number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude, the next 7 digits denote degrees, minutes, and seconds of longitude, and the last 2 digits (assigned sequentially) identify the wells within a 1-second grid.

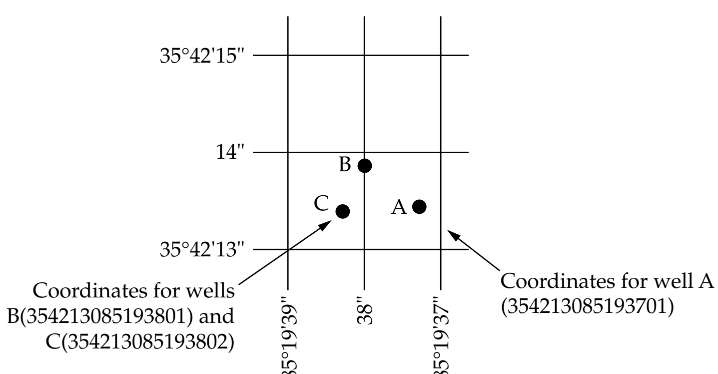


Figure 3.--System for numbering wells (latitude and longitude).

Records of Stage and Water Discharge

Records of stage and water discharge may be complete or partial. Complete records of discharge are those obtained using a continuous stage-recording device through which either instantaneous or mean daily discharges may be computed for any time, or any period of time, during the period of record. Complete records of lake or reservoir content, similarly, are those for which stage or content may be computed or estimated with reasonable accuracy for any time, or period of time. They may be obtained using a continuous stage-recording device. Because daily mean discharges and end-of-day contents commonly are published for such stations, they are referred to as "daily stations."

By contrast, partial records are obtained through discrete measurements without using a continuous stage-recording device and pertain only to a few flow characteristics, or perhaps only one. The nature of the partial record is indicated by table titles such as "Crest-stage partial records," or "Low-flow partial records." Records of miscellaneous discharge measurements or of measurements from special studies, such as low-flow seepage studies, may be considered as partial records, but they are presented separately in this report.

Data Collection and Computation

The data obtained at a complete-record gaging station on a stream consist of a continuous record of stage, individual measurements of discharge throughout a range of stages, and notations regarding factors that may affect the relation between stage and discharge. These data, together with supplemental information, such as weather records, are used to compute daily discharges. The data obtained at a complete-record gaging station on a lake or reservoir consist of a record of stage and of notations regarding factors that may affect the relation between stage and lake content. These data are used with stage-area and stage-capacity curves or tables to compute water-surface areas and lake storage.

Continuous records of stage are obtained with analog recorders that trace continuous graphs of stage or with digital recorders that punch stage values on paper tapes at selected time intervals. Measurements of discharge are made with current meters using methods adapted by the USGS. These methods are described in standard textbooks, in Water-Supply Paper 2175, and in U.S. Geological Survey Techniques of Water Resources Investigations (TWRI's), Book 3, Chapter A1 through A19 and Book 8, Chapters A2 and B2. The methods are consistent with the American Society for Testing and Materials (ASTM) standards and generally follow the standards of the International Organization for Standards (ISO).

In computing discharge records, results of individual measurements are plotted against the corresponding stages, and stage-discharge relation curves are then constructed. From these curves, rating tables indicating the approximate discharge for any stage within the range of the measurements are prepared. If it is necessary to define extremes of discharge outside the range of the current-meter measurements, the curves are extended using: (1) logarithmic plotting; (2) velocity-area studies; (3) results of indirect measurements of peak discharge, such as slope-area or contracted-opening measurements, and computations of flow-over-dams or weirs; or (4) step-backwater techniques.

Daily mean discharges are computed from gage heights and rating tables. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is computed by the shifting-control method, in which correction factors based on individual discharge measurements and notes of the personnel making the measurements are used in applying the gage heights to the rating tables. The shifting-control method also is used if the stage-discharge relation is changed temporarily because of aquatic growth or debris on the control. For some stations, formation of ice in the winter may so obscure the stage-discharge relations that daily mean discharges must be estimated from other information such as temperature and precipitation records, notes of observations, and comparable records of discharge for other stations in the same or nearby basins.

At some stream-gaging stations, the stage-discharge relation is affected by backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

For a lake or reservoir station, capacity tables giving the contents for any stage are prepared from stage-area relation curves defined by surveys. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly change in contents is computed. If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys, the computed contents may be increasingly in error due to the gradual accumulation of sediment.

For some gaging stations there are periods when no gage-height record is obtained, or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods, the daily discharges are estimated from the recorded range in stage, previous or following record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins. Likewise, daily contents may be estimated from operator's logs, previous or following record, inflow-outflow studies, and other information. Information explaining how estimated daily-discharge values are identified in station records is included in the next two sections, "Data Presentation" (REMARKS paragraph) and "Identifying Estimated Daily Discharge."

Data Presentation

Streamflow data in this report are presented in a new format that is considerably different from the format in data reports prior to the 1991 water year. The major changes are that statistical characteristics of discharge now appear in tabular summaries following the water-year data table and less information is provided in the text or station manuscript above the table. These changes represent the results of a pilot program to reformat the annual water-data report to meet current user needs and data preferences.

The records published for each continuous-record surface-water discharge station (gaging station) now consist of four parts, the manuscript or station description; the data table of daily mean values of discharge for the current water year with summary data; a tabular statistical summary of monthly mean flow data for a designated period, by water year; and a summary statistics table that includes statistical data of annual, daily, and instantaneous flows as well as data pertaining to annual runoff, 7-day low-flow minimums, and flow duration.

Station manuscript

The manuscript provides, under various headings, descriptive information, such as station location; period of record; historical extremes outside the period of record; record accuracy; and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments to follow clarify information presented under the various headings of the station description.

LOCATION.--Information on locations is obtained from the most accurate maps available. The location of the gage with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given. River mileage is that determined and used by the USGS, Tennessee Valley Authority, U.S. Army Corps of Engineers, or other agencies using methods given in "River Mileage Measurement," Bulletin 14, Revision of October 1968, prepared by the Water Resources Council.

DRAINAGE AREA.--Drainage areas are measured using the most accurate maps available. Because the type of maps available varies from one drainage basin to another, the accuracy of drainage areas likewise varies. Drainage areas are updated as better maps become available.

PERIOD OF RECORD.--This indicates the period for which there are published records for the station or for an equivalent station. An equivalent station is one whose location was such that records from it can reasonably be considered equivalent with records from the present station.

REVISED RECORDS.--Previously published streamflow records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual reports. Listed under this heading are all the reports in which revisions have been published for the station and the water years to which the revisions apply. If a revision did not include daily, monthly, or annual figures of discharge, that fact is noted after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the most recently revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published in the annual series of reports.

GAGE.--The type of gage in current use, the datum of the current gage referred to National Geodetic Vertical Datum of 1929 (see "Definition of terms"), and a condensed history of the types, locations, and datums of previous gages are given under this heading.

REMARKS.--All periods of estimated daily discharge will either be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily discharge table. (See next section, "Identifying Estimated Daily Discharge.") If a REMARKS paragraph is used to identify estimated record, the paragraph will begin with this information presented as the first entry. The paragraph is also used to present information relative to the accuracy of the records, to special methods of computation, and to conditions that affect natural flow at the station. In addition, information may be presented pertaining to average discharge data for the period of record; to extremes data for the period of record and the current year; and, possibly, to other pertinent times. For reservoir stations, information is given on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir.

COOPERATION.--Records provided by a cooperating organization or obtained for the USGS by a cooperating organization are identified here.

EXTREMES OUTSIDE PERIOD OF RECORD.--Included here is information concerning major floods or unusually low flows that occurred outside the stated period of record. The information may or may not have been obtained by the USGS.

REVISIONS.--If a critical error in published records is discovered, a revision is included in the first report published following discovery of the error.

Although rare, occasionally the records of a discontinued gaging station may need revision. Because, for these stations, there would be no current or, possibly, future station manuscript published to document the revision in a "Revised Records" entry, users of data for these stations who obtained the record from previously published data reports may wish to contact the District Office (address given on the back of the title page of this report) to determine if the published records were ever revised after the station was discontinued. Of course, if the data for a discontinued station were obtained by computer retrieval, the data would be current and there would be no need to check because any published revision of data is always accompanied by revision of the corresponding data in computer storage.

Manuscript information for lake or reservoir stations differs from that for stream stations in the nature of the "Remarks" and in the inclusion of a skeleton stage-capacity table when daily contents are given.

Headings for AVERAGE DISCHARGE, EXTREMES FOR PERIOD OF RECORD, AND EXTREMES FOR CURRENT YEAR have been deleted and the information contained in these paragraphs, except for the listing of secondary instantaneous peak discharges in the EXTREMES FOR CURRENT YEAR paragraph, is now presented in the tabular summaries following the discharge table or in the REMARKS paragraph, as appropriate. No changes have been made to the data presentations of lake contents.

Data table of daily mean values

The daily table of discharge records for stream-gaging stations gives mean discharge for each day of the water year. In the monthly summary for the table, the line headed "TOTAL" gives the sum of the daily figures for each month; the line headed "MEAN" gives the average flow in cubic feet per second for the month; the lines headed "MAX" and "MIN" give the maximum and minimum daily mean discharges, respectively, for each month. Discharge for the month also is usually expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN."), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches or in acre-feet may be omitted if there is extensive regulation or diversion or if the drainage area includes large noncontributing areas. At some stations monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversion or reservoir contents are given. These figures are identified by a symbol and corresponding footnote.

Statistics of monthly mean data

A tabular summary of the mean (line headed "MEAN"), maximum (line headed "MAX"), and minimum line (line headed "MIN") of monthly mean flows for each month for a designated period is provided below the mean values table. The water years of the first occurrence of the maximum and minimum monthly flows are provided immediately below those figures. The designated period will be expressed as "FOR WATER YEARS ____-____, BY WATER YEAR (WY)," and will list the first and last water years of the range of years selected from the PERIOD OF RECORD paragraph in the station manuscript. It will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript.

Summary statistics

A table titled "SUMMARY STATISTICS" follows the statistics of monthly mean data tabulation. This table consists of four columns, with the first column containing the line headings of the statistics being reported. The table provides a statistical summary of yearly, daily, and instantaneous flows, not only for the current water year but also for the previous calendar water year and for a designated period, as appropriate. The designated period selected, "WATER YEARS ____-____," will consist of all the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript. All of the calculations for the statistical characteristics designated ANNUAL (See line headings below), except for the "ANNUAL 7-DAY MINIMUM" statistic, are calculated for the designated period using complete water years. The other statistical characteristics may be calculated using partial water years.

The date or water year, as appropriate, of the first occurrence of each statistic reporting extreme values of discharge is provided adjacent to the statistic. Repeated occurrences may be noted in the REMARKS paragraph of the manuscript or in footnotes. When the designated period is not the same as the station period of record published in the manuscript, values and dates of occurrence for daily and instantaneous extremes outside the designated period will be noted in the REMARKS paragraph or in footnotes. Selected streamflow duration curve statistics and runoff data are also given. Runoff data may be omitted if there is extensive regulation or diversion of flow in the drainage basin.

The following summary statistics data, as appropriate, are provided with each continuous record of discharge. Comments to follow clarify information presented under the various line headings of the summary statistics table.

ANNUAL TOTAL.--The sum of the daily mean values of discharge for the year. At some stations the annual total discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnote.

ANNUAL MEAN.--The arithmetic mean of the individual daily mean discharges for the year noted or for the designated period. At some stations the yearly mean discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes. At least 5 complete years of record must be available before this statistic is published for the designated period.

HIGHEST ANNUAL MEAN.--The maximum annual mean discharge occurring for the designated period.

LOWEST ANNUAL MEAN.--The minimum annual mean discharge occurring for the designated period.

HIGHEST DAILY MEAN.--The maximum daily mean discharge for the year or for the designated period.

LOWEST DAILY MEAN.--The minimum daily mean discharge for the year or for the designated period.

ANNUAL 7-DAY MINIMUM.--The lowest mean discharge for 7 consecutive days for a calendar year or a water year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1-March 31). The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day 10-year low-flow statistic.)

MAXIMUM PEAK FLOW.--The maximum instantaneous peak discharge occurring for the water year or designated period. Occasionally the maximum flow for a year may occur at midnight at the beginning or end of the year, on a recession from or rise toward a higher peak in the adjoining year. In this case, the maximum peak flow is given in the table and the maximum flow may be reported in a footnote or in the REMARKS paragraph in the manuscript.

MAXIMUM PEAK STAGE.--The maximum instantaneous peak stage occurring for the water year or for the designated period. Occasionally the maximum stage for a year may occur at midnight at the beginning or end of the year, on a recession from or rise toward a higher peak in the adjoining year. In this case, the maximum peak stage is given in the table and the maximum stage may be reported in the REMARKS paragraph in the manuscript or in a footnote. If the dates of occurrence of the maximum peak stage and maximum peak flow are different, the REMARKS paragraph in the manuscript or a footnote may be used to provide further information.

INSTANTANEOUS LOW FLOW.--The minimum instantaneous discharge occurring for the water year or for the designated period.

ANNUAL RUNOFF (AC-FT).--Indicates the depth, in acre-feet, to which the drainage area would be covered if all the runoff for the year were uniformly distributed on it.

ANNUAL RUNOFF (CFSM).--Indicates the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area for the year.

ANNUAL RUNOFF (INCHES).--Indicates the depth to which the drainage area would be covered if all the runoff for the year were uniformly distributed on it.

10 PERCENT EXCEEDS.--The discharge that is exceeded 10 percent of the time for the designated period.

50 PERCENT EXCEEDS.--The discharge that is exceeded 50 percent of the time for the designated period.

90 PERCENT EXCEEDS.--The discharge that is exceeded 90 percent of the time for the designated period.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of annual maximum stage and discharge at crest-stage stations, and the second is a table of discharge measurements at low-flow partial-record stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Identifying Estimated Daily Discharge

Estimated daily-discharge values published in the water-discharge tables of annual State data reports are identified either by flagging individual daily values with the letter symbol "e" and printing a table footnote, "e Estimated," or by listing the dates of the estimated record in the REMARKS paragraph of the station description.

Accuracy of the Records

The accuracy of streamflow records depends primarily on: (1) The stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements; and (2) the accuracy of measurements of stage, measurements of discharge, and interpretation of records.

The accuracy attributed to the records is indicated under "REMARKS." "Excellent" means that about 95 percent of the daily discharges are within 5 percent of the true; "good," within 10 percent; and "fair," within 15 percent. Records that do not meet the criteria mentioned are rated "poor." Different accuracies may be attributed to different parts of a given record.

Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second for values less than 1 ft^3/s; to the nearest tenth between 1.0 and 10 ft^3/s; to whole numbers between 10 and 1,000 ft^3/s; and to 3 significant figures to more than 1,000 ft^3/s. The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square and of runoff, in inches, are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

Other Data Available

Records of discharge, not published by the USGS, are collected in Tennessee at several sites by the U.S. Army Corps of Engineers and Tennessee Valley Authority. The National Water Data Exchange (NAWDEX), U.S. Geological Survey, Reston, VA 22092, maintains an index of these sites as well as an index of records of discharge collected by other agencies but not published by the USGS. Information on records at specific sites can be obtained from that office upon request.

Information used in the preparation of the records in this publication, such as discharge-measurements notes, gage-height records, temperature measurements, and rating tables are on file in the Tennessee District office. Also, most of the daily mean discharges are in computer-readable form and have been analyzed statistically. Information on the availability of the unpublished information or on the results of statistical analyses of the published records may be obtained from the District office.

Records of Surface-Water Quality

Records of surface-water quality ordinarily are collected at or near stream-gaging stations. Records of surface-water quality in this report may involve a variety of types of data and measurement frequencies.

Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications. A continuing-record station is a site where data are collected on a regularly scheduled basis. Frequency may be once or more times daily, weekly, monthly, or quarterly. A partial-record station is a site where limited water-quality data are collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A miscellaneous sampling site is a location other than a continuing or partial-record station, where random samples are collected to give better areal coverage to define water-quality conditions in the river basin.

Arrangement of Records

Water-quality records collected at a surface-water daily record station are published immediately following that record, regardless of the frequency of sample collection. Station number and name are the same for both records. Where a surface-water daily record station is not available or where the water quality differs significantly from that at the nearby surface-water station, the continuing water-quality record is published with its own station number and name in the regular downstream-order sequence. Water-quality data for partial-record stations and for miscellaneous sampling sites appear in separate tables following the table of discharge measurements at miscellaneous sites.

On-Site Measurements and Sample Collection

In obtaining water-quality data, a major concern needs to be assuring that the data obtained represent the in situ quality of the water. To assure this, certain measurements, such as water temperature, pH, and dissolved oxygen, need to be made onsite when the samples are taken. To assure that measurements made in the laboratory also represent the in situ water, carefully prescribed procedures need to be followed in collecting the samples, in treating the samples to prevent changes in quality pending analysis, and in shipping the samples to the laboratory. Procedures for onsite measurements and for collecting, treating, and shipping samples are given in the publications on “Techniques of Water-Resources Investigations,” Book 1, Chapter D2; Book 3, Chapter A1, A3, and A4; and Book 9, Chapters A1-A9.” These references are listed in the PUBLICATIONS OF TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS section of this report. These methods are consistent with ASTM standards and generally follow ISO standards.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load. All samples obtained for the National Stream Quality Accounting Network (NASQAN) (see definitions) are obtained from at least several verticals.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

Traditionally, dissolved trace-element concentrations have been reported at the microgram per liter (µg/L) level. Recent evidence, mostly from large rivers, indicates that actual dissolved-phase concentrations for a number of trace elements are within the range of 10's to 100's of nanograms per liter (ng/L). Present data above the µg/L level should be viewed with caution. Such data may actually represent elevated environmental concentrations from natural or human causes; however, these data could reflect contamination introduced during sampling, processing, or analysis. To confidently produce dissolved trace-element data with insignificant contamination, the USGS will begin using new trace-element protocols in the near future.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the USGS District Office whose address is given on the back of the title page of this report.

Water Temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for water-discharge stations. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small diurnal temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

At stations where recording instruments are used, maximum, minimum, and mean temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are on file in the District office and are also published in this report.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross section.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided-day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided-day method. For periods when no samples were collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar water discharge. Methods used in the computation of sediment records are described in the TWRI Book 3, Chapters C1 and C3. These methods are consistent with ASTM standards and generally follow ISO standards.

At other stations, suspended-sediment samples were collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow and in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of the quantities of suspended sediment, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included for some stations.

Laboratory Measurements

Sediment samples, samples for biochemical-oxygen demand (BOD), samples for indicator bacteria, and daily samples for specific conductance are analyzed locally. All other samples are analyzed in the USGS laboratories in Arvada, Colo. Methods used to analyze sediment samples and to compute sediment records are described in the TWRI Book 5, Chapter C1. Methods used by the USGS laboratories are given in the TWRI Book 1, Chapter D2; Book 3, Chapter C2; and Book5, Chapters A1, A3, A4, and A5. These methods are consistent with ASTM standards and generally follow ISO standards.

Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available, instrumentation, general remarks, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and so forth, obtained at a frequency less than daily are presented first. Tables of "daily values" of specific conductance, pH, water temperature, dissolved oxygen, and suspended sediment then follow in sequence.

In the descriptive headings, if the location is identical to that of the discharge gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information, as appropriate, is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

DRAINAGE AREA.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

PERIOD OF RECORD.--This indicates the periods for which there are published water-quality records for the station. The periods are shown separately for records of parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the parameters individually.

INSTRUMENTATION.--Information on instrumentation is given only if a water-quality monitor, temperature recorder, sediment pumping sampler, or other sampling device is in operation at a station.

REMARKS.--Remarks provide added information pertinent to the collection, analysis, or computation of the records.

COOPERATION.--Records provided by a cooperating organization or obtained for the USGS by a cooperating organization are identified here.

EXTREMES.--Maximums and minimums are given only for parameters measured daily or more frequently. None are given for parameters measured weekly or less frequently, because the true maximums or minimums may not have been sampled. Extremes, when given, are provided for both the period of record and for the current water year.

REVISIONS.--If errors in published water-quality records are discovered after publication, appropriate updates are made in the U.S. Geological Survey's distributed data system, NWIS, and subsequently to its web-base National data system, NWISWeb [http://water.usgs/nwis/nwis]. Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of the U.S. Geological Survey water-quality data are encouraged to obtain all required data from NWIS or NWISWeb to ensure the most recent updates. Updates to NWISWeb are currently made on an annual basis.

The surface-water-quality records for partial-record stations and miscellaneous sampling sites are published in separate tables following the table of discharge measurements at miscellaneous sites. No descriptive statements are given for these records. Each station is published with its own station number and name in the regular downstream-order sequence.

Remark Codes

The following remark codes may appear with the water-quality data in this report:

PRINTED OUTPUT	REMARK
E	Estimated value
>	Actual value is known to be greater than the value shown
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colon count)
L	Biological organisms count less than 0.5 percent (organisms may be observed rather than counted)
D	Biological organism count equal to or greater than 15 percent (dominant)
&	Biological organism estimated as dominant
V	Analyte was detected in both the environmental sample and the associated blanks.

Dissolved Trace-Element Concentrations

*NOTE.--Traditionally, dissolved trace-element concentrations have been reported at the microgram per liter (µg/L) level, Recent evidence, mostly from large rivers, indicates that actual dissolved-phase concentrations for a number of trace elements are within the range of 10's to 100's of nanograms per liter (ng/L). Data above the µg/L level should be viewed with caution. Such data may actually represent elevated environmental concentrations from natural or human causes; however, these data could reflect contamination introduced during sampling, processing, or analysis. To confidently produce dissolved trace-element data with insignificant contamination, the U.S. Geological Survey began using new trace-element protocols at some stations in water year 1994.

Water Quality-Control Data

Data generated from quality-control (QC) samples are a requisite for evaluating the quality of the sampling and processing techniques as well as data from the actual samples themselves. Without QC data, environmental sample data cannot be adequately interpreted because the errors associated with the sample data are unknown. The various types of QC samples that may be collected by this district are described in the following section. Procedures have been established for the storage of water-quality-control data within the USGS. These procedures allow for storage of all derived QC data and are identified so that they can be related to corresponding environmental samples.

Blank Samples

Blank samples are collected and analyzed to ensure that environmental samples have not been contaminated by the overall data-collection process. The blank solution used to develop specific types of blank samples is a solution that is free of the analyses of interest. Any measured value signal in a blank sample for an analyte (a specific component measured in a chemical analysis) that was absent in the blank solution is believed to be due to contamination. There are many types of blank samples possible, each designed to segregate a different part of the overall data-collection process. The types of blank samples collect in this district are:

Field blank - a blank solution that is subjected to all aspects of sample collection, field processing preservation, transportation, and laboratory handling as an environmental sample.

Trip blank - a blank solution that is put in the same type of bottle used for an environmental sample and kept with the set of sample bottles before and after sample collection.

Equipment blank - a blank solution that is processed through all equipment used for collecting and processing an environmental sample (similar to a field blank but normally done in the more controlled conditions of the office).

Sampler blank - a blank solution that is poured or pumped through the same field sampler used for collecting an environmental sample.

Filter blank - a blank solution that is filtered in the same manner and through the same filter apparatus used for an environmental sample.

Splitter blank - a blank solution that is mixed and separated using a field splitter in the same manner and through the same apparatus used for an environmental sample.

Preservation blank - a blank solution that is treated with the sampler preservatives used for and environmental sample.

Reference Samples

Reference material is a solution or material prepared by a laboratory whose composition is certified for one or more properties so that it can be used to assess a measurement method. Samples of reference material are submitted for analysis to ensure that an analytical method is accurate for the known properties of the reference material. Generally, the selected reference material properties are similar to the environmental sample properties.

Replicate Samples

Replicate samples are a set of environmental samples collected in a manner such that the samples are thought to be essentially identical in composition. Replicate is the general case for which a duplicate is the special case consisting of two samples. Replicate samples are collected and analyzed to establish the amount of variability in the data contributed by some part of the collection and analytical process.

Spike Samples

Spike samples are samples to which known quantities of a solution with one or more well -established analyte concentrations have been added. These samples are analyzed to determine the extent of matrix interference or degradation on the analyte concentration during sample processing and analysis.

Change in National Trends Network Procedures

*NOTE.--Samples handling procedures at all National Trends Network stations were changed substantially on January 11, 1994, in order to reduce contamination from the sample shipping container. The data for samples before and after that date are different and not directly comparable. A tabular summary of the differences based on a special intercomparison study is available from the NADP Program Office, Illinois State Water Survey, 2204 Griffith Drive, Champaign, IL 61820-7495 (Telephone: 217-333-7873).

Records of Ground-Water Levels

Only ground-water level data from a basic network of observation wells are published herein. This basic network contains observation wells so located that the most significant data are obtained from the fewest wells in the most important aquifers.

Data Collection and Computation

Measurements of water levels are made in many types of wells under varying conditions, but the methods of measurement are standardized to the extent possible. The equipment and measuring techniques used at each observation well ensure that measurements at each well are of consistent accuracy and reliability.

Tables of water-level data are presented by counties arranged in alphabetical order. Each well is identified by means of (1) a 15-digit number that is based on latitude and longitude and (2) a local number that is provided for local needs.

Water-level records are obtained from direct measurements with a steel tape or from the graph or punched tape of a water-stage recorder. The water-level measurements in this report are given in feet with reference to land-surface datum (lsd). Land-surface datum is a datum plane that is approximately at land surface at each well. If known, the elevation of the land-surface datum is given in the well description. The height of the measuring point (MP) above or below land-surface datum is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month (eom).

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth to water of several hundred feet, the error in determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water the accuracy is greater. Accordingly, most measurements are reported to a hundredth of a foot, but some are given only to a tenth of a foot or a larger unit.

Data Presentation

Each well record consists of three parts, the station description, the data table of water levels observed during the current water year, and a graph of the water levels for the current water year or other selected period. The description of the well is presented first through use of descriptive headings preceding the tabular data. The comments to follow clarify information presented under the various headings of the well description.

LOCATION.--This paragraph follows the well-identification number and reports the latitude and longitude (given in degrees, minutes, and seconds); the hydrologic-unit number; the distance and direction from a geographic point of reference; and the owner's name.

AQUIFER.--This entry designates by name (if a name exists) and geologic age the aquifer(s) open to the well.

WELL CHARACTERISTICS.--This entry describes the well in terms of depth, diameter, casing depth and/or screened interval, method of construction, use, and additional information such as casing breaks, collapsed screen, and other changes since construction.

INSTRUMENTATION.--This paragraph provides information on both the frequency of measurement and the collection method used, allowing the user to better evaluate the reported water-level extremes by knowing whether they are based on weekly, monthly, or some other frequency of measurement.

DATUM.--This entry describes both the measuring point and the land-surface elevation at the well. The measuring point is described physically (such as top of collar, notch in top of casing, plug in pump base and so on), and in relation to land surface (such as 1.3 ft above land-surface datum). The elevation of the land-surface datum is described in feet above (or below) National Geodetic Vertical Datum of 1929 (NGVD of 1929); it is reported with a precision depending on the method of determination.

REMARKS.--This entry describes factors that may influence the water level in a well or the measurement of the water level. It should identify wells that are also water-quality observation wells, and may be used to acknowledge the assistance of local (non-Survey) observers.

PERIOD OF RECORD.--This entry indicates the period for which there are published records for the well. It reports the month and year of the start of publication of water-level records by the USGS and the words "to current year" if the records are to be continued into the following year. Periods for which water-level records are available, but are not published by the USGS, may be noted.

EXTREMES FOR PERIOD OF RECORD.--This entry contains the highest and lowest water levels of the period of published record, with respect to land-surface datum, and the dates of their occurrence.

A table of water levels follows the station description for each well. Water levels are reported in feet below land-surface datum and all taped measurements of water level are listed. For wells equipped with recorders, only abbreviated tables are published; generally, only water-level lows are listed for every fifth day and at the end of the month (eom). The highest and lowest water levels of the water year and their dates of occurrence are shown on a line below the abbreviated table. Because all values are not published for wells with recorders, the extremes may be values that are not listed in the table. Missing records are indicated by dashes in place of the water level. A hydrograph for a selected period of record follows each water-level table.

Records of Ground-Water Quality

Records of ground-water quality in this report differ from other types of records in that for most sampling sites they consist of only one set of measurements for the water year. The quality of ground water ordinarily changes slowly; therefore, for most general purposes one annual sampling, or only a few samples taken at infrequent intervals during the year, is sufficient. Frequent measurement of the same constituents is not necessary unless one is concerned with a particular problem, such as monitoring for trends in nitrate concentration. In special cases where the quality of ground water may change more rapidly, more frequent measurements are made to identify the nature of the changes.

Data Collection and Computation

The records of ground-water quality in this report were obtained mostly as a part of special studies in specific areas. Consequently, a number of chemical analyses are presented for some counties but none are presented for others. As a result, the records for this year, by themselves, do not provide a balanced view of ground-water quality Statewide. Such a view can be attained only by considering records for this year in context with similar records obtained for these and other counties in earlier years.

Most methods for collecting and analyzing water samples are described in the U.S. Geological Survey TWRI publications referred to in the "On-site Measurements and Sample Collection" and the "Laboratory Measurements" sections in this data report. In addition, the TWRI Book 1, Chapter D2, describes guidelines for the collection and field analysis of ground-water samples for selected unstable constituents. The values reported in this report represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. These methods are consistent with ASTM standards and generally follow ISO standards. All samples were obtained by trained personnel. The wells sampled were pumped long enough to assure that the water collected came directly from the aquifer and had not stood for a long time in the well casing where it would have been exposed to the atmosphere and to the material, possibly metal, comprising the casings.

Data Presentation

The records of ground-water quality are published in a section titled QUALITY OF GROUND WATER immediately following the ground-water-level records. Data for quality of ground water are listed alphabetically by County and are identified by well number. The prime identification number for wells sampled is the 15-digit number derived from the latitude-longitude locations. No descriptive statements are given for ground-water-quality records; however, the well number, depth of well, date of sampling, and other pertinent data are given in the table containing the chemical analyses of the ground water. The REMARK codes listed for surface-water-quality records are also applicable to ground-water-quality records.

EXPLANATION OF PRECIPITATION-QUALITY RECORDS

Collection of the Data

The precipitation-quality records in this report are for one site operated by the USGS in the National Trends Network. Field measurements of pH and specific conductance of weekly composite precipitation samples and daily precipitation quantity are made. Other chemical analyses for all National Trends Network sites are performed by the Central Analytical Laboratory of the Illinois Water Survey. A numerical agency code (17003) has been assigned to the Illinois Water-Survey for data storage purposes.

ACCESS TO WATSTORE DATA

The USGS provides near real-time stage and discharge data for many of the gaging stations equipped with the necessary telemetry and historic daily-mean and peak-flow discharge data for most current or discontinued gaging stations through the World Wide Web (WWW). These data may be accessed at

http://water.usgs.gov

Some water-quality and ground-water data also are available through the WWW. In addition, data can be provided in various machine-readable formats on magnetic tape or 3-1/2 inch floppy disk. Information about the availability of specific types of data or products, and user charges, can be obtained locally from each of the Water Resources Division District Offices (See address on the back of the title page)

DEFINITION OF TERMS

Specialized technical terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. Definitions of common terms such as algae, water level, and precipitation are given in standard dictionaries. Not all terms defined in this alphabetical list apply to every State. See also table for converting inch/pound units to International System (SI) units on the inside of the back cover.

Acid neutralizing capacity (ANC) is the equivalent sum of all bases or base-producing materials, solutes plus particulates, in an aqueous system that can be titrated with acid to an equivalence point. This term designates titration of an "unfiltered" sample (formerly reported as alkalinity).

Acre-foot (AC-FT, acre-ft) is a unit of volume, commonly used to measure quantities of water used or stored, equivalent to the volume of water required to cover 1 acre to a depth of 1 foot and equivalent to 43,560 cubic feet, 325,851 gallons, or 1,233 cubic meters. (See also "Annual runoff")

Adenosine triphosphate (ATP) is an organic, phosphate-rich compound important in the transfer of energy in organisms. Its central role in living cells makes ATP an excellent indicator of the presence of living material in water. A measurement of ATP therefore provides a sensitive and rapid estimate of biomass. ATP is reported in micrograms per liter.

Algal growth potential (AGP) is the maximum algal dry weight biomass that can be produced in a natural water sample under standardized laboratory conditions. The growth potential is the algal biomass present at stationary phase and is expressed as milligrams dry weight of algae produced per liter of sample. (See also "Biomass" and "Dry weight")

Alkalinity is the capacity of solutes in an aqueous system to neutralize acid. This term designates titration of a "filtered" sample.

Annual runoff is the total quantity of water that is discharged ("runs off") from a drainage basin in a year. Data reports may present annual runoff data as volumes in acre-feet, as discharges per unit of drainage area in cubic feet per second per square mile, or as depths of water on the drainage basin in inches.

Annual 7-day minimum is the lowest mean value for any 7-consecutive-day period in a year. Annual 7-day minimum values are reported herein for the calendar year and the water year (October 1 through September 30). Most low-flow frequency analyses use a climatic year (April 1-March 31), which tends to prevent the low-flow period from being artificially split between adjacent years. The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day, 10-year low-flow statistic.)

Aroclor is the registered trademark for a group of polychlorinated biphenyls that were manufactured by the Monsanto Company prior to 1976. Aroclors are assigned specific 4-digit reference numbers dependent upon molecular type and degree of substitution of the biphenyl ring hydrogen atoms by chlorine atoms. The first two digits of a numbered aroclor represent the molecular type, and the last two digits represent the percentage weight of the hydrogen-substituted chlorine.

Artificial substrate is a device that is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is collected. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multiplate samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton collection. (See also "Substrate")

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500 °C for 1 hour. Ash mass of zooplankton and phytoplankton is expressed in grams per cubic meter (g/m^3), and periphyton and benthic organisms in grams per square meter (g/m^2). (See also "Biomass" and "Dry mass")

Aspect is the direction toward which a slope faces with respect to the compass.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, whereas others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

Bankfull stage, as used in this report, is the stage at which a stream first overflows its natural banks formed by floods with 1- to 3-year recurrence intervals.

Base discharge (for peak discharge) is a discharge value, determined for selected stations, above which peak discharge data are published. The base discharge at each station is selected so that an average of about three peak flows per year will be published. (See also "Peak flow")

Base flow is sustained flow of a stream in the absence of direct runoff. It includes natural and human-induced streamflows. Natural base flow is sustained largely by ground-water discharge.

Bedload is material in transport that is supported primarily by the streambed. In this report, bedload is considered to consist of particles in transit from the bed to an elevation equal to the top of the bedload sampler nozzle (ranging from 0.25 to 0.5 foot) that are retained in the bedload sampler. A sample collected with a pressure-differential bedload sampler also may contain a component of the suspended load.

Bedload discharge (tons per day) is the rate of sediment moving as bedload, reported as dry weight, that passes through a cross section in a given time. NOTE: Bedload discharge values in this report may include a component of the suspended-sediment discharge. A correction may be necessary when computing the total sediment discharge by summing the bedload discharge and the suspended-sediment discharge. (See also “Bedload,” “Dry weight,” “Sediment,” and “Suspended-sediment discharge”)

Bed material is the sediment mixture of which a stream-bed, lake, pond, reservoir, or estuary bottom is composed. (See also “Bedload” and “Sediment”)

Benthic organisms are the group of organisms inhabiting the bottom of an aquatic environment. They include a number of types of organisms, such as bacteria, fungi, insect larvae and nymphs, snails, clams, and crayfish. They are useful as indicators of water quality.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by microorganisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as mass per unit area or volume of habitat.

Biomass pigment ratio is an indicator of the total proportion of periphyton that are autotrophic (plants). This is also called the Autotrophic Index.

Blue-green algae (*Cyanophyta*) are a group of phytoplankton organisms having a blue pigment, in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water. Concentrations are expressed as a number of cells per milliliter (cells/mL) of sample. (See also “Phytoplankton”)

Bottom material (See “Bed material”)

Bulk electrical conductivity is the combined electrical conductivity of all material within a doughnut-shaped volume surrounding an induction probe. Bulk conductivity is affected by different physical and chemical properties of the material including the dissolved solids content of the pore water and lithology and porosity of the rock.

Cells/volume refers to the number of cells of any organism that is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample volume, and are generally reported as cells or units per milliliter (mL) or liter (L).

Cells volume (biovolume) determination is one of several common methods used to estimate biomass of algae in aquatic systems. Cell members of algae are frequently used in aquatic surveys as an indicator of algal production. However, cell numbers alone cannot represent true biomass because of considerable cell-size variation among the algal species. Cell volume (μm^3) is determined by obtaining critical cell measurements or cell dimensions (for example, length, width, height, or radius) for 20 to 50 cells of each important species to obtain an average biovolume per cell. Cells are categorized according to the correspondence of their cellular shape to the nearest geometric solid or combinations of simple solids (for example, spheres, cones, or cylinders). Representative formulae used to compute biovolume are as follows:

sphere $4/3\ \pi r^3$ cone $1/3\ \pi r^2 h$ cylinder $\pi r^2 h$.

pi (π) is the ratio of the circumference to the diameter of a circle; pi = 3.14159….

From cell volume, total algal biomass expressed as biovolume (μm^3/mL) is thus determined by multiplying the number of cells of a given species by its average cell volume and then summing these volumes for all species.

Cfs-day (See “Cubic foot per second-day”)

Channel bars, as used in this report, are the lowest prominent geomorphic features higher than the channel bed.

Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with BOD or with carbonaceous organic pollution from sewage or industrial wastes. [See also “Biochemical oxygen demand (BOD)”]

Clostridium perfringens *(C. perfringens)* is a spore-forming bacterium that is common in the feces of human and other warm-blooded animals. Clostridial spores are being used experimentally as an indicator of past fecal contamination and presence of microorganisms that are resistant to disinfection and environmental stresses. (See also “Bacteria”)

Coliphages are viruses that infect and replicate in coliform bacteria. They are indicative of sewage contamination of water and of the survival and transport of viruses in the environment.

Color unit is produced by 1 milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

Confined aquifer is a term used to describe an aquifer containing water between two relatively impermeable bound-aries. The water level in a well tapping a confined aquifer stands above the top of the confined aquifer and can be higher or lower than the water table that may be present in the material above it. In some cases, the water level can rise above the ground surface, yielding a flowing well.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Continuous-record station is a site where data are collected with sufficient frequency to define daily mean values and variations within a day.

Control designates a feature in the channel that physically affects the water-surface elevation and thereby determines the stage-discharge relation at the gage. This feature may be a constriction of the channel, a bedrock outcrop, a gravel bar, an artificial structure, or a uniform cross section over a long reach of the channel.

Control structure, as used in this report, is a structure on a stream or canal that is used to regulate the flow or stage of the stream or to prevent the intrusion of saltwater.

Cubic foot per second (CFS, ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point in 1 second. It is equivalent to approximately 7.48 gallons per second or approximately 449 gallons per minute, or 0.02832 cubic meters per second. The term “second-foot” sometimes is used synonymously with “cubic foot per second” but is now obsolete.

Cubic foot per second-day (CFS-DAY, Cfs-day, $[(ft^3/s)/d]$) is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, 1.98347 acre-feet, 646,317 gallons, or 2,446.6 cubic meters. The daily mean discharges reported in the daily value data tables are numerically equal to the daily volumes in cfs-days, and the totals also represent volumes in cfs-days.

Cubic foot per second per square mile [CFSM, $(ft^3/s)/mi^2$] is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming the runoff is distributed uniformly in time and area. (See also “Annual runoff”)

Daily mean suspended-sediment concentration is the time-weighted concentration of suspended sediment passing a stream cross section during a 24-hour day. (See also “Sediment” and “Suspended-sediment concentration”)

Daily-record station is a site where data are collected with sufficient frequency to develop a record of one or more data values per day. The frequency of data collection can range from continuous recording to periodic sample or data collection on a daily or near-daily basis.

Data collection platform (DCP) is an electronic instrument that collects, processes, and stores data from various sensors, and transmits the data by satellite data relay, line-of-sight radio, and/or landline telemetry.

Data logger is a microprocessor-based data acquisition system designed specifically to acquire, process, and store data. Data are usually downloaded from onsite data loggers for entry into office data systems.

Datum is a surface or point relative to which measurements of height and/or horizontal position are reported. A vertical datum is a horizontal surface used as the zero point for measurements of gage height, stage, or elevation; a horizontal datum is a reference for positions given in terms of latitude-longitude, State Plane coordinates, or UTM coordinates. (See also “Gage datum,” “Land-surface datum,” “National Geodetic Vertical Datum of 1929,” and “North American Vertical Datum of 1988”)

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample. (See also “Phytoplankton”)

Diel is of or pertaining to a 24-hour period of time; a regular daily cycle.

Discharge, or **flow**, is the rate that matter passes through a cross section of a stream channel or other water body per unit of time. The term commonly refers to the volume of water (including, unless otherwise stated, any sediment or other constituents suspended or dissolved in the water) that passes a cross section in a stream channel, canal, pipeline, etc., within a given period of time (cubic feet per second). Discharge also can apply to the rate at which constituents, such as suspended sediment, bedload, and dissolved or suspended chemicals, pass through a cross section, in which cases the quantity is expressed as the mass of constituent that passes the cross section in a given period of time (tons per day).

Dissolved refers to that material in a representative water sample that passes through a 0.45-micrometer membrane filter. This is a convenient operational definition used by Federal and State agencies that collect water-quality data. Determinations of “dissolved” constituent concentrations are made on sample water that has been filtered.

Dissolved oxygen (DO) is the molecular oxygen (oxygen gas) dissolved in water. The concentration in water is a function of atmospheric pressure, temperature, and dissolved-solids concentration of the water. The ability of water to retain oxygen decreases with increasing temperature or dissolved-solids concentration. Photosynthesis and respiration by plants commonly cause diurnal variations in dissolved-oxygen concentration in water from some streams.

Dissolved-solids concentration in water is the quantity of dissolved material in a sample of water. It is determined either analytically by the “residue-on-evaporation” method, or mathematically by totaling the concentrations of individual constituents reported in a comprehensive chemical analysis. During the analytical determination, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. In the mathematical calculation, the bicarbonate value, in milligrams per liter, is multiplied by 0.4926 to convert it to carbonate. Alternatively, alkalinity concentration (as mg/L $CaCO_3$) can be converted to carbonate concentration by multiplying by 0.60.

Diversity index (H) (Shannon index) is a numerical expression of evenness of distribution of aquatic organisms. The formula for diversity index is:

$$\bar{d} = -\sum_{i \approx 1}^{s} \frac{n_i}{n} \log_2 \frac{n_i}{n} ,$$

where n_i is the number of individuals per taxon, n is the total number of individuals, and s is the total number of taxa in the sample of the community. Index values range from zero, when all the organisms in the sample are the same, to some positive number, when some or all of the organisms in the sample are different.

Drainage area of a stream at a specific location is that area upstream from the location, measured in a horizontal plane, that has a common outlet at the site for its surface runoff from precipitation that normally drains by gravity into a stream. Drainage areas given herein include all closed basins, or noncontributing areas, within the area unless otherwise specified.

Drainage basin is a part of the Earth's surface that contains a drainage system with a common outlet for its surface runoff. (See "Drainage area")

Dry mass refers to the mass of residue present after drying in an oven at 105 °C, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry-mass values are expressed in the same units as ash mass. (See also "Ash mass," "Biomass," and "Wet mass")

Dry weight refers to the weight of animal tissue after it has been dried in an oven at 65 ˚C until a constant weight is achieved. Dry weight represents total organic and inorganic matter in the tissue. (See also "Wet weight")

Embeddedness is the degree to which gravel-sized and larger particles are surrounded or enclosed by finer-sized particles. (See also "Substrate embeddedness class")

Enterococcus bacteria are commonly found in the feces of humans and other warmblooded animals. Although some strains are ubiquitous and not related to fecal pollution, the presence of enterococci in water is an indication of fecal pollution and the possible presence of enteric pathogens. Enterococcus bacteria are those bacteria that produce pink to red colonies with black or reddish-brown precipitate after incubation at 41 °C on mE agar (nutrient medium for bacterial growth) and subsequent transfer to EIA medium. Enterococci include *Streptococcus feacalis, Streptococcus feacium, Streptococcus avium,* and their variants. (See also "Bacteria")

EPT Index is the total number of distinct taxa within the insect orders Ephemeroptera, Plecoptera, and Trichoptera. This index summarizes the taxa richness within the aquatic insects that are generally considered pollution sensitive; the index usually decreases with pollution.

***Escherichia coli** (E. coli)* are bacteria present in the intestine and feces of warmblooded animals. *E. coli* are a member species of the fecal coliform group of indicator bacteria. In the laboratory, they are defined as those bacteria that produce yellow or yellow-brown colonies on a filter pad saturated with urea substrate broth after primary culturing for 22 to 24 hours at 44.5 ˚C on mTEC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample. (See also "Bacteria")

Estimated (E) concentration value is reported when an analyte is detected and all criteria for a positive result are met. If the concentration is less than the method detection limit (MDL), an 'E' code will be reported with the value. If the analyte is qualitatively identified as present, but the quantitative determination is substantially more uncertain, the National Water Quality Laboratory will identify the result with an 'E' code even though the measured value is greater than the MDL. A value reported with an 'E' code should be used with caution. When no analyte is detected in a sample, the default reporting value is the MDL preceded by a less than sign (<).

Euglenoids (*Euglenophyta*) are a group of algae that are usually free-swimming and rarely creeping. They have the ability to grow either photosynthetically in the light or heterotrophically in the dark. (See also "Phytoplankton")

Extractable organic halides (EOX) are organic compounds that contain halogen atoms such as chlorine. These organic compounds are semivolatile and extractable by ethyl acetate from air-dried streambed sediment. The ethyl acetate extract is combusted, and the concentration is determined by microcoulometric determination of the halides formed. The concentration is reported as micrograms of chlorine per gram of the dry weight of the streambed sediment.

Fecal coliform bacteria are present in the intestines or feces of warmblooded animals. They often are used as indicators of the sanitary quality of the water. In the laboratory, they are defined as all organisms that produce blue colonies within 24 hours when incubated at 44.5 °C plus or minus 0.2 °C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample. (See also "Bacteria")

Fecal streptococcal bacteria are present in the intestines of warmblooded animals and are ubiquitous in the environment. They are characterized as gram-positive, cocci bacteria that are capable of growth in brain-heart infusion broth. In the laboratory, they are defined as all the organisms that produce red or pink colonies within 48 hours at 35 °C plus or minus 1.0 °C on KF-streptococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample. (See also "Bacteria")

Fire algae (*Pyrrhophyta*) are free-swimming unicells characterized by a red pigment spot. (See also "Phytoplankton")

Flow-duration percentiles are values on a scale of 100 that indicate the percentage of time for which a flow is not exceeded. For example, the 90th percentile of river flow is greater than or equal to 90 percent of all recorded flow rates.

Gage datum is a horizontal surface used as a zero point for measurement of stage or gage height. This surface usually is located slightly below the lowest point of the stream bottom such that the gage height is usually slightly greater than the maximum depth of water. Because the gage datum itself is not an actual physical object, the datum usually is defined by specifying the elevations of permanent reference marks such as bridge abutments and survey monuments, and the gage is set to agree with the reference marks. Gage datum is a local datum that is maintained independently of any national geodetic datum. However, if the elevation of the gage datum relative to the national datum (North American Vertical Datum of 1988 or National Geodetic Vertical Datum of 1929) has been determined, then the gage readings can be converted to elevations above the national datum by adding the elevation of the gage datum to the gage reading.

Gage height (G.H.) is the water-surface elevation, in feet above the gage datum. If the water surface is below the gage datum, the gage height is negative. Gage height often is used interchangeably with the more general term “stage,” although gage height is more appropriate when used in reference to a reading on a gage.

Gage values are values that are recorded, transmitted, and/or computed from a gaging station. Gage values typically are collected at 5-, 15-, or 30-minute intervals.

Gaging station is a site on a stream, canal, lake, or reservoir where systematic observations of stage, discharge, or other hydrologic data are obtained.

Gas chromatography/flame ionization detector (GC/FID) is a laboratory analytical method used as a screening technique for semivolatile organic compounds that are extractable from water in methylene chloride.

Geomorphic channel units, as used in this report, are fluvial geomorphic descriptors of channel shape and stream velocity. Pools, riffles, and runs are types of geomorphic channel units considered for National Water-Quality Assessment (NAWQA) Program habitat sampling.

Green algae have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algae mats or floating “moss” in lakes. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample. (See also “Phytoplankton”)

Habitat, as used in this report, includes all nonliving (physical) aspects of the aquatic ecosystem, although living components like aquatic macrophytes and riparian vegetation also are usually included. Measurements of habitat are typically made over a wider geographic scale than are measurements of species distribution.

Habitat quality index is the qualitative description (level 1) of instream habitat and riparian conditions surrounding the reach sampled. Scores range from 0 to 100 percent with higher scores indicative of desirable habitat conditions for aquatic life. Index only applicable to wadable streams.

Hardness of water is a physical-chemical characteristic that commonly is recognized by the increased quantity of soap required to produce lather. It is computed as the sum of equivalents of polyvalent cations (primarily calcium and magnesium) and is expressed as the equivalent concentration of calcium carbonate ($CaCO_3$).

High tide is the maximum height reached by each rising tide. The high-high and low-high tides are the higher and lower of the two high tides, respectively, of each tidal day. *See NOAA web site: http://www.co-ops.nos.noaa.gov/tideglos.html*

Hilsenhoff’s Biotic Index (HBI) is an indicator of organic pollution that uses tolerance values to weight taxa abundances; usually increases with pollution. It is calculated as follows:

$$HBI = sum\frac{(n)(a)}{N} ,$$

where n is the number of individuals of each taxon, a is the tolerance value of each taxon, and N is the total number of organisms in the sample.

Horizontal datum (See “Datum”)

Hydrologic index stations referred to in this report are continuous-record gaging stations that have been selected as representative of streamflow patterns for their respective regions. Station locations are shown on index maps.

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as defined by the former Office of Water Data Coordination and delineated on the State Hydrologic Unit Maps by the USGS. Each hydrologic unit is identified by an 8-digit number.

Inch (IN., in.), as used in this report, refers to the depth to which the drainage area would be covered with water if all of the runoff for a given time period were uniformly distributed on it. (See also “Annual runoff”)

Instantaneous discharge is the discharge at a particular instant of time. (See also “Discharge”)

Island, as used in this report, is a mid-channel bar that has permanent woody vegetation, is flooded once a year on average, and remains stable except during large flood events.

Laboratory reporting level (LRL) is generally equal to twice the yearly determined long-term method detection level (LT-MDL). The LRL controls false negative error. The probability of falsely reporting a nondetection for a sample that contained an analyte at a concentration equal to or greater than the LRL is predicted to be less than or equal to 1 percent. The value of the LRL will be reported with a “less than” (<) remark code for samples in which the analyte was not detected. The National Water Quality Laboratory (NWQL) collects quality-control data from selected analytical methods on a continuing basis to determine LT-MDLs and to establish LRLs. These values are reevaluated annually on the basis of the most current quality-control data and, therefore, may change. [Note: In several previous NWQL documents (NWQL Technical Memorandum 98.07, 1998), the LRL was called the nondetection value or NDV—a term that is no longer used.]

Land-surface datum (lsd) is a datum plane that is approximately at land surface at each ground-water observation well.

Latent heat flux (often used interchangeably with latent heat-flux density) is the amount of heat energy that converts water from liquid to vapor (evaporation) or from vapor to liquid (condensation) across a specified cross-sectional area per unit time. Usually expressed in watts per square meter.

Light-attenuation coefficient, also known as the extinction coefficient, is a measure of water clarity. Light is attenuated according to the Lambert-Beer equation:

$$I = I_o e^{-\lambda L} ,$$

where I_o is the source light intensity, I is the light intensity at length L (in meters) from the source, λ is the light-attenuation coefficient, and e is the base of the natural logarithm. The light-attenuation coefficient is defined as

$$\lambda = -\frac{1}{L}\log_e \frac{I}{I_o} .$$

Lipid is any one of a family of compounds that are insoluble in water and that make up one of the principal components of living cells. Lipids include fats, oils, waxes, and steroids. Many environmental contaminants such as organochlorine pesticides are lipophilic.

Long-term method detection level (LT-MDL) is a detection level derived by determining the standard deviation of a minimum of 24 method detection limit (MDL) spike sample measurements over an extended period of time. LT-MDL data are collected on a continuous basis to assess year-to-year variations in the LT-MDL. The LT-MDL controls false positive error. The chance of falsely reporting a concentration at or greater than the LT-MDL for a sample that did not contain the analyte is predicted to be less than or equal to 1 percent.

Low tide is the minimum height reached by each falling tide. The high-low and low-low tides are the higher and lower of the two low tides, respectively, of each tidal day. *See NOAA web site: http://www.co-ops.nos.noaa.gov/tideglos.html*

Macrophytes are the macroscopic plants in the aquatic environment. The most common macrophytes are the rooted vascular plants that usually are arranged in zones in aquatic ecosystems and restricted in the area by the extent of illumination through the water and sediment deposition along the shoreline.

Mean concentration of suspended sediment (Daily mean suspended-sediment concentration) is the time-weighted concentration of suspended sediment passing a stream cross section during a given time period. (See also “Daily mean suspended-sediment concentration” and “Suspended-sediment concentration”)

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period. (See also “Discharge”)

Mean high or **low tide** is the average of all high or low tides, respectively, over a specific period.

Mean sea level is a local tidal datum. It is the arithmetic mean of hourly heights observed over the National Tidal Datum Epoch. Shorter series are specified in the name; for example, monthly mean sea level and yearly mean sea level. In order that they may be recovered when needed, such datums are referenced to fixed points known as benchmarks. (See also “Datum”)

Measuring point (MP) is an arbitrary permanent reference point from which the distance to water surface in a well is measured to obtain water level.

Membrane filter is a thin microporous material of specific pore size used to filter bacteria, algae, and other very small particles from water.

Metamorphic stage refers to the stage of development that an organism exhibits during its transformation from an immature form to an adult form. This developmental process exists for most insects, and the degree of difference from the immature stage to the adult form varies from relatively slight to pronounced, with many intermediates. Examples of metamorphic stages of insects are egg-larva-adult or egg-nymph-adult.

Method detection limit (MDL) is the minimum concentration of a substance that can be measured and reported with 99-percent confidence that the analyte concentration is greater than zero. It is determined from the analysis of a sample in a given matrix containing the analyte. At the MDL concentration, the risk of a false positive is predicted to be less than or equal to 1 percent.

Methylene blue active substances (MBAS) are apparent detergents. The determination depends on the formation of a blue color when methylene blue dye reacts with synthetic anionic detergent compounds.

Micrograms per gram (UG/G, µg/g) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

Micrograms per kilogram (UG/KG, µg/kg) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the constituent per unit mass (kilogram) of the material analyzed. One microgram per kilogram is equivalent to 1 part per billion.

Micrograms per liter (UG/L, µg/L) is a unit expressing the concentration of chemical constituents in water as mass (micrograms) of constituent per unit volume (liter) of water. One thousand micrograms per liter is equivalent to 1 milligram per liter. One microgram per liter is equivalent to 1 part per billion.

Microsiemens per centimeter (US/CM, µS/cm) is a unit expressing the amount of electrical conductivity of a solution as measured between opposite faces of a centimeter cube of solution at a specified temperature. Siemens is the International System of Units nomenclature. It is synonymous with mhos and is the reciprocal of resistance in ohms.

Milligrams per liter (MG/L, mg/L) is a unit for expressing the concentration of chemical constituents in water as the mass (milligrams) of constituent per unit volume (liter) of water. Concentration of suspended sediment also is expressed in milligrams per liter and is based on the mass of dry sediment per liter of water-sediment mixture.

Minimum reporting level (MRL) is the smallest measured concentration of a constituent that may be reliably reported by using a given analytical method.

Miscellaneous site, miscellaneous station, or miscellaneous sampling site is a site where streamflow, sediment, and/or water-quality data or water-quality or sediment samples are collected once, or more often on a random or discontinuous basis to provide better areal coverage for defining hydrologic and water-quality conditions over a broad area in a river basin.

Most probable number (MPN) is an index of the number of coliform bacteria that, more probably than any other number, would give the results shown by the laboratory examination; it is not an actual enumeration. MPN is determined from the distribution of gas-positive cultures among multiple inoculated tubes.

Multiple-plate samplers are artificial substrates of known surface area used for obtaining benthic invertebrate samples. They consist of a series of spaced, hardboard plates on an eyebolt.

Nanograms per liter (NG/L, ng/L) is a unit expressing the concentration of chemical constituents in solution as mass (nanograms) of solute per unit volume (liter) of water. One million nanograms per liter is equivalent to 1 milligram per liter.

National Geodetic Vertical Datum of 1929 (NGVD of 1929) is a fixed reference adopted as a standard geodetic datum for elevations determined by leveling. It was formerly called "Sea Level Datum of 1929" or "mean sea level." Although the datum was derived from the mean sea level at 26 tide stations**,** it does not necessarily represent local mean sea level at any particular place. *See NOAA web site: http://www.ngs.noaa.gov/faq.shtml#WhatVD29VD88* (See "North American Vertical Datum of 1988")

Natural substrate refers to any naturally occurring immersed or submersed solid surface, such as a rock or tree, upon which an organism lives. (See also "Substrate")

Nekton are the consumers in the aquatic environment and consist of large free-swimming organisms that are capable of sustained, directed mobility.

Nephelometric turbidity unit (NTU) is the measurement for reporting turbidity that is based on use of a standard suspension of formazin. Turbidity measured in NTU uses nephelometric methods that depend on passing specific light of a specific wavelength through the sample.

North American Vertical Datum of 1988 (NAVD 1988) is a fixed reference adopted as the official civilian vertical datum for elevations determined by Federal surveying and mapping activities in the United States. This datum was established in 1991 by minimum-constraint adjustment of the Canadian**,** Mexican, and United States first-order terrestrial leveling networks.

Open or **screened interval** is the length of unscreened opening or of well screen through which water enters a well, in feet below land surface.

Organic carbon (OC) is a measure of organic matter present in aqueous solution, suspension, or bottom sediment. May be reported as dissolved organic carbon (DOC), particulate organic carbon (POC), or total organic carbon (TOC).

Organic mass or **volatile mass** of a living substance is the difference between the dry mass and ash mass and represents the actual mass of the living matter. Organic mass is expressed in the same units as for ash mass and dry mass. (See also "Ash mass," "Biomass," and "Dry mass")

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per area habitat, usually square meter (m^2), acre, or hectare. Periphyton, benthic organisms, and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually milliliter (mL) or liter (L). Numbers of planktonic organisms can be expressed in these terms.

Organochlorine compounds are any chemicals that contain carbon and chlorine. Organochlorine compounds that are important in investigations of water, sediment, and biological quality include certain pesticides and industrial compounds.

Parameter code is a 5-digit number used in the USGS computerized data system, National Water Information System (NWIS), to uniquely identify a specific constituent or property.

Partial-record station is a site where discrete measurements of one or more hydrologic parameters are obtained over a period of time without continuous data being recorded or computed. A common example is a crest-stage gage partial-record station at which only peak stages and flows are recorded.

Particle size is the diameter, in millimeters (mm), of a particle determined by sieve or sedimentation methods. The sedimentation method utilizes the principle of Stokes law to calculate sediment particle sizes. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube, sedigraph) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification, as used in this report, agrees with the recommendation made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay	>0.00024 - 0.004	Sedimentation
Silt	>0.004 - 0.062	Sedimentation
Sand	>0.062 - 2.0	Sedimentation/sieve
Gravel	>2.0 - 64.0	Sieve
Cobble	>64 - 256	Manual measurement
Boulder	>256	Manual measurement

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. For the sedimentation method, most of the organic matter is removed, and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native water analysis.

Peak flow (peak stage) is an instantaneous local maximum value in the continuous time series of streamflows or stages, preceded by a period of increasing values and followed by a period of decreasing values. Several peak values ordinarily occur in a year. The maximum peak value in a year is called the annual peak; peaks lower than the annual peak are called secondary peaks. Occasionally, the annual peak may not be the maximum value for the year; in such cases, the maximum value occurs at midnight at the beginning or end of the year, on the recession from or rise toward a higher peak in the adjoining year. If values are recorded at a discrete series of times, the peak recorded value may be taken as an approximation of the true peak, which may occur between the recording instants. If the values are recorded with finite precision, a sequence of equal recorded values may occur at the peak; in this case, the first value is taken as the peak.

Percent composition or **percent of total** is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, weight, mass, or volume.

Percent shading is a measure of the amount of sunlight potentially reaching the stream. A clinometer is used to measure left and right bank canopy angles. These values are added together, divided by 180, and multiplied by 100 to compute percentage of shade.

Periodic-record station is a site where stage, discharge, sediment, chemical, physical, or other hydrologic measurements are made one or more times during a year but at a frequency insufficient to develop a daily record.

Periphyton is the assemblage of microorganisms attached to and living upon submerged solid surfaces. Although primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms. Periphyton are useful indicators of water quality.

Pesticides are chemical compounds used to control undesirable organisms. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides.

pH of water is the negative logarithm of the hydrogen-ion activity. Solutions with pH less than 7.0 standard units are termed “acidic,” and solutions with a pH greater than 7.0 are termed “basic.” Solutions with a pH of 7.0 are neutral. The presence and concentration of many dissolved chemical constituents found in water are affected, in part, by the hydrogen-ion activity of water. Biological processes including growth, distribution of organisms, and toxicity of the water to organisms also are affected, in part, by the hydrogen-ion activity of water.

Phytoplankton is the plant part of the plankton. They are usually microscopic, and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment and commonly are known as algae. (See also “Plankton”)

Picocurie (PC, pCi) is one trillionth (1×10^{-12}) of the amount of radioactive nuclide represented by a curie (Ci). A curie is the quantity of radioactive nuclide that yields 3.7×10^{10} radioactive disintegrations per second (dps). A picocurie yields 0.037 dps, or 2.22 dpm (disintegrations per minute).

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers. Concentrations are expressed as a number of cells per milliliter (cells/mL) of sample.

Polychlorinated biphenyls (PCBs) are industrial chemicals that are mixtures of chlorinated biphenyl compounds having various percentages of chlorine. They are similar in structure to organochlorine insecticides.

Polychlorinated naphthalenes (PCNs) are industrial chemicals that are mixtures of chlorinated naphthalene compounds. They have properties and applications similar to polychlorinated biphenyls (PCBs) and have been identified in commercial PCB preparations.

Pool, as used in this report, is a small part of a stream reach with little velocity, commonly with water deeper than surrounding areas.

Primary productivity is a measure of the rate at which new organic matter is formed and accumulated through photo-synthetic and chemosynthetic activity of producer organisms (chiefly, green plants). The rate of primary production is estimated by measuring the amount of oxygen released (oxygen method) or the amount of carbon assimilated (carbon method) by the plants.

Primary productivity (carbon method) is expressed as milligrams of carbon per area per unit time [mg C/(m^2/time)] for periphyton and macrophytes or per volume [mg C/(m^3/time)] for phytoplankton. The carbon method defines the amount of carbon dioxide consumed as measured by radioactive carbon (carbon-14). The carbon-14 method is of greater sensitivity than the oxygen light and dark bottle method and is preferred for use with unenriched water samples. Unit time may be either the hour or day, depending on the incubation period. (See also “Primary productivity”)

Primary productivity (oxygen method) is expressed as milligrams of oxygen per area per unit time [mg O/(m^2/time)] for periphyton and macrophytes or per volume [mg O/(m^3/time)] for phytoplankton. The oxygen method defines production and respiration rates as estimated from changes in the measured dissolved-oxygen concentration. The oxygen light and dark bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period. (See also “Primary productivity”)

Radioisotopes are isotopic forms of elements that exhibit radioactivity. Isotopes are varieties of a chemical element that differ in atomic weight but are very nearly alike in chemical properties. The difference arises because the atoms of the isotopic forms of an element differ in the number of neutrons in the nucleus; for example, ordinary chlorine is a mixture of isotopes having atomic weights of 35 and 37, and the natural mixture has an atomic weight of about 35.453. Many of the elements similarly exist as mixtures of isotopes, and a great many new isotopes have been produced in the operation of nuclear devices such as the cyclotron. There are 275 isotopes of the 81 stable elements, in addition to more than 800 radioactive isotopes.

Reach, as used in this report, is a length of stream that is chosen to represent a uniform set of physical, chemical, and biological conditions within a segment. It is the principal sampling unit for collecting physical, chemical, and biological data.

Recoverable from bed (bottom) material is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment and thus the determination represents less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results. (See also "Bed material")

Recurrence interval, also referred to as return period, is the average time, usually expressed in years, between occurrences of hydrologic events of a specified type (such as exceedances of a specified high flow or nonexceedance of a specified low flow). The terms "return period" and "recurrence interval" do not imply regular cyclic occurrence. The actual times between occurrences vary randomly, with most of the times being less than the average and a few being substantially greater than the average. For example, the 100-year flood is the flow rate that is exceeded by the annual maximum peak flow at intervals whose average length is 100 years (that is, once in 100 years, on average); almost two-thirds of all exceedances of the 100-year flood occur less than 100 years after the previous exceedance, half occur less than 70 years after the previous exceedance, and about one-eighth occur more than 200 years after the previous exceedance. Similarly, the 7-day, 10-year low flow ($7Q_{10}$) is the flow rate below which the annual minimum 7-day-mean flow dips at intervals whose average length is 10 years (that is, once in 10 years, on average); almost two-thirds of the nonexceedances of the $7Q_{10}$ occur less than 10 years after the previous nonexceedance, half occur less than 7 years after, and about one-eighth occur more than 20 years after the previous nonexceedance. The recurrence interval for annual events is the reciprocal of the annual probability of occurrence. Thus, the 100-year flood has a 1-percent chance of being exceeded by the maximum peak flow in any year, and there is a 10-percent chance in any year that the annual minimum 7-day-mean flow will be less than the $7Q_{10}$.

Replicate samples are a group of samples collected in a manner such that the samples are thought to be essentially identical in composition.

Return period (See "Recurrence interval")

Riffle, as used in this report, is a shallow part of the stream where water flows swiftly over completely or partially submerged obstructions to produce surface agitation.

River mileage is the curvilinear distance, in miles, measured upstream from the mouth along the meandering path of a stream channel in accordance with Bulletin No. 14 (October 1968) of the Water Resources Council and typically is used to denote location along a river.

Run, as used in this report, is a relatively shallow part of a stream with moderate velocity and little or no surface turbulence.

Runoff is the quantity of water that is discharged ("runs off") from a drainage basin during a given time period. Runoff data may be presented as volumes in acre-feet, as mean discharges per unit of drainage area in cubic feet per second per square mile, or as depths of water on the drainage basin in inches. (See also "Annual runoff")

Sea level, as used in this report, refers to one of the two commonly used national vertical datums (NGVD 1929 or NAVD 1988). See separate entries for definitions of these datums.

Sediment is solid material that originates mostly from disintegrated rocks; when transported by, suspended in, or deposited from water, it is referred to as "fluvial sediment." Sediment includes chemical and biochemical precipitates and decomposed organic material, such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are affected by environmental and land-use factors. Some major factors are topography, soil characteristics, land cover, and depth and intensity of pre-cipitation.

Sensible heat flux (often used interchangeably with latent sensible heat-flux density) is the amount of heat energy that moves by turbulent transport through the air across a specified cross-sectional area per unit time and goes to heating (cooling) the air. Usually expressed in watts per square meter.

Seven-day, 10-year low flow ($7Q_{10}$) is the discharge below which the annual 7-day minimum flow falls in 1 year out of 10 on the long-term average. The recurrence interval of the $7Q_{10}$ is 10 years; the chance that the annual 7-day minimum flow will be less than the $7Q_{10}$ is 10 percent in any given year. (See also "Annual 7-day minimum" and "Recurrence interval")

Shelves, as used in this report, are streambank features extending nearly horizontally from the flood plain to the lower limit of persistent woody vegetation.

Sodium adsorption ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions within soil and is an index of sodium or alkali hazard to the soil. Sodium hazard in water is an index that can be used to evaluate the suitability of water for irrigating crops.

Soil heat flux (often used interchangeably with soil heat-flux density) is the amount of heat energy that moves by conduction across a specified cross-sectional area of soil per unit time and goes to heating (or cooling) the soil. Usually expressed in watts per square meter.

Soil-water content is the water lost from the soil upon drying to constant mass at 105 °C; expressed either as mass of water per unit mass of dry soil or as the volume of water per unit bulk volume of soil.

Specific electrical conductance (conductivity) is a measure of the capacity of water (or other media) to conduct an electrical current. It is expressed in microsiemens per centimeter at 25 °C. Specific electrical conductance is a function of the types and quantity of dissolved substances in water and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is from 55 to 75 percent of the specific conductance (in microsiemens). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stable isotope ratio (per MIL) is a unit expressing the ratio of the abundance of two radioactive isotopes. Isotope ratios are used in hydrologic studies to determine the age or source of specific water, to evaluate mixing of different water, as an aid in determining reaction rates, and other chemical or hydrologic processes.

Stage (See "Gage height")

Stage-discharge relation is the relation between the water-surface elevation, termed stage (gage height), and the volume of water flowing in a channel per unit time.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lives.

Substrate embeddedness class is a visual estimate of riffle streambed substrate larger than gravel that is surrounded or covered by fine sediment (<2mm, sand or finer). Below are the class categories expressed as the percentage covered by fine sediment:

0	no gravel or larger substrate	3	26-50 percent
1	> 75 percent	4	5-25 percent
2	51-75 percent	5	< 5 percent

Surface area of a lake is that area (acres) encompassed by the boundary of the lake as shown on USGS topographic maps, or other available maps or photographs. Because surface area changes with lake stage, surface areas listed in this report represent those determined for the stage at the time the maps or photographs were obtained.

Surficial bed material is the upper surface (0.1 to 0.2 foot) of the bed material that is sampled using U.S. Series Bed-Material Samplers.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of undissolved material in a water-sediment mixture. It is defined operationally as the material retained on a 0.45-micrometer filter.

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative suspended water-sediment sample that is retained on a 0.45-micrometer membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results. Determinations of "suspended, recoverable" constituents are made either by directly analyzing the suspended mate-rial collected on the filter or, more commonly, by difference, on the basis of determinations of (1) dissolved and (2) total recoverable concentrations of the constituent. (See also "Suspended")

Suspended sediment is the sediment maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid. (See also "Sediment")

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 foot above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L). The analytical technique uses the mass of all of the sediment and the net weight of the water-sediment mixture in a sample to compute the suspended-sediment concentration. (See also "Sediment" and "Suspended sediment")

Suspended-sediment discharge (tons/d) is the rate of sediment transport, as measured by dry mass or volume, that passes a cross section in a given time. It is calculated in units of tons per day as follows: concentration (mg/L) x discharge (ft^3/s) x 0.0027. (See also "Sediment," "Suspended sediment," and "Suspended-sediment concentration")

Suspended-sediment load is a general term that refers to a given characteristic of the material in suspension that passes a point during a specified period of time. The term needs to be qualified, such as "annual suspended-sediment load" or "sand-size suspended-sediment load," and so on. It is not synonymous with either suspended-sediment discharge or concentration. (See also "Sediment")

Suspended, total is the total amount of a given constituent in the part of a water-sediment sample that is retained on a 0.45-micrometer membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. Knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total." Determinations of "suspended, total" constituents are made either by directly analyzing portions of the suspended material collected on the filter or, more commonly, by difference, on the basis of determinations of (1) dissolved and (2) total concentrations of the constituent. (See also "Suspended")

Suspended solids, total residue at 105 ˚C concentration is the concentration of inorganic and organic material retained on a filter, expressed as milligrams of dry material per liter of water (mg/L). An aliquot of the sample is used for this analysis.

Synoptic studies are short-term investigations of specific water-quality conditions during selected seasonal or hydro-logic periods to provide improved spatial resolution for critical water-quality conditions. For the period and conditions sampled, they assess the spatial distribution of selected water-quality conditions in relation to causative factors, such as land use and contaminant sources.

Taxa (Species) richness is the number of species (taxa) present in a defined area or sampling unit.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchial scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, *Hexagenia limbata,* is the following:

Kingdom:	Animal
Phylum:	Arthropoda
Class:	Insecta
Order:	Ephemeroptera
Family:	Ephemeridae
Genus:	*Hexagenia*
Species:	*Hexagenia limbata*

Thalweg is the line formed by connecting points of minimum streambed elevation (deepest part of the channel).

Thermograph is an instrument that continuously records variations of temperature on a chart. The more general term "temperature recorder" is used in the table descriptions and refers to any instrument that records temperature whether on a chart, a tape, or any other medium.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water resulting from the mixing of flow proportionally to the duration of the concentration.

Tons per acre-foot (T/acre-ft) is the dry mass (tons) of a constituent per unit volume (acre-foot) of water. It is computed by multiplying the concentration of the constituent, in milligrams per liter, by 0.00136.

Tons per day (T/DAY, tons/d) is a common chemical or sediment discharge unit. It is the quantity of a substance in solution, in suspension, or as bedload that passes a stream section during a 24-hour period. It is equivalent to 2,000 pounds per day, or 0.9072 metric tons per day.

Total is the amount of a given constituent in a representative whole-water (unfiltered) sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating both that the sample consists of a water-suspended sediment mixture and that the analytical method determined at least 95 percent of the constituent in the sample.)

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. This group includes coliforms that inhabit the intestine of warmblooded animals and those that inhabit soils. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria that ferment lactose with gas formation within 48 hours at 35 °C. In the laboratory, these bacteria are defined as all the organisms that produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35 °C plus or minus 1.0 °C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 milliliters of sample. (See also "Bacteria")

Total discharge is the quantity of a given constituent, measured as dry mass or volume, that passes a stream cross section per unit of time. When referring to constituents other than water, this term needs to be qualified, such as "total sediment discharge," "total chloride discharge," and so on.

Total in bottom material is the amount of a given constituent in a representative sample of bottom material. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total in bottom material."

Total length (fish) is the straight-line distance from the anterior point of a fish specimen's snout, with the mouth closed, to the posterior end of the caudal (tail) fin, with the lobes of the caudal fin squeezed together.

Total load refers to all of a constituent in transport. When referring to sediment, it includes suspended load plus bed load.

Total organism count is the number of organisms collected and enumerated in any particular sample. (See also "Organism count/volume")

Total recoverable is the amount of a given constituent in a whole-water sample after a sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data for whole-water samples, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures may produce different analytical results.

Total sediment discharge is the mass of suspended-sediment plus bed-load transport, measured as dry weight, that passes a cross section in a given time. It is a rate and is reported as tons per day. (See also "Bedload," "Bedload discharge," "Sediment," "Suspended sediment," and "Suspended-sediment concentration")

Total sediment load or **total load** is the sediment in transport as bedload and suspended-sediment load. The term may be qualified, such as "annual suspended-sediment load" or "sand-size suspended-sediment load," and so on. It differs from total sediment discharge in that load refers to the material, whereas discharge refers to the quantity of material, expressed in units of mass per unit time. (See also "Sediment," "Suspended-sediment load," and "Total load")

Transect, as used in this report, is a line across a stream perpendicular to the flow and along which measurements are taken, so that morphological and flow characteristics along the line are described from bank to bank. Unlike a cross section, no attempt is made to determine known elevation points along the line.

Turbidity is the reduction in the transparency of a solution due to the presence of suspended and some dissolved substances. The measurement technique records the collective optical properties of the solution that cause light to be scattered and attenuated rather than transmitted in straight lines; the higher the intensity of scattered or attenuated light, the higher the value of the turbidity. Turbidity is expressed in nephelometric turbidity units (NTU). Depending on the method used, the turbidity units as NTU can be defined as the intensity of light of a specified wavelength scattered or attenuated by suspended particles or absorbed at a method specified angle, usually 90 degrees, from the path of the incident light. Currently approved methods for the measurement of turbidity in the USGS include those that conform to U.S. EPA Method 180.1, ASTM D1889-00, and ISO 7027. Measurements of turbidity by these different methods and different instruments are unlikely to yield equivalent values.

Ultraviolet (UV) absorbance (absorption) at 254 or 280 nanometers is a measure of the aggregate concentration of the mixture of UV absorbing organic materials dissolved in the analyzed water, such as lignin, tannin, humic substances, and various aromatic compounds. UV absorbance (absorption) at 254 or 280 nanometers is measured in UV absorption units per centimeter of pathlength of UV light through a sample.

Unconfined aquifer is an aquifer whose upper surface is a water table free to fluctuate under atmospheric pressure. (See "Water-table aquifer")

Vertical datum (See "Datum")

Volatile organic compounds (VOCs) are organic compounds that can be isolated from the water phase of a sample by purging the water sample with inert gas, such as helium, and subsequently analyzed by gas chromatography. Many VOCs are human-made chemicals that are used and produced in the manufacture of paints, adhesives, petroleum products, pharmaceuticals, and refrigerants. They are often components of fuels, solvents, hydraulic fluids, paint thinners, and dry cleaning agents commonly used in urban settings. VOC contamination of drinking-water supplies is a human health concern because many are toxic and are known or suspected human carcinogens.

Water table is that surface in a ground-water body at which the water pressure is equal to the atmospheric pressure.

Water-table aquifer is an unconfined aquifer within which the water table is found.

Water year in USGS reports dealing with surface-water supply is the 12-month period October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 2002, is called the "2002 water year."

WDR is used as an abbreviation for "Water-Data Report" in the REVISED RECORDS paragraph to refer to State annual hydrologic-data reports. (WRD was used as an abbreviation for "Water-Resources Data" in reports published prior to 1976.)

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

Wet mass is the mass of living matter plus contained water. (See also "Biomass" and "Dry mass")

Wet weight refers to the weight of animal tissue or other substance including its contained water. (See also "Dry weight")

WSP is used as an acronym for "Water-Supply Paper" in reference to previously published reports.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column and often are large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers. (See also "Plankton")

TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS OF THE U.S. GEOLOGICAL SURVEY

The USGS publishes a series of manuals titled the “Techniques of Water-Resources Investigations” that describe procedures for planning and conducting specialized work in water-resources investigations. The material in these manuals is grouped under major subject headings called books and is further divided into sections and chapters. For example, section A of book 3 (Applications of Hydraulics) pertains to surface water. Each chapter then is limited to a narrow field of the section subject matter. This publication format permits flexibility when revision or printing is required.

Manuals in the Techniques of Water-Resources Investigations series, which are listed below, are available online at http://water.usgs.gov/pubs/twri/. Printed copies are available for sale from the USGS, Information Services, Box 25286, Federal Center, Denver, Colorado 80225 (an authorized agent of the Superintendent of Documents, Government Printing Office). Please telephone “1-888-ASK-USGS” for current prices, and refer to the title, book number, section number, chapter number, and mention the “U.S. Geological Survey Techniques of Water-Resources Investigations.” Other products can be viewed online at http://www.usgs.gov/sales.html, or ordered by telephone or by FAX to (303)236-4693. Order forms for FAX requests are available online at http://mac.usgs.gov/isb/pubs/forms/. Prepayment by major credit card or by a check or money order payable to the “U.S. Geological Survey” is required.

Book 1. Collection of Water Data by Direct Measurement

Section D. Water Quality

1–D1. *Water temperature—Influential factors, field measurement, and data presentation*, by H.H. Stevens, Jr., J.F. Ficke, and G.F. Smoot: USGS–TWRI book 1, chap. D1. 1975. 65 p.

1–D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents,* by W.W. Wood: USGS–TWRI book 1, chap. D2. 1976. 24 p.

Book 2. Collection of Environmental Data

Section D. Surface Geophysical Methods

2–D1. *Application of surface geophysics to ground-water investigations,* by A.A.R. Zohdy, G.P. Eaton, and D.R. Mabey: USGS–TWRI book 2, chap. D1. 1974. 116 p.

2–D2. *Application of seismic-refraction techniques to hydrologic studies,* by F.P. Haeni: USGS–TWRI book 2, chap. D2. 1988. 86 p.

Section E. Subsurface Geophysical Methods

2–E1. *Application of borehole geophysics to water-resources investigations,* by W.S. Keys and L.M. MacCary: USGS–TWRI book 2, chap. E1. 1971. 126 p.

2–E2. *Borehole geophysics applied to ground-water investigations,* by W.S. Keys: USGS–TWRI book 2, chap. E2. 1990. 150 p.

Section F. Drilling and Sampling Methods

2–F1. *Application of drilling, coring, and sampling techniques to test holes and wells*, by Eugene Shuter and W.E. Teasdale: USGS–TWRI book 2, chap. F1. 1989. 97 p.

Book 3. Applications of Hydraulics

Section A. Surface-Water Techniques

3–A1. *General field and office procedures for indirect discharge measurements,* by M.A. Benson and Tate Dalrymple: USGS–TWRI book 3, chap. A1. 1967. 30 p.

3–A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M.A. Benson: USGS–TWRI book 3, chap. A2. 1967. 12 p.

3–A3. *Measurement of peak discharge at culverts by indirect methods,* by G.L. Bodhaine: USGS–TWRI book 3, chap. A3. 1968. 60 p.

3–A4. *Measurement of peak discharge at width contractions by indirect methods,* by H.F. Matthai: USGS-TWRI book 3, chap. A4. 1967. 44 p.

3–A5. *Measurement of peak discharge at dams by indirect methods,* by Harry Hulsing: USGS–TWRI book 3, chap. A5. 1967. 29 p.

3–A6. *General procedure for gaging streams*, by R.W. Carter and Jacob Davidian: USGS–TWRI book 3, chap. A6. 1968. 13 p.

3–A7. *Stage measurement at gaging stations,* by T.J. Buchanan and W.P. Somers: USGS–TWRI book 3, chap. A7. 1968. 28 p.

3–A8. *Discharge measurements at gaging stations,* by T.J. Buchanan and W.P. Somers: USGS–TWRI book 3, chap. A8. 1969. 65 p.

3–A9. *Measurement of time of travel in streams by dye tracing*, by F.A. Kilpatrick and J.F. Wilson, Jr.: USGS–TWRI book 3, chap. A9. 1989. 27 p.

3–Al0. *Discharge ratings at gaging stations,* by E.J. Kennedy: USGS–TWRI book 3, chap. A10. 1984. 59 p.

3–A11. *Measurement of discharge by the moving-boat method*, by G.F. Smoot and C.E. Novak: USGS–TWRI book 3, chap. A11. 1969. 22 p.

3–A12. *Fluorometric procedures for dye tracing*, Revised, by J.F. Wilson, Jr., E.D. Cobb, and F.A. Kilpatrick: USGS–TWRI book 3, chap. A12. 1986. 34 p.

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3–A13. *Computation of continuous records of streamflow*, by E.J. Kennedy: USGS–TWRI book 3, chap. A13. 1983. 53 p.

3–A14. *Use of flumes in measuring discharge,* by F.A. Kilpatrick and V.R. Schneider: USGS–TWRI book 3, chap. A14. 1983. 46 p.

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3–A18. *Determination of stream reaeration coefficients by use of tracers,* by F.A. Kilpatrick, R.E. Rathbun, Nobuhiro Yotsukura, G.W. Parker, and L.L. DeLong: USGS–TWRI book 3, chap. A18. 1989. 52 p.

3–A19. *Levels at streamflow gaging stations*, by E.J. Kennedy: USGS–TWRI book 3, chap. A19. 1990. 31 p.

3–A20. *Simulation of soluble waste transport and buildup in surface waters using tracers*, by F.A. Kilpatrick: USGS–TWRI book 3, chap. A20. 1993. 38 p.

3–A21 *Stream-gaging cableways,* by C. Russell Wagner: USGS–TWRI book 3, chap. A21. 1995. 56 p.

Section B. Ground-Water Techniques

3–B1. *Aquifer-test design, observation, and data analysis,* by R.W. Stallman: USGS–TWRI book 3, chap. B1. 1971. 26 p.

3–B2. *Introduction to ground-water hydraulics, a programed text for self-instruction*, by G.D. Bennett: USGS–TWRI book 3, chap. B2. 1976. 172 p.

3–B3. *Type curves for selected problems of flow to wells in confined aquifers*, by J.E. Reed: USGS–TWRI book 3, chap. B3. 1980. 106 p.

3–B4. *Regression modeling of ground-water flow,* by R.L. Cooley and R.L. Naff: USGS–TWRI book 3, chap. B4. 1990. 232 p.

3–B4. *Supplement 1***.** *Regression modeling of ground-water flow—Modifications to the computer code for nonlinear regression solution of steady-state ground-water flow problems*, by R.L. Cooley: USGS–TWRI book 3, chap. B4. 1993. 8 p.

3–B5. *Definition of boundary and initial conditions in the analysis of saturated ground-water flow systems—An introduction*, by O.L. Franke, T.E. Reilly, and G.D. Bennett: USGS–TWRI book 3, chap. B5. 1987. 15 p.

3–B6. *The principle of superposition and its application in ground-water hydraulics,* by T.E. Reilly, O.L. Franke, and G.D. Bennett: USGS–TWRI book 3, chap. B6. 1987. 28 p.

3–B7. *Analytical solutions for one-, two-, and three-dimensional solute transport in ground-water systems with uniform flow,* by E.J. Wexler: USGS–TWRI book 3, chap. B7. 1992. 190 p.

3–B8. *System and boundary conceptualization in ground-water flow simulation,* by T.E. Reilly: USGS–TWRI book 3, chap. B8. 2001. 29 p.

Section C. Sedimentation and Erosion Techniques

3–C1. *Fluvial sediment concepts,* by H.P. Guy: USGS–TWRI book 3, chap. C1. 1970. 55 p.

3–C2. *Field methods for measurement of fluvial sediment*, by T.K. Edwards and G.D. Glysson: USGS–TWRI book 3, chap. C2. 1999. 89 p.

3–C3. *Computation of fluvial-sediment discharge,* by George Porterfield: USGS–TWRI book 3, chap. C3. 1972. 66 p.

Book 4. Hydrologic Analysis and Interpretation

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4–A1. *Some statistical tools in hydrology*, by H.C. Riggs: USGS–TWRI book 4, chap. A1. 1968. 39 p.

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4–A3. *Statistical methods in water resources,* by D.R. Helsel and R.M. Hirsch: USGS–TWRI book 4, chap. A3. 1991. Available only online at http://water.usgs.gov/pubs/twri/twri4a3/. (Accessed August 30, 2002.)

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4–B1. *Low-flow investigations,* by H.C. Riggs: USGS–TWRI book 4, chap. B1. 1972. 18 p.

4–B2. *Storage analyses for water supply*, by H.C. Riggs and C.H. Hardison: USGS–TWRI book 4, chap. B2. 1973. 20 p.

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5–A2. *Determination of minor elements in water by emission spectroscopy,* by P.R. Barnett and E.C. Mallory, Jr.: USGS–TWRI book 5, chap. A2. 1971. 31 p.

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5–A3. *Methods for the determination of organic substances in water and fluvial sediments,* edited by R.L. Wershaw, M.J. Fishman, R.R. Grabbe, and L.E. Lowe: USGS–TWRI book 5, chap. A3. 1987. 80 p.

5–A4. *Methods for collection and analysis of aquatic biological and microbiological samples,* by L.J. Britton and P.E. Greeson, editors: USGS–TWRI book 5, chap. A4. 1989. 363 p.

5–A5. *Methods for determination of radioactive substances in water and fluvial sediments,* by L.L. Thatcher, V.J. Janzer, and K.W. Edwards: USGS–TWRI book 5, chap. A5. 1977. 95 p.

5–A6. *Quality assurance practices for the chemical and biological analyses of water and fluvial sediments,* by L.C. Friedman and D.E. Erdmann: USGS–TWRI book 5, chap. A6. 1982. 181 p.

Section C. Sediment Analysis

5–C1. *Laboratory theory and methods for sediment analysis,* by H.P. Guy: USGS–TWRI book 5, chap. C1. 1969. 58 p.

Book 6. Modeling Techniques

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6–A1. *A modular three-dimensional finite-difference ground-water flow model,* by M.G. McDonald and A.W. Harbaugh: USGS–TWRI book 6, chap. A1. 1988. 586 p.

6–A2. *Documentation of a computer program to simulate aquifer-system compaction using the modular finite-difference ground-water flow model,* by S.A. Leake and D.E. Prudic: USGS–TWRI book 6, chap. A2. 1991. 68 p.

6–A3. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 1: Model Description and User's Manual,* by L.J. Torak: USGS–TWRI book 6, chap. A3. 1993. 136 p.

6–A4. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 2: Derivation of finite-element equations and comparisons with analytical solutions,* by R.L. Cooley: USGS–TWRI book 6, chap. A4. 1992. 108 p.

6–A5. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 3: Design philosophy and programming details,* by L.J. Torak: USGS–TWRI book 6, chap. A5. 1993. 243 p.

6–A6. *A coupled surface-water and ground-water flow model (MODBRANCH) for simulation of stream-aquifer interaction*, by Eric D. Swain and Eliezer J. Wexler: USGS–TWRI book 6, chap. A6. 1996. 125 p.

6–A7. *User's guide to SEAWAT: A computer program for simulation of three-dimensional variable-density ground-water flow*, by Weixing Guo and Christian D. Langevin: USGS–TWRI book 6, chap. A7. 2002. 77 p.

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7–C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments,* by P.C. Trescott, G.F. Pinder, and S.P. Larson: USGS–TWRI book 7, chap. C1. 1976. 116 p.

7–C2. *Computer model of two-dimensional solute transport and dispersion in ground water*, by L.F. Konikow and J.D. Bredehoeft: USGS–TWRI book 7, chap. C2. 1978. 90 p.

7–C3. *A model for simulation of flow in singular and interconnected channels,* by R.W. Schaffranek, R.A. Baltzer, and D.E. Goldberg: USGS–TWRI book 7, chap. C3. 1981. 110 p.

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8–A1. *Methods of measuring water levels in deep wells,* by M.S. Garber and F.C. Koopman: USGS–TWRI book 8, chap. A1. 1968. 23 p.

8–A2. *Installation and service manual for U.S. Geological Survey manometers*, by J.D. Craig: USGS–TWRI book 8, chap. A2. 1983. 57 p.

Section B. Instruments for Measurement of Discharge

8–B2. *Calibration and maintenance of vertical-axis type current meters,* by G.F. Smoot and C.E. Novak: USGS–TWRI book 8, chap. B2. 1968. 15 p.

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9–A1. *National field manual for the collection of water-quality data: Preparations for water sampling,* by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A1. 1998. 47 p.

9–A2. *National field manual for the collection of water-quality data: Selection of equipment for water sampling*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A2. 1998. 94 p.

9–A3. *National field manual for the collection of water-quality data: Cleaning of equipment for water sampling*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A3. 1998. 75 p.

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9–A4. *National field manual for the collection of water-quality data: Collection of water samples*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A4. 1999. 156 p.

9–A5. *National field manual for the collection of water-quality data: Processing of water samples*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A5. 1999, 149 p.

9–A6. *National field manual for the collection of water-quality data: Field measurements*, edited by F.D. Wilde and D.B. Radtke: USGS–TWRI book 9, chap. A6. 1998. Variously paginated.

9–A7. *National field manual for the collection of water-quality data: Biological indicators*, edited by D.N. Myers and F.D. Wilde: USGS–TWRI book 9, chap. A7. 1997 and 1999. Variously paginated.

9–A8. *National field manual for the collection of water-quality data: Bottom-material samples*, by D.B. Radtke: USGS–TWRI book 9, chap. A8. 1998. 48 p.

9–A9. *National field manual for the collection of water-quality data: Safety in field activities*, by S.L. Lane and R.G. Fay: USGS–TWRI book 9, chap. A9. 1998. 60 p.

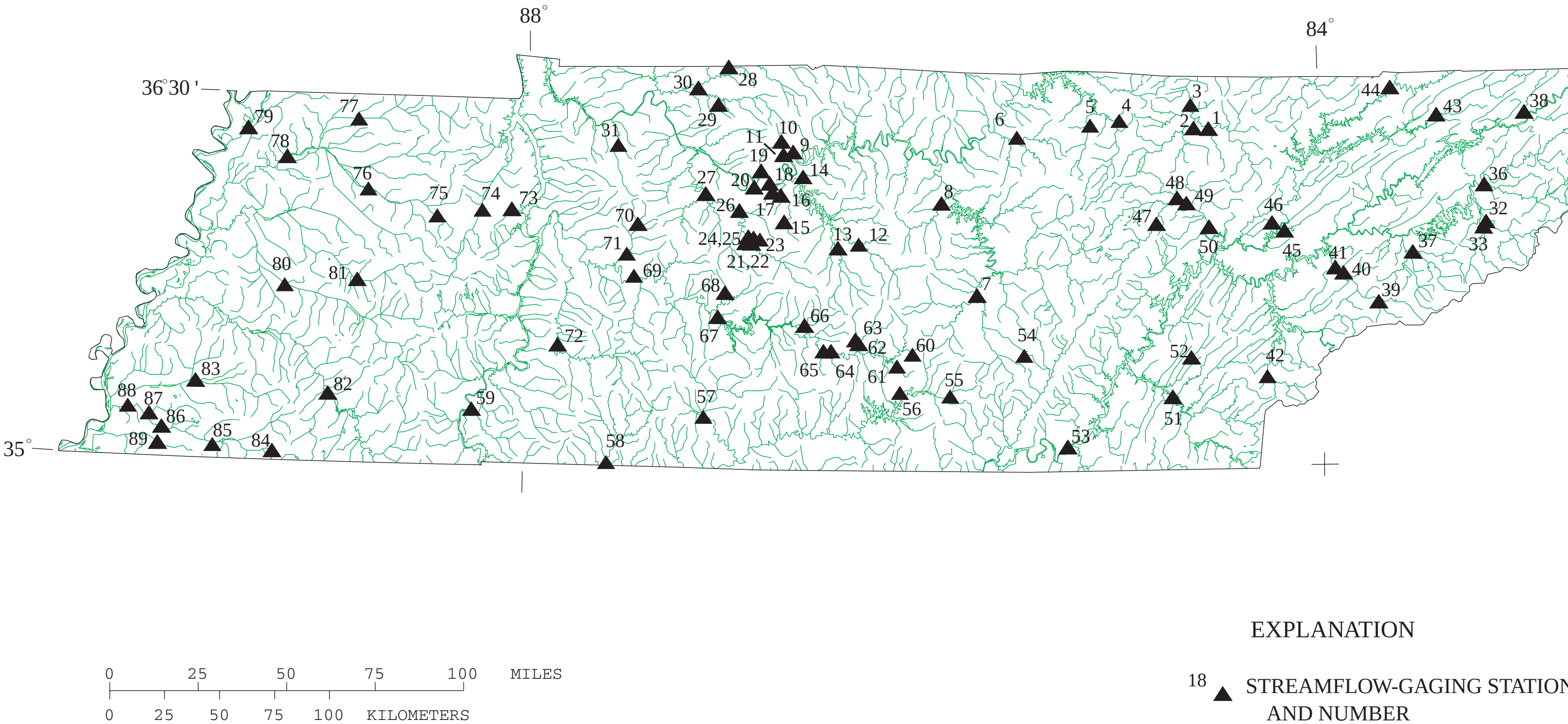


Figure 4. Location of streamflow-gaging stations in Tennessee.

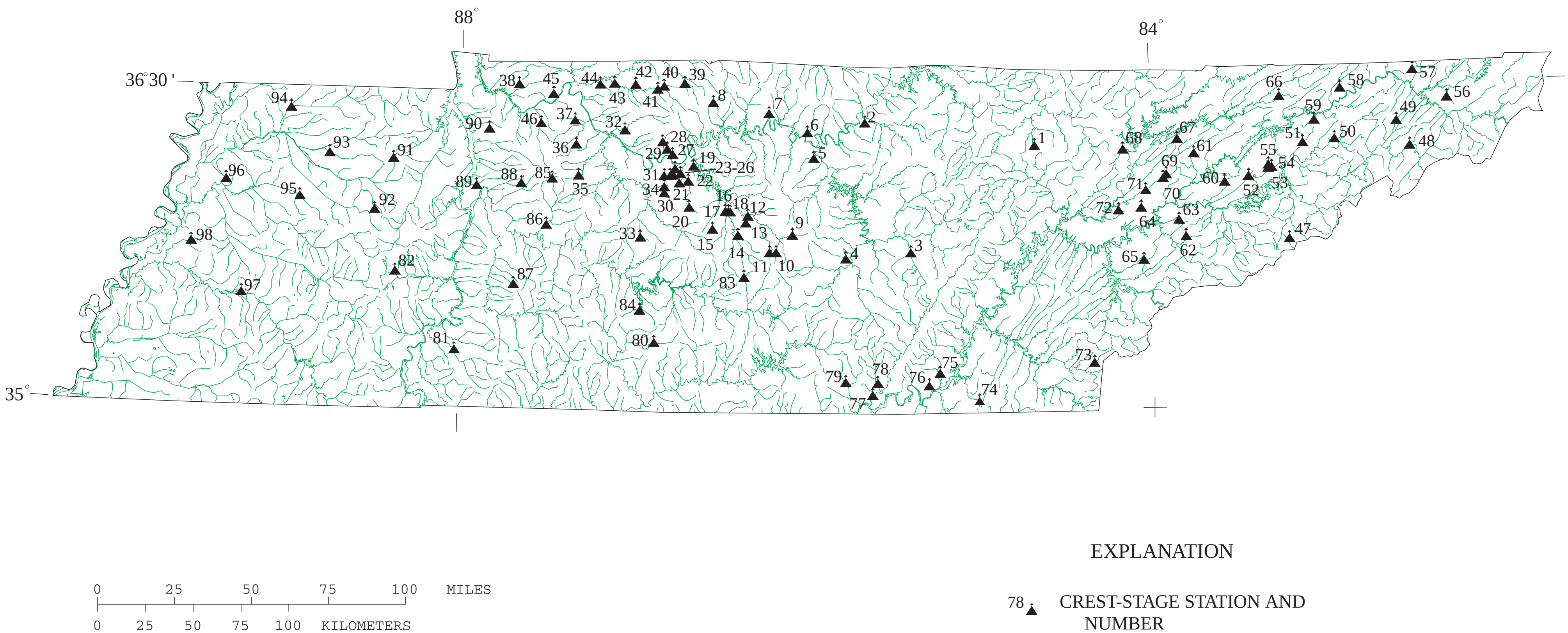


Figure 5. Location of crest-stage stations in Tennessee.

Map number	Station number and name		Page
1	03417500	CUMBERLAND RIVER AT CELINA	54-59
2	03418420	CUMBERLAND RIVER BELOW CORDELL HULL DAM	62-67
3	03426310	CUMBERLAND RIVER AT OLD HICKORY DAM	74-80
4	03428200	WEST FORK STONES RIVER AT MURFREESBORO	90-95
5	03431091	CUMBERLAND RIVER AT OMAHUNDRO WATER PLANT	102-107
6	03431514	CUMBERLAND RIVER NEAR BORDEAUX	112-117
7	03435000	CUMBERLAND RIVER BELOW CHEATHAM DAM	138-143
8	03466208	BIG LIMESTONE CREEK NR LIMESTONE	164-166
9	03467609	NOLICHUCKY RIVER NR LOWLAND	170-172
10	03597860	DUCK RIVER AT SHELBYVILLE	231-234
11	03600085	CARTERS CREEK AT PETTY LANE NR CARTERS CREEK	242-243
12	03600086	CARTERS CREEK TRIB NR CARTERS CREEK	244-245
13	03600088	CARTERS CREEK AT BUTLER ROAD AT CARTERS CREEK	248-249
14	350750085045802	HM:O-19	371
15	351428085003600	HM:O-15	370
16	353839089493500	LD:F	372
17	350034086422800	LI:G-1	373
18	353922083345600	SV:E-2	374
19	350857089591401	SH:P-99	375
20	351113089583101	SH:P-151	376
21	351102089582701	SH:P-152	377
22	350900089482300	SH:Q-1	378
23	352042089523401	SH:U-100	379
24	352042089523402	SH:U-101	380
25	352042089523403	SH:U-102	381
26	351917089515101	SH:V-211	382
27	351916089515101	SH:V-212	383
28	351917089515102	SH:V-222	384

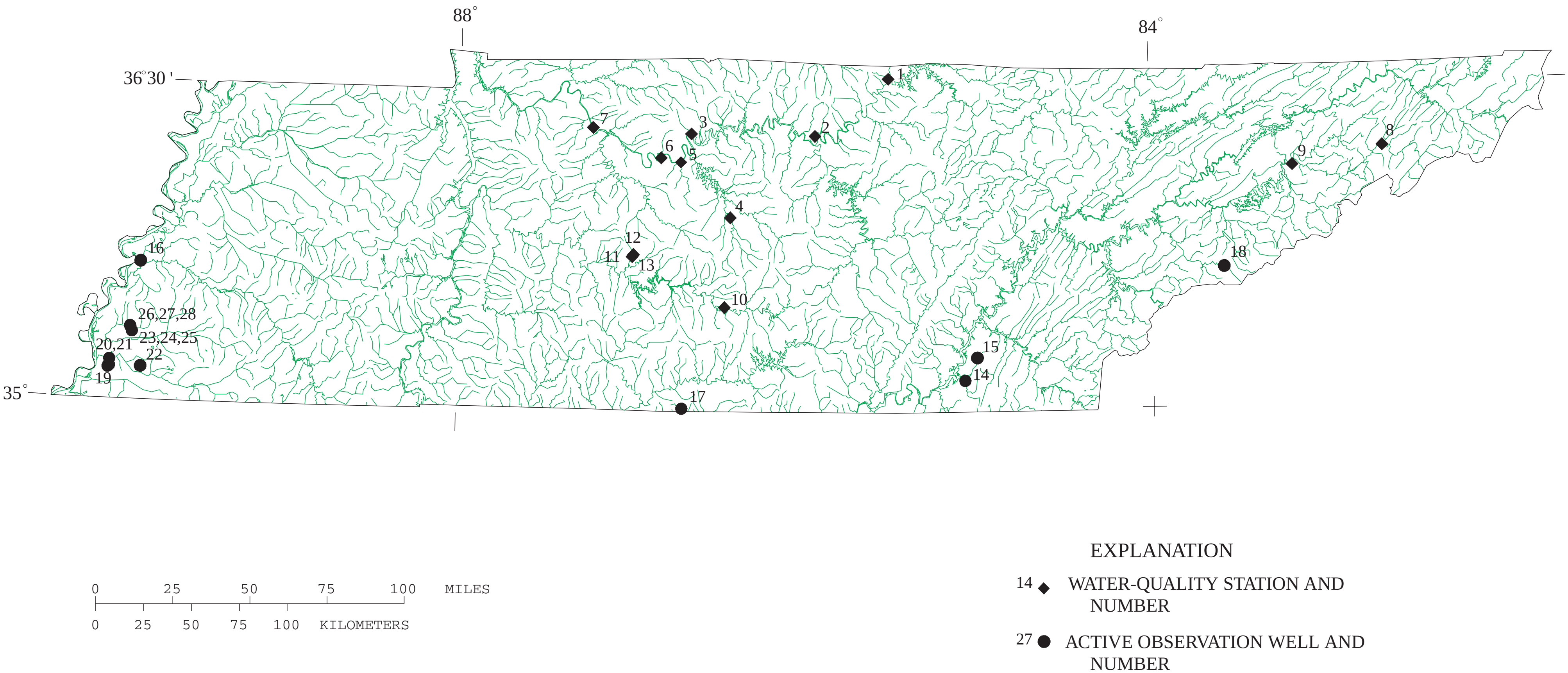


Figure 6. Location of water-quality stations and active observation wells in Tennessee.

03408500 NEW RIVER AT NEW RIVER, TN

LOCATION.--Lat 36°23'08", long 84°33'17", Scott County, Hydrologic Unit 05130104, on left bank at town of New River, 700 ft downstream from Phillips Creek, 1,000 ft downstream from bridge on U.S. Highway 27, 1.7 mi downstream from Brimstone Creek, and at mile 8.6.

DRAINAGE AREA.--382 mi^2.

PERIOD OF RECORD.--August 1934 to September 1991, October 1991 to September 1998, as stage only. October 1998 to current year. Gage-height records collected in this vicinity 1908-52 are contained in reports of U.S. Weather Bureau.

REVISED RECORDS.--WSP 1436: Drainage area. WDR TN-73: 1939(M), 1951(M), 1970(M).

GAGE.--Water-stage recorder. Datum of gage is 1,092.67 ft above NGVD of 1929.

REMARKS.--Records good except for estimated daily discharges, which are fair. Periodic observation of water temperature and specific conductance are published in this report as miscellaneous water quality data.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 63,700 ft^3/s, May 27, 1973, gage height, 37.91 ft, from high water mark in gage well, from rating curve extended above 27,000 ft^3/s on basis of slope-area and contracted-opening measurements of peak flow; no flow part of each day Aug. 12-14, 1944.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of March 23, 1929, reached a stage of 41.2 ft, discharge, 74,700 ft^3/s, estimated, based on field survey at old U.S. Weather Bureau gage, 1,200 ft upstream at datum 3.41 ft higher.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 12,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 24	0130	25,900	22.70	Mar 17	1730	18,100	18.50
Jan 25	0500	19,800	19.45	Mar 18	1430	*29,300	*24.37

Minimum discharge, 0.50 ft^3/s, Sept. 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	27	366	205	729	251	6150	1040	102	60	27	7.4
2	23	24	263	182	930	247	2330	1650	89	46	41	5.9
3	21	23	194	178	819	258	1490	2030	79	37	29	5.9
4	19	23	151	158	780	262	1080	1520	69	26	21	5.9
5	18	23	125	143	650	233	865	1180	68	21	16	6.0
6	30	22	108	156	570	214	722	900	93	17	12	5.5
7	26	21	103	174	790	204	610	738	186	16	9.6	4.2
8	39	21	195	145	1230	198	537	654	145	14	7.6	3.2
9	45	20	656	140	1180	203	511	525	94	12	5.7	2.4
10	31	20	600	159	1020	273	595	461	73	9.9	4.8	1.8
11	21	20	893	417	910	278	496	420	58	42	4.2	1.2
12	16	19	839	575	759	278	450	347	46	78	3.5	0.82
13	15	19	717	515	667	330	442	437	41	70	2.8	0.62
14	19	19	2840	433	574	349	432	810	49	522	2.4	1.8
15	27	18	2160	377	507	343	410	579	62	363	2.4	4.2
16	73	18	1090	322	461	530	377	447	46	183	7.0	4.3
17	61	18	763	283	421	10400	346	364	38	104	10	3.9
18	43	18	932	274	372	21900	368	480	33	71	4.4	4.3
19	35	18	890	2740	335	5360	352	419	28	55	4.5	18
20	27	18	698	4510	339	2420	317	314	25	49	11	16
21	25	18	522	1920	419	1780	290	270	22	43	17	104
22	23	18	417	1170	366	1300	270	232	19	37	17	131
23	22	18	408	8350	334	1040	245	203	17	35	18	278
24	19	20	957	18300	314	877	225	178	16	70	13	157
25	24	581	830	12700	299	743	690	157	18	68	9.9	82
26	25	501	650	3220	299	746	829	139	38	41	12	102
27	25	250	522	1800	307	947	645	157	36	30	35	616
28	40	169	427	1270	276	801	558	186	76	25	27	846
29	40	124	362	993	---	713	510	243	102	22	17	361
30	35	136	302	807	---	654	402	161	93	20	12	197
31	31	---	249	675	---	3210	---	121	---	19	9.2	---
TOTAL	924	2244	20229	63291	16657	57342	23544	17362	1861	2205.9	413.0	2977.34
MEAN	29.81	74.80	652.5	2042	594.9	1850	784.8	560.1	62.03	71.16	13.32	99.24
MAX	73	581	2840	18300	1230	21900	6150	2030	186	522	41	846
MIN	15	18	103	140	276	198	225	121	16	9.9	2.4	0.62
CFSM	0.08	0.20	1.71	5.34	1.56	4.84	2.05	1.47	0.16	0.19	0.03	0.26
IN.	0.09	0.22	1.97	6.16	1.62	5.58	2.29	1.69	0.18	0.21	0.04	0.29

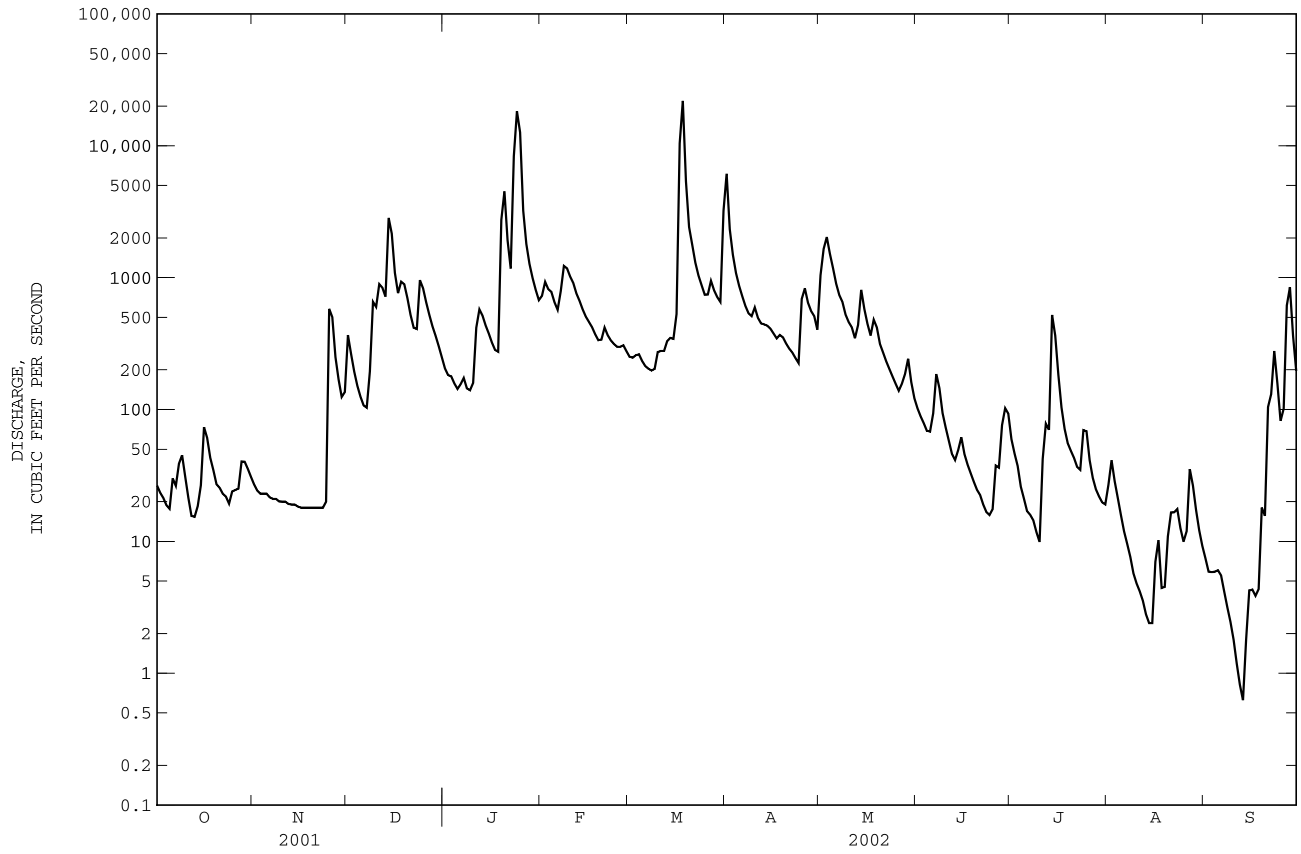
03408500 NEW RIVER AT NEW RIVER, TN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1934 - 2002, BY WATER YEAR (WY)

MEAN	137.7	491.1	1065	1393	1458	1539	1074	671.4	345.5	274.6	160.3	126.8
MAX	1035	2683	3359	4206	3891	4371	2564	3095	2850	1986	1159	1235
(WY)	1990	1958	1991	1937	1939	1975	1977	1973	1989	1967	1942	1989
MIN	0.64	2.35	43.9	42.1	112	530	216	60.6	4.54	3.99	5.71	2.68
(WY)	1953	1940	1966	1981	1941	1985	1942	1936	1936	1944	1936	1953

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1934 - 2002	
ANNUAL TOTAL	157545		209050.24			
ANNUAL MEAN	431.6		572.7		726.0	
HIGHEST ANNUAL MEAN					1350	1973
LOWEST ANNUAL MEAN					55.5	1934
HIGHEST DAILY MEAN	12000	Feb 17	21900	Mar 18	a38000	Dec 23 1990
LOWEST DAILY MEAN	15	Oct 13	0.62	Sep 13	0.10	Aug 9 1944
ANNUAL SEVEN-DAY MINIMUM	18	Nov 15	1.7	Sep 8	0.10	Aug 9 1944
MAXIMUM PEAK FLOW			29300	Mar 18	a63700	May 27 1973
MAXIMUM PEAK STAGE			24.37	Mar 18	b37.91	May 27 1973
INSTANTANEOUS LOW FLOW			0.50	Sep 13	c0.00	Aug 12 1944
ANNUAL RUNOFF (CFSM)	1.13		1.50		1.90	
ANNUAL RUNOFF (INCHES)	15.34		20.36		25.82	
10 PERCENT EXCEEDS	948		938		1620	
50 PERCENT EXCEEDS	136		158		257	
90 PERCENT EXCEEDS	23		12		17	

a Highest daily mean and instantaneous peak flows from rating curve extended above 27,000 ft^3/s on basis of slope-area and contracted opening measurements of peak flow.
b Maximum stage from high-water mark in gage well.
c Minimum discharge also occurred Aug. 13-15, 1944.



03409500 CLEAR FORK NEAR ROBBINS, TN

LOCATION.--Lat 36°23'18", long 84°37'49", Scott County, Hydrologic Unit 05130104, on right bank 300 ft downstream from Burnt Mill Bridge, 3.3 mi northwest of Robbins, and at mile 3.7.

DRAINAGE AREA.--272 mi^2.

PERIOD OF RECORD.--October 1930 to September 1971, July 1975 to September 1991, October 1991 to September 1998, stage only, October 1998 to current year. Published as Clear Fork River near Robbins, October 1951 to September 1954.

REVISED RECORDS.--WSP 1306: 1931(M), 1936-37(M), 1943-44(M). WSP 1436: Drainage area. WSP 1910: 1935(M).

GAGE.--Data collection platform. Datum of gage is 1,081.46 ft, Sandy Hook datum. Prior to Aug. 10, 1940, nonrecording gage at site 300 ft upstream at datum 1.00 ft higher.

REMARKS.--Records good. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water-quality data.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 23, 1929 reached a stage of 22.1 ft, former site and datum, from information by local residents, and flood of May 27, 1973, reached a stage of 18.92 ft, present site and datum, from floodmark; discharge 35,700 ft^3/s, from rating curve extended above 14,000 ft^3/s, on basis of slope-area measurement at gage height 18.5 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 24	0330	17,000	13.70	Apr 1	0000	7,940	9.76
Mar 18	0900	*19,800	*14.62				

Minimum discharge, 3.8 ft^3/s, Sept. 13, 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	11	131	125	466	143	5070	1020	83	52	66	23
2	11	11	129	131	561	143	2080	1730	71	43	54	22
3	9.1	12	101	104	461	154	1240	1150	62	33	42	20
4	7.7	9.6	82	102	444	158	860	923	54	27	35	18
5	6.6	9.1	69	89	379	140	660	898	110	23	29	15
6	10	9.2	60	87	336	130	527	701	489	20	24	13
7	10	9.2	59	99	509	124	438	559	778	17	19	10
8	8.0	9.1	120	105	977	119	376	1620	378	15	15	8.5
9	16	8.7	463	90	955	119	339	957	216	15	12	7.3
10	13	8.7	381	90	798	133	325	698	146	18	9.7	6.5
11	9.7	8.7	417	264	681	137	289	606	109	14	8.3	5.5
12	8.9	8.5	435	484	541	130	259	488	85	12	7.3	4.8
13	8.7	8.2	351	397	452	147	249	582	72	21	6.6	4.0
14	8.6	8.1	1180	315	374	193	270	1460	83	33	5.8	3.9
15	8.4	7.8	1270	260	321	177	265	873	149	117	5.6	4.5
16	14	7.8	630	209	290	190	232	592	105	96	6.1	4.5
17	24	7.8	424	180	260	9160	203	436	82	63	13	4.3
18	17	8.0	417	171	221	15900	192	530	69	51	56	5.0
19	14	8.3	377	1580	193	5100	207	532	59	40	43	5.9
20	14	8.3	297	3340	199	2280	181	373	53	32	37	10
21	13	7.9	230	1510	264	1960	163	295	46	29	32	110
22	12	7.8	187	862	230	1270	151	242	37	33	29	163
23	12	8.0	217	5440	195	919	136	203	33	35	24	89
24	11	11	600	15600	181	725	130	173	33	48	30	68
25	12	647	502	10100	170	578	1080	148	41	169	32	52
26	12	487	370	3010	167	712	1210	128	34	168	26	82
27	12	192	287	1510	173	1290	721	223	70	102	32	652
28	32	123	234	1000	159	902	538	193	85	73	43	425
29	21	91	194	743	---	720	507	142	70	59	76	228
30	15	93	161	581	---	591	401	117	64	51	45	139
31	12	---	129	470	---	2730	---	98	---	51	30	---
TOTAL	395.7	1846.8	10504	49048	10957	47174	19299	18690	3766	1560	893.4	2203.7
MEAN	12.76	61.56	338.8	1582	391.3	1522	643.3	602.9	125.5	50.32	28.82	73.46
MAX	32	647	1270	15600	977	15900	5070	1730	778	169	76	652
MIN	6.6	7.8	59	87	159	119	130	98	33	12	5.6	3.9
CFSM	0.05	0.23	1.25	5.82	1.44	5.59	2.37	2.22	0.46	0.19	0.11	0.27
IN.	0.05	0.25	1.44	6.71	1.50	6.45	2.64	2.56	0.52	0.21	0.12	0.30

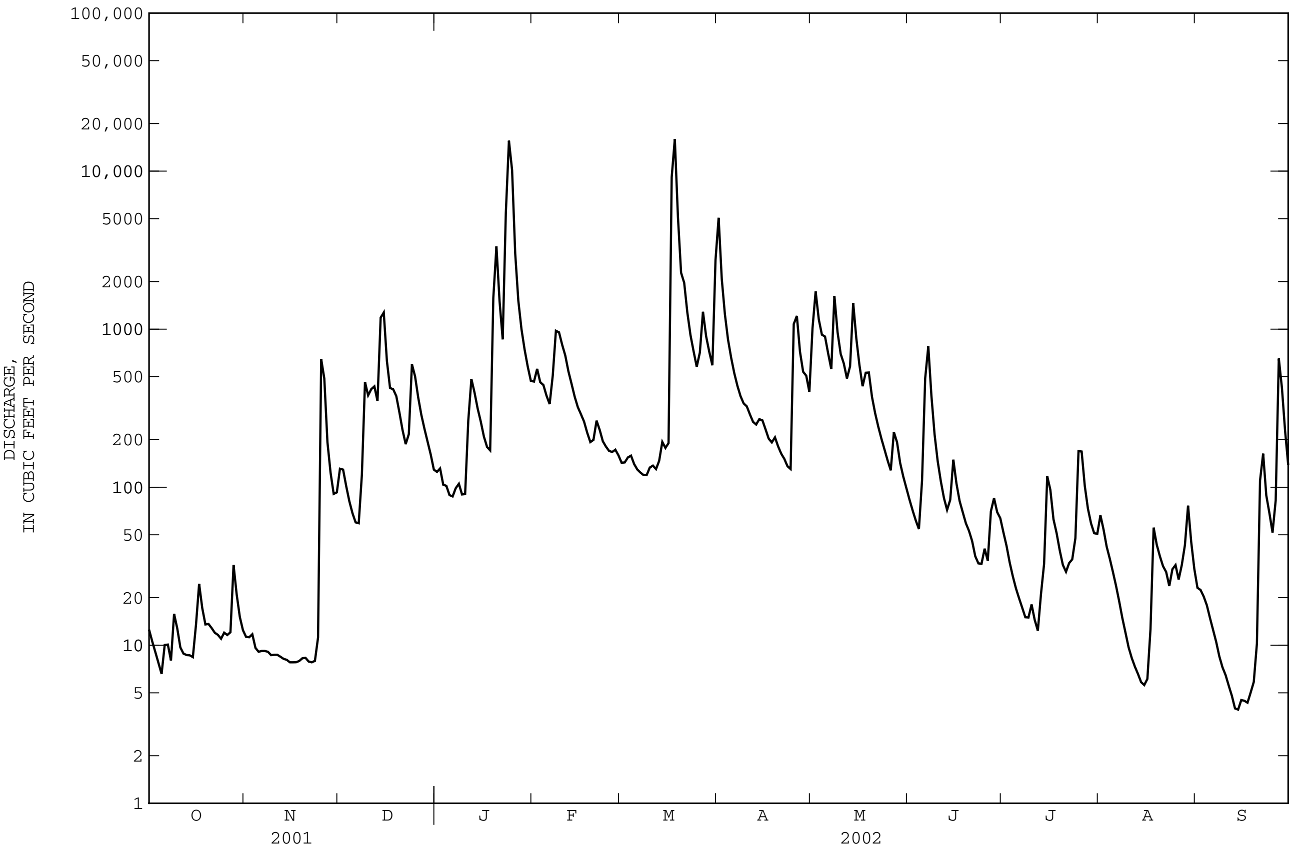
03409500 CLEAR FORK NEAR ROBBINS, TN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2002, BY WATER YEAR (WY)

MEAN	91.04	287.7	638.2	917.0	1025	999.7	720.3	459.9	210.8	159.7	101.7	93.74
MAX	747	1303	2470	3418	2794	2757	1968	2043	1742	1122	940	974
(WY)	1990	1958	1991	1937	1939	1963	1977	1984	1989	1967	1971	1982
MIN	1.84	4.97	28.6	32.4	141	333	152	64.1	8.29	6.40	8.07	2.92
(WY)	1954	1954	1964	1981	1941	1969	1942	1948	1988	1944	1987	1953

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1931 - 2002	
ANNUAL TOTAL	107503.0		166337.6			
ANNUAL MEAN	294.5		455.7		469.9	
HIGHEST ANNUAL MEAN					864	1989
LOWEST ANNUAL MEAN					113	1975
HIGHEST DAILY MEAN	9630	Feb 17	15900	Mar 18	a24800	Dec 23 1990
LOWEST DAILY MEAN	4.0	Sep 18	3.9	Sep 14	0.20	Sep 20 1932
ANNUAL SEVEN-DAY MINIMUM	5.1	Sep 14	4.4	Sep 12	0.51	Sep 15 1932
MAXIMUM PEAK FLOW			19800	Mar 18	a34000	Feb 3 1939
MAXIMUM PEAK STAGE			14.64	Mar 18	b18.50	Feb 3 1939
INSTANTANEOUS LOW FLOW			c3.8	Sep 13	d0.20	Sep 19 1932
ANNUAL RUNOFF (CFSM)	1.08		1.68		1.73	
ANNUAL RUNOFF (INCHES)	14.70		22.75		23.47	
10 PERCENT EXCEEDS	609		883		1090	
50 PERCENT EXCEEDS	83		119		155	
90 PERCENT EXCEEDS	8.6		8.7		11	

a Highest daily mean and instantaneous peak flows from rating curve extended above 14,000 ft^3/s on basis of slope-area measurement of peak flow.
b Maximum stage from floodmarks, site and datum then in use.
c Also occurred Sept. 14.
d Also occurred Sept. 20, 21, 1932.



03410210 SOUTH FORK CUMBERLAND RIVER AT LEATHERWOOD FORD, TN

LOCATION.--Lat 36°28'38", long 84°40'09", Scott County, Hydrologic Unit 05130104, on left bank at bridge on State Route 297, 1.0 mi above Anderson Branch, 1.3 miles below North White Oak Creek, 10.1 mi southwest of Oneida, and at mi 70.1.

DRAINAGE AREA.--806 mi^2.

PERIOD OF RECORD.--October 1983 to September 1987. October 1998 to September 1999, May 2001 to current year. Occasional discharge measurements, water years 1961-62, 1979-80, 1991-94.

GAGE.--Water-stage recorder. Datum of gage is 862.79 ft Sandy Hook datum.

REMARKS.--Records good. No daily discharge Oct. 1, 2000 to May 8, 2001. Periodic observation of water temperature and specific conductance are published in this report as miscellaneous water quality data.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 20,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 24	0430	43,400	27.51	Apr 1	0215	20,700	19.13
Mar 18	1400	*51,500	*29.94				

Minimum discharge, 20 ft^3/s, Sept. 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	e600	200	258	505	95
2	---	---	---	---	---	---	---	e1000	193	209	283	98
3	---	---	---	---	---	---	---	e500	238	182	244	118
4	---	---	---	---	---	---	---	e400	285	157	1480	132
5	---	---	---	---	---	---	---	e300	258	154	1010	184
6	---	---	---	---	---	---	---	e400	243	208	558	141
7	---	---	---	---	---	---	---	e650	315	220	331	116
8	---	---	---	---	---	---	---	e570	539	192	214	100
9	---	---	---	---	---	---	---	e520	583	167	197	88
10	---	---	---	---	---	---	---	484	430	204	549	78
11	---	---	---	---	---	---	---	427	310	167	542	69
12	---	---	---	---	---	---	---	389	245	166	738	60
13	---	---	---	---	---	---	---	344	207	141	1070	53
14	---	---	---	---	---	---	---	298	182	122	1060	50
15	---	---	---	---	---	---	---	258	180	105	483	48
16	---	---	---	---	---	---	---	231	225	85	274	40
17	---	---	---	---	---	---	---	211	205	69	188	35
18	---	---	---	---	---	---	---	192	172	58	150	32
19	---	---	---	---	---	---	---	176	149	47	128	33
20	---	---	---	---	---	---	---	166	133	54	111	59
21	---	---	---	---	---	---	---	159	122	57	101	72
22	---	---	---	---	---	---	---	172	134	65	93	109
23	---	---	---	---	---	---	---	283	234	70	85	99
24	---	---	---	---	---	---	---	342	285	80	83	93
25	---	---	---	---	---	---	---	269	210	75	90	106
26	---	---	---	---	---	---	---	240	167	73	89	124
27	---	---	---	---	---	---	---	214	150	61	88	121
28	---	---	---	---	---	---	---	228	235	77	89	101
29	---	---	---	---	---	---	---	268	317	1610	85	85
30	---	---	---	---	---	---	---	253	242	3430	78	73
31	---	---	---	---	---	---	---	223	---	1190	76	---
TOTAL	---	---	---	---	---	---	---	10767	7388	9753	11072	2612
MEAN	---	---	---	---	---	---	---	347.3	246.3	314.6	357.2	87.07
MAX	---	---	---	---	---	---	---	1000	583	3430	1480	184
MIN	---	---	---	---	---	---	---	159	122	47	76	32
CFSM	---	---	---	---	---	---	---	0.43	0.31	0.39	0.44	0.11
IN.	---	---	---	---	---	---	---	0.50	0.34	0.45	0.51	0.12

e Estimated

03410210 SOUTH FORK CUMBERLAND RIVER AT LEATHERWOOD FORD, TN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2001, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	352.7	1324	1635	1928	2516	2054	1784	1773	617.7	517.1	395.4	129.7
MAX	870	3506	2921	4553	3114	3648	3690	5631	1630	1758	1302	454
(WY)	1986	1987	1984	1999	1985	1984	2000	1984	1999	1999	1985	1986
MIN	43.4	49.4	196	602	1715	1104	539	347	230	124	61.4	25.9
(WY)	1999	1999	2000	1986	2000	1985	1986	2001	1984	2000	1987	1999

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1984 - 2001	
ANNUAL TOTAL	319081		41592			
ANNUAL MEAN	1165		271.8		1186	
HIGHEST ANNUAL MEAN					1744	1984
LOWEST ANNUAL MEAN					272	2001
HIGHEST DAILY MEAN	27600	Apr 4	3430	Jul 30	49300	May 7 1984
LOWEST DAILY MEAN	21	Sep 21	32	Sep 18	18	Sep 18 1999
ANNUAL SEVEN-DAY MINIMUM	25	Sep 16	42	Sep 13	20	Sep 14 1999
MAXIMUM PEAK FLOW					56100	May 7 1984
MAXIMUM PEAK STAGE					31.22	May 7 1984
INSTANTANEOUS LOW FLOW					17	Oct 1 1998
ANNUAL RUNOFF (CFSM)	1.44		0.34		1.47	
ANNUAL RUNOFF (INCHES)	14.73		1.92		19.99	
10 PERCENT EXCEEDS	3070		546		2750	
50 PERCENT EXCEEDS	472		182		478	
90 PERCENT EXCEEDS	49		67		49	

03410210 SOUTH FORK CUMBERLAND RIVER AT LEATHERWOOD FORD, TN--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

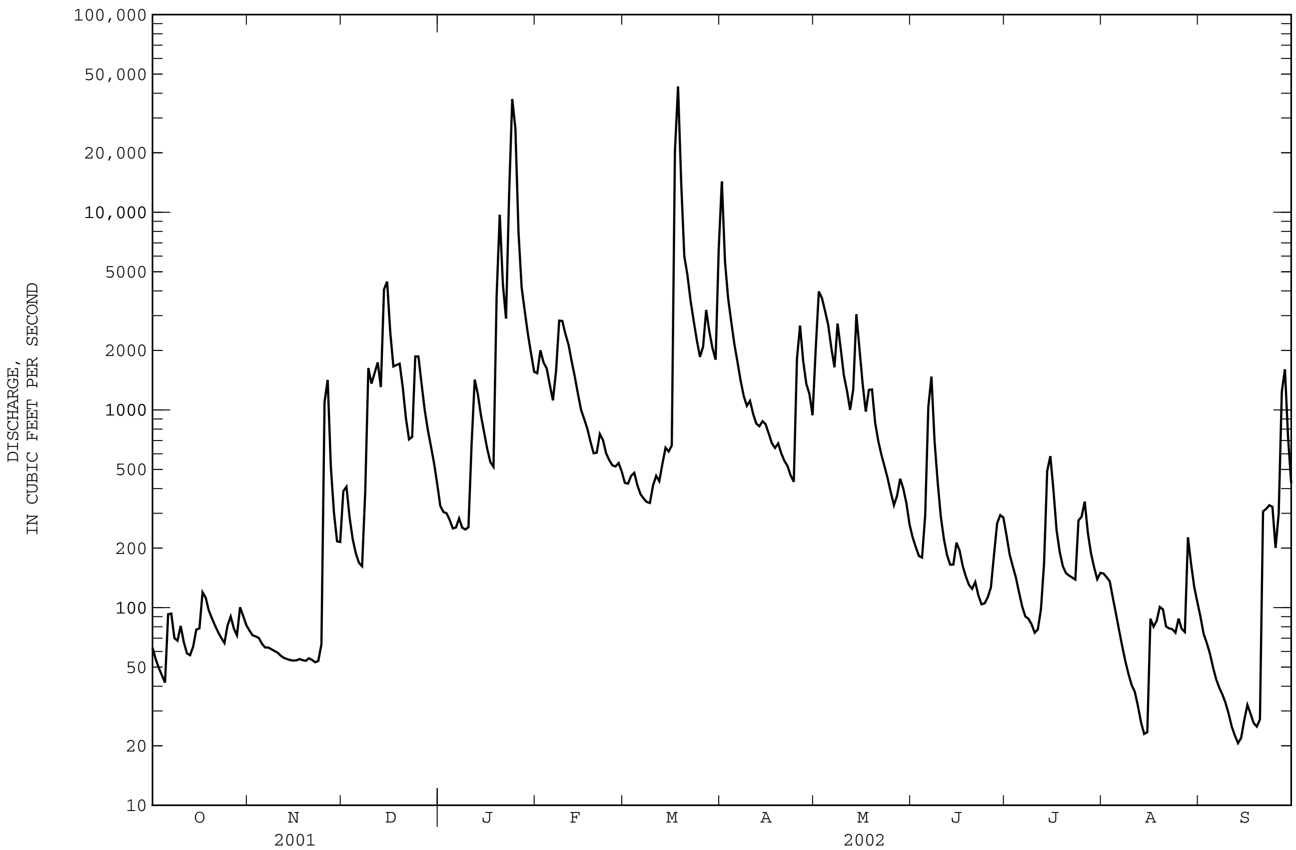
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63	76	388	327	1540	428	14300	2030	226	231	149	90
2	55	72	409	304	2000	424	5630	3970	202	185	142	74
3	50	71	286	300	1740	464	3680	3670	182	162	136	66
4	46	70	222	278	1620	481	2800	3160	179	142	112	59
5	42	66	188	251	1340	416	2150	2690	293	119	93	50
6	93	63	168	254	1120	375	1750	2060	1040	101	77	44
7	93	63	162	283	1570	356	1410	1640	1470	90	64	39
8	70	62	386	254	2830	342	1170	2740	695	88	53	36
9	68	60	1630	248	2820	338	1050	2040	429	82	46	33
10	81	59	1360	255	2420	415	1110	1500	288	75	41	29
11	67	57	1540	671	2130	464	954	1250	222	78	38	25
12	59	56	1740	1420	1760	436	853	1000	184	98	32	22
13	57	55	1310	1200	1470	533	827	1270	165	168	26	21
14	64	54	4070	937	1200	644	877	3050	165	491	23	22
15	77	54	4460	771	1000	616	846	2030	213	584	23	27
16	78	54	2480	634	899	661	759	1360	194	393	88	32
17	120	55	1660	545	804	20400	678	980	162	246	80	29
18	112	54	1690	516	691	43300	642	1260	144	191	86	26
19	97	54	1710	3780	604	14100	677	1270	130	162	101	25
20	88	55	1300	9700	607	5990	603	862	124	149	98	27
21	81	54	910	4340	755	4820	552	697	135	145	80	307
22	75	53	709	2900	704	3570	520	594	115	142	78	316
23	70	54	730	12400	603	2820	466	518	104	139	78	329
24	66	65	1860	37400	557	2250	433	450	105	276	75	323
25	81	1100	1860	26500	525	1860	1810	383	113	288	88	200
26	90	1420	1360	7910	518	2090	2670	330	126	344	78	299
27	78	518	1000	4170	539	3200	1770	368	185	239	75	1240
28	72	302	793	3160	487	2490	1350	449	267	188	227	1600
29	100	216	656	2420	---	2050	1200	400	294	160	166	724
30	91	215	539	1940	---	1800	941	337	285	139	127	426
31	82	---	423	1560	---	6520	---	263	---	150	107	---
TOTAL	2366	5207	37999	127628	34853	124653	54478	44621	8436	6045	2687	6540
MEAN	76.32	173.6	1226	4117	1245	4021	1816	1439	281.2	195.0	86.68	218.0
MAX	120	1420	4460	37400	2830	43300	14300	3970	1470	584	227	1600
MIN	42	53	162	248	487	338	433	263	104	75	23	21
CFSM	0.09	0.22	1.52	5.11	1.54	4.99	2.25	1.79	0.35	0.24	0.11	0.27
IN.	0.11	0.24	1.75	5.89	1.61	5.75	2.51	2.06	0.39	0.28	0.12	0.30

03410210 SOUTH FORK CUMBERLAND RIVER AT LEATHERWOOD FORD, TN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	313.2	1160	1576	2241	2336	2335	1788	1732	575.6	476.8	361.1	139.5
MAX	870	3506	2921	4553	3114	4021	3690	5631	1630	1758	1302	454
(WY)	1986	1987	1984	1999	1985	2002	2000	1984	1999	1999	1985	1986
MIN	43.4	49.4	196	602	1245	1104	539	347	230	124	61.4	25.9
(WY)	1999	1999	2000	1986	2002	1985	1986	2001	1984	2000	1987	1999

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1984 - 2002	
ANNUAL TOTAL	87164		455513			
ANNUAL MEAN	355.8		1248		1194	
HIGHEST ANNUAL MEAN					1744	1984
LOWEST ANNUAL MEAN					272	2001
HIGHEST DAILY MEAN	4460	Dec 15	43300	Mar 18	49300	May 7 1984
LOWEST DAILY MEAN	32	Sep 18	21	Sep 13	18	Sep 18 1999
ANNUAL SEVEN-DAY MINIMUM	42	Sep 13	25	Sep 10	20	Sep 14 1999
MAXIMUM PEAK FLOW			51500	Mar 18	56100	May 7 1984
MAXIMUM PEAK STAGE			29.94	Mar 18	31.22	May 7 1984
INSTANTANEOUS LOW FLOW			20	Sep 13	17	Oct 1 1998
ANNUAL RUNOFF (CFSM)	0.44		1.55		1.48	
ANNUAL RUNOFF (INCHES)	4.02		21.02		20.13	
10 PERCENT EXCEEDS	1000		2440		2710	
50 PERCENT EXCEEDS	162		327		457	
90 PERCENT EXCEEDS	56		55		51	



03414500 EAST FORK OBEY RIVER NEAR JAMESTOWN, TN

LOCATION.--Lat 36°24'58", long 85°01'35", Fentress County, Hydrologic Unit 05130105, on right bank at bridge 200 ft upstream from bridge on State Highway 52, 0.5 mi upstream from Poplar Cove Creek, 5.3 mi west of Jamestown, and at mile 12.7.

DRAINAGE AREA.--202 mi^2, includes 6.0 mi^2 without surface drainage.

PERIOD OF RECORD.--October 1942 to September 1991. October 1991 to September 1992, miscellaneous water-quality measurements. October 1992 to September 2000, crest-stage partial record station. October 2000 to current year. Prior to February 1943 monthly discharges only, published in WSP 1306.

REVISED RECORDS.--WSP 1276: 1944, 1946(M). WSP 1506: Drainage area.

GAGE.--Water-stage encoder and satellite telemeter at station. Datum of gage is 680.30 ft, Sandy Hook datum. Feb. 24 to April 7, 1943, nonrecording gage 200 ft upstream at same datum.

REMARKS.--Records good. Periodic observation of water temperature and specific conductance are published in this report as miscellaneous water-quality data.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 44,800 ft^3/s, May 27, 1973, gage height, 30.46 ft, from rating curve extended above 32,000 ft^3/s, on basis of slope-area measurement of peak flow; minimum, 3.6 ft^3/s, Sept. 26-28, 1948; minimum gage height, 0.55 ft, Sept. 12-17, 1954.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1929 reached a stage of about 30.7 ft, from flood profile by U.S. Army Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 8,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 23	2300	*23,100	*22.42	Mar 18	0700	21,900	21.82
Jan 24	1330	15,700	18.48	Apr 25	0830	10,000	14.57
Mar 17	1130	21,200	21.50				

Minimum discharge, 6.4 ft^3/s, Sept. 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

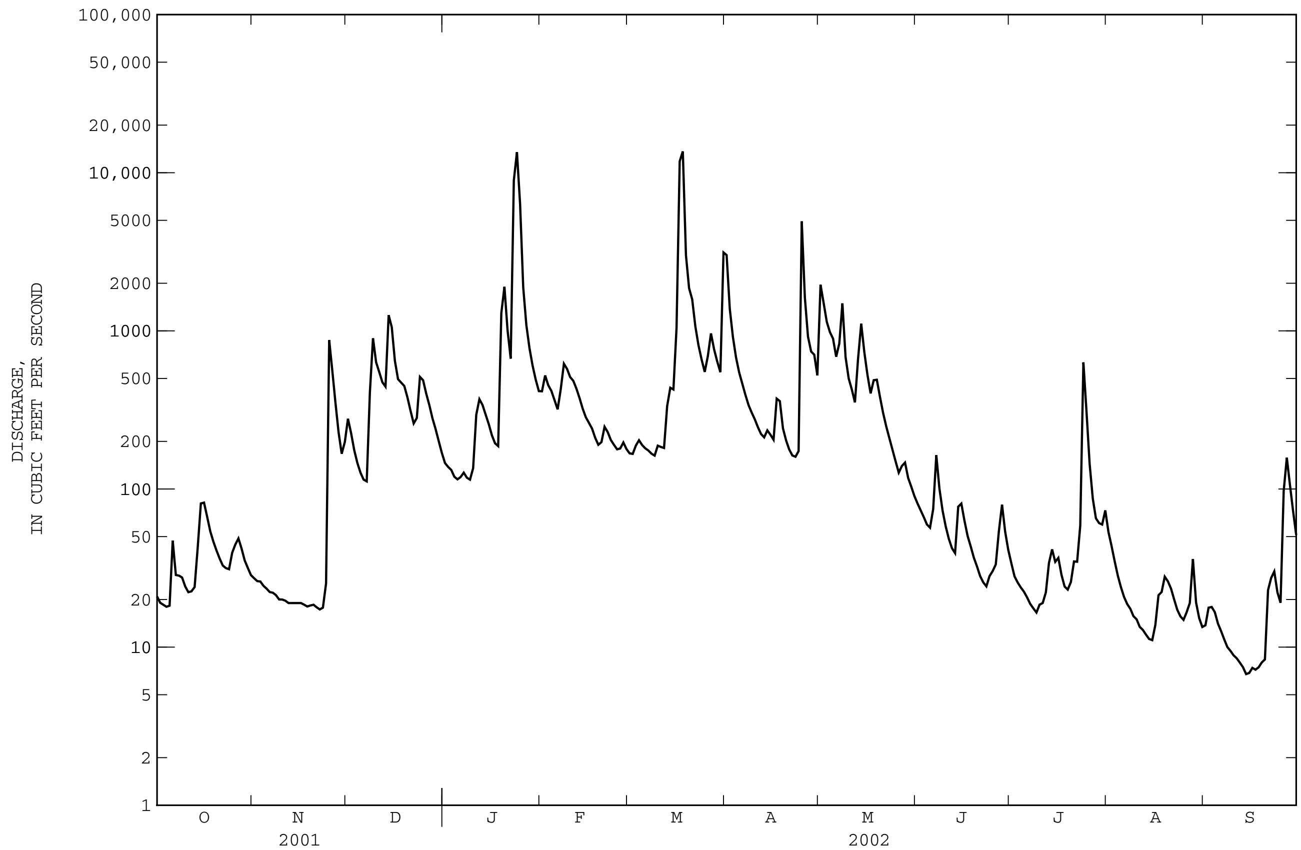
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	27	278	146	415	168	3010	1960	81	34	54	14
2	19	26	225	138	522	167	1380	1500	73	28	44	18
3	19	26	176	132	453	188	916	1140	66	26	35	18
4	18	24	146	120	417	203	680	982	60	24	28	17
5	18	23	127	115	365	190	546	894	57	22	24	14
6	47	22	115	119	319	181	464	686	75	21	21	13
7	29	22	112	127	428	175	394	831	164	19	19	11
8	28	21	408	118	620	167	339	1490	101	18	17	10
9	28	20	897	115	575	163	304	684	73	17	16	9.5
10	24	20	633	135	511	188	276	500	58	19	15	8.9
11	22	20	548	295	483	184	246	426	48	19	13	8.5
12	23	19	473	370	431	182	223	353	42	22	13	8.0
13	24	19	444	340	376	335	212	667	39	34	12	7.5
14	43	19	1260	295	322	437	235	1110	77	42	11	6.8
15	81	19	1050	257	284	426	220	733	81	35	11	6.9
16	82	19	646	218	262	1050	205	527	63	37	14	7.4
17	67	19	495	194	241	11800	373	402	50	29	21	7.2
18	54	18	471	187	211	13600	359	488	43	24	22	7.5
19	46	18	448	1290	190	3010	242	491	37	23	28	8.0
20	41	19	380	1900	198	1860	203	382	32	26	26	8.4
21	36	18	312	1010	247	1580	178	303	28	35	23	23
22	33	17	260	667	229	1070	163	249	26	35	20	27
23	32	18	281	8940	204	811	160	210	24	59	17	30
24	31	25	512	13500	190	659	174	177	28	632	16	22
25	39	875	488	6330	178	550	4930	149	30	308	15	19
26	45	561	402	1890	180	693	1620	127	33	144	17	97
27	49	351	339	1090	197	963	919	140	54	87	19	158
28	42	229	280	777	179	763	740	147	80	65	36	106
29	35	167	240	603	---	640	707	117	54	61	19	73
30	32	198	201	492	---	548	523	103	41	60	15	51
31	29	---	169	416	---	3130	---	90	---	73	13	---
TOTAL	1137	2879	12816	42326	9227	46081	20941	18058	1718	2078	654	815.6
MEAN	36.68	95.97	413.4	1365	329.5	1486	698.0	582.5	57.27	67.03	21.10	27.19
MAX	82	875	1260	13500	620	13600	4930	1960	164	632	54	158
MIN	18	17	112	115	178	163	160	90	24	17	11	6.8
CFSM	0.19	0.49	2.11	6.97	1.68	7.58	3.56	2.97	0.29	0.34	0.11	0.14
IN.	0.22	0.55	2.43	8.03	1.75	8.75	3.97	3.43	0.33	0.39	0.12	0.15

03414500 EAST FORK OBEY RIVER NEAR JAMESTOWN, TN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	98.18	291.5	627.1	791.7	841.9	881.2	607.1	411.3	178.5	117.3	74.65	77.90
MAX	589	973	2066	2253	1900	2897	1369	1909	682	961	722	494
(WY)	1990	1958	1991	1950	1956	1975	1977	1984	1989	1967	1982	1944
MIN	4.76	8.05	22.1	43.6	161	206	139	66.7	10.9	9.73	10.0	7.18
(WY)	1948	1954	1964	1981	1968	1983	1986	1962	1988	1944	1962	1953

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1943 - 2002	
ANNUAL TOTAL	94199		158730.6			
ANNUAL MEAN	258.1		434.9		415.6	
HIGHEST ANNUAL MEAN					743	1973
LOWEST ANNUAL MEAN					218	1986
HIGHEST DAILY MEAN	7300	Feb 16	13600	Mar 18	23200	Dec 30 1969
LOWEST DAILY MEAN	12	Jul 21	6.8	Sep 14	3.6	Sep 26 1948
ANNUAL SEVEN-DAY MINIMUM	13	Jul 17	7.3	Sep 12	3.9	Sep 22 1948
MAXIMUM PEAK FLOW			23100	Jan 23	44800	May 27 1973
MAXIMUM PEAK STAGE			22.42	Jan 23	30.46	May 27 1973
INSTANTANEOUS LOW FLOW			6.4	Sep 14	3.6	Sep 26 1948
ANNUAL RUNOFF (CFSM)	1.32		2.22		2.12	
ANNUAL RUNOFF (INCHES)	17.88		30.13		28.81	
10 PERCENT EXCEEDS	553		791		943	
50 PERCENT EXCEEDS	71		127		160	
90 PERCENT EXCEEDS	19		18		15	



03415000 WEST FORK OBEY RIVER NEAR ALPINE, TN

LOCATION.--Lat 36°23'49", long 85°10'28", Overton County, Hydrologic Unit 05130105, on left bank 20 ft upstream from bridge on State Highway 52, 0.3 mile upstream from Nettlecarrier Creek, 2.4 miles east of Alpine, and at mile 8.0.

DRAINAGE AREA.--115 mi^2, includes 34 mi^2 without surface drainage.

PERIOD OF RECORD.--October 1942 to September 1971, October 1979 to November 1981. October 2001 to September 2002. Prior to December 1942 monthly discharges only, published in WSP 1306.

REVISIONS.--WSP 1386: 1943-45(P), 1946, 1948, 1952(P). WSP 1506: Drainage area.

GAGE.--Data collection platform and crest-stage gage. Datum of gage is 683.28 ft above NGVD of 1929. Oct. 1942 to Sept. 1971 gage at same site at datum 1.0 ft higher.

REMARKS.--No estimated daily discharges, records good. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water-quality data.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,100 ft^3/s, Mar. 21, 1955, gage height 17.30 ft present datum; minimum 2.6 ft^3/s Sept. 13-19, 1954.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1929 reached a stage of about 15.3 ft (present datum), from flood profile by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 23	2300	7,400	11.87	Mar 18	0330	*10,100	*14.00
Jan 24	1130	8,320	12.62	Apr 25	0330	6,450	11.05
Mar 17	0930	6,960	11.50				

Minimum discharge, 3.6 ft^3/s, Sept. 10, 11, 12, 13, 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	15	103	57	213	84	1510	998	46	19	14	5.9
2	9.6	15	71	53	209	85	612	564	42	17	11	7.4
3	8.9	14	56	50	181	93	391	351	38	16	10	6.8
4	8.2	13	48	47	167	93	291	350	36	15	9.0	5.9
5	9.3	13	41	44	145	87	237	323	36	15	8.2	5.2
6	37	12	37	47	136	85	204	255	45	14	7.7	4.8
7	36	11	37	46	192	84	178	251	51	12	7.0	4.6
8	23	11	427	42	221	82	162	313	39	12	6.5	4.3
9	18	11	479	40	201	82	150	204	32	13	6.3	4.2
10	14	10	204	61	190	92	133	166	29	14	6.2	3.9
11	12	10	193	130	179	87	123	145	27	12	6.6	3.9
12	13	9.7	154	136	164	92	115	127	25	17	6.2	3.7
13	14	9.5	186	117	148	160	117	540	28	49	6.1	4.0
14	53	9.3	769	104	133	169	128	533	78	67	5.8	4.1
15	93	9.3	385	92	124	154	120	282	51	36	5.8	3.9
16	50	9.1	212	79	118	327	113	205	35	24	10	4.4
17	36	9.1	163	74	109	5200	141	173	30	18	12	4.9
18	29	8.9	149	72	98	6360	120	280	27	17	16	5.3
19	25	8.9	133	879	91	1530	111	197	24	20	19	5.0
20	22	9.4	112	737	100	971	104	162	21	29	14	6.0
21	20	9.0	96	350	119	711	99	139	20	26	9.4	13
22	18	8.9	85	224	101	453	94	120	18	20	7.6	59
23	17	9.2	128	3850	94	330	84	106	18	26	6.9	35
24	16	14	197	6220	90	263	117	93	21	20	7.2	16
25	24	276	146	2810	89	218	2990	81	23	15	7.2	13
26	33	104	126	908	96	510	676	71	23	15	7.7	88
27	26	63	111	450	101	467	336	64	23	13	7.8	151
28	22	50	97	293	90	329	297	64	55	13	11	79
29	19	44	83	226	---	266	276	69	31	16	11	42
30	17	117	70	185	---	219	199	56	23	15	7.8	28
31	16	---	62	159	---	2280	---	50	---	15	6.6	---
TOTAL	749.0	913.3	5160	18582	3899	21963	10228	7332	995	630	277.6	622.2
MEAN	24.16	30.44	166.5	599.4	139.2	708.5	340.9	236.5	33.17	20.32	8.955	20.74
MAX	93	276	769	6220	221	6360	2990	998	78	67	19	151
MIN	8.2	8.9	37	40	89	82	84	50	18	12	5.8	3.7
CFSM	0.30	0.38	2.05	7.40	1.72	8.75	4.21	2.92	0.41	0.25	0.11	0.26
IN.	0.34	0.42	2.37	8.53	1.79	10.09	4.70	3.37	0.46	0.29	0.13	0.29

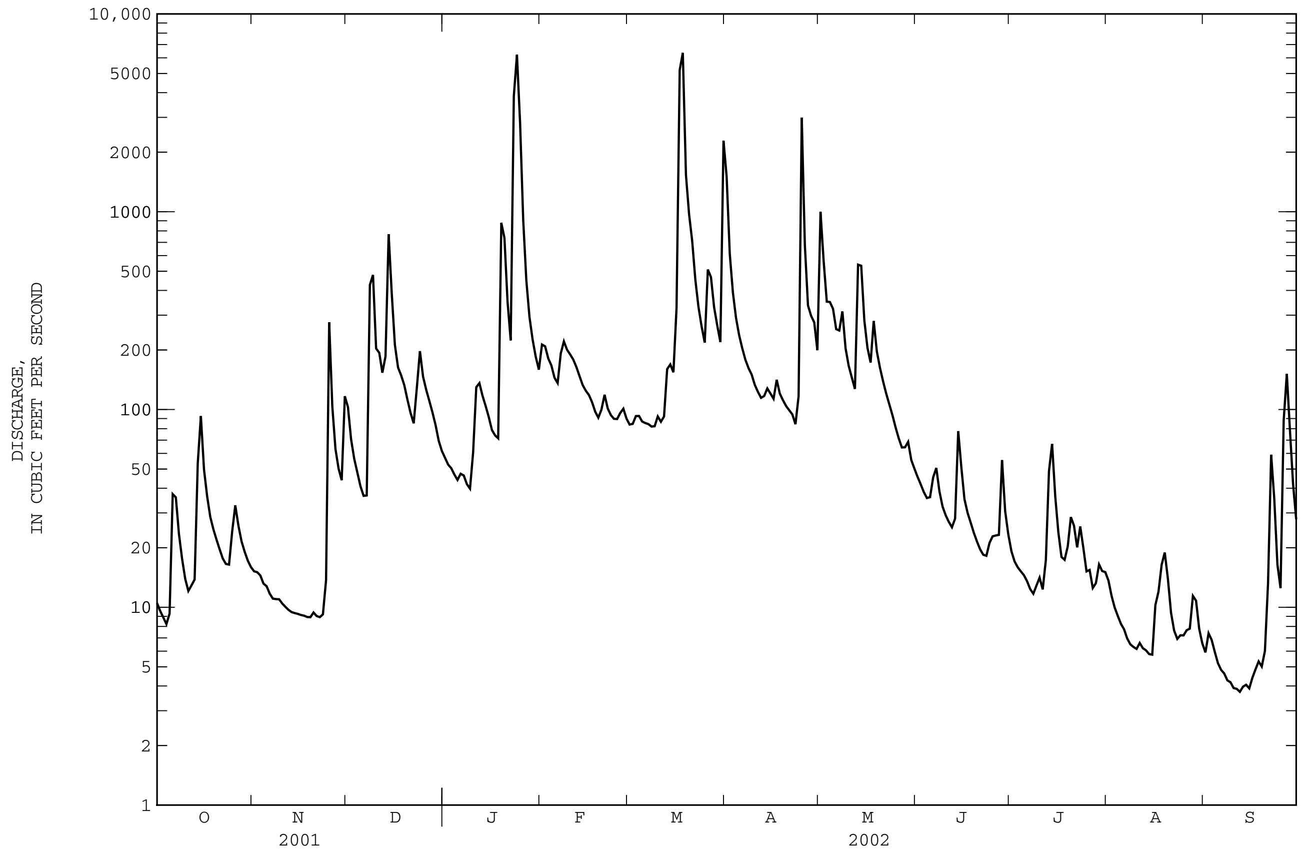
03415000 WEST FORK OBEY RIVER NEAR ALPINE, TN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	23.59	84.96	202.3	308.4	356.1	384.5	256.2	126.3	73.16	46.94	27.71	23.76
MAX	122	384	691	1024	872	859	528	357	266	327	142	183
(WY)	1980	1958	1952	1950	1956	1955	1962	1958	1969	1967	1971	1944
MIN	3.84	4.61	6.28	11.2	79.4	136	68.8	23.5	12.3	7.33	6.09	4.23
(WY)	1953	1954	1966	1981	1968	1969	1963	1948	1948	1954	1962	1980

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1943 - 2002	
ANNUAL TOTAL	6876.3		71351.1			
ANNUAL MEAN	71.63		195.5		158.0	
HIGHEST ANNUAL MEAN					264	1950
LOWEST ANNUAL MEAN					13.5	2001
HIGHEST DAILY MEAN	769	Dec 14	6360	Mar 18	7440	Dec 30 1969
LOWEST DAILY MEAN	8.2	Oct 4	3.7	Sep 12	2.6	Sep 13 1954
ANNUAL SEVEN-DAY MINIMUM	9.0	Nov 16	4.0	Sep 9	2.6	Sep 12 1954
MAXIMUM PEAK FLOW			10100	Mar 18	10100	Mar 18 2002
MAXIMUM PEAK STAGE			14.00	Mar 18	14.00	Mar 18 2002
INSTANTANEOUS LOW FLOW			a3.6	Sep 10	b2.6	Sep 12 1954
ANNUAL RUNOFF (CFSM)	0.88		2.41		1.95	
ANNUAL RUNOFF (INCHES)	3.16		32.77		26.50	
10 PERCENT EXCEEDS	188		325		358	
50 PERCENT EXCEEDS	24		53		46	
90 PERCENT EXCEEDS	9.3		7.8		6.2	

a Also occurred Sept. 11, 12, 13, 15.
b Also occurred Sept. 13-19, 1954.



03417500 CUMBERLAND RIVER AT CELINA, TN

WATER-QUALITY RECORDS

LOCATION.--Lat 36°33'15", long 85°30'52", Clay County, Hydrologic Unit 05130106, on right bank at State Highway 52 bridge, 0.5 mi northwest of courthouse in Celina, 600 ft downstream from Obey River, and at mile 380.8.

DRAINAGE AREA.--7,307 mi^2.

PERIOD OF RECORD.--November 1991 to September 1997, October 1999 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: November 1991 to September 1997, October 1999 to current year.
pH: November 1991 to September 1997, October 1999 to current year.
WATER TEMPERATURE: November 1991 to September 1997, October 1999 to current year.
DISSOLVED OXYGEN: October 1992 to September 1997, October 1999 to current year.

INSTRUMENTATION.--Data collection platform and water-quality monitor.

REMARKS.--Flow regulated by Lake Cumberland (station 03413500) and Dale Hollow Lake (station 03416500). Interruptions in the record were due to instrument malfunctions. Records for water temperature, specific conductance, and pH are good, dissolved oxygen records are poor.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum, 280 microsiemens, Aug. 29, 1992; minimum, 113 microsiemens, Mar. 27, 1994.
pH: Maximum, 8.5 units, Mar. 3, 4, 6, 1992; minimum, 6.2 units, Sept. 14, 1993.
WATER TEMPERATURE: Maximum, 19.6°C, July 31, 2001; minimum, 2.5°C, Feb. 9, 1995.
DISSOLVED OXYGEN: Maximum, 15.3 mg/L, Jan. 29, 2000; minimum, 6.6 mg/L, Sept. 23, 2000.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 267 microsiemens, Dec. 3; minimum, 142 microsiemens, Mar. 17.
pH: Maximum, 8.2 units, several days; minimum, 6.6 units, Mar. 18.
WATER TEMPERATURE: Maximum, 18.0°C, June 13; minimum, 4.3°C, Jan. 3.
DISSOLVED OXYGEN: Maximum, 13.5 mg/L, Apr. 8; minimum, 6.7 mg/L, June 10.

SPECIFIC CONDUCTANCE, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	217	214	215	215	212	213	237	214	228	234	230	232
2	215	212	213	215	211	213	246	232	238	230	225	227
3	216	210	212	215	209	211	267	237	248	227	226	226
4	215	212	213	215	207	210	264	234	253	228	226	227
5	215	210	213	213	206	209	256	232	243	227	226	227
6	218	210	214	213	206	208	233	231	232	230	226	228
7	218	212	214	211	204	207	232	230	231	230	229	229
8	218	212	215	212	203	206	241	230	234	230	227	229
9	214	211	213	214	202	205	241	235	239	229	227	228
10	214	210	212	218	202	209	244	238	241	229	227	228
11	214	211	212	231	199	212	246	240	243	241	228	235
12	214	209	212	227	197	206	242	232	239	242	235	237
13	215	212	213	231	197	208	239	209	225	242	236	239
14	243	213	220	218	196	209	224	217	220	236	232	234
15	225	220	223	217	214	215	240	222	232	235	229	232
16	230	224	226	217	214	215	248	239	242	231	224	227
17	233	226	230	217	212	213	255	248	252	226	223	224
18	228	222	225	213	211	212	256	252	254	224	219	222
19	225	217	220	213	209	211	253	241	251	228	222	225
20	223	219	221	210	208	209	248	241	244	234	228	230
21	223	218	220	210	206	208	243	238	240	239	234	236
22	224	218	220	207	205	206	244	236	239	239	232	236
23	222	218	220	207	205	206	241	236	239	235	191	214
24	222	219	220	227	203	207	243	241	242	191	157	176
25	224	217	220	223	208	212	245	239	243	195	179	187
26	225	220	222	218	209	212	244	241	242	---	---	---
27	227	222	226	214	208	210	242	238	240	---	---	---
28	228	223	226	214	210	212	241	232	237	227	226	226
29	224	219	221	223	210	216	242	236	238	229	225	227
30	220	215	217	224	209	217	239	235	236	231	228	230
31	217	214	215	---	---	---	235	233	234	241	231	237
MONTH	243	209	218	231	196	210	267	209	239	242	157	226

03417500 CUMBERLAND RIVER AT CELINA, TN--Continued

SPECIFIC CONDUCTANCE, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	243	237	240	232	228	231	---	---	---	207	192	201
2	239	233	236	234	231	232	---	---	---	200	193	197
3	244	234	239	234	232	233	---	---	---	200	191	195
4	246	241	244	234	232	233	212	203	208	195	189	192
5	242	237	239	233	232	232	204	201	203	197	191	192
6	241	238	240	233	231	232	206	201	203	198	195	196
7	241	236	238	232	231	232	208	201	205	197	191	194
8	237	235	236	233	230	232	204	198	200	198	190	193
9	235	234	234	235	231	233	204	198	201	191	185	187
10	236	234	235	237	235	236	202	197	199	189	186	187
11	237	233	236	238	236	237	199	191	194	188	182	184
12	233	230	231	238	235	237	196	191	193	186	181	183
13	231	229	230	236	232	234	201	196	199	188	184	186
14	231	228	229	233	226	229	200	193	196	186	182	184
15	229	227	228	228	224	226	198	194	195	188	183	186
16	229	227	228	225	221	223	199	196	198	185	181	182
17	230	227	228	227	142	201	201	194	197	186	173	180
18	230	228	229	181	145	171	199	195	196	176	150	165
19	229	226	227	218	177	192	199	194	196	186	144	171
20	228	224	226	223	201	215	198	196	197	186	181	183
21	228	226	227	216	196	203	201	196	198	186	176	180
22	233	227	229	221	216	220	202	199	200	180	175	177
23	235	233	234	224	220	222	202	195	198	177	173	176
24	237	233	235	222	218	220	204	196	199	179	172	175
25	238	236	237	218	210	214	199	173	181	178	173	175
26	238	234	235	213	208	209	202	185	194	179	175	177
27	236	229	232	211	200	205	210	202	207	177	174	176
28	230	228	229	203	198	201	208	203	206	176	174	175
29	---	---	---	201	197	198	211	204	207	176	172	174
30	---	---	---	---	---	---	211	202	207	176	173	174
31	---	---	---	---	---	---	---	---	---	175	172	173
MONTH	246	224	233	238	142	220	212	173	199	207	144	183

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	174	172	173	190	186	187	192	186	188	186	184	185
2	177	173	174	189	184	186	194	190	191	189	183	186
3	179	175	177	187	183	184	193	190	191	188	182	185
4	180	175	178	186	182	184	196	187	190	187	185	186
5	179	174	176	185	182	184	190	186	188	186	185	185
6	176	174	175	186	183	184	188	185	186	186	185	185
7	---	---	---	187	183	185	186	183	185	186	185	185
8	---	---	---	186	183	184	185	182	183	186	185	186
9	---	---	---	185	184	185	182	181	181	188	186	187
10	219	197	214	187	184	185	182	181	181	188	187	187
11	208	192	197	188	183	185	182	180	181	189	186	187
12	199	188	193	187	182	184	181	179	180	187	185	186
13	201	171	191	190	182	184	182	178	179	186	185	186
14	208	190	199	190	181	185	180	178	178	186	186	186
15	223	194	206	190	183	186	178	175	176	187	185	186
16	226	202	212	188	183	185	176	174	175	187	185	186
17	220	194	205	185	181	183	180	175	177	186	185	185
18	221	191	204	186	181	183	184	180	182	185	183	184
19	208	194	201	187	180	183	187	180	185	186	185	185
20	209	192	200	184	179	181	187	186	186	187	184	186
21	214	195	205	186	182	183	187	185	186	187	183	184
22	---	---	---	190	186	188	186	184	185	189	185	187
23	---	---	---	189	186	187	186	183	184	190	186	188
24	---	---	---	190	183	186	185	183	184	189	185	188
25	---	---	---	187	184	186	185	183	184	187	183	185
26	189	186	187	187	183	184	187	182	185	219	182	191
27	190	185	188	186	182	184	188	185	187	205	187	196
28	188	182	185	186	180	183	188	184	186	202	194	199
29	190	185	187	186	182	184	186	185	186	204	198	201
30	190	186	188	187	180	184	187	184	186	207	200	204
31	---	---	---	189	183	185	186	182	184	---	---	---
MONTH	226	171	192	190	179	185	196	174	184	219	182	188

03417500 CUMBERLAND RIVER AT CELINA, TN--Continued

PH, WH, FIELD, in (STANDARD UNITS), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	7.5	7.1	7.7	7.6	7.3	7.2	7.8	7.8	8.1	8.0	7.5	7.4
2	7.6	7.5	7.7	7.5	7.4	7.3	7.9	7.8	8.1	8.0	7.5	7.5
3	7.6	7.5	7.7	7.5	7.6	7.4	8.0	7.9	8.1	8.0	7.5	7.5
4	7.6	7.5	7.6	7.5	7.7	7.6	8.0	7.9	8.1	8.0	7.5	7.5
5	7.6	7.5	7.6	7.5	7.8	7.7	8.0	7.9	8.0	8.0	7.5	7.5
6	7.5	7.5	7.7	7.5	7.8	7.7	8.0	7.9	8.0	7.9	7.6	7.5
7	7.7	7.5	7.7	7.6	7.8	7.7	7.9	7.9	8.0	7.9	7.6	7.5
8	7.7	7.6	7.7	7.5	7.7	7.7	8.1	7.9	8.0	7.9	7.6	7.6
9	7.8	7.7	7.7	7.6	7.8	7.7	8.1	7.9	7.9	7.9	7.7	7.6
10	7.8	7.8	7.7	7.5	7.8	7.8	8.1	7.9	7.9	7.9	7.6	7.6
11	7.8	7.7	7.7	7.5	7.8	7.7	8.0	7.9	8.0	7.9	7.7	7.6
12	7.8	7.7	7.7	7.5	7.8	7.6	8.1	7.9	7.9	7.9	7.7	7.6
13	7.7	7.6	7.7	7.5	7.7	7.6	8.1	7.9	7.9	7.8	7.7	7.6
14	7.7	7.6	7.7	7.5	7.6	7.5	8.0	7.9	7.9	7.8	7.7	7.7
15	7.7	7.7	7.7	7.6	7.6	7.5	8.2	8.0	7.8	7.8	7.8	7.6
16	7.7	7.6	7.7	7.6	7.7	7.6	8.0	7.8	7.9	7.8	7.8	7.7
17	7.7	7.7	7.7	7.6	7.7	7.7	7.9	7.8	7.9	7.8	7.7	7.5
18	7.7	7.6	7.7	7.6	7.7	7.7	7.9	7.8	7.9	7.8	7.6	6.6
19	7.7	7.5	7.7	7.5	7.8	7.7	7.9	7.8	7.8	7.7	7.8	7.3
20	7.6	7.5	7.6	7.5	7.8	7.7	7.9	7.8	7.8	7.7	7.8	7.8
21	7.6	7.6	7.6	7.5	7.7	7.7	8.0	7.8	7.8	7.6	7.8	7.7
22	7.6	7.5	7.6	7.5	7.8	7.7	8.0	7.9	7.6	7.4	7.8	7.8
23	7.6	7.5	7.6	7.5	7.8	7.7	8.0	7.8	7.5	7.4	7.8	7.8
24	7.5	7.4	7.6	7.4	7.8	7.7	7.8	7.7	7.5	7.4	7.8	7.8
25	7.5	7.3	7.5	7.4	7.8	7.8	7.7	7.7	7.5	7.4	7.8	7.8
26	7.4	7.4	7.4	7.3	7.9	7.7	---	---	7.5	7.5	7.8	7.7
27	7.5	7.4	7.5	7.3	7.8	7.7	---	---	7.5	7.5	7.8	7.7
28	7.5	7.4	7.4	7.3	7.8	7.7	8.2	8.1	7.5	7.5	7.7	7.7
29	7.8	7.4	7.4	7.3	7.8	7.8	8.2	8.1	---	---	7.7	7.7
30	7.8	7.6	7.4	7.2	7.8	7.7	8.2	8.0	---	---	---	---
31	7.7	7.6	---	---	7.8	7.7	8.0	8.0	---	---	---	---
MONTH	7.8	7.1	7.7	7.2	7.9	7.2	8.2	7.7	8.1	7.4	7.8	6.6

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	7.7	7.6	7.4	7.4	8.1	7.9	7.8	7.7	7.5	7.3
2	---	---	7.6	7.6	7.4	7.4	8.1	7.8	7.8	7.6	7.5	7.3
3	7.8	7.8	7.6	7.6	7.5	7.4	7.8	7.7	7.7	7.6	7.6	7.2
4	7.8	7.7	7.6	7.6	7.5	7.4	7.8	7.6	7.7	7.6	7.3	7.2
5	7.8	7.7	7.6	7.6	7.5	7.5	7.8	7.6	7.8	7.6	7.3	7.3
6	7.8	7.8	7.6	7.6	7.5	7.4	7.9	7.7	7.8	7.7	7.4	7.3
7	7.8	7.8	7.6	7.6	---	---	7.7	7.7	7.7	7.4	7.4	7.3
8	7.8	7.7	7.6	7.6	---	---	7.9	7.7	7.4	7.3	7.4	7.4
9	7.7	7.7	7.6	7.5	---	---	7.9	7.8	7.4	7.3	7.5	7.4
10	7.7	7.6	7.6	7.5	7.9	7.7	7.8	7.8	7.6	7.4	7.6	7.5
11	7.7	7.7	7.5	7.5	8.1	7.8	7.8	7.7	7.6	7.6	7.6	7.5
12	7.7	7.7	7.5	7.5	8.2	8.0	7.8	7.7	7.6	7.5	7.5	7.4
13	7.7	7.7	7.5	7.5	8.2	8.0	7.8	7.7	7.6	7.6	7.5	7.3
14	7.7	7.6	7.5	7.5	8.2	8.1	7.8	7.6	7.6	7.6	7.6	7.4
15	7.6	7.6	7.5	7.5	8.1	8.0	7.7	7.6	7.7	7.6	7.4	7.4
16	7.6	7.6	7.5	7.5	8.0	8.0	7.6	7.5	7.7	7.5	7.4	7.3
17	7.6	7.6	7.5	7.4	8.0	7.9	7.5	7.5	7.5	7.4	7.4	7.3
18	7.6	7.6	7.5	7.4	7.9	7.8	7.5	7.4	7.4	7.4	7.4	7.3
19	7.6	7.6	7.5	7.4	7.8	7.8	7.4	7.4	7.4	7.2	7.3	7.2
20	7.6	7.5	7.5	7.4	7.8	7.7	7.4	7.4	7.4	7.3	7.3	7.2
21	7.6	7.6	7.5	7.4	7.7	7.7	7.5	7.4	7.4	7.3	7.3	7.2
22	7.6	7.5	7.4	7.4	7.7	7.6	7.6	7.5	7.4	7.3	7.2	7.2
23	7.6	7.6	7.4	7.4	7.6	7.6	7.6	7.6	7.4	7.2	7.2	7.2
24	7.7	7.6	7.4	7.4	7.7	7.6	7.6	7.6	7.3	7.2	7.2	7.2
25	7.7	7.6	7.4	7.4	8.1	7.6	7.6	7.5	7.3	7.2	7.2	7.1
26	7.6	7.6	7.4	7.4	8.1	7.9	7.5	7.5	7.3	7.2	7.4	7.2
27	7.7	7.6	7.4	7.4	8.1	7.9	7.6	7.5	7.4	7.2	7.5	7.4
28	7.7	7.6	7.4	7.3	8.1	7.9	7.6	7.5	7.3	7.3	7.4	7.4
29	7.7	7.6	7.4	7.3	8.1	8.0	7.6	7.4	7.3	7.3	7.4	7.3
30	7.7	7.6	7.4	7.3	8.1	8.0	7.7	7.5	7.4	7.3	7.3	7.3
31	---	---	7.5	7.3	---	---	7.8	7.7	7.5	7.4	---	---
MONTH	7.8	7.5	7.7	7.3	8.2	7.4	8.1	7.4	7.8	7.2	7.6	7.1

03417500 CUMBERLAND RIVER AT CELINA, TN--Continued

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	15.2	14.3	14.7	13.0	12.2	12.6	12.9	12.3	12.6	4.9	4.5	4.7
2	15.6	14.8	15.2	14.0	12.8	13.4	12.3	11.8	12.1	4.7	4.4	4.5
3	15.3	14.9	15.1	14.6	13.8	14.2	11.8	11.2	11.4	4.6	4.3	4.5
4	15.3	14.6	14.9	14.2	13.6	13.9	11.5	11.0	11.2	4.7	4.4	4.5
5	15.2	14.5	14.9	13.8	13.3	13.5	11.6	11.2	11.4	5.2	4.5	4.8
6	15.0	14.4	14.8	13.4	12.6	12.8	12.1	11.4	11.8	5.6	5.2	5.4
7	14.6	14.2	14.4	12.7	11.9	12.3	12.6	12.0	12.4	6.0	5.5	5.7
8	14.2	13.6	13.9	12.6	11.8	12.2	13.0	12.6	12.9	5.6	5.2	5.4
9	14.1	13.6	13.8	13.1	12.4	12.7	13.0	12.3	12.7	6.4	5.5	5.9
10	14.6	13.7	14.1	12.8	12.2	12.5	12.3	11.5	11.7	7.0	6.4	6.7
11	15.3	14.4	14.8	12.7	12.0	12.4	11.5	11.3	11.4	7.8	7.0	7.4
12	15.4	15.0	15.2	12.3	11.8	12.1	11.5	11.2	11.3	7.8	7.4	7.6
13	15.7	15.2	15.4	12.2	11.7	12.0	12.9	11.5	12.4	7.7	7.2	7.4
14	16.4	15.6	15.9	12.2	11.4	11.9	13.3	12.9	13.1	7.2	7.0	7.1
15	16.2	15.5	15.9	12.3	11.8	12.1	13.0	12.8	12.9	7.4	7.0	7.2
16	16.0	14.9	15.5	12.6	11.9	12.3	12.8	12.5	12.6	8.0	7.0	7.5
17	14.9	13.1	13.9	12.7	12.0	12.4	12.8	12.6	12.7	8.4	7.9	8.1
18	13.2	12.3	12.7	13.0	12.3	12.7	12.7	11.9	12.4	8.2	7.7	8.0
19	12.9	12.4	12.6	13.0	12.5	12.8	11.9	11.3	11.6	7.9	7.5	7.7
20	13.5	12.7	13.1	12.9	12.3	12.6	11.3	10.0	10.6	7.7	7.3	7.5
21	14.4	13.2	13.7	12.3	11.4	11.8	10.0	9.1	9.4	8.0	7.5	7.7
22	14.7	14.2	14.4	11.4	10.7	11.0	9.3	8.7	9.0	7.7	7.0	7.4
23	15.4	14.7	15.1	11.3	10.5	10.8	9.4	8.9	9.2	8.6	7.7	8.2
24	16.3	15.3	15.8	12.9	11.2	11.9	9.3	8.6	8.9	9.9	8.3	9.5
25	16.3	15.0	15.9	13.2	12.6	12.9	8.6	7.4	7.9	9.9	9.1	9.6
26	15.6	14.2	14.8	13.1	12.6	12.9	7.4	6.5	6.8	---	---	---
27	14.2	12.6	13.4	13.4	13.0	13.2	6.5	5.7	6.1	---	---	---
28	12.6	11.4	11.9	13.3	13.1	13.2	6.1	5.6	5.9	9.0	8.6	8.9
29	11.5	10.8	11.0	13.9	13.1	13.5	6.0	5.7	5.9	10.0	9.0	9.5
30	11.8	10.8	11.2	13.8	12.9	13.4	5.9	5.3	5.6	10.8	10.0	10.4
31	12.5	11.5	12.0	---	---	---	5.4	4.9	5.1	11.0	10.5	10.8
MONTH	16.4	10.8	14.2	14.6	10.5	12.6	13.3	4.9	10.4	11.0	4.3	7.2

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	11.0	9.9	10.7	7.8	7.0	7.4	---	---	---	14.5	12.9	13.4
2	9.9	8.9	9.5	7.9	7.6	7.7	---	---	---	12.9	12.0	12.5
3	8.9	7.9	8.2	7.9	7.3	7.8	10.1	9.3	9.8	12.5	11.5	12.0
4	8.0	7.4	7.8	7.3	6.8	6.9	9.3	8.9	9.1	12.2	11.1	11.4
5	7.7	7.3	7.5	6.9	6.0	6.5	9.9	8.9	9.4	11.7	11.0	11.3
6	7.7	7.5	7.6	8.2	6.6	7.5	9.9	9.3	9.6	11.8	11.4	11.6
7	7.6	7.4	7.5	9.0	7.8	8.4	10.0	9.2	9.6	12.0	11.2	11.5
8	7.8	7.4	7.6	9.7	8.2	9.0	10.7	9.7	10.2	12.4	11.9	12.2
9	8.3	7.7	8.0	9.9	9.4	9.6	10.3	10.0	10.1	12.4	12.1	12.2
10	8.3	8.2	8.3	9.4	8.7	9.1	10.0	9.4	9.8	12.1	11.1	11.5
11	8.6	8.0	8.3	9.0	8.1	8.7	10.8	9.7	10.3	11.6	10.9	11.2
12	8.2	7.8	8.0	8.9	8.6	8.7	11.0	10.3	10.6	12.2	11.6	11.9
13	8.1	7.6	7.9	9.1	8.6	8.8	10.6	10.2	10.4	12.6	11.9	12.2
14	8.0	7.6	7.8	9.7	9.0	9.3	10.7	10.3	10.6	12.4	12.1	12.2
15	8.1	7.6	7.8	10.7	9.4	10.1	12.0	10.5	11.3	12.1	11.6	11.8
16	8.5	8.0	8.3	10.5	10.4	10.5	12.8	11.6	12.2	11.8	11.4	11.6
17	8.5	7.9	8.3	11.9	10.0	10.6	12.6	11.8	12.2	12.8	11.5	11.8
18	8.2	7.6	7.9	11.5	10.9	11.2	12.5	11.8	12.1	13.2	11.6	12.3
19	8.1	7.6	7.8	11.2	9.9	11.0	12.7	11.9	12.3	13.2	11.4	12.0
20	8.8	8.1	8.5	10.1	9.2	9.7	12.4	11.8	12.1	11.6	11.2	11.4
21	9.2	8.6	8.9	10.2	9.1	9.8	13.3	12.0	12.5	11.5	11.0	11.2
22	8.8	8.0	8.5	9.1	8.3	8.7	14.1	13.2	13.7	11.6	10.8	11.2
23	8.0	7.5	7.8	8.5	7.8	8.2	14.2	13.1	13.6	12.0	11.2	11.6
24	8.4	7.6	8.0	8.8	8.0	8.4	13.2	11.7	12.3	12.3	11.5	11.9
25	9.0	7.9	8.4	9.3	8.6	8.9	13.3	12.3	12.9	12.5	11.8	12.1
26	8.9	8.0	8.6	9.2	8.7	8.9	13.2	12.2	12.5	12.9	12.4	12.6
27	8.0	6.8	7.3	8.8	8.1	8.5	12.4	11.6	11.9	12.7	12.1	12.4
28	7.2	6.5	6.8	8.6	7.8	8.2	13.4	11.6	12.3	13.2	12.3	12.7
29	---	---	---	9.4	8.6	8.8	14.0	13.2	13.5	12.9	12.2	12.6
30	---	---	---	---	---	---	14.5	13.7	14.1	13.1	12.4	12.8
31	---	---	---	---	---	---	---	---	---	13.3	12.5	12.9
MONTH	11.0	6.5	8.1	11.9	6.0	8.9	14.5	8.9	11.5	14.5	10.8	12.0

03417500 CUMBERLAND RIVER AT CELINA, TN--Continued

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	13.5	12.7	13.1	17.4	15.4	16.1	15.5	15.2	15.3	16.2	15.5	15.8
2	14.3	12.9	13.5	17.5	16.4	17.0	15.6	15.2	15.4	17.3	15.8	16.4
3	16.3	14.3	15.1	16.6	15.0	15.6	15.9	15.6	15.7	17.6	16.7	17.2
4	17.2	16.3	16.6	15.8	14.9	15.3	16.4	15.6	16.0	16.7	16.0	16.3
5	17.2	15.4	16.2	15.9	15.3	15.5	17.8	16.0	16.7	16.3	15.6	15.9
6	---	---	---	16.3	15.5	15.8	17.8	16.6	17.3	16.0	15.5	15.7
7	---	---	---	16.3	15.4	15.8	16.6	15.5	16.0	16.0	15.6	15.8
8	---	---	---	17.0	15.5	16.1	15.8	15.4	15.6	16.4	15.8	16.1
9	---	---	---	16.6	15.4	15.9	15.6	15.3	15.5	17.3	16.0	16.5
10	17.2	15.8	16.4	15.4	14.4	14.8	15.6	15.2	15.4	17.8	16.8	17.2
11	17.8	16.6	17.5	14.4	13.5	14.0	15.9	15.2	15.5	17.7	16.6	17.0
12	17.6	15.6	16.5	14.1	13.6	13.8	17.1	15.5	16.1	16.7	15.8	16.3
13	18.0	15.2	15.9	13.9	13.2	13.5	17.0	15.9	16.5	16.2	15.6	15.9
14	16.5	15.2	15.7	14.0	13.0	13.4	15.9	15.3	15.5	16.7	15.7	16.1
15	16.1	15.5	15.9	15.3	14.0	14.6	15.5	15.3	15.4	16.6	16.0	16.3
16	15.5	14.4	14.8	16.3	15.0	15.6	15.4	14.6	15.0	17.0	16.1	16.4
17	15.3	14.0	14.6	16.3	15.4	15.8	14.7	14.3	14.5	17.0	16.1	16.5
18	15.0	14.1	14.5	16.2	15.2	15.7	15.3	14.3	14.7	16.1	15.6	15.8
19	15.0	14.5	14.7	15.9	15.1	15.5	16.4	15.2	15.7	16.2	15.5	15.8
20	15.1	14.7	14.9	16.0	15.0	15.4	17.0	15.9	16.4	16.4	16.1	16.3
21	15.2	14.8	15.0	16.4	15.3	15.8	15.9	15.5	15.7	16.4	16.2	16.3
22	15.5	14.9	15.1	17.0	15.4	16.0	16.2	15.8	15.9	16.2	16.1	16.2
23	15.6	14.8	15.1	17.2	16.4	16.8	16.2	15.9	16.0	16.4	15.9	16.2
24	16.3	14.6	15.4	17.1	15.2	15.9	16.2	15.7	16.0	16.5	15.7	16.1
25	15.9	15.3	15.6	15.7	15.0	15.3	16.1	15.8	16.0	16.1	15.4	15.7
26	15.8	14.7	15.3	15.7	14.9	15.3	17.1	15.7	16.3	15.6	15.4	15.5
27	16.1	14.8	15.4	15.4	14.9	15.2	17.2	16.3	16.8	16.5	15.5	16.1
28	16.0	15.0	15.6	16.2	15.1	15.6	16.3	15.4	15.8	17.7	16.4	17.0
29	15.1	14.6	14.8	17.4	15.6	16.3	15.9	15.5	15.7	17.7	17.0	17.5
30	15.9	14.5	15.1	17.6	16.3	17.0	15.8	15.3	15.6	17.8	16.7	17.1
31	---	---	---	16.3	15.2	15.7	15.9	15.3	15.6	---	---	---
MONTH	18.0	12.7	15.3	17.6	13.0	15.5	17.8	14.3	15.8	17.8	15.4	16.3

OXYGEN DISSOLVED, in (MG/L), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	9.6	8.8	9.3	11.2	10.4	10.8	9.2	8.3	9.0	13.0	12.5	12.7
2	9.6	9.2	9.4	11.0	10.1	10.5	9.6	8.1	9.1	12.8	12.1	12.4
3	9.3	8.9	9.1	10.8	9.9	10.3	9.6	7.8	9.1	12.6	12.3	12.5
4	9.2	8.8	9.0	10.5	9.8	10.1	10.2	8.2	9.4	12.8	12.4	12.5
5	9.0	8.6	8.8	10.4	9.6	9.9	10.4	8.8	9.8	12.9	12.4	12.6
6	8.8	8.6	8.7	10.6	9.9	10.2	10.5	10.0	10.3	12.8	12.1	12.5
7	9.1	8.5	8.8	10.6	10.2	10.4	10.3	10.0	10.2	12.3	12.0	12.1
8	9.5	8.9	9.1	10.5	9.9	10.2	10.2	9.8	10.0	12.8	12.2	12.4
9	10.1	9.5	9.8	10.5	9.8	10.2	10.4	9.9	10.1	12.8	12.2	12.5
10	10.1	9.6	9.9	10.4	9.7	10.1	10.5	10.3	10.4	12.7	11.8	12.2
11	10.0	9.3	9.5	10.4	9.7	10.0	10.9	10.4	10.5	12.4	11.6	11.9
12	9.6	9.0	9.1	10.3	9.7	9.9	11.1	10.8	10.9	12.4	11.7	11.9
13	9.3	8.7	9.0	10.4	9.6	10	11.2	10.2	10.7	12.2	11.3	11.6
14	9.2	8.6	8.8	10.3	9.8	9.9	10.4	10.2	10.3	12.2	11.7	11.9
15	8.6	8.2	8.4	10.1	9.6	9.8	10.3	10.1	10.2	12.8	11.7	12.2
16	---	---	---	10.1	9.4	9.7	10.4	10.1	10.2	11.7	11.1	11.3
17	---	---	---	10.1	9.5	9.8	10.6	10.4	10.5	11.4	11.0	11.2
18	9.7	9.1	9.4	10.1	9.5	9.7	10.8	10.4	10.5	11.6	11.0	11.3
19	10.6	9.9	10.2	9.9	9.3	9.6	10.9	10.7	10.8	11.3	11.0	11.2
20	11.3	10.6	10.8	9.9	9.2	9.5	11.2	10.9	11.0	11.6	11.2	11.4
21	11.6	11.1	11.4	10.1	9.5	9.7	11.7	11.2	11.5	12.0	11.3	11.6
22	11.9	11.3	11.6	10.3	9.7	9.9	12.2	11.2	11.9	12.0	11.7	11.8
23	11.9	11.3	11.6	10.3	9.8	10.1	12.1	11.6	11.8	11.8	11.2	11.4
24	11.7	10.0	11.3	10.2	9.4	9.7	11.9	11.6	11.7	11.3	10.7	11.0
25	---	---	---	9.5	8.9	9.1	12.3	11.9	12.0	11.0	10.7	10.9
26	---	---	---	9.0	8.7	8.8	12.8	12.3	12.5	---	---	---
27	---	---	---	9.2	8.7	8.9	13.0	12.7	12.8	---	---	---
28	---	---	---	9.4	9.0	9.1	13.1	12.8	12.9	11.1	10.9	11.0
29	11.7	10.7	11.1	9.4	9.1	9.2	13.0	12.8	12.9	10.9	10.7	10.8
30	11.7	11.0	11.4	9.2	9.0	9.1	13.0	12.4	12.8	10.7	10.5	10.6
31	11.5	10.6	11.0	---	---	---	13.0	12.6	12.8	10.6	10.4	10.5
MONTH	11.9	8.2	9.9	11.2	8.7	9.8	13.1	7.8	10.9	13.0	10.4	11.7

03417500 CUMBERLAND RIVER AT CELINA, TN--Continued

OXYGEN DISSOLVED, in (MG/L), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	10.6	10.4	10.5	11.7	11.5	11.6	---	---	---	10.9	10.4	10.6
2	10.8	10.6	10.7	11.8	11.6	11.7	---	---	---	10.7	10.5	10.6
3	11.2	10.8	11.1	11.9	11.6	11.7	12.0	11.7	11.7	10.8	10.3	10.5
4	11.5	11.2	11.3	12.3	11.8	12.0	12.0	11.6	11.7	10.9	10.4	10.7
5	11.5	11.2	11.4	12.5	12.2	12.4	12.2	11.8	12.0	10.9	10.7	10.8
6	11.2	11.1	11.2	12.2	11.8	12.1	12.2	12.0	12.1	11.4	10.8	11.0
7	11.4	11.2	11.3	12.0	11.6	11.8	12.3	12.1	12.2	11.3	10.7	11.0
8	11.4	11.3	11.3	12.0	11.1	11.7	13.5	12.1	12.6	10.8	10.6	10.7
9	11.4	11.3	11.4	---	---	---	12.8	12.1	12.6	10.7	10.6	10.6
10	11.4	11.3	11.4	---	---	---	12.8	11.1	11.6	10.9	10.6	10.8
11	11.6	11.4	11.5	---	---	---	11.1	11.1	11.1	11.0	10.8	10.9
12	11.6	11.5	11.5	11.6	11.5	11.6	11.1	11.0	11.1	10.9	10.7	10.8
13	11.6	11.4	11.5	11.5	11.3	11.4	11.0	10.9	11.0	10.7	10.4	10.6
14	11.8	11.5	11.7	11.6	11.2	11.4	11.0	10.9	10.9	10.5	10.2	10.3
15	11.8	11.6	11.7	11.6	11.3	11.4	10.9	10.7	10.8	10.8	10.4	10.6
16	11.7	11.6	11.6	11.4	11.0	11.1	10.8	10.6	10.7	10.8	10.6	10.7
17	11.9	11.6	11.7	11.1	10.2	10.8	10.8	10.7	10.7	11.3	10.3	10.5
18	12.1	11.8	11.9	12.2	10.3	10.8	11.0	10.8	10.9	10.4	9.6	10.1
19	12.0	11.7	11.9	12.2	10.5	10.8	11.0	10.8	10.9	10.4	9.3	10.0
20	11.7	11.1	11.4	11.1	10.8	11.0	10.9	10.8	10.8	10.6	10.4	10.5
21	11.2	11.0	11.1	11.1	10.8	10.9	10.9	10.6	10.8	10.6	10.4	10.5
22	11.3	11.1	11.2	11.5	11.1	11.3	10.7	10.6	10.6	10.6	10.4	10.5
23	11.3	11.1	11.3	11.6	11.4	11.5	10.7	10.5	10.6	10.5	10.2	10.4
24	11.5	11.3	11.4	11.5	11.4	11.4	11.2	10.7	11.0	10.3	10.2	10.3
25	11.6	11.4	11.5	11.4	11.3	11.4	10.8	9.9	10.4	10.2	9.9	10.1
26	11.6	11.4	11.5	11.3	11.2	11.2	10.6	9.9	10.4	10.2	9.9	10.0
27	11.6	11.4	11.5	11.3	11.2	11.2	11.0	10.5	10.8	10.1	9.9	10.0
28	11.6	11.5	11.6	11.4	11.3	11.4	11.0	10.8	10.9	10.1	9.8	9.9
29	---	---	---	11.4	11.3	11.3	10.8	10.4	10.6	10.0	9.6	9.8
30	---	---	---	---	---	---	10.7	10.4	10.6	9.9	9.6	9.8
31	---	---	---	---	---	---	---	---	---	9.8	9.5	9.7
MONTH	12.1	10.4	11.4	12.5	10.2	11.4	13.5	9.9	11.1	11.4	9.3	10.4

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	9.6	9.5	9.5	---	---	---	10.4	9.9	10.1	---	---	---
2	9.5	9.4	9.5	---	---	---	10.5	10.0	10.2	---	---	---
3	9.4	9.2	9.3	---	---	---	10.4	9.9	10.2	---	---	---
4	9.4	9.2	9.3	---	---	---	10.5	10.1	10.3	8.5	8.2	8.3
5	9.5	9.2	9.3	---	---	---	10.7	10.1	10.3	8.6	8.2	8.4
6	9.3	9.2	9.2	---	---	---	10.7	10.2	10.4	8.7	8.3	8.4
7	---	---	---	---	---	---	10.5	9.8	10.3	8.7	8.3	8.4
8	---	---	---	---	---	---	10.7	10.0	10.3	8.7	8.3	8.6
9	---	---	---	11.0	10.6	10.7	10.7	10.2	10.4	9.2	8.3	8.6
10	9.1	6.7	8.6	10.9	10.5	10.7	10.8	9.9	10.4	9.4	8.3	9.0
11	9.4	8.1	8.9	10.9	10.5	10.7	10.6	9.9	10.3	9.2	8.2	8.8
12	9.8	8.2	9.3	10.8	10.5	10.7	10.8	9.2	10.1	9.1	8.1	8.7
13	9.6	8.8	9.3	11.0	10.7	10.8	10.6	9.5	10.2	9.3	8.0	8.8
14	9.7	8.3	9.3	11.0	10.7	10.9	---	---	---	9.2	8.4	8.9
15	9.2	7.5	8.6	11.3	10.6	10.9	---	---	---	9.1	8.0	8.6
16	10.0	8.0	9.1	11.3	10.7	11.0	---	---	---	9.2	7.2	8.2
17	10.3	8.2	9.5	11.3	10.8	11.1	---	---	---	---	---	---
18	10.6	9.0	9.9	11.5	10.9	11.1	---	---	---	---	---	---
19	10.5	9.1	10.1	11.5	10.9	11.2	8.3	7.8	8.1	9.1	8.6	8.8
20	10.7	9.5	10.3	11.2	10.9	11.0	8.3	8.0	8.1	9.1	8.6	8.8
21	10.5	9.0	10.1	11.4	10.6	11.0	8.0	7.8	7.9	9.3	8.9	9.1
22	10.6	9.5	10.1	---	---	---	8.0	7.7	7.8	9.3	9.0	9.2
23	10.7	9.0	9.9	11.3	10.1	10.8	8.0	7.6	7.7	10.5	9.3	9.7
24	10.9	8.1	9.8	11.3	10.1	10.6	7.9	7.4	7.6	10.7	10.1	10.4
25	10.6	8.7	10.1	---	---	---	7.7	7.4	7.5	10.6	9.6	10.2
26	10.8	9.9	10.3	---	---	---	8.0	6.9	7.6	9.6	8.6	9.3
27	10.6	10.0	10.3	---	---	---	8.0	7.6	7.8	8.6	7.6	8.1
28	10.5	10.0	10.2	---	---	---	7.6	7.4	7.5	7.8	7.2	7.4
29	10.4	9.9	10.2	---	---	---	7.5	7.1	7.4	---	---	---
30	10.7	9.3	10.2	---	---	---	---	---	---	---	---	---
31	---	---	---	10.2	9.8	10.0	---	---	---	---	---	---
MONTH	10.9	6.7	9.6	11.5	9.8	10.8	10.8	6.9	9.1	10.7	7.2	8.8

03418070 ROARING RIVER ABOVE GAINESBORO, TN

LOCATION.--Lat 36°21'04", long 85°32'45", Jackson County, Hydrologic Unit 05130106, near left bank of downstream end of county road bridge. 1.1 mi upstream from Blackburn Fork, 6.3 mi east of Gainesboro, and at mile 9.9.

DRAINAGE AREA.--210 mi^2, includes 34 mi^2 without surface drainage.

PERIOD OF RECORD.--October 1974 to September 1991. October 1992 to September 1997, crest-stage partial record station. October 2001 to September 2002. Prior to December 1942 monthly discharges only, published in WSP 1306.

GAGE.--Data collection platform and crest-stage gage. Datum of gage is 520.56 ft above NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good, except those below 5.0 ft^3/s, which are poor. Minimum discharge for current year and period of record, no flow many days each years. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water-quality data.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,400 ft^3/s, Mar. 12, 1975, gage height 21.83 ft, from high-water marks; no flow many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 24	1300	12,700	17.64	Mar 31	1530	5,980	12.65
Mar 18	0500	*13,300	*17.93	Apr 25	0500	5,580	12.21

Minimum discharge, no flow, many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	109	66	278	51	2700	1430	8.1	0.00	0.00	0.00
2	0.00	0.00	37	59	288	50	1240	1060	3.9	0.00	0.00	0.00
3	0.00	0.00	8.3	52	225	54	790	595	1.6	0.00	0.00	0.00
4	0.00	0.00	7.4	50	199	52	562	637	0.99	0.00	0.00	0.00
5	0.07	0.00	3.0	41	166	46	439	585	1.2	0.00	0.00	0.00
6	135	0.00	0.12	51	154	43	351	441	6.7	0.00	0.00	0.00
7	15	0.00	0.80	57	230	41	283	466	16	0.00	0.00	0.00
8	0.00	0.00	839	44	293	37	234	601	1.8	0.00	0.00	0.00
9	0.00	0.00	964	40	251	39	198	414	0.48	0.00	0.00	0.00
10	0.00	0.00	418	43	223	44	156	308	0.00	0.00	0.00	0.00
11	0.00	0.00	394	96	204	39	126	233	0.00	0.02	0.00	0.00
12	0.00	0.00	296	130	176	42	106	174	0.00	0.00	0.00	0.00
13	0.00	0.00	360	103	155	52	92	777	3.6	10	0.00	0.00
14	174	0.00	1160	84	134	68	84	1140	109	35	0.00	0.00
15	149	0.00	726	70	120	57	77	588	26	1.7	0.00	0.00
16	53	0.00	401	58	109	93	60	393	2.4	0.00	0.00	0.00
17	10	0.00	294	50	95	5500	47	274	0.70	0.00	0.00	0.00
18	0.15	0.00	256	51	83	9650	41	470	0.00	0.00	0.00	0.00
19	0.00	0.00	206	618	76	2820	33	307	0.00	0.00	0.00	0.00
20	0.00	0.00	161	959	87	2180	28	207	0.00	0.00	0.00	0.00
21	0.00	0.00	129	487	93	1580	23	157	0.00	0.00	0.00	0.00
22	0.00	0.00	108	315	76	960	21	121	0.00	0.00	0.00	2.0
23	0.00	0.00	188	3940	67	675	13	96	0.00	0.00	0.00	1.9
24	0.00	0.00	348	9380	62	522	60	75	0.00	0.00	0.00	0.00
25	0.03	40	245	5060	57	407	2970	58	0.00	0.00	0.00	0.00
26	0.00	28	191	1720	61	1170	914	56	0.00	0.00	0.00	52
27	0.00	2.3	160	910	61	1160	458	52	0.00	0.00	0.00	668
28	0.00	3.2	135	575	55	722	342	35	18	0.00	0.00	180
29	0.00	15	112	397	---	544	382	26	0.39	0.00	0.00	39
30	0.00	89	89	288	---	427	223	19	0.00	0.00	0.00	6.0
31	0.00	---	76	223	---	3120	---	13	---	0.00	0.00	---
TOTAL	536.25	177.50	8421.62	26017	4078	32245	13053	11808	200.86	46.72	0.00	948.90
MEAN	17.30	5.917	271.7	839.3	145.6	1040	435.1	380.9	6.695	1.507	0.000	31.63
MAX	174	89	1160	9380	293	9650	2970	1430	109	35	0.00	668
MIN	0.00	0.00	0.12	40	55	37	13	13	0.00	0.00	0.00	0.00
CFSM	0.10	0.03	1.54	4.77	0.83	5.91	2.47	2.16	0.04	0.01	0.00	0.18
IN.	0.11	0.04	1.78	5.50	0.86	6.82	2.76	2.50	0.04	0.01	0.00	0.20

03418070 ROARING RIVER ABOVE GAINESBORO, TN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 2002, BY WATER YEAR (WY)

MEAN	75.46	174.7	404.7	536.1	519.4	603.3	366.8	272.7	88.28	33.91	37.86	66.69
MAX	476	539	1440	1271	1426	2507	1015	1361	483	147	331	261
(WY)	1990	1980	1991	1979	1989	1975	1979	1984	1981	1989	1982	1982
MIN	0.000	0.39	0.43	0.22	74.3	36.6	8.05	0.46	0.000	0.058	0.000	0.000
(WY)	1979	1981	1981	1981	1981	1983	1986	1985	1984	1984	1975	1976

SUMMARY STATISTICS	FOR 2002 WATER YEAR		WATER YEARS 1975 - 2002	
ANNUAL TOTAL	97532.85			
ANNUAL MEAN	267.2		264.1	
HIGHEST ANNUAL MEAN			455	1975
LOWEST ANNUAL MEAN			83.0	1986
HIGHEST DAILY MEAN	9650	Mar 18	15800	Mar 13 1975
LOWEST DAILY MEAN	a0.00	Oct 1	a0.00	Oct 28 1974
ANNUAL SEVEN-DAY MINIMUM	0.00	Oct 26	0.00	Oct 28 1974
MAXIMUM PEAK FLOW	13300	Mar 18	22400	Mar 12 1975
MAXIMUM PEAK STAGE	17.93	Mar 18	21.83	Mar 12 1975
ANNUAL RUNOFF (CFSM)	1.52		1.50	
ANNUAL RUNOFF (INCHES)	20.61		20.38	
10 PERCENT EXCEEDS	586		636	
50 PERCENT EXCEEDS	28		38	
90 PERCENT EXCEEDS	0.00		0.00	

a See REMARKS.

03418420 CUMBERLAND RIVER BELOW CORDELL HULL DAM, TN

WATER-QUALITY RECORDS

LOCATION.--Lat 36°17'12", long 85°56'27", Smith County, Hydrologic Unit 05130108, on right bank in powerhouse at Cordell Hull Dam, 2.7 mi north of Carthage, and at mile 313.5.

DRAINAGE AREA.--8,095 mi^2.

PERIOD OF RECORD.--October 1980 to September 1997, October 1999 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1980 to September 1997, October 1999 to current year.
pH: October 1990 to September 1997, October 1999 to current year.
WATER TEMPERATURE: October 1980 to September 1997, October 1999 to current year.
DISSOLVED OXYGEN: October 1980 to September 1997, October 1999 to current year.

INSTRUMENTATION.--Data collection platform and water-quality monitor.

REMARKS.--Flow regulated by Cordell Hull Dam and other reservoirs above station. Interruptions in the record were due to instrument malfunctions. All parameters affected by release from Cordell Hull Dam. Records for water temperature, specific conductance and pH are good, dissolved oxygen records are poor.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum, 290 microsiemens, Mar. 27, 1990; minimum, 140 microsiemens, Sept. 3, 1984.
pH: Maximum, 8.9 units, Aug. 14, 29, 2002; minimum, 6.6 units, May 31, 1994, Jan. 1, 2002.
WATER TEMPERATURE: Maximum, 23.7°C, July 13, 1995 July 31, 1997; minimum, 2.0°C, Jan. 12, 15-21, 1981.
DISSOLVED OXYGEN: Maximum, 15.5 mg/L, Mar. 4, 1983; minimum, 3.7 mg/L, Aug. 5, 1988.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 250 microsiemens, Dec. 21; minimum, 167 microsiemens, Mar. 20.
pH: Maximum, 8.9 units, Aug. 14, 29; minimum, 6.6 units, Jan. 1.
WATER TEMPERATURE: Maximum, 23.6°C, July 10; minimum, 4.9°C, Jan. 20.
DISSOLVED OXYGEN: Maximum, 13.5 mg/L, Jan. 17, 18, 19.

SPECIFIC CONDUCTANCE FROM THE DCP, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	218	210	212	228	220	223	222	217	218	236	233	235
2	213	211	211	224	221	223	221	217	218	238	235	237
3	215	213	214	229	223	224	223	218	220	238	237	238
4	217	212	214	230	222	224	228	218	222	242	238	239
5	216	213	214	228	222	224	225	218	221	242	239	240
6	216	212	213	230	222	225	221	219	219	242	238	240
7	219	211	213	225	222	223	222	219	220	241	240	240
8	216	212	214	231	222	224	223	217	221	241	241	241
9	216	213	214	227	222	224	226	221	223	241	239	240
10	215	212	213	233	222	224	229	225	227	240	239	240
11	215	211	212	229	222	225	231	227	229	240	238	239
12	217	212	213	230	221	224	233	229	230	240	238	239
13	217	213	214	225	221	222	238	230	233	240	238	239
14	214	208	211	224	220	222	239	235	237	241	237	238
15	218	210	211	225	220	222	240	236	238	241	238	238
16	218	210	212	225	219	221	248	240	242	240	238	239
17	215	211	212	224	219	221	246	241	243	238	237	237
18	216	211	213	225	218	220	247	243	245	239	235	236
19	217	211	213	222	218	220	248	245	246	237	232	234
20	217	211	214	223	218	220	249	247	248	236	231	232
21	219	213	216	221	217	219	250	247	248	235	231	233
22	219	214	216	222	217	219	249	246	247	234	231	232
23	219	214	216	225	218	220	248	242	246	239	230	234
24	225	211	217	225	215	219	245	241	243	230	227	228
25	220	213	216	220	217	218	243	237	239	229	187	208
26	221	215	217	221	216	218	240	230	235	187	169	174
27	220	216	218	220	216	218	232	228	229	170	168	169
28	222	214	218	225	217	219	229	227	228	180	170	176
29	220	215	218	221	217	219	229	227	228	180	176	177
30	225	219	220	219	217	218	234	228	231	184	179	182
31	226	219	221	---	---	---	235	232	233	192	183	187
MONTH	226	208	215	233	215	221	250	217	232	242	168	225

03418420 CUMBERLAND RIVER BELOW CORDELL HULL DAM, TN--Continued

SPECIFIC CONDUCTANCE FROM THE DCP, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	209	191	199	229	227	228	213	206	212	215	201	207
2	213	208	211	230	227	228	206	199	201	205	199	201
3	220	213	217	229	226	227	204	198	200	208	201	204
4	222	220	221	227	226	226	212	204	209	215	207	210
5	223	222	222	228	226	226	214	212	214	217	215	216
6	225	223	224	227	225	225	214	211	213	218	213	215
7	225	224	224	227	225	225	211	208	210	219	214	215
8	231	224	227	231	225	226	209	208	209	216	212	214
9	231	229	230	227	225	226	210	208	210	216	212	213
10	233	229	230	229	226	227	210	208	209	216	213	215
11	233	231	232	231	226	228	209	206	207	218	214	216
12	234	232	233	229	226	227	209	206	207	216	214	215
13	233	231	232	229	227	228	206	204	205	217	208	213
14	232	231	231	232	229	229	204	203	203	209	207	208
15	235	231	232	231	229	230	204	202	202	208	205	207
16	235	231	232	233	229	231	205	202	203	206	204	205
17	232	230	231	232	229	230	206	203	204	208	206	207
18	233	230	231	232	213	228	209	204	206	207	205	206
19	232	230	231	213	172	192	213	206	208	206	202	204
20	231	229	230	178	167	171	213	205	208	203	199	201
21	230	229	229	205	178	189	214	205	207	199	190	196
22	230	229	229	211	205	210	219	207	212	190	182	186
23	230	229	229	---	---	---	216	209	211	198	183	190
24	231	228	229	222	214	219	217	213	214	204	198	201
25	230	228	228	224	223	224	217	206	210	206	203	204
26	230	228	228	224	223	224	214	206	208	205	201	202
27	229	227	228	223	220	222	217	208	211	205	196	199
28	228	227	227	220	215	217	213	209	211	203	195	198
29	---	---	---	216	212	214	218	210	213	198	195	196
30	---	---	---	212	210	211	216	210	213	196	194	195
31	---	---	---	211	209	210	---	---	---	197	193	194
MONTH	235	191	227	233	167	220	219	198	208	219	182	205

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	198	193	194	197	192	195	191	189	190	194	189	192
2	200	195	197	197	191	194	191	188	190	198	189	192
3	202	194	198	198	189	192	191	188	189	196	190	192
4	202	194	197	196	190	192	193	188	189	195	189	192
5	200	195	197	199	191	194	191	187	189	195	190	192
6	202	194	197	199	191	195	192	188	189	197	194	195
7	201	194	197	196	190	193	194	189	190	---	---	---
8	203	194	197	199	189	193	198	189	192	---	---	---
9	201	194	197	198	190	192	198	189	192	187	185	185
10	202	194	198	195	191	192	198	189	193	188	185	186
11	208	196	201	198	192	194	199	190	194	188	186	186
12	204	196	199	194	190	192	199	189	193	---	---	---
13	203	195	199	195	190	191	202	188	192	---	---	---
14	200	196	198	196	189	192	197	187	191	189	185	186
15	202	195	198	193	188	190	189	185	187	191	185	188
16	203	193	197	193	188	190	197	184	187	191	184	187
17	197	192	194	196	188	192	195	183	186	193	185	187
18	200	193	194	192	187	189	194	182	186	189	185	187
19	201	195	196	195	187	189	193	186	189	190	186	188
20	200	195	197	195	188	191	192	188	190	191	187	188
21	200	195	196	200	189	194	192	187	189	193	185	188
22	197	194	196	199	188	195	189	185	187	190	185	187
23	200	195	197	200	188	195	190	184	186	190	185	186
24	200	195	196	196	189	191	188	182	185	188	184	186
25	198	194	196	198	189	193	189	182	185	188	183	186
26	198	194	196	197	189	193	193	184	188	189	182	184
27	202	194	196	199	189	195	192	188	189	188	181	183
28	200	194	196	198	190	193	193	188	191	183	181	182
29	196	192	194	197	190	193	197	189	191	183	181	182
30	200	192	196	198	191	194	198	189	192	191	179	183
31	---	---	---	200	187	192	197	189	192	---	---	---
MONTH	208	192	197	200	187	193	202	182	189	198	179	187

03418420 CUMBERLAND RIVER BELOW CORDELL HULL DAM, TN--Continued

PH, WH, FIELD FROM THE DCP, in (STANDARD UNITS), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	7.8	7.2	7.9	7.6	7.7	7.6	7.5	6.6	7.5	7.4	7.9	7.9
2	7.8	7.4	7.9	7.6	7.6	7.6	7.6	6.8	7.5	7.4	7.9	7.9
3	7.9	7.4	7.8	7.5	7.6	7.6	7.7	7.6	7.5	7.5	7.9	7.8
4	7.9	7.4	7.9	7.4	7.6	7.5	7.7	7.5	7.6	7.5	7.9	7.8
5	8.0	7.4	7.9	7.7	7.8	7.3	7.8	7.6	7.6	7.5	8.0	7.8
6	7.8	7.6	7.8	7.5	7.8	7.4	7.7	7.5	7.6	7.5	7.9	7.8
7	7.9	7.3	7.9	7.6	7.5	7.3	7.7	7.6	7.6	7.6	8.0	7.8
8	7.8	7.4	7.9	7.6	7.7	7.3	7.8	7.6	7.6	7.6	8.0	7.8
9	7.8	7.4	7.8	7.6	7.6	7.5	7.8	7.6	7.6	7.6	8.0	7.9
10	7.9	7.4	7.7	7.3	7.7	7.4	7.9	7.7	7.6	7.5	8.1	7.8
11	7.9	7.5	7.6	7.3	7.8	7.6	7.9	7.7	7.6	7.6	8.1	7.8
12	7.8	7.5	7.7	7.4	7.7	7.5	7.9	7.7	7.6	7.6	8.1	7.8
13	7.7	7.6	7.7	7.6	7.6	7.1	7.9	7.7	7.6	7.5	8.3	7.9
14	7.8	7.6	7.9	7.6	7.6	7.3	7.9	7.8	7.6	7.5	8.4	8.2
15	7.8	7.5	7.9	7.8	7.5	7.1	7.9	7.7	7.6	7.5	8.3	8.3
16	7.8	7.3	7.8	7.8	7.4	7.1	7.9	7.8	7.6	7.5	8.3	8.1
17	7.8	7.4	7.8	7.7	7.7	7.2	8.0	7.8	7.6	7.5	8.2	8.0
18	7.8	7.2	7.8	7.7	7.7	7.1	7.9	7.8	7.6	7.5	8.0	7.8
19	7.9	7.3	7.9	7.5	7.6	7.3	7.9	7.7	7.7	7.5	7.8	7.6
20	7.8	7.4	7.8	7.6	7.5	7.3	7.8	7.7	7.9	7.6	7.6	7.6
21	7.8	7.2	7.8	7.6	7.6	7.2	7.7	7.6	7.9	7.8	7.7	7.6
22	7.9	7.5	7.8	7.7	7.6	7.2	7.7	7.7	7.9	7.8	7.7	7.7
23	8.0	7.3	7.8	7.7	7.4	7.2	7.9	7.6	7.9	7.8	---	---
24	8.2	7.4	7.7	7.6	7.4	7.0	7.9	7.7	7.9	7.8	7.7	7.7
25	8.0	7.3	7.8	7.6	7.4	7.2	7.7	7.6	8.0	7.8	7.8	7.7
26	7.8	7.3	7.7	7.6	7.4	7.2	7.6	7.5	7.9	7.8	7.8	7.7
27	7.9	7.3	7.7	7.6	7.7	7.4	7.5	7.5	7.9	7.8	7.8	7.7
28	7.9	7.4	7.7	7.6	7.7	6.8	7.5	7.5	7.9	7.9	7.7	7.7
29	7.9	7.3	7.7	7.6	7.5	7.2	7.5	7.4	---	---	7.7	7.7
30	7.8	7.7	7.7	7.6	7.6	7.0	7.5	7.3	---	---	7.7	7.7
31	8.0	7.7	---	---	7.7	7.1	7.4	7.3	---	---	7.7	7.7
MONTH	8.2	7.2	7.9	7.3	7.8	6.8	8.0	6.6	8.0	7.4	8.4	7.6

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	7.7	7.7	8.0	7.5	8.2	7.8	8.0	7.7	7.8	7.6	8.7	8.0
2	7.7	7.6	7.8	7.4	8.2	7.7	8.2	7.6	8.2	7.5	8.5	8.0
3	7.7	7.6	7.7	7.3	8.1	7.5	8.2	7.7	8.3	7.6	8.6	8.0
4	7.8	7.7	7.8	7.4	8.2	7.5	8.4	7.7	8.0	7.6	8.6	7.9
5	7.8	7.7	7.7	7.5	8.2	7.7	8.3	7.7	8.1	7.7	8.7	7.9
6	7.8	7.8	7.7	7.4	8.0	7.5	8.3	7.6	8.2	7.6	---	---
7	7.8	7.7	7.7	7.3	8.5	7.6	8.4	7.8	8.3	7.5	---	---
8	7.8	7.8	7.8	7.4	8.6	7.6	8.0	7.7	8.4	7.6	---	---
9	7.8	7.8	7.7	7.4	8.4	7.6	8.2	7.6	8.2	7.6	---	---
10	7.8	7.8	7.8	7.5	8.1	7.6	8.3	7.7	8.3	7.6	8.8	7.8
11	7.8	7.7	7.8	7.5	7.9	7.6	8.3	7.7	8.2	7.6	7.8	7.7
12	7.8	7.7	7.9	7.5	8.0	7.6	8.3	7.8	8.1	7.6	---	---
13	7.8	7.7	7.8	7.7	8.0	7.6	8.3	7.7	8.1	7.4	8.1	7.1
14	7.8	7.8	7.8	7.8	7.6	7.5	8.1	7.6	8.9	7.6	8.1	6.9
15	7.8	7.7	7.9	7.7	7.7	7.4	8.2	7.6	8.6	7.9	7.7	7.0
16	8.1	7.7	7.8	7.7	7.9	7.4	8.2	7.6	8.5	7.9	7.8	7.1
17	8.0	7.7	7.8	7.7	7.5	7.3	8.0	7.6	8.6	7.7	7.9	7.2
18	8.2	7.5	7.8	7.7	7.7	7.3	7.9	7.6	8.2	7.8	8.0	6.8
19	8.1	7.4	7.8	7.8	8.2	7.5	8.2	7.5	8.5	7.7	8.0	7.1
20	8.0	7.4	7.8	7.8	8.0	7.6	8.2	7.6	8.3	8.0	7.8	7.2
21	8.0	7.5	7.8	7.7	8.0	7.6	7.9	7.5	8.8	7.9	7.6	6.8
22	7.8	7.4	7.7	7.6	8.1	7.7	8.1	7.4	8.8	7.9	7.4	7.0
23	7.8	7.4	7.8	7.6	8.2	7.7	7.8	7.4	8.6	7.9	7.6	7.0
24	7.9	7.2	7.8	7.7	8.0	7.6	8.1	7.5	8.4	8.0	7.7	7.3
25	8.0	7.4	7.9	7.8	8.1	7.6	8.4	7.4	8.3	7.9	7.8	7.4
26	8.0	7.6	7.9	7.7	8.2	7.7	8.4	7.5	8.5	7.8	7.8	7.3
27	8.1	7.4	7.9	7.6	7.9	7.7	8.1	7.4	8.6	8.0	7.8	7.3
28	8.0	7.6	8.2	7.6	7.9	7.6	8.1	7.4	8.3	8.0	7.6	7.3
29	8.0	7.5	8.1	7.9	8.2	7.7	8.0	7.4	8.9	8.0	7.6	7.3
30	8.1	7.5	8.1	7.9	8.2	7.7	7.9	7.4	8.6	8.0	7.6	7.2
31	---	---	8.2	7.9	---	---	8.0	7.4	8.8	7.9	---	---
MONTH	8.2	7.2	8.2	7.3	8.6	7.3	8.4	7.4	8.9	7.4	8.8	6.8

03418420 CUMBERLAND RIVER BELOW CORDELL HULL DAM, TN--Continued

WATER TEMPERATURE FROM THE DCP, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	17.1	16.4	16.7	14.9	14.2	14.6	12.9	12.5	12.6	7.8	7.4	7.6
2	17.0	16.4	16.7	15.6	14.4	14.8	12.7	12.3	12.6	7.4	6.8	7.1
3	17.3	16.3	16.7	14.8	14.4	14.5	12.9	12.3	12.6	6.9	6.2	6.6
4	17.3	16.4	16.9	14.9	14.1	14.5	12.6	12.2	12.4	6.7	5.9	6.4
5	17.5	16.2	17.0	14.7	14.2	14.4	13.0	12.2	12.5	6.5	5.9	6.2
6	16.9	16.1	16.4	14.6	14.1	14.3	13.3	12.2	12.6	6.1	5.9	6.0
7	16.7	16.2	16.4	14.7	13.8	14.2	12.9	12.6	12.7	6.0	5.6	5.8
8	16.8	16.2	16.4	14.9	13.9	14.2	13.2	12.7	12.9	5.7	5.3	5.5
9	16.7	16.1	16.3	14.3	13.8	14.0	12.9	12.6	12.8	5.8	5.2	5.5
10	16.7	16.2	16.5	14.2	13.6	13.9	12.7	12.5	12.6	5.9	5.4	5.6
11	16.9	16.6	16.7	14.0	13.6	13.7	12.6	12.4	12.6	5.9	5.6	5.7
12	16.9	16.6	16.7	13.8	13.4	13.6	12.7	12.4	12.5	5.8	5.5	5.7
13	17.1	16.6	16.8	13.6	13.2	13.3	12.8	12.6	12.7	5.8	5.3	5.6
14	17.2	16.9	17.1	13.6	13.0	13.3	12.7	12.6	12.6	6.0	5.5	5.7
15	16.9	16.6	16.7	13.4	12.9	13.1	12.6	12.4	12.5	5.8	5.3	5.6
16	16.8	16.3	16.5	13.2	12.7	12.9	12.6	12.3	12.4	5.5	5.3	5.4
17	16.4	16.0	16.2	13.2	12.6	12.9	12.8	12.5	12.6	5.7	5.3	5.4
18	16.0	15.7	15.9	13.3	12.7	13.0	12.5	12.0	12.4	5.3	5.1	5.2
19	16.0	15.7	15.9	13.2	12.7	12.9	12.4	12.0	12.2	5.2	5.0	5.1
20	15.9	15.5	15.8	13.0	12.5	12.7	12.1	11.7	11.9	5.2	4.9	5.0
21	15.8	15.4	15.6	12.6	12.2	12.4	12.1	11.3	11.7	5.7	5.1	5.4
22	16.0	15.5	15.7	12.4	11.9	12.2	11.5	11.1	11.3	6.3	5.2	5.8
23	17.0	15.6	16.1	12.3	12.0	12.1	11.2	10.9	11.1	7.0	6.2	6.5
24	16.7	16.1	16.4	12.5	12.1	12.3	11.1	10.6	10.9	8.3	7.0	7.7
25	16.8	15.8	16.3	12.8	12.1	12.3	10.7	10.1	10.5	9.5	8.3	9.0
26	16.1	15.4	15.8	12.5	12.2	12.3	10.1	9.7	10	9.9	9.5	9.7
27	15.7	15.1	15.4	12.8	12.1	12.4	9.8	9.3	9.5	9.9	9.7	9.8
28	15.4	14.8	15.1	12.8	12.4	12.5	9.4	9.0	9.2	9.9	9.7	9.8
29	15.4	14.6	15.0	12.9	12.5	12.7	9.0	8.6	8.9	10.4	9.8	10.1
30	15.1	14.5	14.8	12.9	12.7	12.8	8.8	8.3	8.6	10.4	10.2	10.3
31	15.2	14.4	14.7	---	---	---	8.3	7.7	8.1	11.0	10.3	10.5
MONTH	17.5	14.4	16.2	15.6	11.9	13.3	13.3	7.7	11.6	11.0	4.9	6.8

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	11.1	10.3	10.7	7.6	7.3	7.5	10.4	10.0	10.2	16.4	15.9	16.2
2	10.3	10.1	10.2	7.8	7.5	7.6	10.7	10.2	10.4	16.2	15.8	16.0
3	10.2	10.0	10.1	7.8	7.2	7.6	10.9	10.6	10.8	15.9	15.6	15.7
4	10.0	9.7	9.8	7.3	6.7	7.0	10.9	10.5	10.7	15.8	15.3	15.6
5	9.7	9.4	9.5	7.6	6.5	7.0	10.6	10.3	10.5	15.5	15.2	15.4
6	9.4	8.8	9.2	7.2	6.7	7.0	10.5	10.0	10.2	15.4	14.9	15.2
7	8.8	7.9	8.4	8.0	7.1	7.5	10.5	9.8	10.1	15.0	14.6	14.8
8	7.9	7.3	7.6	8.2	7.4	7.6	10.8	10.3	10.5	15.2	14.6	14.9
9	7.4	7.1	7.3	8.4	7.8	8.2	10.9	10.7	10.8	14.9	14.6	14.8
10	7.6	7.3	7.4	8.7	8.0	8.4	11.6	10.9	11.2	15.1	14.8	14.9
11	7.8	7.4	7.6	9.4	8.1	8.6	12.0	11.5	11.7	15.2	14.8	15.0
12	7.8	7.5	7.6	9.1	8.4	8.7	12.0	11.6	11.8	15.6	14.8	15.1
13	7.9	7.5	7.7	9.1	8.8	9.0	11.9	11.5	11.7	15.3	14.9	15.1
14	8.2	7.7	7.9	9.9	8.8	9.2	12.2	11.9	12.0	15.1	14.5	14.8
15	8.3	8.0	8.2	10.4	9.5	9.7	12.8	12.0	12.3	14.7	14.4	14.5
16	8.4	8.1	8.2	10.2	9.7	9.9	13.7	12.6	12.9	14.6	14.3	14.4
17	8.5	8.1	8.2	10.8	9.8	10.2	13.9	12.9	13.3	14.9	14.6	14.7
18	8.6	8.0	8.2	11.4	10.8	11.0	15.0	13.3	14.0	14.8	14.2	14.6
19	8.5	8.0	8.3	12.1	11.4	11.8	15.2	13.6	14.2	14.2	13.5	13.8
20	8.9	8.3	8.6	12.2	12.1	12.2	15.2	13.9	14.6	13.6	13.3	13.5
21	9.1	8.7	8.8	12.2	10.9	11.7	16.1	14.8	15.5	13.6	13.4	13.5
22	9.0	8.8	8.9	12.1	10.2	10.4	16.1	15.0	15.4	14.1	13.6	13.8
23	8.8	8.6	8.7	---	---	---	16.1	14.8	15.6	14.1	13.8	13.9
24	8.7	8.4	8.6	9.7	9.3	9.5	16.3	15.6	15.8	14.2	13.6	13.9
25	9.3	8.6	8.8	9.6	9.3	9.5	16.3	16.0	16.2	14.5	13.9	14.1
26	9.0	8.5	8.8	9.6	9.5	9.5	16.1	15.7	15.9	14.6	14.2	14.3
27	8.5	8.0	8.3	9.5	9.3	9.4	15.8	15.3	15.5	15.0	14.5	14.7
28	8.1	7.6	7.8	9.7	9.1	9.4	17.1	15.4	16.0	15.7	14.8	15.2
29	---	---	---	9.9	9.3	9.6	16.2	15.4	15.7	15.9	15.2	15.5
30	---	---	---	9.8	9.7	9.7	16.5	15.7	16.0	16.5	15.7	16.0
31	---	---	---	10.1	9.7	9.9	---	---	---	17.2	16.1	16.7
MONTH	11.1	7.1	8.6	12.2	6.5	9.1	17.1	9.8	13.1	17.2	13.3	14.9

03418420 CUMBERLAND RIVER BELOW CORDELL HULL DAM, TN--Continued

WATER TEMPERATURE FROM THE DCP, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	17.6	16.3	16.9	21.4	20.1	20.8	21.3	20.3	20.9	22.5	20.2	21.1
2	17.3	16.5	16.9	22.3	20.1	20.7	22.6	19.9	21.0	21.8	20.3	21.0
3	17.0	16.5	16.7	22.4	19.8	20.8	23.1	20.1	21.3	22.2	20.0	21.0
4	18.1	16.4	17.0	23.2	20.1	21.2	22.2	20.1	21.2	22.2	20.1	21.1
5	18.6	16.7	17.5	22.9	20.1	21.4	22.4	20.1	21.1	22.6	20.5	21.2
6	17.9	16.7	17.4	22.7	20.4	21.0	22.7	20.6	21.2	20.8	20.5	20.6
7	19.7	17.0	17.7	22.9	20.3	21.1	23.1	20.5	21.3	---	---	---
8	20.2	17.0	18.2	21.8	20.1	21.0	23.5	20.5	21.8	---	---	---
9	20.3	17.5	18.6	22.8	20.4	21.2	22.8	20.6	21.8	22.6	20.8	21.5
10	20.4	18.1	18.7	23.6	20.3	21.5	23.2	20.7	21.7	22.8	20.3	21.1
11	19.9	17.6	18.7	23.4	20.3	21.6	22.6	20.8	21.6	20.8	20.6	20.7
12	21.0	18.0	19.1	22.9	20.2	21.5	22.1	20.9	21.3	---	---	---
13	21.7	18.7	19.8	23.1	20.4	21.7	22.2	20.4	21.3	22.4	20.4	21.7
14	20.2	18.7	19.5	22.4	20.7	21.4	23.4	20.1	21.5	22.4	20.5	21.5
15	21.3	19.2	19.9	22.3	20.5	21.2	22.4	19.9	21.3	22.2	20.5	21.1
16	22.1	19.6	20.2	22.0	20.2	21.0	22.1	19.7	21.0	21.8	20.2	20.9
17	21.1	19.8	20.4	21.4	19.6	20.7	22.1	19.7	20.8	21.8	20.1	20.8
18	21.2	19.9	20.4	20.9	19.0	20.0	21.3	19.5	20.4	22.3	20.0	20.9
19	23.2	20.0	21.1	21.6	18.9	19.8	22.2	19.9	20.5	22.4	19.9	21.3
20	22.8	20.2	21.4	21.7	19.0	19.9	21.4	20.1	20.8	22.2	20.4	21.3
21	22.8	20.0	21.1	20.7	19.1	20.1	22.6	20.2	21.1	21.4	20.1	20.6
22	22.9	20.0	21.1	21.1	19.1	19.8	22.7	19.9	21.1	21.4	20.1	20.6
23	23.0	20.0	21.2	20.6	19.1	19.3	22.3	19.6	20.8	20.9	19.7	20.3
24	22.7	19.9	21.2	21.8	19.1	20.3	21.9	19.8	20.8	20.9	19.9	20.3
25	22.8	19.9	21.2	22.7	19.4	20.6	21.5	19.7	20.5	20.6	19.9	20.3
26	23.0	20.1	21.3	22.7	19.5	20.9	22.0	19.7	20.5	20.3	19.8	20.2
27	21.4	20.0	20.8	22.0	19.6	20.7	22.0	19.9	20.6	20.2	19.7	20.0
28	20.9	19.7	20.3	22.2	19.7	20.7	21.1	20.0	20.6	19.9	19.3	19.6
29	22.3	19.8	20.5	22.7	20.0	21.2	22.8	20.1	21.1	19.5	19.1	19.2
30	22.2	19.9	20.7	21.8	20.1	20.8	22.2	20.2	21.0	19.4	18.6	19.0
31	---	---	---	22.4	20.2	21.0	22.5	20.3	21.1	---	---	---
MONTH	23.2	16.3	19.5	23.6	18.9	20.8	23.5	19.5	21.1	22.8	18.6	20.7

OXYGEN DISSOLVED FROM THE DCP, in (MG/L), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	9.1	5.7	8.5	10.6	7.2	9.6	9.6	9.2	9.5	10.2	9.4	10.0
2	9.1	8.2	8.6	11.4	10.3	10.7	9.5	9.1	9.3	10.5	10.1	10.4
3	9.5	8.0	8.8	11.5	9.0	10.7	9.5	9.1	9.3	11.0	10.4	10.7
4	9.5	8.5	9.0	11.7	9.0	10.8	9.4	8.2	9.1	11.0	10.6	10.8
5	9.6	8.6	9.1	12.2	11.2	11.6	9.9	8.4	9.2	11.6	10.6	11.0
6	9.3	8.6	8.9	11.9	9.2	11.6	10.2	9.2	9.6	11.4	10.8	11.1
7	9.4	7.7	8.9	12.4	11.6	12.0	9.8	8.6	9.4	11.8	11.1	11.4
8	9.2	8.5	9.0	12.4	10.3	11.8	9.5	8.7	9.2	12.2	11.3	11.8
9	9.4	7.5	9.0	12.3	11.3	11.8	9.3	8.7	9.1	12.3	11.4	11.9
10	9.6	7.5	9.3	11.8	8.3	11.3	9.0	8.7	8.9	12.5	11.7	12.2
11	9.5	9.1	9.3	---	---	---	9.0	8.1	8.8	12.5	12.0	12.3
12	9.3	8.7	9.1	---	---	---	9.1	7.5	8.7	12.7	12.2	12.4
13	9.1	8.7	8.9	---	---	---	9.0	8.7	8.9	12.9	12.2	12.6
14	9.3	8.8	9.1	10.7	10.2	10.5	8.9	8.5	8.7	13.2	12.6	12.9
15	9.2	8.6	9.0	10.7	10.1	10.5	9.2	8.7	8.9	13.2	12.2	12.9
16	9.4	8.5	9.1	10.7	10.3	10.4	9.3	8.8	9.2	13.2	12.9	13.1
17	9.2	5.9	8.8	10.6	10.1	10.3	9.6	9.1	9.3	13.5	13.0	13.2
18	9.4	4.5	8.6	10.5	10.1	10.2	9.6	8.8	9.4	13.5	12.9	13.3
19	9.5	5.5	9.0	10.7	9.4	10	9.6	8.6	9.4	13.5	13.2	13.4
20	9.5	5.1	9.0	10.3	9.3	9.9	9.9	9.0	9.6	13.4	13.0	13.2
21	9.4	6.2	8.7	10.3	8.8	9.9	10.2	9.0	9.9	13.2	13.0	13.1
22	9.7	6.7	9.3	10.6	9.4	10.2	10.4	9.6	10	13.1	12.6	13.0
23	9.9	8.8	9.5	10.4	9.9	10.2	10.2	9.6	9.9	12.8	12.2	12.5
24	10.2	8.5	9.5	10.3	9.6	10.1	10.1	9.1	9.8	12.2	11.5	11.8
25	9.6	3.7	8.7	10.4	9.9	10.2	10.0	8.9	9.7	11.5	10.4	10.9
26	9.2	6.3	8.8	10.2	9.8	10.0	9.9	8.9	9.5	10.4	10.1	10.2
27	9.3	4.3	8.3	10.2	9.5	9.9	9.9	8.9	9.5	10.2	10.0	10.2
28	9.3	7.3	8.9	10.1	9.4	9.9	9.8	8.6	9.5	10.1	9.5	10.0
29	9.9	5.3	8.8	9.8	9.5	9.7	9.8	9.2	9.6	10.1	9.5	10
30	9.9	8.0	9.5	9.8	9.6	9.7	9.9	9.0	9.6	10.1	9.6	10
31	10.5	9.5	9.8	---	---	---	10.3	9.2	9.9	12.0	9.6	10.4
MONTH	10.5	3.7	9.0	12.4	7.2	10.5	10.4	7.5	9.4	13.5	9.4	11.7

03418420 CUMBERLAND RIVER BELOW CORDELL HULL DAM, TN--Continued

OXYGEN DISSOLVED FROM THE DCP, in (MG/L), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	10.6	10.0	10.3	12.2	12.0	12.1	11.3	11.1	11.3	10.9	4.9	9.8
2	10.8	10.2	10.6	12.2	12.0	12.1	11.1	11.0	11.0	9.8	7.5	9.5
3	10.8	10.7	10.8	12.5	11.9	12.1	11.0	10.9	11.0	9.5	6.3	8.9
4	10.9	10.6	10.7	12.3	12.0	12.2	11.2	11.0	11.1	9.7	8.8	9.4
5	11.0	10.5	10.9	12.8	12.2	12.5	11.4	11.2	11.3	9.8	9.2	9.6
6	11.1	10.0	10.8	13.2	12.3	12.5	11.5	11.3	11.4	9.8	8.0	9.4
7	11.2	10.7	11.0	12.8	12.3	12.6	11.5	11.4	11.4	10.0	8.1	9.6
8	11.4	11.0	11.2	12.7	12.2	12.5	11.6	11.3	11.5	10.2	9.2	9.8
9	11.5	11.0	11.3	12.7	12.0	12.5	11.4	11.3	11.3	10.4	9.6	10.1
10	11.7	11.1	11.5	12.6	11.9	12.4	11.3	11.2	11.3	10.6	9.7	10.2
11	11.7	11.2	11.6	12.6	11.9	12.3	11.3	11.1	11.2	10.6	9.7	10.3
12	11.8	11.4	11.7	12.7	11.4	12.3	11.3	11.0	11.2	10.6	8.7	10.2
13	11.8	11.6	11.7	12.9	12.0	12.5	11.4	11.1	11.2	10.2	9.7	10.1
14	11.8	11.4	11.7	12.9	12.3	12.6	11.3	11.1	11.2	10.2	9.9	10.1
15	11.8	11.4	11.7	12.8	12.3	12.6	11.4	10.8	11.1	10.4	9.6	10.2
16	11.8	11.3	11.7	13.0	12.1	12.7	11.9	10.9	11.2	10.6	10.0	10.2
17	11.9	11.5	11.8	12.8	12.2	12.6	11.8	10.9	11.2	10.1	9.7	9.9
18	12.0	11.7	11.8	12.2	11.0	11.8	12.2	10.0	11.3	10.0	9.6	9.8
19	12.0	11.7	11.9	11.6	10.2	10.6	11.8	10.1	11.2	10.3	10.0	10.2
20	12.0	11.4	11.8	10.2	10.0	10.1	11.5	9.5	10.9	10.4	10.2	10.3
21	11.7	11.5	11.6	10.8	10.2	10.4	11.2	9.4	10.8	11.5	9.6	10.1
22	11.7	11.5	11.6	11.0	10.8	11.0	10.6	9.4	10.0	9.6	9.3	9.5
23	11.9	11.6	11.7	---	---	---	10.6	8.2	9.8	10.6	9.3	9.7
24	11.9	11.7	11.8	11.6	11.2	11.4	10.2	7.4	9.7	10.5	9.3	10.1
25	12.1	11.7	11.9	12.2	11.6	11.7	10.4	7.4	10.1	10.8	9.7	10.5
26	12.0	11.6	11.8	11.7	11.6	11.6	10.6	8.6	10.1	10.9	9.9	10.6
27	12.1	11.7	11.9	11.6	11.6	11.6	10.9	7.8	10	11.2	7.9	10.5
28	12.2	11.9	12.0	11.6	11.4	11.5	10.8	8.5	10.1	11.8	7.9	10.7
29	---	---	---	11.5	11.3	11.4	10.9	7.7	10.1	11.7	10.5	11.0
30	---	---	---	11.6	11.4	11.5	11.0	8.2	10.1	11.8	10.6	11.2
31	---	---	---	11.6	11.3	11.5	---	---	---	11.9	10.4	11.3
MONTH	12.2	10.0	11.5	13.2	10.0	11.9	12.2	7.4	10.8	11.9	4.9	10.1

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	11.9	10.6	11.4	9.0	6.2	8.2	9.9	7.3	9.0	---	---	---
2	11.7	10.4	11.2	9.7	7.0	8.2	11.0	7.1	9.2	---	---	---
3	---	---	---	9.4	7.6	8.5	10.9	5.6	9.0	---	---	---
4	---	---	---	9.8	6.4	8.6	10.2	6.0	8.5	---	---	---
5	---	---	---	9.8	6.4	8.3	10.5	3.8	8.4	---	---	---
6	---	---	---	9.8	5.6	8.2	10.2	4.9	8.0	---	---	---
7	---	---	---	9.9	7.3	8.4	10.2	2.8	7.0	---	---	---
8	---	---	---	8.8	6.7	8.2	10.0	4.5	8.1	---	---	---
9	---	---	---	9.0	4.8	7.8	9.4	2.8	6.8	---	---	---
10	---	---	---	9.1	7.2	7.9	9.5	3.5	6.4	---	---	---
11	8.7	6.1	7.7	9.2	6.8	8.0	9.5	2.4	5.7	---	---	---
12	8.8	6.5	7.7	9.4	7.2	8.3	8.9	2.1	5.3	---	---	---
13	8.5	4.6	7.1	9.8	8.4	8.9	9.3	2.1	5.5	---	---	---
14	7.6	5.5	7.0	9.9	6.8	8.7	10.2	2.1	6.4	---	---	---
15	7.1	5.1	6.2	10.4	7.9	9.0	8.8	6.1	7.3	---	---	---
16	---	---	---	10.6	8.5	9.3	---	---	---	---	---	---
17	---	---	---	10.0	7.6	9.0	---	---	---	---	---	---
18	---	---	---	9.9	8.0	9.0	---	---	---	---	---	---
19	9.4	6.9	7.7	10.5	7.4	9.1	8.6	7.3	8.0	---	---	---
20	8.7	7.1	7.7	10.7	7.7	9.4	7.3	6.5	7.0	---	---	---
21	8.9	6.9	7.8	10.4	7.6	9.0	6.8	5.5	6.1	---	---	---
22	8.9	7.3	7.9	10.8	7.1	8.9	---	---	---	---	---	---
23	8.9	6.5	7.6	---	---	---	---	---	---	---	---	---
24	8.7	6.4	7.6	10.6	7.8	9.5	---	---	---	---	---	---
25	8.8	6.2	7.4	11.3	7.5	9.4	---	---	---	---	---	---
26	9.2	7.4	8.0	11.1	8.6	9.5	---	---	---	---	---	---
27	8.5	7.2	8.0	10.6	8.3	9.3	---	---	---	---	---	---
28	8.4	7.0	7.9	10.4	8.0	9.2	---	---	---	---	---	---
29	9.6	7.4	8.3	10.0	5.5	9.0	---	---	---	---	---	---
30	9.6	6.5	8.0	9.8	6.4	8.4	---	---	---	---	---	---
31	---	---	---	10.4	6.4	8.9	---	---	---	---	---	---
MONTH	11.9	4.6	8.0	11.3	4.8	8.7	11.0	2.1	7.3	---	---	---

03421000 COLLINS RIVER NEAR MCMINNVILLE, TN

LOCATION.--Lat 35°42'32", long 85°43'46", Warren County, Hydrologic Unit 05130107, on left bank at downstream side of bridge on U.S. Highway 70S, 1.8 mi downstream from Barren Fork River, 2.5 mi northeast of McMinnville, and at mile 19.5.

DRAINAGE AREA.--640 mi^2.

PERIOD OF RECORD.--October 1924 to current year. Prior to April 1925 monthly discharge only, published in WSP 1306.

REVISED RECORDS.--WSP 873: 1929, 1932(M), 1934-35, 1936(M), 1937. WSP 1276: 1925-26, 1928(M), 1933, 1936, 1940. WSP 2110: Drainage area.

GAGE.--Data collection platform. Datum of gage is 825.78 ft, Sandy Hook datum. Prior to Oct. 16, 1926, nonrecording gage on upstream side of bridge at same datum.

REMARKS.--No estimated daily discharges. Records good. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water-quality data.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1854 is believed to have been about equal to that of Mar. 23, 1929, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 11,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 24	0730	*47,300	*32.56	Apr 1	0230	21,400	20.78
Mar 18	0130	34,300	27.22				

Minimum discharge, 91 ft^3/s, Sept. 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	192	177	1660	674	1780	618	16600	608	427	156	137	139
2	178	173	1330	622	2100	590	7100	818	398	153	128	130
3	166	169	989	585	1730	585	3900	2890	362	162	123	124
4	151	166	764	553	1530	597	2770	6880	337	153	121	120
5	151	163	622	519	1360	594	2170	6710	358	148	118	115
6	184	159	538	532	1250	571	1800	3490	404	144	114	110
7	175	157	495	543	1590	549	1560	2260	395	139	108	106
8	165	152	539	536	2070	529	1370	1680	434	139	105	104
9	158	149	959	519	1890	519	1250	1330	396	137	102	102
10	151	147	1100	586	1680	528	1120	1160	328	148	101	100
11	144	145	1130	674	1530	563	1010	1340	287	259	102	100
12	142	142	1180	684	1370	582	930	1350	256	178	102	99
13	153	141	1210	666	1240	918	868	2270	247	187	100	94
14	826	138	5580	633	1100	1430	821	3320	242	316	102	94
15	993	136	6220	601	970	1360	773	1650	228	385	114	97
16	781	135	3240	564	897	1420	718	1230	214	270	117	107
17	574	133	2420	535	833	17500	664	993	207	211	145	113
18	454	131	4000	527	762	32800	616	1140	197	186	145	117
19	371	131	3100	1960	703	21100	581	1100	189	167	152	196
20	315	135	2200	5760	e725	8080	551	886	178	156	143	135
21	279	130	1660	3900	e950	4340	522	743	170	145	127	527
22	250	128	1350	2590	895	3110	501	654	166	162	133	312
23	230	131	1370	16400	809	2420	473	584	162	236	129	254
24	214	279	2080	41500	756	2010	475	529	159	381	139	181
25	243	3170	1650	30200	714	1710	462	481	159	215	622	166
26	220	2690	1370	12100	693	1870	441	441	166	184	504	398
27	223	1490	1180	5070	675	2230	455	457	181	162	220	1500
28	218	1020	1040	3370	652	1610	459	647	183	149	172	1420
29	200	760	922	2620	---	1410	448	633	180	139	161	865
30	188	999	821	2130	---	10700	418	537	164	138	174	529
31	181	---	734	1800	---	19600	---	485	---	140	150	---
TOTAL	8870	13776	53453	139953	33254	142443	51826	49296	7774	5845	4910	8454
MEAN	286.1	459.2	1724	4515	1188	4595	1728	1590	259.1	188.5	158.4	281.8
MAX	993	3170	6220	41500	2100	32800	16600	6880	434	385	622	1500
MIN	142	128	495	519	652	519	418	441	159	137	100	94
CFSM	0.45	0.72	2.69	7.05	1.86	7.18	2.70	2.48	0.40	0.29	0.25	0.44
IN.	0.52	0.80	3.11	8.13	1.93	8.28	3.01	2.87	0.45	0.34	0.29	0.49

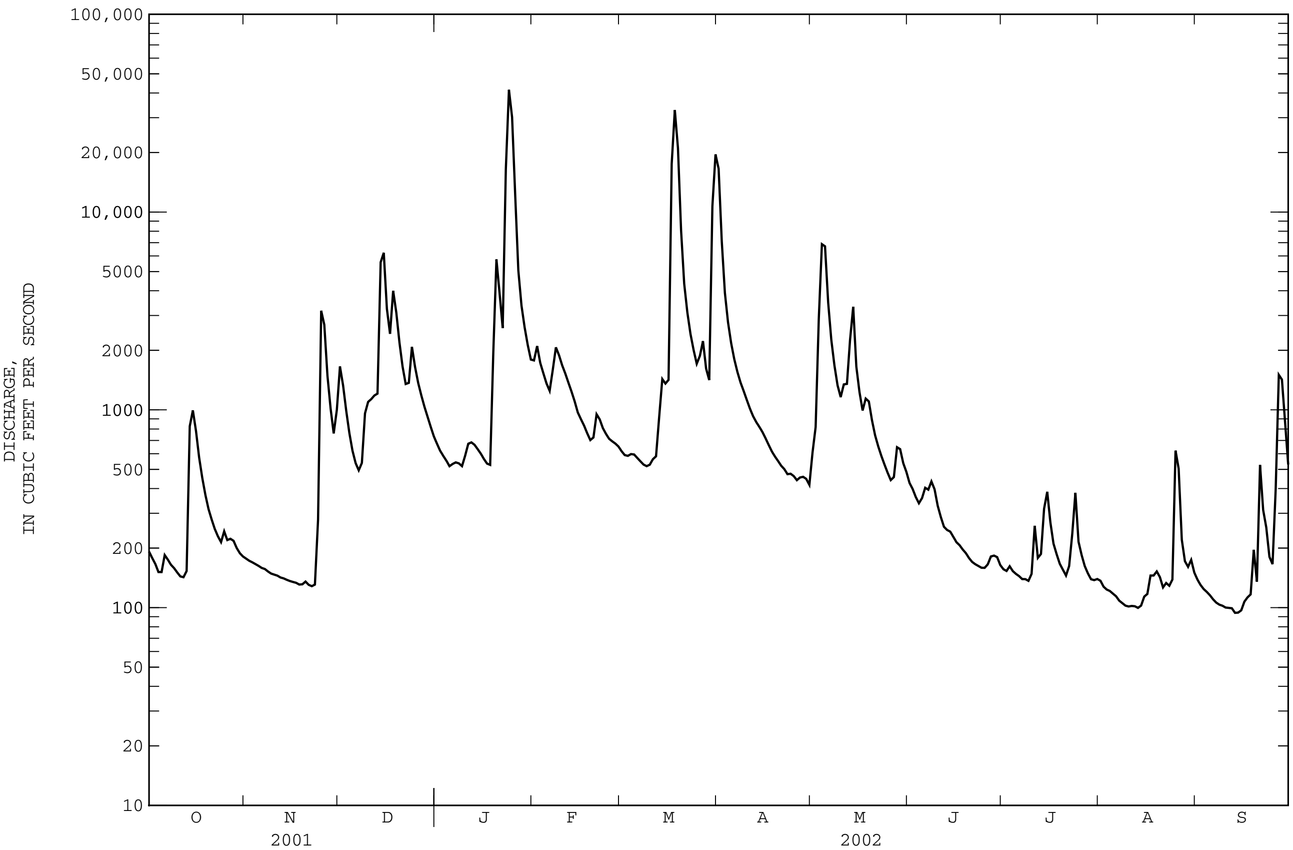
e Estimated

03421000 COLLINS RIVER NEAR MCMINNVILLE, TN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	317.8	768.2	1592	2149	2377	2535	1793	1075	632.1	431.0	320.1	290.7
MAX	2345	4286	6783	6262	6564	6279	4412	3825	4216	2091	1439	1204
(WY)	1976	1958	1991	1974	1939	1929	1994	1984	1928	1989	1942	1992
MIN	63.5	69.0	107	126	391	619	462	225	85.9	115	76.2	62.9
(WY)	1932	1932	1940	1940	1941	1988	1986	1941	1988	1944	1925	1925

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1925 - 2002	
ANNUAL TOTAL	392695		519854			
ANNUAL MEAN	1076		1424		1185	
HIGHEST ANNUAL MEAN					2193	1973
LOWEST ANNUAL MEAN					409	1931
HIGHEST DAILY MEAN	21000	Feb 17	41500	Jan 24	64100	Dec 23 1990
LOWEST DAILY MEAN	124	Jul 24	94	Sep 13	37	Oct 28 1961
ANNUAL SEVEN-DAY MINIMUM	131	Nov 17	98	Sep 9	50	Sep 24 1925
MAXIMUM PEAK FLOW			47300	Jan 24	75300	Mar 23 1929
MAXIMUM PEAK STAGE			32.56	Jan 24	39.10	Mar 23 1929
INSTANTANEOUS LOW FLOW			91	Sep 13	35	Sep 21 1930
ANNUAL RUNOFF (CFSM)	1.68		2.23		1.85	
ANNUAL RUNOFF (INCHES)	22.83		30.22		25.15	
10 PERCENT EXCEEDS	2680		2330		2600	
50 PERCENT EXCEEDS	434		519		530	
90 PERCENT EXCEEDS	156		131		113	



03424730 SMITH FORK AT TEMPERANCE HALL, TN

LOCATION.--Lat 36°05'14", long 85°54'29", Dekalb County, Hydrologic Unit 05130108, on left bank 150 ft downstream from James Slager Memorial bridge on State Highway 264, 0.3 mi northwest of Temperance Hall, and at mile 8.8.

DRAINAGE AREA.--214 mi^2.

PERIOD OF RECORD.--August 1991 to current year.

GAGE.--Data collection platform and crest-stage gage. Datum of gage is 499.00 ft above NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water-quality data.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 23	1930	*17,000	*24.06	Mar 18	0700	9,340	16.92
Jan 24	1500	12,200	20.01	Mar 31	1700	10,300	18.10
Mar 17	1300	13,300	20.97	May 1	0830	7,940	15.18

Minimum discharge, 11 ft^3/s, Sept. 11, 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	35	340	87	405	151	2610	3150	67	28	37	22
2	22	33	182	80	473	150	1070	1070	62	26	36	20
3	20	32	119	75	379	156	620	984	61	59	30	19
4	20	31	88	71	335	150	428	1080	58	51	26	17
5	19	29	71	67	283	139	339	823	60	45	22	15
6	32	28	60	71	268	136	285	503	73	36	21	16
7	79	26	58	81	481	133	250	358	81	29	20	16
8	51	24	1100	83	642	131	226	273	64	26	19	16
9	39	25	1130	78	514	130	208	222	54	25	18	14
10	33	25	412	76	426	135	185	192	49	25	17	12
11	28	25	606	87	369	127	168	176	47	37	16	12
12	27	25	382	98	320	133	158	153	44	86	18	12
13	28	25	413	103	285	212	149	1280	41	141	16	12
14	697	25	1260	98	249	252	141	1140	40	124	15	13
15	404	24	652	91	226	225	133	480	40	84	15	13
16	166	23	354	84	212	240	125	307	39	54	17	15
17	99	23	261	78	195	7000	118	241	38	42	26	16
18	71	24	277	80	177	6830	112	479	36	37	27	21
19	54	24	243	1170	164	2100	105	279	34	43	25	26
20	46	25	197	1100	178	1640	99	205	33	42	35	29
21	40	26	158	507	238	1220	95	170	31	36	28	105
22	35	26	134	322	208	704	94	144	30	31	25	148
23	32	25	522	8370	188	513	92	125	29	29	27	96
24	30	28	631	10300	177	410	103	109	28	30	19	47
25	195	60	344	4760	165	335	348	96	29	35	17	37
26	147	80	247	1390	168	782	201	104	29	32	25	248
27	81	55	194	769	172	702	148	159	31	28	39	1350
28	58	77	161	544	159	475	127	107	32	27	32	386
29	48	137	136	427	---	383	287	87	31	25	26	165
30	42	1020	114	350	---	544	199	78	30	27	25	99
31	39	---	97	297	---	4930	---	72	---	30	24	---
TOTAL	2706	2065	10943	31794	8056	31168	9223	14646	1321	1370	743	3017
MEAN	87.29	68.83	353.0	1026	287.7	1005	307.4	472.5	44.03	44.19	23.97	100.6
MAX	697	1020	1260	10300	642	7000	2610	3150	81	141	39	1350
MIN	19	23	58	67	159	127	92	72	28	25	15	12
CFSM	0.41	0.32	1.65	4.79	1.34	4.70	1.44	2.21	0.21	0.21	0.11	0.47
IN.	0.47	0.36	1.90	5.53	1.40	5.42	1.60	2.55	0.23	0.24	0.13	0.52

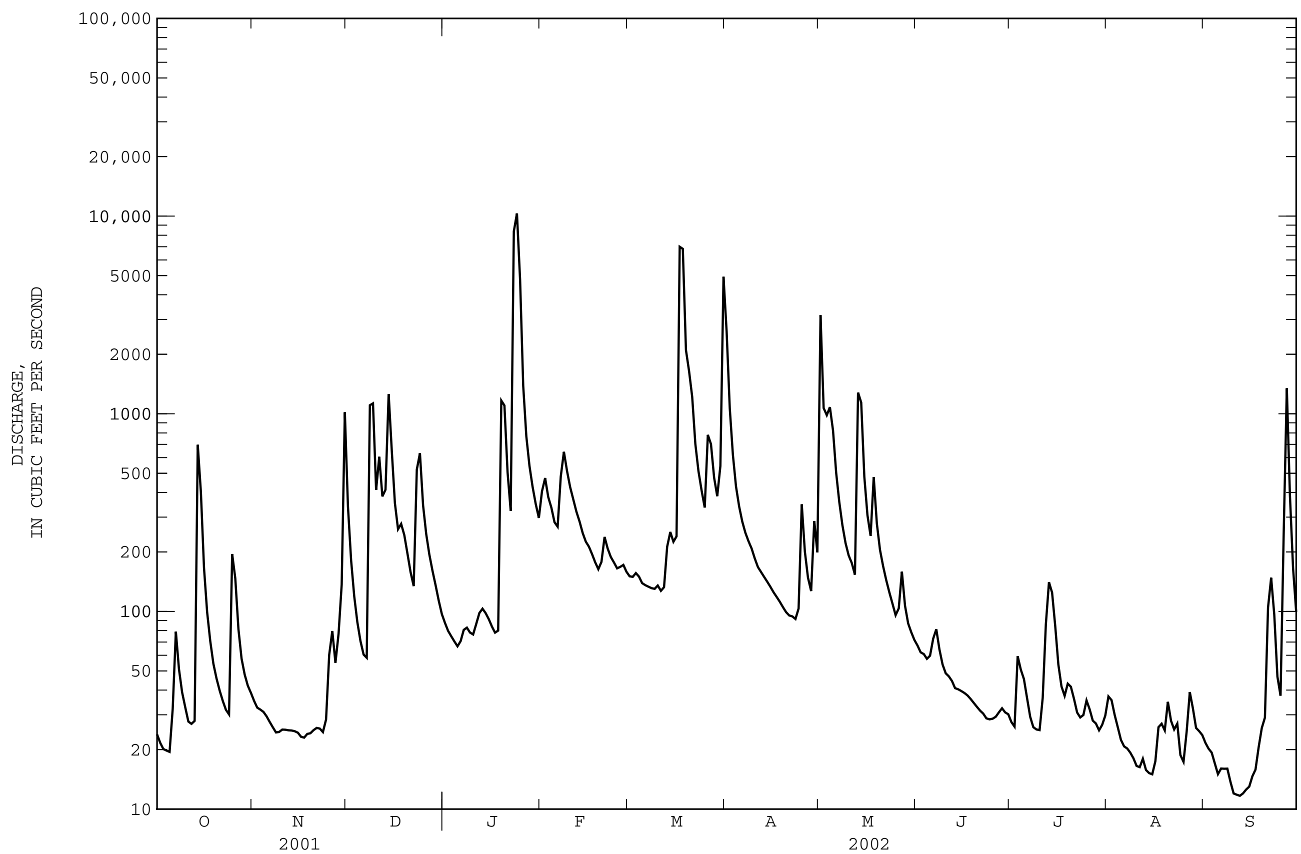
03424730 SMITH FORK AT TEMPERANCE HALL, TN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	81.08	173.2	422.2	613.6	500.5	738.0	439.4	269.2	213.7	119.0	68.57	77.63
MAX	270	559	811	1081	1190	1516	1095	506	768	460	225	389
(WY)	1996	1997	1992	1999	1994	1994	1994	1995	1998	1992	1996	1992
MIN	15.1	29.5	72.7	82.9	212	401	158	61.4	44.0	25.6	22.5	12.5
(WY)	2001	2000	2000	2000	1993	2001	1992	1992	2002	2000	1999	1999

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1991 - 2002	
ANNUAL TOTAL	77565		117052			
ANNUAL MEAN	212.5		320.7		305.6	
HIGHEST ANNUAL MEAN					488	1994
LOWEST ANNUAL MEAN					31.0	1991
HIGHEST DAILY MEAN	5350	Feb 16	10300	Jan 24	11800	Jan 23 1999
LOWEST DAILY MEAN	15	Aug 25	12	Sep 10	9.7	Sep 10 1999
ANNUAL SEVEN-DAY MINIMUM	16	Aug 24	13	Sep 9	10	Sep 7 1999
MAXIMUM PEAK FLOW			17000	Jan 23	19900	Jan 23 1999
MAXIMUM PEAK STAGE			24.06	Jan 23	26.12	Jan 23 1999
INSTANTANEOUS LOW FLOW			a11	Sep 11	9.0	Sep 8 1999
ANNUAL RUNOFF (CFSM)	0.99		1.50		1.43	
ANNUAL RUNOFF (INCHES)	13.48		20.35		19.40	
10 PERCENT EXCEEDS	412		569		631	
50 PERCENT EXCEEDS	66		87		105	
90 PERCENT EXCEEDS	23		23		22	

a Also occurred Sept. 12.



03426310 CUMBERLAND RIVER AT OLD HICKORY DAM (TAILWATER), TN

LOCATION.--Lat 36°17'47", long 86°39'28", Davidson County, Hydrologic Unit 05130202, at right bank in powerhouse, at Old Hickory Dam, 2.0 mi west of Hendersonville, and at mile 216.2.

DRAINAGE AREA.--11,673 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1931 to September 1942, October 1947 to current year. Prior to July 1953, published as "at dam 3, near Old Hickory". July 1953 to September 1986 published as "below Old Hickory".

GAGE.--Datum of gage is NGVD of 1929.

REMARKS.--Flow regulated by six lakes or reservoirs (see p. 152).

COOPERATION.--Records provided by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 173,000 ft^3/s, Jan. 29, 1937; maximum gage height, 438.80 ft, Mar. 14, 1975; minimum daily discharge, 86 ft^3/s, Aug. 15, 1936; minimum gage height since filling of Cheatham Lake on Oct. 1, 1956, 383.49 ft, Sept. 10, 1962, at present datum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1793, 437.4 ft Dec. 31, 1926, at present datum, from profile by U.S. Army Corps of Engineers, discharge, 200,000 ft^3/s.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 87,900 ft^3/s, Mar. 18; minimum daily, 4,270 ft^3/s, Nov. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7020	6330	19100	9190	33800	23800	70500	24500	14500	8650	12200	8160
2	6780	4270	12400	9620	28900	22200	70400	27300	10800	8380	9890	7610
3	7890	5690	10200	10400	31600	12200	57800	28900	8890	9810	8680	7020
4	9040	4980	9360	9100	28400	6240	47200	24000	6660	9490	7600	8450
5	10500	5520	7980	7000	28300	10300	42200	30700	6960	12800	7860	9960
6	8500	5520	5800	6790	28000	11300	46000	27400	8030	9060	9050	9410
7	7790	5510	5750	6850	30600	9000	42800	23500	10700	6790	8800	7370
8	7640	5510	5780	7600	31100	13400	37500	32100	5760	7590	10400	7900
9	7920	5530	10100	8360	28800	12200	35600	29500	5750	6690	10500	7930
10	6990	5520	18600	8920	19400	7370	37400	29000	9870	9780	9650	7330
11	7880	4770	12200	10000	23400	6780	37200	31200	8440	14700	7750	8390
12	8140	5570	12300	7820	25900	6780	36900	30800	8420	11400	7880	8710
13	6970	5270	15000	6760	19900	8720	35400	31500	8400	10400	7880	8740
14	7820	5260	27400	6480	19600	10900	29300	43700	12600	13700	8970	9080
15	18000	5710	21800	5480	22400	11700	24100	34900	8450	7660	10100	7430
16	9160	7320	12300	8000	22100	12200	16700	34500	8640	10100	11800	5720
17	6050	5010	12400	9510	19600	35300	15900	34600	8630	11000	14800	7590
18	6360	4980	7960	8580	15600	87900	14000	42000	8660	10900	9730	8940
19	8050	4820	9320	10600	14600	84300	15800	41800	7250	10400	7610	9850
20	5750	4800	6850	15700	17800	70800	15900	32600	8400	9490	7900	9640
21	4990	5240	6580	10300	20400	66900	14200	28100	8360	7310	9190	8450
22	5270	5380	5780	12300	18300	66800	13100	27800	7560	8330	9120	9010
23	6820	5700	6030	24200	19300	64200	7350	26600	6500	8670	9910	7870
24	6800	5220	6020	73900	19400	56600	6870	26500	7880	10500	8780	7770
25	6610	7400	10800	82100	14100	53000	25200	23500	9080	11900	9330	8070
26	6260	9430	12700	72400	12600	49700	20400	17500	9780	12800	8700	9170
27	6050	7410	10500	50200	18200	56400	16600	17100	9280	11900	9320	26100
28	5460	8410	11000	41000	20800	52500	9080	13500	9320	6580	8700	19600
29	4280	14200	7350	30500	---	46300	14700	15400	6830	9010	9800	17000
30	5840	17900	5850	30700	---	46000	13800	17000	5740	8130	12200	5900
31	6080	---	7620	35000	---	50900	---	17300	---	8900	7860	---
TOTAL	228710	194180	332830	635360	632900	1072690	869900	864800	256140	302820	291960	284170
MEAN	7378	6473	10740	20500	22600	34600	29000	27900	8538	9768	9418	9472
MAX	18000	17900	27400	82100	33800	87900	70500	43700	14500	14700	14800	26100
MIN	4280	4270	5750	5480	12600	6240	6870	13500	5740	6580	7600	5720

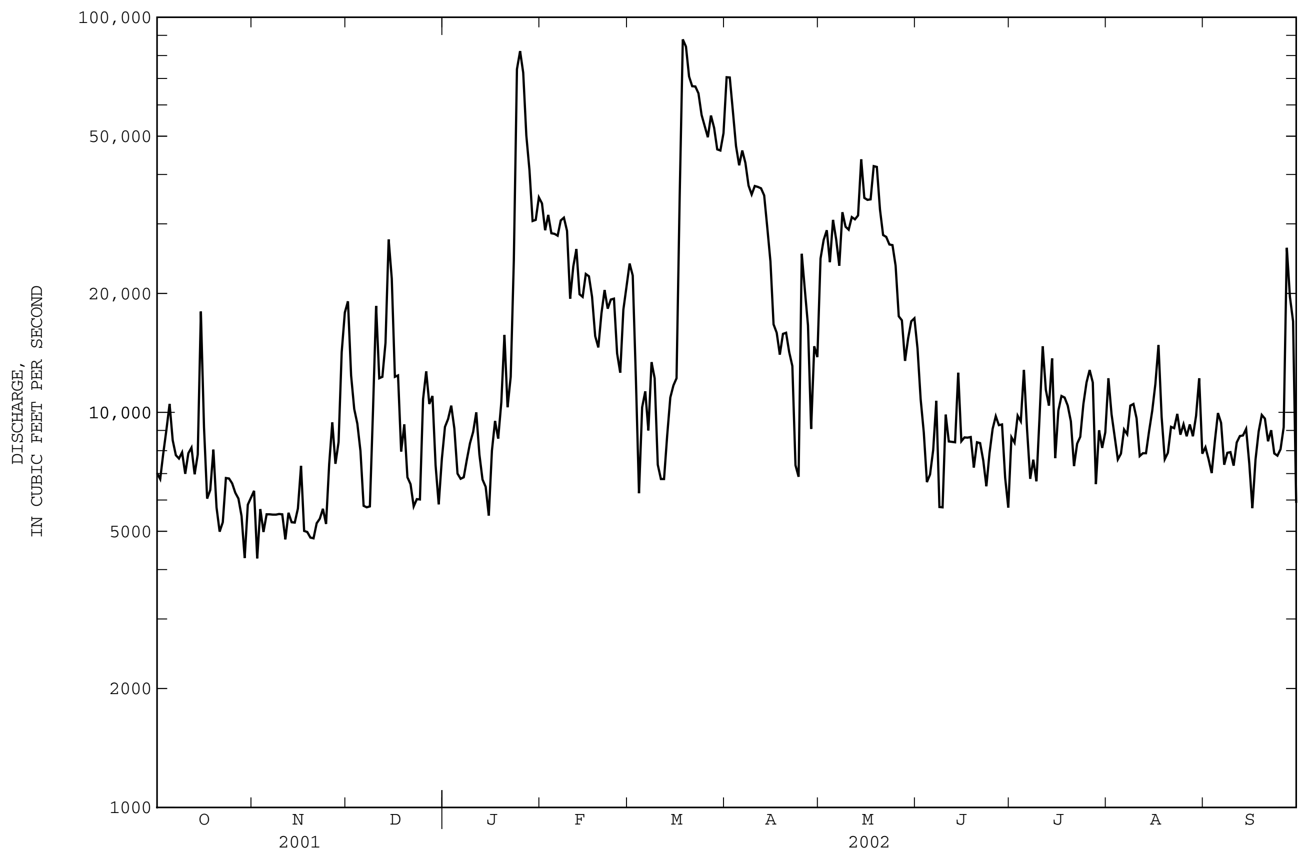
03426310 CUMBERLAND RIVER AT OLD HICKORY DAM (TAILWATER), TN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 2002, BY WATER YEAR (WY)

MEAN	9095	12070	21420	27890	27170	31150	28360	20390	15580	12650	11990	9965
MAX	29430	29530	43590	79580	61700	73880	74400	65100	40510	28410	21400	27600
(WY)	1990	1980	1979	1974	1957	1975	1994	1984	1997	1967	1982	1979
MIN	2660	3449	3974	4656	8524	6778	6963	5465	6048	4211	4991	2723
(WY)	1969	1981	1981	1981	1981	1981	1986	1988	1988	1974	1975	1968

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		*WATER YEARS 1957 - 2002	
ANNUAL TOTAL	3885230		5966460			
ANNUAL MEAN	10640		16350		18940	
HIGHEST ANNUAL MEAN					28560	1974
LOWEST ANNUAL MEAN					8780	1988
HIGHEST DAILY MEAN	77700	Feb 17	87900	Mar 18	146000	Mar 14 1975
LOWEST DAILY MEAN	2840	May 20	4270	Nov 2	200	Nov 3 1957
ANNUAL SEVEN-DAY MINIMUM	4740	May 16	5130	Nov 17	1070	Oct 28 1969
10 PERCENT EXCEEDS	17800		35100		40600	
50 PERCENT EXCEEDS	9040		9730		13500	
90 PERCENT EXCEEDS	5170		5820		5300	

* Regulated period only.



03426310 CUMBERLAND RIVER AT OLD HICKORY DAM (TAILWATER), TN--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 1979 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: April 1979 to current year.
pH: April 1979 to current year.
WATER TEMPERATURE: April 1979 to current year.
DISSOLVED OXYGEN: April 1979 to current year.
TURBIDITY: October 1992 to current year.

INSTRUMENTATION.--Water-quality monitor since April 1979.

REMARKS.--Flow regulated by Old Hickory Dam and other reservoirs above station. Periods of missing record were due to instrument malfunctions. Supersaturation of dissolved oxygen may occur due to local hydraulic conditions. All parameters affected by release from Old Hickory Dam. Records for water temperature are excellent, specific conductance are good, pH and dissolved oxygen are poor and turbidity are fair.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum, 269 microsiemens, Jan. 3, 4, 2002; minimum, 137 microsiemens, March 14, 1994.
pH: Maximum, 9.8 units, March 26, 1988; minimum, 6.4 units, July 28, 1991, July 24, 25, 26, 1993.
WATER TEMPERATURE: Maximum, 27.6°C, August 8, 1988; minimum, 2.1°C, Dec. 24, 1989.
DISSOLVED OXYGEN: Maximum, 17.2 mg/L, February 8, 2001; minimum, 2.9 mg/L, Sept. 5, 1988, July 8, 1993.
TURBIDITY: Maximum recorded, 170 NTU, March 5, 1997, minimum, 1 NTU, many days during the 1996, Sept. 20, 1997, and many days during the 2000, 2001, and 2002 water years.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 269 microsiemens, Jan. 3, 4; minimum, 182 microsiemens, Sept. 30.
pH: Maximum, 8.8 units, Jan. 18, 20-23; minimum, 6.8 units, July 29, 30.
WATER TEMPERATURE: Maximum, 27.4°C, Aug. 8; minimum, 5.6°C, Jan. 9.
DISSOLVED OXYGEN: Maximum, 14.9 mg/L, Jan. 25; minimum, 3.4 mg/L, July 3.
TURBIDITY: Maximum, 120 NTU, Mar. 19; minimum, 1 NTU, several days.

SPECIFIC CONDUCTANCE FROM THE DCP, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	200	198	199	212	211	211	219	217	218	267	266	267
2	202	199	201	216	212	214	219	217	218	268	267	268
3	202	200	202	219	215	218	218	218	218	269	268	268
4	203	200	202	220	218	218	218	217	218	269	268	268
5	203	201	202	220	219	220	219	218	218	268	267	268
6	204	201	202	220	218	219	222	219	221	267	266	266
7	201	200	201	220	218	219	224	222	223	266	261	264
8	205	200	201	220	218	219	225	224	224	262	261	261
9	204	200	201	220	219	219	226	225	225	261	255	258
10	202	201	202	219	218	219	229	226	226	256	246	251
11	203	200	202	222	217	218	233	228	230	248	242	244
12	203	201	202	221	217	218	236	233	235	243	235	239
13	203	202	202	219	217	218	238	234	237	237	231	234
14	203	201	202	217	215	216	239	235	238	231	226	230
15	203	203	203	217	214	216	235	231	233	226	224	225
16	203	201	202	214	213	214	234	231	232	225	223	224
17	203	202	203	217	213	215	241	234	238	223	216	220
18	206	203	204	219	214	215	242	240	241	217	215	216
19	207	204	205	220	215	217	243	242	243	215	212	213
20	207	205	206	221	217	218	245	243	244	212	209	210
21	210	206	208	221	218	218	245	245	245	209	208	209
22	210	206	208	220	216	218	247	245	245	209	206	208
23	209	205	207	218	216	217	249	246	247	207	205	206
24	211	207	209	219	217	218	250	248	249	246	207	224
25	212	207	208	220	218	218	253	250	252	252	215	239
26	210	207	208	220	218	219	255	252	254	215	203	209
27	213	207	208	219	217	217	258	254	255	213	211	213
28	211	207	208	220	218	219	263	258	260	211	209	209
29	211	207	208	220	215	217	266	263	265	209	202	205
30	209	208	209	218	216	217	267	265	266	202	197	200
31	211	209	210	---	---	---	267	266	267	197	193	194
MONTH	213	198	204	222	211	217	267	217	238	269	193	233

03426310 CUMBERLAND RIVER AT OLD HICKORY DAM (TAILWATER), TN--Continued

SPECIFIC CONDUCTANCE FROM THE DCP, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	193	191	192	222	221	222	218	213	214	207	198	203
2	193	192	192	222	221	221	216	209	212	214	207	211
3	195	192	193	227	222	224	219	214	216	218	214	217
4	195	194	195	226	225	225	219	211	216	222	218	220
5	197	195	196	226	223	224	213	207	210	223	217	221
6	203	197	200	223	219	220	208	203	205	220	217	219
7	208	202	204	219	216	217	209	204	207	222	219	221
8	211	208	209	217	215	216	209	207	208	220	217	219
9	212	210	211	217	216	216	210	206	207	220	218	219
10	212	210	211	219	216	218	207	203	205	221	219	220
11	215	212	214	219	218	219	204	200	202	220	214	217
12	219	214	217	219	218	219	201	197	199	217	214	215
13	221	218	219	222	219	220	200	197	199	214	210	212
14	222	220	221	224	222	223	199	196	197	210	203	207
15	227	221	224	225	223	224	198	196	197	208	203	206
16	224	222	224	227	225	226	198	196	197	206	204	205
17	224	221	222	228	218	224	198	196	197	212	205	210
18	222	221	222	229	219	224	199	196	197	213	207	210
19	224	221	222	224	209	214	202	198	200	208	201	205
20	225	224	224	233	215	227	203	200	202	205	201	203
21	226	225	225	233	227	231	203	201	202	205	202	204
22	227	226	227	227	189	203	203	200	202	209	204	206
23	226	225	226	192	188	190	202	199	201	212	208	210
24	225	224	224	203	192	199	202	199	201	212	207	209
25	225	222	224	203	201	202	202	197	200	208	206	207
26	222	219	220	205	200	202	199	196	198	206	202	204
27	221	219	220	209	205	207	199	197	198	203	197	200
28	221	219	219	211	206	209	200	197	199	199	194	197
29	---	---	---	214	211	212	200	198	199	196	193	194
30	---	---	---	217	214	215	201	198	200	197	195	196
31	---	---	---	217	213	216	---	---	---	201	196	198
MONTH	227	191	214	233	188	216	219	196	203	223	193	209

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	204	199	201	201	198	199	194	188	191	198	193	194
2	207	204	205	203	199	201	192	189	191	198	193	195
3	209	206	207	203	197	200	192	188	190	198	194	196
4	209	206	208	200	197	198	193	189	191	197	191	194
5	209	207	208	201	192	198	193	190	191	199	193	196
6	209	201	207	201	199	200	193	190	191	196	191	194
7	208	205	207	202	198	200	193	190	191	197	191	193
8	208	205	206	202	199	201	192	188	190	194	190	192
9	209	206	208	204	198	200	193	190	191	196	191	193
10	209	206	208	205	200	201	195	191	192	195	192	193
11	209	206	207	203	200	202	198	193	194	194	189	192
12	210	206	208	203	198	201	197	194	195	193	189	192
13	209	206	208	199	196	198	196	193	195	195	191	193
14	209	207	208	199	196	197	197	193	195	198	191	193
15	208	205	207	199	196	198	195	192	194	195	192	193
16	208	204	205	202	195	197	194	191	193	194	192	193
17	205	201	203	211	197	202	197	192	194	194	192	193
18	202	200	201	207	197	200	197	193	195	194	192	193
19	202	201	201	207	195	199	195	191	194	195	192	194
20	202	201	202	202	190	196	195	193	194	195	192	194
21	202	198	200	197	192	195	195	191	193	195	192	193
22	198	196	197	199	191	195	197	192	194	194	190	192
23	199	196	198	194	190	192	196	192	194	192	190	191
24	198	197	198	195	194	194	196	191	193	195	190	192
25	199	195	196	197	191	194	194	189	192	192	190	191
26	198	195	197	193	188	191	199	191	194	192	187	190
27	199	196	197	191	189	190	196	190	193	188	185	186
28	200	198	199	191	188	190	197	194	195	188	185	186
29	200	199	200	193	189	191	197	195	196	186	184	185
30	199	199	199	193	190	191	197	194	195	186	182	184
31	---	---	---	196	188	193	196	193	194	---	---	---
MONTH	210	195	203	211	188	197	199	188	193	199	182	192

03426310 CUMBERLAND RIVER AT OLD HICKORY DAM (TAILWATER), TN--Continued

PH, WH, FIELD FROM THE DCP, in (STANDARD UNITS), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	8.0	7.7	8.3	8.1	7.8	7.7	8.0	7.9	8.4	8.3	8.3	8.1
2	8.2	7.5	8.2	8.1	7.8	7.7	7.9	7.2	8.4	8.3	8.1	8.1
3	8.6	7.9	8.1	7.9	8.1	7.7	8.0	7.5	8.3	8.3	8.1	8.0
4	8.5	7.7	8.0	7.8	8.3	8.1	8.1	8.0	8.3	8.3	8.2	8.0
5	8.4	7.7	8.0	7.8	8.4	8.3	8.1	8.0	8.4	8.3	8.2	8.1
6	7.9	7.3	8.2	7.8	8.3	8.3	8.2	8.1	8.4	8.4	8.3	8.2
7	8.3	7.9	8.0	7.9	8.3	8.3	8.2	8.1	8.4	8.3	8.3	8.2
8	8.2	7.7	8.1	7.8	8.3	8.2	8.3	8.2	8.3	8.2	8.3	8.3
9	8.2	7.7	8.0	7.9	8.2	8.1	8.3	8.3	8.3	8.2	8.3	8.1
10	8.1	7.6	8.1	7.9	8.2	8.2	8.3	8.2	8.3	8.2	8.2	8.1
11	8.0	7.5	8.1	7.7	8.2	8.1	8.5	8.2	8.3	8.3	8.3	8.2
12	7.6	7.3	8.0	7.7	8.2	8.1	8.5	8.3	8.3	8.3	8.3	8.2
13	7.3	7.2	8.0	7.8	8.2	8.0	8.5	8.4	8.3	8.3	8.2	8.2
14	7.5	7.2	8.0	7.9	8.1	8.0	8.6	8.4	8.3	8.3	8.2	8.2
15	7.5	7.3	8.0	7.8	8.1	8.1	8.6	8.4	8.3	8.2	8.2	8.2
16	7.4	7.1	7.9	7.8	8.1	8.1	8.7	8.4	8.2	8.2	8.2	8.0
17	7.3	7.1	7.9	7.6	8.1	8.0	8.7	8.6	8.2	8.2	8.0	7.9
18	7.7	7.2	8.1	7.7	8.0	8.0	8.8	8.6	8.2	8.2	8.0	7.7
19	7.8	7.6	8.2	7.7	8.1	8.0	8.7	8.6	8.2	8.2	7.7	7.6
20	7.7	7.4	8.2	7.8	8.1	8.0	8.8	8.5	8.2	8.2	7.6	7.6
21	7.8	7.3	8.2	7.8	8.0	8.0	8.8	8.6	8.2	8.2	7.6	7.5
22	7.9	7.4	8.3	8.0	8.0	8.0	8.8	8.7	8.2	8.1	7.6	7.5
23	8.1	7.8	8.3	8.1	8.0	8.0	8.8	8.4	8.2	8.1	7.5	7.4
24	7.9	7.3	8.1	7.9	8.1	8.0	8.4	7.8	8.2	8.1	7.5	7.4
25	7.5	7.2	8.0	7.9	8.0	7.9	8.1	7.8	8.2	8.1	7.4	7.4
26	7.5	7.2	7.9	7.8	8.0	8.0	7.9	7.4	8.2	8.1	7.4	7.3
27	7.4	7.1	7.9	7.8	8.1	8.0	7.7	7.5	8.2	8.1	7.4	7.4
28	7.6	7.3	7.8	7.7	8.0	7.9	8.0	7.7	8.2	8.2	7.4	7.4
29	8.0	7.0	7.8	7.7	7.9	7.9	8.1	7.8	---	---	7.5	7.4
30	8.2	7.8	7.8	7.7	8.0	7.9	8.3	8.1	---	---	7.5	7.4
31	8.2	8.0	---	---	8.0	7.9	8.3	8.3	---	---	7.5	7.3
MONTH	8.6	7.0	8.3	7.6	8.4	7.7	8.8	7.2	8.4	8.1	8.3	7.3

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	7.3	7.3	8.2	7.8	7.7	7.3	7.5	7.3	7.1	7.0	8.2	7.9
2	7.3	7.3	7.9	7.8	7.5	7.3	7.5	7.3	7.1	7.1	8.1	7.9
3	7.3	7.3	7.9	7.7	7.6	7.2	7.5	7.2	7.2	7.1	8.0	7.9
4	7.6	7.3	7.8	7.7	7.5	7.2	7.5	7.4	7.3	7.1	7.9	7.8
5	7.6	7.6	7.7	7.7	7.6	7.1	7.5	7.4	7.4	7.2	8.1	7.8
6	7.6	7.5	7.7	7.6	7.4	7.2	7.6	7.4	8.1	7.3	8.2	7.9
7	7.6	7.6	7.7	7.6	7.5	7.2	7.7	7.5	8.2	7.8	8.1	7.9
8	7.7	7.6	7.7	7.7	7.9	7.4	7.7	7.6	8.2	8.0	8.0	7.9
9	7.7	7.6	7.7	7.7	7.8	7.3	7.8	7.4	8.0	7.9	8.0	7.8
10	7.8	7.6	7.8	7.7	7.6	7.3	7.7	7.5	8.0	7.8	8.0	7.9
11	7.7	7.6	7.7	7.6	7.4	7.2	7.8	7.5	7.9	7.8	8.1	7.9
12	7.7	7.6	7.7	7.6	7.4	7.2	7.8	7.4	8.2	7.7	8.3	8.1
13	7.7	7.6	7.6	7.5	7.4	7.1	7.8	7.5	8.3	7.8	8.4	8.1
14	7.7	7.6	7.7	7.5	7.3	7.1	7.8	7.4	8.4	7.8	8.5	8.1
15	8.0	7.6	7.6	7.4	7.3	7.2	7.7	7.4	8.1	7.9	8.2	7.9
16	8.1	7.8	7.5	7.3	7.5	7.2	7.7	7.5	8.2	8.0	8.1	7.8
17	8.0	7.7	7.2	7.1	7.6	7.2	7.6	7.3	8.3	7.9	8.2	7.9
18	8.1	7.6	7.6	7.4	7.4	7.2	7.5	7.3	8.0	7.8	8.5	7.9
19	7.9	7.7	7.5	7.4	7.5	7.2	7.5	7.2	8.2	7.9	8.4	7.9
20	7.8	7.6	7.5	7.4	7.4	7.1	7.5	7.2	8.2	8.1	8.5	8.0
21	7.8	7.6	7.5	7.3	7.5	7.2	7.6	7.2	8.5	8.1	8.4	7.9
22	7.8	7.3	7.7	7.4	7.4	7.2	7.6	7.4	8.4	8.3	8.2	8.0
23	8.2	7.6	7.8	7.6	7.4	7.3	7.6	---	8.3	8.2	8.5	8.0
24	8.1	7.8	7.9	7.7	7.3	7.3	8.0	---	8.3	8.2	8.6	8.1
25	8.1	7.5	8.0	7.8	7.4	7.2	8.0	7.6	8.2	8.1	8.4	8.2
26	8.0	7.7	8.0	7.6	7.4	7.3	7.9	7.6	8.2	8.1	8.3	8.1
27	7.8	7.6	7.9	7.6	7.6	7.2	7.8	7.6	8.3	8.2	8.2	8.0
28	7.6	7.4	7.9	7.6	7.4	7.2	7.7	7.5	8.4	7.9	8.2	8.0
29	7.8	7.4	8.1	7.6	7.5	7.3	7.7	6.8	8.0	7.9	8.2	8.0
30	8.2	7.6	7.8	7.5	7.4	7.3	7.0	6.8	8.2	7.9	8.3	8.0
31	---	---	7.9	7.2	---	---	7.0	7.0	8.1	8.0	---	---
MONTH	8.2	7.3	8.2	7.1	7.9	7.1	8.0	6.8	8.5	7.0	8.6	7.8

03426310 CUMBERLAND RIVER AT OLD HICKORY DAM (TAILWATER), TN--Continued

WATER TEMPERATURE FROM THE DCP, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	19.6	19.3	19.4	15.8	15.5	15.6	13.8	13.5	13.7	7.8	7.3	7.6
2	19.6	19.1	19.4	16.0	15.7	15.8	13.5	13.3	13.4	7.3	6.9	7.0
3	19.8	19.2	19.5	16.0	15.7	15.8	13.4	13.2	13.3	6.9	6.4	6.7
4	19.9	19.2	19.5	16.0	15.6	15.9	13.4	13.2	13.3	6.4	6.1	6.2
5	19.9	19.1	19.5	15.9	15.7	15.8	13.4	13.3	13.3	6.2	5.9	6.1
6	19.2	18.4	18.7	15.9	15.6	15.8	13.4	13.2	13.4	6.1	6.1	6.1
7	18.9	18.5	18.7	15.8	15.6	15.7	13.5	13.4	13.4	6.1	5.9	6.0
8	19.0	18.4	18.7	15.7	15.4	15.5	13.6	13.4	13.5	5.9	5.7	5.8
9	18.8	18.6	18.7	15.5	15.3	15.4	13.4	13.0	13.2	6.0	5.6	5.8
10	18.7	18.3	18.5	15.4	15.2	15.3	13.0	12.7	12.8	6.5	6.0	6.3
11	18.6	18.5	18.6	15.4	15.1	15.3	12.8	12.6	12.7	6.6	6.5	6.5
12	18.6	18.4	18.5	15.2	14.9	15.1	12.7	12.6	12.6	6.9	6.6	6.7
13	18.8	18.6	18.6	15.1	14.9	15.0	12.8	12.7	12.8	7.0	6.7	6.9
14	18.9	18.7	18.8	15.1	14.9	15.0	12.8	12.7	12.7	7.3	7.0	7.1
15	18.9	18.4	18.7	14.9	14.7	14.8	12.9	12.7	12.8	7.3	7.2	7.3
16	18.7	17.9	18.3	14.8	14.6	14.8	13.0	12.9	13.0	7.4	7.1	7.3
17	17.9	17.2	17.6	14.9	14.6	14.8	13.1	12.9	13.0	7.6	7.4	7.5
18	17.4	17.1	17.2	15.0	14.6	14.8	13.1	12.8	12.9	7.5	7.3	7.4
19	17.3	17.0	17.1	15.0	14.8	14.9	12.8	12.4	12.6	7.3	7.2	7.3
20	17.2	17.0	17.1	14.8	14.1	14.4	12.4	12.0	12.2	7.3	7.1	7.3
21	17.3	16.9	17.1	14.1	13.9	14.0	12.0	11.6	11.8	7.6	7.3	7.4
22	17.5	17.0	17.2	13.9	13.7	13.8	11.6	11.4	11.5	7.8	7.4	7.6
23	18.1	17.4	17.8	13.8	13.6	13.7	11.6	11.3	11.5	8.3	7.8	8.0
24	18.1	17.6	17.9	14.1	13.8	14.0	11.3	10.8	11.0	8.5	7.4	8.1
25	17.9	17.3	17.6	14.2	14.0	14.1	10.8	10.2	10.6	9.0	7.3	8.0
26	17.3	16.6	16.9	14.1	13.9	13.9	10.2	9.7	9.9	9.6	9.0	9.4
27	16.6	16.0	16.3	14.3	14.0	14.2	9.7	9.1	9.3	9.7	9.3	9.5
28	16.0	15.7	15.8	14.2	14.0	14.1	9.3	9.1	9.2	9.9	9.6	9.7
29	15.9	15.5	15.7	14.2	14.0	14.1	9.3	8.7	9.1	10.3	9.9	10.1
30	15.7	15.4	15.6	14.2	13.8	14.0	8.7	8.2	8.5	10.7	10.2	10.5
31	15.6	15.4	15.5	---	---	---	8.2	7.8	8.0	11.3	10.7	11.0
MONTH	19.9	15.4	17.9	16.0	13.6	14.8	13.8	7.8	12.0	11.3	5.6	7.6

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	11.4	11.1	11.2	8.4	8.0	8.2	11.2	10.7	11.0	18.4	17.7	18.0
2	11.1	10.7	10.9	8.5	8.2	8.3	11.7	11.0	11.3	18.1	17.7	18.0
3	10.7	10.2	10.5	8.4	8.0	8.2	11.7	11.4	11.6	17.9	17.5	17.7
4	10.2	9.6	10	8.0	7.6	7.7	11.5	11.1	11.3	17.5	17.2	17.3
5	9.6	9.0	9.2	7.8	7.3	7.6	11.6	11.1	11.4	17.7	17.1	17.3
6	9.0	8.6	8.8	8.1	7.7	7.9	11.9	11.3	11.6	17.6	17.1	17.3
7	8.6	8.3	8.4	8.4	8.0	8.2	12.1	11.4	11.7	17.8	17.3	17.6
8	8.6	8.3	8.4	9.1	8.3	8.6	12.1	11.7	11.8	18.1	17.6	17.9
9	8.9	8.4	8.6	9.5	9.0	9.2	12.1	11.9	12.0	18.0	17.6	17.8
10	8.9	8.6	8.8	9.2	8.9	9.1	12.8	11.9	12.2	18.0	17.6	17.8
11	8.9	8.7	8.8	9.6	9.1	9.3	13.0	12.3	12.6	17.7	17.2	17.5
12	8.9	8.7	8.8	9.8	9.6	9.7	13.5	12.8	13.1	17.7	17.2	17.4
13	8.8	8.5	8.7	9.9	9.6	9.7	13.9	13.3	13.6	17.6	17.0	17.3
14	8.8	8.4	8.6	10.6	9.8	10.1	14.2	13.7	14.0	17.0	16.6	16.8
15	8.7	8.6	8.7	10.9	10.5	10.7	15.2	13.9	14.5	17.0	16.5	16.7
16	8.9	8.6	8.8	10.9	10.5	10.7	15.7	14.9	15.2	16.9	16.5	16.6
17	9.0	8.6	8.8	11.3	10.6	10.9	15.7	15.2	15.4	17.0	16.7	16.8
18	9.0	8.6	8.8	11.5	11.3	11.5	16.5	15.4	15.8	16.8	15.9	16.4
19	9.0	8.7	8.9	12.2	11.5	12.0	16.3	15.9	16.1	15.9	15.4	15.6
20	9.5	9.0	9.2	12.1	12.0	12.1	16.5	16.1	16.3	16.0	15.4	15.7
21	9.8	9.1	9.5	12.3	11.7	12.1	17.3	16.3	16.7	16.1	15.6	15.8
22	9.7	9.4	9.6	11.8	11.2	11.3	17.5	16.0	16.7	16.3	15.6	15.9
23	9.7	9.2	9.5	11.4	11.1	11.2	18.3	17.3	17.8	16.5	15.9	16.2
24	9.6	9.2	9.4	11.1	10.7	10.9	18.1	17.7	17.9	16.8	16.2	16.4
25	9.8	9.3	9.5	11.2	10.6	10.8	18.0	17.4	17.8	17.2	16.6	16.9
26	9.9	8.8	9.4	11.0	10.6	10.9	17.7	17.2	17.4	17.5	16.7	17.0
27	9.0	8.3	8.6	10.6	10.3	10.4	17.3	17.0	17.2	17.8	17.2	17.5
28	8.4	8.2	8.3	10.9	10.2	10.5	17.7	17.2	17.4	18.4	17.6	17.9
29	---	---	---	11.4	10.6	11.0	18.0	17.0	17.5	19.2	17.8	18.4
30	---	---	---	11.2	11.1	11.2	18.4	17.7	18.1	19.1	18.2	18.6
31	---	---	---	11.1	10.8	10.9	---	---	---	19.5	18.1	18.8
MONTH	11.4	8.2	9.2	12.3	7.3	10.0	18.4	10.7	14.6	19.5	15.4	17.2

03426310 CUMBERLAND RIVER AT OLD HICKORY DAM (TAILWATER), TN--Continued

WATER TEMPERATURE FROM THE DCP, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	19.5	18.5	19.0	26.3	25.3	25.8	26.6	24.8	25.5	26.1	25.2	25.5
2	19.5	18.8	19.2	26.8	25.6	26.0	26.1	25.2	25.7	25.7	25.3	25.5
3	20.4	18.7	19.6	26.8	25.6	26.2	26.2	24.9	25.6	25.5	25.1	25.2
4	20.5	19.2	19.9	26.4	25.6	26.0	26.0	25.0	25.4	25.2	24.6	25.0
5	21.3	20.0	20.5	26.6	26.1	26.3	25.8	25.0	25.3	26.1	24.5	25.1
6	21.1	19.6	20.2	26.5	26.0	26.2	26.6	25.0	25.5	26.1	24.9	25.4
7	21.8	20.1	21.1	26.5	26.1	26.3	26.9	25.9	26.5	25.7	24.8	25.2
8	23.1	21.6	22.2	26.4	25.8	26.2	27.4	26.2	26.7	25.4	24.7	25.0
9	23.2	21.4	22.3	26.5	25.5	26.1	26.8	26.0	26.4	25.5	24.8	25.1
10	23.5	21.8	22.6	26.5	25.8	26.0	26.8	26.0	26.3	25.5	24.8	25.1
11	23.0	22.2	22.7	27.2	26.3	26.7	26.5	25.5	26.0	25.4	24.6	24.9
12	23.0	22.4	22.7	26.6	25.9	26.3	26.5	25.5	26.0	25.8	25.2	25.5
13	23.6	21.9	22.8	26.4	25.6	26.0	26.5	25.6	26.1	25.9	25.4	25.5
14	23.5	22.3	23.0	26.5	25.7	26.0	26.5	25.6	26.0	26.0	25.4	25.6
15	23.4	22.8	23.0	26.0	25.7	25.8	26.2	25.6	25.9	25.7	24.8	25.3
16	23.9	23.3	23.6	26.2	25.6	25.9	26.1	25.6	25.9	25.1	24.5	24.8
17	24.6	23.4	23.9	25.9	25.1	25.6	26.2	25.5	25.9	25.1	24.5	24.7
18	24.8	23.5	24.1	25.7	24.7	25.2	25.8	25.2	25.4	25.7	24.5	25.1
19	24.9	23.7	24.4	25.8	24.8	25.3	25.8	25.4	25.6	25.7	24.6	25.2
20	24.6	23.4	24.1	25.6	24.9	25.3	25.8	25.3	25.6	25.7	24.5	25.3
21	24.9	23.7	24.4	26.0	25.1	25.6	26.2	25.6	25.8	25.2	24.3	24.7
22	24.7	23.8	24.2	26.1	25.6	25.9	26.1	25.4	25.7	24.9	24.1	24.5
23	24.7	24.2	24.5	26.2	25.9	26.0	26.0	25.0	25.5	24.4	24.1	24.2
24	24.8	24.2	24.5	26.4	25.9	26.2	25.6	24.8	25.1	24.2	23.8	23.9
25	24.8	23.2	24.2	26.9	25.8	26.3	25.5	24.8	25.1	23.8	23.4	23.6
26	25.1	23.7	24.5	26.5	25.8	26.2	25.5	24.8	25.3	23.4	22.7	23.1
27	25.4	24.1	24.7	26.0	25.3	25.7	26.0	25.3	25.7	22.7	22.2	22.4
28	25.4	24.2	24.9	25.4	24.4	25.1	26.0	25.5	25.8	22.3	22.1	22.2
29	25.6	25.0	25.2	25.6	24.4	25.0	25.9	25.5	25.7	22.3	22.0	22.1
30	25.6	25.0	25.3	25.2	24.7	25.0	26.2	25.4	25.8	22.6	22.1	22.3
31	---	---	---	25.8	24.8	25.3	26.0	25.4	25.6	---	---	---
MONTH	25.6	18.5	22.9	27.2	24.4	25.9	27.4	24.8	25.8	26.1	22.0	24.6

OXYGEN DISSOLVED FROM THE DCP, in (MG/L), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	10.3	8.2	9.2	9.6	8.8	9.3	---	---	---	10.9	10.4	10.6
2	10.5	8.7	9.7	9.3	8.6	9.0	---	---	---	11.2	10.8	11.0
3	11.8	9.3	10.1	9.0	8.2	8.4	9.4	9.1	9.3	11.5	10.8	11.1
4	11.7	9.1	10.3	8.9	7.4	8.5	9.5	9.0	9.3	12.0	11.2	11.6
5	11.3	9.2	10.2	8.8	7.6	8.5	9.8	9.3	9.5	12.1	11.6	11.8
6	10.1	6.6	9.2	9.6	7.8	8.9	9.6	9.0	9.3	12.1	11.5	11.8
7	11.5	9.8	10.5	9.0	8.0	8.7	9.2	8.8	8.9	12.0	11.4	11.7
8	11.4	9.3	10.6	9.3	7.5	8.8	9.1	8.4	8.8	12.4	11.6	12.1
9	11.0	8.8	10.1	8.9	8.4	8.7	8.9	8.3	8.6	12.6	12.1	12.4
10	11.0	9.0	10.1	9.6	8.5	9.0	8.8	8.5	8.7	12.6	12.2	12.4
11	10.5	9.0	9.9	9.4	7.5	8.9	8.6	8.2	8.5	12.8	12.1	12.3
12	9.8	8.1	9.2	9.2	7.3	8.8	8.5	8.2	8.3	12.9	12.2	12.6
13	9.5	8.2	9.0	9.4	8.6	9.0	8.4	8.2	8.3	13.1	12.6	12.9
14	9.4	8.2	8.9	9.3	8.6	9.0	8.8	8.3	8.5	13.3	12.6	12.9
15	9.7	8.5	9.1	9.1	8.4	8.7	8.8	8.5	8.7	13.0	12.5	12.8
16	9.8	8.7	9.4	9.2	8.6	8.9	8.7	8.4	8.5	13.6	12.4	12.9
17	9.6	8.7	9.2	9.4	7.4	8.8	8.7	8.5	8.6	13.4	12.8	13.1
18	10.9	8.6	9.9	9.8	6.7	9.1	8.7	8.3	8.4	13.7	12.7	13.1
19	10.9	9.4	10.5	9.8	7.5	8.9	8.8	8.3	8.5	13.4	12.6	13.2
20	10.8	9.8	10.3	9.4	6.2	8.9	8.9	8.3	8.6	13.6	12.6	13.1
21	10.6	9.3	9.8	10.0	6.2	9.3	9.1	8.9	9.0	13.5	12.8	13.2
22	10.7	9.5	10.0	10.3	9.3	9.9	10.1	8.9	9.1	13.5	12.9	13.2
23	11.1	10.2	10.6	10.2	9.3	9.8	10.6	9.2	9.6	14.7	12.8	13.2
24	10.3	8.9	9.6	9.5	6.9	9.1	9.4	9.0	9.3	14.7	14.3	14.5
25	9.7	8.6	9.2	9.0	6.9	8.7	9.4	9.0	9.2	14.9	---	---
26	9.6	8.8	9.2	9.2	8.2	8.7	9.8	9.4	9.6	---	---	---
27	9.6	7.8	9.1	9.3	8.6	9.0	10.2	9.6	9.9	---	---	---
28	10.2	7.5	9.3	---	---	---	10.1	9.7	9.9	---	---	---
29	9.9	6.5	9.1	---	---	---	10.1	9.7	9.9	9.7	9.6	9.6
30	9.5	7.8	9.0	---	---	---	10.2	9.8	10.0	9.8	9.6	9.8
31	9.5	8.1	8.9	---	---	---	10.6	10.2	10.4	9.8	9.6	9.7
MONTH	11.8	6.5	9.7	10.3	6.2	8.9	10.6	8.2	9.1	14.9	9.6	12.2

03426310 CUMBERLAND RIVER AT OLD HICKORY DAM (TAILWATER), TN--Continued

OXYGEN DISSOLVED FROM THE DCP, in (MG/L), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	10.2	9.8	10	12.9	12.2	12.5	12.6	12.2	12.5	10.8	9.0	9.8
2	10.3	10.1	10.2	12.7	12.4	12.5	12.4	12.1	12.2	9.3	8.8	9.1
3	10.2	10.1	10.2	12.8	12.3	12.5	12.5	12.2	12.3	9.1	8.8	8.9
4	10.5	10.1	10.3	13.1	12.4	12.7	13.4	11.3	12.3	9.1	8.6	8.8
5	10.6	10.5	10.6	13.7	13.0	13.4	12.2	10.1	11.1	9.1	8.4	8.8
6	10.7	10.5	10.6	14.0	13.4	13.7	12.1	11.1	11.8	8.7	8.3	8.5
7	10.8	10.6	10.7	14.2	13.6	13.8	11.8	10.7	11.4	9.0	8.0	8.5
8	10.8	10.6	10.7	14.1	13.7	13.9	10.9	9.5	10	11.6	8.8	10
9	10.9	10.6	10.8	14.1	13.3	13.5	9.7	9.5	9.6	9.6	9.0	9.3
10	11.0	10.8	10.9	13.4	13.0	13.2	11.1	9.6	9.9	10.9	9.1	9.9
11	11.2	11.0	11.1	14.0	13.2	13.6	10.3	10.0	10.1	10.2	9.5	9.8
12	11.3	11.1	11.2	14.1	13.4	13.8	10.2	9.9	10.1	10.0	9.5	9.7
13	11.5	11.2	11.3	13.7	13.0	13.4	10.2	9.9	10.0	9.8	9.3	9.5
14	11.5	11.4	11.5	13.9	13.1	13.6	10.1	9.7	9.9	11.9	9.5	11.4
15	11.7	11.4	11.5	13.6	12.8	13.3	10.5	9.7	10.1	11.7	9.7	10.7
16	11.9	11.3	11.5	12.9	12.2	12.5	11.1	10.1	10.6	11.8	10.8	11.4
17	11.7	11.5	11.6	13.6	11.9	12.6	11.6	10.7	11.0	11.3	9.2	10.2
18	11.9	11.6	11.8	13.5	12.8	13.1	12.2	10.8	11.4	11.8	9.1	10.7
19	12.0	11.7	11.9	12.8	11.6	12.2	11.8	11.2	11.4	12.0	9.6	11.1
20	12.0	11.7	11.9	11.9	11.6	11.8	11.4	10.9	11.2	9.6	9.1	9.4
21	12.6	11.7	12.0	12.0	11.8	11.9	11.5	10.7	11.1	9.6	9.0	9.3
22	12.1	11.9	12.0	12.3	12.0	12.1	10.7	10.0	10.3	9.9	9.3	9.5
23	12.2	11.9	12.1	12.2	11.8	12.1	11.7	10.2	10.8	10.3	9.6	10
24	12.4	11.9	12.1	12.5	11.9	12.3	11.3	10.2	10.6	10.7	10.0	10.3
25	12.6	12.2	12.4	12.8	12.3	12.6	11.0	9.7	10.4	10.9	10.0	10.5
26	12.6	11.9	12.1	13.2	12.7	12.9	10.9	10.3	10.6	10.7	9.5	10.2
27	12.5	11.9	12.2	13.1	12.6	13.0	10.7	10.2	10.4	10.5	9.4	9.9
28	12.8	12.2	12.5	13.0	12.8	12.9	10.6	9.7	10.2	9.8	8.9	9.4
29	---	---	---	13.0	12.3	12.8	10.9	9.6	10.2	10.4	8.4	9.4
30	---	---	---	13.0	12.7	12.9	11.4	10.3	10.8	9.9	8.6	9.1
31	---	---	---	12.9	12.6	12.8	---	---	---	10.5	8.6	9.4
MONTH	12.8	9.8	11.3	14.2	11.6	12.9	13.4	9.5	10.8	12.0	8.0	9.8

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	9.8	8.5	9.2	6.6	5.3	5.9	6.6	4.9	5.9	7.3	5.9	6.5
2	9.2	7.7	8.8	6.2	4.3	5.3	7.0	5.8	6.3	6.8	5.8	6.4
3	9.2	7.8	8.5	6.0	3.4	5.1	7.4	5.6	6.5	6.4	5.2	6.0
4	8.6	7.3	8.1	5.8	4.6	5.2	6.8	5.2	6.0	6.0	4.8	5.6
5	8.5	6.1	7.9	6.3	4.9	5.7	6.4	5.2	5.8	6.6	4.5	5.4
6	7.8	7.0	7.5	6.5	5.0	5.9	6.0	5.1	5.5	6.9	4.8	5.7
7	7.9	6.6	7.4	7.0	5.7	6.3	6.3	5.4	5.9	7.1	4.9	5.9
8	8.7	7.5	8.0	6.3	5.6	5.9	7.3	5.6	6.2	6.6	5.0	5.7
9	8.3	7.2	7.7	7.0	4.0	6.0	7.2	5.5	6.2	6.1	4.2	5.3
10	7.7	7.1	7.4	6.4	5.1	5.8	7.4	5.5	6.5	5.9	4.1	4.9
11	7.1	5.9	6.7	6.3	5.4	5.8	6.9	5.1	6.3	5.5	3.9	4.8
12	6.6	5.2	6.1	6.9	5.4	6.2	6.2	4.7	5.5	6.7	4.5	5.8
13	6.7	4.8	6.0	6.9	6.1	6.7	5.9	4.6	5.3	7.2	5.5	6.3
14	6.2	5.3	5.8	7.3	6.9	7.1	6.1	4.8	5.5	7.6	5.1	6.8
15	6.6	5.4	5.9	8.0	6.9	7.5	6.3	4.9	5.5	7.3	6.1	6.6
16	7.1	5.8	6.5	8.2	6.9	7.6	6.6	5.4	6.1	6.1	5.4	5.7
17	7.5	5.0	6.5	7.4	6.2	6.9	7.2	5.6	6.5	6.5	5.3	5.9
18	7.2	5.5	6.6	7.4	6.3	6.8	6.8	5.9	6.4	7.8	5.6	6.6
19	7.7	6.1	6.9	7.2	5.2	6.6	7.0	6.5	6.8	7.4	5.4	6.5
20	6.8	5.5	6.3	7.2	6.1	6.6	7.1	6.2	6.6	7.8	5.6	6.9
21	7.2	5.4	6.3	7.6	6.0	6.8	7.6	6.3	6.8	7.8	5.3	6.5
22	7.0	5.8	6.4	6.9	5.7	6.2	7.6	5.9	6.7	7.0	6.2	6.5
23	6.9	6.0	6.5	6.2	5.7	5.9	6.8	5.4	6.1	8.1	6.1	7.2
24	6.6	6.1	6.3	6.0	4.8	5.5	6.8	5.6	6.0	8.0	6.6	7.3
25	6.6	5.1	5.9	6.6	4.5	5.5	6.8	5.5	6.1	8.2	6.9	7.7
26	6.3	4.7	5.9	6.7	5.3	6.2	6.4	4.8	5.7	7.6	6.6	7.0
27	7.2	3.7	5.9	6.4	5.9	6.1	6.1	4.8	5.7	9.2	6.7	7.6
28	6.3	3.9	5.7	6.7	5.9	6.3	6.5	5.0	5.9	7.4	6.8	7.0
29	6.5	5.5	6.1	6.7	5.9	6.2	6.0	5.1	5.5	7.8	6.6	7.3
30	6.4	5.1	5.8	6.2	5.7	6.0	6.6	5.2	5.9	8.8	7.0	7.9
31	---	---	---	6.7	5.3	6.1	6.8	5.4	6.2	---	---	---
MONTH	9.8	3.7	6.8	8.2	3.4	6.2	7.6	4.6	6.1	9.2	3.9	6.4

03426310 CUMBERLAND RIVER AT OLD HICKORY DAM (TAILWATER), TN--Continued

TURBIDITY, in (NTU), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	8	3	6	4	6	4	8	6	33	23	9	6
2	6	2	7	4	5	4	7	6	29	22	8	7
3	6	2	6	4	17	4	7	4	24	20	8	7
4	4	2	6	2	20	6	8	3	22	18	9	7
5	7	3	7	4	15	6	6	4	18	14	8	6
6	7	3	8	4	26	7	5	4	15	13	8	6
7	6	3	8	4	23	8	7	4	13	11	8	6
8	5	2	7	3	17	5	5	4	12	10	7	6
9	5	2	10	6	6	5	6	3	14	9	9	7
10	5	3	12	6	6	4	5	4	11	9	9	6
11	6	3	11	6	7	5	5	4	11	8	8	6
12	6	3	9	6	7	5	6	4	11	8	9	6
13	6	3	---	---	7	5	6	4	9	8	8	6
14	8	4	---	---	7	5	8	4	9	7	8	6
15	8	4	---	---	8	6	6	4	9	7	9	6
16	9	4	---	---	11	6	6	4	9	8	8	6
17	7	4	---	---	9	6	6	4	10	8	19	6
18	9	3	---	---	9	7	8	4	10	7	51	17
19	8	4	5	2	9	6	8	5	11	7	120	51
20	6	4	4	1	8	6	8	4	11	7	110	45
21	9	4	4	2	8	6	6	4	11	7	68	42
22	6	4	6	2	7	5	6	4	10	7	81	52
23	7	5	4	3	7	6	12	4	9	7	83	58
24	6	5	12	2	9	5	42	7	9	7	58	38
25	8	4	5	2	8	5	110	22	9	7	38	31
26	8	5	4	2	8	5	110	41	10	7	32	26
27	8	3	5	2	8	6	---	---	10	7	32	21
28	8	4	5	2	8	6	---	---	8	7	26	19
29	6	2	6	2	8	6	43	39	---	---	19	16
30	6	3	6	4	7	6	41	32	---	---	19	16
31	6	3	---	---	7	6	42	32	---	---	23	15
MONTH	9	2	12	1	26	4	110	3	33	7	120	6

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	33	20	10	5	10	6	7	2	18	8	10	3
2	40	26	9	6	8	4	6	2	13	10	9	3
3	---	---	11	8	8	3	7	1	14	9	10	5
4	43	39	11	8	7	2	7	4	12	9	13	4
5	45	36	13	9	9	1	8	4	14	9	10	3
6	40	33	15	12	6	2	13	4	14	10	10	4
7	41	26	16	12	9	3	8	5	15	10	9	5
8	29	22	22	12	7	5	8	4	15	10	10	5
9	24	20	17	13	10	4	8	3	15	10	9	5
10	35	18	17	13	12	5	9	4	19	11	13	5
11	20	18	17	15	12	3	7	2	14	8	12	6
12	27	17	18	15	11	4	7	1	16	9	14	6
13	25	18	20	16	13	4	4	2	12	6	15	7
14	29	16	25	19	14	8	7	3	8	5	14	6
15	27	15	28	16	---	---	7	4	5	2	12	8
16	22	15	23	15	---	---	6	2	10	5	10	5
17	20	12	19	13	6	1	8	2	11	5	8	4
18	16	12	21	13	10	2	13	6	11	5	8	4
19	18	12	20	15	8	4	5	2	7	5	10	2
20	15	12	28	14	8	3	4	2	6	4	8	4
21	12	9	28	16	8	5	14	8	7	3	16	2
22	16	9	18	13	7	4	---	---	8	4	54	8
23	13	8	18	11	8	4	---	---	8	5	33	2
24	10	7	14	9	5	4	11	7	9	5	7	2
25	14	7	13	9	8	3	13	6	9	6	14	2
26	11	8	14	9	7	2	14	6	6	5	5	1
27	12	7	22	11	7	2	18	8	8	5	8	1
28	14	8	22	14	8	1	12	7	8	4	---	---
29	10	7	18	12	6	4	11	6	9	2	---	---
30	9	4	15	9	6	3	10	7	9	3	---	---
31	---	---	12	7	---	---	12	7	8	3	---	---
MONTH	45	4	28	5	14	1	18	1	19	2	54	1

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03426385 MANSKER CREEK ABOVE GOODLETTSVILLE, TN

LOCATION.--Lat 36°20'20", long 86°43'04", Davidson County, Hydrologic Unit 05130202, on left bank at downstream end of bridge on U.S. Highway 31W, at mouth of Slater Creek, 400 ft below Lumsley Fork, and 1.2 mi north of Goodlettsville.

DRAINAGE AREA.--27.7 mi^2, includes Slater Creek.

PERIOD OF RECORD.--August 1993 to current year.

GAGE.--Data collection platform. Datum of gage is 434.99 ft above NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good. Periodic obsevations of water temperature and specific conductance are published in this report as miscellaneous water-quality data.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 27	0645	2,180	8.36	Mar 17	1930	4,110	12.23
Nov 29	1030	2,490	8.99	Mar 20	0700	2,100	8.20
Nov 29	2130	1,590	7.18	Apr 17	1815	1,820	7.66
Dec 13	0215	1,350	6.66	Apr 24	1245	2,330	8.67
Jan 24	0445	*4,480	*12.96				

Minimum daily discharge, 0.25 ft^3/s, Sept. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

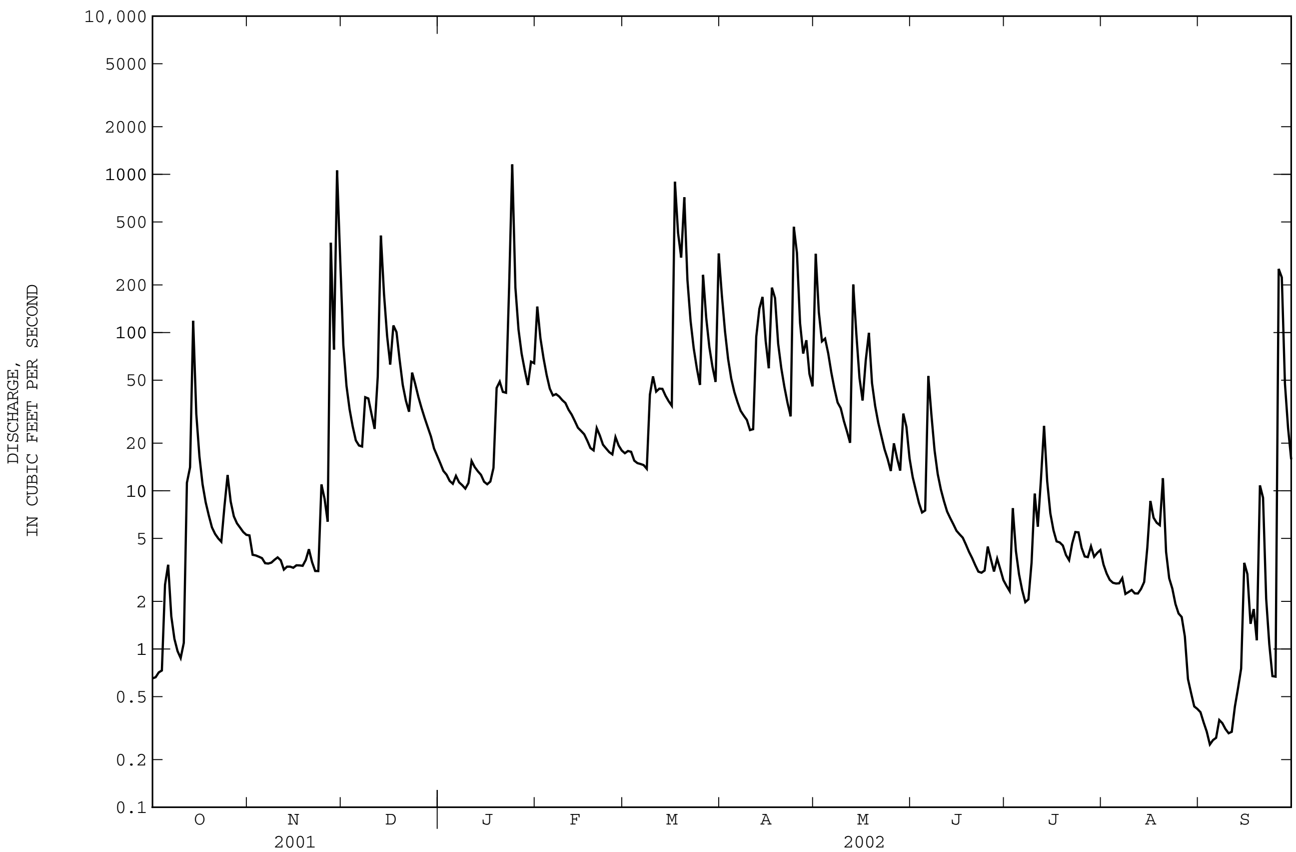
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.65	5.2	83	15	146	17	172	314	12	2.5	3.4	0.40
2	0.66	3.9	46	13	92	18	102	134	10	2.3	3.0	0.34
3	0.71	3.9	33	13	69	18	68	88	8.4	7.8	2.7	0.30
4	0.73	3.8	25	12	54	16	51	92	7.3	4.2	2.6	0.25
5	2.5	3.8	21	11	44	15	42	74	7.5	3.0	2.6	0.27
6	3.4	3.5	19	12	40	15	36	56	53	2.4	2.6	0.27
7	1.6	3.5	19	11	41	15	32	44	30	2.0	2.8	0.36
8	1.2	3.5	39	11	39	14	30	36	18	2.1	2.2	0.34
9	0.97	3.7	38	10	37	41	28	33	13	3.5	2.3	0.31
10	0.88	3.8	31	11	36	53	24	28	10	9.6	2.4	0.29
11	1.1	3.6	25	15	33	42	25	24	8.6	5.9	2.2	0.30
12	11	3.2	53	14	30	44	94	20	7.4	12	2.2	0.43
13	14	3.3	410	13	28	44	142	201	6.7	26	2.4	0.57
14	119	3.3	175	13	25	40	168	97	6.1	11	2.7	0.75
15	31	3.3	95	11	24	37	89	51	5.6	7.2	4.4	3.5
16	16	3.4	63	11	23	34	59	37	5.3	5.6	8.6	3.0
17	11	3.4	111	11	21	898	192	67	5.1	4.8	6.8	1.4
18	8.5	3.4	101	14	19	426	165	100	4.6	4.7	6.3	1.8
19	7.0	3.7	67	45	18	298	85	48	4.1	4.5	6.1	1.1
20	5.9	4.3	47	49	25	716	60	34	3.8	3.9	12	11
21	5.3	3.5	37	42	22	215	45	27	3.4	3.6	4.1	9.0
22	5.0	3.1	32	42	20	118	36	22	3.1	4.6	2.8	2.1
23	4.8	3.1	56	195	19	80	30	18	3.0	5.5	2.4	1.1
24	8.0	11	47	1160	18	60	466	16	3.1	5.5	1.9	0.67
25	13	8.9	39	193	17	47	319	13	4.4	4.4	1.7	0.67
26	8.5	6.4	33	104	22	231	115	20	3.7	3.8	1.6	252
27	6.9	370	29	74	19	124	74	16	3.1	3.8	1.2	223
28	6.2	78	25	58	18	81	89	13	3.7	4.5	0.65	48
29	5.9	1060	22	47	---	61	55	31	3.2	3.8	0.53	25
30	5.5	290	19	66	---	49	46	25	2.7	4.1	0.43	16
31	5.3	---	17	64	---	316	---	16	---	4.2	0.42	---
TOTAL	312.20	1907.5	1857	2360	999	4183	2939	1795	259.9	172.8	98.03	604.52
MEAN	10.07	63.58	59.90	76.13	35.68	134.9	97.97	57.90	8.663	5.574	3.162	20.15
MAX	119	1060	410	1160	146	898	466	314	53	26	12	252
MIN	0.65	3.1	17	10	17	14	24	13	2.7	2.0	0.42	0.25
CFSM	0.36	2.30	2.16	2.75	1.29	4.87	3.54	2.09	0.31	0.20	0.11	0.73
IN.	0.42	2.56	2.49	3.17	1.34	5.62	3.95	2.41	0.35	0.23	0.13	0.81

03426385 MANSKER CREEK ABOVE GOODLETTSVILLE, TN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 2002, BY WATER YEAR (WY)

MEAN	9.525	32.58	49.98	72.03	75.50	100.8	67.87	47.46	36.09	7.852	4.882	9.442
MAX	21.7	81.9	123	157	169	251	116	97.3	127	12.7	14.0	52.2
(WY)	1996	1997	1997	1999	1994	1997	1998	1998	1998	1998	1994	1996
MIN	1.40	2.94	10.1	15.4	35.7	39.4	23.2	12.7	5.31	2.58	1.17	0.38
(WY)	2001	1999	2000	2000	2002	2000	1995	2001	2000	1995	1993	1999

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1993 - 2002	
ANNUAL TOTAL	12203.76		17487.95			
ANNUAL MEAN	33.43		47.91		42.75	
HIGHEST ANNUAL MEAN					63.9	1997
LOWEST ANNUAL MEAN					20.9	2000
HIGHEST DAILY MEAN	1060	Nov 29	1160	Jan 24	1890	Mar 2 1997
LOWEST DAILY MEAN	0.57	Sep 28	0.25	Sep 4	0.02	Sep 9 1999
ANNUAL SEVEN-DAY MINIMUM	0.62	Sep 27	0.30	Sep 4	0.04	Sep 3 1999
MAXIMUM PEAK FLOW			4480	Jan 24	12500	Mar 2 1997
MAXIMUM PEAK STAGE			12.96	Jan 24	13.31	Mar 2 1997
ANNUAL RUNOFF (CFSM)	1.21		1.73		1.54	
ANNUAL RUNOFF (INCHES)	16.39		23.49		20.97	
10 PERCENT EXCEEDS	62		100		87	
50 PERCENT EXCEEDS	11		14		13	
90 PERCENT EXCEEDS	1.8		1.9		1.7	



03426470 DRY CREEK NEAR EDENWOLD, TN

LOCATION.--Lat 36°17'05", long 86°42'24", Davidson County, Hydrologic Unit 05130202, on right wingwall on downstream side of bridge on Gallatin Pike, 0.6 mi southwest of Edenwold, 0.6 mi northeast of Amqui, and at mile 1.2.

DRAINAGE AREA.--7.64 mi^2.

PERIOD OF RECORD.--October 1996 to current year.

GAGE.--Data collection platform. Elevation of gage is 430 ft above NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water-quality data.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,700 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 29	1000	2,050	8.33	May 1	0100	2,190	8.42
Jan 24	0415	3,830	9.30	Jul 12	1515	2,590	8.67
Mar 17	1900	*4,530	*9.59				

Minimum discharge, 0.11 ft^3/s, Oct. 3, 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.16	0.69	19	3.1	38	4.5	38	204	1.9	1.1	1.2	0.49
2	0.14	0.67	9.8	2.9	19	4.4	21	31	1.7	0.99	0.93	0.42
3	0.13	0.62	6.7	2.6	16	4.4	15	22	1.6	17	0.78	0.45
4	0.13	0.58	4.7	2.5	14	4.2	12	30	1.5	4.4	0.67	0.44
5	2.3	0.56	3.5	2.4	12	4.0	10	20	1.5	2.3	0.58	0.44
6	2.0	0.49	3.6	2.7	11	3.8	8.8	15	66	1.6	0.54	0.41
7	0.93	0.54	4.6	2.5	15	3.8	7.6	11	9.8	1.3	0.46	0.42
8	0.70	0.47	13	2.3	16	3.5	6.9	9.3	4.9	3.7	0.41	0.38
9	0.56	0.43	11	2.3	14	7.1	6.7	8.7	3.4	7.1	0.38	0.32
10	0.50	0.59	7.5	2.4	12	6.5	5.8	7.0	2.7	78	0.39	0.31
11	0.54	0.45	5.3	3.7	10	5.7	6.0	5.9	2.3	13	0.35	0.28
12	7.0	0.46	13	3.2	9.6	9.1	11	4.9	2.0	189	0.33	0.23
13	9.2	0.50	230	3.0	8.5	10	38	74	2.2	35	0.33	0.24
14	75	0.52	57	2.8	7.6	8.5	27	19	1.9	11	1.1	0.37
15	7.9	0.51	21	2.7	7.0	8.5	15	11	1.7	4.6	1.1	5.0
16	5.8	0.51	13	2.5	6.5	15	11	8.2	1.6	3.9	15	2.2
17	2.3	0.49	20	2.4	6.0	578	39	8.8	1.5	2.0	2.6	1.1
18	1.3	0.53	18	4.0	5.6	179	29	8.3	1.4	1.7	1.2	0.97
19	1.1	0.65	12	21	5.1	79	16	6.2	1.3	1.4	0.90	0.87
20	0.94	0.68	8.4	14	7.5	209	12	5.0	1.1	1.1	2.4	4.9
21	0.84	0.65	6.9	9.9	6.5	53	10	4.5	1.0	0.96	1.0	4.8
22	0.74	0.63	5.5	10	5.7	27	8.4	4.0	0.93	1.1	56	1.8
23	0.78	0.67	11	63	5.2	19	7.2	3.5	0.93	3.0	5.5	1.2
24	2.1	1.3	8.5	432	4.8	14	150	3.2	0.95	2.7	1.9	0.98
25	3.3	1.3	7.3	55	4.5	12	46	3.0	1.9	1.6	1.3	0.96
26	1.8	1.0	6.2	27	6.4	45	21	3.4	1.1	1.1	1.0	261
27	1.3	56	5.3	19	5.4	20	15	3.0	2.5	0.92	0.83	168
28	1.0	15	4.5	15	4.9	15	36	2.7	2.3	0.94	0.76	21
29	0.92	481	3.8	13	---	12	15	2.4	1.4	1.0	0.68	10
30	0.79	87	3.4	15	---	12	13	2.3	1.2	3.0	0.59	6.2
31	0.71	---	3.1	15	---	130	---	2.0	---	1.9	0.56	---
TOTAL	132.91	655.49	546.6	758.9	283.8	1507.0	657.4	543.3	126.21	398.41	101.77	496.18
MEAN	4.287	21.85	17.63	24.48	10.14	48.61	21.91	17.53	4.207	12.85	3.283	16.54
MAX	75	481	230	432	38	578	150	204	66	189	56	261
MIN	0.13	0.43	3.1	2.3	4.5	3.5	5.8	2.0	0.93	0.92	0.33	0.23
CFSM	0.56	2.86	2.31	3.20	1.33	6.36	2.87	2.29	0.55	1.68	0.43	2.16
IN.	0.65	3.19	2.66	3.70	1.38	7.34	3.20	2.65	0.61	1.94	0.50	2.42

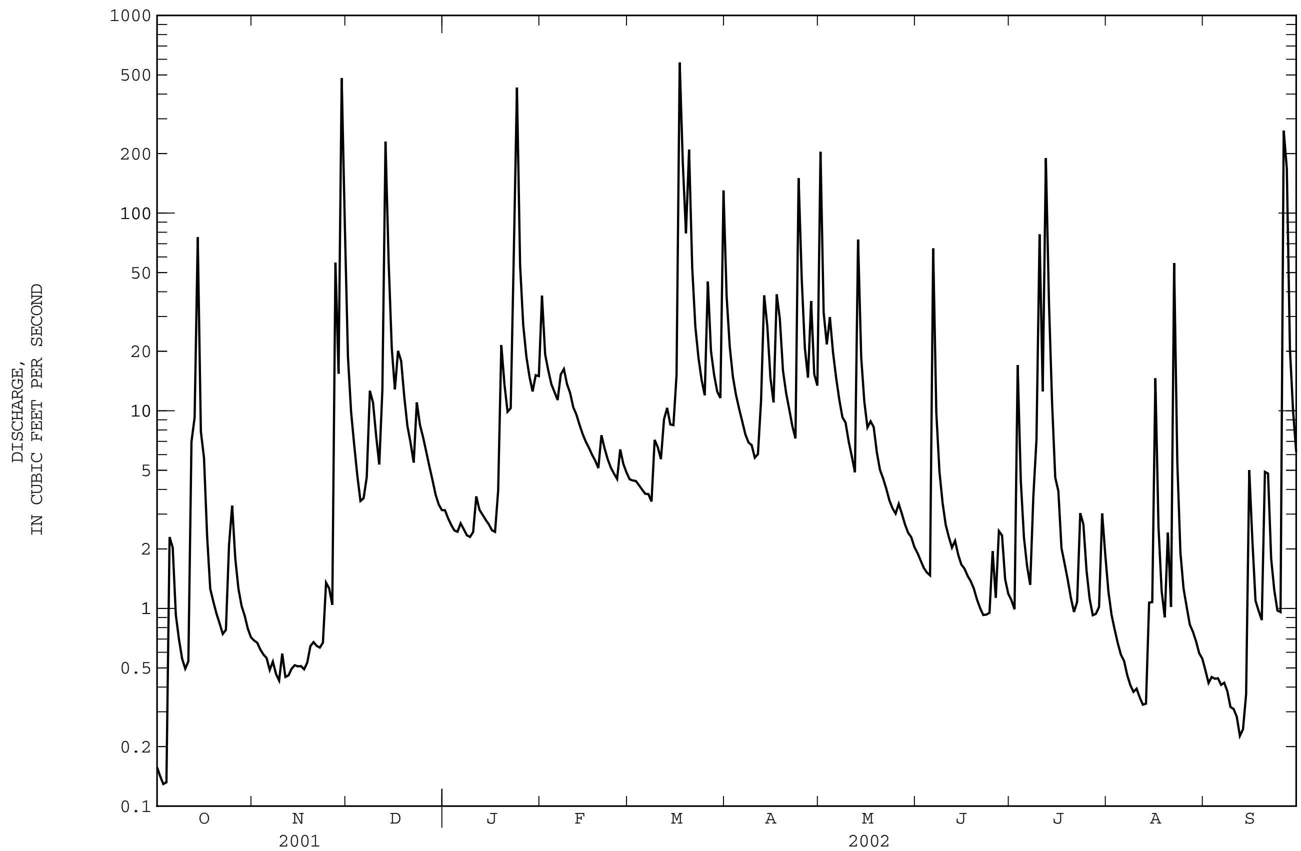
03426470 DRY CREEK NEAR EDENWOLD, TN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 2002, BY WATER YEAR (WY)

MEAN	2.257	11.61	16.29	21.41	17.98	26.17	18.07	9.921	17.40	3.940	1.451	3.400
MAX	5.15	30.8	34.2	49.9	38.1	57.0	48.5	20.8	47.3	12.9	3.28	16.5
(WY)	1997	1997	1997	1999	2001	1997	1998	1998	1998	2002	2002	2002
MIN	0.17	0.68	4.46	6.56	10.1	7.85	5.78	2.51	1.16	0.33	0.20	0.12
(WY)	2001	1999	2000	2000	2002	2001	2001	2001	2000	2000	2000	1999

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1997 - 2002	
ANNUAL TOTAL	3602.19		6207.97			
ANNUAL MEAN	9.869		17.01		12.45	
HIGHEST ANNUAL MEAN					17.6	1997
LOWEST ANNUAL MEAN					5.12	2000
HIGHEST DAILY MEAN	481	Nov 29	578	Mar 17	679	Jun 5 1998
LOWEST DAILY MEAN	0.13	Oct 3	0.13	Oct 3	0.02	Sep 8 1999
ANNUAL SEVEN-DAY MINIMUM	0.16	Sep 28	0.30	Sep 8	0.04	Aug 20 2000
MAXIMUM PEAK FLOW			4530	Mar 17	6360	Jun 5 1998
MAXIMUM PEAK STAGE			9.59	Mar 17	10.21	Jun 5 1998
INSTANTANEOUS LOW FLOW			a0.11	Oct 3	0.02	Aug 23 2000
ANNUAL RUNOFF (CFSM)	1.29		2.23		1.63	
ANNUAL RUNOFF (INCHES)	17.54		30.23		22.14	
10 PERCENT EXCEEDS	14		27		21	
50 PERCENT EXCEEDS	1.8		3.8		2.8	
90 PERCENT EXCEEDS	0.41		0.53		0.24	

a Also occurred Oct. 4.



03427500 EAST FORK STONES RIVER NEAR LASCASSAS, TN

LOCATION.--Lat 35°55'06", long 86°20'02", Rutherford County, Hydrologic Unit 05130203, on left bank 50 (revised) ft upstream from highway bridge, 2.5 mi southwest of Lascassas, 3.7 mi downstream from Bradley Creek, 6.0 mi northeast of the courthouse in Murfreesboro, and at mile 15.4.

DRAINAGE AREA.--262 mi^2.

PERIOD OF RECORD.--October 1950 to November 1958, May 1963 to September 1991, October 1991 to September 2000, crest-stage partial record station. October 2000 to current year. Prior to February 1951 monthly discharge only, published in WSP 1726.

REVISED RECORDS.--WSP 1910: Drainage Area. WDR-TN-75-1: 1955(M), 1963(M), 1970(M), 1973 (M)(P).

GAGE.--Water-stage encoder and satellite telemeter at station. Datum of gage is 507.88 ft, Sandy Hook datum (levels by U.S. Army Corps of Engineers). Prior to Oct. 1, 1973, water-stage recorder 100 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Frequent diurnal fluctuation at low flow caused by small mills above station. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water-quality data.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1902, 39.48 ft, Mar. 13, 1975.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 23	2330	*21,800	*31.89	Mar 31	1630	12,100	23.15
Mar 17	1830	20,700	31.19	May 13	1700	8,980	19.60

Minimum discharge, 6.7 ft^3/s, Sept. 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

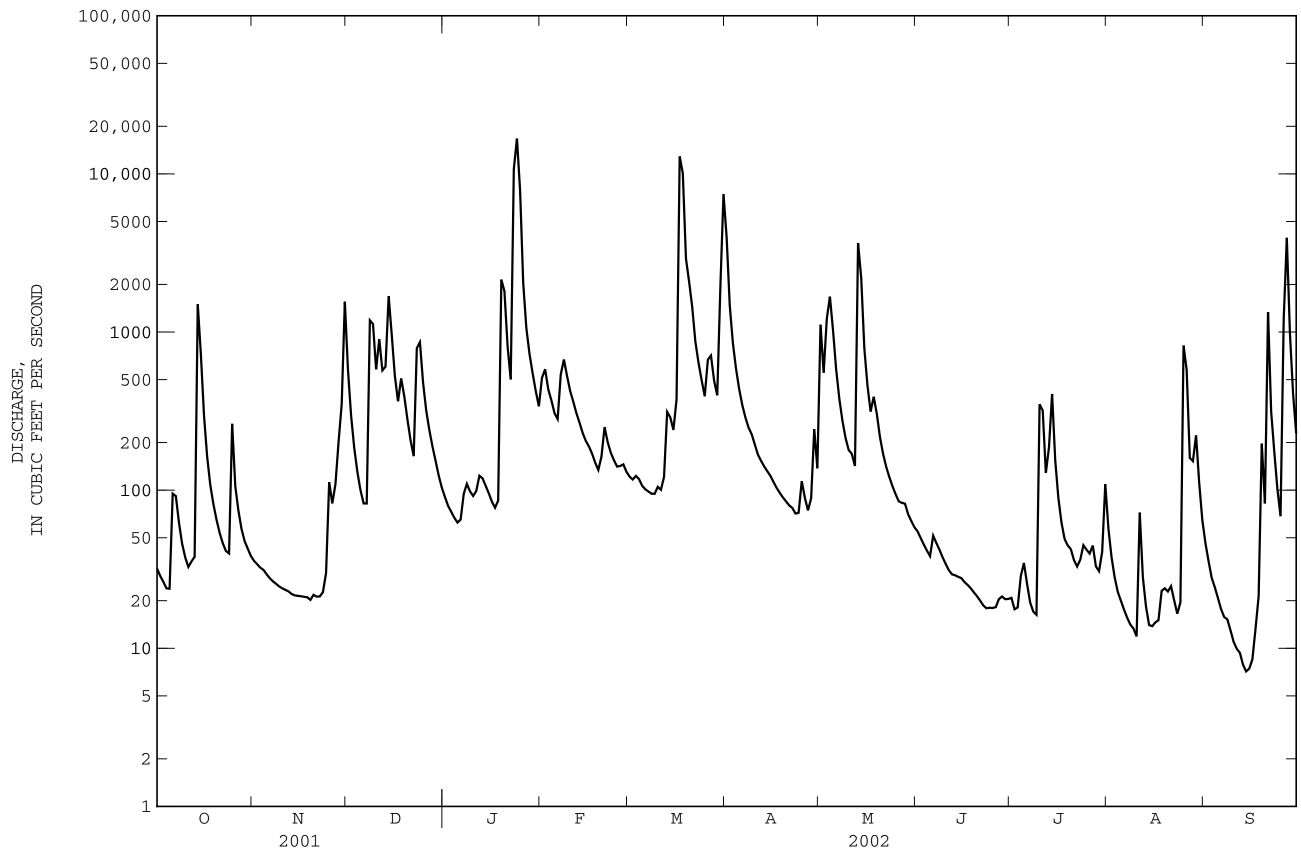
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	36	579	90	514	122	3990	1110	55	21	57	46
2	29	34	295	80	582	117	1460	553	50	18	38	36
3	26	32	185	73	434	123	850	1210	45	18	28	28
4	24	31	131	67	370	118	587	1680	41	29	23	24
5	24	29	100	62	307	107	437	1030	38	35	20	21
6	95	28	82	65	282	101	346	578	52	26	18	18
7	92	27	82	95	539	98	288	380	46	19	16	16
8	62	26	1190	110	670	95	249	275	42	17	14	15
9	46	25	1120	98	528	95	226	214	38	16	13	13
10	38	24	581	92	424	105	195	179	34	349	12	11
11	33	23	901	99	362	101	168	170	31	319	72	9.9
12	35	23	572	123	307	121	153	142	29	129	28	9.4
13	38	22	604	119	267	313	141	3650	29	186	18	7.9
14	1500	22	1690	107	230	288	132	2200	28	406	14	7.1
15	725	21	954	96	205	240	123	789	28	154	14	7.4
16	297	21	525	84	189	375	112	460	26	89	15	8.5
17	163	21	365	77	170	12900	103	314	25	62	15	13
18	108	21	509	86	149	10100	96	390	24	49	23	21
19	82	20	392	2150	134	2910	90	303	23	45	24	197
20	65	22	280	1810	163	2090	85	216	21	42	23	82
21	54	21	207	818	250	1440	80	169	20	36	25	1340
22	46	21	164	501	201	872	77	140	19	33	20	314
23	41	23	790	10800	172	642	71	121	18	36	17	175
24	40	30	863	16700	155	498	72	106	18	45	19	101
25	263	112	478	7860	141	393	114	94	18	42	823	68
26	106	82	319	2040	142	668	90	85	18	40	577	1200
27	74	109	240	1060	146	710	74	83	20	45	160	3940
28	57	202	189	729	131	492	89	82	21	33	153	983
29	47	350	153	551	---	398	243	70	20	31	222	408
30	43	1550	124	425	---	1940	137	64	21	41	111	229
31	38	---	104	339	---	7460	---	58	---	109	65	---
TOTAL	4323	3008	14768	47406	8164	46032	10878	16915	898	2520	2677	9349.2
MEAN	139.5	100.3	476.4	1529	291.6	1485	362.6	545.6	29.93	81.29	86.35	311.6
MAX	1500	1550	1690	16700	670	12900	3990	3650	55	406	823	3940
MIN	24	20	82	62	131	95	71	58	18	16	12	7.1
CFSM	0.53	0.38	1.82	5.84	1.11	5.67	1.38	2.08	0.11	0.31	0.33	1.19
IN.	0.61	0.43	2.10	6.73	1.16	6.54	1.54	2.40	0.13	0.36	0.38	1.33

03427500 EAST FORK STONES RIVER NEAR LASCASSAS, TN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2002, BY WATER YEAR (WY)

MEAN	150.4	385.4	747.1	827.8	864.0	940.6	621.5	453.6	174.5	122.1	83.80	154.2
MAX	1211	1466	2027	2184	2136	3201	1605	2214	1261	898	448	1078
(WY)	1976	1987	1991	1974	1956	1975	1973	1984	1989	1989	1966	1986
MIN	7.13	9.56	19.6	55.4	205	205	69.5	34.6	9.62	16.8	13.3	10.9
(WY)	1954	1954	1966	1981	1968	1966	1986	1988	1988	1988	1957	1968

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1951 - 2002	
ANNUAL TOTAL	110402		166938.2			
ANNUAL MEAN	302.5		457.4		456.5	
HIGHEST ANNUAL MEAN					921	1973
LOWEST ANNUAL MEAN					141	1981
HIGHEST DAILY MEAN	8420	Feb 17	16700	Jan 24	34900	Mar 13 1975
LOWEST DAILY MEAN	11	Aug 30	7.1	Sep 14	0.40	Aug 31 1953
ANNUAL SEVEN-DAY MINIMUM	13	Aug 25	8.7	Sep 10	2.9	Sep 22 1954
MAXIMUM PEAK FLOW			21800	Jan 23	41200	Mar 13 1975
MAXIMUM PEAK STAGE			31.89	Jan 23	39.48	Mar 13 1975
INSTANTANEOUS LOW FLOW			6.7	Sep 14	0.20	Oct 23 1953
ANNUAL RUNOFF (CFSM)	1.15		1.75		1.74	
ANNUAL RUNOFF (INCHES)	15.68		23.70		23.67	
10 PERCENT EXCEEDS	633		834		962	
50 PERCENT EXCEEDS	78		98		118	
90 PERCENT EXCEEDS	21		20		16	



03428200 WEST FORK STONES RIVER AT MURFREESBORO, TN

LOCATION.--Lat 35°54'10", long 86°25'48", Rutherford County, Hydrologic Unit 05130203, on left bank at Murfreesboro sewage treatment plant outfall, 3,000 ft downstream from Sinking Creek, 4.5 mi northwest of the courthouse in Murfreesboro, and at mile 10.7.

DRAINAGE AREA.--177 mi^2, includes 17 mi^2 without surface drainage.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1972 to January 1982, January 1986 to current year.

GAGE.--Data collection platform and crest-stage gage. Datum of gage is 514.95 ft above NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow is affected by Murfreesboro sewage treatment plant outflow. An annual average of 11.6 ft^3/s, with a maximum of 15.5 ft^3/s is discharged to the West Fork Stones River 25 ft above the station. Prior to July 1987 an annual average of 7.7 ft^3/s was discharged. Natural flow of stream affected by transbasin diversion of water from East Fork Stones River basin into the West Fork Stones River basin.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,700 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 24	0230	*19,400	*21.09	Mar 18	1400	6,450	13.89
Jan 24	2030	12,600	18.31	Mar 31	2100	9,010	16.12
Mar 17	2100	18,100	20.60	Sep 27	1130	3,890	10.23

Minimum discharge, 8.0 ft^3/s, Sept. 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52	49	458	124	470	105	2450	165	48	38	32	25
2	46	47	309	113	448	99	907	192	43	28	27	23
3	43	48	247	105	358	98	585	480	41	26	24	22
4	40	45	207	96	317	92	447	984	38	23	21	21
5	42	41	169	89	277	86	362	537	37	22	18	21
6	164	39	144	100	270	81	303	344	95	20	21	18
7	91	37	149	112	365	76	266	269	56	19	19	17
8	79	37	284	121	403	73	237	212	46	21	18	17
9	66	36	499	112	335	82	221	159	40	19	17	16
10	57	36	373	106	299	78	197	149	37	23	17	16
11	53	35	482	118	283	77	184	142	35	32	19	15
12	82	35	384	132	253	112	167	121	33	25	18	15
13	76	34	428	126	231	275	144	1430	35	64	17	15
14	681	32	991	116	210	239	127	882	38	108	16	14
15	443	38	617	106	189	196	120	409	31	49	19	14
16	269	32	410	97	175	206	109	291	29	44	20	27
17	211	30	353	91	158	8270	99	251	29	38	20	23
18	160	29	473	113	144	5750	92	265	28	35	19	26
19	131	29	340	1040	132	1710	81	233	24	48	18	28
20	109	32	275	1000	175	1220	75	181	23	36	18	26
21	93	31	234	500	222	937	69	148	21	33	19	263
22	83	27	206	368	182	623	70	126	23	50	19	121
23	72	27	500	6600	157	495	61	108	19	46	17	70
24	72	69	549	12800	140	416	63	92	21	42	21	55
25	113	91	342	6130	129	366	61	80	24	36	21	47
26	74	55	275	1410	139	530	55	73	21	36	82	459
27	68	119	237	833	124	527	53	69	21	34	66	2240
28	62	130	212	600	114	378	121	62	22	41	58	584
29	58	237	184	494	---	354	77	56	19	38	41	312
30	54	946	157	420	---	1720	59	67	56	44	33	223
31	51	---	138	361	---	4840	---	55	---	34	30	---
TOTAL	3695	2473	10626	34533	6699	30111	7862	8632	1033	1152	805	4773
MEAN	119.2	82.43	342.8	1114	239.2	971.3	262.1	278.5	34.43	37.16	25.97	159.1
MAX	681	946	991	12800	470	8270	2450	1430	95	108	82	2240
MIN	40	27	138	89	114	73	53	55	19	19	16	14

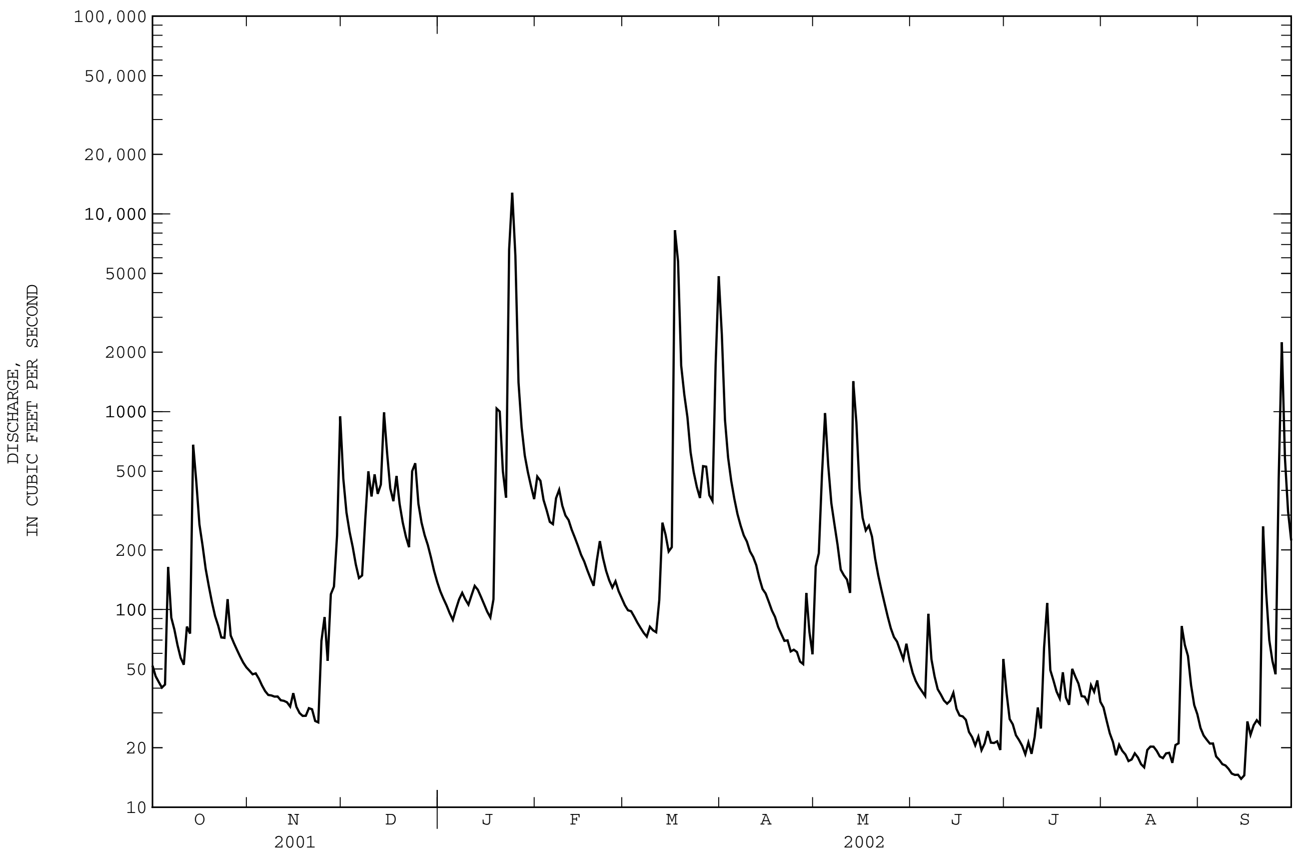
03428200 WEST FORK STONES RIVER AT MURFREESBORO, TN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 2002, BY WATER YEAR (WY)

MEAN	138.9	263.2	476.2	591.4	513.5	683.0	336.7	209.0	155.9	96.05	71.19	135.1
MAX	894	1035	1259	1453	1156	1773	954	818	765	658	348	880
(WY)	1976	1987	1991	1974	1991	1975	1994	1973	1989	1989	1996	1979
MIN	7.60	10.4	31.6	25.4	133	216	58.4	23.8	11.0	13.9	12.2	11.3
(WY)	1981	1981	1981	1981	1978	1981	1986	1981	1988	1988	1976	1980

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		aWATER YEARS 1972 - 2002	
ANNUAL TOTAL	89140		112394			
ANNUAL MEAN	244.2		307.9		309.6	
HIGHEST ANNUAL MEAN					517	1973
LOWEST ANNUAL MEAN					76.0	1981
HIGHEST DAILY MEAN	6340	Feb 17	12800	Jan 24	21200	Mar 13 1975
LOWEST DAILY MEAN	27	Nov 22	14	Sep 14	4.7	Oct 13 1980
ANNUAL SEVEN-DAY MINIMUM	29	Nov 17	15	Sep 9	5.3	Nov 8 1980
MAXIMUM PEAK FLOW			19400	Jan 24	31000	Mar 13 1975
MAXIMUM PEAK STAGE			21.09	Jan 24	23.80	Mar 13 1975
INSTANTANEOUS LOW FLOW			8.0	Sep 12	2.9	Jul 7 1988
10 PERCENT EXCEEDS	494		494		638	
50 PERCENT EXCEEDS	87		86		109	
90 PERCENT EXCEEDS	37		21		16	

a See REMARKS



03428200 WEST FORK STONES RIVER AT MURFREESBORO, TN--Continued

WATER-QUALITY RECORDS

LOCATION.--At bridge on Blanton Drive, 900 ft upstream from Sinking Creek, 0.7 mi upstream from discharge station.

PERIOD OF RECORD.--February 1986 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: February 1986 to current year.
pH: February 1986 to current year.
WATER TEMPERATURE: February 1986 to current year.
DISSOLVED OXYGEN: February 1986 to current year.

INSTRUMENTATION.--Water-quality monitor.

REMARKS.--Periods of missing record were due to instrument malfunctions. Records for water temperature and specific conductance are good, pH and dissolved oxygen records are fair.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum, 529 microsiemens, Jan. 24, 2000; minimum, 63 microsiemens, Dec. 25, 1987.
pH: Maximum, 9.0 units, Mar. 24, 1986; minimum, 5.8 units, June 18, 1992.
WATER TEMPERATURE: Maximum, 33.3°C, July 31, 1999; minimum, 0.2°C, Feb. 3, 4, 5, 6, 1996.
DISSOLVED OXYGEN: Maximum, 19.0 mg/L, Apr. 10, 2002; minimum, 1.6 mg/L, Sept. 12, 1990.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 465 microsiemens, Oct. 24; minimum, 102 microsiemens, Mar. 17.
pH: Maximum, 8.7 units, Apr. 7, 10; minimum, 7.4 units, many days.
WATER TEMPERATURE: Maximum, 31.8, Aug. 5; minimum, 1.4°C, Jan. 4.
DISSOLVED OXYGEN: Maximum, 19.0 mg/L, Apr. 10; minimum, 3.0 mg/L, Aug. 22.

SPECIFIC CONDUCTANCE, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	381	368	375	455	430	444	377	354	361	454	440	447
2	390	370	383	454	433	444	411	377	395	456	440	448
3	393	377	387	453	436	445	431	411	422	457	445	451
4	395	380	389	451	435	444	443	431	437	457	443	450
5	395	338	386	451	436	445	451	443	446	456	442	449
6	361	300	328	449	436	444	454	451	452	452	443	446
7	356	338	349	448	439	445	457	448	452	453	431	443
8	398	339	366	448	441	445	452	405	423	451	430	440
9	418	398	411	447	442	444	425	411	420	450	434	442
10	426	409	419	447	441	444	429	421	426	449	429	439
11	427	412	421	444	441	443	421	417	419	441	415	429
12	424	418	422	442	438	440	427	420	424	436	410	425
13	424	371	416	438	434	436	426	420	422	440	405	425
14	387	321	360	435	432	434	423	372	407	438	409	424
15	364	341	348	436	429	433	375	351	361	439	407	424
16	394	350	373	435	428	431	409	375	393	436	407	422
17	421	394	408	434	431	433	423	409	418	429	411	420
18	438	421	428	433	429	431	428	418	425	423	407	415
19	448	438	442	432	429	430	419	415	417	416	243	359
20	455	448	452	431	429	430	427	419	422	322	241	277
21	461	451	456	431	427	430	437	427	431	384	322	357
22	463	451	458	430	428	429	445	437	440	404	384	397
23	464	446	457	429	426	427	445	400	424	402	109	250
24	465	356	451	429	406	422	400	329	347	184	108	142
25	446	415	430	407	344	359	383	336	360	263	144	195
26	444	419	432	381	369	376	415	383	401	320	263	295
27	448	424	435	387	344	366	431	415	422	349	320	336
28	457	419	450	404	385	397	440	431	434	365	349	357
29	457	440	451	402	366	389	444	436	440	375	365	370
30	457	432	446	387	355	368	447	437	443	380	375	378
31	455	431	444	---	---	---	450	439	445	383	380	381
MONTH	465	300	412	455	344	425	457	329	417	457	108	385

03428200 WEST FORK STONES RIVER AT MURFREESBORO, TN--Continued

SPECIFIC CONDUCTANCE, in US/CM @ 25C, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	383	365	373	413	393	402	312	161	253	343	182	320
2	373	366	371	416	401	410	356	312	337	356	327	340
3	367	361	363	415	403	408	372	356	364	334	303	320
4	386	367	377	416	395	407	378	367	372	342	293	314
5	396	386	390	404	389	398	380	366	374	346	292	313
6	403	396	398	400	381	393	380	361	374	388	346	370
7	407	399	401	399	380	391	379	352	370	411	388	400
8	406	394	400	396	378	389	378	359	371	424	410	413
9	403	391	397	394	387	391	378	358	372	420	414	417
10	406	399	402	400	388	393	378	325	359	421	410	416
11	410	395	404	394	387	391	373	334	358	417	403	410
12	419	395	409	393	385	390	374	333	358	421	406	415
13	416	393	408	398	384	394	376	333	360	419	202	304
14	418	392	409	406	391	398	384	352	370	315	205	265
15	420	393	409	408	394	402	387	344	367	369	315	346
16	420	383	406	410	407	409	382	344	363	396	369	380
17	420	375	403	410	102	201	376	354	363	395	389	393
18	420	371	400	234	136	199	372	357	364	396	391	393
19	419	375	400	321	234	288	373	362	368	396	386	392
20	411	369	393	341	319	330	376	369	371	395	385	392
21	406	378	395	344	336	339	382	369	374	397	378	390
22	409	389	401	374	344	360	382	364	367	398	366	385
23	409	373	395	384	373	378	370	365	368	398	361	382
24	410	366	392	387	382	385	371	362	367	397	364	382
25	408	366	390	390	383	388	372	368	370	393	371	382
26	407	390	397	389	356	373	372	368	370	390	380	385
27	406	392	400	368	355	360	378	372	375	390	306	380
28	417	391	405	371	356	363	376	302	349	388	367	380
29	---	---	---	383	350	374	326	306	320	385	365	377
30	---	---	---	384	219	276	339	316	326	376	341	363
31	---	---	---	281	147	218	---	---	---	378	353	370
MONTH	420	361	396	416	102	361	387	161	359	424	182	371

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	374	362	369	335	326	330	343	333	338	349	337	345
2	378	362	371	326	314	321	341	332	336	354	349	351
3	373	360	367	319	313	316	336	330	333	350	347	348
4	369	356	363	319	313	317	333	327	329	347	339	342
5	362	352	358	313	301	306	333	325	328	341	334	336
6	355	295	336	301	291	295	335	327	330	338	330	333
7	335	295	323	297	285	292	340	328	335	336	330	333
8	341	335	337	298	268	288	345	332	339	335	327	331
9	357	341	353	301	289	293	346	334	341	333	328	330
10	360	354	357	323	301	311	346	339	342	333	328	330
11	358	353	356	348	323	333	346	338	341	333	328	331
12	358	353	356	355	348	353	348	332	342	329	326	328
13	356	345	351	356	346	351	348	338	343	328	324	326
14	356	348	354	346	238	270	343	337	341	331	326	328
15	362	355	359	304	277	295	345	291	338	332	301	327
16	360	352	356	325	304	319	351	341	345	342	293	322
17	354	352	353	350	325	341	356	351	353	360	342	354
18	353	348	351	355	342	351	358	351	355	362	350	358
19	398	346	373	366	350	358	359	352	356	358	354	357
20	351	347	349	353	325	341	359	354	357	354	221	336
21	350	345	347	333	323	327	357	351	354	367	278	327
22	347	339	343	337	145	290	355	347	352	367	313	338
23	345	335	340	332	257	306	352	339	347	313	281	294
24	347	330	339	362	332	352	350	340	344	281	270	275
25	344	336	340	363	349	358	354	350	352	288	273	283
26	351	344	346	351	341	348	368	325	350	357	254	286
27	350	342	347	349	341	345	368	326	351	357	198	232
28	355	349	351	359	344	352	365	350	358	346	231	296
29	355	346	351	364	348	357	364	354	360	396	346	374
30	366	331	346	353	348	350	357	342	353	421	396	409
31	---	---	---	354	336	348	342	336	338	---	---	---
MONTH	398	295	351	366	145	326	368	291	345	421	198	329

03428200 WEST FORK STONES RIVER AT MURFREESBORO, TN--Continued

PH, WH, FIELD, in (STANDARD UNITS), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	8.0	7.6	8.2	8.0	7.6	7.6	8.2	8.0	8.0	7.8	8.3	8.0
2	7.8	7.5	8.1	7.8	7.7	7.6	8.2	8.0	8.0	7.9	8.2	7.9
3	8.0	7.5	7.9	7.8	7.8	7.7	8.2	8.0	8.0	7.9	8.2	7.8
4	7.9	7.7	7.9	7.8	7.9	7.7	8.2	8.0	8.2	7.9	8.2	7.9
5	7.9	7.7	7.9	7.8	8.0	7.8	8.2	8.0	8.2	8.0	8.1	7.9
6	7.7	7.5	7.9	7.8	8.0	7.8	8.1	8.0	8.1	8.0	8.2	7.8
7	7.9	7.4	7.9	7.7	7.8	7.8	8.2	7.9	8.1	8.0	8.0	7.8
8	8.0	7.6	7.8	7.7	7.8	7.6	8.3	8.0	8.2	8.0	8.0	7.7
9	8.1	7.7	7.8	7.7	7.8	7.6	8.3	8.0	8.3	8.0	7.9	7.6
10	8.1	7.7	7.8	7.7	7.8	7.8	8.2	7.8	8.2	8.0	8.0	7.6
11	8.1	7.7	7.8	7.8	7.8	7.8	8.2	7.8	8.4	8.0	8.0	7.7
12	7.9	7.6	7.8	7.7	7.9	7.8	8.2	7.8	8.5	8.1	7.8	7.5
13	7.8	7.5	7.8	7.7	7.8	7.8	8.2	7.8	8.6	8.1	7.8	7.5
14	7.7	7.4	7.7	7.7	7.8	7.8	8.3	7.8	8.6	8.1	8.1	7.7
15	7.6	7.6	7.9	7.7	7.8	7.7	8.3	7.9	8.6	8.1	8.2	7.8
16	7.7	7.6	7.9	7.9	7.9	7.8	8.3	7.9	8.6	8.0	8.0	7.8
17	7.9	7.7	7.9	7.8	7.9	7.9	8.2	7.9	8.6	8.0	7.9	7.5
18	8.0	7.8	7.9	7.7	8.0	7.9	8.3	7.9	8.6	8.1	7.6	7.5
19	8.0	7.8	7.8	7.7	8.1	8.0	7.9	7.6	8.6	8.0	7.7	7.5
20	8.0	7.8	7.8	7.7	8.2	8.0	7.7	7.6	8.6	8.1	7.8	7.7
21	8.1	7.8	7.8	7.8	8.2	8.1	7.8	7.7	8.6	8.0	7.9	7.8
22	8.1	7.8	7.9	7.8	8.2	8.1	8.0	7.8	8.4	8.0	8.0	7.9
23	8.1	7.8	7.8	7.7	8.1	7.9	7.8	7.5	8.5	8.0	8.1	7.9
24	8.0	7.8	7.7	7.5	7.9	7.8	7.5	7.4	8.5	8.0	8.2	8.0
25	7.9	7.6	7.6	7.4	8.0	7.8	7.5	7.4	8.5	8.0	8.3	8.0
26	8.0	7.6	7.7	7.4	8.1	7.9	7.6	7.5	8.2	8.0	8.2	8.0
27	8.1	7.7	7.6	7.4	8.2	8.0	7.7	7.6	8.3	7.9	8.3	8.1
28	8.1	7.8	7.5	7.4	8.2	8.0	7.8	7.7	8.3	8.0	8.5	8.1
29	8.1	7.8	7.5	7.4	8.3	8.0	7.8	7.8	---	---	8.6	8.1
30	8.3	7.8	7.6	7.4	8.3	8.1	7.9	7.8	---	---	8.2	7.9
31	8.3	8.0	---	---	8.3	8.1	8.0	7.8	---	---	8.1	7.8
MONTH	8.3	7.4	8.2	7.4	8.3	7.6	8.3	7.4	8.6	7.8	8.6	7.5

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	8.0	7.8	7.8	7.7	8.0	7.6	8.0	7.6	8.2	7.8	8.0	7.8
2	8.1	7.9	7.8	7.7	8.0	7.7	7.8	7.6	8.3	7.8	8.0	7.8
3	8.2	8.0	7.9	7.8	8.0	7.7	7.8	7.6	8.2	7.8	8.1	7.8
4	8.4	8.0	7.9	7.8	7.9	7.6	7.9	7.6	8.1	7.7	8.0	7.8
5	8.5	8.0	7.9	7.8	7.9	7.6	8.0	7.6	8.1	7.7	8.0	7.8
6	8.6	8.0	8.0	7.9	7.7	7.5	8.0	7.6	8.1	7.7	8.0	7.8
7	8.7	8.1	8.1	7.9	7.8	7.4	8.2	7.6	8.1	7.7	8.0	7.8
8	8.6	8.0	8.2	7.9	7.8	7.5	8.1	7.6	8.0	7.7	8.0	7.8
9	8.6	8.0	8.2	8.0	7.9	7.6	8.0	7.6	8.0	7.6	8.0	7.8
10	8.7	8.0	8.1	8.0	7.9	7.6	7.8	7.6	7.9	7.7	8.0	7.8
11	8.4	7.9	8.2	8.0	7.9	7.6	7.8	7.6	8.0	7.6	8.1	7.8
12	8.4	7.9	8.2	8.0	7.9	7.6	7.8	7.7	8.0	7.7	8.0	7.8
13	8.4	7.9	8.1	7.6	7.8	7.6	7.9	7.6	7.9	7.6	8.0	7.8
14	8.4	7.9	7.8	7.6	7.8	7.6	8.0	7.6	7.9	7.6	7.9	7.7
15	8.4	7.9	8.0	7.8	7.8	7.6	8.1	7.6	7.7	7.5	7.8	7.6
16	8.3	7.8	8.1	7.9	7.7	7.6	8.1	7.7	7.7	7.6	7.9	7.7
17	8.2	7.8	8.1	8.0	7.8	7.6	8.2	7.7	7.8	7.6	7.9	7.8
18	8.2	7.8	8.2	8.0	7.8	7.6	8.3	7.9	7.9	7.6	7.8	7.7
19	8.0	7.7	8.3	8.1	7.8	7.6	8.4	7.9	7.8	7.6	7.8	7.7
20	7.9	7.6	8.4	8.1	7.8	7.6	8.3	7.8	7.8	7.6	7.8	7.6
21	7.9	7.6	8.5	8.1	7.8	7.6	8.3	7.9	7.9	7.6	8.0	7.6
22	7.9	7.6	8.5	8.1	7.9	7.6	8.2	7.7	7.9	7.6	7.9	7.7
23	7.9	7.7	8.4	7.9	7.9	7.6	7.9	7.6	7.9	7.6	7.8	7.7
24	7.9	7.7	8.3	7.9	7.9	7.6	8.2	7.7	7.9	7.6	7.9	7.7
25	8.0	7.8	8.2	7.9	7.7	7.6	8.2	7.7	7.8	7.7	7.8	7.7
26	8.0	7.8	8.1	7.8	7.8	7.6	8.3	7.7	8.0	7.7	7.9	7.6
27	8.0	7.8	8.1	7.8	7.8	7.6	8.2	7.8	8.2	7.7	7.9	7.7
28	8.0	7.8	8.1	7.8	7.9	7.6	8.2	7.8	8.2	7.8	7.9	7.7
29	7.9	7.7	8.1	7.8	7.9	7.6	8.1	7.8	8.1	7.8	8.0	7.9
30	7.9	7.6	8.0	7.7	8.1	7.6	8.1	7.8	8.0	7.7	8.0	7.9
31	---	---	8.0	7.6	---	---	8.2	7.8	8.0	7.7	---	---
MONTH	8.7	7.6	8.5	7.6	8.1	7.4	8.4	7.6	8.3	7.5	8.1	7.6

03428200 WEST FORK STONES RIVER AT MURFREESBORO, TN--Continued

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	19.2	16.2	17.8	14.7	11.9	13.3	13.6	12.8	13.1	4.3	2.6	3.5
2	19.5	16.8	18.3	16.2	13.8	14.9	13.4	12.0	12.5	3.7	2.3	3.1
3	20.0	17.6	18.9	16.9	15.5	16.1	13.3	11.4	12.2	3.2	2.5	2.9
4	20.1	18.1	19.2	15.9	13.8	14.9	13.6	11.7	12.5	3.4	1.4	2.4
5	20.5	18.8	19.7	15.1	13.3	14.1	13.9	11.9	12.8	4.1	2.0	3.0
6	20.1	17.3	18.6	14.0	12.1	13.0	14.7	12.3	13.5	4.4	4.1	4.3
7	17.7	15.4	16.6	13.2	11.5	12.4	15.0	14.0	14.5	5.2	4.2	4.6
8	17.6	15.0	16.3	13.5	11.5	12.6	15.4	14.7	15.0	5.2	3.3	4.3
9	17.6	15.0	16.3	14.0	12.8	13.4	14.7	12.8	13.8	6.4	3.9	5.1
10	18.9	16.1	17.5	13.0	11.1	12.1	12.8	12.0	12.2	8.3	5.9	6.9
11	18.9	18.0	18.5	12.9	11.4	12.3	12.2	11.9	12.0	8.8	7.6	8.2
12	19.2	18.6	18.9	12.5	11.0	11.8	13.3	12.1	12.6	8.6	6.4	7.6
13	20.2	19.0	19.6	12.5	10.9	11.8	14.3	13.3	13.9	8.2	6.1	7.3
14	20.0	18.6	19.4	12.5	11.1	11.9	14.6	14.2	14.4	8.4	6.6	7.5
15	18.8	17.3	18.0	12.1	10.9	11.7	14.2	13.6	13.9	7.9	6.2	7.2
16	17.4	15.4	16.7	12.0	10.5	11.4	14.0	13.4	13.7	7.4	5.8	6.8
17	16.1	14.1	15.0	12.8	11.1	12.1	14.5	13.9	14.2	7.8	7.1	7.5
18	15.7	12.9	14.2	13.4	11.9	12.7	14.1	12.7	13.5	7.9	6.4	7.2
19	15.5	13.0	14.2	13.3	12.4	12.9	12.7	11.1	12.0	7.6	5.9	6.8
20	16.2	13.3	14.7	12.9	10.5	11.7	11.1	9.2	10.3	8.0	6.0	7.0
21	16.9	14.2	15.5	10.5	8.8	9.6	10.1	8.6	9.2	9.7	8.0	8.8
22	17.6	15.5	16.5	10.0	8.6	9.3	9.9	8.1	8.9	9.6	8.4	9.0
23	19.3	17.0	18.0	11.5	9.9	10.6	10.5	9.2	9.8	12.2	9.6	10.4
24	20.0	18.4	19.1	14.2	11.5	12.9	9.9	8.4	9.1	13.5	12.2	13.0
25	19.3	17.2	18.1	14.5	12.8	13.7	8.4	6.8	7.7	12.2	9.6	10.3
26	17.4	15.2	16.1	14.4	11.9	13.1	6.8	5.6	6.3	10.4	9.6	10.1
27	15.2	13.0	13.8	15.5	14.4	15.0	6.6	5.4	5.9	11.1	9.9	10.6
28	13.3	11.2	12.2	15.9	14.9	15.4	7.1	5.4	6.1	12.5	11.0	11.7
29	13.4	10.8	12.1	16.1	15.8	15.9	6.9	5.4	6.3	14.3	12.5	13.5
30	13.3	10.9	12.1	15.8	13.6	14.7	5.8	4.4	5.1	16.0	14.3	15.1
31	13.7	11.0	12.4	---	---	---	4.9	3.8	4.3	16.4	15.3	15.8
MONTH	20.5	10.8	16.6	16.9	8.6	12.9	15.4	3.8	11.0	16.4	1.4	7.8

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	16.1	13.1	14.9	8.9	5.4	7.2	13.9	11.8	12.8	20.2	18.9	19.5
2	13.1	10.9	11.8	9.3	8.1	8.7	16.0	13.6	14.9	20.1	18.6	19.6
3	10.9	9.7	10.3	9.3	7.0	8.3	15.7	13.9	15.0	18.6	16.6	17.7
4	9.8	8.3	9.2	8.1	5.2	6.7	14.9	12.6	13.7	16.6	15.7	16.0
5	8.3	7.5	7.9	9.3	5.9	7.5	14.7	12.1	13.3	17.7	15.6	16.5
6	7.5	7.3	7.4	10.7	7.2	8.9	15.1	12.2	13.5	18.4	17.2	17.7
7	7.8	7.4	7.5	12.4	9.6	10.8	15.5	12.4	13.8	21.1	17.9	19.3
8	8.8	7.1	7.8	14.2	10.6	12.3	16.1	14.1	15.0	22.6	19.4	20.8
9	10.0	7.6	8.7	13.6	11.8	13.2	16.6	15.4	15.8	22.2	20.7	21.4
10	10.6	9.4	9.9	13.1	9.9	11.4	19.0	14.6	16.5	21.6	19.4	20.3
11	11.0	9.2	10	12.7	9.6	11.2	19.0	16.0	17.3	22.0	18.4	20.1
12	11.0	8.7	9.6	12.0	11.6	11.7	19.5	17.0	18.1	23.6	20.1	21.8
13	10.6	8.7	9.4	12.3	11.4	11.9	20.1	17.9	18.9	22.9	18.1	20.4
14	10.4	7.9	8.9	14.1	10.8	12.3	20.0	18.1	19.0	18.1	16.6	17.4
15	10.4	8.3	9.3	15.8	12.3	14.1	22.6	18.0	20.2	18.8	16.4	17.6
16	11.4	9.0	10.0	15.2	14.5	14.9	24.0	19.6	21.8	---	---	---
17	11.4	8.6	9.9	14.5	11.7	13.0	24.9	21.1	22.9	20.4	18.7	19.4
18	11.3	7.8	9.5	14.4	13.7	14.0	25.5	21.9	23.6	19.3	16.7	18.0
19	10.8	8.7	9.8	14.6	13.9	14.2	25.1	23.0	24.1	18.4	15.4	16.7
20	13.0	10.2	11.5	14.7	14.1	14.5	25.9	23.2	24.4	18.4	15.6	16.8
21	13.5	11.0	12.0	14.6	12.9	13.8	26.1	23.3	24.6	18.2	15.5	16.7
22	11.5	9.8	10.9	12.9	10.9	11.7	24.9	22.0	23.5	19.5	14.9	17.0
23	11.4	8.5	9.8	12.5	9.9	11.2	22.0	19.2	20.3	20.5	16.0	18.2
24	11.8	7.8	9.7	13.6	10.7	12.2	20.2	19.0	19.5	21.4	17.8	19.5
25	12.6	8.7	10.7	15.4	12.5	13.9	21.1	18.2	19.6	22.6	19.2	20.8
26	11.9	8.8	10.2	15.0	13.4	14.5	19.2	16.6	17.1	23.0	20.8	21.8
27	8.8	6.5	7.4	13.4	12.0	12.6	18.5	16.0	17.0	24.2	20.9	22.5
28	8.3	4.8	6.5	14.2	11.1	12.6	21.4	18.4	19.7	24.9	21.9	23.3
29	---	---	---	16.1	13.3	14.7	21.5	18.1	19.9	25.8	22.7	24.2
30	---	---	---	15.8	13.2	14.8	20.9	18.5	19.8	25.9	23.2	24.4
31	---	---	---	13.2	11.7	12.2	---	---	---	26.9	22.9	24.9
MONTH	16.1	4.8	9.7	16.1	5.2	12.0	26.1	11.8	18.5	26.9	14.9	19.7

03428200 WEST FORK STONES RIVER AT MURFREESBORO, TN--Continued

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	27.8	24.2	26.0	29.7	26.5	28.2	30.1	27.5	28.8	28.0	25.8	26.9
2	28.9	25.1	27.0	29.2	27.6	28.4	30.3	27.6	29.0	28.6	26.0	27.2
3	29.5	26.1	27.8	28.2	26.6	27.2	31.3	28.3	29.7	29.2	26.4	27.7
4	30.0	26.8	28.4	29.7	25.8	27.6	31.5	28.6	29.9	30.0	26.8	28.2
5	29.2	26.6	28.1	30.8	27.2	28.9	31.8	28.6	30.0	29.1	26.4	27.7
6	28.2	24.7	26.4	31.7	28.2	29.7	30.9	28.4	29.6	28.6	25.1	26.7
7	27.0	23.4	25.0	31.1	27.0	28.9	29.5	25.8	27.5	28.5	25.3	26.7
8	27.0	23.9	25.6	31.0	27.4	29.0	28.8	24.6	26.6	28.1	25.2	26.5
9	28.1	24.6	26.3	29.5	27.7	28.5	28.8	24.8	26.7	27.7	25.2	26.4
10	28.3	25.0	26.7	29.6	27.2	28.1	27.2	25.3	26.3	27.9	24.7	26.2
11	27.5	25.4	26.6	27.4	26.3	26.8	28.3	25.3	26.6	28.0	24.5	26.0
12	28.3	25.5	26.9	27.4	25.9	26.4	29.6	25.6	27.3	26.9	23.2	24.9
13	28.1	26.4	27.3	26.4	25.2	25.8	29.2	25.7	27.3	26.3	23.4	24.8
14	27.3	25.4	26.2	27.1	24.5	25.7	29.6	26.3	27.7	27.2	24.5	25.7
15	25.9	23.3	24.7	28.1	25.1	26.6	27.6	26.1	26.9	27.4	25.1	25.9
16	24.5	22.6	23.4	28.4	25.9	27.2	27.1	25.9	26.5	26.1	24.5	25.3
17	25.4	21.5	23.3	29.1	26.5	27.8	28.2	25.5	26.6	26.4	25.4	25.8
18	26.9	23.1	24.8	28.6	27.0	27.9	29.2	26.1	27.5	26.2	24.9	25.5
19	28.0	24.3	26.0	28.6	26.4	27.5	29.0	26.2	27.5	26.4	24.9	25.6
20	28.6	25.2	26.7	28.6	26.2	27.5	30.0	26.7	27.9	27.2	24.0	25.8
21	29.0	25.6	27.1	28.9	27.1	28.1	30.2	26.3	28.1	25.1	23.9	24.5
22	29.4	25.7	27.4	28.8	26.3	27.6	31.4	27.4	29.0	24.4	23.2	23.9
23	28.6	26.1	27.2	27.6	25.7	26.8	30.8	27.4	28.8	23.4	21.0	22.3
24	29.5	26.1	27.6	28.6	26.0	27.2	29.7	27.2	28.3	22.0	20.1	21.0
25	27.6	26.4	27.1	29.0	26.8	27.9	29.3	27.2	28.0	21.1	20.2	20.5
26	29.2	25.7	27.3	29.2	27.2	28.2	27.5	26.3	26.9	20.6	19.5	20.2
27	28.6	26.4	27.3	28.8	27.4	28.3	27.7	25.0	26.2	20.7	19.5	20.3
28	29.3	25.9	27.4	29.7	27.1	28.4	27.3	25.0	26.1	21.1	19.7	20.3
29	29.6	26.5	27.9	29.2	27.7	28.6	27.0	24.8	25.9	21.8	19.7	20.5
30	29.7	26.6	28.0	28.6	27.2	27.9	27.2	25.1	26.2	22.1	20.4	21.2
31	---	---	---	29.3	26.6	28.0	27.7	25.5	26.7	---	---	---
MONTH	30.0	21.5	26.6	31.7	24.5	27.8	31.8	24.6	27.6	30.0	19.5	24.7

OXYGEN DISSOLVED, in (MG/L), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	11.5	7.4	9.2	13.3	8.5	10.9	10.3	7.6	9.5	16.6	13.2	14.5
2	11.1	7.2	9.0	11.7	7.5	9.8	11.1	9.7	10.4	17.0	13.4	14.9
3	10.1	7.0	8.0	10.2	6.7	8.6	11.1	9.9	10.5	16.8	13.5	14.8
4	10.5	7.5	9.4	10.1	6.8	8.5	11.6	9.1	10.3	17.4	14.0	15.3
5	10.0	7.5	8.8	10.1	6.7	8.6	---	---	---	17.7	13.8	15.4
6	9.4	7.4	8.1	10.1	7.5	8.9	---	---	---	14.9	13.0	13.9
7	11.8	7.5	9.0	10.2	7.9	9.1	---	---	---	17.3	12.3	14.3
8	12.7	7.8	9.6	10.2	8.1	9.4	---	---	---	18.1	12.8	14.8
9	12.9	8.0	10.1	9.9	8.0	8.9	---	---	---	18.4	12.6	14.8
10	12.8	7.7	10	10.1	8.4	9.3	10.8	10.2	10.4	17.3	12.0	13.9
11	10.9	5.9	9.0	10.4	8.3	9.4	11.0	10.4	10.7	18.7	10.8	13.8
12	9.1	3.4	6.9	10.6	8.4	9.5	10.9	9.9	10.5	17.9	10.8	13.4
13	9.6	4.6	6.4	10.8	9.2	10.2	10.0	8.6	9.6	18.3	11.1	13.7
14	8.5	4.4	7.3	10.8	9.2	10.1	10.1	3.7	8.0	16.4	11.0	13.2
15	9.0	8.3	8.6	11.0	9.3	10.3	10.4	10.0	10.1	17.8	11.0	13.6
16	9.5	8.5	8.9	10.9	9.7	10.3	10.5	9.9	10.2	18.0	11.5	14.1
17	10.7	8.9	9.6	10.6	9.5	10.1	9.9	9.5	9.7	17.1	11.4	13.8
18	11.4	9.4	10.1	10.3	9.2	9.8	10.8	9.6	10.2	17.6	11.4	13.8
19	11.8	9.4	10.2	9.9	8.8	9.3	11.2	10.2	10.6	12.5	11.2	11.9
20	12.3	9.3	10.3	10.1	8.3	9.1	12.2	10.5	11.2	12.4	11.6	12.1
21	12.8	9.0	10.3	11.1	9.7	10.4	12.8	11.2	11.8	12.0	11.3	11.6
22	12.8	8.6	10.2	11.6	10.5	11.0	13.1	11.3	11.9	12.7	11.2	11.7
23	13.0	8.1	10	11.1	9.4	10.3	11.9	11.0	11.3	11.2	9.7	10.6
24	12.2	7.3	9.1	9.5	7.4	8.2	11.6	11.3	11.4	9.8	9.4	9.6
25	11.4	7.0	8.5	9.5	7.7	8.4	12.5	11.5	11.9	11.4	9.8	10.9
26	13.0	6.9	9.3	10.7	7.6	8.9	13.7	12.0	12.6	11.6	11.2	11.4
27	14.4	8.4	10.8	8.8	7.8	8.2	14.2	12.3	13.0	11.7	11.0	11.3
28	15.4	9.6	11.9	9.5	7.6	8.2	14.5	12.2	13.0	11.4	10.6	11.0
29	16.0	9.9	12.5	8.4	7.6	8.0	14.6	12.0	12.9	10.7	10.0	10.4
30	15.0	9.9	12.2	9.8	6.1	8.5	15.5	12.4	13.6	10.9	9.6	10.1
31	14.3	8.9	11.5	---	---	---	16.0	12.8	14.1	10.9	9.4	9.9
MONTH	16.0	3.4	9.5	13.3	6.1	9.3	16.0	3.7	11.1	18.7	9.4	12.9

03428200 WEST FORK STONES RIVER AT MURFREESBORO, TN--Continued

OXYGEN DISSOLVED, in (MG/L), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	10.5	9.4	9.9	17.4	12.0	14.2	11.3	10.5	11.0	8.6	7.5	8.0
2	12.3	10.5	11.3	14.7	11.1	12.6	11.6	9.9	10.7	8.2	7.4	7.8
3	11.9	11.2	11.5	16.0	10.4	12.8	12.4	9.9	10.8	9.1	8.0	8.6
4	13.8	11.4	12.4	16.6	11.7	13.8	14.1	10.5	11.8	8.5	7.4	8.1
5	14.2	12.1	12.9	16.5	11.9	13.8	15.6	10.7	12.5	---	---	---
6	13.4	12.2	12.7	16.2	11.4	13.4	17.3	10.6	13.0	---	---	---
7	13.5	12.2	12.7	15.1	10.7	12.5	18.1	10.4	13.4	---	---	---
8	14.9	12.4	13.3	14.9	10.0	11.9	16.0	9.9	12.5	---	---	---
9	15.3	11.8	13.1	---	---	---	15.9	9.4	12.0	9.5	7.4	8.2
10	14.2	11.5	12.3	14.7	7.4	11.0	19.0	9.5	13.4	9.3	7.4	8.2
11	17.6	11.4	13.6	14.7	9.6	11.8	16.8	8.9	12.4	10.9	7.9	9.0
12	17.5	11.7	14.0	11.2	8.8	10.1	16.2	8.4	12.0	11.5	7.7	9.1
13	14.8	10.8	12.0	11.5	7.8	10.1	14.6	8.0	11.0	15.4	7.3	8.4
14	---	---	---	13.0	9.6	11.0	14.0	8.0	10.5	15.4	9.2	9.9
15	---	---	---	13.0	8.9	10.5	14.7	7.9	10.8	10.8	9.4	10
16	---	---	---	10.3	8.3	9.1	13.6	7.1	10	10.8	9.3	10.2
17	---	---	---	10.4	8.7	9.7	12.8	6.3	8.9	10.9	8.6	9.5
18	---	---	---	10.1	9.1	9.7	11.6	6.0	8.2	11.0	8.6	9.6
19	---	---	---	10.3	10.0	10.2	9.2	5.5	7.0	13.2	9.7	11.0
20	16.0	9.9	12.5	10.3	10.0	10.1	9.1	4.4	6.5	13.6	9.8	11.3
21	16.0	9.6	12.1	10.8	10.3	10.5	9.4	5.2	6.8	14.4	9.6	11.6
22	15.4	9.7	11.8	12.1	10.5	11.3	9.0	4.0	6.4	16.0	9.8	12.1
23	17.4	10.2	13.0	12.7	11.0	11.7	10.0	3.9	7.6	16.1	9.3	12.0
24	17.6	10.6	13.3	13.0	10.5	11.6	8.6	6.2	7.3	15.2	8.8	11.5
25	17.0	10.4	13.0	13.6	9.9	11.4	11.1	6.8	8.7	14.0	8.3	10.7
26	14.0	9.7	11.4	10.6	9.7	10.2	10.4	8.0	9.1	12.4	7.6	9.6
27	16.4	10.3	12.9	12.7	10.6	11.3	11.2	8.4	9.7	12.6	7.4	9.4
28	17.4	11.9	14.1	14.4	10.1	11.9	10.2	7.5	8.9	12.5	6.8	9.2
29	---	---	---	14.4	9.3	11.3	10.3	6.9	8.2	12.6	6.8	9.2
30	---	---	---	10.6	9.0	9.8	9.2	6.4	7.7	11.0	6.3	8.1
31	---	---	---	11.0	10.6	10.8	---	---	---	11.0	5.8	8.0
MONTH	17.6	9.4	12.5	17.4	7.4	11.3	19.0	3.9	10.0	16.1	5.8	9.6

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	10.6	5.5	7.6	8.5	3.2	5.6	10.6	5.5	8.1	---	---	---
2	9.9	5.0	7.2	---	---	---	10.8	5.7	8.3	---	---	---
3	9.2	4.7	6.8	---	---	---	10.3	6.2	8.1	---	---	---
4	8.3	4.5	6.3	8.4	5.2	6.8	9.7	5.1	7.3	9.0	6.0	7.3
5	7.1	4.0	5.5	8.9	4.8	6.9	9.3	5.1	7.1	8.3	5.8	6.9
6	6.2	4.0	5.2	9.0	3.5	6.8	8.7	4.6	6.5	8.3	5.3	6.6
7	7.5	3.8	5.4	9.7	5.3	7.1	8.8	4.6	6.3	8.6	5.7	6.9
8	7.5	3.9	5.6	9.8	5.5	7.3	9.7	4.3	6.5	9.0	5.8	7.3
9	8.6	4.1	6.0	9.2	5.1	6.8	9.0	3.5	5.5	8.7	5.9	7.2
10	6.9	3.5	5.3	7.9	5.1	6.2	7.6	4.7	6.0	9.2	5.9	7.4
11	8.5	4.1	6.1	7.4	4.9	6.0	9.1	3.8	6.6	9.4	5.4	7.3
12	8.3	4.4	6.2	7.6	6.0	6.5	10.0	5.5	7.4	8.8	5.7	7.0
13	7.3	3.8	5.4	8.7	5.6	6.9	9.3	3.3	6.2	8.4	5.5	6.9
14	7.4	3.6	5.4	9.3	6.0	7.4	8.8	4.7	6.2	7.6	3.6	5.7
15	6.8	4.2	5.7	10.5	5.7	7.9	7.4	4.1	5.6	---	---	---
16	6.8	3.1	5.3	10.8	5.9	8.2	6.6	4.1	5.4	7.6	3.9	5.9
17	8.1	4.5	6.5	11.4	6.1	8.6	7.2	4.0	5.4	7.2	5.2	6.2
18	8.0	4.8	6.4	11.2	6.5	8.9	8.2	4.2	6.2	6.6	4.9	5.7
19	8.2	5.2	6.6	12.6	6.5	9.3	7.5	4.2	5.5	6.4	4.4	5.5
20	8.2	5.2	6.5	11.2	6.0	8.7	8.2	3.9	5.5	7.2	4.6	5.8
21	8.2	5.0	6.4	11.2	6.2	8.7	7.5	3.7	5.2	7.7	5.5	6.6
22	8.5	5.3	6.6	9.3	7.9	7.9	6.6	3.0	4.8	7.8	6.4	6.9
23	8.0	4.7	6.3	9.8	4.6	7.2	8.4	4.6	6.0	8.2	5.5	6.7
24	7.8	4.6	6.2	11.9	5.1	8.1	8.0	3.6	6.1	8.4	6.0	7.2
25	5.8	4.2	4.9	11.1	5.3	8.2	7.7	5.1	6.3	7.3	6.0	6.6
26	7.7	4.0	5.6	11.7	4.9	8.3	---	---	---	8.9	6.1	7.6
27	7.6	4.5	5.7	10.2	5.6	8.3	---	---	---	9.0	8.2	8.7
28	8.0	4.6	5.8	10.7	5.3	7.8	---	---	---	9.2	8.7	9.0
29	7.5	4.2	5.7	9.3	4.9	7.3	---	---	---	9.5	8.6	8.9
30	9.3	4.2	6.2	9.6	4.9	7.6	---	---	---	9.5	8.3	8.8
31	---	---	---	10.2	5.5	8.0	---	---	---	---	---	---
MONTH	10.6	3.1	6.0	12.6	3.2	7.6	10.8	3.0	6.3	9.5	3.6	7.0

03430147 STONERS CREEK NEAR HERMITAGE, TN

LOCATION.--Lat 36°11'40", long 86°36'28", Davidson County, Hydrologic Unit 05130203, on downstream end of pier at center of culvert under Andrew Jackson Parkway, 0.8 mi southwest of Hermitage.

DRAINAGE AREA.--20.6 mi^2.

PERIOD OF RECORD.--January 1992 to current year.

GAGE.--Data logger. Datum of gage is 411.70 ft above NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water-quality data.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 800 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 29	1200	1,340	7.72	Mar 20	0845	807	6.19
Jan 24	0845	1,320	7.66	Mar 31	1115	829	6.26
Mar 17	2245	*3,450	*11.66	May 13	0730	927	6.57

Minimum daily discharge, 0.64 ft^3/s, Oct. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.69	2.2	70	7.9	106	9.7	146	238	7.0	1.8	3.8	5.9
2	0.67	2.0	43	7.3	59	9.8	83	63	6.0	1.4	2.9	2.6
3	0.66	2.7	29	6.8	52	10	56	42	4.1	9.0	2.4	1.8
4	0.63	1.8	21	6.4	47	8.9	42	70	3.5	16	2.0	1.4
5	11	1.7	16	5.9	37	8.3	34	47	3.4	4.0	1.7	1.2
6	26	1.6	14	7.2	34	7.9	28	35	36	2.6	1.5	1.1
7	4.0	1.5	14	6.7	55	7.4	23	31	8.4	1.9	1.3	1.0
8	2.4	1.5	138	5.9	59	6.9	20	26	5.3	1.5	1.1	1.1
9	1.7	1.3	72	5.6	48	15	18	29	4.2	46	0.99	1.3
10	1.4	1.4	46	6.8	44	14	15	22	3.4	67	0.95	1.4
11	1.6	1.4	36	16	37	11	14	20	2.9	21	0.91	1.1
12	13	1.4	34	12	32	15	16	15	2.5	17	0.89	1.0
13	12	1.4	206	10	26	17	14	343	4.5	138	0.89	1.1
14	108	1.4	162	9.1	22	14	13	103	2.8	36	2.4	1.4
15	21	1.4	80	7.9	20	13	11	58	2.4	16	5.0	6.7
16	10	1.3	53	7.1	18	37	10	40	2.1	9.3	48	3.1
17	6.1	1.3	54	7.0	16	985	9.2	75	2.0	7.1	13	3.2
18	4.4	1.3	45	12	14	687	9.2	97	1.7	6.2	4.6	3.6
19	5.7	1.3	35	106	13	187	8.1	49	1.5	4.9	3.3	3.9
20	12	2.0	29	59	23	367	7.1	35	1.4	4.1	3.5	13
21	11	1.4	25	41	16	148	6.4	27	1.2	3.4	2.5	20
22	12	1.5	20	33	13	86	9.0	21	1.1	3.1	2.0	4.8
23	15	1.5	33	320	12	62	6.4	18	1.3	68	1.7	3.0
24	27	9.3	25	637	11	47	136	15	1.4	27	1.5	2.3
25	21	4.6	20	189	9.9	37	64	12	24	16	7.0	2.1
26	5.3	3.1	17	96	17	152	31	11	3.2	11	2.8	133
27	3.4	11	15	63	12	71	22	9.6	3.2	5.3	1.8	219
28	3.9	11	13	47	10	50	18	8.4	5.3	5.3	1.5	44
29	2.4	523	11	38	---	40	13	7.3	3.0	4.5	1.3	22
30	2.3	223	9.6	46	---	37	13	11	2.2	7.1	8.3	14
31	2.2	---	8.8	41	---	388	---	13	---	6.4	9.6	---
TOTAL	348.45	821.3	1394.4	1863.6	862.9	3548.9	895.4	1591.3	151.0	567.9	141.13	521.1
MEAN	11.24	27.38	44.98	60.12	30.82	114.5	29.85	51.33	5.033	18.32	4.553	17.37
MAX	108	523	206	637	106	985	146	343	36	138	48	219
MIN	0.63	1.3	8.8	5.6	9.9	6.9	6.4	7.3	1.1	1.4	0.89	1.0
CFSM	0.55	1.33	2.18	2.92	1.50	5.56	1.45	2.49	0.24	0.89	0.22	0.84
IN.	0.63	1.48	2.52	3.37	1.56	6.41	1.62	2.87	0.27	1.03	0.25	0.94

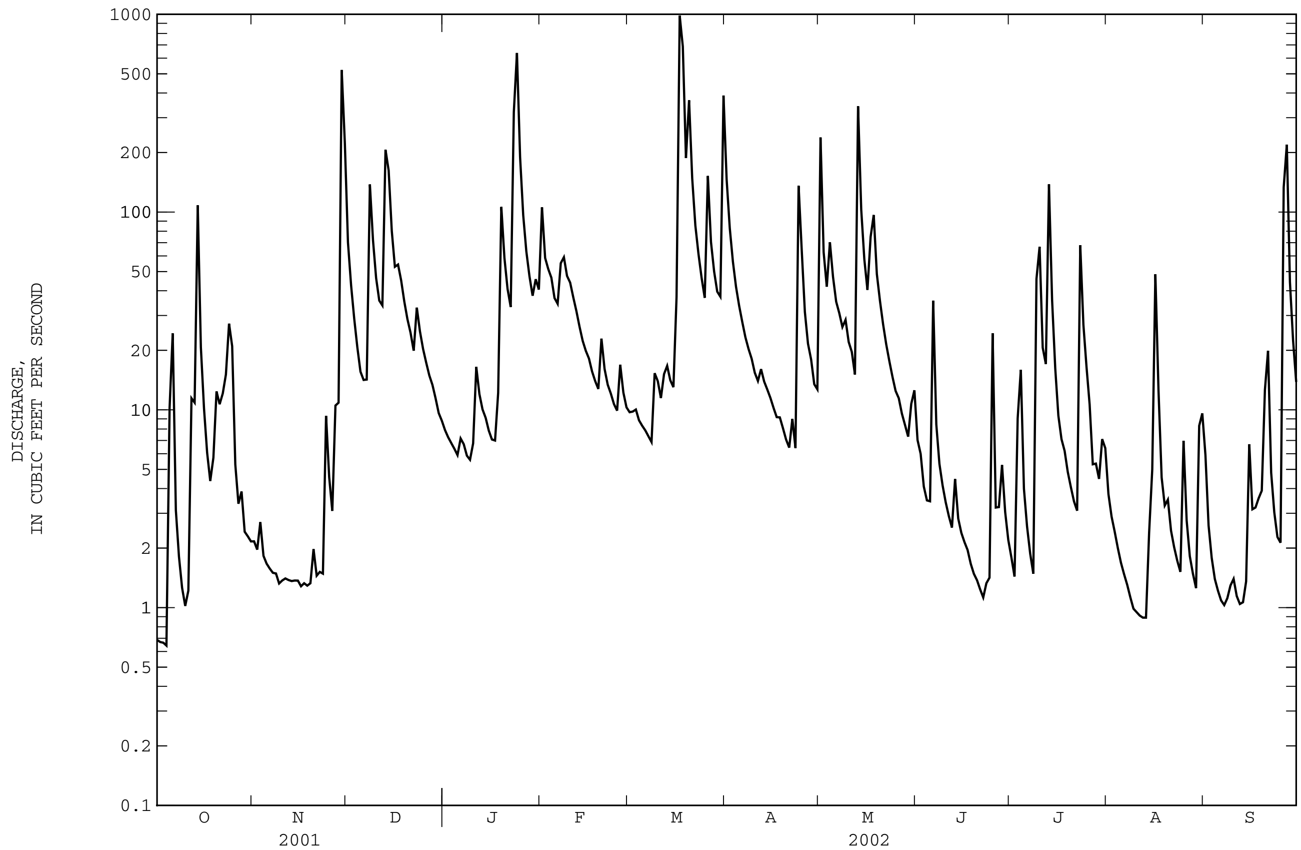
03430147 STONERS CREEK NEAR HERMITAGE, TN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2002, BY WATER YEAR (WY)

MEAN	8.431	22.41	36.90	52.30	49.47	71.09	37.09	29.22	25.41	12.44	4.184	5.699
MAX	43.3	53.1	75.6	108	119	149	112	83.6	101	62.0	13.3	17.4
(WY)	1996	1996	1997	1999	1994	1997	1994	1995	1998	1992	1994	2002
MIN	0.42	1.12	11.4	21.8	27.5	31.1	10.7	5.24	3.24	1.37	0.79	0.28
(WY)	2001	1999	2000	2000	1995	1998	1992	1992	2000	2000	1993	1998

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1992 - 2002	
ANNUAL TOTAL	8609.37		12707.38			
ANNUAL MEAN	23.59		34.81		29.64	
HIGHEST ANNUAL MEAN					44.2	1994
LOWEST ANNUAL MEAN					15.3	2000
HIGHEST DAILY MEAN	785	Feb 16	985	Mar 17	1260	Jul 3 1992
LOWEST DAILY MEAN	0.38	Sep 13	0.63	Oct 4	0.04	Sep 5 1999
ANNUAL SEVEN-DAY MINIMUM	0.42	Sep 12	1.0	Aug 7	0.05	Sep 2 1999
MAXIMUM PEAK FLOW			3450	Mar 17	a4220	Jul 3 1992
MAXIMUM PEAK STAGE			11.66	Mar 17	12.60	Jul 3 1992
INSTANTANEOUS LOW FLOW					0.09	Oct 14 2000
ANNUAL RUNOFF (CFSM)	1.15		1.69		1.44	
ANNUAL RUNOFF (INCHES)	15.55		22.95		19.55	
10 PERCENT EXCEEDS	44		69		59	
50 PERCENT EXCEEDS	7.2		11		10	
90 PERCENT EXCEEDS	0.98		1.4		0.89	

a From rating curve extended above 500 ft^3/s on basis of contracted-opening measurement of peak flow.



03430550 MILL CREEK NEAR NOLENSVILLE, TN

LOCATION.--Lat 36°00'33", long 86°42'06", Davidson County, Hydrologic Unit 05130202, near left bank on downstream side of bridge on US Highway 31A, 800 ft upstream from Holt Creek, 0.6 mi upstream from Owl Creek, 4.6 mi northwest of Nolensville, and at mile 19.6.

DRAINAGE AREA.--40.5 mi^2.

PERIOD OF RECORD.--March 1992 to current year.

REVISED RECORD.--WRD TN-94-1: 1992 (M).

GAGE.--Data logger. Datum of gage is 527.74 ft above NGVD of 1929.

REMARKS.--No estimated daily discharges. Records fair. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water-quality data.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,400 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 29	1215	4,070	11.40	Mar 17	0645	5,050	12.36
Nov 29	2215	2,570	9.67	Mar 17	2130	2,480	9.55
Jan 24	0830	*5,780	*13.02	May 13	0930	3,040	10.25

Minimum daily discharge, 0.11 ft^3/s, Sept. 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

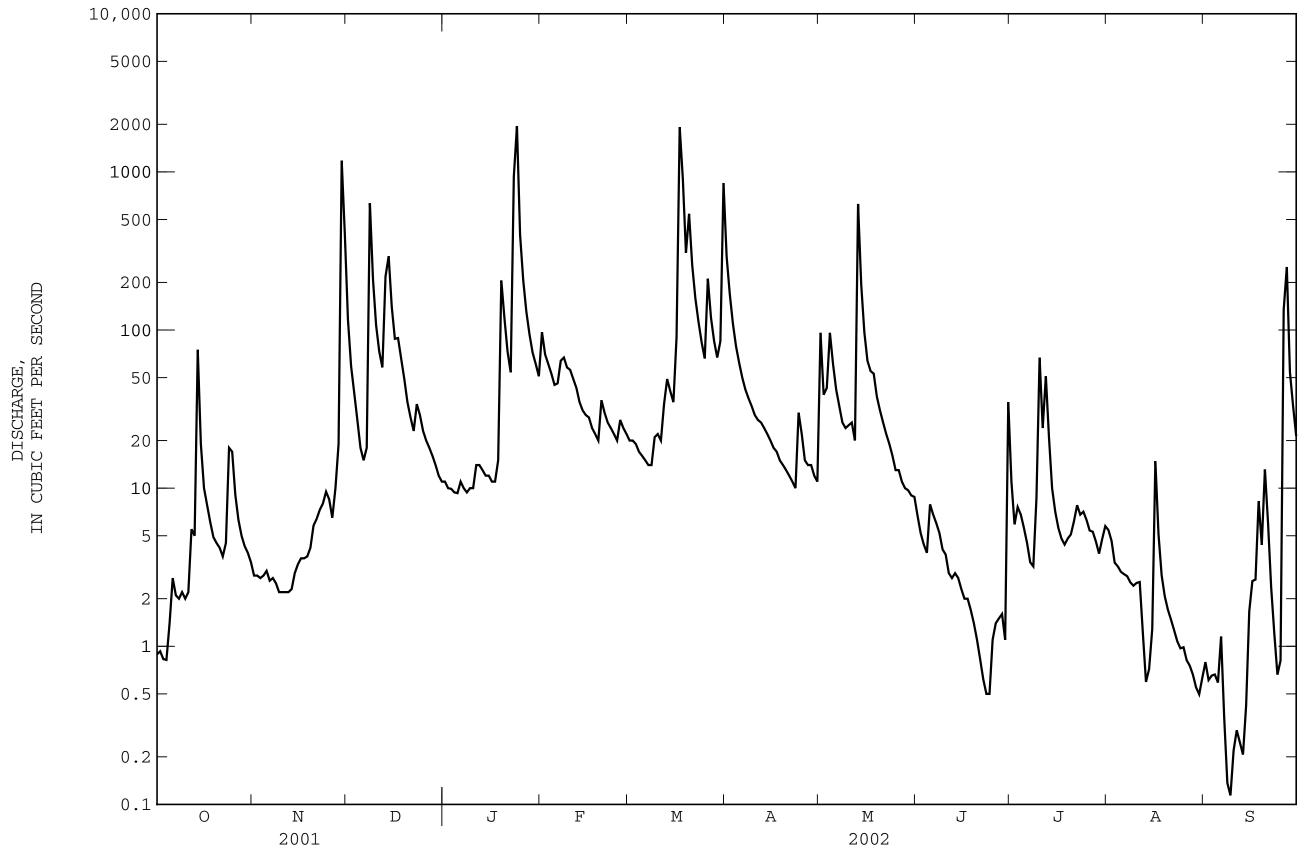
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.89	2.8	116	11	97	20	292	96	6.7	11	5.4	0.79
2	0.93	2.8	59	10	70	20	169	39	5.2	5.9	4.6	0.61
3	0.83	2.7	40	9.9	61	19	110	43	4.4	7.6	3.4	0.65
4	0.82	2.8	27	9.4	53	17	79	96	3.9	6.8	3.2	0.66
5	1.4	3.0	18	9.3	45	16	62	61	7.9	5.6	3.0	0.59
6	2.7	2.6	15	11	46	15	50	42	6.8	4.5	2.9	1.2
7	2.1	2.7	18	10	64	14	42	33	6.0	3.4	2.8	0.35
8	2.0	2.5	635	9.4	67	14	37	26	5.2	3.2	2.5	0.14
9	2.2	2.2	209	10	58	21	33	24	4.1	8.7	2.4	0.11
10	2.0	2.2	107	10	56	22	29	25	3.8	67	2.5	0.22
11	2.2	2.2	73	14	49	20	27	26	2.9	24	2.5	0.29
12	5.5	2.2	58	14	43	34	26	20	2.7	51	1.2	0.25
13	5.0	2.3	218	13	35	49	24	627	2.9	21	0.60	0.21
14	75	2.9	293	12	31	41	22	194	2.7	10	0.72	0.42
15	19	3.3	140	12	29	35	20	97	2.3	7.1	1.3	1.7
16	10	3.6	88	11	28	90	18	64	2.0	5.6	15	2.6
17	7.8	3.6	89	11	24	1920	17	55	2.0	4.8	5.1	2.6
18	6.1	3.7	66	15	22	910	15	53	1.7	4.4	2.8	8.3
19	4.9	4.2	49	206	20	308	14	38	1.4	4.8	2.1	4.4
20	4.5	5.8	35	119	36	543	13	31	1.1	5.1	1.7	13
21	4.2	6.4	28	73	30	258	12	26	0.83	6.2	1.5	6.0
22	3.7	7.3	23	54	26	159	11	22	0.62	7.8	1.3	2.4
23	4.5	8.0	34	935	24	113	10	19	0.50	6.8	1.1	1.2
24	18	9.5	29	1950	22	84	30	16	0.50	7.1	0.97	0.66
25	17	8.5	23	399	20	66	22	13	1.1	6.3	0.99	0.81
26	9.1	6.5	20	207	27	211	15	13	1.4	5.4	0.82	134
27	6.3	10	18	131	24	120	14	11	1.5	5.3	0.75	250
28	5.0	19	16	94	22	85	14	10	1.6	4.6	0.66	54
29	4.3	1180	14	72	---	67	12	9.7	1.1	3.9	0.55	33
30	3.9	403	12	61	---	85	11	9.0	35	4.8	0.50	21
31	3.4	---	11	51	---	849	---	8.8	---	5.8	0.63	---
TOTAL	235.27	1718.3	2581	4554.0	1129	6225	1250	1847.5	119.85	325.5	75.49	542.16
MEAN	7.589	57.28	83.26	146.9	40.32	200.8	41.67	59.60	3.995	10.50	2.435	18.07
MAX	75	1180	635	1950	97	1920	292	627	35	67	15	250
MIN	0.82	2.2	11	9.3	20	14	10	8.8	0.50	3.2	0.50	0.11
CFSM	0.19	1.41	2.05	3.62	0.99	4.95	1.03	1.47	0.10	0.26	0.06	0.45
IN.	0.22	1.58	2.37	4.18	1.04	5.71	1.15	1.70	0.11	0.30	0.07	0.50

03430550 MILL CREEK NEAR NOLENSVILLE, TN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2002, BY WATER YEAR (WY)

MEAN	21.50	43.10	79.36	122.3	118.3	178.1	75.81	68.60	45.37	17.84	8.264	6.884
MAX	146	122	159	225	263	372	209	190	210	58.8	35.0	18.1
(WY)	1996	1996	1997	1999	1994	1997	1994	1995	1998	1992	1995	2002
MIN	0.39	1.67	28.4	39.2	40.3	81.9	20.3	8.40	4.00	2.35	1.03	0.85
(WY)	2001	1999	2000	2000	2002	1998	1992	1992	2002	2000	2000	2000

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1992 - 2002	
ANNUAL TOTAL	19283.30		20603.07			
ANNUAL MEAN	52.83		56.45		66.30	
HIGHEST ANNUAL MEAN					104	1994
LOWEST ANNUAL MEAN					41.3	1993
HIGHEST DAILY MEAN	2420	Feb 16	1950	Jan 24	4070	Mar 27 1994
LOWEST DAILY MEAN	0.50	Aug 23	0.11	Sep 9	0.08	Sep 13 1993
ANNUAL SEVEN-DAY MINIMUM	0.85	Aug 18	0.22	Sep 7	0.10	Sep 9 1993
MAXIMUM PEAK FLOW			5780	Jan 24	13000	Oct 5 1995
MAXIMUM PEAK STAGE			13.02	Jan 24	17.88	May 25 2000
INSTANTANEOUS LOW FLOW					0.14	Oct 30 1999
ANNUAL RUNOFF (CFSM)	1.30		1.39		1.64	
ANNUAL RUNOFF (INCHES)	17.70		18.91		22.23	
10 PERCENT EXCEEDS	108		96		126	
50 PERCENT EXCEEDS	10		11		18	
90 PERCENT EXCEEDS	1.6		1.1		1.2	



03431060 MILL CREEK AT THOMPSON LANE NEAR WOODBINE, TN

LOCATION.--Lat 36°07'04", long 86°43'08", Davidson County, Hydrologic Unit 05130202, at bridge on Thompson Lane, 1.4 miles west of Arlington Church, 1.5 miles upstream from U.S. Highway 41 and 70S, and 1.6 miles downstream from Sevenmile Creek, and at mile 6.3.

DRAINAGE AREA.--93.4 mi^2.

PERIOD OF RECORD.--Crest-stage gage July 1964 to September 1996. October 1996 to current year.

GAGE.--Data collection platform and crest-stage gage. Datum of gage is 432.55 ft above NGVD of 1929. July 1964 to September 1996, crest-stage gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good, except Oct. 31 to Nov. 24, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water-quality data.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 29	1630	4,740	9.99	Mar 17	0900	5,650	10.80
Jan 24	1215	6,930	11.82	Mar 17	2115	*7,170	*12.00

Minimum daily discharge, 1.5 ft^3/s, Oct. 3, 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	17	263	30	247	53	777	376	28	110	16	5.9
2	1.6	15	139	30	167	52	415	134	25	32	18	6.2
3	1.5	14	93	29	152	51	265	122	22	26	19	6.8
4	1.5	8.9	70	27	136	47	193	218	21	44	18	6.3
5	38	5.4	56	26	115	44	154	153	85	23	16	7.7
6	57	6.0	49	29	115	43	129	111	42	18	15	12
7	10	6.3	51	29	157	42	115	89	29	16	14	19
8	6.3	6.3	1090	27	162	41	100	72	24	21	12	6.3
9	5.0	5.8	400	26	138	76	91	67	20	71	11	7.3
10	7.7	7.5	198	27	136	62	81	71	19	50	9.9	8.2
11	11	6.6	143	50	123	53	74	66	19	83	9.9	8.1
12	49	5.7	122	35	109	74	81	54	17	553	10	7.9
13	38	5.8	397	32	95	94	69	1110	19	186	11	7.9
14	322	6.3	579	30	85	81	61	389	17	75	22	9.9
15	68	6.2	267	28	78	72	57	193	17	51	31	42
16	40	6.1	165	28	73	263	53	134	16	40	180	29
17	31	6.8	164	28	67	3880	49	175	15	31	35	13
18	25	5.8	135	41	61	2590	44	151	15	35	20	26
19	21	5.9	106	391	58	875	41	104	14	40	15	19
20	18	8.3	83	212	109	1640	38	86	13	24	14	67
21	14	6.1	69	135	83	733	36	72	12	20	12	57
22	14	5.8	60	104	68	407	44	61	12	21	9.9	22
23	14	6.0	85	1800	62	278	33	54	12	23	8.8	14
24	54	92	70	3680	58	209	281	48	12	23	8.3	12
25	100	70	59	1110	54	163	111	43	56	19	7.2	13
26	36	49	53	493	83	546	67	43	20	17	8.3	632
27	26	94	49	303	65	275	56	39	19	16	7.6	871
28	22	89	44	218	57	196	75	37	27	15	6.5	142
29	20	2360	40	173	---	160	54	36	17	15	6.6	66
30	17	1270	35	156	---	176	44	35	132	20	6.4	43
31	16	---	32	131	---	1980	---	29	---	25	6.8	---
TOTAL	1087.4	4197.6	5166	9458	2913	15256	3688	4372	796	1743	585.2	2187.5
MEAN	35.08	139.9	166.6	305.1	104.0	492.1	122.9	141.0	26.53	56.23	18.88	72.92
MAX	322	2360	1090	3680	247	3880	777	1110	132	553	180	871
MIN	1.5	5.4	32	26	54	41	33	29	12	15	6.4	5.9
CFSM	0.38	1.50	1.78	3.27	1.11	5.27	1.32	1.51	0.28	0.60	0.20	0.78
IN.	0.43	1.67	2.06	3.77	1.16	6.08	1.47	1.74	0.32	0.69	0.23	0.87

03431060 MILL CREEK AT THOMPSON LANE NEAR WOODBINE, TN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 2002, BY WATER YEAR (WY)

MEAN	23.86	89.44	172.3	271.0	259.4	345.1	145.7	151.2	173.4	35.46	16.29	26.14
MAX	59.2	167	349	521	577	771	298	336	586	56.2	25.3	72.9
(WY)	1997	1997	1997	1999	2001	1997	2000	2000	1998	2002	1997	2002
MIN	1.89	13.4	71.5	103	104	162	52.9	59.8	22.5	8.14	6.99	4.09
(WY)	2001	1999	2000	2000	2002	2001	1997	2001	2000	2000	2000	2000

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1997 - 2002	
ANNUAL TOTAL	42682.7		51449.7			
ANNUAL MEAN	116.9		141.0		141.9	
HIGHEST ANNUAL MEAN					207	1997
LOWEST ANNUAL MEAN					106	2000
HIGHEST DAILY MEAN	4890	Feb 16	3880	Mar 17	6420	Mar 3 1997
LOWEST DAILY MEAN	1.5	Oct 3	a1.5	Oct 3	0.75	Sep 21 2000
ANNUAL SEVEN-DAY MINIMUM	1.7	Sep 12	6.1	Nov 12	0.95	Sep 16 2000
MAXIMUM PEAK FLOW			7170	Mar 17	26200	May 4 1979
MAXIMUM PEAK STAGE			12.00	Mar 17	20.63	May 4 1979
INSTANTANEOUS LOW FLOW					0.20	Sep 23 2000
ANNUAL RUNOFF (CFSM)	1.25		1.51		1.52	
ANNUAL RUNOFF (INCHES)	17.00		20.49		20.64	
10 PERCENT EXCEEDS	205		253		267	
50 PERCENT EXCEEDS	34		43		44	
90 PERCENT EXCEEDS	3.8		7.7		3.8	

a Also occurred Oct. 4.