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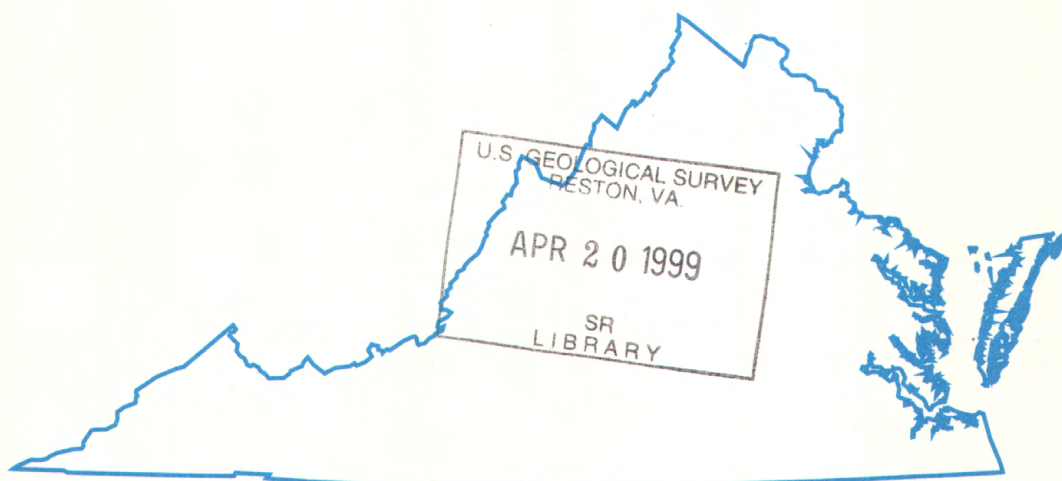
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Water Resources Data Virginia Water Year 1998

Volume 1. Surface-Water Discharge and Surface-Water Quality Records

Water-Data Report VA-98-1



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



Prepared in cooperation with the
Virginia Department of Environmental
Quality and with other agencies

CALENDAR FOR WATER YEAR 1998

1997

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1998

JANUARY							FEBRUARY							MARCH						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
				1	2	3	1	2	3	4	5	6	7	1	2	3	4	5	6	7
4	5	6	7	8	9	10	8	9	10	11	12	13	14	8	9	10	11	12	13	14
11	12	13	14	15	16	17	15	16	17	18	19	20	21	15	16	17	18	19	20	21
18	19	20	21	22	23	24	22	23	24	25	26	27	28	22	23	24	25	26	27	28
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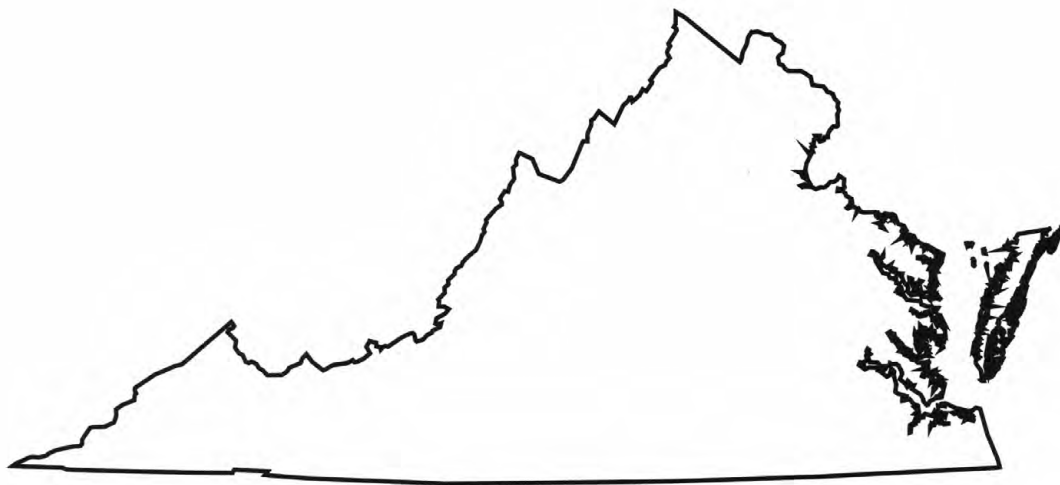
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Volume 1. Surface-Water Discharge and Surface-Water Quality Records

By Roger K. White, Donald C. Hayes, Michael R. Eckenwiler, and Paul E. Herman

Water-Data Report VA-98-1



U.S. DEPARTMENT OF THE INTERIOR

BRUCE BABBITT, Secretary

U.S. GEOLOGICAL SURVEY

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1999

PREFACE

This volume of the annual hydrologic data report of Virginia is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's and cooperating agencies' surface- and ground-water data-collection networks in each State, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and water quality 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. Hydrologic data for Virginia are contained in two volumes:

Volume 1. Surface-Water-Discharge and Surface-Water-Quality Records

Volume 2. Ground-Water-Level and Ground-Water-Quality Records

This report (Volume 1) is the culmination of a concerted effort by dedicated personnel of the U.S. Geological Survey and the Virginia Department of Environmental Quality 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, the following personnel contributed significantly to the collection, computation, processing, and completion of this information:

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13. ABSTRACT (Maximum 200 words) Water-resources data for the 1998 water year for Virginia includes records of stage, discharge, and water quality of streams and stage, contents, and water quality of lakes and reservoirs. This volume contains records for water discharge at 152 gaging stations; stage only at 2 gaging station; stage and contents at 10 lakes and reservoirs; and water quality at 24 gaging stations. Also included are data for 55 crest-stage partial-record stations. Locations of these sites are shown on figures 4 and 5. Miscellaneous hydrologic data were collected at 199 measuring sites and 17 water-quality sampling sites not involved in the systematic data-collection program. The data in this report represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in Virginia.			
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SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME

NOTE.--Data for partial-record stations and miscellaneous sites for both surface-water discharge and quality are published in separate sections of the data report. See references at the end of this list for page numbers for these sections.

[Letters after station name designate type of data collected: (d) discharge, (c) chemical, (b) biological, (m) microbiological, (t) water temperature, (s) sediment, (e) elevation, gage heights, or contents]

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

[Letters after station name designate type of data collected: (d) discharge, (c) chemical, (b) biological, (m) microbiological, (t) water temperature, (s) sediment, (e) elevation, gage heights, or contents]

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

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

[Letters after station name designate type of data collected: (d) discharge, (c) chemical, (b) biological, (m) microbiological, (t) water temperature, (s) sediment, (e) elevation, gage heights, or contents]

	Station number	Page
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Russell Fork at Haysi (d)	03208500	468
North Fork of Pound Lake at Pound (e)	03208680	470
Cranes Nest River near Clintwood (d)	03208950	472
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French Broad River (head of Tennessee River):		
South Fork Holston River at Riverside, near Chilhowie (d)	03471500	480
South Fork Holston River near Damascus (d)	03473000	482
Middle Fork Holston River at Seven Mile Ford (d)	03474000	484
Middle Fork Holston River near Meadowview (d)	03475000	488
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WATER RESOURCES DATA - VIRGINIA, 1998

DISCONTINUED SURFACE-WATER-DISCHARGE OR STAGE-ONLY STATIONS

The following continuous-record surface-water-discharge or stage-only stations (gaging stations) in Virginia 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. Discontinued project stations with less than 3 years of record have not been included. Information regarding these stations may be obtained from the District Office at the address given on the back side of the title page of this report.

[Letters after station name designate type of data collected: (d) discharge, (e) elevation]

Discontinued surface-water-discharge or stage-only stations

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
NASSAWADOX CREEK BASIN			
Guy Creek (head of Holly Grove Cove) near Nassawadox, VA (d)	01484800	1.72	1963-96
POTOMAC RIVER BASIN			
Opequon Creek near Berryville, VA (d)	01615000	57.4	1943-97
Abrams Creek at Winchester, VA (d)	01615500	5.6	1946-49
Abrams Creek near Winchester, VA (d)	01616000	16.5	1949-60, 1979-94
Dry River at Rawley Springs, VA (d)	01621000	72.6	1946-48
Cooks Creek at Mt. Crawford, VA (d)	01621500	42	1905-06
Castle Spring near Churchville, VA (d)	01622500	-	1949-56
Bell Creek at St. Pauls Chapel, near Staunton, VA (d)	01623000	.61	1948-55
Bell Creek near Staunton, VA (d)	01623500	3.8	1948-55
Bell Creek at Franks Mill, near Staunton, VA (d)	01624000	9.6	1948-56
Middle River near Verona, VA (d)	01624300	178	1967-86
Lewis Creek near Staunton, VA (d)	01624500	18	1905-06
Christians Creek near Fishersville, VA (d)	01624800	70.1	1967-97
North River at Port Republic, VA (d)	01625500	804	1895-99
Back Creek near Lyndhurst, VA (d)	01625900	41.2	1974-77
South River at Waynesboro, VA (d)	01626500	133	1905-06, 1928-52
South River near Dooks, VA (d)	01626850	149	1974-95
South River at Port Republic, VA (d)	01628000	248	1895-99
White Oak Run near Grottoes, VA (d)	01628060	1.94	1979-96
Elk Run at Elkton, VA (d)	01629000	17	1901-06
Yagers Spring near Luray, VA (d)	01629990	-	1949-56
Hawksbill Creek near Luray, VA (d)	01630000	52	1905-06
Plains Mill Spring near New Market, VA (d)	01632500	-	1949-56
Stony Creek at Columbia Furnace, VA (d)	01633500	79.4	1947-56
Marlboro Spring at Marlboro, VA (d)	01635000	-	1949-56
North Fork Shenandoah River near Riverton, VA (d)	01636000	1,040	1899-1906
Happy Creek at Front Royal, VA (d)	01636210	14.0	1948-77
Big Spring near Leesburg, VA (d)	01643610	.03	1968-69, 1980-81
Goose Creek near Middleburg, VA (d)	01643700	123	1965-67, 1969-95

WATER RESOURCES DATA - VIRGINIA, 1998

Discontinued surface-water-discharge or stage-only stations--Continued

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
POTOMAC RIVER BASIN--Continued			
Stave Run at Reston, VA (d)	01644290	.05	1966-71, 1973
Stave Run near Reston, VA (d)	01644291	.08	1971-82
Smilax Branch at Reston, VA (d)	01644295	.32	1967-78
Snakeden Branch at Reston, VA (d)	01645784	.79	1973-78
Fourmile Run at Alexandria, VA (d)	01652500*	14.4 13.8	1951-69, 1974-75, 1979-82
Long Branch near Annandale, VA (d)	01654500	3.71	1947-57
Accotink Creek near Accotink Station, VA (d)	01655000	37.0	1949-57
Cedar Run near Warrenton, VA (d)	01655500	12.3	1950-87
Broad Run at Buckland, VA (d)	01656500	50.5	1950-79, 1981-87
Broad Run near Bristow, VA (d)	01656650	89.6	1975-87
Occoquan River near Manassas, VA (d)	01656700	343	1968-81
Bull Run near Catharpin, VA (d)	01656725	25.8	1969-87
Cub Run near Bull Run, VA (d)	01656960	49.9	1973-87
Bull Run near Manassas, VA (d)	01657000	147	1950-81
Bull Run near Manassas Park, VA (d)	01657020	148	1984-87
Bull Run near Clifton, VA (d)	01657415	185	1972-84
Occoquan River (Creek) near Occoquan, VA (d)	01657500	570	1913-16, 1921-23, 1937-56
Hooes Run near Occoquan, VA (d)	01657655	3.97	1975-82
Neabsco Creek at Dale City, VA (d)	01657850	6.11	1994-96
Neabsco Creek Tributary at Telegraph Road near Dale City, VA (d)	01657885	.91	1995-96
Powells Creek near Dale City, VA (d)	01657895	7.93	1994-96
Quantico Creek near Dumfries, VA (d)	01658480	6.90	1983-85
South Fork Quantico Creek near Joplin, VA (d)	01658550	9.62	1983-85
South Fork Quantico Creek near Dumfries, VA (d)	01658650	16.6	1983-85
North Branch Chopawamsic Creek near Independent Hill, VA (d)	01659000	5.79	1951-57, 1990
Middle Fork Chopawamsic Creek near Garrisonville, VA (d)	01659500	4.51	1951-57, 1960-67
South Branch Chopawamsic Creek near Garrisonville, VA (d)	01660000	2.56	1951-57
Cannon Creek near Garrisonville, VA (d)	01660380	10.2	1994-96
Aquia Creek near Garrisonville, VA (d)	01660400	34.9	1971-97
GREAT WICOMICO RIVER BASIN			
Bush Mill Stream near Heathsville, VA (d)	01661800*	6.82	1964-87

* Currently operated as a crest-stage partial-record station.

WATER RESOURCES DATA - VIRGINIA, 1998

Discontinued surface-water-discharge or stage-only stations--Continued

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
RAPPAHANNOCK RIVER BASIN			
Carter Run near Marshall, VA (d)	01661900	19.5	1977-82
Rappahannock River near Warrenton, VA (d)	01662000	195	1943-86
Rush River at Washington, VA (d)	01662500	14.7	1953-77
Thornton River near Laurel Mills, VA (d)	01663000	142	1943-56
Hazel River at Rixeyville, VA (d)	01663500	287	1942-92
Rappahannock River at Kellys Ford, VA (d)	01664500	641	1925-52
Mountain Run near Culpeper, VA (d)	01665000	15.9	1949-97
Rapidan River near Ruckersville, VA (d)	01665500	114	1942-95
Robinson River at Locust Dale, VA (d)	01666000	148	1942
Rapidan River at Rapidan, VA (d)	01667000	446	1924-31
Mountain Run near Burr Hill, VA (d)	01667870	28.8	1990-92
Hoskins Creek near Tappahannock, VA (d)	01668800	15.5	1965-86
PIANKATANK RIVER BASIN			
Dragon Swamp near Church View, VA (d)	01669500	84.9	1943-81
YORK RIVER BASIN			
Beaverdam Swamp near Ark, VA (d)	01670000	6.63	1950-89
Pamunkey Creek at Lahore, VA (d)	01670180*	40.5	1989-92
Contrary Creek near Mineral, VA (d)	01670300*	5.53	1976-86
North Anna River near Partlow, VA (d)	01670400	344	1978-95
North Anna River near Hewlett, VA (d)	01670500	424	1926-28
North Anna River near Doswell, VA (d)	01671000	441	1926-86
Bunch Creek near Boswells Tavern, VA (d)	01671500	4.37	1949-79
South Anna River at Vontay, VA (d)	01672000	332	1927-30
South Anna River near Ashland, VA (d)	01672500	394	1930-97
Totopotomoy Creek near Atlee, VA (d)	01673500	5.89	1949-77
Ware Creek near Toano, VA (d)	01677000	6.29	1979-95
JAMES RIVER BASIN			
Bolar Spring at Bolar, VA (d)	02010000	-	1950-56
Muddy Run Spring near Warm Springs, VA (d)	02010500	-	1946-56
Warm Spring at Warm Springs, VA (d)	02011000	-	1928-44
Back Creek on Rt. 600, near Mountain Grove, VA (d)	02011480	85.8	1974-84
Falling Spring Creek near Falling Spring, VA (d)	02012000	11.5	1948-52
Jackson River at Falling Spring, VA (d)	02012500*	411	1925-84
Jackson River at Covington, VA (d)	02012900	440	1907-08

* Currently operated as a crest-stage partial-record station.

WATER RESOURCES DATA - VIRGINIA, 1998

Discontinued surface-water-discharge or stage-only stations--Continued

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
JAMES RIVER BASIN--Continued			
Smith Creek above old dam, near Clifton Forge, VA (d)	02014500	12.4	1947-56
Smith Creek near Clifton Forge, VA (d)	02015000	12.5	1944-47
Stuart Spring near McDowell, VA (d)	02015500	-	1950-56
Meadow Creek at New Castle, VA (d)	02017000	13.8	1929-52
Catawba Creek near Fincastle, VA (d)	02019000	104	1928-37
Karnes Spring near Buchanan, VA (d)	02020000	-	1950-56
Calfpasture River (head of Maury River) above Mill Creek, at Goshen, VA (d)	02020500	144	1938-96
Calfpasture River at Goshen, VA (d)	02021000	190	1925-39
Big Spring at Kerrs Creek, VA (d)	02022000	-	1950-56
Maury River near Lexington, VA (d)	02023000	487	1925-60
South River near Riverside, VA (d)	02023500	111	1950-62
Buffalo Creek near Glasgow, VA (d)	02024300	123	1963-64
Maury River at Glasgow, VA (d)	02024500	831	1895-1906
Pedlar River near Pedlar Mills, VA (d)	02025000	91	1942-56
Tye River at Roseland, VA (d)	02026500	68	1927-38
Buffalo river near Tye River, VA (d)	02027800	147	1960-95
Tye (Buffalo) River near Norwood, VA (d)	02028000	360	1940-60
Hardware River near Scottsville, VA (d)	02029500	104	1925-39
Slate River near Arvonion (d)	02030500	226	1926-95
Mechums River near White Hall (Ivy), VA (d)	02031000	95.4	1942-51
North Fork Moormans River near White Hall, VA (d)	02031500	11.4	1952-63, 1982-84
Moormans River near White Hall, VA (d)	02032000	18	1943-46
Moormans River near Free Union, VA (d)	02032250	74.6	1979-97
Buck Mountain Creek near Free Union, VA (d)	02032400	37	1979-97
South Fork Rivanna River near Earlysville, VA (d)	02032500	216	1951-66
South Fork Rivanna River near Charlottesville, VA (d)	02032515	260	1979-97
North Fork Rivanna River near Proffit, VA (d)	02032680	176	1970-92
Rivanna River near Charlottesville, VA (d)	02033000	473	1925
Rivanna River below Moores Creek, near Charlottesville, VA (d)	02033500	507	1925-34
Willis River at Lakeside Village (Flanagan Mills), VA (d)	02034500*	262	1927-86
(Big) Lickinghole Creek near Goochland, VA (d)	02035500	70	1944-46
Beaverdam Creek at State Farm, VA (d)	02036000	42	1944-47, 1957-64,
Falling Creek near Chesterfield, Va. (d)	02038000*	32.8	1955-94
Falling Creek near Drewrys Bluff, VA (d)	02038500	54	1942-56, 1957-64
Vaghans Creek near Hixburg, VA (d)	02038880	23.2	1980-81

* Currently operated as a crest-stage partial-record station.

WATER RESOURCES DATA - VIRGINIA, 1998

Discontinued surface-water-discharge or stage-only stations--Continued

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
JAMES RIVER BASIN--Continued			
Fishpond Creek near Hixburg, VA (d)	02038830	14	1980-81
Flat Creek near Amelia, VA (d)	02040500*	73	1946-48
Appomattox River near Petersburg, VA (d)	02041500	1,335	1927-66
Swift Creek near Chester, VA (d)	02042000	143	1943-49
Chickahominy River near Atlee, VA (d)	02042287	62.2	1990-97
GREAT DISMAL SWAMP BASIN			
Cypress Swamp at Cypress Chapel, VA (d)	02043500	23.8	1953-71, 1978-96
Washington Ditch near Cypress Chapel, VA (d)	02043550	41	1979-81
CHOWAN RIVER BASIN			
Nottoway River near Burkeville, VA (d)	02044000	38.7	1946-86
Nottoway River near McKenney, VA (d)	02045000	362	1946-50
Waqua Creek near Alberta, VA (d)	02045200	15.0	1966-67
Anderson Branch at Sussex, VA (d)	02046500	5.35	1949-56
Assamoosick Swamp near Sebrell, VA (d)	02047100	86.4	1982-88
Blackwater River at Zuni, VA (d)	02048000	456	1943-88
Seacock Creek at Unity, VA (d)	02048500	102	1943-49
Blackwater River near Burdette, VA (d)	02049000	576	1942-44
North Meherrin River near Keysville, VA (d)	02050500	9.2	1949-61
Great Creek near Cochran, VA (d)	02051600	30.7	1958-86
Fountains Creek near Brink, VA (d)	02052500	65.2	1953-95
Fontaine (Fountains) Creek near Emporia, VA (d)	02053000	96	1944-53
ROANOKE RIVER BASIN			
Big Springs at Elliston, VA (d)	02054000	-	1948-56
Tinker Creek at Roanoke, VA (d)	02055500	70	1907-08
Back Creek near Roanoke, VA (d)	02056500	43	1907-08
Blackwater River near Union Hall, VA (d)	02057000	208	1925-64
Roanoke River near Toshes, VA (d)	02057500	1,020	1925-63
Snow Creek at Sago, VA (d)	02058000	60	1935-44
Pigg River near Toshes, VA (d)	02058500	394	1930-63
Roanoke River near Gretna, VA (d)	02059000	1,430	1925-30
Goose Creek at Huddleston, VA (d)	02060000	218	1929-32
Big Otter River near Bedford, VA (d)	02061000	116	1944-60
Big Otter River near Altavista, VA (d)	02062000	372	1929-37
Caldwells Creek near Appomattox, VA (d)	02063000	5.13	1954-60

* Currently operated as a crest-stage partial-record station.

Discontinued surface-water-discharge or stage-only stations--Continued

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
ROANOKE RIVER BASIN--Continued			
Falling River at Spring Mills, VA (d)	02063500	52.2	1954-60
Little Falling River at Hat Creek, VA (d)	02064500	43	1929-36
Falling River near Brookneal, VA (d)	02065000	228	1936-41
Roanoke River at Clarkton, VA (d)	02065200	2,691	1963-76
Roanoke Creek at Saxe, VA (d)	02066500	135	1946-72
Roanoke River near Clover, VA (d)	02067000	3,230	1929-52
Roanoke River above Dan River, at Clarksville, VA (d)	02067500	-	1895-98
Leatherwood Creek near Martinsville (Old Liberty), VA (d)	02073500	68	1926-34
Dan River at Danville, VA (d)	02075000	2,050	1934-95
Dan River at South Boston, VA (d)	02076000*	2,730	1900-07, 1923-52
Georges Creek near Gretna, VA (d)	02076500	9.24	1949-97
Hyco River near Omega, VA (d)	02078000	413	1934-50
Dan River at Clarksville, VA (d)	02078500	-	1896-98
Roanoke River at Clarksville, VA (d)	02079000	7,320	1935-52
Roanoke River at Buggs Island, VA (d)	02079500*	7,780	1947-62
Allen Creek near Boydton, VA (d)	02079640	53.4	1961-96

KANAWHA RIVER BASIN

New River near Baywood, VA (d)	03163000	1,000	1928-30
New River near Grayson, VA (d)	03164500	1,160	1908-12
New River at Ivanhoe, VA (d)	03165500	1,340	1927, 1930-78
Cripple Creek near Ivanhoe, VA (d)	03166000	148	1930-34
Neff-Litz Spring near Rural Retreat, VA (d)	03166500	-	1947-56
Glade Creek at Grahams Forge, VA (d)	03166800	7.15	1976-93
Big Reed Island Creek near Allisonia, VA (d)	03167500	278	1908-16, 1939-95
Peak Creek at Pulaski, VA (d)	03168500	58.3 60.9	1927-33, 1951-57
Little River near Copper Valley, VA (d)	03169500	239	1908-16
New River at Eggleston, VA (d)	03171500	2,941	1915-76
Wabash Spring near Poplar Hill, VA (d)	03172000	-	1950-51
Walker Creek at Staffordsville, VA (d)	03172500	277	1908-16
Francis Spring near Bane, VA (d)	03173500	-	1952-56
Wolf Creek near Shawver Mill (Burkes Garden), VA (d)	03174500	36	1927-28
West Fork Cove Creek near Bluefield, VA (d)	03175000	5.5	1929-32

* Currently operated as a crest-stage partial-record station.

WATER RESOURCES DATA - VIRGINIA, 1998

Discontinued surface-water-discharge or stage-only stations--Continued

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
KANAWHA RIVER BASIN--Continued			
Cox Branch above Tazewell Reservoir, near Gratton, VA (d)	03175100	2.06	1988-92
Bluestone River at Bluefield, VA (d)	03177700	39.8	1965-80
Bluestone River at Falls Mills, VA (d)	03177710	44.2	1980-97
BIG SANDY RIVER BASIN			
Levisa Fork near Grundy, VA (d)	03207500	235	1942-74, 1986-87
Grissom Creek near Council, VA (d)	03208034	2.82	1981-83
Barton Fork near Council, VA (d)	03208036	1.23	1981-83
Russell Fork at Council, VA (d)	03208040*	10.2	1981-83
Russell Fork near Birchleaf, VA (d)	03208100	87.4	1981-83
North Fork Pound River at Pound, VA (d)	03208700*	18.5	1962-87
Pound River above Indian Creek, at Pound, VA (d)	03208800*	36.7	1966-78
Pound River below Bold Camp Creek, at Pound, VA (d)	03208850*	61.2	1966-78
Pound River near Georges Fork, VA (d)	03208900*	82.5	1964-82
Russell Fork at Bartlick, VA (d)	03209200*	526	1963-82
Kersaw Branch near Hurley, VA (d)	03213577	.60	1981-82
Knox Creek at Kelsa, VA (d)	03213590*	84.3	1980-81
Steve Keesling Spring at Sugar Grove, VA (d)	03471000	-	1928, 1948-56
TENNESSEE RIVER BASIN			
South Fork Holston River near Chilhowie, VA (d)	03472000	89.5	1907-10
Beaverdam Creek at Damascus, VA (d)	03472500	56.0	1947-59
Middle Fork Holston River at Groseclose, VA (d)	03473500	7.39	1948-57, 1988-89
Middle Fork Holston River at Chilhowie, VA (d)	03474500	155	1907-10, 1921-32
Cedarville Spring at Cedarville, VA (d)	03475500	-	1950-53
Beaver Creek near Wallace, VA (d)	03477500	13.7	1946-57
Percy Preston Spring near Wallace, VA (d)	03478000	-	1950-56
Lick Creek near Chatham Hill, VA (d)	03487800*	25.5	1966-68
North Fork Holston River near Plasterco, VA (d)	03488100	259	1963-66
Brumley Creek near Hansonville, VA (d)	03488445	4.29	1979-82
Brumley Creek at Brumley Gap, VA (d)	03488450*	21.1	1979-82
North Fork Holston River at Holston, VA (d)	03488500	402	1951-59
North Fork Holston River near Mendota, VA (d)	03489500	493	1921-32
Cove Creek near Hilton, VA (d)	03489850	17.6	1966-68

* Currently operated as a crest-stage partial-record station.

WATER RESOURCES DATA - VIRGINIA, 1998

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Discontinued surface-water-discharge or stage-only stations--Continued

Station name	Station number	Drainage area (mi ²)	Period of record (water years)
TENNESSEE RIVER BASIN --Continued			
Big Moccasin Creek at Collinwood, near Hansonville, VA (d)	03489870	41.9	1966-68
Big Moccasin Creek near Gate City, VA (d)	03489900	79.6	1953-59, 1966-68
North Fork Holston River near Gate City, VA (d)	03490000*	672	1932-82
Taylor Springs at Cedar Bluff, VA (d)	03520500	-	1953
Clinch River at Cedar Bluff, VA (d)	03521000	125	1944-46
Clinch River at Richlands, VA (d)	03521500*	137	1946-89
Little River at Wardell, VA (d)	03522000	103	1949-52
Will Brooks Spring at Wardell, VA (d)	03522500	-	1950-52
(Big) Cedar Creek near Lebanon, VA (d)	03523000	51.5	1953-59
Thompson Creek near Coulwood, VA (d)	03523500	14.0	1942-49
Guest River at Coeburn, VA (d)	03524500*	87.3	1949-59, 1979-81
Stony Creek at Ka, VA (d)	03524900*	30.9	1980-81
Stony Creek at Fort Blackmore, VA (d)	03525000	41.4	1949-52
Clinch River at Clinchport, VA (d)	03525500	986	1907-10
Quillen Springs near Gate City, VA (d)	03526500	-	1954-56
Clinch River at Speers Ferry, VA (d)	03527000	1,126	1920-76, 1979-81
North Fork Clinch River at Duffield, VA (d)	03527500	23.1	1953-59
Powell River at Big Stone Gap, VA (d)	03529500	112	1945-59, 1979-81
South Fork Powell River at Big Stone Gap, VA (d)	03530000	40	1945-47, 1951-77
North Fork Powell River at Pennington Gap, VA (d)	03530500	71.4	1944-51, 1978-81, 1993-95
Powell River near Pennington Gap, VA (d)	03531000	290	1921-32

* Currently operated as a crest-stage partial-record station.

WATER RESOURCES DATA - VIRGINIA, 1998

DISCONTINUED SURFACE-WATER-QUALITY STATIONS

The following surface-water-quality stations in Virginia have been discontinued. Water-quality data (daily or periodic samples with collection frequency not less than quarterly) were collected and published for the period of record, expressed in water years, shown for each station. For each station entry, a period of record is provided for each type of record listed. Those stations with an asterisk (*) after the station number are currently operated as partial-record water-quality sampling stations.

[Type of record: C (chemical), T (water temperature), SC (specific conductance), SED (sediment)]

Discontinued surface-water-quality stations

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record (water years)
POTOMAC RIVER BASIN				
North River near Burketown, VA	01622000	379	C, T, SC	1994
Middle River near Grottoes, VA	01625000	375	C, T, SC	1994
South River at Harriston, VA	01627500	212	SC C, T, SC	1949 1994
South Fork Shenandoah River near Luray, VA	01629500	1,377	SC C, T, SC	1949 1994
South Fork Shenandoah River at Front Royal, VA	01631000	1,642	T, SC SED C C, T, SC	1953-56, 1968-77, 1980 1953-56 1949, 1953-56, 1968-86 1994
North Fork Shenandoah River near Strasburg, VA	01634000	768	T, SC SED C C, T, SC	1949, 1956, 1969-71 1956 1930, 1949, 1952, 1956, 1970-86 1994
Catoctin Creek at Taylorstown, VA	01638480	89.6	C	1993-95
Goose Creek near Leesburg, VA	01644000	332	T, SC C, T, SC	1969-71 1994
Stave Run near Reston, VA	01644291	.08	SED	1971-74
Smilax Branch at Reston, VA	01644295	.32	SED	1971-75
Snakeden Branch at Reston, VA	01645784	.79	SED	1973-78
Accotink Creek near Annandale, VA	01654000	23.5	C	1993-95
Cedar Run near Aden, VA	01656100*	155	SED	1974
Bull Run near Catharpin, VA	01656725	25.8	SED	1974
Cub Run near Bull Run, VA	01656960	49.9	SED	1972-74
Bull Run near Clifton, VA	01657415	185	SED	1973-74
Neabsco Creek Tributary at Telegraph Road near Dale City, VA	01657885	.91	C, S	1995-96
Quantico Creek near Dumfries, VA	01658480	6.90	C	1983-85
South Fork Quantico Creek near Independent Hill, VA	01658500*	7.64	C	1951, 1953, 1955-56, 1969, 1973-75, 1983-85
South Fork Quantico Creek at Camp 5, near Joplin, VA	01658550	9.62	C	1983-85
South Fork Quantico Creek near Dumfries, VA	01658650	16.6	C	1983-85
South Fork Quantico Creek near Triangle, VA	01658620	15.7	T, SC	1973

WATER RESOURCES DATA - VIRGINIA, 1998

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Discontinued surface-water-quality stations--Continued

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record (water years)
RAPPAHANNOCK RIVER BASIN				
Carter Run near Marshall, VA	01661900	19.5	SED	1977-78
Hazel River at Rixeyville, VA	01663500	287	T SC SED	1951-55 1953-55 1952-55
Rappahannock River at Remington, VA	01664000	620	SC, T SED	1951-56, 1965-86 1951-93
Rapidan River near Culpeper, VA	01667500	472	T SC SED	1946, 1951-56 1953-56 1951-56
Mountain Run near Burr Hill, VA	01667870	28.8	C, T, SC	1990-92
Rappahannock River near Fredericksburg, VA	01668000*	1,596	T, SC	1956, 1968-74
Rappahannock River at VEPCO Dam, at Fredericksburg, VA	01668020	-	T, SC	1971-72
YORK RIVER BASIN				
North Anna River below Lake Anna, near Hewlett, VA	01670600	-	T, SC	1972-73
Pamunkey Creek at Lahore, VA	01670180	40.5	C, T, SC	1989-92
Bunch Creek near Boswells Tavern, VA	01671500	4.37	T	1954-56
Pamunkey River near Hanover, VA	01673000*	1,081	T SC	1946, 1968-76 1968-76
Mattaponi River near Bowling Green, VA	01674000	257	T	1946
Mattaponi River near Beulahville, VA	01674500*	601	T	1946
Ware Creek near Toano, VA	01677000	6.29	C	1979-81, 1985-95
JAMES RIVER BASIN				
Back Creek near Sunrise, VA	02011460	60.1	T	1984-95
Back Creek at Sunrise, VA	02011470	76.1	T	1984-92, 1993-95
Little Back Creek near Sunrise, VA	02011490	4.91	T	1984-92, 1993-95
Jackson River at Falling Spring, VA	02012500	411	T, SC C	1969-86 1930, 1948, 1968-86
James River at Buchanan, VA	02019500	2,075	T SC SED C	1948, 1951-56, 1968-86 1953-56, 1968-86 1951-56 1930, 1948, 1951-56, 1968-86
James River at Bent Creek, VA	02026000	3,683	T	1948

TYPE OF RECORD: C (chemical), T (water temperature), SC (specific conductance), SED (sediment)

* Presently active periodic sampling station.

WATER RESOURCES DATA - VIRGINIA, 1998

Discontinued surface-water-quality stations--Continued

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record (water years)
JAMES RIVER BASIN--Continued				
James River at Scottsville, VA	02029000	4,584	T, SC SED	1951-56, 1987 1951-56
James River at Cartersville, VA	02035000*	6,257	T, SC SED	1968-76, 1979, 1981 1981
James River and Kanawha Canal, near Richmond, VA	02037000	-	C, T, SC	1972-73
James River near Richmond, VA	02037500	6,758	T, SC	1948-51, 1953-56
Fishpond Creek near Hixsburg, VA	02038830	14.0	SC	1981
Holiday Creek near Andersonville, VA	02038850	8.53	C, M, S	1968-96
Vaughans Creek near Hixsburg, VA	02038880	23.2	SC	1981
Chickahominy River tributary at Atlee Exit, near Greenwood, VA	0204228301	-	C, T, SC,	1994
Chickahominy River near Atlee, VA	02042287	62.2	C, SED	1989-91
Upham Brook near Richmond, VA	02042428	38.6	C, SED	1989-91
Chickahominy River at Rt. 156, near Seven Pines, VA	02042440	149.3	C SED	1984, 1987-91 1988-91
Chickahominy River near Providence Forge, VA	02042500*	248	C, T, SC SED	1969-70, 1972-91 1990-91
Chickahominy River above Walkers Dam, at Walkers, VA	02042720	301	C, T, SC SED	1983-91 1990-91
Diascund Creek at Rt. 628, near New Kent, VA	02042726	9.25	C, T, SC SED	1986-91 1991
Diascund Creek Reservoir off Timber Swamp, near Walkers, VA	02042734	-	C, T, SC	1983-91
Beaverdam Creek at Rt. 632, near Barhamsville, VA	02042736	4.82	C, T, SC SED	1986-91 1991
Wahrani Swamp at Rt. 632, near Barhamsville, VA	02042742	4.02	C, T, SC	1986-91
Diascund Creek Reservoir off pump station, near Walkers, VA	02042746	-	C, T, SC	1983-91
Little Creek Reservoir Infall near Norge, VA	0204275415	-	C, T, SC	1983-85
Little Creek Reservoir (North) near Norge, VA	0204275420	-	C, T, SC	1983-85
Little Creek Reservoir (North Central) near Norge, VA	0204275430	-	C, T, SC	1983-91
Little Creek Reservoir (Northeast) near Norge, VA	0204275440	-	C, T, SC	1983-85
Little Creek Reservoir (South Central) near Norge, VA	0204275470	-	C, T, SC	1983-91
Little Creek Reservoir (West) near Norge, VA	0204275490	-	C, T, SC	1983-91

CHOWAN RIVER BASIN

Nottoway River near Burkeville, VA	02044000	38.7	T	1947
Nottoway River near Sebrell, VA	02047000	1,421	T C, T, S	1947 1978-96

TYPE OF RECORD: C (chemical), T (water temperature), SC (specific conductance), SED (sediment)

* Presently active periodic sampling station.

WATER RESOURCES DATA - VIRGINIA, 1998

Discontinued surface-water-quality stations--Continued

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record (water years)
CHOWAN RIVER BASIN--Continued				
Blackwater River at Zuni, VA	02048000	456	T	1947
Blackwater River near Franklin, VA	02049500	617	C, M, S	1947, 1952, 1975-96
North Meherrin River near Lunenburg, VA	02051000	55.6	T	1947
Meherrin River at Emporia, VA	02052000	747	T, SC C	1968-80 1968-93
ROANOKE RIVER BASIN				
Roanoke River at Lafayette, VA	02054500	257	T, SC	1951
Roanoke River at Altavista, VA	02060500	1,789	T SC SED C	1951, 1953-56, 1968-86 1953-56, 1968-86 1953-56 1951, 1953-56, 1968-86
Roanoke River at Randolph, VA	02066000	2,977	T, SC SED C	1951-56, 1968-62 1954-81 1930, 1951-86
Smith River above Route 615, near Woolwine, VA	02071510	-	C, T, SC	1994-95
Smith River at Rt 8 near Woolwine, VA	02071520	-	C, T, SC	1994
Smith River near Philpott, VA	02072000	216	C, T, SC	1994-95
Smith River near Irisburg, VA	02073600	-	C, T, SC	1994-95
Dan River at Sewage Treatment Plant, near Danville, VA	02075045	2,105	C, T, SC	1993-94
Dan River at Sewage Treatment Plant effluent, near Danville, VA	02075046	-	C, T, SC	1993-94
Dan River at Paces, VA	02075500	2,550	T, SC SED C	1954-56 1954-81 1954-93
Dan River at South Boston, VA	02076000	2,730	T SC	1952 1951-52
Roanoke River at Clarksville, VA	02079000	7,320	C	1987-91
Lake Gaston near Elams, NC	02079785	-	T, SC SED	1988 1988
Lake Gaston (Little River Channel) near Henrico, VA	0207987950	-	C, T, SC	1987-92
Pea Hill Creek at Route 665, near Gasburg, VA	02079880	-	C, T, SC	1987-92
Pea Hill Creek above Rt. 667, near Gasburg, VA	0207988050	-	C, T, SC	1989-90
Pea Hill Creek tributary No. 1, near Gasburg, VA	02079881	-	C, T, SC	1989-90
Pea Hill Creek tributary No. 2, near Valentines, VA	0207988130	-	C, T, SC	1989-90
Pea Hill Creek tributary No. 3, near Valentines, VA	0207988160	-	C, T, SC	1989-90
Pea Hill Creek tributary No. 4, near Valentines, VA	02079883	-	C, T, SC	1989-90

TYPE OF RECORD: C (chemical), T (water temperature), SC (specific conductance), SED (sediment)

* Presently active periodic sampling station.

WATER RESOURCES DATA - VIRGINIA, 1998

Discontinued surface-water-quality stations--Continued

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record (water years)
ROANOKE RIVER BASIN--Continued				
Pea Hill Creek tributary No. 4 tributary, near Valentines, VA	0207988430	-	C, T, SC	1989-90
Cold Spring Branch near Gasburg, VA	0207988440	-	C, T, SC	1989-90
Pea Hill Creek above North Carolina State line, near Gasburg, VA	0207988450	-	C, T, SC	1987-92
Lake Gaston (Pea Hill Creek) near Henrico, NC	0207988490	-	C, T, SC	1989-90
Lake Gaston tributary near Tillans Chapel, near Elams, NC	0207988510	-	C, T, SC	1989-90
Pea Hill Creek tributary No. 5, near Henrico, NC	02079888550	-	C, T, SC	1989-90
Pea Hill Creek near Bowens Corner, near Valentines, VA	02079882	-	C, T, SC	1988

KANAWHA RIVER BASIN

New River near Galax, VA	03164000	1,131	T, SC C	1950, 1968-83 1931, 1950, 1952, 1968-86
New River at Radford, VA	03171000	2,748	T, SC	1950, 1956
New River at Eggleston, VA	03171500	2,941	T, SC	1953-55
New River at Glen Lyn, VA	03176500*	3,768	SC T C, T, SC, SED	1968-88 1964-88 1931, 1950, 1952, 1955-56, 1965-95

BIG SANDY RIVER BASIN

Levisa Fork near Grundy, VA	03207500	235	T, SC SED	1950 1986
Levisa Fork at Big Rock, VA	03207800	297	T, SC SED	1970-81 1970-81
Grissom Creek near Council, VA	03208034	2.82	T, SC, C, SED	1982-83
Barton Fork near Council, VA	03208036	10.2	T, SC, C, SED	1981-83
Russell Fork at Council, VA	03208040	1.23	T, SC C	1981-83 1982-83
Russell Fork near Birchleaf, VA	03208100	87.4	T, SC, C	1982-83

TENNESSEE RIVER BASIN

South Fork Holston River near Damascus, VA	03473000	301	T SC C	1950, 1968-73 1950 1950, 1952, 1968-86
Middle Fork Holston River at Chilhowie, VA	03474500	155	T	1962
Brumley Creek near Hansonville, VA	03488445	4.29	T	1980-81
Brumley Creek at Brumley Gap, VA	03488450	21.1	T	1979-81
North Fork Holston River at Holston, VA	03488500	402	T, SC	1952-56

TYPE OF RECORD: C (chemical), T (water temperature), SC (specific conductance), SED (sediment)

* Presently active periodic sampling station.

WATER RESOURCES DATA - VIRGINIA, 1998

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Discontinued surface-water-quality stations--Continued

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record (water years)
TENNESSEE RIVER BASIN --Continued				
North Fork Holston River near Gate City, VA	03490000	672	T SC SED	1950-51, 1968-78 1950-51 1935-38, 1963-65
Clinch River at Speers Ferry, VA	03527000	1,126	T SC SED	1950, 1965-67 1950 1935-38, 1963-65
Powell River at Big Stone Gap, VA	03529500	112	T, SC	1950
Powell River near Jonesville, VA	03531500	319	T	1964-67

TYPE OF RECORD: C (chemical), T (water temperature), SC (specific conductance), SED (sediment)

* Presently active periodic sampling station.

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VOLUME 1. SURFACE-WATER-DISCHARGE AND SURFACE-WATER-QUALITY RECORDS

INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with State agencies, obtains a large amount of data pertaining to the water resources of Virginia 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 Geological Survey, the data are published annually in this report series entitled "Water Resources Data - Virginia."

This report series includes records of stage, discharge, and water quality of streams and stage, contents, and water quality of lakes and reservoirs. This volume contains records for water discharge at 152 gaging stations; stage only at 2 gaging stations; stage and contents at 10 lakes and reservoirs; and water quality at 24 gaging stations. Also included are data for 55 crest-stage partial-record stations. Locations of these sites are shown on figures 4 and 5. Miscellaneous hydrologic data were collected at 199 measuring sites and 17 water-quality sampling sites not involved in the systematic data-collection program. The data in this report represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in Virginia.

This series of annual reports for Virginia began with the 1961 water year with a report that contained only data relating to the quantities of surface water. For the 1964 water year, a similar report was introduced that contained only data relating to water quality. 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. Beginning with the 1990 water year, the report format was changed to two volumes. Volume 1 contains surface-water-discharge and surface-water-quality data and Volume 2 contains ground-water-level and ground-water-quality data.

Prior to the introduction of this series and for several water years concurrent with it, water-resources data for Virginia 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, Parts 6A and 6B." For the 1961 through 1970 water 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 Waters of 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 U.S. Geological Survey, Branch of Information Services, Federal Center, Bldg. 41, Box 25286, Denver, Colorado 80225.

Publications similar to this report are published annually by the Geological Survey 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 VA-98-1." For archiving and general distribution, the reports for 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, Springfield, Virginia 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the District Office at the address given on the back of the title page or by telephone (804) 278-4750.

Water resources data, including those provided in water data reports, are available through the World Wide Web on the Internet. The Universal Resource Location (URL) to the Virginia District's home page is:

<http://va.usgs.gov>

COOPERATION

The U.S. Geological Survey and agencies of the State of Virginia have had joint-funding agreements for the collection of water-resource records since 1930. Organizations that assisted in collecting the data in this report through joint-funding agreements with the Survey are:

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY, Dennis H. Treacy, executive director.

VIRGINIA DEPARTMENT OF TRANSPORTATION, David P. Gehr, commissioner.

CITY OF ALEXANDRIA, Vola Lawson, city manager.

CITY OF DANVILLE, Herbert Dawson, director, Water and Wastewater.

CITY OF NEWPORT NEWS, Brian Ramaley, director, Department of Public Utilities.

CITY OF ROANOKE, Kit B. Kiser, director, Utilities and Operations.

NORTHERN VIRGINIA PLANNING DISTRICT COMMISSION, G. Mark Gibb, executive director.

WEST PIEDMONT PLANNING DISTRICT COMMISSION, Robert W. Dowd, executive director.

SOUTHEASTERN PUBLIC SERVICE AUTHORITY, Durwood S. Curling, executive director.

UNIVERSITY OF VIRGINIA, Dr. James N. Galloway, chairman, Graduate Admissions.

CITY OF NORFOLK, Shurl Montgomery, assistant city manager.

HAMPTON ROADS PLANNING DISTRICT COMMISSION, Arthur L. Collins, executive director.

WASHINGTON COUNTY SERVICE AUTHORITY, Bert C. Mullins, general manager.

WATER RESOURCES DATA - VIRGINIA, 1998

Assistance with funds or services was given by the U.S. Army Corps of Engineers in collecting records for gaging stations and water-quality stations throughout the State.

Under a cooperative agreement covering the Tennessee River Basin, the Tennessee Valley Authority provided financial assistance for the operation of gaging stations, the records for which are published herein. Similar financial assistance for water-quality studies was provided by the U.S. Marine Corps Base, Quantico, VA, for the Quantico, Cannon, and Aquia Creek Basins. Other cooperators that provided funds for the collection of records are the American Electric Power, Virginia Power, City of Danville, City of Radford, City of Bedford, Multitrade of Pittsylvania County, LG & E, Synergics Incorporated, and Georgia Pacific Corporation.

Organizations that provided data are acknowledged in station descriptions.

RECORDS COLLECTED BY THE STATE OF VIRGINIA

In addition to data collected by the U.S. Geological Survey, there are included herein records for 66 gaging stations operated by the Virginia Department of Environmental Quality. These records are published as provided and are acknowledged in the "COOPERATION" paragraph of each individual station. The Virginia Department of Environmental Quality is under the direction of Dennis H. Treacy, executive director. Published material for the gaging-station records is supplied through the Division of Water Program Coordination, Larry G. Lawson, P.E., director.

SUMMARY OF HYDROLOGIC CONDITIONS

Surface-Water Discharge

Annual mean discharges for the 1998 water year in the Potomac, Rappahannock, York, James, Chowan, Kanawha, and Big Sandy River Basins were in the above-normal range of flow (greater than the 75th percentile of annual mean flow) based on streamflow data at the most downstream gaged location in each basin. In the Roanoke and Tennessee River Basins, annual mean discharges of contributing basins were either in the normal range of flow (between the 25th and 75th percentile of annual mean flows) or in the above-normal range of flow based on streamflow data at the most downstream gaged locations of the contributing basins. No stream-gaging stations in the State had annual mean discharges in the below-normal range of flow (below the 25th percentile of annual mean flows). A comparison of annual mean discharges with the long-term mean discharge at selected stations throughout the State is shown in figure 1.

Drought conditions from July through September 1997 resulted in monthly mean discharges well below the median monthly mean discharges for October in many basins across the State, especially the smaller basins with unregulated streams. Above normal precipitation, beginning in October 1997 and continuing through the winter of 1998, resulted in monthly mean discharges above the median monthly mean discharges across the State, except for basins in the southwest portion of the State, which remained below the 25th percentile for monthly mean discharges through December 1997. Monthly mean discharges in basins across the State generally were well above the median monthly mean discharges from January through June 1998. Drought conditions from July through December 1998, resulting from the third lowest statewide precipitation totals on record for the July-December time frame, reduced monthly mean discharges in most basins to levels below the median monthly mean discharges from July through September 1998. By mid to late September, daily mean discharges in many smaller basins were below the 25th percentile of monthly mean flows; however, daily mean discharges in many larger basins remained equal to, or just below, the median monthly mean discharge. The distribution of monthly and annual mean discharges for selected stations is shown in figure 2.

One new annual maximum instantaneous discharge was recorded in the Piankatank River Basin at Dragon Swamp at Mascot, Va. (station 01669520; 16 years of record). A new annual minimum instantaneous discharge also was recorded in the Piankatank River Basin at Dragon Swamp at Mascot, Va., and a new annual minimum instantaneous discharge was recorded in the Potomac River Basin at Cedar Run near Aden, Va. (station 01656100; 17 years of record).

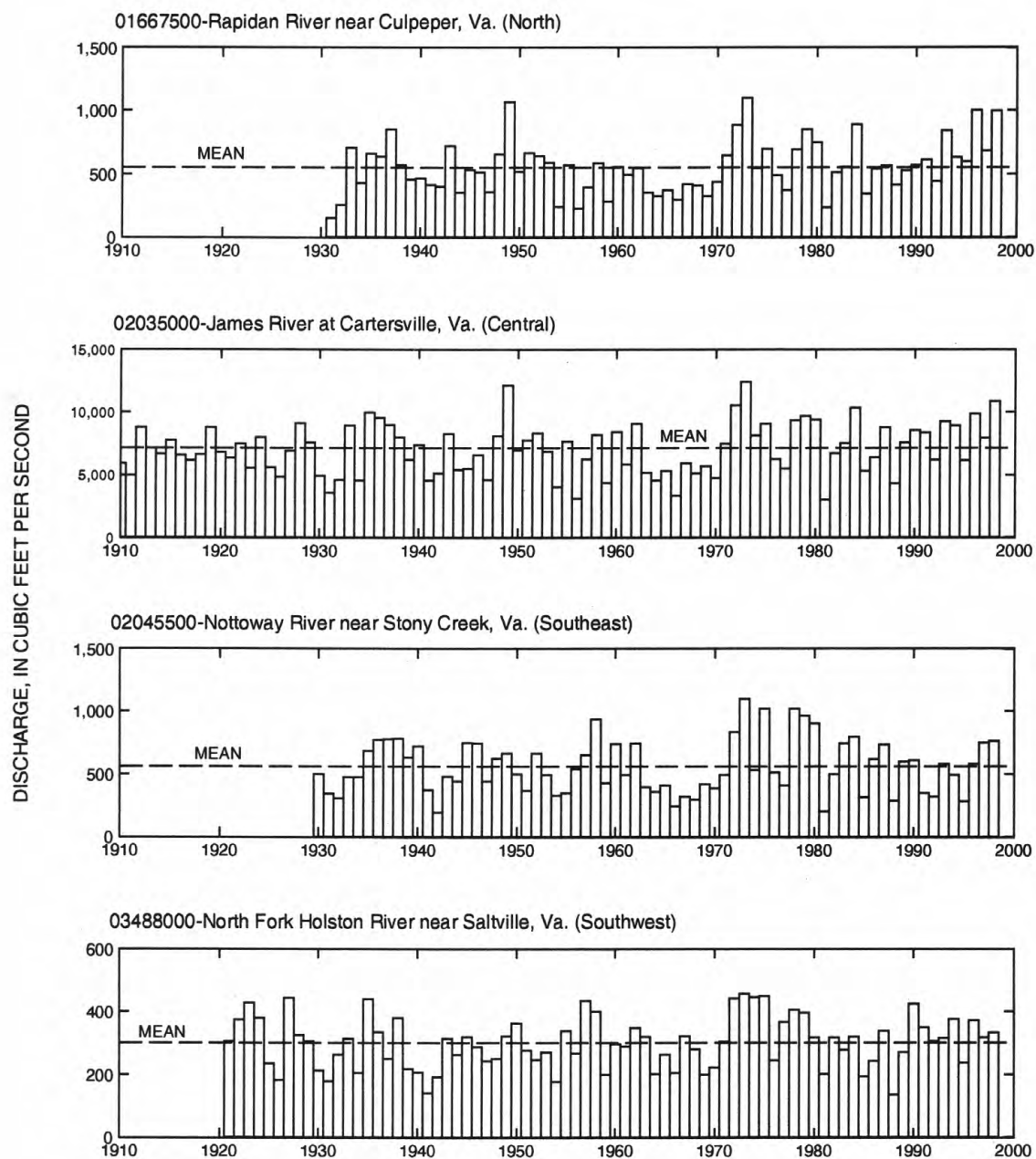


Figure 1. Annual mean discharge at four selected stream-gaging stations.

WATER RESOURCES DATA - VIRGINIA, 1998

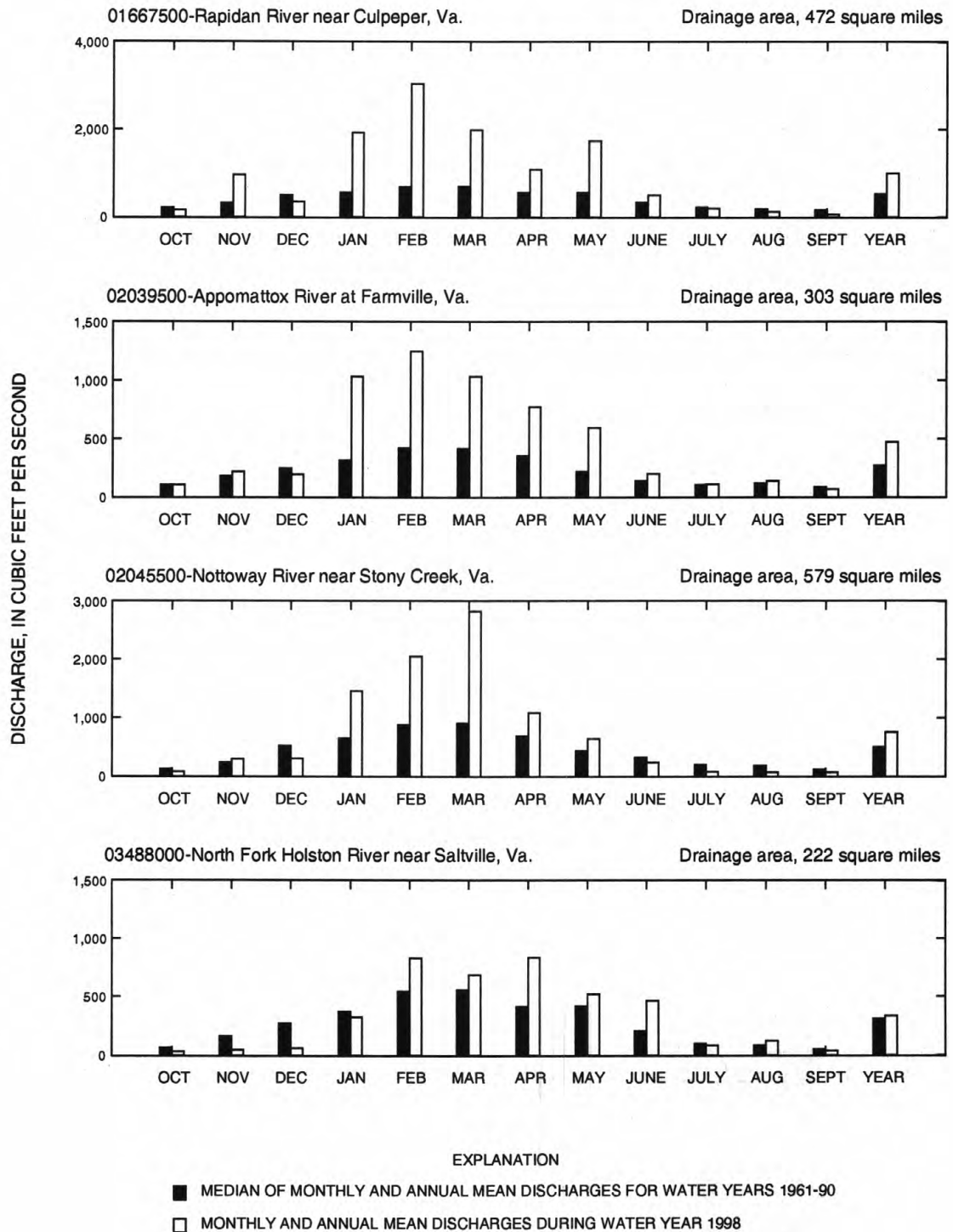


Figure 2. Monthly and annual mean discharges during 1998 water year and median of monthly and annual mean discharges for 1961-90 water years at four representative stream-gaging stations.

WATER RESOURCES DATA - VIRGINIA, 1998

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Benchmark Network is a network of 50 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in 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.

National Stream-Quality Accounting Network (NASQAN) monitors the water quality of large rivers within four of the Nation's largest river basins--the Mississippi, Columbia, Colorado, and Rio Grande. The network consists of 39 stations. 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.

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) provides continuous measurement and assessment of the chemical climate of precipitation throughout the United States. As the lead federal agency, the USGS works together with over 100 organizations to accomplish the following objectives; (1) Provide a long-term, spatial and temporal record of atmospheric deposition generated from a network of 191 precipitation chemistry monitoring sites. (2) Provide the mechanism to evaluate the effectiveness of the significant reduction in SO₂ emissions that began in 1995 as implementation of the Clean Air Act Amendments (CAAA) occurred. (3) Provide the scientific basis and nationwide evaluation mechanism for implementation of the Phase II CAAA emission reductions for SO₂ and NO_x scheduled to begin in 2000.

Data from the network, as well as information about individual sites, are available through the world wide web at:

<http://nadp.nrel.colostate.edu/NADP>

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 53 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 is available through the world wide web at:

http://www.rvares.er.usgs.gov/nawqa/nawqa_home.html

EXPLANATION OF THE RECORDS

The surface-water-discharge and surface-water-quality records published in this report are for the 1998 water year that began October 1, 1997, and ended September 30, 1998. 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, and water-quality data for surface water. The locations of the stations where the data were collected are shown in figures 4 and 5. 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 in this report is assigned a unique identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indefinitely. The system used by the U.S. Geological Survey to assign identification numbers for surface-water stations is based on geographic location. The "downstream order" system is used for regular surface-water stations and the "latitude-longitude" system is occasionally used for surface-water stations where only miscellaneous measurements are made.

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 indentation in the "List of Stations" in the front of this report. Each indentation represents one rank. This downstream order and system of indentation shows which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

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The station-identification number is assigned according to downstream order. 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 eight-digit number for each station, such as 02027500, which appears just to the left of the station name, includes the two-digit Part number "02" plus the six-digit downstream-order number "027500." The Part number designates the major river basin; for example, Part "02" is the James River Basin.

Latitude-Longitude System

The identification numbers for some miscellaneous surface-water and water-quality sites are assigned according to the grid system of latitude and longitude. The number consists of 15 digits. The first six digits denote the degrees, minutes, and seconds of latitude, the next seven digits denote degrees, minutes, and seconds of longitude, and the last two digits (assigned sequentially) identify the sites within a 1-second grid. This site-identification number, once assigned, is a pure number and has no locational significance. In the rare instance where the initial determination of latitude and longitude are found to be in error, the station will retain its initial identification number; however, its true latitude and longitude will be listed in the LOCATION paragraph of the station description.

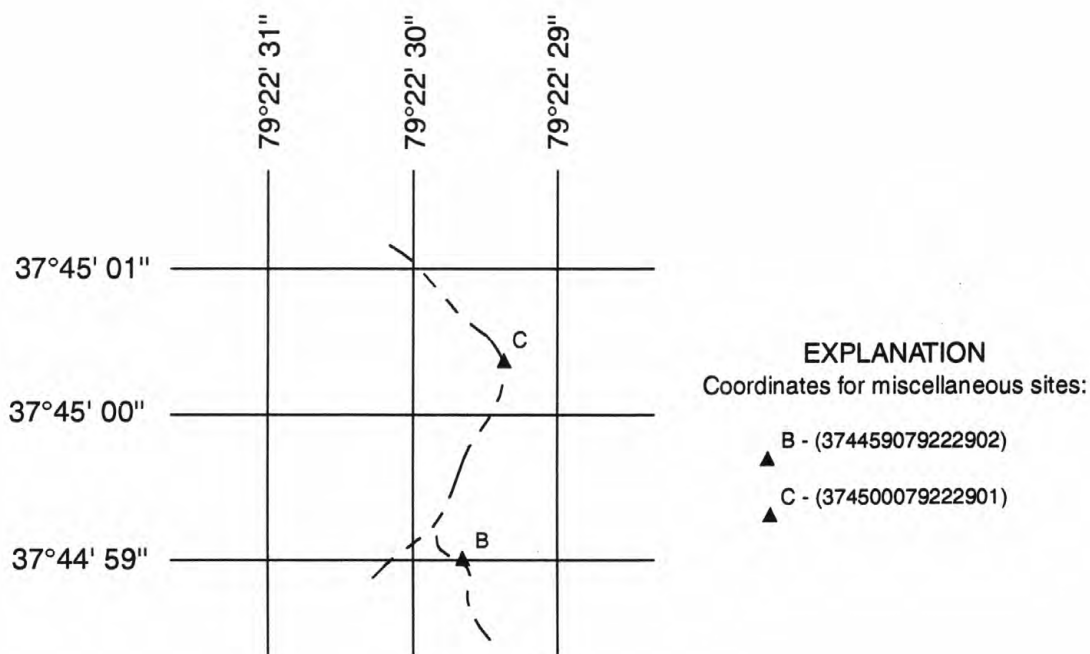


Figure 3. System for numbering selected miscellaneous sites.

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, but need not be. 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. Location of all complete-record and crest-stage partial-record stations for which data are given in this report are shown in figures 4 and 5.

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Data Collection and Computation

The data obtained at a complete-record gaging station on a stream or canal consist of a continuous record of stage, individual measurements of discharge throughout a range of stages, and notations regarding factors that may affect the relationships 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 relationship 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 adopted by the Geological Survey as a result of experience accumulated since 1880. 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 to 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 by applying the daily mean stages (gage heights) to the stage-discharge curves or 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 determined by the shifting-control method, in which correction factors based on the individual discharge measurements and notes of the personnel making the measurements are applied to the gage heights before the discharges are determined from the curves or tables. This 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 records for other stations in the same or nearby basins for comparable periods.

At some stream-gaging stations, the stage-discharge relation is affected by the 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.

In computing records of lake or reservoir contents, it is necessary to have available from surveys, curves or tables defining the relationship of stage and content. The application of stage to the stage-content curves or tables gives the contents from which daily, monthly, or yearly changes then are determined. If the stage-content relationship changes because of deposition of sediment in a lake or reservoir, periodic resurveys may be necessary to redefine the relationship. Even when this is done, the contents computed may become increasingly in error as the lapsed time since the last survey increases. Discharges over lake or reservoir spillways are computed from stage-discharge relationships much as other stream discharges are computed.

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; extremes for the current year; 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 gaging station 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 mileages, given for only a few stations, were determined by methods given in "River Mileage Measurement," Bulletin 14, Revision of October 1968, prepared by the Water Resources Council or were provided by the U.S. Army Corps of Engineers.

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 records have been published for the station or for an equivalent station. An equivalent station is one that was in operation at a time that the present station was not and whose location was such that flow at it can reasonably be considered equivalent to flow at the present station.

REVISED RECORDS.--Because of new information, published records occasionally are found to be incorrect, and revisions are printed in later 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.

GAGE.--The type of gage in current use, the datum of the current gage referred to sea level (see glossary), 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 items. 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 U.S. Geological Survey 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 U.S. Geological Survey.

EXTREMES FOR CURRENT YEAR.--Extremes given here are similar to those for the period of record, except the peak discharge listing may include secondary peaks. For stations meeting certain criteria, all peak discharges and stages occurring during the water year and equal to or greater than a selected base discharge are presented under this heading. The peaks equal to or greater than the base discharge, excluding the highest one, are referred to as secondary peaks. Peak discharges are not published for canals, ditches, drains, or streams for which the peaks are subject to substantial control by man. The time of occurrence for peaks is expressed in 24-hour local standard time. For example, 12:30 a.m. is 0030, and 1:30 p.m. is 1330. The minimum for the current water year appears below the table of peak data.

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 and EXTREMES FOR PERIOD OF RECORD have been deleted and the information contained in these paragraphs 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 presentation 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; and 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 data 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 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 year and for a designated period, as appropriate. The designated period selected, "WATER YEARS _____," 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. 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. Because the designated period may not be the same as the station period of record published in the manuscript, occasionally the dates of occurrence listed for the daily and instantaneous extremes in the designated-period column may not be within the selected water years listed in the heading. When this occurs, it 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 footnotes.

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.

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.)

INSTANTANEOUS PEAK FLOW.--The maximum instantaneous discharge occurring for the water year or for the designated period. Note that secondary instantaneous peak discharges above a selected base discharge are stored in District computer files for stations meeting certain criteria. Those discharge values may be obtained by writing to the District Office. (See address on back of title page of this report.)

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INSTANTANEOUS PEAK STAGE.--The maximum instantaneous stage occurring for the water year or for the designated period. If the dates of occurrence for the instantaneous peak flow and instantaneous peak stage differ, 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.--Indicates the total quantity of water in runoff for a drainage area for the year. Data reports may use any of the following units of measurement in presenting annual runoff data:

Acre-foot (AC-FT) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equal to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Cubic feet per second per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile area drained, assuming the runoff is distributed uniformly in time and area.

Inches (INCHES) indicates the depth to which the drainage area would be covered if all of the runoff for a given time period were uniformly distributed on it.

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

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

90 PERCENT EXCEEDS.--The discharge that has been 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 their true values; "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 ft³/s to the nearest tenth between 1.0 and 10 ft³/s; to whole numbers between 10 and 1,000 ft³/s; and to 3 significant figures for more than 1,000 ft³/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 mile 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 Records Available

Information used in the preparation of the records in this publication, such as discharge-measurement notes, gage-height records, temperature measurements, and rating tables is on file in the Virginia 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 Virginia District Office. (See address on back of title page of this report.)

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Records of Surface-Water Quality

Records of surface-water quality ordinarily are obtained at or near stream-gaging stations because interpretation of records of surface-water quality nearly always requires corresponding discharge data. 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.

A careful distinction needs to be made between "continuing records", as used in this report, and "continuous recordings," which refers to a continuous graph or a series of discrete values punched at short intervals on a paper tape. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are obtained only monthly or less frequently. Locations of stations for which records on the quality of surface water appear in this report are shown in figure 6.

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 detailed in the "Techniques of Water-Resources Investigations," Book 1, Chapter D2; Book 3, Chapter C2; Book 5, Chapters A1, A3, and A4. These references are listed in the "PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS" section of this report which appears at the end of the introductory text. These methods are consistent with American Society for Testing and Materials (ASTM) standards and generally follow the standards of the International Organization for Standards (ISO). Detailed information on collecting, treating, and shipping samples may be obtained from the Virginia District Office. (Address on back of title page.)

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 (see definitions) are obtained from at least several verticals. Whether samples are obtained from the centroid of flow or from several verticals depends on flow conditions and other factors which must be evaluated by the collector.

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.

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 Virginia District Office whose address is given on the back of the title page of this report.

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Water Temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at the 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, either mean temperatures or maximum and minimum temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are on file in the Virginia District Office. (Address on back of title page.)

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 sections.

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 discharges 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 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 American Society for Testing and Materials (ASTM) standards and generally follow the standards of the International Organization for Standards (ISO).

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 suspended-sediment discharge, 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 Geological Survey laboratory in Arvada, Colorado. Methods used to analyze sediment samples and to compute sediment records are given in TWRI Book 5, Chapter C1. Methods used by the Geological Survey laboratories are given in TWRI Book 1, Chapter D2; Book 3, Chapter C2; Book 5, Chapters A1, A3, A4, and A5. These methods are consistent with American Society for Testing and Materials (ASTM) standards and generally follow the standards of the International Organization for Standards (ISO).

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.

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INSTRUMENTATION--Information on instrumentation is given only if a water-quality monitor temperature record, 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 Geological Survey 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 to the Water-Quality File in the U.S. Geological Survey's computerized data system, WATSTORE, and subsequently by monthly transfer of update transactions to the U.S. Environmental Protection Agency's STORET system. Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of U.S. Geological Survey water-quality data are encouraged to obtain all required data from the appropriate computer file to insure the most recent updates.

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 colony count).
L	Biological organism count less than 0.5 percent (organism 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.

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 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.

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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 analytes 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 collected 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 an 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. There are many types of replicate samples possible, each of which may yield slightly different results in a dynamic hydrologic setting, such as a flowing stream. The types of replicate samples collected in this district are:

Sequential samples - a type of replicate sample in which the samples are collected one after the other, typically over a short time.

Split sample - a type of replicate sample in which a sample is split into subsamples contemporaneous in time and space.

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.

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ACCESS TO USGS WATER 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://va.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

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. See also table for converting English units to International System (SI) Units on the inside of the back cover.

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

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

Algae are mostly aquatic single-celled, colonial, or multi-celled plants, containing chlorophyll and lacking roots, stems, and leaves.

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.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, while 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.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which 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 + or - 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Fecal coliform bacteria are bacteria that are present in the intestine or feces of warm-blooded animals. They are often 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 + or - 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.

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Fecal streptococcal bacteria are bacteria found also in the intestine of warm-blooded animals.

Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory, they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C + or - 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.

Bed material is the sediment mixture of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

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 micro-organisms, such as bacteria.

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

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. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter (g/m^3), and periphyton and benthic organisms in grams per square mile (g/mi^2).

Dry mass refers to the mass of residue present after drying in an oven at 105°C for zooplankton and periphyton, 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.

Organic mass or volatile mass of the living substance is the difference between the dry mass and ash mass and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash mass and dry mass.

Wet mass is the mass of living matter plus contained water.

Bottom material: See Bed material.

Cells/volume refers to the number of cells of any organism which 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, usually milliliters (mL) or liters (L).

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 natural water color or with carbonaceous organic pollution from sewage or industrial wastes.

Chlorophyll refers to the green pigments of plants. Chlorophyll "a" and "b" are the two most common green pigments in plants.

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

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.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, 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 salt water.

Cubic feet per second per square mile [$(\text{ft}^3/\text{s})/\text{mi}^2$] is 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.

Cubic foot per second (ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

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Discharge is the volume of water (or more broadly, volume of fluid plus suspended sediment) that passes a given point within a given period of time.

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

Annual 7-day minimum is 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.)

Dissolved refers to that material in a representative water sample which passes through a 0.45 μ m membrane filter. This is a convenient operational definition used by Federal agencies that collect water data. Determinations of "dissolved" constituents are made on subsamples of the filtrate.

Dissolved-solids concentration of water 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 of dissolved solids, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. Therefore, in the mathematical calculation of dissolved-solids concentration, the bicarbonate value, in milligrams per liter, is multiplied by 0.492 to reflect the change.

Drainage area of a stream at a specified location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise specified.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

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

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

Hydrologic Bench-Mark Network is a network of 53 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an eight-digit number.

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.

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 ($\mu\text{g/g}$) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

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Micrograms per liter ($\mu\text{G/L}$, $\mu\text{g/L}$) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

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

National Geodetic Vertical Datum of 1929 (NGVD of 1929) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called "Sea Level Datum of 1929" or "mean sea level" in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in natural or regional water-quality planning and management. The 284 sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objectives of NASQAN are (1) to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting such that the data may be used for, (2) description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (3) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics, and (4) providing a nationally consistent data base useful for water-quality assessment and hydrologic research.

The National Trends Network (NTN) is a 150-station network for sampling atmospheric deposition in the United States. The purpose of the network is to determine the variability, both in location and in time, of the composition of atmospheric deposition, which includes snow, rain, dust particles, aerosols, and gases. The core from which the NTN was built was the already-existing deposition-monitoring network of the National Atmospheric Deposition Program (NADP).

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, diverse, and geographically distributed part of the Nation's ground- and surface-water resources, and to identify, describe, and explain the major natural and human factors that affect these observed conditions and trends.

Assessment activities have begun in more than one-third of the study units and ultimately will be conducted in 60 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 a basis for decision making on the use of water resources within the study units and a foundation for aggregation and comparison of findings to address water-quality issues of regional and national interest.

Organism is any living entity.

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.

Total organism count is the total number of organisms collected and enumerated in any particular sample.

Parameter Code is a 5-digit number used in the U.S. Geological Survey computerized data system, WATSTORE, to uniquely identify a specific constituent. The codes used in WATSTORE are the same as those used in the U.S. Environmental Protection Agency data system, STORET. The Environmental Protection Agency assigns and approves all requests for new codes.

Partial-record station is a particular site where limited streamflow and/or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle size is the diameter, in millimeters (mm), of a particle determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) 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).

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

<u>Classification</u>	<u>Size (mm)</u>	<u>Method of analysis</u>
Clay.....	0.00024 - 0.004	Sedimentation
Silt.....	.004 - .062	Sedimentation
Sand.....	.062 - 2.0	Sedimentation or sieve
Gravel.....	2.0 - 64.0	Sieve

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. 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.

Percent composition 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, mass, or volume.

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

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

Picocurie (PC, pCi) is one trillionth (1×10^{-12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{10} radioactive disintegrations per second. A picocurie yields 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.

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 are commonly known as algae.

Blue-green algae 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.

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.

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.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column and are often 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.

Primary productivity is a measure of the rate at which new organic matter is formed and accumulated through photosynthetic 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 by the plants (carbon method).

Milligrams of carbon per area or volume per unit time [mg C/(m².time)] for periphyton and macrophytes and [mg C/(m³.time)] for phytoplankton are units for expressing primary productivity. They define 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 in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

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Milligrams of oxygen per area or volume per unit time [$\text{mg O}_2 / (\text{m}^2 \cdot \text{time})$] for periphyton and macrophytes and [$\text{mg O}_2 / (\text{m}^3 \cdot \text{time})$] for phytoplankton are the units for expressing primary productivity. They define 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.

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.

Recoverable from 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.

Return period is the average time interval between occurrences of a hydrological event of a given or greater magnitude, usually expressed in years. May also be called recurrence interval.

Runoff in inches (IN., in.) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Sea level: In this report, "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)--a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it 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 influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Bed load is the sediment that is transported in a stream by rolling, sliding, or skipping along the bed and very close to it. In this report, bed load is considered to consist of particles in transit within 0.25 ft of the streambed.

Bed load discharge (tons per day) is the quantity of bed load measured by dry weight that moves past a section as bed load in a given time.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

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 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Suspended-sediment discharge (tons/day) is the rate at which dry mass of sediment passes a section of a stream or is the quantity of sediment, as measured by dry mass or volume, that passes a 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.

Suspended-sediment load is a general term that refers to material in suspension. It is not synonymous with either discharge or concentration.

Total sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry mass or volume, that passes a section during a given time.

Total-sediment load or total load is a term which refers to the total sediment (bed load plus suspended-sediment load) that is in transport. It is not synonymous with total-sediment discharge.

7-day 10-year low flow ($7 Q_{10}$) is the discharge at the 10-year recurrence interval taken from a frequency curve of annual values of the lowest mean discharge for 7 consecutive days (the 7-day low flow).

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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. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in microsiemens per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 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.

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

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.

Natural substrate refers to any naturally occurring emersed or submersed solid surface, such as a rock or tree, upon which an organism lives.

Artificial substrate is a device which 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 taken. 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.

Surface area of a lake is that area outlined on the latest U.S.G.S. topographic map as the boundary of the lake and measured by a planimeter in acres. In localities not covered by topographic maps, the areas are computed from the best maps available at the time planimeted. All areas shown are those for the stage when the planimeted map was made.

Surficial bed material is the part (0.1 to 0.2 ft) 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 associated with 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 water-suspended sediment sample that is retained on a 0.45 μ m 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 analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total is the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45 μ m membrane filter. 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 determine when the results should be reported as "suspended, total."

Determinations of "suspended, total" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

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Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchical 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.....	<i>Hexagenia</i>
Species.....	<i>Hexagenia limbata</i>

Thermograph is an instrument that continuously records variations of temperature on a chart. The more general term "temperature recorder" is used in the table headings 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 that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 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) is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour period.

Total is the total amount of a given constituent in a representative water-suspended sediment 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 all of the constituent in the sample.)

Total discharge is the total quantity of any individual constituent, as measured by dry mass or volume, that passes through a stream cross-section per unit of time. This term needs to be qualified, such as "total sediment discharge," "total chloride discharge," and so on.

Total, recoverable is the amount of a given constituent that is in solution after a representative water-suspended sediment 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, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

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 waters. 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.

Water year in Geological Survey 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, 1998, is called the "1998 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.

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

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PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

The U.S. Geological Survey publishes a series of manuals describing procedures for planning and conducting specialized work in water-resources investigations. The material 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. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises.

The reports listed below are for sale by the U.S. Geological Survey, Branch of Information Services, Box 25286, Federal Center, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be sent by check or money order payable to the U.S. Geological Survey. Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations."

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, Chapter D1. 1975. 65 pages.
- 1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W.W. Wood: USGS-TWRI Book 1, Chapter D2. 1976. 24 pages.

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, Chapter D1. 1974. 116 pages.
- 2-D2. *Application of seismic-refraction techniques to hydrologic studies*, by F.P. Haeni: USGS-TWRI Book 2, Chapter D2. 1988. 86 pages.

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, Chapter E1. 1971. 126 pages.
- 2-E2. *Borehole geophysics applied to ground-water investigations*, by W.S. Keys: USGS-TWRI Book 2, Chapter E2. 1990. 150 pages.

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, Chapter F1. 1989. 97 pages.

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, Chapter A1. 1967. 30 pages.
- 3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M.A. Benson: USGS-TWRI Book 3, Chapter A2. 1967. 12 pages.
- 3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G.L. Bodhaine: USGS-TWRI Book 3, Chapter A3. 1968. 60 pages.
- 3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H.F. Matthai: USGS-TWRI Book 3, Chapter A4. 1967. 44 pages.
- 3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS-TWRI Book 3, Chapter A5. 1967. 29 pages.
- 3-A6. *General procedure for gaging streams*, by R.W. Carter and Jacob Davidian: USGS-TWRI Book 3, Chapter A6. 1968. 13 pages.
- 3-A7. *Stage measurement at gaging stations*, by T.J. Buchanan and W.P. Somers: USGS-TWRI Book 3, Chapter A7. 1968. 28 pages.
- 3-A8. *Discharge measurements at gaging stations*, by T.J. Buchanan and W.P. Somers: USGS-TWRI Book 3, Chapter A8. 1969. 65 pages.
- 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, Chapter A9. 1989. 27 pages.
- 3-A10. *Discharge ratings at gaging stations*, by E.J. Kennedy: USGS-TWRI Book 3, Chapter A10. 1984. 59 pages.
- 3-A11. *Measurement of discharge by the moving-boat method*, by G.F. Smoot and C.E. Novak: USGS-TWRI Book 3, Chapter A11. 1969. 22 pages.
- 3-A12. *Fluorometric procedures for dye tracing*, Revised, by J.F. Wilson, Jr., E.D. Cobb, and F.A. Kilpatrick: USGS-TWRI Book 3, Chapter A12. 1986. 41 pages.
- 3-A13. *Computation of continuous records of streamflow*, by E.J. Kennedy: USGS-TWRI Book 3, Chapter A13. 1983. 53 pages.
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- 3-A17. *Acoustic velocity meter systems*, by Antonius Laenen: USGS-TWRI Book 3, Chapter A17. 1985. 38 pages.
- 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, Chapter A18. 1989. 52 pages.
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- 3-B1. *Aquifer-test design, observation, and data analysis*, by R.W. Stallman: USGS-TWRI Book 3, Chapter B1. 1971. 26 pages.
- 3-B2. *Introduction to ground-water hydraulics, a programed text for self-instruction*, by G.D. Bennett: USGS-TWRI Book 3, Chapter B2. 1976. 172 pages.
- 3-B3. *Type curves for selected problems of flow to wells in confined aquifers*, by J.E. Reed: USGS-TWRI Book 3, Chapter B3. 1980. 106 pages.
- 3-B4. *Regression modeling of ground-water flow*, by R.L. Cooley and R.L. Naff: USGS-TWRI Book 3, Chapter B4. 1990. 232 pages.
- 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, Chapter B4. 1993. 8 pages.
- 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, Chapter B5. 1987. 15 pages.
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- 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, Chapter B7. 1992. 190 pages.

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- 3-C1. *Fluvial sediment concepts*, by H.P. Guy: USGS-TWRI Book 3, Chapter C1. 1970. 55 pages.
- 3-C2. *Field methods for measurement of fluvial sediment*, by Thomas K. Edwards and G. Douglas Glysson: USGS-TWRI Book 3, Chapter C2. 1988. 80 pages.
- 3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS-TWRI Book 3, Chapter C3. 1972. 66 pages.

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- 4-A1. *Some statistical tools in hydrology*, by H.C. Riggs: USGS-TWRI Book 4, Chapter A1. 1968. 39 pages.
- 4-A2. *Frequency curves*, by H.C. Riggs: USGS-TWRI Book 4, Chapter A2. 1968. 15 pages.

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- 4-B1. *Low-flow investigations*, by H.C. Riggs: USGS-TWRI Book 4, Chapter B1. 1972. 18 pages.
- 4-B2. *Storage analyses for water supply*, by H.C. Riggs and C.H. Hardison: USGS-TWRI Book 4, Chapter B2. 1973. 20 pages.
- 4-B3. *Regional analyses of streamflow characteristics*, by H.C. Riggs: USGS-TWRI Book 4, Chapter B3. 1973. 15 pages.

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- 4-D1. *Computation of rate and volume of stream depletion by wells*, by C.T. Jenkins: USGS-TWRI Book 4, Chapter D1. 1970. 17 pages.

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- 5-A1. *Methods for determination of inorganic substances in water and fluvial sediments*, by M.J. Fishman and L.C. Friedman, editors: USGS-TWRI Book 5, Chapter A1. 1989. 545 pages.
- 5-A2. *Determination of minor elements in water by emission spectroscopy*, by P.R. Barnett and E.C. Mallory, Jr.: USGS-TWRI Book 5, Chapter A2. 1971. 31 pages.
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- 5-C1. *Laboratory theory and methods for sediment analysis*, by H.P. Guy: USGS-TWRI Book 5, Chapter C1. 1969. 58 pages.

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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, Chapter A1. 1988. 586 pages.
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- 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, Chapter A3. 1993. 136 pages.
- 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, Chapter A4. 1992. 108 pages.
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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, Chapter A1. 1968. 23 pages.
- 8-A2. *Installation and service manual for U.S. Geological Survey manometers*, by J.D. Craig: USGS-TWRI Book 8, Chapter A2. 1983. 57 pages.

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- 8-B2. *Calibration and maintenance of vertical-axis type current meters*, by G.F. Smoot and C.E. Novak: USGS-TWRI Book 8, Chapter B2. 1968. 15 pages.

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- 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, Chapter A6. 1998. Various pages.
- 9-A7. *National Field Manual for the Collection of Water-Quality Data: Biological Indicators*, by D.N. Myers and F.D. Wilde: USGS-TWRI Book 9, Chapter A7. 1997. 49 pages.
- 9-A8. *National Field Manual for the Collection of Water-Quality Data: Bottom-material samples*, by D.B. Radtke: USGS-TWRI Book 9, Chapter A8. 1998. 48 pages.
- 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, Chapter A9. 1998. 60 pages.

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An index of geophysical logging in Virginia by the U.S. Geological Survey, by M. P. Mulheren, J. D. Larson, and H. T. Hopkins: U.S. Geological Survey Open-File Report 82-432. 1982. 34 pages.

Annual maximum stages and discharges of selected streams in Virginia through 1990, by B. J. Prugh, Jr., E. H. Nuckels, and C. G. Humphrey: U.S. Geological Survey Open-File Report 90-587. 1991. 442 pages.

Assessment of ground-water contamination from a leaking underground storage tank at a Defense Supply Center near Richmond, Virginia, by W. G. Wright and J. D. Powell: U.S. Geological Survey Water-Resources Investigations Report 90-4091. 1990. 38 pages.

Availability and quality of ground water in the Piedmont province of Virginia, by J. D. Powell and J. M. Abe: U.S. Geological Survey Water-Resources Investigations Report 85-4235. 1985. 33 pages.
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Compilation of surface-water and water-quality data-collection sites on selected streams in Virginia, by B. J. Prugh, Jr. and C. G. Humphrey: U.S. Geological Survey Open-File Report 93-462. 1994. 645 pages.

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Flood of November 1985 in West Virginia, Pennsylvania, Maryland, and Virginia, by J. B. Lescinsky: U.S. Geological Survey Open-File Report 86-486. 1987. 33 pages.

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Geohydrology and Geochemistry near coastal ground-water-discharge areas of the Eastern Shore, Virginia, by G.K. Speiran: U.S. Geological Survey Water Supply Paper. 1996. 73 pages.

Geohydrology and the occurrence of volatile organic compounds in ground water, Culpeper basin of Prince William County, Virginia, by D. L. Nelms and D. L. Richardson: U.S. Geological Survey Water-Resources Investigations Report 90-4032. 1991. 94 pages.

Geohydrology of the shallow aquifer system, Naval Weapons Station Yorktown, Yorktown, Virginia, by A.R. Brockman, D.L. Nelms, G.E. Harlow, Jr., and J.J. Gildea: U.S. Geological Survey Water-Resources Investigations Report 97-4188. 61 pages.

Ground-water availability along the Blue Ridge Parkway, Virginia, by H. T. Hopkins: U.S. Geological Survey Water-Resources Investigations Report 84-4168. 1985. 154 pages.

Ground-water contamination and movement at the Defense General Supply Center, Richmond, Virginia, by J. D. Powell, W. G. Wright, D. L. Nelms, and R. J. Ahlin: U.S. Geological Survey Water-Resources Investigations Report 90-4113. 1991. 36 pages.

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Well-construction, water-level, and ground-water-quality data for Prince William County, Virginia, 1992, by D. L. Nelms and A. R. Brockman: U.S. Geological Survey Open-File Report 93-443. 1994. 73 pages.

WATER RESOURCES DATA - VIRGINIA, 1998

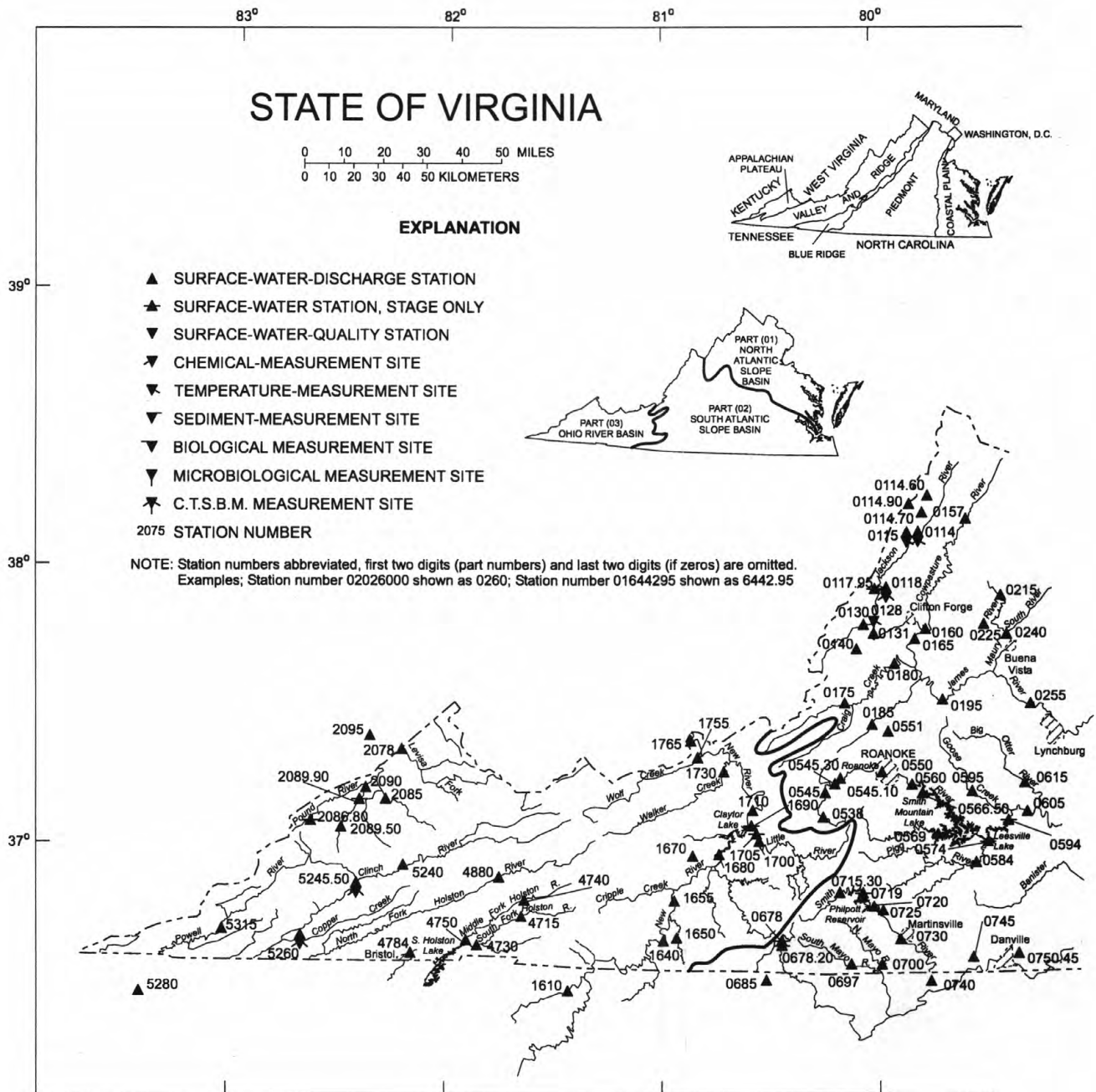
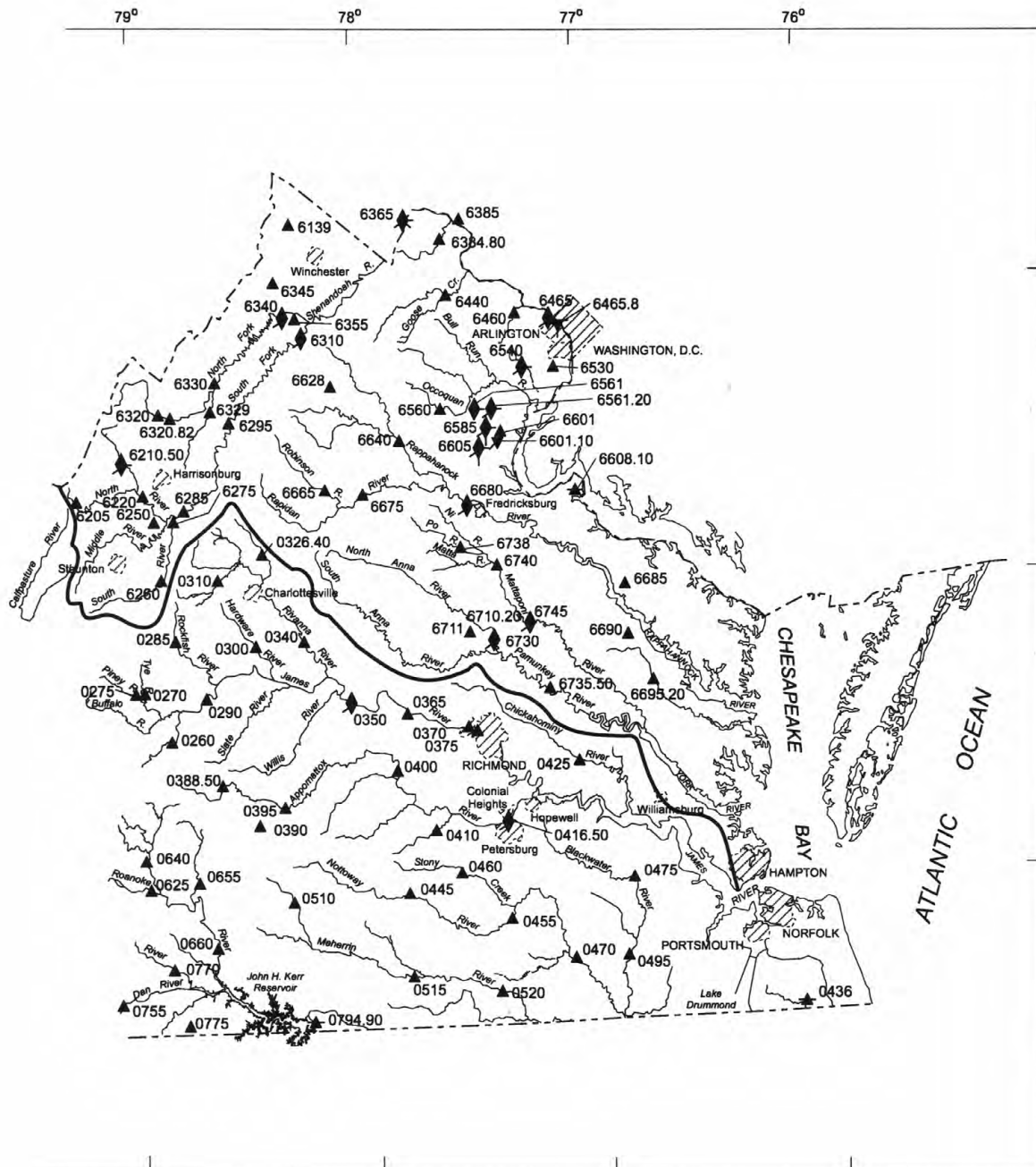


Figure 4. Location of surface-water-discharge and surface-water-quality data-collection stations.



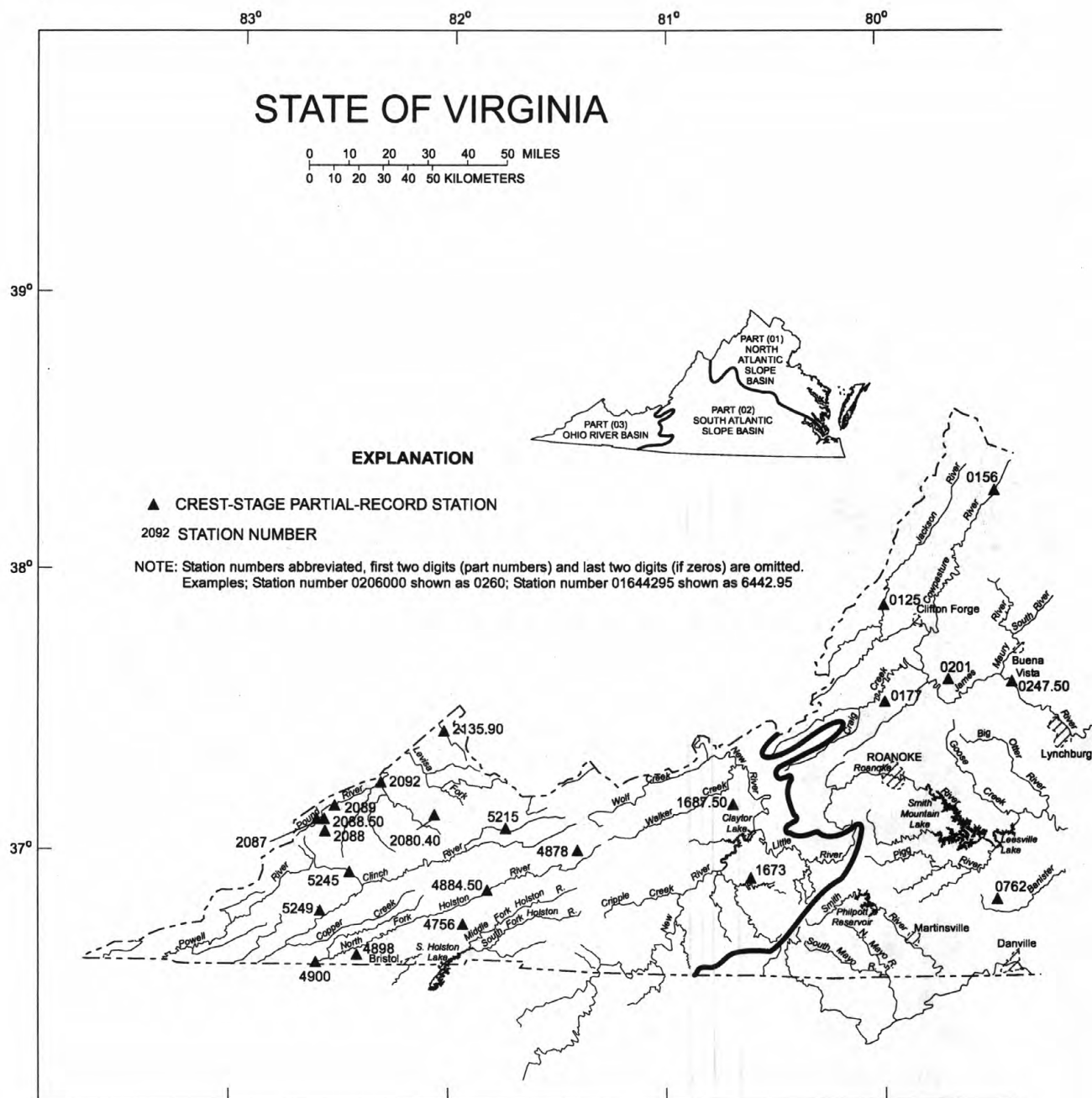
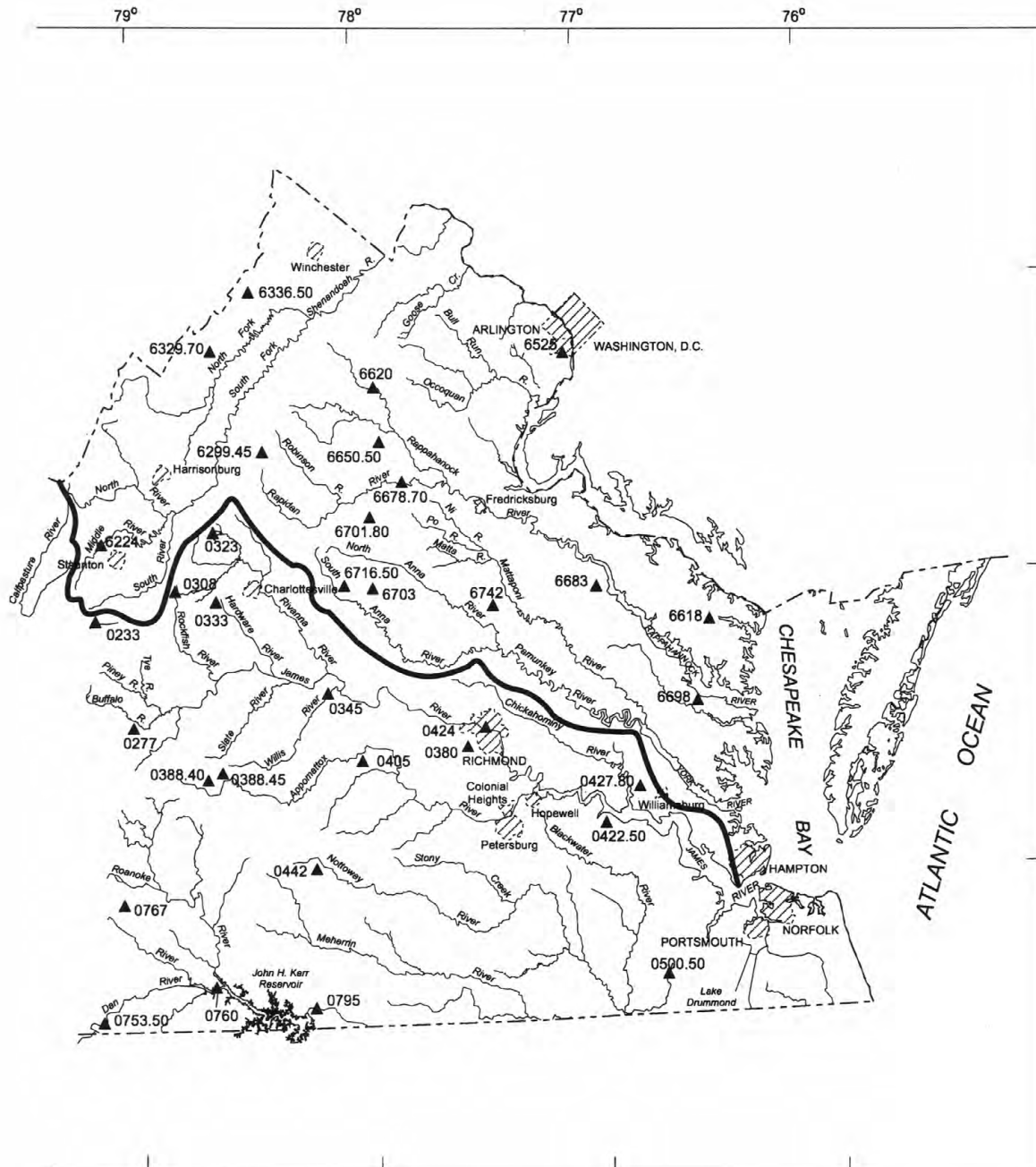


Figure 5. Location of surface-water partial-record stations.





Old Bridge Discharge Measurement
Probably in the 1920's to 1930's

SURFACE-WATER-DISCHARGE AND SURFACE-WATER-QUALITY RECORDS

Remarks Codes

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

PRINT 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 colony count).
L	Biological organism count less than 0.5 percent (organism 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 (ug/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 ug/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.

Change in National Trends Network Procedures

NOTE.-- Sample 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/NTN Coordination Office, Colorado State University, Fort Collins, CO 80523 (Telephone: 303-491-5643).

POTOMAC RIVER BASIN

01613900 HOGUE CREEK NEAR HAYFIELD, VA

LOCATION.--Lat 39°12'52", long 78°17'18", Frederick County, Hydrologic Unit 02070004, on right bank 15 ft upstream from bridge on State Highway 614, 0.8 mi upstream from Gap Run, and 1.3 mi southeast of Hayfield.

DRAINAGE AREA.--15.0 mi².

PERIOD OF RECORD.--August 1960 to December 1986, October 1992 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 668.60 ft above sea level.

REMARKS.--Records good except for period with ice effect, Jan. 1, which is fair. Maximum discharge, 4,090 ft³/s, from rating curve extended above 870 ft³/s. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 7	1400	*1,040	*4.96	Mar. 21	0230	626	3.96
Jan. 28	1445	571	3.81				

Minimum discharge, 1.0 ft³/s, Sept. 5, 6, gage height, 0.33 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	12	6.9	e6.9	38	40	17	15	5.5	8.1	2.3	1.4
2	1.6	13	5.1	9.5	29	34	16	29	4.3	6.2	2.3	1.4
3	1.4	7.5	4.6	23	25	32	13	28	3.9	5.1	1.9	1.4
4	1.3	5.5	4.5	36	35	25	25	35	3.4	4.8	1.8	1.5
5	1.3	4.2	4.2	27	301	21	24	59	3.2	4.5	1.8	1.3
6	1.3	3.6	4.0	20	169	18	18	80	3.1	3.8	1.7	1.3
7	1.3	329	3.9	20	101	16	16	40	2.8	3.4	1.7	1.4
8	1.5	141	3.6	229	74	82	15	76	2.7	4.5	1.8	1.9
9	1.7	54	3.4	190	64	114	43	64	2.8	4.1	1.8	1.6
10	1.8	25	3.9	92	52	70	53	47	6.4	3.4	3.3	1.6
11	1.8	15	4.2	49	48	44	35	43	5.6	2.9	5.2	1.5
12	1.8	11	3.7	33	65	33	26	99	18	2.6	2.5	1.5
13	1.9	8.8	3.4	25	46	26	22	82	49	2.6	2.1	1.4
14	1.7	20	3.3	19	36	23	19	49	26	2.6	3.0	1.4
15	1.8	21	3.1	25	28	19	17	32	55	2.4	4.2	1.4
16	1.6	15	3.1	58	23	16	15	25	91	2.6	2.9	1.4
17	1.6	10	3.1	51	101	15	16	30	28	4.0	7.1	1.5
18	1.7	8.3	2.9	44	131	57	15	17	15	2.9	4.4	1.6
19	1.5	7.2	2.9	33	78	188	79	13	11	2.4	2.8	1.5
20	1.4	6.1	2.8	26	59	129	114	10	9.5	2.3	2.4	1.6
21	1.4	6.7	2.8	21	44	351	51	8.5	7.1	2.2	2.3	1.5
22	1.5	17	3.2	17	34	122	34	7.3	6.0	2.0	2.4	1.9
23	1.6	15	4.2	105	56	71	27	6.6	75	2.1	2.3	1.9
24	1.8	11	4.7	106	224	49	21	6.6	53	2.4	2.2	1.8
25	2.2	8.8	17	65	109	36	17	11	16	2.0	2.1	1.8
26	2.5	8.0	14	43	64	29	15	7.1	10	1.8	2.0	1.8
27	3.0	6.7	12	33	48	24	17	6.1	7.7	1.7	1.8	1.5
28	2.4	6.0	11	272	43	21	13	5.6	19	1.7	1.7	1.6
29	2.3	5.8	9.4	160	---	18	11	4.8	17	1.7	1.6	1.7
30	2.2	6.3	11	89	---	16	11	4.6	10	1.7	1.6	1.7
31	2.2	---	8.6	54	---	14	---	6.7	---	3.4	1.4	---
TOTAL	54.9	808.5	174.5	1981.4	2125	1753	815	947.9	567.0	97.9	78.4	46.8
MEAN	1.77	27.0	5.63	63.9	75.9	56.5	27.2	30.6	18.9	3.16	2.53	1.56
MAX	3.0	329	17	272	301	351	114	99	91	8.1	7.1	1.9
MIN	1.3	3.6	2.8	6.9	23	14	11	4.6	2.7	1.7	1.4	1.3
CFSM	.12	1.80	.38	4.26	5.06	3.77	1.81	2.04	1.26	.21	.17	.10
IN.	.14	2.01	.43	4.91	5.27	4.35	2.02	2.35	1.41	.24	.19	.12

e Estimated.

POTOMAC RIVER BASIN

01613900 HOGUE CREEK NEAR HAYFIELD, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1986, 1993 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	7.19	13.1	16.4	20.2	27.2	39.0	26.3	17.0	12.1	5.05	5.16	5.54
MAX	53.6	52.5	51.2	81.0	75.9	114	89.7	47.4	94.2	30.6	54.2	65.8
(WY)	1980	1986	1973	1996	1998	1993	1983	1978	1972	1978	1978	1996
MIN	.52	1.08	1.06	1.72	4.38	5.81	6.31	2.17	.98	.81	.60	.78
(WY)	1964	1966	1966	1966	1977	1981	1963	1969	1969	1964	1977	1963

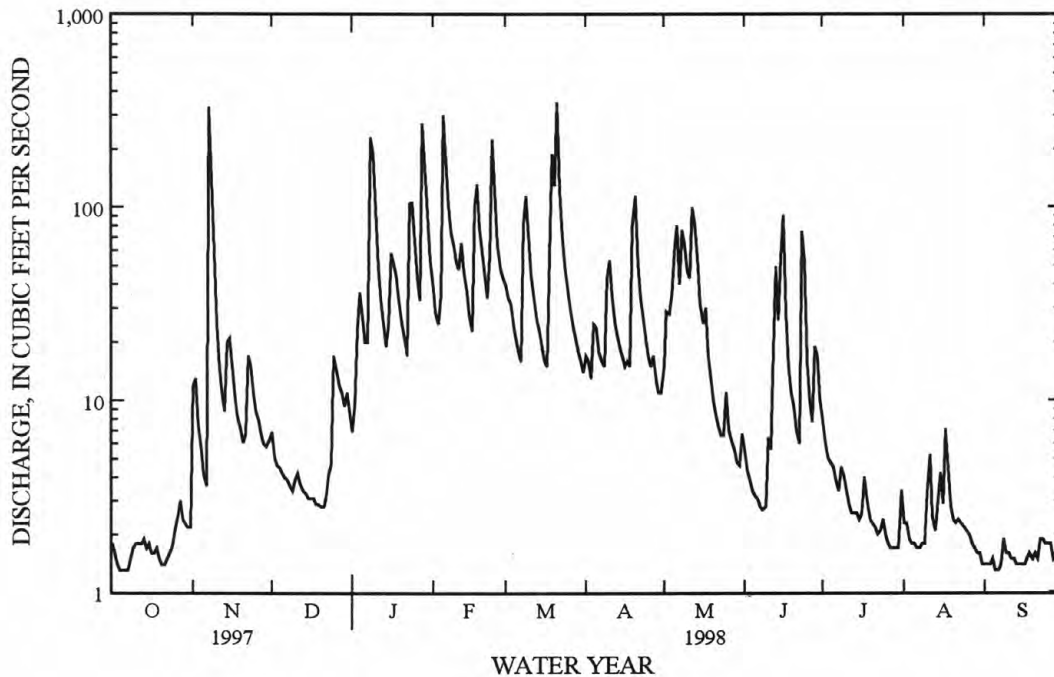
SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1960 - 1986 1993 - 1998
ANNUAL TOTAL	3909.95	9450.3	
ANNUAL MEAN	10.7	25.9	16.2
HIGHEST ANNUAL MEAN			32.2
LOWEST ANNUAL MEAN			3.84
HIGHEST DAILY MEAN	329 Nov 7	351 Mar 21	1060 Sep 6 1996
LOWEST DAILY MEAN	.93 a Sep 26	1.3 b Oct 4	.06 Sep 14 1968
ANNUAL SEVEN-DAY MINIMUM	1.0 Sep 21	1.4 Oct 2	.31 Aug 6 1963
INSTANTANEOUS PEAK FLOW		1040 Nov 7	4090 Sep 6 1996
INSTANTANEOUS PEAK STAGE		4.96 Nov 7	9.71 Sep 6 1996
INSTANTANEOUS LOW FLOW		1.0 c Sep 5	d.00 Sep 14 1968
ANNUAL RUNOFF (CFSM)	.71	1.73	1.08
ANNUAL RUNOFF (INCHES)	9.70	23.44	14.65
10 PERCENT EXCEEDS	21	65	35
50 PERCENT EXCEEDS	5.3	8.1	5.5
90 PERCENT EXCEEDS	1.5	1.6	1.2

a Also Sept. 27, 1997.

b Also Oct. 5-7, 1997, and Sept. 5, 6, 1998.

c Also Sept. 6, 1998.

d No flow part of Sept. 14, 1968, cause unknown.



POTOMAC RIVER BASIN

01620500 NORTH RIVER NEAR STOKESVILLE, VA

LOCATION.--Lat 38°20'15", long 79°14'25", Augusta County, Hydrologic Unit 02070005, George Washington National Forest, on left bank 575 ft upstream from highway bridge, 2.8 mi upstream from city of Staunton dam, 3.8 mi upstream from Broad Run, 5.0 mi west of Stokesville, and 7.8 mi upstream from Skidmore Fork.

DRAINAGE AREA.--17.2 mi².

PERIOD OF RECORD.--October 1946 to current year.

REVISED RECORDS.--WSP 1903: 1960. WSP 2103: Drainage area. WDR VA-89-1: 1949 (M).

GAGE.--Water-stage recorder. Datum of gage is 2,051.37 ft above sea level. Prior to June 10, 1958, at site 575 ft downstream at datum 6.0 ft lower. Prior to October 25, 1996, at site 400 ft upstream at datum 3.2 ft higher.

REMARKS.--Records fair except those for periods of doubtful or no gage-height record Jan. 8-12, Mar. 24 to May 15, which are poor. Maximum discharge, 9,530 ft³/s, from rating curve extended above 900 ft³/s on basis of computation of peak flow over dam at site 2.8 mi downstream. Maximum gage height, 19.8 ft, from floodmarks, backwater from Elkhorn Lake. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1942 reached a stage of 8.4 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	0615	*1,600	*6.59	Mar. 19	1045	292	3.75
Feb. 17	1815	838	4.64	Mar. 21	0015	586	4.31
Mar. 9	1445	670	4.43	a			

a May have been above base discharge on Apr. 21 and May 9.

Minimum daily discharge, 0.26 ft³/s, Sept. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	2.6	14	24	40	150	e38	e54	9.5	11	1.3	.51
2	1.1	13	14	23	36	113	e37	e63	8.3	9.3	1.2	.43
3	.98	24	13	25	35	87	e42	e72	7.4	9.5	1.0	.40
4	1.1	22	13	43	68	66	e58	e83	6.7	15	.94	.36
5	1.5	18	13	73	98	53	e88	e95	6.3	15	.83	.35
6	1.5	15	12	89	71	42	e53	e110	6.0	14	.76	.33
7	1.5	57	12	98	55	36	e45	e140	5.6	13	.70	.36
8	1.4	102	12	e300	46	120	e46	e160	5.1	13	.67	.49
9	1.2	83	11	e330	42	528	e80	e130	4.9	12	.74	.42
10	1.1	62	12	e160	45	333	e130	e87	5.1	11	e1.2	.40
11	.99	47	13	e110	54	141	e90	e70	4.9	9.4	.83	.39
12	.96	36	13	e75	81	80	e70	e62	5.0	8.1	.78	.34
13	.93	29	13	54	99	57	e57	e53	5.4	7.2	.67	.32
14	.90	26	14	43	81	45	e48	e47	5.0	6.6	.65	.31
15	.89	27	15	41	64	37	e40	e38	6.8	6.1	.75	.29
16	.86	28	14	55	53	30	e35	37	9.3	5.5	.79	.27
17	.84	26	14	61	330	24	e35	59	8.2	5.2	.94	.27
18	.82	23	14	55	443	30	e48	53	6.3	4.8	.92	.26
19	.81	21	14	48	212	255	e73	43	22	4.4	1.0	.31
20	.79	18	14	40	148	284	e120	35	51	4.1	1.1	.29
21	.78	18	14	33	124	443	e150	29	38	3.9	1.1	.29
22	.77	18	13	29	98	177	e140	24	28	3.6	1.2	.31
23	.75	17	13	42	89	74	e120	20	21	3.3	1.5	.32
24	.80	17	14	80	73	e68	e87	19	18	3.0	1.9	.32
25	.83	17	16	77	62	e58	e65	16	15	2.7	1.8	.33
26	.91	17	20	63	65	e54	e50	14	13	2.5	1.5	.31
27	.96	17	24	54	74	e50	e43	14	11	2.3	1.2	.29
28	1.0	16	26	64	112	e47	e42	13	11	2.1	.93	.36
29	.98	15	27	55	---	e45	e43	11	15	1.9	.77	.31
30	.96	15	28	52	---	e43	e48	10	13	1.7	.67	.30
31	.97	---	26	46	---	e41	---	11	---	1.6	.58	---
TOTAL	31.38	846.6	485	2342	2798	3611	2021	1672	371.8	212.8	30.92	10.24
MEAN	1.01	28.2	15.6	75.5	99.9	116	67.4	53.9	12.4	6.86	1.00	.34
MAX	1.5	102	28	330	443	528	150	160	51	15	1.9	.51
MIN	.75	2.6	11	23	35	24	35	10	4.9	1.6	.58	.26
CFSM	.06	1.64	.91	4.39	5.81	6.77	3.92	3.14	.72	.40	.06	.02
IN.	.07	1.83	1.05	5.07	6.05	7.81	4.37	3.62	.80	.46	.07	.02

e Estimated.

POTOMAC RIVER BASIN

01620500 NORTH RIVER NEAR STOKESVILLE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	14.1	25.8	27.7	35.4	37.5	58.3	47.5	35.1	24.5	7.20	8.66	10.0
MAX	90.7	257	99.5	152	99.9	230	196	86.4	177	53.1	66.8	157
(WY)	1980	1986	1974	1995	1998	1993	1992	1960	1949	1995	1989	1996
MIN	.21	.41	1.29	.74	4.64	8.21	11.7	5.32	2.37	.87	.26	.25
(WY)	1964	1954	1961	1981	1977	1981	1995	1977	1977	1966	1987	1963

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

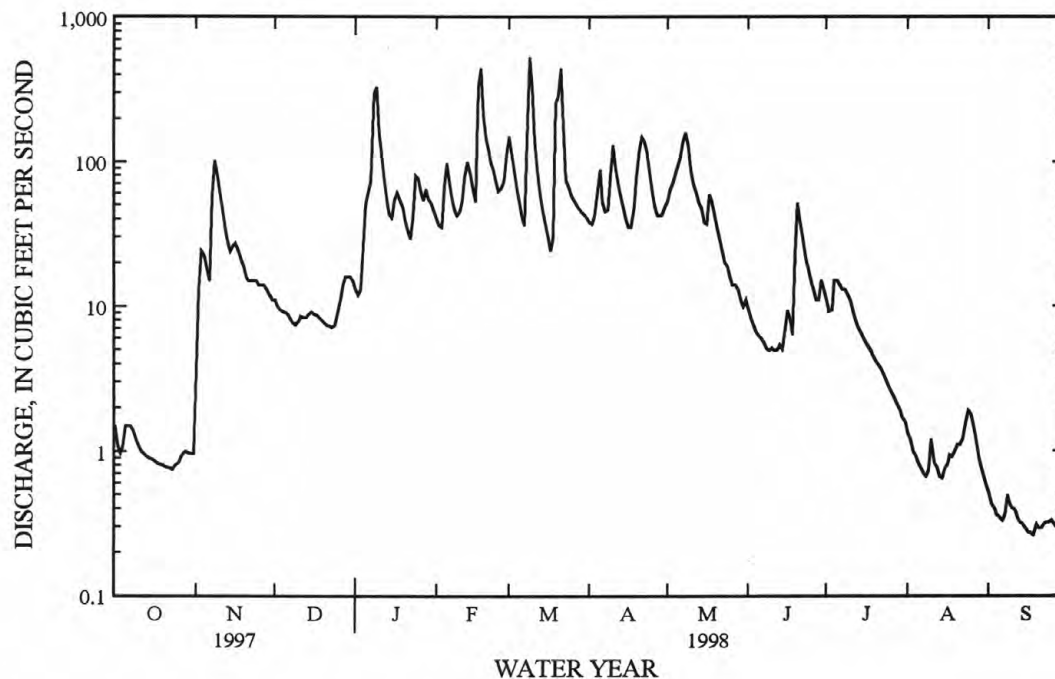
WATER YEARS 1947 - 1998

ANNUAL TOTAL	7224.64	14080.04	
ANNUAL MEAN	19.8	38.6	27.6
HIGHEST ANNUAL MEAN			49.0
LOWEST ANNUAL MEAN			10.4
HIGHEST DAILY MEAN	477 Jun 2	528 Mar 9	3300 Nov 5 1985
LOWEST DAILY MEAN	.69 Sep 8	.26 Sep 18	.10 bSep 15 1962
ANNUAL SEVEN-DAY MINIMUM	.78 Sep 3	.28 Sep 15	.12 Sep 29 1968
INSTANTANEOUS PEAK FLOW		1600 Jan 8	9530 Jun 17 1949
INSTANTANEOUS PEAK STAGE		6.59 Jan 8	c19.80 Nov 5 1985
INSTANTANEOUS LOW FLOW		.25 dSep 17	.10 Sep 15 1962
ANNUAL RUNOFF (CFSM)	1.15	2.24	1.60
ANNUAL RUNOFF (INCHES)	15.63	30.45	21.78
10 PERCENT EXCEEDS	40	88	61
50 PERCENT EXCEEDS	9.4	14	12
90 PERCENT EXCEEDS	.93	.72	1.1

b Also Sept. 16, 19-22, 1962, and Sept. 7-13, 1966.

c From floodmarks, backwater from Elkhorn Lake.

d Also Sept. 18, 1998.



POTOMAC RIVER BASIN

01621050 MUDDY CREEK AT MOUNT CLINTON, VA

LOCATION.--Lat 38°29'12", long 78°57'40", Rockingham County, Hydrologic Unit 02070005, on right downstream side of bridge on State Highway 726, at Mount Clinton.

DRAINAGE AREA.--14.2 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 1,320 ft above sea level, from topographic map.

REMARKS.--Records good except for period of doubtful gage-height record, May 5, 6, which is fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 150 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	0630	*1,330	*6.89	Mar. 19	0015	363	4.82
Feb. 5	1645	170	4.13	Mar. 20	2045	433	5.01
Feb. 17	1430	860	6.02	May 8	0215	165	4.11

Minimum discharge, 1.2 ft³/s, Sept. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.3	4.4	3.7	3.4	35	27	22	15	11	9.0	2.5	2.1
2	3.2	4.2	3.4	3.5	32	27	20	23	11	8.5	2.7	2.0
3	3.1	3.3	3.4	3.7	39	25	19	21	11	8.1	2.4	2.1
4	3.0	3.0	3.6	4.4	50	23	29	25	11	7.7	2.4	2.1
5	2.5	2.5	3.4	5.2	123	22	23	e35	11	7.5	2.3	1.7
6	2.3	2.9	3.3	5.1	109	20	20	e26	10	7.0	2.3	2.0
7	2.1	24	3.2	7.7	69	19	19	26	10	6.8	2.3	2.2
8	2.0	18	3.2	249	57	48	19	80	10	7.6	2.4	5.8
9	1.9	7.1	3.3	51	50	74	34	44	10	6.8	2.8	2.5
10	1.9	5.4	3.7	28	47	42	30	34	11	6.4	2.9	2.3
11	2.2	4.7	3.5	22	62	32	24	31	12	6.0	2.9	2.3
12	1.9	4.6	3.3	19	92	29	21	32	12	5.8	2.4	2.2
13	1.7	4.5	3.2	17	64	26	20	27	10	5.6	2.2	2.1
14	1.5	5.6	3.1	15	48	25	19	24	9.8	5.5	3.8	2.2
15	1.7	5.1	3.0	18	38	23	18	22	12	5.2	3.2	2.0
16	1.5	4.9	3.1	21	34	21	17	20	10	5.1	3.3	2.0
17	1.5	4.6	3.0	18	272	20	17	22	9.7	5.3	4.0	2.0
18	1.7	4.4	3.0	16	121	51	15	18	9.2	4.6	3.0	2.1
19	1.4	4.4	3.0	15	67	135	25	17	11	4.4	2.7	2.2
20	1.3	4.2	2.9	14	57	127	27	16	9.7	4.1	2.5	2.3
21	1.4	4.2	2.8	13	43	182	20	15	9.0	3.7	2.5	2.1
22	1.4	4.6	3.0	13	36	80	19	14	10	3.6	2.4	2.2
23	1.6	4.1	3.1	34	48	52	18	14	13	3.9	2.3	2.2
24	2.4	4.0	3.1	27	50	42	17	14	12	3.2	2.1	2.1
25	3.2	4.1	4.2	22	38	35	15	15	9.9	3.1	2.1	2.1
26	2.5	4.1	3.7	19	35	31	15	13	9.4	3.9	1.9	2.1
27	3.0	3.9	3.9	19	32	29	15	13	9.1	3.4	2.1	2.0
28	2.3	3.8	3.8	56	30	27	14	13	11	3.2	2.1	1.9
29	2.1	3.7	3.8	68	---	25	14	12	13	3.1	2.1	1.7
30	1.8	3.8	3.9	58	---	23	13	12	10	2.9	2.1	1.6
31	1.9	---	3.6	44	---	22	---	12	---	3.0	2.2	---
TOTAL	65.3	162.1	104.2	909.0	1778	1364	598	705	317.8	164.0	78.9	66.2
MEAN	2.11	5.40	3.36	29.3	63.5	44.0	19.9	22.7	10.6	5.29	2.55	2.21
MAX	3.3	24	4.2	249	272	182	34	80	13	9.0	4.0	5.8
MIN	1.3	2.5	2.8	3.4	30	19	13	12	9.0	2.9	1.9	1.6
CFSM	.15	.38	.24	2.06	4.47	3.10	1.40	1.60	.75	.37	.18	.16
IN.	.17	.42	.27	2.38	4.66	3.57	1.57	1.85	.83	.43	.21	.17

POTOMAC RIVER BASIN

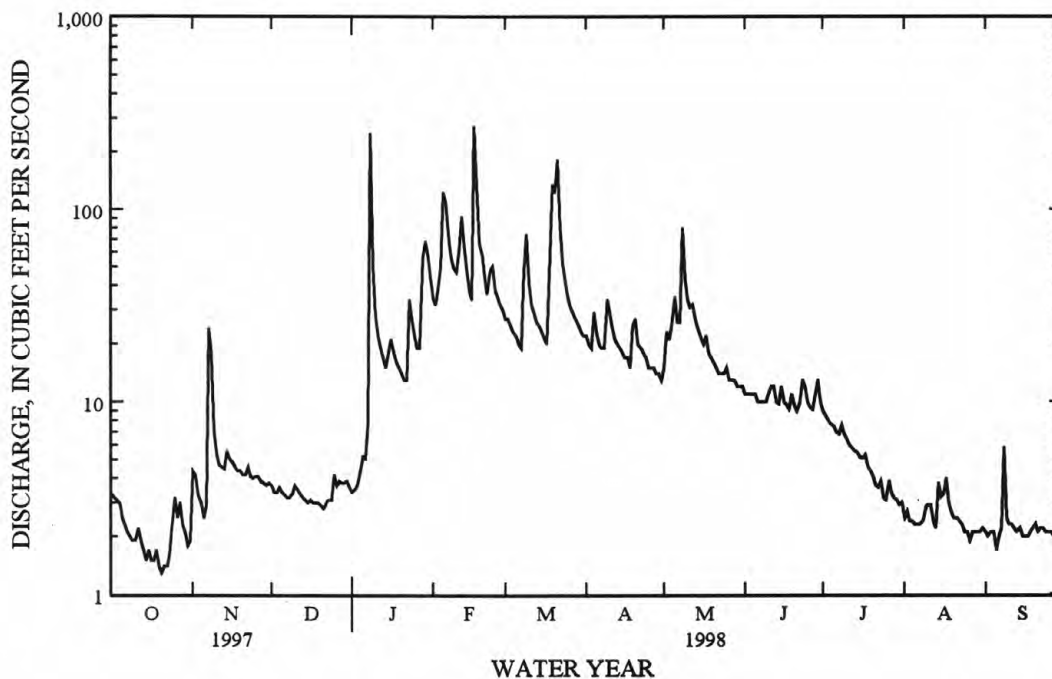
01621050 MUDDY CREEK AT MOUNT CLINTON, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	9.16	8.28	12.3	27.1	26.9	27.8	13.9	12.5	10.9	7.84	10.5	19.9
MAX	22.1	19.3	37.5	66.9	63.5	44.0	19.9	22.7	29.9	16.1	33.8	105
(WY)	1996	1997	1997	1996	1998	1998	1998	1998	1996	1995	1996	1996
MIN	2.07	4.03	2.45	9.43	5.92	6.64	4.08	6.18	5.48	3.16	1.75	1.85
(WY)	1994	1994	1995	1995	1995	1995	1995	1997	1993	1993	1993	1993

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1993 - 1998	
ANNUAL TOTAL	3031.9		6312.5			
ANNUAL MEAN	8.31		17.3		16.2	
HIGHEST ANNUAL MEAN					30.0	
LOWEST ANNUAL MEAN					6.67	
HIGHEST DAILY MEAN	138	Mar 3	272	Feb 17	1760	Sep 6 1996
LOWEST DAILY MEAN	1.3	Oct 20	1.3	Oct 20	1.1	Jul 31 1993
ANNUAL SEVEN-DAY MINIMUM	1.5	Oct 16	1.5	Oct 16	1.4	Jul 29 1993
INSTANTANEOUS PEAK FLOW			1330	Jan 8	3850	Sep 6 1996
INSTANTANEOUS PEAK STAGE			6.89	Jan 8	10.37	Sep 6 1996
INSTANTANEOUS LOW FLOW			1.2	Oct 20	.71	Oct 12 1995
ANNUAL RUNOFF (CFPM)	.58		1.22		1.14	
ANNUAL RUNOFF (INCHES)	7.94		16.54		15.47	
10 PERCENT EXCEEDS	17		40		28	
50 PERCENT EXCEEDS	4.8		7.5		7.9	
90 PERCENT EXCEEDS	2.4		2.1		2.3	

a Result from unknown flow disruption.



POTOMAC RIVER BASIN

01621050 MUDDY CREEK AT MOUNT CLINTON, VA--Continued
(National water-quality assessment station)

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1993 to June 1995, September 1997 to current year.

REMARKS.--These data are a part of the National Water-Quality Assessment (NAWQA) program of the Potomac River Basin.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)
OCT 1997												
27...	1630	2.4	446	8.0	8.5	12.5	720	10.1	55	21	3.4	7.8
DEC												
15...	1700	3.0	--	--	5.0	3.5	729	--	61	22	3.3	3.6
JAN 1998												
13...	1500	17	456	8.0	10.5	10.0	729	10.8	55	21	4.5	4.0
FEB												
12...	1345	77	286	8.0	9.0	8.5	719	11.1	33	12	3.2	4.2
MAR												
16...	1415	21	397	8.7	3.5	7.5	738	14.4	49	19	3.8	2.5
APR												
14...	1445	19	359	9.1	17.5	15.5	723	13.6	49	18	3.3	2.5
27...	1200	16	380	8.5	13.0	14.5	730	11.9	--	--	--	--
MAY												
12...	1215	36	384	8.2	14.0	13.5	725	9.2	46	17	3.7	4.1
26...	1145	13	431	8.2	29.0	20.0	726	9.5	--	--	--	--
JUN												
10...	1345	10	433	8.2	20.0	16.0	729	9.4	53	22	3.6	3.2
25...	1100	9.9	437	8.0	28.0	23.0	732	9.5	--	--	--	--
JUL												
16...	1100	5.2	440	8.1	27.5	24.0	--	9.2	--	--	--	--
30...	0845	2.7	451	7.8	25.5	20.5	728	7.9	--	--	--	--
AUG												
11...	1330	2.9	431	8.2	28.5	25.5	726	9.7	51	22	3.2	3.7
25...	1215	1.8	431	8.2	30.0	25.5	727	10.7	--	--	--	--
SEP												
28...	1215	2.0	437	8.2	27.5	23.0	727	10.5	52	24	3.3	4.7

DATE	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	BICAR- BONATE WATER DIS IT (MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT (MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT FIELD (MG/L AS CACO3 (39086)	SOLIDS, RESIDUE AT 180 DEG. C SOLVED (MG/L) (70300)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
OCT 1997											
27...	11	9.3	<.10	6.8	245	0	201	262	.066	3.00	.073
DEC											
15...	11	7.7	.10	3.1	260	0	213	266	.033	4.21	<.020
JAN 1998											
13...	14	10	.11	7.6	218	0	179	261	.014	8.61	<.020
FEB											
12...	12	5.8	<.10	5.3	128	0	105	167	.013	4.92	<.020
MAR											
16...	11	8.2	<.10	2.6	199	4	169	234	.016	6.38	.023
APR											
14...	9.8	6.2	<.10	1.8	156	17	156	193	.034	4.54	.049
27...	--	--	--	--	--	--	--	--	--	--	--
MAY											
12...	9.7	6.1	<.10	6.0	203	0	166	219	.044	4.36	.142
26...	--	--	--	--	--	--	--	--	--	--	--
JUN											
10...	9.4	7.3	.12	6.5	233	2	195	254	.317	5.02	.062
25...	--	--	--	--	--	--	--	--	--	--	--
JUL											
16...	--	--	--	--	--	--	--	--	.069	3.86	.086
30...	--	--	--	--	--	--	--	--	--	--	--
AUG											
11...	7.6	6.9	.10	6.9	227	8	200	253	.049	3.14	.061
25...	--	--	--	--	--	--	--	--	--	--	--
SEP											
28...	7.6	7.3	<.10	6.3	--	--	--	259	.081	2.65	.027

< Actual value is known to be less than the value shown.

POTOMAC RIVER BASIN

01621050 MUDDY CREEK AT MOUNT CLINTON, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	ACETO- CHLOR, WATER FLTRD REC (UG/L) (49260)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)
OCT 1997											
27...	.61	.44	.120	.073	.069	22	34	<.003	<.002	<.002	.057
DEC											
15...	.45	.35	.059	.063	.059	14	15	<.003	<.002	<.002	.065
JAN 1998											
13...	.49	.37	.085	.065	.090	<10	15	--	--	--	--
FEB											
12...	1.0	.36	.307	.224	.197	16	11	--	--	--	--
MAR											
16...	.53	.19	.029	<.010	.014	<10	11	--	--	--	--
APR											
14...	.55	.26	.050	.024	.033	22	14	<.003	<.002	<.002	.058
27...	--	--	--	--	--	--	--	<.003	.006	<.002	.088
MAY											
12...	1.2	.63	.269	.126	.126	31	45	<.003	<.002	<.002	1.54
26...	--	--	--	--	--	--	--	<.003	<.002	<.002	.368
JUN											
10...	.44	.24	.060	.040	.044	12	17	<.003	<.002	<.002	.216
25...	--	--	--	--	--	--	--	<.003	<.002	<.002	2.14
JUL											
16...	.47	.28	.169	.041	.029	--	--	<.003	<.002	<.002	.214
30...	--	--	--	--	--	--	--	<.003	<.002	<.002	.155
AUG											
11...	.41	.34	.063	.045	.052	16	22	<.003	<.002	<.002	.129
25...	--	--	--	--	--	--	--	<.003	<.002	<.002	.105
SEP											
28...	.51	.41	.096	.061	.061	32	26	<.003	<.002	<.002	.088

DATE	ALPHA BHC DIS- SOLVED (UG/L) (34253)	BEN- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82673)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	P, P' DDE DISSOLV (UG/L) (34653)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)
OCT 1997											
27...	<.002	<.002	<.002	<.003	<.021	<.004	<.004	<.002	E.0820	<.006	<.001
DEC											
15...	<.002	<.002	<.002	<.003	<.003	<.004	<.004	<.002	E.107	<.006	<.001
JAN 1998											
13...	--	--	--	--	--	--	--	--	--	--	--
FEB											
12...	--	--	--	--	--	--	--	--	--	--	--
MAR											
16...	--	--	--	--	--	--	--	--	--	--	--
APR											
14...	<.002	<.002	<.002	<.003	<.003	<.004	<.004	<.002	E.112	<.006	<.001
27...	<.002	<.002	<.002	<.003	<.003	<.004	<.004	<.002	E.0634	E.0017	<.001
MAY											
12...	<.002	<.002	<.002	E.0051	<.003	<.004	<.004	<.002	E.107	<.006	<.001
26...	<.002	<.002	<.002	<.003	<.003	E.0025	<.004	<.002	E.0976	E.0016	<.001
JUN											
10...	<.002	<.002	<.002	<.003	<.003	<.004	<.004	<.002	E.0947	<.006	<.001
25...	<.002	<.002	<.002	<.003	<.003	<.004	.0923	<.002	E.340	<.006	<.001
JUL											
16...	<.002	<.002	<.002	<.003	<.003	<.004	<.004	<.002	E.120	<.006	<.001
30...	<.002	<.002	<.002	<.003	<.003	<.004	<.004	<.002	E.127	<.006	<.001
AUG											
11...	<.002	<.002	<.002	<.003	<.003	<.004	<.004	<.002	E.134	<.006	<.001
25...	<.002	<.002	<.002	<.003	<.003	<.004	<.004	<.002	E.104	<.006	<.001
SEP											
28...	<.002	<.002	<.002	<.003	<.003	<.004	<.004	<.002	E.109	<.006	<.001

< Actual value is known to be less than the value shown.
E Estimated.

POTOMAC RIVER BASIN

01621050 MUDDY CREEK AT MOUNT CLINTON, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	FONOFOS WATER DISS REC (UG/L) (04095)	LINDANE DIS- SOLVED (UG/L) (39341)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)
OCT 1997											
27...	<.017	<.002	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
DEC											
15...	<.017	<.002	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
JAN 1998											
13...	--	--	--	--	--	--	--	--	--	--	--
FEB											
12...	--	--	--	--	--	--	--	--	--	--	--
MAR											
16...	--	--	--	--	--	--	--	--	--	--	--
APR											
14...	<.017	E.001	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
27...	<.017	<.002	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
MAY											
12...	<.017	<.002	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
26...	<.017	<.002	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
JUN											
10...	<.017	<.002	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
25...	<.017	<.002	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
JUL											
16...	<.017	<.002	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
30...	<.017	<.002	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
AUG											
11...	<.017	<.002	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
25...	<.017	<.002	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
SEP											
28...	<.017	<.002	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
DATE	MALA- THION, DIS- SOLVED (UG/L) (39532)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	METRI- BUZIN SENSOR WATER DISSOLV (UG/L) (82630)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PRO- METON, WATER, DISS, REC (UG/L) (04037)
OCT 1997											
27...	<.005	.005	<.004	<.004	<.004	<.005	<.013	<.003	<.004	<.004	<.018
DEC											
15...	<.005	<.002	<.004	<.004	<.004	<.005	<.013	<.003	<.004	<.004	<.018
JAN 1998											
13...	--	--	--	--	--	--	--	--	--	--	--
FEB											
12...	--	--	--	--	--	--	--	--	--	--	--
MAR											
16...	--	--	--	--	--	--	--	--	--	--	--
APR											
14...	<.005	.004	<.004	<.004	<.004	<.005	<.013	<.003	<.004	<.004	E.0038
27...	<.005	.010	<.004	<.004	<.004	<.005	<.013	<.003	<.004	<.004	E.0039
MAY											
12...	<.005	.330	<.004	<.004	<.004	<.005	<.013	<.003	<.004	<.004	<.018
26...	<.005	.062	<.004	<.004	<.004	<.005	<.013	<.003	<.004	<.004	E.0034
JUN											
10...	<.005	.036	<.004	<.004	<.004	<.005	<.013	<.003	<.004	<.004	E.0065
25...	<.005	.079	<.004	<.004	<.004	<.005	<.013	<.003	<.004	<.004	<.018
JUL											
16...	<.005	.012	<.004	<.004	<.004	<.005	<.024	<.003	<.004	<.004	<.018
30...	<.005	.008	<.004	<.004	<.004	<.005	<.013	<.003	<.004	<.004	<.018
AUG											
11...	<.005	.009	<.004	<.004	<.004	<.005	<.013	<.003	<.004	<.004	<.018
25...	<.005	.005	<.004	<.004	<.004	<.005	<.081	<.003	<.004	<.004	<.018
SEP											
28...	<.005	E.003	<.004	<.004	<.004	<.005	<.013	<.003	<.004	<.004	<.018

< Actual value is known to be less than the value shown.
E Estimated.

POTOMAC RIVER BASIN

01621050 MUDDY CREEK AT MOUNT CLINTON, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
OCT 1997											
27...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	<.010	.0236	20
DEC											
15...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	<.010	.0249	18
JAN 1998											
13...	--	--	--	--	--	--	--	--	--	--	19
FEB											
12...	--	--	--	--	--	--	--	--	--	--	52
MAR											
16...	--	--	--	--	--	--	--	--	--	--	6
APR											
14...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	<.010	.0196	23
27...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	<.010	.0384	--
MAY											
12...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	E.0048	1.16	64
26...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	E.0065	.169	--
JUN											
10...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	<.010	.0862	52
25...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	E.0054	1.11	--
JUL											
16...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	<.010	.0804	13
30...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	<.010	.0607	--
AUG											
11...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	<.010	.0553	11
25...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	<.010	.0376	--
SEP											
28...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	E.0029	.0328	8

< Actual value is known to be less than the value shown.
E Estimated.

POTOMAC RIVER BASIN

01622000 NORTH RIVER NEAR BURKETOWN, VA

LOCATION.--Lat 38°20'25", long 78°54'50", Rockingham County, Hydrologic Unit 02070005, on right bank 0.8 mi downstream from Pleasant Run, 2.8 mi northeast of Burkettown, and 8.5 mi upstream from Middle River.

DRAINAGE AREA.--379 mi².

PERIOD OF RECORD.--October 1925 to October 1972, May 1975 to current year. Monthly discharge only for some periods, published in WSP 1302.

REVISED RECORDS.--WSP 1171: 1936(M). WSP 1302: 1928-29(M), 1932-34(M), 1937-38(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,103.49 ft above sea level. Prior to Dec. 12, 1938, nonrecording gage at site 3.0 mi downstream at different datum.

REMARKS.--Records good except those for period with ice effect, Dec. 31 to Jan. 2, and period of doubtful gage-height record, Jun. 16-25, which are fair. At a point 26.8 mi upstream from station, there is an aqueduct tunnel diversion of about 2.8 ft³/s from Staunton Dam Reservoir by city of Staunton for industrial and municipal use. Diurnal fluctuation at low and medium flow caused by wastewater treatment plant and diversions for industrial, municipal, and irrigation at points upstream. Maximum discharge, 70,400 ft³/s, from rating curve extended above 16,000 ft³/s on basis of slope-area measurements at gage heights 32.4 ft and 36.3 ft and contracted-opening measurements at gage heights 35.85 ft and 36.3 ft. Minimum discharge, 16 ft³/s, result of temporary dam upstream. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1852, that of June 18, 1949.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1200	*11,200	*14.91	Mar. 9	2130	3,690	7.70
Jan. 28	1830	4,180	8.27	Mar. 19	0500	4,380	8.49
Feb. 5	1930	2,880	6.72	Mar. 21	0900	7,020	11.19
Feb. 17	2200	6,780	10.96	May 9	0430	2,620	6.39

Minimum discharge, 66 ft³/s, Sept. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	93	136	185	e185	1280	1520	701	484	218	181	86	79
2	91	136	169	e190	1090	1510	687	703	206	174	89	77
3	90	118	165	194	1010	1340	642	678	198	204	91	76
4	88	108	166	225	1410	1130	814	716	190	176	79	75
5	88	106	159	337	2600	970	1010	843	187	167	79	71
6	91	110	153	485	2330	832	1020	1000	188	162	77	71
7	87	724	150	540	1870	739	921	918	180	154	78	73
8	85	1200	147	6020	1590	1160	827	1770	175	167	73	146
9	83	1140	141	4360	1450	2980	1060	2490	173	153	86	88
10	82	883	150	2790	1330	3270	1600	1900	184	163	103	83
11	80	668	151	1900	1400	2360	1480	1470	177	146	106	82
12	81	513	142	1410	1910	1780	1270	1220	186	142	93	82
13	83	411	140	1140	1830	1410	1070	989	176	140	85	80
14	80	387	141	872	1610	1150	907	830	172	133	91	84
15	83	345	139	780	1350	929	787	722	222	131	162	80
16	78	330	137	926	1150	779	699	646	e260	125	114	79
17	79	312	136	942	3000	688	652	678	e370	131	270	86
18	81	291	134	892	4710	802	582	642	e265	124	183	85
19	81	273	133	801	3270	3430	705	557	e260	121	123	80
20	83	254	132	717	2610	3030	1240	496	e350	120	116	81
21	78	248	131	628	2200	6120	1230	447	e270	112	110	79
22	76	258	134	572	1850	4150	1080	386	e240	105	105	84
23	74	235	132	1080	1750	2690	933	343	e230	100	101	80
24	80	221	135	1350	1690	2010	806	328	e285	97	101	77
25	127	205	176	1400	1410	1570	696	314	e220	89	96	78
26	109	200	162	1190	1290	1250	623	286	201	95	92	76
27	125	199	179	1030	1250	1040	596	285	189	102	88	76
28	100	189	202	2430	1310	930	532	270	193	90	90	81
29	100	183	202	2280	---	876	484	252	247	88	84	75
30	92	185	212	1860	---	814	454	236	196	87	85	75
31	90	---	e200	1550	---	740	---	229	---	87	84	---
TOTAL	2738	10568	4835	41076	51550	53999	26108	23128	6608	4066	3220	2439
MEAN	88.3	352	156	1325	1841	1742	870	746	220	131	104	81.3
MAX	127	1200	212	6020	4710	6120	1600	2490	370	204	270	146
MIN	74	106	131	185	1010	688	454	229	172	87	73	71
CFSM	.23	.93	.41	3.50	4.86	4.60	2.30	1.97	.58	.35	.27	.21
IN.	.27	1.04	.47	4.03	5.06	5.30	2.56	2.27	.65	.40	.32	.24

e Estimated.

POTOMAC RIVER BASIN

01622000 NORTH RIVER NEAR BURKETOWN, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 1973, 1976 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	249	285	335	448	532	721	615	495	335	200	241	225
MAX	1500	2080	1087	1777	1841	1932	1831	1486	1704	809	1102	3130
(WY)	1943	1986	1935	1996	1998	1936	1987	1942	1949	1949	1949	1996
MIN	38.1	36.5	39.2	53.5	47.9	136	107	106	72.7	48.6	41.0	34.2
(WY)	1931	1931	1966	1966	1931	1981	1981	1930	1977	1977	1964	1930

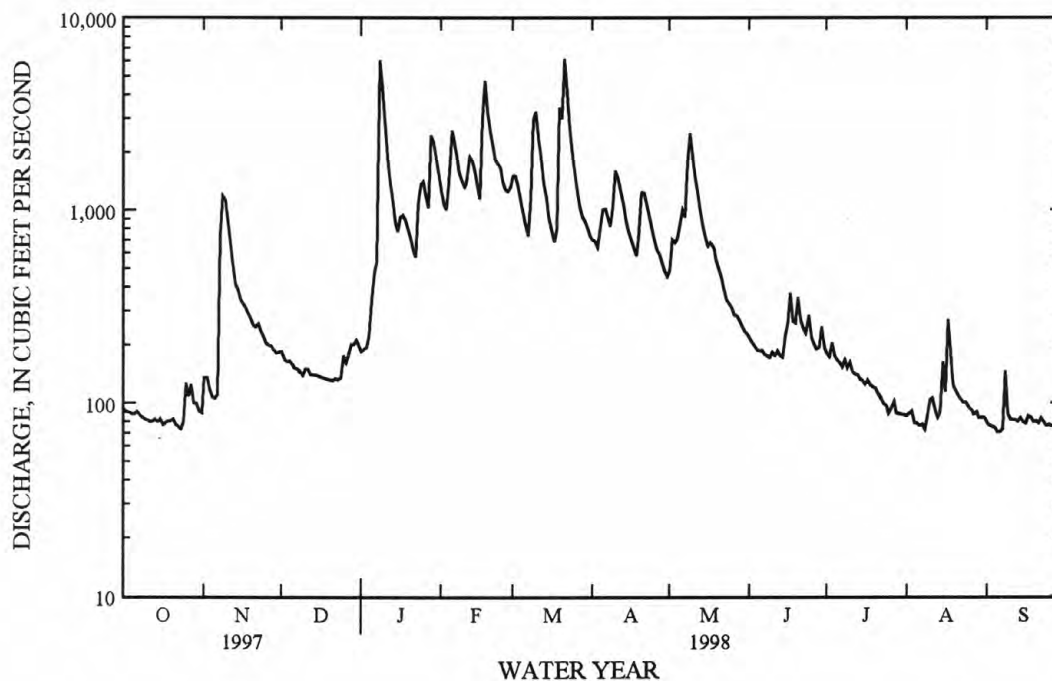
SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1926 - 1973 1976 - 1998	
ANNUAL TOTAL	124660		230335		389	
ANNUAL MEAN	342		631		871	
HIGHEST ANNUAL MEAN					1996	
LOWEST ANNUAL MEAN					1956	
HIGHEST DAILY MEAN	3870	Jun 3	- 6120	Mar 21	e32000	Sep 7 1996
LOWEST DAILY MEAN	74	Oct 23	71	aSep 5	22	Sep 24 1930
ANNUAL SEVEN-DAY MINIMUM	79	Oct 17	75	Sep 1	30	Dec 20 1930
INSTANTANEOUS PEAK FLOW			11200	Jan 8	70400	Sep 6 1996
INSTANTANEOUS PEAK STAGE			14.91	Jan 8	b36.70	Sep 6 1996
INSTANTANEOUS LOW FLOW			66	Sep 6	c16	Nov 23 1965
ANNUAL RUNOFF (CFSM)	.90		1.67		1.03	
ANNUAL RUNOFF (INCHES)	12.24		22.61		13.93	
10 PERCENT EXCEEDS	660		1580		830	
50 PERCENT EXCEEDS	204		205		207	
90 PERCENT EXCEEDS	90		81		64	

a Also Sept. 6, 1997.

b From high-water mark in gage house.

c Result of temporary dam upstream.

e Estimated.



POTOMAC RIVER BASIN

01625000 MIDDLE RIVER NEAR GROTTOS, VA

LOCATION.--Lat 38°15'42", long 78°51'44", Augusta County, Hydrologic Unit 02070005, on left bank at upstream side of bridge on State Highway 769 at Mount Meridian, 1.8 mi upstream from mouth, and 2.0 mi west of Grottoes.

DRAINAGE AREA.--375 mi².

PERIOD OF RECORD.--April 1927 to current year. Records for February 1925 to September 1926, published in WSP 601 and 621, are unreliable and should not be used.

REVISED RECORDS.--WSP 1051: 1928-29, 1930(M), 1932, 1935-37, 1938(M), 1940. WSP 1171: 1933. WSP 1302: 1928-29(M), 1931-34(M). WSP 2103: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 1,061.51 ft above sea level. Prior to Sept. 1, 1938, nonrecording gage at same site and datum.

REMARKS.--Records good except for period with ice effect, Jan. 1, 2, which is fair. There are discharges of about 11.0 ft³/s from wastewater treatment plants upstream from station. Most of water discharged from treatment plants was diverted from another drainage basin for industrial and municipal supply. Small diurnal fluctuation at low flow caused by mills upstream from station. Maximum discharge, 44,300 ft³/s, from rating curve extended above 15,000 ft³/s on basis of slope-area measurement at gage height 33.09 ft. Minimum discharge, 18 ft³/s, result of freezeup. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1877, that of Sept. 7, 1996.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	2330	*9,590	*16.79	Feb. 18	0400	9,240	16.49
Jan. 28	2130	3,950	10.64	Mar. 19	1500	3,150	9.56
Feb. 5	0400	8,340	15.68	Mar. 21	1400	5,640	12.77
Feb. 13	0130	3,630	10.22				

Minimum discharge, 85 ft³/s, Oct. 8, 9, 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	111	133	162	e185	1390	1100	677	448	321	304	152	117
2	97	272	164	e198	1140	1040	647	648	305	277	146	116
3	94	223	151	226	1080	999	587	630	295	327	143	114
4	94	174	151	297	2510	847	780	704	282	283	139	114
5	91	148	151	375	6090	775	944	705	281	271	135	112
6	91	137	144	399	3290	713	797	720	279	256	132	111
7	88	738	138	410	2390	664	699	609	271	237	129	112
8	87	1140	135	4760	1970	1130	643	1190	262	244	132	138
9	86	796	133	5020	1780	2330	758	1920	258	249	155	133
10	88	497	141	1740	1560	1990	1060	1300	272	228	163	119
11	88	362	171	1120	1660	1310	964	956	264	212	156	115
12	85	292	159	839	3070	1040	799	896	261	204	149	113
13	87	250	151	715	2910	892	699	877	262	200	142	112
14	89	264	147	600	2060	815	635	705	263	196	138	111
15	93	283	146	643	1600	734	595	624	460	191	149	109
16	100	248	143	1220	1360	672	551	567	459	200	146	108
17	97	218	141	962	3860	629	569	1220	818	304	182	114
18	97	204	139	804	6640	698	558	879	458	213	233	122
19	98	193	136	677	2990	2300	741	646	516	194	169	119
20	96	184	134	622	2390	1980	2000	550	649	187	146	115
21	95	179	131	537	2010	4660	1170	498	451	179	139	116
22	91	201	133	487	1600	2830	883	452	376	174	136	118
23	91	192	145	1190	1540	1810	750	430	353	171	133	114
24	94	178	141	1500	1940	1430	683	440	429	182	130	108
25	136	166	194	1410	1600	1200	594	433	334	173	127	107
26	141	162	209	1040	1330	1060	540	389	301	164	124	109
27	181	159	223	855	1200	963	526	392	282	162	123	108
28	137	154	247	2310	1100	873	503	470	289	161	119	106
29	116	151	232	2840	---	803	457	389	375	159	120	105
30	103	151	238	2270	---	747	433	352	380	155	119	103
31	99	---	229	1850	---	694	---	332	---	152	118	---
TOTAL	3141	8449	5059	38101	64060	39728	22242	21371	10806	6609	4424	3418
MEAN	101	282	163	1229	2288	1282	741	689	360	213	143	114
MAX	181	1140	247	5020	6640	4660	2000	1920	818	327	233	138
MIN	85	133	131	185	1080	629	433	332	258	152	118	103
CFSM	.27	.75	.44	3.28	6.10	3.42	1.98	1.84	.96	.57	.38	.30
IN.	.31	.84	.50	3.78	6.35	3.94	2.21	2.12	1.07	.66	.44	.34

e Estimated.

POTOMAC RIVER BASIN

01625000 MIDDLE RIVER NEAR GROTTOES, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	236	237	306	412	477	592	467	346	258	180	197	201
MAX	1138	2019	1111	1436	2288	1704	1674	963	993	705	1017	1887
(WY)	1980	1986	1949	1996	1998	1936	1987	1989	1972	1972	1940	1996
MIN	64.8	58.9	55.8	66.9	91.3	106	95.8	89.7	77.7	47.2	55.6	64.4
(WY)	1964	1931	1966	1981	1931	1981	1981	1969	1969	1966	1977	1932

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

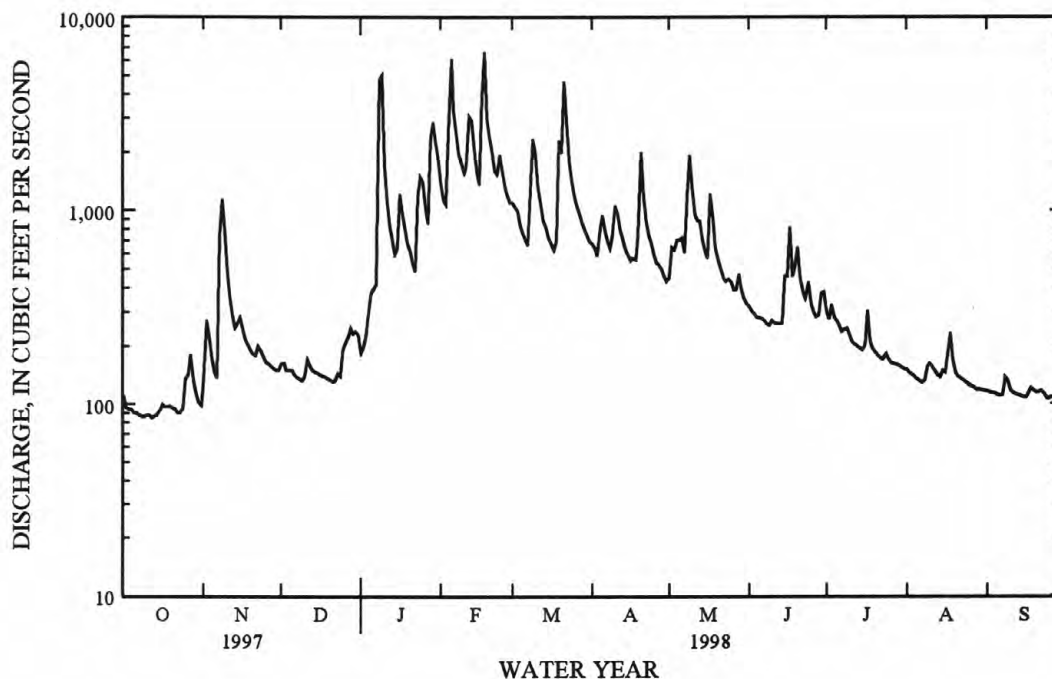
WATER YEARS 1928 - 1998

ANNUAL TOTAL	112157	227408	325
ANNUAL MEAN	307	623	623
HIGHEST ANNUAL MEAN			1998
LOWEST ANNUAL MEAN			1981
HIGHEST DAILY MEAN	2350 Mar 4	6640 Feb 18	26000 Nov 5 1985
LOWEST DAILY MEAN	85 Oct 12	85 Oct 12	28 Nov 28 1930
ANNUAL SEVEN-DAY MINIMUM	87 Oct 7	87 Oct 7	38 Sep 6 1966
INSTANTANEOUS PEAK FLOW		9590 Jan 8	44300 Sep 7 1996
INSTANTANEOUS PEAK STAGE		16.79 Jan 8	a35.62 Sep 7 1996
INSTANTANEOUS LOW FLOW		85 bOct 8	c18 Dec 16 1988
ANNUAL RUNOFF (CFSM)	.82	1.66	.87
ANNUAL RUNOFF (INCHES)	11.13	22.56	11.77
10 PERCENT EXCEEDS	647	1550	642
50 PERCENT EXCEEDS	205	272	190
90 PERCENT EXCEEDS	101	111	84

a From high-water mark in gage house.

b Also Oct. 9, 12, 1997.

c Result of freezeup.



POTOMAC RIVER BASIN

01626000 SOUTH RIVER NEAR WAYNESBORO, VA

LOCATION.--Lat 38°03'27", long 78°54'30", Waynesboro City, Hydrologic Unit 02070005, on right bank 80 ft downstream from bridge on State Highway 664, 1.3 mi southwest of Waynesboro Post Office, and 2.4 mi downstream from Back Creek.

DRAINAGE AREA.--127 mi², of which 41 mi² are above flood-detention structures.

PERIOD OF RECORD.--October 1952 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,296.20 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. There is discharge of about 1.9 ft³/s from a wastewater treatment plant upstream from station, originating from well fields. Flow from 41 mi² upstream from station slightly regulated by flood-detention reservoirs (sixteen of which were built by Soil Conservation Service between 1954 and 1961). National Weather Service gage-height telemeter and Virginia Department of Emergency Services gage-height radio transmitter at station. Maximum discharge, 17,500 ft³/s, from rating curve extended above 4,200 ft³/s on basis of contracted-opening measurement at gage height 13.95 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1942 reached a stage of 14.3 ft, from floodmarks, discharge, 14,500 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1130	3,880	8.61	Mar. 9	1400	1,760	6.27
Feb. 4	2100	2,140	6.76	Mar. 21	1130	1,220	5.48
Feb. 13	0430	1,580	6.03	Apr. 20	0900	1,380	5.73
Feb. 17	1800	*5,810	*10.05	May 8	0700	1,050	5.21

Minimum discharge, 30 ft³/s, Oct. 4-6, 8-13, 20-23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	89	87	80	464	888	287	266	172	121	50	41
2	32	99	84	81	408	864	280	311	159	113	49	40
3	32	70	77	86	392	804	255	297	148	116	48	40
4	32	58	79	112	1030	678	346	331	136	103	48	41
5	31	50	78	154	1970	590	430	343	135	113	46	39
6	31	51	74	177	1560	519	373	345	134	98	46	39
7	32	468	71	217	1020	468	331	353	128	91	45	39
8	31	749	69	2460	758	603	305	951	120	96	47	43
9	31	446	68	1760	623	1510	357	782	116	98	52	41
10	31	280	70	1040	551	1320	443	602	122	89	53	39
11	31	192	77	722	584	891	414	502	117	81	52	39
12	32	153	71	569	1340	704	364	463	115	76	48	38
13	31	131	68	506	1420	556	332	463	109	73	47	38
14	32	147	67	389	999	487	308	413	103	71	47	38
15	34	153	65	322	758	431	288	365	203	68	47	38
16	35	135	64	390	661	386	269	341	259	83	51	38
17	35	122	64	379	3410	352	311	865	358	80	86	40
18	36	113	63	341	3930	349	330	638	241	66	69	39
19	39	105	62	312	2570	437	573	474	269	64	56	39
20	31	99	61	293	2260	484	1250	394	300	62	51	38
21	31	96	60	265	1950	1110	753	341	219	59	48	39
22	32	115	61	245	1500	886	566	297	187	56	47	38
23	32	109	65	452	1390	664	482	274	176	56	46	37
24	33	102	64	613	1370	550	428	270	161	64	45	36
25	37	97	87	562	1160	475	376	257	142	59	44	36
26	41	94	98	465	972	423	335	223	130	57	44	36
27	49	89	100	411	856	389	317	243	124	56	43	36
28	46	84	101	608	837	361	303	295	123	56	43	36
29	39	81	97	631	---	340	270	232	168	54	42	36
30	37	79	101	587	---	319	252	203	146	52	41	35
31	36	---	90	533	---	296	---	186	---	51	41	---
TOTAL	1066	4656	2343	15762	36743	19134	11928	12320	5020	2382	1522	1152
MEAN	34.4	155	75.6	508	1312	617	398	397	167	76.8	49.1	38.4
MAX	49	749	101	2460	3930	1510	1250	951	358	121	86	43
MIN	31	50	60	80	392	296	252	186	103	51	41	35
CFSM	.27	1.22	.60	4.00	10.3	4.86	3.13	3.13	1.32	.61	.39	.30
IN.	.31	1.36	.69	4.62	10.76	5.60	3.49	3.61	1.47	.70	.45	.34

POTOMAC RIVER BASIN

01626000 SOUTH RIVER NEAR WAYNESBORO, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	114	134	137	185	214	287	245	170	121	67.1	82.0	79.4
MAX	549	1214	355	767	1312	748	1062	485	875	305	700	546
(WY)	1973	1986	1997	1996	1998	1993	1987	1989	1972	1972	1955	1996
MIN	25.5	25.1	24.2	23.6	64.5	49.0	44.0	50.4	37.5	26.1	26.3	27.0
(WY)	1966	1966	1966	1966	1959	1981	1981	1981	1964	1966	1966	1970

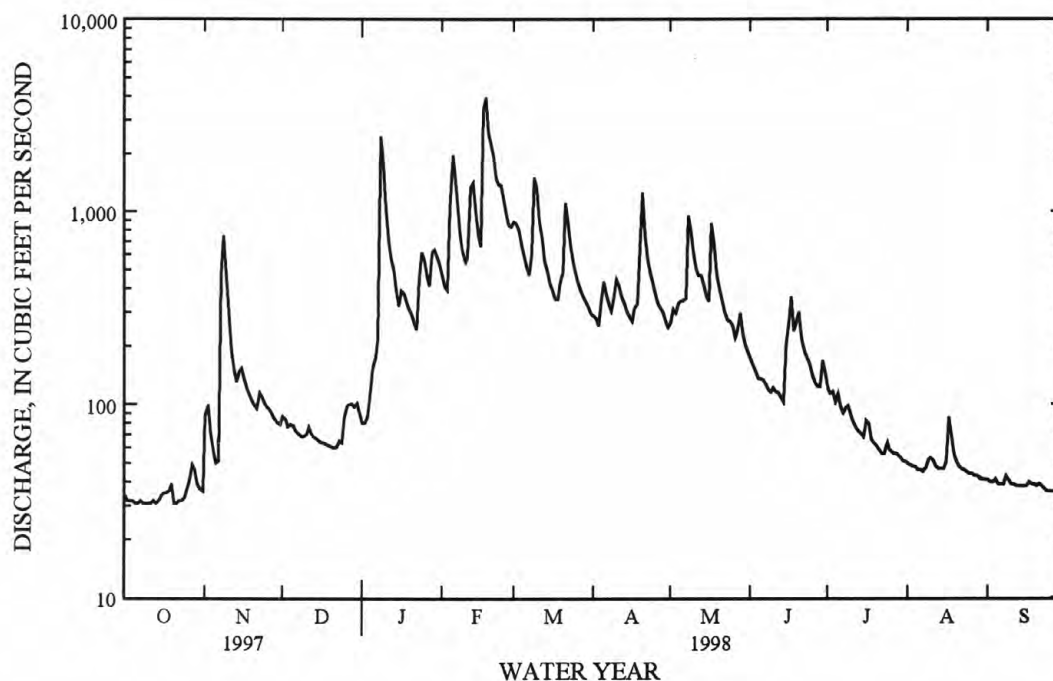
SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1953 - 1998	
ANNUAL TOTAL	42714		114028			
ANNUAL MEAN	117		312		152	
HIGHEST ANNUAL MEAN					312	
LOWEST ANNUAL MEAN					47.5	
HIGHEST DAILY MEAN	749	Nov 8	3930	Feb 18	9670	Aug 18 1955
LOWEST DAILY MEAN	31	Oct 5	31	aOct 5	17	Aug 8 1966
ANNUAL SEVEN-DAY MINIMUM	31	Oct 5	31	Oct 5	21	bFeb 1 1966
INSTANTANEOUS PEAK FLOW			5810	Feb 17	17500	Nov 4 1985
INSTANTANEOUS PEAK STAGE			10.05	Feb 17	15.30	Nov 4 1985
INSTANTANEOUS LOW FLOW			30	cOct 4	d7.0	Jul 18 1966
ANNUAL RUNOFF (CFSM)	.92		2.46		1.20	
ANNUAL RUNOFF (INCHES)	12.51		33.40		16.31	
10 PERCENT EXCEEDS	251		755		305	
50 PERCENT EXCEEDS	87		121		85	
90 PERCENT EXCEEDS	35		38		33	

a Also Oct. 6, 8-11, 13, 20-21, 1997.

b Also Feb. 2, 1966.

c Also Oct. 5-6, 8-13, 20-23, 1997.

d Result of regulation from unknown source upstream from gage.



POTOMAC RIVER BASIN

01627500 SOUTH RIVER AT HARRISTON, VA

LOCATION.--Lat 38°13'07", long 78°50'13", Augusta County, Hydrologic Unit 02070005, on left bank 200 ft downstream from bridge on State Highway 778, 0.3 mi northwest of Harriston, 0.6 mi downstream from Paine Run, and 7.2 mi upstream from confluence with North River.

DRAINAGE AREA.--212 mi².

PERIOD OF RECORD.--February 1925 to September 1951, October 1968 to current year.

REVISED RECORDS.--WSP 1171: 1926(M), 1927-28, 1929-32(M), 1933, 1934(M), 1935, 1937. WSP 1302: 1937(M), 1938(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,129.87 ft above sea level. Prior to Sept. 1, 1938, nonrecording gage at same site and datum.

REMARKS.--Records good except those for period with ice effect, Jan. 1, and periods of doubtful or no gage-height record, Feb. 18, Mar. 18, Mar. 31 to Apr. 18, Apr. 21 to May 7, and May 9-21, which are fair. There are discharges of about 8.4 ft³/s from industrial and municipal wastewater treatment plants upstream from station, originating from well fields. Maximum discharge, 28,900 ft³/s, from rating curve extended above 10,000 ft³/s on basis of slope-area measurement at gage height 15.47 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in 1870 and 1877 reached a stage of about 18.8 ft, from information by observer in 1925.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 8	0900	1,680	5.87	Mar. 9	1930	2,360	6.19
Jan. 8	1530	7,380	10.57	Mar. 21	1630	1,740	5.48
Jan. 28	1530	3,280	7.14	Apr. 20	0430	2,850	6.71
Feb. 4	2100	8,020	10.89	May 8	1630	2,130	5.93
Feb. 12	2030	2,490	6.33	May 17	2400	Unknown	Unknown
Feb. 17	1730	*10,000	*11.59				

Minimum discharge, 62 ft³/s, Oct. 22, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	76	141	140	e135	922	1210	e415	e470	240	185	99	82
2	72	187	139	137	790	1220	e405	e550	224	174	98	81
3	70	140	133	138	748	1160	e400	e460	213	183	96	78
4	69	121	133	156	3230	994	e580	e545	202	169	95	80
5	69	108	132	198	4650	870	e750	e580	198	169	93	80
6	68	101	129	235	2970	763	e600	e590	197	161	92	79
7	67	836	125	252	1930	683	e520	e695	192	151	92	80
8	68	1450	122	4120	1410	804	e480	1780	184	159	98	110
9	68	766	122	3160	1150	1860	e600	e1300	178	158	132	83
10	67	445	127	1700	1000	1910	e750	e1000	184	150	112	79
11	67	292	132	1170	1170	1320	e650	e870	181	141	104	77
12	66	229	128	906	2320	1050	e600	e800	181	134	98	77
13	69	198	123	793	2200	842	e550	e770	175	130	93	76
14	65	222	122	660	1570	725	e500	e690	170	127	92	74
15	69	224	119	566	1200	637	e460	e610	271	123	93	75
16	67	204	118	687	1060	567	e420	e570	313	134	98	74
17	68	185	116	669	5980	515	e520	e1400	465	192	174	76
18	73	173	116	603	e6200	e485	e560	e1150	331	135	153	92
19	79	166	114	548	3520	663	1120	e800	339	124	116	79
20	70	158	113	512	2890	693	2590	e600	399	120	103	78
21	65	155	113	459	2490	1530	e1300	e450	299	114	97	78
22	65	173	115	422	1960	1400	e950	394	252	111	95	78
23	65	167	117	754	1810	1050	e800	361	240	108	92	75
24	69	159	117	1020	1870	853	e710	355	244	114	90	74
25	82	151	138	974	1640	726	e620	342	207	115	87	74
26	84	147	149	813	1390	640	e570	304	192	110	86	74
27	97	145	153	710	1230	582	e490	319	183	109	85	75
28	87	140	158	2300	1170	535	e460	387	188	109	85	74
29	78	137	152	1760	---	498	e440	325	217	105	86	72
30	76	137	158	1330	---	463	e410	276	218	101	84	73
31	74	---	149	1120	---	e420	---	256	---	100	83	---
TOTAL	2229	7857	4022	29007	60470	27668	20220	19999	7077	4215	3101	2357
MEAN	71.9	262	130	936	2160	893	674	645	236	136	100	78.6
MAX	97	1450	158	4120	6200	1910	2590	1780	465	192	174	110
MIN	65	101	113	135	748	420	400	256	170	100	83	72
CFSM	.34	1.24	.61	4.41	10.2	4.21	3.18	3.04	1.11	.64	.47	.37
IN.	.39	1.38	.71	5.09	10.61	4.85	3.55	3.51	1.24	.74	.54	.41

e Estimated.

POTOMAC RIVER BASIN

01627500 SOUTH RIVER AT HARRISTON, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1951, 1969 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	227	237	257	323	364	412	400	289	211	134	152	179
MAX	1048	1988	802	1252	2160	1407	1414	819	1454	520	925	1047
(WY)	1943	1986	1949	1996	1998	1936	1987	1989	1972	1972	1940	1996
MIN	46.5	54.0	53.8	64.9	57.0	102	93.1	83.2	67.8	47.3	42.1	41.0
(WY)	1931	1931	1932	1981	1931	1981	1981	1930	1930	1930	1930	1930

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1926 - 1951
1969 - 1998

ANNUAL TOTAL	70859	188222	
ANNUAL MEAN	194	516	266
HIGHEST ANNUAL MEAN			516
LOWEST ANNUAL MEAN			97.5
HIGHEST DAILY MEAN	1450	Nov 8	e6200
LOWEST DAILY MEAN	64	aSep 5	65
ANNUAL SEVEN-DAY MINIMUM	65	Sep 2	67
INSTANTANEOUS PEAK FLOW			10000
INSTANTANEOUS PEAK STAGE			11.59
INSTANTANEOUS LOW FLOW			62
ANNUAL RUNOFF (CFSM)	.92	2.43	fOct 22
ANNUAL RUNOFF (INCHES)	12.43	33.03	c17
10 PERCENT EXCEEDS	391	1220	497
50 PERCENT EXCEEDS	149	185	158
90 PERCENT EXCEEDS	69	76	70

a Also Sept. 6-8, 1997.

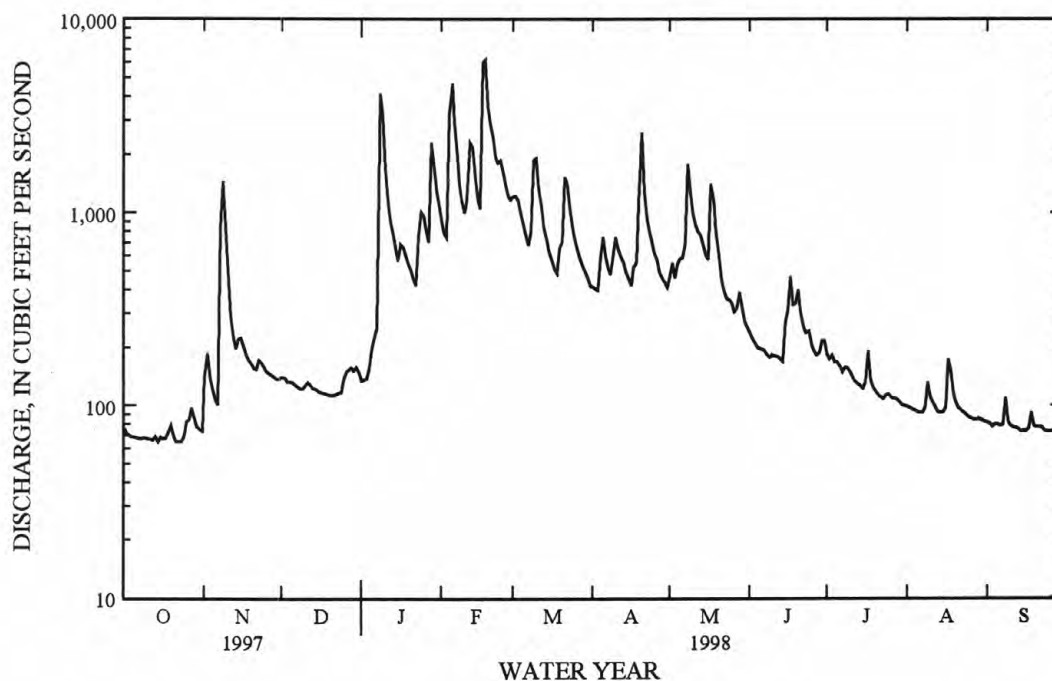
b Also Oct. 21-23, 1997.

c Probably result of regulation by mill then in existence upstream from station.

d Peak discharge, 23,100 ft³/s.

e Estimated.

f Also Oct. 23, 1997.



POTOMAC RIVER BASIN

01628500 SOUTH FORK SHENANDOAH RIVER NEAR LYNNWOOD, VA

LOCATION.--Lat 38°19'21", long 78°45'18", Rockingham County, Hydrologic Unit 02070005, on left bank 1.2 mi north-east of Lynnwood and 3.3 mi downstream from confluence of North and South Rivers.

DRAINAGE AREA.--1,084 mi².

PERIOD OF RECORD.--September 1930 to current year.

REVISED RECORDS.--WSP 1171: 1933(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,013.17 ft above sea level.

REMARKS.--Records good except for period with ice effect, Dec. 31 to Jan. 1, which is fair. Diurnal fluctuation at low flow prior to 1960 caused by mill at Lynnwood. National Weather Service rain gage and gage-height telemeters and Virginia Department of Emergency Services gage-height radio transmitter at station. Maximum discharge, 107,000 ft³/s, from rating curve extended above 22,000 ft³/s on basis of computations of flow over dam at gage heights 23.60 ft and 27.2 ft. Minimum gage height, 1.63 ft, Sept. 20, 1932. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1870, that of Sept. 7, 1996.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 7,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1730	27,200	17.38	Mar. 9	2200	8,790	10.13
Jan. 28	2200	11,700	11.88	Mar. 19	1500	7,650	9.36
Feb. 5	0130	20,700	15.35	Mar. 21	1430	14,200	12.93
Feb. 13	0330	8,730	10.09	Apr. 20	0600	7,400	9.19
Feb. 18	0330	*27,600	*17.49				

Minimum discharge, 228 ft³/s, Oct. 23, 24, gage height, 2.14 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	293	327	531	e540	3940	4130	2190	1350	869	738	374	320
2	270	592	519	559	3280	4120	2150	1900	813	683	367	313
3	264	492	490	589	2990	3890	2000	1880	782	739	368	309
4	263	404	491	683	6860	3290	2320	2180	748	701	357	308
5	257	363	493	842	15900	2870	2900	2380	737	655	342	306
6	261	345	475	1060	9640	2540	2760	2560	731	638	337	299
7	256	2380	458	1150	7230	2280	2520	2300	715	597	333	302
8	252	4900	448	15000	5820	3120	2340	4380	691	605	335	392
9	246	3220	442	14600	5060	7220	2550	6420	675	615	391	368
10	243	2080	455	7000	4340	7860	3630	4750	705	588	406	324
11	242	1460	503	4610	4410	5690	3500	3560	693	551	413	314
12	240	1110	474	3340	7980	4300	3060	3090	692	526	389	310
13	240	912	457	2770	7920	3480	2710	2830	689	514	370	306
14	240	901	448	2230	6170	2960	2440	2340	680	499	360	302
15	244	911	445	1960	4770	2530	2240	2040	951	490	425	300
16	247	827	437	2960	3940	2210	2040	1810	1060	494	401	296
17	247	767	433	2650	11200	2000	2040	2830	1510	668	500	301
18	252	716	427	2370	21100	2100	2000	2640	1090	531	736	329
19	255	678	421	2080	10300	6570	2330	1990	1050	484	466	313
20	254	647	416	1890	8450	5980	6230	1690	1400	473	412	306
21	243	624	413	1640	7350	12200	4240	1490	1060	451	393	300
22	237	673	413	1480	6110	9100	3220	1320	929	437	377	309
23	233	651	428	2980	5610	6280	2690	1210	909	420	372	300
24	236	610	427	4000	6290	4830	2350	1190	1050	424	365	290
25	313	568	522	3980	5310	3950	2030	1170	842	425	354	289
26	331	555	561	3210	4460	3390	1800	1070	761	403	348	290
27	393	542	578	2700	4010	3020	1710	1050	718	412	341	289
28	329	531	635	6930	3840	2750	1590	1200	721	403	334	285
29	301	514	622	8110	---	2590	1430	1060	864	394	335	286
30	282	510	637	6360	---	2440	1340	952	875	384	328	280
31	269	---	e600	5160	---	2290	---	898	---	379	325	---
TOTAL	8233	29810	15099	115433	194280	131980	76350	67530	26010	16321	11954	9236
MEAN	266	994	487	3724	6939	4257	2545	2178	867	526	386	308
MAX	393	4900	637	15000	21100	12200	6230	6420	1510	739	736	392
MIN	233	327	413	540	2990	2000	1340	898	675	379	325	280
CFSM	.25	.92	.45	3.44	6.40	3.93	2.35	2.01	.80	.49	.36	.28
IN.	.28	1.02	.52	3.96	6.67	4.53	2.62	2.32	.89	.56	.41	.32

e Estimated.

POTOMAC RIVER BASIN

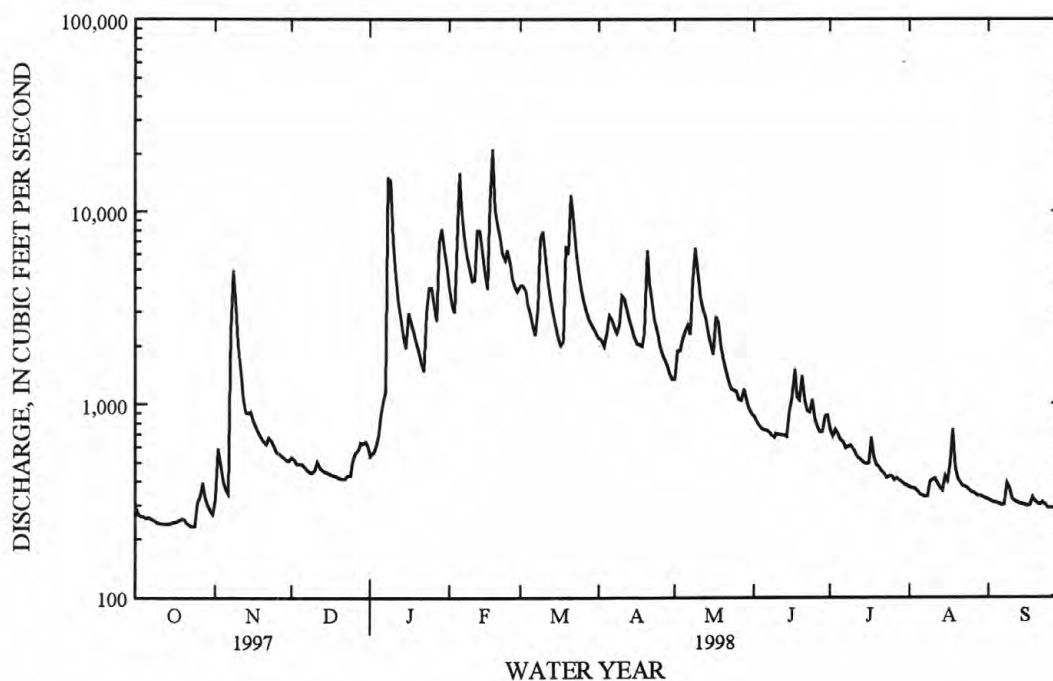
01628500 SOUTH FORK SHENANDOAH RIVER NEAR LYNNWOOD, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	733	786	962	1275	1477	1903	1588	1214	873	552	622	621
MAX	4172	6886	3302	4904	6939	5785	5454	3086	3656	2013	2895	5823
(WY)	1943	1986	1949	1996	1998	1936	1987	1989	1972	1949	1940	1996
MIN	122	150	156	154	203	360	317	362	245	162	166	173
(WY)	1931	1931	1966	1966	1931	1981	1981	1977	1956	1966	1932	1964

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1931 - 1998	
ANNUAL TOTAL	331837		702236			
ANNUAL MEAN	909		1924		1048	
HIGHEST ANNUAL MEAN					2020	
LOWEST ANNUAL MEAN					397	
HIGHEST DAILY MEAN	7090		21100		e63500	
LOWEST DAILY MEAN	233		233		100	
ANNUAL SEVEN-DAY MINIMUM	242		242		106	
INSTANTANEOUS PEAK FLOW			27600		107000	
INSTANTANEOUS PEAK STAGE			17.49		a30.84	
INSTANTANEOUS LOW FLOW			228		c32	
ANNUAL RUNOFF (CFSM)	.84		1.77		.97	
ANNUAL RUNOFF (INCHES)	11.39		24.10		13.14	
10 PERCENT EXCEEDS	1880		4860		2140	
50 PERCENT EXCEEDS	589		718		608	
90 PERCENT EXCEEDS	274		300		240	

- a From high-water mark in gage house.
b Also Oct. 24, 1997.
c Result of regulation.
e Estimated.



POTOMAC RIVER BASIN

01629500 SOUTH FORK SHENANDOAH RIVER NEAR LURAY, VA

LOCATION.--Lat 38°38'46", long 78°32'06", Page County, Hydrologic Unit 02070005, on right bank between bridges on U.S. Highway 211, 1.2 mi downstream from Big Run, 2.2 mi upstream from Mill Creek, and 4.1 mi west of Luray.

DRAINAGE AREA.--1,377 mi².

PERIOD OF RECORD.--April 1925 to September 1930, October 1938 to September 1951, June 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 721.76 ft above sea level. April 1925 to September 1930, nonrecording gage at same site and datum.

REMARKS.--Records good except those for period with ice effect, Jan. 1, and periods of doubtful or no gage-height record, Feb. 1-3, May 13, May 30 to June 14, and Aug. 20-26, which are fair. Diurnal fluctuation at low and medium flow caused by powerplant 10 mi upstream from station. Virginia Department of Emergency Services gage-height radio trans-mitter at station. Maximum discharge, 112,000 ft³/s, from rating curve extended above 86,300 ft³/s. Minimum gage height, 2.15 ft, Sept. 27, 1941. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 18, 1936, reached a stage of 23.6 ft, from floodmarks, discharge, 81,600 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 8,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 8	1400	10,800	8.93	Feb. 18	1100	35,400	16.12
Jan. 8	2400	*36,700	*16.39	Mar. 10	0630	11,400	9.00
Jan. 29	0430	16,200	11.02	Mar. 21	2100	17,700	11.53
Feb. 5	1000	26,400	14.08	Apr. 20	1330	10,300	8.51
Feb. 12	1630	12,500	9.49	May 9	1300	8,850	7.83

Minimum discharge, 290 ft³/s, Oct. 23, 24, 31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	542	398	775	e770	e6100	5600	2390	1630	e1100	1000	529	423
2	446	621	762	744	e5000	5650	2320	2110	e1050	861	520	416
3	407	972	703	777	e4360	5550	2140	2570	e1000	825	513	408
4	392	765	660	920	5590	4770	2190	2610	e960	913	510	400
5	396	614	649	1180	22000	4110	3160	3760	e950	829	502	393
6	394	545	615	1480	15100	3610	3210	3690	e930	806	484	392
7	381	3420	601	1660	11000	3170	2900	3470	e910	779	469	392
8	380	9900	597	16300	8620	3310	2610	4550	e880	756	467	459
9	377	6400	575	26200	7630	7880	2640	8370	e860	779	542	489
10	367	3730	575	11200	6560	10800	4210	7140	e920	766	629	494
11	354	2580	614	7300	6400	8240	4640	5250	e880	736	616	428
12	355	1980	651	5230	10800	6160	3950	4420	e860	690	595	413
13	362	1620	596	4150	11600	4950	3360	e4150	e850	670	555	411
14	352	1470	579	3390	9320	4150	2910	3480	e830	655	531	409
15	367	1540	576	2780	7230	3540	2590	2920	859	644	535	389
16	362	1430	573	3800	5850	3030	2310	2530	1280	634	612	398
17	365	1300	552	3950	12300	2680	2130	2740	1330	691	636	391
18	372	1200	543	3500	31600	2710	2160	3830	1620	852	831	392
19	381	1120	523	3050	16500	6590	2360	2720	1140	685	908	425
20	381	1070	518	2720	12100	8360	8170	2210	1470	656	e600	419
21	371	1020	511	2400	10500	13500	6810	1890	1410	635	e540	413
22	354	999	519	2100	8740	13700	4860	1670	1180	606	e505	413
23	339	1040	516	3060	7510	9240	3880	1500	1070	596	e480	408
24	339	993	536	6150	8810	6730	3290	1420	1130	571	e470	394
25	371	922	575	5750	7820	5360	2810	1470	1140	579	e460	379
26	463	880	723	4870	6630	4430	2430	1360	944	579	e450	375
27	521	850	762	3990	5880	3800	2200	1240	889	561	445	381
28	569	836	797	8050	5440	3330	2060	1300	867	572	434	384
29	473	772	861	13500	---	3020	1860	1340	932	561	433	372
30	426	766	873	9790	---	2780	1690	e1200	1110	546	432	370
31	400	---	855	8160	---	2560	---	e1150	---	534	426	---
TOTAL	12359	51753	19765	168921	276990	173310	94240	89690	31351	21567	16659	12230
MEAN	399	1725	638	5449	9893	5591	3141	2893	1045	696	537	408
MAX	569	9900	873	26200	31600	13700	8170	8370	1620	1000	908	494
MIN	339	398	511	744	4360	2560	1690	1150	830	534	426	370
CFSM	.29	1.25	.46	3.96	7.18	4.06	2.28	2.10	.76	.51	.39	.30
IN.	.33	1.40	.53	4.56	7.48	4.68	2.55	2.42	.85	.58	.45	.33

e Estimated.

POTOMAC RIVER BASIN

01629500 SOUTH FORK SHENANDOAH RIVER NEAR LURAY, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 1930, 1939 - 1951, 1980 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1046	1166	1355	1669	2092	2314	2197	1702	1245	770	874	1007
MAX	6332	8783	3821	6490	9893	7143	7412	4449	3418	2460	3637	8043
(WY)	1943	1986	1949	1996	1998	1993	1987	1989	1949	1949	1940	1996
MIN	271	254	351	260	574	548	452	499	438	296	258	257
(WY)	1942	1942	1944	1981	1944	1981	1981	1930	1930	1930	1930	1930

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1926 - 1930
1939 - 1951
1980 - 1998

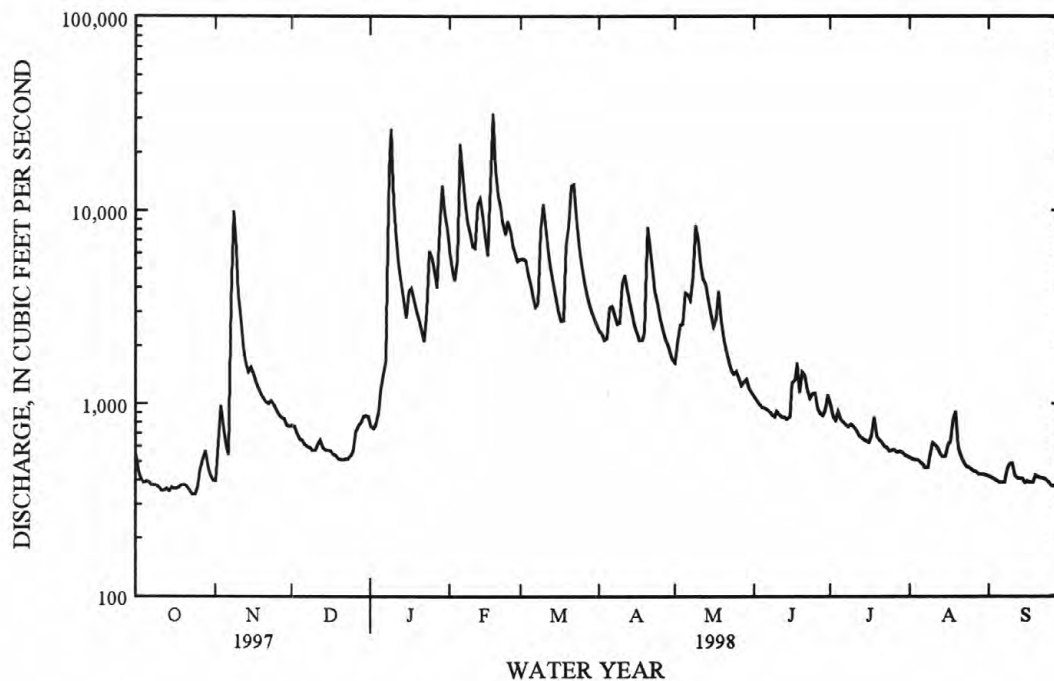
ANNUAL TOTAL	463319	968835	
ANNUAL MEAN	1269	2654	1441
HIGHEST ANNUAL MEAN			2707
LOWEST ANNUAL MEAN			580
HIGHEST DAILY MEAN	9900	Nov 8	31600
LOWEST DAILY MEAN	335	Sep 6	339
ANNUAL SEVEN-DAY MINIMUM	353	Sep 3	360
INSTANTANEOUS PEAK FLOW			36700
INSTANTANEOUS PEAK STAGE			16.39
INSTANTANEOUS LOW FLOW			290
ANNUAL RUNOFF (CFSM)	.92	1.93	1.05
ANNUAL RUNOFF (INCHES)	12.52	26.17	14.22
10 PERCENT EXCEEDS	2390	7180	2860
50 PERCENT EXCEEDS	880	950	865
90 PERCENT EXCEEDS	381	398	367

a Also Oct. 24, 1997.

b Result of regulation.

c Also Sept. 16, 1925; data were collected for only part of the 1925 water year.

d also Oct. 24, 31, 1997.



POTOMAC RIVER BASIN

01631000 SOUTH FORK SHENANDOAH RIVER AT FRONT ROYAL, VA

LOCATION.--Lat 38°54'50", long 78°12'40", Warren County, Hydrologic Unit 02070005, on left bank 0.7 mi downstream from bridge on State Highway 619, 1.0 mi west of Front Royal, and 3.5 mi upstream from confluence with North Fork.

DRAINAGE AREA.--1,642 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1899 to September 1906, September 1930 to current year. Monthly discharge only for some periods, published in WSP 1302.

REVISED RECORDS.--WSP 951: 1936(M). WSP 1171: 1935(M), 1937(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 469.38 ft above sea level. June 1899 to July 1906, nonrecording gage at site 1.0 mi upstream at different datum.

REMARKS.--No estimated daily discharges. Records good except for period July 28 to Sept. 30, which is fair. Large diurnal fluctuation at low and medium flow caused by powerplants upstream from station prior to 1954; occasional large diurnal fluctuation thereafter. National Weather Service gage-height telemeter at station. Maximum discharge, 130,000 ft³/s, from rating curve extended above 92,000 ft³/s on basis of slope-area measurement of peak flow. Minimum gage height, 0.56 ft, Jan. 30, 1934. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1870, that of Oct. 16, 1942.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 8,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 8	1100	12,900	8.36	Feb. 18	1945	35,300	15.01
Jan. 9	0930	*36,800	*15.42	Feb. 24	2100	9,620	7.04
Jan. 29	1330	17,400	9.90	Mar. 10	1430	10,600	7.46
Feb. 5	2045	30,800	13.82	Mar. 22	0700	18,300	10.18
Feb. 13	0200	12,600	8.23	Apr. 21	0045	9,600	7.03

Minimum discharge, 403 ft³/s, Oct. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	851	649	872	938	6990	5680	2830	1980	1340	1200	594	581
2	642	734	856	905	5640	5860	2660	2100	1260	1060	585	574
3	528	962	842	897	4880	5810	2500	2640	1200	967	576	567
4	487	1170	828	1030	5470	5280	2470	2680	1150	945	572	548
5	445	962	806	1200	21500	4580	2800	4240	1110	1010	567	526
6	447	826	790	1450	21400	4050	3370	4830	1050	940	559	498
7	455	3930	766	1700	12900	3620	3210	4190	1060	918	544	478
8	441	11800	754	7640	9340	3430	2950	4350	1050	912	538	519
9	439	9720	755	32500	8000	5340	2930	6850	1040	898	547	500
10	440	5680	746	15100	6910	9830	3590	7750	1060	895	607	548
11	435	3820	747	8100	6370	8700	4670	5990	1050	868	706	659
12	417	2870	767	5810	8890	6550	4350	4970	1070	851	683	497
13	432	2100	784	4720	11900	5300	3770	4740	1080	825	660	452
14	452	1820	744	3990	9930	4550	3310	4250	1070	810	629	452
15	448	1740	732	3400	7660	3960	2970	3660	1570	794	618	461
16	455	1690	729	3320	6190	3470	2700	3180	1390	792	608	466
17	450	1520	743	4350	9380	3120	2490	2970	1570	779	707	477
18	478	1380	713	4050	31800	3010	2350	3470	1610	803	750	536
19	472	1280	704	3650	23600	4590	2560	3470	1650	919	890	486
20	482	1190	681	3300	13500	8660	5760	2670	1300	800	1040	527
21	491	1140	687	3010	10900	11000	7980	2330	1640	768	777	595
22	479	1140	683	2540	9050	16300	5620	2080	1470	740	687	620
23	461	1110	700	2630	7770	10400	4450	1860	1380	707	665	609
24	444	1110	696	5220	8770	7320	3740	1760	1260	690	651	588
25	462	1040	737	5760	8580	5850	3270	1810	1280	659	636	575
26	474	980	756	5300	7280	4960	2870	1740	1240	652	630	572
27	548	938	869	4430	6350	4400	2610	1630	1070	654	612	523
28	628	906	900	7110	5780	3860	2400	1530	1060	634	601	522
29	639	900	914	15700	---	3480	2260	1580	1050	626	586	521
30	610	869	994	11200	---	3210	2090	1540	1070	620	586	500
31	562	---	967	8860	---	3000	---	1410	---	610	588	---
TOTAL	15494	65976	24262	179810	296730	179170	101530	100250	37200	25346	19999	15977
MEAN	500	2199	783	5800	10600	5780	3384	3234	1240	818	645	533
MAX	851	11800	994	32500	31800	16300	7980	7750	1650	1200	1040	659
MIN	417	649	681	897	4880	3000	2090	1410	1040	610	538	452
CFSM	.30	1.34	.48	3.53	6.45	3.52	2.06	1.97	.76	.50	.39	.32
IN.	.35	1.49	.55	4.07	6.72	4.06	2.30	2.27	.84	.57	.45	.36

POTOMAC RIVER BASIN

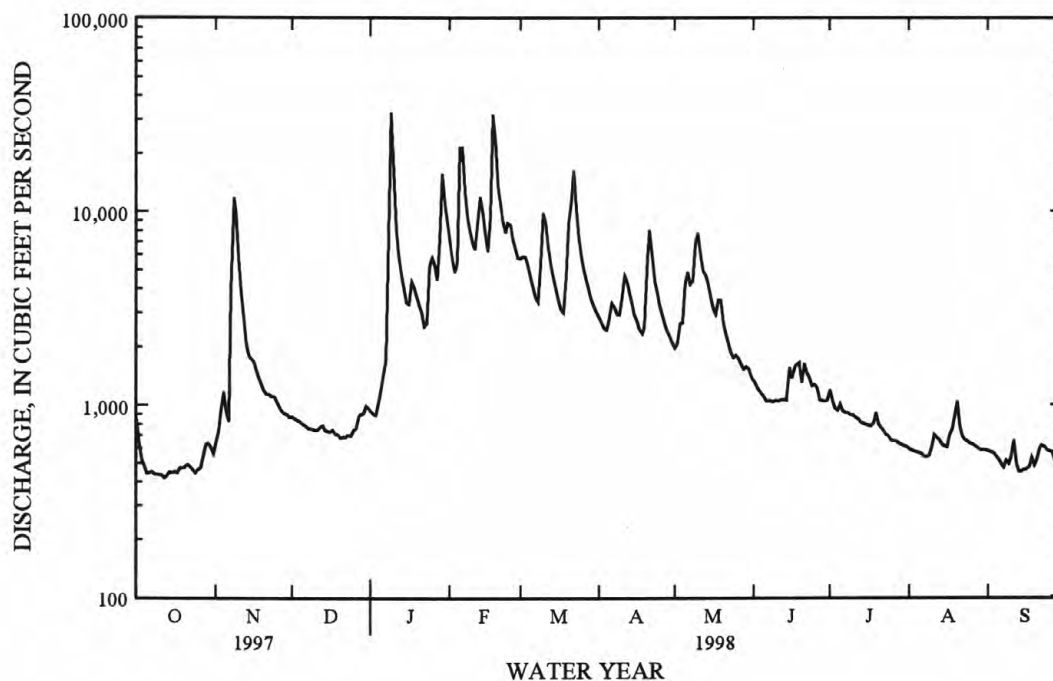
01631000 SOUTH FORK SHENANDOAH RIVER AT FRONT ROYAL, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1165	1237	1495	1953	2260	2897	2476	1868	1347	808	949	957
MAX	8678	10130	4795	7876	10600	10300	7963	4807	6586	2876	6807	9631
(WY)	1943	1986	1973	1996	1998	1936	1987	1989	1972	1949	1955	1996
MIN	225	243	268	285	348	632	516	578	393	252	281	314
(WY)	1931	1931	1966	1966	1931	1981	1981	1977	1977	1966	1932	1965

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1931 - 1998	
ANNUAL TOTAL	524282		1061744		1614	
ANNUAL MEAN	1436		2909		3189	
HIGHEST ANNUAL MEAN					1996	
LOWEST ANNUAL MEAN					1981	
HIGHEST DAILY MEAN	11800	Nov 8	32500	Jan 9	114000	Oct 16 1942
LOWEST DAILY MEAN	328	Aug 7	417	Oct 12	107	Nov 18 1930
ANNUAL SEVEN-DAY MINIMUM	437	Oct 8	437	Oct 8	152	Sep 6 1966
INSTANTANEOUS PEAK FLOW			36800	Jan 9	130000	Oct 16 1942
INSTANTANEOUS PEAK STAGE			15.42	Jan 9	a34.80	Oct 16 1942
INSTANTANEOUS LOW FLOW			403	Oct 12	59	Jan 30 1934
ANNUAL RUNOFF (CFSM)	.87		1.77		.98	
ANNUAL RUNOFF (INCHES)	11.88		24.05		13.36	
10 PERCENT EXCEEDS	2650		7300		3230	
50 PERCENT EXCEEDS	988		1110		960	
90 PERCENT EXCEEDS	472		522		390	

a From floodmarks.



POTOMAC RIVER BASIN

01631000 SOUTH FORK SHENANDOAH RIVER AT FRONT ROYAL, VA--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300)	OXYGEN, DIS- SOLVED CENT SATUR- ATION (00301)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
OCT 1997										
30...	1530	623	358	8.9	18.0	12.0	750	13.1	124	40
NOV										
08...	1515	12600	210	7.6	--	9.0	741	10.7	95	--
20...	1010	1150	270	6.6	8.0	9.0	750	11.2	98	--
DEC										
16...	0830	793	315	7.9	3.0	1.0	752	13.2	94	--
JAN 1998										
09...	1300	36100	135	6.0	15.0	13.0	739	11.5	113	--
10...	1015	14600	165	6.2	6.0	10.0	751	10.6	95	--
22...	1200	2500	245	7.7	1.0	5.0	754	12.4	98	30
*22...	1205	2500	245	7.7	1.0	5.0	754	12.4	98	--
24...	1130	5570	238	8.0	4.0	5.5	744	11.9	97	--
29...	1100	17100	184	7.0	6.0	3.0	746	12.8	97	--
30...	1045	10900	182	7.1	6.0	4.0	745	13.0	101	--
FEB										
06...	1045	21100	142	7.4	5.0	3.0	745	12.1	92	--
08...	1100	9240	205	7.0	8.0	4.5	749	12.0	94	--
*12...	1245	8520	212	7.2	12.0	7.0	741	11.2	95	--
12...	1245	8520	212	7.2	12.0	7.0	741	11.2	95	--
18...	1045	33000	126	7.5	13.0	6.5	738	11.1	93	--
20...	1200	13200	136	7.4	12.0	7.0	740	11.7	99	--
MAR										
17...	0945	3140	220	6.9	5.0	6.0	760	12.4	100	--
APR										
16...	0930	2730	194	7.7	20.0	16.5	744	10.4	109	24
21...	1200	7770	200	7.6	19.7	14.0	753	9.3	91	--
MAY										
07...	1135	4170	175	6.6	28.0	21.5	747	8.9	103	--
13...	0900	4760	168	7.1	15.0	15.0	754	10.3	103	--
JUN										
17...	1130	1670	324	7.6	26.0	23.0	755	7.1	84	--
JUL										
22...	1300	741	329	8.6	36.0	29.5	749	6.4	86	37
AUG										
21...	1030	749	332	9.0	27.0	25.0	748	10.0	124	--
SEP										
17...	1245	424	323	9.0	27.6	25.9	746	11.0	139	--

* Replicate sample.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

[illegible]

POTOMAC RIVER BASIN

01631000 SOUTH FORK SHENANDOAH RIVER AT FRONT ROYAL, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)
OCT 1997									
30...	18	.14	.23	207	--	<.010	1.09	<.020	.29
NOV									
08...	--	--	--	--	1.04	.024	1.07	.092	.60
20...	--	--	--	--	--	<.010	1.58	<.020	.12
DEC									
16...	--	--	--	--	--	<.010	.219	<.020	.18
JAN 1998									
09...	--	--	--	--	.819	.033	.852	.155	2.2
10...	--	--	--	--	.796	.019	.815	.057	1.2
22...	7.7	<.10	6.8	140	1.70	.013	1.71	<.020	<.10
22...	--	--	--	--	1.66	.013	1.68	<.020	<.10
24...	--	--	--	--	1.70	.019	1.72	<.020	.20
29...	--	--	--	--	1.21	.012	1.22	.096	.47
30...	--	--	--	--	1.05	.016	1.06	.128	.66
FEB									
06...	--	--	--	--	--	<.010	.862	.086	.65
08...	--	--	--	--	--	<.010	1.54	.062	.33
12...	--	--	--	--	--	<.010	1.64	.060	.27
12...	--	--	--	--	--	<.010	1.64	.060	.27
18...	--	--	--	--	--	<.010	.790	.063	.31
20...	--	--	--	--	--	<.010	1.01	.042	.19
MAR									
17...	--	--	--	--	1.55	.041	1.59	<.020	<.10
APR									
16...	5.2	<.10	.48	106	--	<.010	.554	.025	.20
21...	--	--	--	--	--	<.010	.895	.062	.35
MAY									
07...	--	--	--	--	.860	.011	.871	.033	.41
13...	--	--	--	--	.818	.018	.836	.052	.21
JUN									
17...	--	--	--	--	--	<.010	1.48	.066	.63
JUL									
22...	12	.11	5.2	192	.581	.018	.599	.032	.39
AUG									
21...	--	--	--	--	.906	.016	.922	.033	.29
SEP									
17...	--	--	--	--	.490	.010	.500	.020	.34

< Actual value is known to be less than the value shown.

POTOMAC RIVER BASIN

01631000 SOUTH FORK SHENANDOAH RIVER AT FRONT ROYAL, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN DIS- SOLVED (MG/L AS N) (00602)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
OCT 1997								
30...	.20	1.3	.174	.169	.174	11	2.2	7
NOV								
08...	.27	1.3	.218	.125	.148	--	--	129
20...	<.10	--	.107	.080	.100	--	--	2
DEC								
16...	.12	.34	.073	.043	.055	--	--	2
JAN 1998								
09...	.52	1.4	.749	.169	.164	--	--	755
10...	.23	1.0	.354	.075	.075	--	--	257
22...	<.10	--	.032	.013	.043	<10	5.4	7
22...	<.10	--	.030	.030	.035	--	--	--
24...	.14	1.9	.051	.048	.057	--	--	26
29...	.21	1.4	.131	.087	.089	--	--	131
30...	.34	1.4	.173	.111	.120	--	--	73
FEB								
06...	.33	1.2	.206	.087	.113	--	--	164
08...	.24	1.8	.117	.091	.084	--	--	37
12...	.13	1.8	.082	.055	.055	--	--	--
12...	.13	1.8	.082	.055	.055	--	--	31
18...	.21	1.0	.105	.065	.072	--	--	325
20...	.11	1.1	.054	.034	.043	--	--	82
MAR								
17...	<.10	--	.026	.021	.031	--	--	7
APR								
16...	.10	.66	.030	.030	.021	28	<4.0	6
21...	.26	1.2	.096	.051	.047	--	--	65
MAY								
07...	.21	1.1	.075	.051	.050	--	--	24
13...	.16	1.0	.094	.050	.062	--	--	27
JUN								
17...	.28	1.8	.141	.113	.108	--	--	22
JUL								
22...	.25	.85	.107	.077	.070	15	7.7	3
AUG								
21...	.22	1.1	.124	.113	.114	--	--	4
SEP								
17...	.30	.80	.065	.062	.057	--	--	2

< Actual value is known to be less than the value shown.

POTOMAC RIVER BASIN

01632000 NORTH FORK SHENANDOAH RIVER AT COOTES STORE, VA

LOCATION.--Lat 38°38'13", long 78°51'11", Rockingham County, Hydrologic Unit 02070006, on right bank at Cootes Store, 300 ft upstream from bridge on State Highway 259, and 3.7 mi upstream from Linville Creek.

DRAINAGE AREA.--210 mi².

PERIOD OF RECORD.--February 1925 to current year.

REVISED RECORDS.--WSP 726: 1928-31. WSP 951: 1936, 1939(M). WSP 1171: 1935, 1937, 1938(M). WSP 1502: 1926, 1927-28(M), 1929, 1930-34(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,051.8 ft above mean sea level (U.S. Army Corps of Engineers bench mark). Prior to Nov. 15, 1937, nonrecording gage at same site and datum.

REMARKS.--Records good except for period of no gage-height record, Aug. 27-31, which is fair. National Weather Service gage-height telemeter and Virginia Department of Emergency Services gage-height radio transmitter at station. Maximum discharge, 63,400 ft³/s, from rating curve extended above 9,000 ft³/s on basis of indirect measurement of peak flow. Minimum gage height, 1.74 ft, Sept. 7-10, 1966. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1836, that of Oct. 15, 1942.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	0815	7,140	10.63	Mar. 21	0700	3,860	7.83
Feb. 17	1930	*7,620	*10.97				

Minimum discharge, 0.85 ft³/s, Sept. 26-27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	31	65	80	598	1160	228	150	34	39	4.1	2.6
2	20	69	60	84	521	812	261	268	30	35	4.0	2.2
3	19	75	54	137	535	667	234	272	27	32	3.8	2.0
4	17	55	51	438	841	515	497	275	25	30	3.6	1.8
5	16	43	47	505	1340	399	698	549	24	28	3.2	1.7
6	15	41	44	403	1120	318	535	790	24	25	3.1	1.6
7	14	1400	41	357	849	275	404	502	22	22	2.9	1.5
8	13	1770	39	4030	713	728	328	1820	21	26	2.8	2.8
9	12	846	38	2160	695	2050	596	1470	21	21	3.3	2.1
10	12	441	39	1160	690	1550	1050	806	25	18	3.8	1.9
11	12	271	41	694	865	850	912	552	24	17	3.9	1.7
12	12	195	42	452	1600	559	629	457	27	15	3.2	1.6
13	11	153	40	338	1510	414	459	423	23	14	3.1	1.6
14	11	156	40	265	1070	337	363	374	36	12	3.5	1.5
15	11	194	39	243	727	279	302	312	38	11	4.4	2.2
16	11	181	39	353	576	233	266	263	181	10	5.8	1.3
17	10	161	39	445	3020	204	231	332	98	9.7	38	1.3
18	11	140	39	407	3200	295	199	252	61	9.0	23	1.8
19	9.8	121	38	346	1830	1760	278	201	59	8.1	15	1.7
20	9.3	105	37	294	1500	1460	1030	164	71	7.5	11	1.8
21	8.9	93	36	245	1270	3180	698	137	53	7.0	8.3	1.5
22	8.9	103	36	217	1010	1520	496	112	44	6.2	7.0	1.5
23	8.5	113	36	765	992	831	382	94	52	5.6	6.2	1.7
24	8.7	111	36	1150	1150	567	309	83	63	5.2	5.2	1.7
25	10	102	48	883	1070	418	254	79	44	4.9	4.6	1.7
26	11	96	73	619	1080	336	216	65	36	4.5	4.2	1.7
27	12	87	84	486	928	292	207	60	31	4.3	e3.9	1.5
28	12	79	87	705	1030	283	177	55	34	4.2	e3.8	1.7
29	11	72	87	674	---	258	155	48	52	4.0	e3.4	1.5
30	11	69	100	770	---	223	143	42	53	3.7	e3.2	1.7
31	11	---	98	741	---	197	---	38	---	4.2	e2.9	---
TOTAL	381.1	7373	1593	20446	32330	22970	12537	11045	1333	443.1	198.2	52.9
MEAN	12.3	246	51.4	660	1155	741	418	356	44.4	14.3	6.39	1.76
MAX	22	1770	100	4030	3200	3180	1050	1820	181	39	38	2.8
MIN	8.5	31	36	80	521	197	143	38	21	3.7	2.8	1.3
CFSM	.06	1.17	.24	3.14	5.50	3.53	1.99	1.70	.21	.07	.03	.01
IN.	.07	1.31	.28	3.62	5.73	4.07	2.22	1.96	.24	.08	.04	.01

e Estimated.

POTOMAC RIVER BASIN

01632000 NORTH FORK SHENANDOAH RIVER AT COOTES STORE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	128	147	186	223	293	417	348	275	130	64.9	88.2	86.6
MAX	1401	1883	850	1114	1155	1536	1156	964	906	552	697	1582
(WY)	1943	1986	1974	1996	1998	1936	1987	1942	1972	1949	1955	1996
MIN	.76	3.26	3.04	5.13	11.3	38.4	27.7	24.3	6.10	1.60	.52	.66
(WY)	1931	1931	1966	1966	1934	1981	1981	1977	1977	1977	1930	1930

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1925 - 1998

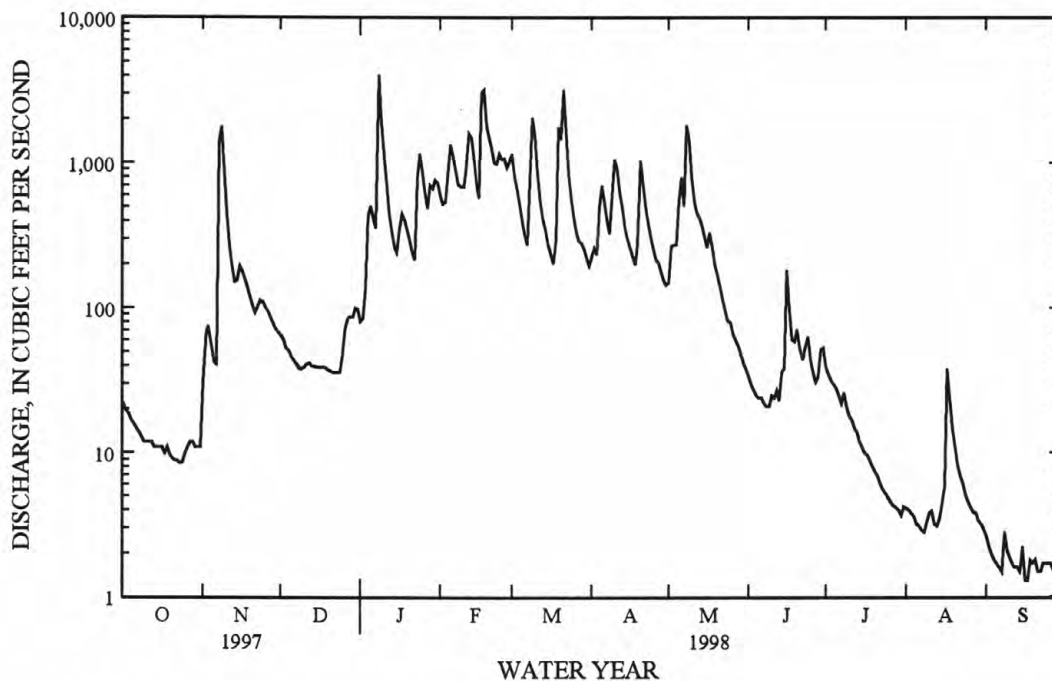
ANNUAL TOTAL	49973.9	110702.3	199	
ANNUAL MEAN	137	303	463	1996
HIGHEST ANNUAL MEAN			58.1	1934
LOWEST ANNUAL MEAN			26400	Sep 6 1996
HIGHEST DAILY MEAN	2080	Mar 4	10.97	Feb 17
LOWEST DAILY MEAN	4.9	Sep 8	1.3	aSep 16
ANNUAL SEVEN-DAY MINIMUM	5.5	Sep 3	1.6	Sep 16
INSTANTANEOUS PEAK FLOW			7620	Feb 17
INSTANTANEOUS PEAK STAGE			10.97	Feb 17
INSTANTANEOUS LOW FLOW			.85	dSep 26
ANNUAL RUNOFF (CFSM)	.65		1.44	
ANNUAL RUNOFF (INCHES)	8.85		19.61	
10 PERCENT EXCEEDS	277		434	
50 PERCENT EXCEEDS	60		62	
90 PERCENT EXCEEDS	10		4.6	

a Also Sept. 17, 1998.

b Also Aug. 29, Sept. 4, 1957, and Sept. 7-10, 1966.

c From floodmarks.

d Also Sept. 27, 1998.



POTOMAC RIVER BASIN

01632082 LINVILLE CREEK AT BROADWAY, VA

LOCATION.--Lat 38°36'24", long 78°48'13", Rockingham County, Hydrologic Unit 02070006, on left bank at Linville, 170 ft downstream from bridge on State Highway 1421, and 1.1 mi upstream from mouth.

DRAINAGE AREA.--45.5 mi².

PERIOD OF RECORD.--August 1985 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,029.90 ft above sea level.

REMARKS.--Records good except those for period of doubtful or no gage-height record, Oct. 9 to Dec. 4, and period with ice effect, Jan. 1, which are fair. Maximum discharge, 17,800 ft³/s, from rating curve extended above 1,860 ft³/s on basis of slope-area measurement at gage height 12.58 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location by the Virginia Department of Environmental Quality - Water Division.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	0800	*2,200	*5.71	Mar. 9	0715	535	3.66
Jan. 28	1815	546	3.68	Mar. 19	0045	1,460	4.96
Feb. 5	1630	737	4.01	Mar. 20	2200	982	4.37
Feb. 12	0015	530	3.65	Mar. 21	0645	896	4.25
Feb. 17	1730	1,220	4.68				

Minimum discharge, 6.4 ft³/s, Oct. 5, 7, 8, gage height, 1.39 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.3	e13	e15	e15	143	94	72	45	29	23	11	9.2
2	8.0	e24	e13	17	125	90	66	62	28	21	10	9.1
3	7.4	e17	e13	20	127	86	62	57	27	20	10	8.6
4	7.0	e13	e12	27	171	78	74	54	26	19	10	8.4
5	6.7	e11	12	32	532	74	63	74	27	19	9.9	8.0
6	6.8	e10	12	31	370	70	58	73	26	17	9.7	8.0
7	6.8	e125	11	34	252	66	55	66	24	17	9.7	8.2
8	6.8	e165	11	640	224	161	54	219	24	19	9.7	15
9	e6.9	e92	11	238	185	268	91	126	24	18	10	11
10	e6.8	e60	12	129	160	145	88	103	26	17	15	10
11	e6.8	e39	12	101	183	117	75	92	26	16	12	9.7
12	e6.9	e32	11	85	265	102	67	93	29	15	10	8.7
13	e7.0	e30	11	76	172	94	62	83	24	15	15	8.4
14	e7.0	e33	10	66	143	86	59	74	23	14	28	8.0
15	e7.6	e36	9.9	73	124	78	56	68	29	14	26	8.0
16	e7.8	e32	9.7	94	112	73	53	63	26	14	22	7.6
17	e8.2	e29	9.7	79	530	71	52	61	24	15	29	8.1
18	e8.9	e26	9.4	70	267	187	48	54	23	14	19	7.5
19	e8.3	e24	9.4	64	175	538	77	51	27	13	16	7.9
20	e8.0	e23	9.5	57	155	349	100	48	25	13	14	8.0
21	e7.8	e21	8.9	51	132	483	74	45	22	12	13	7.8
22	e7.5	e24	9.5	48	115	233	65	41	22	12	12	8.6
23	e7.4	e22	9.6	199	136	168	60	40	49	12	11	8.4
24	e8.2	e20	10	126	191	141	55	39	30	12	11	7.5
25	e10	e19	14	104	136	122	50	43	23	12	11	7.4
26	e11	e18	14	87	118	109	47	36	21	12	10	7.6
27	e13	e17	15	82	108	100	49	36	20	12	10	7.4
28	e12	e16	15	279	101	92	45	35	23	11	9.9	7.7
29	e10	e15	15	297	---	84	41	33	36	11	9.9	7.2
30	e9.4	e14	17	261	---	79	39	31	27	11	9.7	7.3
31	e8.5	---	16	182	---	75	---	30	---	11	9.4	---
TOTAL	252.8	1020	367.6	3664	5452	4513	1857	1975	790	461	412.9	254.3
MEAN	8.15	34.0	11.9	118	195	146	61.9	63.7	26.3	14.9	13.3	8.48
MAX	13	165	17	640	532	538	100	219	49	23	29	15
MIN	6.7	10	8.9	15	101	66	39	30	20	11	9.4	7.2
CFSM	.18	.75	.26	2.60	4.28	3.20	1.36	1.40	.58	.33	.29	.19
IN.	.21	.83	.30	3.00	4.46	3.69	1.52	1.61	.65	.38	.34	.21

e Estimated.

POTOMAC RIVER BASIN

01632082 LINVILLE CREEK AT BROADWAY, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	25.1	32.5	35.3	66.5	56.9	79.2	52.8	40.2	24.4	19.2	27.2	35.2
MAX	108	144	115	213	195	206	135	91.0	49.6	68.5	138	275
(WY)	1991	1986	1997	1996	1998	1994	1993	1989	1996	1995	1996	1996
MIN	6.66	7.34	7.05	9.75	10.1	17.1	11.5	12.9	9.68	8.28	5.79	5.21
(WY)	1989	1992	1989	1989	1989	1989	1995	1986	1986	1986	1986	1986

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

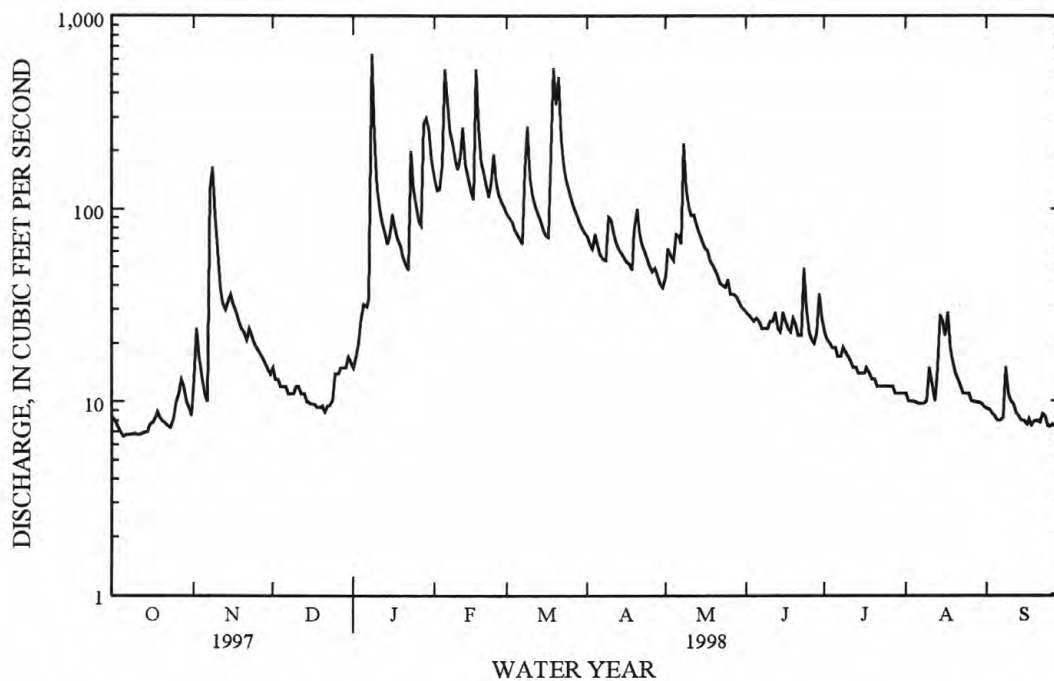
WATER YEARS 1985 - 1998

ANNUAL TOTAL	10695.7	21019.6	
ANNUAL MEAN	29.3	57.6	41.3
HIGHEST ANNUAL MEAN			85.5
LOWEST ANNUAL MEAN			22.6
HIGHEST DAILY MEAN	584	640	e4700
LOWEST DAILY MEAN	6.7	6.7	3.2
ANNUAL SEVEN-DAY MINIMUM	6.8	6.8	3.6
INSTANTANEOUS PEAK FLOW		2200	17800
INSTANTANEOUS PEAK STAGE		5.71	13.23
INSTANTANEOUS LOW FLOW		6.4	2.8
ANNUAL RUNOFF (CFSM)	.64	1.27	.91
ANNUAL RUNOFF (INCHES)	8.74	17.19	12.35
10 PERCENT EXCEEDS	58	138	80
50 PERCENT EXCEEDS	18	24	20
90 PERCENT EXCEEDS	8.0	8.2	7.4

a Also Oct. 7, 8, 1997.

b Also Sept. 14, 17, 1986.

e Estimated.



POTOMAC RIVER BASIN

01632900 SMITH CREEK NEAR NEW MARKET, VA

LOCATION.--Lat 38°41'36", long 78°38'35", Shenandoah County, Hydrologic Unit 02070006, on left bank 25 ft upstream from bridge on State Highway 620, 3.6 mi north of New Market, and 4.4 mi upstream from mouth.

DRAINAGE AREA.--93.2 mi².

PERIOD OF RECORD.--August 1960 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 881.50 ft above sea level. Prior to Aug. 2, 1963, on right bank a short distance downstream, at datum 0.71 ft higher.

REMARKS.--Records good except for period with ice effect, Jan. 1, which is fair. Maximum discharge, 12,400 ft³/s, from rating curve extended above 2,300 ft³/s on basis of contracted-opening measurement at gage height 16.38 ft. Minimum discharge, 4.5 ft³/s, result of freezeup. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 1, 1959, reached a stage of 10.7 ft, discharge not determined, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 650 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 7	1630	804	5.64	Feb. 12	0730	939	6.86
Jan. 8	1630	*2,660	*9.78	Feb. 18	0130	2,120	9.24
Jan. 28	2000	903	6.73	Mar. 19	0800	1,580	8.36
Feb. 5	0400	1,190	7.51	Mar. 21	0430	852	6.52

Minimum discharge, 13 ft³/s, Sept. 17, 18, 24, 25, gage height, 1.28 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	27	40	e36	298	266	166	112	65	43	25	18
2	17	41	37	39	262	251	160	147	63	41	24	20
3	17	33	35	51	259	252	149	166	61	40	23	19
4	17	27	35	84	399	226	182	155	58	38	22	19
5	17	25	35	87	1000	212	176	258	58	39	22	19
6	16	23	34	76	691	202	154	188	60	38	22	19
7	15	446	34	72	471	190	146	155	58	36	21	18
8	15	538	33	1510	407	268	144	178	55	38	23	22
9	15	193	33	707	374	462	213	173	55	38	24	23
10	16	120	34	350	327	324	237	152	61	36	25	20
11	15	93	35	253	335	261	195	142	58	34	29	19
12	16	78	34	211	689	235	167	155	66	34	23	19
13	15	69	32	187	477	219	154	155	57	33	23	18
14	15	74	32	165	366	211	148	134	56	31	25	17
15	16	79	30	169	306	196	144	124	62	31	27	16
16	16	70	30	231	275	184	138	118	64	30	27	15
17	16	62	29	213	730	176	136	120	72	32	28	14
18	18	57	28	179	1160	229	128	106	58	31	27	15
19	17	53	28	160	515	972	161	98	60	30	24	16
20	16	51	27	148	433	400	307	94	64	29	24	17
21	16	50	27	136	379	702	186	91	55	28	22	16
22	15	54	27	130	322	417	160	85	51	28	21	16
23	15	51	29	366	326	320	148	82	51	27	22	17
24	16	46	29	343	443	275	139	83	53	27	21	15
25	21	43	41	274	396	247	130	91	47	26	20	14
26	23	43	41	220	324	228	125	81	45	26	19	15
27	27	41	39	199	287	214	125	78	42	26	19	15
28	23	40	40	638	269	199	118	77	49	25	19	14
29	21	39	39	579	---	186	111	74	55	25	20	14
30	19	39	43	477	---	177	108	70	50	25	19	14
31	19	---	40	389	---	169	---	68	---	25	19	---
TOTAL	539	2605	1050	8679	12520	8870	4755	3810	1709	990	709	513
MEAN	17.4	86.8	33.9	280	447	286	159	123	57.0	31.9	22.9	17.1
MAX	27	538	43	1510	1160	972	307	258	72	43	29	23
MIN	15	23	27	36	259	169	108	68	42	25	19	14
CFSM	.19	.93	.36	3.00	4.80	3.07	1.70	1.32	.61	.34	.25	.18
IN.	.22	1.04	.42	3.46	5.00	3.54	1.90	1.52	.68	.40	.28	.20

e Estimated.

POTOMAC RIVER BASIN

01632900 SMITH CREEK NEAR NEW MARKET, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	53.8	58.8	70.5	105	119	158	118	86.1	59.7	36.7	36.3	38.8
MAX	297	324	240	423	447	530	372	238	294	121	139	408
(WY)	1973	1986	1997	1996	1998	1994	1987	1988	1972	1972	1996	1996
MIN	8.56	11.0	8.86	10.1	21.1	26.4	19.4	20.0	18.1	10.0	10.8	9.36
(WY)	1987	1966	1966	1966	1989	1981	1981	1969	1977	1977	1966	1986

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1960 - 1998

ANNUAL TOTAL	25356	46749	
ANNUAL MEAN	69.5	128	78.3
HIGHEST ANNUAL MEAN			152
LOWEST ANNUAL MEAN			27.8
HIGHEST DAILY MEAN	903	1510	5190
LOWEST DAILY MEAN	15	14	6.5
ANNUAL SEVEN-DAY MINIMUM	15	14	7.5
INSTANTANEOUS PEAK FLOW		2660	12400
INSTANTANEOUS PEAK STAGE		9.78	17.62
INSTANTANEOUS LOW FLOW		13	g4.5
ANNUAL RUNOFF (CFSM)	.75	1.37	.84
ANNUAL RUNOFF (INCHES)	10.12	18.66	11.41
10 PERCENT EXCEEDS	127	324	155
50 PERCENT EXCEEDS	44	54	44
90 PERCENT EXCEEDS	17	17	15

a Also Oct. 8, 9, 11, 13, 14, 22, 23, 1997.

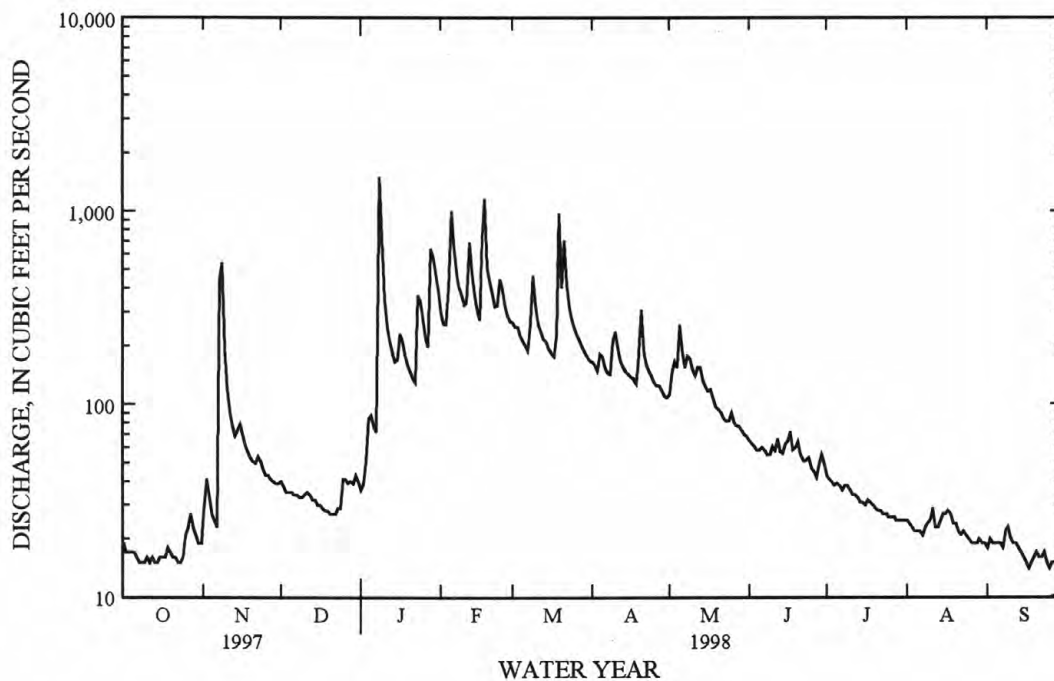
b Also Sept. 25, 28-30, 1998.

c Also Oct. 8, 1997.

d Also July 28, 1977.

f Also Sept. 18, 24, 25, 1997.

g Result of freezeup.



POTOMAC RIVER BASIN

01633000 NORTH FORK SHENANDOAH RIVER AT MOUNT JACKSON, VA

LOCATION.--Lat 38°44'43", long 78°38'21", Shenandoah County, Hydrologic Unit 02070006, on right bank at upstream side of bridge on State Highway 698 at Mount Jackson and 0.4 mi downstream from Mill Creek.

DRAINAGE AREA.--506 mi².

PERIOD OF RECORD.--October 1943 to current year.

REVISED RECORDS.--WSP 1382: 1945, 1948-50(M), 1951-53(P), 1954(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 838.55 ft above sea level. Prior to July 1, 1976, nonrecording gage, and July 1, 1976, to Oct. 23, 1981, water-stage recorder, at site 400 ft upstream at same datum.

REMARKS.--Records good except for period with ice effect, Jan. 1, which is fair. Some diversion during low flow for irrigation at points upstream from station. Virginia Department of Emergency Services gage-height radio transmitter at station. Maximum discharge, 103,000 ft³/s, Sept. 6, 1996, from rating curve extended above 19,000 ft³/s on basis of peak runoff for stations at Cootes Store and near Strasburg. Minimum gage height, 1.97 ft, Sept. 3, 1966. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1942 reached a stage of 20.2 ft, from floodmarks, discharge, about 80,000 ft³/s, from rating curve extended above 18,000 ft³/s on basis of peak runoff for flood in October, 1942 for stations at Cootes Store and near Strasburg.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 5,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1400	*13,300	*13.54	Mar. 19	0700	7,150	10.05
Feb. 18	0130	13,300	13.53	Mar. 21	1130	8,860	11.12

Minimum discharge, 37 ft³/s, Sept. 16, 17, 28-30, gage height, 2.27 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82	76	176	e185	1400	2010	699	447	238	187	66	47
2	72	151	162	192	1180	1600	798	651	223	165	63	47
3	68	178	153	219	1110	1440	698	730	213	158	62	47
4	66	156	148	544	1620	1180	925	724	200	150	59	47
5	64	131	144	830	4400	1000	1380	953	198	149	57	47
6	60	114	135	725	3360	874	1110	1500	198	141	55	45
7	57	1940	129	608	2310	782	911	1030	189	133	55	46
8	54	3350	124	7310	1860	1150	792	2860	183	134	56	52
9	51	1640	124	4910	1740	3870	1110	2810	178	138	61	63
10	51	929	127	2110	1540	3170	1940	1650	200	124	68	55
11	54	625	130	1330	1620	1810	1720	1230	193	115	86	51
12	53	467	129	925	3010	1330	1300	1090	214	110	71	49
13	54	371	125	739	2820	1080	1020	1030	196	107	63	47
14	55	348	124	602	2020	944	861	910	188	102	78	45
15	56	395	120	544	1500	827	771	799	222	98	99	43
16	56	388	117	744	1230	734	690	698	331	93	91	39
17	56	349	116	838	3420	669	644	802	318	94	105	38
18	59	310	115	775	8590	806	571	667	244	91	125	39
19	58	279	113	672	3910	5030	655	563	226	88	96	44
20	57	251	111	594	2990	2820	1990	492	250	87	83	45
21	55	234	109	508	2440	7380	1470	442	220	81	76	45
22	53	239	110	454	1990	3770	1100	395	197	78	71	46
23	52	242	113	1230	1890	2140	901	363	193	76	69	45
24	55	237	112	1980	2470	1590	777	347	263	75	66	43
25	67	226	136	1570	2280	1280	667	357	206	73	61	39
26	77	217	163	1140	2150	1090	593	324	181	73	59	41
27	83	203	187	921	1820	974	568	306	166	74	55	42
28	78	191	203	2120	1780	899	520	299	176	72	53	39
29	69	180	197	2310	---	837	466	280	208	71	52	39
30	64	177	220	2060	---	764	438	262	221	68	51	37
31	63	---	216	1830	---	698	---	250	---	68	50	---
TOTAL	1899	14594	4388	41519	68450	54548	28085	25261	6433	3273	2162	1352
MEAN	61.3	486	142	1339	2445	1760	936	815	214	106	69.7	45.1
MAX	83	3350	220	7310	8590	7380	1990	2860	331	187	125	63
MIN	51	76	109	185	1110	669	438	250	166	68	50	37
CFSM	.12	.96	.28	2.65	4.83	3.48	1.85	1.61	.42	.21	.14	.09
IN.	.14	1.07	.32	3.05	5.03	4.01	2.06	1.86	.47	.24	.16	.10

e Estimated.

POTOMAC RIVER BASIN

01633000 NORTH FORK SHENANDOAH RIVER AT MOUNT JACKSON, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	239	295	384	497	595	851	645	526	308	169	220	217
MAX	1580	2371	1272	2283	2445	2387	2193	1418	1483	834	1403	2804
(WY)	1980	1986	1973	1996	1998	1994	1987	1988	1972	1949	1955	1996
MIN	22.2	26.3	22.7	30.1	62.7	119	79.2	84.3	53.8	26.0	19.9	26.2
(WY)	1987	1966	1966	1966	1959	1981	1981	1969	1977	1977	1964	1954

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1944 - 1998

ANNUAL TOTAL	129761	251964	
ANNUAL MEAN	356	690	411
HIGHEST ANNUAL MEAN			935
LOWEST ANNUAL MEAN			136
HIGHEST DAILY MEAN	5660	Mar 4	8590
LOWEST DAILY MEAN	45	aSep 5	37
ANNUAL SEVEN-DAY MINIMUM	46	Sep 3	40
INSTANTANEOUS PEAK FLOW			13300
INSTANTANEOUS PEAK STAGE			13.54
INSTANTANEOUS LOW FLOW			37
ANNUAL RUNOFF (CFSM)	.70	1.36	.81
ANNUAL RUNOFF (INCHES)	9.54	18.52	11.05
10 PERCENT EXCEEDS	705	1910	876
50 PERCENT EXCEEDS	194	214	191
90 PERCENT EXCEEDS	56	53	46

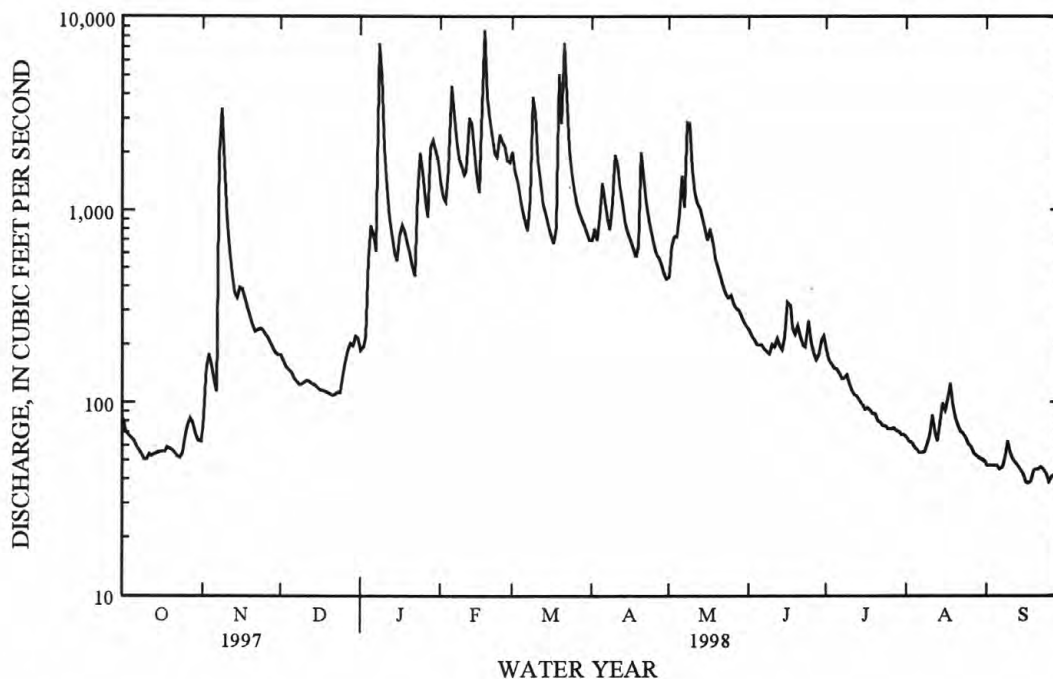
a Also Sept. 6-8, 1997.

b Also Sept. 3, 1966.

c Also Feb. 18, 1998.

d also Sept. 17, 28-30, 1998.

f Observed.



POTOMAC RIVER BASIN

01634000 NORTH FORK SHENANDOAH RIVER NEAR STRASBURG, VA

LOCATION.--Lat 38°58'36", long 78°20'11", Warren County, Hydrologic Unit 02070006, on right bank at downstream side of bridge on State Highway 55, 1.5 mi southeast of Strasburg, 2.2 mi upstream from Cedar Creek, and 10 mi upstream from confluence with South Fork.

DRAINAGE AREA.--768 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1925 to current year.

REVISED RECORDS.--WSP 951: 1936(M). WSP 1001: 1931. WSP 1171: 1929(M), 1933(M), 1936-37. WSP 1302: 1928(M), 1930(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 494.03 ft above sea level. Prior to Sept. 21, 1930, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Large diurnal fluctuation at low and medium flow from unknown cause. Water-level elevations at the site were affected during the 1992-93 water years by construction of a new bridge about 50 ft downstream from the gage. National Weather Service gage-height telemeter at station. Maximum discharge, 114,000 ft³/s, from rating curve extended above 46,000 ft³/s. Minimum gage height, 1.52 ft, Feb. 9, 1934. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1870, that of Sept. 7, 1996.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 6,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 9	0500	*14,000	*14.90	Mar. 19	1930	8,230	10.77
Feb. 5	1930	8,260	10.80	Mar. 21	2245	9,850	12.03
Feb. 18	1630	13,500	14.56				

Minimum discharge, 103 ft³/s, Sept. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	211	167	253	286	2510	2500	1140	747	439	370	159	128
2	185	197	244	266	2060	2480	1320	850	419	344	149	124
3	160	204	235	265	1810	2120	1260	1080	399	316	149	122
4	146	278	222	314	2040	1890	1220	1100	384	303	143	120
5	141	241	213	651	6260	1630	1770	1400	369	298	141	120
6	140	210	206	985	6520	1430	1850	1770	364	287	133	121
7	139	855	197	858	4360	1290	1550	1790	358	283	132	121
8	137	4120	190	2770	3300	1290	1340	1830	351	280	131	142
9	135	3200	189	10300	2890	2750	1390	4110	346	274	133	134
10	133	1690	191	4660	2560	4810	2320	2880	360	265	151	131
11	129	1070	191	2680	2380	3150	2610	2030	360	262	197	129
12	128	755	193	1890	3170	2190	2170	1750	375	242	169	144
13	126	584	194	1450	4080	1780	1740	1680	424	234	175	137
14	127	511	189	1190	3330	1530	1470	1510	458	229	189	132
15	131	481	183	1030	2590	1390	1310	1340	600	225	188	129
16	117	514	181	1150	2070	1240	1190	1190	1260	218	175	126
17	122	486	178	1460	2100	1120	1110	1140	778	215	212	121
18	126	438	175	1460	8610	1140	1030	1220	595	211	211	140
19	125	394	173	1280	6020	4650	994	1000	485	206	202	124
20	126	356	170	1120	4180	5030	1940	879	423	203	222	125
21	127	334	171	979	3500	6740	2600	788	418	198	201	134
22	126	339	169	858	2940	6980	1910	712	388	191	186	133
23	119	334	169	1010	2600	3840	1550	651	622	186	177	129
24	118	331	171	2880	3350	2690	1340	610	540	181	169	114
25	126	315	192	2720	3650	2150	1180	671	441	174	164	124
26	129	300	198	2100	3020	1820	1050	613	398	171	155	132
27	139	283	252	1670	2720	1620	969	568	348	167	142	154
28	141	277	275	2460	2430	1480	914	532	334	165	135	117
29	150	262	283	5010	---	1380	838	515	335	166	133	117
30	143	258	295	3560	---	1280	770	488	350	163	130	119
31	132	---	290	3150	---	1180	---	463	---	164	128	---
TOTAL	4234	19784	6432	62462	97050	76570	43845	37907	13721	7191	5081	3843
MEAN	137	659	207	2015	3466	2470	1462	1223	457	232	164	128
MAX	211	4120	295	10300	8610	6980	2610	4110	1260	370	222	154
MIN	117	167	169	265	1810	1120	770	463	334	163	128	114
CFSM	.18	.86	.27	2.62	4.51	3.22	1.90	1.59	.60	.30	.21	.17
IN.	.21	.96	.31	3.03	4.70	3.71	2.12	1.84	.66	.35	.25	.19

POTOMAC RIVER BASIN

01634000 NORTH FORK SHENANDOAH RIVER NEAR STRASBURG, VA--Continued

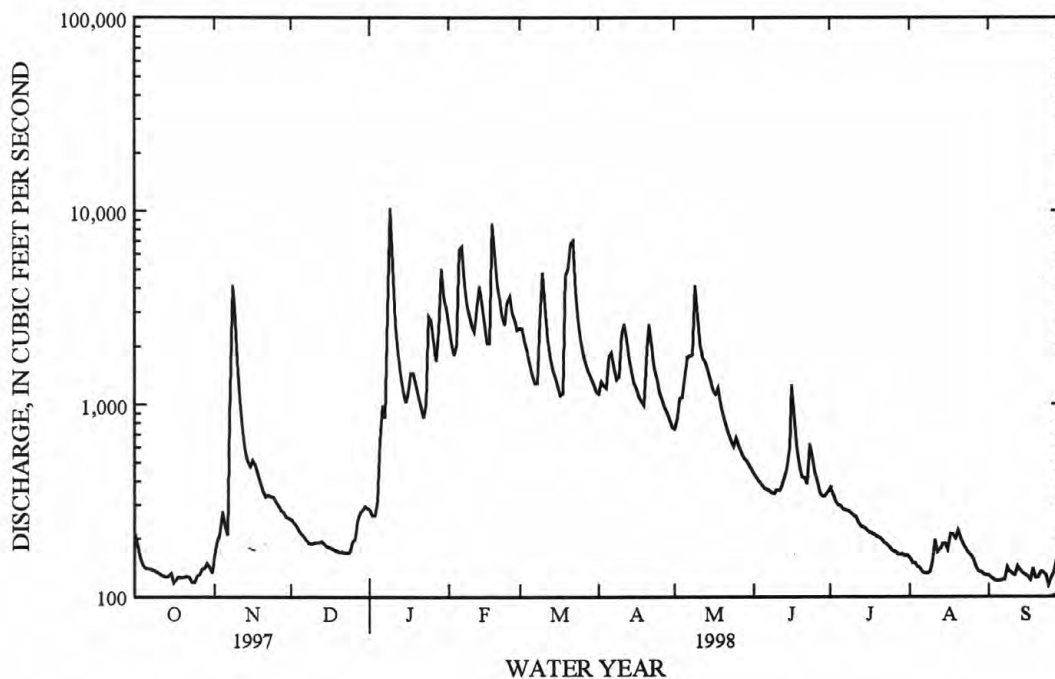
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	406	425	542	707	888	1161	985	769	474	299	359	320
MAX	3488	2813	1955	3394	3466	5017	2876	1821	2234	1169	2510	3838
(WY)	1943	1986	1973	1996	1998	1936	1993	1988	1972	1949	1955	1996
MIN	58.9	75.8	82.0	86.4	94.0	183	183	154	115	76.4	66.7	67.1
(WY)	1931	1931	1932	1966	1931	1931	1981	1969	1977	1977	1930	1986

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1925 - 1998	
ANNUAL TOTAL	195824		378120			
ANNUAL MEAN	537		1036		611	
HIGHEST ANNUAL MEAN					1360	
LOWEST ANNUAL MEAN					226	
HIGHEST DAILY MEAN	8170		10300		60700	
LOWEST DAILY MEAN	107		114		35	
ANNUAL SEVEN-DAY MINIMUM	117		122		45	
INSTANTANEOUS PEAK FLOW			14000		114000	
INSTANTANEOUS PEAK STAGE			14.90		32.27	
INSTANTANEOUS LOW FLOW			103		6.0	
ANNUAL RUNOFF (CFSM)	.70		1.35		.80	
ANNUAL RUNOFF (INCHES)	9.49		18.32		10.81	
10 PERCENT EXCEEDS	1030		2720		1280	
50 PERCENT EXCEEDS	315		360		319	
90 PERCENT EXCEEDS	134		131		113	

a Also Sept. 8, 1997.

b Also Sept. 14, 18, 1986.



POTOMAC RIVER BASIN

01634000 NORTH FORK SHENANDOAH RIVER AT STRASBURG, VA--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)
OCT 1997												
30...	1050	144	449	8.9	15.0	10.0	751	13.9	125	56	20	8.5
NOV												
08...	1245	4420	240	7.0	--	9.0	740	10.3	92	--	--	--
20...	1215	355	340	7.7	10.0	7.7	751	13.9	118	--	--	--
DEC												
16...	1030	181	390	7.9	3.0	2.0	751	13.3	98	--	--	--
JAN 1998												
09...	1515	8730	140	7.7	15.0	14.0	740	10.2	102	--	--	--
10...	1220	4750	165	5.9	9.0	9.0	750	10.4	91	--	--	--
22...	1600	839	295	7.9	2.0	4.5	753	13.2	103	40	9.4	4.6
*22...	1605	839	295	7.9	2.0	4.5	753	13.2	103	--	--	--
24...	1430	3480	380	8.1	4.0	5.0	744	11.6	93	--	--	--
29...	1345	5020	163	7.1	10.0	3.5	743	12.9	100	--	--	--
30...	1250	3670	215	7.2	8.0	4.5	743	12.1	96	--	--	--
FEB												
06...	1330	6370	200	7.8	5.0	4.5	745	12.2	96	--	--	--
08...	1315	3240	210	7.1	11.0	5.5	747	15.2	123	--	--	--
*12...	1000	2660	265	7.0	13.0	6.0	739	11.9	99	--	--	--
12...	1000	2660	265	7.0	13.0	6.0	739	11.9	99	--	--	--
18...	1315	12200	204	7.8	15.0	6.5	737	11.7	98	--	--	--
20...	1430	4030	172	7.7	13.0	7.0	740	11.6	98	--	--	--
MAR												
17...	1120	1050	290	6.8	2.0	5.0	760	11.9	93	--	--	--
APR												
16...	1430	1110	270	7.6	28.0	16.1	741	11.2	117	35	9.0	3.8
21...	1430	2450	250	7.9	18.0	14.5	750	10.3	103	--	--	--
MAY												
07...	0940	1780	240	7.3	26.0	22.0	747	11.1	130	--	--	--
13...	1130	1660	250	7.4	16.0	14.5	752	10.0	99	--	--	--
JUN												
17...	1315	678	354	8.0	25.0	23.0	753	7.8	92	--	--	--
JUL												
22...	1500	185	356	8.6	36.0	29.5	746	12.2	164	38	20	7.9
AUG												
21...	1230	1190	430	8.8	29.0	24.5	748	12.0	147	--	--	--
SEP												
17...	1115	121	438	8.4	28.1	24.9	746	9.2	114	--	--	--

* Replicate sample.

POTOMAC RIVER BASIN

01634000 NORTH FORK SHENANDOAH RIVER AT STRASBURG, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT.DIS FET LAB CAC03 (MG/L) (29801)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CAC03 (39086)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	SULFATE DIS- SOLVED (MG/L AS S04) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
OCT 1997												
30...	3.0	200	198	18	204	20	16	.13	.17	255	1.92	.016
NOV												
08...	--	--	--	--	--	--	--	--	--	--	1.18	.025
20...	--	--	--	--	--	--	--	--	--	--	--	<.010
DEC												
16...	--	--	--	--	--	--	--	--	--	--	--	<.010
JAN 1998												
09...	--	--	--	--	--	--	--	--	--	--	1.01	.029
10...	--	--	--	--	--	--	--	--	--	--	1.38	.025
22...	1.8	120	111	0	135	16	8.5	<.10	5.9	173	2.26	.021
22...	--	--	--	--	--	--	--	--	--	--	2.23	.017
24...	--	--	--	--	--	--	--	--	--	--	2.19	.017
29...	--	--	--	--	--	--	--	--	--	--	1.19	.014
30...	--	--	--	--	--	--	--	--	--	--	1.45	.013
FEB												
06...	--	--	--	--	--	--	--	--	--	--	--	<.010
08...	--	--	--	--	--	--	--	--	--	--	--	<.010
12...	--	--	--	--	--	--	--	--	--	--	--	<.010
12...	--	--	--	--	--	--	--	--	--	--	--	<.010
18...	--	--	--	--	--	--	--	--	--	--	--	<.010
20...	--	--	--	--	--	--	--	--	--	--	--	<.010
MAR												
17...	--	--	--	--	--	--	--	--	--	--	2.08	.033
APR												
16...	1.7	110	103	--	--	12	6.2	<.10	.68	147	--	<.010
21...	--	--	--	--	--	--	--	--	--	--	--	<.010
MAY												
07...	--	--	--	--	--	--	--	--	--	--	1.35	.015
13...	--	--	--	--	--	--	--	--	--	--	1.38	.019
JUN												
17...	--	--	--	--	--	--	--	--	--	--	--	<.010
JUL												
22...	2.5	150	--	--	--	16	13	.10	4.3	217	.930	.020
AUG												
21...	--	--	--	--	--	--	--	--	--	--	1.54	.024
SEP												
17...	--	--	--	--	--	--	--	--	--	--	.879	.016

< Actual value is known to be less than the value shown.

POTOMAC RIVER BASIN

01634000 NORTH FORK SHENANDOAH RIVER AT STRASBURG, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN DIS- SOLVED (MG/L AS N) (00602)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
OCT 1997											
30...	1.94	<.020	.30	.18	2.1	.100	.103	.135	9.7	2.4	--
NOV											
08...	1.21	--	1.7	.35	1.6	.369	.094	.098	--	--	215
20...	2.92	<.020	.16	.10	3.0	.093	.080	.100	--	--	3
DEC											
16...	.483	<.020	.17	.13	.61	.088	.062	.079	--	--	4
JAN 1998											
09...	1.04	.071	1.7	.40	1.4	.446	.111	.104	--	--	287
10...	1.40	.060	.87	.30	1.7	.216	.095	.083	--	--	86
22...	2.28	<.020	<.10	<.10	--	.036	.017	.052	<10	7.0	25
22...	2.25	<.020	<.10	<.10	--	.032	.019	.042	--	--	--
24...	2.20	<.020	.40	.18	2.4	.102	.054	.074	--	--	24
29...	1.21	.088	.46	.29	1.5	.188	.073	.078	--	--	83
30...	1.46	.073	.53	.28	1.7	.145	.092	.096	--	--	46
FEB											
06...	1.24	.287	1.1	.66	1.9	.274	.164	.213	--	--	82
08...	1.89	.048	.28	.23	2.1	.121	.092	.096	--	--	25
12...	2.04	.038	.17	.13	2.2	.057	.054	.054	--	--	--
12...	2.04	.038	.17	.13	2.2	.057	.054	.054	--	--	14
18...	1.59	.064	.45	.28	1.9	.137	.100	.102	--	--	402
20...	1.36	.037	.15	.10	1.5	.040	.034	.042	--	--	41
MAR											
17...	2.11	<.020	.10	.10	2.2	.020	.020	.029	--	--	5
APR											
16...	1.03	.025	.20	.14	1.2	.032	.021	.020	24	4.6	8
21...	1.37	.044	.36	.26	1.6	.056	.031	.028	--	--	37
MAY											
07...	1.37	.044	.40	.23	1.6	.070	.047	.048	--	--	28
13...	1.40	.050	.25	.18	1.6	.055	.061	.059	--	--	15
JUN											
17...	1.86	.225	.65	.51	2.4	.169	.143	.145	--	--	35
JUL											
22...	.950	.038	.37	.26	1.2	.039	.040	.032	11	5.1	4
AUG											
21...	1.56	.037	.28	.23	1.8	.166	.148	.153	--	--	3
SEP											
17...	.895	<.020	.46	.31	1.2	.144	.137	.135	--	--	1

< Actual value is known to be less than the value shown.



Walker Creek at Bane, VA
03173000

POTOMAC RIVER BASIN

01634500 CEDAR CREEK NEAR WINCHESTER, VA

LOCATION.--Lat 39°04'52", long 78°19'47", Frederick County, Hydrologic Unit 02070006, on left bank 0.2 mi upstream from Fawcett Run, 0.3 mi upstream from bridge on State Highway 628, 1.3 mi downstream from Froman Run, and 11.4 mi southwest of Winchester.

DRAINAGE AREA.--103 mi².

PERIOD OF RECORD.--June 1937 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 647.09 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. Maximum discharge, 22,000 ft³/s, from rating curve extended above 15,000 ft³/s. Minimum discharge, 1.5 ft³/s, result of freezeup. Minimum gage height, 1.04 ft, Feb. 19, 1941, result of freezeup. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 17, 1936, reached a stage of about 25 ft, discharge, about 18,000 ft³/s, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 7	1600	*3,800	*9.60	Mar. 8	1830	1,370	5.42
Jan. 8	1230	2,480	7.43	Mar. 19	0300	2,640	7.70
Jan. 28	1630	2,470	7.41	Mar. 21	0400	3,620	9.32
Feb. 5	1200	2,420	7.33	Apr. 19	2400	1,550	5.77
Feb. 17	2100	2,400	7.29	May 5	2330	1,060	4.79
Feb. 24	1000	1,310	5.31				

Minimum discharge, 8.5 ft³/s, Sept. 16, 17, 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	73	47	51	269	337	157	103	46	47	16	10
2	14	94	41	63	224	298	172	180	40	38	14	10
3	13	62	38	104	201	322	134	178	39	34	13	10
4	12	42	37	182	253	255	220	205	35	33	13	10
5	13	35	37	167	1990	221	236	431	34	33	13	9.9
6	11	29	35	139	1020	194	188	465	35	30	12	9.6
7	10	1460	33	124	583	177	165	270	33	28	12	9.9
8	9.7	674	32	1400	432	564	153	479	31	29	12	16
9	9.9	278	31	1090	384	746	384	457	30	33	14	14
10	10	167	32	505	327	463	462	349	61	29	17	12
11	10	116	35	316	319	329	321	306	48	25	18	11
12	10	89	34	234	485	265	253	444	134	22	15	11
13	11	72	31	195	416	225	214	415	213	22	13	9.7
14	11	100	30	157	331	203	190	308	177	21	14	9.6
15	12	126	29	160	265	177	171	239	232	21	18	9.6
16	15	92	28	310	223	156	154	199	401	22	18	9.5
17	12	72	28	296	740	140	147	212	177	30	22	9.8
18	13	62	27	260	1270	262	142	148	109	20	23	16
19	14	56	27	211	625	1450	347	121	93	18	16	14
20	15	51	26	179	445	622	741	102	92	18	14	11
21	13	50	26	150	361	2330	337	89	67	17	13	11
22	14	92	26	132	298	801	256	77	57	16	13	11
23	14	87	32	433	344	452	214	70	71	16	13	12
24	15	70	32	526	1060	337	183	68	159	17	12	11
25	21	59	64	358	580	269	156	119	77	16	12	10
26	27	56	69	263	421	230	139	73	60	15	12	12
27	38	51	61	217	350	205	145	62	50	14	12	11
28	26	47	60	1020	340	183	120	59	77	14	11	18
29	19	46	54	857	---	165	105	52	71	14	11	12
30	18	45	60	514	---	148	98	47	52	14	11	11
31	18	---	55	352	---	134	---	50	---	18	10	---
TOTAL	465.6	4353	1197	10965	14556	12660	6704	6377	2801	724	437	341.6
MEAN	15.0	145	38.6	354	520	408	223	206	93.4	23.4	14.1	11.4
MAX	38	1460	69	1400	1990	2330	741	479	401	47	23	18
MIN	9.7	29	26	51	201	134	98	47	30	14	10	9.5
CFSM	.15	1.41	.37	3.43	5.05	3.96	2.17	2.00	.91	.23	.14	.11
IN.	.17	1.57	.43	3.96	5.26	4.57	2.42	2.30	1.01	.26	.16	.12

POTOMAC RIVER BASIN

01634500 CEDAR CREEK NEAR WINCHESTER, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	61.3	70.0	91.9	116	148	208	175	130	85.0	33.1	39.5	39.5
MAX	777	500	320	545	520	708	600	382	664	181	420	523
(WY)	1943	1986	1973	1996	1998	1993	1983	1988	1972	1978	1955	1996
MIN	6.01	8.64	7.95	10.2	21.5	38.2	37.0	24.5	10.5	6.06	4.52	6.95
(WY)	1964	1966	1966	1966	1959	1981	1947	1969	1969	1966	1957	1986

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1938 - 1998

ANNUAL TOTAL	31540.4	61581.2	
ANNUAL MEAN	86.4	169	99.4
HIGHEST ANNUAL MEAN			214
LOWEST ANNUAL MEAN			28.3
HIGHEST DAILY MEAN	1460	Nov 7	2330
LOWEST DAILY MEAN	9.7	Oct 8	9.5
ANNUAL SEVEN-DAY MINIMUM	10	bOct 6	9.9
INSTANTANEOUS PEAK FLOW			3800
INSTANTANEOUS PEAK STAGE			9.60
INSTANTANEOUS LOW FLOW			8.5
ANNUAL RUNOFF (CFSM)	.84	1.64	.97
ANNUAL RUNOFF (INCHES)	11.39	22.24	13.12
10 PERCENT EXCEEDS	160	425	213
50 PERCENT EXCEEDS	53	61	43
90 PERCENT EXCEEDS	13	12	10

a Also Sept. 3, 4, 7, 8, 1966.

b Also Oct. 7, 1997.

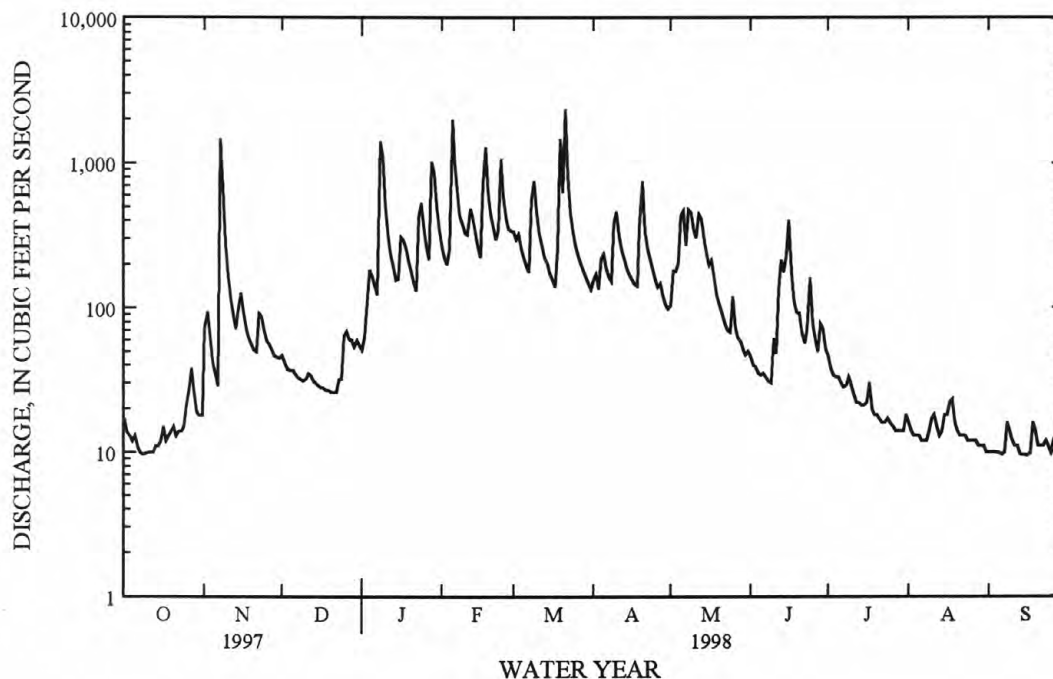
c Also Sept. 3, 1966.

d From floodmarks.

e Estimated.

f Also Sept. 17, 27, 1998.

g Result of freezeup.



POTOMAC RIVER BASIN

01635500 PASSAGE CREEK NEAR BUCKTON, VA

LOCATION.--Lat 38°57'29", long 78°16'01", Warren County, Hydrologic Unit 02070006, on right bank 350 ft upstream from bridge on State Highway 55, 1.2 mi south of Buckton railroad station, 1.4 mi upstream from mouth, and 4.2 mi west of Riverton.

DRAINAGE AREA.--87.8 mi².

PERIOD OF RECORD.--October 1905 to July 1906 (gage heights only), April 1932 to current year. Prior to October 1966 published as "at Buckton."

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 525.14 ft above sea level. October 1905 to July 1906, nonrecording gage at site 1 mi downstream at different datum. Apr. 4, 1932, to Oct. 7, 1937, nonrecording gage at site 350 ft downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Occasional diurnal fluctuation during low flow caused by State Fish Hatchery 2 mi upstream from station. At a point 14.2 mi upstream from station on Little Passage Creek, there has been a diversion in some years from Strasburg Reservoir, capacity, 54.6 acre-ft, by town of Strasburg for municipal water supply. There was no diversion during the year. Maximum discharge, 23,000 ft³/s, from rating curve extended above 5,200 ft³/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 7	2330	2,930	8.73	Mar. 19	1130	1,450	6.78
Jan. 8	2030	*3,270	*9.12	Mar. 21	0630	1,370	6.65
Jan. 28	2030	2,100	7.71	Apr. 9	2130	1,060	6.13
Feb. 5	0830	2,420	8.12	Apr. 20	0500	1,160	6.31
Feb. 17	2230	1,360	6.63	Jun. 15	2230	1,910	7.45

Minimum discharge, 3.0 ft³/s, Sept. 5, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	16	46	43	366	209	117	80	28	23	5.1	4.6
2	14	71	41	57	293	186	114	128	24	19	4.9	4.3
3	12	66	36	70	259	190	98	133	22	16	4.8	3.6
4	11	38	35	162	427	162	163	116	20	15	4.7	3.7
5	11	28	35	156	2090	144	190	372	19	15	4.5	3.2
6	9.9	22	33	125	1140	130	136	380	19	14	4.4	3.1
7	9.5	1240	31	109	664	119	120	206	19	13	4.3	3.4
8	9.0	1410	29	1580	523	185	113	314	17	13	4.3	5.0
9	8.5	399	28	1730	474	375	390	309	17	14	4.5	5.3
10	8.4	237	32	660	388	274	549	225	23	13	6.9	5.5
11	8.1	151	38	360	369	197	307	198	23	11	17	5.0
12	7.5	113	36	257	664	168	229	249	22	9.7	14	4.5
13	8.1	91	32	214	493	150	189	285	39	9.1	9.2	4.4
14	9.0	97	31	170	364	142	169	202	47	8.9	8.0	4.0
15	9.0	114	29	169	284	128	152	160	431	8.7	9.0	3.8
16	8.5	92	27	291	240	116	139	134	421	8.4	9.0	3.8
17	8.9	75	28	314	608	108	132	311	117	8.2	9.8	3.8
18	9.6	66	27	251	874	162	143	163	72	7.8	10	15
19	9.9	60	26	202	486	1020	219	121	59	7.1	8.9	6.2
20	9.9	56	25	171	382	554	778	97	56	6.8	7.2	5.2
21	9.1	54	25	143	328	1130	310	82	43	6.6	6.4	5.0
22	8.5	76	24	128	264	588	221	70	36	6.6	5.9	6.0
23	8.4	70	25	362	294	394	182	62	56	6.0	5.6	6.6
24	8.3	60	27	465	586	298	155	60	78	5.6	5.6	5.9
25	11	53	42	318	452	236	133	83	46	5.5	5.1	5.9
26	15	51	53	237	342	202	119	59	36	5.5	4.9	5.8
27	18	48	49	200	275	181	116	50	29	5.3	4.7	6.5
28	19	44	50	1080	238	162	100	47	28	5.3	4.5	6.1
29	13	42	46	1180	---	146	88	40	33	5.2	4.4	5.3
30	11	41	52	751	---	133	82	35	29	5.1	4.1	5.0
31	11	---	50	517	---	121	---	31	---	5.3	4.3	---
TOTAL	333.1	4981	1088	12472	14167	8310	5953	4802	1909	302.7	206.0	155.5
MEAN	10.7	166	35.1	402	506	268	198	155	63.6	9.76	6.65	5.18
MAX	19	1410	53	1730	2090	1130	778	380	431	23	17	15
MIN	7.5	16	24	43	238	108	82	31	17	5.1	4.1	3.1
CFSM	.12	1.89	.40	4.58	5.76	3.05	2.26	1.76	.72	.11	.08	.06
IN.	.14	2.11	.46	5.28	6.00	3.52	2.52	2.03	.81	.13	.09	.07

POTOMAC RIVER BASIN

01635500 PASSAGE CREEK NEAR BUCKTON, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	39.9	43.8	68.1	100	121	157	136	95.3	51.9	18.3	25.7	27.1
MAX	581	276	235	431	506	573	377	339	609	87.3	437	432
(WY)	1943	1986	1973	1996	1998	1994	1952	1989	1972	1941	1955	1996
MIN	2.85	4.48	4.60	6.25	5.79	20.5	20.9	14.6	6.01	1.87	1.94	2.37
(WY)	1964	1966	1966	1966	1934	1959	1981	1963	1977	1934	1963	1936

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

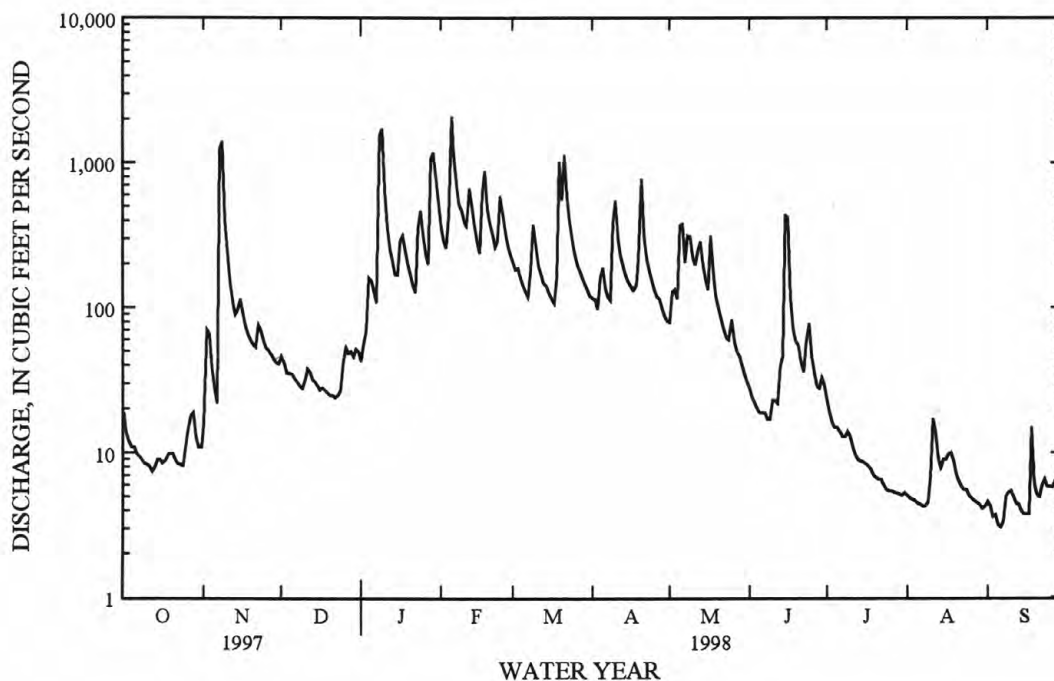
FOR 1998 WATER YEAR

WATER YEARS 1933 - 1998

ANNUAL TOTAL	29414.9	54679.3	73.5	
ANNUAL MEAN	80.6	150		
HIGHEST ANNUAL MEAN			161	1996
LOWEST ANNUAL MEAN			20.0	1934
HIGHEST DAILY MEAN	1830	Jun 2	2090	Feb 5
LOWEST DAILY MEAN	4.4	Sep 7	3.1	Sep 6
ANNUAL SEVEN-DAY MINIMUM	5.1	Sep 3	3.7	Sep 1
INSTANTANEOUS PEAK FLOW			3270	Jan 8
INSTANTANEOUS PEAK STAGE			9.12	Jan 8
INSTANTANEOUS LOW FLOW			3.0	aSep 5
ANNUAL RUNOFF (CFSM)	.92		1.71	
ANNUAL RUNOFF (INCHES)	12.46		23.17	
10 PERCENT EXCEEDS	133		381	
50 PERCENT EXCEEDS	46		47	
90 PERCENT EXCEEDS	8.1		5.3	

a Also Sept. 6, 1997.

b Observed.



POTOMAC RIVER BASIN

01636500 SHENANDOAH RIVER AT MILLVILLE, WV

LOCATION.--Lat 39°16'55", long 77°47'22", Jefferson County, Hydrologic Unit 02070007, on left bank 0.4 mi downstream from Cattail Run, 1.0 mi upstream from Millville, 5.0 mi upstream from Harpers Ferry, and at mile 4.7.

DRAINAGE AREA.--3,022 mi².

PERIOD OF RECORD.--April 1895 to March 1909, August 1928 to current year.

REVISED RECORDS.--WSP 951: 1936(M). WSP 1432: Drainage area at former site, 1895-99, 1901-02, 1905, 1907-08, 1932(M), 1935(M). WDR WV-97-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 293.00 ft above sea level. Apr. 15, 1895, to Mar. 31, 1909, nonrecording gage at site 0.8 mi downstream at datum 0.32 ft higher.

REMARKS.--No estimated daily discharges. Records good. Some regulation by upstream hydroelectric plants, including that of Potomac Light and Power Company, 0.5 mi upstream from station. National Weather Service gage-height telemeter and U.S. Army Corps of Engineers satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1870 reached practically same stage as flood of Mar. 18, 1936, 26.36 ft, discharge, 151,000 ft³/s.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 15,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage Height (ft)	Date	Time	Discharge (ft ³ /s)	Gage Height (ft)
Nov. 8	2130	22,100	9.97	Feb. 25	0500	18,700	9.17
Jan. 9	2100	*52,300	*15.35	Mar. 10	2300	18,500	9.13
Jan. 29	1900	28,600	11.35	Mar. 22	1245	33,700	12.31
Feb. 6	0700	48,000	14.70	Apr. 21	1215	15,200	8.27
Feb. 13	1200	20,200	9.53	May 10	0300	15,200	8.26
Feb. 19	0600	50,800	15.13				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1100	964	1770	1850	13900	10500	5350	3820	2510	1930	998	736
2	1270	1420	1740	1800	10900	10600	5240	4000	2390	2070	973	693
3	1050	1580	1690	1810	9180	10300	5180	4430	2330	1860	935	701
4	954	1550	1660	2010	8740	9680	4970	5050	2160	1730	922	704
5	879	1730	1620	2540	25300	8380	5280	5510	2080	1680	910	701
6	831	1500	1570	3050	43000	7350	6410	8850	2020	1710	898	687
7	778	3090	1520	3490	26900	6600	6400	8160	1940	1630	882	680
8	781	19200	1450	10300	19000	6150	5780	8020	1910	1600	862	702
9	795	18600	1400	38700	15200	7860	5520	10800	1890	1580	847	721
10	733	11400	1500	36000	13300	15400	7210	14600	1960	1540	855	716
11	736	7170	1390	17000	11600	16800	9020	11800	2070	1470	943	740
12	711	5150	1450	11400	12300	12400	8960	9530	2100	1450	1080	807
13	687	4180	1440	8650	18600	9730	7660	9060	2240	1410	1060	828
14	687	3590	1470	6970	18100	8160	6590	8330	2710	1370	1020	760
15	708	3450	1420	5980	14200	7120	5820	7100	2450	1310	1040	727
16	727	3280	1400	5990	11400	6300	5310	6110	4440	1270	1010	722
17	698	3100	1380	7170	10600	5640	4900	5480	4280	1270	977	707
18	681	2800	1390	7580	33400	5430	4610	5460	3520	1260	1020	694
19	685	2550	1380	6730	44400	8850	4580	6060	3200	1240	1100	719
20	701	2390	1360	5940	25100	17800	7200	5130	2910	1390	1080	722
21	676	2280	1320	5270	19200	25500	13400	4460	2430	1270	1350	693
22	707	2290	1260	4790	16100	31200	11100	4020	2820	1190	1110	715
23	679	2300	1280	4980	13800	22700	8460	3710	2510	1130	1010	742
24	661	2230	1290	8160	15900	15300	7040	3390	2830	1120	942	722
25	672	2140	1390	11900	17900	11800	6060	3320	2600	1040	921	709
26	713	2040	1480	10300	14800	9710	5390	3430	2370	1050	888	720
27	814	1960	1570	8580	12700	8300	4910	3200	2220	1030	858	718
28	846	1860	1740	11400	11200	7360	4570	3000	2060	1030	841	717
29	908	1820	1800	26400	---	6610	4280	2820	2000	999	831	712
30	893	1800	1870	23000	---	6060	4030	2850	1960	1000	799	692
31	912	---	1920	17100	---	5640	---	2720	---	1050	782	---
TOTAL	24673	119414	46920	316840	506720	341230	191230	184220	74910	42679	29744	21607
MEAN	796	3980	1514	10220	18100	11010	6374	5943	2497	1377	959	720
MAX	1270	19200	1920	38700	44400	31200	13400	14600	4440	2070	1350	828
MIN	661	964	1260	1800	8740	5430	4030	2720	1890	999	782	680
CFSM	.26	1.32	.50	3.38	5.99	3.64	2.11	1.97	.83	.46	.32	.24
IN.	.30	1.47	.58	3.90	6.24	4.20	2.35	2.27	.92	.53	.37	.27

POTOMAC RIVER BASIN

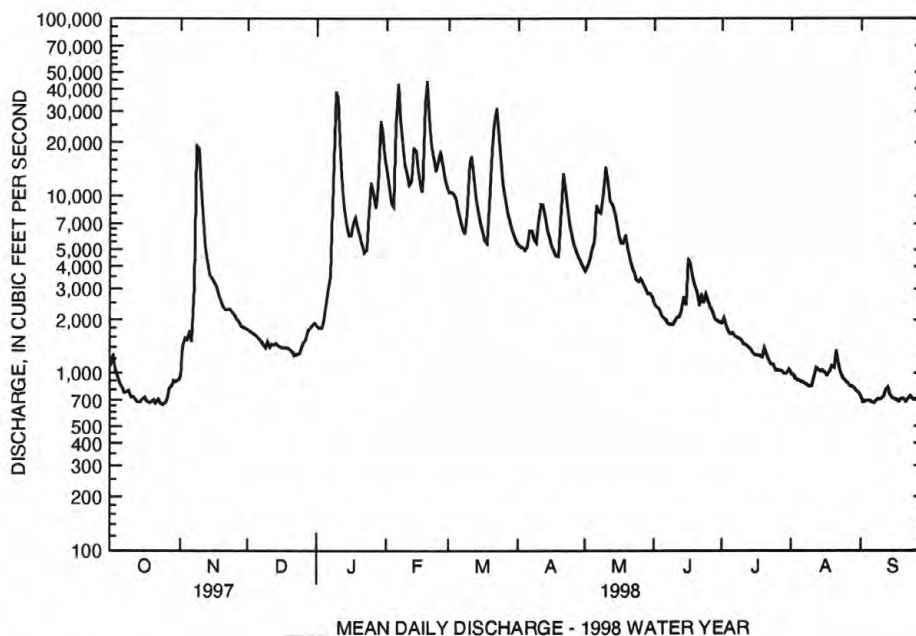
01636500 SHENANDOAH RIVER AT MILLVILLE, WV--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1895 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1954	1882	2511	3293	3988	5102	4409	3387	2418	1459	1647	1458
MAX	16250	13350	8164	13470	18100	17540	12840	8701	10380	4809	10390	14780
(WY)	1943	1986	1973	1996	1998	1936	1901	1901	1972	1972	1955	1996
MIN	343	388	410	503	542	929	992	1001	660	402	388	411
(WY)	1931	1932	1966	1966	1931	1931	1981	1969	1977	1966	1930	1963

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1895 - 1998	
ANNUAL TOTAL	967886		1900187			
ANNUAL MEAN	2652		5206		2786	
HIGHEST ANNUAL MEAN					5618	1996
LOWEST ANNUAL MEAN					1111	1981
HIGHEST DAILY MEAN	20200	Mar 5	44400	Feb 19	192000	Oct 16 1942
LOWEST DAILY MEAN	643	Sep 9	661	Oct 24	194	Jul 24 1930
ANNUAL SEVEN-DAY MINIMUM	683	Oct 19	683	Oct 19	240	Sep 7 1966
INSTANTANEOUS PEAK FLOW			52300	Jan 9	230000	Oct 16 1942
INSTANTANEOUS PEAK STAGE			15.35	Jan 9	(a) 32.40	Oct 16 1942
INSTANTANEOUS LOW FLOW			649	Oct 24	59	Oct 4 1930
ANNUAL RUNOFF (CFSM)	.88		1.72		.92	
ANNUAL RUNOFF (INCHES)	11.91		23.39		12.53	
10 PERCENT EXCEEDS	4680		12900		5630	
50 PERCENT EXCEEDS	1860		2220		1620	
90 PERCENT EXCEEDS	792		722		613	

a From floodmarks.



POTOMAC RIVER BASIN

01638480 CATOCTIN CREEK AT TAYLORSTOWN, VA

LOCATION.--Lat 39°15'18", long 77°34'36", Loudoun County, Hydrologic Unit 02070008, on left bank at downstream side of bridge on State Highway 663 at Taylorstown and 3.2 mi downstream from Milltown Creek.

DRAINAGE AREA.--89.6 mi².

PERIOD OF RECORD.--August 1971 to current year.

GAGE.--Water-stage recorder. Datum of gage is 247.37 ft above sea level. Prior to Nov. 3, 1983, at site 60 ft upstream at datum 1.78 ft higher.

REMARKS.--Records good except those for period with ice effect, Jan. 1 and period of doubtful gage-height record, July 4, 5, which are fair. Maximum discharge, 23,800 ft³/s, from rating curve extended above 7,400 ft³/s on basis of contracted-opening measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 7	2000	2,100	7.77	Feb. 24	0245	1,320	6.44
Jan. 8	1200	7,070	13.37	Mar. 19	0400	2,600	8.56
Jan. 23	1630	1,830	7.33	Mar. 21	0400	*7,140	*13.43
Jan. 28	1600	3,970	10.33	Apr. 9	1740	1,870	7.39
Feb. 5	0730	2,770	8.81	May 8	1030	1,330	6.47

Minimum discharge, 0.92 ft³/s, Sept. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.1	53	49	e42	280	224	306	101	54	60	19	2.9
2	4.6	120	42	48	245	209	295	198	50	49	14	2.7
3	3.3	79	35	56	226	382	190	167	51	44	11	2.7
4	2.7	32	34	69	663	232	209	130	48	42	9.9	2.5
5	2.1	20	35	69	2050	194	196	118	45	e34	9.2	2.0
6	1.9	16	31	63	589	174	160	154	45	e28	7.6	1.6
7	1.6	518	29	62	385	161	146	116	42	26	6.7	1.6
8	1.7	904	27	3730	309	313	141	648	39	34	6.7	1.9
9	1.9	269	27	857	258	737	598	524	38	41	6.7	2.0
10	2.6	156	30	436	227	390	413	318	46	33	7.9	4.0
11	2.4	105	40	344	209	272	247	277	53	26	11	3.5
12	2.6	79	36	295	262	232	198	361	80	23	11	2.8
13	2.8	64	32	269	194	209	172	346	186	21	8.2	2.1
14	3.0	92	30	236	170	198	161	245	297	21	6.9	1.6
15	4.0	110	29	286	154	177	152	203	121	20	8.3	1.3
16	5.7	75	27	675	144	163	142	178	121	21	11	1.2
17	4.8	61	26	334	295	152	145	159	223	21	12	1.1
18	4.0	52	26	328	584	263	148	137	104	20	15	1.2
19	4.3	47	24	251	310	1330	196	122	82	17	12	1.2
20	4.3	44	24	215	250	518	438	109	90	16	8.1	2.9
21	4.1	42	24	184	227	4160	209	101	67	17	6.6	2.8
22	3.7	106	24	169	195	650	172	92	60	18	6.4	2.5
23	3.8	81	29	831	317	411	156	86	78	17	5.9	3.1
24	3.8	61	31	475	984	332	142	86	66	16	5.4	3.1
25	6.4	51	86	306	388	281	126	99	58	14	4.6	2.7
26	12	47	75	249	295	244	118	82	47	13	4.4	2.6
27	22	44	56	210	256	218	124	74	42	13	10	2.3
28	17	40	66	2420	231	196	108	73	186	12	16	1.9
29	10	39	57	840	---	178	99	67	111	12	6.9	1.6
30	6.7	39	61	433	---	163	95	62	75	11	4.2	1.3
31	5.0	---	55	337	---	150	---	58	---	21	3.4	---
TOTAL	162.9	3446	1197	15119	10697	13513	6002	5491	2605	761	276.0	66.7
MEAN	5.25	115	38.6	488	382	436	200	177	86.8	24.5	8.90	2.22
MAX	22	904	86	3730	2050	4160	598	648	297	60	19	4.0
MIN	1.6	16	24	42	144	150	95	58	38	11	3.4	1.1
CFSM	.06	1.28	.43	5.44	4.26	4.86	2.23	1.98	.97	.27	.10	.02
IN.	.07	1.43	.50	6.28	4.44	5.61	2.49	2.28	1.08	.32	.11	.03

e Estimated.

POTOMAC RIVER BASIN

01638480 CATOCTIN CREEK AT TAYLORSTOWN, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1971 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	68.6	63.8	119	143	153	196	165	126	94.9	49.5	33.0	46.8
MAX	414	148	358	488	382	580	476	445	706	284	186	281
(WY)	1977	1997	1997	1998	1998	1993	1983	1989	1972	1987	1984	1979
MIN	2.07	5.16	10.1	10.2	40.4	43.7	48.6	31.4	7.53	2.80	2.02	1.05
(WY)	1987	1992	1981	1981	1992	1981	1985	1977	1986	1986	1991	1986

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1971 - 1998

ANNUAL TOTAL	23920.9	59336.6	
ANNUAL MEAN	65.5	163	
HIGHEST ANNUAL MEAN			104
LOWEST ANNUAL MEAN			196
HIGHEST DAILY MEAN	904	Nov 8	4160
LOWEST DAILY MEAN	1.4	aSep 2	1.1
ANNUAL SEVEN-DAY MINIMUM	1.5	bSep 1	1.4
INSTANTANEOUS PEAK FLOW			7140
INSTANTANEOUS PEAK STAGE			13.43
INSTANTANEOUS LOW FLOW			.92
ANNUAL RUNOFF (CFSM)	.73		1.81
ANNUAL RUNOFF (INCHES)	9.93		24.64
10 PERCENT EXCEEDS	146		333
50 PERCENT EXCEEDS	39		60
90 PERCENT EXCEEDS	2.7		3.0

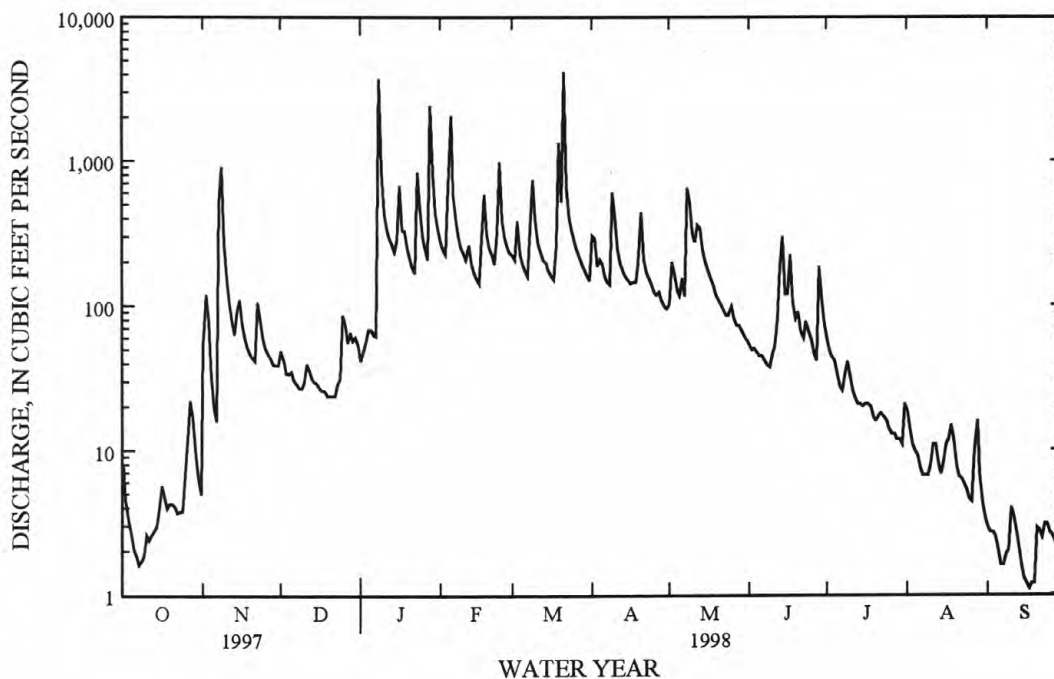
a Also Sept. 4, 5, 1997.

b Also Sept. 2, 1997.

c From floodmarks, site and datum then in use.

d Also Sept. 4, 1991.

e Estimated.



POTOMAC RIVER BASIN

01638500 POTOMAC RIVER AT POINT OF ROCKS, MD

LOCATION.--Lat 39°16'25", long 77°32'35", Frederick County, Hydrologic Unit 02070008, on left bank at downstream side of bridge on U.S. Highway 15 at Point of Rocks, 0.3 mi downstream from Catoctin Creek (Virginia), 6 mi upstream from Monocacy River, and at mile 159.5.

DRAINAGE AREA.--9,651 mi².

PERIOD OF RECORD.--February 1895 to current year.

REVISED RECORDS.--WSP 192: 1895-1905. WSP 1432: 1899, 1901-2, 1904-5, 1912, 1914(M), 1915, 1917(M), 1918, 1919(M), 1920, 1921-23(M), 1924, 1925-28(M), 1930(M).

GAGE.--Water-stage recorder. Datum of gage is 200.63 ft above sea level. Prior to Oct. 28, 1929, nonrecording gage at same site. Prior to Sept. 2, 1902, at datum about 0.45 ft higher.

REMARKS.--No estimated daily discharges. Records good. Low flow affected slightly from 1913 to July 1981 by Stony River Reservoir; since December 1950 by Savage River Reservoir (see station 01597500); and since July 1981 by Jennings Randolph Lake. Low flow affected extensively at times by run-of-the-river hydroelectric plants. National Weather Service gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 2, 1889, reached a stage of 40.2 ft, from floodmarks, discharge, about 460,000 ft³/s from rating curve extended as explained in footnotes.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 35,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov 9	0230	99,100	17.37	Mar 2	2030	39,600	9.26
Jan 10	0330	122,000	20.07	Mar 11	0730	62,300	12.64
Jan 25	1330	36,000	8.68	Mar 22	1600	*123,000	*20.24
Jan 29	2100	65,200	13.04	Apr 11	1300	38,700	9.12
Feb 6	1330	104,000	17.99	Apr 21	1100	70,200	13.71
Feb 14	1000	46,100	10.28	May 7	0730	39,800	9.30
Feb 19	1200	106,000	18.23	May 10	0200	51,600	11.10
Feb 25	1200	74,700	14.30	May 13	1830	35,300	8.57

Minimum discharge, 1,500 ft³/s, Sep 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2790	2430	6400	7380	36700	37000	16900	13400	6570	6390	2850	1980
2	3480	3340	7030	6810	29400	38300	16500	14400	6610	8200	2850	1970
3	2950	5920	8680	6540	24700	37900	16000	17300	6580	6980	2930	1860
4	2780	7430	7740	7330	23500	33900	14900	19200	6020	6330	2780	1610
5	2480	6760	7100	11600	43900	29000	14100	17800	5930	5510	2480	1730
6	2090	5830	6600	14300	96600	24600	15600	24900	5530	4980	2360	1670
7	2100	6750	6170	14600	73000	21500	17400	38200	5080	4610	2270	1740
8	1950	55300	5770	28400	51300	19700	15800	35200	4870	4610	2190	1850
9	1850	85000	5480	79900	40200	24800	15700	45500	4740	5150	2160	1970
10	1930	45400	5300	105000	34600	48200	19900	48700	4830	6040	2150	1820
11	1780	27100	5180	56100	30600	59400	36500	38200	4930	5510	2340	1710
12	1730	18900	5610	37200	30300	44400	32600	31800	5070	4750	2930	1940
13	1730	14500	5840	27900	40200	33300	25800	33900	5960	4190	3110	1820
14	1770	12100	6060	22500	45100	27500	21300	32900	7090	3960	3290	1910
15	1650	11600	6130	19400	37700	23600	18600	27100	7550	3670	3120	2060
16	1610	12600	5880	19800	30200	20300	16900	22400	8860	3450	2880	1800
17	1630	11500	5570	21100	26300	18000	15400	19100	10200	3350	3190	1800
18	1720	10200	5280	22100	52300	16800	14100	17700	10600	3380	3460	1820
19	1680	9070	5150	20900	99500	21400	13600	16700	9870	3280	3500	1750
20	1680	8130	4950	18800	74400	35100	36400	14400	9300	3260	3480	1650
21	1690	7540	4690	16600	57100	69000	47600	12300	9110	3300	3430	1700
22	1650	7340	4430	14800	47900	113000	48600	11000	10500	2960	3100	1870
23	1640	7780	4430	15700	41200	89000	32600	9940	8980	2900	2800	1800
24	1650	8870	4460	23200	50300	53600	25400	9170	8660	3010	2610	1820
25	1630	8900	4800	34800	72000	39500	21300	8700	10500	2810	2490	2080
26	1760	8370	5710	32400	60200	31800	18400	8600	8610	2700	2930	2010
27	1970	7800	7160	26900	50200	26900	16500	8310	6920	2500	2710	1910
28	2150	7220	7650	31100	41000	23400	16600	8160	6460	2540	2260	1860
29	2650	6740	7800	57400	---	20900	16000	7440	5680	2510	2150	1690
30	2350	6520	7870	54600	---	19300	14600	7130	5450	2490	2060	1740
31	2240	---	7630	42800	---	17800	---	6840	---	2920	2010	---
TOTAL	62760	436940	188550	897960	1340400	1118900	671600	626390	217060	128240	84870	54940
MEAN	2025	14560	6082	28970	47870	36090	22390	20210	7235	4137	2738	1831
MAX	3480	85000	8680	105000	99500	113000	67600	48700	10600	8200	3500	2080
MIN	1610	2430	4430	6540	23500	16800	13600	6840	4740	2490	2010	1610
CFSM	.21	1.51	.63	3.00	4.96	3.74	2.32	2.09	.75	.43	.28	.19
IN.	.24	1.68	.73	3.46	5.17	4.31	2.59	2.41	.84	.49	.33	.21

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1895 - 1998, BY WATER YEAR (WY)

	MEAN	5056	5722	8652	11650	14600	19900	16540	12410	8023	4545	4299	3774
MAX	37030	39000	32610	42160	47870	68360	43840	41970	40400	16000	23580	38300	
(WY)	1943	1986	1973	1996	1998	1936	1993	1924	1972	1949	1955	1996	
MIN	706	840	1253	1703	2661	5400	4368	3276	1932	1056	771	834	
(WY)	1931	1931	1966	1981	1934	1931	1915	1930	1969	1966	1930	1930	

POTOMAC RIVER BASIN

01638500 POTOMAC RIVER AT POINT OF ROCKS, MD--Continued

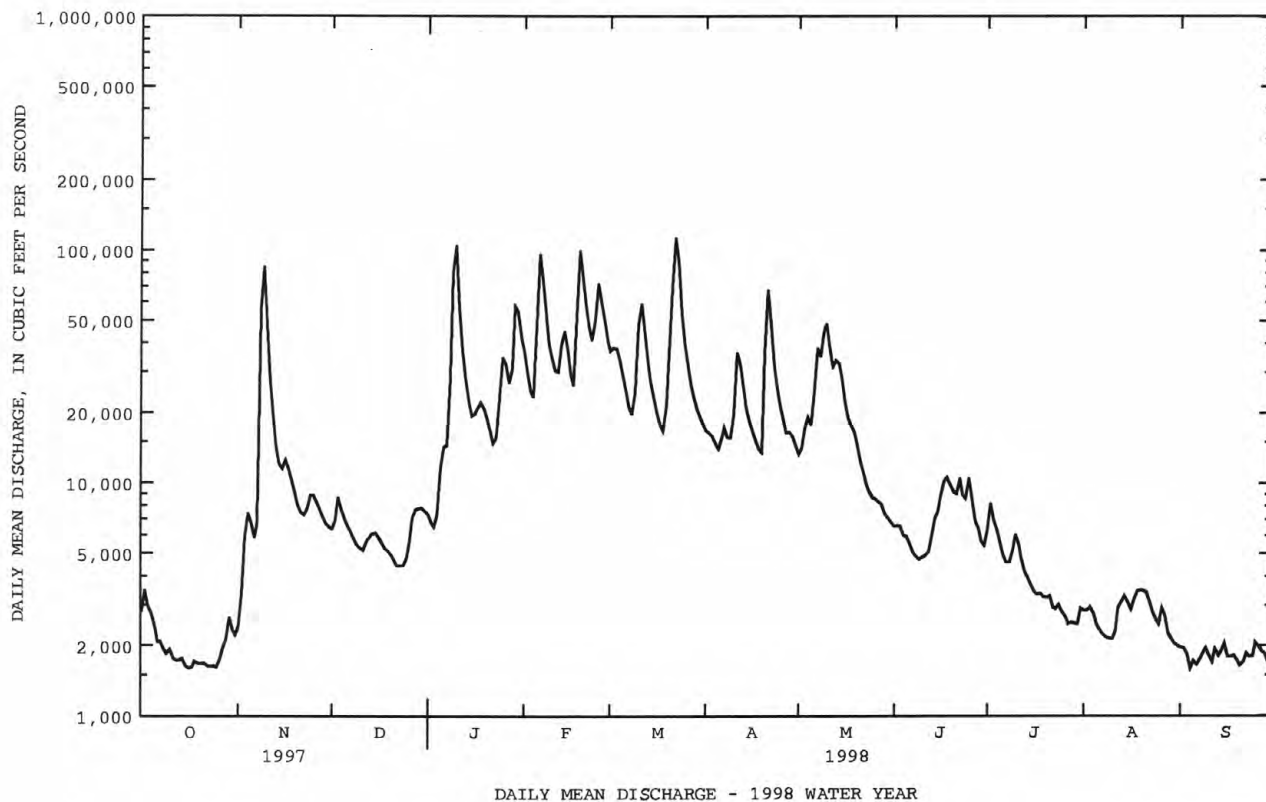
SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1895 - 1998	
ANNUAL TOTAL	3089020		5828610		9582	
ANNUAL MEAN	8463		15970		18750	
HIGHEST ANNUAL MEAN					4366	
LOWEST ANNUAL MEAN					434000	
HIGHEST DAILY MEAN	85000	Nov 9	113000	Mar 22	540	Mar 19 1936
LOWEST DAILY MEAN	1560	(a)	1610	(b)	593	Sep 10 1914
ANNUAL SEVEN-DAY MINIMUM	1600	Sep 3	1660	Oct 19	593	Sep 6 1966
INSTANTANEOUS PEAK FLOW			123000	Mar 22	(c) 480000	Mar 19 1936
INSTANTANEOUS PEAK STAGE			20.24	Mar 22	41.03	Mar 19 1936
INSTANTANEOUS LOW FLOW			1500	Sep 4	530	(d)
ANNUAL RUNOFF (CFSM)	.88		1.65		.99	
ANNUAL RUNOFF (INCHES)	11.91		22.47		13.49	
10 PERCENT EXCEEDS	17700		40500		20900	
50 PERCENT EXCEEDS	5940		7440		5430	
90 PERCENT EXCEEDS	1830		1860		1690	

a Sept. 5, 9.

b Oct. 16, 1997, Sept. 4, 1998.

c From rating curve extended above 300,000 ft³/s, on the basis of adjustment of figure of peak flow at station near Washington for inflow and storage, and slope-area measurement of peak flow.

d Sept. 11, 12, 1966.



POTOMAC RIVER BASIN

01644000 GOOSE CREEK NEAR LEESBURG, VA

LOCATION.--Lat 39°01'10", long 77°34'40", Loudoun County, Hydrologic Unit 02070008, on left bank 400 ft upstream from bridge on State Highway 621 at Evergreen Mills, 1.4 mi downstream from Little River, 6.7 mi south of Leesburg, and 10.9 mi upstream from mouth.

DRAINAGE AREA.--332 mi².

PERIOD OF RECORD.--July 1909 to April 1911, September 1911 to December 1912, January 1930 to current year.

REVISED RECORDS.--WSP 851: 1935-37. WSP 951: 1933(M), 1937. WSP 1302: 1934-35(M). WSP 2103: Drainage area. WDR VA-72-1: 1937(M), 1943(M), 1951(M), 1956(M). WDR VA-79-1: 1978.

GAGE.--Water-stage recorder. Datum of gage is 248.93 ft above sea level. July 12, 1909, to Dec. 31, 1912, nonrecording gage at site 1,000 ft downstream at different datum. Jan. 21, 1930, to Nov. 28, 1938, nonrecording gage at site 400 ft downstream at datum 4.20 ft lower than present datum.

REMARKS.--Records good except for period of doubtful gage-height record, Jan. 6, 7, which is fair. National Weather Service gage-height telemeter at station. Maximum discharge, 78,100 ft³/s, from rating curve extended above 11,000 ft³/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May or June 1889 reached a stage of about 29 ft, discharge, about 45,000 ft³/s, site and datum in use 1930-38, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 7	2330	6,210	9.68	Feb. 5	0930	8,390	12.26
Jan. 9	0100	8,090	11.95	Feb. 18	0300	4,960	8.04
Jan. 23	2000	4,530	7.40	Mar. 19	0900	4,750	7.73
Jan. 29	0100	10,300	14.02	Mar. 21	1330	*16,500	*17.43

Minimum discharge, 3.4 ft³/s, Sept. 14, 16, 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	134	184	158	1120	879	677	350	195	249	31	8.4
2	20	512	163	186	940	794	876	697	178	192	28	8.0
3	13	408	141	198	832	985	578	606	211	161	25	7.5
4	10	167	138	235	2270	749	662	543	180	147	23	6.8
5	9.0	113	139	278	7470	654	690	476	168	144	21	6.3
6	8.1	87	132	e240	2970	595	541	491	163	133	19	5.9
7	8.1	1930	120	e225	1880	558	490	417	155	121	18	5.4
8	6.8	3340	114	3300	1470	916	471	2040	143	126	17	8.0
9	6.2	1180	112	3740	1160	2310	954	1950	137	142	18	13
10	6.0	729	123	1380	988	1540	1590	1210	180	136	21	6.8
11	5.9	502	148	955	884	1090	871	1020	240	112	29	5.3
12	6.3	392	138	736	1210	906	711	1070	445	93	26	4.3
13	6.5	322	126	645	850	791	625	1050	702	85	28	3.7
14	6.4	412	119	535	728	734	567	793	979	79	23	3.5
15	8.7	453	113	638	661	659	536	684	447	74	22	3.7
16	15	332	108	1930	609	591	497	596	1070	72	48	3.4
17	10	272	107	1050	1400	552	492	535	1440	72	41	3.6
18	22	236	105	998	3260	848	476	463	501	71	49	12
19	23	219	102	779	1870	3190	500	415	362	63	38	19
20	25	204	99	679	1400	1800	1410	378	316	57	27	9.6
21	23	199	98	581	1170	11800	769	348	254	52	22	6.3
22	19	378	98	526	948	3500	649	323	230	47	19	5.6
23	16	317	115	2170	1180	2080	580	304	319	43	18	5.0
24	17	253	123	2040	3100	1520	520	302	706	45	16	4.4
25	26	219	241	1380	1670	1210	455	336	301	45	14	4.1
26	44	205	268	1060	1280	1030	420	300	224	47	12	4.5
27	65	196	214	879	1100	910	422	266	188	44	27	5.5
28	71	177	242	6260	969	815	385	269	526	37	19	5.2
29	54	170	218	5500	---	729	346	244	461	33	12	4.8
30	40	168	230	2030	---	673	327	221	311	31	9.8	4.4
31	32	---	218	1450	---	609	---	207	---	31	9.1	---
TOTAL	660.0	14226	4596	42761	45389	46017	19087	18904	11732	2784	729.9	194.0
MEAN	21.3	474	148	1379	1621	1484	636	610	391	89.8	23.5	6.47
MAX	71	3340	268	6260	7470	11800	1590	2040	1440	249	49	19
MIN	5.9	87	98	158	609	552	327	207	137	31	9.1	3.4
CF5M	.06	1.43	.45	4.15	4.88	4.47	1.92	1.84	1.18	.27	.07	.02
IN.	.07	1.59	.51	4.79	5.09	5.16	2.14	2.12	1.31	.31	.08	.02

e Estimated.

POTOMAC RIVER BASIN

01644000 GOOSE CREEK NEAR LEESBURG, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 1913, 1930 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	197	223	334	421	521	599	519	372	263	141	157	134
MAX	2265	1155	1316	1499	1621	1892	1766	1322	2887	1207	1188	1054
(WY)	1943	1933	1993	1996	1998	1993	1983	1989	1972	1956	1937	1945
MIN	2.12	3.83	14.8	25.8	26.3	83.6	141	85.5	38.7	9.61	1.86	1.38
(WY)	1931	1931	1966	1966	1931	1931	1981	1969	1986	1966	1930	1985

SUMMARY STATISTICS

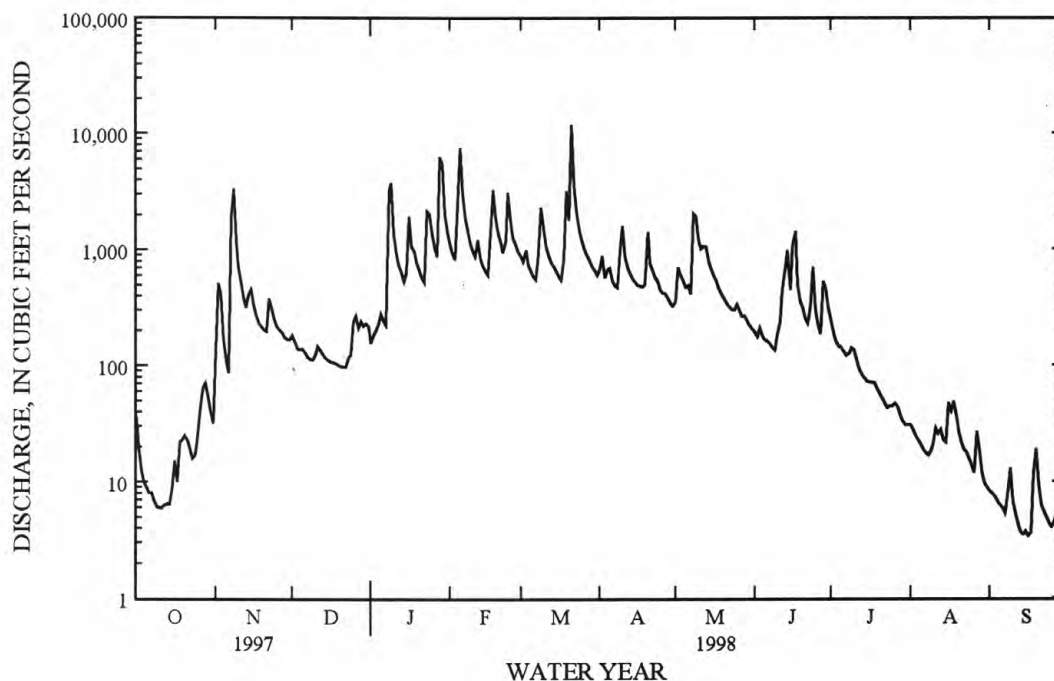
FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1910 - 1912
1930 - 1998

ANNUAL TOTAL	94421.4	207079.9	
ANNUAL MEAN	259	567	326
HIGHEST ANNUAL MEAN			664
LOWEST ANNUAL MEAN			55.2
HIGHEST DAILY MEAN	3650	Mar 4	11800
LOWEST DAILY MEAN	3.8	Sep 2	3.4
ANNUAL SEVEN-DAY MINIMUM	5.5	Aug 27	3.9
INSTANTANEOUS PEAK FLOW			16500
INSTANTANEOUS PEAK STAGE			17.43
INSTANTANEOUS LOW FLOW			3.4
ANNUAL RUNOFF (CFSM)	.78		1.71
ANNUAL RUNOFF (INCHES)	10.58		23.20
10 PERCENT EXCEEDS	553		1380
50 PERCENT EXCEEDS	140		235
90 PERCENT EXCEEDS	9.4		8.9

- a Also Sept. 28-30, 1941.
b From high-water mark in gage house.
c Also Sept. 16, 17, 1998.
d Not determined.
e Estimated.
f Probably occurred Sept. 27-30, 1941.



POTOMAC RIVER BASIN

01646000 DIFFICULT RUN NEAR GREAT FALLS, VA

LOCATION.--Lat 38°58'33", long 77°14'46", Fairfax County, Hydrologic Unit 02070008, on right bank 250 ft downstream from bridge on State Highway 193, 300 ft downstream from Rocky Run, 0.7 mi upstream from mouth, and 1.5 mi southeast of Great Falls.

DRAINAGE AREA.--57.9 mi².

PERIOD OF RECORD.--October 1934 to current year. Monthly discharge only October to December 1934, published in WSP 1302.

REVISED RECORDS.--WSP 951: 1936(M), 1937-38, 1939-40(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 151.30 ft above sea level.

REMARKS.--Records good except those for periods of doubtful gage-height record, Dec. 16-21, and June 8, 9, which are fair. Maximum discharge, 32,200 ft³/s, from rating curve extended above 1,600 ft³/s on basis of contracted-opening measurement at gage height 13.18 ft and slope-area measurement at gage height 21.40 ft. Minimum gage height, 1.65 ft, Sept. 9, 10, 1966. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 8	0100	1,540	8.16	Feb. 18	0330	1,000	7.02
Jan. 23	2030	1,320	7.71	Feb. 23	2400	1,160	7.38
Jan. 28	1900	2,060	9.08	Mar. 19	0700	1,260	7.59
Feb. 5	0430	2,180	9.29	Mar. 21	0630	*3,030	*10.51

Minimum discharge, 4.7 ft³/s, Sept. 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	126	39	44	73	84	117	108	40	48	26	6.1
2	13	122	39	43	67	93	360	216	38	35	18	8.2
3	13	85	30	45	68	387	108	230	50	33	16	7.3
4	13	39	32	44	676	121	168	195	36	32	15	6.3
5	13	29	33	41	1480	94	112	118	36	32	13	6.0
6	12	26	31	41	224	85	89	215	36	29	12	5.5
7	12	600	30	52	126	80	84	103	33	28	12	5.4
8	11	721	30	95	99	184	82	402	e31	91	12	28
9	12	261	32	63	93	499	373	144	e30	51	12	10
10	12	92	45	50	86	155	217	107	56	34	175	5.9
11	11	57	53	44	71	100	112	104	44	29	83	5.7
12	11	45	36	42	131	89	93	227	231	27	29	5.3
13	12	42	32	44	75	82	86	155	196	26	19	6.4
14	12	197	31	40	67	81	84	93	114	25	17	5.3
15	20	99	31	112	63	76	82	79	185	25	16	5.3
16	17	54	e30	217	61	74	78	71	265	25	15	5.0
17	16	48	e30	73	333	72	135	67	83	24	15	7.5
18	173	51	e29	65	484	227	124	63	54	33	19	45
19	35	47	e29	55	136	753	131	59	48	23	13	12
20	22	42	e28	51	102	212	247	57	102	22	12	7.7
21	18	48	e28	47	90	1510	101	54	49	24	11	7.2
22	16	122	35	45	78	275	86	51	45	37	11	65
23	19	58	72	634	325	151	82	50	50	22	10	19
24	19	47	44	290	880	120	78	49	154	23	10	8.2
25	155	43	139	120	185	106	73	64	53	19	9.4	6.4
26	49	43	60	75	116	100	70	49	42	21	8.3	7.8
27	149	40	57	66	99	96	82	47	38	20	8.3	6.9
28	38	38	77	1380	91	92	69	47	109	18	8.6	7.3
29	25	36	54	419	---	87	67	44	59	18	7.3	5.6
30	22	33	60	115	---	84	66	42	45	17	6.9	7.5
31	21	---	56	76	---	82	---	40	---	58	6.3	---
TOTAL	986	3291	1352	4528	6379	6251	3656	3350	2352	949	646.1	334.8
MEAN	31.8	110	43.6	146	228	202	122	108	78.4	30.6	20.8	11.2
MAX	173	721	139	1380	1480	1510	373	402	265	91	175	65
MIN	11	26	28	40	61	72	66	40	30	17	6.3	5.0
CFSM	.55	1.89	.75	2.52	3.93	3.48	2.10	1.87	1.35	.53	.36	.19
IN.	.63	2.11	.87	2.91	4.10	4.02	2.35	2.15	1.51	.61	.42	.22

e Estimated.

POTOMAC RIVER BASIN

01646000 DIFFICULT RUN NEAR GREAT FALLS, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	40.4	51.2	61.0	75.3	83.1	90.6	82.5	72.1	67.9	41.3	38.2	36.4
MAX	317	116	165	194	228	227	224	203	1210	115	143	245
(WY)	1980	1973	1997	1996	1998	1993	1973	1989	1972	1975	1955	1975
MIN	4.69	7.75	11.4	16.5	32.4	33.2	31.5	21.8	10.0	4.52	1.88	5.57
(WY)	1942	1942	1966	1966	1942	1981	1985	1955	1986	1955	1966	1986

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1935 - 1998

ANNUAL TOTAL	25582.4	34074.9	61.5	
ANNUAL MEAN	70.1	93.4	184	1972
HIGHEST ANNUAL MEAN			28.4	1966
LOWEST ANNUAL MEAN				
HIGHEST DAILY MEAN	1140	May 26	e25000	Jun 22 1972
LOWEST DAILY MEAN	8.2	Aug 16	.10	aSep 7 1966
ANNUAL SEVEN-DAY MINIMUM	8.9	Aug 10	.16	Sep 3 1966
INSTANTANEOUS PEAK FLOW			32200	Jun 22 1972
INSTANTANEOUS PEAK STAGE			b21.40	Jun 22 1972
INSTANTANEOUS LOW FLOW			4.7	cSep 29
ANNUAL RUNOFF (CFSM)	1.21	1.61	.05	dSep 9 1966
ANNUAL RUNOFF (INCHES)	16.44	21.89	1.06	
10 PERCENT EXCEEDS	126	189	14.44	
50 PERCENT EXCEEDS	51	49	38	
90 PERCENT EXCEEDS	14	11	13	

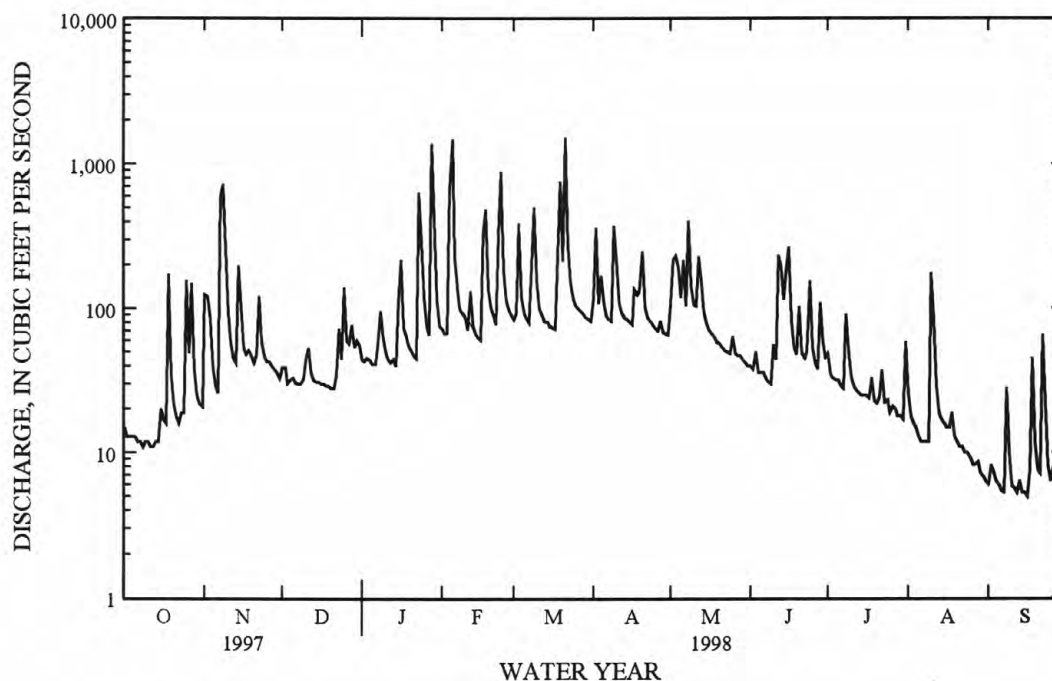
a Also Sept. 8, 9, 1966.

b From floodmarks.

c Also Sept. 30, 1998.

d Also Sept. 10, 1966.

e Estimated.



POTOMAC RIVER BASIN

01646500 POTOMAC RIVER NEAR WASHINGTON, DC

LOCATION.--Lat 38°56'58", long 77°07'40", Montgomery County, Hydrologic Unit 02070008, on left bank just upstream from Little Falls Dam, 1 mi upstream from District of Columbia boundary line, 1.2 mi upstream from Chain Bridge, 1.8 mi east of Langley, Fairfax County, and at mile 117.4.

DRAINAGE AREA.--11,560 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1930 to current year.

REVISED RECORDS.--WSP 726: Drainage area. WDR MD-DE-75-1: 1973-74(M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 37.95 ft above sea level. Prior to June 7, 1930, nonrecording gage, and June 7, 1930, to Jan. 22, 1965, water-stage recorder at site 1 mi upstream on right bank at same datum.

REMARKS.--No estimated daily discharges. Water-discharge records good. Diversions at Great Falls through aqueducts, and since June 1959, from gage pool at Little Falls Dam, for municipal supply of Washington, D.C.; since October 1958, at Rockville Filtration Plant, for municipal supply of city of Rockville; since April 1961, at Potomac Filtration Plant for water supply of Washington Suburban Sanitary District; since October 1961, at Fairfax Water Treatment Plant for water supply of city of Fairfax (from Goose Creek); since April 1964, at Violets Lock to Chesapeake and Ohio Canal; and since October 1985, at Fairfax County Water Authority Treatment Plant for water supply of the county. Low flow affected slightly prior to July 1981 by Stony River Reservoir, since December 1950, by Savage River Reservoir (see station 01597500), and since July 1981, by Jennings Randolph Lake. National Weather Service gage-height telemeter at station. Satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 2, 1889, was of approximately the same magnitude as that of March 19, 1936.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 45,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov 9	0915	118,000	9.49	Feb 25	1415	94,000	8.63
Jan 10	0815	144,000	10.43	Mar 11	1400	75,700	7.90
Jan 25	1915	46,000	6.49	Mar 22	2115	*152,000	*10.79
Jan 29	2030	85,200	8.29	Apr 11	2400	47,300	6.56
Feb 6	2030	130,000	9.88	Apr 21	1800	84,200	8.25
Feb 14	1700	53,800	6.89	May 10	0500	65,300	7.44
Feb 19	1630	130,000	9.88				

Minimum discharge, 973 ft³/s, Sep 7, 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2770	2290	7300	8850	48400	46800	20800	16400	7650	5950	3050	1360
2	2690	3190	7140	8260	38800	45100	24800	17100	7530	7650	2900	1400
3	3210	4500	8510	7620	31900	49300	22200	20900	7500	8340	2710	1380
4	2800	7380	9360	7670	31700	45300	20000	23400	7320	7120	2730	1470
5	2500	7920	8340	9440	61000	39300	19000	22900	6680	6450	2500	1100
6	2170	6860	7620	14400	114000	32700	18100	26900	6580	5590	2170	1150
7	1830	8170	7020	15700	104000	28200	20600	43400	6070	5020	1970	1090
8	1720	40300	6440	22300	69600	25800	20100	48200	5580	4990	1890	1310
9	1590	108000	6030	84200	52700	35300	19900	62000	5290	5200	1820	1490
10	1480	66500	5820	136000	44100	56900	28800	63500	5410	6240	1960	1510
11	1570	37400	5860	82300	38400	73000	40000	52200	5560	6520	2450	1450
12	1450	25200	5770	50100	36600	61500	43600	43400	6510	5630	3060	1290
13	1330	18800	6180	37000	43000	45000	34500	46700	7550	4650	3050	1240
14	1300	16000	6430	28900	52800	36000	28100	44800	11000	4130	2910	1260
15	1420	14500	6540	24700	48500	30800	24200	36900	9430	3790	2980	1300
16	1360	15000	6570	28000	38400	26200	21600	30100	10300	3500	2860	1400
17	1290	14400	6160	29600	32900	23100	20100	25100	13000	3290	2760	1240
18	1860	12800	5860	28500	55800	21900	18900	21900	12400	3220	3050	1910
19	1650	11400	5640	27500	118000	33900	17400	20500	12000	3320	3320	1540
20	1450	10200	5470	24700	103000	41600	28400	18600	11400	3170	3410	1270
21	1430	9090	5210	21500	74100	103000	78800	15800	10900	3070	3320	1170
22	1460	9600	4890	19000	60900	140000	67300	13900	10900	3160	3130	1400
23	1340	9580	4820	21700	52800	130000	44800	12500	11700	2770	2730	1470
24	1330	10300	4810	36800	66600	77100	33200	11600	12400	2700	2370	1480
25	1940	10600	5680	43700	90700	54200	27200	11100	12900	2810	2090	1390
26	1840	10200	7240	42900	80200	42300	23300	10400	11100	2650	1950	1660
27	2080	9410	8610	36000	66200	35300	20600	10100	8930	2550	2370	1650
28	2030	8670	9360	48600	54100	30100	19400	9910	7890	2320	2330	1450
29	2080	8190	9350	79800	---	26700	19400	9280	7530	2270	1800	1420
30	2450	7570	9470	77100	---	24200	17800	8430	6360	2180	1560	1360
31	2230	---	9250	56600	---	22400	---	8030	---	2410	1550	---
TOTAL	57650	524020	212750	1159440	1709200	1483000	842900	805950	265370	132660	78750	41610
MEAN	1860	17470	6863	37400	61040	47840	28100	26000	8846	4279	2540	1387
MAX	3210	108000	9470	136000	118000	140000	78800	63500	13000	8340	3410	1910
MIN	1290	2290	4810	7620	31700	21900	17400	8030	5290	2180	1550	1090
(†)	577	541	535	523	511	531	552	584	634	704	732	737
MEAN*%*	2437	18020	7398	37930	61550	48350	28660	26580	9479	4984	3273	2125
CFSM*	0.21	1.56	0.64	3.28	5.32	4.18	2.48	2.30	0.82	0.43	0.28	0.18
IN*	0.24	1.74	0.74	3.78	5.55	4.82	2.77	2.65	0.92	0.50	0.33	0.21

† Diversions, in cubic feet per second, for municipal supply of Washington, D.C., Washington Suburban Sanitary District, city of Rockville, city of Fairfax (from Goose Creek), Fairfax County, and the Chesapeake and Ohio Canal (insignificant diversion to canal during current water year). Records provided by U.S. Army Corps of Engineers, Washington Suburban Sanitary Commission, city of Rockville, city of Fairfax, and Fairfax County Water Authority.

* Adjusted for diversion.

POTOMAC RIVER BASIN

01646500 POTOMAC RIVER NEAR WASHINGTON, DC--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1958, BY WATER YEAR (WY) (UNREGULATED)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	6120	6496	9843	13570	16660	21060	19120	13610	7960	5135	5804	4419
MAX	44100	21040	30900	37190	36790	76510	36430	27780	19090	21040	28210	19940
(WY)	1943	1933	1951	1937	1939	1936	1933	1932	1951	1949	1955	1945
MIN	583	700	1536	2527	2982	6505	7202	3953	2867	1284	569	679
(WY)	1931	1931	1944	1956	1934	1931	1947	1930	1930	1930	1930	1930

SUMMARY STATISTICS

WATER YEARS 1930 - 1958

ANNUAL MEAN	10790
HIGHEST ANNUAL MEAN	16100
LOWEST ANNUAL MEAN	4525
HIGHEST DAILY MEAN	426000
LOWEST DAILY MEAN	448
ANNUAL SEVEN-DAY MINIMUM	499
INSTANTANEOUS PEAK FLOW	484000
INSTANTANEOUS PEAK STAGE	(a) 28.10
INSTANTANEOUS LOW FLOW	430
ANNUAL RUNOFF (CFSM)	.93
ANNUAL RUNOFF (INCHES)	12.68
10 PERCENT EXCEEDS	23600
50 PERCENT EXCEEDS	6440
90 PERCENT EXCEEDS	1810

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1998, BY WATER YEAR (WY)

MEAN	6118	8010	11750	14600	18170	25760	20970	15620	9506	4838	4147	4756
MAX	36790	42030	37630	52890	61040	67370	57850	40410	46630	17160	21720	44620
(WY)	1977	1986	1997	1996	1998	1994	1993	1989	1972	1972	1996	1996
MIN	908	1097	1038	1682	5703	7403	5810	3921	2216	695	538	791
(WY)	1964	1966	1966	1981	1963	1990	1995	1969	1969	1966	1966	1964

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1959 - 1998

ANNUAL TOTAL	3714790		7313300									
ANNUAL MEAN	10180		20040							11990		
ANNUAL MEAN*	10780		20630							12474		
HIGHEST ANNUAL MEAN										23760		1996
LOWEST ANNUAL MEAN										4900		1969
LOWEST ANNUAL MEAN*										5306		1969
HIGHEST DAILY MEAN	108000	Nov 9	140000	Mar 22						334000	Jun 24	1972
LOWEST DAILY MEAN	1240	Sep 8	1090	Sep 7						(b) 121	Sep 9	1966
LOWEST DAILY MEAN*	1810	Sep 9	1860	Oct 24						(c) 601	Sep 10	1966
ANNUAL SEVEN-DAY MINIMUM	1350	Aug 10	1270	Sep 2						181	Sep 7	1966
INSTANTANEOUS PEAK FLOW			152000	Mar 22						484000	Mar 19	1936
INSTANTANEOUS PEAK STAGE			10.79	Mar 22						28.10	Mar 19	1936
INSTANTANEOUS LOW FLOW			973	(d)						66	Sep 9	1966
ANNUAL RUNOFF (CFSM)	.88		1.73							1.04		
ANNUAL RUNOFF (CFSM)*	.93		1.78							1.08		
ANNUAL RUNOFF (INCHES)	11.95		23.53							14.09		
ANNUAL RUNOFF (INCHES)*	12.66		24.24							14.66		
10 PERCENT EXCEEDS	22400		52700							27400		
50 PERCENT EXCEEDS	7060		9090							6600		
90 PERCENT EXCEEDS	1540		1490							1620		

a At previous site, 1 mi upstream at same datum.

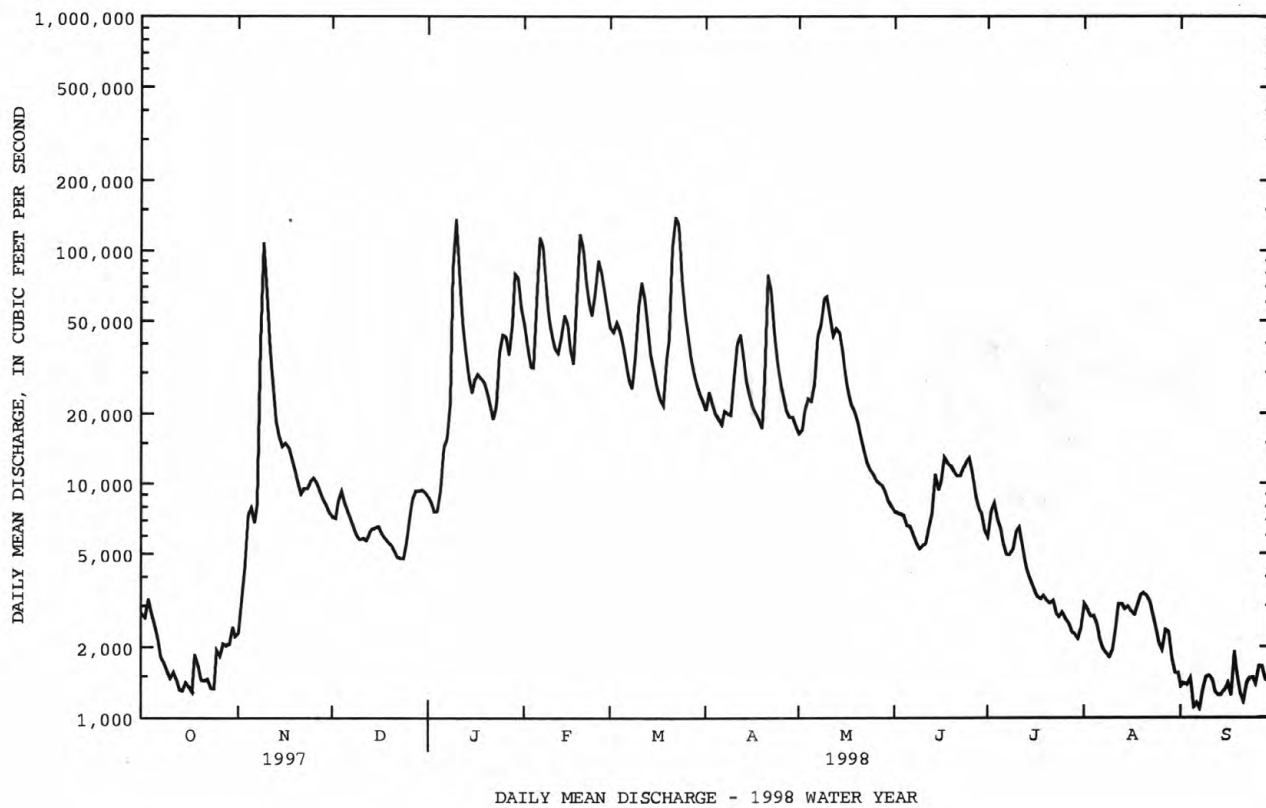
* Adjusted for diversion.

b Minimum daily discharge observed at gaging station, does not include diversion of 489 ft³/s.c Includes diversion of 449 ft³/s for municipal use.

d Sep 7, 13.

POTOMAC RIVER BASIN

01646500 POTOMAC RIVER NEAR WASHINGTON, DC--Continued



POTOMAC RIVER BASIN

01646500 POTOMAC RIVER NEAR WASHINGTON, DC--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1989 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1988 to current year.

WATER TEMPERATURE: October 1988 to current year.

INSTRUMENTATION.--Water-quality monitor October 1988 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD--

SPECIFIC CONDUCTANCE: Maximum, 747 microsiemens, Jan. 11, 1991; minimum, 68 microsiemens, Oct. 23, 1990.

WATER TEMPERATURE (water years 1989-93, 1995-97): Maximum, 33.5°C, July 11, 1993; minimum, 0.0°C, on many day during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 454 microsiemens, Nov 7; minimum, 122 microsiemens, Nov 7.

WATER TEMPERATURE: Maximum, 32.0°C, Jul 22; minimum, 1.2°C, Jan 2.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	390	382	386	424	416	419	311	308	309	375	362	368
2	392	385	390	419	370	388	316	311	314	374	339	361
3	385	381	383	404	370	394	318	315	317	347	324	336
4	390	384	388	393	374	381	320	318	319	329	320	324
5	398	390	394	440	391	415	319	316	318	324	307	314
6	410	397	403	452	440	447	319	310	315	322	305	311
7	407	401	403	454	122	338	315	309	311	323	297	311
8	410	406	408	258	144	217	316	300	309	338	256	286
9	416	407	410	273	158	196	303	300	301	256	173	190
10	412	399	407	171	164	169	312	302	304	195	137	165
11	405	390	398	184	171	179	312	303	305	157	151	154
12	395	390	394	198	184	192	314	306	310	173	157	164
13	395	386	392	215	198	207	320	314	317	189	173	181
14	389	381	385	223	213	218	327	320	324	204	189	196
15	385	378	382	238	218	230	331	325	328	439	204	245
16	389	381	386	261	238	249	331	326	329	398	222	243
17	392	387	390	274	261	267	332	324	328	231	222	226
18	388	340	376	280	274	279	328	320	325	250	231	244
19	340	311	321	278	273	275	329	324	326	251	244	247
20	363	331	354	286	275	281	327	320	325	247	244	245
21	363	359	361	293	286	288	325	319	323	255	247	251
22	368	360	365	295	259	275	329	322	327	257	255	256
23	386	368	377	295	285	290	332	314	321	266	159	232
24	395	384	391	308	295	301	323	317	321	227	211	216
25	391	290	360	319	308	314	322	271	298	250	212	235
26	363	315	355	330	319	326	320	302	313	---	---	---
27	358	272	321	329	309	319	322	314	320	---	---	---
28	374	326	350	309	304	306	325	306	313	---	---	---
29	395	373	384	308	304	306	330	325	326	200	162	173
30	419	395	403	309	307	308	373	330	354	202	179	190
31	426	419	422	---	---	---	373	358	366	202	184	193
MONTH	426	272	382	454	122	292	373	271	320	---	---	---

POTOMAC RIVER BASIN

01646500 POTOMAC RIVER NEAR WASHINGTON, DC--Continued

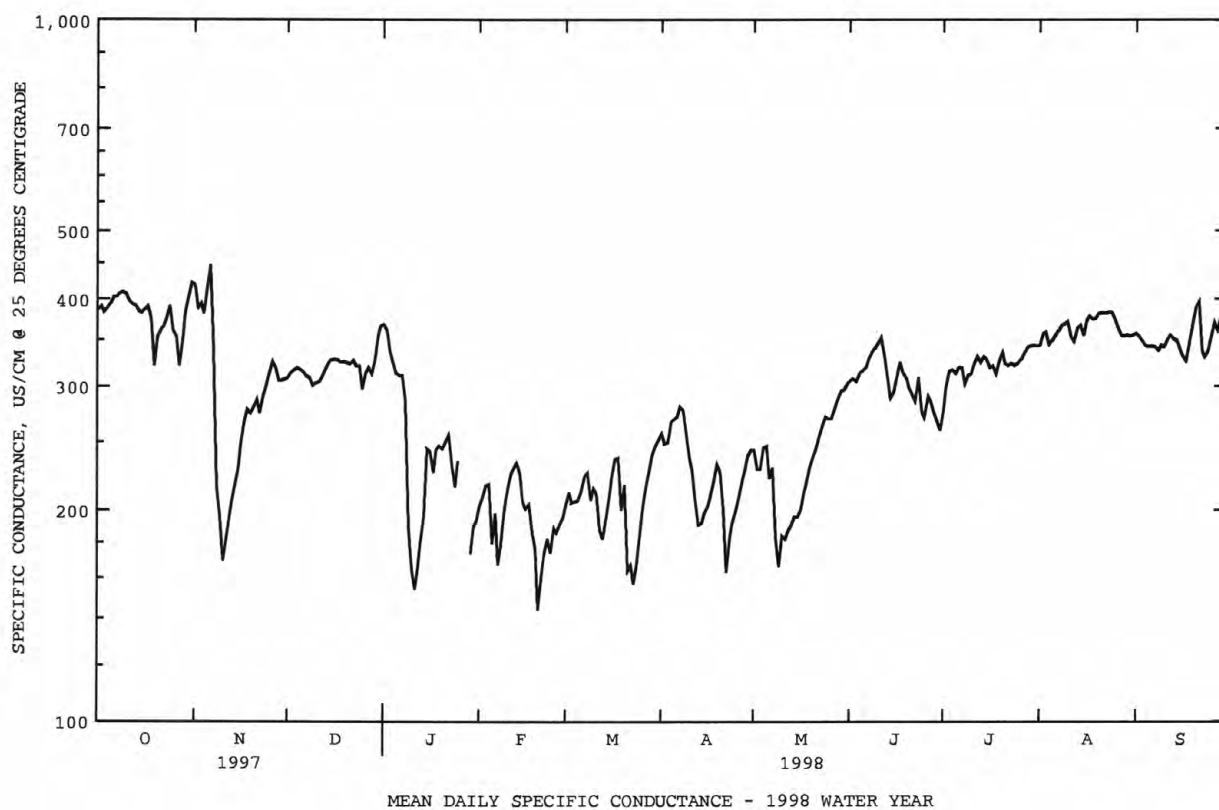
SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	204	202	203	208	199	204	261	224	257	252	232	244
2	213	204	209	214	208	212	257	224	249	245	124	229
3	221	213	217	214	202	205	261	235	250	245	138	229
4	236	190	218	208	205	206	271	261	267	254	241	246
5	196	167	179	210	207	207	271	265	269	253	217	247
6	213	179	198	218	210	213	277	265	271	240	195	222
7	179	161	167	228	218	223	284	277	281	241	212	230
8	192	171	180	233	213	226	282	271	278	212	168	183
9	207	192	200	228	168	207	272	218	257	182	155	166
10	221	207	214	228	207	215	250	217	238	192	177	184
11	231	221	225	226	200	211	247	215	229	184	179	182
12	231	229	230	200	180	188	246	193	207	190	182	187
13	236	230	234	187	180	182	195	190	191	193	188	190
14	236	216	227	201	187	194	197	190	192	198	192	196
15	217	199	206	215	201	208	200	197	199	198	195	196
16	203	199	201	231	215	223	207	200	203	205	196	200
17	214	195	204	242	231	237	220	207	212	214	205	211
18	207	139	187	247	232	238	226	211	220	224	214	221
19	207	141	177	241	148	200	242	212	233	237	224	230
20	155	135	144	240	195	217	232	212	227	241	234	238
21	166	153	159	214	132	164	236	160	201	248	239	245
22	180	166	174	180	155	167	175	157	163	259	248	255
23	188	167	182	160	152	157	188	175	182	269	259	264
24	179	162	174	175	160	167	196	188	192	275	268	272
25	195	178	189	195	175	185	202	196	199	274	264	270
26	188	184	186	210	195	203	213	202	208	276	267	270
27	193	187	191	222	210	217	224	213	219	288	276	279
28	199	193	195	235	222	229	233	223	229	295	285	288
29	---	---	---	244	235	240	242	233	239	298	291	295
30	---	---	---	250	244	247	246	242	244	301	292	297
31	---	---	---	254	250	252	---	---	---	306	299	302
MONTH	236	135	195	254	132	208	284	157	227	306	124	234

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	308	301	305	290	263	277	350	333	344	361	354	357
2	311	305	308	313	290	301	364	349	357	355	350	353
3	311	298	305	321	313	316	364	352	359	352	342	349
4	315	310	313	321	315	317	352	339	344	346	341	344
5	319	313	316	316	309	313	355	339	349	344	339	342
6	321	317	319	329	312	320	361	349	355	346	340	343
7	333	321	328	332	308	319	364	355	360	348	337	342
8	338	333	335	312	295	303	369	361	366	340	336	338
9	343	334	340	330	289	311	371	368	369	349	337	344
10	349	343	346	317	310	313	373	369	371	347	340	342
11	354	346	352	329	317	324	370	340	353	357	342	350
12	353	314	332	336	329	332	357	339	348	360	351	355
13	332	186	308	331	320	325	369	354	363	360	345	351
14	298	249	289	348	318	331	374	349	366	354	344	349
15	308	276	294	353	309	329	363	348	355	345	334	339
16	326	295	309	326	314	320	377	363	372	343	328	332
17	339	316	325	339	308	321	380	373	378	337	323	327
18	338	307	314	329	309	313	379	369	374	354	333	345
19	311	301	309	348	304	327	380	369	376	376	354	366
20	310	285	299	356	321	336	384	378	381	395	376	389
21	306	284	293	330	319	324	387	378	382	403	388	396
22	301	273	286	326	317	321	384	378	381	397	327	338
23	327	291	309	329	319	324	386	379	383	356	319	331
24	296	222	277	328	318	322	388	377	383	342	331	337
25	284	263	271	330	319	324	380	364	375	363	336	353
26	304	275	291	333	322	328	370	356	364	377	363	370
27	287	282	286	342	328	335	357	354	356	374	354	361
28	282	275	276	344	333	340	357	352	354	385	367	377
29	277	261	268	348	339	343	358	353	356	395	385	390
30	263	257	260	347	340	344	357	352	354	404	395	401
31	---	---	---	348	334	343	359	353	356	---	---	---
MONTH	354	186	305	356	263	322	388	333	364	404	319	354

POTOMAC RIVER BASIN

01646500 POTOMAC RIVER NEAR WASHINGTON, DC--Continued



POTOMAC RIVER BASIN

01646500 POTOMAC RIVER NEAR WASHINGTON, DC--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	19.3	18.3	18.7	12.0	11.5	11.8	7.9	6.8	7.4	2.3	1.3	1.8
2	18.4	17.0	17.8	12.9	11.9	12.3	6.9	6.0	6.5	2.7	1.2	1.8
3	18.2	16.4	17.5	13.3	11.8	12.5	6.2	5.4	5.8	3.2	1.9	2.4
4	19.4	17.3	18.3	12.4	11.3	11.9	7.1	5.6	6.4	4.5	2.8	3.5
5	20.4	18.5	19.3	11.3	10.0	10.8	7.5	6.2	7.0	4.9	3.6	4.1
6	21.5	19.9	20.6	10.3	9.6	10.0	6.2	5.1	5.8	5.5	4.3	5.0
7	22.2	20.9	21.4	10.0	9.2	9.6	5.1	4.3	4.6	7.2	5.5	5.9
8	23.3	21.4	22.3	9.4	8.9	9.2	5.1	4.0	4.4	9.3	7.2	8.3
9	23.8	21.8	22.7	8.9	8.6	8.7	4.6	4.1	4.3	12.4	9.3	11.5
10	23.5	22.2	22.9	9.4	8.8	9.0	4.9	4.4	4.6	10.9	10.2	10.6
11	23.0	21.9	22.5	9.4	9.0	9.2	5.2	4.9	5.1	10.2	8.8	9.5
12	22.2	21.1	21.7	9.2	8.7	8.9	5.5	5.0	5.2	8.8	7.5	8.1
13	21.6	20.6	21.1	8.7	7.8	8.1	5.6	4.4	5.0	7.5	6.5	7.0
14	21.1	20.2	20.6	7.8	7.1	7.3	5.1	4.2	4.6	6.5	5.5	5.9
15	20.5	19.3	19.6	7.1	6.7	6.9	4.5	3.6	4.0	5.5	4.5	4.8
16	19.3	18.2	18.6	7.1	6.1	6.5	4.6	3.3	3.8	4.6	4.4	4.5
17	18.5	16.7	17.6	6.1	5.4	5.7	4.7	3.4	3.9	4.5	4.3	4.4
18	16.7	15.9	16.2	5.6	4.9	5.2	4.7	3.3	3.9	4.7	4.3	4.5
19	15.9	14.7	15.2	5.7	4.9	5.2	4.6	3.4	3.9	4.9	4.6	4.7
20	15.4	14.3	14.8	5.7	4.9	5.2	4.9	3.6	4.2	4.9	4.6	4.7
21	15.3	13.9	14.4	5.9	4.9	5.4	4.9	3.8	4.3	4.7	4.0	4.3
22	14.5	13.4	13.7	6.6	5.6	6.3	4.3	3.5	3.8	4.6	4.0	4.1
23	13.6	12.3	13.0	7.3	6.4	6.8	4.6	3.7	4.0	5.3	4.1	4.5
24	13.1	12.0	12.3	7.0	5.5	6.6	4.6	4.0	4.2	4.6	3.9	4.3
25	12.1	11.7	11.9	5.8	4.9	5.4	5.5	4.5	4.9	4.2	3.7	3.9
26	11.9	11.4	11.6	5.6	5.0	5.3	6.1	5.1	5.4	e4.1	e3.7	e4.0
27	12.2	11.3	11.6	6.8	5.5	5.9	5.2	4.6	5.0	e4.1	e3.7	e3.9
28	11.7	10.5	11.0	6.4	5.7	6.1	4.8	3.6	4.3	e4.2	e3.8	e4.0
29	11.4	10.5	10.9	7.0	6.3	6.6	3.7	3.0	3.5	4.2	3.6	3.9
30	11.0	10.1	10.5	7.4	6.9	7.1	3.3	2.8	3.0	4.4	3.9	4.1
31	11.7	10.2	10.9	---	---	---	2.9	1.9	2.6	4.7	4.1	4.4
MONTH	23.8	10.1	16.8	13.3	4.9	7.8	7.9	1.9	4.7	12.4	1.2	5.1
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	5.0	4.3	4.6	8.0	7.4	7.7	18.4	17.8	18.1	17.5	16.8	17.2
2	5.1	4.3	4.6	8.2	7.6	7.9	18.3	17.7	18.1	17.7	16.2	17.2
3	5.0	4.7	4.8	8.3	7.7	8.0	18.0	16.6	17.2	18.3	16.3	17.5
4	4.9	4.3	4.6	8.3	7.7	8.0	17.4	14.9	15.9	18.3	17.3	17.7
5	4.3	3.9	4.0	7.9	7.3	7.5	14.9	13.8	14.3	17.8	17.2	17.4
6	4.1	3.8	3.9	7.8	6.7	7.3	14.3	13.0	13.8	18.7	17.0	17.8
7	4.3	3.8	4.0	8.4	7.0	7.7	14.6	12.9	13.9	18.6	17.8	18.1
8	5.1	4.2	4.6	8.4	7.9	8.1	14.5	13.3	14.0	17.8	17.1	17.3
9	5.3	4.6	4.9	9.7	8.1	8.9	14.4	13.0	13.7	17.1	16.2	16.5
10	5.7	4.7	5.1	9.5	8.1	8.8	13.2	12.6	12.9	16.2	15.9	16.0
11	5.9	5.0	5.4	8.1	7.1	7.6	13.5	11.6	12.5	15.9	15.6	15.7
12	6.8	5.8	6.2	7.1	5.9	6.5	13.5	12.1	12.8	15.6	15.1	15.3
13	6.6	5.9	6.2	6.1	5.2	5.6	14.0	12.1	13.1	16.1	14.7	15.3
14	6.3	5.9	6.1	5.8	4.8	5.3	14.4	13.0	13.7	17.0	15.3	16.1
15	6.0	5.3	5.7	6.1	4.6	5.4	15.8	13.4	14.4	18.3	16.1	17.2
16	5.8	5.0	5.3	6.5	5.2	5.8	16.6	15.1	15.8	20.1	17.3	18.7
17	6.1	5.0	5.4	6.4	5.6	6.0	17.7	16.3	17.0	21.5	19.1	20.2
18	7.7	6.1	6.7	6.5	6.0	6.2	17.7	16.4	16.9	22.6	20.2	21.3
19	6.9	6.5	6.7	7.5	6.5	6.9	17.2	14.9	16.3	23.4	21.5	22.5
20	6.9	6.6	6.7	7.8	7.2	7.5	15.9	14.8	15.3	24.2	22.6	23.4
21	7.3	6.8	7.0	7.8	7.3	7.5	15.2	13.4	14.3	24.3	23.4	23.9
22	7.5	7.0	7.2	7.6	7.4	7.5	13.9	13.1	13.4	23.8	22.2	22.8
23	7.3	6.8	7.1	7.6	7.1	7.3	13.9	13.2	13.6	22.7	21.3	22.0
24	6.8	6.1	6.4	7.3	6.9	7.1	15.0	13.2	14.1	21.6	20.9	21.4
25	6.1	5.6	5.8	7.8	6.7	7.3	16.3	14.2	15.2	22.7	20.9	21.7
26	6.4	5.6	5.9	9.2	7.3	8.2	16.5	15.4	15.9	23.2	22.0	22.4
27	7.1	6.1	6.6	11.2	9.0	10.1	16.5	15.3	16.0	22.6	21.6	22.3
28	7.7	6.9	7.3	13.7	10.8	12.1	16.7	15.2	16.1	23.7	21.6	22.4
29	---	---	---	15.6	13.1	14.2	17.2	15.5	16.4	25.0	22.5	23.7
30	---	---	---	17.1	14.7	15.8	17.5	16.7	17.0	26.6	24.0	25.3
31	---	---	---	18.4	16.3	17.3	---	---	---	27.4	25.3	26.2
MONTH	7.7	3.8	5.7	18.4	4.6	8.3	18.4	11.6	15.1	27.4	14.7	19.8

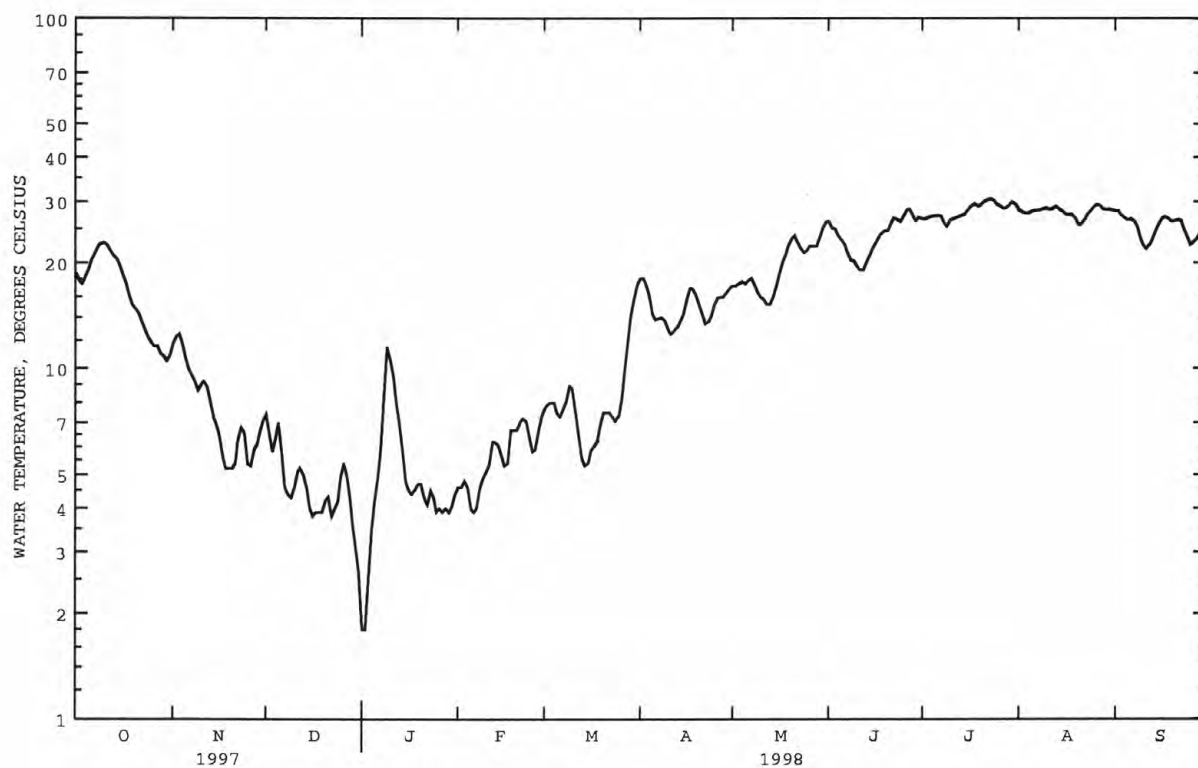
e Estimated

POTOMAC RIVER BASIN

01646500 POTOMAC RIVER NEAR WASHINGTON, DC--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	27.1	25.5	26.3	27.7	26.1	26.8	29.1	27.4	28.4	28.8	27.7	28.2
2	26.1	24.7	25.3	27.9	25.9	26.7	29.3	26.6	28.1	29.1	27.3	28.2
3	26.1	24.3	25.1	28.2	26.4	27.1	29.4	26.4	27.9	27.9	26.9	27.5
4	24.3	23.1	23.9	28.3	26.4	27.3	28.9	26.5	27.8	27.4	26.5	27.1
5	24.1	22.4	23.3	28.4	26.7	27.3	29.3	26.7	28.1	27.2	25.9	26.6
6	23.6	22.0	22.6	28.6	26.3	27.4	29.3	27.1	28.3	28.5	25.3	26.8
7	22.2	20.7	21.5	28.4	26.1	27.3	29.1	27.6	28.3	27.0	25.8	26.5
8	21.3	19.7	20.5	27.2	25.5	26.2	29.1	27.8	28.4	26.5	24.7	25.5
9	21.2	19.4	20.3	26.5	24.6	25.5	29.3	28.2	28.7	24.7	23.0	23.5
10	19.9	19.3	19.6	28.0	25.1	26.5	29.4	28.3	28.8	23.2	21.9	22.5
11	19.3	19.0	19.1	27.9	26.0	26.8	29.3	27.6	28.4	23.1	21.0	22.0
12	19.8	18.6	19.1	28.2	25.9	27.0	29.6	27.7	28.7	23.9	21.5	22.5
13	21.3	19.5	20.2	28.5	26.0	27.3	30.0	27.5	29.0	25.3	22.3	23.6
14	22.0	20.0	20.9	28.6	26.3	27.5	29.3	27.7	28.6	26.3	23.7	24.9
15	22.5	21.3	22.0	28.7	26.6	27.8	28.9	27.2	28.2	27.3	25.0	26.0
16	24.2	21.7	22.8	29.6	27.0	28.5	28.3	27.1	27.7	28.0	26.0	26.8
17	24.3	23.2	23.7	30.5	27.8	29.2	27.9	27.1	27.5	27.8	26.6	27.2
18	25.0	23.6	24.3	30.6	28.1	29.5	28.3	26.7	27.6	27.4	26.5	26.9
19	25.2	24.1	24.7	30.0	27.8	29.1	27.8	25.7	27.0	26.7	25.8	26.4
20	25.8	23.9	24.8	30.3	28.2	29.4	26.8	24.3	25.9	27.6	25.8	26.5
21	27.0	25.3	26.0	31.1	28.5	29.9	27.0	24.1	25.7	27.6	25.6	26.7
22	27.6	26.4	26.9	32.0	28.6	30.3	28.0	25.1	26.6	27.0	26.1	26.5
23	27.3	26.2	26.7	31.4	29.7	30.6	29.0	26.2	27.5	26.2	24.6	25.2
24	27.0	25.4	26.3	30.8	29.4	30.3	29.0	27.3	28.1	24.7	23.2	23.9
25	27.9	26.4	27.2	30.2	28.7	29.6	29.7	28.0	28.8	23.6	22.2	22.6
26	29.2	27.7	28.4	30.0	28.2	29.2	30.5	28.6	29.4	24.9	21.8	22.9
27	29.0	27.9	28.6	29.3	27.9	28.7	29.6	29.0	29.3	24.7	22.5	23.4
28	27.9	26.4	27.4	29.6	27.8	28.7	29.3	28.2	28.7	24.9	23.5	24.2
29	27.4	25.7	26.4	30.2	28.2	29.2	28.9	28.0	28.4	25.0	23.3	24.2
30	28.0	26.2	27.1	31.3	28.9	29.9	30.0	27.8	28.6	25.6	23.4	24.4
31	---	---	---	30.1	28.8	29.4	29.2	28.0	28.5	---	---	---
MONTH	29.2	18.6	24.0	32.0	24.6	28.3	30.5	24.1	28.1	29.1	21.0	25.3
YEAR	32.0	1.2	15.8									



DAILY MEAN WATER TEMPERATURE - 1998 WATER YEAR

POTOMAC RIVER BASIN

01646580 POTOMAC RIVER AT CHAIN BRIDGE AT WASHINGTON, DC

LOCATION.--Lat 38°55'46", long 77°07'02", Arlington County, Va., Hydrologic Unit 02070010, under right downstream side of bridge on Virginia State Highway 123, and at river mile 115.9.

DRAINAGE AREA.--11,570 mi².

PERIOD OF RECORD.--Water years 1973 to current year. Prior to October 1977, published as "at Great Falls."

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: June 1978 to September 1981.

pH: June 1978 to September 1981.

WATER TEMPERATURE: June 1978 to September 1981.

DISSOLVED OXYGEN: June 1978 to September 1981.

SUSPENDED SEDIMENT DISCHARGE: October 1978 to September 1981.

INSTRUMENTATION.--Water-quality monitor June 1978 to September 1981.

REMARKS--Extreme high flows are sampled from the George Mason Memorial Bridge (14th Street) located 6 mi downstream from Chain Bridge. On May 3 and Nov. 17, 1994 samples were collected and analyzed using ultraclean methodologies.

Data on trace metals for these dates are available from the University of Delaware. Data on organics for these dates are available from George Mason University.

EXTREMES FOR PERIOD OF DAILY RECORD--

SPECIFIC CONDUCTANCE (water years 1979, 1981): Maximum, 598 microsiemens, Sept. 12, 1981; minimum, 116 microsiemens, Jan. 25, 1979.

pH (water years 1979, 1981): Maximum, 9.3 units, Mar. 29, 1981; minimum, 6.7 units, June 2, 1981.

WATER TEMPERATURE (water years 1979, 1981): Maximum, 31.0°C, July 23-24, 1978; minimum, 0.0°C on many days during winter periods.

DISSOLVED OXYGEN (water years 1979, 1981): Maximum, 16.4 mg/L, on many days in 1979; minimum, 5.6 mg/L, June 2, 1981.

SEDIMENT CONCENTRATION: Maximum daily mean, 812 mg/L, Sept. 6, 1979; minimum daily mean, 1 mg/L on many days during winter periods.

SEDIMENT LOAD: Maximum daily, 281,000 tons, Feb. 27, 1979; minimum daily, 3.2 tons, Jan. 5, 1981.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00301)	HARD- NESS TOTAL (MG/L CaCO3) (00900)	CALCIUM DIS- SOLVED AS CA (MG/L) (00915)	MAGNE- SIUM, DIS- SOLVED AS MG (MG/L) (00925)
OCT 28...	1115	1940	369	7.7	10.5	11.0	763	10.4	94	150	40	12
NOV 24...	0930	10300	285	8.3	9.0	6.5	765	12.4	100	110	33	7.5
DEC 17...	0945	6100	--	7.9	4.0	5.0	758	--	--	130	38	8.8
JAN 22...	1000	19100	244	7.1	2.0	4.0	769	13.2	100	100	30	6.7
MAR 05...	1030	39100	200	7.2	9.0	7.5	762	12.8	107	83	24	5.3
31...	1045	22700	244	7.7	26.5	16.5	760	9.8	101	110	32	7.0
APR 15...	1130	24300	202	7.9	20.5	14.0	760	10.0	97	89	26	6.0
MAY 14...	1045	45300	191	7.8	17.0	15.5	767	10.0	100	84	25	5.4
JUN 02...	0845	7310	--	--	--	--	--	--	--	--	--	--
11...	1315	5540	339	8.1	18.0	19.5	766	9.0	98	150	42	11
JUL 15...	1500	3830	316	8.4	26.5	28.5	--	7.3	--	--	--	--
AUG 26...	1330	2040	365	8.1	31.5	29.5	760	7.9	104	150	40	12
SEP 23...	1600	1510	347	8.0	18.5	25.0	766	7.1	86	140	36	12

POTOMAC RIVER BASIN

01646580 POTOMAC RIVER AT CHAIN BRIDGE AT WASHINGTON, DC--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT DIS TOT IT FIELD (MG/L AS CAC03) (39086)	BICAR- BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CAR- BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SI02) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS NO3) (71851)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
OCT 28...	15	2.9	108	132	0	40	20	.20	.91	207	--	<.010
NOV 24...	7.9	2.6	84	102	0	30	12	<.10	7.1	169	7.8	.036
DEC 17...	9.1	2.1	96	117	0	40	13	<.10	1.8	190	--	<.010
JAN 22...	6.6	2.0	74	90	0	25	11	<.10	7.2	143	8.0	.016
MAR 05...	4.4	1.6	59	72	0	18	7.0	<.10	6.2	128	--	<.010
31...	4.9	1.7	--	--	--	21	8.1	<.10	5.8	145	--	<.010
APR 15...	4.8	1.6	63	77	0	19	6.6	<.10	5.4	122	4.4	.014
MAY 14...	4.6	1.9	64	78	0	16	5.8	<.10	7.4	117	4.9	.017
JUN 02...	--	--	--	--	--	--	--	--	--	--	--	--
11...	9.3	2.4	112	137	0	32	13	.13	2.8	200	6.5	.020
JUL 15...	--	--	100	117	2	--	--	--	--	--	4.9	.017
AUG 26...	13	3.2	117	135	4	34	17	.15	5.5	216	4.6	.017
SEP 23...	15	3.0	--	--	--	38	20	.17	4.3	209	3.6	.015
DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (82663)	PHORATE WATER FLTRD 0.7 U GF, REC (82664)
OCT 28...	.681	<.015	.24	<.20	.92	.038	.013	.015	31	8.5	<.0040	<.0020
NOV 24...	1.79	<.020	.18	.12	2.0	.027	.017	.029	31	8.1	<.0040	<.0020
DEC 17...	1.48	<.020	.16	.12	1.6	.020	.015	.013	37	5.7	<.0040	<.0020
JAN 22...	1.82	<.020	.22	.10	2.0	.038	.013	.030	14	5.4	--	--
MAR 05...	1.35	.028	.23	.15	1.6	.043	.025	.027	<10	4.7	<.0040	<.0020
31...	1.46	.025	.17	<.10	1.6	.041	.024	.017	10	<4.0	<.0040	<.0020
APR 15...	1.01	.064	.23	.12	1.2	.045	.019	.013	42	<4.0	<.0040	<.0020
MAY 14...	1.13	.072	.51	.25	1.6	.093	.027	.073	27	<4.0	<.0040	<.0020
JUN 02...	--	--	--	--	--	--	--	--	--	--	<.0040	<.0020
11...	1.49	.062	.30	.20	1.8	<.010	<.010	.020	15	<4.0	<.0040	<.0020
JUL 15...	1.12	.062	.31	.21	1.4	.027	.022	.028	--	--	<.0040	<.0020
AUG 26...	1.06	.098	.33	.26	1.4	.050	.051	.043	<10	11	<.0040	<.0020
SEP 23...	.823	.045	.34	.30	1.2	.037	.022	.023	11	6.9	<.0040	<.0020

POTOMAC RIVER BASIN

01646580 POTOMAC RIVER AT CHAIN BRIDGE AT WASHINGTON, DC--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TER- BACIL WATER FLTRD 0.7 U GF, REC (82665)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (82661)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (82660)	ACETO- CHLOR, WATER FLTRD REC (49260)	ALA- CHLOR, WATER, DISS, REC (46342)	ATRA- ZINE, WATER, DISS, REC (39632)	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (82673)	BUTYL- ATE, WATER, DISS, REC (04028)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (82680)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (82674)	CHLOR- PYRIFOS DIS- SOLVED (38933)	CYANA- ZINE, WATER, DISS, REC (04041)
OCT 28...	<.0070	<.0020	<.0030	<.0020	<.002	.040	<.0020	<.0020	E.0108	<.0030	<.0040	<.0040
NOV 24...	<.0070	<.0020	<.0030	<.0020	<.002	.035	<.0020	<.0020	E.0039	<.0030	<.0040	<.0040
DEC 17...	<.0070	<.0020	<.0030	<.0020	<.002	.041	<.0020	<.0020	<.0030	<.0030	<.0040	<.0040
JAN 22...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 05...	<.0070	<.0020	<.0030	<.0020	<.002	.018	<.0020	<.0020	<.0030	<.0030	<.0040	<.0040
31...	<.0070	<.0020	<.0030	<.0020	<.002	.028	<.0020	<.0020	<.0030	<.0030	<.0040	<.0040
APR 15...	<.0070	<.0020	<.0030	<.0020	<.002	.026	<.0020	<.0020	<.0030	<.0030	<.0040	.0081
MAY 14...	<.0120	<.0020	<.0030	.0157	E.003	.546	<.0020	<.0020	E.0077	<.0030	<.0040	.0263
JUN 02...	<.0070	<.0020	<.0030	<.0020	<.002	.049	<.0020	<.0020	<.0030	<.0030	<.0040	<.0040
11...	<.0070	<.0020	<.0030	<.0020	<.002	.230	<.0020	<.0020	<.0030	<.0030	<.0040	.0263
JUL 15...	<.0070	<.0020	<.0030	<.0020	<.002	.219	<.0020	<.0020	<.0030	<.0030	<.0040	.0439
AUG 26...	<.0070	<.0020	<.0030	<.0020	<.002	.075	<.0020	<.0020	<.0030	<.0030	<.0040	<.0040
SEP 23...	<.0070	<.0020	<.0030	<.0020	<.002	.066	<.0020	<.0020	E.0162	<.0030	<.0040	<.0040
DATE	DCPA WATER FLTRD 0.7 U GF, REC (82682)	P, P' DDE DISSOLV (34653)	DEETHYL ATRA- ZINE, WATER, DISS, REC (04040)	DI- AZINON, DIS- SOLVED (39572)	DI- ELDRIN DIS- SOLVED (39381)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (82677)	EPTC WATER FLTRD 0.7 U GF, REC (82668)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (82672)	FONOFOS WATER FLTRD DISS REC (04095)	LINDANE DIS- SOLVED (39341)	LIN- URON WATER FLTRD 0.7 U GF, REC (82666)	MALA- THION, DIS- SOLVED (39532)
OCT 28...	<.0020	<.0060	E.0213	.007	<.001	<.0170	<.0020	<.0030	<.0030	<.004	<.0020	<.005
NOV 24...	<.0020	<.0060	E.0514	E.004	<.001	<.0170	<.0020	<.0030	<.0030	<.004	<.0020	<.005
DEC 17...	<.0020	<.0060	E.0544	<.002	<.001	<.0170	<.0020	<.0030	<.0030	<.004	<.0020	<.005
JAN 22...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 05...	<.0020	<.0060	E.0272	<.002	<.001	<.0170	<.0020	<.0030	<.0030	<.004	<.0020	<.005
31...	<.0020	<.0060	E.0368	<.002	<.001	<.0170	<.0020	<.0030	<.0030	<.004	<.0020	<.005
APR 15...	<.0020	<.0060	E.0293	<.002	<.001	<.0170	<.0020	<.0030	<.0030	<.004	<.0020	<.005
MAY 14...	<.0020	<.0060	E.0348	<.002	<.001	<.0170	<.0020	<.0030	<.0030	<.004	<.0020	<.005
JUN 02...	<.0020	<.0060	E.0376	<.002	<.001	<.0170	<.0020	<.0030	<.0030	<.004	<.0020	<.005
11...	<.0020	<.0060	E.0682	<.002	<.001	<.0170	<.0020	<.0030	<.0030	<.004	<.0020	<.005
JUL 15...	<.0020	<.0060	E.0788	<.002	<.001	<.0170	<.0020	<.0030	<.0030	<.004	<.0020	<.005
AUG 26...	<.0020	<.0060	E.0582	<.002	<.001	<.0170	<.0020	<.0030	<.0030	<.004	<.0020	<.005
SEP 23...	<.0020	<.0060	E.0871	.006	<.001	<.0170	<.0020	<.0030	<.0030	<.004	<.0020	<.005

E Estimated value

POTOMAC RIVER BASIN

01646580 POTOMAC RIVER AT CHAIN BRIDGE AT WASHINGTON, DC--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	METRI- BUZIN WATER DISSOLV (UG/L) (82630)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)
OCT 28...	<.0010	<.0060	.013	<.004	<.0040	<.0030	<.0040	<.004	<.0040	<.0050	E.0116	<.0030
NOV 24...	<.0010	<.0060	.024	<.004	<.0040	<.0030	<.0040	<.004	<.0040	<.0050	E.0077	<.0030
DEC 17...	<.0010	<.0060	.017	<.004	<.0040	<.0030	<.0040	<.004	<.0040	<.0050	<.0180	<.0030
JAN 22...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 05...	<.0010	<.0060	.014	<.004	<.0040	<.0030	<.0040	<.004	<.0040	<.0050	E.0044	<.0030
31...	<.0010	<.0060	.013	<.004	<.0040	<.0030	<.0040	<.004	<.0040	<.0050	<.0180	<.0030
APR 15...	<.0010	<.0060	.016	<.004	<.0040	<.0030	<.0040	<.004	<.0040	<.0050	E.0072	<.0030
MAY 14...	<.0010	<.0060	.195	<.004	<.0040	<.0030	<.0040	<.004	<.0040	<.0050	E.0069	<.0030
JUN 02...	<.0010	<.0060	.006	<.004	<.0040	<.0030	<.0040	<.004	<.0040	<.0050	<.0180	<.0030
11...	<.0010	<.0060	.146	<.004	<.0040	<.0030	<.0040	<.004	<.0040	<.0050	E.0133	<.0030
JUL 15...	<.0010	<.0060	.072	<.004	<.0040	<.0030	<.0040	<.004	<.0040	<.0050	E.0154	<.0030
AUG 26...	<.0010	<.0060	.016	<.004	<.0040	<.0030	<.0040	<.004	<.0040	<.0050	.0207	<.0030
SEP 23...	<.0010	<.0060	.009	<.004	<.0040	<.0030	<.0040	<.004	<.0040	<.0050	E.0153	<.0030

DATE	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
OCT 28...	<.0070	<.0130	<.0040	.0140	<.0100	<.0130	<.0020	<.0010	<.0020	1	6.3
NOV 24...	<.0070	<.0130	<.0040	.0135	<.0100	<.0130	<.0020	<.0010	<.0020	6	167
DEC 17...	<.0070	<.0130	<.0040	.0103	E.0066	<.0130	<.0020	<.0010	<.0020	3	49
JAN 22...	--	--	--	--	--	--	--	--	--	13	670
MAR 05...	<.0070	<.0130	<.0040	.0065	<.0100	<.0130	<.0020	<.0010	<.0020	21	2220
31...	<.0070	<.0130	<.0040	.0098	E.0064	<.0130	<.0020	<.0010	<.0020	14	858
APR 15...	<.0070	<.0130	<.0040	.0128	<.0100	<.0130	<.0020	<.0010	<.0020	15	984
MAY 14...	<.0070	<.0130	<.0040	.247	E.0057	<.0130	<.0020	<.0010	<.0020	40	4890
JUN 02...	<.0070	<.0130	<.0040	.0224	<.0100	<.0130	<.0020	<.0010	<.0020	--	--
11...	<.0070	<.0130	<.0040	.0764	E.0067	<.0130	<.0020	<.0010	<.0020	10	150
JUL 15...	<.0070	<.0130	<.0040	.0691	E.0090	<.0130	<.0020	<.0010	<.0020	3	31
AUG 26...	<.0070	<.0130	<.0040	.0233	<.0100	<.0130	<.0020	<.0010	<.0020	4	22
SEP 23...	<.0070	<.0130	<.0040	.0176	E.0077	<.0130	<.0020	<.0010	<.0020	6	24

E Estimated value

POTOMAC RIVER BASIN

01653000 CAMERON RUN AT ALEXANDRIA, VA

LOCATION.--Lat 38°48'23", long 77°06'36", Fairfax County, Hydrologic Unit 02070010, on left downstream side of Norfolk Southern Railway bridge at Alexandria, 800 ft downstream from confluence of Holmes Run and Backlick Run, 0.5 mi east of the U.S. Army Quartermaster Depot, and 3.4 mi upstream from mouth.

DRAINAGE AREA.--33.7 mi².

PERIOD OF RECORD.--June 1955 to March 1979, October 1979 to September 1980, October 1980 to September 1986 (annual maximum only), October 1986 to current year.

GAGE.--Water-stage recorder. Gage reinstalled Nov. 8, 1979. Datum of gage is 31.07 ft above sea level. Prior to Sept. 20, 1965, at present site at datum 7.78 ft higher. Sept. 20, 1965, to Jan. 19, 1976, at present site at datum 5.44 ft higher. Jan. 20, 1976, to Nov. 8, 1976, at site 1,200 ft downstream at datum 10.00 ft lower. Nov. 9, 1976, to Mar. 31, 1979, at site 0.5 mi downstream at datum 7.22 ft lower.

REMARKS.--Records good except for period of doubtful gage-height record, Oct. 1-20, which is fair. Some regulation by Lake Barcroft, formerly Alexandria Reservoir, on Holmes Run 3.6 mi upstream, usable capacity 2,092 acre-ft. Maximum discharge, 19,900 ft³/s, from rating curve extended above 2,500 ft³/s on basis of culvert computations of peak flow for main channel and bypass channels. Several measurements of water temperature were made during the year. Water-quality records for some periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,230 ft³/s, Feb. 17, gage height, 6.28 ft; minimum daily, 3.5 ft³/s, Sept. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e8.0	95	14	15	27	32	80	84	16	16	11	5.0
2	e6.0	45	12	15	22	90	63	130	10	12	9.0	5.6
3	e4.2	19	11	14	43	153	28	152	13	11	8.4	4.1
4	e4.2	12	13	16	446	44	121	98	10	10	7.5	4.2
5	e4.2	11	15	14	418	32	38	117	9.9	9.9	7.1	3.9
6	e4.0	10	12	14	109	29	27	140	11	9.4	6.8	3.5
7	e3.7	364	11	33	58	36	23	59	10	9.4	6.8	3.6
8	e3.7	203	11	55	41	208	29	203	10	120	6.5	29
9	e3.7	142	13	27	32	391	267	76	22	25	6.6	5.3
10	e3.9	34	40	15	28	74	76	49	39	12	28	4.6
11	e4.5	19	29	13	56	42	39	78	23	10	13	4.6
12	e4.8	15	14	13	84	35	31	175	166	9.4	9.1	4.0
13	e4.9	27	13	14	32	31	26	75	112	9.4	7.5	4.0
14	e5.8	140	12	12	23	30	30	36	35	9.4	6.6	3.7
15	e16	39	12	122	22	26	26	32	344	9.2	6.1	3.8
16	e24	18	11	88	24	24	25	32	124	9.0	5.6	3.9
17	e55	14	11	27	295	22	105	23	31	18	43	6.3
18	e250	13	11	28	247	149	34	18	18	16	20	6.0
19	e170	12	11	20	64	304	124	20	14	7.6	9.4	4.5
20	e14	12	11	19	46	170	81	25	37	7.6	6.1	4.0
21	11	45	11	14	33	494	32	14	14	9.4	6.4	4.7
22	9.6	99	21	13	29	122	27	12	102	18	6.8	111
23	10	25	48	486	248	61	25	15	198	89	6.8	9.7
24	12	14	21	107	306	44	21	15	158	31	6.0	7.3
25	168	12	128	59	77	37	22	39	26	10	6.0	7.5
26	193	12	24	32	45	37	21	14	17	8.6	6.0	7.0
27	83	12	49	62	38	32	31	13	13	7.8	6.0	6.0
28	15	13	46	565	35	30	19	13	65	8.5	9.1	5.9
29	12	12	23	115	---	29	20	13	16	8.1	5.5	5.2
30	11	13	49	48	---	27	21	13	14	31	5.1	6.1
31	10	---	25	32	---	25	---	12	---	68	4.7	---
TOTAL	1129.2	1501	732	2107	2928	2860	1512	1795	1677.9	629.7	292.5	284.0
MEAN	36.4	50.0	23.6	68.0	105	92.3	50.4	57.9	55.9	20.3	9.44	9.47
MAX	250	364	128	565	446	494	267	203	344	120	43	111
MIN	3.7	10	11	12	22	22	19	12	9.9	7.6	4.7	3.5
CFSM	1.08	1.48	.70	2.02	3.10	2.74	1.50	1.72	1.66	.60	.28	.28
IN.	1.25	1.66	.81	2.33	3.23	3.16	1.67	1.98	1.85	.70	.32	.31

e Estimated.

POTOMAC RIVER BASIN

01653000 CAMERON RUN AT ALEXANDRIA, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 1978, 1980, 1987 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	32.5	31.8	39.6	43.7	47.2	55.7	41.6	39.4	36.2	46.7	36.1	30.6
MAX	147	80.5	99.2	157	128	132	81.8	117	265	662	364	172
(WY)	1984	1964	1970	1978	1979	1993	1970	1989	1972	1981	1981	1975
MIN	4.52	4.40	3.47	10.0	15.6	19.9	10.6	8.59	7.93	2.51	3.85	5.31
(WY)	1964	1966	1966	1966	1968	1966	1969	1956	1956	1957	1957	1977

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1956 - 1998

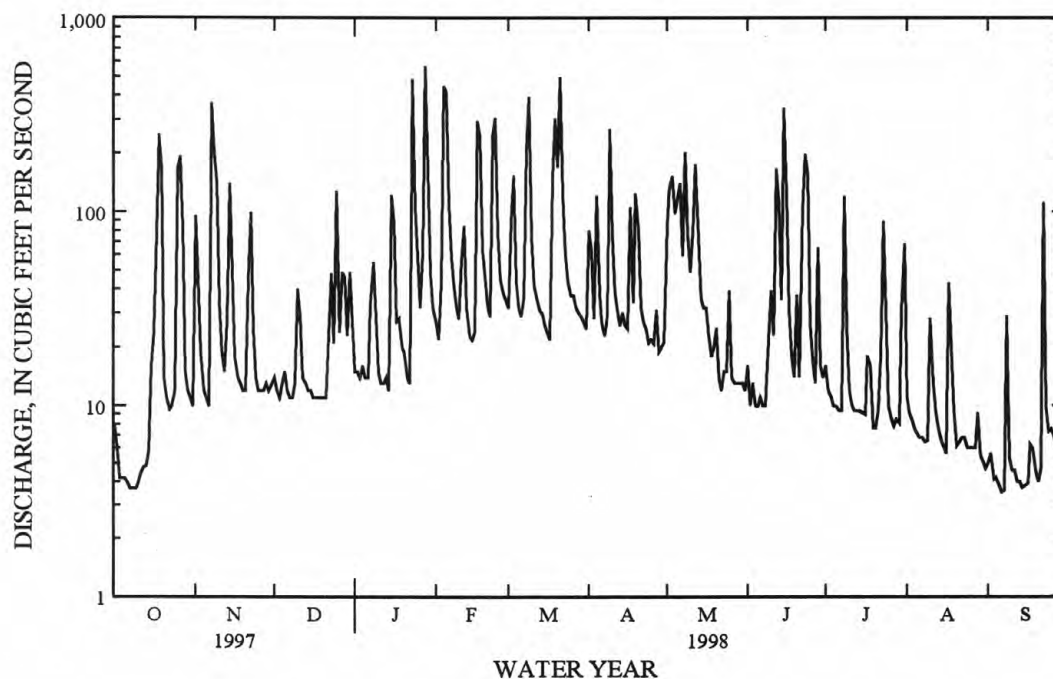
ANNUAL TOTAL	11841.2	17448.3	
ANNUAL MEAN	32.4	47.8	
HIGHEST ANNUAL MEAN			37.1
LOWEST ANNUAL MEAN			64.4
HIGHEST DAILY MEAN	425	565	3680
LOWEST DAILY MEAN	3.7	3.5	1.1
ANNUAL SEVEN-DAY MINIMUM	3.9	3.9	1.3
INSTANTANEOUS PEAK FLOW		3230	19900
INSTANTANEOUS PEAK STAGE		6.28	18.14
INSTANTANEOUS LOW FLOW		3.5	1.1
ANNUAL RUNOFF (CFSM)	.96	1.42	1.10
ANNUAL RUNOFF (INCHES)	13.07	19.26	14.98
10 PERCENT EXCEEDS	66	123	80
50 PERCENT EXCEEDS	18	19	16
90 PERCENT EXCEEDS	7.2	6.0	4.9

a Also Oct. 8, 9, 1997.

b Also Sept. 23-25, 1964.

c Also Sept. 6-7, 14, 15-16, 1998.

c Also Sept. 22-25, 1964.



POTOMAC RIVER BASIN

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA

LOCATION.--Lat 38°48'46", long 77°13'43", Fairfax County, Hydrologic Unit 02070010, on left bank 800 ft upstream from bridge on State Highway 620, 0.2 mi upstream from Long Branch, and 2.3 mi southwest of Annandale.

DRAINAGE AREA.--23.5 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1947 to current year (fragmentary prior to October 1947).

REVISED RECORDS.--WSP 1502: 1952. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 191.24 ft above sea level (levels by Stone and Webster Engineering Corporation). Prior to May 12, 1949, nonrecording gage at site 800 ft downstream at datum 0.33 ft lower. May 12, 1949, to June 4, 1970, water-stage recorder at site 800 ft downstream at datum 0.33 ft lower.

REMARKS.--No estimated daily discharges. Records good. Maximum discharge, 12,000 ft³/s, from rating curve extended above 6,600 ft³/s on basis of contracted-opening and flow-over-road measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 7	2000	1,590	8.20	Feb. 17	2300	1,850	8.63
Jan. 23	1715	1,910	8.74	Mar. 19	0500	1,400	7.85
Jan. 28	1530	1,920	8.75	Mar. 21	0515	*2,670	*9.73
Feb. 5	0330	1,680	8.35	Jun. 15	2300	2,050	8.96

Minimum discharge, 0.40 ft³/s, Sept. 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	88	10	8.7	15	19	70	76	11	20	5.2	.85
2	1.2	29	5.9	8.1	14	83	109	200	8.3	8.4	3.1	.81
3	1.2	8.5	5.7	8.9	13	206	20	153	12	7.6	2.8	.78
4	1.2	4.8	6.4	8.1	699	31	98	70	7.4	7.4	2.6	.80
5	1.2	3.9	7.8	7.7	676	23	25	65	7.7	7.1	2.4	.70
6	1.1	3.4	5.9	7.7	63	19	20	113	10	6.4	2.3	.62
7	1.1	607	5.4	36	31	19	18	39	7.2	6.3	2.3	1.8
8	.99	181	5.2	41	22	123	17	181	6.8	74	2.2	23
9	.92	114	6.7	18	18	293	266	53	10	15	2.2	2.2
10	1.1	16	28	11	16	38	46	34	34	7.7	59	1.3
11	1.1	10	15	8.6	23	24	24	43	13	6.0	12	.88
12	1.1	7.7	7.1	8.2	63	21	20	145	145	5.5	3.6	.65
13	1.1	9.9	6.2	11	17	19	18	50	119	5.0	2.7	.56
14	1.5	125	5.9	8.1	15	19	18	25	21	4.8	2.2	.53
15	3.9	23	5.6	109	13	17	17	20	485	4.7	2.2	.52
16	2.5	10	5.6	70	13	16	16	18	82	5.0	2.1	.69
17	37	7.7	5.6	16	363	16	88	16	21	11	13	1.5
18	131	7.2	5.6	18	291	123	29	15	13	12	7.8	1.8
19	4.5	6.8	5.3	11	37	385	87	14	11	4.7	2.2	1.3
20	2.5	6.6	5.3	11	27	116	62	13	63	4.2	1.7	.78
21	1.5	25	5.2	9.3	21	784	20	13	11	5.5	1.5	9.3
22	1.5	71	9.4	8.9	17	89	17	12	34	9.5	1.4	89
23	1.4	11	40	650	261	35	16	12	67	35	1.4	2.6
24	1.6	8.2	9.7	67	326	28	16	12	153	16	1.4	1.1
25	104	7.8	95	42	44	24	15	22	14	4.4	1.4	1.1
26	80	7.7	12	19	26	23	14	11	11	3.9	1.2	1.9
27	34	7.0	26	30	22	21	21	11	9.1	3.8	1.7	.95
28	5.8	6.7	31	985	20	20	14	11	89	3.3	1.5	.63
29	3.7	7.0	12	70	---	19	13	10	15	3.2	1.3	.59
30	3.2	7.4	29	27	---	18	13	9.8	15	2.8	1.1	7.2
31	3.1	---	15	18	---	18	---	9.2	---	41	1.0	---
TOTAL	437.71	1428.3	438.5	2352.3	3166	2689	1227	1476.0	1505.5	351.2	148.5	156.44
MEAN	14.1	47.6	14.1	75.9	113	86.7	40.9	47.6	50.2	11.3	4.79	5.21
MAX	131	607	95	985	699	784	266	200	485	74	59	89
MIN	.92	3.4	5.2	7.7	13	16	13	9.2	6.8	2.8	1.0	.52
CFSM	.60	2.03	.60	3.23	4.81	3.69	1.74	2.03	2.14	.48	.20	.22
IN.	.69	2.26	.69	3.72	5.01	4.26	1.94	2.34	2.38	.56	.24	.25

POTOMAC RIVER BASIN

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	18.4	24.8	29.1	33.5	36.9	42.9	35.6	33.4	25.1	20.3	21.7	20.8
MAX	76.6	70.4	73.8	87.0	113	114	94.5	125	212	74.5	123	120
(WY)	1980	1994	1997	1996	1998	1993	1983	1989	1972	1969	1967	1996
MIN	2.03	3.25	5.48	4.53	12.1	10.6	8.40	8.46	2.83	1.81	1.94	.45
(WY)	1955	1955	1966	1981	1978	1981	1985	1986	1986	1955	1957	1954

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1948 - 1998

ANNUAL TOTAL	9561.84	15376.45	
ANNUAL MEAN	26.2	42.1	28.5
HIGHEST ANNUAL MEAN			49.4
LOWEST ANNUAL MEAN			14.3
HIGHEST DAILY MEAN	757 May 26	985 Jan 28	e3300 Jun 22 1972
LOWEST DAILY MEAN	.90 Aug 13	.52 Sep 15	.02 aOct 10 1986
ANNUAL SEVEN-DAY MINIMUM	1.0 bAug 8	.73 Sep 10	.11 Oct 14 1988
INSTANTANEOUS PEAK FLOW		2670 Mar 21	12000 Jun 22 1972
INSTANTANEOUS PEAK STAGE		9.73 Mar 21	c15.96 Jun 22 1972
INSTANTANEOUS LOW FLOW		.40 dSep 29	.02 fOct 9 1986
ANNUAL RUNOFF (CFSM)	1.11	1.79	1.21
ANNUAL RUNOFF (INCHES)	15.14	24.34	16.47
10 PERCENT EXCEEDS	54	89	51
50 PERCENT EXCEEDS	12	12	12
90 PERCENT EXCEEDS	1.4	1.4	3.6

a Also Oct. 11, 12, 1986.

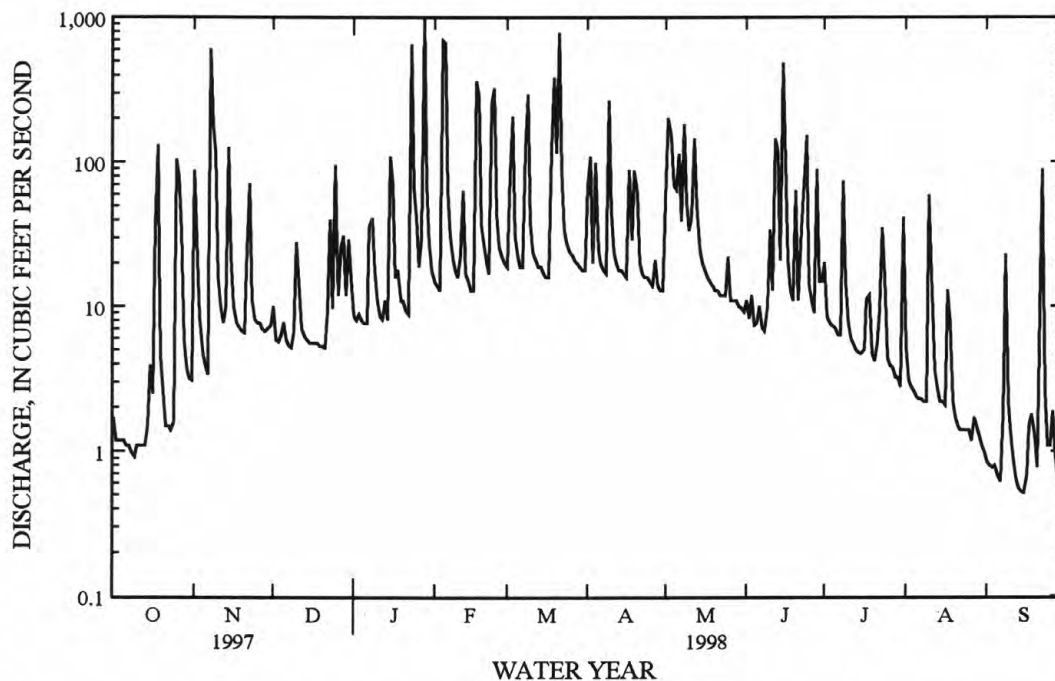
b Also Aug. 9, 1997.

c From high-water mark in gage house.

d Also Sept. 30, 1998.

e Estimated.

f Also Oct. 10-13, 1986, and Oct. 18, 1988.



POTOMAC RIVER BASIN

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA--Continued
(National water-quality assessment station)

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1993 to August 1995, September 1997 to current year.

REMARKS.--These data are a part of the National Water-Quality Assessment (NAWQA) program of the Potomac River Basin.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)
OCT 1997												
30...	1030	3.2	138	7.0	22.0	8.0	763	9.8	11	3.2	9.9	2.6
NOV												
24...	1345	8.1	169	7.8	4.0	7.0	763	10.8	13	4.2	11	3.3
DEC												
17...	1145	5.7	252	7.3	12.0	2.5	755	13.1	17	6.7	17	2.1
JAN 1998												
22...	1200	8.9	377	7.2	4.0	2.5	766	12.6	18	6.6	41	2.3
MAR												
05...	1300	23	200	7.1	8.0	6.5	762	12.1	15	5.3	15	1.8
31...	1330	18	246	7.1	26.5	19.5	760	10.9	17	7.1	16	1.8
APR												
15...	1500	17	238	7.9	27.0	17.5	756	10.5	11	6.2	8.2	6.3
28...	1215	13	238	7.4	22.0	14.0	768	9.9	--	--	--	--
MAY												
14...	1400	24	205	7.3	26.0	17.0	763	8.6	17	5.4	14	2.3
JUN												
02...	1145	8.1	--	--	--	--	--	--	--	--	--	--
11...	1445	11	170	7.1	20.0	16.5	762	8.2	13	4.6	11	2.2
24...	0945	47	96	6.5	27.0	23.0	761	7.0	--	--	--	--
JUL												
15...	1830	4.8	236	7.5	23.0	24.0	--	8.2	--	--	--	--
29...	1300	3.4	219	7.1	28.5	25.0	757	7.5	--	--	--	--
AUG												
12...	1500	3.2	131	6.7	27.5	26.0	761	6.8	9.8	3.1	7.5	2.8
26...	1715	1.2	203	7.1	28.5	27.0	757	7.3	--	--	--	--
SEP												
23...	1415	2.3	113	6.7	19.5	21.0	763	7.2	8.3	2.6	6.7	3.0

DATE	SULFATE DIS- SOLVED (MG/L AS S04) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	BICAR- BONATE WATER DIS IT (MG/L AS HCO3) (00453)	CAR- BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKA- LINITY WAT DIS TOT IT FIELD (MG/L AS CAC03) (39086)	SOLIDS, RESIDUE AT 180 DEG. C SOLVED (MG/L) (70300)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
OCT 1997											
30...	7.9	18	<.10	7.5	26	0	21	85	<.010	.497	<.015
NOV											
24...	9.3	22	<.10	10	40	0	33	106	<.010	.380	<.020
DEC											
17...	9.4	41	<.10	14	50	0	41	152	<.010	.896	<.020
JAN 1998											
22...	11	80	<.10	13	48	0	40	205	.015	1.18	<.020
MAR											
05...	12	32	<.10	13	40	0	33	136	.012	1.16	<.020
31...	9.6	41	<.10	10	51	0	42	142	<.010	.724	.022
APR											
15...	12	15	.16	4.8	45	0	37	143	.040	1.01	.109
28...	--	--	--	--	--	--	--	--	--	--	--
MAY											
14...	10	26	<.10	14	49	0	40	129	.017	1.02	.057
JUN											
02...	--	--	--	--	--	--	--	--	--	--	--
11...	8.4	21	.13	11	39	0	32	110	.031	1.04	.092
24...	--	--	--	--	--	--	--	--	--	--	--
JUL											
15...	--	--	--	--	--	--	--	--	.015	.818	.063
29...	--	--	--	--	--	--	--	--	--	--	--
AUG											
12...	6.6	15	.11	6.6	29	0	24	86	.013	.598	.070
26...	--	--	--	--	--	--	--	--	--	--	--
SEP											
23...	7.6	13	.10	4.5	--	--	--	70	.020	.762	.102

< Actual value is known to be less than the value shown.

POTOMAC RIVER BASIN

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	ACETO- CHLOR, WATER FLTRD REC (UG/L) (49260)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)
OCT 1997											
30...	.29	<.20	.037	<.010	<.010	120	48	<.003	<.002	<.002	.004
NOV											
24...	.31	.22	.012	<.010	.024	370	100	<.003	<.002	<.002	.006
DEC											
17...	.12	.10	.030	<.010	<.010	200	116	<.003	<.002	<.002	.005
JAN 1998											
22...	.14	<.10	.012	<.010	<.010	160	156	--	--	--	--
MAR											
05...	.18	.16	.019	.012	.016	130	106	--	--	--	--
31...	.15	.12	.016	<.010	.011	190	54	--	--	--	--
APR											
15...	1.7	1.1	.343	.097	.072	720	157	<.003	<.002	<.002	E.004
28...	--	--	--	--	--	--	--	<.003	.0089	<.002	.032
MAY											
14...	.37	.26	.024	<.010	.014	190	87	<.003	<.002	<.002	.023
JUN											
02...	--	--	--	--	--	--	--	<.003	<.002	<.002	.015
11...	.41	.34	.027	.012	.017	150	59	<.003	<.002	<.002	.055
24...	--	--	--	--	--	--	--	<.003	<.002	<.002	.013
JUL											
15...	.21	.14	<.010	<.010	.017	--	--	<.003	<.002	<.002	.014
29...	--	--	--	--	--	--	--	<.003	<.002	<.002	.013
AUG											
12...	.43	.40	.025	.019	<.010	27	84	<.003	<.002	<.002	.005
26...	--	--	--	--	--	--	--	<.003	<.002	<.002	.007
SEP											
23...	.57	.40	.101	.028	.030	52	53	<.003	<.002	<.002	<.001

DATE	ALPHA BHC DIS- SOLVED (UG/L) (34253)	BEN- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82673)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	P, P' DDE DISSOLV (UG/L) (34653)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)
OCT 1997											
30...	<.002	<.002	<.002	E.0277	<.003	.0067	<.004	E.0012	<.002	<.006	<.001
NOV											
24...	<.002	<.002	<.002	E.0134	<.003	<.004	<.004	.0101	<.002	<.006	<.001
DEC											
17...	<.002	<.002	<.002	<.003	<.003	.0052	<.004	.0236	E.0052	<.006	<.001
JAN 1998											
22...	--	--	--	--	--	--	--	--	--	--	--
MAR											
05...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
APR											
15...	<.002	<.002	<.002	<.003	<.003	E.0036	<.004	E.0010	E.0037	<.006	<.001
28...	<.002	.0046	<.002	E.0271	<.003	.0050	.0093	E.0016	E.0048	<.006	<.001
MAY											
14...	<.002	.0046	<.002	E.0174	<.003	.0211	<.004	E.0019	E.0042	<.006	<.001
JUN											
02...	<.002	<.002	<.002	<.003	<.003	<.004	<.004	<.002	E.0045	<.006	<.001
11...	<.002	<.002	<.002	E.132	<.003	.0157	<.004	<.002	E.0124	<.006	<.001
24...	<.002	<.007	<.002	E1.18	<.003	<.004	<.004	<.002	E.0067	<.006	<.001
JUL											
15...	<.002	<.002	<.002	E.0096	<.003	<.004	<.004	<.002	E.0039	<.006	<.001
29...	<.002	<.002	<.002	E.0783	<.003	<.004	<.004	<.002	<.002	<.006	<.001
AUG											
12...	<.002	<.002	<.002	E.325	<.003	<.004	<.004	<.002	<.002	<.006	<.001
26...	<.002	<.002	<.002	E.0695	<.003	<.004	<.004	<.002	<.002	<.006	<.001
SEP											
23...	<.002	<.002	<.002	E.331	<.003	E.0037	<.004	<.002	<.002	<.006	<.001

< Actual value is known to be less than the value shown.
E Estimated.

POTOMAC RIVER BASIN

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	FONOFOS WATER DISS REC (UG/L) (04095)	LINDANE DIS- SOLVED (UG/L) (39341)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)
OCT 1997											
30...	<.017	.050	<.002	<.003	<.004	E.0032	<.004	<.002	<.006	<.004	<.001
NOV											
24...	<.017	.068	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
DEC											
17...	<.017	.012	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
JAN 1998											
22...	--	--	--	--	--	--	--	--	--	--	--
MAR											
05...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
APR											
15...	<.017	.029	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
28...	<.017	.043	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
MAY											
14...	<.017	.035	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
JUN											
02...	<.017	E.003	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
11...	<.017	.126	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
24...	<.017	.462	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
JUL											
15...	<.017	.024	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
29...	<.017	.037	<.002	<.003	<.004	<.003	.059	<.002	<.006	<.004	<.001
AUG											
12...	<.017	.167	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
26...	<.017	.045	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001
SEP											
23...	<.017	.102	<.002	<.003	<.004	<.003	<.004	<.002	<.006	<.004	<.001

DATE	MALA- THION, DIS- SOLVED (UG/L) (39532)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	METRI- BUZIN WATER DISSOLV (UG/L) (82630)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PARA- THION, DIS- SOLVED (UG/L) (39542)	PRO- METON, WATER, DISS, REC (UG/L) (04037)
OCT 1997											
30...	<.005	.005	<.004	<.004	<.004	<.005	<.013	<.003	<.004	<.004	E.0172
NOV											
24...	<.010	.006	<.004	<.004	<.004	<.005	<.013	<.003	<.004	<.004	E.0172
DEC											
17...	<.005	.004	<.004	<.004	<.004	<.005	<.013	<.003	<.004	<.004	E.0124
JAN 1998											
22...	--	--	--	--	--	--	--	--	--	--	--
MAR											
05...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--	--	--
APR											
15...	<.005	.011	<.004	<.004	.0300	<.005	<.013	<.003	<.004	<.004	E.0067
28...	.010	.510	<.070	<.004	.0324	<.005	<.013	<.003	<.004	<.004	.0746
MAY											
14...	<.005	.044	<.004	<.004	.0374	<.005	<.013	<.003	<.004	<.004	.0181
JUN											
02...	<.005	.009	<.004	<.004	<.004	<.005	<.013	<.003	<.004	<.004	E.0123
11...	.017	.042	<.004	<.004	.0498	<.005	<.013	<.003	<.004	<.004	.0502
24...	<.005	.025	<.004	<.004	.0512	<.005	<.013	<.003	<.004	<.004	.0543
JUL											
15...	<.005	.009	<.004	<.004	<.004	<.005	<.013	<.003	<.004	<.004	E.0159
29...	<.005	.012	<.004	<.004	<.004	<.005	<.013	<.003	<.004	<.004	.0267
AUG											
12...	<.005	.007	<.004	<.004	<.004	<.005	<.013	<.003	<.004	<.004	.0628
26...	<.005	.005	<.004	<.004	<.004	<.005	<.013	<.003	<.004	<.004	.0319
SEP											
23...	<.005	E.003	<.004	<.004	<.004	<.005	<.013	<.003	<.004	<.004	.0304

< Actual value is known to be less than the value shown.

E Estimated.

POTOMAC RIVER BASIN

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PROP- CHLOR, WATER, FLTRD DISS, REC (UG/L) (04024)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
OCT 1997											
30...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	<.010	.0078	4
NOV											
24...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	<.010	.0122	4
DEC											
17...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	E.0041	.0152	1
JAN 1998											
22...	--	--	--	--	--	--	--	--	--	--	1
MAR											
05...	--	--	--	--	--	--	--	--	--	--	3
31...	--	--	--	--	--	--	--	--	--	--	2
APR											
15...	<.002	<.007	<.003	<.007	<.001	E.0021	<.002	<.013	<.010	.0100	8
28...	<.002	<.007	<.003	<.007	<.001	.0059	<.002	<.013	<.010	.0184	--
MAY											
14...	<.002	<.007	<.003	<.007	<.001	.0053	<.002	<.013	<.010	.0243	11
JUN											
02...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	<.010	.0557	--
11...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	<.010	.0326	15
24...	<.002	<.007	<.003	<.007	<.001	.0075	<.002	<.013	<.010	.0158	--
JUL											
15...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	<.010	.0236	7
29...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	<.010	.0168	--
AUG											
12...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	<.010	<.013	13
26...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	<.010	.0101	--
SEP											
23...	<.002	<.007	<.003	<.007	<.001	<.002	<.002	<.013	E.0075	<.005	26

< Actual value is known to be less than the value shown.
E Estimated.

POTOMAC RIVER BASIN

01656000 CEDAR RUN NEAR CATLETT, VA

LOCATION.--Lat 38°38'12", long 77°37'31", Fauquier County, Hydrologic Unit 02070010, on right bank 100 ft downstream from bridge on State Highway 806, 0.9 mi downstream from Licking Run, and 1.4 mi southeast of Catlett.

DRAINAGE AREA.--93.4 mi².

PERIOD OF RECORD.--July 1950 to December 1986, January 1986 to September 1989 (annual maximum only), October 1989 to current year.

REVISED RECORDS.--WSP 2103: Drainage area. WDR VA-79-1: 1973-77(P). WDR VA-95-1: 1972-94 (M).

GAGE.--Water-stage recorder. Datum of gage is 199.15 ft above sea level. July 1950 to December 1986, water-stage recorder at same site and datum.

REMARKS.--Records good except those for period with ice effect, Jan. 1, and period with backwater, Aug. 30 to Sept. 18, which are fair. Maximum discharge, 32,500 ft³/s, from rating curve extended above 7,000 ft³/s, on basis of contracted-opening measurement of peak flow. No flow at times in many years. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct 15, 1942, reached a stage of about 22 ft, discharge not determined, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 7	1700	2,800	10.22	Feb. 18	0630	3,890	11.68
Jan. 23	1730	2,540	9.83	Mar. 19	0730	2,060	9.01
Jan. 28	1900	3,970	11.78	Mar. 21	0800	*6,060	*13.98
Feb. 5	0430	4,340	12.21				

Minimum daily discharge, 0.12 ft³/s, Sept. 15, 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.1	126	34	e52	162	129	113	68	41	33	3.4	e.67
2	2.8	96	28	53	135	132	336	260	27	26	2.8	e.78
3	3.2	46	22	67	125	234	138	341	21	16	2.2	e.92
4	2.3	25	22	71	1560	130	171	316	17	13	1.8	e.62
5	2.0	18	27	63	3060	108	166	204	17	11	1.6	e.40
6	2.6	13	26	57	845	94	117	199	15	11	1.9	e.32
7	2.1	1560	22	91	518	86	95	139	13	8.2	1.6	e.29
8	1.3	937	20	258	272	561	85	1290	11	9.3	1.4	e.50
9	1.6	294	18	195	191	937	374	631	11	14	1.5	e.20
10	2.2	151	24	127	158	367	412	315	47	11	2.0	e.16
11	2.6	98	44	93	147	194	198	249	46	8.1	2.0	e.15
12	2.7	74	37	75	238	147	140	518	51	6.0	2.6	e.15
13	2.8	77	31	71	157	126	113	367	110	4.7	2.1	e.14
14	2.4	252	27	60	126	116	99	203	134	4.1	1.8	e.14
15	3.3	205	23	142	109	101	96	149	294	4.1	1.8	e.12
16	1.9	141	24	442	99	89	81	113	730	4.1	2.3	e.12
17	2.4	93	25	192	826	83	107	94	232	3.9	2.0	e7.1
18	63	64	25	165	2030	189	112	74	109	4.2	2.3	e30
19	32	49	22	121	552	1260	118	61	72	3.3	2.5	6.9
20	15	39	19	102	279	526	368	52	57	2.7	1.9	2.4
21	7.8	37	16	76	207	3710	160	46	42	2.6	1.4	1.3
22	4.2	107	17	66	158	870	117	39	69	3.0	1.2	.75
23	3.2	73	48	1310	497	482	101	34	115	2.2	1.2	.76
24	2.2	66	41	783	777	250	88	34	205	31	1.0	1.3
25	14	47	224	330	304	189	70	74	63	9.9	.83	1.3
26	19	40	132	196	195	159	60	51	42	5.3	.73	.76
27	46	36	107	180	157	140	58	39	32	5.2	.80	.70
28	20	29	141	2780	138	121	50	37	44	3.8	.82	1.0
29	10	28	99	1270	---	108	44	32	50	3.5	.85	.74
30	7.1	28	105	455	---	97	42	27	40	3.0	e.70	.90
31	4.9	---	97	222	---	86	---	24	---	3.8	e.60	---
TOTAL	290.7	4849	1547	10165	14022	11821	4229	6080	2757	271.0	51.63	61.59
MEAN	9.38	162	49.9	328	501	381	141	196	91.9	8.74	1.67	2.05
MAX	63	1560	224	2780	3060	3710	412	1290	730	33	3.4	30
MIN	1.3	13	16	52	99	83	42	24	11	2.2	.60	.12
CFSM	.10	1.73	.53	3.51	5.36	4.08	1.51	2.10	.98	.09	.02	.02
IN.	.12	1.93	.62	4.05	5.58	4.71	1.68	2.42	1.10	.11	.02	.02

e Estimated.

POTOMAC RIVER BASIN

01656000 CEDAR RUN NEAR CATLETT, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 1987, 1990 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	46.8	64.7	111	149	171	178	125	75.1	72.1	30.4	45.5	38.8
MAX	450	248	379	467	501	531	544	210	917	323	407	388
(WY)	1980	1973	1993	1978	1998	1993	1983	1971	1972	1956	1955	1975
MIN	.40	3.15	3.53	4.64	28.0	22.3	19.6	9.41	2.90	.74	.58	.37
(WY)	1987	1966	1966	1981	1954	1981	1985	1956	1954	1963	1966	1954

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1951 - 1986
1990 - 1998

ANNUAL TOTAL	24124.07	56144.92	
ANNUAL MEAN	66.1	154	92.1
HIGHEST ANNUAL MEAN			171
LOWEST ANNUAL MEAN			27.6
HIGHEST DAILY MEAN	1560	Nov 7	3710
LOWEST DAILY MEAN	.70	aJul 22	e.12
ANNUAL SEVEN-DAY MINIMUM	1.1	Aug 9	e.14
INSTANTANEOUS PEAK FLOW			6060
INSTANTANEOUS PEAK STAGE			13.98
INSTANTANEOUS LOW FLOW			(g)
ANNUAL RUNOFF (CFSM)	.71		1.65
ANNUAL RUNOFF (INCHES)	9.61		22.36
10 PERCENT EXCEEDS	151		322
50 PERCENT EXCEEDS	28		47
90 PERCENT EXCEEDS	1.5		1.3

a Also Aug. 12, 1997.

b Also Sept. 16, 1998.

c Many days in 1954, 1957, 1959, 1963-64, 1966, 1983, and 1993.

d Many days in 1954, 1957, 1959, 1963-64, 1966, and 1983.

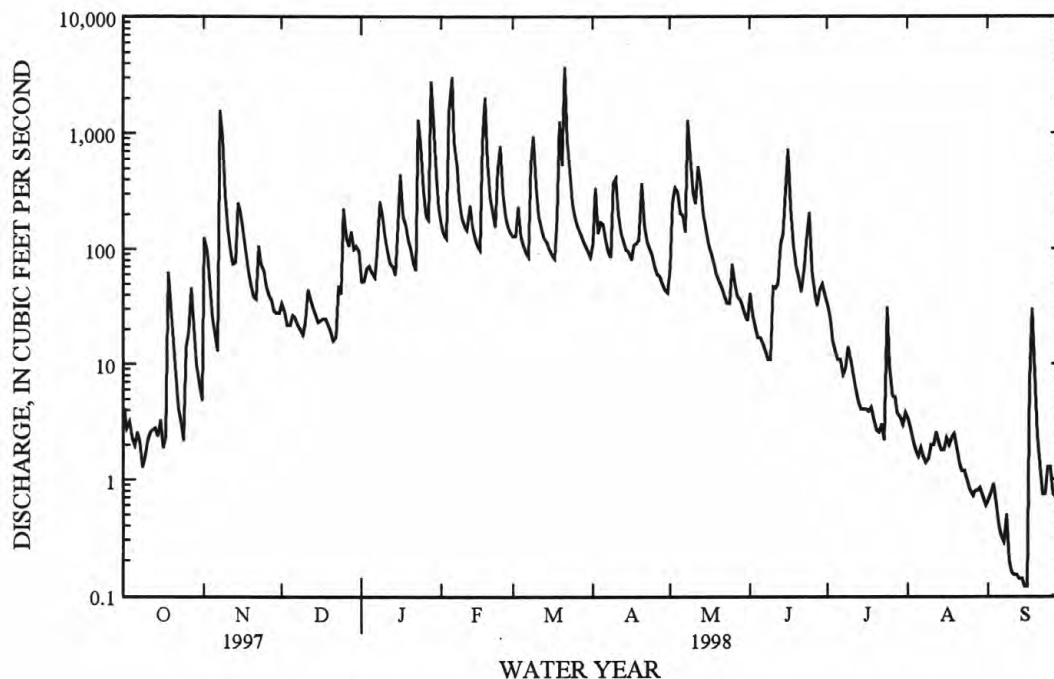
e Estimated.

f From floodmarks.

g Not determined.

h Probably occurred Sept. 16, 1998.

j Many days in 1954, 1957, 1959, 1963-64, 1966, 1983, 1991, and 1993.



POTOMAC RIVER BASIN

01656100 CEDAR RUN NEAR ADEN, VA

LOCATION.--Lat. 38°36'58", long 77°33'16", Prince William County, Hydrologic unit 02070010, on left bank 1000 feet upstream side of bridge on State Highway 611, 0.5 mi downstream from Darrels Run, 0.7 mi downstream from Town Run, and 3.0 miles southeast of Aden.

DRAINAGE AREA.--155 mi²

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1972 to November 1987, August 1996 to current year.

GAGE.--Water-stage recorder. Datum of gage is 166.27 ft above sea level.

REMARKS.--Records fair. October 1972 to November 1987, water-stage recorder at site 800 ft downstream at same datum.

COOPERATION.--Records provided by Virginia Water Control Board from October 1972 to November 1987.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1972 reached a stage of 21.37 ft, from floodmarks, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,800 ft³/s and maximum (*):

REVISION.--The maximum discharge for water year 1997 has been revised to 7,990 ft³/s, Oct. 19, 1996, gage height, 14.89 ft.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 8	0115	4,050	12.75	Feb. 5	0600	5,660	13.94
Jan. 23	2400	3,960	12.66	Feb. 18	1100	4,220	12.92
Jan. 28	1845	4,960	13.57	Mar. 21	1030	*6,770	*14.43

Minimum daily discharge, 0.16 ft³/s, Sept. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.9	97	56	e115	226	163	118	63	37	41	3.3	.87
2	3.7	179	49	102	187	177	314	227	34	30	2.8	.92
3	3.2	111	38	116	168	569	155	496	24	22	2.6	1.3
4	2.9	45	37	120	1980	238	184	363	20	17	1.7	.61
5	3.1	32	43	109	4700	182	222	230	19	14	1.6	.43
6	2.6	22	45	100	1490	153	149	231	18	13	1.4	.49
7	2.4	1440	37	143	812	135	124	158	17	11	1.2	.44
8	2.6	2390	33	366	439	795	112	1650	15	11	1.2	.40
9	2.2	527	30	282	290	1710	362	872	15	14	2.1	.30
10	1.9	250	33	185	224	579	744	370	33	14	2.1	.19
11	1.7	165	67	143	198	284	276	298	63	11	1.6	.16
12	1.9	128	62	121	371	204	189	711	53	8.3	1.6	.17
13	2.4	105	51	118	230	166	152	564	118	6.8	1.9	.21
14	2.0	321	44	110	177	152	133	287	248	5.3	1.8	.21
15	2.4	271	39	180	151	133	127	198	275	4.8	1.4	.21
16	2.7	160	36	788	136	119	114	149	1200	4.5	1.9	.21
17	3.4	117	37	322	1150	112	133	123	287	4.5	1.8	.31
18	59	93	37	271	3170	293	155	98	152	4.7	2.4	42
19	30	79	34	203	781	2150	125	78	103	4.9	2.0	12
20	11	68	31	184	408	775	498	64	79	3.9	1.8	2.5
21	6.5	64	26	144	311	4770	223	54	53	2.9	1.1	.99
22	4.6	197	26	128	220	1420	157	46	42	2.1	.94	.87
23	4.3	150	63	1810	798	606	132	38	137	2.4	1.3	.73
24	4.4	123	72	1900	1700	327	120	36	335	20	1.2	.62
25	11	95	328	585	512	244	100	73	107	14	.90	.60
26	25	77	213	309	302	201	85	62	59	6.5	.93	.83
27	70	66	162	247	215	175	79	44	40	4.5	1.4	2.1
28	31	54	223	3340	175	154	78	41	51	4.2	1.2	.70
29	15	48	168	2540	---	144	66	37	76	2.9	.98	.64
30	11	47	171	635	---	124	57	31	52	2.6	1.0	.64
31	7.9	---	175	319	---	107	---	27	---	2.8	1.1	---
TOTAL	338.7	7521	2466	16035	21521	17361	5483	7719	3762	310.6	50.25	72.65
MEAN	10.9	251	79.5	517	769	560	183	249	125	10.0	1.62	2.42
MAX	70	2390	328	3340	4700	4770	744	1650	1200	41	3.3	42
MIN	1.7	22	26	100	136	107	57	27	15	2.1	.90	.16
CFSM	.07	1.62	.51	3.34	4.96	3.61	1.18	1.61	.81	.06	.01	.02
IN.	.08	1.81	.59	3.85	5.17	4.17	1.32	1.85	.90	.07	.01	.02

e Estimated.

POTOMAC RIVER BASIN

01656100 CEDAR RUN NEAR ADEN, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 1987, 1997 - 1998 BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	137	151	267	301	359	308	266	118	74.7	39.0	71.7	134
MAX	924	584	668	893	908	786	1088	384	353	192	336	958
(WY)	1980	1973	1973	1978	1979	1984	1983	1978	1982	1975	1984	1975
MIN	1.61	10.0	8.55	5.96	58.7	27.8	29.7	17.2	4.78	2.55	1.14	1.32
(WY)	1987	1975	1981	1981	1977	1981	1981	1977	1977	1985	1987	1980

SUMMARY STATISTICS

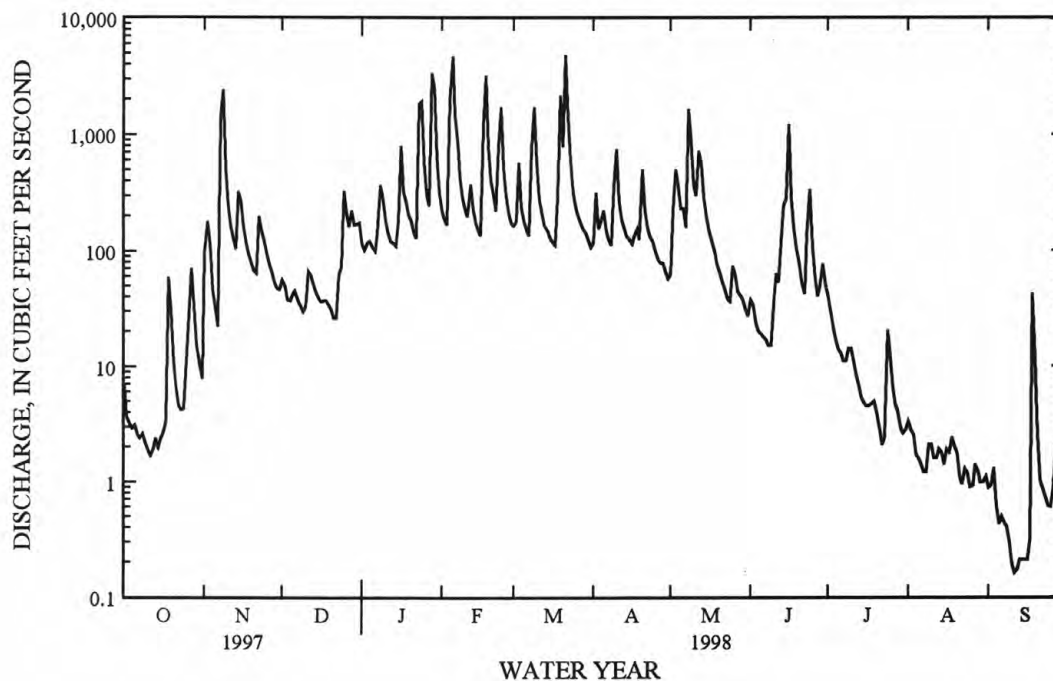
FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1973 - 1987
1997 - 1998

ANNUAL TOTAL	39616.2	82640.20	184
ANNUAL MEAN	109	226	313
HIGHEST ANNUAL MEAN			52.0
LOWEST ANNUAL MEAN			10400
HIGHEST DAILY MEAN	2390	Nov 8	4770
LOWEST DAILY MEAN	1.2	Sep 27	.16
ANNUAL SEVEN-DAY MINIMUM	1.8	Sep 3	.19
INSTANTANEOUS PEAK FLOW			6770
INSTANTANEOUS PEAK STAGE			14.43
INSTANTANEOUS LOW FLOW			.16
ANNUAL RUNOFF (CFSM)	.70		1.46
ANNUAL RUNOFF (INCHES)	9.51		19.83
10 PERCENT EXCEEDS	227	497	340
50 PERCENT EXCEEDS	46	66	50
90 PERCENT EXCEEDS	2.6	1.3	3.0

a Also Sept. 11, 12, 1998.



POTOMAC RIVER BASIN

01656100 CEDAR RUN NEAR ADEN, VA--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
OCT 1997			
01...	1200	2.00	8
02...	1200	1.88	11
03...	1200	1.87	12
04...	1200	1.86	4
05...	1200	1.86	6
06...	1200	1.85	8
07...	1200	1.83	13
08...	1200	1.84	6
09...	1200	1.82	9
10...	1200	1.81	13
11...	1200	1.79	12
12...	1200	1.80	12
13...	1200	1.83	9
14...	1200	1.80	8
15...	1200	1.82	12
16...	1009	1.81	8
16...	1010	1.81	2
16...	1011	1.81	10
16...	1200	1.83	7
17...	1200	1.84	17
18...	1200	2.93	22
19...	1200	2.37	12
20...	1200	2.10	19
21...	1200	1.97	18
22...	1200	1.90	9
23...	1200	1.89	23
24...	1200	1.90	12
25...	1200	1.96	13
26...	1200	2.28	14
27...	1200	3.15	95
28...	1200	2.41	8
29...	1200	2.17	7
30...	1200	2.08	8
31...	1200	2.01	7
NOV 1997			
01...	1200	2.14	14
01...	1815	3.50	71
01...	2215	4.71	94
02...	0215	4.10	42
02...	0615	3.68	24
02...	1200	3.36	29
02...	2215	3.50	24
03...	0215	3.50	17
03...	1200	3.07	9
04...	1200	2.56	14
05...	1200	2.42	11
06...	1200	2.29	6
07...	0945	3.61	83
07...	1200	7.25	422
07...	1345	9.18	363
07...	1745	10.94	374
07...	2145	12.02	145
08...	0145	12.56	87
08...	0545	12.24	45
08...	1200	10.22	77
08...	1345	9.65	37
08...	1745	7.88	38
09...	0145	5.88	25
09...	1200	5.28	27
09...	2145	5.88	14
10...	0545	4.16	10
10...	1200	3.94	11
10...	2145	3.70	14

POTOMAC RIVER BASIN

01656100 CEDAR RUN NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
NOV 1997			
11...	1200	3.47	10
12...	1200	3.17	12
13...	1200	2.99	14
14...	0430	3.46	23
14...	0830	4.10	34
14...	1200	4.47	29
14...	1230	4.50	35
14...	1630	4.76	27
14...	2030	4.90	30
15...	0030	4.71	24
15...	0430	4.36	23
15...	1200	3.95	15
15...	1230	3.93	17
16...	0030	3.60	12
16...	1200	3.38	10
20...	1200	2.72	21
21...	1200	2.66	11
22...	0515	3.48	43
22...	0915	3.48	43
22...	1200	3.84	16
22...	1315	3.83	22
23...	0115	3.50	13
23...	1200	3.28	15
24...	1200	3.15	8
26...	1115	2.88	11
26...	1116	2.88	5
26...	1117	2.88	17
26...	1200	2.77	8
27...	1200	2.70	8
28...	1200	2.59	10
29...	1200	2.55	4
30...	1200	2.54	8
DEC 1997			
01...	1200	2.63	12
02...	1200	2.57	8
03...	1200	2.45	17
04...	1200	2.45	12
05...	1200	2.51	21
06...	1200	2.52	13
07...	1200	2.44	11
08...	1200	2.39	20
09...	1200	2.36	18
10...	1200	2.39	9
11...	1200	2.78	12
12...	1200	2.66	6
16...	1200	2.42	43
19...	1200	2.40	23
20...	1200	2.37	6
21...	1200	2.30	8
22...	1200	2.31	5
23...	1200	2.63	8
24...	1200	2.73	16
25...	0445	3.46	44
25...	0845	4.86	61
25...	1200	4.97	46
25...	1245	4.94	53
25...	1645	4.62	42
25...	2045	4.29	35
26...	0045	4.05	27
26...	1200	3.66	22
26...	1245	3.64	25
26...	2045	3.48	20
27...	1200	3.28	13
27...	2000	3.46	19

POTOMAC RIVER BASIN

01656100 CEDAR RUN NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
DEC 1997			
28...	0000	3.74	13
28...	0400	3.92	16
28...	1200	3.75	12
29...	0000	3.57	14
30...	1200	3.39	10
30...	1630	3.45	23
30...	2030	3.57	15
31...	0030	3.66	13
31...	0430	3.61	8
31...	1145	3.45	10
31...	1200	3.44	10
JAN 1998			
02...	1200	2.91	42
03...	1200	3.07	9
04...	1200	3.09	4
05...	1200	2.99	8
06...	1200	2.93	10
07...	1200	3.21	15
07...	2015	3.45	8
08...	0015	3.96	23
08...	0415	4.62	36
08...	0815	4.56	38
08...	1200	4.38	27
08...	1615	4.39	32
08...	2015	4.59	35
09...	0015	4.47	23
09...	0815	4.14	23
09...	1135	4.14	22
09...	1137	4.14	333
09...	1157	4.12	21
09...	1200	4.02	21
09...	1615	3.91	17
10...	0015	3.73	15
10...	0815	3.56	13
10...	1200	3.49	10
11...	1200	3.23	7
12...	1200	3.07	10
13...	1200	3.06	10
14...	1200	2.98	3
15...	1200	2.87	8
15...	1915	3.47	90
15...	2315	6.07	164
16...	0315	7.20	142
16...	0715	6.89	88
16...	1115	6.12	69
16...	1200	5.99	54
16...	1515	5.51	50
17...	0315	4.58	22
17...	1200	4.20	18
17...	1515	4.08	16
18...	0315	4.06	9
18...	0715	4.16	15
18...	1115	4.09	11
18...	1200	4.07	10
19...	1200	3.59	8
19...	1515	3.57	9
20...	1200	3.53	8
22...	1200	3.14	10
23...	0515	3.49	39
23...	0915	5.69	121
23...	1200	8.95	288
23...	1315	10.02	292
23...	1715	11.46	309
23...	2115	12.35	193

POTOMAC RIVER BASIN

01656100 CEDAR RUN NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
JAN 1998			
24...	0115	12.42	102
24...	0515	11.72	62
24...	0915	9.51	54
24...	1025	8.85	58
24...	1030	8.84	37
24...	1050	8.42	52
24...	1200	7.92	57
24...	1315	7.34	46
24...	1715	6.27	34
24...	2115	6.06	32
25...	0115	6.21	34
25...	0515	5.99	30
25...	0915	5.55	25
25...	1200	5.30	23
25...	2115	4.74	21
26...	0515	4.41	20
27...	0115	4.00	11
27...	1200	3.84	15
28...	1200	12.17	120
28...	1600	12.94	122
28...	2000	13.40	132
28...	2400	13.31	90
29...	0400	13.03	69
29...	0800	12.09	49
29...	1200	9.92	54
29...	1201	9.92	46
29...	1600	7.86	45
30...	0400	6.21	39
30...	1000	5.66	28
30...	1005	5.66	31
30...	1015	5.64	32
30...	1200	5.64	24
30...	1600	5.23	36
31...	0400	4.52	37
31...	1200	4.30	17
31...	2400	4.02	31
FEB 1998			
03...	1200	3.46	8
03...	1315	3.45	6
04...	0145	3.52	5
04...	0545	3.78	33
04...	0945	7.34	160
04...	1200	9.36	124
04...	1257	9.90	162
04...	1300	9.95	23
04...	1312	10.03	172
04...	1345	10.36	172
04...	1745	11.80	144
04...	2145	12.88	126
05...	0145	13.54	95
05...	0545	13.75	87
05...	0945	13.79	67
05...	1200	13.64	60
05...	1235	13.50	42
05...	1345	13.35	49
05...	1745	12.86	33
05...	2145	12.11	29
06...	0145	10.65	35
06...	0545	8.69	38
06...	0945	7.51	28
06...	1050	7.40	23
06...	1200	7.17	32
06...	1345	7.04	26
06...	1745	7.26	25
06...	2145	7.52	27

POTOMAC RIVER BASIN

01656100 CEDAR RUN NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
FEB 1998			
07...	0145	7.20	21
07...	0545	6.78	21
07...	0945	6.41	19
07...	1200	6.18	21
07...	1345	5.91	15
07...	1745	5.54	18
07...	2145	5.23	14
08...	0145	5.03	15
08...	1200	4.98	14
08...	2145	4.50	4
09...	1200	4.12	23
09...	2145	3.99	2
10...	1200	3.78	8
10...	1345	3.77	2
11...	1200	3.61	4
11...	2145	3.69	10
12...	0145	4.28	9
12...	0545	4.86	13
12...	0945	4.85	15
12...	1200	4.73	24
12...	1345	4.63	18
12...	1745	4.41	11
13...	0145	4.06	4
13...	0945	3.85	4
13...	2145	3.68	3
14...	1200	3.52	7
17...	1200	4.80	112
17...	1400	7.19	211
17...	1800	10.46	192
17...	2200	11.11	137
18...	0200	12.19	201
18...	0600	12.52	234
18...	1000	12.86	155
18...	1200	12.66	103
18...	1245	12.59	94
18...	1400	12.31	80
18...	1800	10.33	52
18...	2200	7.90	47
19...	0200	6.89	38
19...	0600	6.63	35
19...	1000	6.25	42
19...	1200	6.14	36
19...	1400	6.00	33
19...	1800	5.71	39
19...	2200	5.28	24
20...	0200	5.00	23
20...	0600	4.78	23
20...	1000	4.63	19
20...	1200	4.60	22
20...	1800	4.71	16
21...	0200	4.58	16
21...	1000	4.33	15
21...	1200	4.28	15
22...	1200	3.78	10
23...	1200	3.77	27
24...	1200	8.83	40
24...	1630	7.49	39
24...	2030	6.51	36
25...	0030	6.01	28
25...	0430	5.64	26
25...	1200	5.15	19
25...	1630	4.95	16

POTOMAC RIVER BASIN

01656100 CEDAR RUN NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
FEB 1998			
26...	0430	4.41	12
26...	1200	4.29	11
26...	1630	4.23	6
27...	0430	4.04	8
27...	1200	3.79	10
27...	1230	3.78	10
28...	0830	3.62	8
28...	1200	3.61	10
MAR 1998			
01...	0430	3.52	34
01...	1200	3.48	9
02...	0030	3.51	9
02...	1200	3.46	11
02...	2030	3.58	8
03...	0030	4.81	18
03...	0430	6.46	69
03...	0830	6.24	104
03...	1200	5.47	45
04...	1200	3.85	18
05...	1200	3.54	11
05...	1400	3.53	18
05...	2315	3.45	9
06...	1200	3.35	12
07...	1200	3.24	5
08...	1130	3.49	18
08...	1200	3.60	21
08...	1530	6.85	96
08...	1930	9.38	115
09...	0330	7.90	59
09...	0730	8.40	56
09...	1000	9.34	79
09...	1015	9.39	58
09...	1030	9.45	74
09...	1200	9.71	47
09...	1315	9.78	63
09...	1330	9.83	50
09...	1345	9.83	64
09...	1530	9.76	64
09...	1930	8.49	45
09...	2330	6.99	35
10...	0330	6.21	23
10...	0730	5.71	24
10...	1130	5.30	18
10...	1200	5.28	20
10...	1530	5.01	17
10...	2330	4.74	15
11...	0730	4.23	14
11...	1530	4.03	9
12...	1200	3.68	8
13...	0945	3.48	13
13...	1200	3.46	7
14...	1200	3.39	5
15...	1200	3.24	8
16...	1200	3.14	6
17...	1200	3.08	3
18...	0730	3.45	28
18...	1130	4.62	35
18...	1200	4.75	37
18...	1530	4.96	28
18...	1930	4.60	22
18...	2330	4.39	33
19...	0330	7.96	219
19...	0730	10.62	289
19...	1115	11.43	144
19...	1130	11.27	152
19...	1200	11.48	98
19...	1530	11.37	81
19...	1930	9.35	49
19...	2330	7.21	45

POTOMAC RIVER BASIN

01656100 CEDAR RUN NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
MAR 1998			
20...	0330	6.23	38
20...	1200	5.37	30
20...	1530	5.19	17
20...	1945	5.64	26
20...	2345	10.27	366
21...	0345	13.03	328
21...	0745	14.16	271
21...	1145	14.08	191
21...	1200	14.03	107
21...	1545	13.48	96
21...	1945	12.66	52
21...	2345	11.54	44
22...	0345	9.64	47
22...	0745	8.19	48
22...	1145	7.32	40
22...	1200	7.30	45
22...	1545	6.90	37
22...	1945	6.57	34
23...	0745	5.88	32
23...	1200	5.50	28
23...	1945	4.90	24
24...	0745	4.41	19
24...	1200	4.30	12
25...	1200	3.90	23
25...	1900	3.81	11
26...	1200	3.67	14
26...	2300	3.60	11
27...	1200	3.52	16
28...	1200	3.39	19
28...	2100	3.45	13
29...	1200	3.30	15
30...	1200	3.18	10
31...	1200	3.02	6
APR 1998			
01...	1200	2.95	8
01...	2230	3.49	14
02...	1200	4.21	61
02...	1830	3.79	53
03...	0230	3.49	23
03...	1200	3.30	18
04...	1200	3.24	11
04...	1530	3.45	14
04...	1930	4.05	16
04...	2330	4.15	14
05...	0430	3.96	13
05...	1200	3.69	12
05...	1230	3.67	14
05...	2030	3.47	15
06...	1200	3.25	10
07...	1200	3.07	9
08...	1200	2.98	10
09...	0030	2.97	142
09...	1200	3.04	9
09...	1630	3.47	55
09...	2030	6.68	131
10...	0430	7.17	94
10...	0830	5.85	63
10...	1200	5.32	34
11...	0030	4.39	20
11...	1200	3.96	16
11...	2030	3.77	10
12...	1200	3.50	12
12...	1630	3.45	10
13...	1200	3.26	7
14...	1200	3.13	10
15...	1200	3.10	7
16...	1200	2.98	7

POTOMAC RIVER BASIN

01656100 CEDAR RUN NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDEDED (MG/L) (80154)
APR 1998			
17...	1200	3.03	9
17...	2000	3.45	15
18...	1200	3.30	9
19...	1200	3.01	9
19...	2330	3.45	31
20...	0330	5.60	76
20...	0730	5.90	66
20...	1130	5.18	49
20...	1200	5.11	40
20...	1530	4.69	40
20...	1930	4.36	29
20...	2330	4.10	26
21...	0330	3.90	20
21...	0730	3.77	19
21...	1130	3.68	14
21...	1200	3.67	14
21...	1530	3.60	18
21...	1930	3.53	12
21...	2330	3.45	9
22...	1010	3.42	7
22...	1015	3.42	10
22...	1200	3.29	8
23...	1200	3.13	8
24...	1200	3.04	10
25...	1200	2.87	11
26...	1200	2.79	11
27...	1200	2.74	7
28...	1200	2.75	8
29...	1200	2.65	10
30...	1200	2.58	10
MAY 1998			
01...	1200	2.55	10
02...	0115	3.51	40
02...	0515	4.09	32
02...	0915	3.75	20
02...	1200	3.60	20
02...	1315	3.55	12
02...	1715	3.45	9
02...	2015	3.45	16
03...	0015	5.75	123
03...	0415	6.46	72
03...	0815	5.26	58
03...	1200	4.60	40
03...	1215	4.57	31
03...	1615	4.22	26
03...	2015	4.00	33
04...	0015	3.87	24
04...	0415	5.40	28
04...	0815	4.78	25
04...	1200	4.42	35
04...	1215	4.41	35
04...	1615	4.17	28
04...	2015	3.99	24
05...	0015	3.86	19
05...	0415	3.75	16
05...	0815	3.70	12
05...	1200	3.85	15
06...	0415	3.92	15
06...	0815	4.04	12
06...	1200	3.84	15
06...	1215	3.83	20
07...	1200	3.32	16
07...	2330	3.47	18
08...	0330	6.36	141
08...	0730	8.78	147
08...	1130	9.19	125
08...	1200	9.20	107
08...	1530	9.49	118
08...	1930	9.46	127
08...	2330	8.70	66

POTOMAC RIVER BASIN

01656100 CEDAR RUN NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
MAY 1998			
09...	0330	7.40	45
09...	0730	6.72	41
09...	1130	6.27	34
09...	1200	6.22	33
10...	0330	4.80	21
10...	1200	4.45	15
11...	1200	4.10	11
11...	1330	4.16	18
11...	2130	4.27	19
12...	0530	4.26	25
12...	0930	5.17	45
12...	1200	6.09	47
12...	1330	6.51	65
12...	1730	7.10	64
12...	2130	6.82	45
13...	0130	6.20	35
13...	0530	5.75	29
13...	0945	5.46	16
13...	0950	5.46	21
13...	0955	5.45	17
13...	1200	5.21	21
13...	1730	4.83	17
14...	0530	4.21	19
14...	1200	4.07	11
14...	1730	3.96	12
15...	0930	3.63	15
15...	1200	3.57	11
16...	1200	3.27	7
17...	1200	3.08	8
18...	1200	2.89	11
19...	1200	2.74	9
20...	1200	2.62	11
21...	1200	2.54	19
22...	1200	2.47	18
23...	1200	2.38	14
24...	1200	2.37	18
25...	1200	2.63	15
26...	1200	2.61	14
27...	1200	2.44	12
28...	1200	2.43	12
29...	1200	2.38	17
30...	1200	2.30	14
31...	1200	2.25	16
JUN 1998			
01...	1200	2.24	12
02...	1200	2.31	17
03...	1200	2.20	14
04...	1200	2.15	5
05...	1200	2.13	8
06...	1200	2.13	7
07...	1200	2.10	9
08...	1200	2.05	5
09...	1200	2.02	5
10...	1200	2.13	11
11...	1200	2.57	8
12...	1200	2.46	12
13...	1200	2.49	13
13...	2015	3.52	97
14...	0015	4.96	291
14...	0415	4.54	140
14...	0815	3.96	80
14...	1200	3.65	50
14...	1215	3.64	155
15...	1200	2.89	18
15...	2000	3.62	299
15...	2400	9.03	322

POTOMAC RIVER BASIN

01656100 CEDAR RUN NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
JUN 1998			
16...	0400	9.57	271
16...	0800	9.16	189
16...	1143	7.00	74
16...	1147	7.00	75
16...	1150	6.75	80
16...	1200	6.76	69
16...	1201	6.76	75
16...	2000	4.76	41
16...	2400	4.36	37
17...	0400	4.21	32
17...	1200	4.18	24
17...	1600	4.00	27
18...	0400	3.49	29
18...	1200	3.30	23
19...	1200	2.97	18
20...	1200	2.79	15
21...	1200	2.56	13
22...	1200	2.43	10
23...	0130	3.45	27
23...	1200	3.18	18
24...	0030	3.46	210
24...	0430	5.53	115
24...	0830	4.98	111
24...	1200	4.31	61
24...	1230	4.23	70
24...	1630	3.80	70
24...	2030	3.51	59
25...	1200	2.97	27
26...	1200	2.61	14
27...	1200	2.43	15
28...	1200	2.48	18
29...	1200	2.77	18
30...	1200	2.56	23
JUL 1998			
01...	1200	2.44	9
02...	1200	2.30	16
03...	1200	2.20	19
04...	1200	2.12	9
05...	1200	2.04	14
06...	1200	2.05	9
07...	1200	1.98	8
08...	1200	1.98	9
09...	1200	2.09	11
10...	1200	2.07	8
11...	1200	2.00	10
12...	1200	1.92	10
13...	1200	1.88	7
14...	1200	1.83	11
15...	1200	1.83	5
16...	1200	1.80	3
17...	1200	1.80	5
18...	1200	1.80	8
19...	1200	1.82	4
20...	1200	1.78	3
22...	0945	1.82	5
22...	0950	1.82	6
22...	0955	1.82	5
23...	1200	1.71	9
24...	1200	2.48	14
25...	1200	2.08	16
26...	1200	1.88	14
27...	1200	1.82	11
28...	1200	1.81	11
29...	1200	1.76	9
30...	1200	1.74	7
31...	1200	1.76	11

POTOMAC RIVER BASIN

01656100 CEDAR RUN NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
AUG 1998			
01...	1200	1.76	8
02...	1200	1.76	9
03...	1200	1.73	13
04...	1200	1.70	10
05...	1200	1.69	6
06...	1200	1.67	7
07...	1200	1.65	6
08...	1200	1.63	5
09...	1200	1.69	3
10...	1200	1.70	9
11...	1100	1.78	4
11...	1105	1.67	17
11...	1110	1.78	10
11...	1200	1.67	6
12...	1200	1.66	4
13...	1200	1.67	3
14...	1200	1.70	7
15...	1200	1.70	4
16...	1200	1.72	10
17...	1200	1.67	8
18...	1200	1.69	9
19...	1200	1.67	6
20...	1200	1.68	8
21...	1200	1.64	15
22...	1200	1.61	6
23...	1200	1.65	8
24...	1200	1.65	9
25...	1200	1.62	5
26...	1200	1.63	9
27...	1200	1.72	8
28...	1200	1.71	4
29...	1200	1.68	9
30...	1200	1.70	7
31...	1200	1.73	8
SEP 1998			
01...	1200	1.67	4
02...	1200	1.67	5
03...	1200	1.73	5
04...	1200	1.60	6
05...	1200	1.55	4
06...	1200	1.60	4
07...	1200	1.61	6
16...	1005	1.61	3
16...	1010	1.61	2
16...	1015	1.61	3

POTOMAC RIVER BASIN

01656100 CEDAR RUN NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER				NOVEMBER			DECEMBER		
1	6.9	2	.04	97	11	6.2	56	4	.67
2	3.7	3	.03	179	9	4.5	49	4	.47
3	3.2	3	.02	111	4	1.2	38	6	.62
4	2.9	1	.01	45	4	.45	37	6	.56
5	3.1	2	.02	32	3	.25	43	8	.90
6	2.6	2	.02	22	2	.13	45	5	.65
7	2.4	3	.02	1440	54	321	37	5	.54
8	2.6	2	.01	2390	16	120	33	8	.73
9	2.2	2	.01	527	7	11	30	7	.61
10	1.9	4	.02	250	4	2.7	33	5	.40
11	1.7	3	.01	165	3	1.6	67	5	.83
12	1.9	3	.01	128	4	1.4	62	3	.54
13	2.4	2	.01	105	5	1.5	51	3	.41
14	2.0	2	.01	321	9	8.4	44	3	.35
15	2.4	3	.02	271	6	4.6	39	3	.31
16	2.7	2	.02	160	3	1.4	36	3	.29
17	3.4	5	.04	117	3	.85	37	3	.30
18	59	5	.86	93	4	1.0	37	3	.30
19	30	4	.28	79	5	1.1	34	3	.27
20	11	5	.14	68	6	1.2	31	3	.26
21	6.5	5	.08	64	6	1.0	26	4	.26
22	4.6	4	.05	197	9	4.6	26	3	.23
23	4.3	6	.06	150	5	1.9	63	4	.76
24	4.4	3	.04	123	3	1.1	72	9	1.8
25	11	6	.27	95	3	.89	328	23	21
26	25	7	.47	77	3	.72	213	12	7.0
27	70	17	3.5	66	3	.56	162	8	3.6
28	31	3	.28	54	4	.51	223	7	4.4
29	15	2	.08	48	2	.30	168	7	3.1
30	11	2	.06	47	3	.39	171	7	3.3
31	7.9	2	.05	---	---	---	175	6	2.6
TOTAL	338.7	---	6.54	7521	---	502.45	2466	---	58.06
JANUARY				FEBRUARY			MARCH		
1	e115	6	e1.9	226	21	13	163	7	3.1
2	102	5	1.5	187	11	5.8	177	8	3.9
3	116	5	1.4	168	6	2.6	569	40	70
4	120	3	.82	1980	76	535	238	15	10
5	109	5	1.4	4700	42	565	182	10	5.0
6	100	6	1.7	1490	21	89	153	8	3.2
7	143	8	3.0	812	13	30	135	4	1.6
8	366	19	19	439	8	10	795	36	145
9	282	12	9.3	290	8	6.2	1710	44	207
10	185	7	3.4	224	3	1.9	579	16	26
11	143	4	1.7	198	4	2.2	284	9	7.0
12	121	6	1.9	371	10	11	204	7	3.8
13	118	5	1.7	230	4	2.5	166	6	2.6
14	110	3	.77	177	5	2.4	152	5	1.9
15	180	25	28	151	5	1.9	133	6	2.2
16	788	47	116	136	4	1.3	119	5	1.6
17	322	11	10	1150	88	460	112	5	1.5
18	271	7	4.9	3170	114	1090	293	25	21
19	203	5	3.0	781	32	68	2150	121	747
20	184	5	2.6	408	18	20	775	50	174
21	144	6	2.3	311	13	11	4770	174	2270
22	128	7	2.4	220	9	5.4	1420	41	160
23	1810	111	759	798	36	143	606	28	47
24	1900	37	227	1700	41	203	327	16	15
25	585	19	30	512	17	24	244	17	12
26	309	13	11	302	8	6.6	201	13	7.3
27	247	17	12	215	7	4.3	175	16	7.6
28	3340	90	897	175	8	3.5	154	18	7.4
29	2540	52	389	---	---	---	144	15	5.8
30	635	35	60	---	---	---	124	11	3.7
31	319	26	23	---	---	---	107	8	2.2
TOTAL	16035	---	2626.69	21521	---	3318.6	17361	---	3975.4

e Estimated.

POTOMAC RIVER BASIN

01656100 CEDAR RUN NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	118	11	3.7	63	21	4.1	37	19	2.1
2	314	58	52	227	36	27	34	20	1.8
3	155	22	9.2	496	67	109	24	14	.90
4	184	16	8.0	363	36	36	20	6	.34
5	222	16	9.4	230	20	12	19	8	.41
6	149	13	5.2	231	22	13	18	8	.38
7	124	11	3.8	158	23	9.6	17	9	.41
8	112	12	3.5	1650	149	697	15	5	.23
9	362	52	115	872	47	120	15	6	.22
10	744	64	167	370	22	22	33	10	.89
11	276	19	14	298	20	16	63	9	1.5
12	189	14	6.9	711	57	124	53	12	1.7
13	152	10	4.1	564	29	47	118	49	38
14	133	12	4.3	287	18	14	248	83	73
15	127	9	3.2	198	15	8.1	275	96	176
16	114	9	2.9	149	10	3.9	1200	128	582
17	133	14	5.3	123	10	3.4	287	27	21
18	155	13	5.6	98	13	3.5	152	23	9.7
19	125	19	6.6	78	12	2.5	103	18	5.0
20	498	64	95	64	15	2.5	79	15	3.2
21	223	22	14	54	22	3.1	53	13	1.9
22	157	11	4.7	46	21	2.7	42	13	1.6
23	132	11	4.1	38	18	1.8	137	48	17
24	120	14	4.4	36	20	2.0	335	90	88
25	100	15	4.0	73	22	4.7	107	29	8.8
26	85	14	3.3	62	17	2.9	59	15	2.4
27	79	11	2.3	44	14	1.7	40	15	1.6
28	78	11	2.4	41	15	1.6	51	21	3.2
29	66	14	2.4	37	18	1.8	76	20	4.2
30	57	14	2.2	31	17	1.4	52	20	2.8
31	---	---	---	27	17	1.2	---	---	---
TOTAL	5483	---	568.5	7719	---	1299.5	3762	---	1050.28

POTOMAC RIVER BASIN

01656100 CEDAR RUN NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JULY			AUGUST			SEPTEMBER			
1	41	11	1.2	3.3	8	.08	.87	5	.01
2	30	15	1.2	2.8	9	.07	.92	5	.01
3	22	17	1.0	2.6	12	.08	1.3	5	.02
4	17	10	.49	1.7	10	.05	.61	6	.01
5	14	13	.47	1.6	7	.03	.43	4	.00
6	13	9	.34	1.4	7	.03	.49	4	.01
7	11	8	.24	1.2	6	.02	.44	6	.01
8	11	9	.27	1.2	5	.01	.40	7	.01
9	14	10	.39	2.1	4	.02	.30	8	.01
10	14	9	.32	2.1	7	.04	.19	6	.00
11	11	10	.28	1.6	5	.02	.16	6	.00
12	8.3	10	.21	1.6	4	.02	.17	6	.00
13	6.8	8	.14	1.9	3	.02	.21	6	.00
14	5.3	9	.14	1.8	6	.03	.21	6	.00
15	4.8	5	.07	1.4	5	.02	.21	6	.00
16	4.5	3	.04	1.9	9	.05	.21	4	.00
17	4.5	5	.06	1.8	8	.04	.31	6	.01
18	4.7	7	.09	2.4	8	.05	42	9	1.1
19	4.9	4	.06	2.0	7	.04	12	9	.27
20	3.9	3	.03	1.8	8	.04	2.5	5	.04
21	2.9	4	.03	1.1	12	.04	.99	5	.01
22	2.1	5	.03	.94	7	.02	.87	6	.01
23	2.4	9	.06	1.3	8	.03	.73	5	.01
24	20	16	1.0	1.2	8	.03	.62	6	.01
25	14	16	.65	.90	6	.01	.60	5	.01
26	6.5	14	.24	.93	8	.02	.83	7	.02
27	4.5	11	.14	1.4	7	.03	2.1	12	.07
28	4.2	11	.12	1.2	5	.02	.70	6	.01
29	2.9	9	.07	.98	8	.02	.64	5	.01
30	2.6	8	.05	1.0	7	.02	.64	5	.01
31	2.8	10	.08	1.1	7	.02	---	---	---
TOTAL	310.6	---	9.51	50.25	---	1.02	72.65	---	1.68
YEAR	82640.20		13418.23						

POTOMAC RIVER BASIN

01656120 CEDAR RUN AT ROUTE 646 NEAR ADEN, VA

LOCATION.--Lat. 38°38'29", long 77°30'46", Prince William County, Hydrologic unit 02070010, on left bank at upstream side of bridge on State Highway 646, 2.0 miles southeast of Aden.

DRAINAGE AREA.--Not determined.

WATER-DISCHARGE RECORDS

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

GAGE.--Water stage recorder. Elevation of gage is 160 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 7,000 ft³/s Mar. 21, gage height 16.17 ft; minimum 0.46 ft³/s, Sept. 14-16.

REVISION.--The maximum discharge for period of record is 7,820 ft³/s, Oct. 19, 1996; gage height, 16.61 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.6	97	62	131	304	224	123	78	40	51	5.5	2.5
2	5.4	275	58	106	239	220	386	272	47	40	4.7	2.1
3	3.7	149	47	120	205	707	205	608	31	30	3.9	2.0
4	3.2	64	45	126	1780	322	230	469	25	23	3.3	2.9
5	3.3	47	50	114	5720	231	314	309	24	20	2.6	1.5
6	3.4	34	53	103	2240	184	199	327	23	18	2.7	.93
7	2.8	1150	46	153	1040	159	160	211	20	16	2.4	.80
8	2.7	2910	41	457	567	737	143	1700	18	17	2.1	1.1
9	3.1	708	38	377	381	2120	390	1190	17	20	2.1	1.1
10	2.6	328	41	233	290	798	998	503	30	20	3.2	.85
11	2.7	190	69	164	251	389	396	399	90	16	2.8	.68
12	2.4	135	69	131	466	276	266	817	69	14	2.1	.61
13	2.0	106	60	123	302	223	205	741	112	12	2.0	.56
14	2.4	374	52	114	222	200	174	390	333	11	2.7	.53
15	2.9	369	47	157	181	170	162	271	231	9.3	3.0	.46
16	2.8	195	42	1000	157	145	143	199	1390	9.5	2.9	.49
17	4.0	127	44	439	1090	133	163	157	362	9.2	4.1	.54
18	82	98	44	357	3570	377	202	120	192	9.8	6.0	20
19	52	83	41	262	1100	2380	156	95	125	9.3	3.9	12
20	20	73	38	232	540	1010	594	79	95	8.8	3.4	4.2
21	9.6	68	34	171	425	5150	303	68	67	7.2	2.9	2.0
22	6.0	230	33	146	304	2160	203	59	52	5.5	2.2	2.3
23	4.9	177	61	1620	835	769	164	49	209	5.5	1.9	1.5
24	5.0	131	80	2600	2200	444	141	47	520	23	2.6	1.1
25	10	98	390	794	689	335	112	82	157	27	2.5	.96
26	44	83	277	430	403	274	93	79	85	12	1.8	.94
27	90	74	184	331	302	238	85	57	57	8.9	1.7	1.6
28	54	63	278	3160	252	201	82	52	66	7.9	1.8	1.4
29	28	57	202	3670	---	170	70	48	98	6.3	2.1	.91
30	18	56	197	858	---	151	63	41	65	4.9	1.9	.99
31	13	---	213	443	---	133	---	35	---	5.6	1.7	---
TOTAL	495.5	8549	2936	19122	26055	21030	6925	9552	4650	477.7	88.5	69.55
MEAN	16.0	285	94.7	617	931	678	231	308	155	15.4	2.85	2.32
MAX	90	2910	390	3670	5720	5150	998	1700	1390	51	6.0	20
MIN	2.0	34	33	103	157	133	63	35	17	4.9	1.7	.46

POTOMAC RIVER BASIN

01656120 CEDAR RUN AT ROUTE 646 NEAR ADEN, VA--Continued

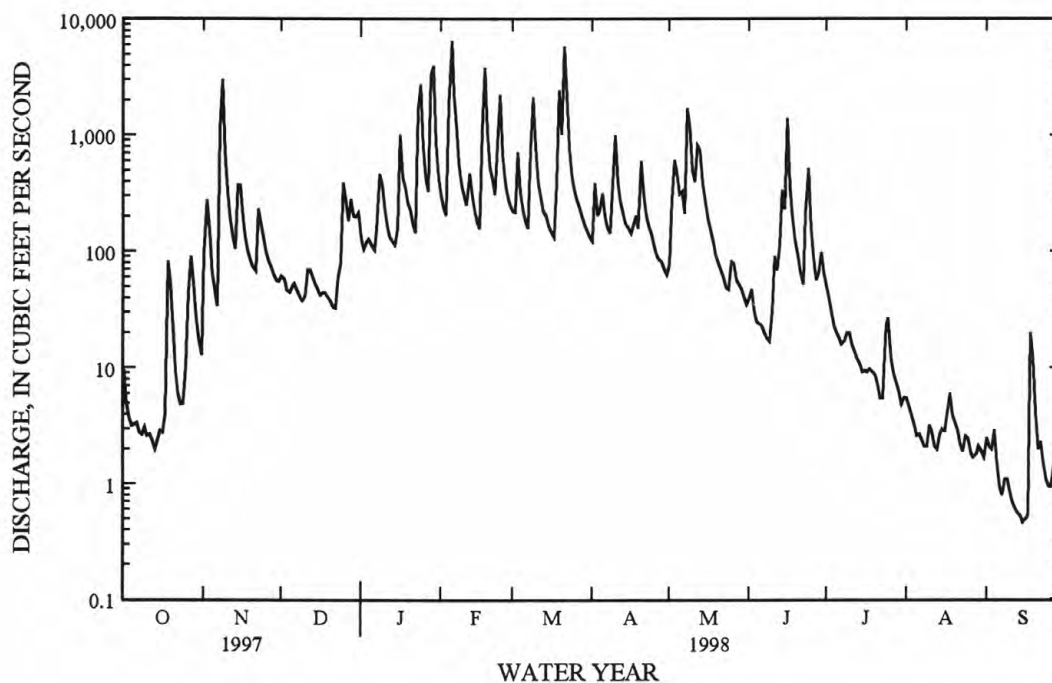
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	191	263	346	436	621	507	178	178	93.4	18.0	4.21	5.13
MAX	366	285	597	617	931	678	231	308	155	20.7	5.57	7.94
(WY)	1997	1998	1997	1998	1998	1998	1998	1998	1998	1997	1997	1997
MIN	16.0	241	94.7	255	311	336	125	47.7	31.7	15.4	2.85	2.32
(WY)	1998	1997	1998	1997	1997	1997	1997	1997	1997	1998	1998	1998

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1996 - 1998	
ANNUAL TOTAL	46241.0		99950.25			
ANNUAL MEAN	127		274		235	
HIGHEST ANNUAL MEAN					274	
LOWEST ANNUAL MEAN					195	
HIGHEST DAILY MEAN	2910	Nov 8	5720	Feb 5	5720	Feb 5 1998
LOWEST DAILY MEAN	2.0	Oct 13	.46	Sep 15	.46	Sep 15 1998
ANNUAL SEVEN-DAY MINIMUM	2.5	Sep 4	.55	Sep 11	.55	Sep 11 1998
INSTANTANEOUS PEAK FLOW			7000	Mar 21	a7820	Oct 19 1996
INSTANTANEOUS PEAK STAGE			16.17	Mar 21	16.61	Oct 19 1996
INSTANTANEOUS LOW FLOW			.46	bSep 14	.46	bSep 14 1998
10 PERCENT EXCEEDS	290		600		467	
50 PERCENT EXCEEDS	53		79		82	
90 PERCENT EXCEEDS	3.0		2.2		2.9	

a Revised.

b Also Sept. 15-16, 1998.



POTOMAC RIVER BASIN

01656120 CEDAR RUN AT ROUTE 646 NEAR ADEN, VA--Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	NITRO- GEN DIS- SOLVED (MG/L AS N) (00602)
OCT 1997										
16...	0900	2.9	163	7.0	10.5	12.7	770	4.9	45	--
NOV										
26...	1130	83	162	6.6	9.5	6.0	745	14.7	121	1.5
JAN 1998										
09...	1015	385	160	7.1	14.5	13.2	749	9.9	96	1.1
30...	1005	909	91	7.1	6.0	6.0	757	12.2	99	.98
FEB										
04...	1515	2600	90	7.1	2.0	4.8	749	12.6	100	.91
24...	1345	2240	78	6.8	8.0	6.5	752	12.1	100	.75
MAR										
19...	1045	2670	83	7.0	9.5	6.3	730	12.1	102	1.3
APR										
22...	0900	205	98	7.0	17.5	13.9	735	9.8	98	.45
MAY										
13...	0900	769	112	6.9	14.5	14.5	735	8.9	91	1.0
JUN										
16...	1000	1970	103	6.9	27.3	19.7	754	7.5	83	3.0
JUL										
22...	0900	5.2	145	7.3	27.5	25.1	752	5.6	69	--
AUG										
11...	1020	2.5	172	7.2	27.5	24.4	749	6.8	83	--
SEP										
16...	0930	.54	245	7.2	20.3	22.8	755	3.8	45	--

DATE	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
OCT 1997									
16...	--	<.010	<.050	<.015	.34	.28	<.010	<.010	<.010
NOV									
26...	--	<.010	1.26	<.020	.32	.28	.017	<.010	.043
JAN 1998									
09...	.549	.010	.559	<.020	.64	.52	.078	.035	.044
30...	--	<.010	.707	.041	.39	.27	.061	.016	<.010
FEB									
04...	--	<.010	.508	<.020	.81	.40	.190	.064	.056
24...	--	<.010	.330	.060	.69	.42	.134	.061	.038
MAR									
19...	--	<.010	.347	.305	1.6	.96	.464	.199	.162
APR									
22...	--	<.010	.165	.037	.39	.28	.047	.016	.018
MAY									
13...	.430	.010	.440	.047	.69	.57	.080	.044	.039
JUN									
16...	2.10	.032	2.13	.095	1.5	.86	.326	.107	.094
JUL									
22...	--	<.010	<.050	.048	.28	.22	.027	<.010	.016
AUG									
11...	--	<.010	<.050	.061	.31	.29	<.010	.017	<.010
SEP									
16...	--	.012	<.050	.038	.34	.30	.013	.015	.012

< Actual value is known to be less than the value shown.

* The constituent reporting level was changed during this water year.

POTOMAC RIVER BASIN

01656120 CEDAR RUN AT ROUTE 646 NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
OCT 1997			
01...	1200	1.63	15
02...	1200	1.50	11
04...	1200	1.39	15
05...	1200	1.39	16
06...	1200	1.39	12
07...	1200	1.35	26
08...	1200	1.35	10
09...	1200	1.38	7
10...	1200	1.35	20
11...	1200	1.35	20
12...	1200	1.33	18
13...	1200	1.29	13
14...	1200	1.32	13
15...	1200	1.36	11
16...	0855	1.35	5
16...	0856	1.35	2
16...	1200	1.35	10
17...	1200	1.33	8
18...	1200	2.58	72
19...	1200	2.26	68
20...	1200	1.83	15
21...	1200	1.60	14
22...	1200	1.50	13
23...	1200	1.44	17
24...	1200	1.43	9
25...	1200	1.63	13
26...	1200	2.16	11
27...	1200	2.85	21
28...	1200	2.28	4
29...	1200	1.94	7
30...	1200	1.77	6
31...	1200	1.70	6
NOV 1997			
01...	1200	1.99	8
01...	2045	3.71	53
02...	0045	5.11	58
02...	0445	4.29	39
02...	0845	3.70	37
02...	1200	3.40	107
03...	1200	2.98	55
04...	1200	2.37	30
05...	1200	2.21	60
06...	1200	2.05	6
07...	1130	3.57	120
07...	1200	4.90	174
07...	1530	9.83	286
07...	1930	11.09	330
07...	2330	11.74	163
08...	0330	12.54	64
08...	0730	13.02	51
08...	1200	12.74	40
08...	1530	12.11	18
08...	1930	10.04	33
09...	0330	6.30	31
09...	1130	5.67	27
09...	1200	5.65	23
09...	2330	4.78	22
10...	1200	3.96	61
10...	2330	3.59	15
11...	1200	3.31	21
12...	1200	3.01	14
13...	1200	2.79	18
14...	0700	3.52	23
14...	1100	4.37	34
14...	1200	4.51	51
14...	1500	4.82	30
14...	1900	5.11	30
14...	2300	5.22	28

POTOMAC RIVER BASIN

01656120 CEDAR RUN AT ROUTE 646 NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
NOV 1997			
15...	0300	4.92	21
15...	1200	4.13	50
15...	1500	3.97	18
16...	0300	3.57	11
16...	1200	3.35	23
17...	1200	2.95	12
18...	1200	2.75	12
19...	1200	2.63	18
20...	1200	2.54	23
21...	1200	2.47	10
22...	0700	3.40	48
22...	1100	3.86	26
22...	1200	3.90	28
22...	1500	3.90	22
22...	1900	3.78	20
22...	2300	3.63	13
23...	1200	3.24	26
24...	1200	3.01	18
25...	1200	2.74	12
26...	1020	2.62	5
26...	1021	2.62	4
26...	1022	2.62	7
26...	1200	2.63	5
27...	1200	2.55	5
28...	1200	2.45	7
29...	1200	2.39	7
30...	1200	2.37	8
DEC 1997			
01...	1200	2.47	11
02...	1200	2.40	10
03...	1200	2.27	6
04...	1200	2.25	8
05...	1200	2.31	8
06...	1200	2.35	16
07...	1200	2.25	14
08...	1200	2.18	10
09...	1200	2.17	10
10...	1200	2.18	13
11...	1200	2.54	11
12...	1200	2.50	9
13...	1200	2.42	13
14...	1200	2.34	4
15...	1200	2.27	7
16...	1200	2.21	8
17...	1200	2.24	13
18...	1200	2.25	8
19...	1200	2.20	7
20...	1200	2.18	5
21...	1200	2.12	4
22...	1200	2.10	9
23...	1200	2.31	7
24...	1200	2.59	6
25...	0645	3.51	45
25...	1045	5.15	93
25...	1200	5.32	105
25...	1445	5.31	63
25...	1845	4.93	51
25...	2245	4.49	41
26...	0245	4.18	32
26...	1200	3.73	49
26...	1845	3.54	13
27...	1200	3.22	16
27...	2300	3.51	7
28...	0300	3.85	17
28...	0700	4.03	16
28...	1100	3.92	13
28...	1200	3.88	13

POTOMAC RIVER BASIN

01656120 CEDAR RUN AT ROUTE 646 NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
DEC 1997			
29...	0300	3.56	12
29...	1200	3.38	12
30...	1200	3.34	7
30...	2045	3.50	9
31...	0045	3.64	8
31...	0445	3.66	8
31...	0845	3.55	8
31...	1200	3.46	9
JAN 1998			
02...	1200	2.79	9
03...	1200	2.94	9
04...	1200	2.97	6
05...	1200	2.86	4
06...	1200	2.78	9
07...	1200	3.03	4
07...	2245	3.56	35
08...	0215	4.15	29
08...	0615	4.91	55
08...	1015	4.88	38
08...	1200	4.77	51
08...	1415	4.66	38
08...	1815	4.66	34
08...	2215	4.88	36
09...	0215	4.74	30
09...	0615	4.52	25
09...	0915	4.43	44
09...	0920	4.40	21
09...	0945	4.38	24
09...	1015	4.34	19
09...	1200	4.25	22
09...	1815	4.02	19
10...	0215	3.79	14
10...	0615	3.69	13
10...	1200	3.55	24
10...	1415	3.50	10
11...	1200	3.19	11
12...	1200	2.98	4
13...	1200	2.93	8
14...	1200	2.87	4
15...	1200	2.73	5
15...	2045	3.57	47
16...	0045	6.61	162
16...	0445	7.96	149
16...	0845	7.70	116
16...	1200	7.01	103
16...	1245	6.84	73
16...	1645	6.10	55
16...	2045	5.59	43
17...	0045	5.24	28
17...	0445	4.96	24
17...	1200	4.54	45
18...	0445	4.24	17
18...	0845	4.37	13
18...	1200	4.32	19
18...	1245	4.30	14
19...	0045	3.90	11
19...	1200	3.69	16
19...	1645	3.64	11
20...	1200	3.58	7
21...	1200	3.21	14
22...	1200	3.08	4
23...	0630	3.50	13
23...	1030	6.40	117
23...	1200	8.81	189
23...	1430	11.01	319
23...	1830	11.99	277
23...	2230	12.63	170

POTOMAC RIVER BASIN

01656120 CEDAR RUN AT ROUTE 646 NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
JAN 1998			
24...	0230	13.11	115
24...	0630	13.20	43
24...	0920	12.99	52
24...	0925	12.98	41
24...	0948	12.87	50
24...	1030	12.63	39
24...	1200	12.15	76
24...	1430	10.46	40
24...	1830	7.47	43
24...	2230	6.77	37
25...	0230	6.87	35
25...	0630	6.61	27
25...	1030	6.14	24
25...	1200	5.97	25
25...	2230	5.12	29
26...	1200	4.43	17
26...	1430	4.35	22
27...	0230	4.10	16
27...	1200	3.91	12
28...	1200	12.28	129
28...	1715	13.65	111
28...	2115	14.44	111
29...	0115	14.85	87
29...	0515	14.70	76
29...	0915	14.09	33
29...	1200	13.40	30
29...	1315	13.03	42
29...	1715	11.24	35
29...	2115	8.36	40
30...	0015	7.38	50
30...	0315	6.98	37
30...	0715	6.67	30
30...	0940	6.54	39
30...	0945	6.54	33
30...	1004	6.50	24
30...	1115	6.39	34
30...	1200	6.31	34
31...	0715	4.72	22
31...	1200	4.55	18
FEB 1998			
01...	1115	3.89	18
01...	1200	3.87	185
02...	1200	3.57	64
03...	1200	3.40	16
04...	0315	3.50	22
04...	0715	4.12	45
04...	1115	8.44	125
04...	1200	9.29	127
04...	1206	9.34	153
04...	1215	9.52	38
04...	1221	9.10	138
04...	1353	10.61	153
04...	1400	10.74	173
04...	1404	10.79	155
04...	1515	11.30	125
04...	1915	12.48	118
04...	2315	13.45	177
05...	0315	14.89	131
05...	0715	15.70	85
05...	1000	15.89	53
05...	1015	15.89	71
05...	1025	15.90	72
05...	1115	15.87	65
05...	1200	15.89	51
05...	1515	15.63	45
05...	1915	14.98	29
05...	2315	14.11	28

POTOMAC RIVER BASIN

01656120 CEDAR RUN AT ROUTE 646 NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
FEB 1998			
06...	0315	13.09	32
06...	0715	11.77	26
06...	1045	7.40	31
06...	1055	7.33	31
06...	1115	9.20	36
06...	1200	8.83	37
06...	1225	8.70	35
06...	1230	8.68	38
06...	1235	8.55	33
06...	1515	7.91	25
06...	1915	7.98	24
06...	2315	8.25	19
07...	0315	8.25	20
07...	0715	7.40	17
07...	1115	6.98	20
07...	1200	6.90	20
07...	2315	5.64	14
08...	0715	5.26	10
08...	1200	5.24	16
08...	1515	5.12	6
08...	1915	4.93	11
09...	0315	4.55	13
09...	1200	4.27	16
10...	0715	3.92	5
10...	1115	3.80	4
10...	1200	3.84	10
11...	0315	3.70	3
11...	1200	3.63	8
11...	1915	3.62	3
11...	2315	3.73	1
12...	0315	4.36	5
12...	0715	5.10	15
12...	1115	5.13	15
12...	1200	5.09	22
12...	1515	4.88	14
12...	1915	4.61	14
13...	0315	4.18	8
13...	1115	3.90	3
13...	1200	3.88	10
13...	2315	3.67	4
14...	1200	3.50	7
15...	1200	3.29	4
16...	1200	3.15	4
17...	1030	3.55	14
17...	1200	4.20	68
17...	1430	7.05	138
17...	1830	10.77	157
17...	2230	11.69	145
18...	0230	12.47	167
18...	0630	12.89	164
18...	1030	13.35	244
18...	1045	13.37	259
18...	1100	13.41	161
18...	1115	13.43	173
18...	1200	13.52	120
18...	1430	13.70	107
18...	1830	13.25	65
18...	2230	11.88	47
19...	0230	8.72	49
19...	0630	7.31	39
19...	1030	6.90	36
19...	1200	6.77	27
19...	1430	6.59	31
19...	1830	6.23	33
19...	2230	5.75	28

POTOMAC RIVER BASIN

01656120 CEDAR RUN AT ROUTE 646 NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
FEB 1998			
20...	0230	5.35	21
20...	0630	5.09	16
20...	1200	4.85	31
20...	1430	4.82	23
20...	2230	4.94	9
21...	0630	4.66	9
21...	1200	4.46	12
22...	1200	3.84	16
23...	1200	3.74	13
24...	1200	10.93	34
24...	1220	8.67	38
24...	1225	8.67	42
24...	1235	8.58	41
24...	1305	10.67	39
24...	1325	10.55	44
24...	1345	10.46	38
24...	1715	8.75	39
24...	2115	7.42	38
25...	0115	6.60	34
25...	0515	6.08	30
25...	0915	5.70	24
25...	1200	5.49	22
25...	1315	5.40	16
25...	1715	5.16	26
25...	2115	4.95	11
26...	0115	4.71	11
26...	0915	4.44	9
26...	1200	4.37	30
26...	2115	4.17	10
27...	0915	3.94	11
27...	1200	3.90	8
27...	1315	3.89	9
28...	0515	3.71	12
28...	1200	3.66	12
MAR 1998			
01...	0515	3.54	8
01...	1200	3.50	9
02...	1200	3.45	11
02...	2015	3.50	11
03...	0015	4.22	20
03...	0415	6.16	96
03...	0815	7.01	77
03...	1200	6.26	32
03...	1215	6.21	64
04...	1200	3.97	18
05...	1200	3.55	9
06...	1200	3.30	14
07...	1200	3.16	8
08...	1200	3.39	15
08...	1245	3.50	22
08...	1645	6.99	80
08...	2045	9.77	89
09...	0045	10.34	123
09...	0445	9.23	118
09...	0845	9.53	74
09...	0900	9.61	83
09...	0915	9.71	54
09...	0945	9.86	91
09...	1200	10.39	55
09...	1215	10.44	77
09...	1230	10.48	84
09...	1245	10.50	69
09...	1300	10.54	70
09...	1645	10.78	52
09...	2045	10.00	45

POTOMAC RIVER BASIN

01656120 CEDAR RUN AT ROUTE 646 NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
MAR 1998			
10...	0045	7.95	39
10...	0845	6.26	36
10...	1200	5.84	15
10...	1245	5.76	21
10...	1645	5.39	21
11...	0845	4.42	12
11...	1200	4.31	24
11...	1645	4.17	12
12...	0045	4.00	10
12...	0845	3.81	9
12...	1200	3.75	11
13...	0130	3.63	10
13...	1200	3.49	21
14...	1200	3.40	14
15...	1200	3.21	10
16...	1200	3.06	10
17...	1200	2.99	8
18...	0815	3.52	71
18...	1200	4.56	19
18...	1215	4.64	31
18...	1615	5.36	37
18...	2015	5.02	27
19...	0015	4.83	28
19...	0415	8.47	200
19...	0815	11.00	226
19...	1000	11.35	231
19...	1015	11.39	200
19...	1030	11.46	212
19...	1200	11.72	439
19...	1215	11.74	182
19...	1615	12.23	115
19...	2015	12.10	51
20...	0015	9.76	41
20...	0415	7.22	35
20...	0815	6.42	39
20...	1200	5.99	47
20...	1215	5.98	12
20...	1615	5.66	15
20...	2015	5.93	5
21...	0015	10.92	1130
21...	0415	12.87	316
21...	0815	14.55	268
21...	1200	15.97	133
21...	1215	15.98	185
21...	1615	15.97	130
21...	2015	15.13	63
22...	0015	11.24	41
22...	0415	12.72	44
22...	0815	11.24	44
22...	1200	8.97	48
22...	1215	8.86	37
22...	1615	7.69	41
22...	2015	7.16	27
23...	0015	6.80	25
23...	0415	6.50	27
23...	0815	6.26	24
23...	1200	5.97	20
23...	1215	5.94	23
23...	1615	5.52	32
24...	0815	4.54	30
24...	1200	4.42	20
25...	1200	3.86	19
25...	2200	3.69	17
26...	1200	3.54	17
26...	1700	3.51	13
27...	1200	3.34	12
28...	1200	3.13	27

POTOMAC RIVER BASIN

01656120 CEDAR RUN AT ROUTE 646 NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
MAR 1998			
29...	1200	2.95	27
30...	1200	2.83	22
31...	1200	2.83	23
APR 1998			
01...	1200	2.64	14
02...	0345	3.52	61
02...	0745	5.37	49
02...	1145	4.55	47
02...	1200	4.50	65
02...	1545	4.03	55
02...	1945	3.71	59
02...	2345	3.50	61
03...	1200	3.07	25
04...	1200	3.04	23
04...	1815	3.51	46
04...	2215	4.17	20
05...	0315	4.11	27
05...	0715	3.91	19
05...	1200	3.67	21
05...	1515	3.54	15
06...	1200	3.04	28
07...	1200	2.79	19
08...	1200	2.68	9
09...	0015	2.67	223
09...	1200	2.81	14
09...	1615	3.51	379
09...	2015	5.92	287
10...	0415	8.69	166
10...	0815	6.99	120
10...	1200	5.99	54
11...	0015	4.71	28
11...	1200	4.08	39
11...	2015	3.82	20
12...	0415	3.55	15
12...	1200	3.39	21
13...	1200	3.07	20
14...	1200	2.89	21
15...	1200	2.83	23
16...	1200	2.70	23
17...	1200	2.75	46
18...	1200	3.11	43
19...	1200	2.73	14
20...	0130	3.56	37
20...	0530	5.99	61
20...	0930	6.17	63
20...	1200	5.69	44
20...	1330	5.42	75
20...	1730	4.86	66
20...	2130	4.45	46
21...	0130	4.12	56
21...	0530	3.87	10
21...	0930	3.70	36
21...	1200	3.62	52
21...	1330	3.58	15
22...	0925	3.11	9
22...	0930	3.11	6
22...	0935	3.11	4
22...	1200	3.10	18
23...	1200	2.87	18
24...	1200	2.75	16
25...	1200	2.56	22
26...	1200	2.45	14
27...	1200	2.40	22
28...	1200	2.40	15
29...	1200	2.31	19
30...	1200	2.25	19

POTOMAC RIVER BASIN

01656120 CEDAR RUN AT ROUTE 646 NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
MAY 1998			
01...	1200	2.21	16
02...	0330	3.51	77
02...	0730	4.07	57
02...	1130	3.66	34
02...	1200	3.62	107
02...	2230	3.50	27
03...	0230	6.28	115
03...	0630	6.64	93
03...	1030	5.41	71
03...	1200	5.05	52
03...	1430	4.65	45
03...	1830	4.30	36
03...	2230	4.18	25
04...	0630	5.59	38
04...	1030	4.95	32
04...	1200	4.75	35
04...	1430	4.51	34
04...	1830	4.21	33
04...	2230	3.98	35
05...	0230	3.80	24
05...	1200	3.66	33
05...	1430	3.78	20
05...	2230	4.01	69
06...	0230	3.99	40
06...	1030	4.08	26
06...	1200	3.98	72
06...	1830	3.63	28
07...	1200	3.15	26
08...	0045	3.51	38
08...	0445	6.49	116
08...	0845	9.19	165
08...	1200	9.96	103
08...	1245	10.03	136
08...	1645	10.20	93
08...	2045	10.25	105
09...	0045	10.12	90
09...	0445	8.59	43
09...	0845	7.49	57
09...	1200	7.01	45
09...	1645	6.32	43
10...	0045	5.43	27
10...	0845	4.86	27
10...	1200	4.70	38
11...	1200	4.14	19
11...	1315	4.14	31
11...	2115	4.28	27
12...	0515	4.25	30
12...	0915	5.08	40
12...	1200	6.01	35
12...	1315	6.44	56
12...	1715	7.08	71
12...	2115	6.86	52
13...	0115	6.25	57
13...	0515	5.78	38
13...	0835	6.10	30
13...	0840	6.10	23
13...	0850	6.10	23
13...	0915	5.42	36
13...	1200	5.70	29
13...	2115	4.59	27
14...	0915	4.12	18
14...	1200	4.17	24
14...	2115	3.87	22
15...	0915	3.63	18
15...	1200	3.53	21
16...	1200	3.13	19
17...	1200	2.86	42
18...	1200	2.64	35

POTOMAC RIVER BASIN

01656120 CEDAR RUN AT ROUTE 646 NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
MAY 1998			
19...	1200	2.48	38
21...	1200	2.29	24
22...	1200	2.22	22
23...	1200	2.13	20
24...	1200	2.11	22
25...	1200	2.26	19
26...	1200	2.36	18
27...	1200	2.19	21
28...	1200	2.16	20
29...	1200	2.13	17
31...	1200	1.99	33
JUN			
01...	1200	1.98	29
02...	1200	2.08	26
03...	1200	1.92	30
04...	1200	1.85	26
05...	1200	1.83	18
06...	1200	1.82	16
07...	1200	1.77	14
08...	1200	1.72	14
09...	1200	1.70	20
10...	1200	1.90	14
11...	1200	2.39	61
12...	1200	2.27	53
13...	1200	2.31	59
13...	2230	3.68	101
14...	0230	5.00	403
14...	0630	4.47	240
14...	1030	3.84	257
14...	1200	3.68	287
15...	1200	2.67	398
15...	2030	3.50	151
16...	0030	8.77	396
16...	0430	10.02	274
16...	0830	10.05	216
16...	0905	10.06	226
16...	0907	10.05	209
16...	0930	10.00	183
16...	1200	8.59	106
16...	1230	8.21	115
16...	1630	5.93	56
17...	0430	4.15	29
17...	0830	4.28	28
17...	1200	4.18	34
17...	1230	4.16	26
18...	0030	3.50	24
18...	1200	3.07	23
19...	1200	2.67	11
20...	1200	2.50	21
21...	1200	2.30	26
22...	1200	2.14	30
23...	1200	2.95	40
23...	2045	3.74	144
24...	0045	5.65	274
24...	0445	5.80	158
24...	0845	5.69	93
24...	1200	5.01	136
24...	1245	4.83	74
24...	1645	4.09	48
24...	2045	3.63	41
25...	1200	2.86	63
26...	1200	2.43	18
27...	1200	2.23	16
28...	1200	2.28	41
29...	1200	2.58	36
30...	1200	2.30	19

POTOMAC RIVER BASIN

01656120 CEDAR RUN AT ROUTE 646 NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
JUL 1998			
01...	1200	2.16	15
02...	1200	2.04	12
03...	1200	1.93	12
04...	1200	1.80	14
05...	1200	1.75	22
06...	1200	1.72	27
07...	1200	1.69	26
08...	1200	1.72	30
09...	1200	1.72	19
10...	1200	1.75	20
11...	1200	1.69	17
12...	1200	1.65	21
13...	1200	1.61	17
14...	1200	1.58	16
15...	1200	1.55	10
16...	1200	1.56	13
17...	1200	1.56	7
18...	1200	1.59	6
19...	1200	1.57	5
20...	1200	1.54	8
21...	1200	1.50	10
22...	0845	1.46	7
22...	0850	1.46	6
22...	0855	1.46	12
22...	1200	1.43	4
23...	1200	1.41	5
24...	1200	1.48	7
25...	1200	1.86	53
26...	1200	1.61	9
27...	1200	1.54	8
28...	1200	1.53	6
29...	1200	1.46	5
30...	1200	1.40	4
31...	1200	1.44	16
AUG			
01...	1200	1.42	7
02...	1200	1.41	3
03...	1200	1.36	5
04...	1200	1.35	3
05...	1200	1.32	14
06...	1200	1.32	12
07...	1200	1.31	20
08...	1200	1.29	14
09...	1200	1.28	20
10...	1200	1.34	10
11...	1000	1.31	7
11...	1005	1.35	4
11...	1015	1.32	10
11...	1200	1.31	7
12...	1200	1.28	10
13...	1200	1.26	5
14...	1200	1.31	5
15...	1200	1.32	5
16...	1200	1.30	9
17...	1200	1.34	5
18...	1200	1.39	9
19...	1200	1.34	12
20...	1200	1.33	5
21...	1200	1.30	7
22...	1200	1.27	11
23...	1200	1.24	9
24...	1200	1.28	6
25...	1200	1.27	11
26...	1200	1.23	6
27...	1200	1.23	8
28...	1200	1.22	6
29...	1200	1.24	9
30...	1200	1.23	6
31...	1200	1.22	6

POTOMAC RIVER BASIN

01656120 CEDAR RUN AT ROUTE 646 NEAR ADEN, VA--Continued
WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
SEP 1998			
01...	1200	1.27	9
02...	1200	1.24	4
03...	1200	1.22	5
04...	1200	1.29	5
05...	1200	1.23	4
06...	1200	1.19	12
07...	1200	1.17	8
16...	0910	1.23	3
16...	0915	1.23	2
16...	0920	1.23	2

POTOMAC RIVER BASIN

01656120 CEDAR RUN AT ROUTE 646 NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	9.6	6	.15	97	12	7.0	62	8	1.4
2	5.4	5	.08	275	21	17	58	8	1.2
3	3.7	5	.05	149	13	5.6	47	5	.68
4	3.2	6	.05	64	9	1.6	45	6	.71
5	3.3	7	.06	47	6	.77	50	7	.89
6	3.4	6	.05	34	4	.37	53	11	1.6
7	2.8	9	.06	1150	90	493	46	11	1.3
8	2.7	4	.03	2910	31	253	41	8	.92
9	3.1	4	.03	708	17	32	38	8	.86
10	2.6	7	.05	328	12	11	41	10	1.2
11	2.7	8	.06	190	12	6.2	69	9	1.6
12	2.4	8	.05	135	9	3.5	69	7	1.3
13	2.0	5	.03	106	8	2.4	60	5	.74
14	2.4	5	.03	374	18	20	52	3	.47
15	2.9	4	.04	369	14	14	47	5	.61
16	2.8	3	.02	195	11	5.8	42	6	.67
17	4.0	5	.06	127	9	3.2	44	6	.71
18	82	23	5.5	98	9	2.4	44	6	.69
19	52	15	2.3	83	9	1.9	41	5	.55
20	20	8	.42	73	8	1.6	38	4	.41
21	9.6	7	.18	68	9	1.7	34	3	.30
22	6.0	6	.10	230	20	12	33	4	.35
23	4.9	7	.09	177	9	4.4	61	7	1.4
24	5.0	5	.06	131	8	2.7	80	7	1.5
25	10	9	.27	98	5	1.4	390	39	47
26	44	9	1.1	83	4	.91	277	15	12
27	90	10	2.4	74	4	.84	184	6	3.2
28	54	7	1.0	63	6	.97	278	10	7.2
29	28	4	.31	57	6	.92	202	8	4.6
30	18	3	.15	56	6	.95	197	6	3.0
31	13	3	.11	---	---	---	213	6	3.4
TOTAL	495.5	---	14.89	8549	---	909.13	2936	---	102.46

POTOMAC RIVER BASIN

01656120 CEDAR RUN AT ROUTE 646 NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JANUARY			FEBRUARY			MARCH			
1	131	5	1.9	304	20	16	224	8	5.0
2	106	5	1.4	239	19	12	220	10	6.2
3	120	4	1.4	205	19	11	707	49	103
4	126	4	1.3	1780	107	723	322	17	15
5	114	3	.96	5720	79	1200	231	8	4.9
6	103	3	.84	2240	30	188	184	7	3.4
7	153	7	3.7	1040	19	54	159	7	2.8
8	457	26	33	567	13	20	737	28	104
9	377	16	17	381	8	8.0	2120	62	359
10	233	8	5.0	290	4	3.4	798	32	73
11	164	5	2.1	251	3	2.1	389	14	14
12	131	3	1.2	466	11	14	276	11	8.2
13	123	5	1.7	302	6	4.7	223	12	7.1
14	114	3	1.0	222	4	2.2	200	13	7.1
15	157	15	15	181	3	1.5	170	10	4.8
16	1000	69	205	157	4	1.6	145	10	3.8
17	439	17	20	1090	61	324	133	9	3.3
18	357	11	11	3570	100	970	377	22	26
19	262	8	5.5	1100	30	92	2380	118	780
20	232	5	3.3	540	15	22	1010	88	339
21	171	4	1.8	425	10	12	5150	221	2530
22	146	4	1.5	304	15	12	2160	35	215
23	1620	113	776	835	48	188	769	25	51
24	2600	45	346	2200	49	297	444	23	28
25	794	22	49	689	23	45	335	18	16
26	430	16	19	403	9	10	274	14	11
27	331	19	17	302	8	6.6	238	13	8.0
28	3160	97	907	252	8	5.4	201	24	13
29	3670	53	568	---	---	---	170	25	12
30	858	36	86	---	---	---	151	22	8.9
31	443	23	27	---	---	---	133	21	7.5
TOTAL	19122	---	3130.60	26055	---	4245.5	21030	---	4770.0
APRIL			MAY			JUNE			
1	123	21	7.1	78	24	6.0	40	38	4.4
2	386	54	56	272	44	33	47	31	4.2
3	205	31	18	608	60	115	31	29	2.4
4	230	29	20	469	33	42	25	25	1.7
5	314	20	18	309	33	28	24	19	1.2
6	199	13	6.9	327	36	32	23	16	.98
7	160	11	4.6	211	28	16	20	14	.78
8	143	10	3.8	1700	100	488	18	15	.72
9	390	123	231	1190	44	154	17	19	.89
10	998	91	318	503	23	32	30	19	1.7
11	396	23	25	399	22	24	90	54	12
12	266	20	14	817	41	103	69	58	11
13	205	21	12	741	30	63	112	76	29
14	174	22	10	390	20	21	333	283	260
15	162	24	10	271	18	13	231	207	158
16	143	26	10	199	19	10	1390	166	803
17	163	48	22	157	35	15	362	30	30
18	202	42	23	120	33	11	192	23	12
19	156	22	9.5	95	34	8.6	125	14	4.8
20	594	65	107	79	28	6.0	95	21	5.4
21	303	36	31	68	23	4.3	67	28	5.0
22	203	8	4.6	59	21	3.3	52	39	5.4
23	164	9	3.8	49	19	2.5	209	90	70
24	141	16	5.9	47	17	2.1	520	110	179
25	112	16	4.8	82	20	4.6	157	32	14
26	93	15	3.8	79	18	3.9	85	20	4.6
27	85	15	3.4	57	20	3.0	57	20	3.0
28	82	15	3.4	52	20	2.8	66	41	7.5
29	70	18	3.5	48	18	2.4	98	38	10
30	63	19	3.1	41	24	2.6	65	21	3.8
31	---	---	---	35	31	2.9	---	---	---
TOTAL	6925	---	993.2	9552	---	1255.0	4650	---	1646.47

POTOMAC RIVER BASIN

01656120 CEDAR RUN AT ROUTE 646 NEAR ADEN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JULY			AUGUST			SEPTEMBER			
1	51	16	2.2	5.5	7	.10	2.5	8	.05
2	40	12	1.3	4.7	4	.05	2.1	5	.03
3	30	12	.99	3.9	4	.05	2.0	5	.03
4	23	15	.91	3.3	4	.04	2.9	5	.04
5	20	22	1.2	2.6	12	.08	1.5	5	.02
6	18	27	1.3	2.7	13	.09	.93	10	.03
7	16	28	1.2	2.4	18	.12	.80	8	.02
8	17	29	1.3	2.1	15	.09	1.1	8	.03
9	20	20	1.1	2.1	18	.10	1.1	11	.03
10	20	19	1.0	3.2	10	.09	.85	12	.03
11	16	18	.79	2.8	8	.06	.68	12	.02
12	14	20	.73	2.1	9	.05	.61	21	.03
13	12	17	.54	2.0	5	.03	.56	19	.03
14	11	15	.43	2.7	5	.04	.53	14	.02
15	9.3	11	.28	3.0	5	.04	.46	12	.01
16	9.5	12	.30	2.9	8	.06	.49	10	.01
17	9.2	7	.18	4.1	6	.06	.54	14	.02
18	9.8	6	.16	6.0	9	.14	20	37	2.3
19	9.3	5	.14	3.9	10	.11	12	36	1.2
20	8.8	8	.18	3.4	6	.05	4.2	17	.21
21	7.2	9	.18	2.9	7	.06	2.0	12	.06
22	5.5	6	.09	2.2	10	.06	2.3	13	.08
23	5.5	5	.08	1.9	9	.05	1.5	15	.06
24	23	33	3.4	2.6	7	.05	1.1	11	.03
25	27	46	3.5	2.5	9	.06	.96	10	.03
26	12	12	.39	1.8	7	.03	.94	12	.03
27	8.9	8	.19	1.7	7	.04	1.6	13	.07
28	7.9	6	.13	1.8	7	.03	1.4	17	.07
29	6.3	5	.08	2.1	8	.05	.91	12	.03
30	4.9	5	.07	1.9	6	.03	.99	8	.02
31	5.6	12	.19	1.7	6	.03	---	---	---
TOTAL	477.7	---	24.53	88.5	---	1.94	69.55	---	4.64
YEAR	99950.25		17098.36						

POTOMAC RIVER BASIN

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA

LOCATION.--Lat 38°35'14", long 77°25'44", Prince William County, Hydrologic Unit 02070011, on left bank at upstream side of bridge on State Highway 619, 3.4 mi south of Independent Hill, 5.6 mi west of Dumfries, and 6.5 mi upstream from mouth.

DRAINAGE AREA.--7.64 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1951 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 238.88 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. No flow at times in 1954, 1957, 1962-66, 1983, 1985, 1987, 1988, 1991, 1993, and 1998.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 7	2030	409	5.72	Feb. 23	2130	282	5.01
Jan. 23	1700	521	6.23	Mar. 9	0930	214	4.51
Jan. 28	1630	616	6.60	Mar. 19	0600	253	4.81
Feb. 5	0415	652	6.73	Mar. 21	0400	*799	*7.21
Feb. 18	0145	712	6.94	Apr. 9	1915	280	5.00

No flow part or all of each day Aug. 26-28, Aug. 30 to Sept. 8, and Sept. 13-17, 29-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.50	17	3.6	4.1	8.7	9.1	7.3	11	2.4	2.1	.51	.00
2	.72	8.7	3.3	3.9	7.8	9.3	6.8	31	1.9	1.7	.42	.00
3	.82	3.9	3.2	4.5	7.1	26	6.0	29	1.7	1.4	.36	.00
4	.90	2.4	3.4	4.4	238	12	19	22	1.6	1.2	.30	.00
5	.93	1.9	3.4	4.2	355	8.9	12	16	1.5	1.2	.25	.00
6	1.0	1.5	3.1	4.2	52	7.8	7.8	35	1.4	1.1	.22	.00
7	1.0	174	3.0	8.1	31	7.5	6.8	10	1.3	.97	.18	.00
8	1.1	71	2.9	14	17	35	6.2	44	1.1	1.3	.16	.11
9	1.1	28	3.0	8.4	12	102	87	39	1.1	1.6	.18	.10
10	1.1	10	3.6	5.3	9.8	25	38	15	2.8	1.2	.45	.07
11	1.2	5.7	4.5	4.3	9.5	13	14	14	2.8	1.0	.47	.06
12	1.2	4.1	3.8	4.0	17	9.8	9.4	39	3.0	.86	.41	.04
13	1.3	3.8	3.4	4.3	10	8.5	7.8	25	7.8	.78	.30	.01
14	1.3	22	3.1	3.9	8.4	8.2	7.2	11	5.4	.72	.20	.00
15	1.5	10	3.0	15	7.3	7.2	6.7	7.2	25	.69	.16	.00
16	1.6	5.6	2.9	36	6.9	6.7	5.9	5.4	32	.69	.17	.00
17	3.0	4.3	3.0	11	139	6.5	12	4.3	6.2	.68	.44	.03
18	26	3.9	2.9	8.5	222	35	7.6	3.5	3.1	.65	.60	.04
19	2.9	3.6	2.7	7.2	29	129	7.8	3.1	3.3	.63	.38	.05
20	1.7	3.4	2.7	7.4	18	48	20	2.8	2.8	.61	.32	.06
21	1.5	4.1	2.5	5.8	14	287	8.2	2.7	1.9	.52	.22	.04
22	1.5	17	2.8	4.4	10	51	6.2	2.4	2.5	.47	.16	.13
23	1.7	7.6	4.5	198	89	22	5.3	2.2	5.7	.47	.11	.11
24	2.0	5.4	3.9	49	129	16	4.7	2.4	23	.49	.07	.09
25	4.4	4.4	19	20	27	12	4.0	3.4	4.0	.93	.05	.08
26	4.4	4.2	8.0	10	15	11	3.7	2.7	2.4	.71	.02	.07
27	8.9	3.9	6.5	9.1	12	11	3.9	2.5	1.8	.51	.01	.08
28	2.6	3.8	8.6	328	10	9.6	3.5	2.6	4.9	.44	.04	.05
29	1.6	3.3	6.5	56	---	8.8	3.3	2.2	3.9	.40	.06	.02
30	1.4	3.4	6.2	18	---	8.1	3.3	1.9	2.7	.36	.01	.02
31	1.4	---	5.8	11	---	7.6	---	1.9	---	.56	.00	---
TOTAL	82.27	441.9	138.8	872.0	1511.5	958.6	341.4	394.2	161.0	26.94	7.23	1.26
MEAN	2.65	14.7	4.48	28.1	54.0	30.9	11.4	12.7	5.37	.87	.23	.042
MAX	26	174	19	328	355	287	87	44	32	2.1	.60	.13
MIN	.50	1.5	2.5	3.9	6.9	6.5	3.3	1.9	1.1	.36	.00	.00
CFSM	.35	1.93	.59	3.68	7.07	4.05	1.49	1.66	.70	.11	.03	.01
IN.	.40	2.15	.68	4.25	7.36	4.67	1.66	1.92	.78	.13	.04	.01

POTOMAC RIVER BASIN

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA--Continued

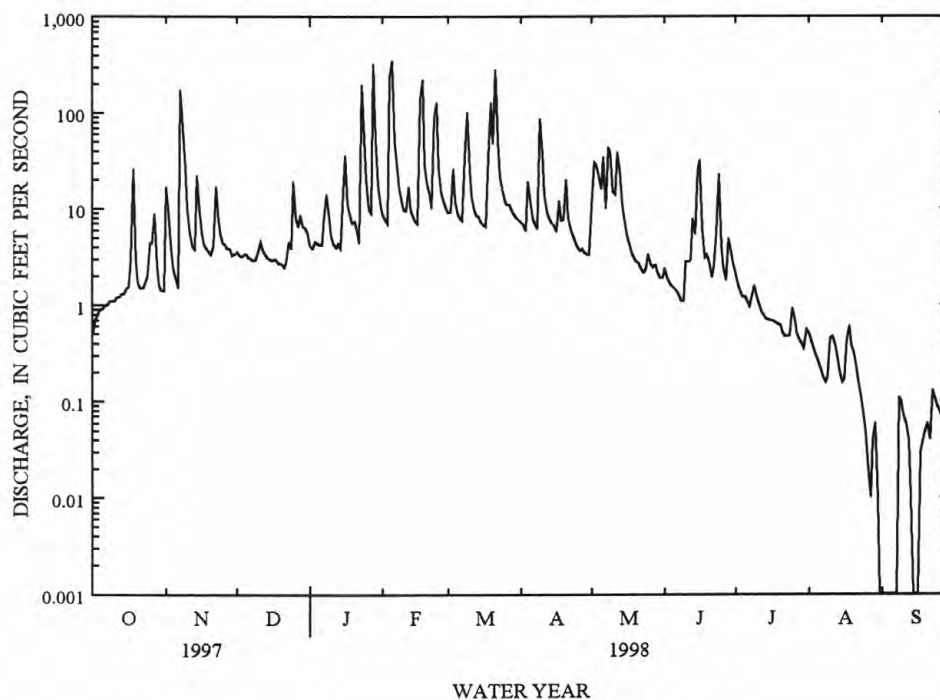
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	3.30	5.88	8.11	10.4	12.3	14.0	11.6	8.15	4.83	2.52	2.59	3.02
MAX	23.9	19.2	24.4	31.2	54.0	35.0	33.0	42.8	48.8	15.1	24.5	37.2
(WY)	1980	1953	1997	1996	1998	1994	1983	1989	1972	1975	1955	1975
MIN	.070	.34	.58	1.01	3.60	1.77	2.90	1.57	.40	.055	.010	.000
(WY)	1989	1955	1966	1981	1968	1981	1969	1956	1991	1963	1963	1964

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1951 - 1998	
ANNUAL TOTAL	2786.20		4937.10			
ANNUAL MEAN	7.63		13.5		7.18	
HIGHEST ANNUAL MEAN					13.5	
LOWEST ANNUAL MEAN					2.55	
HIGHEST DAILY MEAN	174	Nov 7	355	Feb 5	770	Jun 22 1972
LOWEST DAILY MEAN	.21	Sep 17	.00	aAug 31	.00	(b)
ANNUAL SEVEN-DAY MINIMUM	.23	Sep 22	.00	Aug 31	.00	(b)
INSTANTANEOUS PEAK FLOW			799	Mar 21	4160	May 6 1989
INSTANTANEOUS PEAK STAGE			7.21	Mar 21	11.62	May 6 1989
INSTANTANEOUS LOW FLOW			.00	aAug 26	.00	(b)
ANNUAL RUNOFF (CFSM)	1.00		1.77		.94	
ANNUAL RUNOFF (INCHES)	13.57		24.04		12.78	
10 PERCENT EXCEEDS	16		25		14	
50 PERCENT EXCEEDS	3.6		3.6		2.8	
90 PERCENT EXCEEDS	.31		.11		.20	

a No flow many days August to September. See EXTREMES FOR CURRENT YEAR.

b No flow at times many years. See REMARKS.



POTOMAC RIVER BASIN

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1951, 1953, 1955-56, 1969, 1973-75, 1983-85, 1994 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	E. COLI WATER WHOLE TOTAL UREASE (COL / 100 ML) (31633)
OCT 1997											
15...	1020	1.6	77	6.8	14.0	14.5	770	4.2	41	320	270
NOV											
25...	1100	4.3	58	6.8	6.0	4.0	750	15.3	119	K21	K25
JAN 1998											
08...	1001	14	97	6.8	19.0	12.0	749	10.2	96	140	170
27...	1030	7.2	46	6.6	4.5	3.3	742	13.2	102	K17	K24
FEB											
04...	1430	283	37	6.1	2.0	4.5	749	12.6	99	--	--
24...	1050	156	31	5.7	7.5	5.6	752	12.1	97	49	51
MAR											
18...	1015	68	42	6.9	9.0	5.3	745	12.6	102	70	140
APR											
21...	0940	8.2	45	6.7	19.5	12.0	750	10.3	97	84	84
MAY											
12...	0910	38	44	6.5	15.0	13.4	726	9.3	94	550	190
JUN											
17...	0930	6.9	44	6.4	28.0	18.7	760	7.8	84	340	360
JUL											
21...	1000	.54	42	7.0	25.5	22.9	753	5.4	64	170	190
AUG											
12...	1030	.42	62	7.0	25.5	22.1	752	6.7	78	19	23
SEP											
15...	0945	0	54	6.8	24.5	20.4	754	4.8	54	640	780

DATE	NITRO- GEN DIS- SOLVED (MG/L AS N) (00602)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
OCT 1997									
15...	--	<.010	<.050	<.015	.23	<.20	<.010	<.010	<.010
NOV									
25...	--	<.010	<.050	<.020	.16	.14	<.010	<.010	.024
JAN 1998									
08...	--	<.010	<.050	<.020	.25	.22	.032	.028	.034
27...	--	<.010	<.050	.041	.13	.13	<.010	<.010	.016
FEB									
04...	.34	<.010	.098	<.020	.44	.25	.049	<.010	.018
24...	--	<.010	<.050	.021	.30	.22	.011	<.010	<.010
MAR									
18...	.24	<.010	.078	.022	.36	.16	.032	<.010	<.010
APR									
21...	.25	<.010	.083	.030	.24	.17	.027	<.010	<.010
MAY									
12...	--	<.010	<.050	.028	.39	.26	.019	<.010	<.010
JUN									
17...	--	<.010	<.050	.053	.35	.24	.029	<.010	.015
JUL									
21...	.23	<.010	.060	.040	.27	.17	<.010	.011	.011
AUG									
12...	--	<.010	<.050	.055	.22	.19	.013	<.010	<.010
SEP									
15...	--	.013	<.050	.033	.15	.21	.022	.019	.013

< Actual value is known to be less than the value shown.

K results based on colony count outside the acceptance range (non-ideal colony count).

POTOMAC RIVER BASIN

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
OCT 1997			
01...	1200	1.61	9
02...	1200	1.49	6
03...	1200	1.50	5
04...	1200	1.52	10
05...	1200	1.52	3
06...	1200	1.53	10
07...	1200	1.54	8
08...	1200	1.55	3
09...	1200	1.55	32
10...	1200	1.55	17
11...	1200	1.55	5
12...	1200	1.56	13
13...	1200	1.57	23
14...	1200	1.57	20
15...	1015	1.58	9
15...	1016	1.58	3
15...	1017	1.58	7
15...	1200	1.60	10
16...	1200	1.61	20
17...	1200	1.61	22
18...	0315	3.01	266
18...	0415	3.05	313
18...	0715	2.82	155
18...	0915	2.52	344
18...	1200	2.21	69
19...	1200	1.69	18
20...	1200	1.61	10
21...	1200	1.60	8
22...	1200	1.59	9
23...	1200	1.61	18
24...	1200	1.65	8
25...	1200	1.91	13
26...	1200	1.70	7
27...	1200	1.88	6
28...	1200	1.69	7
29...	1200	1.62	7
30...	1200	1.61	4
31...	1200	1.61	5
NOV 1997			
01...	1200	1.85	13
01...	1418	2.55	81
01...	1518	2.85	156
01...	1618	2.83	101
01...	1718	2.77	191
01...	1818	2.65	66
01...	1918	2.53	67
02...	1200	1.92	12
03...	1200	1.77	16
04...	1200	1.69	8
05...	1200	1.67	4
06...	1200	1.63	5
07...	0830	2.68	33
07...	0930	3.63	19
07...	1130	4.64	190
07...	1200	4.38	289
07...	1230	4.44	118
07...	1430	4.88	200
07...	1630	5.37	161
07...	1930	5.68	105
07...	2030	5.77	103
07...	2230	5.08	124
08...	0030	3.61	98
08...	0330	3.48	37
08...	0630	3.88	69
08...	1200	3.01	100
09...	1200	2.54	10
10...	1200	1.94	17
11...	1200	1.80	12

POTOMAC RIVER BASIN

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
NOV 1997			
12...	1200	1.71	8
13...	1200	1.67	3
14...	1200	2.40	18
15...	1200	1.94	10
16...	1200	1.77	5
17...	1200	1.71	7
18...	1200	1.69	4
19...	1200	1.67	6
20...	1200	1.65	4
21...	1200	1.64	10
22...	1200	2.16	9
23...	1200	1.84	8
24...	1200	1.74	7
25...	1105	1.68	6
25...	1106	1.68	4
25...	1107	1.68	6
25...	1200	1.69	18
26...	1200	1.68	5
27...	1200	1.67	6
28...	1200	1.66	5
29...	1200	1.65	1
30...	1200	1.64	8
DEC 1997			
01...	1200	1.66	3
02...	1200	1.64	4
03...	1200	1.63	5
04...	1200	1.65	5
05...	1200	1.65	11
06...	1200	1.64	8
07...	1200	1.63	4
08...	1200	1.62	4
09...	1200	1.63	3
10...	1200	1.65	8
11...	1200	1.72	4
12...	1200	1.68	6
13...	1200	1.66	7
14...	1200	1.65	7
15...	1200	1.64	7
16...	1200	1.63	2
17...	1200	1.64	2
18...	1200	1.64	4
19...	1200	1.63	3
20...	1200	1.63	1
21...	1200	1.62	4
22...	1200	1.63	3
23...	1200	1.77	3
24...	1200	1.70	2
25...	0730	2.50	48
25...	0830	2.51	53
25...	1200	2.35	17
26...	1200	1.89	6
27...	1200	1.80	5
28...	1200	1.93	6
29...	1200	1.84	1
30...	1200	1.81	1
31...	1200	1.81	1
JAN 1998			
03...	1200	1.73	5
04...	1200	1.71	2
05...	1200	1.69	2
06...	1200	1.68	3
07...	1200	1.85	3
08...	1000	2.02	12
08...	1001	2.02	8
08...	1002	2.02	11
08...	1200	2.03	5
09...	1200	1.87	4

POTOMAC RIVER BASIN

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
JAN 1998			
10...	1200	1.74	3
11...	1200	1.70	3
12...	1200	1.69	4
13...	1200	1.72	4
14...	1200	1.69	3
15...	1200	1.70	4
15...	2015	2.52	63
15...	2115	2.77	58
15...	2215	2.97	58
15...	2315	3.13	75
16...	0015	3.09	89
16...	0115	3.08	96
16...	0215	3.06	79
16...	0315	3.02	62
16...	0415	2.94	54
16...	0515	2.86	45
16...	0615	2.79	40
16...	1015	2.51	39
16...	1200	2.47	18
17...	1200	1.97	6
18...	1200	1.91	7
19...	1200	1.84	2
20...	1200	1.87	3
22...	1200	1.72	2
23...	0815	2.56	19
23...	0915	2.85	26
23...	1015	2.85	33
23...	1115	4.21	48
23...	1200	4.81	473
23...	1215	4.94	129
23...	1315	5.27	272
23...	1415	5.56	347
23...	1515	5.81	290
23...	1615	6.15	215
23...	1715	6.27	154
23...	1815	6.13	129
23...	1915	5.87	91
23...	2015	5.51	89
23...	2215	4.40	84
24...	0115	3.56	115
24...	0415	3.15	59
24...	0715	2.88	51
24...	1200	2.61	270
25...	1200	2.20	87
26...	1200	1.97	29
27...	1013	1.86	11
27...	1015	1.86	6
27...	1017	1.86	11
27...	1200	1.88	9
28...	1145	5.45	37
28...	1200	5.54	155
28...	1245	5.70	93
28...	1345	6.03	113
28...	1445	6.39	99
28...	1545	6.63	88
28...	1645	6.65	70
28...	1745	6.60	61
28...	1845	6.48	61
28...	1945	6.33	51
28...	2045	6.10	51
28...	2145	5.78	46
28...	2245	5.08	49
28...	2345	4.27	59

POTOMAC RIVER BASIN

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
JAN 1998			
29...	0045	3.93	61
29...	0145	3.68	62
29...	0245	3.51	61
29...	0345	3.37	56
29...	0445	3.25	52
29...	1045	2.76	27
29...	1200	2.70	123
30...	1200	2.17	28
31...	1200	1.98	12
FEB 1998			
01...	1200	1.89	14
02...	1200	1.85	9
03...	1200	1.92	8
04...	0730	2.57	22
04...	0830	3.16	32
04...	0930	3.65	39
04...	1030	4.06	54
04...	1130	4.61	85
04...	1200	4.49	166
04...	1225	4.58	36
04...	1230	4.61	158
04...	1300	4.71	115
04...	1330	4.81	120
04...	1430	5.10	113
04...	1530	5.38	123
04...	1630	5.62	102
04...	1635	5.63	140
04...	1645	5.69	51
04...	1655	5.76	69
04...	1730	5.91	129
04...	1830	6.20	86
04...	1930	6.40	60
05...	0130	6.48	44
05...	0230	6.62	47
05...	0430	6.79	46
05...	0630	6.61	34
05...	0730	6.46	35
05...	0930	6.11	28
05...	1030	5.88	26
05...	1100	5.76	52
05...	1105	5.70	61
05...	1110	5.66	60
05...	1130	5.61	51
05...	1200	5.44	94
05...	1330	4.86	50
05...	1500	4.45	60
05...	1505	4.42	64
05...	1515	4.40	67
05...	1530	4.35	62
05...	1630	4.16	34
05...	1830	3.82	37
05...	2030	3.43	36
05...	2230	3.32	34
06...	0030	3.17	21
06...	0230	3.03	22
06...	0430	2.91	16
06...	0730	2.76	16
06...	1030	2.65	10
06...	1200	2.62	26
06...	1530	2.71	15
06...	1730	2.85	10
06...	1930	2.92	7
06...	2030	2.81	9
06...	2330	2.68	13
07...	0530	2.58	7
07...	0830	2.51	6
07...	1200	2.43	11

POTOMAC RIVER BASIN

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
FEB 1998			
08...	1200	2.14	6
09...	1200	2.00	64
10...	1200	1.93	3
11...	1200	1.90	3
12...	1200	2.14	2
13...	1200	1.93	2
14...	1200	1.87	2
15...	1200	1.83	1
16...	1200	1.81	1
17...	1115	2.53	24
17...	1200	3.03	96
17...	1215	3.17	36
17...	1315	3.99	47
17...	1415	4.45	67
17...	1515	4.68	104
17...	1615	4.81	103
17...	1715	4.95	92
17...	1815	5.03	81
17...	1915	5.05	79
17...	2015	5.04	69
17...	2115	4.94	70
17...	2215	5.17	53
17...	2315	5.77	59
18...	0015	6.49	117
18...	0115	6.49	194
18...	0215	6.92	125
18...	0315	6.71	92
18...	0415	6.40	74
18...	0515	5.97	66
18...	0615	5.28	106
18...	0715	4.42	55
18...	0815	4.03	54
18...	0915	3.79	47
18...	0945	3.69	72
18...	1000	3.65	55
18...	1015	3.61	58
18...	1115	3.47	51
18...	1200	3.26	91
18...	1315	3.23	33
18...	1515	3.07	31
18...	1915	2.82	24
18...	2115	2.71	21
18...	2315	2.65	14
19...	0315	2.58	12
19...	0615	2.52	12
19...	1200	2.37	17
20...	1200	2.15	12
21...	1200	2.05	6
22...	1200	1.95	4
23...	1200	2.07	8
23...	1400	2.54	11
23...	1500	3.01	28
23...	1600	3.53	30
23...	1700	3.98	49
23...	1800	4.37	60
23...	1900	4.71	76
23...	2000	4.89	86
23...	2100	5.01	75
23...	2200	5.04	74
23...	2300	4.96	66
24...	0100	4.57	55
24...	0300	4.45	33
24...	0500	4.32	32
24...	0700	4.26	27
24...	1030	4.08	49
24...	1035	4.08	33
24...	1045	4.06	39

POTOMAC RIVER BASIN

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
FEB 1998			
24...	1100	4.01	26
24...	1200	3.81	33
24...	1300	3.62	28
25...	1200	2.33	19
26...	1200	2.09	6
27...	1200	2.00	5
28...	1200	1.95	5
MAR 1998			
01...	1200	1.92	6
02...	1200	1.89	6
03...	0230	2.51	31
03...	0330	2.65	31
03...	0430	2.71	31
03...	0530	2.69	36
03...	0630	2.63	33
03...	0730	2.57	29
03...	0830	2.50	25
03...	1200	2.35	16
04...	1200	2.01	9
05...	1200	1.92	4
06...	1200	1.87	4
07...	1200	1.85	3
08...	1200	2.23	14
08...	1315	2.52	23
08...	1415	2.78	27
08...	1515	3.02	27
08...	1615	3.16	30
08...	1715	3.21	44
08...	1815	3.19	49
08...	2115	2.92	38
08...	2315	2.77	27
09...	0115	2.69	21
09...	0245	2.55	19
09...	0315	2.79	22
09...	0415	3.01	19
09...	0515	3.36	21
09...	0615	3.78	30
09...	0715	4.13	40
09...	0815	4.35	70
09...	0915	4.50	92
09...	0930	4.51	133
09...	0935	4.51	131
09...	0945	4.50	137
09...	1015	4.46	147
09...	1115	4.25	95
09...	1200	4.05	53
09...	1245	3.86	90
09...	1445	3.49	56
09...	1845	3.03	36
09...	2245	2.73	7
10...	1200	2.29	25
11...	1200	2.03	14
12...	1200	1.94	4
13...	1200	1.89	3
14...	1200	1.89	4
15...	1200	1.85	2
16...	1200	1.83	3
17...	1200	1.82	1
18...	0615	2.54	25
18...	0815	3.13	30
18...	1000	3.09	64
18...	1015	3.06	41
18...	1017	3.06	50
18...	1030	3.03	66
18...	1200	2.84	35
18...	1215	2.81	47
18...	1615	2.51	27

POTOMAC RIVER BASIN

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
MAR 1998			
19...	0015	2.52	19
19...	0215	3.66	35
19...	0415	4.67	19
19...	0615	4.83	77
19...	0815	4.56	114
19...	0900	4.45	66
19...	0915	4.42	70
19...	0930	4.40	65
19...	1015	4.30	79
19...	1200	3.95	67
19...	1415	3.51	54
19...	1815	3.05	43
19...	2215	2.78	30
20...	0415	2.55	27
20...	1200	2.37	34
20...	1800	2.54	22
20...	2000	3.09	18
20...	2200	3.55	19
21...	0200	6.24	64
21...	0400	7.24	112
21...	0600	6.76	100
21...	0800	5.88	73
21...	1000	4.42	57
21...	1200	3.99	109
21...	1201	3.99	52
21...	1400	3.75	57
21...	1600	3.53	35
21...	2200	3.22	35
21...	2400	4.90	30
22...	0400	3.12	24
22...	1000	2.78	20
22...	1200	2.70	27
22...	1600	2.59	41
23...	1200	2.25	8
24...	1200	2.08	5
25...	1200	1.99	8
26...	1200	1.95	4
27...	1200	1.94	10
28...	1200	1.91	13
29...	1200	1.88	10
30...	1200	1.86	3
31...	1200	1.84	6
APR 1998			
01...	1200	1.82	6
02...	1200	1.82	6
03...	1200	1.78	6
04...	1200	2.42	44
04...	1230	2.50	52
04...	1430	2.57	48
05...	1200	1.98	12
06...	1200	1.87	7
07...	1200	1.82	4
08...	1200	1.80	9
09...	1200	2.29	26
09...	1315	2.56	35
09...	1515	3.44	33
09...	1715	4.81	64
09...	1915	5.03	129
09...	2115	4.57	151
09...	2315	3.63	100
10...	0315	2.96	61
10...	0715	2.68	36
10...	1200	2.48	47
11...	1200	2.06	16
12...	1200	1.93	9
13...	1200	1.87	5
14...	1200	1.85	7

POTOMAC RIVER BASIN

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
APR 1998			
15...	1200	1.83	7
16...	1200	1.80	10
17...	1200	2.19	37
18...	1200	1.86	13
19...	1200	1.81	7
20...	0045	2.51	34
20...	0245	2.54	50
20...	1200	2.15	11
21...	0910	1.86	7
21...	0915	1.86	8
21...	0930	1.86	6
21...	1200	1.89	7
22...	1200	1.81	7
23...	1200	1.78	8
24...	1200	1.75	7
25...	1200	1.72	6
26...	1200	1.71	7
27...	1200	1.73	9
28...	1200	1.69	6
29...	1200	1.68	9
30...	1200	1.67	8
MAY 1998			
01...	1200	1.67	8
01...	1945	2.51	70
01...	2145	2.58	76
02...	1200	1.98	30
02...	1845	2.50	51
02...	2045	3.39	67
02...	2245	3.36	34
03...	0045	3.03	52
03...	0245	2.74	34
03...	0445	2.56	53
03...	1200	2.24	28
03...	2245	2.51	21
04...	0045	2.62	11
04...	0245	2.53	32
04...	1200	2.21	23
05...	1200	1.94	216
05...	2245	2.57	39
06...	0045	3.61	47
06...	0245	3.05	98
06...	0445	2.77	169
06...	0645	2.59	83
06...	1200	2.34	258
07...	1200	1.94	16
08...	0100	2.58	38
08...	0300	3.08	48
08...	0500	3.02	57
08...	0700	2.82	58
08...	0900	2.71	41
08...	1200	2.81	31
08...	1300	2.82	26
08...	1700	2.56	26
08...	2345	2.50	22
09...	0145	3.29	22
09...	0345	3.10	36
09...	0745	2.68	42
09...	1145	2.52	25
09...	1200	2.81	31
10...	1200	2.09	17
11...	1200	2.09	16
12...	0815	2.51	37
12...	1000	2.66	50
12...	1005	2.66	40
12...	1010	2.66	48
12...	1015	2.70	46
12...	1200	2.87	63

POTOMAC RIVER BASIN

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
MAY 1998			
12...	1215	2.90	40
12...	1415	3.02	46
12...	1615	2.92	49
12...	1815	2.77	44
12...	2015	2.70	36
12...	2215	2.73	29
13...	0015	2.73	23
13...	0215	2.64	23
13...	0415	2.54	26
13...	1200	2.31	27
14...	1200	2.00	17
15...	1200	1.86	19
16...	1200	1.78	13
17...	1200	1.75	13
18...	1200	1.68	17
19...	1200	1.65	10
20...	1200	1.63	7
21...	1200	1.62	20
22...	1200	1.60	13
23...	1200	1.57	13
24...	1200	1.59	10
25...	1200	1.68	7
26...	1200	1.61	22
27...	1200	1.60	15
28...	1200	1.60	16
29...	1200	1.58	26
30...	1200	1.55	28
31...	1200	1.54	20
JUN 1998			
01...	1200	1.60	14
02...	1200	1.53	13
03...	1200	1.52	11
04...	1200	1.50	5
05...	1200	1.51	3
06...	1200	1.50	5
07...	1200	1.49	5
08...	1200	1.47	4
09...	1200	1.46	4
10...	1200	1.66	12
11...	1200	1.62	10
12...	1200	1.65	12
13...	1200	1.60	26
13...	2000	2.53	156
14...	1200	1.74	74
15...	1200	1.71	35
15...	1915	2.58	205
15...	2115	3.62	304
15...	2315	3.81	482
16...	0115	3.53	343
16...	0315	3.17	293
16...	0515	2.78	151
16...	0715	2.51	109
16...	1200	2.20	45
17...	0905	1.81	17
17...	0910	1.81	13
17...	0915	1.81	14
17...	1200	1.85	13
18...	1200	1.70	10
19...	1200	1.76	12
20...	1200	1.66	11
21...	1200	1.60	11
22...	1200	1.56	12
23...	1200	1.67	16
23...	2400	2.62	254
24...	0200	3.15	205
24...	0400	2.77	196
24...	1200	2.09	35

POTOMAC RIVER BASIN

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
JUN 1998			
25...	1200	1.73	12
26...	1200	1.63	8
27...	1200	1.57	8
28...	1200	1.87	17
29...	1200	1.71	11
30...	1200	1.62	8
JUL 1998			
01...	1200	1.58	11
02...	1200	1.53	10
03...	1200	1.51	8
04...	1200	1.49	8
05...	1200	1.49	12
06...	1200	1.47	10
07...	1200	1.46	9
08...	1200	1.50	9
09...	1200	1.52	11
10...	1200	1.50	12
11...	1200	1.46	11
12...	1200	1.45	9
13...	1200	1.44	8
14...	1200	1.43	12
15...	1200	1.42	15
16...	1200	1.42	34
17...	1200	1.42	32
18...	1200	1.41	37
19...	1200	1.41	31
20...	1200	1.41	18
21...	1005	1.40	18
21...	1010	1.40	5
21...	1015	1.40	8
21...	1200	1.40	15
22...	1200	1.38	38
23...	1200	1.37	21
24...	1200	1.38	23
25...	1200	1.49	16
26...	1200	1.42	9
27...	1200	1.39	5
28...	1200	1.37	11
29...	1200	1.36	35
30...	1200	1.34	18
31...	1200	1.39	10
AUG 1998			
01...	1200	1.38	9
02...	1200	1.36	10
03...	1200	1.34	3
04...	1200	1.32	19
05...	1200	1.30	8
06...	1200	1.29	9
07...	1200	1.28	6
08...	1200	1.27	6
09...	1200	1.27	4
10...	1200	1.38	13
11...	1200	1.37	12
12...	1010	1.36	6
12...	1015	1.36	13
12...	1020	1.36	7
12...	1200	1.36	5
13...	1200	1.33	10
14...	1200	1.29	8
15...	1200	1.28	6
16...	1200	1.28	12
17...	1200	1.30	14
18...	1200	1.42	15
19...	1200	1.37	9
20...	1200	1.35	12
21...	1200	1.34	11
22...	1200	1.31	9

POTOMAC RIVER BASIN

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
AUG 1998			
23...	1200	1.29	9
24...	1200	1.28	17
25...	1200	1.26	24
26...	1200	1.25	11
27...	1200	1.25	13
28...	1200	1.26	19
29...	1200	1.29	9
30...	1200	1.27	6
31...	1200	1.25	39
SEP 1998			
01...	1200	1.24	10
02...	1200	1.25	25
03...	1200	1.24	8
04...	1200	1.23	6
05...	1200	1.23	7
06...	1200	1.22	8
07...	1200	1.21	7
15...	0925	1.29	9
15...	0930	1.29	18
15...	0935	1.29	8

POTOMAC RIVER BASIN

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	.50	4	.00	17	20	1.9	3.6	2	.02
2	.72	2	.00	8.7	9	.24	3.3	2	.02
3	.82	2	.00	3.9	7	.08	3.2	3	.02
4	.90	3	.01	2.4	4	.03	3.4	3	.03
5	.93	1	.00	1.9	2	.01	3.4	6	.06
6	1.0	3	.01	1.5	4	.02	3.1	5	.04
7	1.0	3	.01	174	46	32	3.0	2	.02
8	1.1	2	.00	71	32	6.1	2.9	2	.01
9	1.1	9	.03	28	23	1.8	3.0	2	.02
10	1.1	7	.02	10	10	.28	3.6	4	.04
11	1.2	3	.01	5.7	6	.09	4.5	3	.04
12	1.2	5	.01	4.1	4	.04	3.8	4	.04
13	1.3	8	.03	3.8	3	.03	3.4	4	.04
14	1.3	7	.03	22	8	.48	3.1	4	.03
15	1.5	5	.02	10	6	.17	3.0	3	.03
16	1.6	8	.03	5.6	3	.05	2.9	1	.01
17	3.0	19	.25	4.3	4	.04	3.0	1	.01
18	26	55	5.7	3.9	2	.02	2.9	3	.02
19	2.9	9	.08	3.6	3	.03	2.7	2	.01
20	1.7	4	.02	3.4	2	.02	2.7	1	.01
21	1.5	3	.01	4.1	5	.06	2.5	3	.02
22	1.5	4	.02	17	5	.23	2.8	2	.02
23	1.7	7	.03	7.6	5	.10	4.5	2	.02
24	2.0	5	.03	5.4	4	.06	3.9	2	.03
25	4.4	5	.06	4.4	4	.05	19	14	.88
26	4.4	5	.07	4.2	3	.04	8.0	4	.10
27	8.9	4	.10	3.9	4	.04	6.5	3	.06
28	2.6	3	.02	3.8	3	.03	8.6	3	.08
29	1.6	3	.01	3.3	5	.04	6.5	1	.02
30	1.4	2	.01	3.4	4	.04	6.2	1	.02
31	1.4	2	.01	---	---	---	5.8	1	.02
TOTAL	82.27	---	6.63	441.9	---	44.12	138.8	---	1.79

POTOMAC RIVER BASIN

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JANUARY			FEBRUARY			MARCH			
1	4.1	1	.02	8.7	14	.32	9.1	5	.12
2	3.9	2	.02	7.8	11	.22	9.3	8	.22
3	4.5	3	.03	7.1	12	.23	26	18	1.4
4	4.4	1	.01	238	61	46	12	8	.26
5	4.2	1	.01	355	42	41	8.9	4	.11
6	4.2	2	.02	52	15	2.1	7.8	4	.08
7	8.1	4	.11	31	9	.74	7.5	4	.08
8	14	7	.29	17	6	.29	35	21	2.9
9	8.4	3	.08	12	4	.14	102	47	16
10	5.3	2	.03	9.8	3	.08	25	24	1.7
11	4.3	2	.02	9.5	3	.07	13	12	.45
12	4.0	3	.03	17	2	.10	9.8	5	.12
13	4.3	3	.03	10	2	.05	8.5	3	.07
14	3.9	2	.02	8.4	2	.04	8.2	3	.06
15	15	13	1.3	7.3	1	.02	7.2	2	.04
16	36	20	2.7	6.9	2	.03	6.7	2	.03
17	11	5	.14	139	38	24	6.5	2	.04
18	8.5	3	.08	222	47	46	35	23	2.5
19	7.2	1	.03	29	12	.90	129	52	21
20	7.4	2	.04	18	10	.47	48	29	3.8
21	5.8	3	.04	14	5	.20	287	64	64
22	4.4	2	.02	10	4	.10	51	30	4.0
23	198	53	48	89	22	12	22	11	.72
24	49	81	9.1	129	24	9.1	16	6	.24
25	20	47	2.7	27	14	1.0	12	8	.25
26	10	16	.44	15	6	.23	11	5	.15
27	9.1	10	.32	12	4	.13	11	10	.29
28	328	38	37	10	4	.11	9.6	14	.36
29	56	49	6.6	---	---	---	8.8	10	.24
30	18	26	1.3	---	---	---	8.1	4	.09
31	11	13	.38	---	---	---	7.6	6	.13
TOTAL	872.0	---	110.91	1511.5	---	185.67	958.6	---	121.45

POTOMAC RIVER BASIN

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	7.3	7	.14	11	27	1.7	2.4	12	.08
2	6.8	7	.13	31	46	4.1	1.9	11	.06
3	6.0	7	.12	29	32	2.7	1.7	8	.04
4	19	33	2.2	22	25	1.5	1.6	4	.02
5	12	16	.55	16	25	1.3	1.5	2	.01
6	7.8	8	.17	35	124	10	1.4	4	.01
7	6.8	6	.11	10	28	.81	1.3	4	.01
8	6.2	11	.18	44	32	4.1	1.1	3	.01
9	87	58	26	39	26	2.8	1.1	4	.01
10	38	53	6.1	15	16	.65	2.8	9	.07
11	14	21	.82	14	15	.57	2.8	8	.06
12	9.4	11	.28	39	31	3.5	3.0	11	.09
13	7.8	7	.14	25	20	1.4	7.8	49	2.0
14	7.2	8	.15	11	15	.46	5.4	66	1.1
15	6.7	9	.17	7.2	15	.29	25	99	18
16	5.9	14	.22	5.4	12	.17	32	86	14
17	12	34	1.2	4.3	11	.13	6.2	13	.23
18	7.6	17	.37	3.5	13	.12	3.1	9	.07
19	7.8	15	.41	3.1	8	.07	3.3	10	.09
20	20	24	1.6	2.8	7	.05	2.8	9	.07
21	8.2	9	.20	2.7	14	.10	1.9	9	.05
22	6.2	9	.15	2.4	12	.08	2.5	18	.16
23	5.3	10	.14	2.2	11	.06	5.7	46	1.4
24	4.7	8	.10	2.4	8	.05	23	63	7.1
25	4.0	7	.08	3.4	7	.07	4.0	10	.11
26	3.7	8	.08	2.7	15	.11	2.4	6	.04
27	3.9	9	.10	2.5	13	.09	1.8	7	.03
28	3.5	8	.07	2.6	14	.09	4.9	16	.19
29	3.3	9	.09	2.2	20	.12	3.9	8	.09
30	3.3	9	.08	1.9	22	.11	2.7	6	.05
31	---	---	---	1.9	17	.09	---	---	---
TOTAL	341.4	---	42.15	394.2	---	37.39	161.0	---	45.25

POTOMAC RIVER BASIN

01658500 SOUTH FORK QUANTICO CREEK NFAR INDEPENDENT HILL, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JULY			AUGUST			SEPTEMBER			
1	2.1	8	.04	.51	7	.01	.00	0	.00
2	1.7	8	.04	.42	7	.01	.00	0	.00
3	1.4	6	.02	.36	4	.00	.00	0	.00
4	1.2	6	.02	.30	13	.01	.00	0	.00
5	1.2	8	.03	.25	8	.01	.00	0	.00
6	1.1	7	.02	.22	8	.00	.00	0	.00
7	.97	7	.02	.18	6	.00	.00	0	.00
8	1.3	7	.03	.16	6	.00	.11	10	.00
9	1.6	8	.03	.18	5	.00	.10	10	.00
10	1.2	9	.03	.45	11	.01	.07	8	.00
11	1.0	8	.02	.47	11	.01	.06	8	.00
12	.86	6	.01	.41	6	.01	.04	7	.00
13	.78	6	.01	.30	9	.01	.01	8	.00
14	.72	8	.02	.20	8	.00	.00	9	.00
15	.69	11	.02	.16	7	.00	.00	0	.00
16	.69	21	.04	.17	11	.00	.00	0	.00
17	.68	22	.04	.44	14	.02	.03	16	.00
18	.65	24	.04	.60	14	.02	.04	20	.00
19	.63	20	.03	.38	10	.01	.05	13	.00
20	.61	13	.02	.32	11	.01	.06	9	.00
21	.52	12	.02	.22	11	.01	.04	10	.00
22	.47	22	.03	.16	9	.00	.13	14	.00
23	.47	16	.02	.11	10	.00	.11	12	.00
24	.49	15	.02	.07	17	.00	.09	14	.00
25	.93	12	.03	.05	21	.00	.08	9	.00
26	.71	7	.01	.02	12	.00	.07	7	.00
27	.51	5	.01	.01	13	.00	.08	5	.00
28	.44	9	.01	.04	17	.00	.05	6	.00
29	.40	22	.02	.06	9	.00	.02	4	.00
30	.36	14	.01	.01	8	.00	.02	5	.00
31	.56	8	.01	.00	0	.00	---	---	---
TOTAL	26.94	---	0.72	7.23	---	0.15	1.26	---	0.00
YEAR	4937.10		596.23						

POTOMAC RIVER BASIN

01660100 CHOPAWAMSIC CREEK AT RUSSELL ROAD NEAR JOPLIN, VA

LOCATION.--Lat. 38°31'23", long 77°22'26", Prince William County, Hydrologic unit 02070011, on left bank at upstream side of Russell Road, 4.5 miles southwest of Dumfries and 2.6 miles upstream from mouth.

DRAINAGE AREA.--Not determined.

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

GAGE.--Water stage recorder. Elevation of gage is 30 ft above sea level, from topographic map.

REMARKS.--Records fair.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 851 ft³/s Feb. 5, gage height 6.55 ft, minimum daily 0.02 ft³/s Sept. 24-26, 28, 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.59	11	11	11	36	40	29	35	11	10	.61	.07
2	.81	23	6.3	11	29	38	27	67	9.8	7.5	.45	.07
3	1.0	7.3	5.1	11	26	61	25	89	e8.5	6.1	.43	.05
4	.84	4.2	6.1	11	281	44	56	76	e7.0	5.5	.41	.05
5	.14	3.1	6.8	10	555	36	52	53	7.4	5.1	.39	.05
6	.17	2.8	5.7	9.6	146	31	37	67	7.0	4.4	.39	.05
7	.17	e100	5.5	11	101	29	32	45	6.1	3.7	.41	.05
8	.18	e110	5.0	20	68	66	29	96	5.7	5.0	.39	.04
9	.27	61	4.6	18	51	208	132	96	5.4	6.7	.40	.04
10	.37	34	5.0	13	40	95	130	63	15	5.3	.57	.05
11	.39	18	5.9	11	36	58	67	54	16	3.7	1.8	.05
12	.46	12	6.1	9.1	49	45	50	75	18	2.6	2.6	.05
13	.54	8.3	5.7	9.5	36	39	43	77	17	2.0	1.9	.05
14	.71	28	5.6	8.7	29	38	39	51	27	1.8	1.6	.05
15	.95	26	5.2	14	26	33	38	40	65	1.6	1.2	.05
16	1.3	14	5.2	63	24	29	34	33	122	1.6	1.6	.05
17	2.2	9.6	5.1	35	142	27	56	28	42	1.8	3.0	.05
18	8.1	8.2	5.1	25	294	60	45	23	21	4.7	4.3	.05
19	.91	7.9	5.1	20	92	184	42	20	16	3.0	.92	.05
20	.92	6.6	5.1	19	65	108	67	18	15	2.5	.31	.05
21	1.2	6.4	4.9	16	54	415	46	17	10	1.7	.20	.05
22	1.4	27	5.0	14	43	136	38	15	8.4	1.2	.17	.05
23	1.7	19	9.1	211	107	80	34	15	11	.92	.18	.03
24	1.9	10	8.2	137	245	61	31	15	82	.85	.43	.02
25	3.8	8.1	40	69	99	52	27	20	28	.72	.29	.02
26	3.5	8.5	25	44	65	46	26	e17	14	.69	.23	.02
27	6.6	9.0	18	35	53	43	25	13	9.5	.61	.20	.03
28	4.0	7.2	20	408	45	39	23	14	26	1.1	.20	.02
29	2.1	6.1	18	174	---	36	22	14	19	2.2	.16	.02
30	1.4	6.8	16	73	---	33	22	12	14	.74	.09	.03
31	1.3	---	15	48	---	30	---	11	---	.76	.08	---
TOTAL	49.92	603.1	294.4	1568.9	2837	2240	1324	1269	663.8	96.09	25.91	1.31
MEAN	1.61	20.1	9.50	50.6	101	72.3	44.1	40.9	22.1	3.10	.84	.044
MAX	8.1	110	40	408	555	415	132	96	122	10	4.3	.07
MIN	.14	2.8	4.6	8.7	24	27	22	11	5.4	.61	.08	.02

e Estimated.

POTOMAC RIVER BASIN

01660100 CHOPAWAMSI CREEK AT RUSSELL ROAD NEAR JOPLIN, VA--Continued

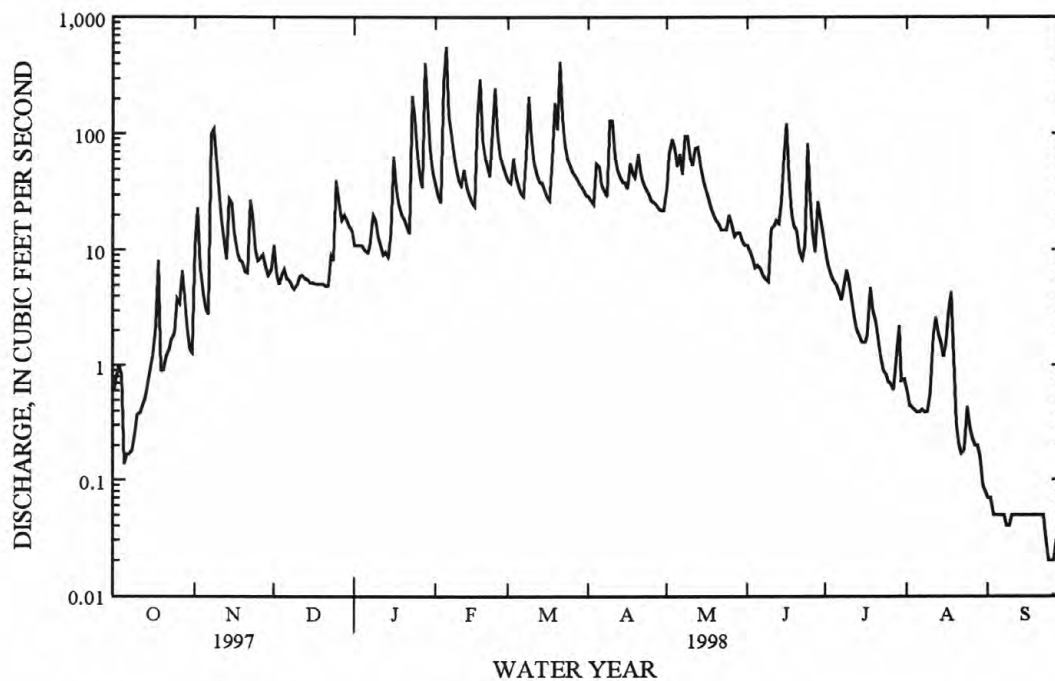
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	16.7	27.5	32.1	41.3	71.0	51.7	38.3	29.8	13.5	8.57	5.25	11.5
MAX	31.7	34.9	54.7	50.6	101	72.3	44.1	40.9	22.1	18.6	13.9	33.0
(WY)	1997	1997	1997	1998	1998	1998	1998	1998	1998	1996	1996	1996
MIN	1.61	20.1	9.50	32.0	40.7	35.0	29.6	13.7	7.98	3.10	.84	.044
(WY)	1998	1998	1998	1997	1997	1996	1997	1997	1997	1998	1998	1998

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1996 - 1998
ANNUAL TOTAL	6311.63	10973.43	
ANNUAL MEAN	17.3	30.1	27.5
HIGHEST ANNUAL MEAN			30.1
LOWEST ANNUAL MEAN			24.9
HIGHEST DAILY MEAN	145 Mar 3	555 Feb 5	555 Feb 5 1998
LOWEST DAILY MEAN	.14 Oct 5	.02 aSep 24	.02 aSep 24 1998
ANNUAL SEVEN-DAY MINIMUM	.24 Oct 5	.02 Sep 23	.02 Sep 23 1998
INSTANTANEOUS PEAK FLOW		851 Feb 5	851 Feb 5 1998
INSTANTANEOUS PEAK STAGE		6.55 Feb 5	6.55 Feb 5 1998
INSTANTANEOUS LOW FLOW		.02 bSep 8	.02 bSep 8 1998
10 PERCENT EXCEEDS	39	67	59
50 PERCENT EXCEEDS	8.5	11	18
90 PERCENT EXCEEDS	.83	.17	.83

a Also Sept. 25, 26, 28, 29, 1998.

b Also Sept. 9, 23-30, 1998.



POTOMAC RIVER BASIN

01660110 CHOPAWAMSIC CREEK AT I-95 NEAR JOPLIN, VA

WATER QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	NITRO- GEN DIS- SOLVED (MG/L AS N) (00602)
OCT 1997										
15...	1145	1.2	434	3.6	15.0	15.0	770	4.2	41	--
NOV										
26...	0830	8.2	58	6.6	4.0	4.5	745	14.7	116	.17
JAN 1998										
08...	1245	21	60	6.8	16.5	12.2	744	12.1	116	--
27...	1145	31	55	6.4	5.0	4.3	742	12.7	100	.26
FEB										
04...	1330	288	38	6.4	2.5	4.9	749	12.8	102	.31
24...	1430	229	38	5.8	10.0	7.1	747	12.4	104	--
MAR										
18...	1200	73	41	6.7	8.5	6.9	743	12.5	99	--
APR										
21...	1045	48	47	6.5	19.0	13.2	755	10.8	104	.22
MAY										
12...	1110	72	47	6.4	15.0	15.0	731	9.3	96	--
JUN										
17...	1115	43	43	6.6	25.0	21.0	761	8.3	93	--
JUL										
21...	1210	1.7	81	6.5	27.0	26.3	753	5.8	73	.21
AUG										
11...	0900	.93	145	6.3	23.5	22.6	749	6.6	77	.24
SEP										
15...	1115	.05	953	3.0	26.5	22.4	755	3.6	42	--

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)
OCT 1997										
15...	17	11	3.9	2.8	170	6.4	<.10	15	298	--
NOV										
26...	4.6	2.5	3.7	1.5	18	4.9	<.10	11	62	--
JAN 1998										
08...	3.5	1.9	3.5	1.2	10	3.5	<.10	14	51	--
27...	3.0	1.8	2.4	1.4	13	2.6	<.10	9.6	58	.053
FEB										
04...	2.1	1.3	1.9	1.2	7.7	2.2	<.10	7.1	41	--
24...	2.0	1.2	2.0	1.0	6.4	2.0	<.10	9.1	41	--
MAR										
18...	2.3	1.4	2.3	.85	7.0	2.3	<.10	11	38	--
APR										
21...	2.8	1.7	2.5	1.0	7.9	2.5	<.10	12	43	.026
MAY										
12...	3.0	1.6	2.7	.95	8.4	2.4	<.10	12	39	--
JUN										
17...	2.9	1.6	2.6	1.1	5.2	2.4	<.10	11	47	--
JUL										
21...	5.2	2.8	2.9	1.2	18	2.8	<.10	11	64	--
AUG										
11...	8.8	5.0	2.8	1.7	50	3.6	<.10	13	98	--
SEP										
15...	23	16	4.5	2.9	340	5.8	<.10	16	427	--

< Actual value is known to be less than the value shown.

POTOMAC RIVER BASIN

01660110 CHOPAWAMSIK CREEK AT I-95 NEAR JOPLIN, VA

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	ARSENIC TOTAL (UG/L AS AS) (01002)
OCT 1997										
15...	<.010	<.050	.023	.21	<.20	<.010	<.010	<.010	3400	<1
NOV										
26...	<.010	.051	<.020	.17	.11	<.010	<.010	.023	360	<1
JAN 1998										
08...	<.010	<.050	<.020	.14	<.10	<.010	<.010	.018	200	<1
27...	.013	.066	.073	.19	.19	<.010	<.010	.015	410	<1
FEB										
04...	<.010	.088	<.020	.35	.22	.022	<.010	.014	990	<1
24...	<.010	<.050	.033	.20	.17	<.010	<.010	<.010	430	<1
MAR										
18...	<.010	<.050	.026	.14	<.10	<.010	<.010	<.010	240	<1
APR										
21...	.053	.079	.033	.36	.14	.021	.014	<.010	210	<1
MAY										
12...	<.010	<.050	.026	.23	.13	<.010	<.010	<.010	270	<1
JUN										
17...	<.010	<.050	.051	.25	.16	<.010	<.010	.015	170	<1
JUL										
21...	<.010	.071	.045	.18	.14	<.010	<.010	<.010	200	<1
AUG										
11...	<.010	.107	.070	.21	.14	<.010	<.010	<.010	420	<1
SEP										
15...	.012	<.050	.349	.38	.35	<.010	.013	.017	2500	<1

< Actual value is known to be less than the value shown.

POTOMAC RIVER BASIN
 01660110 CHOPAWAMSIC CREEK AT I-95 NEAR JOPLIN, VA
 WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	BERYL- LIUM, TOTAL RECOV- ERABLE (UG/L AS BE) (01012)	BORON, TOTAL RECOV- ERABLE (UG/L AS B) (01022)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO) (01037)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)
OCT 1997										
15...	<100	<10	20	<1	1	80	9	26000	20900	<1
NOV										
26...	<100	<10	20	<1	<1	7	4	3200	2900	1
JAN 1998										
08...	<100	<10	<10	<1	<1	3	1	1800	1400	2
27...	<100	<10	<10	<1	<1	5	3	2300	1300	5
FEB										
04...	<100	<10	<10	<1	2	3	5	2000	280	6
24...	<100	<10	<10	<1	<1	2	4	880	400	7
MAR										
18...	<100	<10	<10	<1	<1	1	2	790	420	2
APR										
21...	<100	<10	10	<1	<1	2	2	1300	670	2
MAY										
12...	<100	<10	<10	<1	<1	2	2	1400	620	2
JUN										
17...	<100	<10	20	<1	<1	2	2	1600	790	4
JUL										
21...	<100	<10	20	<1	<1	6	2	4300	2400	1
AUG										
11...	<100	<10	10	<1	<1	20	5	7800	6800	<1
SEP										
15...	<100	<10	20	<1	<1	100	5	67000	60000	<1

< Actual value is known to be less than the value shown.

POTOMAC RIVER BASIN

01660110 CHOPAWAMSIK CREEK AT I-95 NEAR JOPLIN, VA

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	LITHIUM TOTAL RECOV- ERABLE (UG/L AS LI) (01132)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	MOLYB- DENUM, TOTAL RECOV- ERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	SELE- NIUM, TOTAL RECOV- ERABLE (UG/L AS SE) (01147)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	STRON- TIUM, TOTAL RECOV- ERABLE (UG/L AS SR) (01082)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)
OCT 1997										
15...	<10	5100	5090	<.10	<1	68	<1	<1	100	90
NOV										
26...	<10	460	498	<.10	2	5	<1	<1	50	<10
JAN 1998										
08...	<10	230	240	<.10	<1	3	<1	<1	50	<10
27...	<10	280	289	<.10	<1	5	<1	<1	30	10
FEB										
04...	<10	230	147	<.10	<1	4	<1	<1	30	20
24...	<10	130	110	<.10	<1	3	<1	<1	20	10
MAR										
18...	<10	110	117	<.10	<1	2	<1	<1	50	<10
APR										
21...	<10	120	160	<.10	<1	2	<1	<1	<10	<10
MAY										
12...	<10	160	159	<.10	<1	3	<1	<1	60	<10
JUN										
17...	<10	160	199	<.10	<1	2	<1	<1	40	<10
JUL										
21...	<10	450	506	<.10	<1	5	<1	<1	20	<10
AUG										
11...	<10	1600	1670	<.10	<1	15	<1	<1	70	20
SEP										
15...	<10	10000	9960	<.10	<1	60	<1	<1	90	80

< Actual value is known to be less than the value shown.

POTOMAC RIVER BASIN

01660500 BEAVERDAM RUN NEAR GARRISONVILLE, VA

LOCATION.--Lat. 38°30'25", long 77°25'46", Stafford County, Hydrologic unit 02070011, on left bank 3.4 miles upstream from mouth and 2.2 miles north of Garrisonville.

DRAINAGE AREA.--12.7 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1951 to June 1957, and March 1997 to current year.

GAGE.--Water stage recorder. Datum of gage is 150.43 ft above sea level. May 1951 to June 1957, at site 500 ft. upstream at same datum.

REMARKS.--Records fair. Flow regulated by Lunga Reservoir 2.5 mi upstream, capacity 420 acre-ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 276 ft³/s Feb. 5, gage height 2.74 ft; minimum 0.74 ft³/s, Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	13	7.2	7.0	47	30	18	17	8.2	12	7.3	7.2
2	1.7	9.0	7.4	7.2	36	28	17	31	8.3	9.8	7.2	7.4
3	2.3	7.7	7.6	7.2	30	39	15	42	8.3	8.6	7.2	7.4
4	2.8	7.6	8.2	7.5	97	35	26	46	8.3	8.5	7.1	7.3
5	2.8	7.3	8.4	7.2	250	30	28	41	8.5	8.8	7.1	7.3
6	3.2	e6.0	8.4	7.2	173	26	23	40	8.5	8.6	7.0	7.6
7	3.1	e29	8.5	7.4	117	23	20	34	8.7	8.5	7.0	7.5
8	3.5	18	6.7	7.8	82	34	18	49	8.1	9.1	7.2	7.8
9	3.3	13	7.1	7.6	58	74	42	53	8.2	8.8	7.2	7.6
10	3.0	11	7.7	7.2	44	68	64	43	13	8.4	7.3	7.7
11	3.2	10	7.2	7.3	36	50	51	36	9.5	8.5	7.4	7.4
12	3.6	10	7.0	7.2	36	38	39	43	10	8.5	7.3	6.1
13	3.6	10	6.9	7.1	30	30	31	45	11	8.3	7.0	5.9
14	3.2	13	6.8	7.2	25	27	26	38	9.8	8.3	7.1	5.8
15	3.2	11	6.6	10	21	23	24	31	11	8.3	7.1	5.8
16	4.0	10	6.8	13	19	19	21	24	19	8.3	7.1	5.7
17	5.6	9.6	7.5	8.9	55	18	29	20	25	8.5	8.1	5.5
18	13	9.3	e6.8	8.5	146	28	28	16	20	8.7	8.3	5.7
19	3.6	8.7	5.9	8.5	108	71	26	14	16	8.7	7.7	5.9
20	3.1	8.8	6.1	7.8	76	75	33	12	15	8.3	7.7	5.9
21	2.9	9.6	6.1	7.4	58	177	28	10	11	7.9	7.8	5.7
22	3.1	12	6.5	e7.0	43	131	24	9.5	9.6	8.2	7.6	6.0
23	3.1	9.6	6.9	e25	57	91	21	8.3	10	8.3	7.4	5.7
24	3.7	8.4	6.9	20	110	65	19	8.4	45	8.1	7.2	5.7
25	7.9	8.4	12	23	86	48	17	12	38	8.0	7.1	5.9
26	7.8	8.8	8.6	23	60	38	15	11	27	7.8	7.2	5.9
27	7.5	8.3	8.8	24	46	31	15	9.0	20	7.6	7.1	6.0
28	6.0	8.6	8.9	127	37	28	12	5.6	17	8.5	7.0	5.5
29	7.3	8.5	8.0	144	---	24	11	7.0	16	8.1	7.2	5.5
30	6.9	8.6	8.3	98	---	21	10	9.3	13	7.7	7.4	5.7
31	7.2	---	7.9	67	---	19	---	8.6	---	8.2	7.4	---
TOTAL	137.0	312.8	233.7	724.2	1983	1439	751	773.7	441.0	263.9	226.8	192.1
MEAN	4.42	10.4	7.54	23.4	70.8	46.4	25.0	25.0	14.7	8.51	7.32	6.40
MAX	13	29	12	144	250	177	64	53	45	12	8.3	7.8
MIN	1.7	6.0	5.9	7.0	19	18	10	5.6	8.1	7.6	7.0	5.5
CFSM	.35	.82	.59	1.84	5.58	3.66	1.97	1.97	1.16	.67	.58	.50
IN.	.40	.92	.68	2.12	5.81	4.22	2.20	2.27	1.29	.77	.66	.56

e Estimated.

POTOMAC RIVER BASIN

01660500 BEAVERDAM RUN NEAR GARRISONVILLE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951*, 1952 - 1956, 1957*, BY WATER YEAR (WY)
[UNREGULATED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2.95	9.63	10.2	13.4	14.5	21.8	20.3	9.45	7.61	3.18	11.9	2.02
MAX	6.79	27.1	19.3	25.0	25.5	37.0	42.2	19.5	18.6	7.16	64.0	5.88
(WY)	1957	1953	1952	1953	1957	1953	1952	1953	1951	1952	1955	1952
MIN	.33	.64	4.68	3.42	5.17	16.0	9.87	3.50	1.58	.20	.088	.040
(WY)	1955	1955	1955	1955	1954	1954	1955	1957	1954	1954	1954	1954

SUMMARY STATISTICS

WATER YEARS 1951* - 1957*

ANNUAL TOTAL	
ANNUAL MEAN	10.4
HIGHEST ANNUAL MEAN	14.4
LOWEST ANNUAL MEAN	5.24
HIGHEST DAILY MEAN	564
LOWEST DAILY MEAN	.01
ANNUAL SEVEN-DAY MINIMUM	.01
INSTANTANEOUS PEAK FLOW	1370
INSTANTANEOUS PEAK STAGE	7.03
INSTANTANEOUS LOW FLOW	.01
ANNUAL RUNOFF (CFSM)	.82
ANNUAL RUNOFF (INCHES)	11.12
10 PERCENT EXCEEDS	20
50 PERCENT EXCEEDS	5.0
90 PERCENT EXCEEDS	.38

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997* - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	4.42	10.4	7.54	23.4	70.8	46.4	20.9	17.8	11.0	6.91	4.64	4.23
MAX	4.42	10.4	7.54	23.4	70.8	46.4	25.0	25.0	14.7	8.51	7.32	6.40
(WY)	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998
MIN	4.42	10.4	7.54	23.4	70.8	46.4	16.8	10.6	7.35	5.30	1.97	2.05
(WY)	1998	1998	1998	1998	1998	1998	1997	1997	1997	1997	1997	1997

SUMMARY STATISTICS

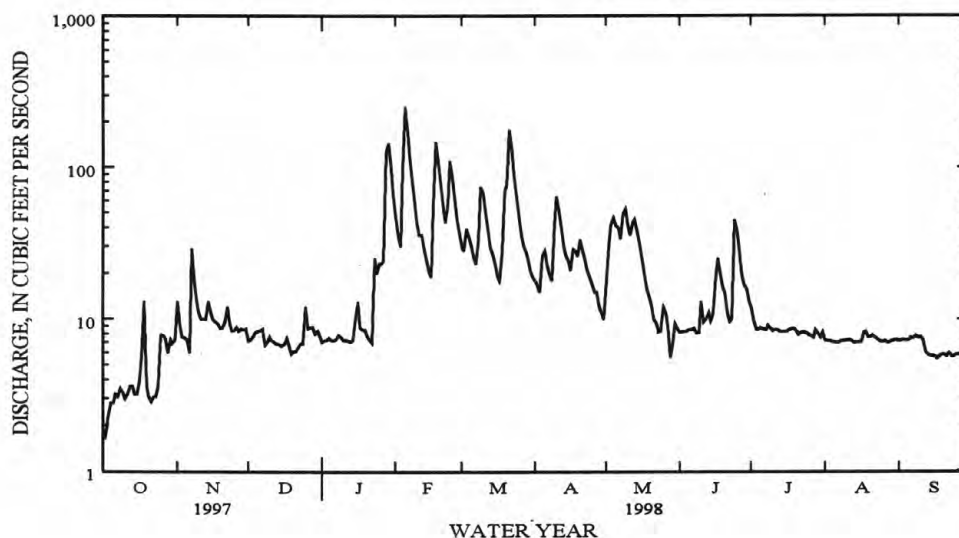
FOR 1998 WATER YEAR

WATER YEARS 1997* - 1998

ANNUAL TOTAL	7478.2	
ANNUAL MEAN	20.5	20.5
HIGHEST ANNUAL MEAN		20.5
LOWEST ANNUAL MEAN		20.5
HIGHEST DAILY MEAN	250	250
LOWEST DAILY MEAN	1.7	1.4
ANNUAL SEVEN-DAY MINIMUM	2.5	1.7
INSTANTANEOUS PEAK FLOW	276	276
INSTANTANEOUS PEAK STAGE	2.74	2.74
INSTANTANEOUS LOW FLOW	.74	.74
ANNUAL RUNOFF (CFSM)	1.61	1.61
ANNUAL RUNOFF (INCHES)	21.90	21.92
10 PERCENT EXCEEDS	45	38
50 PERCENT EXCEEDS	8.6	8.3
90 PERCENT EXCEEDS	5.9	2.1

* Partial water year, March to September 1997.

a Many days in 1954 and 1955.



POTOMAC RIVER BASIN

01660500 BEAVERDAM RUN NEAR GARRISONVILLE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 1997 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) SATUR- ATION (00300)	OXYGEN, DIS- SOLVED (MG/L) SATUR- ATION (00301)	COLI- FORM, FECAL, UM-MF (COLS./ 100 ML) (31625)	E. COLI WATER WHOLE TOTAL UREASE (COL / 100 ML) (31633)
OCT 1997											
15...	0840	2.9	38	6.7	11.5	15.9	770	6.6	66	190	170
NOV											
25...	0900	8.3	38	6.7	.5	3.8	755	11.7	90	K23	K28
JAN 1998											
08...	0844	7.6	42	6.9	18.5	11.1	747	10.6	99	67	70
27...	0830	21	38	6.6	3.5	3.8	742	12.5	97	K16	K4
30...	0845	103	35	6.8	6.5	6.0	757	12.5	101	--	--
*30...	0846	103	35	6.8	6.5	6.0	757	12.5	101	--	--
FEB											
04...	1145	80	35	6.6	3.0	4.6	749	12.8	101	--	--
24...	0900	117	29	6.4	4.0	6.6	752	12.2	101	67	K40
MAR											
18...	0900	30	33	7.0	5.0	6.5	745	12.8	106	77	K34
APR											
21...	0840	29	29	6.9	17.5	14.0	750	10.2	101	K31	80
MAY											
12...	0900	42	30	6.6	15.5	16.7	730	9.1	98	120	120
JUN											
17...	0835	25	31	6.5	27.5	20.6	760	7.5	84	140	160
JUL											
21...	0845	7.6	33	6.7	24.5	22.9	754	7.4	87	96	67
AUG											
12...	0830	7.0	33	6.4	25.0	23.8	752	5.9	71	56	65
SEP											
15...	0915	5.7	34	6.6	24.3	22.6	754	6.1	72	260	320

DATE	NITRO- GEN DIS- SOLVED (MG/L AS N) (00602)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
OCT 1997									
15...	--	<.010	<.050	<.015	.31	<.20	<.010	<.010	<.010
NOV									
25...	--	<.010	<.050	<.020	.24	.18	<.010	<.010	.022
JAN 1998									
08...	--	<.010	<.050	<.020	.28	.22	.012	<.010	.018
27...	.29	<.010	.074	.068	.24	.22	<.010	<.010	.012
30...	.31	<.010	.062	.078	.36	.25	<.010	<.010	.012
30...	.34	<.010	.059	.067	.29	.28	<.010	<.010	.014
FEB									
04...	.32	<.010	.114	<.020	.37	.21	.038	<.010	.013
24...	.28	<.010	.066	.050	.31	.22	<.010	<.010	<.010
MAR									
18...	--	<.010	<.050	.039	.27	.17	.012	<.010	<.010
APR									
21...	.24	<.010	.077	.034	.23	.16	<.010	<.010	.010
MAY									
12...	--	<.010	<.050	.030	.31	.17	<.010	<.010	<.010
JUN									
17...	--	<.010	<.050	.041	.33	.16	<.010	<.010	.015
JUL									
21...	.33	<.010	.069	.048	.31	.26	<.010	<.010	.015
AUG									
12...	.33	<.010	.078	.061	.35	.25	<.010	<.010	<.010
SEP									
15...	--	.013	<.050	.040	.36	.23	.719	<.010	<.010

* Replicate sample.

< Actual value is known to be less than the value shown.

K Results based on colony count outside the acceptance range (non-ideal colony count).

POTOMAC RIVER BASIN

01660500 BEAVERDAM RUN NEAR GARRISONVILLE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
OCT 1997			
01...	1200	.78	19
02...	1200	.75	21
03...	1200	.77	14
04...	1200	.80	13
05...	1200	.78	20
06...	1200	.78	24
07...	1200	.78	18
08...	1200	.77	18
09...	1200	.76	19
10...	1200	.77	24
11...	1200	.77	19
12...	1200	.77	29
13...	1200	.76	17
14...	1200	.77	21
15...	0835	.75	6
15...	0836	.75	3
15...	1200	.76	10
16...	1200	.78	24
17...	1200	.75	14
18...	0115	1.02	155
18...	0215	1.07	69
18...	0315	1.11	116
18...	0415	1.08	57
18...	0515	1.05	34
18...	0615	1.00	28
18...	1200	.85	172
19...	1200	.77	40
20...	1200	.75	24
21...	1200	.76	25
22...	1200	.76	17
23...	1200	.76	24
24...	1200	.75	22
25...	1200	.82	20
26...	1200	.81	30
27...	1200	.81	29
28...	1200	.75	11
29...	1200	.78	1
30...	1200	.78	11
31...	1200	.78	10
NOV 1997			
01...	1200	.91	30
02...	1200	.80	41
03...	1200	.79	4
04...	1200	.77	13
05...	1200	.77	13
06...	1000	.77	38
07...	1115	1.07	50
07...	1200	1.07	114
07...	1300	1.13	54
07...	1400	1.24	156
07...	1500	1.47	576
07...	1600	1.40	214
07...	1800	1.23	78
07...	2000	1.07	65
07...	2200	1.00	58
08...	1200	.91	113
09...	1200	.85	39
10...	1200	.80	14
11...	1200	.80	9
12...	1200	.79	42
13...	1200	.78	30
14...	1200	.84	25
15...	1200	.79	15
16...	1200	.80	18
18...	1200	.80	17
19...	1200	.81	39
20...	1200	.79	11
21...	1200	.78	14
22...	1200	.84	18
23...	1200	.80	14
24...	1200	.79	13

POTOMAC RIVER BASIN

01660500 BEAVERDAM RUN NEAR GARRISONVILLE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
NOV 1997			
25...	0905	.82	2
25...	0906	.82	2
25...	0907	.82	2
25...	1200	.80	101
26...	1200	.79	34
27...	1200	.80	24
28...	1200	.80	24
29...	1200	.79	28
30...	1200	.80	27
DEC 1997			
01...	1200	.78	19
02...	1200	.79	24
04...	1200	.80	16
05...	1200	.83	20
06...	1200	.80	19
07...	1200	.89	98
08...	1200	.77	31
09...	1200	.78	14
10...	1200	.78	13
11...	1200	.80	16
12...	1200	.81	14
16...	1200	.79	17
17...	1200	.79	17
20...	1200	.76	11
21...	1200	.77	12
22...	1200	.76	14
23...	1200	.77	8
24...	1200	.77	13
25...	1200	.85	22
26...	1200	.81	24
27...	1200	.79	19
30...	1200	.78	9
JAN 1998			
02...	1200	.78	10
03...	1200	.77	14
04...	1200	.79	9
05...	1200	.79	14
06...	1200	.77	13
07...	1200	.80	17
08...	0843	.83	7
08...	0844	.83	2
08...	0845	.83	11
08...	1200	.80	11
09...	1200	.77	30
10...	1200	.77	21
11...	1200	.79	21
12...	1200	.78	19
13...	1200	.79	20
14...	1200	.77	27
16...	1200	.84	70
17...	1200	.79	39
18...	1200	.80	23
19...	1200	.80	25
20...	1200	.78	15
22...	1200	.77	351
23...	0930	.97	334
23...	1015	1.03	70
23...	1115	1.21	159
23...	1200	1.40	84
23...	1215	1.45	335
23...	1315	1.53	244
23...	1415	1.50	165
23...	1515	1.41	105
23...	1615	1.32	42
23...	1715	1.26	30
23...	1815	1.21	31
23...	1915	1.16	18
23...	2015	1.11	11
23...	2115	1.07	15

POTOMAC RIVER BASIN

01660500 BEAVERDAM RUN NEAR GARRISONVILLE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
JAN 1998			
24...	0015	1.00	164
24...	0315	.96	309
24...	1200	.90	40
25...	0445	.96	331
25...	0715	.96	345
26...	1200	.96	17
27...	0843	1.00	2
27...	0845	1.00	4
27...	0847	1.00	2
27...	1200	.95	318
28...	1100	1.84	378
28...	1200	1.95	64
28...	1201	1.95	465
28...	1300	2.01	316
28...	1400	2.07	224
28...	1500	2.19	172
28...	1600	2.29	154
28...	1700	2.19	132
28...	1800	2.13	41
28...	1900	2.10	79
28...	2000	2.09	57
28...	2100	2.09	48
28...	2200	2.08	120
29...	0100	2.06	97
29...	0500	2.05	69
29...	0900	1.97	49
29...	1200	1.93	16
30...	0825	1.70	11
30...	0830	1.70	10
30...	0853	1.69	7
30...	0930	1.63	15
30...	1200	1.61	10
30...	1430	1.58	16
30...	1900	1.52	13
31...	0030	1.46	12
31...	0630	1.40	9
31...	1200	1.37	8
FEB 1998			
01...	1200	1.20	59
02...	1200	1.09	30
03...	0930	1.03	27
03...	1200	1.03	49
03...	1530	1.05	12
04...	0030	1.01	15
04...	0530	1.14	19
04...	0630	1.16	22
04...	0730	1.21	19
04...	0830	1.27	25
04...	1200	1.49	170
04...	1230	1.55	57
04...	1330	1.70	97
04...	1355	1.75	78
04...	1400	1.75	51
04...	1410	1.80	78
04...	1430	1.83	82
04...	1530	1.89	82
04...	1630	1.94	73
04...	1830	1.99	73
04...	2030	2.00	57
04...	2330	2.27	47
05...	0030	2.41	117
05...	0230	2.50	219
05...	0530	2.60	246
05...	0930	2.70	193
05...	1000	2.70	197
05...	1005	2.70	205
05...	1010	2.70	207
05...	1030	2.69	191
05...	1200	2.69	52
05...	1530	2.58	114

POTOMAC RIVER BASIN

01660500 BEAVERDAM RUN NEAR GARRISONVILLE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
FEB 1998			
05...	1930	2.48	100
05...	2330	2.38	82
06...	0330	2.28	61
06...	0630	2.20	54
06...	0930	2.11	48
06...	1200	2.09	26
06...	1500	2.03	29
06...	2200	1.93	20
07...	0500	1.84	24
07...	1200	1.74	38
07...	1400	1.71	12
08...	1200	1.48	46
10...	1200	1.16	34
11...	1200	1.09	63
12...	1200	1.09	70
13...	1200	1.04	58
14...	1200	.99	50
15...	1200	.95	44
17...	1200	1.22	77
17...	1630	1.46	52
17...	1830	1.50	37
17...	2130	1.54	23
17...	2230	1.81	45
17...	2330	1.97	309
18...	0030	1.92	161
18...	0230	1.94	64
18...	0430	1.98	56
18...	0530	2.00	47
18...	0630	1.98	41
18...	0901	1.97	32
18...	0905	1.97	66
18...	0908	1.97	37
18...	0930	1.98	29
18...	1130	1.97	19
18...	1200	1.96	29
18...	1530	1.92	18
18...	1930	1.89	34
18...	2330	1.83	12
19...	0330	1.79	11
19...	0830	1.71	8
19...	1200	1.68	11
20...	1200	1.44	7
21...	1200	1.30	12
22...	1200	1.17	12
23...	1200	1.17	22
23...	1730	1.46	37
23...	1830	1.52	33
23...	2030	1.55	27
24...	0030	1.60	16
24...	0330	1.69	18
24...	0630	1.73	17
24...	0830	1.75	17
24...	0835	1.79	12
24...	0837	1.79	21
24...	0845	1.79	15
24...	1130	1.72	12
24...	1200	1.73	16
24...	1530	1.71	9
24...	1630	1.69	9
25...	1200	1.55	10
26...	1200	1.32	9
27...	1200	1.19	9
28...	1200	1.12	19
MAR 1998			
01...	1200	1.05	21
02...	1200	1.00	20
03...	1200	1.14	20
04...	1200	1.08	19
05...	1200	1.04	7
06...	1200	.99	16
07...	1200	.96	24

POTOMAC RIVER BASIN

01660500 BEAVERDAM RUN NEAR GARRISONVILLE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
MAR 1998			
08...	1200	1.07	23
09...	0615	1.46	54
09...	0815	1.51	39
09...	1030	1.46	27
09...	1035	1.46	20
09...	1040	1.46	17
09...	1200	1.46	21
09...	1215	1.46	37
09...	2115	1.46	10
10...	1200	1.39	12
11...	1200	1.24	26
12...	1200	1.13	9
12...	1730	1.11	9
13...	0230	1.06	4
13...	1200	1.03	20
14...	1200	1.01	25
15...	1200	.98	14
16...	1200	.92	20
17...	1200	.90	15
18...	0815	1.04	8
18...	0830	1.04	9
18...	0845	1.04	10
18...	1200	1.03	19
19...	1200	1.44	21
20...	1200	1.38	17
20...	1945	1.46	23
20...	2045	1.47	20
20...	2145	1.49	15
20...	2245	1.57	23
20...	2345	1.83	121
21...	0045	2.37	406
21...	0126	2.48	363
21...	0226	2.29	206
21...	0326	2.13	102
21...	0426	2.13	60
21...	0526	2.11	41
21...	0626	2.13	46
21...	0726	2.15	30
21...	0826	2.13	45
21...	0926	2.14	44
21...	1200	2.13	40
21...	1226	2.12	41
21...	1526	2.09	36
21...	1826	2.05	31
22...	1200	1.83	20
23...	1200	1.54	13
24...	1200	1.33	12
25...	1200	1.19	11
26...	1200	1.10	26
27...	1200	1.05	33
28...	1200	1.02	28
29...	1200	.97	22
30...	1200	.94	32
31...	1200	.93	40
APR 1998			
01...	1200	.92	16
02...	1200	.90	31
03...	1200	.88	24
04...	1200	1.10	61
05...	1200	1.01	34
06...	1200	.96	42
07...	1200	.93	34
08...	1200	.92	33
09...	1200	.98	36
09...	1615	.91	184
09...	1715	.92	161
09...	1815	.90	128
10...	1200	1.36	16
11...	1200	1.36	22
12...	1200	1.13	38
13...	1200	1.05	38

POTOMAC RIVER BASIN

01660500 BEAVERDAM RUN NEAR GARRISONVILLE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
APR 1998			
14...	1200	1.00	39
15...	1200	.96	43
16...	1200	.94	75
17...	1200	1.12	142
18...	1200	1.01	124
19...	1200	.98	101
20...	1200	1.07	162
21...	0810	1.05	16
21...	0815	1.05	9
21...	0830	1.05	20
21...	1200	1.00	24
22...	1200	.97	96
23...	1200	.94	85
24...	1200	.91	99
25...	1200	.87	130
26...	1200	.86	171
27...	1200	.86	82
28...	1200	.82	19
29...	1200	.80	54
30...	1200	.81	43
MAY 1998			
01...	1200	.80	41
02...	1200	.98	69
03...	1200	1.13	25
04...	1200	1.17	37
05...	1200	1.12	25
06...	1200	1.13	28
07...	1200	1.04	50
08...	1200	1.20	50
09...	1200	1.24	24
10...	1200	1.16	19
11...	1200	1.08	17
12...	0845	1.18	17
12...	0850	1.18	9
12...	0855	1.18	15
12...	1200	1.18	20
13...	1200	1.17	19
14...	1200	1.09	8
15...	1200	1.03	19
16...	1200	.96	23
17...	1200	.92	33
18...	1200	.87	53
19...	1200	.83	40
20...	1200	.81	17
21...	1200	.80	32
22...	1200	.79	31
23...	1200	.76	32
24...	1200	.76	39
25...	1200	.82	55
26...	1200	.82	48
27...	1200	.80	59
28...	1200	.73	64
29...	1200	.74	94
30...	1200	.79	40
31...	1200	.79	59
JUN 1998			
01...	1200	.78	31
02...	1200	.78	52
03...	1200	.78	60
04...	1200	.78	38
05...	1200	.78	39
06...	1200	.78	51
07...	1200	.78	29
08...	1200	.78	31
09...	1200	.77	43
10...	1200	.90	72
11...	1200	.80	102
12...	1200	.80	68
13...	1200	.79	63
14...	1200	.79	89
15...	1200	.84	56

POTOMAC RIVER BASIN

01660500 BEAVERDAM RUN NEAR GARRISONVILLE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
JUN 1998			
16...	1200	.92	23
17...	0815	1.03	25
17...	0820	1.03	17
17...	0825	1.03	24
17...	1200	.99	33
18...	1200	.93	95
19...	1200	.89	55
20...	1200	.87	36
21...	1200	.83	61
22...	1200	.80	62
23...	1200	.79	52
24...	1200	1.23	40
25...	1200	1.12	34
25...	1400	1.11	17
25...	2300	1.06	10
26...	0500	1.03	10
26...	1200	1.01	87
26...	1300	1.00	9
27...	1200	.93	14
28...	1200	.89	22
29...	1200	.88	31
30...	1200	.85	61
JUL 1998			
01...	1200	.83	29
02...	1200	.80	25
03...	1200	.78	37
04...	1200	.77	52
05...	1200	.78	51
06...	1200	.77	45
07...	1200	.78	29
08...	1200	.78	68
09...	1200	.78	50
10...	1200	.78	60
11...	1200	.78	88
12...	1200	.78	59
13...	1200	.77	76
14...	1200	.77	80
15...	1200	.77	61
16...	1200	.77	84
17...	1200	.77	180
18...	1200	.78	138
19...	1200	.78	97
20...	1200	.77	43
21...	0822	.82	28
21...	0825	.82	3
21...	0830	.82	11
21...	1200	.77	21
22...	1200	.77	88
23...	1200	.77	68
24...	1200	.76	52
25...	1200	.76	87
26...	1200	.76	88
27...	1200	.76	54
28...	1200	.78	54
29...	1200	.79	146
30...	1200	.77	61
31...	1200	.78	58
AUG 1998			
01...	1200	.77	54
02...	1200	.78	61
03...	1200	.78	50
04...	1200	.77	52
05...	1200	.77	36
06...	1200	.77	67
07...	1200	.77	58
08...	1200	.77	44
09...	1200	.78	55
10...	1200	.78	53
11...	1200	.77	66
12...	0810	.82	36
12...	0815	.82	7

POTOMAC RIVER BASIN

01660500 BEAVERDAM RUN NEAR GARRISONVILLE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
AUG 1998			
12...	0820	.82	16
12...	1200	.77	27
13...	1200	.77	55
14...	1200	.77	65
15...	1200	.77	61
16...	1200	.77	57
17...	1200	.77	57
18...	1200	.78	106
19...	1200	.77	64
20...	1200	.77	76
21...	1200	.77	69
22...	1200	.77	119
23...	1200	.77	89
24...	1200	.77	77
25...	1200	.76	61
26...	1200	.77	88
27...	1200	.76	46
28...	1200	.77	42
29...	1200	.76	36
30...	1200	.78	38
31...	1200	.77	34
SEP 1998			
01...	1200	.77	26
02...	1200	.77	32
03...	1200	.77	32
04...	1200	.76	35
05...	1200	.78	39
06...	1200	.78	13
07...	1200	.77	39
15...	0855	1.78	25
15...	0900	1.78	8
15...	0905	1.78	8

POTOMAC RIVER BASIN

01660500 BEAVERDAM RUN NEAR GARRISONVILLE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	1.8	4	.02	13	12	.44	7.2	18	.36
2	1.7	4	.02	9.0	6	.15	7.4	20	.40
3	2.3	3	.02	7.7	3	.06	7.6	17	.34
4	2.8	3	.02	7.6	7	.14	8.2	14	.31
5	2.8	4	.03	7.3	10	.19	8.4	16	.37
6	3.2	5	.04	e6.0	19	e.31	8.4	19	.44
7	3.1	4	.03	e29	81	e8.0	8.5	56	1.3
8	3.5	4	.04	18	58	2.8	6.7	26	.47
9	3.3	4	.04	13	28	1.0	7.1	12	.23
10	3.0	5	.04	11	11	.33	7.7	10	.21
11	3.2	4	.04	10	9	.26	7.2	11	.22
12	3.6	5	.05	10	25	.72	7.0	10	.19
13	3.6	3	.03	10	23	.66	6.9	10	.19
14	3.2	3	.03	13	19	.68	6.8	10	.19
15	3.2	2	.02	11	13	.38	6.6	11	.19
16	4.0	4	.05	10	15	.40	6.8	11	.20
17	5.6	8	.20	9.6	15	.39	7.5	11	.22
18	13	11	.52	9.3	17	.42	e6.8	9	e.17
19	3.6	10	.10	8.7	27	.65	5.9	7	.12
20	3.1	8	.06	8.8	12	.29	6.1	6	.10
21	2.9	8	.06	9.6	13	.34	6.1	7	.11
22	3.1	7	.05	12	16	.53	6.5	7	.12
23	3.1	8	.07	9.6	13	.35	6.9	5	.08
24	3.7	8	.08	8.4	10	.24	6.9	6	.12
25	7.9	9	.18	8.4	4	.09	12	10	.34
26	7.8	12	.26	8.8	25	.58	8.6	11	.25
27	7.5	12	.24	8.3	24	.54	8.8	8	.19
28	6.0	6	.09	8.6	23	.54	8.9	6	.15
29	7.3	5	.10	8.5	25	.58	8.0	5	.11
30	6.9	5	.09	8.6	24	.56	8.3	4	.09
31	7.2	6	.12	---	---	---	7.9	4	.08
TOTAL	137.0	---	2.74	312.8	---	22.62	233.7	---	7.86
JANUARY			FEBRUARY			MARCH			
1	7.0	3	.06	47	42	5.3	30	28	2.3
2	7.2	3	.06	36	28	2.8	28	26	2.0
3	7.2	4	.09	30	18	1.5	39	25	2.6
4	7.5	3	.07	97	32	11	35	21	1.9
5	7.2	4	.08	250	136	93	30	10	.83
6	7.2	4	.08	173	42	20	26	17	1.2
7	7.4	4	.07	117	38	12	23	24	1.5
8	7.8	3	.07	82	54	12	34	27	2.6
9	7.6	8	.16	58	51	8.0	74	29	5.5
10	7.2	7	.14	44	51	6.0	68	13	2.3
11	7.3	8	.16	36	85	8.2	50	20	2.8
12	7.2	8	.16	36	101	9.7	38	11	1.1
13	7.1	9	.18	30	91	7.5	30	18	1.5
14	7.2	15	.30	25	82	5.6	27	23	1.6
15	10	45	1.3	21	71	4.1	23	16	.98
16	13	40	1.4	19	46	2.4	19	18	.96
17	8.9	24	.59	55	84	19	18	14	.69
18	8.5	16	.37	146	73	29	28	15	1.2
19	8.5	16	.37	108	18	5.3	71	20	3.8
20	7.8	15	.31	76	15	3.0	75	21	4.9
21	7.4	63	1.2	58	20	3.1	177	66	35
22	e7.0	344	e6.6	43	20	2.3	131	19	7.0
23	e25	95	e6.8	57	33	5.7	91	13	3.1
24	20	110	6.2	110	21	6.1	65	11	1.9
25	23	181	11	86	15	3.4	48	11	1.5
26	23	20	1.3	60	13	2.2	38	22	2.2
27	24	182	13	46	14	1.8	31	28	2.3
28	127	285	85	37	25	2.5	28	24	1.8
29	144	43	18	---	---	---	24	20	1.3
30	98	15	3.9	---	---	---	21	26	1.4
31	67	13	2.3	---	---	---	19	28	1.4
TOTAL	724.2	---	161.32	1983	---	292.5	1439	---	101.16

e Estimated.

POTOMAC RIVER BASIN

01660500 BEAVERDAM RUN NEAR GARRISONVILLE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	18	16	.77	17	33	1.9	8.2	23	.51
2	17	22	1.0	31	35	2.8	8.3	32	.71
3	15	18	.75	42	16	1.8	8.3	36	.81
4	26	32	2.5	46	18	2.3	8.3	27	.59
5	28	28	2.1	41	15	1.6	8.5	27	.61
6	23	29	1.8	40	16	1.7	8.5	31	.70
7	20	25	1.3	34	25	2.3	8.7	21	.49
8	18	23	1.1	49	38	5.2	8.1	22	.47
9	42	47	7.3	53	19	2.7	8.2	30	.67
10	64	18	3.1	43	11	1.3	13	48	1.7
11	51	15	2.0	36	9	.92	9.5	63	1.6
12	39	22	2.4	43	10	1.2	10	48	1.3
13	31	23	1.9	45	10	1.2	11	45	1.3
14	26	23	1.6	38	6	.62	9.8	55	1.5
15	24	27	1.7	31	10	.85	11	37	1.1
16	21	44	2.5	24	13	.88	19	18	.92
17	29	72	5.8	20	19	1.1	25	24	1.6
18	28	66	5.0	16	28	1.2	20	54	2.8
19	26	58	4.1	14	22	.83	16	38	1.7
20	33	59	5.3	12	12	.38	15	27	1.1
21	28	15	1.1	10	18	.49	11	37	1.1
22	24	41	2.6	9.5	19	.49	9.6	38	.99
23	21	44	2.5	8.3	20	.44	10	32	.87
24	19	51	2.6	8.4	24	.56	45	24	3.0
25	17	67	3.0	12	32	1.0	38	15	1.6
26	15	78	3.2	11	31	.89	27	6	.41
27	15	40	1.7	9.0	36	.88	20	8	.42
28	12	14	.46	5.6	42	.63	17	12	.55
29	11	24	.73	7.0	51	.94	16	17	.72
30	10	23	.66	9.3	29	.74	13	26	.93
31	---	---	---	8.6	33	.76	---	---	---
TOTAL	751	---	72.57	773.7	---	40.60	441.0	---	32.77

POTOMAC RIVER BASIN

01660500 BEAVERDAM RUN NEAR GARRISONVILLE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JULY			AUGUST			SEPTEMBER			
1	12	15	.50	7.3	14	.28	7.2	15	.29
2	9.8	13	.34	7.2	15	.30	7.4	17	.35
3	8.6	17	.39	7.2	13	.26	7.4	18	.36
4	8.5	22	.51	7.1	13	.25	7.3	20	.40
5	8.8	22	.52	7.1	11	.22	7.3	23	.45
6	8.6	18	.43	7.0	17	.31	7.6	24	.48
7	8.5	14	.32	7.0	16	.30	7.5	24	.48
8	9.1	23	.56	7.2	13	.25	7.8	24	.50
9	8.8	20	.48	7.2	15	.30	7.6	29	.60
10	8.4	23	.51	7.3	16	.31	7.7	30	.63
11	8.5	27	.63	7.4	18	.35	7.4	34	.67
12	8.5	21	.48	7.3	10	.20	6.1	34	.55
13	8.3	23	.52	7.0	16	.30	5.9	25	.40
14	8.3	23	.51	7.1	20	.39	5.8	10	.15
15	8.3	18	.41	7.1	21	.40	5.8	17	.27
16	8.3	24	.55	7.1	20	.39	5.7	23	.36
17	8.5	41	.94	8.1	23	.51	5.5	26	.40
18	8.7	33	.77	8.3	34	.76	5.7	26	.41
19	8.7	21	.49	7.7	27	.56	5.9	22	.36
20	8.3	10	.22	7.7	29	.61	5.9	18	.28
21	7.9	6	.12	7.8	31	.64	5.7	21	.33
22	8.2	15	.33	7.6	45	.92	6.0	13	.20
23	8.3	14	.31	7.4	39	.78	5.7	13	.21
24	8.1	12	.26	7.2	34	.65	5.7	19	.29
25	8.0	18	.39	7.1	30	.58	5.9	23	.36
26	7.8	19	.39	7.2	36	.71	5.9	21	.33
27	7.6	13	.27	7.1	24	.45	6.0	23	.37
28	8.5	13	.30	7.0	21	.39	5.5	28	.42
29	8.1	14	.30	7.2	19	.36	5.5	27	.41
30	7.7	15	.31	7.4	19	.39	5.7	40	.61
31	8.2	14	.31	7.4	18	.35	---	---	---
TOTAL	263.9	---	13.37	226.8	---	13.47	192.1	---	11.92
YEAR	7478.2		772.90						

POTOMAC RIVER BASIN

01660810 UPPER MACHODOC CREEK AT DAHLGREN, VA

LOCATION.--Lat 38°19'10" long 77°02'08", Hydrologic Unit 02070011, on pier 350 ft south of security gate at intersection of Tisdale Road and Welch Road, at the Naval Surface Warfare Center, Dahlgren Laboratory, in Dahlgren, and 0.5 mi upstre^am from confluence of Potomac River.

PERIOD OF RECORD.-- October 1992 to September 1998 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 4.86 ft below sea level; gage readings have been adjusted to sea level.

REMARKS.--Records good.

EXTREMS FOR PERIOD OF RECORD.--Maximum elevation, 5.86 ft, Sept. 6, 1996. Minimum elevation, -3.31 ft, Apr. 1, 1997.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 3.87 ft, Feb. 5; minimum, -2.17 ft, Dec. 31.

ELEVATION, FEET, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

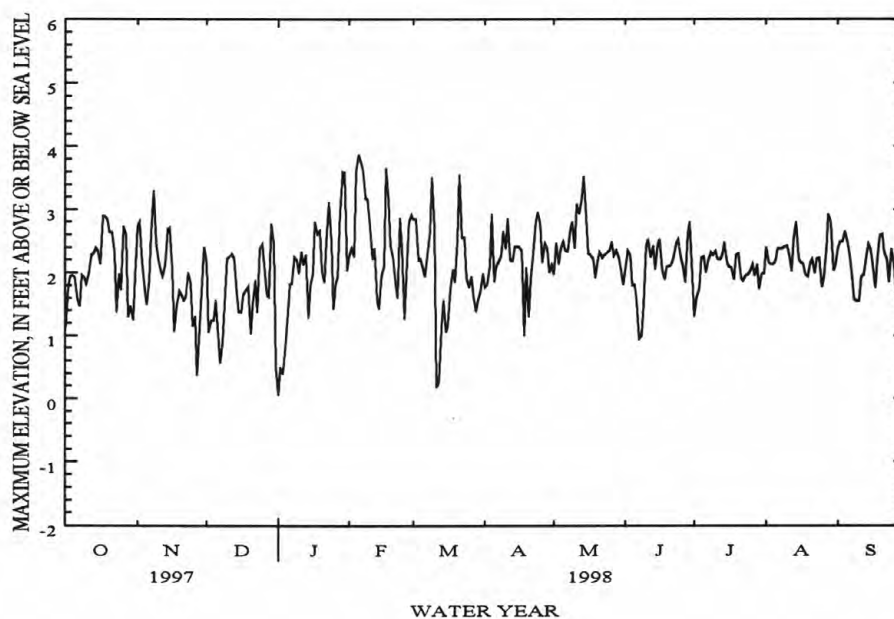
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	1.12	-.68	2.74	.86	2.16	-.72	.05	-2.13	2.27	.13	2.84	.54
2	1.78	-.01	2.80	1.02	1.05	-1.16	.50	-1.62	2.40	.38	2.85	.39
3	1.95	.19	2.17	.55	1.24	-.62	.40	-1.65	2.27	.36	2.21	.13
4	1.96	.25	1.75	-.16	1.24	-.57	.81	-1.23	3.62	.61	2.23	.19
5	1.93	.25	1.49	-.17	1.57	-.35	1.23	-.81	3.87	2.07	2.07	.15
6	1.60	.01	1.88	.14	1.02	-.52	1.82	-.11	3.78	2.37	1.94	-.13
7	1.47	-.05	2.62	.87	.56	-1.14	1.84	.03	3.62	1.77	2.30	.57
8	1.97	.19	3.30	1.75	.90	-1.39	2.26	.32	3.18	1.59	2.64	.35
9	1.93	.34	2.47	.76	1.70	-.66	2.20	.53	3.16	1.26	3.52	1.62
10	1.83	.35	2.23	.55	2.24	.17	1.99	.19	2.72	.42	2.71	-1.26
11	1.99	.05	2.04	.17	2.28	.32	2.34	.36	2.22	.12	.18	-1.63
12	2.29	.52	1.95	.03	2.31	.33	2.12	.33	2.39	.10	.28	-1.37
13	2.31	.39	2.13	.06	2.24	.13	2.29	.21	1.57	-.42	1.13	-.74
14	2.40	.34	2.69	.46	1.69	-.62	1.28	-.38	1.42	-.28	1.57	-.29
15	2.36	-.19	2.71	.46	1.37	-.55	1.80	.15	1.97	.01	1.07	-.93
16	2.13	.02	2.05	-.59	1.37	-.51	1.99	.23	2.10	.40	1.17	-.48
17	2.90	.58	1.07	-.78	1.66	-.42	2.81	.47	3.66	.89	1.76	-.24
18	2.90	.83	1.49	-.43	1.73	.10	2.62	1.00	3.15	1.46	2.05	.17
19	2.84	.93	1.72	-.01	1.79	.03	2.67	.90	2.44	1.06	1.85	.10
20	2.64	.90	1.66	.24	1.03	-.50	2.03	.50	2.25	.85	2.52	.25
21	2.64	.78	1.58	.15	1.51	-.35	1.85	.02	1.83	.05	3.56	1.93
22	2.34	.19	1.62	.37	1.88	.47	2.51	1.01	1.60	-.19	2.55	1.06
23	1.37	-.27	2.00	.32	1.37	.10	3.12	1.47	2.87	.35	2.56	.76
24	1.98	.33	1.84	-.45	2.39	.32	2.50	.40	2.40	-1.24	1.92	-.32
25	1.73	.06	1.15	-.76	2.46	1.06	1.42	-.47	1.26	-1.42	1.80	-.51
26	2.73	.12	1.31	-.41	2.12	.42	1.86	-.09	2.18	-.01	1.94	-.29
27	2.60	.95	.37	-1.41	1.65	-.03	1.93	-.17	2.80	.37	1.63	-1.00
28	1.30	-.80	1.01	-.88	1.62	-.85	2.97	.65	2.92	.57	1.38	-1.04
29	1.47	-.21	1.88	-.23	2.78	.59	3.60	.95	---	---	1.56	-.93
30	1.25	-.44	2.41	.55	2.46	-.18	3.59	.61	---	---	1.72	-.62
31	1.94	-.09	---	---	.51	-2.17	2.03	.13	---	---	1.99	-.42
MONTH	2.90	-.80	3.30	-1.41	2.78	-2.17	3.60	-2.13	3.87	-1.42	3.56	-1.63

POTOMAC RIVER BASIN

01660810 UPPER MACHODOC CREEK AT DAHLGREN, VA--Continued

ELEVATION, FEET, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	1.78	-.41	1.97	-.30	2.05	-.06	1.30	-.41	2.41	.83	2.40	.65
2	1.83	-.32	2.47	.41	2.36	.11	1.64	.06	2.17	.55	2.49	1.21
3	2.10	.08	2.13	.63	2.28	.46	1.75	.24	2.14	.61	2.49	.40
4	2.93	.69	2.39	.60	1.80	.13	2.25	.44	2.14	.46	2.65	.57
5	1.86	.20	2.50	.98	1.81	-.06	2.26	-.03	2.21	.44	2.48	.31
6	2.10	.58	2.36	.28	1.55	-.81	2.00	.37	2.39	.57	2.31	.03
7	2.18	.50	2.34	.53	.96	-.89	2.20	.62	2.38	.51	1.93	-.24
8	2.28	.38	2.68	1.09	1.01	-.62	2.33	.39	2.39	.48	1.58	-.44
9	2.65	.63	2.80	.16	1.49	-.15	2.29	.14	2.42	.32	1.55	-.52
10	2.38	.71	2.39	.73	2.44	.74	2.35	.15	2.43	.25	1.57	-.42
11	2.86	.24	3.09	1.24	2.53	.19	2.23	.15	2.30	.19	1.94	-.17
12	2.21	.35	2.93	1.28	2.25	.38	2.20	.15	2.02	.05	1.97	.04
13	2.19	.51	3.17	1.54	2.43	.44	2.30	.14	2.53	.10	2.19	.15
14	2.42	.62	3.53	1.23	2.05	.27	2.48	.56	2.80	.96	2.46	.67
15	2.41	.64	2.88	.70	2.45	.46	2.16	.26	2.23	.42	2.37	.59
16	2.42	.64	2.31	.45	2.53	.51	2.09	.10	2.16	.31	2.11	.10
17	2.36	.31	2.28	.48	2.05	.16	2.07	.08	2.14	.18	1.76	.04
18	1.00	-.83	2.23	.44	1.90	-.11	1.89	-.16	1.98	-.09	2.21	.52
19	2.08	-.01	1.92	.15	2.09	.07	2.29	.27	1.94	-.48	2.59	.95
20	1.30	-.50	2.21	.28	2.10	-.04	2.31	-.04	2.16	.48	2.61	.72
21	1.90	-.24	2.33	.47	2.13	-.08	1.92	-.36	2.22	.11	2.32	.54
22	2.31	.36	2.25	-.18	2.26	.14	1.88	-.30	1.99	-.08	2.23	.37
23	2.81	.83	2.30	.00	2.47	.18	1.96	-.07	2.23	.32	1.85	.19
24	2.96	.76	2.34	-.30	2.53	-.01	1.97	-.25	2.24	.14	2.38	.69
25	2.77	-.30	2.35	.05	2.25	-.06	2.03	-.01	1.77	-.05	2.13	.54
26	2.17	-.28	2.49	-.16	2.14	-.04	2.14	.22	1.92	-.06	1.71	.26
27	2.47	-.14	2.28	.02	1.85	-.03	1.95	.22	2.36	.49	1.78	.27
28	2.39	-.39	2.36	.04	2.61	-.08	2.14	.43	2.93	1.26	1.46	.02
29	2.01	-.39	2.25	.09	2.80	1.15	1.74	.19	2.81	1.24	2.12	.36
30	2.12	-.18	2.06	.10	1.86	.27	1.98	.22	2.04	.36	---	---
31	---	---	1.81	.02	---	---	2.00	.38	2.11	.85	---	---
MONTH	2.96	-.83	3.53	-.30	2.80	-.89	2.48	-.41	2.93	-.48	---	---



RAPPAHANNOCK RIVER BASIN

01662800 BATTLE RUN NEAR LAUREL MILLS, VA

LOCATION.--Lat 38°39'20", long 78°04'27", Rappahannock County, Hydrologic Unit 02080103, on left bank just downstream from bridge on State Highway 729, 0.8 mi upstream from mouth, and 1.0 mi northwest of Laurel Mills.

DRAINAGE AREA.--27.6 mi².

PERIOD OF RECORD.--April 1958 to July 1995. October 1997 to current year..

REVISED RECORDS.--WSP 2103: Drainage area. WDR VA-72-1: 1971. WDR VA-74-1: 1972.

GAGE.--Water-stage recorder. Datum of gage is 374.62 ft above sea level.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Oct. 1-3, 11-15, Nov. 6, 7, 29, 30, and Aug. 21-24, and period with ice effect, Jan. 1, which are fair. Maximum discharge, 9,120 ft³/s, from rating curve extended above 2,500 ft³/s on basis of velocity-area study and slope-area measurement of peak flow. No flow many days in September 1966. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 310 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 7	Unknown	1,510	a10.28	Mar. 19	0200	318	4.51
Jan. 8	1030	*1,630	*10.73	Mar. 21	0130	1,370	9.74
Jan. 23	1200	426	5.22	Apr. 9	1500	960	8.01
Jan. 28	1000	1,060	8.44	May 7	2400	641	6.45
Feb. 5	0230	750	7.01	May 8	0930	548	5.94
Feb. 17	1800	1,460	10.10				

a From high-water mark in well.

Minimum discharge, 0.30 ft³/s, Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e5.0	30	14	e17	71	63	53	43	21	12	3.1	1.2
2	e4.3	38	12	18	60	58	48	66	19	10	2.6	1.0
3	e3.8	23	13	20	56	54	43	79	19	9.5	2.4	.93
4	3.4	15	14	23	310	49	62	65	18	9.5	2.3	.89
5	3.2	12	13	23	446	46	49	95	19	9.8	2.1	1.8
6	3.0	e10	12	22	175	43	44	68	19	8.5	2.0	1.0
7	2.9	e980	12	29	117	42	43	90	16	8.1	1.9	.86
8	3.0	159	11	533	92	107	41	404	16	11	2.0	1.4
9	3.2	74	12	160	77	180	205	183	16	9.8	2.2	.94
10	3.8	48	14	83	67	108	123	114	24	8.8	2.5	.83
11	e3.3	36	15	60	68	83	84	93	21	7.2	3.2	.70
12	e3.5	28	13	48	89	71	69	99	22	6.6	3.6	.65
13	e4.0	24	12	42	63	63	60	82	26	6.4	2.2	.50
14	e4.6	32	12	36	56	59	56	68	23	6.3	5.3	.46
15	e4.2	27	11	51	51	52	51	60	36	6.1	5.1	.46
16	3.8	23	11	71	48	49	47	53	52	6.1	3.8	.47
17	3.2	20	12	51	567	47	49	48	36	7.6	6.7	.48
18	6.4	19	11	47	291	72	43	42	22	6.6	5.2	.51
19	4.4	18	11	41	149	157	78	39	19	5.5	3.8	.55
20	3.7	17	11	37	115	238	92	36	18	5.3	3.2	.56
21	3.4	18	10	34	92	566	63	35	15	4.9	e2.7	.53
22	3.2	23	11	32	78	186	55	31	14	4.4	e2.5	.68
23	3.2	19	14	173	118	123	50	31	15	5.5	e2.2	.62
24	3.6	17	13	114	127	99	46	32	18	8.3	e2.0	.47
25	13	16	30	85	91	85	42	44	13	5.1	1.9	.50
26	8.1	16	23	65	79	76	40	31	12	4.4	1.6	.62
27	12	15	23	63	71	69	38	29	11	4.1	2.1	.54
28	6.7	14	25	654	66	64	35	29	19	4.0	1.5	.41
29	5.5	e13	22	216	---	58	33	26	18	3.7	1.2	.36
30	5.1	e12	23	121	---	54	32	24	14	3.3	1.3	.34
31	5.0	---	20	88	---	50	---	23	---	3.3	1.2	---
TOTAL	145.5	1796	460	3057	3690	3071	1774	2162	611	211.7	85.4	21.26
MEAN	4.69	59.9	14.8	98.6	132	99.1	59.1	69.7	20.4	6.83	2.75	.71
MAX	13	980	30	654	567	566	205	404	52	12	6.7	1.8
MIN	2.9	10	10	17	48	42	32	23	11	3.3	1.2	.34
CF5M	.17	2.17	.54	3.57	4.77	3.59	2.14	2.53	.74	.25	.10	.03
IN.	.20	2.42	.62	4.12	4.97	4.14	2.39	2.91	.82	.29	.12	.03

e Estimated.

RAPPAHANNOCK RIVER BASIN

01662800 BATTLE RUN NEAR LAUREL MILLS, VA

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 1995, 1997 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	17.2	23.7	26.7	34.9	42.1	49.3	42.1	33.1	22.8	11.5	11.9	11.3
MAX	119	106	79.9	116	132	144	150	85.9	91.8	39.9	73.8	102
(WY)	1980	1986	1993	1978	1998	1993	1983	1988	1972	1972	1994	1979
MIN	.92	2.36	1.82	1.45	7.92	12.5	9.31	8.31	3.61	1.23	.42	.63
(WY)	1992	1966	1966	1966	1989	1981	1981	1969	1986	1966	1966	1985

SUMMARY STATISTICS

FOR 1998 WATER YEAR

WATER YEARS 1958 - 1995
1997 - 1998

ANNUAL TOTAL	17084.86	
ANNUAL MEAN	46.8	27.2
HIGHEST ANNUAL MEAN		48.4
LOWEST ANNUAL MEAN		9.17
HIGHEST DAILY MEAN	e980	2000
LOWEST DAILY MEAN	.34	.00
ANNUAL SEVEN-DAY MINIMUM	.46	.00
INSTANTANEOUS PEAK FLOW	1630	9120
INSTANTANEOUS PEAK STAGE	10.73	d14.40
INSTANTANEOUS LOW FLOW	.30	.00
ANNUAL RUNOFF (CFSM)	1.70	.99
ANNUAL RUNOFF (INCHES)	23.03	13.41
10 PERCENT EXCEEDS	92	56
50 PERCENT EXCEEDS	19	16
90 PERCENT EXCEEDS	1.9	2.8

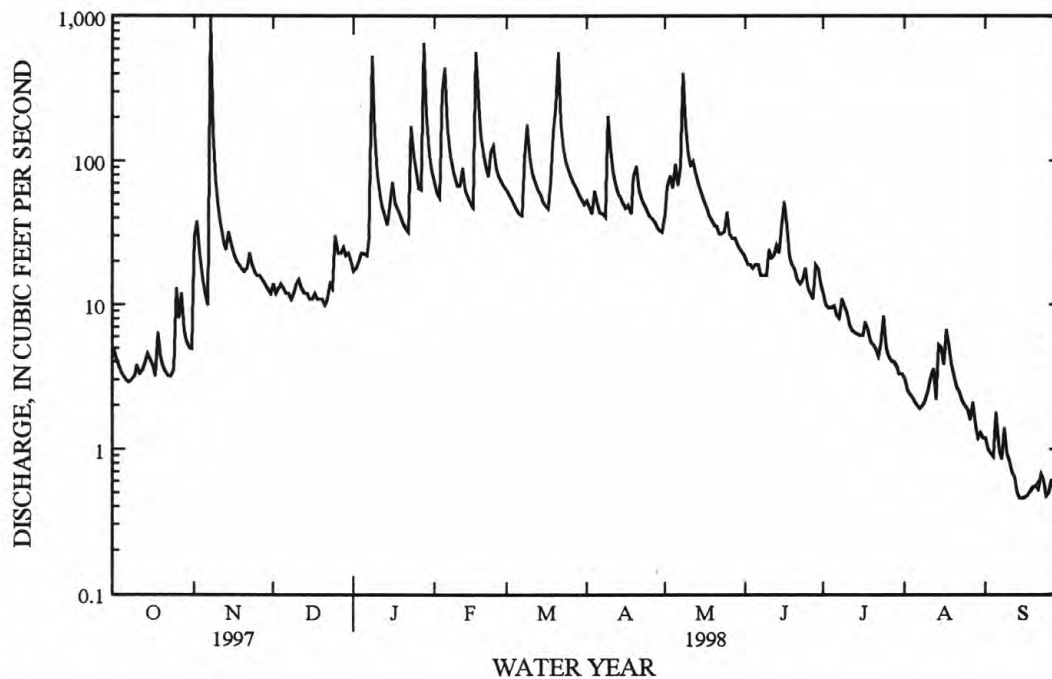
a Also Sept. 6-13, 1966.

b Also Sept. 7, 1966.

c Also June 27, 1995.

d From high-water mark in gage house. Result of backwater from bridge collapse.

e Estimated.



RAPPAHANNOCK RIVER BASIN

01664000 RAPPAHANNOCK RIVER AT REMINGTON, VA

LOCATION.--Lat 38°31'50", long 77°48'50", Fauquier County, Hydrologic Unit 02080103, on left bank 80 ft upstream from bridge on alternate U.S. Highway 29, at Remington, 0.3 mi upstream from Tinpot Run, 0.4 mi downstream from Ruffans Run, and 2.5 mi downstream from Hazel River.

DRAINAGE AREA.--620 mi².

PERIOD OF RECORD.--October 1942 to current year.

REVISED RECORDS.--WSP 1171: 1944. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 252.53 ft above sea level. Prior to Nov. 21, 1951, nonrecording gage at bridge 80 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. National Weather Service gage-height telemeter at station. Maximum discharge, 90,000 ft³/s, from rating curve extended above 43,000 ft³/s on basis of slope-area measurement of peak flow. Minimum gage height, 2.31 ft, Sept. 13, 1966. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum flood since at least 1828, that of Oct. 16, 1942.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 6,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 8	0730	12,700	16.49	Feb. 18	1115	16,800	18.43
Jan. 9	0700	13,600	16.65	Mar. 19	1130	6,280	11.21
Jan. 23	2200	7,140	11.99	Mar. 21	1700	*17,600	*18.84
Jan. 29	0415	15,100	17.50	Apr. 10	0245	6,660	11.56
Feb. 5	1415	14,600	17.20	May 8	2345	12,400	16.01

Minimum discharge, 15 ft³/s, Sept. 15, 17, 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	221	187	400	463	2030	1700	1220	839	633	453	82	25
2	160	988	374	465	1710	1600	1500	1520	632	387	74	24
3	134	924	341	508	1530	1560	1170	1570	549	335	67	23
4	122	544	339	576	4470	1390	1300	2060	514	311	60	20
5	113	394	361	687	13200	1280	1540	1980	513	306	57	18
6	105	320	340	679	7100	1200	1210	2060	510	297	51	18
7	96	2580	313	732	3610	1130	1110	1610	488	270	49	17
8	91	8640	301	3530	2680	1910	1070	8040	462	276	45	22
9	86	2760	299	9740	2140	4970	1830	7400	447	342	46	21
10	84	1770	323	3010	1860	3440	4190	3200	609	314	55	23
11	85	1310	394	2010	1680	2280	2110	2450	763	274	96	23
12	83	1060	372	1560	2370	1880	1680	2590	683	230	102	23
13	79	884	338	1340	1920	1640	1470	2480	933	206	85	21
14	77	972	318	1150	1690	1510	1350	1880	1270	193	77	18
15	80	1120	303	1130	1520	1380	1290	1600	789	183	123	18
16	86	866	290	2440	1390	1260	1230	1410	2520	178	118	17
17	98	729	288	1650	4260	1190	1240	1290	1870	179	94	17
18	146	652	285	1400	14100	1510	1180	1150	1090	264	133	24
19	154	593	277	1200	5220	4700	1140	1050	806	210	131	35
20	130	549	272	1090	3310	2870	2600	970	740	166	90	31
21	105	509	272	966	2710	14200	1710	904	636	152	68	25
22	94	643	271	895	2190	8060	1420	842	582	138	59	21
23	88	649	354	3380	2320	3510	1280	793	602	125	52	22
24	85	540	366	4000	4240	2630	1190	791	1080	170	48	21
25	113	473	690	2470	2730	2170	1080	1000	624	151	45	22
26	228	449	819	1810	2190	1880	1010	898	498	126	42	22
27	270	435	630	1540	1950	1700	973	778	440	113	36	21
28	273	404	688	8830	1780	1560	914	781	449	103	34	21
29	183	392	603	11300	---	1430	853	722	616	99	33	18
30	148	388	613	3750	---	1330	818	663	542	92	29	22
31	134	---	575	2590	---	1250	---	621	---	85	27	---
TOTAL	3951	32724	12409	76891	97900	80120	42678	55942	22890	6728	2108	653
MEAN	127	1091	400	2480	3496	2585	1423	1805	763	217	68.0	21.8
MAX	273	8640	819	11300	14100	14200	4190	8040	2520	453	133	35
MIN	77	187	271	463	1390	1130	818	621	440	85	27	17
CF5M	.21	1.76	.65	4.00	5.64	4.17	2.29	2.91	1.23	.35	.11	.04
IN.	.24	1.96	.74	4.61	5.87	4.81	2.56	3.36	1.37	.40	.13	.04

RAPPAHANNOCK RIVER BASIN

01664000 RAPPAHANNOCK RIVER AT REMINGTON, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	497	587	728	873	1025	1209	1057	845	600	344	373	361
MAX	4895	2575	2172	2480	3496	3751	3784	2177	3520	974	2926	2815
(WY)	1943	1986	1951	1998	1998	1993	1983	1989	1972	1949	1955	1996
MIN	27.3	61.8	61.1	78.3	212	292	248	198	71.8	30.1	13.2	15.4
(WY)	1987	1966	1966	1966	1989	1981	1981	1977	1977	1966	1966	1985

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

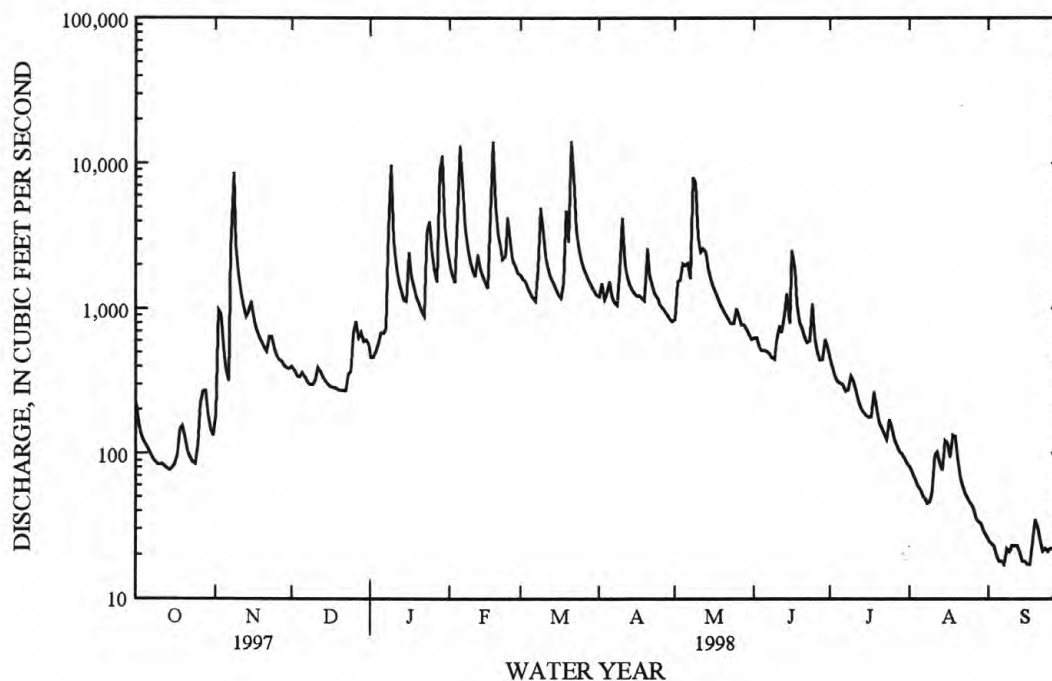
FOR 1998 WATER YEAR

WATER YEARS 1943 - 1998

ANNUAL TOTAL	208491		434994									
ANNUAL MEAN	571		1192							707		
HIGHEST ANNUAL MEAN										1231		1996
LOWEST ANNUAL MEAN										251		1981
HIGHEST DAILY MEAN	8640	Nov 8		14200	Mar 21					64000		Oct 16 1942
LOWEST DAILY MEAN	20	Sep 8		17	Sep 7					2.9		Sep 12 1966
ANNUAL SEVEN-DAY MINIMUM	26	Sep 3		20	Sep 11					3.2		Sep 7 1966
INSTANTANEOUS PEAK FLOW				17600	Mar 21					90000		Oct 16 1942
INSTANTANEOUS PEAK STAGE				18.84	Mar 21					a30.00		Oct 16 1942
INSTANTANEOUS LOW FLOW				15	bSep 15					1.1		Sep 10 1966
ANNUAL RUNOFF (CFSM)				1.92						1.14		
ANNUAL RUNOFF (INCHES)	12.51			26.10						15.48		
10 PERCENT EXCEEDS	1140			2590						1420		
50 PERCENT EXCEEDS	431			616						424		
90 PERCENT EXCEEDS	61			44						77		

a From floodmarks.

a Also Sept. 17, 18, 1998.



RAPPAHANNOCK RIVER BASIN

01666500 ROBINSON RIVER NEAR LOCUST DALE, VA

LOCATION.--Lat 38°19'30", long 78°05'45", Madison County, Hydrologic Unit 02080103, on right bank 100 ft upstream from bridge on State Highway 614, 1.1 mi upstream from Great Run, 1.7 mi upstream from mouth, 2.0 mi southeast of Locust Dale, and 3.4 mi downstream from Crooked Run.

DRAINAGE AREA.--179 mi².

PERIOD OF RECORD.--July 1943 to current year. Prior to October 1965, published as Robertson River near Locust Dale.

REVISED RECORDS.--WSP 1171: 1948(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 283.70 ft above sea level.

REMARKS.--Records good except those for period with ice effect, Jan. 1, and periods of doubtful gage-height record, Jan. 8 to Feb. 4, Feb. 7-16, Feb. 21 to Mar. 11, Apr. 17-19, and May 3-7, which are fair. Maximum discharge, 25,400 ft³/s, from rating curve extended above 9,100 ft³/s on basis of contracted-opening measurement at gage height 20.17 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 15, 1942, reached a stage of 23.9 ft, from floodmarks, discharge, about 44,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 7	1630	5,840	14.36	Mar. 8	1930	Unknown	a15.94
Jan. 8	1630	Unknown	a16.95	Mar. 9	0900	Unknown	a15.36
Jan. 23	1430	Unknown	a11.99	Mar. 19	0500	2,300	9.07
Jan. 28	1700	Unknown	a17.81	Mar. 21	0430	6,580	14.91
Feb. 4	2000	Unknown	a17.64	May 5	0430	1,980	8.61
Feb. 17	2230	*11,600	*19.03	May 8	1100	8,270	16.72
Feb. 24	0300	Unknown	a14.09				

a May have been lower during period of estimated record, backwater from debris.

Minimum discharge, 17 ft³/s, Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	93	144	135	e140	e530	e510	376	292	194	125	53	32
2	80	377	126	147	e500	e540	371	467	183	110	48	31
3	73	301	122	151	e450	e790	336	e375	177	104	45	30
4	69	217	124	169	e2500	e650	442	e400	168	101	43	29
5	65	177	123	181	5020	e460	413	e1070	172	100	41	27
6	61	154	118	185	2280	e435	361	e730	168	93	40	25
7	57	2840	115	230	e1200	e420	351	e570	158	89	38	25
8	55	1580	112	e2400	e820	e720	319	5570	152	96	38	44
9	53	653	112	e1500	e750	e1600	579	1330	150	116	77	40
10	53	433	118	e950	e670	e1100	688	848	184	127	116	31
11	51	333	131	e660	e610	e730	526	683	171	108	89	29
12	49	276	123	e450	e780	579	455	723	201	98	104	29
13	50	239	118	e400	e650	493	411	628	175	94	70	26
14	50	283	116	e340	e570	440	385	521	175	91	67	24
15	51	273	111	e380	e500	403	363	462	214	87	87	23
16	51	230	110	e800	e450	373	338	420	214	86	71	22
17	55	209	110	e620	5350	351	e374	403	207	96	110	22
18	97	193	108	e410	3700	441	e335	365	161	122	199	26
19	71	182	106	e360	1170	1270	e411	340	146	90	96	27
20	61	172	104	e325	835	829	741	320	152	86	75	27
21	56	167	103	e295	e710	3770	481	303	134	81	67	26
22	54	192	106	e265	e670	1070	420	280	127	76	62	26
23	52	171	127	e1150	e790	776	386	270	247	72	58	37
24	52	157	119	e900	e1150	650	358	264	291	71	54	30
25	86	148	216	e730	e730	565	329	328	154	68	50	25
26	96	145	190	e630	e640	510	311	258	131	65	46	27
27	178	140	175	e450	e570	471	297	248	120	63	43	27
28	111	136	185	e3700	e530	443	278	246	121	71	41	24
29	89	134	169	e2050	---	408	263	225	216	67	38	20
30	80	132	177	e870	---	391	254	209	149	58	37	18
31	76	---	166	e670	---	366	---	202	---	54	34	---
TOTAL	2175	10788	4075	22508	35125	22554	11952	19350	5212	2765	2037	829
MEAN	70.2	360	131	726	1254	728	398	624	174	89.2	65.7	27.6
MAX	178	2840	216	3700	5350	3770	741	5570	291	127	199	44
MIN	49	132	103	140	450	351	254	202	120	54	34	18
CFSM	.39	2.01	.73	4.06	7.01	4.06	2.23	3.49	.97	.50	.37	.15
IN.	.45	2.24	.85	4.68	7.30	4.69	2.48	4.02	1.08	.57	.42	.17

e Estimated.

RAPPAHANNOCK RIVER BASIN

01666500 ROBINSON RIVER NEAR LOCUST DALE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	173	219	235	276	310	351	311	254	216	130	140	158
MAX	783	1350	624	752	1254	980	989	625	1154	522	1063	1119
(WY)	1991	1986	1973	1978	1998	1993	1983	1989	1995	1949	1955	1996
MIN	18.5	35.1	32.0	47.5	105	105	89.3	70.9	35.7	21.3	12.2	8.05
(WY)	1964	1966	1966	1966	1977	1981	1981	1977	1977	1944	1963	1954

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1944 - 1998

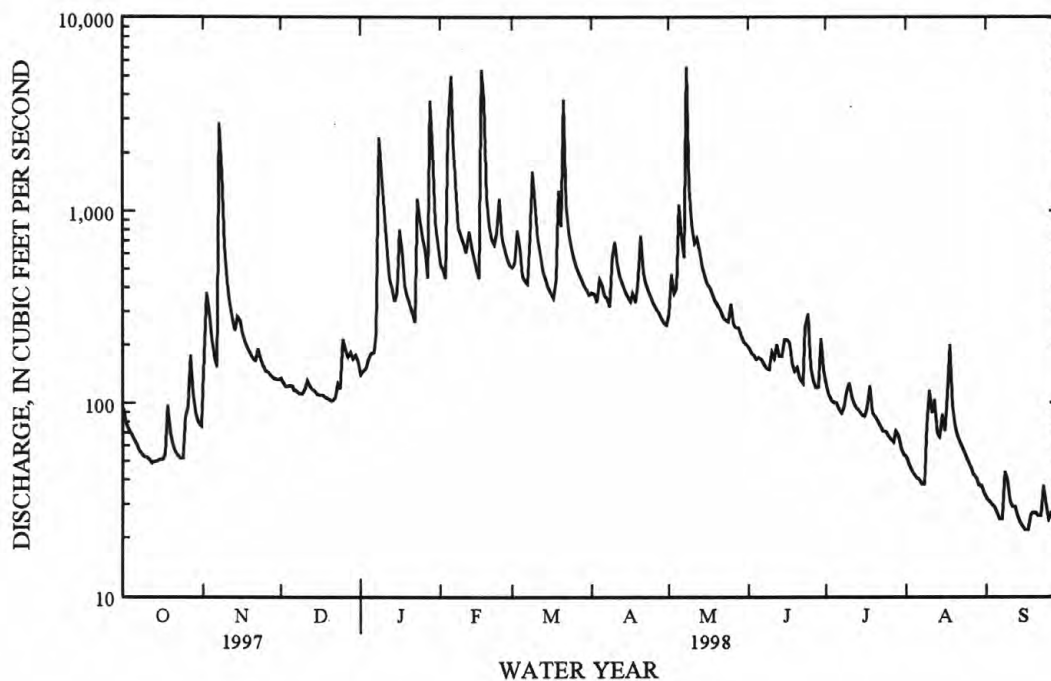
ANNUAL TOTAL	72613			139370								
ANNUAL MEAN	199			382								
HIGHEST ANNUAL MEAN										231		
LOWEST ANNUAL MEAN										445		1973
HIGHEST DAILY MEAN										95.6		1981
LOWEST DAILY MEAN										14700		Jun 22 1972
ANNUAL SEVEN-DAY MINIMUM										1.8		bSep 13 1954
INSTANTANEOUS PEAK FLOW										3.0		Sep 7 1966
INSTANTANEOUS PEAK STAGE										25400		Jun 27 1995
INSTANTANEOUS LOW FLOW										c23.92		Sep 6 1996
ANNUAL RUNOFF (CFSM)										1.2		dSep 7 1954
ANNUAL RUNOFF (INCHES)										1.29		
10 PERCENT EXCEEDS										17.50		
50 PERCENT EXCEEDS										434		
90 PERCENT EXCEEDS										150		
										41		

a Also Sept. 6, 7, 1997.

b Also Sept. 27, 1954.

c Backwater from debris.

d Also Sept. 13, 1954.



RAPPAHANNOCK RIVER BASIN

01667500 RAPIDAN RIVER NEAR CULPEPER, VA

LOCATION.--Lat 38°21'01", long 77°58'31", Culpeper County, Hydrologic Unit 02080103, on left bank 0.7 mi upstream from Cedar Run and bridge on U.S. Highway 522, 8.5 mi south of Culpeper, and at mile 29.6.

DRAINAGE AREA.--472 mi².

PERIOD OF RECORD.--October 1930 to current year. Monthly discharge only for some periods, published in WSP 1302.

REVISED RECORDS.--WSP 741: 1931. WSP 801: 1934(M), 1936(M). WSP 1081: 1943-46. WSP 1171: 1932(M), 1933-35. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 241.36 ft above sea level.

REMARKS.--Records good except those for period with ice effect, Jan. 1, which is fair. Prior to 1977, diurnal fluctuation at low flow caused by mill at Rapidan, and since July 1986, by powerplant at same site. National Weather Service gage-height telemeter at station. Maximum discharge, 59,300 ft³/s, from rating curve extended above 43,000 ft³/s on basis of slope-area measurement at gage height 30.26 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 7	2115	10,200	10.96	Mar. 8	2345	4,550	6.06
Jan. 9	0115	10,000	10.84	Mar. 9	1615	5,640	7.10
Jan. 23	1845	6,400	7.79	Mar. 19	0830	7,140	8.45
Jan. 28	2345	13,700	13.65	Mar. 21	1030	14,200	14.02
Feb. 5	0445	15,300	14.82	May 5	1045	7,250	8.54
Feb. 18	0600	*18,700	*17.15	May 8	1815	16,600	15.73

Minimum discharge, 32 ft³/s, Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	220	218	364	e375	1490	1330	944	746	522	343	101	64
2	175	690	337	388	1270	1310	996	1360	488	290	91	60
3	159	747	312	409	1140	1560	854	1210	472	267	83	59
4	150	480	316	450	6440	1240	1110	1060	443	254	75	58
5	143	391	320	487	12400	1150	1200	4130	455	251	70	56
6	132	339	297	500	4240	1090	943	1990	449	232	66	51
7	121	5030	282	672	3320	1040	889	1600	425	218	63	48
8	114	5630	274	4480	2250	1870	825	12700	406	224	63	61
9	111	2210	272	5660	1810	4410	1280	5220	394	261	71	96
10	110	1470	283	2160	1530	2680	1960	2410	488	274	189	80
11	105	1090	335	1560	1400	1920	1470	2000	489	227	178	68
12	98	872	311	1230	2020	1620	1240	1990	522	197	222	62
13	95	737	294	1050	1640	1430	1100	1850	502	190	154	58
14	95	911	280	888	1470	1310	1020	1500	568	180	117	52
15	97	897	270	966	1310	1190	965	1320	648	173	133	46
16	102	710	262	2140	1200	1090	890	1200	718	168	134	43
17	108	615	260	1370	6550	1030	1040	1140	842	180	146	40
18	239	559	257	1110	12800	1160	948	1030	532	277	415	40
19	196	516	250	964	3510	4170	962	929	450	196	256	54
20	145	482	247	885	2460	2240	2210	865	486	171	163	62
21	122	459	247	794	2070	11100	1410	802	419	158	131	56
22	114	602	246	713	1770	3310	1190	740	379	144	119	52
23	106	534	318	3160	2040	2210	1090	705	504	134	109	59
24	99	465	304	2640	2910	1840	1030	703	846	127	102	69
25	152	415	615	1960	1860	1580	921	781	463	126	95	53
26	234	399	595	1430	1600	1400	876	692	372	121	88	51
27	447	384	489	1270	1460	1280	846	653	326	112	82	54
28	305	360	546	8940	1370	1190	813	680	309	120	81	49
29	217	354	485	6770	---	1100	743	616	497	120	77	44
30	186	346	500	2400	---	1040	723	574	448	109	74	36
31	173	---	482	1820	---	983	---	543	---	106	69	---
TOTAL	4870	28912	10650	59641	85330	61873	32488	53739	14862	5950	3817	1681
MEAN	157	964	344	1924	3048	1996	1083	1734	495	192	123	56.0
MAX	447	5630	615	8940	12800	11100	2210	12700	846	343	415	96
MIN	95	218	246	375	1140	983	723	543	309	106	63	36
CFSM	.33	2.04	.73	4.08	6.46	4.23	2.29	3.67	1.05	.41	.26	.12
IN.	.38	2.28	.84	4.70	6.73	4.88	2.56	4.24	1.17	.47	.30	.13

e Estimated.

RAPPAHANNOCK RIVER BASIN

01667500 RAPIDAN RIVER NEAR CULPEPER, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	427	474	558	678	752	853	786	585	493	308	337	361
MAX	3163	2690	1653	1924	3048	2236	2615	1734	2901	1206	2323	2908
(WY)	1943	1986	1949	1998	1998	1993	1937	1998	1995	1949	1955	1996
MIN	8.10	29.4	62.4	93.6	91.5	179	210	166	86.2	68.0	22.5	14.0
(WY)	1931	1931	1931	1966	1931	1931	1981	1956	1977	1957	1957	1954

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

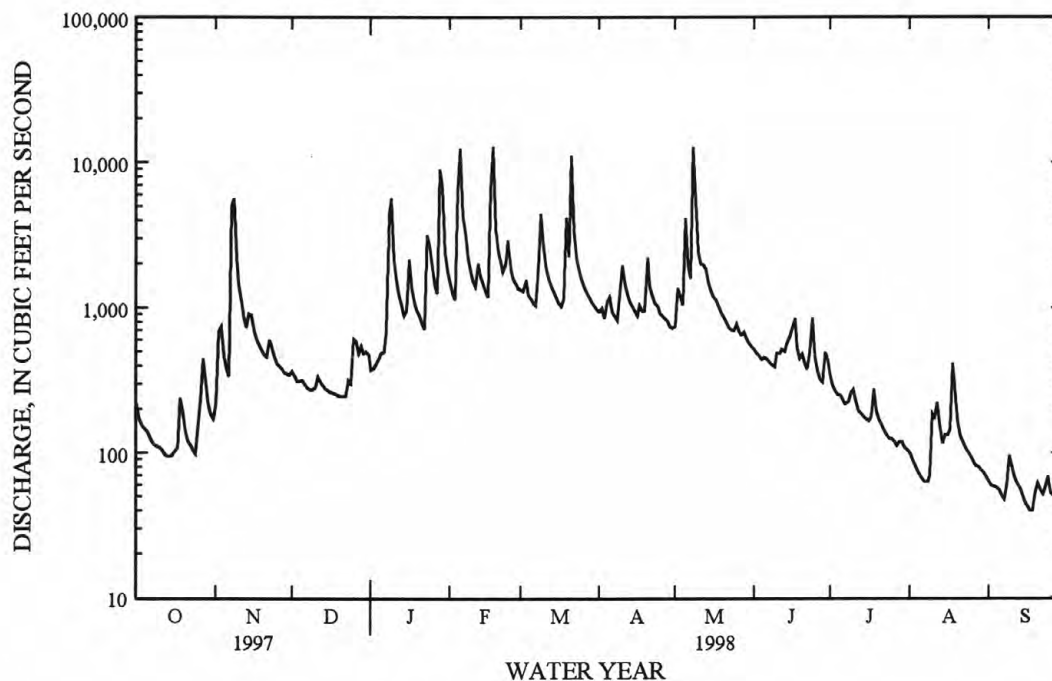
WATER YEARS 1931 - 1998

ANNUAL TOTAL	195629	363813	
ANNUAL MEAN	536	997	550
HIGHEST ANNUAL MEAN			1099
LOWEST ANNUAL MEAN			151
HIGHEST DAILY MEAN	6590	Jul 2	12800
LOWEST DAILY MEAN	41	Sep 6	36
ANNUAL SEVEN-DAY MINIMUM	52	Sep 2	48
INSTANTANEOUS PEAK FLOW			18700
INSTANTANEOUS PEAK STAGE			17.15
INSTANTANEOUS LOW FLOW			32
ANNUAL RUNOFF (CFSM)	1.14	2.11	1.16
ANNUAL RUNOFF (INCHES)	15.42	28.67	15.82
10 PERCENT EXCEEDS	941	2030	1080
50 PERCENT EXCEEDS	388	487	345
90 PERCENT EXCEEDS	108	76	86

a From high-water mark in gage house.

b Also Oct. 5, 11, 1954.

e Estimated.



RAPPAHANNOCK RIVER BASIN

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA

LOCATION.--Lat 38°19'20", long 77°31'05", Spotsylvania County, Hydrologic Unit 02080104, on right bank 1.6 mi upstream from Virginia Power dam, 2.2 mi downstream from Motts Run, and 3.8 mi upstream from Fredericksburg.

DRAINAGE AREA.--1,596 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1907 to current year. Monthly discharge only for some periods, published in WSP 1302.

REVISED RECORDS.--WSP 801: 1924(M). WSP 951: 1937(M). WSP 1302: 1907-12, 1913(M), 1916(M), 1918(M), 1920-21(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 55.18 ft above sea level. Prior to Jan. 15, 1922, nonrecording gage, and Jan. 15, 1922, to Aug. 2, 1966, water-stage recorder at same site at datum 1.00 ft higher.

REMARKS.--Records good except those for periods of doubtful gage-height record, Nov. 18-21, and Dec. 2, 3, 13-17, which are fair. Maximum discharge, 140,000 ft³/s, from rating curve extended above 76,000 ft³/s on basis of flow-over-dam and slope-area measurements at gage heights 26.1 ft and 26.9 ft, present datum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1889 was probably several feet lower than that of Oct. 16, 1942.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 16,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 8	1000	28,800	10.81	Feb. 18	2300	39,900	12.70
Jan. 9	1400	20,700	9.26	Mar. 19	1830	17,200	8.52
Jan. 24	0500	19,800	9.08	Mar. 22	1300	40,200	12.75
Jan. 29	0900	35,300	11.92	May 9	0800	29,300	10.90
Feb. 5	1400	*43,000	*13.20				

Minimum discharge, 75 ft³/s, Sept. 30; minimum gage height, 1.18 ft, Sept. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	679	406	769	1160	4160	3200	2260	1550	1150	860	251	120
2	441	983	e780	916	3360	3120	2520	2780	1170	707	233	112
3	349	1900	e720	952	2930	3690	2290	4570	1050	609	215	106
4	312	1350	692	1030	10300	3210	2370	3650	988	559	196	100
5	291	932	709	1140	39800	2680	3650	4980	936	531	182	93
6	278	745	726	1190	23100	2440	2620	5560	940	515	171	89
7	258	7200	688	1280	11300	2270	2250	3670	920	496	162	86
8	236	25500	654	3400	7840	3080	2070	13600	856	485	155	94
9	231	9290	648	17900	5440	13000	3010	23000	816	557	155	92
10	218	4440	670	7190	4160	9850	9490	7950	872	593	163	90
11	211	2930	735	4050	3520	5420	4850	5460	1220	555	199	112
12	208	2320	864	3010	4780	4110	3530	5400	1190	487	295	111
13	208	1950	e790	2500	4470	3440	2950	6460	1230	433	323	104
14	204	2040	e685	2180	3550	3050	2630	4260	2100	403	310	98
15	209	2660	e615	1890	3100	2760	2440	3410	1640	383	243	93
16	207	2070	e565	5940	2770	2470	2250	2920	3010	370	256	90
17	215	1660	e545	4400	7620	2300	2530	2600	3200	359	303	83
18	453	e1380	565	3100	34800	2640	2850	2420	2190	377	288	103
19	557	e1200	558	2620	17800	11600	2220	2130	1350	515	464	98
20	436	e1050	545	2290	7560	8250	5460	1940	1110	444	403	88
21	333	e960	539	2000	6040	31300	4400	1790	1080	371	293	92
22	275	1260	540	1760	4650	25100	3140	1660	911	349	239	110
23	245	1580	568	5950	5000	8450	2690	1530	1050	340	212	113
24	232	1210	761	14100	12100	5770	2420	1480	3050	308	195	103
25	251	1020	1210	6360	6610	4560	2190	1610	1640	321	183	92
26	288	908	2040	4230	4570	3850	1990	1940	983	316	170	97
27	660	873	1410	3190	3860	3410	1870	1540	801	295	160	92
28	863	826	1440	18300	3450	3090	1770	1470	722	273	150	85
29	611	778	1450	31300	---	2820	1630	1460	798	257	138	82
30	447	767	1270	9910	---	2590	1540	1320	1030	254	132	79
31	377	---	1360	5660	---	2410	---	1220	---	253	128	---
TOTAL	10783	82188	26111	170898	248640	185930	87880	125330	40003	13575	6967	2907
MEAN	348	2740	842	5513	8880	5998	2929	4043	1333	438	225	96.9
MAX	863	25500	2040	31300	39800	31300	9490	23000	3200	860	464	120
MIN	204	406	539	916	2770	2270	1540	1220	722	253	128	79
CFSM	.22	1.72	.53	3.45	5.56	3.76	1.84	2.53	.84	.27	.14	.06
IN.	.25	1.92	.61	3.98	5.80	4.33	2.05	2.92	.93	.32	.16	.07

e Estimated.

RAPPAHANNOCK RIVER BASIN

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1907 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1157	1335	1685	2234	2538	2719	2508	1920	1433	920	1022	949
MAX	11090	6522	5357	6472	8880	8505	9484	10310	7112	3368	7190	6924
(WY)	1943	1986	1949	1996	1998	1993	1983	1924	1972	1949	1955	1996
MIN	15.3	75.4	147	268	224	526	587	492	224	78.6	21.1	46.5
(WY)	1931	1931	1931	1966	1931	1931	1981	1956	1977	1930	1930	1930

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

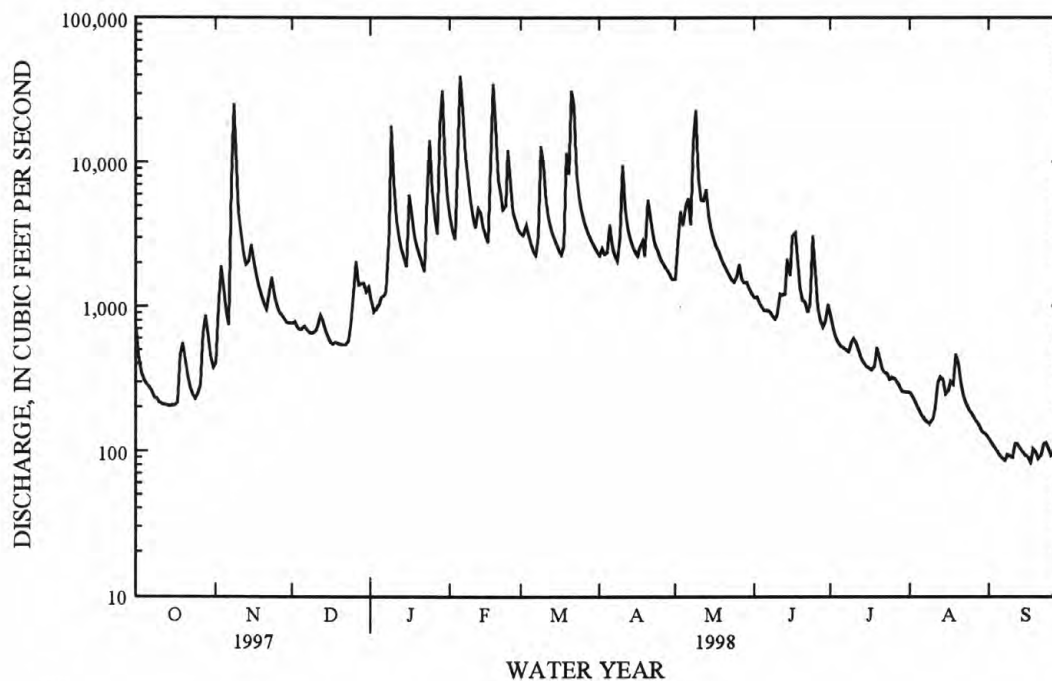
FOR 1998 WATER YEAR

WATER YEARS 1907 - 1998

ANNUAL TOTAL	529511		1001212									
ANNUAL MEAN	1451		2743									
HIGHEST ANNUAL MEAN												1996
LOWEST ANNUAL MEAN												1931
HIGHEST DAILY MEAN	25500	Nov 8	39800	Feb 5					127000		Oct 16 1942	
LOWEST DAILY MEAN	109	Sep 9	79	Sep 30					5.0		aOct 11 1930	
ANNUAL SEVEN-DAY MINIMUM	123	Sep 4	90	Sep 24					8.3		Oct 9 1930	
INSTANTANEOUS PEAK FLOW			43000	Feb 5					140000		Oct 16 1942	
INSTANTANEOUS PEAK STAGE			13.20	Feb 5					b26.90		Oct 16 1942	
INSTANTANEOUS LOW FLOW			75	Sep 30					5.0		Oct 11 1930	
ANNUAL RUNOFF (CFSM)	.91		1.72						1.06			
ANNUAL RUNOFF (INCHES)	12.34		23.34						14.45			
10 PERCENT EXCEEDS	2920		5840						3340			
50 PERCENT EXCEEDS	910		1170						1000			
90 PERCENT EXCEEDS	208		158						237			

a Also Oct. 12, 1930.

b From floodmarks.



RAPPAHANNOCK RIVER BASIN

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1929-30, 1956, 1967-74, 1978 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1955 to September 1956, April 1968 to August 1974. October 1991 to September 1993.

WATER TEMPERATURE: October 1955 to September 1956, April 1968 to August 1974.

COOPERATION.--Chemical data as noted were provided by the Virginia Division of Consolidated Laboratory Services (VDCLS) and reviewed by the U.S. Geological Survey.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM HG) (00025)	AGENCY ANA- LYZING SAMPLE OF (CODE NUMBER) (00028)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)
OCT 1997										
08...	0900	243	77	6.8	16.0	22.0	776	VDCLS	2.9	7.5
20...	1030	437	82	6.6	10.0	13.0	766	VDCLS	4.9	9.4
NOV										
05...	0900	953	87	7.0	8.0	9.0	780	VDCLS	11	10.6
09...	1200	8130	68	6.4	13.0	10.0	757	VDCLS	74	10.4
21...	0930	934	84	6.8	8.0	5.0	769	VDCLS	5.7	12.8
DEC										
03...	1300	710	85	6.8	9.0	5.5	769	VDCLS	4.1	11.6
*03...	1315	710	85	6.8	9.0	5.5	769	VDCLS	3.3	11.6
17...	1100	573	86	6.9	5.5	4.0	758	VDCLS	5.3	13.0
JAN 1998										
05...	0915	1150	69	7.2	6.5	3.5	751	VDCLS	5.9	14.1
08...	1000	2340	82	6.8	21.0	11.0	757	VDCLS	8.5	10.6
09...	1000	19600	48	6.7	17.0	13.0	758	VDCLS	790	9.0
*09...	1015	19700	48	6.7	17.0	13.0	758	VDCLS	790	9.0
10...	1145	6470	61	7.0	9.5	11.0	771	VDCLS	170	10.8
22...	1130	1750	79	7.0	5.0	4.0	776	VDCLS	13	13.2
24...	1000	16300	66	5.7	5.5	4.0	762	VDCLS	180	12.4
28...	1000	15200	65	7.4	4.0	5.0	759	VDCLS	57	12.5
*28...	1015	15600	65	7.4	4.0	5.0	759	USGS	--	12.5
31...	1000	5760	62	6.5	4.0	6.0	768	VDCLS	65	12.0
FEB										
03...	1030	2940	68	6.2	6.0	5.0	772	VDCLS	28	12.5
06...	1100	21700	59	--	5.0	5.0	764	VDCLS	56	12.0
08...	1000	7960	63	6.8	6.5	5.0	765	VDCLS	62	12.9
19...	1100	14300	54	5.7	13.0	9.0	761	VDCLS	91	11.0
27...	1030	3860	65	6.6	10.0	7.0	764	VDCLS	19	12.0
MAR										
04...	0930	3250	71	6.4	6.0	7.0	764	VDCLS	28	11.6
10...	0915	11000	58	6.7	8.5	10.0	733	VDCLS	110	10.7
19...	1000	11500	68	7.2	10.0	7.0	764	VDCLS	35	12.0
26...	1000	3870	62	6.8	17.0	8.0	779	VDCLS	24	11.9
APR										
02...	0930	2330	67	6.6	20.5	18.0	763	VDCLS	9.6	8.9
*02...	0945	2340	67	6.6	20.5	18.0	763	USGS	--	8.9
10...	1030	11600	62	6.8	8.0	14.0	759	VDCLS	150	9.6
*10...	1045	11600	62	6.8	8.0	14.0	759	VDCLS	190	9.6
14...	1000	2650	62	6.5	18.0	13.5	762	VDCLS	7.2	10.2
20...	1030	5870	66	6.9	17.5	14.3	760	VDCLS	20	10.1
MAY										
04...	1045	3980	85	7.0	18.0	17.1	757	VDCLS	68	8.2
06...	0930	5140	61	6.4	16.0	15.0	771	VDCLS	230	8.8
08...	0915	8200	58	6.7	20.0	16.7	752	VDCLS	56	8.9
*09...	1020	29200	52	6.6	19.0	16.0	758	USGS	--	8.6
09...	1035	29200	52	6.6	19.0	16.0	758	VDCLS	130	8.6
20...	0930	1980	69	6.6	22.0	22.0	764	VDCLS	8.7	8.2
JUN										
10...	0930	861	76	6.6	16.0	19.0	774	VDCLS	2.0	8.9
11...	1330	1320	76	6.6	20.0	19.0	770	VDCLS	--	9.1
16...	1000	1800	74	7.2	25.0	22.5	760	VDCLS	24	7.4
24...	1415	4390	81	6.1	30.0	26.0	769	VDCLS	110	7.3
JUL										
08...	1200	478	78	7.1	25.0	26.0	764	VDCLS	2.3	8.1
23...	0930	340	92	7.6	27.5	29.5	752	VDCLS	1.5	5.8
AUG										
05...	1030	182	87	7.9	24.0	26.0	760	VDCLS	1.3	7.1
21...	1000	299	87	6.5	24.5	23.5	760	VDCLS	1.7	7.8
SEP										
02...	0945	113	84	7.7	23.0	26.0	748	VDCLS	1.6	5.8
16...	1030	91	91	6.8	28.5	26.0	775	VDCLS	1.6	7.6

* Replicate sample.

RAPPAHANNOCK RIVER BASIN

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	RESIDUE FIXED NON FILTER- ABLE (MG/L) (00540)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L) (00535)	NITRO- GEN DIS- SOLVED (MG/L AS N) (00602)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
			*	*	*	*	*	*	*	*
OCT 1997										
08...	84	6.3	<3	<3	<3	.209	.013	.002	.013	.010
20...	89	6.4	<3	<3	<3	.246	.047	.002	.047	.004
NOV										
05...	90	12	5	3	<3	.704	.385	.002	.387	.017
09...	93	8.9	127	111	16	1.00	.675	.002	.677	.010
21...	99	13	3	3	3	.879	.730	.002	.730	.008
DEC										
03...	91	13	<3	<3	<3	.784	.624	<.002	.624	<.004
*03...	91	13	<3	<3	<3	.730	.630	<.002	.630	<.004
17...	100	10	3	3	<3	.586	.498	<.002	.498	.005
JAN 1998										
05...	108	11	3	<3	<3	.788	.659	<.002	.659	<.004
08...	97	10	19	15	4	.703	.552	.002	.554	<.004
09...	86	7.1	664	568	96	.800	.385	.004	.389	.029
*09...	86	7.1	725	620	105	.697	.380	.004	.384	.028
10...	97	11	182	160	22	.740	.554	.002	.556	.011
22...	99	13	8	6	<3	.865	.752	.002	.754	.008
24...	95	7.8	219	189	30	1.01	.480	.003	.483	.050
28...	98	9.5	68	60	8	.927	.516	.002	.518	.035
*28...	98	8.7	124	114	10	.94	--	--	.52	.050
31...	96	11	59	52	7	.411	.609	<.002	.609	.012
FEB										
03...	97	13	16	13	3	.830	.715	<.002	.715	.010
06...	94	7.4	99	86	13	.720	.423	.002	.425	.032
08...	101	10	53	45	8	.805	.568	<.002	.568	.020
19...	95	8.8	135	120	15	.652	.437	.003	.440	<.004
27...	99	12	16	13	3	.719	.561	<.002	.561	.006
MAR										
04...	95	12	23	19	4	.773	.548	.003	.551	<.004
10...	99	9.0	106	91	15	.764	.396	.003	.399	.017
19...	99	10	103	90	13	.658	.464	.003	.467	.046
26...	98	12	21	18	<3	.662	.550	<.002	.550	.005
APR										
02...	94	11	9	7	<3	.552	.428	<.002	.428	.004
*02...	94	11	<1	--	4	.58	--	--	.43	<.002
10...	93	8.0	286	--	--	.742	.336	.005	.341	.050
*10...	93	8.1	308	--	--	.724	.338	.005	.343	.053
14...	98	12	--	--	--	.445	.046	.002	.048	.014
20...	99	2.2	--	--	--	.527	.325	<.002	.325	.008
MAY										
04...	86	11	64	53	11	.829	.418	.005	.423	.043
06...	86	8.9	224	192	32	.906	.464	.007	.471	.067
08...	93	12	--	--	--	.616	.409	.002	.411	.020
*09...	88	7.1	182	150	32	.45	--	--	.048	.027
09...	88	7.6	210	168	42	.856	.362	.005	.367	.047
20...	94	13	8	6	<3	.658	.452	<.002	.452	.004
JUN										
10...	94	2.2	<3	<3	<3	.534	.372	.002	.374	.016
11...	97	12	<3	<3	<3	.575	.421	.002	.423	.022
16...	86	--	21	16	5	.811	--	--	--	--
24...	89	12	208	177	31	.789	.565	.005	.570	.020
JUL										
08...	100	9.0	<3	<3	<3	.341	.150	<.002	.150	.013
23...	77	7.5	<3	<3	<3	.324	.109	.002	.111	.016
AUG										
05...	88	5.0	<3	<3	<3	.172	.007	<.002	.007	.007
21...	92	5.4	<3	<3	<3	.238	.043	<.002	.043	<.004
SEP										
02...	73	4.3	<3	<3	<3	.266	.005	<.002	.005	.008
16...	92	4.1	<3	<3	<3	.171	.005	<.002	.005	--

* Replicate sample.

* For these constituents, there are differences in the minimum constituent reporting levels between the analyzing agencies.

< Actual value is known to be less than the value shown.

RAPPAHANNOCK RIVER BASIN

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGN TOTAL SEDIMNT SUSP AS N (MG/L) (00601)	PHOS- PHORUS TOTAL PHORUS (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS TOTAL SEDIMNT SUSP AS P (MG/L) (00667)	CARBON, INORG + ORGANIC SUSP. TOTAL (MG/L AS C) (00694)
OCT 1997					*			
08...	--	--	.015	--	.011	.005	.002	.21
20...	--	--	.028	--	.013	.010	.003	.24
NOV								
05...	--	--	.346	--	.027	.018	.007	4.26
09...	--	--	.333	--	.044	.025	.080	3.77
21...	--	--	.022	--	.018	.011	.009	.21
DEC								
03...	--	--	.026	--	.010	.010	.006	.25
*03...	--	--	.020	--	.010	.010	.010	.22
17...	--	--	.020	--	.007	.008	.008	.28
JAN 1998								
05...	--	--	.032	--	.010	.006	.010	.31
08...	--	--	.137	--	.020	.004	.035	.96
09...	--	--	1.920	--	.030	.016	.771	19.66
*09...	--	--	1.499	--	.038	.020	.663	14.53
10...	--	--	.424	--	.020	.016	.199	4.40
22...	--	--	.026	--	.019	.013	.013	.29
24...	--	--	.700	--	.047	.038	.240	6.56
28...	--	--	.362	--	.030	.023	.131	3.53
*28...	.5	.4	--	.09	<.01	.021	--	--
31...	--	--	.139	--	.020	.016	.074	1.23
FEB								
03...	--	--	.065	--	.010	.010	.027	.64
06...	--	--	.246	--	.030	.031	.114	2.15
08...	--	--	.160	--	.031	.023	.066	1.45
19...	--	--	.295	--	.003	.016	.146	2.85
27...	--	--	.070	--	.019	.012	.027	.68
MAR								
04...	--	--	.097	--	.028	.009	.041	.83
10...	--	--	.310	--	.041	.017	.138	3.08
19...	--	--	.223	--	.022	.019	.076	2.08
26...	--	--	.061	--	.019	.013	.028	.57
APR								
02...	--	--	.043	--	.014	.011	.015	.38
*02...	.1	.2	--	.03	.015	.008	--	--
10...	--	--	.991	--	.044	.031	.321	9.17
*10...	--	--	.891	--	.040	.025	.262	8.47
14...	--	--	.052	--	.016	.005	.020	.49
20...	--	--	.137	--	.016	.008	.043	1.25
MAY								
04...	--	--	.292	--	.033	.015	.093	2.37
06...	--	--	.907	--	.191	.020	.349	8.43
08...	--	--	.294	--	.020	.017	.098	2.91
*09...	.6	.4	--	.11	.03	.009	--	--
09...	--	--	.600	--	.066	.028	.258	5.37
20...	--	--	.042	--	.019	.008	.015	.34
JUN								
10...	--	--	.021	--	.009	.004	.007	.13
11...	--	--	.032	--	.008	.002	.008	.47
16...	--	--	.096	--	.025	--	.031	.78
24...	--	--	.821	--	.031	.020	.208	7.82
JUL								
08...	--	--	.022	--	.019	.009	.006	.14
23...	--	--	.021	--	.011	.008	.006	.15
AUG								
05...	--	--	.009	--	.014	.005	.004	.07
21...	--	--	.013	--	.009	.002	.004	.12
SEP								
02...	--	--	.021	--	.012	.002	.007	.23
16...	--	--	.028	--	.011	.002	.006	.19

* Replicate sample.

* For these constituents, there are differences in the minimum constituent reporting levels between the analyzing agencies.

< Actual value is known to be less than the value shown.



Rappahannock River at Remington (01664000)
Hurricane Agnes June 1972

RAPPAHANNOCK RIVER BASIN

01668500 CAT POINT CREEK NEAR MONTROSS, VA

LOCATION.--Lat 38°02'23", long 76°49'38", Richmond County, Hydrologic Unit 02080104, on right bank 200 ft upstream from bridge on State Highway 637, 1.7 mi west of Farmers Fork, 3.8 mi south of Montross, and 11.4 mi upstream from mouth.

DRAINAGE AREA.--45.6 mi².

PERIOD OF RECORD.--September 1943 to current year.

REVISED RECORDS.--WSP 1382: 1944(M), 1945, 1946-51(M), 1952(P), 1953-54(M). WSP 2103: Drainage area. WDR VA-94-1: 1979(P), 1985(M), 1992(M).

GAGE.--Water-stage recorder. Datum of gage is 3.04 ft above sea level. Prior to Aug. 19, 1953, nonrecording gage near right bank at downstream side of highway bridge at same datum.

REMARKS.--No estimated daily discharges. Records good. Prior to 1980, slight diurnal fluctuation at low flow caused by gristmill upstream from station. Maximum discharge, 6,820 ft³/s, from rating curve extended above 1,400 ft³/s. No flow at times in 1943, 1957, 1959-60, 1966, and 1977. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in September 1935 exceeded 9.3 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 9	2000	254	5.23	Feb. 5	0500	*2,620	*8.80
Jan. 24	1200	488	5.87	Mar. 20	0100	439	5.92
Jan. 29	0100	1,360	7.42	Mar. 21	1800	598	6.25

Minimum discharge, 0.63 ft³/s, Oct. 10, 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	16	32	41	127	95	94	66	33	27	10	3.1
2	1.6	29	30	33	106	94	99	91	30	22	9.5	2.7
3	1.5	31	26	30	95	116	90	88	29	20	8.4	2.4
4	1.3	25	32	27	370	105	120	77	27	18	7.6	2.2
5	1.2	20	37	25	1890	91	169	73	26	19	6.9	2.0
6	1.0	17	35	23	595	86	109	80	26	17	6.1	1.8
7	.87	53	29	23	315	83	92	70	24	15	5.7	1.5
8	.82	197	24	33	213	98	88	79	23	23	5.6	1.6
9	.68	239	23	46	163	184	128	86	23	70	5.4	1.9
10	.64	186	25	38	139	186	156	78	61	57	7.9	1.8
11	.69	77	35	29	127	118	111	72	79	33	27	1.5
12	.74	39	33	23	137	99	94	80	71	22	30	1.4
13	.68	28	28	24	120	93	87	88	59	17	16	1.3
14	.75	51	23	28	104	89	84	77	56	15	9.1	1.1
15	.94	61	20	37	97	86	85	65	62	14	6.3	.99
16	1.2	45	18	71	93	83	82	58	82	14	5.1	1.1
17	1.4	31	17	62	111	82	145	52	86	14	4.3	.91
18	2.5	24	16	47	149	114	165	47	68	15	4.7	1.1
19	5.5	22	15	38	116	249	115	42	52	18	5.0	1.5
20	9.2	20	15	35	100	315	137	40	44	21	4.4	1.7
21	8.1	20	15	30	96	447	112	38	37	21	3.6	1.9
22	4.7	88	18	27	89	335	92	37	33	18	3.1	2.8
23	3.2	108	44	95	103	204	85	36	31	15	2.8	4.9
24	2.6	66	44	411	200	157	81	37	80	13	2.6	4.5
25	2.9	43	53	234	166	138	76	44	88	12	2.4	3.8
26	6.5	36	52	122	118	126	72	53	55	11	3.3	3.4
27	16	31	50	90	104	119	69	52	36	10	5.3	3.1
28	14	27	75	550	98	112	67	51	30	9.6	10	2.8
29	9.5	24	66	843	---	106	64	46	33	9.0	7.7	2.5
30	6.5	26	64	300	---	100	63	41	31	8.3	5.1	2.5
31	5.7	---	53	174	---	95	---	36	---	8.6	3.7	---
TOTAL	114.61	1680	1047	3589	6141	4405	3031	1880	1415	606.5	234.6	65.80
MEAN	3.70	56.0	33.8	116	219	142	101	60.6	47.2	19.6	7.57	2.19
MAX	16	239	75	843	1890	447	169	91	88	70	30	4.9
MIN	.64	16	15	23	89	82	63	36	23	8.3	2.4	.91
CFSM	.08	1.23	.74	2.54	4.81	3.12	2.22	1.33	1.03	.43	.17	.05
IN.	.09	1.37	.85	2.93	5.01	3.59	2.47	1.53	1.15	.49	.19	.05

RAPPAHANNOCK RIVER BASIN

01668500 CAT POINT CREEK NEAR MONTROSS, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	26.3	37.5	47.1	59.5	65.8	78.0	68.9	51.2	35.6	28.1	28.4	24.5
MAX	134	119	126	175	219	211	164	149	232	128	153	210
(WY)	1980	1980	1984	1978	1998	1994	1983	1990	1972	1995	1969	1979
MIN	1.47	6.70	11.6	12.9	24.1	23.2	20.7	11.1	4.59	1.13	.89	.41
(WY)	1955	1992	1955	1955	1955	1945	1985	1955	1945	1957	1963	1954

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1944 - 1998

ANNUAL TOTAL	13751.01	24209.51	
ANNUAL MEAN	37.7	66.3	45.8
HIGHEST ANNUAL MEAN			89.4
LOWEST ANNUAL MEAN			18.7
HIGHEST DAILY MEAN	239	Nov 9	1890
LOWEST DAILY MEAN	.57	Sep 27	.64
ANNUAL SEVEN-DAY MINIMUM	.67	Sep 22	.71
INSTANTANEOUS PEAK FLOW			2620
INSTANTANEOUS PEAK STAGE			8.80
INSTANTANEOUS LOW FLOW			.63
ANNUAL RUNOFF (CFSM)	.83		1.45
ANNUAL RUNOFF (INCHES)	11.22		19.75
10 PERCENT EXCEEDS	78		127
50 PERCENT EXCEEDS	30		33
90 PERCENT EXCEEDS	1.4		2.4

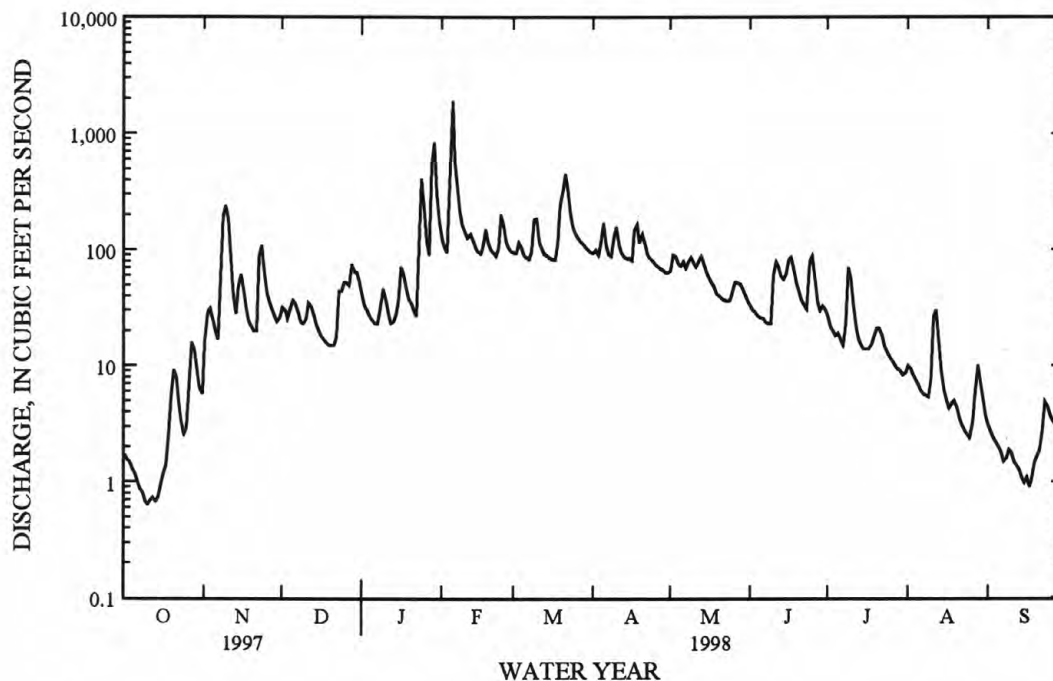
a Many days in 1943 (partial year), 1957, 1959, 1966, and 1977.

b Also Aug. 9, 10, 1957, and Aug. 31 to Sept. 7, 1966.

c Result of Chandlers Millpond dam washout.

d Also Oct. 13, 1997.

f At times in 1943 (partial year), 1957, 1959-60, 1966, and 1977.



RAPPAHANNOCK RIVER BASIN

01669000 PISCATAWAY CREEK NEAR TAPPAHANNOCK, VA

LOCATION.--Lat 37°52'37", long 76°54'03", Essex County, Hydrologic Unit 02080104, on right bank at upstream side of bridge on State Highway 691, 0.6 mi south of Hensley Fork, 2.3 mi downstream from Sturgeon Swamp, and 4.2 mi southwest of Tappahannock.

DRAINAGE AREA.--28.0 mi².

PERIOD OF RECORD.--July 1951 to current year.

REVISED RECORDS.--WSP 2103: Drainage area. WDR VA-79-1: 1970-76(P), 1978(P).

GAGE.--Water-stage recorder. Datum of gage is 2.50 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. Maximum discharge, 2,380 ft³/s, from rating curve extended above 1,400 ft³/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 29	0300	331	3.97	Mar. 19	2100	357	4.06
Feb. 5	0330	*805	*5.36	Mar. 21	1400	455	4.41
Mar. 9	2230	254	3.68				

Minimum discharge, 1.6 ft³/s, Sept. 18, 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.4	14	24	21	60	64	81	63	26	14	6.1	3.1
2	2.8	21	24	19	54	66	84	89	24	12	4.9	3.0
3	2.6	24	20	18	50	88	76	76	22	10	4.4	2.7
4	2.5	19	21	17	226	71	110	69	20	9.9	3.5	2.9
5	2.4	15	22	16	631	61	139	74	20	9.7	3.4	2.6
6	2.1	12	20	15	268	58	90	67	21	8.5	3.1	2.4
7	2.0	51	17	15	192	56	75	59	19	7.8	2.9	2.2
8	2.0	106	16	22	151	75	71	88	18	8.7	3.0	3.4
9	2.0	102	15	28	120	188	109	105	18	10	3.8	2.9
10	2.0	74	16	22	104	166	143	76	40	12	4.4	2.9
11	2.0	37	18	17	96	97	92	67	49	10	7.0	2.9
12	1.9	23	19	17	103	81	74	69	36	8.2	7.4	2.5
13	2.0	20	17	16	92	74	67	74	32	7.3	5.6	2.4
14	2.1	35	15	16	82	74	65	65	30	6.7	4.7	2.2
15	2.9	39	14	22	74	66	66	57	36	6.3	4.0	2.0
16	4.2	28	13	37	70	62	61	51	46	6.2	3.3	1.9
17	5.9	20	14	32	101	62	118	45	43	6.3	3.3	1.7
18	10	17	13	26	141	118	145	41	33	5.9	3.4	1.7
19	17	16	12	22	89	255	101	37	33	5.2	3.3	1.9
20	20	15	12	23	76	236	133	35	34	5.9	2.6	2.1
21	16	15	12	19	74	377	103	35	26	5.5	2.5	1.8
22	10	50	14	17	66	237	85	35	21	5.0	2.5	3.2
23	6.8	54	21	54	91	164	79	33	20	4.4	2.4	5.3
24	5.9	34	22	144	152	136	75	34	21	4.2	2.4	8.6
25	9.6	25	24	78	98	120	69	36	21	4.1	2.1	6.2
26	12	20	23	47	76	111	69	34	19	4.4	2.0	4.1
27	20	18	24	43	69	107	65	38	16	4.1	2.6	3.5
28	20	16	36	175	66	98	62	53	15	4.1	5.3	2.7
29	14	16	33	264	---	95	61	42	16	3.8	5.1	2.4
30	9.8	18	33	120	---	88	60	33	17	4.4	4.6	2.7
31	8.6	---	28	75	---	83	---	29	---	6.4	3.7	---
TOTAL	224.5	954	612	1457	3472	3634	2628	1709	792	221.0	119.3	89.9
MEAN	7.24	31.8	19.7	47.0	124	117	87.6	55.1	26.4	7.13	3.85	3.00
MAX	20	106	36	264	631	377	145	105	49	14	7.4	8.6
MIN	1.9	12	12	15	50	56	60	29	15	3.8	2.0	1.7
CFSM	.26	1.14	.71	1.68	4.43	4.19	3.13	1.97	.94	.25	.14	.11
IN.	.30	1.27	.81	1.94	4.61	4.83	3.49	2.27	1.05	.29	.16	.12

RAPPAHANNOCK RIVER BASIN

01669000 PISCATAWAY CREEK NEAR TAPPAHANNOCK, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	19.4	27.3	31.0	38.3	45.4	53.8	49.3	37.5	25.4	18.0	17.4	15.2
MAX	63.4	74.1	74.7	88.4	124	118	109	87.0	111	105	88.0	70.4
(WY)	1980	1980	1997	1978	1998	1994	1958	1958	1972	1975	1955	1979
MIN	1.30	6.30	9.20	7.93	14.0	13.5	13.4	7.41	4.20	2.01	1.00	.28
(WY)	1955	1955	1966	1955	1955	1981	1985	1955	1986	1954	1954	1954

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

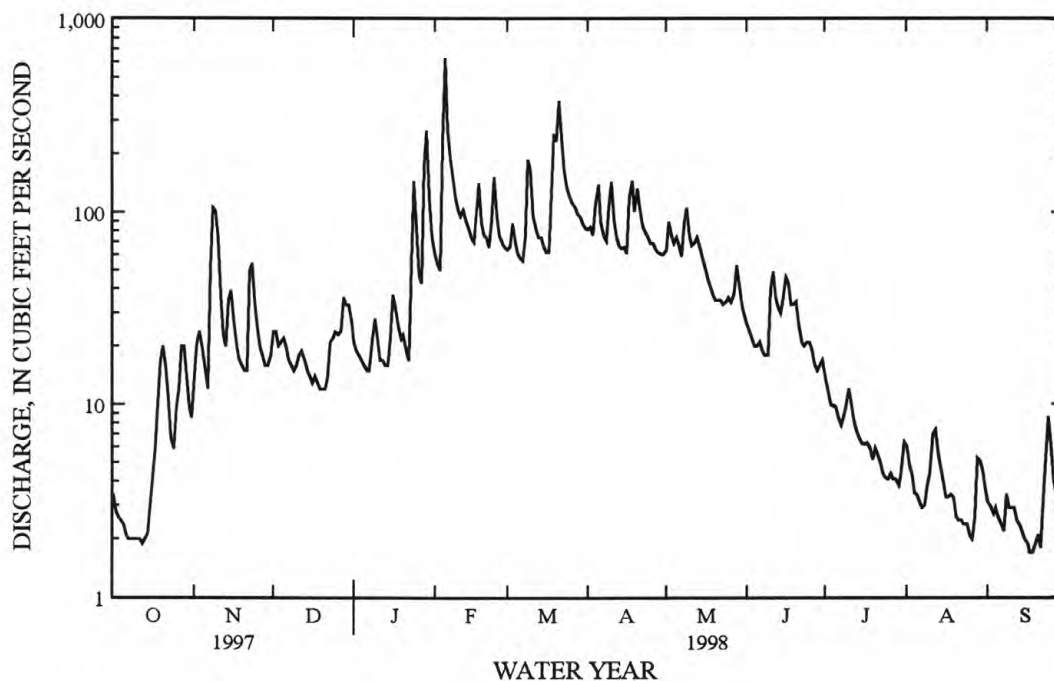
WATER YEARS 1952 - 1998

ANNUAL TOTAL	10434.7	15912.7	
ANNUAL MEAN	28.6	43.6	31.4
HIGHEST ANNUAL MEAN			56.8
LOWEST ANNUAL MEAN			12.1
HIGHEST DAILY MEAN	129	631	1080
LOWEST DAILY MEAN	1.7	1.7	.02
ANNUAL SEVEN-DAY MINIMUM	2.0	1.9	.13
INSTANTANEOUS PEAK FLOW		805	2380
INSTANTANEOUS PEAK STAGE		5.36	b7.52
INSTANTANEOUS LOW FLOW		1.6	.01
ANNUAL RUNOFF (CFSM)	1.02	1.56	1.12
ANNUAL RUNOFF (INCHES)	13.86	21.14	15.24
10 PERCENT EXCEEDS	59	102	64
50 PERCENT EXCEEDS	20	21	23
90 PERCENT EXCEEDS	3.2	2.7	5.2

a Also Sept. 18, 1998.

b From high-water mark in well.

c Also Sept. 19, 1998.



PIANKATANK RIVER BASIN

01669520 DRAGON SWAMP AT MASCOT, VA

LOCATION.--Lat 37°38'01", long 76°41'48", King and Queen County, Hydrologic Unit 02080102, on right bank at up stream side of bridge on State Highway 603, 0.8 mi east of Mascot, 2.1 mi downstream from Church Swamp, and 3.3 mi west of Warner.

DRAINAGE AREA.--108 mi².

PERIOD OF RECORD.--August 1981 to current year.

GAGE.--Water-stage recorder. Datum of gage is 21.60 ft above sea level.

REMARKS.--Records good except for period with backwater from beaver dam, Oct. 1-9, which is fair. Maximum discharge, 2,800 ft³/s, from rating curve extended above 2,150 ft³/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 30	2000	922	7.10	Mar. 21	1200	1,450	7.60
Feb. 6	0900	*2,800	*9.39	May 11	1400	752	6.46
Mar. 11	0700	854	6.64				

Minimum discharge, zero flow, Aug. 25-26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.98	41	86	138	557	269	240	161	111	73	1.6	.47
2	e.88	53	76	119	411	244	234	163	99	57	1.4	.30
3	e.78	56	72	107	328	238	227	161	89	46	1.2	.34
4	e.69	54	75	97	574	235	258	161	77	39	1.0	.86
5	e.58	52	75	87	2140	227	302	164	68	38	.86	.80
6	e.51	51	71	77	2690	221	301	172	61	31	.79	.74
7	e.44	127	66	72	1840	222	302	176	54	24	.74	.61
8	e.44	277	61	84	1040	273	296	241	46	21	.67	.76
9	e1.0	335	59	106	721	464	292	374	43	22	.59	.86
10	2.8	381	60	104	548	666	309	472	80	22	.59	.74
11	2.9	321	68	93	431	826	287	725	91	20	.61	.69
12	3.3	246	67	82	411	649	256	702	106	17	.56	.57
13	3.9	191	64	81	378	433	244	587	124	15	.44	.36
14	4.6	208	60	89	313	322	244	441	139	12	.35	.14
15	7.7	206	57	116	276	273	238	337	152	10	.26	.06
16	9.5	177	53	240	256	247	221	283	173	8.8	.22	.06
17	9.9	141	50	266	277	232	226	254	174	8.3	.44	.05
18	11	114	47	228	353	287	235	233	159	7.9	.48	.08
19	16	93	45	194	351	517	233	209	191	6.9	.22	.10
20	24	79	44	183	341	985	247	185	214	6.3	.28	.17
21	26	71	42	164	339	1410	256	164	199	5.5	.08	.34
22	33	84	44	142	295	1200	281	145	178	4.4	.05	.76
23	34	86	62	170	288	1070	286	129	148	3.5	.04	2.9
24	31	91	64	265	359	790	272	119	117	2.8	.02	2.3
25	31	92	73	306	391	545	258	112	96	2.3	.01	1.6
26	29	95	76	355	409	411	235	103	86	2.2	.01	1.4
27	36	91	93	376	388	339	212	110	90	2.1	.20	1.2
28	33	85	143	540	314	302	196	160	103	2.0	1.3	1.2
29	30	79	161	699	---	278	179	157	104	1.7	1.2	1.0
30	28	76	165	849	---	263	168	141	91	1.4	.66	3.9
31	27	---	154	798	---	250	---	124	---	1.7	.59	---
TOTAL	439.90	4053	2333	7227	17019	14688	7535	7665	3463	514.8	17.46	25.36
MEAN	14.2	135	75.3	233	608	474	251	247	115	16.6	.56	.85
MAX	36	381	165	849	2690	1410	309	725	214	73	1.6	3.9
MIN	.44	41	42	72	256	221	168	103	43	1.4	.01	.05
CFSM	.13	1.25	.70	2.16	5.63	4.39	2.33	2.29	1.07	.15	.01	.01
IN.	.15	1.40	.80	2.49	5.86	5.06	2.60	2.64	1.19	.18	.01	.01

e Estimated.

PIANKATANK RIVER BASIN

01669520 DRAGON SWAMP AT MASCOT, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	62.6	91.5	119	161	204	244	194	136	80.0	49.9	54.6	40.8
MAX	293	290	331	340	608	567	450	247	166	106	200	170
(WY)	1997	1986	1997	1993	1998	1994	1983	1998	1984	1996	1992	1985
MIN	7.97	22.3	39.5	45.9	76.5	58.8	31.2	28.5	6.23	3.15	.56	.79
(WY)	1982	1982	1989	1989	1991	1985	1985	1985	1986	1993	1998	1997

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

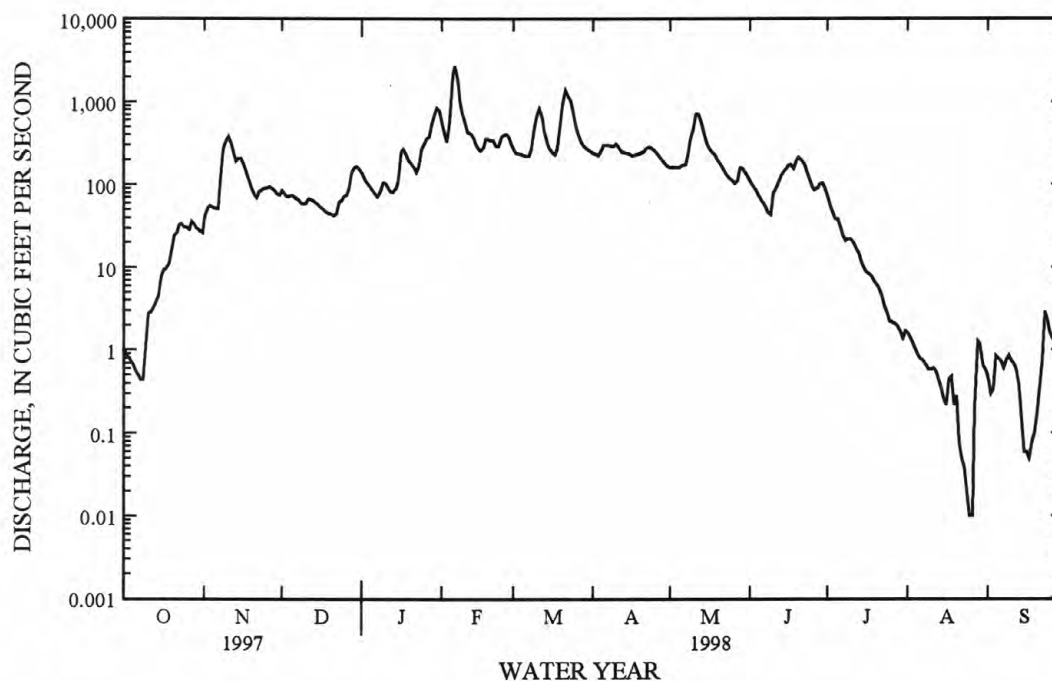
FOR 1998 WATER YEAR

WATER YEARS 1982 - 1998

ANNUAL TOTAL	41273.00	64980.52	
ANNUAL MEAN	113	178	119
HIGHEST ANNUAL MEAN			178
LOWEST ANNUAL MEAN			56.4
HIGHEST DAILY MEAN	388	Feb 18	2690
LOWEST DAILY MEAN	.30	Sep 24	.01
ANNUAL SEVEN-DAY MINIMUM	.33	Sep 19	.06
INSTANTANEOUS PEAK FLOW			2800
INSTANTANEOUS PEAK STAGE			9.39
INSTANTANEOUS LOW FLOW			.00
ANNUAL RUNOFF (CFSM)	1.05	1.65	1.11
ANNUAL RUNOFF (INCHES)	14.22	22.38	15.02
10 PERCENT EXCEEDS	238	384	265
50 PERCENT EXCEEDS	85	91	83
90 PERCENT EXCEEDS	1.3	.60	7.4

a Also Aug. 26, 1998.

e Estimated.



YORK RIVER BASIN

01671020 NORTH ANNA RIVER AT HART CORNER, NEAR DOSWELL, VA

LOCATION.--Lat 37°51'00", long 77°25'41", Hanover County, Hydrologic Unit 02080106, on right bank at downstream side of bridge on State Highway 30, 0.3 mi west of Hart Corner, 2.1 mi east of Doswell, and 5.4 mi upstream from confluence with South Anna River.

DRAINAGE AREA.--463 mi².

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

GAGE.--Water-stage recorder. Elevation of gage is 43 ft above sea level, from topographic map.

REMARKS.--Records good except for period of doubtful gage-height record, Dec. 30 to Feb. 6, which is fair. Flow regulated since January 1972 by Lake Anna, capacity, 373,000 acre-ft, 27.7 mi upstream. At a point 0.8 mi upstream from station, there is diversion for municipal water supply by Hanover County Department of Public Utilities since June 1975. Maximum discharge, 12,000 ft³/s, from rating curve extended above 10,100 ft³/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1969 reached a stage of 28.02 ft, from floodmark, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,350 ft³/s, Feb. 6, gage height, 20.13 ft; minimum, 43 ft³/s, Oct. 12-13, Sept. 28, 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	52	74	272	363	1790	881	442	372	209	258	48	45		
2	46	79	273	302	1510	1240	1180	835	201	251	47	46		
3	45	80	258	276	1400	1520	830	762	243	130	47	45		
4	45	80	268	276	1670	922	662	454	251	74	47	45		
5	45	80	279	273	e6390	675	1770	566	250	74	47	45		
6	45	74	275	269	e9070	566	927	693	218	70	46	44		
7	45	284	268	269	6680	652	597	265	101	67	46	44		
8	44	2380	261	e275	3860	1110	538	1580	92	71	47	50		
9	45	3200	261	e635	2760	3450	918	3260	88	76	50	59		
10	45	2130	266	e606	1680	3480	1700	2260	128	76	58	45		
11	44	1310	282	e472	1500	2340	787	940	131	71	65	46		
12	43	683	276	e418	1580	1060	536	860	129	68	51	46		
13	43	648	271	e384	1550	769	492	1240	264	64	84	45		
14	44	690	265	e322	1300	734	508	1110	304	62	119	45		
15	49	703	261	e321	456	707	438	712	373	63	57	45		
16	54	665	261	e800	1060	683	297	630	558	61	54	44		
17	51	600	255	e1500	993	672	1280	393	506	62	53	44		
18	75	365	257	e1000	4640	802	3310	368	723	61	83	45		
19	100	285	255	e703	5900	3030	2020	355	590	63	107	45		
20	99	264	255	e628	3510	3890	1580	349	657	60	55	45		
21	82	268	254	e432	1890	5580	1070	349	503	58	57	45		
22	66	357	257	355	1530	8240	764	319	352	58	51	48		
23	60	694	172	1130	1670	5490	712	265	456	57	47	49		
24	58	470	174	e4110	3450	2710	687	266	424	55	48	47		
25	61	391	378	e3400	2760	1510	652	280	484	56	47	46		
26	72	307	409	2040	1700	1250	635	276	416	56	48	47		
27	105	276	379	1360	1410	582	517	348	326	60	48	50		
28	111	271	389	e3120	782	502	371	332	271	61	52	44		
29	95	266	378	e6690	---	480	362	216	269	60	49	44		
30	82	265	e516	e6920	---	464	354	222	268	54	46	44		
31	72	---	e562	e3420	---	444	---	216	---	51	45	---		
TOTAL	1923	18239	9187	43069	74491	56435	26936	21093	9785	2408	1749	1382		
MEAN	62.0	608	296	1389	2660	1820	898	680	326	77.7	56.4	46.1		
MAX	111	3200	562	6920	9070	8240	3310	3260	723	258	119	59		
MIN	43	74	172	269	456	444	297	216	88	51	45	44		
(†)	181	169	170	167	120	132	140	147	166	179	189	181		
MEAN†	67.8	614	302	1395	2665	1825	903	685	332	83.5	62.5	52.0		
CFSM†	.15	1.33	.65	3.01	5.76	3.94	1.95	1.48	.72	.18	.13	.11		
IN.†	.17	1.48	.75	3.47	5.99	4.54	2.18	1.71	.80	.21	.16	.13		
CAL YR 1997	TOTAL	141089	MEAN	387	MAX	3200	MIN	42	MEAN†	393	CFSM†	.85	IN.†	11.53
WTR YR 1998	TOTAL	266697	MEAN	731	MAX	9070	MIN	43	MEAN†	736	CFSM†	1.59	IN.†	21.58

† Total diversion, equivalent in cubic feet per second, per month; provided by Hanover County Department of Public Utilities.

‡ Adjusted for diversion.

e Estimated.

YORK RIVER BASIN

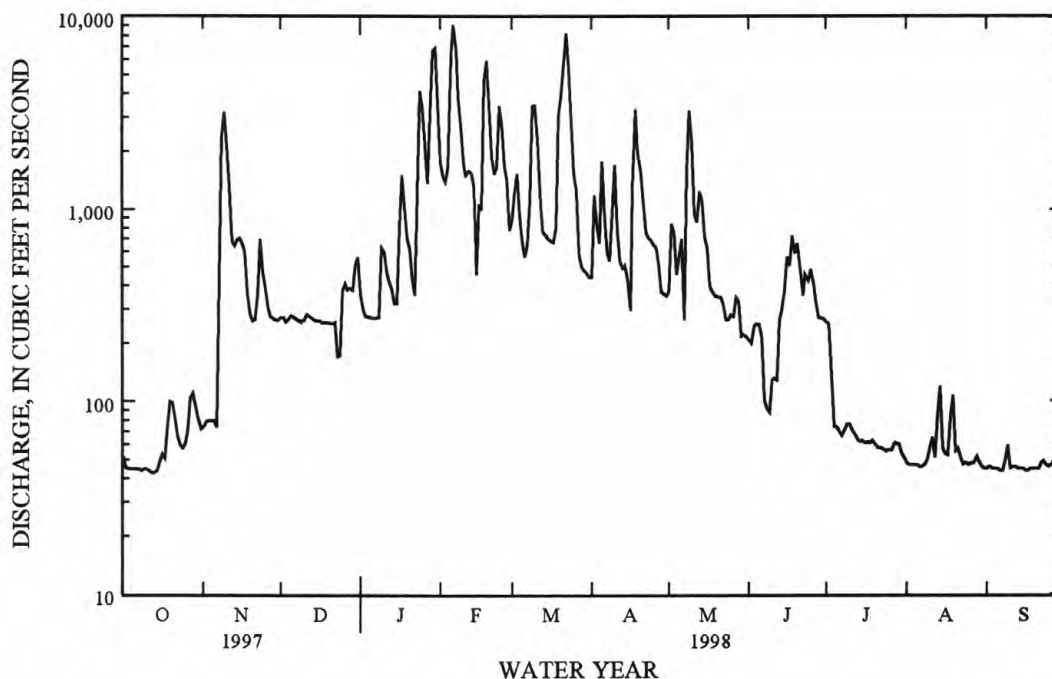
01671020 NORTH ANNA RIVER AT HART CORNER, NEAR DOSWELL, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	228	352	417	593	747	870	688	469	256	173	170	150
MAX	1428	1561	1320	1389	2660	2345	1887	1217	795	591	614	1185
(WY)	1980	1986	1997	1998	1998	1994	1983	1990	1995	1984	1984	1996
MIN	43.7	46.7	75.2	71.9	122	90.5	108	110	51.1	66.3	56.4	46.1
(WY)	1992	1992	1981	1981	1981	1981	1981	1991	1991	1980	1998	1998

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1980 - 1998	
ANNUAL TOTAL	141089		266697			
ANNUAL MEAN	387		731		424	
HIGHEST ANNUAL MEAN					731	
LOWEST ANNUAL MEAN					85.7	
HIGHEST DAILY MEAN	3200	Nov 9	e9070	Feb 6	10900	Mar 30 1994
LOWEST DAILY MEAN	42	aSep 22	43	bOct 12	36	Oct 8 1991
ANNUAL SEVEN-DAY MINIMUM	43	cSep 21	44	Oct 8	39	Oct 4 1991
INSTANTANEOUS PEAK FLOW			9350	Feb 6	12000	Mar 29 1994
INSTANTANEOUS PEAK STAGE			20.13	Feb 6	21.80	Mar 29 1994
INSTANTANEOUS LOW FLOW			43	dOct 12	f36	Oct 8 1991
ANNUAL RUNOFF (CFSM)		.83		1.58		.92
ANNUAL RUNOFF (INCHES)		11.34		21.43		12.46
10 PERCENT EXCEEDS		829		1730		900
50 PERCENT EXCEEDS		261		276		181
90 PERCENT EXCEEDS		49		46		58

a Also Sept. 23, 1997.
b Also Oct. 13, 1997.
c Also Sept. 22, 1997.
d Also Oct. 13, 1997 and Sept. 28, 29, 1998.
e Estimated.
f Observed.



YORK RIVER BASIN

01671100 LITTLE RIVER NEAR DOSWELL, VA

LOCATION.--Lat 37°52'21", long 77°30'48", Hanover County, Hydrologic Unit 02080106, on left bank at downstream side of bridge on State Highway 685, 0.8 mi southwest of Verdon, 2.9 mi west of Doswell, and 9.6 mi upstream from mouth.

DRAINAGE AREA.--107 mi².

PERIOD OF RECORD.--October 1961 to current year.

REVISED RECORDS.--WDR VA-70-1: 1969.

GAGE.--Water-stage recorder. Datum of gage is 132.30 ft above sea level (levels by La Prade Bros., Engineers).

REMARKS.--Records good except for period of doubtful gage-height record, Nov. 16-18, which is fair. Maximum discharge, 12,000 ft³/s, from rating curve extended above 7,600 ft³/s on basis of contracted-opening measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 650 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 9	0630	1,010	4.95	Mar. 10	0630	1,290	5.31
Jan. 24	2030	1,560	5.59	Mar. 22	0530	2,690	6.59
Jan. 29	1130	2,780	6.63	Apr. 5	1900	970	4.91
Feb. 5	2200	*3,380	*7.08	Apr. 18	2030	847	4.73
Feb. 19	0730	1,690	5.74	May 9	0630	1,050	5.02
Feb. 25	0600	1,070	5.04				

Minimum discharge, 1.1 ft³/s, Sept. 27-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.3	32	56	99	205	197	141	93	60	33	6.7	3.4
2	6.6	35	56	89	146	218	196	158	53	29	7.2	3.2
3	9.3	34	55	82	109	352	286	272	46	27	6.7	4.4
4	10	31	60	78	392	312	352	225	40	25	6.0	5.1
5	9.3	29	65	73	2460	226	820	411	38	24	6.0	4.4
6	8.0	26	63	71	2490	187	661	181	35	22	5.9	4.1
7	7.1	110	60	69	1220	166	289	133	33	20	5.7	4.3
8	6.7	610	55	80	696	208	206	492	30	19	5.9	5.9
9	6.6	951	52	101	366	716	189	1010	29	19	5.6	5.4
10	6.4	632	53	94	247	1160	190	722	47	20	5.9	4.1
11	6.5	302	65	86	198	552	184	357	56	19	10	3.1
12	6.1	160	69	76	227	270	164	233	60	17	7.5	3.1
13	6.0	109	70	76	280	204	144	238	59	16	6.9	2.6
14	5.7	105	65	78	232	180	132	226	72	14	7.1	2.3
15	7.7	113	59	87	180	165	129	181	95	13	7.1	2.0
16	8.2	e102	55	187	156	152	126	144	139	12	7.0	2.0
17	7.8	e87	52	241	292	145	260	120	157	12	6.3	1.9
18	27	e70	50	192	954	192	710	102	109	12	5.9	1.9
19	49	65	48	147	1510	772	596	89	79	11	5.9	2.1
20	61	59	48	131	686	1470	352	78	80	10	5.3	2.2
21	57	56	47	115	336	1630	289	70	64	9.8	5.3	1.7
22	45	90	48	104	256	2290	218	64	72	9.2	5.3	1.6
23	32	106	60	303	268	958	169	60	143	8.6	5.2	2.0
24	24	104	66	1170	688	425	146	60	130	8.3	4.8	1.8
25	23	86	97	1120	971	303	132	60	185	8.3	4.4	1.2
26	24	73	130	465	474	231	121	58	121	8.2	4.4	1.2
27	48	63	135	254	261	194	108	66	70	7.8	4.6	1.2
28	64	56	133	836	210	179	98	90	51	7.3	4.6	1.1
29	60	52	129	2430	---	167	93	93	41	7.1	4.5	1.1
30	46	51	125	1400	---	156	87	83	37	6.3	4.1	1.1
31	36	---	112	473	---	146	---	70	---	6.3	3.9	---
TOTAL	720.3	4399	2238	10807	16510	14523	7588	6239	2231	461.2	181.7	81.5
MEAN	23.2	147	72.2	349	590	468	253	201	74.4	14.9	5.86	2.72
MAX	64	951	135	2430	2490	2290	820	1010	185	33	10	5.9
MIN	5.7	26	47	69	109	145	87	58	29	6.3	3.9	1.1
CFSM	.22	1.37	.67	3.26	5.51	4.38	2.36	1.88	.70	.14	.05	.03
IN.	.25	1.53	.78	3.76	5.74	5.05	2.64	2.17	.78	.16	.06	.03

e Estimated.

YORK RIVER BASIN

01671100 LITTLE RIVER NEAR DOSWELL, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	56.4	76.8	105	152	170	199	149	103	67.3	40.6	50.5	36.9
MAX	264	340	278	491	590	583	391	311	533	288	653	404
(WY)	1980	1973	1997	1978	1998	1994	1993	1990	1972	1975	1969	1975
MIN	1.03	3.25	18.2	20.5	46.6	33.0	44.2	22.0	5.45	2.78	1.35	.70
(WY)	1969	1992	1966	1981	1968	1981	1968	1969	1991	1968	1977	1968

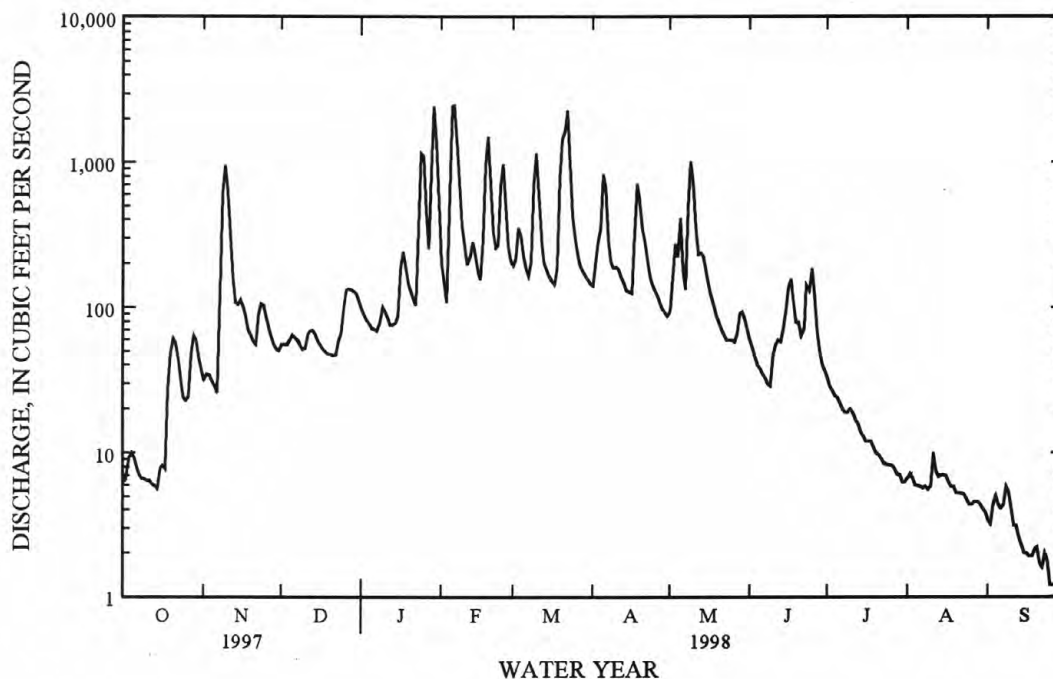
SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1962 - 1998	
ANNUAL TOTAL	34135.9		65979.7		100	
ANNUAL MEAN	93.5		181		181	
HIGHEST ANNUAL MEAN					181	
LOWEST ANNUAL MEAN					29.8	
HIGHEST DAILY MEAN	951	Nov 9	2490	Feb 6	9800	Aug 21 1969
LOWEST DAILY MEAN	4.9	aSep 7	1.1	bSep 28	.10	Sep 26 1968
ANNUAL SEVEN-DAY MINIMUM	5.3	Sep 3	1.2	Sep 24	.21	Sep 30 1968
INSTANTANEOUS PEAK FLOW			3380	Feb 5	12000	Aug 21 1969
INSTANTANEOUS PEAK STAGE			7.08	Feb 5	11.09	Aug 21 1969
INSTANTANEOUS LOW FLOW			1.1	cSep 27	.10	dSep 25 1968
ANNUAL RUNOFF (CFSM)	.87		1.69		.94	
ANNUAL RUNOFF (INCHES)	11.87		22.94		12.71	
10 PERCENT EXCEEDS	177		417		197	
50 PERCENT EXCEEDS	63		69		53	
90 PERCENT EXCEEDS	8.1		5.2		6.7	

a Also Sept. 8, 1997.

b Also Sept. 29, 30, 1998.

c Also Sept. 28-30, 1998.

d Also Sept. 26, 1968.



YORK RIVER BASIN

01673000 PAMUNKEY RIVER NEAR HANOVER, VA

LOCATION.--Lat 37°46'03", long 77°19'57", Hanover County, Hydrologic Unit 02080106, on right bank 100 ft downstream from bridge on State Highway 614, 0.3 mi upstream from Mechumps Creek, 2.0 mi east of Hanover, and 7.0 mi upstream from Millpond Creek.

DRAINAGE AREA.--1,081 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1941 to current year. Monthly discharge only for some periods, published in WSP 1302.

REVISED RECORDS.--WSP 1302: 1944(M). WSP 1382: 1949. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 14.72 ft above sea level. Prior to Oct. 15, 1976, nonrecording gage at same site and datum.

REMARKS.--Records fair. Some regulation since January 1972 by Lake Anna, capacity, 373,000 acre-ft, and occasional diurnal fluctuation at low flow caused by mill upstream from station. Unknown amount of diversion for irrigation upstream from gage. Maximum discharge, 40,300 ft³/s, from rating curve extended above 22,000 ft³/s.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1928 reached a stage of 32.6 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16,800 ft³/s, Feb. 7, gage height, 23.70 ft; minimum, 49 ft³/s, Sept. 7, 29, 30; minimum gage height, 2.42 ft, Oct. 10, 12-15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	120	284	563	1040	10200	1710	1300	861	573	445	110	64
2	136	267	569	855	7860	2250	1620	1150	519	424	102	61
3	135	276	559	711	4940	2570	2310	1750	496	384	100	62
4	124	278	559	660	3810	2770	1680	1580	511	260	107	62
5	112	276	608	646	8060	1850	3710	1530	493	239	100	59
6	107	272	636	636	14600	1450	4890	1500	486	233	97	57
7	99	380	646	621	16400	1340	3310	1320	394	204	88	54
8	94	2970	578	673	14000	1520	1810	1260	324	193	91	66
9	93	5320	535	1310	11100	4460	1590	4440	309	203	77	69
10	88	6540	519	1630	8610	8280	2530	6510	354	372	96	73
11	89	6740	571	1300	5660	9200	2610	6750	421	377	128	63
12	86	3890	617	1040	3790	7370	1780	5010	429	251	124	61
13	86	1520	655	836	3500	3870	1470	2630	496	223	132	62
14	86	1310	618	990	3130	1900	1350	2760	624	204	155	61
15	92	1390	574	772	1910	1550	1320	1790	696	177	141	55
16	100	1430	543	1510	1650	1420	1120	1410	1070	167	107	55
17	113	1300	513	2900	2080	1350	1460	1140	1030	152	104	55
18	132	941	494	3000	5160	1560	4250	956	1080	147	103	56
19	230	695	481	1960	e9430	3760	6030	867	1050	142	127	55
20	599	572	474	1620	e11400	8870	6160	806	914	144	127	57
21	478	540	466	1290	10000	e11300	4700	769	911	136	95	58
22	347	736	468	1030	7780	e14300	2780	737	706	129	82	62
23	262	1230	484	1730	5190	e15500	1780	651	751	124	86	67
24	213	1390	399	5610	5240	e12700	1500	625	757	121	90	61
25	192	1050	671	8910	7120	e9900	1370	623	787	119	90	59
26	196	830	1160	9250	7750	6650	1280	639	787	121	86	60
27	269	655	1370	7770	5820	3540	1190	666	640	127	89	61
28	403	595	1300	6530	3110	1780	971	793	511	135	89	59
29	566	559	1220	10500	---	1510	905	711	490	127	72	54
30	447	536	1230	13900	---	1420	873	680	470	126	69	57
31	330	---	1390	12700	---	1340	---	629	---	114	69	---
TOTAL	6424	44772	21470	103930	199300	148990	69649	53543	19079	6320	3133	1805
MEAN	207	1492	693	3353	7118	4806	2322	1727	636	204	101	60.2
MAX	599	6740	1390	13900	16400	15500	6160	6750	1080	445	155	73
MIN	86	267	399	621	1650	1340	873	623	309	114	69	54
CFSM	.19	1.38	.64	3.10	6.58	4.45	2.15	1.60	.59	.19	.09	.06
IN.	.22	1.54	.74	3.58	6.86	5.13	2.40	1.84	.66	.22	.11	.06

e Estimated.

YORK RIVER BASIN

01673000 PAMUNKEY RIVER NEAR HANOVER, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1971, BY WATER YEAR (WY) [UNREGULATED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	474	633	996	1242	1450	1712	1327	925	578	490	818	355
MAX	2492	1910	3782	3051	3288	3585	2743	2570	2493	2697	6381	1123
(WY)	1943	1953	1949	1949	1961	1962	1948	1946	1971	1945	1969	1944
MIN	60.6	112	166	207	552	816	523	321	223	91.9	63.1	30.3
(WY)	1942	1942	1966	1966	1968	1959	1968	1969	1970	1957	1966	1954

SUMMARY STATISTICS

WATER YEARS 1942 - 1971

ANNUAL MEAN	915	
HIGHEST ANNUAL MEAN	1606	1949
LOWEST ANNUAL MEAN	434	1954
HIGHEST DAILY MEAN	39300	Aug 23 1969
LOWEST DAILY MEAN	13	Sep 12 1966
ANNUAL SEVEN-DAY MINIMUM	15	Sep 7 1966
INSTANTANEOUS PEAK FLOW	40300	Aug 23 1969
INSTANTANEOUS PEAK STAGE	a31.12	Aug 23 1969
INSTANTANEOUS LOW FLOW	12	Sep 12 1966
ANNUAL RUNOFF (CFSM)	.85	
ANNUAL RUNOFF (INCHES)	11.50	
10 PERCENT EXCEEDS	1960	
50 PERCENT EXCEEDS	511	
90 PERCENT EXCEEDS	130	

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	735	887	1323	1738	1916	2132	1797	1204	820	549	451	509
MAX	3461	3505	3450	4334	7118	5430	5009	2821	4293	2747	2025	2939
(WY)	1980	1986	1997	1978	1998	1994	1984	1978	1972	1975	1985	1975
MIN	86.2	113	216	197	522	248	434	265	140	128	92.8	60.2
(WY)	1992	1992	1981	1981	1981	1981	1981	1991	1991	1977	1983	1998

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1972 - 1998

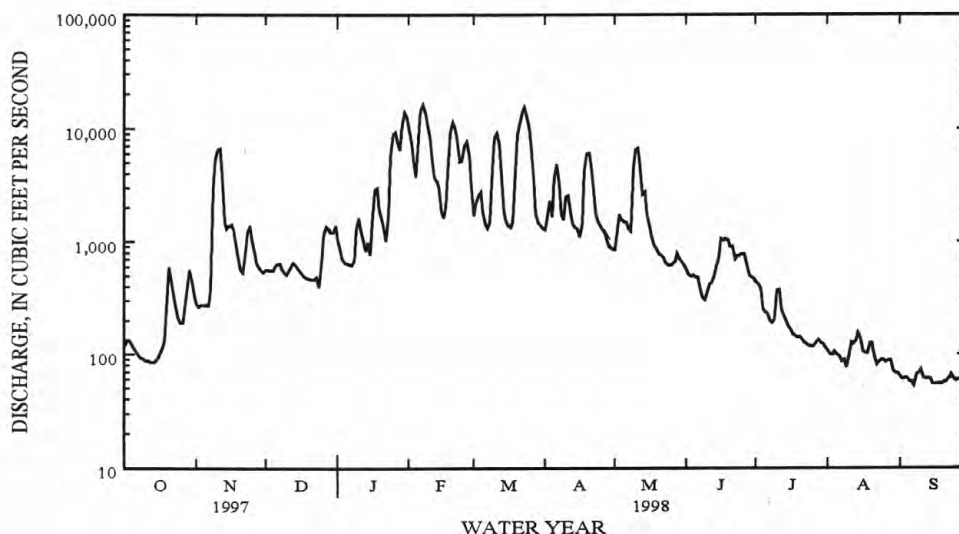
ANNUAL TOTAL	350640	678415	
ANNUAL MEAN	961	1859	1168
HIGHEST ANNUAL MEAN			1859
LOWEST ANNUAL MEAN			265
HIGHEST DAILY MEAN	6740	Nov 11	25000
LOWEST DAILY MEAN	74	bSep 6	47
ANNUAL SEVEN-DAY MINIMUM	78	Sep 4	52
INSTANTANEOUS PEAK FLOW			29900
INSTANTANEOUS PEAK STAGE			29.22
INSTANTANEOUS LOW FLOW			47
ANNUAL RUNOFF (CFSM)	.89	1.72	1.08
ANNUAL RUNOFF (INCHES)	12.07	23.35	14.68
10 PERCENT EXCEEDS	1950	6080	2730
50 PERCENT EXCEEDS	599	646	630
90 PERCENT EXCEEDS	113	86	124

a From floodmarks.

b Also Sept. 7, 1997.

c Also Sept. 29, 1998.

d Also Sept. 29, 30, 1998.



YORK RIVER BASIN

01673000 PAMUNKEY RIVER NEAR HANOVER, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1946, 1952, 1968 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1968 to January 1976, October 1991 to September 1994.

WATER TEMPERATURE: October 1945 to September 1946, April 1968 to January 1976.

COOPERATION.--Chemical data as noted were provided by the Virginia Division of Consolidated Laboratory Services (VDCLS) and reviewed by the U.S. Geological Survey.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00301)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
OCT 1997												
15...	1300	93	243	7.0	14.0	17.5	773	VDCLS	4.3	7.8	80	--
NOV												
08...	1430	3600	70	7.0	11.0	10.0	757	VDCLS	110	10.0	89	--
10...	1125	6550	60	6.3	13.5	11.0	764	VDCLS	49	9.6	87	--
*10...	1135	6550	60	6.3	13.5	11.0	764	VDCLS	37	9.6	87	--
13...	0900	1540	78	6.8	6.0	1.0	770	VDCLS	13	10.8	75	--
20...	0915	575	98	6.9	11.5	5.5	771	VDCLS	7.4	11.4	89	--
DEC												
22...	1030	461	104	6.8	4.0	5.5	776	VDCLS	6.4	12.4	97	--
JAN 1998												
10...	1030	1660	81	6.6	9.0	11.0	770	VDCLS	19	10.4	93	--
14...	1245	1010	86	6.5	3.0	8.0	778	VDCLS	9.8	11.2	93	--
17...	1000	2650	73	6.5	6.0	6.5	766	VDCLS	29	12.0	97	--
25...	1030	8900	51	6.7	6.0	6.6	737	VDCLS	41	11.3	95	--
28...	1230	6310	61	7.0	4.0	5.0	752	VDCLS	87	11.4	90	--
*28...	1245	6310	61	7.0	4.0	5.0	752	USGS	--	11.4	90	--
30...	1220	14100	44	6.7	12.4	7.0	772	VDCLS	41	13.4	109	--
FEB												
02...	1415	7670	54	--	11.0	6.0	773	VDCLS	32	11.5	91	--
06...	1330	14900	43	--	4.0	6.0	765	VDCLS	100	11.4	91	--
07...	1100	16700	46	6.3	7.0	6.5	766	VDCLS	38	11.4	92	--
18...	0930	4940	85	6.4	5.0	9.0	757	VDCLS	83	11.6	101	--
*18...	0945	4950	85	6.4	5.0	9.0	757	VDCLS	88	11.6	101	--
MAR												
18...	1315	1580	69	6.8	10.5	8.0	773	VDCLS	10	11.4	95	--
22...	0830	13600	41	6.7	4.0	8.5	729	VDCLS	56	10.7	96	--
APR												
17...	0930	1180	68	6.8	20.0	17.8	733	USGS	13	8.5	93	7.0
18...	1630	4720	52	6.7	20.5	16.5	750	VDCLS	25	8.6	89	--
20...	1315	6200	53	6.6	18.5	15.3	760	VDCLS	25	8.6	86	--
*20...	1330	6170	53	6.6	18.5	15.3	760	USGS	--	8.6	86	--
MAY												
04...	1300	1530	64	7.1	20.5	18.2	757	VDCLS	13	8.3	89	--
05...	1245	1540	67	6.8	20.0	18.0	763	VDCLS	10	8.3	88	--
19...	0830	870	74	6.6	23.0	21.0	769	VDCLS	--	7.7	86	--
*19...	0845	870	74	6.6	23.0	21.0	769	VDCLS	--	7.7	86	--
JUN												
22...	1030	701	83	6.9	29.0	25.0	770	VDCLS	6.0	6.8	82	--
*22...	1045	699	83	6.9	29.0	25.0	770	USGS	--	6.8	82	--
JUL												
15...	0755	187	150	7.1	25.0	24.5	755	VDCLS	5.4	5.8	71	--
AUG												
18...	1100	107	232	6.7	30.0	26.0	760	VDCLS	2.0	5.9	73	--
SEP												
21...	1330	59	297	7.1	31.5	25.0	760	VDCLS	1.0	5.5	67	--

* Replicate sample.

YORK RIVER BASIN

01673000 PAMUNKEY RIVER NEAR HANOVER, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530) **	RESIDUE FIXED NON FILTER- ABLE (MG/L) (00540) **	RESIDUE VOLA- TILE, SUS- PENDE (MG/L) (00535) **	NITRO- GEN DIS- SOLVED (MG/L AS N) (00602) **	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618) **
OCT 1997												
15...	--	--	--	--	--	--	7.6	<3	<3	<3	1.01	.573
NOV												
08...	--	--	--	--	--	--	12	202	166	36	.659	.198
10...	--	--	--	--	--	--	9.8	98	84	14	.434	.086
*10...	--	--	--	--	--	--	9.7	95	81	14	.444	.086
13...	--	--	--	--	--	--	12	22	18	4	.491	.198
20...	--	--	--	--	--	--	13	4	4	3	.536	.233
DEC												
22...	--	--	--	--	--	--	14	<3	<3	<3	.508	.259
JAN 1998												
10...	--	--	--	--	--	--	14	24	21	3	.370	.192
14...	--	--	--	--	--	--	13	6	4	<3	.452	.227
17...	--	--	--	--	--	--	14	66	56	10	.477	.194
25...	--	--	--	--	--	--	9.5	27	21	6	.536	.183
28...	--	--	--	--	--	--	9.4	140	122	18	.602	.297
*28...	--	--	--	--	--	--	8.5	92	74	18	.58	--
30...	--	--	--	--	--	--	7.9	24	19	5	.326	.132
FEB												
02...	--	--	--	--	--	--	9.6	9	7	<3	.723	.190
06...	--	--	--	--	--	--	7.0	23	18	5	.442	.143
07...	--	--	--	--	--	--	7.6	15	11	4	.432	.144
18...	--	--	--	--	--	--	9.5	92	78	14	.477	.220
*18...	--	--	--	--	--	--	9.6	93	78	15	.490	.222
MAR												
18...	--	--	--	--	--	--	11	14	12	<3	.645	.325
22...	--	--	--	--	--	--	7.2	23	19	4	.446	.168
APR												
17...	.77	2.4	.9	4.5	3.9	<.1	11	--	--	--	.444	.191
18...	--	--	--	--	--	--	1.9	63	51	12	.461	.158
20...	--	--	--	--	--	--	1.9	--	--	--	.560	.139
*20...	--	--	--	--	--	--	9.2	13	8	5	.44	--
MAY												
04...	--	--	--	--	--	--	12	19	16	<3	.416	.161
05...	--	--	--	--	--	--	12	22	18	4	.446	.172
19...	--	--	--	--	--	--	14	8	6	<3	.460	.252
*19...	--	--	--	--	--	--	13	9	7	<3	.483	.248
JUN												
22...	--	--	--	--	--	--	12	8	6	<3	.548	.320
*22...	--	--	--	--	--	--	11	4	--	8	.56	--
JUL												
15...	--	--	--	--	--	--	13	4	3	<3	.755	.450
AUG												
18...	--	--	--	--	--	--	10	3	<3	<3	1.20	.856
SEP												
21...	--	--	--	--	--	--	19	--	--	--	.903	.485

* Replicate sample.

** For these constituents, there are differences in the minimum constituent reporting levels between the analyzing agencies.

< Actual value is known to be less than the value shown.

YORK RIVER BASIN

01673000 PAMUNKEY RIVER NEAR HANOVER, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613) **	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631) **	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608) **	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	NITROGEN TOTAL SEDIMENT SUSP TOTAL AS N (MG/L) (00601)	PHOS- PHORUS TOTAL AS P (MG/L) (00665)	PHOS- PHORUS DIS- SOLVED AS P (MG/L) (00666) **	PHOS- PHORUS ORTHO, DIS- SOLVED AS P (MG/L) (00671)	PHOS TOTAL SEDIMENT SUSP TOTAL AS P (MG/L) (00667)	CARBON, INORG + ORGANIC SUSP. TOTAL AS C (MG/L) (00694)
OCT 1997											
15...	.003	.576	.007	--	--	.001	--	.111	.103	.005	.08
NOV											
08...	.004	.202	.004	--	--	.820	--	.022	.015	.109	8.21
10...	.002	.088	.004	--	--	.185	--	.029	.014	.049	1.79
*10...	.002	.088	.004	--	--	.368	--	.026	.012	.054	3.40
13...	.002	.200	.014	--	--	.076	--	.024	.013	.015	.83
20...	.002	.233	.012	--	--	.038	--	.026	.016	.012	.32
DEC											
22...	.018	.277	.013	--	--	.022	--	.033	.028	.010	.24
JAN 1998											
10...	.002	.194	.012	--	--	.080	--	.020	.018	.025	.81
14...	.003	.230	.010	--	--	.033	--	.020	.018	.011	.36
17...	.002	.196	.019	--	--	.207	--	.021	.016	.056	1.99
25...	.002	.185	.015	--	--	.134	--	.036	.015	.030	1.12
28...	.002	.299	.030	--	--	.377	--	.030	.024	.113	3.81
*28...	--	.29	.026	.7	.3	--	.09	.01	.018	--	--
30...	.002	.134	.008	--	--	.122	--	.016	.010	.042	1.11
FEB											
02...	.002	.192	.012	--	--	.080	--	.010	.009	.022	.66
06...	.002	.145	.015	--	--	.119	--	<.010	.013	.040	1.04
07...	.002	.146	.012	--	--	.090	--	.018	.011	.030	.82
18...	.002	.222	.034	--	--	.338	--	.040	.024	.094	3.24
*18...	.002	.224	.033	--	--	.299	--	.026	.025	.090	2.93
MAR											
18...	<.002	.325	.032	--	--	.057	--	.026	.012	.021	.61
22...	.002	.170	.033	--	--	.143	--	.022	.016	.045	1.15
APR											
17...	.003	.194	.020	--	--	.058	--	.028	.014	.021	.55
18...	.003	.161	.016	--	--	.171	--	.027	.012	.049	1.6
20...	.002	.141	.024	--	--	.097	--	.038	.012	.033	.85
*20...	--	.12	.017	.4	.3	--	.06	.03	.011	--	--
MAY											
04...	.002	.163	.014	--	--	.066	--	.026	.015	.021	.67
05...	<.002	.172	.016	--	--	.068	--	.021	.014	.021	.81
19...	<.002	.252	.027	--	--	.034	--	.027	.025	.015	.32
*19...	<.002	.248	.033	--	--	.035	--	.027	.022	.015	.34
JUN											
22...	.004	.324	.016	--	--	.035	--	.034	.024	.011	.43
*22...	--	.31	.008	.4	.2	--	.03	.03	.021	--	--
JUL											
15...	--	.450	.020	--	--	.036	--	.053	.050	.012	.27
AUG											
18...	.006	.862	.016	--	--	.124	--	.135	.120	.010	.21
SEP											
21...	.006	.491	--	--	--	.022	--	.173	.143	.011	.16

* Replicate sample.

** For these constituents, there are differences in the minimum constituent reporting levels between the analyzing agencies.

< Actual value is known to be less than the value shown.



1940's Innovative Technologies

YORK RIVER BASIN

01673550 TOTOPOTOMOY CREEK NEAR STUDLEY, VA

LOCATION.--Lat 37°39'44", long 77°15'29", Hanover County, Hydrologic Unit 02080106, on right bank at downstream side of bridge on State Highway 606, 2.0 mi southeast of Studley, 2.4 mi downstream from Hawes millrace, and 4.1 mi upstream from mouth.

DRAINAGE AREA.--26.2 mi².

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 38.36 ft above sea level.

REMARKS.--Records good except those for periods of doubtful gage-height record, July 13-23, Aug. 3-6, 16-24, and Sept. 3-30, which are fair. Maximum discharge, 802 ft³/s, from rating curve extended above 783 ft³/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 160 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 24	1430	359	6.78	Mar. 20	0300	452	7.37
Jan. 29	0030	*585	*7.83	Mar. 22	0100	364	6.82
Feb. 5	0730	*585	*7.83	Apr. 18	0930	202	5.34
Feb. 18	1430	267	5.98	Jul. 10	0230	247	5.79
Mar. 10	0130	434	7.28	Jul. 11	0300	378	6.93

Minimum discharge, 0.08 ft³/s, Oct. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

					DAY	OCT	NOV	DEC	JAN	FEB	MAR	
					JUN	JUL	AUG	SEP				
					APR	MAY						
1	3.3	8.8	19	19	51	50	49	29	15	15	8.5	3.0
2	2.1	13	25	16	42	49	50	51	14	12	8.6	3.0
3	1.6	13	18	15	37	60	47	64	12	11	e6.5	e2.9
4	1.8	11	17	15	168	55	84	41	11	8.9	e5.2	e4.5
5	1.2	9.2	16	13	521	46	134	53	11	8.4	e4.8	e3.5
6	.81	8.4	15	13	303	41	74	45	11	7.7	e3.9	e3.0
7	1.4	41	14	13	154	40	57	31	11	7.1	4.0	e2.1
8	.79	104	12	24	98	51	52	54	10	7.5	4.1	e4.2
9	.31	68	12	54	71	260	67	66	10	9.9	6.0	e4.6
10	.71	51	14	29	58	299	78	51	18	189	6.5	e4.0
11	.67	28	16	20	54	96	58	38	22	257	10	e3.1
12	1.5	19	17	17	54	67	46	37	19	43	8.1	e2.4
13	.85	15	15	17	53	58	43	39	19	e20	6.4	e2.1
14	.98	22	13	19	44	54	42	36	18	e18	5.5	e1.8
15	4.0	34	12	23	40	51	43	30	32	e16	4.7	e1.6
16	4.1	25	12	40	38	47	41	27	74	e18	e4.3	e1.3
17	5.3	17	11	35	91	46	95	25	62	e16	e4.0	e1.1
18	8.6	14	11	24	225	93	166	22	26	e13	e3.6	e1.1
19	12	13	11	22	105	274	71	20	17	e13	e3.2	e1.3
20	14	13	11	21	66	351	79	18	16	e12	e3.0	e1.4
21	12	13	10	19	58	289	63	18	18	e11	e2.7	e1.4
22	9.2	66	12	17	51	260	48	17	20	e10	e2.5	e3.0
23	6.7	86	18	77	75	121	43	17	103	e9.5	e2.3	e2.7
24	5.7	29	19	282	145	88	40	18	63	9.3	e2.0	e2.3
25	8.9	20	21	131	104	74	35	20	27	8.4	1.9	e2.0
26	12	17	24	49	68	66	32	19	19	7.9	1.8	e1.7
27	21	15	24	40	57	63	30	20	15	7.7	3.5	e1.6
28	22	14	36	289	53	60	29	27	16	10	6.4	e1.5
29	15	13	32	448	---	56	28	26	25	9.9	10	e1.4
30	10	14	26	147	---	53	28	21	19	7.5	6.1	e5.8
31	7.9	---	23	69	---	51	---	18	---	7.4	3.8	---
TOTAL	196.42	814.4	536	2017	2884	3269	1752	998	753	801.1	153.9	75.4
MEAN	6.34	27.1	17.3	65.1	103	105	58.4	32.2	25.1	25.8	4.96	2.51
MAX	22	104	36	448	521	351	166	66	103	257	10	5.8
MIN	.31	8.4	10	13	37	40	28	17	10	7.1	1.8	1.1
CFSM	.24	1.04	.66	2.48	3.93	4.02	2.23	1.23	.96	.99	.19	.10
IN.	.28	1.16	.76	2.86	4.09	4.64	2.49	1.42	1.07	1.14	.22	.11

e Estimated.

YORK RIVER BASIN

01673550 TOTOPOTOMOY CREEK NEAR STUDLEY, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1998, BY WATER YEAR (WY)

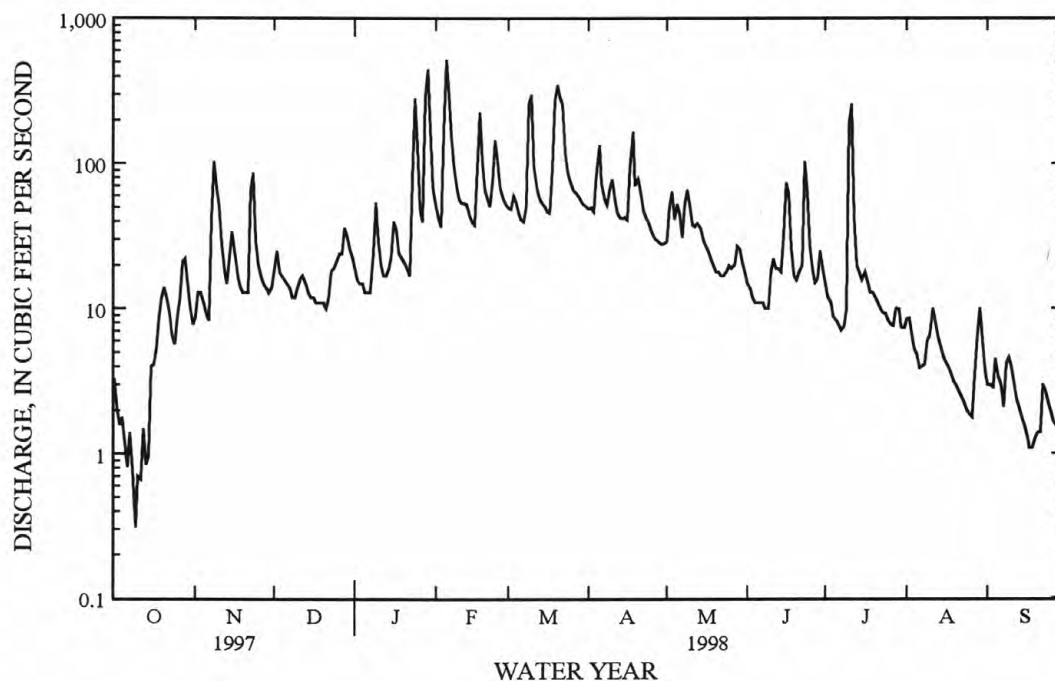
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	14.4	23.6	26.0	36.9	39.5	51.6	42.7	30.2	18.2	12.6	13.7	9.68
MAX	54.0	80.8	56.0	114	103	127	106	68.4	43.2	25.8	49.7	44.4
(WY)	1980	1986	1997	1978	1998	1984	1984	1978	1979	1998	1985	1979
MIN	2.93	6.44	10.5	10.3	15.5	12.7	12.3	8.46	4.95	5.73	.92	1.18
(WY)	1982	1982	1981	1981	1991	1981	1985	1985	1986	1995	1995	1997

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1978 - 1998	
ANNUAL TOTAL	7279.11		14250.22			
ANNUAL MEAN	19.9		39.0		26.5	
HIGHEST ANNUAL MEAN					45.1	1984
LOWEST ANNUAL MEAN					11.8	1981
HIGHEST DAILY MEAN	104	Nov 8	521	Feb 5	612	Mar 29 1984
LOWEST DAILY MEAN	.25	Sep 7	.31	Oct 9	e.03	Aug 31 1995
ANNUAL SEVEN-DAY MINIMUM	.32	Sep 3	.83	Oct 8	e.09	Aug 25 1995
INSTANTANEOUS PEAK FLOW			585	aJan 29	802	Aug 19 1985
INSTANTANEOUS PEAK STAGE			7.83	aJan 29	8.77	Feb 25 1979
INSTANTANEOUS LOW FLOW			.08	Oct 8	(b)	Sep 1 1995
ANNUAL RUNOFF (CFSM)	.76		1.49		1.01	
ANNUAL RUNOFF (INCHES)	10.34		20.23		13.75	
10 PERCENT EXCEEDS	39		77		52	
50 PERCENT EXCEEDS	16		18		17	
90 PERCENT EXCEEDS	1.4		2.7		4.3	

a Also Feb. 5, 1998.

b Minimum discharge observed, 0.025 ft³/s.

e Estimated.



YORK RIVER BASIN

01673800 PO RIVER NEAR SPOTSYLVANIA, VA

LOCATION.--Lat 38°10'17", long 77°35'42", Spotsylvania County, Hydrologic Unit 02080105, on right bank at upstream side of bridge on State Highway 208, 1.6 mi north of Snell, 2.0 mi south of Spotsylvania, 4.8 mi downstream from Gladys Run, and 4.9 mi upstream from U.S. Highway 1.

DRAINAGE AREA.--77.4 mi².

PERIOD OF RECORD.--October 1962 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 183.76 ft above sea level. Prior to Sept. 30, 1964, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods of doubtful gage-height record, July 17 to Aug. 5, and Aug. 23 to Sept. 30, which are fair. Maximum discharge, 10,900 ft³/s, from rating curve extended above 3,400 ft³/s. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 900 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 8	2000	1,550	9.22	Feb. 24	2000	1,100	7.95
Jan. 24	1730	1,530	9.19	Mar. 10	0230	944	7.43
Jan. 29	1200	2,730	11.55	Mar. 20	0630	1,070	7.86
Feb. 5	1730	3,850	13.17	Mar. 21	2330	*4,070	*13.44
Feb. 18	1700	3,010	12.00	Jun. 23	2330	1,410	8.88

Minimum discharge, 0.50 ft³/s, Oct. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.7	16	39	60	129	118	81	74	26	40	e4.3	e1.8
2	5.2	29	40	49	104	128	79	186	24	34	e4.6	e1.7
3	3.2	35	34	47	91	223	72	116	22	28	e4.0	e1.6
4	2.4	24	39	48	521	165	195	86	21	24	e3.4	e1.6
5	2.0	18	51	46	3040	121	353	75	20	22	e3.2	e1.5
6	1.8	15	45	43	2320	104	150	68	20	20	3.3	e1.4
7	1.6	226	37	48	803	94	110	61	19	18	3.0	e1.4
8	1.3	1080	32	70	467	164	95	229	18	20	2.9	e1.8
9	1.4	608	31	92	333	707	182	436	18	34	3.1	e1.4
10	1.4	158	32	68	181	715	364	189	25	34	4.0	e1.3
11	1.1	86	45	52	140	204	183	119	30	26	9.6	e1.1
12	1.0	58	48	45	209	139	123	166	32	20	5.7	e.98
13	.86	46	40	44	182	116	100	293	39	16	4.1	e.90
14	.72	69	36	47	124	106	91	146	44	13	3.8	e.82
15	1.0	110	33	57	103	97	87	93	41	12	4.2	e.77
16	1.3	68	31	226	91	86	80	70	56	10	4.1	e.70
17	2.2	49	30	188	302	82	341	57	98	e8.5	4.4	e.72
18	36	39	30	106	2330	138	576	49	63	e7.5	5.3	e1.2
19	58	35	28	87	1330	555	186	45	39	e7.0	4.7	e1.7
20	27	33	28	80	256	860	279	41	32	e6.8	3.9	e1.4
21	15	33	27	71	237	2250	191	38	29	e6.1	3.5	e1.4
22	10	91	27	61	174	2420	125	36	30	e6.4	3.3	e1.5
23	7.4	125	37	334	278	457	103	34	383	e7.8	e3.1	e1.5
24	5.6	78	46	1190	906	215	91	33	514	e6.4	e3.0	e1.4
25	8.5	58	100	519	567	158	79	33	120	e5.7	e2.7	e1.3
26	15	48	127	184	195	133	72	33	64	e5.3	e2.6	e1.2
27	49	42	77	131	144	120	66	33	45	e5.0	e2.5	e1.1
28	48	37	88	881	124	110	62	39	38	e4.7	e2.3	e1.0
29	26	34	82	2420	---	100	58	38	49	e4.4	e2.2	e.90
30	17	32	74	727	---	92	55	33	50	e4.2	e2.1	e.82
31	13	---	72	187	---	85	---	29	---	e4.0	e2.0	---
TOTAL	371.68	3380	1486	8208	15681	11062	4629	2978	2009	460.8	114.9	37.91
MEAN	12.0	113	47.9	265	560	357	154	96.1	67.0	14.9	3.71	1.26
MAX	58	1080	127	2420	3040	2420	576	436	514	40	9.6	1.8
MIN	.72	15	27	43	91	82	55	29	18	4.0	2.0	.70
CFSM	.15	1.46	.62	3.42	7.24	4.61	1.99	1.24	.87	.19	.05	.02
IN.	.18	1.62	.71	3.94	7.54	5.32	2.22	1.43	.97	.22	.06	.02

e Estimated.

YORK RIVER BASIN

01673800 PO RIVER NEAR SPOTSYLVANIA, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	44.7	66.7	87.8	121	140	157	115	78.8	52.3	29.4	25.2	25.8
MAX	275	278	210	326	560	566	397	221	490	145	207	268
(WY)	1980	1994	1997	1978	1998	1994	1983	1972	1972	1984	1969	1975
MIN	.24	.85	11.1	10.4	37.3	25.2	27.1	19.1	4.62	1.68	.25	.26
(WY)	1992	1992	1966	1981	1968	1981	1981	1986	1986	1963	1963	1991

SUMMARY STATISTICS

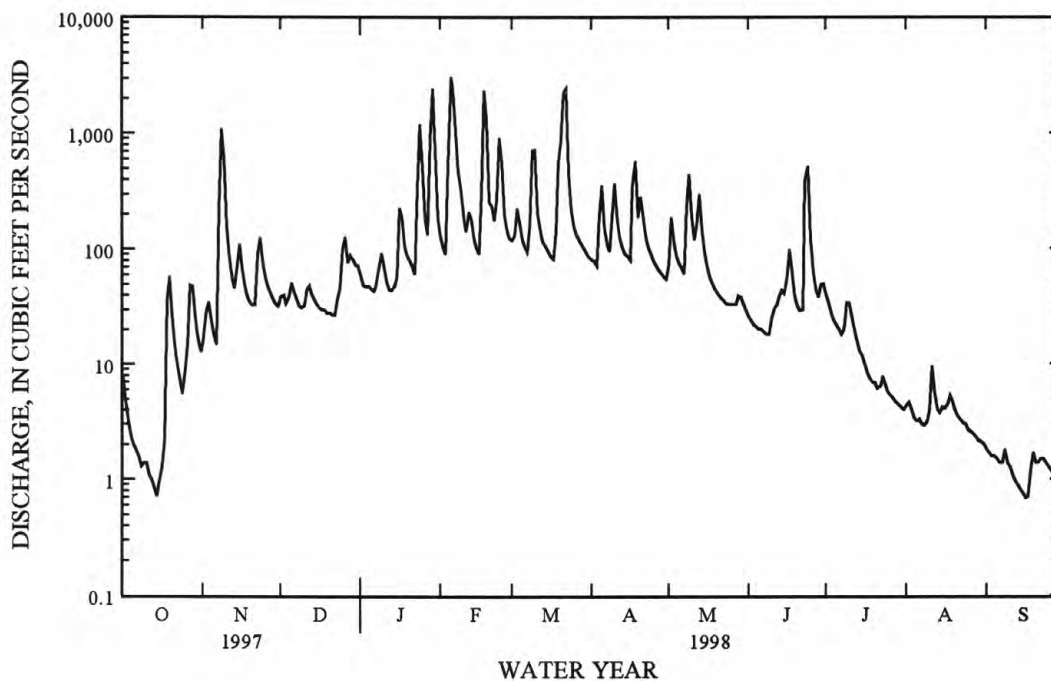
FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1963 - 1998

ANNUAL TOTAL	24839.28	50418.29	
ANNUAL MEAN	68.1	138	78.4
HIGHEST ANNUAL MEAN			164
LOWEST ANNUAL MEAN			18.7
HIGHEST DAILY MEAN	1080	3040	8160
LOWEST DAILY MEAN	.72 Oct 14	e.70 Sep 16	.04 Sep 23 1991
ANNUAL SEVEN-DAY MINIMUM	1.1 Oct 10	e.86 Sep 11	.06 Oct 6 1986
INSTANTANEOUS PEAK FLOW		4070	10900
INSTANTANEOUS PEAK STAGE		13.44 Mar 21	19.03 Jun 22 1972
INSTANTANEOUS LOW FLOW		.50 Oct 14	.03 Sep 23 1991
ANNUAL RUNOFF (CFSM)	.88	1.78	1.01
ANNUAL RUNOFF (INCHES)	11.94	24.23	13.76
10 PERCENT EXCEEDS	141	265	152
50 PERCENT EXCEEDS	37	41	36
90 PERCENT EXCEEDS	3.2	1.7	2.9

e Estimated.



YORK RIVER BASIN

01674000 MATTAPONI RIVER NEAR BOWLING GREEN, VA

LOCATION.--Lat 38°03'42", long 77°23'10", Caroline County, Hydrologic Unit 02080105, on right bank 0.1 mi upstream from bridge on State Highway 605, 2.2 mi northwest of Bowling Green, 2.4 mi upstream from South River, and 7.1 mi downstream from confluence of Matta and Poni Rivers.

DRAINAGE AREA.--257 mi².

PERIOD OF RECORD.--September 1942 to current year.

REVISED RECORDS.--WSP 1382: 1943, 1945(M), 1948(M), 1949, 1953(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 85.14 ft above sea level. Prior to Aug. 17, 1978, gage located on left bank at same datum.

REMARKS.--Records good except those for periods of doubtful gage-height record, Feb. 12, 13, and July 15, 16, 27, 28, which are fair. Some diurnal fluctuation from gristmill upstream on Po River. Maximum discharge, 13,400 ft³/s, from rating curve extended above 8,100 ft³/s. No flow at times in September and October 1954 and September 1966. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1928 reached a stage of 19.5 ft based on relative difference in stage between this flood and flood of Oct. 17, 1942, at Milford 4 mi downstream, discharge, 15,000 ft³/s, from rating curve extended above 8,100 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 25	1400	2,740	10.70	Feb. 25	1700	2,690	10.57
Jan. 30	0300	5,340	13.42	Mar. 10	1900	2,690	10.57
Feb. 6	1300	*6,550	*14.45	Mar. 22	1800	5,550	13.60
Feb. 19	1700	4,950	13.05	Apr. 19	0700	2,210	9.94

Minimum discharge, 1.3 ft³/s, Sept. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.0	22	118	235	1250	621	383	239	108	103	13	4.2
2	3.3	28	119	200	763	578	406	340	93	81	13	3.9
3	4.1	36	113	176	554	651	375	468	84	65	12	3.7
4	3.9	42	115	156	621	792	415	489	76	54	11	3.5
5	3.4	35	137	145	2750	807	623	467	71	47	11	3.2
6	3.1	28	148	136	6310	622	1010	379	69	42	10	2.9
7	2.8	79	135	131	5110	510	839	306	74	37	10	2.7
8	2.6	338	114	158	3090	505	558	420	70	47	9.7	2.7
9	2.4	781	103	216	1990	823	510	673	65	95	9.8	2.6
10	2.4	1630	98	222	1340	2310	638	1360	86	90	11	2.3
11	2.3	895	118	204	956	2210	929	1080	109	70	12	2.1
12	2.2	408	130	172	e730	1260	868	680	114	50	12	1.8
13	2.1	211	131	153	e640	805	603	563	112	39	11	1.8
14	2.2	198	116	151	768	608	474	669	141	33	11	1.7
15	2.7	261	103	159	615	513	420	638	173	e32	10	1.6
16	3.3	268	95	262	492	456	385	456	196	e29	9.7	1.5
17	3.2	240	91	379	480	409	495	339	252	25	9.3	1.6
18	15	186	87	473	869	427	1070	273	297	23	9.2	2.5
19	47	148	84	408	4190	658	2030	228	231	21	8.6	3.0
20	64	124	82	310	3440	1720	1280	198	164	21	8.1	2.8
21	42	112	82	264	1510	3060	1020	176	118	19	7.2	2.5
22	25	161	81	234	976	5130	884	160	95	19	7.2	2.8
23	15	218	98	336	825	4440	626	146	98	26	7.0	2.7
24	11	265	112	891	1060	2090	479	135	233	23	6.8	2.6
25	10	257	165	2570	2450	1140	400	141	439	20	6.2	2.2
26	13	210	252	2010	2060	812	346	140	492	18	6.0	2.1
27	35	169	291	1010	1150	644	309	137	226	e17	6.1	2.3
28	53	141	293	878	777	553	278	160	119	e17	6.3	2.1
29	55	125	280	3390	---	496	257	162	98	16	5.8	2.2
30	39	114	278	4990	---	448	240	145	112	15	5.7	1.7
31	27	---	262	2870	---	411	---	123	---	14	4.7	---
TOTAL	501.0	7730	4431	23889	47766	36509	19150	11890	4615	1208	280.4	75.3
MEAN	16.2	258	143	771	1706	1178	638	384	154	39.0	9.05	2.51
MAX	64	1630	293	4990	6310	5130	2030	1360	492	103	13	4.2
MIN	2.1	22	81	131	480	409	240	123	65	14	4.7	1.5
CFSM	.06	1.00	.56	3.00	6.64	4.58	2.48	1.49	.60	.15	.04	.01
IN.	.07	1.12	.64	3.46	6.91	5.28	2.77	1.72	.67	.17	.04	.01

e Estimated.

YORK RIVER BASIN

01674000 MATTAPONI RIVER NEAR BOWLING GREEN, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	126	172	272	368	417	486	385	257	141	105	116	81.1
MAX	860	721	1041	1174	1706	1540	1164	707	1111	853	939	714
(WY)	1943	1973	1949	1978	1998	1994	1983	1972	1972	1945	1955	1975
MIN	1.44	6.04	33.1	34.7	113	79.8	104	56.5	17.5	9.24	1.18	.43
(WY)	1992	1992	1966	1981	1968	1981	1968	1955	1977	1977	1977	1954

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

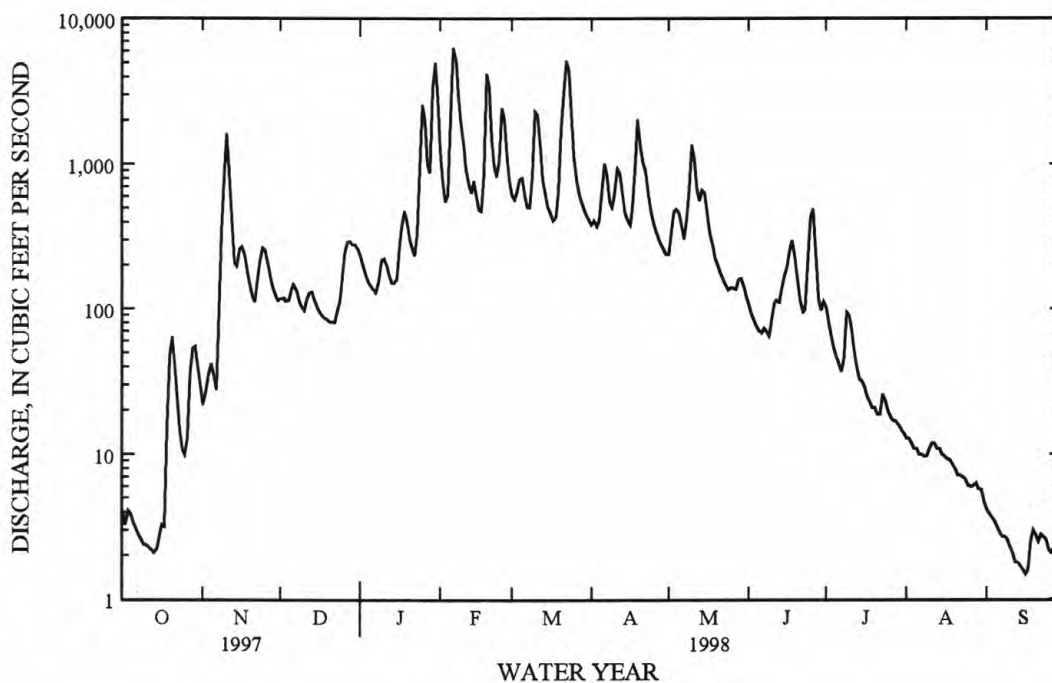
WATER YEARS 1943 - 1998

ANNUAL TOTAL	75607.2	158044.7	
ANNUAL MEAN	207	433	
HIGHEST ANNUAL MEAN			243
LOWEST ANNUAL MEAN			516
HIGHEST DAILY MEAN	1630	Nov 10	61.0
LOWEST DAILY MEAN	2.1	Oct 13	12200
ANNUAL SEVEN-DAY MINIMUM	2.3	Oct 8	.00
INSTANTANEOUS PEAK FLOW			.00
INSTANTANEOUS PEAK STAGE			13400
INSTANTANEOUS LOW FLOW			c18.95
ANNUAL RUNOFF (CFSM)	.81	1.68	.00
ANNUAL RUNOFF (INCHES)	10.94	22.88	.95
10 PERCENT EXCEEDS	486	1010	12.85
50 PERCENT EXCEEDS	118	141	548
90 PERCENT EXCEEDS	5.8	3.2	127

a Many days in September and October 1954, and September 1966.

b Many days in September and October 1954.

c From floodmark in well.



YORK RIVER BASIN

01674500 MATTAPONI RIVER NEAR BEULAHVILLE, VA

LOCATION.--Lat 37°53'02", long 77°09'55", King William County, Hydrologic Unit 02080105, on right bank, 10 ft upstream from bridge on State Highway 628, 2.4 mi north of Beulahville, and 3.3 mi downstream from Maracossic Creek.

DRAINAGE AREA.--601 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1941 to September 1987, October 1989 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 12.43 ft above sea level (levels by Virginia Department of Transportation). Prior to Oct. 14, 1942, nonrecording gage. Oct. 14, 1942, to Aug. 8, 1974, water-stage recorder on right bank at site 0.6 mi upstream at same datum. Aug. 8, 1974, water-stage recorder on left bank 80 ft downstream from previous site, at same datum. Sept. 8, 1987, to Aug. 31, 1989, nonrecording gage on downstream side of bridge at same datum. Sept. 1, 1989, to Mar. 31, 1994, water-stage recorder on upstream side of bridge at same datum. Apr. 1, 1994, to Sept. 28, 1995, nonrecording gage on downstream side of bridge at same datum. Sept. 29, 1995, water-stage recorder at present site and datum.

REMARKS.--Records fair. Diurnal fluctuation at times during low flow caused by gristmill on Po River. Maximum discharge, 16,900 ft³/s, from rating curve extended above 11,760 ft³/s. Minimum gage height, 0.94 ft, Sept. 14, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,560 ft³/s, Feb. 9, gage height, 18.42 ft; minimum 11 ft³/s, Sept. 16-17, gage height, 1.52 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58	175	355	e560	4570	2530	1280	694	397	297	59	30
2	54	181	352	506	4540	2050	1200	757	360	272	54	29
3	49	190	364	451	3620	1740	1250	905	332	237	50	e26
4	46	192	353	408	2780	1630	1360	1050	299	202	47	23
5	40	191	363	377	2820	1580	1540	1170	281	178	48	23
6	37	186	381	358	3530	1570	1690	1260	267	165	49	21
7	39	235	385	344	4330	1570	1790	1400	e250	151	42	18
8	38	510	359	378	6000	1510	1860	1370	e240	143	38	18
9	37	895	324	498	6360	1590	1920	1320	e230	146	37	21
10	34	1190	305	559	5340	2130	1850	1530	286	175	58	18
11	33	1350	323	549	4110	2570	1680	1840	385	215	187	16
12	33	1440	348	495	3080	e2850	1610	2120	453	190	121	16
13	32	1580	368	452	2420	e3130	1630	2240	437	159	82	14
14	29	1540	352	443	1960	2800	1670	2100	435	137	68	13
15	32	880	325	441	1710	2260	1580	1800	502	119	59	12
16	44	679	301	526	1600	1780	1300	1560	626	107	52	12
17	49	606	292	656	1540	1470	1180	1410	675	101	49	11
18	75	528	276	800	1610	1310	1380	1130	588	104	47	14
19	112	452	263	857	1690	1490	1580	769	584	93	45	21
20	157	398	255	870	1770	2020	1830	605	542	e95	40	22
21	213	357	248	753	2380	2640	2200	528	445	e90	38	19
22	206	457	245	622	3520	3430	2470	480	373	e82	36	18
23	166	561	284	714	3290	4480	2320	445	334	83	34	29
24	136	611	318	1320	2700	5160	2050	425	447	80	31	30
25	116	e600	387	1760	2310	5180	1800	420	612	76	29	24
26	116	565	455	1960	2150	4290	1440	419	644	78	28	21
27	158	498	542	2270	2370	3220	1070	432	713	72	29	19
28	198	432	625	2900	2690	2490	878	474	611	68	37	18
29	237	382	649	3320	---	2010	795	503	388	66	44	16
30	225	355	648	3250	---	1710	731	493	316	63	38	16
31	197	---	613	3630	---	1460	---	449	---	59	33	---
TOTAL	2996	18216	11658	33027	86790	75650	46934	32098	13052	4103	1609	588
MEAN	96.6	607	376	1065	3100	2440	1564	1035	435	132	51.9	19.6
MAX	237	1580	649	3630	6360	5180	2470	2240	713	297	187	30
MIN	29	175	245	344	1540	1310	731	419	230	59	28	11
CFSM	.16	1.01	.63	1.77	5.16	4.06	2.60	1.72	.72	.22	.09	.03
IN.	.19	1.13	.72	2.04	5.37	4.68	2.91	1.99	.81	.25	.10	.04

e Estimated.

YORK RIVER BASIN

01674500 MATTAPONI RIVER NEAR BEULAHVILLE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1987, 1989 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	321	433	635	818	945	1096	971	659	411	293	331	231
MAX	1801	1461	2115	2418	3100	2483	3291	1912	3217	2119	2409	1287
(WY)	1980	1973	1949	1978	1998	1979	1984	1978	1972	1945	1969	1975
MIN	26.1	49.9	96.8	131	286	229	288	130	46.3	43.5	20.3	17.4
(WY)	1942	1992	1966	1981	1992	1981	1995	1942	1991	1966	1977	1980

SUMMARY STATISTICS

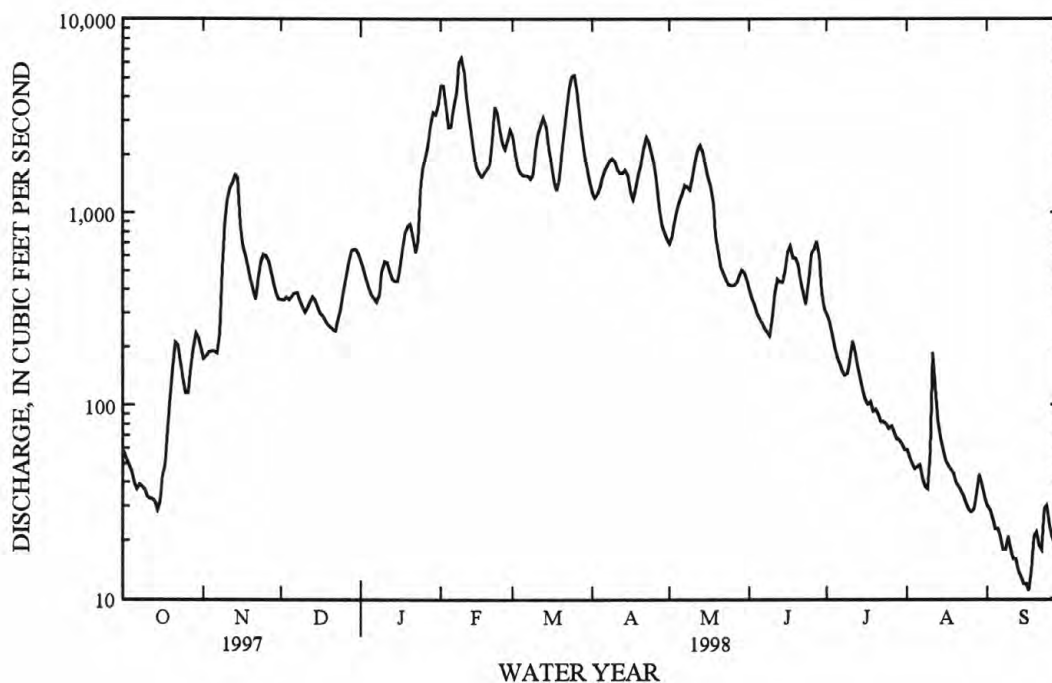
FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1942 - 1987
1989 - 1998

ANNUAL TOTAL	194488	326721	
ANNUAL MEAN	533	895	593
HIGHEST ANNUAL MEAN			1210
LOWEST ANNUAL MEAN			185
HIGHEST DAILY MEAN	1970	Mar 9	6360
LOWEST DAILY MEAN	29	Oct 14	11
ANNUAL SEVEN-DAY MINIMUM	33	Oct 9	13
INSTANTANEOUS PEAK FLOW			6560
INSTANTANEOUS PEAK STAGE			18.42
INSTANTANEOUS LOW FLOW			11
ANNUAL RUNOFF (CFSM)	.89	1.49	.99
ANNUAL RUNOFF (INCHES)	12.04	20.22	13.41
10 PERCENT EXCEEDS	1150	2370	1340
50 PERCENT EXCEEDS	387	432	378
90 PERCENT EXCEEDS	51	32	65

a Also Sept. 17, 1998.



YORK RIVER BASIN

01674500 MATTAPONI RIVER NEAR BEULAHVILLE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968, 1969, 1979 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1991 to September 1994.

WATER TEMPERATURE: October 1991 to September 1994.

COOPERATION.--Chemical data as noted were provided by the Virginia Division of Consolidated Laboratory Services (VDCLS) and reviewed by the U.S. Geological Survey.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM HG) (00025)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)
OCT 1997										
15...	1130	28	58	6.8	14.0	17.0	776	VDCLS	4.2	7.6
NOV										
08...	1145	473	56	6.1	10.0	10.4	747	VDCLS	11	9.2
10...	0900	1140	56	5.9	8.0	11.0	764	VDCLS	16	9.5
*10...	0910	1150	56	5.9	8.0	11.0	764	VDCLS	21	9.5
15...	0900	897	61	5.5	6.0	7.5	766	VDCLS	8.3	9.4
20...	1145	394	59	6.8	13.5	4.0	771	VDCLS	8.0	12.2
DEC										
22...	0900	247	60	7.0	2.0	4.0	777	VDCLS	5.6	13.4
JAN 1998										
10...	0830	555	59	7.2	4.0	11.0	772	VDCLS	12	9.8
14...	1130	442	59	6.5	3.0	6.5	780	VDCLS	9.0	11.6
17...	0845	631	56	6.8	5.0	5.0	766	VDCLS	8.1	12.0
25...	0900	1740	43	6.1	5.0	5.4	737	VDCLS	14	11.8
28...	1015	2810	41	6.6	3.5	4.0	758	VDCLS	26	11.4
*28...	1030	2810	41	6.6	3.5	4.0	758	USGS	--	11.4
30...	0955	3240	40	6.3	6.9	2.8	772	VDCLS	15	--
FEB										
02...	1130	4620	36	7.4	8.0	5.0	775	VDCLS	27	11.8
07...	0930	4070	36	6.9	5.0	5.0	766	VDCLS	19	11.2
08...	0930	5860	35	5.7	4.0	5.0	766	VDCLS	26	11.3
19...	1445	1690	43	--	18.0	10.0	762	VDCLS	8.4	10.2
MAR										
18...	1100	1300	43	7.4	6.0	7.0	773	VDCLS	6.8	11.4
23...	0830	4340	33	6.3	4.5	6.3	740	VDCLS	15	10.3
26...	1230	4270	33	5.6	22.0	9.0	778	VDCLS	18	10.4
*26...	1245	4270	33	5.6	22.0	9.0	778	VDCLS	18	10.4
APR										
17...	0755	1140	41	6.3	17.8	18.0	733	VDCLS	6.2	9.2
17...	0800	1140	41	6.3	17.8	18.0	733	USGS	6.2	9.2
19...	1245	1560	38	6.5	16.5	17.0	758	VDCLS	7.2	7.8
22...	0930	2470	38	6.7	15.5	14.0	770	VDCLS	9.0	7.9
*22...	0945	2470	38	6.7	15.5	14.0	770	USGS	--	7.9
MAY										
05...	0945	1150	43	5.9	18.0	18.0	763	VDCLS	8.0	7.8
*05...	1000	1150	43	5.9	18.0	18.0	763	USGS	--	7.8
07...	0945	1390	42	6.1	20.5	18.0	766	VDCLS	15	7.4
19...	1000	771	48	6.9	26.0	21.0	769	VDCLS	--	7.3
*19...	1015	771	48	6.9	26.0	21.0	769	VDCLS	--	7.3
JUN										
22...	0900	364	50	6.4	27.0	24.0	770	VDCLS	7.0	7.1
*22...	0915	364	50	6.4	27.0	24.0	770	USGS	--	7.1
JUL										
15...	0950	120	52	6.6	26.5	23.7	755	VDCLS	4.6	6.5
AUG										
18...	0915	46	56	6.2	14.5	24.0	760	VDCLS	3.4	6.3
SEP										
21...	1030	29	58	7.2	27.0	23.0	760	VDCLS	1.9	5.8

* Replicate sample.

YORK RIVER BASIN

01674500 MATTAPONI RIVER NEAR BEULAHVILLE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)
OCT 1997										
15...	77	--	--	--	--	--	--	--	--	5.4
NOV										
08...	84	--	--	--	--	--	--	--	--	8.2
10...	86	--	--	--	--	--	--	--	--	8.2
*10...	86	--	--	--	--	--	--	--	--	8.2
15...	78	--	--	--	--	--	--	--	--	9.5
20...	92	--	--	--	--	--	--	--	--	6.2
DEC										
22...	100	--	--	--	--	--	--	--	--	11
JAN 1998										
10...	88	--	--	--	--	--	--	--	--	9.1
14...	92	--	--	--	--	--	--	--	--	9.5
17...	93	--	--	--	--	--	--	--	--	8.9
25...	97	--	--	--	--	--	--	--	--	7.1
28...	87	--	--	--	--	--	--	--	--	7.9
*28...	87	--	--	--	--	--	--	--	--	7.1
30...	--	--	--	--	--	--	--	--	--	7.0
FEB										
02...	91	--	--	--	--	--	--	--	--	6.6
07...	87	--	--	--	--	--	--	--	--	5.5
08...	88	--	--	--	--	--	--	--	--	5.7
19...	90	--	--	--	--	--	--	--	--	6.4
MAR										
18...	93	--	--	--	--	--	--	--	--	5.6
23...	86	--	--	--	--	--	--	--	--	5.5
26...	88	--	--	--	--	--	--	--	--	5.5
*26...	88	--	--	--	--	--	--	--	--	5.4
APR										
17...	--	--	--	--	--	--	--	--	--	4.7
17...	101	2.4	1.4	2.6	1.1	4.2	3.5	<.1	<.01	.90
19...	81	--	--	--	--	--	--	--	--	5.3
22...	76	--	--	--	--	--	--	--	--	6.1
*22...	76	--	--	--	--	--	--	--	--	6.1
MAY										
05...	82	--	--	--	--	--	--	--	--	7.1
*05...	82	--	--	--	--	--	--	--	--	6.5
07...	78	--	--	--	--	--	--	--	--	6.1
19...	81	--	--	--	--	--	--	--	--	8.2
*19...	81	--	--	--	--	--	--	--	--	8.4
JUN										
22...	83	--	--	--	--	--	--	--	--	9.7
*22...	83	--	--	--	--	--	--	--	--	8.0
JUL										
15...	78	--	--	--	--	--	--	--	--	7.7
AUG										
18...	75	--	--	--	--	--	--	--	--	7.2
SEP										
21...	68	--	--	--	--	--	--	--	--	6.5

* Replicate sample.

< Actual value is known to be less than the value shown.

YORK RIVER BASIN

01674500 MATTAPONI RIVER NEAR BEULAHVILLE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L) (00530)	RESIDUE FIXED NON FILTER- ABLE (MG/L) (00540)	RESIDUE VOLA- TILE, SUS- PENDED (MG/L) (00535)	NITRO- GEN DIS- SOLVED (MG/L) AS N (00602)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L) AS N (00618)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L) AS N (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L) AS N (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) AS N (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L) AS N (00625)
		**	**	**	**	**	**	**	**	
OCT 1997										
15...	--	<3	<3	<3	.289	.038	.002	.038	.004	--
NOV										
08...	--	25	19	6	.310	.065	.002	.065	.010	--
10...	--	26	19	7	.274	.021	<.002	.021	<.004	--
*10...	--	24	19	5	.390	.021	<.002	.021	.004	--
15...	--	8	6	3	.406	.023	.002	.025	.004	--
20...	--	4	<3	<3	.371	.075	.002	.075	.011	--
DEC										
22...	--	3	<3	<3	.410	.181	<.002	.181	.020	--
JAN 1998										
10...	--	7	6	<3	.387	.134	.002	.136	.027	--
14...	--	4	<3	<3	.364	.141	.002	.143	.010	--
17...	--	12	8	<3	.429	.162	.002	.164	.023	--
25...	--	13	10	3	.453	.173	<.002	.173	.015	--
28...	--	7	4	3	.394	.091	<.002	.091	.007	--
*28...	--	1	--	7	.42	--	--	.078	<.002	.4
30...	--	7	4	3	.340	.117	<.002	.117	<.004	--
FEB										
02...	--	8	6	<3	.285	.064	<.002	.064	.004	--
07...	--	7	5	<3	.479	.140	<.002	.140	.008	--
08...	--	8	5	3	.420	.114	<.002	.114	.006	--
19...	--	6	4	<3	.453	.174	.002	.176	<.004	--
MAR										
18...	--	6	5	<3	.628	.206	<.002	.206	.014	--
23...	--	5	3	<3	.329	.101	<.002	.101	.007	--
26...	--	5	4	<3	.300	.076	<.002	.076	.004	--
*26...	--	6	4	<3	.341	.076	.002	.076	.005	--
APR										
17...	--	--	--	--	.44	.117	<.002	.117	.021	--
17...	38	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	.508	.096	.002	.098	.035	--
22...	--	5	3	<3	.422	.049	<.002	.049	.017	--
22...	--	2	--	4	.47	--	--	.038	.017	.6
MAY										
05...	--	13	10	<3	.448	.134	<.002	.134	.044	--
*05...	--	4	--	8	.45	--	--	.11	.037	.5
07...	--	12	10	<3	.499	.143	.003	.146	.060	--
19...	--	<3	<3	<3	.455	.166	.003	.169	.054	--
*19...	--	8	6	<3	.527	.169	.003	.172	.057	--
JUN										
22...	--	4	3	<3	.484	.190	<.002	.190	.027	--
*22...	--	<1	--	9	.53	--	--	.18	.014	.4
JUL										
15...	--	<3	<3	<3	.402	.160	--	.160	.020	--
AUG										
18...	--	<3	<3	<3	.404	.095	<.002	.095	.022	--
SEP										
21...	--	<3	<3	<3	.379	.057	<.002	.057	--	--

* Replicate sample.

** For these constituents, there are differences in the minimum constituent reporting levels between the analyzing agencies.

< Actual value is known to be less than the value shown.

YORK RIVER BASIN

01674500 MATTAPONI RIVER NEAR PEULAHVILLE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGN TOTAL SEDIMNT SUSP TOTAL AS N (MG/L) (00601)	PHOS- PHORUS TOTAL TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS TOTAL SEDIMNT SUSP TOTAL AS P (MG/L) (00667)	CARBON, INORG + ORGANIC SUSP. TOTAL (MG/L AS C) (00694)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
OCT 1997									
15...	--	.020	--	.026	.016	.004	.24	--	--
NOV									
08...	--	.140	--	.019	.012	.022	1.57	--	--
10...	--	.122	--	.016	.014	.027	1.21	--	--
*10...	--	.163	--	.032	.013	.027	1.51	--	--
15...	--	.048	--	.023	.012	.012	.56	--	--
20...	--	.043	--	.018	.009	.017	.36	--	--
DEC									
22...	--	.022	--	.027	.020	.013	.31	--	--
JAN 1998									
10...	--	.048	--	.020	.016	.022	.58	--	--
14...	--	.033	--	.030	.024	.015	.40	--	--
17...	--	.062	--	.018	.018	.021	.75	--	--
25...	--	.094	--	.020	.016	.029	.89	--	--
28...	--	.086	--	.030	.014	.028	.77	--	--
*28...	.3	--	.03	<.01	.011	--	--	--	--
30...	--	.068	--	.020	.008	.022	1.14	--	--
FEB									
02...	--	.073	--	.010	.008	.024	.67	--	--
07...	--	.068	--	.019	.010	.020	.59	--	--
08...	--	.077	--	.013	.009	.026	.67	--	--
19...	--	.055	--	.020	.006	.016	.50	--	--
MAR									
18...	--	.038	--	.018	.007	.014	.42	--	--
23...	--	.055	--	.016	.008	.020	.47	--	--
26...	--	.060	--	.015	.007	.016	.46	--	--
*26...	--	.052	--	.017	.007	.017	.42	--	--
APR									
17...	--	.05	--	.023	.012	.020	.53	--	--
17..	--	--	--	--	--	--	--	540	94
19...	--	.070	--	.024	.014	.027	.76	--	--
22...	--	.057	--	.032	.013	.022	.54	--	--
*22...	.4	--	.06	.03	.012	--	--	--	--
MAY									
05...	--	.065	--	.018	.017	.025	.80	--	--
*05...	.3	--	.03	<.01	.010	--	--	--	--
07...	--	.073	--	.021	.022	.037	.79	--	--
19...	--	.053	--	.023	.026	.024	.59	--	--
*19...	--	.047	--	.035	.025	.024	.55	--	--
JUN									
22...	--	.034	--	.039	.024	.014	.39	--	--
*22...	.3	--	.04	.03	.021	--	--	--	--
JUL									
15...	--	.022	--	.016	.020	.009	.22	--	--
AUG									
18...	--	.124	--	.033	.015	.015	.21	--	--
SEP									
21...	--	.018	--	.034	.016	.006	.13	--	--

* Replicate sample.

** For these constituents, there are differences in the minimum constituent reporting levels between the analyzing agencies.

< Actual value is known to be less than the value shown.

SOUTH ATLANTIC SLOPE BASINS

JAMES RIVER BASIN

02011400 JACKSON RIVER NEAR BACOVA, VA

LOCATION.--Lat 38°02'32", long 79°52'54", Bath County, Hydrologic Unit 02080201, on left bank 0.1 mi downstream from ford, 1.8 mi upstream from Back Creek, and 2.2 mi southwest of Bacova.

DRAINAGE AREA.--158 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,639.20 ft above sea level.

REMARKS.--Records good except for period with ice effect, Jan. 2, which is fair. U.S. Army Corps of Engineers satellite water temperature, precipitation and gage-height telemeter at station. Maximum discharge, 30,000 ft³/s, from rating curve extended above 1,300 ft³/s on basis of slope-area measurements at gage heights 8.88 ft, 11.40 ft, 13.88 ft, and 22.25 ft. Minimum gage height, 2.42 ft, Aug. 18, 19, 1988.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1972, reached a stage of 11.40 ft, discharge, 4,800 ft³/s, and flood of Dec. 26, 1973, reached a stage of 13.88 ft, discharge, 7,560 ft³/s, from rating curve extended as explained above.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1330	*4,180	*10.87	Mar. 19	0530	1,520	7.42
Feb. 17	2230	2,830	9.34	Mar. 21	1030	3,600	10.25
Mar. 9	1830	1,560	7.49	Apr. 19	2300	2,250	8.56

Minimum discharge, 18 ft³/s, Sept. 15-17, 18-19, 24-25, 27-28, 29, 30, gage height, 2.78 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	74	52	57	327	443	223	191	73	104	31	21
2	29	162	47	e55	295	399	224	235	66	83	30	21
3	28	122	44	64	301	343	191	233	62	71	29	21
4	27	94	48	72	485	292	365	314	58	66	28	20
5	26	77	50	120	495	257	427	353	58	71	31	20
6	26	61	46	233	502	224	347	338	59	61	28	20
7	26	119	43	296	436	201	298	300	55	56	27	20
8	25	246	40	2710	383	274	269	398	52	68	30	25
9	25	220	40	1410	373	1010	611	372	51	69	31	26
10	25	147	50	733	356	1000	747	310	57	57	34	22
11	25	111	86	484	393	629	537	276	56	51	48	20
12	24	86	78	362	653	471	413	244	55	48	36	21
13	24	73	70	309	754	375	338	215	58	46	31	20
14	24	78	65	250	620	328	298	187	61	45	30	19
15	25	105	59	246	484	280	267	167	227	45	49	19
16	24	91	54	398	407	239	236	153	148	43	53	19
17	24	79	51	348	1450	212	264	143	125	44	54	19
18	24	70	49	293	1940	295	225	128	97	42	65	19
19	24	64	46	247	1200	1160	924	117	132	41	39	19
20	24	58	44	215	908	1190	1480	110	169	40	32	19
21	23	57	43	181	761	2930	806	105	120	38	29	21
22	23	73	45	164	589	1520	582	98	97	37	27	20
23	23	78	47	412	566	921	472	98	83	39	26	20
24	25	68	48	544	546	659	396	108	74	39	25	19
25	41	63	69	453	471	501	315	102	65	35	24	18
26	41	59	75	350	427	401	271	88	59	34	24	19
27	47	57	74	301	396	337	251	114	62	34	23	19
28	41	54	71	369	402	292	217	113	86	35	23	18
29	32	50	67	401	---	259	191	90	135	33	22	19
30	29	49	70	428	---	232	178	79	124	32	22	19
31	27	---	65	380	---	210	---	73	---	32	22	---
TOTAL	863	2745	1736	12885	16920	17884	12363	5852	2624	1539	1003	602
MEAN	27.8	91.5	56.0	416	604	577	412	189	87.5	49.6	32.4	20.1
MAX	47	246	86	2710	1940	2930	1480	398	227	104	65	26
MIN	23	49	40	55	295	201	178	73	51	32	22	18
CFSM	.18	.58	.35	2.63	3.82	3.65	2.61	1.19	.55	.31	.20	.13
IN.	.20	.65	.41	3.03	3.98	4.21	2.91	1.38	.62	.36	.24	.14

e Estimated.

JAMES RIVER BASIN

02011400 JACKSON RIVER NEAR BACOVA, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	87.1	130	168	252	264	377	284	232	137	61.8	58.4	65.5
MAX	367	762	419	703	604	767	814	508	388	130	282	342
(WY)	1980	1986	1997	1996	1998	1993	1987	1989	1982	1989	1984	1979
MIN	19.7	27.5	36.1	31.6	101	68.0	81.1	61.1	37.1	29.7	20.6	20.1
(WY)	1989	1995	1995	1981	1978	1981	1988	1977	1977	1988	1988	1998

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1975 - 1998	
ANNUAL TOTAL	48801		77016			
ANNUAL MEAN	134		211		176	
HIGHEST ANNUAL MEAN					244	
LOWEST ANNUAL MEAN					86.9	
HIGHEST DAILY MEAN	1620		2930		8820	
LOWEST DAILY MEAN	23		18		16	
ANNUAL SEVEN-DAY MINIMUM	24		19		17	
INSTANTANEOUS PEAK FLOW			4180		30000	
INSTANTANEOUS PEAK STAGE			10.87		c22.25	
INSTANTANEOUS LOW FLOW			18		15	
ANNUAL RUNOFF (CFSM)	.85		1.34		1.11	
ANNUAL RUNOFF (INCHES)	11.49		18.13		15.14	
10 PERCENT EXCEEDS	271		484		374	
50 PERCENT EXCEEDS	84		73		91	
90 PERCENT EXCEEDS	28		24		29	

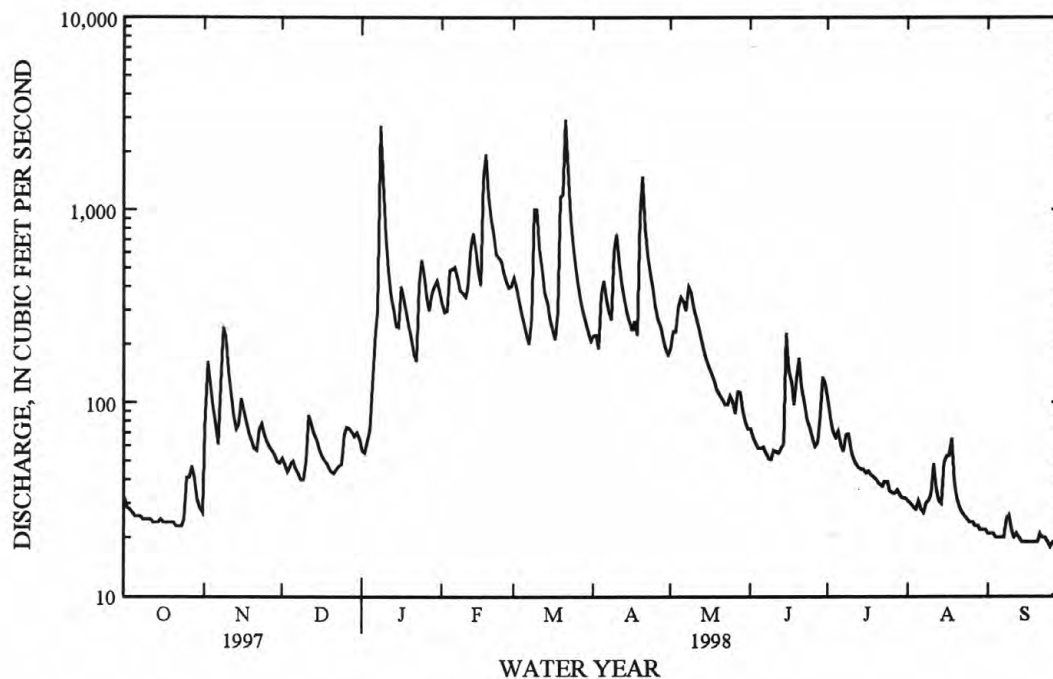
a Also Oct. 22, 23, 1997.

b Also Sept. 28, 1998.

c From floodmark.

d Also Sept. 16-19, 24, 25, 27-30, 1998.

f Also Aug. 18, 19, and Sept. 16, 17, 23, 1988.



JAMES RIVER BASIN

02011400 JACKSON RIVER NEAR BACOVA, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: March 1978 to September 1981, October 1982 to current year.

INSTRUMENTATION.--Water-temperature recorder March 1978 to September 1981, and since October 1982.

REMARKS.--Interruption in record due to instrument malfunction. Some record in prior years fragmentary due to instrument malfunction. Records represent water temperature at sensor within 0.5°C. Temperature at the sensor was compared with the average for the river by temperature cross section on June 28, 1995. No variation of temperature was found within the cross section.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 31.0°C, July 16, 1988; minimum recorded, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 27.8°C, Aug. 26; minimum, 0.0°C on several days during winter period.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	16.5	14.3	15.5	11.3	9.2	10.1	8.5	6.0	7.8	.0	.0	.0
2	15.8	12.1	13.8	11.7	9.9	10.6	6.0	4.2	5.2	.0	.0	.0
3	15.8	11.7	13.6	9.9	8.5	9.0	4.9	3.5	4.2	.7	.0	.1
4	16.9	12.4	14.8	8.5	6.4	7.6	6.4	4.9	5.7	2.5	.0	1.1
5	18.9	15.0	16.7	7.4	4.9	6.1	5.7	3.2	4.7	4.2	1.8	2.9
6	---	---	---	6.7	4.2	5.8	3.2	1.1	2.3	6.0	4.2	5.0
7	---	---	---	7.4	6.4	7.0	1.1	.4	.9	8.5	6.0	7.1
8	19.7	15.8	17.6	7.4	6.7	7.0	2.5	.7	1.7	9.9	8.5	9.5
9	19.7	16.5	17.9	8.1	7.1	7.6	2.8	1.8	2.3	9.5	7.4	8.6
10	19.7	16.9	18.1	8.5	6.7	7.7	3.5	2.8	3.1	7.4	5.7	6.2
11	18.9	15.4	16.9	7.4	6.7	7.2	4.6	3.5	4.0	6.4	4.9	5.6
12	18.5	14.6	16.6	7.1	6.4	6.7	4.2	3.5	4.0	5.7	5.3	5.6
13	19.3	15.8	17.2	6.4	4.9	5.5	3.5	2.1	2.8	6.7	5.3	5.8
14	17.3	15.4	16.4	6.4	4.9	5.7	2.5	1.1	1.9	5.3	3.9	4.7
15	16.5	13.9	15.0	6.0	4.9	5.5	1.8	.0	.8	4.2	3.9	4.1
16	14.3	11.3	13.0	4.9	3.5	4.0	2.1	.0	.9	6.4	4.2	5.4
17	12.8	11.0	12.0	4.6	2.1	3.3	2.1	.0	1.0	6.0	5.3	5.9
18	12.8	11.0	12.0	3.5	1.1	2.4	2.1	.0	1.2	5.3	3.9	4.7
19	13.9	12.1	12.7	3.5	.7	2.3	2.8	.4	1.7	4.9	3.9	4.3
20	12.8	10.2	11.7	4.2	1.4	2.9	2.8	.7	1.8	4.9	3.2	4.1
21	11.3	9.2	9.9	3.9	3.2	3.5	3.5	1.8	2.7	3.5	1.8	2.9
22	10.2	7.8	9.0	6.7	3.9	5.6	3.2	2.8	3.1	4.2	2.8	3.5
23	9.2	5.3	7.4	7.4	6.0	6.6	4.6	3.2	3.8	4.9	3.5	4.4
24	8.1	6.4	7.1	6.4	3.5	4.8	4.6	3.9	4.2	5.7	4.6	5.2
25	9.5	7.4	8.6	3.9	1.4	2.8	5.3	4.2	4.8	4.9	3.9	4.3
26	9.5	9.2	9.4	3.2	1.8	2.4	6.4	4.9	5.4	4.6	3.2	3.8
27	9.9	8.5	9.4	5.3	2.5	3.8	4.9	2.5	3.2	3.9	1.8	3.4
28	8.8	6.4	7.7	5.3	2.8	4.2	3.5	1.8	2.6	2.5	.7	1.6
29	9.2	6.0	7.5	7.1	4.9	6.2	1.8	.0	.5	5.3	2.5	3.7
30	9.2	5.7	7.7	8.5	7.1	7.9	.4	.0	.1	5.3	4.2	4.6
31	9.5	6.0	8.1	---	---	---	.4	.0	.0	5.3	3.5	4.2
MONTH	---	---	---	11.7	.7	5.7	8.5	.0	2.9	9.9	.0	4.3

JAMES RIVER BASIN

02011400 JACKSON RIVER NEAR BACOVA, VA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	4.6	2.1	3.3	8.5	7.4	7.9	16.5	13.5	14.7	14.3	12.8	13.5
2	4.2	2.1	3.1	7.8	6.4	7.3	15.4	11.3	13.2	13.9	12.4	13.1
3	4.6	3.5	4.1	6.4	4.9	5.7	12.8	10.2	11.6	15.0	12.1	13.6
4	4.2	1.8	2.8	6.0	4.6	5.1	11.3	8.5	10.1	15.4	12.4	13.7
5	4.2	2.8	3.5	7.4	4.2	5.6	11.0	7.4	9.1	15.0	12.4	13.5
6	3.9	2.8	3.4	8.1	4.2	6.1	11.7	7.8	9.7	15.0	12.4	13.6
7	5.7	3.5	4.3	8.5	6.4	7.5	11.3	8.5	9.9	13.5	12.8	13.2
8	6.7	4.2	5.2	8.5	8.1	8.3	13.5	9.2	11.1	14.3	12.4	13.2
9	6.0	3.5	4.6	9.5	8.5	9.0	13.5	11.7	12.3	15.0	13.1	14.0
10	6.4	3.5	4.7	8.5	4.6	6.0	11.7	9.9	10.4	16.1	12.8	14.1
11	4.9	3.9	4.5	4.6	2.8	3.4	11.3	8.1	9.6	15.0	13.5	14.2
12	5.7	4.9	5.3	4.6	1.8	2.9	12.1	8.1	10.0	14.3	13.1	13.6
13	6.4	4.9	5.4	4.6	1.8	3.2	13.1	8.8	10.8	17.3	12.4	14.7
14	6.0	4.6	5.1	7.1	3.9	5.0	12.8	11.0	11.8	20.5	14.3	17.1
15	5.7	3.5	4.6	---	---	---	15.0	10.6	12.7	21.7	15.4	18.5
16	4.6	4.2	4.5	---	---	---	14.6	12.4	13.4	21.7	16.5	19.1
17	6.0	4.6	5.4	5.7	4.2	5.0	16.9	12.4	14.1	22.9	17.7	20.2
18	6.4	4.9	5.7	7.1	4.9	5.8	13.9	11.3	12.5	22.5	16.5	19.6
19	6.4	6.0	6.3	9.2	6.4	7.6	11.3	9.9	10.3	22.1	16.5	19.4
20	7.1	6.4	6.7	8.8	7.4	7.9	12.1	8.8	10.4	22.9	13.7	19.0
21	6.7	6.0	6.2	7.4	6.4	7.0	12.1	9.5	11.0	22.5	13.7	20.4
22	---	---	---	6.7	5.3	5.9	11.7	9.9	10.7	21.7	16.9	19.4
23	7.4	4.6	6.2	6.4	4.6	5.5	11.0	9.2	9.9	20.1	16.9	18.4
24	6.0	4.2	5.1	6.7	4.6	5.7	13.5	9.2	11.2	19.7	16.5	18.1
25	7.8	4.9	6.3	7.1	4.9	6.1	13.9	11.3	12.6	22.1	17.3	19.7
26	8.1	5.3	6.6	10.6	6.0	8.2	15.0	11.7	13.3	21.7	18.9	20.3
27	7.8	6.7	7.2	13.5	8.8	10.9	15.0	12.4	13.4	20.5	17.7	18.4
28	8.8	6.7	7.7	15.4	11.3	13.1	15.8	10.2	12.9	21.7	16.9	18.9
29	---	---	---	15.8	11.7	13.4	15.0	11.0	13.1	23.3	18.1	20.7
30	---	---	---	16.1	11.3	13.6	15.0	12.4	13.7	24.6	19.7	21.9
31	---	---	---	17.3	12.4	14.6	---	---	---	25.1	20.5	22.8
MONTH	---	---	---	---	---	---	16.9	7.4	11.6	25.1	12.1	17.1

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	25.1	21.3	23.0	23.8	19.3	21.5	25.5	21.3	23.2	25.1	20.5	22.6
2	22.9	19.3	21.3	22.9	19.7	21.3	25.1	19.7	22.3	24.6	20.5	22.5
3	24.2	19.3	21.6	24.2	19.7	22.0	25.1	19.3	22.1	22.5	19.7	21.2
4	22.1	19.3	20.7	22.5	20.5	21.5	25.5	19.3	22.4	23.8	19.3	21.6
5	20.1	17.7	18.6	25.1	20.1	22.3	26.0	20.1	23.1	24.6	20.1	22.0
6	18.5	16.5	17.5	25.1	21.3	22.9	26.4	20.9	23.5	24.2	19.3	21.6
7	16.9	15.0	15.8	26.0	21.7	23.8	26.0	20.9	23.5	24.2	20.5	22.1
8	18.1	13.5	15.7	26.0	22.9	24.3	23.8	22.1	22.6	22.1	18.9	20.8
9	16.9	15.4	16.1	26.0	22.5	24.2	26.4	21.7	23.7	18.9	16.9	17.6
10	20.9	15.0	17.7	26.9	22.5	24.6	25.1	22.5	23.7	20.1	15.4	17.4
11	20.1	18.5	19.4	26.0	21.7	24.0	25.1	21.7	23.3	20.9	15.4	18.0
12	22.5	18.9	20.3	25.5	20.5	23.0	26.0	22.1	23.8	22.1	17.3	19.4
13	22.5	19.7	21.0	25.5	21.7	23.8	25.1	21.7	23.3	22.5	16.9	19.7
14	20.9	19.3	20.2	25.1	22.5	24.1	23.8	21.7	22.7	23.3	18.1	20.5
15	21.3	16.9	19.6	25.5	22.5	24.1	22.9	21.3	22.1	24.2	18.9	21.4
16	23.3	18.9	20.8	26.0	22.5	24.3	22.1	20.9	21.5	24.2	20.1	22.0
17	21.7	18.9	20.4	26.0	22.9	24.4	23.3	20.5	21.8	23.8	20.5	22.1
18	22.5	18.5	20.5	24.6	21.7	23.3	23.8	21.3	22.5	24.2	20.5	22.1
19	21.3	19.3	20.4	27.3	22.5	24.7	25.1	21.3	23.0	23.3	21.3	22.3
20	22.9	18.1	20.5	26.0	23.3	24.3	24.2	19.7	22.0	24.6	20.5	22.3
21	23.3	18.5	21.1	26.4	22.1	24.2	25.1	20.1	22.4	22.9	21.3	22.1
22	24.2	20.5	22.4	27.3	22.9	25.0	25.5	20.9	23.1	23.3	20.9	21.9
23	25.1	20.9	23.1	25.5	23.3	24.6	26.4	22.1	24.0	21.3	18.1	19.8
24	26.0	21.7	23.7	26.0	22.5	24.2	26.4	21.7	24.0	19.7	15.0	17.3
25	26.4	22.1	24.3	25.5	22.5	24.0	27.3	22.5	24.8	19.3	15.8	17.6
26	27.3	22.9	25.1	26.0	22.1	23.9	27.8	23.8	25.5	21.7	17.7	19.6
27	25.5	22.9	24.2	23.8	21.3	22.4	26.9	23.3	25.0	22.9	19.3	20.9
28	24.6	21.7	23.3	26.0	21.3	23.2	27.3	22.5	24.7	22.9	19.7	21.3
29	24.2	21.3	22.8	26.0	21.7	23.8	25.5	22.5	23.9	22.5	18.5	20.4
30	22.9	20.9	21.9	26.9	22.1	24.5	26.0	21.3	23.5	22.5	18.5	20.4
31	---	---	---	26.0	23.3	24.6	25.1	21.3	23.2	---	---	---
MONTH	27.3	13.5	20.8	27.3	19.3	23.6	27.8	19.3	23.2	25.1	15.0	20.7

JAMES RIVER BASIN

02011460 BACK CREEK NEAR SUNRISE, VA

LOCATION.--Lat 38°14'43", long 79°46'08", Bath County, Hydrologic Unit 02080201, on right bank 900 ft upstream from bridge on State Highway 600, 0.8 mi upstream from Gap Run, and 4.8 mi northeast of Sunrise.

DRAINAGE AREA.--60.1 mi².

PERIOD OF RECORD.--June 1974 to current year.

REVISED RECORDS.--WDR VA-85-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,200.02 ft above sea level (levels by Virginia Department of Transportation). July 2 to Sept. 6, 1990, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Virginia Power gage-height transmitter at station, receiver at Back Creek Dam. Maximum discharge, 17,500 ft³/s, from rating curve extended above 3,800 ft³/s. Minimum gage height, 0.07 ft, July 21, 1977. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 850 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	0730	*5,360	*6.55	Mar. 19	0345	906	3.48
Feb. 17	1930	2,160	4.74	Mar. 21	0615	2,070	4.67
Mar. 9	1415	1,340	4.00	Apr. 19	2345	1,190	3.83

Minimum discharge, 2.0 ft³/s, Sept. 6-7, gage height, 0.47 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.3	52	31	36	94	266	82	61	18	60	4.7	3.0
2	7.9	105	27	38	87	189	78	75	16	41	4.3	2.8
3	6.8	77	24	47	83	143	76	123	15	31	4.0	2.6
4	6.0	68	26	91	98	109	145	176	14	26	3.7	2.6
5	5.3	48	25	193	100	88	195	193	14	23	3.5	2.4
6	5.1	35	23	275	99	71	164	177	15	19	3.3	2.2
7	4.8	130	22	347	92	62	131	156	13	17	3.1	2.2
8	4.6	235	21	2590	87	250	114	152	12	28	3.3	8.5
9	4.3	208	20	777	99	931	195	137	12	24	3.9	7.9
10	4.2	130	29	328	127	604	303	125	15	18	6.3	5.3
11	4.0	87	83	200	166	296	220	111	15	15	19	4.3
12	4.0	62	89	141	317	191	167	96	16	13	9.3	3.7
13	4.0	47	73	112	320	141	133	79	21	12	6.8	3.4
14	3.9	72	61	92	225	116	113	67	23	13	6.2	3.0
15	4.3	111	49	96	154	93	95	58	71	13	11	2.8
16	4.2	90	43	178	119	77	82	52	83	11	11	2.5
17	4.2	67	38	185	942	67	94	48	64	11	19	2.4
18	4.4	52	34	140	1130	143	92	41	45	10	21	2.3
19	4.4	45	30	107	529	706	337	37	124	9.2	14	2.3
20	4.2	40	28	83	351	600	762	34	167	8.6	10	4.4
21	4.2	37	26	65	290	1500	341	32	91	7.9	8.1	4.4
22	4.3	64	26	57	212	635	219	29	58	7.3	6.7	3.8
23	4.2	90	26	192	184	343	165	31	42	6.9	5.8	3.2
24	5.0	77	27	347	154	231	130	32	32	6.9	5.1	2.8
25	14	60	42	222	134	172	103	29	26	6.3	4.8	2.6
26	16	52	59	150	160	141	85	24	21	5.9	4.4	2.5
27	25	46	64	119	175	121	79	28	28	5.7	4.3	2.4
28	18	38	57	111	225	106	65	26	42	5.8	3.9	2.5
29	14	34	51	99	---	93	56	21	117	5.4	3.6	2.6
30	11	32	52	124	---	81	53	19	88	5.0	3.4	2.6
31	9.4	---	43	109	---	73	---	18	---	4.8	3.1	---
TOTAL	225.0	2291	1249	7651	6753	8639	4874	2287	1318	470.7	220.6	100.0
MEAN	7.26	76.4	40.3	247	241	279	162	73.8	43.9	15.2	7.12	3.33
MAX	25	235	89	2590	1130	1500	762	193	167	60	21	8.5
MIN	3.9	32	20	36	83	62	53	18	12	4.8	3.1	2.2
CFSM	.12	1.27	.67	4.11	4.01	4.64	2.70	1.23	.73	.25	.12	.06
IN.	.14	1.42	.77	4.74	4.18	5.35	3.02	1.42	.82	.29	.14	.06

JAMES RIVER BASIN

02011460 BACK CREEK NEAR SUNRISE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	44.3	84.7	110	149	150	207	138	129	63.1	27.1	25.4	25.5
MAX	256	512	249	426	326	394	330	391	174	69.5	88.9	180
(WY)	1977	1986	1997	1996	1994	1993	1987	1996	1995	1994	1996	1996
MIN	4.08	9.58	20.1	8.49	45.4	54.5	45.9	31.8	13.2	6.81	4.41	2.48
(WY)	1992	1995	1981	1981	1978	1988	1986	1991	1994	1988	1987	1983

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

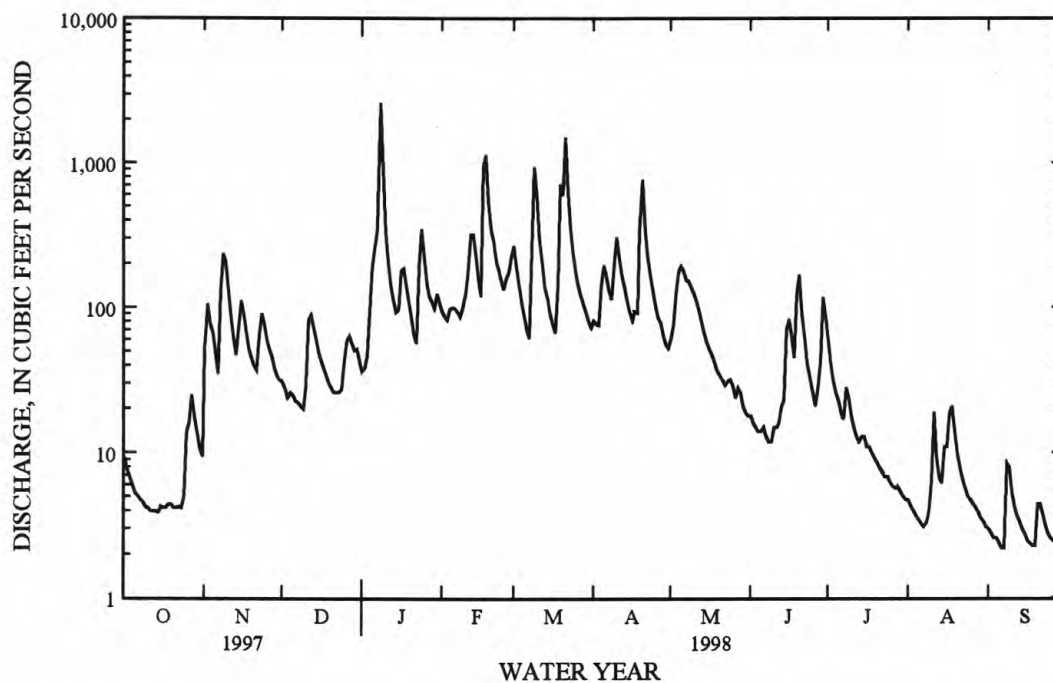
FOR 1998 WATER YEAR

WATER YEARS 1974 - 1998

ANNUAL TOTAL	27301.0	36078.3	96.1	
ANNUAL MEAN	74.8	98.8	155	1996
HIGHEST ANNUAL MEAN			51.6	1988
LOWEST ANNUAL MEAN			6280	Nov 4 1985
HIGHEST DAILY MEAN	1070 Mar 3	2590 Jan 8	1.7	Sep 14 1980
LOWEST DAILY MEAN	3.1 Sep 27	2.2 aSep 6	2.1	Sep 6 1983
ANNUAL SEVEN-DAY MINIMUM	3.5 Sep 21	2.5 Sep 1	17500	Nov 4 1985
INSTANTANEOUS PEAK FLOW		5360 Jan 8	10.01	Nov 4 1985
INSTANTANEOUS PEAK STAGE		6.55 Jan 8	1.5	bSep 13 1980
INSTANTANEOUS LOW FLOW		2.0 aSep 6	1.60	
ANNUAL RUNOFF (CFSM)	1.24	1.64	21.72	
ANNUAL RUNOFF (INCHES)	16.90	22.33	45	
10 PERCENT EXCEEDS	168	203	6.3	
50 PERCENT EXCEEDS	49	42		
90 PERCENT EXCEEDS	4.5	4.0		

a Also Sept. 7, 1998.

b Also Sept. 14, 1980.



JAMES RIVER BASIN

02011470 BACK CREEK AT SUNRISE, VA

LOCATION.--Lat 38°11'25", long 79°48'43", Bath County, Hydrologic Unit 02080201, on left bank 75 ft upstream from bridge on State Highway 600 at Sunrise, 180 ft upstream from Beaver Run, 0.5 mi downstream from Back Creek Dam, and 7.6 mi northeast of Mountain Grove.

DRAINAGE AREA.--76.1 mi².

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Water-stage recorder. Concrete control since Oct. 24, 1984. Datum of gage is 1,968.52 ft above sea level (Virginia Power bench mark). Nov. 5, 1992, to Jan. 5, 1993, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since October 1984 by Back Creek Lake 0.5 mi upstream, amount unknown. Virginia Power gage-height transmitter at station, receiver at Back Creek Dam. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Maximum discharge, 5,690 ft³/s, from rating curve extended above 960 ft³/s on basis of release from Back Creek Lake at peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,990 ft³/s, Jan. 8, gage height, 9.96 ft, from rating curve extended as explained above; minimum, 13 ft³/s, Sept. 26, gage height, 3.95 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	20	34	52	93	420	77	22	26	122	15	15
2	14	20	36	54	92	266	103	21	25	102	15	15
3	14	18	25	57	147	275	155	117	25	45	15	15
4	14	18	22	109	214	199	239	263	19	45	15	15
5	14	17	23	248	223	131	267	281	15	30	15	15
6	14	16	25	279	211	122	259	265	15	22	15	15
7	14	18	24	416	167	111	170	278	15	16	15	15
8	14	75	23	3010	130	237	133	191	14	17	15	15
9	14	192	24	1090	129	1080	270	175	15	16	15	15
10	14	179	26	463	155	811	460	125	15	15	16	15
11	14	117	93	256	285	517	356	124	15	15	15	15
12	14	83	133	220	383	298	166	83	15	15	15	15
13	14	68	121	176	462	274	145	74	15	15	15	14
14	14	67	90	158	417	230	155	72	15	15	15	15
15	14	65	47	162	285	185	138	70	129	15	16	15
16	16	60	26	167	183	142	122	53	138	15	16	15
17	17	61	24	220	1020	85	123	51	132	15	17	15
18	15	61	24	262	1630	80	116	48	94	15	16	15
19	15	61	24	275	744	1010	343	48	116	15	15	15
20	15	61	23	155	455	623	844	49	207	15	15	15
21	15	62	21	120	432	1950	648	50	170	15	15	15
22	15	63	23	102	319	892	249	52	83	15	15	15
23	15	58	24	214	273	412	291	52	45	15	15	15
24	16	61	24	372	215	366	282	49	18	15	15	15
25	17	66	71	417	210	173	136	47	18	15	15	15
26	16	66	98	259	173	157	113	34	19	15	15	15
27	16	64	97	239	170	157	72	34	19	15	15	15
28	16	52	65	248	268	147	21	34	20	15	15	15
29	16	38	64	211	---	87	21	24	116	15	15	15
30	16	35	64	189	---	71	21	26	170	14	15	15
31	16	---	55	195	---	73	---	26	---	15	15	---
TOTAL	462	1842	1473	10395	9485	11581	6495	2838	1738	744	471	449
MEAN	14.9	61.4	47.5	335	339	374	217.5	91.5	57.9	24.0	15.2	15.0
MAX	17	192	133	3010	1630	1950	844	281	207	122	17	15
MIN	14	16	21	52	92	71	21	21	14	14	15	14

JAMES RIVER BASIN

02011470 BACK CREEK AT SUNRISE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	35.8	85.6	128	203	177	267	175	180	83.3	33.9	32.8	35.9
MAX	150	371	285	504	416	616	496	399	259	83.0	96.1	230
(WY)	1990	1986	1997	1996	1994	1993	1987	1989	1995	1994	1996	1996
MIN	9.31	12.0	14.5	14.8	58.2	61.4	51.1	37.5	14.6	12.7	13.4	11.5
(WY)	1985	1985	1995	1985	1993	1988	1986	1991	1994	1985	1997	1985

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

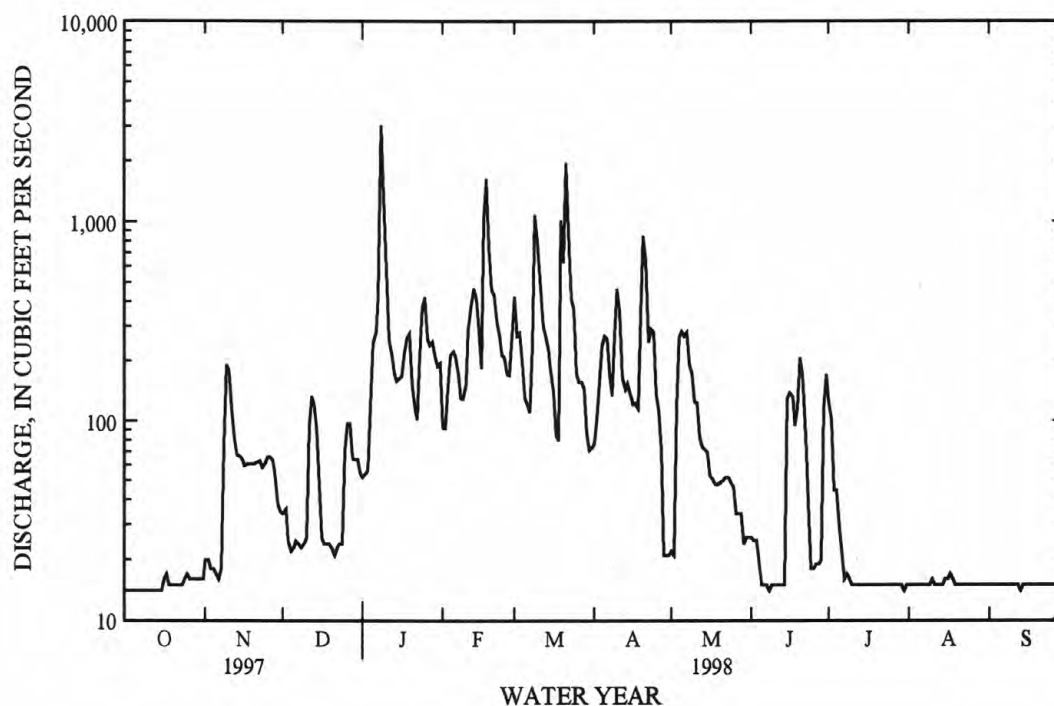
WATER YEARS 1985 - 1998

ANNUAL TOTAL	33653	47973	
ANNUAL MEAN	92.2	131	120
HIGHEST ANNUAL MEAN			175
LOWEST ANNUAL MEAN			55.8
HIGHEST DAILY MEAN	1280	3010	4890
LOWEST DAILY MEAN	13	14	5.2
ANNUAL SEVEN-DAY MINIMUM	13	14	5.6
INSTANTANEOUS PEAK FLOW		3990	5690
INSTANTANEOUS PEAK STAGE		9.96	11.99
INSTANTANEOUS LOW FLOW		13	(c)
ANNUAL RUNOFF (CFSM)	1.21	1.73	1.57
ANNUAL RUNOFF (INCHES)	16.45	23.45	21.35
10 PERCENT EXCEEDS	205	280	260
50 PERCENT EXCEEDS	54	48	45
90 PERCENT EXCEEDS	13	15	14

a Also July 31, and most of August and September 1997.

b Also Oct. 2-15, 1997, and June 8, July 30, Sept. 13, 1998.

c Not determined.



JAMES RIVER BASIN

02011490 LITTLE BACK CREEK NEAR SUNRISE, VA

LOCATION.--Lat 38°12'52", long 79°50'16", Bath County, Hydrologic Unit 02080201, in George Washington National Forest, on right bank 600 ft downstream from Long Spring Run, 1.2 mi downstream from Little Back Creek Dam, and 8.5 mi northeast of Mountain Grove.

DRAINAGE AREA.--4.91 mi².

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Water-stage recorder. Concrete control with rectangular weir plate. Datum of gage is 2,638.48 ft above sea level (Virginia Power bench mark). Nov. 5, 1992, to Jan. 5, 1993, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since January 1985 by Little Back Creek Lake 1.2 mi upstream, amount unknown. Maximum discharge, 580 ft³/s, from rating curve extended above 30 ft³/s on basis of slope-area measurement of peak flow. Minimum gage height, 0.63 ft, Nov. 16, 1994. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 137 ft³/s, Jan. 8, gage height, 3.14 ft, from rating curve extended as explained above; minimum, 0.92 ft³/s, June 4, gage height, 0.72 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.4	5.1	4.1	3.8	6.8	16	5.7	4.9	2.9	6.7	3.1	3.1
2	3.4	6.0	4.0	3.7	6.7	12	6.0	5.1	2.8	6.6	3.1	3.6
3	3.4	5.3	4.0	4.2	6.7	9.7	6.0	5.4	4.7	4.8	3.1	3.1
4	3.4	5.0	4.0	6.7	8.1	7.9	7.6	7.8	1.7	5.0	3.1	3.0
5	3.5	4.3	4.1	13	7.7	6.9	9.2	13	2.7	5.0	3.1	2.8
6	3.5	3.9	4.0	15	7.6	6.1	8.6	11	2.3	4.8	3.0	2.8
7	3.5	4.8	3.9	16	7.1	5.3	7.2	8.3	2.2	4.9	3.0	3.1
8	3.4	6.5	3.9	77	6.8	11	6.3	7.8	2.3	6.0	3.1	3.5
9	3.3	6.5	4.0	25	7.5	34	9.1	8.4	2.7	6.1	3.1	3.3
10	3.3	5.7	4.9	14	8.8	25	14	8.2	2.9	5.4	4.5	2.9
11	3.2	5.1	8.3	10	10	14	10	7.4	3.1	4.9	3.9	2.9
12	3.2	4.7	7.4	8.8	14	10	7.9	6.6	2.6	4.5	3.2	3.0
13	3.4	4.4	6.1	7.8	14	8.2	6.8	5.9	2.8	4.3	4.3	2.9
14	3.5	5.0	5.2	7.7	11	6.9	6.0	5.3	2.9	4.1	2.6	2.9
15	3.3	5.9	4.8	7.9	9.0	6.1	5.4	5.1	13	5.6	3.5	2.9
16	3.3	5.7	4.4	11	8.2	5.7	5.0	4.7	11	3.2	4.9	3.8
17	3.3	5.2	4.1	11	40	5.3	5.4	4.3	6.2	3.4	6.7	2.4
18	3.2	4.6	4.3	9.3	44	7.7	5.3	4.1	5.6	3.4	6.3	2.5
19	3.2	4.4	3.1	8.1	20	29	14	4.5	6.4	3.4	5.3	2.7
20	3.3	4.2	3.1	7.3	14	21	30	3.8	7.7	3.6	3.9	2.8
21	3.4	4.2	3.3	6.1	13	46	14	3.7	7.1	3.5	3.4	3.0
22	3.5	5.0	3.5	5.6	11	22	9.6	3.5	5.8	3.5	3.0	2.7
23	3.5	5.6	3.3	9.6	10	13	7.5	3.4	5.1	3.4	3.0	2.7
24	3.6	5.5	3.3	15	8.9	9.7	6.4	3.2	4.6	3.4	3.1	2.7
25	4.0	5.0	4.4	12	8.1	7.8	5.6	3.1	4.5	3.2	3.2	3.8
26	3.7	4.6	5.2	9.8	9.3	6.9	5.2	3.0	4.2	3.1	3.2	2.4
27	4.0	4.3	5.5	8.7	10	6.2	5.3	3.3	4.3	3.1	3.1	2.5
28	3.7	4.1	5.0	8.3	14	5.7	4.8	3.1	5.9	4.8	3.1	2.7
29	3.5	4.1	4.9	7.3	---	5.4	4.6	3.0	11	2.6	3.1	2.8
30	3.5	4.0	4.6	7.7	---	5.5	4.5	3.1	8.2	2.6	3.1	4.6
31	3.4	---	4.2	7.2	---	5.3	---	3.0	---	3.0	3.2	---
TOTAL	106.8	148.7	138.9	364.6	342.3	381.3	243.0	167.0	149.2	131.9	111.3	89.9
MEAN	3.45	4.96	4.48	11.8	12.2	12.3	8.10	5.39	4.97	4.25	3.59	3.00
MAX	4.0	6.5	8.3	77	44	46	30	13	13	6.7	6.7	4.6
MIN	3.2	3.9	3.1	3.7	6.7	5.3	4.5	3.0	1.7	2.6	2.6	2.4

JAMES RIVER BASIN

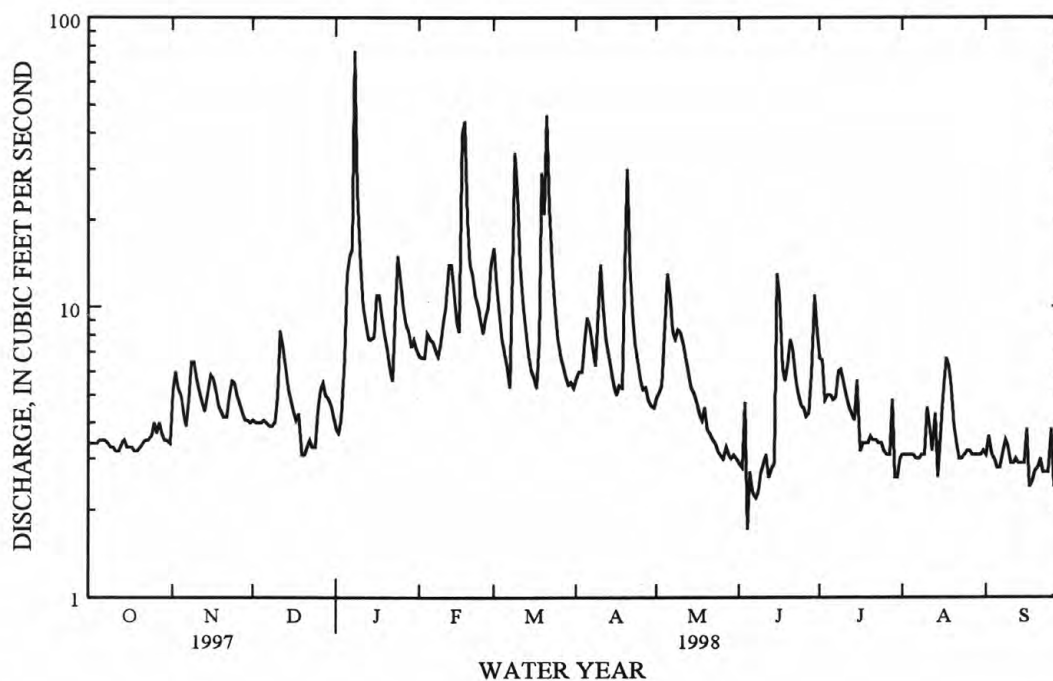
02011490 LITTLE BACK CREEK NEAR SUNRISE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	3.59	5.25	6.00	7.76	7.22	8.74	6.83	7.15	4.57	3.48	3.43	3.42
MAX	7.46	12.6	9.65	15.7	12.9	16.4	13.1	14.8	8.41	4.95	5.13	7.29
(WY)	1990	1986	1997	1996	1994	1993	1987	1985	1995	1994	1989	1996
MIN	2.17	2.72	3.26	3.56	3.78	3.91	3.37	3.37	2.79	2.46	2.33	2.28
(WY)	1987	1992	1995	1985	1993	1985	1986	1991	1991	1987	1986	1985

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1985 - 1998
ANNUAL TOTAL	1985.2	2374.9	
ANNUAL MEAN	5.44	6.51	5.61
HIGHEST ANNUAL MEAN			7.00
LOWEST ANNUAL MEAN			4.37
HIGHEST DAILY MEAN	38 Mar 3	77 Jan 8	158 Nov 4 1985
LOWEST DAILY MEAN	3.1 aSep 6	b1.7 Jun 4	.90 Oct 13 1984
ANNUAL SEVEN-DAY MINIMUM	3.3 Oct 15	2.4 Jun 4	1.2 Jan 24 1985
INSTANTANEOUS PEAK FLOW		137 Jan 8	580 Nov 4 1985
INSTANTANEOUS PEAK STAGE		3.14 Jan 8	4.06 Nov 4 1985
INSTANTANEOUS LOW FLOW		b.92 Jun 4	.83 Nov 16 1994
ANNUAL RUNOFF (CFSM)	1.11	1.33	1.14
ANNUAL RUNOFF (INCHES)	15.04	17.99	15.54
10 PERCENT EXCEEDS	8.3	11	9.6
50 PERCENT EXCEEDS	4.6	4.8	4.0
90 PERCENT EXCEEDS	3.4	3.0	2.6

a Also Dec. 19, 20, 1997.
b Result of regulation.



JAMES RIVER BASIN

02011500 BACK CREEK NEAR MOUNTAIN GROVE, VA

LOCATION.--Lat 38°04'10", long 79°53'50", Bath County, Hydrologic Unit 02080201, on left bank 0.3 mi downstream from Cummings Run, 0.8 mi downstream from bridge on State Highway 39, and 2.1 mi south of Mountain Grove.

DRAINAGE AREA.--134 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1951 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,701.45 ft above sea level.

REMARKS.--Records good except for period of doubtful gage-height record Mar. 30-31, which is fair. Flow regulated since October 1984 by Back Creek Lake 11.3 mi upstream, amount unknown, and since January 1985 by Little Back Creek Lake 14.4 mi upstream, amount unknown. Diversion 10.5 mi upstream from station by Virginia Power for recreation lakes, net averages 0.5 ft³/s. U.S. Army Corps of Engineers satellite water temperature and gage-height telemeter at station. Maximum discharge, 18,400 ft³/s, from rating curve extended above 14,000 ft³/s on basis of slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,740 ft³/s, Jan. 8, gage height, 8.59 ft, minimum, 15 ft³/s, Oct. 6, 8, 13-14, gage height 2.01 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	59	58	83	279	587	148	78	49	180	25	19
2	17	79	58	82	239	404	164	87	46	156	25	19
3	17	64	53	94	269	388	220	145	45	78	24	19
4	17	64	50	145	461	322	353	379	43	72	24	19
5	17	52	48	361	511	219	434	587	37	66	24	18
6	16	43	51	454	577	191	408	486	36	47	23	18
7	16	51	51	533	502	187	314	441	34	42	23	18
8	16	95	48	4450	420	292	238	403	33	47	26	21
9	16	212	49	1530	419	1360	477	436	34	44	25	18
10	16	212	61	730	403	1160	760	319	34	41	40	18
11	16	154	131	454	544	736	588	265	33	38	49	18
12	16	105	188	359	693	477	351	201	35	35	36	18
13	16	94	172	299	810	406	271	153	36	34	32	18
14	16	94	141	259	735	342	265	136	35	33	31	17
15	17	100	93	279	489	282	240	125	348	32	35	17
16	17	97	77	381	371	237	206	102	300	33	45	18
17	20	91	67	407	1400	148	222	92	230	33	84	18
18	20	88	64	413	2380	206	216	83	169	31	61	17
19	19	85	62	397	1180	1410	628	78	140	30	42	18
20	18	83	60	281	771	1040	1510	77	289	29	33	18
21	19	84	58	210	676	2620	1010	77	236	29	29	17
22	19	90	59	174	532	1440	481	76	140	28	26	18
23	18	91	58	434	475	723	458	78	93	30	25	18
24	22	91	54	669	399	590	422	77	51	28	23	18
25	29	93	80	637	389	364	255	72	44	28	22	18
26	26	91	127	458	351	294	192	68	41	27	21	18
27	27	88	131	390	353	282	164	58	43	27	20	18
28	25	82	111	469	410	278	83	72	58	27	20	18
29	25	63	101	454	---	196	74	52	134	26	20	18
30	24	61	100	432	---	e132	71	50	227	26	20	18
31	23	---	91	398	---	e135	---	48	---	26	19	---
TOTAL	597	2756	2552	16716	17038	17448	11223	5401	3073	1403	952	543
MEAN	19.3	91.9	82.3	539.	609	563	374	174	102	45.3	30.7	18.1
MAX	29	212	188	4450	2380	2620	1510	587	348	180	84	21
MIN	16	43	48	82	239	132	71	48	33	26	19	17

JAMES RIVER BASIN

02011500 BACK CREEK NEAR MOUNTAIN GROVE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 1984, BY WATER YEAR (WY) [UNREGULATED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	83.1	107	221	246	320	455	303	230	128	56.3	53.5	32.4
MAX	512	526	694	578	689	980	561	449	396	369	408	308
(WY)	1977	1973	1974	1979	1971	1963	1980	1967	1982	1972	1969	1979
MIN	7.21	10.4	15.2	14.3	87.6	103	90.9	74.2	13.0	7.91	7.18	4.05
(WY)	1954	1954	1961	1981	1978	1981	1963	1977	1964	1964	1964	1968

SUMMARY STATISTICS

WATER YEARS 1952 - 1984

ANNUAL MEAN	186	
HIGHEST ANNUAL MEAN	320	1973
LOWEST ANNUAL MEAN	111	1981
HIGHEST DAILY MEAN	7110	Dec 26 1973
LOWEST DAILY MEAN	1.5	Aug 18 1967
ANNUAL SEVEN-DAY MINIMUM	2.3	Aug 14 1967
INSTANTANEOUS PEAK FLOW	12700	Mar 7 1967
INSTANTANEOUS PEAK STAGE	10.77	Mar 7 1967
INSTANTANEOUS LOW FLOW	1.5	Aug 18 1967
ANNUAL RUNOFF (CFSM)	1.39	
ANNUAL RUNOFF (INCHES)	18.85	
10 PERCENT EXCEEDS	425	
50 PERCENT EXCEEDS	79	
90 PERCENT EXCEEDS	12	

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	54.6	145	201	324	294	406	273	263	125	50.7	46.4	51.9
MAX	246	696	392	818	609	833	824	528	351	105	127	300
(WY)	1990	1986	1997	1996	1998	1993	1987	1996	1995	1994	1989	1996
MIN	19.3	23.2	36.3	77.7	107	92.8	83.5	62.9	32.7	20.4	17.9	16.5
(WY)	1998	1995	1995	1986	1993	1988	1986	1991	1991	1993	1987	1985

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1985 - 1998

ANNUAL TOTAL	50868	79702	
ANNUAL MEAN	139	218	186
HIGHEST ANNUAL MEAN			262
LOWEST ANNUAL MEAN			109
HIGHEST DAILY MEAN	2030	Mar 4	4450 Jan 8
LOWEST DAILY MEAN	16	aSep 19	16 bOct 6
ANNUAL SEVEN-DAY MINIMUM	16	Oct 6	16 Oct 6
INSTANTANEOUS PEAK FLOW			6740 Jan 8
INSTANTANEOUS PEAK STAGE			8.59 Jan 8
INSTANTANEOUS LOW FLOW			15 dOct 6
ANNUAL RUNOFF (CFSM)	1.04	1.63	f11 1.39
ANNUAL RUNOFF (INCHES)	14.12	22.13	18.83
10 PERCENT EXCEEDS	294	487	425
50 PERCENT EXCEEDS	88	79	81
90 PERCENT EXCEEDS	18	18	20

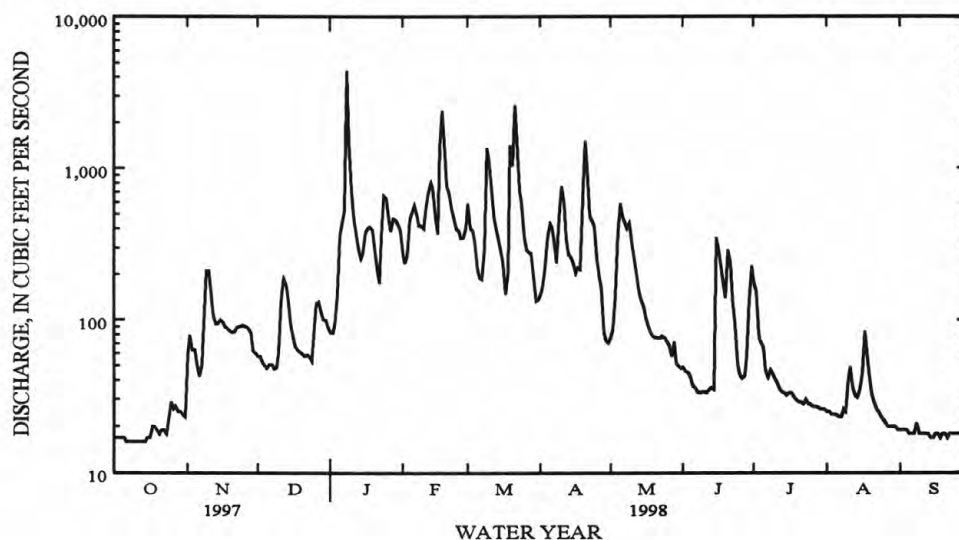
a Also Sept. 20 and Oct. 6-14, 1997.

b also Oct. 7-14, 1997.

c Also Aug. 12, 13, and Sept. 3, 4, 1987.

d Also Oct. 8, 13, 14, 1997.

f Result of freezeup.



JAMES RIVER BASIN

02011500 BACK CREEK NEAR MOUNTAIN GROVE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1978 to current year.

INSTRUMENTATION.--Water-temperature recorder since June 1978.

REMARKS.--Temperatures for Oct. 1-25 effected by lack of streamflow past probe. Some record in prior years fragmentary due to instrument malfunction. Records represent water temperature at sensor within 0.5°C. Temperature at the sensor was compared with the average for the creek by temperature cross section on June 28, 1995. No variation of temperature was found within the cross section.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 33.5°C, Aug. 14, 1988; minimum recorded, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 28.2°C, July 30, Aug. 9, 26; minimum, 0.0°C, Jan. 1.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	16.9	11.7	14.5	12.4	9.5	10.9	10.2	6.4	8.6	1.8	.0	.8
2	20.1	9.5	13.0	12.4	9.9	11.2	6.4	4.2	5.4	4.2	.7	2.3
3	20.9	9.9	13.3	10.2	8.8	9.6	6.7	4.2	5.4	5.3	2.1	3.5
4	23.3	10.6	15.2	9.9	7.1	8.6	8.1	6.7	7.5	6.0	2.8	4.3
5	25.1	13.5	17.1	8.5	5.7	7.0	7.1	3.9	5.9	6.0	4.2	5.1
6	25.1	14.3	17.3	8.1	5.3	7.0	3.9	2.1	3.0	6.7	5.7	6.1
7	25.1	14.3	17.2	9.2	8.1	8.6	2.8	1.8	2.3	7.8	6.4	6.9
8	24.2	13.1	17.0	9.5	7.8	8.5	4.2	2.5	3.4	8.1	6.4	7.6
9	23.8	15.0	17.9	12.1	9.5	10.7	4.9	3.5	4.2	7.8	6.4	7.4
10	22.5	13.1	17.1	12.1	10.2	11.0	5.7	4.6	5.1	7.8	5.7	6.5
11	22.9	13.1	15.8	11.0	10.2	10.7	6.4	4.9	5.7	7.1	5.3	6.1
12	22.1	12.4	15.6	10.2	8.8	9.4	7.1	6.0	6.5	6.0	5.7	5.8
13	22.9	13.1	16.8	8.8	8.1	8.4	6.7	4.9	5.7	7.1	4.9	6.2
14	16.5	12.4	14.4	9.9	8.1	8.9	6.4	4.6	5.3	6.0	3.9	4.9
15	20.5	11.3	14.7	8.8	7.1	8.1	4.6	2.1	3.6	5.3	4.9	5.1
16	16.5	9.5	12.5	7.1	6.0	6.5	4.9	2.5	3.6	7.1	5.3	5.9
17	12.8	9.9	11.3	7.4	5.3	6.3	4.2	1.8	3.2	6.0	5.7	5.8
18	13.5	10.6	12.1	7.1	4.2	5.8	4.2	1.8	3.2	5.7	4.9	5.3
19	16.1	12.1	13.3	7.4	4.6	6.0	4.6	2.1	3.5	6.4	4.9	5.4
20	14.3	9.9	11.8	8.5	4.9	6.8	4.6	2.1	3.5	5.7	3.9	4.7
21	11.0	8.8	9.7	8.1	6.7	7.3	4.9	2.8	4.1	4.9	2.8	3.9
22	13.9	7.1	9.5	9.9	8.1	9.0	4.9	4.2	4.4	4.9	4.2	4.5
23	12.4	4.2	8.1	9.5	7.8	8.8	5.7	4.2	4.9	5.7	4.2	5.0
24	8.5	5.7	6.8	7.8	4.9	6.2	5.7	4.9	5.1	5.7	4.9	5.4
25	12.1	7.4	9.7	6.7	3.5	5.2	6.4	4.9	5.8	6.4	4.6	5.1
26	10.6	9.9	10.2	7.4	4.9	6.1	7.1	5.3	6.3	5.7	3.9	4.7
27	10.6	8.1	10.0	8.1	6.0	7.2	5.3	3.9	4.5	4.6	2.5	4.0
28	12.1	6.0	8.1	8.8	5.7	7.3	5.3	3.5	4.4	4.9	2.5	3.6
29	12.1	5.3	7.9	9.9	7.8	9.0	3.5	.7	2.2	6.7	3.9	4.9
30	12.8	5.3	8.3	10.6	9.5	10.0	3.9	1.8	2.9	5.3	4.2	4.7
31	12.8	6.0	9.0	---	---	---	2.8	1.1	2.2	6.4	3.9	4.6
MONTH	25.1	4.2	12.7	12.4	3.5	8.2	10.2	.7	4.6	8.1	.0	5.0

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	5.3	2.1	3.7	7.4	5.3	6.1	13.5	10.6	11.9	13.5	12.1	12.7
2	4.9	2.1	3.6	7.1	4.9	5.8	14.3	7.8	10.8	13.5	11.7	12.5
3	4.9	4.2	4.5	6.4	4.2	5.0	11.0	7.1	9.1	14.6	11.3	13.0
4	4.2	2.1	3.2	6.0	4.2	4.9	9.2	7.4	8.4	15.0	11.3	12.5
5	4.9	3.9	4.3	7.8	3.9	5.3	12.1	6.7	8.7	13.9	11.0	12.0
6	4.6	3.2	4.0	7.8	3.2	5.5	12.4	6.4	8.7	14.6	11.0	12.4
7	5.7	3.9	4.7	7.8	5.3	6.5	11.7	6.7	8.8	12.4	11.3	11.9
8	6.7	4.2	5.1	7.1	6.4	6.7	13.9	7.4	10.1	13.9	11.7	12.4
9	6.4	2.8	4.4	7.4	6.0	6.7	12.8	8.8	10.4	13.9	11.3	12.5
10	6.4	3.2	4.6	6.0	4.2	5.4	9.9	8.5	9.0	15.0	11.3	12.9
11	5.3	3.9	4.5	4.9	3.5	4.2	12.4	7.4	9.2	13.9	11.7	12.8
12	5.7	4.6	5.0	6.4	2.5	4.0	13.5	6.7	9.4	13.1	12.1	12.6
13	6.7	4.2	5.2	6.7	2.1	4.1	13.5	6.7	9.9	18.1	11.7	14.5
14	6.4	4.2	4.8	7.4	3.5	5.0	12.4	8.8	10.4	20.5	12.8	16.2
15	6.7	3.2	4.5	7.8	2.8	5.0	14.6	8.5	11.2	20.9	13.1	17.0
16	4.6	3.5	4.2	4.9	3.9	4.3	13.5	9.5	11.4	20.1	14.3	17.3
17	5.7	4.6	5.2	5.3	3.5	4.4	15.8	10.2	12.4	22.5	15.8	18.7
18	5.7	5.3	5.4	6.7	4.2	5.4	12.1	9.2	10.1	21.7	14.3	17.9
19	5.7	5.3	5.4	7.8	5.7	6.3	9.9	9.2	9.6	22.1	14.3	18.2
20	6.7	5.3	5.7	6.7	5.7	6.2	12.1	8.8	10.1	22.9	16.1	19.2
21	5.7	4.9	5.3	6.4	5.7	6.1	12.4	8.8	10.3	22.1	16.9	19.0
22	7.8	4.9	5.9	6.0	4.9	5.6	11.0	9.2	10.0	20.9	14.3	17.7
23	5.7	4.6	5.0	7.1	4.2	5.3	11.7	8.5	9.9	18.9	15.8	17.2
24	6.0	4.6	5.1	7.4	4.2	5.4	14.3	9.2	11.0	19.7	15.4	17.4
25	8.1	4.2	5.7	7.8	3.9	5.6	13.9	9.2	11.4	22.5	16.9	19.4
26	8.5	3.9	5.7	11.3	4.2	7.4	15.0	9.5	12.1	21.3	17.3	19.3
27	7.1	4.9	5.8	12.8	5.7	8.9	15.0	10.2	12.4	19.3	16.5	17.3
28	8.1	5.3	6.3	13.5	7.1	9.9	16.5	8.1	12.2	22.9	15.8	18.7
29	---	---	---	13.1	7.1	10.0	15.0	9.9	12.7	24.2	16.5	20.1
30	---	---	---	15.0	8.1	11.4	15.0	12.1	13.4	25.5	18.1	21.3
31	---	---	---	15.0	8.8	12.1	---	---	---	25.5	18.9	22.0
MONTH	8.5	2.1	4.9	15.0	2.1	6.3	16.5	6.4	10.5	25.5	11.0	16.1
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	25.5	19.7	22.1	23.8	18.1	20.4	27.3	19.7	22.6	25.1	18.9	21.7
2	22.5	16.9	20.1	23.3	18.1	20.4	26.9	17.7	21.7	26.0	18.9	21.7
3	25.1	17.7	20.9	24.2	17.7	20.7	26.9	17.3	21.5	22.9	18.1	20.4
4	21.7	18.1	19.7	21.3	18.5	20.0	27.3	17.7	21.7	25.1	18.5	21.3
5	18.9	16.9	17.5	25.1	19.3	21.7	27.8	18.5	22.5	26.4	18.5	21.7
6	18.5	15.8	16.8	25.5	19.7	22.2	27.8	19.3	23.0	24.2	17.3	20.7
7	16.9	13.1	15.0	26.0	20.5	22.9	27.8	19.3	23.0	24.6	18.5	21.3
8	20.1	11.7	15.3	27.3	21.7	23.8	23.3	20.9	21.8	22.1	17.7	20.2
9	16.9	15.0	15.8	26.0	20.9	23.2	28.2	20.9	23.8	19.3	15.4	16.8
10	22.5	14.6	17.8	27.3	21.3	23.7	24.6	21.3	23.1	21.3	13.9	16.9
11	20.5	17.7	19.1	26.4	19.7	22.7	25.1	20.1	22.1	22.1	14.3	17.6
12	24.2	18.5	20.5	25.5	18.5	21.7	25.5	20.5	22.7	23.8	16.1	19.2
13	22.9	18.9	20.8	26.0	20.1	22.8	24.6	20.1	22.2	23.3	16.1	19.4
14	20.5	18.1	19.3	25.5	21.3	23.3	22.9	20.5	21.7	23.8	16.9	20.1
15	19.7	16.1	18.2	26.0	21.3	23.5	22.9	20.5	21.5	24.6	17.7	21.0
16	20.9	16.1	18.1	26.0	20.9	23.2	21.7	20.1	20.9	23.8	18.9	21.4
17	20.1	16.5	18.1	25.1	21.7	23.1	22.1	18.9	20.4	23.3	19.3	21.3
18	21.7	16.5	18.9	24.6	19.7	22.0	23.8	19.3	21.1	25.1	19.3	21.6
19	20.5	17.7	19.0	27.8	21.3	23.8	25.1	19.3	21.8	23.3	20.5	21.6
20	23.3	17.3	19.7	26.9	22.1	23.6	24.6	17.7	20.8	25.5	19.7	22.0
21	22.9	17.3	19.7	27.3	20.5	23.5	25.5	18.5	21.6	22.1	19.7	21.1
22	23.8	18.5	20.6	27.8	21.3	24.4	26.0	18.9	22.3	22.5	20.1	21.2
23	23.8	18.9	21.4	25.5	22.1	23.7	27.3	20.5	23.2	22.9	16.9	19.3
24	26.0	19.3	22.3	27.3	21.3	23.8	26.0	19.7	22.9	20.9	13.1	16.6
25	26.9	20.1	23.1	26.4	20.9	23.3	27.3	20.9	23.7	19.3	14.6	17.2
26	27.3	21.3	23.9	25.1	20.9	22.8	28.2	21.7	24.7	22.1	17.3	19.6
27	25.5	21.3	23.1	22.5	19.3	21.0	26.9	21.7	23.9	23.8	18.5	20.7
28	24.6	20.5	22.2	26.4	20.1	22.6	26.9	20.9	23.7	24.6	18.9	21.1
29	23.3	19.3	21.4	27.3	20.1	23.2	25.5	20.9	22.7	23.3	17.3	20.0
30	21.3	19.3	20.5	28.2	20.5	23.8	27.3	20.1	23.0	22.1	17.3	19.6
31	---	---	---	26.0	22.5	24.0	24.6	19.7	22.0	---	---	---
MONTH	27.3	11.7	19.7	28.2	17.7	22.7	28.2	17.3	22.4	26.4	13.1	20.1
YEAR	28.2	.0	12.8									

JAMES RIVER BASIN

02011795 LAKE MOOMAW NEAR HOT SPRINGS, VA

LOCATION.--Lat 37°57'04", long 79°59'21", Alleghany County, Hydrologic Unit 02080201, in control tower at Gathright Dam on Jackson River, 0.9 mi upstream from Cedar Creek, 7.6 mi southwest of Hot Springs, and 19 mi upstream from Covington.

DRAINAGE AREA.--344 mi².

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

GAGE.--Water-stage recorder. Datum of gage is at sea level (U.S. Army Corps of Engineers bench mark).

REMARKS.--Lake is formed by rolled rockfill dam with an impervious compacted earth (clay) core. Spillway with crest at elevation 1,667.5 ft is in a divide about 2.5 mi south of the dam, ungated, and 2,450 ft long with a base width of 100 ft. Except for flood flows, all discharge will be through a diversion tunnel with the invert of the entrance being in an intake tower 260 ft high. Elevation of invert is 1,430.5 ft. Portals in the tower at nine levels permit oxygenated water from the surface and cold water from the bottom of the lake to be mixed for water-quality control. Sluice gates in the tower control flood flow releases. Storage began Dec. 10, 1979. Total capacity at top of dam, elevation 1,684.5 ft, is 502,600 acre-ft of which 81,100 acre-ft is above spillway crest. Capacity at maximum conservation pool, elevation 1,582.0 ft, is 123,700 acre-ft; capacity at minimum conservation pool, elevation 1,554.0 ft, is 63,000 acre-ft. Lake is used for flood control, low-water augmentation for water-quality control, and recreation. U.S. Army Corps of Engineers satellite precipitation and elevation telemeter at station.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 168,400 acre-ft, Jan. 20, 1996, elevation, 1,598.4 ft; minimum, (after first filling to minimum conservation pool), 71,900 acre-ft, Nov. 30, Dec. 1, 1991, elevation, 1,558.8 ft.

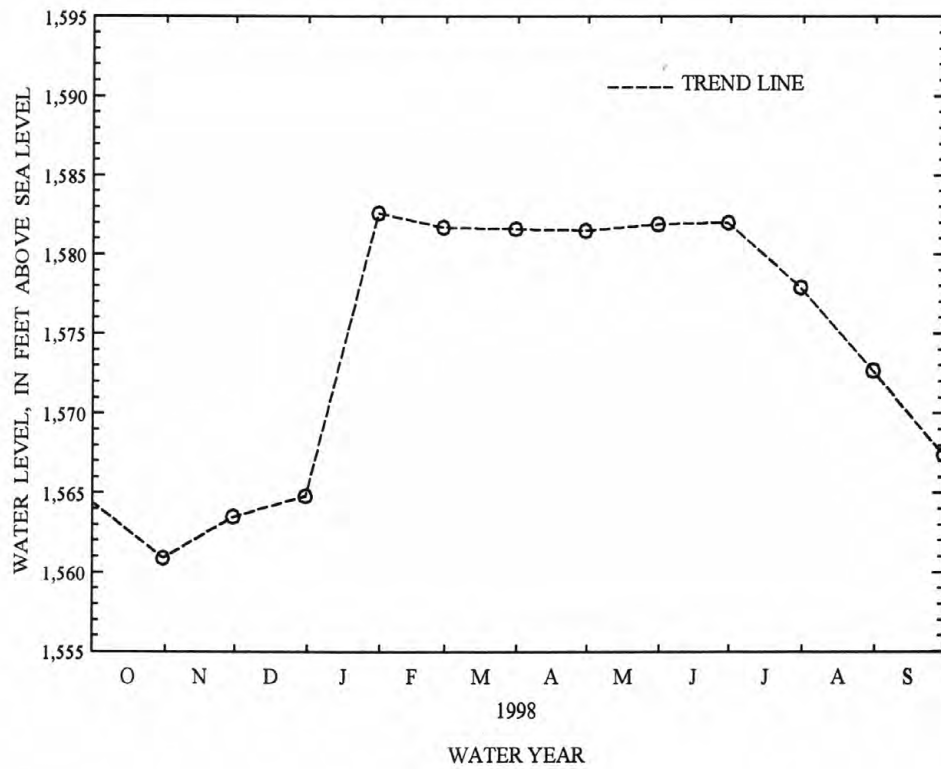
EXTREMES FOR CURRENT YEAR.--Maximum contents, 148,900 acre-ft, Mar. 22, elevation, 1,591.5 ft; minimum, 75,800 acre-ft, Nov. 1, elevation, 1,560.8 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	1,564.5	83,400	-
Oct. 31.....	1,560.9	76,000	-7,400
Nov. 30.....	1,563.5	81,300	+5,300
Dec. 31.....	1,564.8	84,000	+2,700
CAL YR 1997.....			-38,500
Jan. 31.....	1,582.6	125,300	+41,300
Feb. 28.....	1,581.7	123,000	-2,300
Mar. 31.....	1,581.6	122,700	-300
Apr. 30.....	1,581.5	122,500	-200
May 31.....	1,581.9	123,500	+1,000
June 30.....	1,582.0	123,700	+200
July 31.....	1,577.9	113,600	-10,100
Aug. 31.....	1,572.7	101,300	-12,300
Sept. 30.....	1,567.4	89,500	-11,800
WTR YR 1998.....			+6,100

JAMES RIVER BASIN

02011795 LAKE MOOMAW NEAR HOT SPRINGS, VA--Continued



JAMES RIVER BASIN

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA--Continued

LOCATION.--Lat 37°56'54", long 79°56'58", Alleghany County, Hydrologic Unit 02080201, on right bank 0.4 mi upstream from Cedar Creek, 0.5 mi downstream from Gathright Dam and Lake Moomaw, and 7.3 mi southwest of Hot Springs.

DRAINAGE AREA.--345 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1973 to current year.

REVISED RECORDS.--WDR VA-81-1: 1980.

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft above sea level (U.S. Army Corps of Engineers bench mark). Prior to Dec. 20, 1973, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since December 1979 by Lake Moomaw (station 02011795) 0.5 mi upstream; since October 1984 by Back Creek Lake 28.5 mi upstream, amount unknown; and since January 1985 by Little Back Creek Lake 31.6 mi upstream, amount unknown. U.S. Army Corps of Engineers satellite water-quality and gage-height telemeter at station. Maximum discharge, 29,000 ft³/s, result of cofferdam failure during construction of Gathright Dam, from rating curve extended above 9,200 ft³/s on basis of slope-area measurement of peak flow. Minimum discharge, 3.0 ft³/s, July 12, 1979, result of gate closure at Gathright Dam, gage height, 7.78 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1972, reached a stage of 17.20 ft, from floodmark.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,530 ft³/s, Mar. 23 gage height, 13.61 ft; minimum observed, 14.2 ft³/s, Apr. 8; minimum daily, 156 ft³/s, Nov. 13 to Jan. 4, Jan. 6, 7, 10-14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	211	174	156	156	1070	867	326	381	250	282	299	272		
2	192	164	156	156	1070	867	326	288	249	282	298	259		
3	192	162	156	156	811	867	326	290	249	281	296	259		
4	192	160	156	156	362	867	515	565	270	282	296	259		
5	192	159	156	157	698	700	901	969	285	282	296	259		
6	192	159	156	156	1070	576	1070	1060	253	283	298	258		
7	192	159	156	156	1560	576	844	1060	253	284	300	258		
8	192	159	156	159	1870	576	669	1070	250	284	300	258		
9	192	159	156	160	1380	793	788	1070	254	284	300	259		
10	192	159	156	156	1070	1910	1090	1070	257	284	301	263		
11	192	159	156	156	1070	2490	1070	826	256	284	302	263		
12	192	158	156	156	1070	1920	1060	603	257	284	299	262		
13	192	156	156	156	1070	1060	1060	497	257	284	300	261		
14	192	156	156	156	1080	1060	833	423	256	291	299	260		
15	192	156	156	157	1080	855	1080	338	257	296	300	260		
16	192	156	156	157	770	615	1060	292	258	294	300	260		
17	192	156	156	466	165	491	849	292	260	296	299	260		
18	192	156	156	836	1820	420	570	269	260	296	299	260		
19	192	156	156	924	4310	683	574	253	260	296	299	259		
20	192	156	156	743	4740	561	2230	253	260	296	299	260		
21	192	156	156	505	4260	164	3550	253	260	294	299	260		
22	192	156	156	323	2540	2370	2020	253	260	297	297	260		
23	192	156	156	610	1070	5050	1060	253	260	300	296	259		
24	192	156	156	923	1070	5440	1060	254	260	299	296	259		
25	192	156	156	923	1070	4170	1060	254	260	300	296	259		
26	192	156	156	1020	1070	1940	714	253	260	299	296	258		
27	192	156	156	1070	960	1070	512	255	260	299	296	256		
28	192	156	156	1070	867	1070	512	254	261	299	296	256		
29	192	156	156	1070	---	1070	512	253	261	299	296	256		
30	192	156	156	1070	---	603	512	253	272	299	296	256		
31	192	---	156	1070	---	326	---	253	---	299	296	---		
TOTAL	5971	4739	4836	15129	41043	42027	28753	14657	7765	9029	9240	7788		
MEAN	193	158	156	488	1466	1356	958	473	259	291	298	260		
MAX	211	174	156	1070	4740	5440	3550	1070	285	300	302	272		
MIN	192	156	156	156	165	164	326	253	249	281	296	256		
(†)	-3731	+2672	+1361	+20822	-1160	-151	-101	+504	+101	-5092	-6201	-5949		
MEAN†	72.3	247	200	1160	1424	1351	955	489	262	127	98.0	61.3		
CFSM†	.21	.72	.58	3.36	4.13	3.92	2.77	1.42	.76	.37	.28	.18		
IN.†	.24	.80	.67	3.88	4.30	4.52	3.09	1.63	.85	.42	.33	.20		
CAL YR 1997	TOTAL	148497	MEAN	407	MAX	3330	MIN	156	MEAN†	354	CFSM†	1.03	IN.†	13.93
WTR YR 1998	TOTAL	190977	MEAN	523	MAX	5440	MIN	156	MEAN†	532	CFSM†	1.54	IN.†	20.94

† Total change in contents, equivalent in cubic feet per second, per month, in Lake Moomaw; provided by U.S. Army Corps of Engineers.

‡ Adjusted for monthly change in contents.

JAMES RIVER BASIN

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 1979, BY WATER YEAR (WY) [UNREGULATED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	350	255	643	858	605	1050	561	579	374	153	130	222
MAX	1043	388	1584	1306	1096	1656	1134	925	650	180	172	754
(WY)	1977	1978	1974	1979	1979	1978	1977	1975	1974	1979	1978	1979
MIN	67.6	84.3	287	145	241	408	313	191	115	91.5	92.5	76.3
(WY)	1979	1979	1976	1977	1978	1976	1976	1977	1977	1977	1977	1978

SUMMARY STATISTICS

WATER YEARS 1974 - 1979

ANNUAL MEAN	482
HIGHEST ANNUAL MEAN	585
LOWEST ANNUAL MEAN	357
HIGHEST DAILY MEAN	12600
LOWEST DAILY MEAN	63
ANNUAL SEVEN-DAY MINIMUM	65
INSTANTANEOUS PEAK FLOW	a29000
INSTANTANEOUS PEAK STAGE	a18.77
INSTANTANEOUS LOW FLOW	b3.0
ANNUAL RUNOFF (CFSM)	1.40
ANNUAL RUNOFF (INCHES)	18.97
10 PERCENT EXCEEDS	962
50 PERCENT EXCEEDS	245
90 PERCENT EXCEEDS	92

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	236	308	278	491	675	934	750	612	434	271	277	258
MAX	829	1235	1061	1555	1466	1881	2052	1477	1017	398	644	661
(WY)	1980	1986	1997	1996	1998	1993	1987	1989	1982	1995	1984	1996
MIN	70.8	64.1	60.8	74.5	114	74.4	172	230	202	123	71.4	57.5
(WY)	1981	1982	1982	1981	1981	1981	1981	1991	1980	1980	1981	1981

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1980 - 1998

ANNUAL TOTAL	148497	190977	
ANNUAL MEAN	407	523	459
HIGHEST ANNUAL MEAN			592
LOWEST ANNUAL MEAN			196
HIGHEST DAILY MEAN	3330	Mar 5	5440
LOWEST DAILY MEAN	156	cNov 13	156
ANNUAL SEVEN-DAY MINIMUM	156	Nov 13	156
INSTANTANEOUS PEAK FLOW			5530
INSTANTANEOUS PEAK STAGE			13.61
INSTANTANEOUS LOW FLOW			f14.2
ANNUAL RUNOFF (CFSM)	1.18	1.52	5.2
ANNUAL RUNOFF (INCHES)	16.01	20.59	18.08
10 PERCENT EXCEEDS	644	1070	940
50 PERCENT EXCEEDS	288	272	266
90 PERCENT EXCEEDS	156	156	151

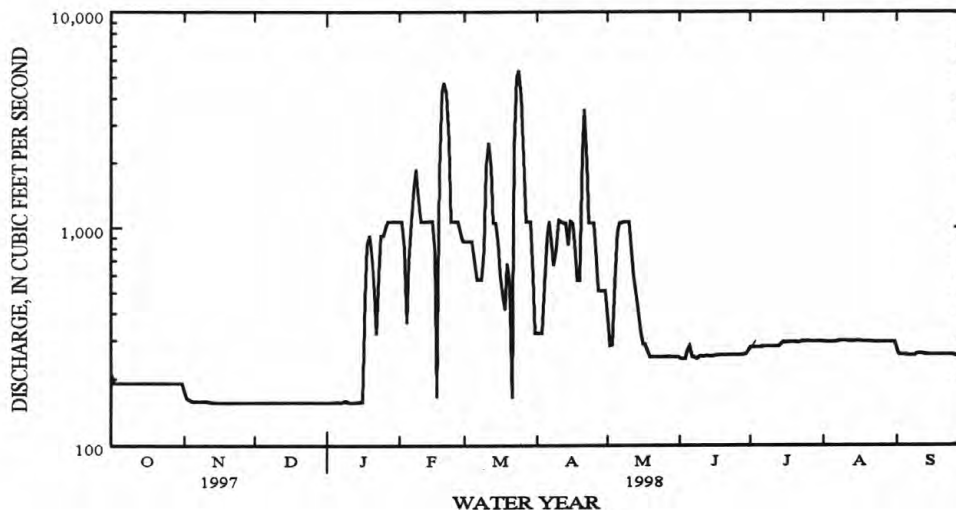
a Result of cofferdam failure during construction of Gathright Dam.

b Result of gate closure at Gathright Dam.

c Also Nov. 14 to Dec. 31, 1997.

d Also Nov. 14, 1997 to Jan. 4, 1998, and Jan. 6, 7, 10-14, 1998.

f Observed, result of regulation.



JAMES RIVER BASIN

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1979 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1978 to current year.

pH: October 1978 to current year.

WATER TEMPERATURE: October 1978 to current year.

DISSOLVED OXYGEN: October 1978 to current year.

INSTRUMENTATION.--Water-quality monitor since October 1978.

REMARKS.--Interruption in record due to instrument malfunction. Some record in prior years fragmentary due to instrument malfunction. The intake tower at Gathright Dam permits selective withdrawal of water from one or more reservoir depths. Records represent specific conductance within 5 microsiemens, pH within 0.5 units, water temperature within 0.5°C, and dissolved oxygen within 0.5 mg/L at the intake to the monitor. All four parameters were compared at the intake with the average for the river by a cross section on June 27, 1995. A maximum variation of 3 microsiemens was found for specific conductance, a maximum of 0.1 units for pH, a maximum variation of 0.2°C for water temperature, and 0.4 mg/L for dissolved oxygen was found within the cross section.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE (water years 1979, 1981-98): Maximum recorded, 249 microsiemens, Nov. 5, 1985; minimum recorded, 78 microsiemens, May 14, 1979.

pH (water years 1979, 1981-98): Maximum recorded, 9.3 units, Jan. 19, 20, 1996; minimum recorded, 6.3 units, May 18, 1996.

WATER TEMPERATURE (water years 1979, 1981-98): Maximum recorded, 28.0°C, Aug. 1, 2, 1979; minimum recorded, 0.0°C, Feb. 16-19, 1979.

DISSOLVED OXYGEN (water years 1979, 1981, 1984-98): Maximum recorded, 19.5 mg/L, Jan. 16, 1979; minimum recorded, 5.7 mg/L, Aug. 1, 3, 1987.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 157 microsiemens, Nov. 6-9, 13, 14; minimum recorded, 106 microsiemens, several days in April and May.

pH: Maximum recorded, 8.9 units, Dec. 5; minimum recorded, 6.9 units, Oct. 16, 18, and 19.

WATER TEMPERATURE: Maximum recorded, 15.7°C, June 1; minimum recorded, 4.7°C, Feb. 7.

DISSOLVED OXYGEN: Maximum recorded, 14.7 mg/L, Feb. 20, 21; minimum recorded, 7.8 mg/L, June 13, 14, 15, and 18.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	142	140	141	149	142	146	151	150	151	145	145	145
2	142	142	142	154	147	150	151	150	151	145	145	145
3	143	142	142	155	152	153	151	150	151	145	145	145
4	142	141	142	155	154	154	151	150	150	145	145	145
5	142	141	141	155	155	155	151	140	146	---	---	---
6	141	140	141	157	155	156	141	140	140	---	---	---
7	141	140	140	157	155	156	140	139	140	---	---	---
8	140	139	140	157	154	155	140	139	139	---	---	---
9	140	138	139	157	153	154	140	139	139	155	154	154
10	139	138	138	154	153	153	139	138	139	154	153	154
11	139	138	138	155	154	154	139	138	139	154	153	154
12	139	137	138	156	154	155	138	138	138	154	152	153
13	138	137	137	157	156	156	139	138	138	154	145	152
14	141	136	137	157	156	156	139	138	139	145	139	140
15	139	135	137	156	155	156	139	138	139	141	137	139
16	136	135	135	156	154	155	139	138	139	143	137	141
17	135	133	135	155	153	154	139	139	139	140	132	135
18	135	133	134	154	150	152	140	139	139	134	129	131
19	135	133	135	151	149	150	140	139	139	136	133	135
20	135	134	135	150	148	149	139	139	139	133	129	130
21	135	133	134	150	149	149	139	138	139	132	130	131
22	135	133	134	150	149	150	146	139	145	136	131	133
23	135	132	134	151	149	150	146	145	146	134	131	133
24	135	133	134	151	150	150	146	145	145	133	131	132
25	135	135	135	151	150	151	145	145	145	131	129	130
26	136	134	135	151	150	151	145	145	145	131	129	130
27	136	134	135	151	150	151	145	145	145	---	---	---
28	136	134	135	152	150	151	145	145	145	---	---	---
29	138	134	136	152	151	151	145	145	145	---	---	---
30	140	136	138	151	150	151	145	145	145	---	---	---
31	145	140	142	---	---	---	145	145	145	---	---	---
MONTH	145	132	137	157	142	152	151	138	143	---	---	---

JAMES RIVER BASIN

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	119	118	119	113	111	112	110	107	108
2	---	---	---	119	116	118	113	110	111	110	109	109
3	---	---	---	118	116	117	113	110	111	110	109	109
4	---	---	---	118	116	117	111	108	109	110	107	109
5	---	---	---	---	---	---	108	107	108	108	106	107
6	---	---	---	117	116	116	109	108	109	107	106	107
7	134	130	131	118	116	117	145	109	114	108	106	107
8	131	129	130	116	116	116	142	108	112	109	107	108
9	129	125	127	117	114	115	110	108	109	109	107	108
10	127	125	126	117	114	115	110	107	108	109	107	108
11	126	124	125	114	113	113	108	108	108	---	---	---
12	127	123	124	114	113	113	108	108	108	108	107	108
13	124	123	123	114	114	114	108	108	108	109	107	108
14	125	124	124	114	114	114	148	106	111	110	108	109
15	124	124	124	115	114	114	109	106	107	111	109	110
16	131	124	126	115	115	115	107	106	106	112	111	111
17	134	128	131	116	115	116	109	107	108	112	110	111
18	134	126	130	117	116	116	109	108	108	113	110	112
19	126	124	125	117	114	116	109	108	109	112	110	111
20	125	122	124	121	114	118	110	108	109	113	111	112
21	123	121	122	122	120	121	109	108	108	113	111	112
22	125	122	123	120	112	115	---	---	---	---	---	---
23	124	123	124	112	109	110	106	105	106	113	111	112
24	124	121	122	111	110	111	108	106	107	113	111	112
25	---	---	---	111	110	110	108	106	107	113	112	113
26	119	119	119	112	110	111	108	106	107	113	112	113
27	119	119	119	112	111	111	108	107	107	---	---	---
28	119	119	119	112	111	111	107	106	107	114	113	113
29	---	---	---	111	110	111	108	106	107	116	113	114
30	---	---	---	113	110	111	108	107	107	115	115	115
31	---	---	---	113	111	112	---	---	---	116	115	115
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	116	115	115	118	117	117	118	116	117	124	122	123
2	116	115	116	118	117	117	117	116	117	124	123	123
3	116	115	116	118	117	118	117	117	117	124	123	123
4	116	115	115	118	118	118	118	117	117	124	123	124
5	116	115	115	118	118	118	118	117	117	125	123	124
6	116	115	116	118	118	118	118	117	117	125	123	124
7	116	115	116	119	118	118	118	117	118	125	124	124
8	118	115	116	119	118	118	118	117	118	125	124	124
9	118	117	117	119	118	119	119	118	118	125	124	124
10	117	117	117	119	118	118	120	118	119	125	124	124
11	117	117	117	119	118	118	121	120	120	125	124	124
12	118	117	117	119	118	119	121	120	120	125	124	125
13	118	117	118	119	119	119	121	120	120	125	125	125
14	118	117	118	119	119	119	121	120	120	126	125	125
15	120	117	118	120	119	119	121	120	120	126	125	125
16	119	118	118	120	119	119	121	120	121	126	125	125
17	119	118	118	120	119	119	121	121	121	126	125	125
18	119	118	119	120	119	119	121	121	121	126	125	126
19	119	118	119	120	119	119	121	121	121	126	125	126
20	119	118	119	120	120	120	122	121	121	127	125	126
21	119	118	119	120	120	120	122	121	121	127	126	126
22	119	119	119	120	119	120	122	121	121	127	126	127
23	119	118	119	120	115	117	122	121	122	127	126	127
24	119	119	119	115	115	115	123	121	122	128	126	127
25	119	119	119	116	115	115	122	121	122	128	127	127
26	120	119	119	116	115	116	122	121	122	128	127	127
27	120	119	119	116	115	116	123	122	122	129	127	128
28	120	119	120	116	116	116	123	122	122	129	127	128
29	120	117	119	117	116	116	123	122	123	129	127	128
30	118	117	117	117	116	117	123	122	123	128	127	128
31	---	---	---	118	116	117	124	123	123	---	---	---
MONTH	120	115	118	120	115	118	124	116	120	129	122	125

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.3	7.2	7.2	7.4	7.3	7.3	8.1	8.1	8.1	8.2	8.2	8.2
2	7.3	7.2	7.3	7.4	7.3	7.4	8.2	8.1	8.1	8.2	8.2	8.2
3	7.7	7.2	7.3	7.6	7.4	7.5	8.3	8.1	8.2	8.2	8.2	8.2
4	7.3	7.2	7.3	7.6	7.6	7.6	8.3	8.2	8.3	8.2	8.2	8.2
5	7.4	7.2	7.3	7.7	7.6	7.6	8.9	8.3	8.4	---	---	---
6	7.4	7.3	7.4	7.7	7.6	7.7	8.3	8.3	8.3	---	---	---
7	7.4	7.4	7.4	7.7	7.7	7.7	8.3	8.3	8.3	---	---	---
8	7.4	7.4	7.4	7.8	7.7	7.7	8.3	8.3	8.3	---	---	---
9	7.5	7.4	7.5	7.9	7.7	7.8	8.3	8.3	8.3	7.9	7.8	7.8
10	7.5	7.5	7.5	7.9	7.9	7.9	8.3	8.3	8.3	7.8	7.8	7.8
11	7.5	7.4	7.5	7.9	7.9	7.9	8.3	8.3	8.3	7.9	7.8	7.9
12	7.6	7.5	7.5	8.1	7.8	7.9	8.3	8.2	8.3	7.9	7.8	7.9
13	7.6	7.6	7.6	7.8	7.7	7.7	8.3	8.3	8.3	7.9	7.8	7.9
14	7.7	7.1	7.5	7.8	7.7	7.7	8.3	8.3	8.3	7.9	7.8	7.8
15	7.1	7.0	7.0	7.8	7.8	7.8	8.3	8.2	8.3	7.9	7.8	7.8
16	7.0	6.9	7.0	7.8	7.7	7.8	8.3	8.3	8.3	7.9	7.8	7.8
17	7.0	7.0	7.0	7.8	7.8	7.8	8.3	8.3	8.3	7.8	7.8	7.8
18	7.0	6.9	7.0	7.8	7.7	7.8	8.3	8.3	8.3	7.8	7.8	7.8
19	7.1	6.9	7.0	8.0	7.8	7.9	8.3	8.3	8.3	7.8	7.8	7.8
20	7.1	7.0	7.1	8.0	7.9	8.0	8.3	8.2	8.3	7.8	7.8	7.8
21	7.1	7.1	7.1	8.0	7.9	8.0	8.2	8.2	8.2	7.8	7.8	7.8
22	7.1	7.1	7.1	8.0	8.0	8.0	8.2	8.2	8.2	7.8	7.8	7.8
23	7.2	7.1	7.2	8.0	8.0	8.0	8.2	8.1	8.2	7.8	7.8	7.8
24	7.2	7.2	7.2	8.1	8.0	8.1	8.2	8.2	8.2	7.8	7.8	7.8
25	7.2	7.2	7.2	8.1	8.0	8.1	8.2	8.2	8.2	7.8	7.8	7.8
26	7.3	7.2	7.3	8.1	8.1	8.1	8.2	8.2	8.2	7.8	7.8	7.8
27	7.3	7.3	7.3	8.1	8.1	8.1	8.2	8.2	8.2	---	---	---
28	7.4	7.3	7.3	8.2	8.0	8.1	8.2	8.2	8.2	---	---	---
29	7.4	7.3	7.4	8.2	8.1	8.2	8.2	8.2	8.2	---	---	---
30	7.5	7.4	7.5	8.2	8.1	8.1	8.2	8.2	8.2	---	---	---
31	7.7	7.4	7.5	---	---	---	8.2	8.2	8.2	---	---	---
MONTH	7.7	6.9	7.3	8.2	7.3	7.8	8.9	8.1	8.3	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	7.8	7.7	7.7	7.8	7.7	7.7	7.8	7.6	7.6
2	---	---	---	7.8	7.7	7.7	7.8	7.7	7.7	7.8	7.6	7.7
3	---	---	---	7.8	7.7	7.7	7.8	7.7	7.7	7.8	7.6	7.6
4	---	---	---	7.8	7.7	7.7	7.7	7.7	7.7	7.7	7.6	7.6
5	---	---	---	---	---	---	7.8	7.7	7.7	7.7	7.6	7.6
6	---	---	---	7.8	7.7	7.7	7.8	7.7	7.7	7.7	7.6	7.6
7	7.7	7.7	7.7	7.8	7.7	7.7	8.0	7.6	7.7	7.6	7.6	7.6
8	7.7	7.7	7.7	7.7	7.7	7.7	7.8	7.6	7.7	7.7	7.6	7.6
9	7.7	7.7	7.7	7.8	7.7	7.7	7.8	7.7	7.7	7.6	7.6	7.6
10	7.7	7.7	7.7	7.8	7.7	7.7	7.7	7.7	7.7	7.7	7.6	7.6
11	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	---	---	---
12	7.7	7.7	7.7	7.8	7.7	7.7	7.7	7.7	7.7	7.7	7.6	7.6
13	7.7	7.7	7.7	7.8	7.7	7.7	7.7	7.7	7.7	7.8	7.6	7.7
14	7.7	7.7	7.7	7.8	7.7	7.7	7.9	7.7	7.7	7.7	7.6	7.7
15	7.7	7.7	7.7	7.8	7.7	7.7	7.8	7.7	7.7	7.8	7.6	7.7
16	7.7	7.6	7.7	7.8	7.7	7.7	7.7	7.7	7.7	7.8	7.6	7.7
17	7.8	7.6	7.7	7.8	7.7	7.7	7.8	7.7	7.7	7.8	7.6	7.7
18	7.8	7.7	7.7	7.8	7.7	7.7	7.8	7.7	7.7	7.8	7.6	7.7
19	7.7	7.7	7.7	7.8	7.7	7.7	7.7	7.7	7.7	7.8	7.6	7.7
20	7.7	7.7	7.7	7.8	7.7	7.7	7.7	7.6	7.7	7.9	7.6	7.7
21	7.7	7.7	7.7	7.8	7.7	7.8	7.6	7.6	7.6	7.9	7.6	7.7
22	7.7	7.7	7.7	7.7	7.7	7.7	---	---	---	---	---	---
23	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.9	7.6	7.7
24	7.7	7.7	7.7	7.7	7.7	7.7	7.8	7.7	7.7	7.9	7.6	7.7
25	7.7	7.7	7.7	7.7	7.7	7.7	7.8	7.7	7.7	7.9	7.6	7.7
26	7.7	7.7	7.7	7.7	7.7	7.7	7.8	7.6	7.7	7.9	7.6	7.7
27	7.7	7.7	7.7	7.7	7.7	7.7	7.8	7.6	7.7	---	---	---
28	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.6	7.7	7.8	7.6	7.7
29	---	---	---	7.7	7.7	7.7	7.7	7.6	7.6	7.8	7.6	7.7
30	---	---	---	7.8	7.7	7.7	7.7	7.5	7.6	7.8	7.6	7.7
31	---	---	---	7.7	7.7	7.7	---	---	---	7.8	7.6	7.7
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

JAMES RIVER BASIN

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA--Continued

PH STANDARD UNITS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

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

[illegible]

JAMES RIVER BASIN

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	15.7	13.5	14.6	15.2	14.2	14.7	15.2	14.7	14.9	15.5	14.5	15.0
2	14.7	13.9	14.2	14.9	14.3	14.6	15.1	14.6	14.8	14.9	14.5	14.7
3	15.4	13.6	14.5	15.1	14.3	14.6	15.2	14.6	14.9	14.8	14.5	14.6
4	14.6	14.0	14.2	15.1	14.5	14.6	15.2	14.6	14.9	14.9	14.4	14.6
5	14.4	14.0	14.2	15.1	14.6	14.8	15.1	14.3	14.6	14.9	14.4	14.6
6	14.6	14.0	14.3	15.1	14.5	14.8	14.8	14.4	14.5	14.8	14.4	14.5
7	14.4	13.8	14.1	15.2	14.5	14.7	15.0	14.5	14.6	14.8	14.4	14.6
8	14.5	13.5	14.0	15.0	14.6	14.8	14.8	14.5	14.6	14.7	14.4	14.5
9	14.2	13.6	13.9	15.2	14.6	14.8	15.1	14.6	14.8	14.5	14.2	14.3
10	14.4	13.6	14.0	15.0	14.4	14.6	14.9	14.7	14.8	14.5	14.1	14.2
11	14.3	13.9	14.1	14.9	14.3	14.6	15.1	14.7	14.9	14.5	14.1	14.2
12	14.6	13.9	14.2	14.8	14.3	14.5	15.2	14.8	14.9	14.4	14.1	14.2
13	15.0	13.9	14.5	14.9	14.3	14.5	15.2	14.9	15.0	14.5	14.1	14.2
14	15.0	14.2	14.6	14.9	14.3	14.5	15.1	14.6	14.8	14.5	14.1	14.2
15	15.0	14.2	14.5	14.9	14.5	14.7	14.8	14.6	14.7	14.6	14.2	14.3
16	15.1	13.8	14.4	15.1	14.6	14.7	14.7	14.6	14.7	14.6	14.3	14.4
17	15.1	14.1	14.6	15.0	14.6	14.7	14.9	14.6	14.7	14.6	14.3	14.4
18	15.3	14.3	14.7	14.9	14.4	14.6	15.1	14.7	14.8	14.8	14.4	14.6
19	14.7	13.6	14.2	15.0	14.5	14.7	15.2	14.8	14.9	14.8	14.5	14.6
20	14.5	13.4	13.9	14.9	14.6	14.7	15.2	14.7	14.9	14.9	14.5	14.6
21	14.3	13.6	13.9	15.2	14.6	14.8	15.1	14.6	14.8	14.9	14.6	14.7
22	14.3	13.6	13.9	15.1	14.6	14.8	15.0	14.6	14.7	14.9	14.6	14.7
23	14.6	13.8	14.1	14.8	14.4	14.6	15.1	14.7	14.9	14.9	14.5	14.7
24	14.5	13.8	14.1	14.9	14.5	14.7	15.2	14.8	15.0	14.7	14.4	14.5
25	14.7	13.8	14.2	15.0	14.6	14.7	15.3	14.7	14.9	14.8	14.5	14.6
26	15.0	14.2	14.5	15.0	14.6	14.7	15.2	14.7	14.9	14.8	14.6	14.7
27	15.1	14.1	14.6	14.9	14.5	14.6	15.2	14.8	15.0	15.0	14.6	14.8
28	15.0	14.2	14.6	15.0	14.5	14.7	15.4	14.9	15.1	15.0	14.6	14.8
29	15.0	14.3	14.6	15.0	14.6	14.8	15.5	15.0	15.3	14.9	14.6	14.8
30	15.3	14.3	14.7	15.2	14.7	14.9	15.4	15.0	15.2	14.9	14.6	14.7
31	---	---	---	15.1	14.8	14.9	15.4	15.0	15.2	---	---	---
MONTH	15.7	13.4	14.3	15.2	14.2	14.7	15.5	14.3	14.9	15.5	14.1	14.5

JAMES RIVER BASIN

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA--Continued

OXYGEN DISSOLVED (MG/L). WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	12.1	11.5	11.8	11.6	11.0	11.3	10.1	9.3	9.8
2	---	---	---	11.9	11.1	11.6	11.8	10.6	11.3	10.1	9.1	9.5
3	---	---	---	12.1	11.1	11.5	11.6	11.1	11.3	9.9	9.2	9.6
4	---	---	---	11.9	11.3	11.6	11.4	10.9	11.1	10.1	9.4	9.7
5	---	---	---	---	---	---	11.4	10.9	11.2	10.3	9.8	10.0
6	---	---	---	11.4	11.1	11.2	11.7	11.3	11.5	10.0	9.9	10.0
7	12.9	12.4	12.7	11.7	11.1	11.4	11.9	10.7	11.5	10.0	9.6	9.8
8	12.9	12.8	12.9	11.7	11.0	11.3	11.7	10.6	11.2	10.5	9.5	9.7
9	13.0	12.4	12.6	12.0	11.0	11.3	11.2	10.7	10.9	10.1	9.6	9.8
10	12.6	12.4	12.5	12.8	11.1	12.1	12.1	11.1	11.4	10.0	9.5	9.8
11	12.5	12.2	12.4	13.1	12.4	12.7	11.3	10.8	11.1	---	---	---
12	12.5	12.2	12.4	13.1	11.7	12.3	11.4	10.9	11.1	9.8	9.4	9.5
13	12.7	12.4	12.5	12.5	11.7	11.9	11.3	10.9	11.0	9.7	9.4	9.6
14	12.7	12.5	12.6	12.4	11.6	11.8	11.1	10.1	10.8	10.1	9.4	9.6
15	12.8	12.6	12.7	12.4	11.4	11.8	11.6	10.7	10.9	9.7	9.3	9.5
16	12.7	11.5	12.3	12.5	11.4	11.7	11.0	10.7	10.8	9.7	9.3	9.4
17	11.8	11.4	11.6	12.1	11.2	11.5	10.8	9.9	10.5	9.6	9.1	9.4
18	14.3	11.5	12.8	11.9	11.1	11.3	10.6	10.1	10.4	10.5	9.1	9.8
19	14.6	14.1	14.4	12.1	11.0	11.4	10.3	10.1	10.2	10.6	9.9	10.1
20	14.7	14.4	14.5	12.1	10.4	11.0	12.9	10.0	11.4	10.1	9.7	9.9
21	14.7	13.8	14.4	10.8	10.3	10.5	12.9	11.9	12.4	10.2	9.3	9.9
22	14.1	12.6	13.5	13.5	10.2	11.9	---	---	---	---	---	---
23	12.7	12.4	12.5	13.7	13.2	13.4	10.6	10.1	10.3	10.5	9.3	9.7
24	12.6	12.3	12.4	13.9	13.4	13.5	10.4	9.9	10.2	9.9	9.3	9.5
25	---	---	---	13.4	12.6	13.1	11.2	10.2	10.5	9.7	9.3	9.5
26	12.7	12.1	12.4	12.9	11.5	12.1	10.7	9.7	10.1	9.7	9.1	9.4
27	12.5	11.8	12.1	12.0	11.5	11.7	10.2	9.8	10.0	---	---	---
28	12.1	11.6	11.9	12.1	11.3	11.7	10.3	9.9	10.1	9.6	9.0	9.3
29	---	---	---	12.4	11.3	11.7	10.8	9.9	10.1	9.8	9.0	9.3
30	---	---	---	12.3	10.7	11.2	10.2	9.9	10.0	9.6	8.9	9.2
31	---	---	---	11.4	10.8	11.1	---	---	---	9.1	8.7	8.9
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

JAMES RIVER BASIN

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	9.1	8.4	8.7	9.5	9.2	9.3	9.2	8.8	9.0	9.5	9.1	9.3
2	9.0	8.5	8.7	9.5	9.2	9.3	9.3	8.9	9.1	9.4	9.1	9.2
3	9.1	8.3	8.6	9.4	8.9	9.2	9.1	8.9	9.0	9.9	9.2	9.4
4	8.8	8.3	8.6	9.2	8.8	9.0	9.3	8.9	9.0	9.8	9.2	9.4
5	8.7	8.4	8.5	9.4	8.9	9.1	9.3	8.9	9.1	10.3	9.3	9.6
6	8.8	8.3	8.5	9.5	8.9	9.1	9.2	9.0	9.1	10.1	9.3	9.6
7	8.9	8.4	8.6	9.1	8.9	9.0	9.4	9.0	9.2	9.7	9.1	9.4
8	8.9	8.4	8.7	9.0	8.7	8.9	9.3	9.0	9.1	9.6	9.2	9.4
9	8.8	8.4	8.6	9.1	8.7	8.9	9.1	8.9	9.0	9.6	9.3	9.4
10	8.8	8.4	8.6	9.0	8.8	8.9	9.1	8.9	9.0	9.7	9.3	9.5
11	8.7	8.2	8.5	9.1	8.8	8.9	9.5	9.0	9.2	9.9	9.4	9.5
12	8.4	8.1	8.2	9.6	8.7	8.9	9.5	9.1	9.3	9.7	9.4	9.5
13	8.3	7.8	8.1	9.0	8.7	8.8	9.5	9.1	9.2	10.1	9.7	9.8
14	8.1	7.8	8.0	9.0	8.7	8.8	9.5	9.2	9.3	10.1	9.6	9.8
15	8.2	7.8	8.0	8.9	8.6	8.8	9.6	9.2	9.4	9.9	9.6	9.7
16	8.2	7.9	8.1	8.9	8.6	8.7	9.6	9.3	9.4	9.9	9.5	9.7
17	8.2	7.9	8.0	9.0	8.5	8.7	9.6	9.5	9.5	9.8	9.4	9.6
18	8.3	7.8	8.1	9.1	8.6	8.8	9.8	9.5	9.6	9.6	9.1	9.4
19	8.7	7.9	8.3	9.0	8.6	8.7	9.8	9.5	9.6	9.5	9.1	9.3
20	8.7	8.1	8.5	8.9	8.6	8.7	9.9	9.6	9.7	9.4	9.0	9.2
21	8.7	8.1	8.5	9.0	8.6	8.8	9.9	9.6	9.8	9.4	9.0	9.1
22	8.9	8.4	8.6	9.0	8.6	8.8	9.8	9.6	9.7	9.7	9.0	9.1
23	8.9	8.4	8.6	8.9	8.7	8.8	9.9	9.5	9.7	9.8	9.1	9.3
24	8.9	8.5	8.6	9.0	8.7	8.8	9.9	9.5	9.7	9.9	9.2	9.4
25	8.8	8.3	8.5	9.0	8.7	8.9	9.9	9.5	9.7	9.5	9.2	9.3
26	8.6	8.3	8.4	9.0	8.7	8.9	9.6	9.4	9.5	9.7	9.2	9.3
27	8.8	8.3	8.6	9.1	8.6	8.9	9.7	9.4	9.6	9.5	9.1	9.2
28	8.9	8.4	8.7	9.0	8.6	8.8	9.7	9.4	9.5	10.1	9.1	9.3
29	9.6	8.6	9.0	9.0	8.6	8.9	9.5	9.2	9.4	9.5	9.3	9.4
30	9.5	9.1	9.3	9.0	8.7	8.9	9.6	9.2	9.4	9.6	9.2	9.4
31	---	---	---	9.1	8.7	8.9	9.5	9.1	9.4	---	---	---
MONTH	9.6	7.8	8.5	9.6	8.5	8.9	9.9	8.8	9.4	10.3	9.0	9.4

JAMES RIVER BASIN

02012800 JACKSON RIVER AT FILTRATION PLANT, AT COVINGTON, VA

LOCATION.--Lat 37°48'39", long 79°59'19", Covington City, Hydrologic Unit 02080201, on left bank 50 ft upstream from Dry Run and 1.7 mi upstream from Dunlap Creek and bridge on U.S. Highway 60.

DRAINAGE AREA.--439 mi².

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1978 to current year.

INSTRUMENTATION.--Water-temperature recorder since June 1978.

REMARKS.--Some record in prior years fragmentary due to instrument malfunction. Records represent water temperature at sensor within 0.5°C. U.S. Army Corps of Engineers satellite water-temperature telemeter at station. Temperature at the sensor was compared with the average for the river by temperature cross section on Oct. 1, 1991. A maximum variation of 0.5°C was found within the cross section.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 30.5°C, July 21, 1980; minimum recorded, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 22.1°C, June 26; minimum, 1.9°C, Jan. 1.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	16.2	14.8	15.7	14.1	12.6	13.3	10.3	8.1	9.5	2.9	1.9	2.4
2	15.9	13.6	14.6	13.9	12.8	13.3	8.1	6.6	7.2	4.1	2.4	3.2
3	16.2	13.5	14.7	12.8	11.2	11.8	7.6	6.3	6.9	5.1	3.7	4.3
4	17.4	14.4	15.7	11.2	9.6	10.6	9.2	7.6	8.5	5.5	4.2	4.8
5	18.5	15.8	16.9	10.4	9.0	9.5	8.7	6.6	7.9	6.1	4.8	5.4
6	19.0	16.6	17.5	10.1	8.6	9.4	6.6	4.6	5.4	8.0	6.1	7.0
7	18.3	16.2	17.1	11.1	9.9	10.6	4.9	4.3	4.6	9.4	8.0	8.6
8	18.4	16.2	17.1	10.8	10.3	10.6	6.1	4.8	5.5	10.5	9.4	10.1
9	18.5	16.7	17.3	11.2	10.4	10.7	6.5	6.0	6.3	10.3	8.3	9.4
10	18.2	16.6	17.3	11.0	9.8	10.5	7.2	6.4	6.8	8.3	6.6	7.3
11	17.6	15.5	16.4	10.5	9.8	10.2	7.4	6.8	7.1	7.0	5.9	6.5
12	17.6	15.4	16.4	9.9	9.2	9.5	7.0	6.3	6.7	6.6	6.5	6.6
13	18.0	15.9	16.8	9.2	8.1	8.7	6.3	5.3	5.8	7.7	6.6	6.9
14	17.0	15.6	16.5	9.0	8.0	8.5	5.4	4.4	5.0	6.6	5.1	5.7
15	16.5	14.6	15.4	8.8	7.8	8.6	4.7	3.6	4.2	5.6	5.2	5.4
16	15.0	13.2	14.1	7.8	6.8	7.2	5.0	3.7	4.4	7.2	5.6	6.4
17	13.7	12.8	13.2	7.6	6.1	6.8	5.3	4.0	4.7	7.1	6.3	6.8
18	14.2	13.2	13.6	7.2	5.6	6.5	5.5	4.2	4.9	6.4	5.6	6.0
19	15.6	13.9	14.6	7.3	5.4	6.4	5.8	4.5	5.1	6.4	5.4	5.9
20	14.7	12.9	13.8	7.8	6.0	6.9	5.9	4.5	5.3	6.0	5.1	5.7
21	13.3	12.1	12.6	7.7	7.2	7.5	6.3	5.5	5.9	5.8	4.3	5.1
22	12.6	11.0	11.8	9.7	7.7	8.7	6.1	5.8	6.0	5.8	5.3	5.6
23	11.7	9.6	10.8	10.3	9.1	9.7	6.7	5.7	6.2	6.2	5.5	5.8
24	11.0	10.5	10.8	9.1	6.2	7.6	6.7	6.5	6.6	6.2	5.6	6.0
25	14.0	10.8	12.3	6.2	4.7	5.6	7.1	6.4	6.8	6.2	5.1	5.6
26	14.0	12.8	13.5	6.6	5.5	6.0	7.8	6.6	7.1	6.1	4.7	5.4
27	12.8	11.3	12.5	8.0	6.3	7.1	6.6	4.8	5.5	5.4	4.1	5.0
28	11.8	10.1	10.9	7.7	6.6	7.2	5.4	4.5	4.9	5.5	4.0	4.7
29	12.0	9.8	10.9	9.5	7.4	8.6	4.7	2.8	3.9	6.4	4.8	5.5
30	12.4	10.2	11.3	10.4	9.5	10.1	4.1	3.0	3.4	6.0	5.4	5.6
31	12.8	10.9	11.9	---	---	---	4.1	2.8	3.6	6.4	5.1	5.6
MONTH	19.0	9.6	14.3	14.1	4.7	8.9	10.3	2.8	5.9	10.5	1.9	5.9

JAMES RIVER BASIN

02013000 DUNLAP CREEK NEAR COVINGTON, VA

LOCATION.--Lat 37°48'10", long 80°02'50", Alleghany County, Hydrologic Unit 02080201, on right bank 20 ft downstream from bridge on U.S. Highway 60, 2.2 mi downstream from Ogle Creek, and 3.0 mi west of Covington.

DRAINAGE AREA.--164 mi².

PERIOD OF RECORD.--October 1928 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 972: 1929-30, 1932-34, 1942. WSP 1303: 1929-35(M), 1937-38(M), 1941-48(M). WSP 2104: Drainage area. WDR VA-74-1: 1969(M), 1972, 1973(P).

GAGE.--Water-stage recorder. Datum of gage is 1,294.70 ft above sea level. Prior to Dec. 8, 1949, nonrecording gage at same site and datum.

REMARKS.--Records good except those for period of doubtful gage-height record Sept. 8-30, which is fair. Occasional diurnal fluctuation caused by dam 7.9 mi upstream from station. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Maximum discharge, 27,400 ft³/s, from rating curve extended above 4,500 ft³/s on basis of step-backwater computations and contracted-opening measurement at gage height 15.65 ft. Minimum gage height, 0.69 ft, June 6, July 14, 1969. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1913 reached a stage of 18 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1100	5,000	8.27	Apr. 17	1330	2,380	5.76
Feb. 4	2100	3,090	6.49	Apr. 20	0030	*5,480	*8.62
Feb. 17	2330	5,240	8.45	May 8	2330	2,130	5.48
Mar. 19	0700	2,230	5.59	May 27	1730	2,350	5.72
Mar. 21	0800	4,820	8.14				

Minimum discharge, 15 ft³/s, Oct. 6, 7, 8-9, gage height, 1.33 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	31	110	43	462	329	159	189	165	57	27	21
2	16	41	91	41	380	271	152	433	138	52	25	20
3	16	48	61	67	342	228	139	415	118	50	23	19
4	18	42	53	141	1640	191	272	753	108	49	22	19
5	16	36	49	269	1870	163	461	1270	99	49	22	20
6	16	32	43	339	1480	140	355	770	94	48	21	20
7	15	31	38	297	1110	125	279	491	84	46	21	21
8	15	38	33	2870	784	133	237	1180	77	53	25	e28
9	16	49	31	845	669	415	499	1400	72	70	30	e26
10	16	47	32	415	592	536	746	692	72	55	35	e22
11	16	39	50	265	594	365	505	844	71	49	45	e21
12	17	34	60	197	734	280	388	641	70	48	36	e21
13	16	31	51	171	779	227	311	441	74	47	31	e21
14	16	32	43	156	572	202	265	329	82	37	29	e21
15	16	32	37	177	438	174	232	259	100	37	31	e20
16	16	31	33	453	370	149	208	217	108	38	87	e19
17	17	30	31	451	1740	131	1350	186	90	37	215	e19
18	17	29	30	323	2730	198	869	159	78	37	95	e19
19	17	28	29	242	1170	1660	1960	140	78	38	68	e18
20	17	27	28	193	800	1290	2980	123	85	35	50	e18
21	18	28	27	155	665	3680	918	115	72	34	41	e19
22	18	39	30	134	472	1470	556	104	66	33	36	e20
23	19	55	38	475	443	710	410	111	59	33	32	e20
24	21	48	45	663	551	465	334	149	55	34	29	e21
25	25	40	99	568	461	339	265	257	57	34	27	e21
26	26	36	112	415	411	273	229	188	52	33	26	e20
27	28	33	93	329	372	240	210	1110	50	33	25	e20
28	27	30	75	836	355	214	185	1010	52	32	23	e20
29	24	28	65	812	---	193	165	438	64	30	22	e20
30	23	29	60	806	---	174	156	274	62	28	22	e20
31	23	---	52	586	---	160	---	204	---	27	21	---
TOTAL	578	1074	1629	13734	22986	15125	15795	14892	2452	1283	1242	614
MEAN	18.6	35.8	52.5	443	821	488	527	480	81.7	41.4	40.1	20.5
MAX	28	55	112	2870	2730	3680	2980	1400	165	70	215	28
MIN	15	27	27	41	342	125	139	104	50	27	21	18
CFSM	.11	.22	.32	2.70	5.01	2.98	3.21	2.93	.50	.25	.24	.12
IN.	.13	.24	.37	3.12	5.21	3.43	3.58	3.38	.56	.29	.28	.14

e Estimated.

JAMES RIVER BASIN

02013000 DUNLAP CREEK NEAR COVINGTON, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	66.5	107	170	250	312	404	285	215	106	48.6	56.8	38.1
MAX	431	659	694	770	821	1053	1071	536	584	358	514	336
(WY)	1990	1986	1974	1996	1998	1993	1987	1989	1972	1972	1984	1989
MIN	13.4	15.7	21.5	24.2	21.5	59.1	54.7	43.7	24.3	14.3	12.5	11.0
(WY)	1942	1932	1956	1981	1934	1988	1986	1930	1934	1966	1932	1970

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

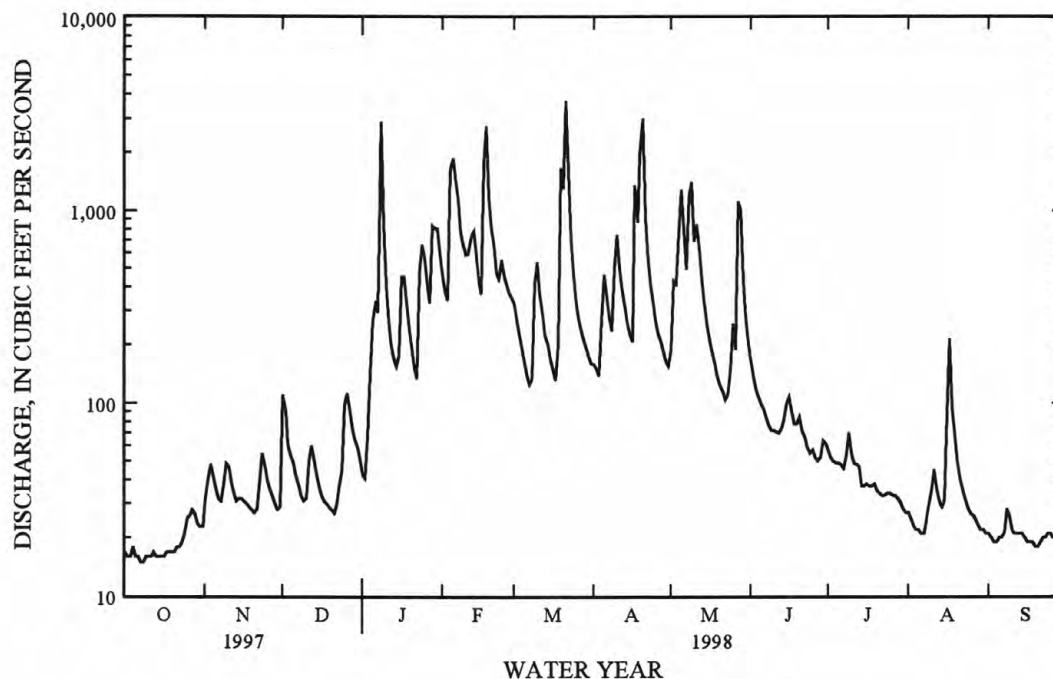
WATER YEARS 1929 - 1998

ANNUAL TOTAL	49841	91404	
ANNUAL MEAN	137	250	171
HIGHEST ANNUAL MEAN			320
LOWEST ANNUAL MEAN			67.3
HIGHEST DAILY MEAN	2540	Mar 3	10400
LOWEST DAILY MEAN	13	aSep 4	7.0
ANNUAL SEVEN-DAY MINIMUM	14	Sep 1	7.6
INSTANTANEOUS PEAK FLOW			5480
INSTANTANEOUS PEAK STAGE			8.62
INSTANTANEOUS LOW FLOW			15
ANNUAL RUNOFF (CFSM)	.83	1.53	2.0
ANNUAL RUNOFF (INCHES)	11.31	20.73	14.16
10 PERCENT EXCEEDS	279	678	370
50 PERCENT EXCEEDS	60	65	68
90 PERCENT EXCEEDS	15	20	18

a Also Sept. 5, 6, 1997.

b Also Oct. 8, 1997.

c Also Oct. 7, 8-9, 1997.



JAMES RIVER BASIN

02013100 JACKSON RIVER BELOW DUNLAP CREEK, AT COVINGTON, VA

LOCATION.--Lat 37°47'19", long 80°00'03", Covington City, Hydrologic Unit 02080201, on left bank in city recreation park and 0.5 mi downstream from Dunlap Creek.

DRAINAGE AREA.--614 mi².

PERIOD OF RECORD.--October 1974 to current year.

REVISED RECORDS.--WDR VA-76-1: 1975(M).

GAGE.--Water-stage recorder. Datum of gage is 1,206.53 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. Small diurnal fluctuation at low flow caused by Westvaco plant 0.8 mi upstream and occasionally by dam on Dunlap Creek 12.7 mi upstream. Flow regulated since December 1979 by Lake Moomaw (station 02011795) 19.9 mi upstream; since October 1984 by Back Creek Lake 47.9 mi upstream, amount unknown; and since January 1985 by Little Back Creek Lake 51.0 mi upstream, amount unknown. Diversion by Westvaco plant averages 47 ft³/s for industrial use of which approximately 42 ft³/s is returned upstream from station. Diversion 2.0 mi upstream from station for city of Covington water supply averages less than 4.0 ft³/s. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Virginia Department of Emergency Services gage-height radio transmitter at station. Maximum discharge, 31,300 ft³/s, from rating curve extended above 19,000 ft³/s. Minimum discharge, 41 ft³/s, Jan. 5, 1981, gage height, 4.38 ft, result of freezeup. Several measurements of water temperature were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1972, reached a stage of 24.36 ft, discharge, 34,000 ft³/s, from floodmarks, and flood of Dec. 27, 1973, reached a stage of 22.09 ft, from floodmarks, discharge, 28,300 ft³/s, from rating curve extended above 19,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,860 ft³/s, Apr. 19, gage height, 11.20 ft; minimum, 199 ft³/s, Nov. 19, 20, Dec. 21, gage height, 4.65 ft; minimum daily, 213 ft³/s, Nov. 20.

DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	295	278	339	244	1780	1440	608	763	497	387	382	368		
2	256	295	319	241	1640	1350	591	911	456	376	381	335		
3	252	276	277	268	1460	1280	567	897	428	371	380	337		
4	252	262	270	351	2760	1210	883	1500	415	371	378	339		
5	251	244	258	512	3190	1070	1530	2540	454	369	379	340		
6	248	234	253	630	3190	845	1640	2160	395	360	382	339		
7	249	237	241	600	3070	817	1320	1800	379	360	387	344		
8	249	251	231	4210	3160	830	1190	2740	365	395	401	367		
9	251	279	229	1650	2660	1380	1460	2970	359	397	405	359		
10	251	254	236	880	2010	2590	2240	2120	365	383	428	359		
11	251	242	256	626	1990	3130	1860	2070	361	368	432	352		
12	254	234	272	503	2240	2710	1680	1550	362	362	410	352		
13	254	228	259	453	2350	1470	1570	1190	367	357	392	350		
14	253	227	246	417	2020	1420	1280	947	375	357	391	352		
15	257	225	239	448	1780	1280	1470	779	457	366	414	351		
16	255	222	232	857	1600	893	1410	627	444	358	452	350		
17	256	217	225	970	2590	788	2560	573	423	359	660	354		
18	257	217	223	1240	4900	758	1790	520	389	359	483	357		
19	254	216	220	1280	5760	3090	3200	455	394	360	437	358		
20	253	213	216	1110	5630	2640	5620	430	398	358	406	358		
21	251	221	215	821	5300	5180	5130	422	376	353	396	358		
22	250	237	229	647	3720	3770	3280	406	371	350	389	359		
23	252	251	235	1200	1920	5760	1810	427	359	374	386	360		
24	253	245	250	1940	2090	5770	1670	479	352	389	380	357		
25	264	234	321	1790	1920	4910	1540	650	349	378	383	356		
26	262	228	341	1580	1800	2820	1260	524	351	380	380	358		
27	261	226	326	1570	1650	1520	888	1720	346	377	382	353		
28	254	220	296	2180	1470	1460	836	1790	366	379	381	353		
29	246	218	282	2340	---	1410	794	948	393	377	385	353		
30	248	227	272	2370	---	1100	776	694	382	377	380	335		
31	244	---	262	2000	---	604	---	570	---	389	380	---		
TOTAL	7883	7158	8070	35928	75650	65295	52453	36172	11728	11496	12602	10563		
MEAN	254	239	260	1159	2702	2106	1748	1167	391	371	407	352		
MAX	295	295	341	4210	5760	5770	5620	2970	497	397	660	368		
MIN	244	213	215	241	1460	604	567	406	346	350	378	335		
(†)	-3731	+2672	+1361	+20,822	-1160	-151	-101	+504	+101	-5092	-6201	-5949		
MEAN‡	134	328	304	1831	2660	2101	1745	1183	394	207	206	154		
CFSM‡	.22	.53	.50	2.98	4.33	3.42	2.84	1.93	.64	.34	.34	.25		
IN.‡	.25	.60	.57	3.44	4.51	3.95	3.17	2.22	.72	.39	.39	.28		
CAL YR 1997	TOTAL	227575	MEAN	623	MAX	5030	MIN	213	MEAN‡	570	CFSM‡	.93	IN.‡	12.60
WTR YR 1998	TOTAL	334998	MEAN	918	MAX	5770	MIN	213	MEAN‡	926	CFSM‡	1.51	IN.‡	20.48

† Total change in contents, equivalent in cubic feet per second, per month, in Lake Moomaw; provided by U.S. Army Corps of Engineers.

‡ Adjusted for monthly change in contents.

JAMES RIVER BASIN

02013100 JACKSON RIVER BELOW DUNLAP CREEK, AT COVINGTON, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1979, BY WATER YEAR (WY) [UNREGULATED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	572	425	712	1258	1079	1794	971	946	529	231	200	350
MAX	1495	853	1020	1930	1757	2762	1790	1600	906	304	270	1058
(WY)	1977	1978	1978	1979	1979	1978	1977	1975	1979	1979	1978	1979
MIN	97.2	118	370	208	450	690	472	296	187	144	135	123
(WY)	1979	1979	1976	1977	1978	1976	1976	1977	1977	1977	1977	1978

SUMMARY STATISTICS

WATER YEARS 1975 - 1979

ANNUAL MEAN	755
HIGHEST ANNUAL MEAN	905
LOWEST ANNUAL MEAN	536
HIGHEST DAILY MEAN	18800
LOWEST DAILY MEAN	88
ANNUAL SEVEN-DAY MINIMUM	92
INSTANTANEOUS PEAK FLOW	23200
INSTANTANEOUS PEAK STAGE	19.85
INSTANTANEOUS LOW FLOW	80
ANNUAL RUNOFF (CFSM)	1.23
ANNUAL RUNOFF (INCHES)	16.70
10 PERCENT EXCEEDS	1620
50 PERCENT EXCEEDS	380
90 PERCENT EXCEEDS	135

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	352	519	549	889	1174	1550	1222	958	628	352	378	348
MAX	1302	2363	1685	2644	2702	3189	3540	2223	1403	526	1285	939
(WY)	1980	1986	1997	1996	1998	1993	1987	1989	1982	1995	1984	1989
MIN	111	114	130	119	283	211	356	397	303	190	117	87.3
(WY)	1981	1982	1981	1981	1981	1981	1986	1991	1980	1981	1981	1981

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

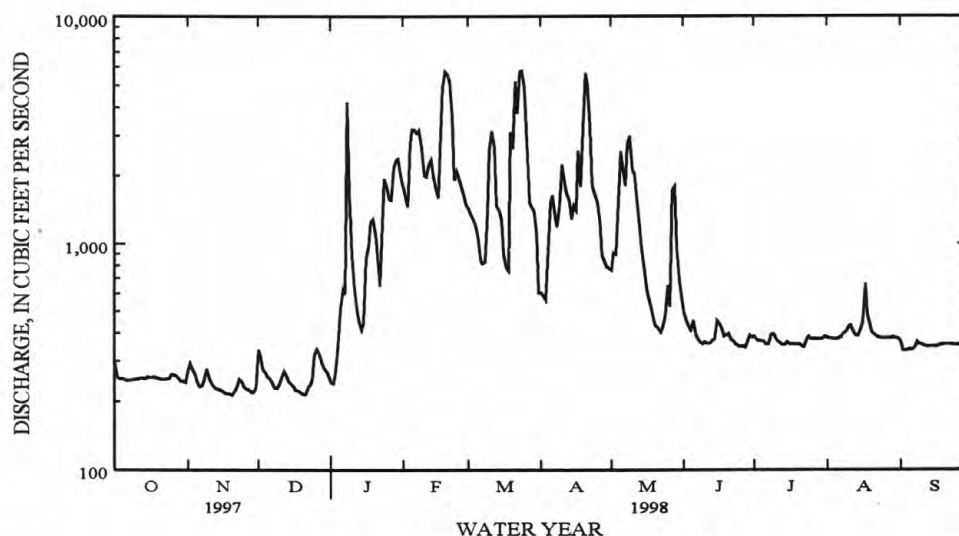
WATER YEARS 1980 - 1998

ANNUAL TOTAL	227575	334998	
ANNUAL MEAN	623	918	741
HIGHEST ANNUAL MEAN			954
LOWEST ANNUAL MEAN			348
HIGHEST DAILY MEAN	5030	Mar 5	5770
LOWEST DAILY MEAN	213	Nov 20	213
ANNUAL SEVEN-DAY MINIMUM	219	Nov 15	219
INSTANTANEOUS PEAK FLOW			7860
INSTANTANEOUS PEAK STAGE			11.20
INSTANTANEOUS LOW FLOW			199
ANNUAL RUNOFF (CFSM)	1.02	1.49	1.21
ANNUAL RUNOFF (INCHES)	13.79	20.30	16.39
10 PERCENT EXCEEDS	1060	2240	1630
50 PERCENT EXCEEDS	368	385	367
90 PERCENT EXCEEDS	246	244	214

a Also Sept. 27-29, 1981.

b Also Nov. 20, Dec. 21, 1997.

c Result of freezeup.



JAMES RIVER BASIN

02014000 POTTS CREEK NEAR COVINGTON, VA

LOCATION.--Lat 37°43'44", long 80°02'33", Alleghany County, Hydrologic Unit 02080201, on left bank at downstream side of bridge on State Highway 18, 0.8 mi downstream from Blue Spring Creek, and 5.2 mi southwest of Covington.

DRAINAGE AREA.--153 mi².

PERIOD OF RECORD.--October 1928 to September 1956, October 1965 to current year.

REVISED RECORDS.--WSP 1723: 1935, 1936(M), 1940(M), 1942(M), 1948-49(M), 1951-52(M), 1954(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,273.93 ft above sea level. Prior to Sept. 30, 1956, nonrecording gage at site 1.3 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 15,400 ft³/s, from rating curve extended above 12,000 ft³/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1530	2,990	7.56	Mar. 21	0530	3,900	8.30
Feb. 17	2200	3,170	7.71	Apr. 20	0300	*4,010	*8.39

Minimum discharge, 19 ft³/s, Sept. 15, 17-18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	42	72	40	352	456	215	241	161	65	25	21
2	26	70	55	42	302	419	203	338	142	57	25	21
3	25	74	44	60	305	360	181	321	129	53	24	21
4	26	68	44	81	1040	305	340	444	124	52	23	21
5	25	46	39	128	1110	263	529	620	121	56	22	21
6	24	37	37	169	1080	228	414	540	118	53	22	20
7	24	37	36	190	774	204	348	445	105	47	21	20
8	24	40	34	2090	601	222	303	811	95	55	25	31
9	24	44	33	801	539	546	416	826	90	51	35	26
10	25	46	36	435	499	621	539	603	94	46	39	22
11	26	40	38	302	545	467	460	750	91	43	49	21
12	25	36	44	239	762	378	391	627	98	40	38	21
13	25	36	43	215	756	319	339	499	104	38	29	21
14	25	38	40	187	600	285	303	407	108	36	27	20
15	27	42	35	207	484	250	274	337	117	36	33	20
16	26	42	33	386	424	219	260	285	110	35	52	20
17	26	38	32	366	1580	197	905	252	91	34	137	20
18	28	36	33	316	2060	249	725	220	82	33	73	20
19	28	33	32	267	1160	1260	1360	193	81	34	56	20
20	28	33	31	234	889	1270	2490	173	193	32	41	20
21	28	35	30	196	757	3100	974	160	123	30	35	20
22	26	45	35	174	604	1370	649	146	103	29	31	21
23	27	48	42	354	587	780	514	153	89	29	28	21
24	28	48	51	453	633	564	441	198	79	37	26	21
25	32	39	80	427	526	446	362	204	78	33	25	21
26	38	36	76	344	461	374	311	178	71	30	24	21
27	44	36	73	299	433	326	281	253	63	28	23	21
28	38	35	65	379	438	289	254	339	65	28	23	21
29	35	33	59	552	---	262	230	268	77	27	23	21
30	32	35	52	529	---	239	214	223	65	26	22	21
31	32	---	48	434	---	221	---	187	---	26	21	---
TOTAL	877	1268	1402	10896	20301	16489	15225	11241	3067	1219	1077	636
MEAN	28.3	42.3	45.2	351	725	532	508	363	102	39.3	34.7	21.2
MAX	44	74	80	2090	2060	3100	2490	826	193	65	137	31
MIN	24	33	30	40	302	197	181	146	63	26	21	20
CFSM	.18	.28	.30	2.30	4.74	3.48	3.32	2.37	.67	.26	.23	.14
IN.	.21	.31	.34	2.65	4.94	4.01	3.70	2.73	.75	.30	.26	.15

JAMES RIVER BASIN

02014000 POTTS CREEK NEAR COVINGTON, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1956, 1966 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	96.1	128	176	250	303	381	293	225	138	67.2	67.0	60.8
MAX	548	766	643	788	725	1078	1184	519	650	288	461	516
(WY)	1990	1986	1949	1937	1998	1955	1987	1971	1972	1938	1940	1989
MIN	20.7	23.8	24.7	29.8	26.9	75.7	80.5	51.4	29.4	22.1	21.9	18.4
(WY)	1940	1940	1940	1956	1934	1988	1986	1934	1934	1966	1930	1968

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

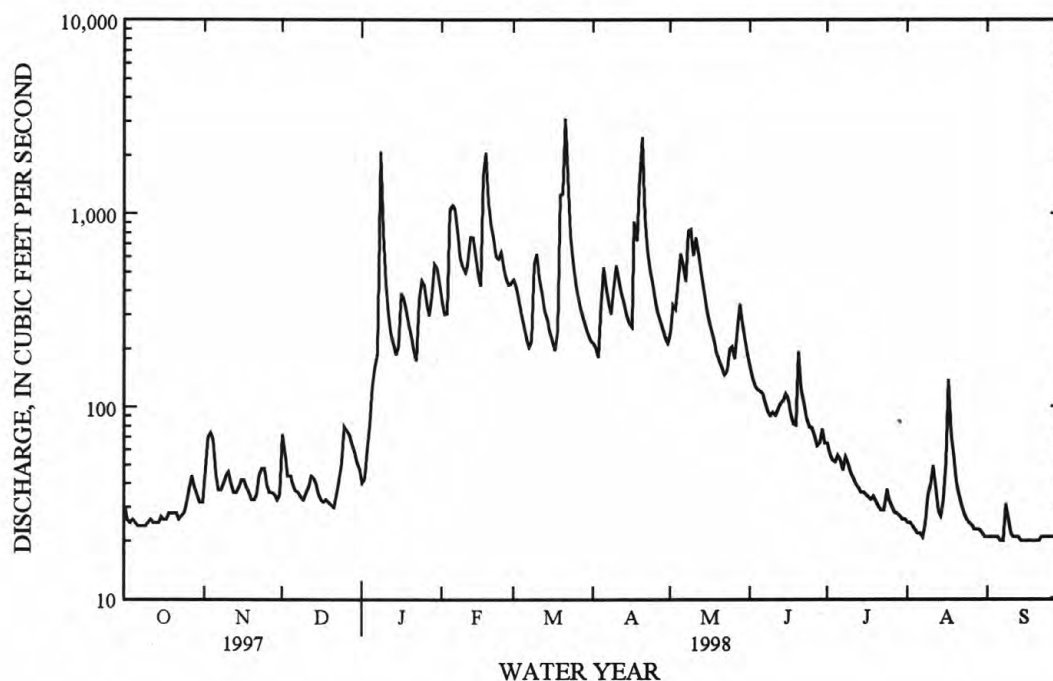
FOR 1998 WATER YEAR

WATER YEARS 1929 - 1956
1966 - 1998

ANNUAL TOTAL	47520	83698	181
ANNUAL MEAN	130	229	320
HIGHEST ANNUAL MEAN			77.2
LOWEST ANNUAL MEAN			15
HIGHEST DAILY MEAN	1240	Mar 4	3100
LOWEST DAILY MEAN	24	Oct 6	20
ANNUAL SEVEN-DAY MINIMUM	25	Oct 3	20
INSTANTANEOUS PEAK FLOW			4010
INSTANTANEOUS PEAK STAGE			8.39
INSTANTANEOUS LOW FLOW			19
ANNUAL RUNOFF (CFSM)	.85	1.50	1.19
ANNUAL RUNOFF (INCHES)	11.55	20.35	16.12
10 PERCENT EXCEEDS	255	573	401
50 PERCENT EXCEEDS	73	70	87
90 PERCENT EXCEEDS	28	23	28

a Also Sept. 17-18, 1998.

b Minimum observed.



JAMES RIVER BASIN

02015700 BULLPASTURE RIVER AT WILLIAMSVILLE, VA

LOCATION.--Lat 38°11'43", long 79°34'14", Bath County, Hydrologic Unit 02080201, on left bank 15 ft downstream from bridge on State Highway 614 at Williamsville and 0.62 mi upstream from mouth.

DRAINAGE AREA.--110 mi².

PERIOD OF RECORD.--August 1960 to current year.

REVISED RECORDS.--WSP 2104: Drainage area. WRD VA-62-1: 1961. WRD VA-96-1: 1985(M).

GAGE.--Water-stage recorder. Datum of gage is 1,610.14 ft above sea level. Prior to July 12, 1974, at site 700 ft upstream at datum 11.84 ft higher.

REMARKS.--No estimated daily discharges. Records good. Maximum discharge, 22,900 ft³/s, from rating curve extended above 3,300 ft³/s on basis of slope-area measurement of peak flow. Minimum discharge, 19 ft³/s, result of freezeup. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location by the Virginia Department of Environmental Quality - Water Division.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	0730	*7,460	*8.18	Mar. 21	0030	2,570	5.41
Feb. 17	1800	2,310	5.19	Apr. 19	2000	2,430	5.29
Mar. 9	1300	2,610	5.44				

Minimum discharge, 36 ft³/s, Sept. 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	114	66	63	203	464	234	181	80	77	46	39
2	41	168	62	74	184	377	221	236	77	66	44	39
3	41	105	61	78	189	307	184	221	73	59	43	39
4	40	83	64	94	218	249	558	233	70	59	42	39
5	40	70	66	170	221	212	454	356	70	58	42	38
6	40	63	62	272	227	181	345	341	70	54	41	39
7	39	362	59	411	221	165	272	286	68	53	41	39
8	39	430	58	3800	206	503	249	445	67	63	42	48
9	38	239	57	1330	209	1680	853	377	66	59	43	43
10	38	142	66	653	221	1020	705	307	73	53	45	40
11	38	111	93	402	262	556	454	262	68	51	57	39
12	38	91	85	296	504	377	337	242	70	49	46	39
13	39	83	78	255	567	303	275	212	71	49	44	39
14	39	105	73	206	445	262	246	184	71	49	45	38
15	39	122	66	210	341	224	218	160	123	49	101	38
16	39	103	64	372	286	189	192	151	101	48	62	38
17	39	91	63	307	1210	170	203	155	89	51	55	38
18	39	81	61	255	1320	341	168	133	75	49	54	38
19	39	77	58	209	957	1220	1110	122	126	49	48	38
20	40	73	57	178	855	1080	1110	114	120	47	44	40
21	39	70	56	148	729	2080	642	109	88	49	43	39
22	38	88	57	139	541	1070	450	105	78	47	42	39
23	38	86	58	604	516	653	372	103	73	46	42	39
24	41	78	59	598	441	450	318	111	68	46	41	38
25	52	74	88	423	397	333	262	107	63	45	41	38
26	49	73	88	311	360	282	227	94	62	45	40	38
27	64	73	83	259	360	249	206	100	67	45	40	38
28	49	67	81	239	419	221	181	103	74	46	40	39
29	45	67	77	236	---	198	163	91	153	45	40	38
30	43	66	78	255	---	173	155	86	88	44	40	38
31	42	---	75	242	---	160	---	81	---	44	39	---
TOTAL	1288	3455	2119	13089	12609	15749	11364	5808	2442	1594	1433	1172
MEAN	41.5	115	68.4	422	450	508	379	187	81.4	51.4	46.2	39.1
MAX	64	430	93	3800	1320	2080	1110	445	153	77	101	48
MIN	38	63	56	63	184	160	155	81	62	44	39	38
CFSM	.38	1.05	.62	3.84	4.09	4.62	3.44	1.70	.74	.47	.42	.36
IN.	.44	1.17	.72	4.43	4.26	5.33	3.84	1.96	.83	.54	.48	.40

JAMES RIVER BASIN

02015700 BULLPASTURE RIVER AT WILLIAMSVILLE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	85.1	123	164	202	227	317	226	192	119	66.4	65.5	67.9
MAX	295	784	543	631	498	655	663	448	376	245	272	432
(WY)	1977	1986	1974	1996	1982	1993	1987	1996	1982	1972	1969	1996
MIN	30.1	35.9	31.9	34.7	63.8	62.2	74.9	65.4	41.4	32.9	27.7	28.5
(WY)	1989	1992	1966	1981	1963	1981	1981	1977	1964	1966	1964	1968

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1960 - 1998

ANNUAL TOTAL	45973	72122	154	
ANNUAL MEAN	126	198	248	1996
HIGHEST ANNUAL MEAN			71.2	1981
LOWEST ANNUAL MEAN			e8700	Nov 4 1985
HIGHEST DAILY MEAN	1620	Mar 3	3800	Jan 8
LOWEST DAILY MEAN	37	Sep 6	38	aOct 9
ANNUAL SEVEN-DAY MINIMUM	38	Sep 2	38	cSep 13
INSTANTANEOUS PEAK FLOW			7460	Jan 8
INSTANTANEOUS PEAK STAGE			8.18	Jan 8
INSTANTANEOUS LOW FLOW			36	Sep 27
ANNUAL RUNOFF (CFSM)	1.15		1.80	1.40
ANNUAL RUNOFF (INCHES)	15.55		24.39	19.08
10 PERCENT EXCEEDS	255		443	307
50 PERCENT EXCEEDS	83		78	82
90 PERCENT EXCEEDS	40		39	35

a Also Oct. 10-12, 22, 23, 1997 and Sept. 5, 14-19, 24-27, 29, 30, 1998.

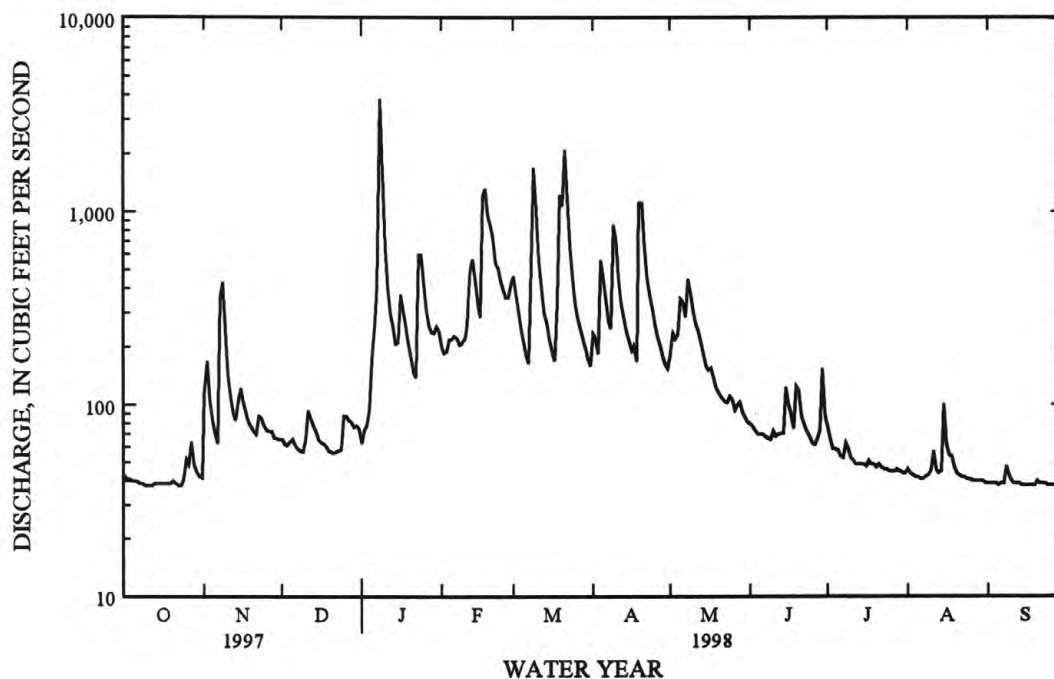
b Also Sept. 9, 1964.

c Also Sept. 24, 1998.

d From floodmarks.

e Estimated.

f Result of freezeup.



JAMES RIVER BASIN

02016000 COWPASTURE RIVER NEAR CLIFTON FORGE, VA

LOCATION.--Lat 37°47'30", long 79°45'35", Alleghany County, Hydrologic Unit 02080201, on left bank 100 ft downstream from bridge on State Highway 633, 2.5 mi upstream from confluence with Jackson River, and 4.0 mi southeast of Clifton Forge.

DRAINAGE AREA.--461 mi².

PERIOD OF RECORD.--March 1925 to current year. Records for May 1907 to August 1908, published in WSP 242, are unreliable and should not be used.

REVISED RECORDS.--WSP 952: 1925-41. WSP 2104: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 1,006.93 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to October 1934, nonrecording gage at site 100 ft upstream at present datum.

REMARKS.--Records good, except for period of no gage-height record, Sept. 8-10, which is fair. Low flow affected by springs and by occasional regulation from unknown source. Maximum discharge, 40,900 ft³/s, from rating curve extended above 13,000 ft³/s on basis of slope-area measurements at gage heights 15.70 ft and 19.15 ft. Minimum gage height, 1.43 ft, Jan. 31, 1981, result of freezeup. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1913 reached a stage of 20.8 ft, from floodmarks, discharge, about 45,000 ft³/s, from rating curve extended above 13,000 ft³/s on basis of records for other stations in James River Basin.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 5,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1915	*20,800	14.39	Mar. 19	1345	8,560	9.51
Feb. 4	1745	6,510	8.37	Mar. 21	1430	11,900	11.07
Feb. 18	0845	7,570	8.98	Apr. 20	1130	6,730	8.50
Mar. 10	0200	5,700	7.87				

Minimum discharge, 74 ft³/s, Sept. 29-30, gage height, 1.50 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	134	187	379	301	1250	1220	532	517	281	352	101	82
2	104	549	324	267	1010	1130	612	773	259	278	97	81
3	97	555	256	309	925	950	565	840	239	233	93	79
4	94	383	251	387	3510	806	874	867	224	204	91	79
5	93	285	252	599	3020	690	1830	1380	217	197	88	79
6	91	235	243	934	2220	606	1300	1430	210	194	86	79
7	90	416	225	1160	2120	542	994	1160	202	174	85	79
8	89	1230	207	13300	1700	567	827	2430	194	180	93	e94
9	88	1290	196	9750	1440	2830	1210	2120	186	205	101	e87
10	87	721	201	2830	1220	4090	2930	1520	194	191	114	e84
11	86	498	256	1670	1170	1990	1820	1160	193	160	115	85
12	86	380	346	1170	1490	1340	1270	955	199	146	112	82
13	85	309	326	965	2010	1020	1000	806	196	139	110	79
14	86	281	306	810	1690	868	855	682	200	134	98	78
15	87	297	281	825	1310	758	761	596	301	127	104	77
16	87	330	255	1570	1050	652	675	531	520	124	160	77
17	86	301	235	1500	2400	574	1150	489	543	122	199	77
18	87	270	224	1130	5960	665	916	579	358	122	152	77
19	87	240	214	898	3290	6910	1170	463	302	119	131	77
20	86	219	205	772	2420	4230	5220	404	379	114	119	78
21	86	211	192	652	2180	10400	2630	357	411	111	108	77
22	86	246	194	571	1720	5460	1650	333	317	109	103	79
23	86	313	217	1630	1550	2600	1250	326	271	109	99	79
24	89	305	229	2730	1800	1720	1060	350	238	121	96	76
25	106	269	456	1970	1500	1270	870	395	214	113	93	75
26	131	244	540	1400	1280	1010	742	336	205	106	90	75
27	148	230	467	1100	1160	875	671	657	230	102	87	76
28	138	217	436	1690	1120	774	623	709	217	101	85	76
29	136	202	398	1600	---	690	546	470	297	101	84	74
30	114	196	375	1680	---	623	510	364	500	99	83	74
31	107	---	338	1590	---	568	---	317	---	105	82	---
TOTAL	3057	11409	9024	57760	53515	58428	37063	24316	8297	4692	3259	2371
MEAN	98.6	380	291	1863	1911	1885	1235	784	277	151	105	79.0
MAX	148	1290	540	13300	5960	10400	5220	2430	543	352	199	94
MIN	85	187	192	267	925	542	510	317	186	99	82	74
CFSM	.21	.82	.63	4.04	4.15	4.09	2.68	1.70	.60	.33	.23	.17
IN.	.25	.92	.73	4.66	4.32	4.71	2.99	1.96	.67	.38	.26	.19

e Estimated.

JAMES RIVER BASIN

02016000 COWPASTURE RIVER NEAR CLIFTON FORGE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	278	380	570	751	878	1116	848	649	388	220	234	214
MAX	1474	2745	1883	2253	1911	2531	2878	2342	1484	1213	1531	1510
(WY)	1938	1986	1974	1996	1998	1993	1987	1989	1982	1972	1969	1996
MIN	45.4	62.8	82.9	95.3	89.9	203	235	147	98.1	64.9	64.9	60.3
(WY)	1931	1932	1966	1981	1934	1981	1995	1930	1964	1930	1930	1932

SUMMARY STATISTICS

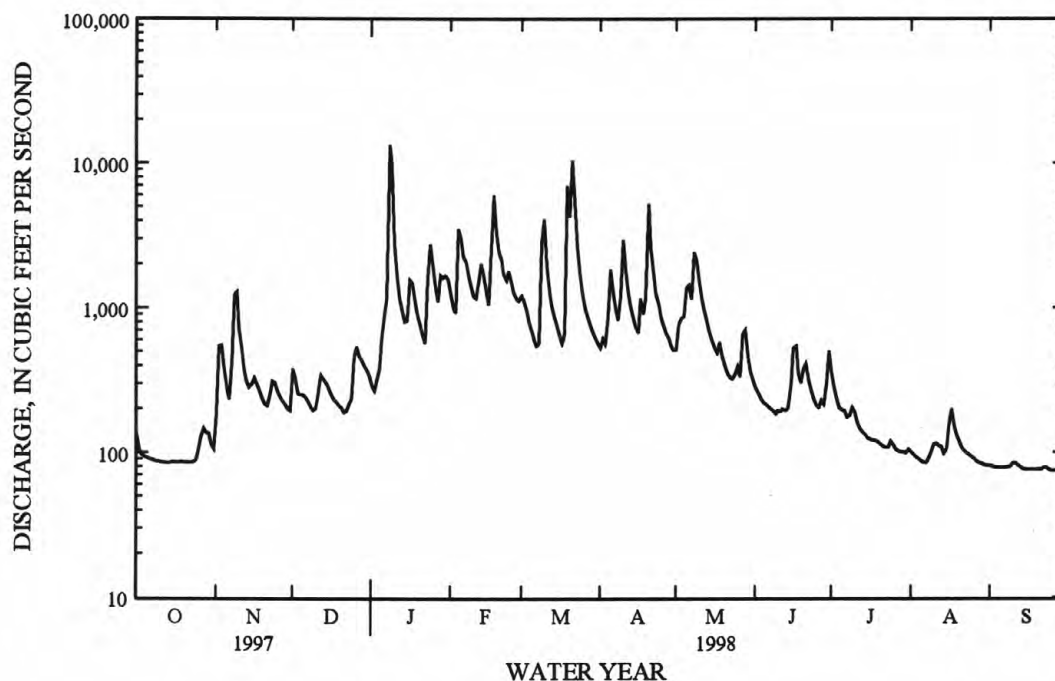
FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1926 - 1998

ANNUAL TOTAL	158311	273191	
ANNUAL MEAN	434	748	
HIGHEST ANNUAL MEAN			542
LOWEST ANNUAL MEAN			935
HIGHEST DAILY MEAN	8020	Mar 4	13300 Jan 8
LOWEST DAILY MEAN	85	Oct 13	74 aSep 29
ANNUAL SEVEN-DAY MINIMUM	86	Oct 11	75 Sep 24
INSTANTANEOUS PEAK FLOW			20800 Jan 8
INSTANTANEOUS PEAK STAGE			14.39 Jan 8
INSTANTANEOUS LOW FLOW			74 aSep 29
ANNUAL RUNOFF (CFSM)	.94	1.62	38
ANNUAL RUNOFF (INCHES)	12.77	22.04	19.15
10 PERCENT EXCEEDS	879	1680	40
50 PERCENT EXCEEDS	292	302	43
90 PERCENT EXCEEDS	93	86	40900
			1170
			261
			87

a Also Sept. 30, 1998.



JAMES RIVER BASIN

02016500 JAMES RIVER AT LICK RUN, VA

LOCATION.--Lat 37°46'25", long 79°47'05", Botetourt County, Hydrologic Unit 02080201, on right bank at community of Lick Run, 1,000 ft downstream from bridge on U.S. Highway 220, 0.9 mi downstream from confluence of Cowpasture and Jackson Rivers, 1.8 mi south of Iron Gate, and at mile 342.3.

DRAINAGE AREA.--1,373 mi².

PERIOD OF RECORD.--April 1925 to current year.

REVISED RECORDS.--WSP 852: 1936-37. WSP 972: 1927, 1930(M), 1932(M), 1935-36. WSP 1303: 1927-28(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 978.30 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to Oct. 26, 1928, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since December 1979 by Lake Moomaw (station 02011795) 43.7 mi upstream from station; since October 1984 by Back Creek Lake 71.7 mi upstream; and since January 1985 by Little Back Creek Lake 74.8 mi upstream, amount unknown. National Weather Service gage-height telemeter at station. Maximum discharge, 87,500 ft³/s, from rating curve extended above 66,000 ft³/s. Minimum discharge, 133 ft³/s, result of freezeup. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1877 reached a stage of about 33 ft, discharge, about 120,000 ft³/s. Flood in March 1913 reached a stage of 30.4 ft, from floodmarks, discharge, about 98,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 33,000 ft³/s, Jan. 8, gage height, 18.43 ft; minimum, 348 ft³/s, Oct. 13, gage height, 1.77 ft; minimum daily, 362 ft³/s, Oct. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	524	583	944	709	3980	3510	1690	1810	1340	1090	539	490		
2	425	1000	869	658	3420	3290	1740	2310	1240	935	523	460		
3	391	1000	712	725	3160	2910	1640	2380	1180	837	518	444		
4	381	770	686	908	8810	2560	2290	2800	1110	780	510	444		
5	382	626	675	1340	10100	2280	4350	4890	1130	786	503	441		
6	376	562	632	1910	8220	1830	3800	4720	1070	759	501	437		
7	372	761	595	2360	7480	1690	3160	3800	975	712	501	439		
8	370	1620	560	24700	6620	1770	2730	6800	904	779	534	532		
9	365	1720	534	15600	5650	5360	3150	7470	862	841	576	475		
10	368	1140	558	5220	4310	8400	6510	5070	886	765	657	469		
11	363	866	632	3230	4200	6410	4700	4560	873	700	689	464		
12	363	703	756	2340	5050	5200	3750	3740	881	652	628	454		
13	365	614	727	1950	6020	3250	3250	2980	904	625	582	447		
14	363	599	685	1660	5040	2900	2900	2450	912	615	548	446		
15	371	606	656	1720	4090	2640	2630	2100	1190	609	602	444		
16	367	649	649	3290	3540	1990	2610	1800	1440	598	736	439		
17	366	611	560	3290	7060	1780	5220	1650	1410	594	1210	435		
18	374	568	543	3080	16800	1830	4470	1650	1170	585	944	439		
19	373	535	523	2790	12700	13600	5680	1460	1080	585	747	433		
20	370	504	506	2460	10700	10700	17800	1340	1260	571	656	438		
21	367	504	487	1920	9980	23300	11400	1280	1230	553	605	437		
22	366	589	542	1570	7330	13300	6970	1230	1090	545	570	440		
23	362	667	589	3350	4740	11100	4230	1240	965	560	552	438		
24	379	661	620	6010	5300	9380	3650	1360	873	623	537	430		
25	435	602	986	4980	4520	7870	3150	1680	814	585	528	428		
26	471	573	1140	3850	3990	5060	2800	1460	805	561	521	433		
27	504	552	1030	3380	3700	3140	2200	2780	813	552	517	433		
28	463	532	963	5160	3390	2860	2040	3990	825	549	507	429		
29	452	519	882	5740	---	2680	1860	2280	1080	544	502	424		
30	421	521	865	5640	---	2450	1770	1730	1280	530	499	426		
31	402	---	786	4880	---	1760	---	1490	---	559	495	---		
TOTAL	12251	21757	21892	126420	179900	166800	124140	86300	31592	20579	18537	13388		
MEAN	395	725	706	4078	6425	5381	4138	2784	1053	664	598	446		
MAX	524	1720	1140	24700	16800	23300	17800	7470	1440	1090	1210	532		
MIN	362	504	487	658	3160	1690	1640	1230	805	530	495	424		
(†)	-3731	+2672	+1361	+20822	-1160	-151	-101	+504	+101	-5092	-6201	-5949		
MEAN†	275	814	750	4750	6384	5376	4135	2800	1056	500	398	248		
CFSM†	.20	.59	.55	3.46	4.65	3.92	3.01	2.04	.77	.36	.29	.18		
IN.†	.23	.66	.63	3.99	4.84	4.52	3.36	2.35	.86	.42	.33	.20		
CAL YR 1996	TOTAL	492020	MEAN	1348	MAX	17000	MIN	362	MEAN†	1295	CFSM†	.94	IN.†	12.80
WTR YR 1997	TOTAL	823556	MEAN	2256	MAX	24700	MIN	362	MEAN†	2265	CFSM†	1.65	IN.†	22.40

† Total change in contents, equivalent in cubic feet per second, per month, in Lake Moomaw; provided by U.S. Army Corps of Engineers.

† Adjusted for monthly change in contents.

JAMES RIVER BASIN

02016500 JAMES RIVER AT LICK RUN, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1979, BY WATER YEAR (WY) [UNREGULATED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	777	1014	1695	2193	2717	3425	2542	1923	1086	653	685	548
MAX	3670	3988	5458	6362	5613	8393	5307	4882	4349	3346	3949	2839
(WY)	1938	1973	1974	1937	1971	1963	1958	1942	1972	1972	1969	1950
MIN	178	209	265	291	277	1264	832	476	331	209	204	183
(WY)	1931	1932	1966	1956	1934	1940	1942	1941	1964	1930	1930	1930

SUMMARY STATISTICS

WATER YEARS 1925 - 1979

ANNUAL MEAN	1606
HIGHEST ANNUAL MEAN	2693
LOWEST ANNUAL MEAN	794
HIGHEST DAILY MEAN	50500 Aug 20 1969
LOWEST DAILY MEAN	156 Oct 12 1930
ANNUAL SEVEN-DAY MINIMUM	162 Oct 8 1930
INSTANTANEOUS PEAK FLOW	66600 Mar 18 1936
INSTANTANEOUS PEAK STAGE	27.01 Jun 21 1972
INSTANTANEOUS LOW FLOW	148 Sep 7 1966
ANNUAL RUNOFF (CFSM)	1.17
ANNUAL RUNOFF (INCHES)	15.88
10 PERCENT EXCEEDS	3530
50 PERCENT EXCEEDS	820
90 PERCENT EXCEEDS	260

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	833	1376	1539	2257	2750	3641	2969	2201	1442	705	713	739
MAX	3495	7206	4206	5302	6425	8083	9349	5639	3660	1186	2704	2839
(WY)	1990	1986	1997	1996	1998	1993	1987	1989	1982	1995	1984	1996
MIN	270	327	328	268	949	623	755	940	561	479	264	269
(WY)	1981	1982	1981	1981	1981	1981	1986	1991	1988	1981	1981	1981

SUMMARY STATISTICS

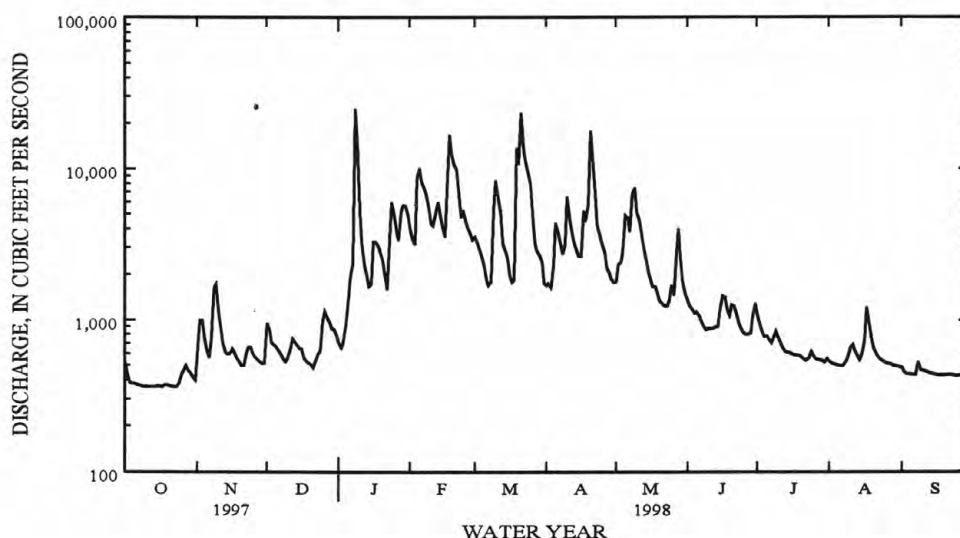
FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1980 - 1998

ANNUAL TOTAL	492020	823556	1758
ANNUAL MEAN	1348	2256	2256
HIGHEST ANNUAL MEAN			789
LOWEST ANNUAL MEAN			1981
HIGHEST DAILY MEAN	17000 Mar 4	24700 Jan 8	67500 Nov 5 1985
LOWEST DAILY MEAN	362 Oct 23	362 Oct 23	180 Jan 5 1981
ANNUAL SEVEN-DAY MINIMUM	365 Oct 8	365 Oct 8	202 Sep 28 1981
INSTANTANEOUS PEAK FLOW		33000 Jan 8	87500 Nov 5 1985
INSTANTANEOUS PEAK STAGE		18.42 Jan 8	30.22 Nov 5 1985
INSTANTANEOUS LOW FLOW		348 Oct 13	a133 Jan 6 1981
ANNUAL RUNOFF (CFSM)	.98	1.64	1.28
ANNUAL RUNOFF (INCHES)	13.33	22.31	17.39
10 PERCENT EXCEEDS	2520	5250	3830
50 PERCENT EXCEEDS	865	904	860
90 PERCENT EXCEEDS	450	437	398

a Result of freezeup.



JAMES RIVER BASIN

02017500 JOHNS CREEK AT NEW CASTLE, VA

LOCATION.--Lat 37°30'22", long 80°06'25", Craig County, Hydrologic Unit 02080201, on right bank 20 ft downstream from bridge on State Highway 615 at New Castle and 1,700 ft upstream from mouth.

DRAINAGE AREA.--104 mi².

PERIOD OF RECORD.--April 1926 to current year.

REVISED RECORDS.--WSP 972: 1935-36(M), 1940(M). WSP 1203: 1928, 1935. WSP 1303: 1927(M), 1928, 1929-34(M), 1935. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,254.30 ft above sea level. Prior to June 7, 1937, nonrecording gage at same site and datum.

REMARKS.--Records good except those for period with ice effect, Dec. 31 to Jan. 1, and periods of doubtful gage-height record, July 26 to Aug. 4, and Sept. 5-8, 11, 14, 15, 18, 22, 28, 29, which are fair. Maximum discharge, 8,000 ft³/s, from rating curve extended above 3,200 ft³/s on basis of slope-area measurement of peak flow. Minimum discharge, 6.0 ft³/s, result of freezeup. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1300	2,540	8.80	Apr. 19	2300	*3,100	*9.30
Mar. 21	0330	2,760	9.02				

Minimum discharge, 8.8 ft³/s, Oct. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.7	17	22	e30	368	258	153	245	85	31	e14	11
2	9.4	26	22	36	303	242	136	327	71	28	e14	11
3	9.6	27	21	39	313	220	119	263	66	26	e14	11
4	9.7	22	21	48	1240	191	312	362	70	25	e13	11
5	9.5	20	21	89	1190	164	403	469	70	28	13	e10
6	9.4	18	21	112	1030	142	328	374	71	24	13	e10
7	9.2	17	20	137	771	123	278	329	65	22	13	e9.8
8	9.0	17	19	1400	575	157	243	496	59	22	20	e12
9	9.2	17	19	607	477	451	466	426	56	22	25	11
10	9.2	16	21	423	406	430	482	360	58	22	22	11
11	11	16	23	340	397	348	389	561	57	21	25	e10
12	9.8	16	23	294	471	299	334	449	72	20	17	11
13	9.1	16	23	257	448	260	292	367	74	19	15	10
14	9.0	18	22	203	384	230	258	305	80	19	14	e9.5
15	9.7	21	22	230	326	191	223	249	85	19	14	e9.3
16	9.3	20	22	407	290	164	219	206	80	18	20	10
17	9.5	18	23	344	977	144	952	169	78	17	50	9.7
18	9.9	18	21	280	990	150	588	136	68	17	37	e9.4
19	10	17	20	237	650	820	1240	112	71	17	27	9.8
20	10	17	20	202	559	1220	1600	94	76	16	22	11
21	9.9	18	19	168	472	2170	820	82	66	16	18	11
22	9.9	25	24	145	397	1010	629	72	60	16	16	e14
23	10	28	31	337	432	686	528	87	52	17	15	12
24	11	27	32	371	444	555	457	106	46	17	14	11
25	13	24	38	325	369	461	384	111	51	16	14	11
26	16	22	40	264	324	404	326	110	40	e16	13	11
27	19	22	42	232	297	357	277	151	35	e16	13	10
28	17	20	42	711	275	304	227	184	33	e15	13	e9.7
29	13	20	38	737	---	255	185	153	37	e15	12	e9.1
30	13	20	40	618	---	209	160	127	35	e14	12	9.8
31	13	---	e33	465	---	173	---	105	---	e14	12	---
TOTAL	336.0	600	805	10088	15175	12788	13008	7587	1867	605	554	316.1
MEAN	10.8	20.0	26.0	325	542	413	434	245	62.2	19.5	17.9	10.5
MAX	19	28	42	1400	1240	2170	1600	561	85	31	50	14
MIN	9.0	16	19	30	275	123	119	72	33	14	12	9.1
CFSM	.10	.19	.25	3.13	5.21	3.97	4.17	2.35	.60	.19	.17	.10
IN.	.12	.21	.29	3.61	5.43	4.57	4.65	2.71	.67	.22	.20	.11

e Estimated.

JAMES RIVER BASIN

02017500 JOHNS CREEK AT NEW CASTLE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1927 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	57.5	89.1	134	191	228	279	225	160	90.2	40.6	43.4	40.3
MAX	396	445	514	546	542	730	820	398	471	291	364	353
(WY)	1930	1986	1949	1996	1998	1955	1987	1989	1972	1941	1940	1989
MIN	9.81	14.0	15.7	16.2	18.0	51.9	47.8	33.5	20.2	8.90	9.39	9.07
(WY)	1992	1931	1940	1956	1934	1988	1995	1930	1970	1930	1930	1930

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

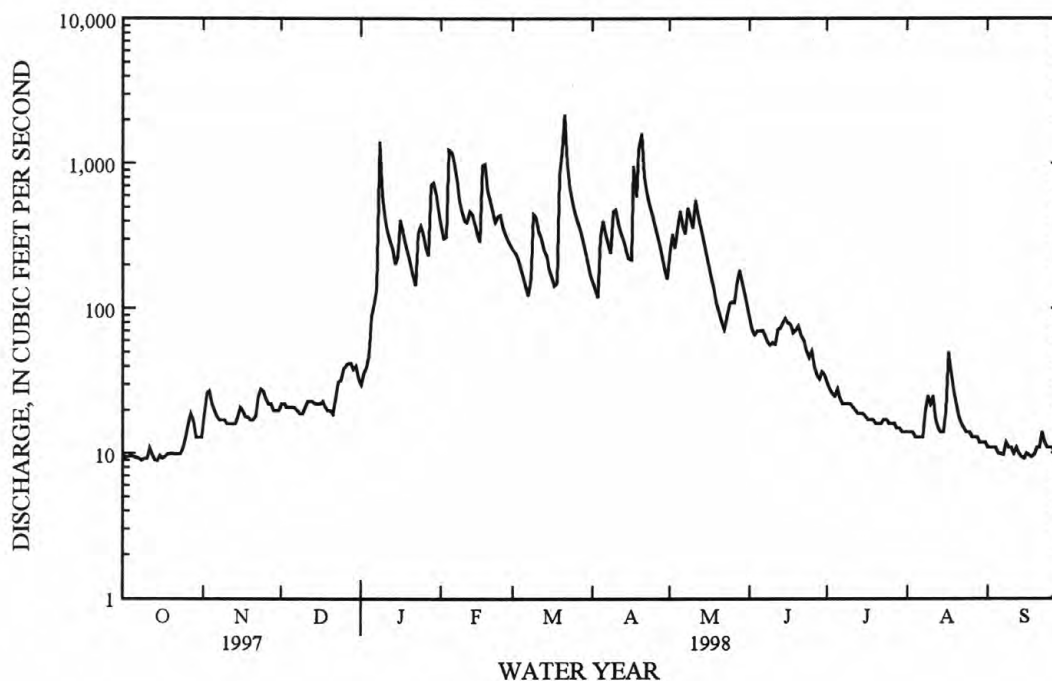
WATER YEARS 1927 - 1998

ANNUAL TOTAL	35627.9	63729.1	
ANNUAL MEAN	97.6	175	131
HIGHEST ANNUAL MEAN			235
LOWEST ANNUAL MEAN			66.1
HIGHEST DAILY MEAN	1050	Mar 4	6040
LOWEST DAILY MEAN	8.4	aSep 21	6.6
ANNUAL SEVEN-DAY MINIMUM	8.8	Sep 3	7.1
INSTANTANEOUS PEAK FLOW			8000
INSTANTANEOUS PEAK STAGE			12.48
INSTANTANEOUS LOW FLOW			c6.0
ANNUAL RUNOFF (CFSM)	.94	1.68	1.26
ANNUAL RUNOFF (INCHES)	12.74	22.80	17.11
10 PERCENT EXCEEDS	217	463	303
50 PERCENT EXCEEDS	39	37	60
90 PERCENT EXCEEDS	9.8	10	13

a Also Sept. 22, 1997.

b Also Oct. 14, 1998.

c Result of freezeup.



JAMES RIVER BASIN

02018000 CRAIG CREEK AT PARR, VA

LOCATION.--Lat 37°39'57", long 79°54'42", Botetourt County, Hydrologic Unit 02080201, on right bank 12 ft upstream from abandoned railway bridge, 700 ft downstream from Stony Run, 0.2 mi northeast of Horton, 0.4 mi northwest of Parr, and at mile 12.0.

DRAINAGE AREA.--329 mi².

PERIOD OF RECORD.--April 1925 to current year.

REVISED RECORDS.--WSP 852: 1937. WSP 892: 1935-36. WSP 1303: 1929-30(M), 1932-35(M), 1937-38(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 992.50 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to June 7, 1937, nonrecording gage at same site and datum.

REMARKS.--Records good, except for period of no gage-height record, May 8-14, which is fair. Maximum discharge, 58,500 ft³/s, from rating curve extended above 11,000 ft³/s on basis of slope-area measurement of peak flow. Minimum discharge, 20 ft³/s, probably occurred Dec. 21, 25, 1980, and Jan. 4, 1981, gage height, 3.20 ft, result of freezeup. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1915	*8,820	*11.83	Mar. 21	1230	*8,820	*11.83
Feb. 5	0415	7,000	10.91	Apr. 17	1845	4,520	9.41
Feb. 18	0400	7,640	11.25	Apr. 20	1015	5,920	10.30

Minimum discharge, 39 ft³/s, Sept. 17-19, 30, gage height, 3.40 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	69	73	103	1240	721	433	457	277	110	48	45
2	53	83	70	90	974	662	403	1030	246	99	47	44
3	45	103	71	100	841	600	366	902	220	92	46	43
4	43	102	70	116	2830	536	524	912	207	88	45	43
5	43	84	69	177	5100	469	1140	1210	209	90	43	42
6	42	79	68	286	3320	409	908	1100	207	87	43	42
7	42	75	67	344	2720	374	751	904	204	82	42	42
8	41	70	65	5020	1860	385	650	e1850	187	81	43	49
9	41	68	63	2720	1450	1220	759	e1700	174	77	58	43
10	41	67	65	1290	1200	1660	1340	e1300	174	76	93	42
11	41	64	67	881	1090	1100	1060	e1350	175	73	91	41
12	42	62	69	696	1220	858	859	e1200	256	68	103	42
13	42	63	72	617	1320	715	734	e1000	302	67	75	41
14	44	66	69	549	1140	631	652	e850	261	65	62	41
15	42	68	68	534	931	557	590	712	251	63	62	41
16	42	73	66	1220	802	485	564	594	254	63	70	41
17	43	76	65	1280	2740	431	2230	511	226	63	86	39
18	44	70	64	936	5060	411	2360	418	209	58	132	39
19	45	66	64	733	2320	2090	1660	363	188	56	110	40
20	45	64	63	626	1760	2850	4530	323	194	55	85	41
21	46	65	61	529	1470	7800	2390	294	192	53	73	41
22	45	72	67	451	1190	3440	1650	271	169	51	65	45
23	44	82	74	670	1170	2010	1320	262	152	50	60	49
24	45	93	89	1170	1540	1500	1140	314	138	52	56	44
25	53	91	109	1070	1220	1190	930	336	126	52	53	43
26	60	82	121	862	1010	978	780	324	126	52	51	43
27	74	78	141	720	884	848	681	323	112	51	49	42
28	76	72	143	1700	795	737	593	437	106	50	48	42
29	75	69	139	2890	---	645	511	401	e105	50	47	41
30	65	68	131	2090	---	566	444	351	e118	49	46	40
31	58	---	119	1670	---	497	---	310	---	49	46	---
TOTAL	1526	2244	2542	32140	49197	37375	32952	22309	5765	2072	1978	1271
MEAN	49.2	74.8	82.0	1037	1757	1206	1098	720	192	66.8	63.8	42.4
MAX	76	103	143	5020	5100	7800	4530	1850	302	110	132	49
MIN	41	62	61	90	795	374	366	262	105	49	42	39
CFSM	.15	.23	.25	3.15	5.34	3.66	3.34	2.19	.58	.20	.19	.13
IN.	.17	.25	.29	3.63	5.56	4.23	3.73	2.52	.65	.23	.22	.14

e Estimated.

JAMES RIVER BASIN

02018000 CRAIG CREEK AT PARR, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	191	284	393	566	670	800	657	458	271	137	162	142
MAX	1093	2112	1519	1642	1757	2116	2427	1202	1134	979	1290	974
(WY)	1938	1986	1949	1937	1998	1993	1987	1942	1972	1941	1940	1928
MIN	34.9	45.9	48.9	51.2	55.6	141	143	93.2	66.2	33.5	35.6	34.1
(WY)	1931	1931	1966	1956	1934	1988	1995	1930	1926	1966	1964	1968

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1925 - 1998	
ANNUAL TOTAL	101354		191371			
ANNUAL MEAN	278		524		394	
HIGHEST ANNUAL MEAN					655	
LOWEST ANNUAL MEAN					185	
HIGHEST DAILY MEAN	4070	Mar 4	7800	Mar 21	21000	Nov 4 1985
LOWEST DAILY MEAN	36	Sep 6	39	Sep 17	25	Sep 4 1966
ANNUAL SEVEN-DAY MINIMUM	37	Sep 3	40	Sep 13	27	Aug 22 1964
INSTANTANEOUS PEAK FLOW			8820	aJan 8	58500	Nov 4 1985
INSTANTANEOUS PEAK STAGE			11.83	aJan 8	b24.76	Nov 4 1985
INSTANTANEOUS LOW FLOW			39	cSep 17	d20	fDec 21 1980
ANNUAL RUNOFF (CFSM)	.84		1.59		1.20	
ANNUAL RUNOFF (INCHES)	11.46		21.64		16.27	
10 PERCENT EXCEEDS	573		1320		874	
50 PERCENT EXCEEDS	131		112		183	
90 PERCENT EXCEEDS	45		43		49	

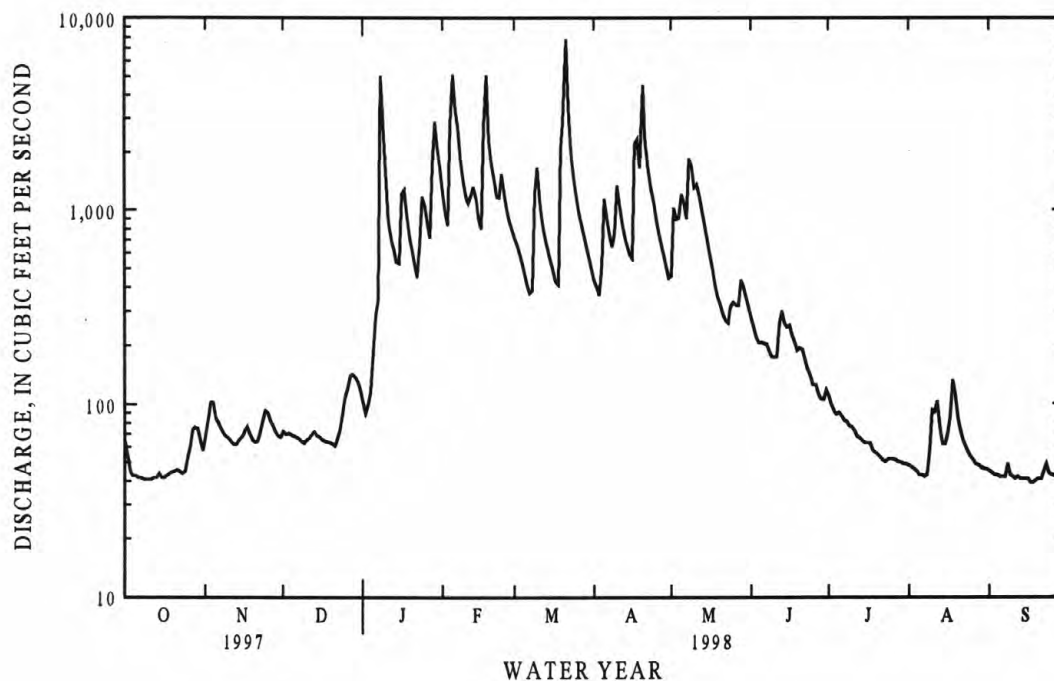
a Also Mar. 21, 1998.

b From floodmarks.

c Also Sept. 18-19, 30, 1998.

d Result of freezeup.

f Also probably occurred Dec. 25, 1980, and Jan. 4, 1981.



JAMES RIVER BASIN

02018500 CATAWBA CREEK NEAR CATAWBA, VA

LOCATION.--Lat 37°28'05", long 80°00'20", Botetourt County, Hydrologic Unit 02080201, on right bank 80 ft upstream from bridge on State Highway 779, 1.0 mi downstream from Little Catawba Creek, 1.9 mi west of Haymakertown, and 8.2 mi northeast of Catawba.

DRAINAGE AREA.--34.3 mi².

PERIOD OF RECORD.--September 1943 to current year.

REVISED RECORDS.--WSP 1303: 1944-45(M). WSP 2104: Drainage area. WDR VA-72-1: 1954, 1955(P), 1957-58(P), 1959, 1960-62(P), 1963, 1964(M), 1965-67(P), 1968(M), 1969, 1970(M), 1971.

GAGE.--Water-stage recorder. Datum of gage is 1,299.96 ft above sea level. Prior to Aug. 1, 1953, nonrecording gage at site 80 ft downstream at same datum.

REMARKS.--Records good except those for period of doubtful gage-height record, Oct. 21 to Dec. 2, and period with ice effect, Jan. 1, 2, which are fair. At a point 5.3 mi upstream from station, there has been transmountain diversion through a tunnel into Roanoke River Basin for municipal water supply of city of Roanoke since December 1974. From October 1953 to October 1976, monthly means adjusted for pumpage by Citadel Cement Corporation. Maximum discharge, 21,200 ft³/s, from rating curve extended above 1,700 ft³/s on basis of slope-area measurements at gage heights 10.35 ft and 19.19 ft. Minimum discharge, 0.28 ft³/s, Aug. 21, 1987, gage height, 0.99 ft, cause unknown. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 13.26 ft, from information by observer.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,590 ft³/s, Mar. 20, gage height, 6.98 ft; minimum, 1.5 ft³/s, Sept. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	5.7	e10	e4.7	e4.9	38	72	50	61	23	8.1	5.7	3.8		
2	5.4	e12	e4.5	e5.9	51	66	46	91	22	8.2	4.5	3.8		
3	5.2	e8.2	4.6	6.3	105	60	43	83	21	7.7	4.3	3.9		
4	5.1	e6.2	4.8	7.3	820	55	76	91	17	8.5	4.1	4.1		
5	5.0	e5.4	4.7	7.7	585	51	78	99	11	9.2	4.9	4.7		
6	4.7	e5.3	4.6	7.2	442	47	68	78	14	8.0	4.5	4.5		
7	4.3	e6.1	4.3	8.1	283	45	61	69	13	8.1	4.0	4.0		
8	4.2	e6.2	4.2	644	192	69	55	70	12	8.7	8.4	4.2		
9	4.2	e6.4	4.3	45	153	231	63	62	12	8.2	8.5	3.9		
10	4.6	e6.2	4.7	27	128	151	60	57	13	7.4	8.7	3.7		
11	4.3	e5.8	4.8	23	123	103	56	75	13	7.0	9.4	2.9		
12	4.5	e5.6	4.7	20	133	83	51	65	13	6.9	7.5	3.0		
13	4.3	e5.5	4.4	19	129	72	48	60	12	6.6	6.6	3.7		
14	4.3	e6.0	4.4	18	108	65	46	55	11	6.4	5.8	3.4		
15	4.4	e6.8	4.2	25	86	58	44	49	12	6.1	5.2	3.4		
16	4.3	e5.9	4.1	34	80	54	56	44	11	6.3	8.1	3.4		
17	4.4	e5.4	4.2	30	967	50	397	40	11	5.9	8.0	3.8		
18	4.5	e5.3	4.2	23	423	54	185	36	10	6.2	6.6	3.9		
19	4.3	e5.2	4.1	21	221	202	253	34	9.6	5.6	5.3	5.0		
20	3.9	e5.0	4.1	19	163	739	319	32	9.5	6.0	4.6	4.1		
21	e4.9	e6.0	4.1	18	125	754	179	30	9.8	5.1	4.4	2.9		
22	e4.8	e7.4	4.9	18	102	287	130	27	8.9	5.0	4.2	3.7		
23	e4.7	e6.5	5.0	32	165	180	107	31	9.5	5.3	4.2	2.9		
24	e5.0	e5.5	5.1	32	160	133	92	32	8.7	5.2	4.0	3.2		
25	e5.5	e5.1	5.5	27	124	106	77	30	9.0	5.6	3.8	2.5		
26	e6.0	e4.8	5.2	23	104	92	68	30	8.4	5.2	3.8	2.4		
27	e6.5	e4.7	5.6	22	91	83	60	41	7.9	5.1	3.7	2.3		
28	e5.4	e4.6	5.4	85	80	76	54	36	8.8	5.5	3.7	2.2		
29	e5.0	e4.7	5.4	69	---	65	49	31	9.1	5.2	3.6	2.1		
30	e4.7	e4.9	5.1	61	---	56	46	28	7.8	6.1	3.8	2.4		
31	e6.0	---	5.0	49	---	52	---	26	---	5.5	3.8	---		
TOTAL	150.1	182.7	144.9	1431.4	6181	4211	2917	1593	358.0	203.9	167.7	103.8		
MEAN	4.84	6.09	4.67	46.2	221	136	97.2	51.4	11.9	6.58	5.41	3.46		
MAX	6.5	12	5.6	644	967	754	397	99	23	9.2	9.4	5.0		
MIN	3.9	4.6	4.1	4.9	38	45	43	26	7.8	5.0	3.6	2.1		
(†)	0	40	0	1497	59.3	0	0	0	193	3.8	0	0		
MEAN†	4.84	7.42	4.67	94.5	223	136	97.2	51.4	18.4	6.7	5.41	3.46		
CFSM†	.14	.22	.14	2.76	6.50	3.96	2.83	1.50	.54	.20	.16	.10		
IN.†	.16	.24	.16	3.18	6.77	4.57	3.16	1.73	.60	.23	.18	.11		
CAL YR 1997	TOTAL	10017.7	MEAN	27.4	MAX	703	MIN	3.9	MEAN†	29.4	CFSM†	.86	IN.†	11.63
WTR YR 1998	TOTAL	17644.5	MEAN	48.3	MAX	967	MIN	2.1	MEAN†	53.3	CFSM†	1.55	IN.†	21.08

† Total diversion, equivalent in cubic feet per second, per month, provided by city of Roanoke.

‡ Adjusted for diversion.

e Estimated.

JAMES RIVER BASIN

02018500 CATAWBA CREEK NEAR CATAWBA, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 1952, BY WATER YEAR (WY) [UNREGULATED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	23.7	27.4	40.1	52.2	65.6	69.0	67.0	47.1	33.3	24.4	20.0	22.9
MAX	106	93.2	134	104	104	103	152	114	108	107	46.5	62.2
(WY)	1948	1948	1949	1947	1948	1951	1951	1950	1949	1949	1949	1945
MIN	5.00	5.89	7.70	15.1	20.0	35.1	23.1	21.5	7.93	4.95	3.91	5.94
(WY)	1952	1944	1944	1951	1947	1950	1945	1945	1944	1944	1944	1951

SUMMARY STATISTICS

WATER YEARS 1944 - 1952

ANNUAL MEAN	40.9
HIGHEST ANNUAL MEAN	75.5
LOWEST ANNUAL MEAN	22.3
HIGHEST DAILY MEAN	1540
LOWEST DAILY MEAN	a2.2
ANNUAL SEVEN-DAY MINIMUM	a2.4
INSTANTANEOUS PEAK FLOW	3300
INSTANTANEOUS PEAK STAGE	c5.80
INSTANTANEOUS LOW FLOW	a2.2
ANNUAL RUNOFF (CFSM)	1.19
ANNUAL RUNOFF (INCHES)	16.21
10 PERCENT EXCEEDS	84
50 PERCENT EXCEEDS	21
90 PERCENT EXCEEDS	6.1

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	17.4	28.1	28.6	40.9	60.8	82.4	65.7	39.8	28.0	11.7	12.3	14.5
MAX	82.2	390	127	131	221	278	337	138	160	52.2	75.5	105
(WY)	1990	1986	1973	1996	1998	1993	1987	1958	1972	1989	1985	1979
MIN	2.63	2.01	3.16	3.45	5.82	6.20	6.78	9.75	5.06	2.59	2.28	2.30
(WY)	1964	1982	1982	1981	1981	1981	1981	1963	1966	1966	1981	1981

SUMMARY STATISTICS

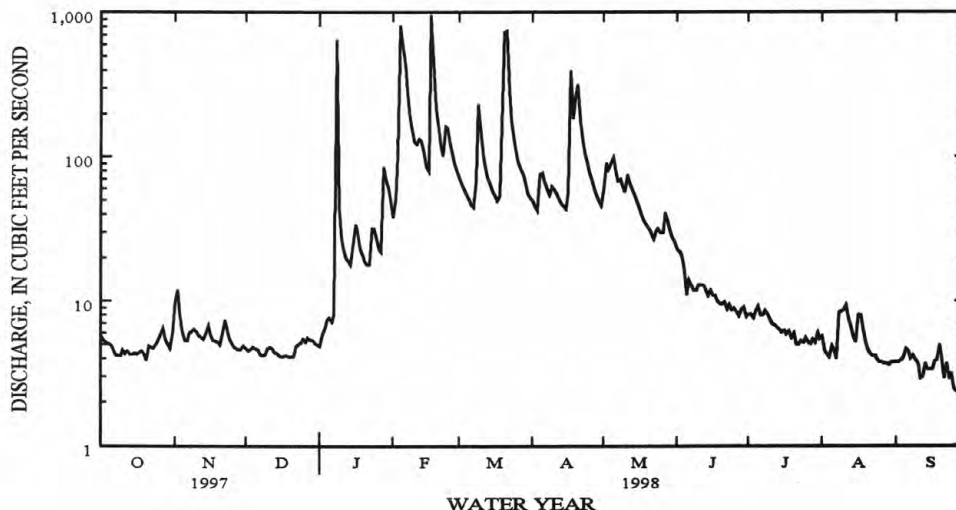
FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1953 - 1998

ANNUAL TOTAL	10017.7	17644.5	
ANNUAL MEAN	27.4	48.3	35.7
HIGHEST ANNUAL MEAN			66.6
LOWEST ANNUAL MEAN			6.16
HIGHEST DAILY MEAN	703	Jun 1	967
LOWEST DAILY MEAN	3.9	Oct 20	2.1
ANNUAL SEVEN-DAY MINIMUM	4.1	Dec 15	2.4
INSTANTANEOUS PEAK FLOW			2590
INSTANTANEOUS PEAK STAGE			6.98
INSTANTANEOUS LOW FLOW			1.5
ANNUAL RUNOFF (CFSM)	.80		1.41
ANNUAL RUNOFF (INCHES)	10.86		19.14
10 PERCENT EXCEEDS	55		105
50 PERCENT EXCEEDS	12		8.2
90 PERCENT EXCEEDS	4.7		4.1

- a Observed.
b Also Sept. 10, 1944.
c From floodmark or crest-stage indicator.
d Also Sept. 8-11, 1944.
f Also Nov. 17, 1963.
g From high-water mark.
h Regulation from unknown source.



JAMES RIVER BASIN

02019500 JAMES RIVER AT BUCHANAN, VA

LOCATION.--Lat 37°31'50", long 79°40'45", Botetourt County, Hydrologic Unit 02080201, on left bank 300 ft upstream from bridge on U.S. Highway 11 at Buchanan, 1,000 ft upstream from Purgatory Creek, 1.5 mi downstream from Looney Creek, and at mile 306.4.

DRAINAGE AREA.--2,075 mi².

PERIOD OF RECORD.--February 1898 to current year. Monthly discharge only for some periods, published in WSP 1303. Records for August 1895 to Feb. 11, 1898, published in WSP 11, 15, and 27 are in error and should not be used. Gage-height records collected at this site since 1893 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 602: 1917-24. WSP 972: 1935-36. WSP 1303: 1898-1916, 1917-20(M), 1922(M), 1924(M). WSP 1383: 1927. WSP 2104: Drainage area. WDR VA-72-1: 1913(M). See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 802.90 ft above sea level. Prior to July 1, 1927, nonrecording gage at same site and datum.

REMARKS.--Records good except for period of no gage-height record, Mar. 21-22, which is fair. Flow regulated since December 1979 by Lake Moomaw (station 02011795) 79.6 mi upstream; since October 1984 by Back Creek Lake 107.6 mi upstream, amount unknown; and since January 1985 by Little Back Creek Lake 110.7 mi upstream, amount unknown. National Weather Service gage-height telemeter at station. Maximum discharge, 179,000 ft³/s, from rating curve extended above 110,000 ft³/s. Minimum gage height, 1.44 ft, Sept. 8, 1966. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1877 reached a stage of 34.9 ft, from floodmark, discharge, about 142,000 ft³/s, from rating curve extended above 110,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 51,000 ft³/s, Jan. 9, gage height, 19.95 ft; minimum, 458 ft³/s, Oct. 11-14, 22-24, gage height, 2.12 ft; minimum daily, 460 ft³/s, Oct. 12, 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	648	596	808	978	7340	5460	3130	2980	2060	1390	748	663		
2	617	1040	1180	882	5980	5230	3030	3810	1820	1220	721	654		
3	522	1290	957	883	5360	4630	2960	4410	1650	1120	694	620		
4	495	1120	857	1040	16700	4180	3440	4690	1530	1070	687	607		
5	486	882	830	1390	27000	3820	6160	6310	1490	1150	686	597		
6	487	764	791	2180	16800	3350	6420	7070	1480	1050	669	602		
7	482	769	745	2790	15500	3050	5510	5900	1400	995	661	599		
8	478	1380	707	30300	12000	3200	4630	7410	1340	988	669	656		
9	471	2040	675	33200	9850	6270	4580	11100	1280	1040	746	698		
10	468	1600	669	9670	7860	12500	8540	7890	1270	1020	766	641		
11	465	1160	711	5840	7120	9630	7760	6710	1280	960	912	623		
12	460	934	806	4250	7920	7820	6230	6680	1270	905	872	620		
13	460	803	889	3600	9270	5910	5360	5270	1400	870	827	621		
14	464	757	850	3140	8400	4660	4820	4400	1360	846	792	609		
15	477	757	801	3030	6880	4290	4280	3840	1420	828	778	602		
16	468	770	788	5300	5830	3690	4220	3390	1750	829	925	595		
17	467	772	744	6200	11700	3170	8420	3010	1780	826	1170	588		
18	470	732	677	5220	30200	2950	11800	2780	1650	814	1360	583		
19	479	686	660	4540	18900	14000	7700	2540	1430	803	1100	587		
20	478	652	639	4050	15300	e15500	26300	2260	1390	797	957	578		
21	469	645	622	3410	13700	e31100	18000	2080	1570	780	890	579		
22	465	704	638	2880	11100	e18100	11700	1940	1410	765	846	583		
23	461	790	728	3940	8520	e16400	7850	1870	1300	769	798	578		
24	467	853	765	8780	9240	13400	6280	2030	1210	791	766	574		
25	519	814	967	7920	8080	11400	5380	2360	1140	807	740	570		
26	568	755	1440	6320	6940	8620	4730	2400	1070	775	737	566		
27	641	711	1380	5320	6320	6090	4050	2190	1070	760	722	563		
28	633	678	1350	9060	5730	5050	3620	5110	1040	749	709	560		
29	591	658	1250	13000	---	4630	3260	3690	1360	743	692	552		
30	576	649	1190	10400	---	4290	3030	2820	1440	731	675	546		
31	541	---	1090	9270	---	3570	---	2360	---	735	673	---		
TOTAL	15773	26761	27204	208783	315540	245960	203190	131300	42660	27926	24988	18014		
MEAN	509	892	878	6735	11270	7934	6773	4235	1422	901	806	600		
MAX	648	2040	1440	33200	30200	31100	26300	11100	2060	1390	1360	698		
MIN	460	596	622	882	5360	2950	2960	1870	1040	731	661	546		
(†)	-3731	+2672	+1361	+20822	-1160	-151	-101	+504	+101	-5092	-6201	-5949		
MEAN†	388	981	921	7407	11230	7929	6770	4252	1425	737	606	402		
CFSM†	.19	.47	.44	3.57	5.41	3.82	3.26	2.05	.69	.35	.29	.19		
IN.†	.22	.53	.51	4.12	5.64	4.41	3.64	2.36	.77	.41	.34	.22		
CAL YR 1996	TOTAL	715976	MEAN	1962	MAX	26000	MIN	460	MEAN†	1908	CFSM†	.92	IN.†	12.49
WTR YR 1997	TOTAL	1288099	MEAN	3529	MAX	33200	MIN	460	MEAN†	3537	CFSM†	1.70	IN.†	23.15

† Total change in contents, equivalent in cubic feet per second, per month, in Lake Moomaw; provided by U.S. Army Corps of Engineers.

‡ Adjusted for monthly change in contents.

e Estimated.

JAMES RIVER BASIN

02019500 JAMES RIVER AT BUCHANAN, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1898 - 1979, BY WATER YEAR (WY) [UNREGULATED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1261	1488	2488	3426	4035	5103	3873	2897	1923	1180	1192	921
MAX	6980	5807	8377	10140	8459	11460	8920	7186	7606	5080	6187	4507
(WY)	1907	1973	1949	1937	1927	1955	1901	1942	1972	1905	1940	1979
MIN	294	329	351	371	412	1779	1097	685	525	263	289	281
(WY)	1931	1932	1966	1956	1934	1940	1915	1930	1970	1966	1964	1968

SUMMARY STATISTICS

WATER YEARS 1898 - 1979

ANNUAL MEAN	2475
HIGHEST ANNUAL MEAN	4138
LOWEST ANNUAL MEAN	1318
HIGHEST DAILY MEAN	92200 Jun 22 1972
LOWEST DAILY MEAN	207 Sep 12 1966
ANNUAL SEVEN-DAY MINIMUM	212 Sep 7 1966
INSTANTANEOUS PEAK FLOW	115000 Mar 27 1913
INSTANTANEOUS PEAK STAGE	a31.00 Mar 27 1913
INSTANTANEOUS LOW FLOW	202 Sep 8 1966
ANNUAL RUNOFF (CFSM)	1.19
ANNUAL RUNOFF (INCHES)	16.20
10 PERCENT EXCEEDS	5220
50 PERCENT EXCEEDS	1300
90 PERCENT EXCEEDS	410

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1263	2030	2345	3714	4299	5444	4748	3271	2215	1075	1071	1127
MAX	5679	10190	6450	10310	11270	12790	16170	8908	5251	2236	3834	4288
(WY)	1990	1986	1997	1996	1998	1993	1987	1989	1982	1989	1984	1996
MIN	419	453	453	396	1260	922	1081	1515	841	651	338	361
(WY)	1981	1982	1981	1981	1981	1981	1995	1991	1994	1981	1981	1981

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1980 - 1998

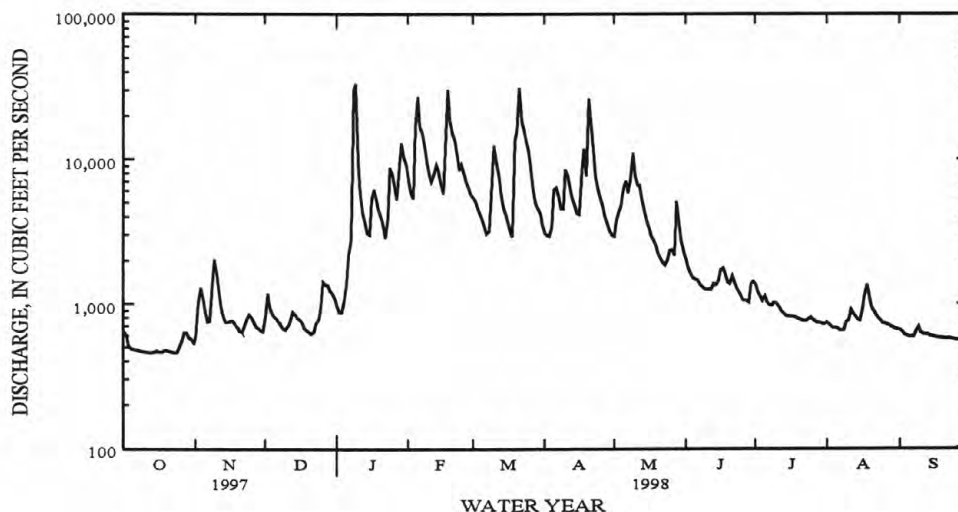
ANNUAL TOTAL	715976	1288099	
ANNUAL MEAN	1962	3529	2707
HIGHEST ANNUAL MEAN			3664 1987
LOWEST ANNUAL MEAN			1092 1981
HIGHEST DAILY MEAN	26000 Mar 4	33200 Jan 9	102000 Nov 5 1985
LOWEST DAILY MEAN	460 Oct 12	460 Oct 12	257 Oct 1 1981
ANNUAL SEVEN-DAY MINIMUM	466 Oct 11	466 Oct 11	268 Sep 29 1981
INSTANTANEOUS PEAK FLOW		51000 Jan 9	179000 Nov 5 1985
INSTANTANEOUS PEAK STAGE		19.95 Jan 9	a38.84 Nov 5 1985
INSTANTANEOUS LOW FLOW		458 bOct 11	c230 dJan 11 1981
ANNUAL RUNOFF (CFSM)	.95	1.70	1.30
ANNUAL RUNOFF (INCHES)	12.84	23.09	17.73
10 PERCENT EXCEEDS	3860	8680	5950
50 PERCENT EXCEEDS	1220	1220	1340
90 PERCENT EXCEEDS	562	581	557

a From floodmarks.

b Also Oct. 12-14, 22-24, 1997.

c Result of freezeup.

d Also Jan. 12, 1981.



JAMES RIVER BASIN

02021500 MAURY RIVER AT ROCKBRIDGE BATHS, VA

LOCATION.--Lat 37°54'26", long 79°25'20", Rockbridge County, Hydrologic Unit 02080202, on right bank at Rockbridge Baths, 1,200 ft upstream from bridge on State Highway 39, and 1.0 mi upstream from Hays Creek.

DRAINAGE AREA.--329 mi².

PERIOD OF RECORD.--October 1928 to current year. Monthly discharge only for some periods, published in WSP 1303. Prior to October 1945, published as North River at Rockbridge Baths.

REVISED RECORDS.--WSP 972: 1929-40, 1941(M). WSP 1002: 1930(m). WSP 1553: 1931(m).

GAGE.--Water-stage recorder. Datum of gage is 1,100.33 ft above sea level (levels by U.S. Army Corps of Engineers).

REMARKS.--Records good except for period of no gage-height record, Nov. 12-14, which is fair. Since 1966, some regulation at times by Lake Merriweather on Little Calpasture River. National Weather Service gage-height telemeter at station. Maximum discharge, 87,700 ft³/s, from rating curve extended above 16,000 ft³/s on basis of slope-area measurement at peak flow. Minimum gage height, 0.79 ft, Sept. 10, 1966. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1715	*22,900	*11.52	Mar. 19	1000	7,160	7.68
Feb. 18	0230	4,560	6.44	Mar. 21	0745	8,940	8.31

Minimum discharge, 18 ft³/s, Sept. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	110	166	214	1220	922	407	387	136	307	35	23
2	28	265	161	203	1040	844	376	634	123	213	34	22
3	27	239	143	210	1050	723	313	763	110	162	31	21
4	27	188	155	298	1690	613	514	1080	102	135	30	21
5	27	145	154	633	2970	492	810	947	101	140	30	22
6	27	122	142	883	2320	396	749	1040	99	114	28	22
7	26	584	130	883	2080	354	657	859	94	95	28	20
8	26	1130	123	13100	1660	447	583	1630	86	122	30	24
9	25	966	117	5540	1410	1890	853	2060	81	132	33	22
10	25	556	128	3260	1220	2340	1640	1390	87	98	37	22
11	24	365	188	2210	1170	1400	1230	991	84	81	49	23
12	25	e243	207	1670	1440	1010	946	851	86	69	41	22
13	25	e195	204	1420	1620	803	772	713	90	63	35	22
14	25	e174	195	1190	1330	687	658	590	89	58	32	22
15	28	208	178	1200	1050	589	579	501	261	55	34	21
16	26	189	161	2060	878	499	504	416	461	52	40	20
17	28	170	148	2020	2020	432	600	428	898	51	44	21
18	27	154	138	1650	3710	495	554	468	410	49	41	21
19	29	139	128	1380	2260	5150	677	345	352	48	38	21
20	28	129	120	1200	1710	3580	2480	285	660	46	36	21
21	27	125	114	797	1450	7500	1700	248	400	43	33	21
22	27	158	118	636	1180	3590	1100	218	264	41	32	21
23	26	176	129	1490	1090	1990	876	204	204	41	31	20
24	28	168	131	2260	1240	1410	785	213	172	51	29	19
25	42	159	331	1800	1170	1070	648	210	145	44	67	20
26	50	150	412	1310	1040	872	556	165	204	39	128	21
27	54	141	403	1050	949	744	519	185	148	39	120	21
28	46	130	362	2040	883	647	450	294	136	38	90	20
29	39	122	310	2550	---	572	356	223	565	37	26	19
30	36	119	298	1990	---	508	338	183	479	35	25	19
31	35	---	263	1610	---	445	---	156	---	36	24	---
TOTAL	945	7719	5957	58757	42850	43014	23230	18677	7127	2534	1311	634
MEAN	30.5	257	192	1895	1530	1388	774	602	238	81.7	42.3	21.1
MAX	54	1130	412	13100	3710	7500	2480	2060	898	307	128	24
MIN	24	110	114	203	878	354	313	156	81	35	24	19
CFSM	.09	.78	.58	5.76	4.65	4.22	2.35	1.83	.72	.25	.13	.06
IN.	.11	.87	.67	6.64	4.85	4.86	2.63	2.11	.81	.29	.15	.07

e Estimated.

JAMES RIVER BASIN

02021500 MAURY RIVER AT ROCKBRIDGE BATHS, VA--Continued

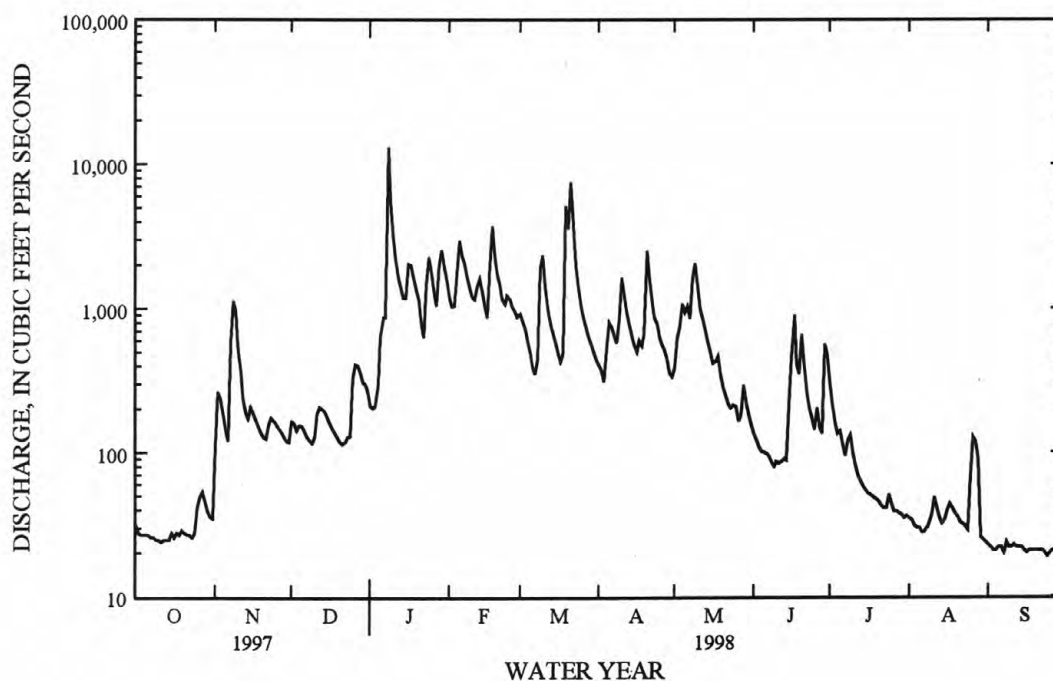
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	196	276	409	560	626	852	625	471	274	120	138	135
MAX	1254	2689	1450	1895	1530	2017	2245	1463	1374	807	1016	1388
(WY)	1980	1986	1974	1998	1998	1936	1987	1989	1995	1972	1969	1996
MIN	16.5	24.1	26.6	32.3	50.9	117	122	81.0	34.7	14.6	14.9	16.1
(WY)	1931	1931	1966	1981	1934	1981	1995	1930	1964	1966	1964	1930

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1929 - 1998	
ANNUAL TOTAL	107322		212755			
ANNUAL MEAN	294		583		389	
HIGHEST ANNUAL MEAN					685	
LOWEST ANNUAL MEAN					157	
HIGHEST DAILY MEAN	3950	Mar 4	13100	Jan 8	41500	Nov 5 1985
LOWEST DAILY MEAN	24	Oct 11	19	a Sep 24	7.1	Sep 10 1966
ANNUAL SEVEN-DAY MINIMUM	25	Oct 8	20	Sep 24	8.2	Sep 7 1966
INSTANTANEOUS PEAK FLOW			22900	Jan 8	87700	Nov 5 1985
INSTANTANEOUS PEAK STAGE			11.52	Jan 8	b 19.19	Nov 5 1985
INSTANTANEOUS LOW FLOW			18	Sep 29	5.8	Sep 10 1966
ANNUAL RUNOFF (CFSM)	.89		1.77		1.18	
ANNUAL RUNOFF (INCHES)	12.13		24.06		16.07	
10 PERCENT EXCEEDS	646		1540		900	
50 PERCENT EXCEEDS	171		188		157	
90 PERCENT EXCEEDS	28		25		30	

a Also Sept. 29, 30, 1998.

b From floodmarks.



JAMES RIVER BASIN

02022500 KERRS CREEK NEAR LEXINGTON, VA

LOCATION.--Lat 37°49'32", long 79°26'36", Rockbridge County, Hydrologic Unit 02080202, on right bank 100 ft upstream from bridge on Interstate Highway 64, 1.4 mi upstream from mouth, and 2.9 mi north of Lexington.

DRAINAGE AREA.--35.0 mi².

PERIOD OF RECORD.--October 1926 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 1203: 1927-29, 1930-34(M), 1935-40, 1941(M), 1942, 1943-48(M), 1949. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 980.32 ft above sea level (levels by U.S. Army Corps of Engineers). Jan. 27, 1927, to Sept. 30, 1953, nonrecording gage at site 1,000 ft downstream at different datum.

REMARKS.--Records good except for period with ice effect, Jan. 1, which is fair. Maximum discharge, 23,000 ft³/s, from rating curve extended above 800 ft³/s on basis of contracted-opening and slope-area measurements of peak flow. Minimum discharge, 0.90 ft³/s, July 22, 1966, result of temporary dam upstream. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	0530	*6,350	*10.73	Mar. 20	1830	2,770	8.53
Jan. 28	1145	890	6.12	Mar. 21	0315	1,280	6.80
Feb. 4	1545	875	6.10	Apr. 19	1930	681	5.71
Feb. 17	1330	1,100	6.50				

Minimum discharge, 6.0 ft³/s, Sept. 28, 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	26	27	e12	101	67	47	59	27	20	11	7.4
2	7.0	18	17	14	85	62	43	66	25	18	9.9	7.3
3	7.0	13	14	15	86	56	41	61	24	18	9.6	7.1
4	6.9	11	15	21	376	51	116	61	24	17	9.2	6.9
5	6.8	9.5	14	29	240	47	84	64	24	17	9.0	6.8
6	6.7	9.8	13	31	230	43	67	58	23	16	8.7	6.8
7	6.6	30	12	64	197	41	58	60	22	16	8.6	6.7
8	6.6	17	11	1060	145	93	53	252	21	19	10	7.7
9	6.7	14	11	268	119	261	137	129	21	17	11	7.3
10	6.7	12	12	120	104	136	108	94	22	16	12	7.0
11	6.7	11	13	82	107	96	82	78	21	14	12	6.9
12	6.9	10	12	65	142	77	68	68	21	14	9.6	6.8
13	7.0	9.9	11	57	122	67	60	58	21	13	9.3	6.6
14	7.1	12	11	47	98	61	56	52	19	13	9.3	6.5
15	7.7	12	11	95	82	54	51	47	41	13	9.7	6.5
16	7.2	11	11	138	75	49	47	43	49	12	14	6.5
17	7.2	10	10	93	566	46	206	40	41	12	14	6.6
18	7.3	9.8	10	72	280	81	102	36	27	12	11	6.8
19	7.4	9.5	10	61	162	314	232	34	30	12	10	6.8
20	7.3	9.5	9.9	54	137	581	222	32	25	11	9.3	7.0
21	7.2	10	9.7	46	113	603	129	31	22	11	8.8	7.0
22	7.3	14	11	43	94	247	101	29	21	11	8.7	6.9
23	7.2	12	11	238	105	152	87	31	20	11	8.6	6.6
24	8.0	11	11	154	112	114	74	36	19	12	8.4	6.6
25	11	10	19	121	93	92	63	34	20	11	7.9	6.8
26	10	10	17	88	83	80	57	28	22	10	7.9	6.8
27	11	9.8	18	78	76	71	55	64	21	11	7.7	6.6
28	8.5	9.5	19	479	71	63	48	50	22	11	7.8	6.4
29	8.0	9.5	18	219	---	58	45	37	32	10	7.8	6.3
30	7.9	9.8	17	176	---	52	43	32	23	9.7	7.7	6.3
31	7.8	---	15	133	---	48	---	29	---	13	7.5	---
TOTAL	233.7	370.6	420.6	4173	4201	3863	2582	1793	750	420.7	296.0	204.3
MEAN	7.54	12.4	13.6	135	150	125	86.1	57.8	25.0	13.6	9.55	6.81
MAX	11	30	27	1060	566	603	232	252	49	20	14	7.7
MIN	6.6	9.5	9.7	12	71	41	41	28	19	9.7	7.5	6.3
CFSM	.22	.35	.39	3.85	4.29	3.56	2.46	1.65	.71	.39	.27	.19
IN.	.25	.39	.45	4.44	4.47	4.11	2.74	1.91	.80	.45	.31	.22

e Estimated.

JAMES RIVER BASIN

02022500 KERRS CREEK NEAR LEXINGTON, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1927 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	23.2	24.3	33.1	47.2	55.8	74.7	58.9	38.9	28.1	17.8	23.8	19.5
MAX	141	209	129	163	150	357	306	159	195	99.5	162	188
(WY)	1938	1986	1949	1937	1998	1936	1987	1989	1995	1972	1969	1950
MIN	5.24	6.50	5.88	5.15	8.86	14.5	10.3	12.0	8.59	5.56	5.85	5.31
(WY)	1964	1966	1966	1966	1931	1981	1942	1956	1945	1966	1981	1970

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1927 - 1998	
ANNUAL TOTAL	10819.0		19307.9			
ANNUAL MEAN	29.6		52.9		37.0	
HIGHEST ANNUAL MEAN					75.5	1936
LOWEST ANNUAL MEAN					14.1	1981
HIGHEST DAILY MEAN	463	Jun 1	1060	Jan 8	e4840	Mar 17 1936
LOWEST DAILY MEAN	6.6	aOct 7	6.3	bSep 29	4.0	cAug 30 1932
ANNUAL SEVEN-DAY MINIMUM	6.7	Oct 5	6.5	Sep 24	4.2	Jan 24 1966
INSTANTANEOUS PEAK FLOW			6350	Jan 8	23000	Sep 10 1950
INSTANTANEOUS PEAK STAGE			10.73	Jan 8	d15.44	Jun 28 1995
INSTANTANEOUS LOW FLOW			6.0	fSep 28	g.90	Jul 22 1966
ANNUAL RUNOFF (CFSM)	.85		1.51		1.06	
ANNUAL RUNOFF (INCHES)	11.50		20.52		14.38	
10 PERCENT EXCEEDS	58		119		70	
50 PERCENT EXCEEDS	16		19		18	
90 PERCENT EXCEEDS	7.3		7.0		7.7	

A Also Oct. 8, 1997.

b Also Sept. 30, 1998.

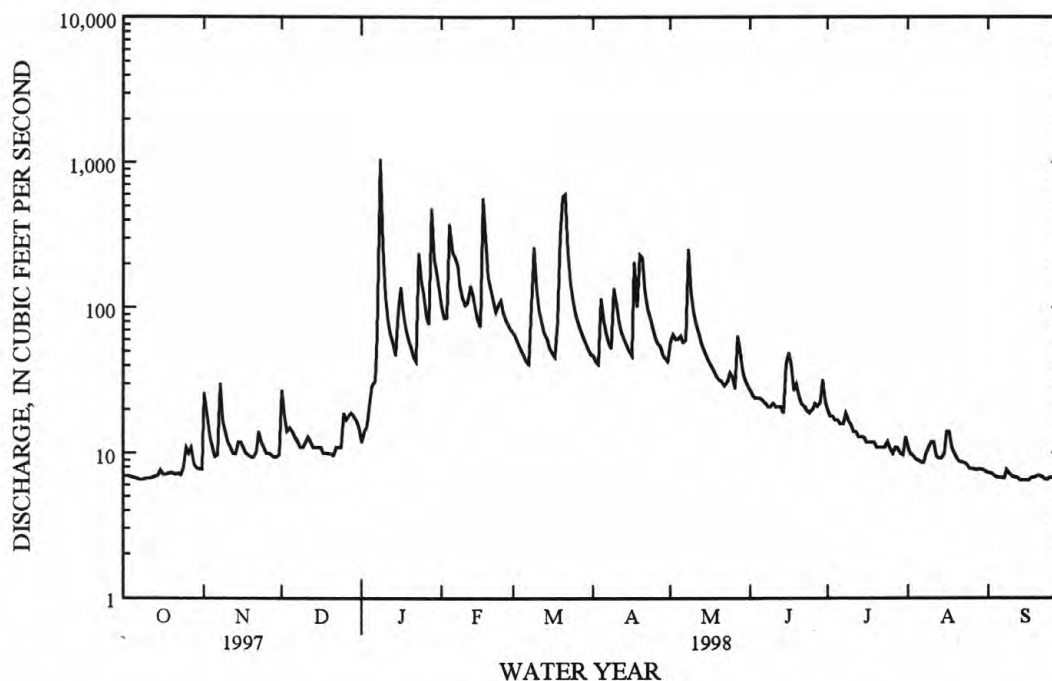
c Also many days in September 1932, Nov. 21, 1938, and July 22, 1966.

d From high-water mark in gage house.

e Estimated.

f Also Sept. 29, 30, 1998.

g Result of temporary dam upstream.



JAMES RIVER BASIN

02024000 MAURY RIVER NEAR BUENA VISTA, VA

LOCATION.--Lat 37°45'45", long 79°23'30", Rockbridge County, Hydrologic Unit 02080202, on right bank 0.5 mi downstream from South River and 2.8 mi northwest of Buena Vista.

DRAINAGE AREA.--646 mi².

PERIOD OF RECORD.--October 1938 to current year. Monthly discharge only for some periods, published in WSP 1303. Prior to October 1945, published as North River near Buena Vista.

REVISED RECORDS.--WSP 952: 1940-41. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 846.58 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. Since 1966, some regulation at times by Lake Merriweather on Little Calfpasture River. Maximum discharge, 105,000 ft³/s, from rating curve extended above 17,000 ft³/s on basis of slope-area measurement of peak flow. Minimum discharge, 20 ft³/s, occurred during filling of a small reservoir 2 mi upstream. Unqualified minimum discharge, 37 ft³/s, Sept. 9, 1966. Minimum gage height, 0.98 ft, Jan. 5, 1981. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 18, 1936, reached a stage of about 22 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 6,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1945	*22,500	*15.20	Mar. 19	1345	7,790	8.56
Feb. 17	1800	8,890	9.24	Mar. 21	0900	11,300	10.62

Minimum discharge, 80 ft³/s, Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	117	244	356	362	2370	1950	896	977	491	670	176	109
2	101	473	360	356	2020	1830	818	1300	453	529	165	107
3	99	459	309	371	1940	1630	694	1440	425	444	157	107
4	99	374	312	416	3440	1410	1230	1910	400	393	154	107
5	99	301	313	723	5070	1180	1560	1790	396	396	154	107
6	96	263	296	1100	4380	948	1470	1760	388	364	151	106
7	95	754	273	1200	3840	842	1270	1570	373	325	147	104
8	94	1430	259	14300	3120	1170	1110	2880	352	342	157	128
9	93	1500	249	8830	2700	3230	1480	3560	340	397	184	111
10	92	862	258	4760	2410	4000	2500	2720	356	330	178	107
11	94	592	302	3470	2350	2660	2110	2010	340	291	192	105
12	92	447	341	2770	3270	2030	1700	1750	339	266	187	106
13	91	370	338	2520	3420	1670	1440	1520	353	249	167	103
14	90	353	322	2170	2880	1460	1230	1310	338	239	157	97
15	107	360	306	2310	2330	1250	1070	1150	573	229	155	94
16	103	339	286	3080	2000	1050	927	1040	848	222	198	93
17	97	309	269	3020	5460	914	1650	1050	1840	220	291	93
18	101	286	258	2710	6970	946	1470	1080	956	214	240	93
19	104	267	246	2340	4650	5590	1940	913	772	205	200	95
20	100	252	232	2130	3760	5180	4660	812	1080	201	177	97
21	97	254	226	1610	3230	9860	3320	743	853	193	161	95
22	94	302	235	949	2690	5810	2370	683	673	186	153	97
23	93	320	250	2530	2490	3530	1910	666	590	194	146	95
24	96	306	251	3620	2630	2640	1700	695	510	215	139	92
25	139	296	395	3090	2410	2140	1450	678	455	201	136	93
26	168	279	570	2340	2180	1810	1280	591	461	188	223	97
27	189	267	581	1940	2000	1590	1190	711	459	180	241	96
28	161	253	569	3780	1900	1420	1100	863	418	182	230	94
29	133	242	501	4380	---	1240	945	693	903	174	164	89
30	120	235	489	3460	---	1090	892	602	926	166	117	82
31	115	---	434	2970	---	965	---	538	---	176	111	---
TOTAL	3369	12989	10386	89607	87910	73035	47382	40005	17661	8581	5408	2999
MEAN	109	433	335	2891	3140	2356	1579	1290	589	277	174	100
MAX	189	1500	581	14300	6970	9860	4660	3560	1840	670	291	128
MIN	90	235	226	356	1900	842	694	538	338	166	111	82
CFSM	.17	.67	.52	4.47	4.86	3.65	2.44	2.00	.91	.43	.27	.15
IN.	.19	.75	.60	5.16	5.06	4.21	2.73	2.30	1.02	.49	.31	.17

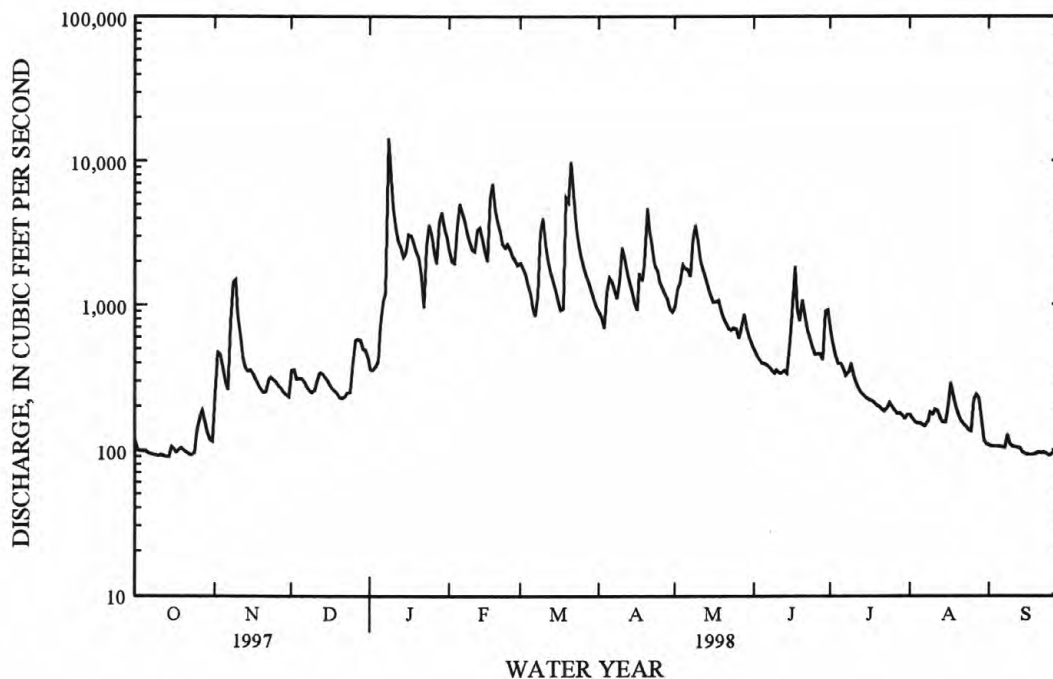
JAMES RIVER BASIN

02024000 MAURY RIVER NEAR BUENA VISTA, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	366	476	704	921	1082	1378	1066	824	554	280	326	291
MAX	1997	3400	2430	2891	3140	3187	3672	2373	2647	1351	3060	2087
(WY)	1980	1986	1949	1998	1998	1993	1987	1989	1995	1972	1969	1996
MIN	72.1	83.3	76.4	100	273	240	276	224	120	53.7	63.4	75.2
(WY)	1942	1966	1966	1981	1977	1981	1995	1941	1964	1966	1964	1963

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1939 - 1998	
ANNUAL TOTAL	202442		399332			
ANNUAL MEAN	555		1094		687	
HIGHEST ANNUAL MEAN					1181	
LOWEST ANNUAL MEAN					269	
HIGHEST DAILY MEAN	5830		14300		56000	
LOWEST DAILY MEAN	90		82		22	
ANNUAL SEVEN-DAY MINIMUM	92		92		40	
INSTANTANEOUS PEAK FLOW			22500		105000	
INSTANTANEOUS PEAK STAGE			15.20		31.23	
INSTANTANEOUS LOW FLOW			80		20	
ANNUAL RUNOFF (CFSM)	.86		1.69		1.06	
ANNUAL RUNOFF (INCHES)	11.66		23.00		14.45	
10 PERCENT EXCEEDS	1290		2810		1520	
50 PERCENT EXCEEDS	339		418		350	
90 PERCENT EXCEEDS	107		101		107	



JAMES RIVER BASIN

02025500 JAMES RIVER AT HOLCOMB ROCK, VA

LOCATION.--Lat 37°30'04", long 79°15'46", Bedford County, Hydrologic Unit 02080203, on right bank at Holcomb Rock, 0.9 mi downstream from Pedlar River, and at mile 268.6.

DRAINAGE AREA.--3,259 mi².

PERIOD OF RECORD.--January 1900 to September 1915 (gage heights only), October 1926 to current year. Monthly discharge only for some periods, published in WSP 1303. Published as "at Salt Creek" December 1926 to June 1931 and as "at Holcombs Rock" June 1931 to September 1990.

REVISED RECORDS.--WSP 972: 1913(M), 1932-33, 1935(M), 1936. WSP 1303: 1928(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 548.53 ft above sea level. January 1900 to September 1915, non-recording gage in powerhouse of Owens Illinois Glass Company 1,000 ft upstream at different datum. December 1926 to June 1931, water-stage recorder at site 2 mi downstream at different datum.

REMARKS.--Records good, except for periods of doubtful gage-height record, Jan. 8, 9, 24, Feb. 4-6, Mar. 21, 22, and Apr. 17, 18, which are fair. Some diurnal fluctuation caused by powerplants upstream from station. Flow regulated since December 1979 by Lake Moomaw (station 02011795) 117.4 mi upstream; since October 1984 by Back Creek Lake 145.4 mi upstream; and since January 1985 by Little Back Creek Lake 148.5 mi upstream, amount unknown. National Weather Service gage-height telemeter at station. Maximum discharge, 207,000 ft³/s, from rating curve extended above 73,000 ft³/s on basis of records for other stations in James River Basin. Minimum gage height, 2.80 ft, Oct. 29, 1987. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1913 reached a stage of 31.3 ft, from floodmarks, discharge, 118,000 ft³/s, from rating curve extended as explained above.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 25,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 9	Unknown	*Unknown	*Unknown	Mar. 19	2245	26,700	14.87
Feb. 4	Unknown	Unknown	Unknown	Mar. 21	Unknown	Unknown	Unknown
Feb. 18	1345	41,600	18.55	Apr. 20	1945	35,500	17.14

Minimum daily discharge, 555 ft³/s, Sept. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	921	1180	1130	1530	11300	8100	4650	4410	2740	2030	1010	899
2	881	1410	1430	1420	9270	7900	4490	5250	2450	1740	990	827
3	847	1760	1480	1370	8210	7120	4480	6370	2160	1590	834	555
4	805	1680	1330	1460	e24000	6360	5570	7020	2070	1490	918	848
5	791	1440	1270	1820	e37500	5700	8030	8270	1930	1530	912	787
6	774	1170	1310	2760	e25000	5090	8910	9830	1920	1500	897	806
7	778	1630	1090	3980	22100	4320	7550	8770	1880	1370	865	790
8	766	2170	1120	e27500	17000	4930	6430	9830	1700	1350	953	872
9	732	3300	1090	e48500	14100	10000	6470	15100	1680	1460	1080	970
10	638	2870	1090	16900	11900	17500	10100	12600	1720	1440	1090	878
11	715	2030	1090	10100	10600	13900	11100	9880	1690	1310	1050	705
12	714	1610	1210	7090	13000	11100	8760	9680	1700	1250	1150	857
13	762	1420	1280	5890	14000	9170	7400	7950	1780	1180	1070	769
14	733	1340	1270	4900	13000	7170	6640	6670	1760	1170	1160	793
15	729	1300	1220	4860	10800	6350	5900	5580	1890	1150	1020	792
16	717	1270	1180	7820	9460	5660	5620	4960	2350	1130	1100	790
17	725	1180	1170	9450	19100	4720	e10000	4780	3330	1160	1510	785
18	746	1200	1100	7940	38300	4470	e15000	4270	2870	1090	1560	793
19	738	1130	1060	6710	26600	13500	11500	3930	2270	1090	1390	792
20	734	1140	1020	5950	20600	23900	28000	3560	2280	1080	1160	797
21	734	1070	1020	5070	17900	e46000	24500	3240	2310	1060	1120	795
22	734	1210	1060	4190	15300	e37300	16300	2970	2110	1050	1030	801
23	724	1270	1090	7060	12800	21800	12000	2770	1870	1070	1000	786
24	739	1290	1160	e12500	13000	17600	9500	2820	1710	1070	959	774
25	778	1280	1310	12600	12100	15000	8120	3030	1620	1080	971	775
26	860	1220	1810	10000	10400	12400	7110	3190	1520	1020	982	774
27	963	1140	2050	8340	9360	9500	6210	3050	1530	1060	1020	774
28	953	1140	2010	15300	8550	7480	5360	5600	1510	1040	999	768
29	902	1090	1930	20400	---	6650	4810	5340	1770	1020	981	780
30	888	1070	1810	15800	---	6070	4380	3980	2290	992	941	764
31	837	---	1690	14100	---	5460	---	3250	---	1030	913	---
TOTAL	24358	44010	40880	303310	455250	362220	274890	187950	60410	38602	32635	23896
MEAN	786	1467	1319	9784	16260	11680	9163	6063	2014	1245	1053	797
MAX	963	3300	2050	48500	38300	46000	28000	15100	3330	2030	1560	970
MIN	638	1070	1020	1370	8210	4320	4380	2770	1510	992	834	555
(†)	-3731	+2672	+1361	+20822	-1160	-151	-101	+504	+101	-5092	-6201	-5949
MEAN†	665	1556	1363	10456	16218	11680	9160	6079	2017	1081	853	598
CFSM†	.20	.48	.42	3.21	4.98	3.58	2.81	1.87	.62	.33	.26	.18
IN.†	.24	.53	.48	3.70	5.18	4.13	3.14	2.15	.69	.38	.30	.20
CAL YR 1997	TOTAL 1011886	MEAN 2772	MAX 28100	MIN 620	MEAN† 2719	CFSM† .83	IN.† 11.33					
WTR YR 1998	TOTAL 1848411	MEAN 5064	MAX 48500	MIN 555	MEAN† 5073	CFSM† 1.56	IN.† 21.14					

† Total change in contents, equivalent in cubic feet per second, per month, in Lake Moomaw; provided by U.S. Army Corps of Engineers.

‡ Adjusted for monthly change in contents.

e Estimated.

JAMES RIVER BASIN

02025500 JAMES RIVER AT HOLCOMB ROCK, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1927 - 1979, BY WATER YEAR (WY) [UNREGULATED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2031	2352	3690	4904	5803	7376	5785	4270	2701	1606	1953	1572
MAX	10050	8975	12750	14490	11260	15510	11840	10020	11320	6610	9834	7414
(WY)	1938	1973	1949	1937	1939	1936	1935	1942	1972	1972	1940	1979
MIN	432	511	580	631	690	2741	1798	1188	910	415	458	421
(WY)	1931	1932	1966	1956	1934	1940	1942	1930	1964	1966	1930	1930

SUMMARY STATISTICS

WATER YEARS 1927 - 1979

ANNUAL MEAN	3663
HIGHEST ANNUAL MEAN	6241
LOWEST ANNUAL MEAN	1947
HIGHEST DAILY MEAN	118000
LOWEST DAILY MEAN	223
ANNUAL SEVEN-DAY MINIMUM	306
INSTANTANEOUS PEAK FLOW	150000
INSTANTANEOUS PEAK STAGE	35.50
INSTANTANEOUS LOW FLOW	71
ANNUAL RUNOFF (CFSM)	1.12
ANNUAL RUNOFF (INCHES)	15.26
10 PERCENT EXCEEDS	7910
50 PERCENT EXCEEDS	2100
90 PERCENT EXCEEDS	655

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1980	3090	3426	5141	5934	7528	6752	4525	3258	1591	1526	1668
MAX	7966	17270	9246	13540	16260	16910	21670	12380	9990	4562	5640	7233
(WY)	1980	1986	1997	1996	1998	1993	1987	1989	1995	1995	1984	1996
MIN	690	785	890	730	2139	1472	1616	2205	1234	1009	595	674
(WY)	1992	1992	1981	1981	1981	1981	1995	1991	1988	1986	1981	1983

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1980 - 1998

ANNUAL TOTAL	1011886	1848411	
ANNUAL MEAN	2772	5064	3855
HIGHEST ANNUAL MEAN			5064
LOWEST ANNUAL MEAN			1613
HIGHEST DAILY MEAN	28100	Mar 4	e48500
LOWEST DAILY MEAN	620	Sep 7	555
ANNUAL SEVEN-DAY MINIMUM	715	Oct 10	715
INSTANTANEOUS PEAK FLOW			(a)
INSTANTANEOUS PEAK STAGE			(a)
INSTANTANEOUS LOW FLOW			d100
ANNUAL RUNOFF (CFSM)	.85	1.55	1.18
ANNUAL RUNOFF (INCHES)	11.55	21.10	16.07
10 PERCENT EXCEEDS	5770	13000	8400
50 PERCENT EXCEEDS	1680	1700	1980
90 PERCENT EXCEEDS	815	792	828

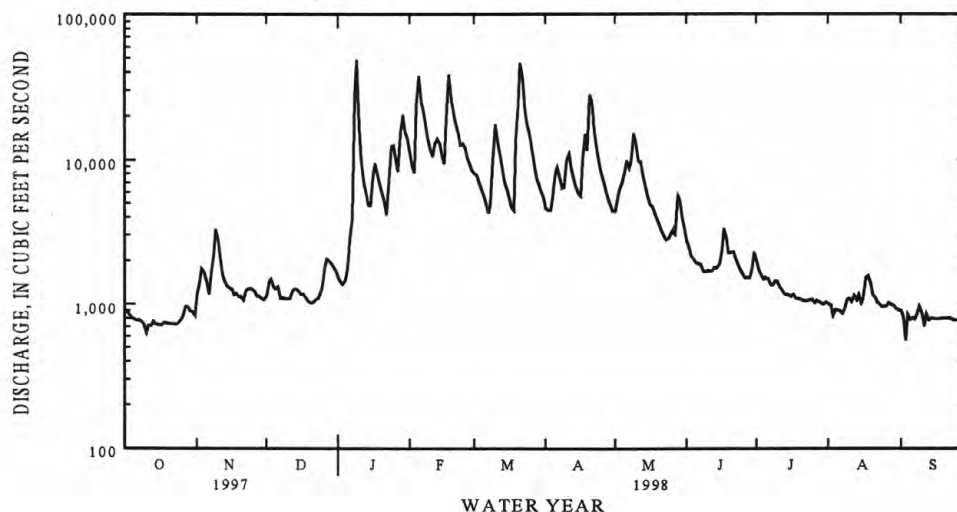
a Not determined.

b Probably occurred Jan. 9, 1998.

c From high-water mark in gage house.

d Result of regulation.

e Estimated.



JAMES RIVER BASIN

02026000 JAMES RIVER AT BENT CREEK, VA

LOCATION.--Lat 37°32'10", long 78°49'30", Nelson County, Hydrologic Unit 02080203, on left bank at town of Bent Creek, 150 ft downstream from Bent Creek, 525 ft upstream from bridge on U.S. Highway 60, 1.3 mi southeast of Gladstone, and at mile 227.8.

DRAINAGE AREA.--3,683 mi².

PERIOD OF RECORD.--October 1924 to current year. Monthly discharge only for some periods, published in WSP 1303. Prior to 1926, published as "at Bent Creek, near Gladstone."

REVISED RECORDS.--WSP 742: 1931(m). WSP 972: 1935-36. WSP 1066: 1940. WSP 1203: 1942. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 381.39 ft above sea level. Prior to Sept. 12, 1930, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Large diurnal fluctuation caused by powerplants upstream from station. Flow regulated since December 1979 by Lake Moomaw (station 02011795) 158.3 mi upstream; since October 1984 by Back Creek Lake 186.3 mi upstream; and since January 1985 by Little Back Creek Lake 189.4 mi upstream, amount unknown. National Weather Service gage-height telemeter at station. Maximum discharge, 226,000 ft³/s, from rating curve extended above 177,000 ft³/s on basis of slope-area measurement of peak flow. Minimum gage height, 2.21 ft, Oct. 13, 14, 1930. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 26,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 9	0700	*71,700	*17.02	Mar. 21	2315	55,400	14.93
Feb. 5	0200	49,300	14.09	Apr. 21	0300	35,200	11.88
Feb. 18	2115	41,900	12.98				

Minimum discharge, 711 ft³/s, Oct. 13, 14-15, Dec. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1100	1310	1420	2180	12600	8600	5190	5050	4090	2800	1320	1050
2	1220	2520	1720	1940	10300	8450	4840	6070	3710	2360	1260	1210
3	1150	2200	1700	1820	9050	7920	4460	6730	3480	2230	1230	1010
4	1090	2260	1970	1920	18400	7130	8700	7320	3170	2020	1110	767
5	1080	1970	2340	1960	43800	6350	8870	8640	3100	2000	1150	1000
6	1040	1890	1890	2950	27400	5790	9870	10100	3040	2060	1180	979
7	872	2270	981	4880	23700	5130	8560	9580	2930	2000	1100	974
8	1030	2820	1310	20000	18600	6020	7470	9650	2910	1900	1190	965
9	979	3660	1340	61600	15200	10900	6920	15000	2670	1930	2730	1060
10	754	4100	1440	22200	13000	16900	8870	13900	2870	2100	1570	1160
11	878	2990	1420	12100	11200	15600	12400	10900	2830	1960	1560	1080
12	946	2340	1450	8410	13300	12200	9460	10100	2700	1660	1400	878
13	908	1940	1600	6810	14300	10200	8260	9030	2640	2480	1480	1000
14	1010	1920	1640	5700	13900	8060	7310	7570	2610	1950	1370	917
15	917	1710	1610	5670	11700	7000	6710	6450	2890	1860	1500	995
16	912	1660	1520	8800	9890	6430	6090	5750	2910	1790	1470	800
17	1060	1540	1470	10100	17300	5750	11400	6260	3330	1830	2030	1070
18	973	1520	1490	9010	39000	5310	16600	5000	4110	1760	1950	853
19	942	1480	1390	7680	30600	8150	12100	4660	3510	1620	2160	983
20	948	1510	1290	6780	21900	24900	24000	4140	3050	1520	1650	1020
21	977	1380	1340	6020	18800	47300	28300	3920	3180	1100	1610	942
22	1000	1600	1240	5060	16500	46300	18500	3750	3110	1390	1410	936
23	954	1640	1410	7290	14100	23600	13500	3780	2680	1470	1420	1060
24	918	1620	1470	12900	13400	18200	10500	4070	2510	1540	1290	944
25	1040	1700	1830	14100	13000	15400	9310	4210	2450	1480	1200	912
26	926	1600	1940	11300	11300	13000	7810	4350	2170	1410	1290	1010
27	1410	1540	2710	9520	10000	10100	7110	4420	2190	1350	1220	943
28	1320	1400	2810	21000	9240	7890	6300	5030	2170	1560	1380	869
29	1180	1500	2730	22600	---	7350	5670	6990	2050	1360	1180	914
30	1040	1320	2570	17400	---	6550	5160	5180	2690	1400	1370	882
31	1230	---	2380	15200	---	6110	---	4300	---	1340	1130	---
TOTAL	31804	58910	53421	344900	481480	388590	300240	211900	87750	55230	44910	29183
MEAN	1026	1964	1723	11130	17200	12540	10010	6835	2925	1782	1449	973
MAX	1410	4100	2810	61600	43800	47300	28300	15000	4110	2800	2730	1210
MIN	754	1310	981	1820	9050	5130	4460	3750	2050	1100	1100	767
(†)	-3731	+2672	+1361	+20822	-1160	-151	-101	+504	+101	-5092	-6201	-5949
MEAN†	906	2053	1767	11797	17154	12530	10005	6852	2928	1617	1249	774
CFSM†	.25	.56	.48	3.20	4.66	3.40	2.72	1.86	.80	.44	.34	.21
IN.†	.28	.62	.55	3.69	4.85	3.92	3.03	2.15	.89	.51	.39	.23

CAL YR 1997	TOTAL	1224103	MEAN	3354	MAX	24700	MIN	754	MEAN†	3300	CFSM†	.90	IN.†	12.17
WTR YR 1998	TOTAL	2088318	MEAN	5721	MAX	61600	MIN	754	MEAN†	5730	CFSM†	1.56	IN.†	21.12

† Total change in contents, equivalent in cubic feet per second, per month, in Lake Moomaw; provided by U.S. Army Corps of Engineers.

‡ Adjusted for monthly change in contents.

JAMES RIVER BASIN

02026000 JAMES RIVER AT BENT CREEK, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1979, BY WATER YEAR (WY) [UNREGULATED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2388	2739	4200	5569	6661	8137	6592	4811	3149	1933	2325	1926
MAX	11180	9718	13990	15920	12630	17410	13490	10790	13360	7286	11930	7642
(WY)	1938	1973	1949	1937	1939	1936	1958	1942	1972	1972	1940	1979
MIN	424	581	710	782	889	3227	1893	1509	1045	419	475	450
(WY)	1931	1931	1966	1956	1934	1940	1942	1930	1964	1966	1966	1930

SUMMARY STATISTICS

WATER YEARS 1925 - 1979

ANNUAL MEAN	4192
HIGHEST ANNUAL MEAN	7514
LOWEST ANNUAL MEAN	2228
HIGHEST DAILY MEAN	130000
LOWEST DAILY MEAN	222
ANNUAL SEVEN-DAY MINIMUM	256
INSTANTANEOUS PEAK FLOW	176000
INSTANTANEOUS PEAK STAGE	a27.13
INSTANTANEOUS LOW FLOW	222
ANNUAL RUNOFF (CFSM)	1.14
ANNUAL RUNOFF (INCHES)	15.46
10 PERCENT EXCEEDS	8910
50 PERCENT EXCEEDS	2500
90 PERCENT EXCEEDS	831

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2398	3427	4107	5750	6783	8494	7650	5326	3861	2011	1896	2178
MAX	9173	16910	10380	11680	17200	18860	24090	13990	10710	4973	6027	9873
(WY)	1980	1986	1997	1991	1998	1993	1987	1989	1995	1995	1984	1996
MIN	743	967	987	858	2521	1626	1842	2788	1496	1128	725	841
(WY)	1987	1992	1981	1981	1981	1981	1995	1982	1986	1986	1981	1980

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

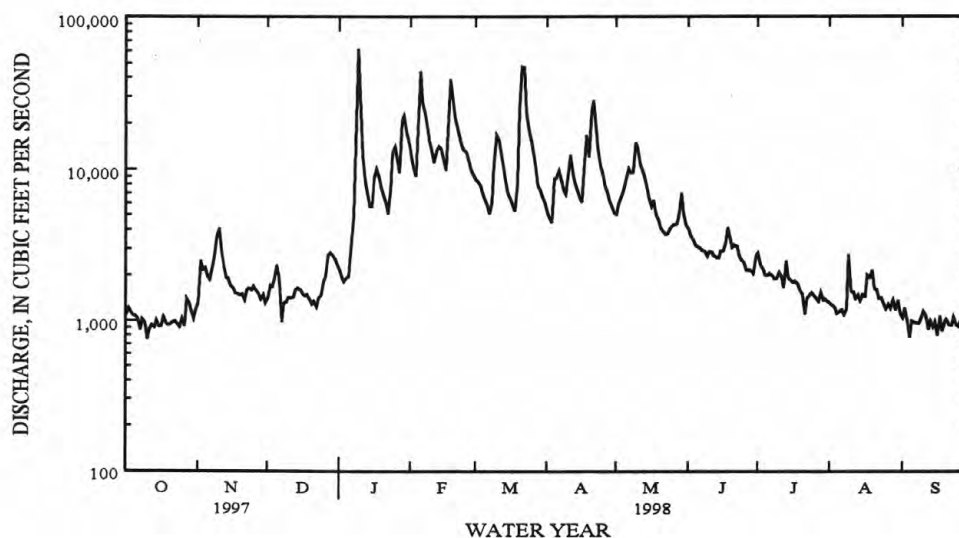
WATER YEARS 1980 - 1998

ANNUAL TOTAL	1224103	2088318	
ANNUAL MEAN	3354	5721	4475
HIGHEST ANNUAL MEAN			5735
LOWEST ANNUAL MEAN			1791
HIGHEST DAILY MEAN	24700	Mar 5	61600
LOWEST DAILY MEAN	754	Oct 10	754
ANNUAL SEVEN-DAY MINIMUM	904	Oct 10	904
INSTANTANEOUS PEAK FLOW			71700
INSTANTANEOUS PEAK STAGE			17.02
INSTANTANEOUS LOW FLOW			711
ANNUAL RUNOFF (CFSM)	.91	1.55	1.22
ANNUAL RUNOFF (INCHES)	12.36	21.09	16.51
10 PERCENT EXCEEDS	6660	13900	9590
50 PERCENT EXCEEDS	2380	2480	2590
90 PERCENT EXCEEDS	1110	1000	974

a From high-water mark.

b Also Oct. 14, 1930.

c Also Oct. 14-15, Dec. 7, 1997.



JAMES RIVER BASIN

02027000 TYE RIVER NEAR LOVINGSTON, VA

LOCATION.--Lat 37°42'55", long 78°58'55", Nelson County, Hydrologic Unit 02080203, on right bank at downstream side of bridge on State Highway 158, 3.5 mi downstream from Hat Creek, 4.8 mi upstream from Piney River, and 6.8 mi southwest of Lovingsston.

DRAINAGE AREA.--92.8 mi².

PERIOD OF RECORD.--August 1938 to current year.

REVISED RECORDS.--WSP 892: 1938. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 578.39 ft above sea level. Sept. 15, 1969, to Oct. 15, 1970, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with doubtful gage-height record, Oct. 3-11, 22, 23, Nov. 17, 26, 27, 29, Mar. 26, and July 14, 15, and period with ice effect, Jan. 1, 2, which are fair. Maximum discharge, 80,000 ft³/s, from rating curve extended above 7,600 ft³/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1230	*6,850	*9.15	Feb. 17	1700	3,640	6.13
Jan. 28	1230	2,570	4.89	Mar. 9	1230	2,040	4.20
Feb. 4	1200	2,160	4.36	May 8	0500	2,110	4.29

Minimum discharge, 7.7 ft³/s, Sept. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	154	95	e87	427	484	246	255	102	69	34	21
2	23	202	82	e90	367	507	223	264	97	59	27	20
3	e21	147	74	95	341	449	202	240	92	63	25	18
4	e23	114	84	107	1360	394	405	249	86	60	24	19
5	e20	95	76	120	1110	352	391	296	91	72	23	16
6	e18	86	70	139	896	313	341	255	89	57	23	15
7	e17	392	69	349	740	289	303	374	80	51	22	17
8	e17	383	65	3830	596	620	280	1340	76	64	29	22
9	e16	306	64	1540	512	1530	406	928	74	63	60	17
10	e20	220	74	842	453	1170	423	698	89	55	42	14
11	e21	177	82	566	486	804	387	551	82	49	37	13
12	17	143	72	432	907	628	352	489	77	46	32	12
13	17	120	69	363	788	517	320	415	76	46	28	11
14	18	145	67	296	661	444	293	363	70	e44	32	10
15	17	131	65	400	551	383	273	320	165	e42	27	10
16	17	116	65	462	484	334	252	328	e250	47	50	9.9
17	17	e108	65	387	2000	303	536	442	e270	92	138	9.6
18	23	100	63	338	1830	299	379	283	139	50	68	11
19	23	92	63	306	1210	360	696	240	e185	43	48	11
20	20	82	60	280	1010	389	1100	209	139	41	39	11
21	18	88	60	240	869	847	777	194	e110	38	33	12
22	e17	133	68	220	730	682	607	172	e100	34	31	12
23	e16	114	77	612	719	541	512	167	e93	41	34	10
24	18	104	73	644	623	457	432	181	e89	50	32	8.9
25	36	97	133	512	546	371	379	160	e82	38	29	9.4
26	42	e92	116	411	503	e350	334	141	e78	35	29	9.7
27	62	e88	120	467	475	323	306	160	e65	35	26	9.3
28	36	84	118	1480	457	299	273	165	69	38	27	8.5
29	29	e80	112	842	---	273	246	133	94	33	24	8.2
30	26	77	114	644	---	249	231	118	79	31	21	8.9
31	26	---	102	517	---	234	---	110	---	32	20	---
TOTAL	717	4270	2517	17618	21651	15195	11905	10240	3188	1518	1114	384.4
MEAN	23.1	142	81.2	568	773	490	397	330	106	49.0	35.9	12.8
MAX	62	392	133	3830	2000	1530	1100	1340	270	92	138	22
MIN	16	77	60	87	341	234	202	110	65	31	20	8.2
CF5M	.25	1.53	.87	6.12	8.33	5.28	4.28	3.56	1.15	.53	.39	.14
IN.	.29	1.71	1.01	7.06	8.68	6.09	4.77	4.10	1.28	.61	.45	.15

e Estimated.

JAMES RIVER BASIN

02027000 TYE RIVER NEAR LOVINGSTON, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	104	133	171	195	221	264	240	184	137	79.4	109	89.2
MAX	550	765	499	568	773	568	692	492	676	382	1541	556
(WY)	1943	1986	1997	1998	1998	1993	1987	1989	1972	1972	1969	1979
MIN	8.69	15.3	23.7	14.7	69.7	64.0	63.1	53.1	30.8	15.1	7.07	6.87
(WY)	1942	1942	1981	1981	1963	1981	1966	1941	1956	1966	1966	1954

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1939 - 1998

ANNUAL TOTAL	45338	90317.4	
ANNUAL MEAN	124	247	160
HIGHEST ANNUAL MEAN			280
LOWEST ANNUAL MEAN			61.7
HIGHEST DAILY MEAN	586 Mar 4	3830 Jan 8	e32600 Aug 20 1969
LOWEST DAILY MEAN	12 aSep 7	8.2 Sep 29	.60 bSep 9 1966
ANNUAL SEVEN-DAY MINIMUM	14 Sep 3	9.0 Sep 24	.73 Sep 7 1966
INSTANTANEOUS PEAK FLOW		6850 Jan 8	80000 Aug 20 1969
INSTANTANEOUS PEAK STAGE		9.15 Jan 8	c29.00 Aug 20 1969
INSTANTANEOUS LOW FLOW		7.7 Sep 29	.50 dSep 10 1966
ANNUAL RUNOFF (CFSM)	1.34	2.67	1.72
ANNUAL RUNOFF (INCHES)	18.17	36.20	23.42
10 PERCENT EXCEEDS	276	609	325
50 PERCENT EXCEEDS	91	100	104
90 PERCENT EXCEEDS	19	18	23

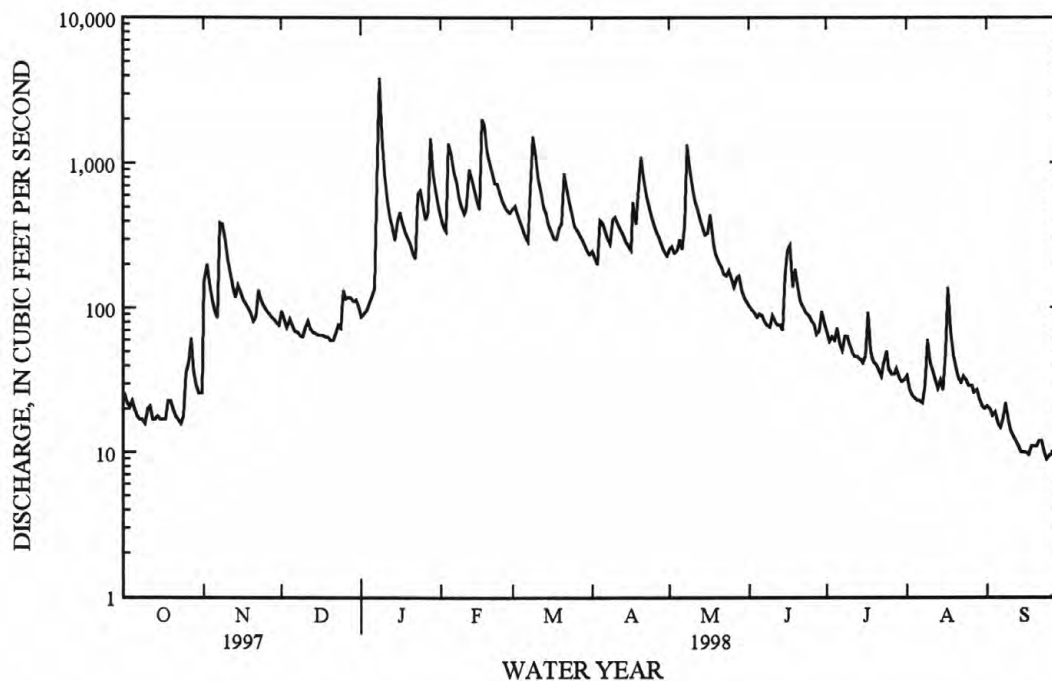
a Also Sept. 8, 1997.

b Also Sept. 10, 11, 1966.

c From floodmarks.

d Also Sept. 11, 1966.

e Estimated.



JAMES RIVER BASIN

02027500 PINEY RIVER AT PINEY RIVER, VA

LOCATION.--Lat 37°42'08", long 79°01'40", Nelson County, Hydrologic Unit 02080203, on left bank at upstream side of bridge on State Highway 151, 0.2 mi southwest of Piney River Post Office, 1.7 mi downstream from Indian Creek, and 2.5 mi southeast of Lowesville.

DRAINAGE AREA.--47.6 mi².

PERIOD OF RECORD.--July 1949 to current year.

REVISED RECORDS.--WSP 2104: Drainage area. WDR VA-72-1: 1971(M).

GAGE.--Water-stage recorder. Datum of gage is 633.58 ft above sea level. Prior to May 27, 1969, water-stage recorder, and Nov. 4, 1969, to Feb. 26, 1970, nonrecording gage at site 20 ft downstream from former highway bridge at same datum. Feb. 26, 1970, to Sept. 20, 1973, on right bank 20 ft upstream from bridge at same datum.

REMARKS.--Records good except those for periods of doubtful gage-height record, May 20-23, May 29 to June 4, and period with ice effect, Jan. 1, 2, which are fair. Periodic dewatering of upstream quarries adds small amount of inflow. Maximum discharge, 38,000 ft³/s, from rating curve extended above 6,000 ft³/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1949 reached a stage of 9.9 ft, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 650 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1115	*3,160	*6.54	Apr. 17	0545	864	3.18
Jan. 28	0745	716	2.85	Apr. 19	1845	785	3.01
Feb. 17	1645	1,360	4.10	May 8	1345	958	3.37
Mar. 9	1045	845	3.14	May 16	2215	1,370	4.12

Minimum discharge, 2.3 ft³/s, Sept. 17, 26-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	103	59	e54	269	194	117	158	e67	33	14	4.8
2	11	125	50	e55	232	195	103	149	e63	31	11	4.5
3	9.7	103	49	56	212	182	96	137	e60	30	11	4.1
4	10	85	55	59	346	170	277	144	e57	30	10	4.0
5	9.5	71	50	63	350	157	230	146	67	33	9.5	3.9
6	9.0	65	49	69	347	144	213	139	63	27	8.9	3.4
7	8.5	166	48	233	309	136	193	228	60	26	8.6	3.3
8	8.4	174	47	2060	267	264	172	701	56	35	16	8.2
9	8.4	169	47	1060	236	707	243	542	56	30	24	6.9
10	8.9	142	51	571	213	606	250	419	59	26	21	4.6
11	9.7	118	48	396	227	451	238	343	54	24	17	4.2
12	9.2	99	45	308	335	352	220	301	53	22	13	3.9
13	8.8	88	44	251	334	285	200	248	53	21	12	3.1
14	8.9	98	42	203	304	239	182	215	49	21	19	3.0
15	9.0	83	41	259	267	201	163	187	74	20	13	2.8
16	8.9	79	40	287	244	174	148	278	64	26	23	2.7
17	11	75	39	267	814	153	347	375	62	30	55	2.6
18	13	70	38	240	966	145	234	256	51	21	25	3.9
19	13	65	37	217	650	157	403	226	63	19	17	3.7
20	11	61	36	192	506	216	626	e170	54	18	13	3.8
21	10	63	35	168	404	421	475	e145	49	17	11	4.2
22	9.6	78	41	155	336	385	382	e130	47	16	10	4.2
23	9.3	65	43	313	329	325	319	e120	45	18	9.3	3.4
24	11	62	44	334	290	277	270	148	43	22	8.5	2.9
25	21	61	68	309	257	237	232	127	41	17	7.7	2.8
26	25	60	60	270	235	206	203	111	39	16	7.0	3.3
27	34	57	68	288	219	181	184	132	37	16	6.5	2.9
28	20	54	67	576	205	161	162	115	37	17	6.1	2.8
29	17	51	67	491	---	144	145	e90	47	14	6.1	2.3
30	16	50	67	392	---	129	136	e82	36	13	5.5	2.4
31	15	---	61	322	---	117	---	e75	---	14	5.2	---
TOTAL	385.8	2640	1536	10518	9703	7711	7163	6637	1606	703	423.9	112.6
MEAN	12.4	88.0	49.5	339	347	249	239	214	53.5	22.7	13.7	3.75
MAX	34	174	68	2060	966	707	626	701	74	35	55	8.2
MIN	8.4	50	35	54	205	117	96	75	36	13	5.2	2.3
CFSM	.26	1.85	1.04	7.13	7.28	5.23	5.02	4.50	1.12	.48	.29	.08
IN.	.30	2.06	1.20	8.22	7.58	6.03	5.60	5.19	1.26	.55	.33	.09

e Estimated.

JAMES RIVER BASIN

02027500 PINEY RIVER AT PINEY RIVER, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	65.4	91.1	109	119	132	162	148	111	90.3	40.3	60.6	48.5
MAX	313	644	297	339	347	311	417	352	541	213	1239	388
(WY)	1991	1986	1997	1998	1998	1993	1987	1989	1972	1972	1969	1996
MIN	4.75	10.7	14.2	7.94	34.4	37.8	38.4	35.8	15.9	9.04	4.92	3.75
(WY)	1964	1954	1981	1981	1977	1981	1966	1963	1956	1964	1987	1998

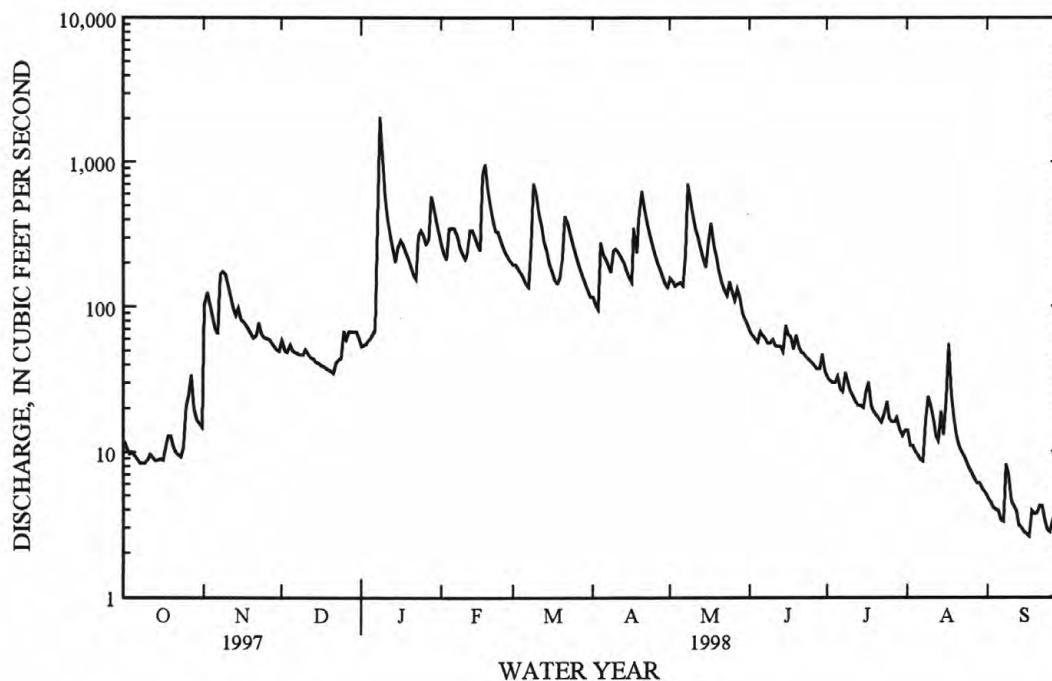
SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1950 - 1998	
ANNUAL TOTAL	26168.7		49139.3			
ANNUAL MEAN	71.7		135		98.0	
HIGHEST ANNUAL MEAN					188	
LOWEST ANNUAL MEAN					35.9	
HIGHEST DAILY MEAN	544 Jun 2		2060 Jan 8		25000 Aug 20 1969	
LOWEST DAILY MEAN	3.7 aSep 7		2.3 Sep 29		b1.4 Sep 13 1966	
ANNUAL SEVEN-DAY MINIMUM	4.5 Sep 2		2.8 Sep 24		b1.7 Sep 7 1966	
INSTANTANEOUS PEAK FLOW			3160 Jan 8		38000 Aug 20 1969	
INSTANTANEOUS PEAK STAGE			6.54 Jan 8		c13.80 Aug 20 1969	
INSTANTANEOUS LOW FLOW			2.3 dSep 17		b1.1 Sep 13 1966	
ANNUAL RUNOFF (CFSM)	1.51		2.83		2.06	
ANNUAL RUNOFF (INCHES)	20.45		38.40		27.97	
10 PERCENT EXCEEDS	152		327		203	
50 PERCENT EXCEEDS	60		62		61	
90 PERCENT EXCEEDS	9.6		8.0		11	

a Also Sept. 8, 1997.

b Dewatering of upstream quarry at a rate of 300 gallons per minute or 0.67 ft³/s included in flow.

c From floodmarks.

d Also Sept. 26-30, 1998.



JAMES RIVER BASIN

02028500 ROCKFISH RIVER NEAR GREENFIELD, VA

LOCATION.--Lat 37°52'10", long 78°49'25", Nelson County, Hydrologic Unit 02080203, on left bank 50 ft downstream from bridge on State Highway 634, 2.8 mi downstream from confluence of North and South Forks, and 4.1 mi south of Greenfield.

DRAINAGE AREA.--94.6 mi².

PERIOD OF RECORD.--April 1943 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 530.29 ft above sea level. Prior to Aug. 21, 1943, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods of doubtful gage-height record, Jan. 28 to Feb. 3, Feb. 5-11, June 22-26, and July 9-11, 19, 20, which are fair. Maximum discharge, 70,000 ft³/s, from rating curve extended above 8,500 ft³/s on basis of contracted-opening measurement at gage height 18.11 ft, slope-area measurements at gage heights 17.2 ft, 23.4 ft, and 31.2 ft, and peak runoff comparison with nearby stations. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 15, 1942, reached a stage of 23.4 ft, from floodmarks, discharge, about 30,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1130	2,530	6.50	Feb. 17	1730	*4,210	*8.48
Jan. 28	1330	3,840	8.09	Mar. 9	0900	1,690	5.18
Feb. 4	1100	2,760	6.84	May 8	0100	2,670	6.71

Minimum discharge, 6.5 ft³/s, Sept. 26, 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	175	79	77	e390	348	238	208	110	72	24	11
2	17	153	62	81	e355	357	212	212	102	69	20	10
3	17	104	62	90	e325	317	195	190	92	70	19	10
4	16	70	67	106	1680	286	360	188	88	66	18	10
5	15	53	61	120	e1150	260	320	246	90	77	16	9.2
6	14	51	53	122	e850	238	292	212	88	61	15	9.0
7	14	661	50	363	e650	222	263	455	81	57	15	8.6
8	14	490	49	1730	e530	571	241	1520	77	69	18	11
9	14	326	50	926	e450	1250	399	830	77	e64	99	10
10	14	220	66	554	e400	849	397	602	90	e56	42	9.8
11	14	174	67	390	e570	622	370	486	86	e53	32	9.1
12	14	138	60	295	840	501	329	449	84	50	26	8.6
13	14	122	55	238	772	428	295	390	77	46	23	8.0
14	14	170	51	183	694	377	271	341	70	45	22	7.6
15	14	136	51	252	614	329	246	298	147	43	23	7.3
16	14	120	51	320	562	295	227	274	239	45	32	7.1
17	15	104	53	252	2330	266	303	362	248	80	46	7.2
18	23	98	51	217	1430	283	230	283	163	46	44	7.7
19	20	90	50	195	910	378	451	246	189	e40	27	9.0
20	19	81	49	179	754	472	670	222	165	e37	22	9.3
21	17	87	47	155	622	874	497	200	140	35	20	9.0
22	15	136	50	142	531	630	417	176	e120	31	18	8.8
23	15	104	61	542	600	505	360	172	e110	35	17	8.0
24	17	92	58	490	562	431	314	172	e100	42	16	7.4
25	44	82	142	393	475	373	277	157	e90	34	14	8.2
26	42	79	116	317	431	338	243	140	e84	30	13	7.5
27	60	75	116	335	400	310	230	191	79	31	14	7.8
28	33	70	116	e1900	370	283	210	170	82	35	15	7.4
29	27	66	104	e900	---	260	190	140	114	28	13	6.7
30	25	64	104	e580	---	235	179	126	84	24	12	7.1
31	23	---	90	e430	---	220	---	118	---	24	12	---
TOTAL	633	4391	2141	12874	20247	13108	9226	9776	3366	1495	747	257.4
MEAN	20.4	146	69.1	415	723	423	308	315	112	48.2	24.1	8.58
MAX	60	661	142	1900	2330	1250	670	1520	248	80	99	11
MIN	14	51	47	77	325	220	179	118	70	24	12	6.7
CFSM	.22	1.55	.73	4.39	7.64	4.47	3.25	3.33	1.19	.51	.25	.09
IN.	.25	1.73	.84	5.06	7.96	5.15	3.63	3.84	1.32	.59	.29	.10

e Estimated.

JAMES RIVER BASIN

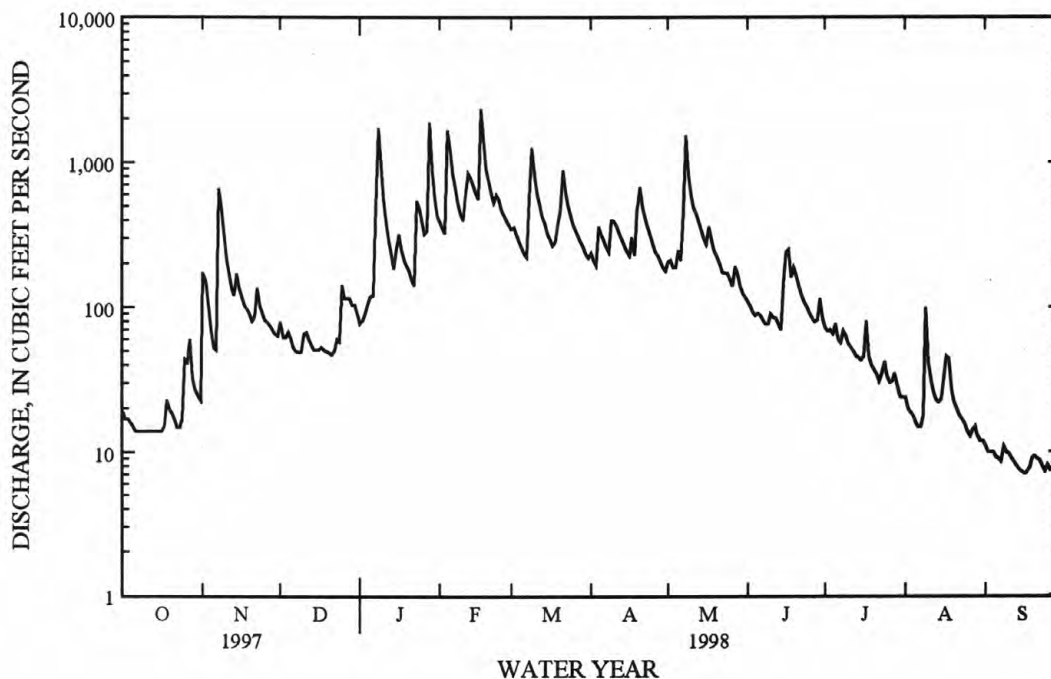
02028500 ROCKFISH RIVER NEAR GREENFIELD, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	95.6	126	152	174	200	249	224	163	125	74.4	87.1	83.8
MAX	394	733	445	480	723	629	699	369	696	327	1246	506
(WY)	1991	1986	1951	1996	1998	1993	1983	1990	1995	1972	1969	1979
MIN	8.65	17.9	18.5	23.1	62.0	55.9	52.5	44.7	23.1	8.82	4.10	3.34
(WY)	1964	1954	1966	a1966	1944	1981	1981	1981	1956	1966	1966	1954

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1943 - 1998	
ANNUAL TOTAL	39896.6		78261.4			
ANNUAL MEAN	109		214		146	
HIGHEST ANNUAL MEAN					290	
LOWEST ANNUAL MEAN					45.9	
HIGHEST DAILY MEAN	955	Jul 24	2330	Feb 17	e28800	Aug 20 1969
LOWEST DAILY MEAN	9.6	bSep 5	6.7	Sep 29	.20	cSep 8 1966
ANNUAL SEVEN-DAY MINIMUM	10	Sep 3	7.4	Sep 24	.30	Sep 6 1966
INSTANTANEOUS PEAK FLOW			4210	Feb 17	70000	Aug 20 1969
INSTANTANEOUS PEAK STAGE			8.48	Feb 17	d31.20	Aug 20 1969
INSTANTANEOUS LOW FLOW			6.5	fSep 26	.20	gSep 8 1966
ANNUAL RUNOFF (CFSM)	1.16		2.27		1.54	
ANNUAL RUNOFF (INCHES)	15.69		30.78		20.97	
10 PERCENT EXCEEDS	249		530		303	
50 PERCENT EXCEEDS	79		100		89	
90 PERCENT EXCEEDS	15		14		19	

a Also 1981.
b Also Sept. 6, 8, 1997.
c Also Sept. 9-11, 1966.
d From floodmarks.
e Estimated.
f Also Sept. 29, 30, 1998.
g Also Sept. 9-12, 1966.



JAMES RIVER BASIN

02029000 JAMES RIVER AT SCOTTSVILLE, VA

LOCATION.--Lat 37°47'50", long 78°29'30", Albemarle County, Hydrologic Unit 02080203, on left bank 900 ft downstream from bridge on State Highway 20 at Scottsville, 6.8 mi upstream from Hardware River, and at mile 188.6.

DRAINAGE AREA.--4,584 mi².

PERIOD OF RECORD.--October 1924 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 727: 1931(m). WSP 972: 1936(M), 1940(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 253.18 ft above sea level. Prior to Nov. 28, 1928, nonrecording gage at same site and datum.

REMARKS.--Records good except for period of no gage-height record, Feb. 9-12. Large diurnal fluctuation caused by powerplants upstream from station. Flow regulated since December 1979 by Lake Moomaw (station 02011795) 197.5 mi upstream; since October 1984 by Back Creek Lake 225.5 mi upstream; and since January 1985 by Little Back Creek Lake 228.6 mi upstream, amount unknown. National Weather Service gage-height telemeter at station. Maximum discharge, 301,000 ft³/s, from rating curve extended above 120,000 ft³/s on basis of slope-conveyance study. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1870 reached a stage of 30.7 ft, discharge, about 215,000 ft³/s, and flood in November 1877 reached a stage of 27.9 ft, discharge, about 160,000 ft³/s, from information by local resident. Flood in March 1913 reached a stage of 25.16 ft, from floodmarks, discharge, 121,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 35,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 9	1700	*78,800	*21.13	Feb. 18	0630	53,900	17.85
Jan. 28	2030	52,400	17.60	Mar. 22	0645	63,200	19.79
Feb. 5	1000	59,300	18.64	Apr. 21	0945	41,400	15.70

Minimum discharge, 812 ft³/s, Oct. 11; minimum gage height, 2.50 Sept. 17, 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1410	1700	1780	2850	17300	11000	7650	6740	4930	3540	1520	1350		
2	1330	3070	1980	2580	13900	10900	7140	7770	4300	3080	1520	1260		
3	1420	3630	2140	2480	12000	10600	6340	8340	3870	2630	1400	1410		
4	1350	3250	2270	2440	21200	9290	10600	8880	3710	2520	1310	1200		
5	1270	2810	2620	2500	54100	8470	15100	10500	3460	2360	1160	943		
6	1270	2440	3370	2770	40900	7640	12600	11600	3400	2480	1260	1190		
7	1220	5070	1580	4380	31900	6970	12000	12400	3310	2330	1260	1160		
8	1030	5880	1390	17000	26000	7700	10100	16900	3220	2330	1220	1220		
9	1190	4770	1790	68100	e22000	17500	9500	19600	2930	2310	2590	1200		
10	1130	5470	1770	39900	e18500	22200	11300	20200	3140	2460	2690	1290		
11	874	4670	2000	17900	e15000	22500	15300	15500	3290	2390	1810	1400		
12	999	3540	1800	12200	e14500	17100	13600	13000	3080	2140	1750	1260		
13	1060	2900	2010	9100	18500	13900	11400	12500	3120	2300	1730	1020		
14	1040	2690	1920	7760	18400	11400	9850	10200	3040	2160	1740	1190		
15	1110	2670	2030	6950	15700	9410	9020	8960	3320	1830	1830	1080		
16	1070	2390	1980	12600	13200	8630	8160	7730	3890	1790	1950	1180		
17	1110	2280	1840	12900	21700	7820	16000	9210	4110	1970	2310	939		
18	1510	2120	1860	12300	50900	7080	22000	7800	4610	2140	2950	1420		
19	1400	2000	1740	10100	44000	9090	18500	6460	4590	1840	2540	1030		
20	1250	2000	1690	8860	29800	25300	25800	6000	4300	1680	2340	1230		
21	1200	1960	1620	7580	25100	51600	37400	5520	3660	1440	2020	1260		
22	1200	2110	1630	6630	22100	60000	26100	5020	3630	1120	1730	1180		
23	1200	2450	1690	8770	19300	34200	19300	4740	3610	1630	1730	1080		
24	1150	2280	1910	16700	18500	24600	14800	4820	3010	1850	1600	1290		
25	1190	2150	2470	19100	17600	20500	12500	5130	3020	1910	1540	1080		
26	1470	2210	2710	15800	15200	17600	10700	5020	2590	1670	1420	965		
27	1790	2110	2990	12800	13300	14100	9710	5190	2580	1670	1520	1210		
28	1950	1870	3620	37300	12300	11200	8540	5640	2460	1680	1460	1080		
29	1760	1930	3550	35300	---	9740	7590	8060	2550	1910	1610	952		
30	1490	1770	3520	25400	---	8900	7080	6710	2660	1490	1420	1070		
31	1340	---	3150	20700	---	8270	---	5470	---	1580	1600	---		
TOTAL	39783	86190	68420	461750	642900	505210	405680	281610	103390	64230	54530	35139		
MEAN	1283	2873	2207	14900	22960	16300	13520	9084	3446	2072	1759	1171		
MAX	1950	5880	3620	68100	54100	60000	37400	20200	4930	3540	2950	1420		
MIN	874	1700	1390	2440	12000	6970	6340	4740	2460	1120	1160	939		
(†)	-3731	+2672	+1361	+20822	-1160	-151	-101	+504	+101	-5092	-6201	-5949		
MEAN†	1163	2962	2251	15567	22219	16292	13519	9100	3450	1908	1559	973		
CFSM†	.25	.65	.49	3.40	4.85	3.55	2.95	1.99	.75	.42	.34	.21		
IN.†	.29	.72	.57	3.92	5.05	4.10	3.29	2.29	.84	.48	.39	.24		
CAL YR 1997	TOTAL	1550825	MEAN	4249	MAX	33400	MIN	874	MEAN†	4196	CFSM†	.92	IN.†	12.43
WTR YR 1998	TOTAL	2748832	MEAN	7531	MAX	68100	MIN	874	MEAN†	7541	CFSM†	1.64	IN.†	22.31

† Total change in contents, equivalent in cubic feet per second, per month, in Lake Moomaw; provided by U.S. Army Corps of Engineers.
† Adjusted for monthly change in contents.
e Estimated.

JAMES RIVER BASIN

02029000 JAMES RIVER AT SCOTTSVILLE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1979, BY WATER YEAR (WY) [UNREGULATED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	3139	3440	5208	6854	8040	9495	7988	5805	4024	2453	2992	2521
MAX	14550	12920	18620	19350	15810	20320	16600	12480	18960	9225	15330	11690
(WY)	1938	1973	1949	1937	1939	1936	1935	1942	1972	1972	1940	1979
MIN	499	792	844	1002	1335	3942	2571	2007	1202	527	594	502
(WY)	1931	1931	1966	1956	1934	1925	1942	1930	1964	1966	1930	1930

SUMMARY STATISTICS

WATER YEARS 1925 - 1979

ANNUAL MEAN	5149
HIGHEST ANNUAL MEAN	9317
LOWEST ANNUAL MEAN	2477
HIGHEST DAILY MEAN	208000
LOWEST DAILY MEAN	300
ANNUAL SEVEN-DAY MINIMUM	321
INSTANTANEOUS PEAK FLOW	301000
INSTANTANEOUS PEAK STAGE	a34.02
INSTANTANEOUS LOW FLOW	b302
ANNUAL RUNOFF (CFSM)	1.12
ANNUAL RUNOFF (INCHES)	15.26
10 PERCENT EXCEEDS	10600
50 PERCENT EXCEEDS	3190
90 PERCENT EXCEEDS	1000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	3043	4548	5224	7441	8515	10570	9814	6791	4868	2602	2434	2795
MAX	11990	25090	13450	18230	22960	23820	28930	18230	14380	6941	7934	13180
(WY)	1980	1986	1997	1996	1998	1993	1987	1989	1995	1995	1984	1996
MIN	963	1251	1318	1165	3198	1961	2493	3610	1799	1262	934	844
(WY)	1987	1992	1981	1981	1981	1981	1995	1982	1986	1986	1987	1983

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

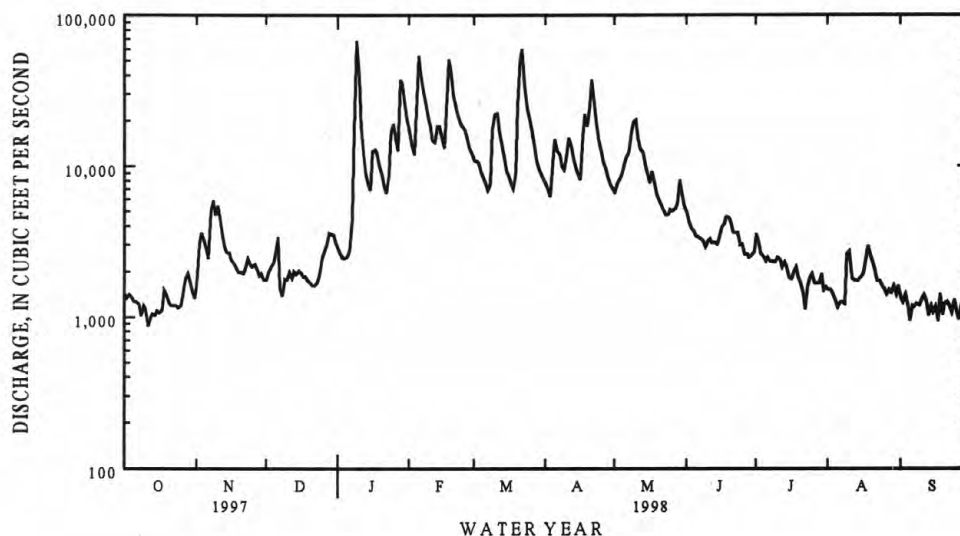
FOR 1998 WATER YEAR

WATER YEARS 1980 - 1998

ANNUAL TOTAL	1550825	2748832	
ANNUAL MEAN	4249	7531	5701
HIGHEST ANNUAL MEAN			7532
LOWEST ANNUAL MEAN			2217
HIGHEST DAILY MEAN	33400	Mar 5	68100
LOWEST DAILY MEAN	874	Oct 11	874
ANNUAL SEVEN-DAY MINIMUM	1040	Oct 11	1040
INSTANTANEOUS PEAK FLOW			78800
INSTANTANEOUS PEAK STAGE			21.13
INSTANTANEOUS LOW FLOW			812
ANNUAL RUNOFF (CFSM)	.93	1.64	1.24
ANNUAL RUNOFF (INCHES)	12.59	22.31	16.90
10 PERCENT EXCEEDS	8320	18500	12300
50 PERCENT EXCEEDS	2990	3040	3320
90 PERCENT EXCEEDS	1290	1220	1190

a From floodmarks.

b Probably lower during period of doubtful record in September 1966.



JAMES RIVER BASIN

02030000 HARDWARE RIVER BELOW BRIERY CREEK, NEAR SCOTTSVILLE, VA

LOCATION.--Lat 37°48'45", long 78°27'20", Fluvanna County, Hydrologic Unit 02080203, on left bank 75 ft upstream from bridge on State Highway 637, 0.8 mi downstream from Briery Creek, 2.4 mi northeast of Scottsville, and 10.8 mi upstream from mouth.

DRAINAGE AREA.--116 mi².

PERIOD OF RECORD.--October 1938 to September 1995, October 1996 to September 1997. Monthly discharge only for some periods, published in WSP 1303. Published as "below Briery Run" prior to October 1990.

REVISED RECORDS.--WSP 952: 1941(M). WSP 1002: 1940, 1943. WSP 1032: 1940, 1944.

GAGE.--Water-stage recorder. Datum of gage is 294.96 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. Maximum discharge, 52,000 ft³/s, from rating curve extended above 18,000 ft³/s on basis of slope-area measurements at gage heights 23.8 ft and 31.0 ft. Minimum gage height, 0.81 ft, Sept. 8, 1966. Several measurements of water temperature were made during the year.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 7	1715	1,720	9.20	Feb. 17	2330	4,820	14.40
Jan. 8	1945	1,570	8.75	Mar. 21	0645	4,060	13.49
Jan. 28	2030	*4,840	*14.43	May 8	0800	2,110	10.13
Feb. 4	2330	3,290	12.50				

Minimum discharge, 7.4 ft³/s, Sept. 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	101	90	94	320	289	256	217	136	94	49	27
2	46	173	78	96	277	296	264	286	128	91	43	26
3	40	121	75	101	258	314	231	248	126	105	42	25
4	37	74	103	112	1640	271	435	214	121	92	42	25
5	35	62	93	112	2100	257	362	457	124	96	37	23
6	34	63	82	107	1060	244	266	272	124	88	35	22
7	35	1120	77	148	857	238	240	331	117	84	35	22
8	34	979	73	965	580	678	230	1710	114	86	37	25
9	33	372	72	571	452	1160	402	656	114	85	234	24
10	34	199	81	277	372	611	480	399	134	114	129	18
11	33	149	97	200	330	411	331	318	128	79	84	18
12	31	125	84	170	611	331	275	311	127	69	83	16
13	31	112	78	163	383	296	251	293	122	65	68	15
14	32	208	75	147	314	281	241	248	115	63	60	14
15	37	163	71	345	276	261	235	225	165	62	57	13
16	36	129	70	687	256	247	222	212	165	61	64	12
17	40	111	69	332	1830	239	635	205	254	97	76	12
18	79	102	67	240	2280	283	410	195	134	82	85	20
19	58	95	65	202	655	803	361	186	130	65	67	20
20	47	90	64	187	509	668	685	175	143	61	54	21
21	40	91	64	166	427	2540	388	172	117	59	48	18
22	38	178	69	156	364	698	316	162	110	55	45	17
23	36	132	94	801	498	479	280	163	109	53	43	14
24	36	110	83	600	572	394	275	169	143	84	40	11
25	60	98	197	414	407	343	244	167	112	60	37	10
26	75	92	136	281	345	317	226	154	105	56	35	12
27	140	87	119	325	318	299	216	173	99	55	33	12
28	77	82	143	3140	303	282	208	197	98	61	38	11
29	60	79	132	1780	---	268	199	160	106	54	37	8.0
30	57	79	125	580	---	259	195	148	101	49	33	8.0
31	53	---	110	402	---	247	---	141	---	48	30	---
TOTAL	1474	5576	2836	13901	18594	14304	9359	8964	3821	2273	1800	519.0
MEAN	47.5	186	91.5	448	664	461	312	289	127	73.3	58.1	17.3
MAX	140	1120	197	3140	2280	2540	685	1710	254	114	234	27
MIN	31	62	64	94	256	238	195	141	98	48	30	8.0
CFSM	.41	1.60	.79	3.87	5.72	3.98	2.69	2.49	1.10	.63	.50	.15
IN.	.47	1.79	.91	4.46	5.96	4.59	3.00	2.87	1.23	.73	.58	.17

JAMES RIVER BASIN

02030000 HARDWARE RIVER BELOW BRIERY CREEK, NEAR SCOTTSVILLE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1995, 1997 - 1998 BY WATER YEAR (WY)

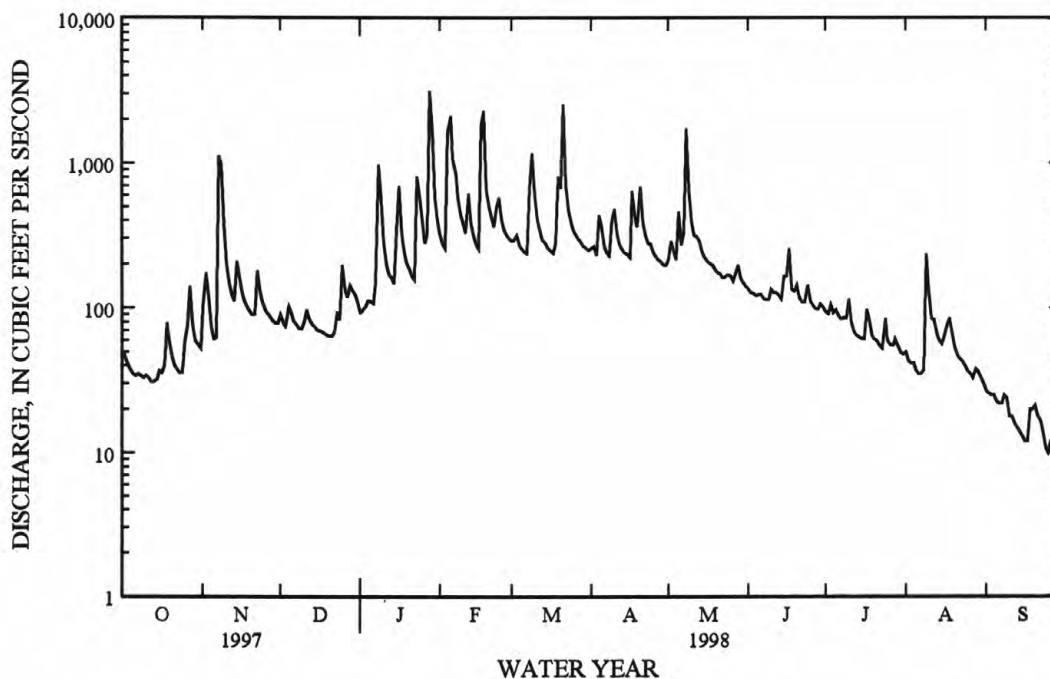
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	91.1	101	133	156	190	219	186	139	109	78.0	99.1	82.1
MAX	370	514	514	448	664	613	604	398	560	273	1155	750
(WY)	1977	1986	1949	1998	1998	1993	1983	1989	1972	1975	1969	1944
MIN	11.4	17.5	20.5	25.0	50.3	35.1	39.5	36.0	24.2	9.45	4.71	7.93
(WY)	1942	1942	1966	1966	1954	1981	1981	1981	1956	1966	1966	1954

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1939 - 1998	
ANNUAL TOTAL	42500		83421.0			
ANNUAL MEAN	116		229		132	
HIGHEST ANNUAL MEAN					249	
LOWEST ANNUAL MEAN					39.0	
HIGHEST DAILY MEAN	1120		3140		28400	
LOWEST DAILY MEAN	11		8.0		.10	
ANNUAL SEVEN-DAY MINIMUM	13		10		.16	
INSTANTANEOUS PEAK FLOW			4840		52000	
INSTANTANEOUS PEAK STAGE			14.43		b31.00	
INSTANTANEOUS LOW FLOW			7.4		.10	
ANNUAL RUNOFF (CFSM)	1.00		1.97		1.14	
ANNUAL RUNOFF (INCHES)	13.63		26.75		15.43	
10 PERCENT EXCEEDS	197		454		241	
50 PERCENT EXCEEDS	87		121		82	
90 PERCENT EXCEEDS	31		33		26	

a Also Sept. 30, 1998.

b From floodmarks.

c Also Sept. 6-8, 1966.



JAMES RIVER BASIN

02031000 MECHUMS RIVER NEAR WHITE HALL, VA

LOCATION.--Lat 38°06'09", long 78°35'35", Albemarle County, Hydrologic Unit 02080204, on right bank 20 ft downstream from bridge on State Highway 614, 1.5 mi downstream from Rocky Run, 4.0 mi southeast of White Hall, and 4.9 mi upstream from confluence with Moormans River.

DRAINAGE AREA.--95.4 mi².

PERIOD OF RECORD.--October 1942 to September 1951, October 1979 to current year. Prior to September 1951, published as Mechum River near Ivy.

GAGE.--Water-stage recorder. Datum of gage is 429.75 ft above sea level. Oct. 1, 1942, to Sept. 30, 1951, on right bank 20 ft downstream from former highway bridge at different datum.

REMARKS.--Records good except those for period with ice effect, Jan. 1, 2, and periods of no gage-height record, Mar. 21-23, and Apr. 10-28, which are fair. Maximum discharge, 20,000 ft³/s, from rating curve extended above 8,000 ft³/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 6, 1979, reached a stage of 24.5 ft, from floodmarks, discharge, about 13,500 ft³/s, from rating curve extended above 8,300 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,200 ft³/s.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 7	0830	1,730	9.88	Feb. 17	1800	*6,040	*16.60
Jan. 8	1130	2,230	10.86	Mar. 20	2100	1,860	10.15
Jan. 28	5100	4,900	15.12	May 12	0300	3,850	13.61
Feb. 4	1700	3,230	12.63	Aug. 9	0530	1,650	9.72

Minimum discharge, 13 ft³/s, Sept. 29, gage height, 4.30 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	92	68	e66	311	219	180	154	95	61	30	21
2	20	114	60	e70	273	228	170	189	87	56	27	21
3	19	71	56	72	249	224	156	164	84	59	26	20
4	19	57	57	86	1660	202	228	176	80	55	25	20
5	19	37	56	90	1130	191	221	233	81	58	24	18
6	18	35	53	90	764	183	191	193	83	51	23	18
7	18	1030	50	178	638	176	174	358	77	48	22	17
8	18	677	48	1060	488	398	164	2210	72	64	24	24
9	18	254	48	494	381	802	221	730	74	61	510	21
10	18	164	56	300	319	492	e350	440	95	64	113	17
11	18	125	61	214	312	355	e305	338	89	51	68	17
12	18	102	55	178	428	289	e270	297	97	46	53	17
13	18	87	53	156	330	251	e225	259	87	44	43	16
14	18	126	51	132	289	226	e205	224	80	42	39	16
15	19	107	48	170	251	205	e185	198	166	40	37	15
16	19	89	49	256	233	187	e170	180	156	46	40	15
17	19	78	50	189	2920	178	e200	170	220	103	45	16
18	95	72	48	162	1050	196	e175	152	114	55	55	28
19	27	67	48	145	540	336	e350	141	112	45	39	23
20	24	63	48	138	420	399	e500	132	121	42	33	22
21	21	66	46	123	344	e630	e320	128	94	39	31	21
22	20	109	49	118	292	e470	e265	121	84	37	29	20
23	19	89	58	544	342	e380	e220	121	138	35	29	19
24	20	78	57	378	384	300	e195	125	157	39	27	17
25	40	68	119	286	302	256	e185	123	94	35	26	17
26	37	66	97	224	262	233	e175	112	81	34	25	18
27	56	63	92	247	246	214	e168	134	72	34	26	17
28	33	61	94	2810	228	205	e150	141	70	38	28	16
29	27	57	87	894	---	193	140	116	90	33	25	14
30	26	61	92	460	---	185	136	105	70	30	24	15
31	24	---	80	381	---	178	---	100	---	30	22	---
TOTAL	787	4165	1934	10711	15386	8981	6594	8264	3020	1475	1568	556
MEAN	25.4	139	62.4	346	550	290	220	267	101	47.6	50.6	18.5
MAX	95	1030	119	2810	2920	802	500	2210	220	103	510	28
MIN	18	35	46	66	228	176	136	100	70	30	22	14
CFSM	.27	1.46	.65	3.62	5.76	3.04	2.30	2.79	1.06	.50	.53	.19
IN.	.31	1.62	.75	4.18	6.00	3.50	2.57	3.22	1.18	.58	.61	.22

e Estimated.

JAMES RIVER BASIN

02031000 MECHUMS RIVER NEAR WHITE HALL, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1951, 1979 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	89.4	106	120	135	154	172	175	125	93.9	64.2	58.5	85.2
MAX	606	636	329	425	550	473	703	289	323	192	245	422
(WY)	1943	1986	1949	1996	1998	1993	1983	1989	1995	1991	1949	1987
MIN	8.65	19.7	20.7	24.0	55.4	45.2	37.1	34.9	23.9	8.95	13.2	8.29
(WY)	1944	1944	1944	1981	1947	1981	1981	1981	1944	1944	1943	1943

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

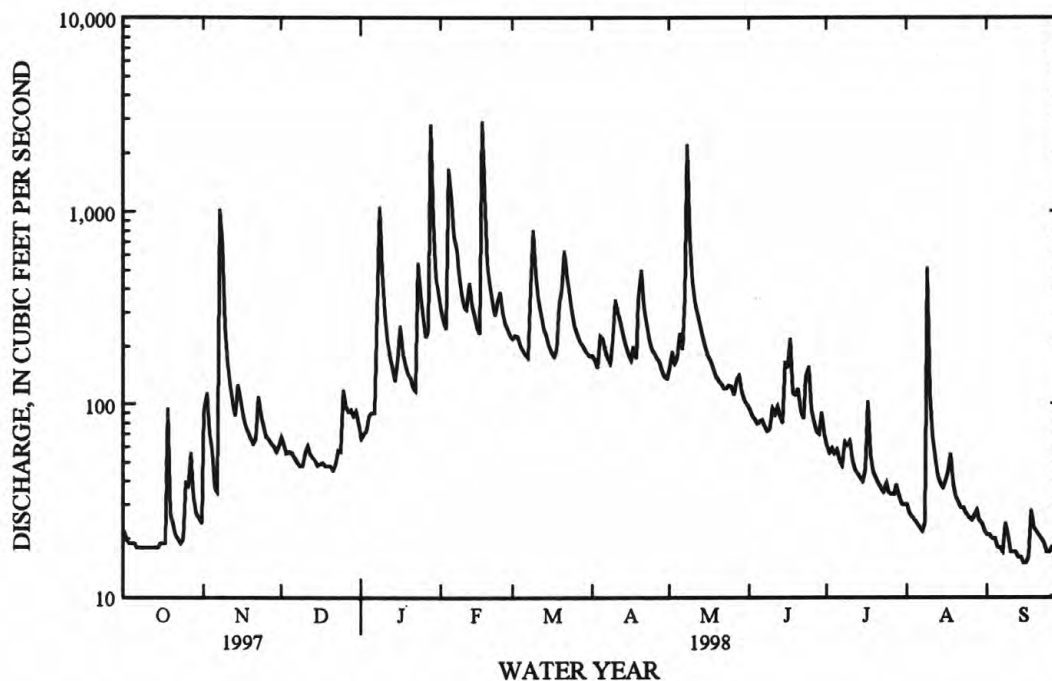
FOR 1998 WATER YEAR

WATER YEARS 1942 - 1951
1979 - 1998

ANNUAL TOTAL	34186.8	63441	114
ANNUAL MEAN	93.7	174	178
HIGHEST ANNUAL MEAN			41.6
LOWEST ANNUAL MEAN			10600
HIGHEST DAILY MEAN	1030	Nov 7	2920
LOWEST DAILY MEAN	9.2	Sep 8	14
ANNUAL SEVEN-DAY MINIMUM	11	aSep 2	16
INSTANTANEOUS PEAK FLOW			6040
INSTANTANEOUS PEAK STAGE			16.60
INSTANTANEOUS LOW FLOW			13
ANNUAL RUNOFF (CFSM)	.98	1.82	.60
ANNUAL RUNOFF (INCHES)	13.33	24.74	16.30
10 PERCENT EXCEEDS	166	352	205
50 PERCENT EXCEEDS	78	89	72
90 PERCENT EXCEEDS	18	20	22

a Also Sept. 3, 1997.

b From floodmarks, datum then in use.



JAMES RIVER BASIN

02032640 NORTH FORK RIVANNA RIVER NEAR EARLYSVILLE, VA

LOCATION.--Lat 38°09'48", long 78°25'30", Albemarle County, Hydrologic Unit 02080204, on right bank at downstream side of bridge on State Highway 606, 0.4 mi upstream from mouth of Jacobs Run, 1.9 mi downstream from mouth of Marsh Run, and 2.1 mi southeast of Advance Mills.

DRAINAGE AREA.--108 mi².

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

GAGE.--Water-stage recorder. Elevation of gage is 365 ft above sea level, from topographic map.

REMARKS.--Records good except those for period with ice effect, Jan. 1, and periods of doubtful gage-height record, Jan. 12-14, Feb. 26 to Mar. 3, Mar. 20, 25-27, and May 11-20, which are fair. Maximum discharge, 30,100 ft³/s, from rating curve extended above 2,150 ft³/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in April 1992 reached a stage of 19.92 ft, from floodmark, by the Virginia Department of Highways.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 7	1530	2,540	7.60	Feb. 17	1830	6,370	12.28
Jan. 8	1230	*7,130	*13.06	Mar. 20	2400	2,700	7.88
Jan. 28	1330	3,810	9.35	May 8	0930	7,030	12.96
Feb. 4	1530	2,250	7.23				

Minimum discharge, 3.0 ft³/s, Sept. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	40	72	e75	312	e225	162	157	86	45	16	5.7
2	26	127	64	79	256	e245	156	391	81	41	14	5.3
3	23	122	61	86	229	e250	140	306	77	40	13	5.0
4	22	89	65	106	1280	223	249	350	72	37	12	5.3
5	20	71	61	124	1510	203	234	828	76	36	11	5.0
6	18	61	57	125	1040	185	204	545	73	31	11	4.2
7	17	1580	55	355	763	173	183	748	68	30	11	3.7
8	16	1690	52	3530	503	512	173	4320	67	38	11	8.9
9	16	586	52	1240	381	1030	342	1110	66	43	16	7.5
10	16	317	61	597	315	659	451	628	83	48	29	6.2
11	15	218	72	396	302	429	375	e430	79	36	28	5.8
12	15	169	64	e285	504	325	306	e325	84	34	23	5.4
13	15	141	59	e240	406	267	257	e305	86	31	18	4.7
14	15	177	56	e200	335	243	229	e240	88	30	15	4.4
15	15	163	52	272	278	221	203	e210	150	29	15	4.7
16	15	139	50	461	242	195	184	e180	132	28	17	4.1
17	16	123	48	317	2930	174	212	e195	123	31	27	10
18	26	112	46	262	1720	201	176	e178	84	33	42	46
19	23	103	45	226	782	495	339	e155	85	29	27	12
20	21	96	44	201	551	e470	673	e147	87	26	20	9.4
21	19	94	43	173	423	1530	400	140	70	24	17	8.5
22	18	124	47	159	336	667	304	129	70	24	15	8.8
23	17	104	55	679	404	443	253	127	181	22	13	8.2
24	18	91	53	538	510	337	219	129	154	21	12	7.4
25	34	82	141	405	368	e260	191	125	79	21	10	7.0
26	47	80	120	309	e290	e245	174	112	62	20	9.2	7.0
27	81	75	111	301	e255	e230	176	118	52	19	8.9	6.9
28	47	71	114	2060	e240	195	154	118	49	20	7.9	6.3
29	36	69	105	994	---	178	143	106	61	19	7.2	5.5
30	32	69	111	578	---	165	136	98	53	17	6.7	5.1
31	29	---	97	406	---	154	---	92	---	17	6.4	---
TOTAL	761	6983	2133	15779	17465	11129	7398	13042	2578	920	489.3	234.0
MEAN	24.5	233	68.8	509	624	359	247	421	85.9	29.7	15.8	7.80
MAX	81	1690	141	3530	2930	1530	673	4320	181	48	42	46
MIN	15	40	43	75	229	154	136	92	49	17	6.4	3.7
CF5M	.23	2.15	.64	4.71	5.77	3.32	2.28	3.89	.79	.27	.15	.07
IN.	.26	2.40	.73	5.43	6.01	3.83	2.54	4.49	.89	.32	.17	.08

e Estimated.

JAMES RIVER BASIN

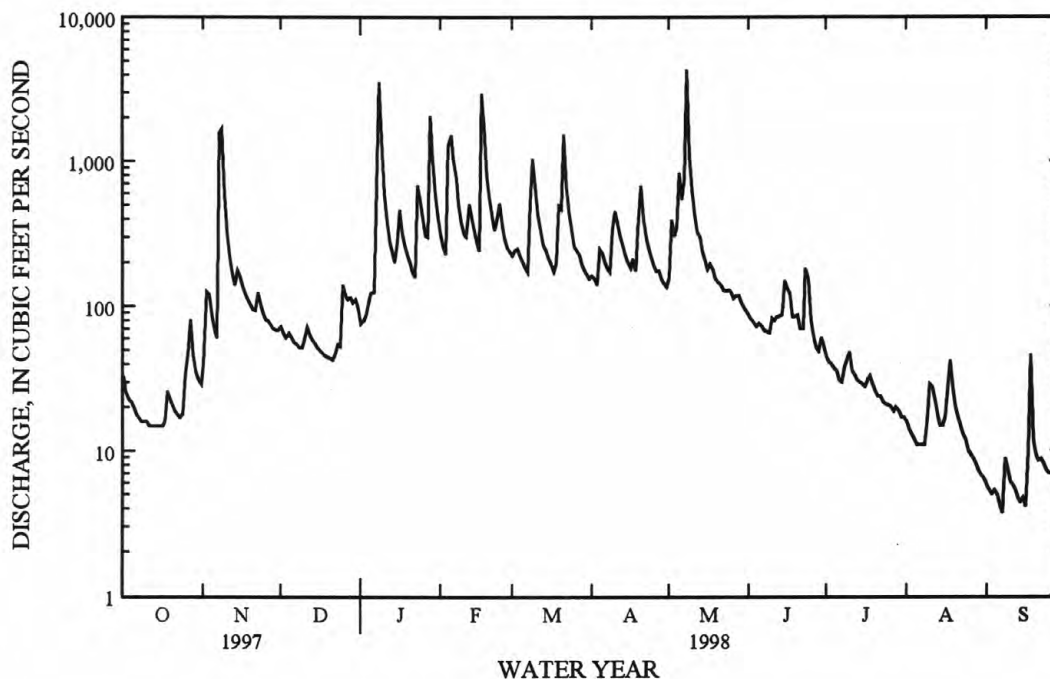
02032640 NORTH FORK RIVANNA RIVER NEAR EARLYSVILLE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	78.0	156	165	351	274	264	161	161	150	94.9	49.4	162
MAX	195	233	367	574	624	406	247	421	316	195	112	682
(WY)	1996	1998	1997	1996	1998	1994	1998	1998	1995	1995	1994	1996
MIN	18.9	47.1	68.8	143	80.1	127	60.1	60.8	31.4	29.7	15.8	7.80
(WY)	1994	1995	1998	1997	1995	1995	1995	1994	1994	1998	1998	1998

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1994 - 1998	
ANNUAL TOTAL	41078.9		78911.3		172	
ANNUAL MEAN	113		216		246	
HIGHEST ANNUAL MEAN					1996	
LOWEST ANNUAL MEAN					1995	
HIGHEST DAILY MEAN	1720	Jul 24	4320	May 8	e11000	Sep 6 1996
LOWEST DAILY MEAN	5.9	Sep 8	3.7	Sep 7	3.7	Sep 7 1998
ANNUAL SEVEN-DAY MINIMUM	6.9	Sep 3	4.9	Sep 1	4.9	Sep 1 1998
INSTANTANEOUS PEAK FLOW			7130	Jan 8	30100	Sep 6 1996
INSTANTANEOUS PEAK STAGE			13.06	Jan 8	a23.56	Sep 6 1996
INSTANTANEOUS LOW FLOW			3.0	Sep 7	3.0	Sep 7 1998
ANNUAL RUNOFF (CFSM)	1.04		2.00		1.59	
ANNUAL RUNOFF (INCHES)	14.13		27.14		21.55	
10 PERCENT EXCEEDS	192		465		327	
50 PERCENT EXCEEDS	80		87		89	
90 PERCENT EXCEEDS	15		11		19	

a From floodmarks.
e Estimated.



JAMES RIVER BASIN

02034000 RIVANNA RIVER AT PALMYRA, VA

LOCATION.--Lat 37°51'28", long 78°15'58", Fluvanna County, Hydrologic Unit 02080204, on left bank 10 ft upstream from bridge on U.S. Highway 15 at Palmyra, 0.5 mi upstream from Cunningham Creek, and 15 mi upstream from mouth.

DRAINAGE AREA.--664 mi².

PERIOD OF RECORD.--October 1933 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 802: 1936(M). WSP 852: 1937. WSP 892: 1934-35. WSP 1303: 1945-46(M). WSP 1503: 1956. WSP 2104: Drainage area. WDR VA-72-1: 1969(M).

GAGE.--Water-stage recorder. Datum of gage is 210.39 ft above sea level. Prior to Oct. 24, 1942, water-stage recorder at site 200 ft downstream at same datum. Oct. 24, 1942, to Dec. 18, 1947, nonrecording gage 10 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Some diurnal fluctuation at times mostly at low and medium flow caused by South Fork Rivanna River Reservoir, diversions for water supply and discharge from wastewater treatment plants upstream at Charlottesville. National Weather Service gage-height telemeter at station. Maximum discharge, 86,000 ft³/s, from rating curve extended above 76,000 ft³/s on basis of contracted-opening measurement of peak flow and velocity-area study. Minimum gage height, 2.13 ft, Sept. 9-11, 1966. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 6,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 8	0800	8,430	14.70	Feb. 18	1030	*23,800	*23.96
Jan. 9	0230	9,650	16.21	Mar. 9	1830	6,210	11.54
Jan. 23	2130	6,420	11.85	Mar. 21	1200	12,700	18.75
Jan. 29	0400	18,500	21.97	May 8	2200	17,100	21.28
Feb. 5	0830	12,200	18.45				

Minimum discharge, 41 ft³/s, Sept. 6, 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	246	266	462	551	1690	1360	1260	1230	545	422	161	72
2	174	564	497	500	1410	1360	1360	1820	501	366	119	50
3	164	644	436	509	1240	1520	1210	1690	484	382	158	82
4	159	471	468	547	4860	1260	1710	1740	469	380	101	60
5	130	390	437	607	10800	1170	1950	4210	467	361	125	47
6	181	339	429	637	5510	1080	1560	2670	491	344	135	43
7	121	3640	382	846	4600	965	1420	2060	476	306	87	45
8	162	7430	359	4570	3140	2120	1340	12100	431	321	104	89
9	113	3070	329	6120	2340	5580	1870	9170	427	436	652	198
10	112	1690	362	2470	1830	3890	2510	3090	509	650	862	88
11	169	1200	450	1660	1600	2360	2070	2260	533	451	382	65
12	102	907	451	1300	2550	1780	1820	1930	541	352	261	58
13	97	722	303	1110	2080	1490	1600	1870	536	259	233	61
14	131	1020	355	954	1740	1350	1480	1510	517	298	230	64
15	120	1030	344	1200	1500	1240	1420	1270	791	248	146	63
16	130	773	324	2860	1320	1130	1320	1190	1020	256	195	62
17	136	636	317	1760	6450	1050	2630	1270	1490	396	213	60
18	321	564	314	1400	19000	1190	1860	1100	783	411	268	146
19	274	522	307	1200	4630	3950	1640	956	624	312	302	265
20	216	485	303	1110	2840	2800	4080	861	680	236	233	105
21	182	469	299	943	2250	10100	2760	792	565	226	139	90
22	165	831	303	831	1810	4500	2030	716	531	223	125	90
23	154	735	403	3340	2100	2960	1710	678	856	218	140	127
24	147	583	393	3800	3130	2320	1600	706	1710	270	84	101
25	227	539	809	2440	2090	1950	1420	708	725	159	154	72
26	297	475	890	1760	1690	1750	1300	658	562	189	77	56
27	543	445	678	1520	1480	1650	1240	685	517	186	142	65
28	392	394	797	9780	1430	1500	1190	909	404	243	75	74
29	281	408	692	12000	---	1430	1090	714	493	156	92	72
30	234	393	690	3290	---	1360	1030	580	495	223	68	61
31	212	---	665	2210	---	1280	---	577	---	144	99	---
TOTAL	6092	31635	14248	73825	97110	69445	51480	61720	19173	9424	6162	2531
MEAN	197	1055	460	2381	3468	2240	1716	1991	639	304	199	84.4
MAX	543	7430	890	12000	19000	10100	4080	12100	1710	650	862	265
MIN	97	266	299	500	1240	965	1030	577	404	144	68	43
CFSM	.30	1.59	.69	3.59	5.22	3.37	2.58	3.00	.96	.46	.30	.13
IN.	.34	1.77	.80	4.14	5.44	3.89	2.88	3.46	1.07	.53	.35	.14

JAMES RIVER BASIN

02034000 RIVANNA RIVER AT PALMYRA, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	563	593	769	955	1063	1216	1064	774	599	400	471	464
MAX	3535	3521	2667	2620	3468	3415	3662	2472	4473	1524	3404	2915
(WY)	1943	1986	1949	1936	1998	1993	1937	1989	1972	1975	1969	1979
MIN	46.4	79.8	88.9	104	303	225	214	212	121	39.0	20.2	19.1
(WY)	1942	1942	1966	1966	1954	1981	1981	1956	1956	1966	1966	1954

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

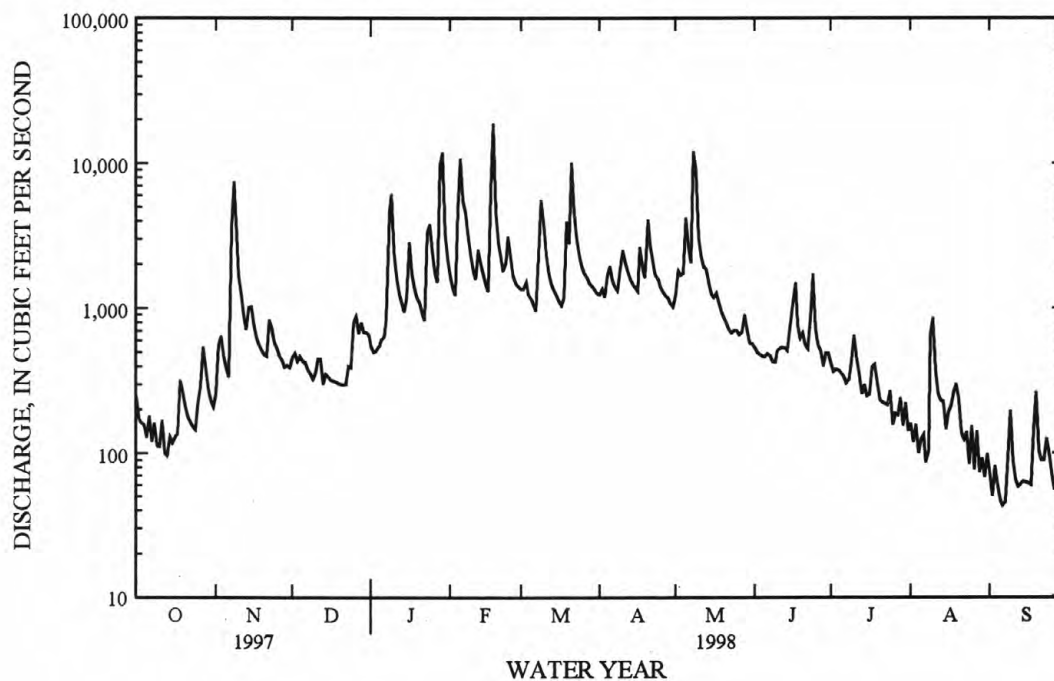
FOR 1998 WATER YEAR

WATER YEARS 1935 - 1998

ANNUAL TOTAL	228381		442845									
ANNUAL MEAN	626		1213									
HIGHEST ANNUAL MEAN										742		
LOWEST ANNUAL MEAN										1401		1973
HIGHEST DAILY MEAN										241		1981
LOWEST DAILY MEAN										68000		Jun 22 1972
ANNUAL SEVEN-DAY MINIMUM										5.2		aSep 9 1966
INSTANTANEOUS PEAK FLOW										5.6		Sep 7 1966
INSTANTANEOUS PEAK STAGE										86000		Aug 20 1969
INSTANTANEOUS LOW FLOW										39.85		Aug 20 1969
ANNUAL RUNOFF (CFSM)										5.2		aSep 9 1966
ANNUAL RUNOFF (INCHES)										1.12		
10 PERCENT EXCEEDS										15.19		
50 PERCENT EXCEEDS										1440		
90 PERCENT EXCEEDS										428		

a Also Sept. 10, 11, 1996.

b Also Sept. 7, 1998.



JAMES RIVER BASIN

02035000 JAMES RIVER AT CARTERSVILLE, VA

LOCATION.--Lat 37°40'15", long 78°05'10", Goochland County, Hydrologic Unit 02080205, on left bank 200 ft downstream from bridge on State Highway 45 at Cartersville, 1.8 mi downstream from Willis River, and at mile 156.4.

DRAINAGE AREA.--6,257 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1898 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 972: 1936(M). WSP 1203: 1901-2(M), 1923-25(M), 1928(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 163.90 ft above sea level. Prior to June 4, 1927, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods of doubtful gage-height record, Jan. 30-31, Feb. 25 to Mar. 1, July 15-17, 20-22, 25-27, Aug. 28, and Sept. 1-2, which are fair. Moderate diurnal fluctuation caused by powerplants upstream from station. National Weather Service gage-height telemeter at station. Maximum discharge, 362,000 ft³/s, from rating curve extended above 160,000 ft³/s on basis of slope-conveyance study. Minimum gage height, 0.02 ft, Sept. 13, 14, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 40,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 10	0415	76,900	21.05	Mar. 22	0145	81,000	21.71
Jan. 29	0700	82,000	21.87	Apr. 21	1530	48,000	15.68
Feb. 5	2345	80,800	21.69	May 9	1200	41,200	14.22
Feb. 18	1930	*82,200	*21.91				

Minimum discharge, 879 ft³/s, Oct. 13-14; minimum gage height, 0.72 ft, Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2640	1770	2990	4980	25600	e15900	10500	9280	6730	4000	1980	e1850
2	1420	2870	3270	4460	20500	15200	10200	11300	6180	4370	1930	e1600
3	1440	5480	3380	4150	17400	15700	9140	12400	5530	3850	1860	1510
4	1390	4620	3690	4100	23800	13900	10800	12200	5230	3660	1810	1600
5	1360	4040	4210	4150	70800	12500	24100	15800	4860	3400	1660	1390
6	1230	3540	4160	4290	71500	11200	17300	17600	4860	3180	1500	1080
7	1270	8190	4670	5350	51800	10100	16900	17200	4760	3270	1660	1310
8	1190	23500	2510	13300	41000	10700	14300	29300	4530	3170	1560	1350
9	1090	14600	2620	59000	31800	25900	12900	40000	4450	3220	1820	1420
10	1130	9630	3100	64500	26300	33100	15800	30500	4350	3500	5120	1470
11	1090	8270	3360	26200	22500	31500	17900	23400	4760	3740	3500	1490
12	950	6290	3570	17100	23500	24300	18300	19000	4750	3180	2540	1560
13	980	5150	3160	13300	27200	19300	15000	18400	4740	2930	2280	1360
14	1040	4810	3290	11200	25900	16300	13200	15500	4520	3090	2310	1100
15	1130	5270	3170	10000	23900	13500	12100	13400	4880	e2550	2270	1260
16	1160	4720	3250	20000	20500	11700	11100	11500	6580	e2350	2400	1160
17	1200	4060	3080	19200	23600	10800	18600	11300	6580	e2400	2840	1210
18	2660	3660	2860	17600	74200	10400	32100	12300	6610	2750	3480	1270
19	2970	3520	2980	14800	71400	19900	25500	9600	6700	2760	3720	1860
20	2040	3300	2790	12800	45400	29000	29900	8750	6410	e2350	3560	1430
21	1630	3310	2730	11200	35800	68400	45100	8040	5680	e2000	2820	1420
22	1430	3810	2590	9910	30300	78500	35400	7460	5260	e1700	2630	1480
23	1380	4630	2870	14300	27500	56800	25600	6850	5230	1630	2160	1380
24	1330	4320	3220	29500	31600	34100	20200	6810	6240	2170	2280	1270
25	1330	3850	4310	27100	e25000	27100	16500	7150	5270	e2450	1940	1440
26	1560	3620	5810	23300	e21000	22600	14600	7140	4460	e2350	1980	1200
27	2750	3490	5040	19000	e18300	19100	12800	7140	3760	e2100	1730	1080
28	3320	3410	5870	48300	e16900	15800	11800	8200	3550	2190	e1900	1310
29	2490	2980	6150	77300	---	13100	10600	9030	3610	2270	1850	1200
30	2190	3160	5840	e46500	---	12400	9730	10300	3730	2370	1940	1090
31	1810	---	5680	e31000	---	11100	---	8120	---	1930	1700	---
TOTAL	50600	163870	116220	667890	945000	709900	537970	424970	154800	86880	72730	41150
MEAN	1632	5462	3749	21540	33750	22900	17930	13710	5160	2803	2346	1372
MAX	3320	23500	6150	77300	74200	78500	45100	40000	6730	4370	5120	1860
MIN	950	1770	2510	4100	16900	10100	9140	6810	3550	1630	1500	1080
CFSM	.26	.87	.60	3.44	5.39	3.66	2.87	2.19	.82	.45	.37	.22
IN.	.30	.97	.69	3.97	5.62	4.22	3.20	2.53	.92	.52	.43	.24

e Estimated.

JAMES RIVER BASIN

02035000 JAMES RIVER AT CARTERSVILLE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1899 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	4248	4795	7038	9664	10980	13200	11140	7999	6097	3821	4034	3517
MAX	20830	28210	25990	26480	33750	31810	33500	23530	30330	15070	20490	18150
(WY)	1907	1986	1949	1936	1998	1993	1987	1989	1972	1919	1969	1996
MIN	528	924	1054	1353	2055	2646	3286	2710	1620	605	652	561
(WY)	1931	1931	1966	1956	1934	1981	1995	1930	1964	1966	1930	1930

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

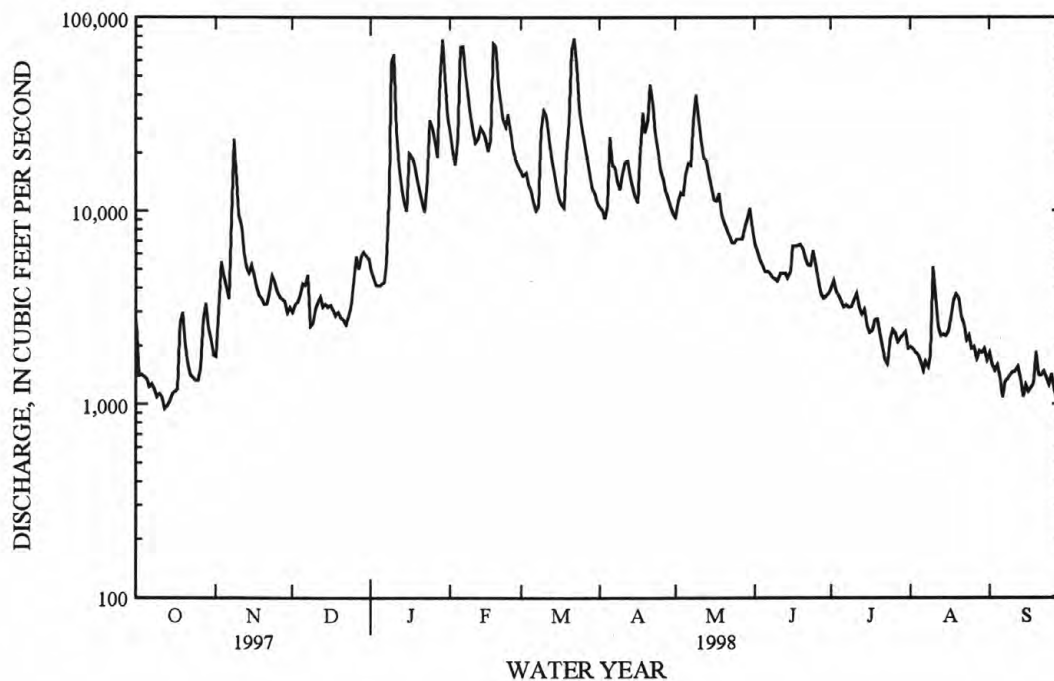
WATER YEARS 1899 - 1998

ANNUAL TOTAL	2239090	3971980	
ANNUAL MEAN	6134	10880	7191
HIGHEST ANNUAL MEAN			12410
LOWEST ANNUAL MEAN			2981
HIGHEST DAILY MEAN	40400	Mar 5	78500
LOWEST DAILY MEAN	950	Oct 12	950
ANNUAL SEVEN-DAY MINIMUM	1060	Oct 9	1060
INSTANTANEOUS PEAK FLOW			82200
INSTANTANEOUS PEAK STAGE			21.91
INSTANTANEOUS LOW FLOW			b879
ANNUAL RUNOFF (CFSM)	.98	1.74	1.15
ANNUAL RUNOFF (INCHES)	13.31	23.61	15.61
10 PERCENT EXCEEDS	12300	26600	15100
50 PERCENT EXCEEDS	4560	4750	4490
90 PERCENT EXCEEDS	1440	1420	1450

a From floodmarks.

b May have been affected by regulation from Lake Moomaw, 230 mi upstream.

c Also Sept. 14, 1966.



JAMES RIVER BASIN

02035000 JAMES RIVER AT CARTERSVILLE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1930, 1948, 1967 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1968 to January 1976, October 1980 to May 1981, October 1991 to September 1994.

WATER TEMPERATURE: April 1968 to January 1976, October 1980 to May 1981, October 1991 to September 1994.

SUSPENDED-SEDIMENT DISCHARGE: October 1980 to May 1981.

COOPERATION.--Chemical data as noted were provided by the Virginia Division of Consolidated Laboratory Services (VDCLS) and reviewed by the U.S. Geological Survey.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM HG) (00025)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)
OCT 1997										
17...	1000	1230	311	7.4	10.0	17.0	767	VDCLS	3.7	7.2
NOV										
08...	1345	24100	94	6.5	11.0	10.0	741	VDCLS	97	10.7
10...	0845	9380	137	6.9	8.5	10.5	760	VDCLS	34	10.4
DEC										
23...	0900	2930	227	6.6	5.0	5.0	762	VDCLS	4.0	12.6
JAN 1998										
09...	1100	61100	174	6.3	16.0	11.0	755	VDCLS	330	9.5
10...	0930	74400	109	6.8	6.5	10.0	768	VDCLS	480	9.9
*10...	0945	74100	109	6.8	6.5	10.0	768	VDCLS	420	9.9
11...	0925	27000	92	6.4	6.5	10.0	766	VDCLS	290	10.9
13...	1230	13100	108	6.5	12.0	8.0	762	VDCLS	52	11.3
16...	0915	20400	98	6.5	8.0	5.0	754	VDCLS	110	11.7
24...	0930	32000	92	7.0	6.0	6.0	759	VDCLS	93	12.4
*24...	0945	31900	92	7.0	6.0	6.0	759	USGS	--	12.4
26...	1045	23600	140	6.9	6.0	5.5	772	VDCLS	43	12.6
29...	1015	81300	62	7.0	10.5	5.0	761	VDCLS	190	12.4
30...	0930	47000	98	6.8	9.5	4.5	759	VDCLS	72	12.2
FEB										
05...	1000	69800	78	6.9	5.5	4.5	752	VDCLS	120	12.3
06...	1030	74900	104	7.0	6.5	5.0	762	VDCLS	160	12.5
12...	0830	22100	103	7.2	8.5	6.4	752	USGS	13	12.3
18...	0945	74400	71	6.8	15.0	7.0	752	VDCLS	200	11.7
*18...	1000	74700	71	6.8	15.0	7.0	752	USGS	--	11.7
MAR										
03...	1230	15700	128	6.8	11.0	9.0	755	VDCLS	10	11.1
22...	1000	79600	99	6.6	10.0	8.5	755	VDCLS	240	13.8
APR										
03...	0930	9150	130	7.3	19.0	17.5	762	VDCLS	11	9.2
18...	1300	31100	91	7.0	17.5	16.2	750	VDCLS	160	8.8
*18...	1315	30900	91	7.0	17.5	16.2	750	VDCLS	110	8.8
21...	0915	45600	102	7.7	15.0	13.6	750	VDCLS	80	9.9
MAY										
05...	0915	13700	148	7.2	17.0	17.0	759	VDCLS	15	8.9
06...	0915	17200	142	6.9	19.0	18.0	762	VDCLS	29	9.2
28...	1015	8190	155	7.8	24.0	21.0	766	VDCLS	5.6	7.8
*28...	1020	8210	155	7.8	24.0	21.0	766	VDCLS	4.9	7.8
JUN										
09...	1000	4730	170	7.1	23.0	21.0	769	VDCLS	1.3	8.7
*09...	1015	4730	170	7.1	23.0	21.0	769	USGS	--	8.7
16...	0930	6720	152	7.5	26.5	24.0	755	VDCLS	22	7.9
JUL										
07...	1000	3400	238	6.3	28.0	28.0	766	VDCLS	2.4	7.7
*07...	1015	3400	238	6.3	28.0	28.0	766	VDCLS	3.1	7.7
AUG										
04...	0930	1960	254	6.5	24.0	26.0	755	VDCLS	1.1	7.2
SEP										
08...	1100	1490	263	8.0	20.5	26.0	741	VDCLS	4.0	6.5

* Replicate sample.

JAMES RIVER BASIN

02035000 JAMES RIVER AT CARTERSVILLE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L) (00530)	RESIDUE FIXED NON FILTER- ABLE (MG/L) (00540)	RESIDUE VOLA- TILE, SUS- PENDED (MG/L) (00535)	NITRO- GEN DIS- SOLVED (MG/L AS N) (00602)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
			**	**	**	**	**	**	**	**
OCT 1997										
17...	74	3.2	<3	<3	<3	.232	.045	<.002	.045	<.004
NOV										
08...	97	7.9	93	80	13	.505	.207	.002	.209	.014
10...	93	8.7	29	24	5	.493	.247	.002	.247	.020
DEC										
23...	99	4.2	<3	<3	<3	.272	.110	<.002	.110	<.004
JAN 1998										
09...	87	5.8	472	380	92	.464	.245	.004	.249	.036
10...	87	6.1	372	326	46	.577	.301	.004	.305	.036
*10...	87	5.8	356	314	42	.546	.295	.004	.299	.036
11...	96	7.1	212	182	30	.624	.372	.003	.375	.015
13...	95	8.3	35	30	5	.604	.508	.002	.510	.020
16...	93	9.1	103	87	16	.574	.365	.003	.368	.029
24...	100	8.3	109	92	17	.538	.293	.002	.295	.025
*24...	100	7.7	102	80	22	.46	--	--	.28	.018
26...	99	8.1	43	37	6	.455	.358	.002	.360	.017
29...	97	6.1	190	164	26	.483	.220	.002	.222	.040
30...	95	7.3	98	85	13	.423	.292	.002	.294	.016
FEB										
05...	96	6.7	202	175	27	.533	.270	.002	.272	.028
06...	98	6.4	154	135	19	.529	.266	.002	.268	.020
12...	101	8.5	24	21	3	.491	.397	<.002	.397	.011
18...	98	6.4	219	189	30	.476	.228	.002	.230	.024
*18...	98	5.8	198	168	30	.38	--	--	.21	.015
MAR										
03...	97	8.6	16	14	<3	.487	.332	.002	.334	.011
22...	119	6.1	274	244	30	.431	.215	.003	.218	.022
APR										
03...	96	8.2	10	7	<3	.349	.228	.002	.230	--
18...	91	6.2	257	216	41	.378	.120	.002	.122	.017
*18...	91	1.2	116	98	18	.415	.120	.002	.122	.018
21...	97	7.8	--	--	--	.373	.200	.003	.203	.032
MAY										
05...	92	8.0	24	20	4	.301	.214	.002	.216	.012
06...	97	7.5	70	59	11	.448	.210	.003	.213	.012
28...	87	7.1	11	8	3	.291	.151	.003	.154	<.004
*28...	87	7.2	11	9	<3	.328	.152	.003	.155	--
JUN										
09...	97	8.0	3	<3	<3	.251	.071	<.002	.071	--
*09...	97	7.4	2	--	5	.20	--	--	.052	<.002
16...	95	9.3	31	25	6	.481	.248	.003	.251	.016
JUL										
07...	97	8.6	3	<3	<3	.334	.169	.002	.171	.006
*07...	97	8.6	3	<3	<3	.406	.167	.002	.169	.008
AUG										
04...	90	7.5	<3	<3	<3	.265	.116	<.002	.116	.005
SEP										
08...	83	4.1	<3	<3	<3	.243	.027	<.002	.027	<.004

* Replicate sample.

** For these constituents, there are differences in the minimum constituent reporting levels between the analyzing agencies.

< Actual value is known to be less than the value shown.

JAMES RIVER BASIN

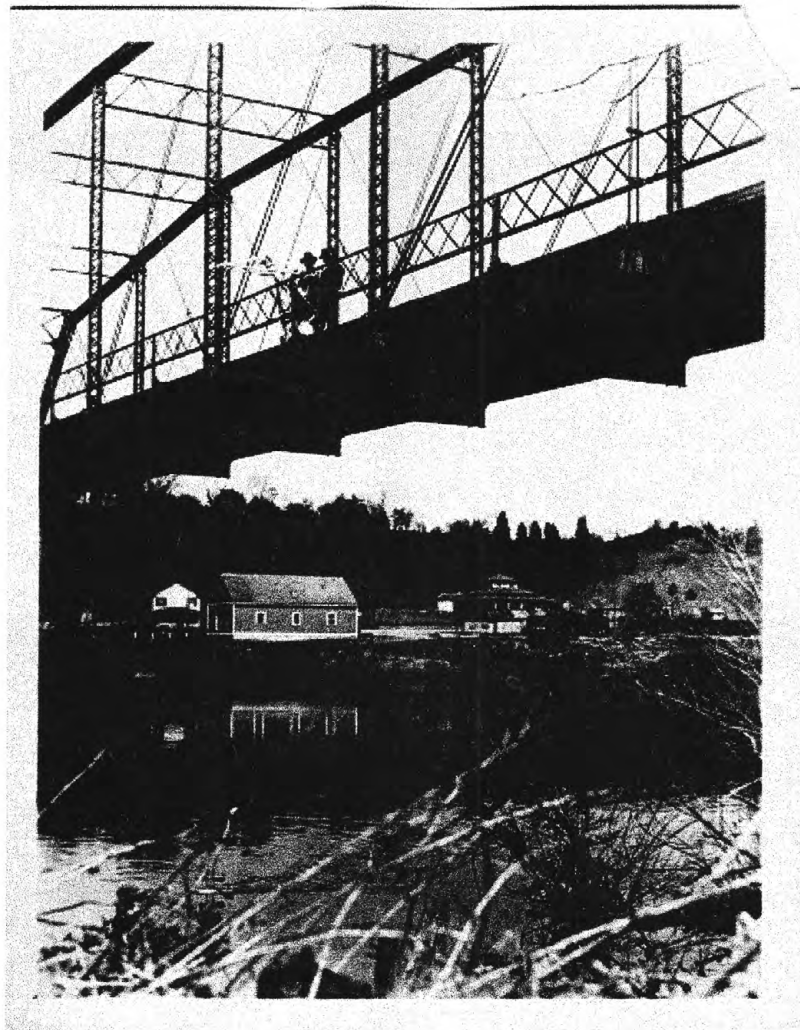
02035000 JAMES RIVER AT CARTERSVILLE, VA--Continued
 WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN TOTAL SEDIMENT SUSP TOTAL AS N (MG/L) (00601)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS TOTAL SEDIMENT SUSP TOTAL AS P (MG/L) (00667)	CARBON, INORG + ORGANIC SUSP. TOTAL (MG/L AS C) (00694)
					**			
OCT 1997								
17...	--	--	.024	.05	.045	.038	.002	.19
NOV								
08...	--	--	.419	--	.033	.018	.081	4.35
10...	--	--	.108	--	.036	.031	.022	1.06
DEC								
23...	--	--	.021	--	.029	.023	.010	.25
JAN 1998								
09...	--	--	1.846	--	.020	.015	.698	17.95
10...	--	--	1.110	--	.025	.020	.239	10.52
*10...	--	--	1.528	--	.031	.020	.330	14.90
11...	--	--	.686	--	.020	.016	.226	6.23
13...	--	--	.152	--	.060	.018	.056	1.41
16...	--	--	.418	--	.026	.018	.105	4.38
24...	--	--	.358	--	.025	.022	.108	3.76
*24...	.4	.2	--	.13	.01	.018	--	--
26...	--	--	.157	--	.037	.031	.050	1.52
29...	--	--	.561	--	.037	.013	.199	5.83
30...	--	--	.247	--	.022	.014	.098	2.83
FEB								
05...	--	--	.386	--	<.010	.006	.206	4.51
06...	--	--	.384	--	.010	.013	.128	3.92
12...	--	--	.070	--	.020	.017	.027	.76
18...	--	--	.505	--	.020	.014	.240	5.50
*18...	.7	.2	--	.33	.02	.007	--	--
MAR								
03...	--	--	.056	--	.018	.013	.022	.51
22...	--	--	.862	--	.033	.023	.220	8.63
APR								
03...	--	--	.064	--	.020	.014	.019	.52
18...	--	--	.514	--	.035	.012	.227	5.22
*18...	--	--	.607	--	.034	.012	.227	6.71
21...	--	--	.359	--	.024	.016	.121	3.86
MAY								
05...	--	--	.080	--	.019	.018	.027	.76
06...	--	--	.196	--	.024	.021	.071	1.92
28...	--	--	.051	--	.026	.025	.015	.45
*28...	--	--	.068	--	.029	.024	.015	.64
JUN								
09...	--	--	.033	--	.028	.018	.009	.21
*09...	<.1	.1	--	.05	<.01	.016	--	--
16...	--	--	.118	--	.039	.031	.031	1.37
JUL								
07...	--	--	.030	--	.042	.035	.009	.22
*07...	--	--	.031	--	.045	.035	.009	.24
AUG								
04...	--	--	.019	--	.052	.042	.007	.17
SEP								
08...	--	--	.016	--	.044	.034	.006	.19

* Replicate sample.

** For these constituents, there are differences in the minimum constituent reporting levels between the analyzing agencies.

< Actual value is known to be less than the value shown.



James River at Scottsville, Virginia (02029000)
Probably in the 1920's to 1930's

JAMES RIVER BASIN

02036500 FINE CREEK AT FINE CREEK MILLS, VA

LOCATION.--Lat 37°35'52", long 77°49'12", Powhatan County, Hydrologic Unit 02080205, on right bank 75 ft downstream from bridge on State Highway 711 at Fine Creek Mills, 0.8 mi upstream from mouth, and 6.7 mi northeast of Powhatan.

DRAINAGE AREA.--22.1 mi².

PERIOD OF RECORD.--July 1944 to current year.

REVISED RECORDS.--WSP 1203: 1948. WSP 1303: 1945(M). WSP 1383: 1954. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 156.59 ft above sea level. Prior to Oct. 28, 1953, nonrecording gage and crest-stage gage at site 75 ft upstream at same datum.

REMARKS.--Records good except for period of doubtful or no gage-height record, Aug. 13 to Sept. 30, which is fair. Maximum discharge, 4,180 ft³/s, from rating curve extended above 2,600 ft³/s. Minimum gage height, 1.53 ft, Sept. 30, Oct. 1, 1970. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 24	1230	222	2.94	Feb. 18	0515	308	3.19
Jan. 28	1930	670	3.98	Mar. 19	1645	*742	*4.14
Feb. 5	0430	423	3.47	Mar. 21	1245	573	3.80

Minimum daily discharge, 0.32 ft³/s, Sept. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.99	1.5	16	17	43	30	24	19	10	3.3	1.4	e.45
2	.86	2.0	14	15	32	32	27	32	8.4	2.6	1.1	e1.2
3	.77	2.3	12	15	27	39	23	31	7.5	2.3	1.0	e1.0
4	.80	2.7	15	14	135	33	59	22	6.8	2.4	.90	e1.1
5	.72	2.5	14	13	361	28	90	19	6.9	2.6	.85	e1.1
6	.63	2.3	11	12	231	25	48	16	11	2.2	.76	e1.6
7	.58	40	9.2	14	169	23	36	15	7.4	2.3	.78	e3.2
8	.64	91	8.4	22	87	49	32	47	5.4	3.3	.95	e1.9
9	.75	70	8.2	27	52	160	44	112	6.9	3.9	1.1	e1.2
10	.84	36	12	21	37	136	59	64	15	6.1	1.3	e.82
11	.79	22	16	17	32	62	38	39	14	5.1	1.5	e.68
12	.68	15	15	15	43	41	29	36	13	3.6	1.2	e.58
13	.67	11	12	17	41	34	25	34	15	2.9	e.80	e.50
14	1.0	22	9.7	16	31	31	24	28	20	2.7	e.76	e.42
15	2.1	20	9.0	26	26	28	24	22	27	2.4	e.72	e.36
16	1.1	16	8.4	54	25	25	23	19	22	2.0	e.90	e.32
17	1.2	13	8.2	45	101	25	78	17	16	1.8	e1.2	e.43
18	3.3	11	7.9	32	234	48	87	15	12	1.9	e1.2	e.54
19	3.6	7.9	7.7	26	95	447	52	13	12	1.8	e.96	e.95
20	3.0	7.6	7.5	24	54	324	69	12	12	1.6	e.85	e1.3
21	2.1	9.1	7.4	20	39	400	48	12	11	1.5	e.72	e1.6
22	1.6	26	9.9	18	32	214	36	10	9.1	1.2	e.64	e2.2
23	1.1	24	14	88	56	98	30	11	8.4	1.2	e.70	e1.5
24	.87	18	14	190	127	62	30	13	14	1.8	e.60	e1.1
25	1.3	13	26	113	82	46	27	13	13	2.9	e.52	e1.0
26	3.3	11	26	62	49	37	23	13	10	2.5	e.48	e.92
27	4.8	9.1	28	47	37	34	20	17	8.3	2.4	e1.0	e.86
28	2.9	8.1	33	361	34	31	17	21	7.0	2.0	e.82	e.80
29	1.8	7.5	28	393	---	29	16	17	6.4	1.8	e.70	e1.2
30	1.4	12	26	147	---	27	15	14	4.7	1.5	e.62	e2.0
31	1.0	---	22	71	---	25	---	12	---	1.5	e.55	---
TOTAL	47.19	533.6	455.5	1952	2312	2623	1153	765	340.2	77.1	27.58	32.83
MEAN	1.52	17.8	14.7	63.0	82.6	84.6	38.4	24.7	11.3	2.49	.89	1.09
MAX	4.8	91	33	393	361	447	90	112	27	6.1	1.5	3.2
MIN	.58	1.5	7.4	12	25	23	15	10	4.7	1.2	.48	.32
CFSM	.07	.80	.66	2.85	3.74	3.83	1.74	1.12	.51	.11	.04	.05
IN.	.08	.90	.77	3.29	3.89	4.42	1.94	1.29	.57	.13	.05	.06

e Estimated.

JAMES RIVER BASIN

02036500 FINE CREEK AT FINE CREEK MILLS, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	14.6	17.5	21.9	27.7	31.9	35.3	29.6	20.7	11.8	8.15	11.4	8.54
MAX	119	105	53.9	92.5	92.7	99.1	84.1	54.1	60.8	25.7	83.3	46.1
(WY)	1973	1986	1949	1978	1979	1994	1983	1978	1972	a1949	1955	1996
MIN	.47	3.15	5.60	6.38	8.76	11.4	7.63	3.21	2.87	1.34	.74	.31
(WY)	1969	1992	1966	1955	1991	1985	1985	1991	1970	1993	1977	1968

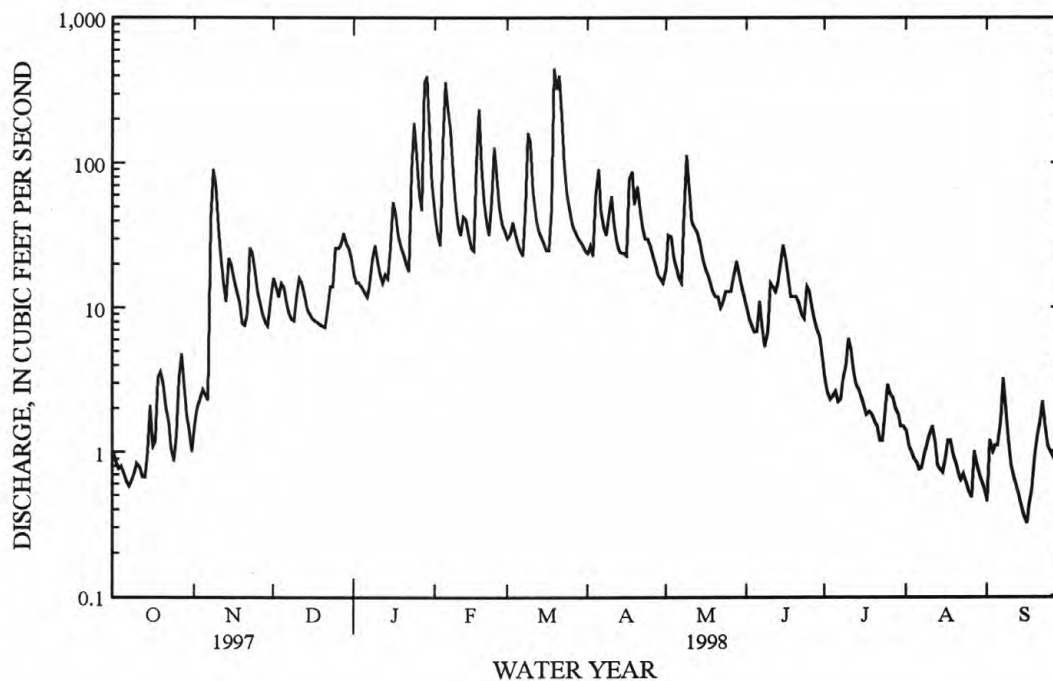
SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1945 - 1998	
ANNUAL TOTAL	5337.26		10319.00		19.9	
ANNUAL MEAN	14.6		28.3		40.7	
HIGHEST ANNUAL MEAN					8.79	
LOWEST ANNUAL MEAN					1880	
HIGHEST DAILY MEAN	102	Mar 1	447	Mar 19		Oct 21 1961
LOWEST DAILY MEAN	e.45	Sep 9	e.32	Sep 16	.08	Oct 1 1968
ANNUAL SEVEN-DAY MINIMUM	e.55	Sep 3	e.45	Sep 12	.10	Sep 25 1968
INSTANTANEOUS PEAK FLOW			742	Mar 19	4180	Oct 6 1972
INSTANTANEOUS PEAK STAGE			4.14	Mar 19	9.02	Oct 6 1972
INSTANTANEOUS LOW FLOW			(b)	(c)	.08	Oct 1 1968
ANNUAL RUNOFF (CFSM)	.66		1.28		.90	
ANNUAL RUNOFF (INCHES)	8.98		17.37		12.22	
10 PERCENT EXCEEDS	31		59		38	
50 PERCENT EXCEEDS	9.9		13		11	
90 PERCENT EXCEEDS	.87		.83		2.4	

a Also 1975.

b Unknown.

c Probably occurred Sept. 16, 1998.

e Estimated.



JAMES RIVER BASIN

02037000 JAMES RIVER AND KANAWHA CANAL NEAR RICHMOND, VA

LOCATION.--Lat 37°33'52", long 77°34'28", Henrico County, Hydrologic Unit 02080205, on left bank 75 ft downstream from Canal bridge, 400 ft downstream from head gates, 1,200 ft north of north end of Bosher Dam on James River, 1.6 mi upstream from Huguenot Memorial Bridge, and 2.0 mi west of Richmond city limits.

PERIOD OF RECORD.--September 1936 to current year.

GAGE.--Water-stage recorder. Datum of gage is 106.07 ft above sea level. Prior to Oct. 1, 1938, at datum 3.06 ft higher.

REMARKS.--Records fair except those for periods of doubtful gage-height record, Nov. 3-5, and Jun. 1-8, which are poor. Canal diverts from James River 1,200 ft upstream from Bosher Dam and discharges into river at several points downstream from gaging station near Richmond. Beginning with the 1969 water year, the descriptive statement that above 2,540 ft³/s, gage height, 14.5 ft, there is interchange of flow with the James River and that discharge above 2,540 ft³/s is included in discharge for the James River near Richmond (station 02037500) has been used. Daily discharges in excess of 2,540 ft³/s for water years 1937-68 should be used with caution until historical records of canal construction and modifications can be reviewed. Figures given show flow in canal only. Probably no flow at times when head gates were closed. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 340 ft³/s, Mar. 21; maximum gage height, 8.61 ft, Mar. 21; minimum discharge, 1.5 ft³/s, Oct. 26, result of head gates being closed.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	141	8.3	6.0	4.7	19	18	21	18	e2.8	52	117	132
2	138	9.9	4.9	4.6	18	19	21	23	e2.6	41	117	132
3	132	e8.4	4.8	6.0	18	18	20	19	e2.9	32	113	132
4	133	e7.0	5.6	4.7	62	18	30	26	e2.4	24	99	136
5	131	e5.6	5.4	4.6	45	18	22	20	e2.5	18	92	136
6	131	8.9	4.9	4.7	41	18	21	17	e2.5	14	91	136
7	132	35	4.5	5.0	28	18	20	17	e2.7	11	90	134
8	134	7.2	4.4	7.5	21	26	20	38	e2.6	64	99	141
9	123	8.5	4.3	6.0	20	54	23	16	6.6	146	109	137
10	123	5.7	5.9	8.4	19	21	21	14	9.5	149	124	138
11	125	5.2	6.0	9.0	19	19	20	13	8.7	145	158	138
12	125	5.0	5.0	8.3	20	18	20	14	8.5	145	163	137
13	124	5.1	4.7	9.1	19	18	20	13	11	140	160	138
14	125	7.7	4.5	8.0	19	18	20	12	2.3	132	158	134
15	126	5.4	4.4	11	19	18	20	12	8.5	131	159	132
16	125	5.0	4.3	8.2	19	18	20	12	22	124	159	133
17	91	5.1	4.2	7.2	68	18	38	12	26	116	151	133
18	15	4.9	4.1	6.8	25	24	22	12	23	126	146	135
19	3.3	4.8	4.0	7.0	30	71	22	11	20	128	148	134
20	2.8	6.2	4.0	6.7	24	34	21	9.3	19	123	142	138
21	2.6	6.3	3.9	6.5	19	77	20	8.6	16	119	139	135
22	2.7	17	4.7	6.5	18	43	20	8.0	14	113	134	138
23	4.1	6.0	6.2	40	30	37	20	7.9	12	106	134	137
24	6.6	5.6	5.4	13	24	24	19	8.5	14	107	131	136
25	7.1	5.7	7.4	8.3	20	22	19	8.3	13	109	132	135
26	3.2	5.7	5.5	7.3	19	22	19	7.2	11	111	134	136
27	4.2	5.4	7.8	9.3	18	21	19	6.0	8.3	110	136	135
28	2.9	5.2	7.2	85	18	21	19	7.0	64	109	133	133
29	5.1	5.1	5.7	32	---	21	19	5.2	71	109	132	135
30	6.5	6.6	6.0	31	---	21	19	3.5	63	110	132	145
31	7.0	---	5.0	20	---	21	---	e2.9	---	114	132	---
TOTAL	2232.1	227.5	160.7	396.4	719	814	635	401.4	472.4	3078	4064	4071
MEAN	72.0	7.58	5.18	12.8	25.7	26.3	21.2	12.9	15.7	99.3	131	136
MAX	141	35	7.8	85	68	77	38	38	71	149	163	145
MIN	2.6	4.8	3.9	4.6	18	18	19	2.9	2.3	11	90	132

e Estimated.

JAMES RIVER BASIN

02037000 JAMES RIVER AND KANAWHA CANAL NEAR RICHMOND, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	592	622	646	667	679	670	685	663	670	604	590	571
MAX	1078	1014	1220	1145	1086	1094	1108	1086	1061	956	1108	937
(WY)	1949	1948	1949	1949	1979	1951	1951	1952	1951	1940	1940	1949
MIN	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60
(WY)	a1981	a1980	a1980	a1980	a1980	a1980	a1980	a1980	a1980	a1980	a1980	a1980

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1937 - 1998	
ANNUAL TOTAL	33607.3		17271.5			
ANNUAL MEAN	92.1		47.3		638	
HIGHEST ANNUAL MEAN					1023	
LOWEST ANNUAL MEAN					1.48	
HIGHEST DAILY MEAN	304	Jul 25	163	Aug 12	b3860	Aug 18 1940
LOWEST DAILY MEAN	c2.6	Oct 21	c2.3	Jun 14	(d)	(f)
ANNUAL SEVEN-DAY MINIMUM	c4.1	Dec 15	c2.6	Jun 2	c.44	Jan 1 1991
INSTANTANEOUS PEAK FLOW			340	Mar 21	(g)	
INSTANTANEOUS PEAK STAGE			8.61	Mar 21	h29.10	Jun 23 1972
INSTANTANEOUS LOW FLOW			1.5	Oct 26	(d)	(f)
10 PERCENT EXCEEDS	252		135		988	
50 PERCENT EXCEEDS	17		19		802	
90 PERCENT EXCEEDS	5.3		4.7		17	

a Estimated, leakage through head gates; also 1983.

b See REMARKS.

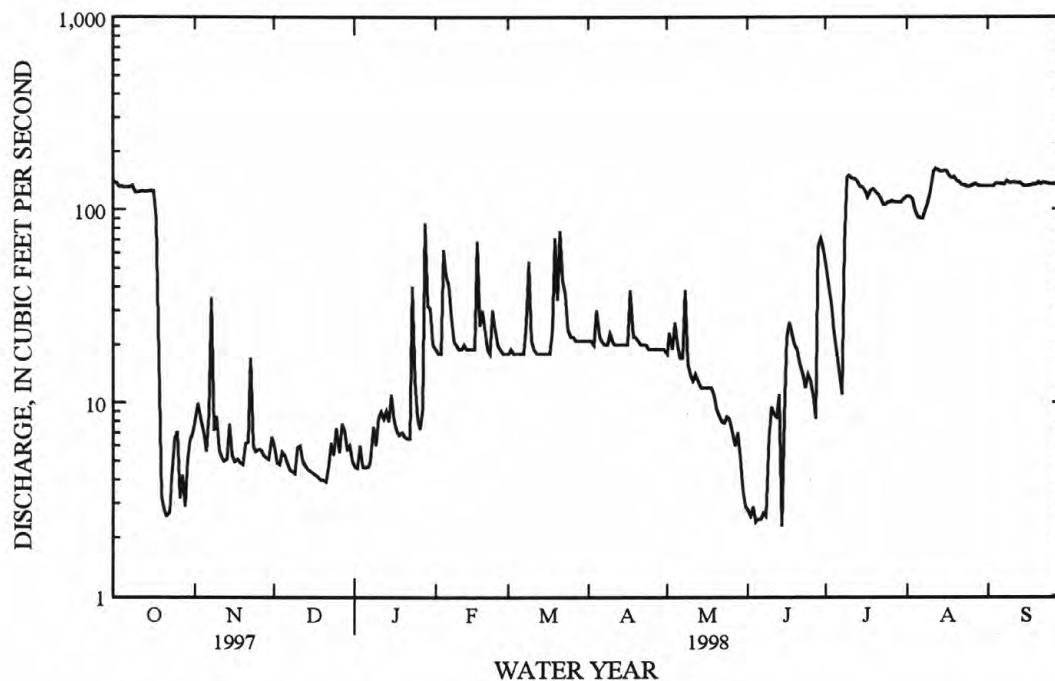
c Result of headgates being closed.

d Probably no flow at times when head gates were closed prior to 1958.

f Many days in 1937-38, 1949-50, 1952, 1954-55, and 1957.

g Interchange of flow with James River makes maximum discharge indeterminate.

h From floodmarks.



JAMES RIVER BASIN

02037500 JAMES RIVER NEAR RICHMOND, VA

LOCATION.--Lat 37°33'47", long 77°32'50", Henrico County, Hydrologic Unit 02080205, on left bank 0.2 mi upstream from Huguenot Memorial Bridge, 0.5 mi southwest of Richmond city limits, 1.7 mi downstream from Boshier Dam, 3.3 mi upstream from Powhite Creek, and at mile 116.6.

DRAINAGE AREA.--6,758 mi².

PERIOD OF RECORD.--October 1934 to current year. Gage-height records collected in vicinity of Mayo's Bridge, at mile 109.5, 1876-1956, and at mile 108.7 since 1957, are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 972: 1936(M). WSP 1433: 1951(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Control is Williams Island dams which divert flow for city of Richmond water supply. Datum of gage is 98.82 ft above sea level.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Dec. 31 to Jan. 1, Jun. 26-30, July 12-23, and Sept. 21, 22, 25, 26, 29, which are fair. City of Richmond takes from 40 ft³/s to 90 ft³/s for water supply from river downstream from gage except during periods of low flow when supply is obtained from James River and Kanawha Canal. Flow regulated by powerplants upstream from station. Above 18.2 ft stage, there is interchange of flow with James River and Kanawha Canal. Records of daily discharge include diversion by city of Richmond but do not include flow in James River and Kanawha Canal (station 02037000) which diverts around station. National Weather Service gage-height telemeter at station. Maximum discharge, 313,000 ft³/s, includes canal flow. Minimum daily discharge of James River and James River and Kanawha Canal combined, 214 ft³/s, Oct. 5, 1941, caused by recharging of the pool above Boshier Dam after the canal gates were closed. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 50,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 10	1800	74,300	15.70	Feb. 19	1300	85,700	16.66
Jan. 29	2245	*87,000	*16.77	Mar. 22	1845	86,900	16.76
Feb. 6	1545	86,500	16.73				

Minimum discharge, 865 ft³/s, Sept. 28, gage height, 3.34 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	2380	2000	3390	e5450	27300	16200	11800	10200	7720	4120	1890	1430		
2	2160	2070	3420	4770	21700	15200	11500	10900	6940	4250	1870	1490		
3	1440	3520	3470	4340	17500	15600	11100	12700	6210	4460	1790	1310		
4	1470	5000	3610	4100	20500	15200	10800	12600	5700	4220	1710	1280		
5	1440	4090	3940	4080	60500	13600	21500	13700	5430	4010	1660	1310		
6	1410	3600	4310	4210	83600	12400	20300	18300	5150	3790	1530	1170		
7	1310	4310	4640	4440	67900	11300	17600	16900	5040	3600	1410	942		
8	1330	19400	3740	6870	46200	11100	16000	22000	4940	3530	1520	1140		
9	1270	20300	2490	37300	33600	24400	14300	42900	4750	3420	1490	1140		
10	1190	11700	2810	69800	26500	37200	15100	35300	4800	3400	2060	1200		
11	1210	9340	3230	41800	22100	32900	16900	26300	4920	3570	4570	1240		
12	1180	7480	3580	20200	20600	27600	19600	20500	5200	e4000	2960	1250		
13	1070	5720	3520	15000	25400	21500	16600	18500	5070	e3300	2330	1310		
14	1080	5000	3170	12100	24200	17700	14700	17000	5040	e2850	2080	1190		
15	1190	5060	3260	10800	22500	15200	13400	14400	5010	e3250	2110	984		
16	1240	5140	3170	15600	19100	13400	12600	12800	6460	e2550	2080	1090		
17	1300	4420	3200	21500	20300	12500	13800	11400	7070	e2500	2190	1020		
18	1630	3890	3030	18500	58800	12200	33600	12600	7120	e2600	2610	1100		
19	2940	3540	2890	16400	83200	21600	28800	11000	6780	e2800	3240	1110		
20	2720	3410	2940	13800	61000	31500	25900	9500	6830	e3000	3080	1520		
21	2100	3250	2830	12200	37600	59900	42400	8950	6510	e2650	e2850	e1200		
22	1800	3800	2770	10600	30700	84100	42400	8180	5550	e2250	e2350	e1150		
23	1610	4580	2770	12200	27600	78300	29200	7580	5340	e1850	e2100	1210		
24	1560	4960	3130	31500	32300	42500	22300	7250	6050	1750	1790	1150		
25	1570	4430	3700	29200	27800	29800	18000	7360	6570	2160	1840	e1000		
26	1610	3950	5460	26400	23400	24700	15700	7600	e5300	2330	1600	e1150		
27	2060	3710	5820	21100	19700	21200	13900	7510	e4400	2220	1680	1020		
28	2920	3560	5650	36600	17300	17400	12900	7940	e4150	2050	1520	913		
29	3110	3440	6500	78500	---	14800	11900	8760	e3900	2070	1590	e1050		
30	2440	3180	6230	70800	---	13500	10800	10700	e4000	2150	1510	964		
31	2240	---	e5920	35700	---	12600	---	9120	---	2160	1560	---		
TOTAL	53980	167850	118590	695860	978900	777100	565400	440450	167950	92860	64570	35033		
MEAN	1741	5595	3825	22450	34960	25070	18850	14210	5598	2995	2083	1168		
MAX	3110	20300	6500	78500	83600	84100	42400	42900	7720	4460	4570	1520		
MIN	1070	2000	2490	4080	17300	11100	10800	7250	3900	1750	1410	913		
(†)	2232.1	227.5	160.7	396.4	719	814	635	401.4	472.4	3078	4064	4071		
MEAN†	1813	5603	3831	22460	34990	25090	18870	14220	5614	3095	2214	1303		
CFSM†	.27	.83	.57	3.32	5.18	3.71	2.79	2.10	.83	.46	.33	.19		
IN.†	.31	.93	.65	3.83	5.39	4.28	3.12	2.43	.93	.53	.38	.22		
CAL YR 1997	TOTAL	2335330	MEAN	6398	MAX	38200	MIN	1070	MEAN†	6489	CFSM†	.96	IN.†	13.04
WTR YR 1998	TOTAL	4158543	MEAN	11390	MAX	84100	MIN	913	MEAN†	11441	CFSM†	1.69	IN.†	22.99

† Total diversion, in cubic feet per second, per month, by James River and Kanawha Canal.

‡ Adjusted for diversion.

e Estimated.

JAMES RIVER BASIN

02037500 JAMES RIVER NEAR RICHMOND, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	4047	4740	6861	9325	11040	13020	11000	7847	5624	3219	3690	3198
MAX	19090	30480	26480	25300	34960	32740	35900	24280	30910	11300	21710	18390
(WY)	1938	1986	1949	1937	1998	1993	1987	1989	1972	1972	1969	1996
MIN	177	338	450	837	3243	2988	2766	2137	904	76.1	149	125
(WY)	1942	1942	1966	1966	1959	1981	1966	1941	1964	1966	1966	1963

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1937 - 1998	
ANNUAL TOTAL	2335330		4158543			
ANNUAL MEAN	6398		11390		6946	
HIGHEST ANNUAL MEAN					13540	
LOWEST ANNUAL MEAN					2666	
HIGHEST DAILY MEAN	38200		84100		a296000	
LOWEST DAILY MEAN	1070		913		c10	
ANNUAL SEVEN-DAY MINIMUM	1170		1040		c10	
INSTANTANEOUS PEAK FLOW			87000		a313000	
INSTANTANEOUS PEAK STAGE			16.77		28.62	
INSTANTANEOUS LOW FLOW			865		(g)	
ANNUAL RUNOFF (CFSM)	.95		1.69		1.03	
ANNUAL RUNOFF (INCHES)	12.86		22.89		13.96	
10 PERCENT EXCEEDS	13400		27700		15000	
50 PERCENT EXCEEDS	4530		5000		4200	
90 PERCENT EXCEEDS	1440		1310		950	

a Includes canal flow.

b Also Oct. 13, 1997.

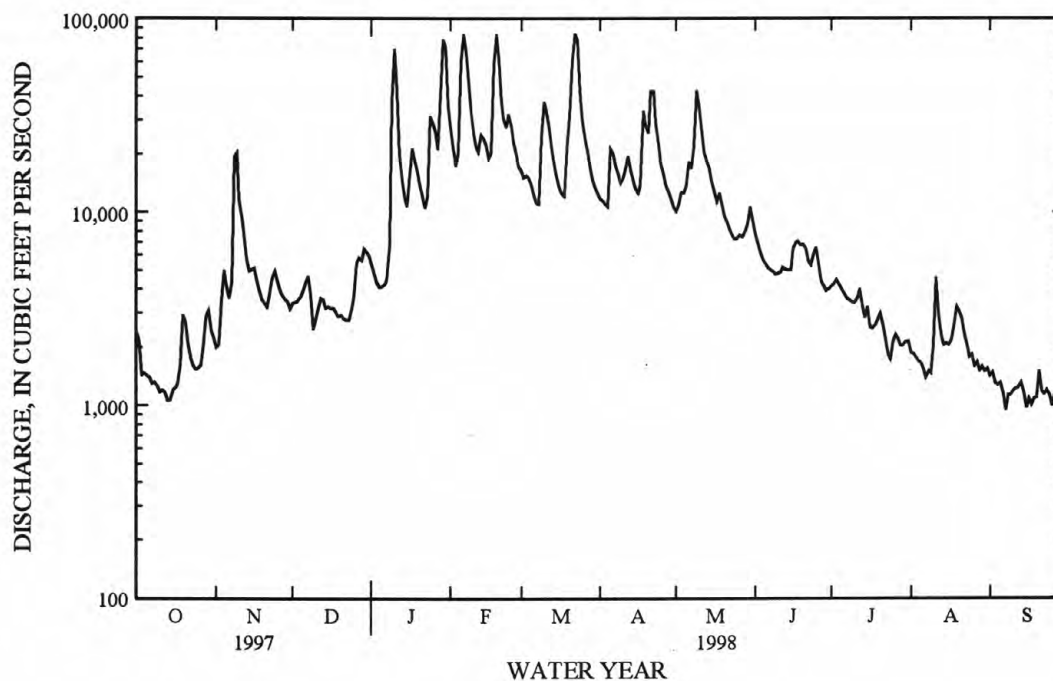
c Result of diversion by Boshier Dam construction.

d Also Sept. 9-15, 1966, Sept. 30, Oct. 5, 6, 1968, and Oct. 8-10, 1970.

f Also Sept. 9, 1966.

g Not determined.

h Probably occurred Sept. 8-15, 1966.



JAMES RIVER BASIN

02038850 HOLIDAY CREEK NEAR ANDERSONVILLE, VA

LOCATION.--Lat 37°24'55", long 78°38'10", Appomattox County, Hydrologic Unit 02080207, on right bank 350 ft downstream from culvert on State Highway 614, 1.0 mi upstream from Holiday Lake, and 5.2 mi southwest of Andersonville.

DRAINAGE AREA.--8.53 mi².

PERIOD OF RECORD.--April 1966 to current year.

REVISED RECORDS.--WDR VA-72-1: 1967-71(M), 1966-69(P), 1971(P).

GAGE.--Water-stage recorder. Datum of gage is 472.97 ft above sea level.

REMARKS.--Records good except those for periods of doubtful gage-height record, Feb. 13-16, 20-22, Feb. 25 to Mar. 7, Mar. 10-18, Mar. 24 to Apr. 3, Apr. 7-16, 21-25, Aug. 5-7, 13-15, and Sept. 7, 9-20, 26-30, which are fair. Maximum discharge, 9,640 ft³/s, from rating curve extended above 4,200 ft³/s on basis of slope-area measurement of peak flow. Minimum gage height, 0.73 ft, Aug. 12, 14, 15, 1987. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 150 ft³/s and maximum (*):

REVISIONS.--The minimum discharge for water year 1997 has been revised to 1.0 ft³/s September 7, 8, 1997. Revised daily discharges, in cubic feet per second, for September 12 to 30, 1997 are given below. These figures supersede those published in the report for 1997.

Sept. 12.....	3.5	Sept. 17.....	2.0	Sept. 22.....	1.9	Sept. 27.....	2.0
13.....	2.6	18.....	4.4	23.....	1.9	28.....	4.3
14.....	2.2	19.....	2.8	24.....	2.4	29.....	5.2
15.....	2.2	20.....	2.4	25.....	2.9	30.....	3.1
16.....	2.3	21.....	2.0	26.....	2.5		

MONTH	TOTAL	MEAN	MAX	MIN	CFSM	IN.
September 1997	80.7	2.69	9.1	1.1	.32	.35
Wtr Yr 1997	3432.5	9.40	107	1.1	1.10	14.97

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 28	1500	*488	*4.27	Apr. 4	0945	225	2.91
Feb. 4	1230	351	3.59	Apr. 17	0815	367	3.67
Feb. 17	1315	357	3.62	Aug. 16	0830	161	2.54
Mar. 20	2400	271	3.16				

Minimum daily discharge, 0.90 ft³/s, Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	11	7.4	7.2	27	e20	e15	16	6.6	3.9	2.0	1.9
2	2.3	9.4	5.8	6.0	26	e20	e15	18	6.2	3.5	1.9	1.9
3	2.4	6.5	5.3	7.0	23	e19	e14	15	6.0	3.5	1.9	1.8
4	2.3	4.9	11	8.1	133	e18	100	14	6.6	3.3	1.7	2.1
5	2.1	4.0	8.1	7.5	73	e17	33	27	7.0	3.4	e1.6	1.8
6	2.0	4.2	6.6	7.5	57	e16	25	17	6.7	3.1	e1.5	1.7
7	1.9	35	5.7	10	38	e15	e21	21	6.2	3.1	e1.5	e1.8
8	2.1	27	5.3	16	25	44	e19	47	5.8	3.7	6.4	2.1
9	2.3	13	5.3	13	26	65	e19	22	6.0	3.8	6.0	e1.6
10	2.5	8.7	6.9	8.9	23	e27	e18	17	9.2	3.7	3.5	e1.5
11	2.4	6.8	7.1	7.6	24	e25	e17	14	8.3	3.1	3.1	e1.4
12	2.4	5.8	5.9	7.0	39	e23	e17	14	7.5	2.8	2.6	e1.3
13	2.5	5.9	5.6	7.5	e27	e21	e16	13	6.7	2.7	e2.3	e1.2
14	3.0	9.6	5.4	6.9	e24	e20	e16	12	5.9	2.6	e2.2	e1.1
15	5.1	7.1	5.1	23	e23	e19	e15	11	6.8	2.5	e2.2	e1.1
16	4.2	6.2	4.8	35	e22	e18	e15	11	6.0	2.5	27	e1.0
17	7.5	5.7	5.0	16	124	e17	102	10	5.5	3.4	7.8	e1.1
18	15	5.4	5.0	11	42	e16	29	9.4	5.2	2.7	5.3	e1.2
19	7.3	4.7	4.8	9.0	24	72	34	9.0	9.3	2.4	3.7	e1.3
20	5.4	4.5	4.7	8.6	e22	62	47	8.8	7.6	2.3	3.1	e1.3
21	3.8	5.2	4.7	7.4	e21	99	e27	8.6	6.0	2.1	2.8	1.4
22	3.2	12	5.8	7.1	e20	33	e23	8.2	5.5	2.0	2.7	1.3
23	2.9	7.9	7.0	57	39	23	e20	9.9	5.4	2.3	2.6	1.3
24	3.0	6.3	6.4	30	34	e21	e18	10	5.1	2.7	2.5	1.1
25	3.5	5.4	13	20	e28	e20	e16	9.4	4.8	2.3	2.4	1.0
26	6.9	5.3	8.8	13	e25	e19	15	8.5	4.5	2.3	2.3	e.98
27	8.8	5.0	8.4	40	e23	e18	13	13	4.1	3.1	2.4	e.96
28	4.9	5.0	8.9	275	e21	e17	13	11	4.6	3.4	2.3	e.94
29	3.8	5.0	8.6	48	---	e16	13	8.7	5.6	2.5	2.2	e.92
30	3.5	6.2	8.1	25	---	e16	12	7.7	4.5	2.1	2.1	e.90
31	3.2	---	7.1	28	---	e15	---	7.0	---	2.1	2.1	---
TOTAL	124.7	248.7	207.6	773.3	1033	851	757	428.2	185.2	88.9	113.7	41.00
MEAN	4.02	8.29	6.70	24.9	36.9	27.5	25.2	13.8	6.17	2.87	3.67	1.37
MAX	15	35	13	275	133	99	102	47	9.3	3.9	27	2.1
MIN	1.9	4.0	4.7	6.0	20	15	12	7.0	4.1	2.0	1.5	.90
CFSM	.47	.97	.79	2.92	4.33	3.22	2.96	1.62	.72	.34	.43	.16
IN.	.54	1.08	.91	3.37	4.50	3.71	3.30	1.87	.81	.39	.50	.18

e Estimated.

JAMES RIVER BASIN

02038850 HOLIDAY CREEK NEAR ANDERSONVILLE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	6.25	7.71	8.99	11.4	13.0	14.4	12.0	9.98	8.51	4.72	4.71	6.32
MAX	25.6	32.3	25.6	30.5	36.9	37.9	32.6	36.0	70.2	15.3	24.9	36.8
(WY)	1972	1986	1974	1978	1998	1994	1973	1971	1972	1972	1973	1996
MIN	1.23	2.40	2.16	2.40	5.38	4.12	4.37	2.93	1.63	.61	.58	.81
(WY)	1987	1982	1989	1989	1989	1981	1967	1981	1966	1966	1987	1970

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

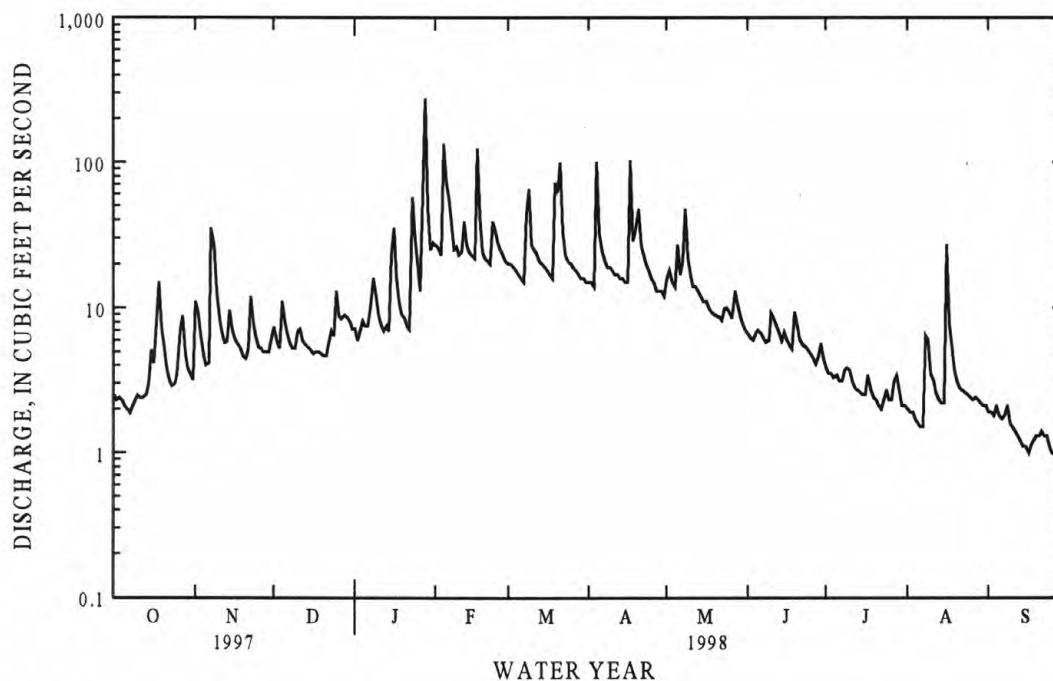
FOR 1998 WATER YEAR

WATER YEARS 1966 - 1998

ANNUAL TOTAL	2884.1		4852.30		9.03	
ANNUAL MEAN	7.90		13.3		18.6	
HIGHEST ANNUAL MEAN					3.28	
LOWEST ANNUAL MEAN					1973	
HIGHEST DAILY MEAN	42	Jul 24	275	Jan 28	1740	Jun 21 1972
LOWEST DAILY MEAN	1.1	Sep 8	e.90	Sep 30	.20	aJul 25 1966
ANNUAL SEVEN-DAY MINIMUM	1.3	Sep 2	.97	Sep 24	.20	Sep 6 1966
INSTANTANEOUS PEAK FLOW			488	Jan 28	9640	Jun 21 1972
INSTANTANEOUS PEAK STAGE			4.27	Jan 28	14.64	Jun 21 1972
INSTANTANEOUS LOW FLOW					.10	Sep 11 1966
ANNUAL RUNOFF (CFSM)	.93		1.56		1.06	
ANNUAL RUNOFF (INCHES)	12.58		21.16		14.38	
10 PERCENT EXCEEDS	14		27		15	
50 PERCENT EXCEEDS	6.9		7.0		5.4	
90 PERCENT EXCEEDS	2.0		2.0		1.9	

a And 11 other days in July and September 1966.

e Estimated.



JAMES RIVER BASIN

02039000 BUFFALO CREEK NEAR HAMPDEN SYDNEY, VA

LOCATION.--Lat 37°15'25", long 78°29'12", Prince Edward County, Hydrologic Unit 02080207, on left bank 100 ft upstream from bridge on State Highway 658, 0.8 mi upstream from Locket Creek, 2.0 mi northwest of Hampden Sydney, and 6.0 mi southwest of Farmville.

DRAINAGE AREA.--69.7 mi².

PERIOD OF RECORD.--August 1946 to current year.

REVISED RECORDS.--WSP 1303: 1948-50(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 339.19 ft above sea level (levels by Virginia Department of Transportation). Prior to Aug. 19, 1953, nonrecording gage at same site and datum.

REMARKS.--Records good except for period of doubtful gage-height record, May 9-17, which is fair. Maximum discharge, 9,160 ft³/s, from rating curve extended above 1,600 ft³/s on basis of slope-area measurement at gage height 11.96 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location by the Virginia Department of Environmental Quality - Water Division.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of about 15 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 24	0300	701	6.22	Mar. 19	1200	*1,650	*7.86
Jan. 28	2230	1,500	7.55	Apr. 4	2100	518	5.83

Minimum daily discharge, 14 ft³/s, Sept. 12-16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	40	65	52	221	86	76	71	55	34	23	17
2	17	47	53	48	145	90	74	79	52	32	22	17
3	16	42	46	46	99	93	69	70	50	32	21	17
4	16	37	55	45	542	81	308	67	50	32	21	20
5	16	33	53	43	584	75	369	95	51	36	20	19
6	15	32	47	41	403	70	225	82	50	33	20	18
7	15	104	43	45	320	67	151	80	47	32	20	17
8	15	99	40	120	235	178	115	590	45	32	38	16
9	16	75	39	144	167	379	107	e450	45	32	91	15
10	16	58	44	90	126	302	97	e300	57	34	64	15
11	16	48	52	69	111	187	87	e180	55	32	46	15
12	16	43	47	58	231	125	79	e145	54	30	36	14
13	16	41	43	57	186	99	73	e120	50	29	31	14
14	16	56	40	54	133	87	72	e100	46	28	28	14
15	21	52	38	124	107	78	71	e84	45	27	27	14
16	23	45	36	382	97	72	67	e76	47	27	31	14
17	24	41	35	259	501	69	313	e73	47	27	36	15
18	60	39	34	158	532	97	333	71	43	26	39	15
19	47	37	33	111	341	929	215	64	52	25	34	16
20	42	36	32	97	249	496	209	61	55	24	29	16
21	33	36	32	79	179	551	149	59	48	24	26	17
22	28	62	35	69	129	406	113	56	44	23	24	24
23	25	59	42	295	170	313	99	61	43	27	23	19
24	25	51	40	569	206	240	100	67	57	28	22	17
25	27	45	67	368	145	181	85	65	47	26	21	17
26	38	42	62	229	113	141	75	60	42	26	20	16
27	55	39	63	185	99	115	69	85	38	26	20	16
28	42	37	85	1210	92	100	65	87	36	27	21	15
29	35	35	74	784	---	91	62	74	37	25	20	15
30	31	43	68	450	---	84	61	65	36	24	19	15
31	29	---	61	325	---	79	---	59	---	23	18	---
TOTAL	809	1454	1504	6606	6463	5961	3988	3596	1424	883	911	489
MEAN	26.1	48.5	48.5	213	231	192	133	116	47.5	28.5	29.4	16.3
MAX	60	104	85	1210	584	929	369	590	57	36	91	24
MIN	15	32	32	41	92	67	61	56	36	23	18	14
CFSM	.37	.70	.70	3.06	3.31	2.76	1.91	1.66	.68	.41	.42	.23
IN.	.43	.78	.80	3.53	3.45	3.18	2.13	1.92	.76	.47	.49	.26

e Estimated.

JAMES RIVER BASIN

02039000 BUFFALO CREEK NEAR HAMPDEN SYDNEY, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	50.5	64.8	73.0	91.8	101	113	93.4	67.2	50.6	39.8	41.5	41.4
MAX	365	315	157	313	295	324	256	173	294	129	260	168
(WY)	1972	1986	1997	1978	1979	1993	1983	1978	1972	1989	1955	1979
MIN	9.94	14.6	18.7	25.3	36.9	37.5	29.4	23.4	11.2	14.0	9.02	6.67
(WY)	1971	1970	1966	1966	1968	1981	1967	1969	1970	1970	1977	1970

SUMMARY STATISTICS

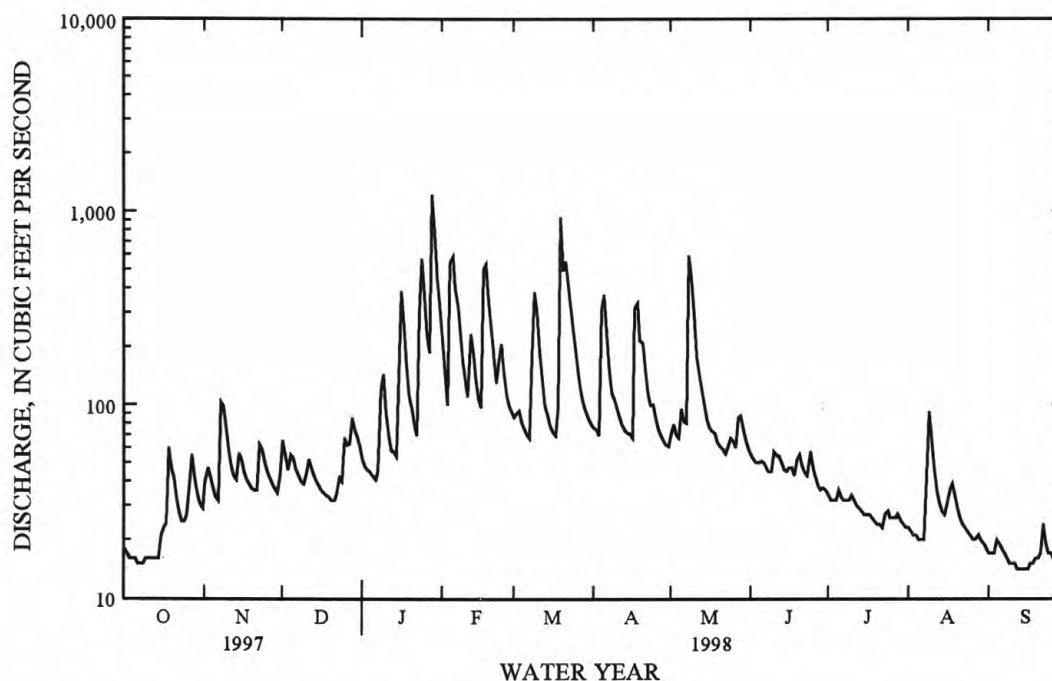
FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1947 - 1998

ANNUAL TOTAL	22738	34088	
ANNUAL MEAN	62.3	93.4	68.9
HIGHEST ANNUAL MEAN			134
LOWEST ANNUAL MEAN			28.5
HIGHEST DAILY MEAN	710	Apr 29	4940
LOWEST DAILY MEAN	12	aSep 6	e2.7
ANNUAL SEVEN-DAY MINIMUM	13	dSep 1	2.9
INSTANTANEOUS PEAK FLOW			9160
INSTANTANEOUS PEAK STAGE			12.38
INSTANTANEOUS LOW FLOW			(h)
ANNUAL RUNOFF (CFSM)	.89	1.34	.99
ANNUAL RUNOFF (INCHES)	12.14	18.19	13.43
10 PERCENT EXCEEDS	109	223	121
50 PERCENT EXCEEDS	46	50	44
90 PERCENT EXCEEDS	17	17	18

- a Also Sept. 7, 1997.
b Also Sept. 13-16, 1998.
c Also Oct. 8, 1970.
d Also Sept. 2, 1997.
e Estimated.
f Also Sept. 11, 12, 1998.
g Also Sept. 15, 1998.
h Not determined.
j Probably occurred Oct. 7, 8, 1970.



JAMES RIVER BASIN

02039500 APPOMATTOX RIVER AT FARMVILLE, VA

LOCATION.--Lat 37°18'25", long 78°23'20", Cumberland County, Hydrologic Unit 02080207, on left bank at downstream side of bridge on State Highway 45 at north town limits of Farmville and 1.1 mi downstream from Buffalo Creek.

DRAINAGE AREA.--303 mi².

PERIOD OF RECORD.--March 1926 to current year.

REVISED RECORDS.--WSP 972: 1927-37, 1938(M). WSP 1303: 1927(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 281.93 ft above sea level. Prior to Nov. 29, 1928, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Maximum discharge, 33,100 ft³/s, from rating curve extended above 12,000 ft³/s on basis of contracted-opening measurement of peak flow. Diurnal fluctuation at low flow caused by Prince Edward Mill 0.2 mi upstream. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,900 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 24	1400	3,720	14.86	Mar. 21	2130	5,070	16.21
Jan. 29	0230	*8,710	*18.87	Apr. 5	0930	4,390	15.59
Feb. 5	1200	5,970	16.93	Apr. 18	0830	3,760	14.91
Feb. 18	1130	5,990	16.95	May 5	2300	2,320	12.82
Mar. 10	0400	2,940	13.90	May 9	0800	3,850	15.01
Mar. 20	0030	5,070	16.21				

Minimum discharge, 57 ft³/s, Sept. 15-18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	80	114	180	210	711	420	380	362	217	143	84	77
2	71	225	185	188	559	478	417	469	203	133	80	75
3	67	200	156	181	471	519	368	410	194	125	74	74
4	67	155	180	183	1860	422	1550	383	192	122	70	80
5	67	120	251	187	5150	382	3620	1680	196	123	67	81
6	64	108	196	179	3140	357	1130	1130	197	123	66	75
7	62	542	163	196	1860	342	678	543	194	117	65	73
8	61	812	148	413	1010	879	544	2090	187	115	71	70
9	61	457	146	690	707	2470	502	3240	185	132	512	68
10	62	288	172	404	553	2240	529	1190	235	127	393	66
11	61	226	221	283	487	844	461	779	254	124	200	62
12	60	201	207	232	1110	587	411	626	231	113	155	62
13	59	187	179	221	939	479	383	516	222	106	130	61
14	60	226	164	220	600	430	369	415	211	103	117	60
15	71	251	155	389	483	395	372	352	194	98	110	59
16	89	211	147	1630	433	368	358	314	198	97	193	58
17	91	181	143	1060	1720	355	1310	306	189	98	352	58
18	364	153	139	587	5060	458	2870	305	176	116	237	58
19	286	125	135	414	1860	3410	931	266	196	101	187	63
20	167	120	133	360	887	3730	1260	244	275	92	138	68
21	125	121	130	301	711	4000	867	236	215	87	116	68
22	99	211	137	259	554	3160	596	227	187	89	108	79
23	86	282	169	1220	768	1160	509	229	207	107	103	81
24	80	204	179	3290	1220	822	513	263	216	116	99	73
25	85	164	320	1610	727	652	449	264	190	109	96	68
26	112	146	353	858	541	547	403	240	170	99	90	66
27	210	137	270	713	465	492	374	263	159	95	88	67
28	197	126	339	4750	433	449	356	358	148	100	88	74
29	129	122	310	7470	---	421	345	288	159	106	85	69
30	106	141	281	2330	---	399	334	251	159	94	81	64
31	97	---	252	965	---	378	---	227	---	85	80	---
TOTAL	3296	6556	6140	31993	35019	32045	23189	18466	5956	3395	4335	2057
MEAN	106	219	198	1032	1251	1034	773	596	199	110	140	68.6
MAX	364	812	353	7470	5150	4000	3620	3240	275	143	512	81
MIN	59	108	130	179	433	342	334	227	148	85	65	58
CFSM	.35	.72	.65	3.41	4.13	3.41	2.55	1.97	.66	.36	.46	.23
IN.	.40	.80	.75	3.93	4.30	3.93	2.85	2.27	.73	.42	.53	.25

JAMES RIVER BASIN

02039500 APPOMATTOX RIVER AT FARMVILLE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	195	249	308	406	447	487	412	278	211	163	198	196
MAX	1190	1287	961	1430	1402	1518	1155	872	1866	518	1783	1140
(WY)	1972	1986	1997	1978	1979	1993	1983	1978	1972	1972	1940	1996
MIN	30.3	51.0	61.6	96.3	114	126	107	95.2	29.5	40.5	19.6	16.7
(WY)	1931	1932	1966	1966	1934	1981	1966	1969	1970	1966	1930	1968

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

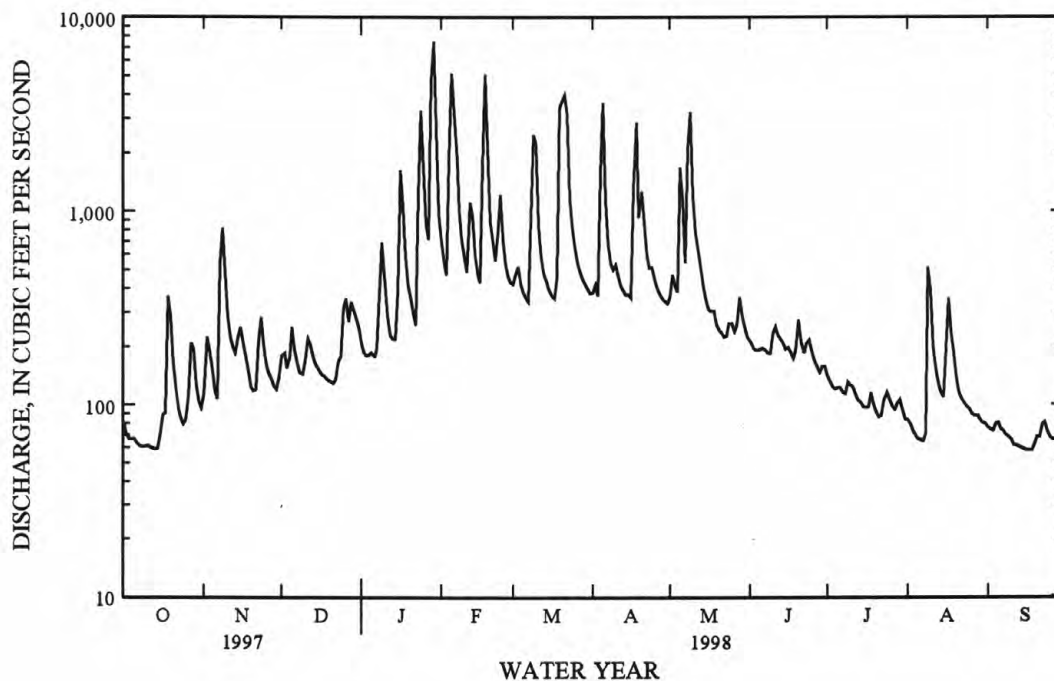
WATER YEARS 1926 - 1998

ANNUAL TOTAL	98123		172447									
ANNUAL MEAN	269		472							296		
HIGHEST ANNUAL MEAN										584		1972
LOWEST ANNUAL MEAN										115		1970
HIGHEST DAILY MEAN				2210	Apr 29		7470	Jan 29		28000		Jun 22 1972
LOWEST DAILY MEAN				55	Sep 7		58	aSep 16		6.3		Oct 5 1968
ANNUAL SEVEN-DAY MINIMUM				59	Sep 2		59	Sep 12		8.1		Sep 30 1968
INSTANTANEOUS PEAK FLOW							8710	Jan 29		33100		Jun 22 1972
INSTANTANEOUS PEAK STAGE							18.87	Jan 29		b29.70		Jun 22 1972
INSTANTANEOUS LOW FLOW							57	cSep 15		3.8		Sep 25 1941
ANNUAL RUNOFF (CFSM)				.89			1.56			.98		
ANNUAL RUNOFF (INCHES)				12.05			21.17			13.27		
10 PERCENT EXCEEDS				520			983			534		
50 PERCENT EXCEEDS				196			207			168		
90 PERCENT EXCEEDS				76			71			62		

a Also Sept. 17, 18, 1998.

b From floodmarks.

c Also Sept. 16-18, 1998.



JAMES RIVER BASIN

02040000 APPOMATTOX RIVER AT MATTOAX, VA

LOCATION.--Lat 37°25'17", long 77°51'33", Amelia County, Hydrologic Unit 02080207, on right bank 75 ft upstream from Norfolk Southern Railway bridge at Mattoax, 0.3 mi upstream from Skinquarter Creek, and 3.7 mi upstream from Flat Creek.

DRAINAGE AREA.--726 mi².

PERIOD OF RECORD.--August 1900 to December 1905, March 1926 to current year.

REVISED RECORDS.--WSP 892: 1938. WSP 972: 1928, 1932, 1934-38. WSP 1303: 1901(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 174.51 ft above sea level. August 1900 to December 1905, non-recording gage at same site, different datum. March 1926 to October 1936, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods of doubtful gage-height record, Oct. 14, and July 13, which are fair. National Weather Service gage-height telemeter at station. Maximum discharge, 35,000 ft³/s, from rating curve extended above 20,000 ft³/s on basis of records for stations at Farmville and near Petersburg. Minimum gage height, 3.52 ft, Oct. 2, 1930. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 29	0330	5,390	20.85	Mar. 12	1900	4,040	18.12
Feb. 1	0300	9,280	24.77	Mar. 19	2400	5,130	20.35
Feb. 8	1100	7,440	23.39	Mar. 22	2130	*10,900	*25.85
Feb. 21	1500	5,580	21.21				

Minimum discharge, 78 ft³/s, Sept. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	150	183	290	546	8810	985	747	626	441	257	146	103
2	138	186	386	451	6320	914	751	800	405	248	135	99
3	113	217	370	393	2530	946	734	908	377	239	130	95
4	103	269	335	365	2420	967	1090	775	359	233	124	96
5	98	239	345	346	4450	801	2580	699	352	222	115	95
6	94	211	390	338	4910	706	3040	1650	350	215	109	101
7	93	281	363	331	6000	647	3450	1650	346	212	105	102
8	90	781	300	364	7290	866	3450	1760	333	211	102	99
9	87	1340	265	637	6240	3100	1380	3240	318	208	107	93
10	87	782	261	1070	4510	3700	1200	3430	337	207	313	88
11	86	503	313	743	1610	3790	1100	3710	374	231	515	85
12	87	378	382	542	1630	4000	964	3240	421	212	291	83
13	89	323	368	463	2410	2310	851	1480	393	e190	217	82
14	e85	332	319	487	2260	1110	784	1200	383	186	180	80
15	89	407	296	549	1350	936	750	994	370	178	159	79
16	90	437	279	1460	1020	815	728	860	345	174	150	82
17	102	367	267	2440	1970	734	1590	766	329	169	147	133
18	133	309	259	2610	3820	881	2820	711	327	172	313	155
19	222	281	251	1490	3990	3840	3190	665	346	172	269	152
20	388	252	246	1050	4600	5080	3660	591	361	180	236	146
21	261	240	243	917	5450	6420	3730	541	411	163	188	149
22	212	292	242	769	4410	10100	2250	508	385	153	158	157
23	181	434	260	1430	1830	10200	1380	482	332	147	142	158
24	158	530	295	3400	3070	8320	1160	482	368	148	134	163
25	149	415	402	3610	3170	6220	1050	513	383	167	126	157
26	150	333	667	3900	2370	3600	909	507	335	174	121	148
27	179	293	703	4160	1370	1370	798	498	301	165	120	140
28	243	272	744	4870	1120	1150	720	585	275	157	119	137
29	284	259	893	5320	---	999	668	681	260	154	117	137
30	226	254	755	5590	---	892	635	573	256	157	113	147
31	196	---	637	7980	---	809	---	491	---	157	107	---
TOTAL	4663	11400	12126	58621	100930	87208	48159	35616	10573	5858	5308	3541
MEAN	150	380	391	1891	3605	2813	1605	1149	352	189	171	118
MAX	388	1340	893	7980	8810	10200	3730	3710	441	257	515	163
MIN	85	183	242	331	1020	647	635	482	256	147	102	79
CFSM	.21	.52	.54	2.60	4.97	3.87	2.21	1.58	.49	.26	.24	.16
IN.	.24	.58	.62	3.00	5.17	4.47	2.47	1.82	.54	.30	.27	.18

e Estimated.

JAMES RIVER BASIN

02040000 APPOMATTOX RIVER AT MATTOAX, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	476	548	746	1029	1149	1249	1067	671	488	378	432	393
MAX	3932	2728	2620	3650	3605	3566	2975	1889	4369	1918	4566	2294
(WY)	1972	1986	1994	1978	1998	1993	1983	1978	1972	1938	1940	1975
MIN	32.7	107	123	207	248	309	273	208	95.0	56.5	35.6	30.0
(WY)	1931	1931	1966	1966	1931	1981	1966	1926	1970	1966	1930	1932

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

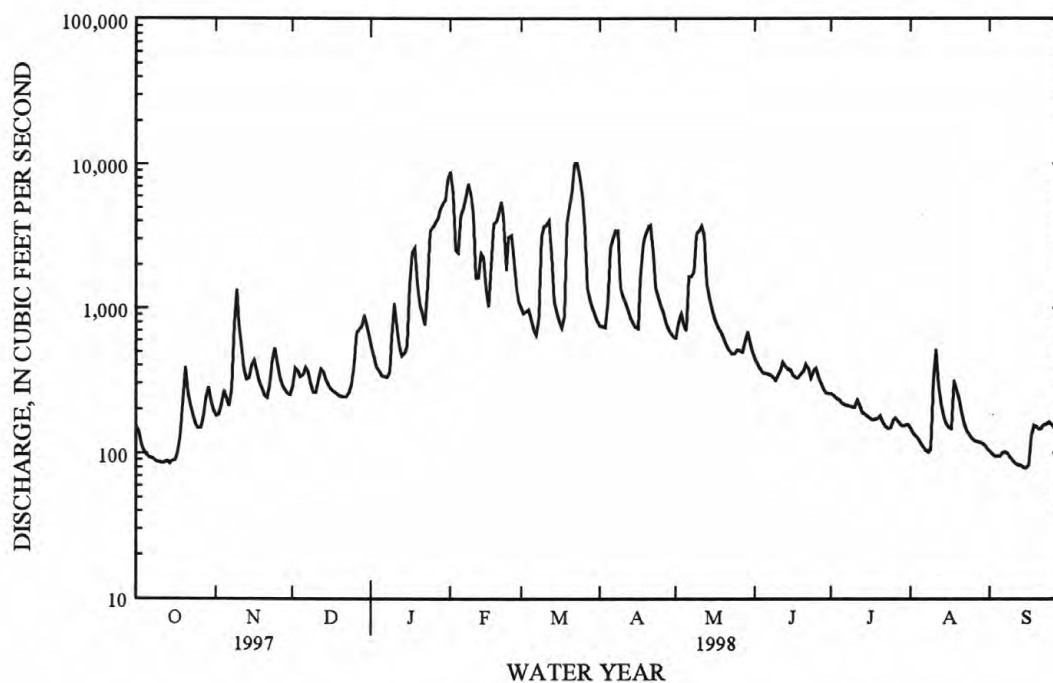
WATER YEARS 1926 - 1998

ANNUAL TOTAL	207939	384003	
ANNUAL MEAN	570	1052	719
HIGHEST ANNUAL MEAN			1553
LOWEST ANNUAL MEAN			285
HIGHEST DAILY MEAN	3900	May 2	10200
LOWEST DAILY MEAN	77	Sep 8	79
ANNUAL SEVEN-DAY MINIMUM	e80	Sep 3	83
INSTANTANEOUS PEAK FLOW			10900
INSTANTANEOUS PEAK STAGE			25.85
INSTANTANEOUS LOW FLOW			78
ANNUAL RUNOFF (CFSM)	.78	1.45	.99
ANNUAL RUNOFF (INCHES)	10.65	19.68	13.45
10 PERCENT EXCEEDS	1120	3440	1610
50 PERCENT EXCEEDS	359	367	387
90 PERCENT EXCEEDS	105	113	116

a Also Mar. 23, 1998.

b From floodmark in gage house.

e Estimated.



JAMES RIVER BASIN

02041000 DEEP CREEK NEAR MANNBORO, VA

LOCATION.--Lat 37°16'59", long 77°52'12", Amelia County, Hydrologic Unit 02080207, on left bank 300 ft upstream from bridge on State Highway 153, 0.9 mi upstream from Sweathouse Creek, 3.4 mi northwest of Mannboro, and 7.5 mi southeast of Amelia.

DRAINAGE AREA.--158 mi².

PERIOD OF RECORD.--September 1946 to current year.

REVISED RECORDS.--WSP 1203: 1948 (calendar year figures only). WSP 2104: Drainage area. WDR VA-79-1: 1973-76(P), 1978.

GAGE.--Water-stage recorder. Datum of gage is 177.20 ft above sea level. Prior to Sept. 2, 1949, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Maximum discharge, 15,000 ft³/s, from rating curve extended above 3,900 ft³/s. Minimum gage height, 0.29 ft, Aug. 9-12, 1957. Several measurements of water temperature were made during the year. Water-quality records for some periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 14.8 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 24	2330	2,160	8.67	Feb. 20	0600	1,600	7.99
Jan. 29	0730	3,490	9.95	Mar. 10	0730	1,700	8.13
Feb. 5	1630	2,960	9.47	Mar. 20	0400	*6,900	*12.82
Feb. 18	1830	2,090	8.60	Mar. 22	0300	3,260	9.74

Minimum discharge, 1.2 ft³/s, Sept. 2, 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.3	32	80	129	281	177	161	115	66	29	6.8	1.5
2	8.0	35	90	109	205	163	163	168	56	27	5.8	1.4
3	7.6	37	89	96	174	160	158	189	50	27	5.3	1.3
4	6.9	37	83	89	423	153	333	154	46	26	4.9	2.0
5	6.3	36	82	84	2150	138	967	130	44	23	4.5	2.7
6	5.8	33	76	79	1680	125	726	117	44	21	3.4	4.5
7	5.5	73	70	77	995	119	297	107	42	19	2.8	13
8	5.2	150	61	90	685	190	228	179	40	18	2.5	8.3
9	4.9	207	57	127	351	753	224	305	38	18	3.5	5.4
10	4.6	159	57	140	242	1550	321	256	45	18	3.6	4.2
11	4.3	101	70	115	199	779	309	168	51	17	4.2	3.5
12	4.2	72	76	94	207	295	225	141	53	16	4.9	2.8
13	4.2	59	74	91	212	209	188	137	58	15	4.9	2.3
14	3.8	83	65	96	185	179	168	130	88	14	4.8	2.0
15	4.3	116	58	139	155	161	161	116	64	13	4.8	1.8
16	6.5	131	54	348	139	147	153	103	60	12	4.6	1.6
17	8.3	95	52	581	327	138	285	96	82	12	5.0	1.5
18	16	69	50	365	1410	255	733	89	65	11	5.4	1.6
19	22	56	50	225	1210	2140	714	81	66	10	4.6	3.2
20	32	49	49	199	478	5050	333	73	80	9.9	4.5	4.8
21	33	47	48	180	262	2070	327	68	86	9.0	3.5	7.0
22	32	289	49	150	210	2340	249	64	71	8.0	3.2	9.4
23	26	577	66	307	247	959	217	60	60	6.8	3.3	7.4
24	20	481	77	1290	657	522	200	67	111	6.2	3.0	5.7
25	18	174	106	1600	895	337	173	71	87	6.2	2.6	5.3
26	21	116	121	668	372	260	150	68	67	7.0	2.2	5.2
27	42	91	150	307	234	226	135	104	50	8.7	2.1	4.5
28	56	76	255	1030	197	208	124	157	40	8.4	2.3	3.7
29	58	68	309	3050	---	192	117	160	35	8.0	2.5	3.0
30	46	66	219	1450	---	179	112	106	32	7.6	2.8	2.7
31	35	---	165	585	---	170	---	79	---	7.3	2.0	---
TOTAL	555.7	3615	2908	13890	14782	20344	8651	3858	1777	439.1	120.3	123.3
MEAN	17.9	121	93.8	448	528	656	288	124	59.2	14.2	3.88	4.11
MAX	58	577	309	3050	2150	5050	967	305	111	29	6.8	13
MIN	3.8	32	48	77	139	119	112	60	32	6.2	2.0	1.3
CFSM	.11	.76	.59	2.84	3.34	4.15	1.83	.79	.37	.09	.02	.03
IN.	.13	.85	.68	3.27	3.48	4.79	2.04	.91	.42	.10	.03	.03

JAMES RIVER BASIN

02041000 DEEP CREEK NEAR MANNBORO, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	104	140	156	221	257	283	216	133	83.5	67.2	59.0	72.8
MAX	859	821	453	800	793	718	632	406	449	301	309	1002
(WY)	1973	1986	1997	1978	1979	1993	1987	1971	1972	1975	1978	1979
MIN	3.55	26.0	26.4	48.5	52.4	74.8	51.2	36.4	15.4	7.26	3.43	2.19
(WY)	1971	1966	1966	1966	1968	1981	1985	1985	1985	1991	1987	1968

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

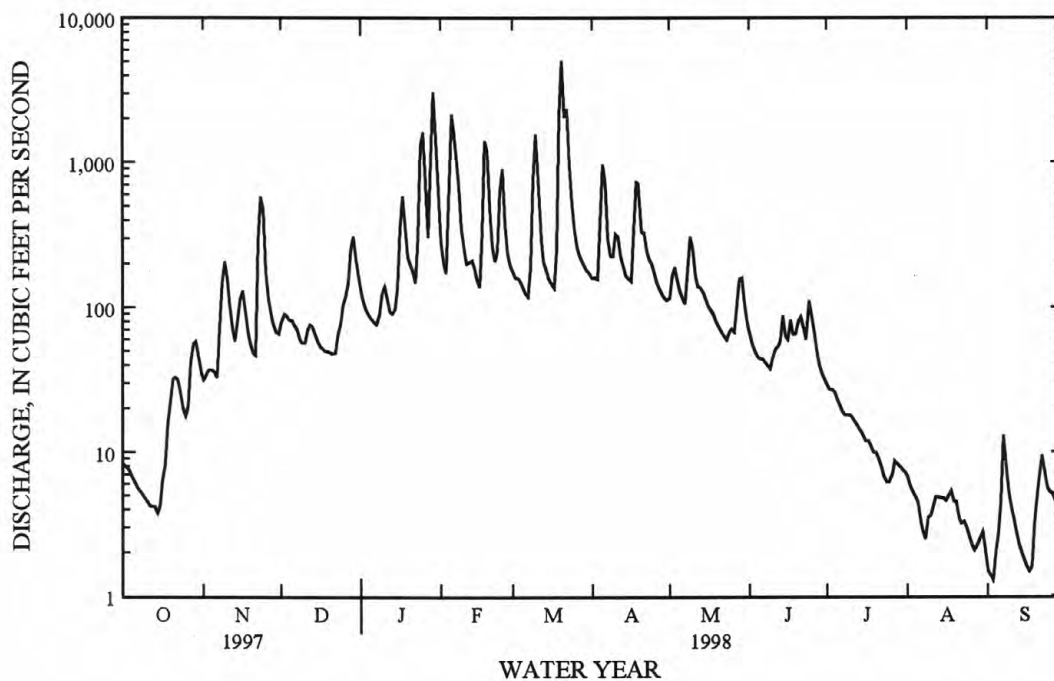
WATER YEARS 1947 - 1998

ANNUAL TOTAL	45968.2	71063.4	
ANNUAL MEAN	126	195	149
HIGHEST ANNUAL MEAN			319
LOWEST ANNUAL MEAN			67.5
HIGHEST DAILY MEAN	2620	Apr 29	12000
LOWEST DAILY MEAN	3.8	Oct 14	.04
ANNUAL SEVEN-DAY MINIMUM	4.3	Oct 9	.16
INSTANTANEOUS PEAK FLOW			15000
INSTANTANEOUS PEAK STAGE			a24.04
INSTANTANEOUS LOW FLOW			.03
ANNUAL RUNOFF (CFSM)	.80	1.23	.94
ANNUAL RUNOFF (INCHES)	10.82	16.73	12.79
10 PERCENT EXCEEDS	245	349	289
50 PERCENT EXCEEDS	76	73	75
90 PERCENT EXCEEDS	7.6	4.2	16

a From floodmarks.

b Also Sept. 3, 1998.

c Also Oct. 5, 1968.



JAMES RIVER BASIN

02041650 APPOMATTOX RIVER AT MATOACA, VA

LOCATION.--Lat 37°13'28", long 77°28'32", Chesterfield County, Hydrologic Unit 02080207, on left bank at upstream side of bridge on State Highway 600, 0.2 mi south of Matoaca, 2.0 mi upstream from Rohoic Creek, 2.8 mi downstream from Lake Chesdin, 3.5 mi west of Petersburg, and at mile 15.9.

DRAINAGE AREA.--1,344 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is 68.30 ft above sea level.

REMARKS.--Records good except those for period of no gage-height record, Oct. 19, 20, which are fair. Flow regulated by Appomattox Water Authority at Lake Chesdin, capacity, 36,000 acre-ft, 2.8 mi upstream from which an average of 36.3 ft³/s is diverted for industrial and municipal use. Records do not include flow of Upper Appomattox Canal of city of Petersburg which diverts around station. National Weather Service gage-height telemeter at station.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,100 ft³/s, Mar. 21, gage height, 11.97 ft; minimum, 64 ft³/s, Sept. 11, result of regulation; minimum daily, 69 ft³/s, Sept. 18, result of regulation.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	358	686	1440	9050	2140	1690	1200	731	311	119	96
2	101	366	656	1270	9250	1880	1650	1450	570	267	120	95
3	101	341	811	961	9330	1880	1270	1820	660	305	115	95
4	104	434	791	829	8970	1790	2420	1800	516	299	102	111
5	106	541	838	752	8820	1770	4260	1370	514	292	98	98
6	106	511	612	745	8930	1590	5390	1630	517	265	92	95
7	106	676	727	699	9230	1470	5300	2050	515	245	89	94
8	109	1080	589	1010	9030	1560	5000	2330	474	158	86	96
9	132	1450	577	1430	9050	4970	4400	5230	429	194	91	93
10	146	1740	618	1590	9050	8080	3190	5710	596	238	104	70
11	124	1470	598	1740	8180	7580	2610	5290	546	235	139	75
12	98	1050	700	1440	4670	6740	2180	4990	685	230	253	131
13	96	676	796	1290	3030	5690	1850	3930	650	274	349	134
14	96	749	680	1110	3280	3560	1640	2290	723	256	187	114
15	104	821	608	1200	2880	2200	1530	2060	724	228	104	83
16	102	932	560	2160	2150	1840	1410	1750	630	214	128	74
17	103	821	557	3390	2570	1640	1960	1370	541	152	133	70
18	101	672	515	4050	6420	2170	4190	1180	628	144	126	69
19	e100	590	524	3680	7430	6990	5340	936	533	142	260	74
20	e108	530	507	2560	7230	10800	5800	832	878	137	262	81
21	442	532	457	2000	6670	13600	5530	754	699	125	191	102
22	463	1060	597	1740	6390	13400	5170	675	669	121	119	101
23	254	1410	587	2050	6670	13200	3480	723	601	120	118	98
24	372	1570	583	5720	6120	13200	2420	692	885	116	116	99
25	329	1410	874	7100	6090	12100	2030	799	822	106	116	98
26	298	1140	1130	7040	5760	10500	1780	747	633	104	116	98
27	349	679	1330	6480	4030	8340	1600	1120	505	103	119	98
28	363	538	1660	8630	2610	3990	1420	1310	363	110	123	100
29	448	530	1890	9750	---	2420	1310	1310	400	116	113	101
30	467	686	1980	10200	---	2000	1250	1210	355	117	112	98
31	392	---	1710	9830	---	1770	---	1020	---	119	106	---
TOTAL	6320	25363	25748	103886	182890	170860	89070	59578	17992	5843	4306	2841
MEAN	204	845	831	3351	6532	5512	2969	1922	600	188	139	94.7
MAX	467	1740	1980	10200	9330	13600	5800	5710	885	311	349	134
MIN	96	341	457	699	2150	1470	1250	675	355	103	86	69
(†)	1293	1009	965	982	879	905	910	1089	1139	1340	1388	1343
CAL YR 1997	TOTAL	367556	MEAN	1007	MAX	7190	MIN	60	(†)	13481		
WTR YR 1998	TOTAL	694697	MEAN	1903	MAX	13600	MIN	69	(†)	13242		

† Total diversion, in cubic feet per second, at Lake Chesdin, provided by Appomattox Water Authority.
e Estimated.

JAMES RIVER BASIN

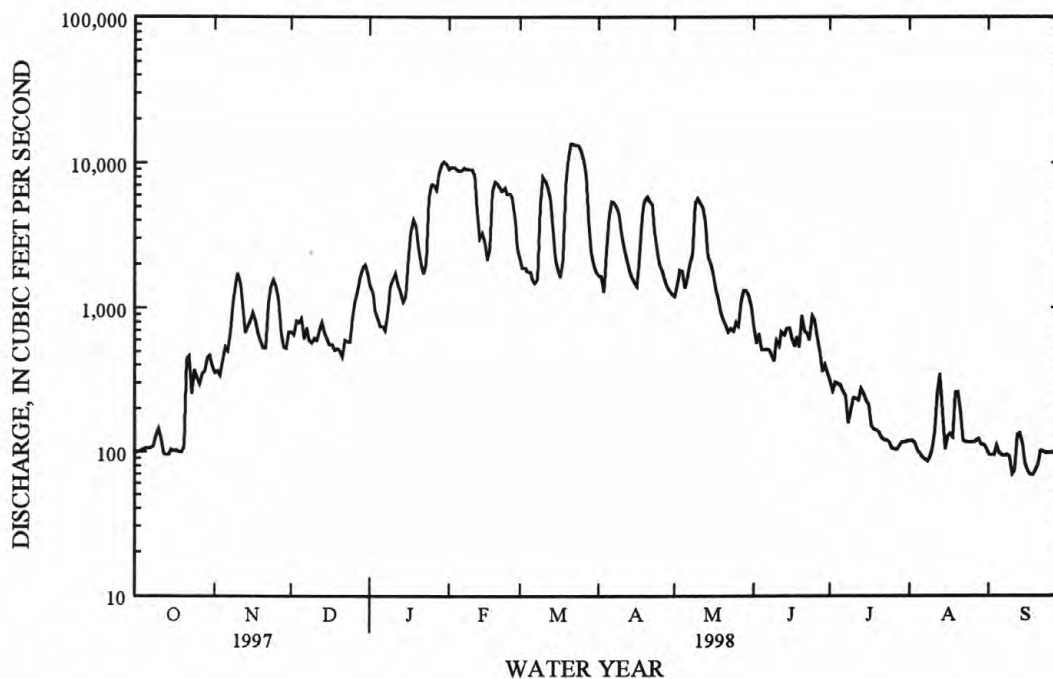
02041650 APPOMATTOX RIVER AT MATOACA, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1099	1115	1454	2098	2325	2619	2140	1363	925	570	499	711
MAX	6869	5648	3857	5868	6532	6098	5003	4452	5293	2123	1818	5312
(WY)	1973	1986	1997	1978	1998	1993	1983	1978	1972	1995	1978	1979
MIN	87.8	200	398	384	889	478	498	411	161	99.2	84.5	85.1
(WY)	1994	1970	1981	1981	1977	1981	1985	1985	1970	1986	1987	1993

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1970 - 1998	
ANNUAL TOTAL	367556		694697		1405	
ANNUAL MEAN	1007		1903		2559	
HIGHEST ANNUAL MEAN					1973	
LOWEST ANNUAL MEAN					1981	
HIGHEST DAILY MEAN	7190	May 1	13600	Mar 21	39400	Oct 7 1972
LOWEST DAILY MEAN	a60	Sep 7	a69	Sep 18	a32	Aug 31 1993
ANNUAL SEVEN-DAY MINIMUM	a70	Sep 5	a79	Sep 15	a48	Aug 25 1980
INSTANTANEOUS PEAK FLOW			14100	Mar 21	40800	Oct 7 1972
INSTANTANEOUS PEAK STAGE			11.97	Mar 21	18.39	Oct 7 1972
INSTANTANEOUS LOW FLOW			a64	Sep 11	a26	Aug 31 1993
ANNUAL RUNOFF (CFSM)	.75		1.42		1.05	
ANNUAL RUNOFF (INCHES)	10.17		19.23		14.20	
10 PERCENT EXCEEDS	2080		6230		3500	
50 PERCENT EXCEEDS	612		699		703	
90 PERCENT EXCEEDS	104		101		161	

a Result of regulation.



JAMES RIVER BASIN

02041650 APPOMATTOX RIVER AT MATOACA, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1991 to September 1993.

WATER TEMPERATURE: October 1991 to September 1993.

COOPERATION.--Chemical data as noted were provided by the Virginia Division of Consolidated Laboratory Services (VDCLS) and reviewed by the U.S. Geological Survey.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)
OCT 1997										
07...	1200	104	103	6.9	30.0	22.0	772	VDCLS	2.7	9.2
21...	1045	279	101	6.7	11.5	16.0	768	VDCLS	8.4	9.3
NOV										
06...	1015	665	99	6.7	11.0	14.0	773	VDCLS	14	10.4
10...	1230	1760	99	6.9	15.0	24.0	762	VDCLS	14	10.3
18...	1200	629	97	7.2	9.5	10.0	774	VDCLS	4.9	11.7
DEC										
02...	1215	653	95	7.1	9.0	9.0	770	VDCLS	4.8	12.1
*02...	1230	653	95	7.1	9.0	9.0	770	VDCLS	5.6	12.1
16...	1045	617	91	7.1	6.5	7.0	769	VDCLS	12	12.0
JAN 1998										
07...	1045	795	90	6.7	19.0	7.0	766	VDCLS	15	12.2
18...	0945	4060	88	7.2	8.0	8.0	768	VDCLS	24	11.9
21...	1030	2000	79	6.8	10.0	6.0	774	VDCLS	29	13.6
24...	1230	6030	74	7.1	11.0	6.0	760	VDCLS	36	12.7
26...	1330	7030	66	7.8	10.0	6.0	774	VDCLS	43	13.0
*26...	1345	7020	66	7.8	10.0	6.0	774	VDCLS	42	13.0
29...	1015	9790	59	6.3	9.5	5.0	762	VDCLS	51	14.0
FEB										
01...	0930	9110	47	7.1	4.0	5.5	773	VDCLS	73	13.0
07...	0930	9280	47	6.3	4.5	5.0	762	VDCLS	70	14.5
18...	1315	6800	61	6.9	19.0	7.5	756	VDCLS	40	12.2
28...	0915	2650	55	6.0	9.5	9.5	763	VDCLS	34	12.3
MAR										
05...	1045	1810	58	6.9	9.0	10.0	766	VDCLS	25	11.6
17...	1145	1470	54	7.0	8.0	8.5	772	VDCLS	33	11.9
20...	1100	10700	59	6.7	14.5	9.0	759	VDCLS	33	12.0
*20...	1115	10700	59	6.7	14.5	9.0	759	USGS	--	12.0
21...	0830	13800	41	6.6	10.0	8.7	723	VDCLS	41	12.6
22...	1015	13400	37	6.7	8.8	9.0	728	VDCLS	83	12.5
APR										
02...	0800	1650	50	6.9	18.5	15.8	740	VDCLS	22	9.8
05...	0900	4120	59	5.4	7.0	16.0	763	VDCLS	16	10.2
19...	0930	5170	71	7.1	16.5	16.4	757	VDCLS	9.4	--
20...	1100	5860	66	6.8	17.0	17.0	766	VDCLS	18	8.5
*20...	1115	5860	66	6.8	17.0	17.0	766	VDCLS	17	8.5
21...	1145	5470	63	6.9	23.5	17.4	760	VDCLS	49	10.2
MAY										
04...	1000	1830	66	6.5	17.0	18.0	759	VDCLS	9.6	9.2
09...	0900	5200	73	6.2	18.0	18.0	758	VDCLS	8.7	9.2
19...	1045	774	62	7.5	27.0	20.0	767	VDCLS	--	9.6
*19...	1050	772	62	7.5	27.0	20.0	767	USGS	--	9.6
JUN										
08...	1215	617	77	7.6	24.0	24.0	770	VDCLS	4.8	9.4
14...	1000	795	83	6.4	25.0	23.5	757	VDCLS	3.7	7.8
19...	0945	429	84	6.2	24.0	25.0	764	VDCLS	3.0	7.0
*19...	1000	434	84	6.2	24.0	25.0	764	USGS	--	7.0
23...	1130	594	84	6.4	32.0	26.0	769	VDCLS	3.1	7.9
24...	1030	924	82	7.3	24.0	26.0	768	VDCLS	6.8	7.2
JUL										
07...	0945	261	87	7.1	25.0	27.0	768	VDCLS	4.3	7.2
21...	1130	123	99	6.4	34.5	26.0	755	VDCLS	4.3	6.8
AUG										
04...	0915	102	102	7.1	23.5	23.0	758	VDCLS	4.2	7.0
18...	1100	125	103	6.7	34.0	26.5	753	VDCLS	4.7	6.9
SEP										
08...	1000	93	101	7.4	22.0	25.0	745	VDCLS	12	7.1
22...	1130	100	96	6.3	26.5	25.0	748	VDCLS	2.9	7.3

* Replicate sample.

JAMES RIVER BASIN

02041650 APPOMATTOX RIVER AT MATOACA, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L) (00530)	RESIDUE FIXED NON FILTER- ABLE (MG/L) (00540)	RESIDUE VOLA- TILE, SUS- PENDED (MG/L) (00535)	NITRO- GEN DIS- SOLVED (MG/L AS N) (00602)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
			**	**	**	**		**	**	**
OCT 1997										
07...	104	11	<3	<3	<3	.337	.130	.002	.130	.070
21...	93	18	5	<3	3	.381	.145	.004	.149	.016
NOV										
06...	99	19	14	11	3	.371	.110	.004	.114	.021
10...	122	18	18	14	4	.332	.075	.004	.079	.058
18...	102	18	3	<3	<3	.302	.087	.003	.090	.050
DEC										
02...	104	19	<3	<3	<3	.392	.159	<.002	.159	.032
*02...	104	19	<3	<3	<3	.374	.159	<.002	.159	.025
16...	98	19	5	4	<3	.437	.168	<.002	.168	.031
JAN 1998										
07...	100	18	6	4	<3	.538	.191	<.002	.191	.010
18...	100	17	22	18	4	--	.177	.002	.179	.210
21...	108	16	15	11	4	.564	.208	.002	.210	.018
24...	102	15	29	23	6	.580	.211	.004	.215	.014
26...	103	13	27	21	6	.550	.213	.002	.215	.026
*26...	103	13	26	21	5	.501	.215	.002	.217	.024
29...	110	12	24	19	5	.481	.173	<.002	.173	.012
FEB										
01...	102	9.1	23	18	5	.416	.155	.002	.157	.010
07...	113	9.5	23	18	5	.417	.164	.003	.167	.021
18...	103	14	3	3	<3	.375	.192	<.002	.192	.018
28...	107	11	16	13	3	.436	.157	.002	.159	.018
MAR										
05...	102	13	10	8	<3	.564	.158	<.002	.158	.019
17...	100	12	9	7	<3	.494	.130	<.002	.130	.025
20...	104	12	18	15	3	.418	.157	<.002	.157	.015
*20...	104	11	224	221	3	.34	--	--	.11	.015
21...	114	8.1	34	28	6	.447	.133	.002	.135	.024
22...	113	7.5	35	29	6	.496	.144	.003	.147	.024
APR										
02...	102	11	15	10	5	.326	.075	.002	.077	.024
05...	103	11	11	8	<3	.268	.047	<.002	.047	.024
19...	--	2.5	--	--	--	.337	.061	<.002	.061	.022
20...	87	2.4	10	<3	10	.486	.124	.003	.127	.037
*20...	87	2.4	--	--	--	.400	.124	.003	.127	.040
21...	107	12	--	--	--	.516	.152	.003	.155	.046
MAY										
04...	98	13	8	6	<3	.317	.044	<.002	.044	.015
09...	98	15	9	6	<3	.323	.062	<.002	.062	.026
19...	105	2.6	8	5	<3	.354	.092	.002	.094	.022
*19...	105	12	7	--	<1	.53	--	--	.071	.013
JUN										
08...	111	16	3	<3	<3	.348	.059	.003	.062	.010
14...	92	17	<3	<3	<3	.342	.082	.005	.087	.034
19...	85	18	6	<3	5	.355	.090	.005	.095	.027
*19...	85	17	1	--	7	.33	--	--	.061	.029
23...	97	18	4	<3	<3	.335	.077	.004	.081	.023
24...	88	18	6	3	3	.293	.058	.004	.062	.026
JUL										
07...	90	19	4	<3	<3	.386	.089	.003	.092	.022
21...	85	18	<3	<3	<3	.591	.303	.017	.320	.025
AUG										
04...	82	20	<3	<3	<3	.562	.370	.010	.380	.018
18...	87	20	<3	<3	<3	.607	.371	.016	.387	.041
SEP										
08...	88	19	<3	<3	<3	.576	.352	.009	.361	.014
22...	90	18	<3	<3	<3	.527	.218	.005	.223	--

* Replicate sample.

** For these constituents, there are differences in the minimum constituent reporting levels between the analyzing agencies.

< Actual value is known to be less than the value shown.

JAMES RIVER BASIN

02041650 APPOMATTOX RIVER AT MATOACA, VA--Continued

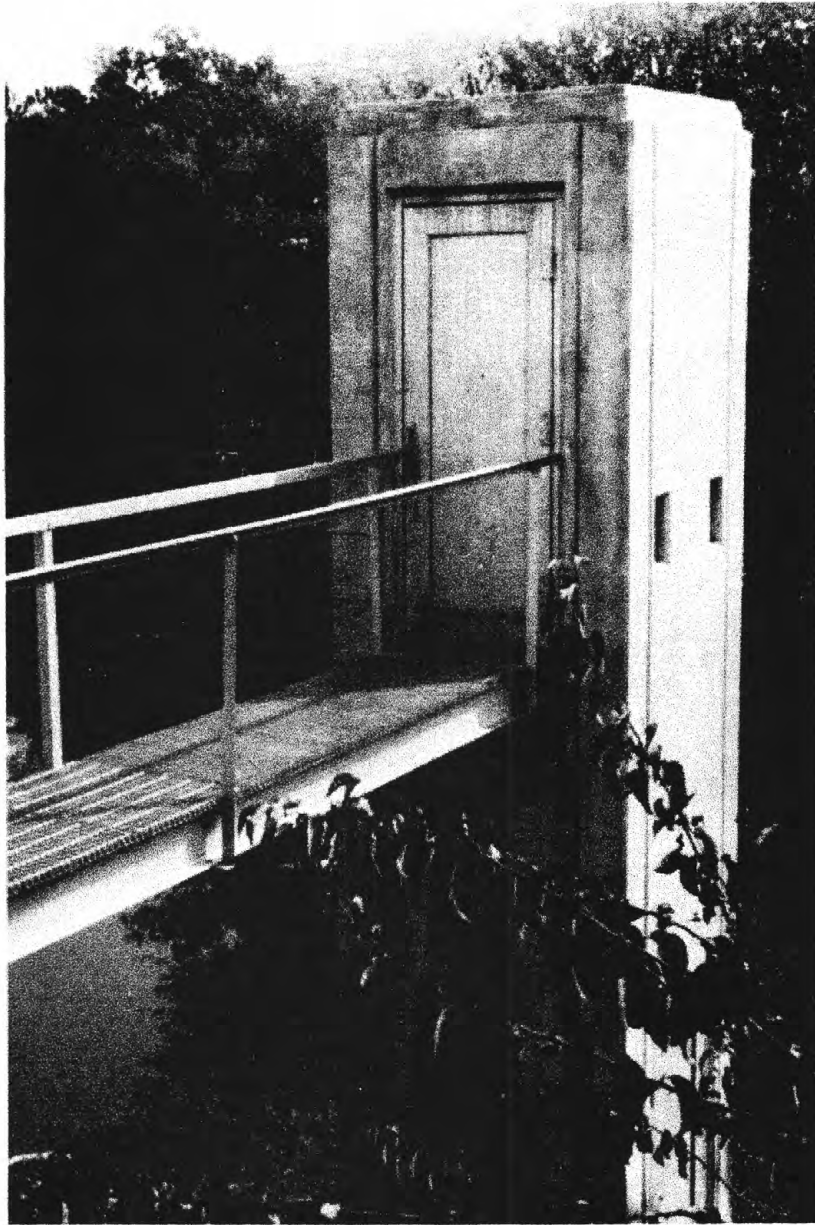
WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGN TOTAL SEDIMNT SUSP TOTAL AS N (MG/L) (00601)	PHOS- PHORUS TOTAL PHORUS (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS TOTAL SEDIMNT SUSP TOTAL AS P (MG/L) (00667)	CARBON, INORG + ORGANIC SUSP. TOTAL (MG/L AS C) (00694)
OCT 1997								
07...	--	--	.008	--	.018	.011	.001	.20
21...	--	--	.062	--	.030	.015	.005	.42
NOV								
06...	--	--	.061	--	.016	.009	.007	.66
10...	--	--	.099	--	.016	.009	.013	.99
18...	--	--	.019	--	.012	.019	.004	.23
DEC								
02...	--	--	.027	--	.020	.010	.009	2.24
*02...	--	--	.028	--	.020	.009	.009	.23
16...	--	--	.040	--	.010	.016	.013	.41
JAN 1998								
07...	--	--	.058	--	.020	.007	.016	.46
18...	--	--	.099	--	.250	.010	.026	.85
21...	--	--	.073	--	.027	.012	.036	.64
24...	--	--	.145	--	.035	.012	.052	1.16
26...	--	--	.122	--	.024	.016	.051	1.06
*26...	--	--	.126	--	.024	.015	.051	1.10
29...	--	--	.121	--	.036	.013	.046	1.05
FEB								
01...	--	--	.182	--	.030	.017	.066	1.35
07...	--	--	.133	--	.023	.021	.055	1.13
18...	--	--	.072	--	.020	.010	.035	.66
28...	--	--	.086	--	.025	.014	.038	.87
MAR								
05...	--	--	.059	--	.023	.004	.031	.47
17...	--	--	.06	--	.020	.012	.030	.54
20...	--	--	.08	--	.020	.010	.034	.66
*20...	.3	.2	--	.03	<.01	.009	--	--
21...	--	--	.17	--	.030	.021	.056	1.34
22...	--	--	.170	--	.027	.019	.068	1.33
APR								
02...	--	--	.092	--	.040	.007	.024	.63
05...	--	--	.121	--	.014	.006	.023	.87
19...	--	--	.112	--	.019	.006	.022	.80
20...	--	--	.117	--	.022	.010	.029	.90
*20...	--	--	.122	--	.021	.011	.030	1.04
21...	--	--	.083	--	.029	.014	.030	.64
MAY								
04...	--	--	.103	--	.014	.006	.020	.69
09...	--	--	.116	--	.012	.006	.022	.76
19...	--	--	.078	--	.016	.011	.021	.55
*19...	.6	.5	--	.03	<.01	.005	--	--
JUN								
08...	--	--	.055	--	.014	.012	.011	.35
14...	--	--	.062	--	.011	.009	.014	.38
19...	--	--	.049	--	.013	.005	.012	.34
*19...	.3	.3	--	<.01	<.01	.007	--	--
23...	--	--	.062	--	.013	.010	.012	.51
24...	--	--	.094	--	.014	.004	.022	.61
JUL								
07...	--	--	.042	--	.026	.011	.011	.31
21...	--	--	.024	--	.044	.032	.007	.20
AUG								
04...	--	--	.009	--	.049	.038	.006	.11
18...	--	--	.170	--	.045	.035	.008	.19
SEP								
08...	--	--	.018	--	.036	.026	.006	.19
22...	--	--	.015	--	.021	.012	.005	.11

* Replicate sample.

** For these constituents, there are differences in the minimum constituent reporting levels between the analyzing agencies.

< Actual value is known to be less than the value shown.



Middle Fork Holston River at Seven Mile Ford, VA
03474000

JAMES RIVER BASIN

02042500 CHICKAHOMINY RIVER NEAR PROVIDENCE FORGE, VA

LOCATION.--Lat 37°26'10", long 77°03'40", New Kent County, Hydrologic Unit 02080206, on left bank 100 ft downstream from bridge on State Highway 618, 1.1 mi southwest of Providence Forge, and 1.7 mi downstream from Schiminoe Creek.

DRAINAGE AREA.--252 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1942 to current year.

REVISED RECORDS.--WSP 1553: 1956. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 6.07 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. Maximum discharge, 7,710 ft³/s, from rating curve extended above 5,520 ft³/s. Minimum gage height, 1.53 ft, Sept. 13, 1965. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,880 ft³/s, Mar. 22, gage height, 9.84 ft; minimum discharge, .07 ft³/s, Oct. 9, 10, 11-14, gage height, 1.75 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.16	92	181	390	2240	860	395	210	171	322	22	14
2	.12	87	153	378	1520	714	364	211	164	297	19	14
3	.10	85	140	319	1090	574	333	201	148	274	17	12
4	.10	80	137	265	1000	474	425	210	123	287	16	22
5	.10	72	144	215	1490	416	642	217	99	269	13	34
6	.09	64	156	176	1980	379	764	239	87	204	10	39
7	.08	120	154	153	2330	383	797	304	76	132	8.4	42
8	.08	263	141	149	2540	451	835	463	65	85	7.7	41
9	.08	410	131	176	1900	845	819	827	56	65	7.0	36
10	.08	530	126	197	1410	1320	825	913	67	167	6.0	33
11	.08	458	126	246	1130	1360	724	750	76	190	14	29
12	.07	515	124	264	936	1580	637	627	83	204	45	27
13	.07	613	124	306	773	1520	559	688	88	223	49	23
14	.27	646	123	313	648	1160	505	676	93	231	36	18
15	.89	596	122	292	534	849	447	589	108	283	22	13
16	.11	461	120	329	466	654	376	468	143	362	18	8.9
17	.36	332	113	400	540	510	359	369	175	351	20	6.1
18	20	234	105	496	791	528	412	318	199	256	18	4.1
19	30	188	98	467	958	940	475	288	210	137	15	2.4
20	51	180	91	479	1070	1630	638	254	233	84	12	1.8
21	57	172	87	474	1340	2070	904	214	305	64	10	1.3
22	59	174	87	411	1230	2750	927	174	340	52	8.2	4.3
23	56	172	100	369	1000	2500	809	146	295	49	6.6	6.0
24	51	190	107	466	923	2130	677	141	212	41	4.8	9.5
25	45	221	124	744	902	1640	552	132	175	34	4.1	10
26	40	266	132	1100	875	1210	456	122	199	29	3.2	9.5
27	54	431	156	1600	950	927	369	176	217	28	4.5	7.8
28	63	427	225	1880	968	750	309	270	262	33	9.6	5.5
29	73	307	283	2170	---	622	265	236	297	40	15	3.8
30	81	220	361	2170	---	521	232	221	309	32	16	11
31	88	---	376	2540	---	448	---	191	---	28	15	---
TOTAL	770.84	8606	4647	19934	33534	32715	16831	10845	5075	4853	472.1	489.0
MEAN	24.9	287	150	643	1198	1055	561	350	169	157	15.2	16.3
MAX	88	646	376	2540	2540	2750	927	913	340	362	49	42
MIN	.07	64	87	149	466	379	232	122	56	28	3.2	1.3
CFSM	.10	1.14	.59	2.55	4.75	4.19	2.23	1.39	.67	.62	.06	.06
IN.	.11	1.27	.69	2.94	4.95	4.83	2.48	1.60	.75	.72	.07	.07

JAMES RIVER BASIN

02042500 CHICKAHOMINY RIVER NEAR PROVIDENCE FORGE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	144	209	287	380	430	481	384	240	165	146	161	107
MAX	794	768	1043	1214	1198	1055	1152	676	757	1081	1445	737
(WY)	1980	1986	1958	1978	1998	1998	1984	1978	1972	1945	1955	1979
MIN	3.81	17.5	28.0	58.7	94.4	108	102	34.9	14.1	12.5	5.53	.17
(WY)	1969	1966	1966	1955	1942	1981	1995	1985	1977	1968	1995	1997

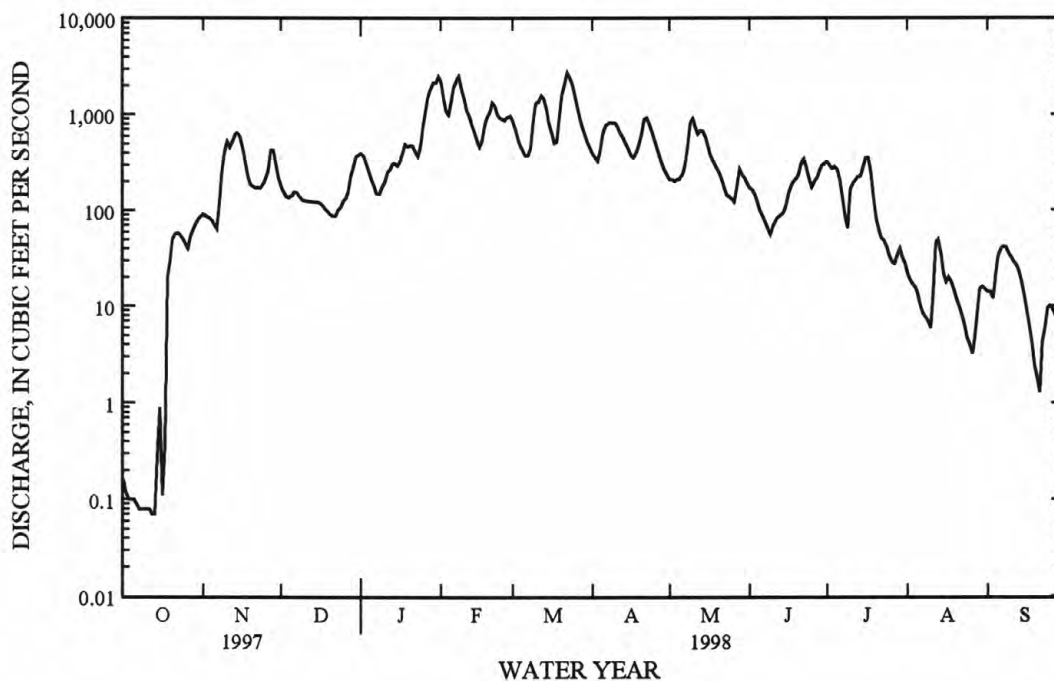
SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1942 - 1998
ANNUAL TOTAL	74943.30	138771.94	
ANNUAL MEAN	205	380	263
HIGHEST ANNUAL MEAN			482
LOWEST ANNUAL MEAN			91.4
HIGHEST DAILY MEAN	1090	2750	6680
LOWEST DAILY MEAN	.07	.07	.07
ANNUAL SEVEN-DAY MINIMUM	.07	.08	.07
INSTANTANEOUS PEAK FLOW		2880	7710
INSTANTANEOUS PEAK STAGE		9.84	11.67
INSTANTANEOUS LOW FLOW		.07	.06
ANNUAL RUNOFF (CFSM)	.81	1.51	1.04
ANNUAL RUNOFF (INCHES)	11.06	20.49	14.16
10 PERCENT EXCEEDS	442	944	600
50 PERCENT EXCEEDS	144	201	166
90 PERCENT EXCEEDS	.17	8.3	22

a Also Sept. 15-17, and Oct. 12, 13, 1997.

b Also Oct. 13, 1997.

c Also Oct. 10, 11-14, 1997.

d Also Sept. 14-15, 16, 17, 18, 1997.



JAMES RIVER BASIN

02042500 CHICKAHOMINY RIVER NEAR PROVIDENCE FORGE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 1995 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) AS CA (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) AS NA (00301)	CALCIUM DIS- SOLVED (MG/L) AS CA (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L) AS MG (00925)	SODIUM, DIS- SOLVED (MG/L) AS NA (00930)
OCT 1997												
21...	1200	56	138	6.6	13.5	12.6	770	7.8	73	12	2.5	8.4
NOV												
07...	1130	111	160	6.2	8.5	10.3	--	--	--	11	2.5	11
08...	1140	265	142	5.9	10.9	10.6	--	--	--	10	2.4	7.6
09...	1415	437	143	5.9	11.1	10.8	--	--	--	--	--	--
12...	1550	541	142	5.5	8.6	10.4	--	--	--	9.0	2.2	9.6
18...	1330	236	144	--	--	5.1	--	--	--	--	--	--
20...	1345	181	--	--	--	--	--	--	--	--	--	--
JAN 1998												
16...	1115	362	101	6.4	4.0	5.3	755	11.4	91	5.8	1.4	9.4
FEB												
16...	1520	458	76	6.5	6.8	5.4	--	--	--	--	--	--
17...	1140	513	75	6.3	12.3	7.4	--	--	--	4.9	1.3	5.9
17...	1715	590	73	6.5	15.0	8.3	--	--	--	--	--	--
18...	1115	788	70	6.4	12.0	9.2	--	--	--	4.8	1.2	5.2
18...	1515	804	69	6.5	16.5	10.3	--	--	--	--	--	--
19...	1515	967	66	6.5	21.3	11.2	--	--	--	4.5	1.1	5.2
20...	1100	1030	65	6.2	--	9.9	--	--	--	--	--	--
21...	0900	1350	67	6.8	15.4	9.4	--	--	--	4.3	1.1	5.5
22...	0910	1280	66	6.6	11.4	8.9	--	--	--	4.4	1.2	5.4
23...	0930	995	66	6.5	--	9.2	--	--	--	4.5	1.2	5.3
24...	0915	930	67	6.6	--	7.9	--	--	--	4.4	1.2	4.8
25...	0930	898	64	6.6	--	7.5	--	--	--	--	--	--
26...	0945	871	67	6.5	--	8.3	--	--	--	--	--	--
27...	0845	943	67	6.6	--	8.7	--	--	--	--	--	--
MAR												
02...	1030	722	75	6.5	--	11.8	--	--	--	--	--	--
04...	1100	476	74	6.7	12.3	8.0	--	--	--	--	--	--
06...	0930	380	78	6.6	--	6.8	--	--	--	--	--	--
09...	0900	769	62	6.6	--	12.0	--	--	--	--	--	--
10...	0915	1290	55	6.5	--	12.4	--	--	--	--	--	--
11...	0945	1370	47	6.5	--	8.8	--	--	--	--	--	--
12...	0850	1570	62	6.6	--	7.0	--	--	--	--	--	--
13...	0800	1590	60	6.6	--	5.8	--	--	--	--	--	--
APR												
16...	1015	380	76	6.3	22.5	17.6	735	6.5	71	6.4	1.6	5.8
JUL												
16...	1000	362	81	6.4	26.0	23.5	753	4.8	57	6.2	1.5	6.4
AUG												
26...	1200	2.8	110	5.8	27.5	24.5	--	4.7	--	8.8	2.1	6.5

JAMES RIVER BASIN

02042500 CHICKAHOMINY RIVER NEAR PROVIDENCE FORGE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ANC WATER UNFLTRD FET FIELD MG/L AS CACO3 (00410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)
OCT 1997												
21...	2.8	12	26	12	--	<.010	8.6	97	--	--	--	--
NOV												
07...	4.3	--	35	16	<.10	<.010	12	107	--	--	--	--
08...	4.8	6	32	13	<.10	<.010	9.2	99	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--
12...	4.1	3	32	14	<.10	<.010	11	105	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1998												
16...	2.2	8	13	14	<.10	<.010	7.1	81	--	--	--	--
FEB												
16...	--	--	--	--	--	--	--	--	<.010	.134	<.020	.36
17...	1.9	8	11	8.5	.11	<.010	3.7	61	<.010	.136	<.020	1.1
17...	--	--	--	--	--	--	--	--	--	--	--	--
18...	1.8	8	9.9	7.2	<.10	<.010	3.7	58	--	--	--	--
18...	--	8	--	--	--	--	--	--	--	--	--	--
19...	1.8	8	8.7	7.4	<.10	<.010	3.7	58	<.010	.140	<.020	.31
20...	--	10	--	--	--	--	--	--	--	--	--	--
21...	1.9	12	9.0	7.2	<.10	<.010	3.7	55	<.010	.147	<.020	.38
22...	1.9	11	9.3	6.8	<.10	<.010	4.0	60	--	--	--	--
23...	1.9	9	9.3	6.6	<.10	<.010	3.8	57	<.010	.129	<.020	.37
24...	1.8	8	13	6.4	<.10	<.010	3.2	56	--	--	--	--
25...	--	8	--	--	--	--	--	--	--	--	--	--
26...	--	9	--	--	--	--	--	--	--	--	--	--
27...	--	9	--	--	--	--	--	--	--	--	--	--
MAR												
02...	--	11	--	--	--	--	--	--	--	--	--	--
04...	--	12	--	--	--	--	--	--	--	--	--	--
06...	--	13	--	--	--	--	--	--	--	--	--	--
09...	--	11	--	--	--	--	--	--	--	--	--	--
10...	--	10	--	--	--	--	--	--	--	--	--	--
11...	--	10	--	--	--	--	--	--	--	--	--	--
12...	--	10	--	--	--	--	--	--	--	--	--	--
13...	--	9	--	--	--	--	--	--	--	--	--	--
APR												
16...	1.5	19	4.0	7.4	<.10	<.010	1.6	60	--	--	--	--
JUL												
16...	1.0	14	9.0	7.7	<.10	<.010	9.3	73	--	--	--	--
AUG												
26...	1.8	--	7.3	9.2	<.10	<.010	6.9	74	--	--	--	--

< Actual value is known to be less than the value shown.

JAMES RIVER BASIN

02042500 CHICKAHOMINY RIVER NEAR PROVIDENCE FORGE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN DIS- SOLVED (MG/L AS N) (00602)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	H-2 / H-1 STABLE ISOTOPE RATIO PER MIL (82082)	O-18 / O-16 STABLE ISOTOPE RATIO PER MIL (82085)	LIGHT ABSOR- BENCE AT 253.7 NM (PER CM)** (99905)
OCT 1997											
21...	--	--	--	--	--	--	120	60	-24.8	-4.33	.210
NOV											
07...	--	--	--	--	--	--	84	178	-32.5	-5.51	.179
08...	--	--	--	--	--	--	250	464	-45.7	-7.11	.244
09...	--	--	--	--	--	--	--	--	--	--	.309
12...	--	--	--	--	--	--	120	254	-44.7	-7.22	.249
18...	--	--	--	--	--	--	--	--	-45.1	-7.24	.231
20...	--	--	--	--	--	--	--	--	-45.6	-7.23	.197
JAN 1998											
16...	--	--	--	--	--	--	550	24	--	--	.284
FEB											
16...	.24	.38	.012	<.010	.017	--	--	--	--	--	.242
17...	.26	.40	.013	.018	.017	--	300	23	--	--	.252
17...	--	--	--	--	--	--	--	--	--	--	.256
18...	--	--	--	--	--	--	270	16	--	--	.246
18...	--	--	--	--	--	--	--	--	--	--	.285
19...	.28	.42	.017	.010	.017	--	320	17	--	--	.285
20...	--	--	--	--	--	--	--	--	-49.3	-8.07	--
21...	.27	.42	.027	.012	.020	--	340	17	-49.5	-8.14	.296
22...	--	--	--	--	--	--	350	17	-50.9	-8.26	.324
23...	.29	.42	.023	.014	.021	--	350	21	-50.6	-8.15	.371
24...	--	--	--	--	--	--	420	21	--	--	.357
25...	--	--	--	--	--	--	--	--	--	--	.320
26...	--	--	--	--	--	--	--	--	--	--	.314
27...	--	--	--	--	--	--	--	--	--	--	.280
MAR											
02...	--	--	--	--	--	--	--	--	--	--	.325
04...	--	--	--	--	--	--	--	--	--	--	.345
06...	--	--	--	--	--	--	--	--	--	--	.300
09...	--	--	--	--	--	--	--	--	--	--	.309
10...	--	--	--	--	--	--	--	--	--	--	.327
11...	--	--	--	--	--	--	--	--	--	--	.386
12...	--	--	--	--	--	--	--	--	--	--	.326
13...	--	--	--	--	--	--	--	--	--	--	.360
APR											
16...	--	--	--	--	--	--	680	85	--	--	.450
JUL											
16...	--	--	--	--	--	12	440	71	--	--	.388
AUG											
26...	--	--	--	--	--	--	220	546	--	--	--

** Abbreviations used: NM, nanometers; PER CM, per centimeter.
 < Actual value is known to be less than the value shown.



The Way It Was Before Safety Guidelines

GREAT DISMAL SWAMP BASIN

02043600 LAKE DRUMMOND IN GREAT DISMAL SWAMP, VA

LOCATION.--Lat 36°35'42", long 76°26'23", Chesapeake City, Hydrologic Unit 03010205, on right bank in outlet canal, 200 ft upstream from dam and gates, 0.5 mi downstream from Lake Drummond, 3.1 mi north of North Carolina State line, and 20 mi southwest of Norfolk.

PERIOD OF RECORD.--May 1926 to current year. Prior to October 1973, published as Lake Drummond in Dismal Swamp.

REVISED RECORDS.--WSP 1032: 1934-43.

GAGE.--Nonrecording gage. Datum of gage is 12.16 ft above sea level. Aug. 22, 1978, to Oct. 1, 1981, water-stage recorder at same site and datum.

REMARKS.--Mean daily gage heights are shown in table below. Maximum gage height, 6.68 ft, Sept. 17, 1960. Minimum gage height, -0.67 ft, Nov. 3, 1952.

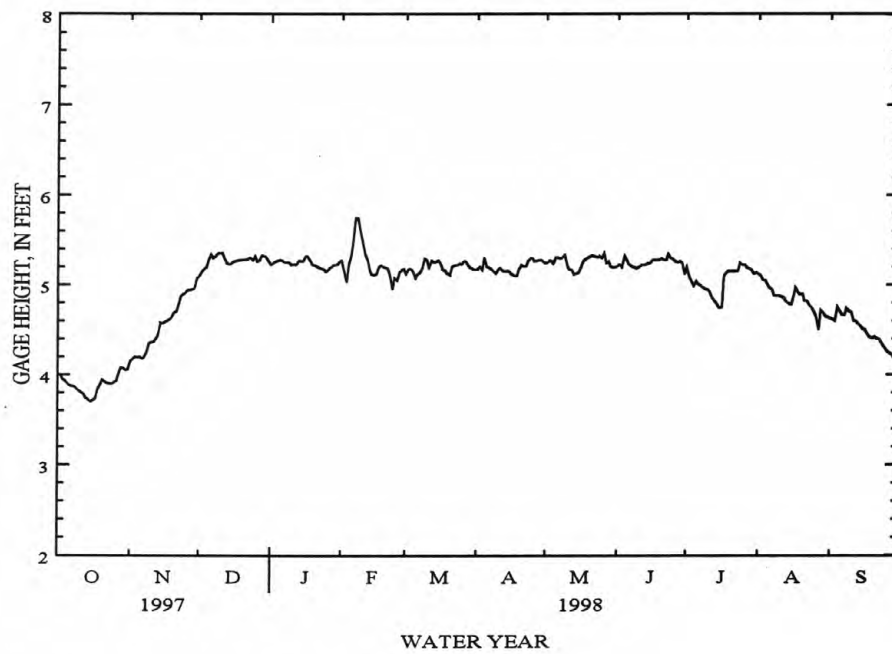
EXTREMES FOR CURRENT YEAR.--Maximum instantaneous gage height, 5.76 ft, Feb. 7; minimum instantaneous gage height, 3.70 ft, Oct. 15.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.00	4.16	5.11	5.23	5.27	5.13	5.17	5.24	5.22	5.20	5.12	4.63
2	4.00	4.18	5.14	5.25	5.15	5.18	5.21	5.27	5.23	5.10	5.10	4.62
3	3.95	4.20	5.18	5.26	5.03	5.18	5.17	5.27	5.20	5.05	5.06	4.60
4	3.93	4.19	5.20	5.27	5.23	5.16	5.31	5.24	5.33	4.99	5.05	4.76
5	3.91	4.20	5.28	5.28	5.33	5.08	5.21	5.31	5.27	5.04	4.99	4.71
6	3.88	4.18	5.34	5.27	5.48	5.12	5.19	5.31	5.23	5.01	4.96	4.67
7	3.87	4.20	5.30	5.25	5.75	5.14	5.18	5.29	5.21	4.99	4.94	4.66
8	3.87	4.25	5.32	5.25	5.74	5.19	5.15	5.32	5.20	4.97	4.88	4.74
9	3.84	4.35	5.36	5.25	5.62	5.29	5.13	5.34	5.18	4.95	4.88	4.71
10	3.82	4.36	5.35	5.22	5.48	5.28	5.18	5.22	5.20	4.95	4.88	4.69
11	3.80	4.36	5.36	5.23	5.34	5.20	5.19	5.17	5.22	4.93	4.87	4.60
12	3.78	4.40	5.30	5.22	5.31	5.27	5.16	5.17	5.22	4.86	4.86	4.60
13	3.74	4.44	5.24	5.27	5.17	5.25	5.15	5.12	5.22	4.82	4.82	4.57
14	3.72	4.58	5.23	5.26	5.12	5.26	5.16	5.13	5.24	4.79	4.79	4.54
15	3.70	4.57	5.25	5.26	5.11	5.28	5.15	5.14	5.24	4.74	4.78	4.51
16	3.72	4.59	5.26	5.32	5.13	5.25	5.12	5.19	5.28	4.75	4.85	4.50
17	3.74	4.60	5.26	5.32	5.20	5.17	5.10	5.27	5.28	5.11	4.97	4.45
18	3.84	4.62	5.28	5.28	5.22	5.16	5.10	5.29	5.28	5.14	4.93	4.42
19	3.89	4.65	5.28	5.22	5.20	5.13	5.18	5.31	5.28	5.16	4.89	4.41
20	3.94	4.69	5.28	5.22	5.19	5.11	5.22	5.32	5.30	5.15	4.90	4.43
21	3.92	4.71	5.28	5.20	5.18	5.21	5.21	5.33	5.28	5.16	4.82	4.40
22	3.91	4.77	5.29	5.19	5.11	5.22	5.21	5.32	5.28	5.15	4.82	4.40
23	3.90	4.88	5.31	5.18	4.95	5.22	5.28	5.31	5.35	5.16	4.78	4.36
24	3.90	4.90	5.28	5.18	5.08	5.24	5.30	5.33	5.30	5.25	4.75	4.32
25	3.92	4.92	5.32	5.15	5.05	5.23	5.30	5.30	5.29	5.22	4.70	4.28
26	3.93	4.94	5.26	5.18	5.15	5.26	5.26	5.36	5.26	5.23	4.65	4.25
27	4.02	4.94	5.28	5.19	5.17	5.26	5.27	5.25	5.25	5.19	4.50	4.23
28	4.08	4.95	5.33	5.22	5.18	5.22	5.28	5.26	5.26	5.18	4.72	4.22
29	4.08	4.98	5.32	5.22	---	5.19	5.28	5.21	5.24	5.17	4.69	4.21
30	4.05	5.08	5.30	5.23	---	5.18	5.25	5.19	5.12	5.13	4.65	4.20
31	4.06	---	5.27	5.26	---	5.17	---	5.20	---	5.14	4.64	---
MEAN	3.89	4.56	5.28	5.24	5.25	5.20	5.20	5.26	5.25	5.05	4.85	4.49
MAX	4.08	5.08	5.36	5.32	5.75	5.29	5.31	5.36	5.35	5.25	5.12	4.76
MIN	3.70	4.16	5.11	5.15	4.95	5.08	5.10	5.12	5.12	4.74	4.50	4.20

GREAT DISMAL SWAMP BASIN

02043600 LAKE DRUMMOND IN GREAT DISMAL SWAMP, VA--Continued



CHOWAN RIVER BASIN

02044500 NOTTOWAY RIVER NEAR RAWLINGS, VA

LOCATION.--Lat 36°59'00", long 77°48'00", Brunswick County, Hydrologic Unit 03010201, on right bank at downstream side of bridge on State Highway 612 at Harpers Bridge, 0.1 mi upstream from Beaver Pond Creek, and 2.6 mi northwest of Rawlings.

DRAINAGE AREA.--309 mi².

PERIOD OF RECORD.--October 1950 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 184.88 ft above sea level.

REMARKS.--Records good except for period of no gage-height record, Mar. 30, 31, which is fair. Maximum discharge, 29,900 ft³/s, from rating curve extended above 16,000 ft³/s on basis of slope-area measurement of peak flow. Minimum gage height, 1.83 ft, Oct. 15, 1954. Several measurements of water temperature were made during the year. Water-quality records for some periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 20.8 ft, discharge, about 19,000 ft³/s, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 25	0830	2,610	7.77	Feb. 19	0030	3,640	9.25
Jan. 29	2030	3,940	9.64	Mar. 10	0500	3,290	8.76
Feb. 5	2400	4,680	10.59	Mar. 20	1030	*10,100	*15.26

Minimum discharge, 22 ft³/s, Sept. 16-18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	71	172	254	530	417	390	322	190	90	40	28
2	51	75	189	216	439	397	435	498	170	79	38	26
3	45	78	178	193	391	390	403	507	158	72	35	24
4	41	73	164	180	1050	369	627	412	154	68	32	81
5	40	69	162	169	3450	340	1440	361	155	65	29	284
6	39	65	157	159	3700	318	1080	329	150	63	26	148
7	37	94	143	162	1410	308	599	309	142	60	25	81
8	35	304	130	259	801	419	514	699	129	58	26	60
9	34	297	123	490	605	2240	504	1300	115	59	48	49
10	33	192	126	455	503	3050	640	659	125	60	66	37
11	33	141	138	305	444	1300	582	444	142	67	88	30
12	32	113	147	239	454	613	485	379	143	66	68	27
13	32	101	142	215	478	510	429	367	136	58	53	25
14	33	134	131	218	421	456	399	334	127	53	44	24
15	41	252	124	278	370	415	390	292	136	49	40	23
16	66	229	119	825	342	385	374	265	154	53	50	22
17	74	150	116	1070	733	363	520	248	142	53	192	22
18	72	119	115	566	2700	660	1570	235	128	52	151	23
19	74	103	113	423	2780	3900	1620	217	134	52	81	38
20	90	96	111	392	770	9140	998	200	187	47	57	43
21	92	92	110	367	575	5310	901	197	180	44	46	41
22	79	254	111	315	486	4290	614	188	143	41	39	38
23	70	942	135	427	549	1990	530	182	126	38	36	45
24	61	443	158	1570	1150	790	485	200	164	36	33	47
25	60	259	181	2310	1040	635	443	217	151	35	30	39
26	66	195	226	787	602	562	397	223	123	39	28	35
27	123	168	246	532	498	518	362	252	106	45	28	33
28	165	148	467	1410	448	485	343	355	95	47	34	32
29	117	134	514	3300	---	451	330	314	96	46	33	31
30	86	136	377	2860	---	e423	317	246	101	43	31	30
31	72	---	301	777	---	e403	---	212	---	42	28	---
TOTAL	1952	5527	5626	21723	27719	41847	18721	10963	4202	1680	1555	1466
MEAN	63.0	184	181	701	990	1350	624	354	140	54.2	50.2	48.9
MAX	165	942	514	3300	3700	9140	1620	1300	190	90	192	284
MIN	32	65	110	159	342	308	317	182	95	35	25	22
CFSM	.20	.60	.59	2.27	3.20	4.37	2.02	1.14	.45	.18	.16	.16
IN.	.23	.67	.68	2.62	3.34	5.04	2.25	1.32	.51	.20	.19	.18

e Estimated.

CHOWAN RIVER BASIN

02044500 NOTTOWAY RIVER NEAR RAWLINGS, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 1998, BY WATER YEAR (WY)

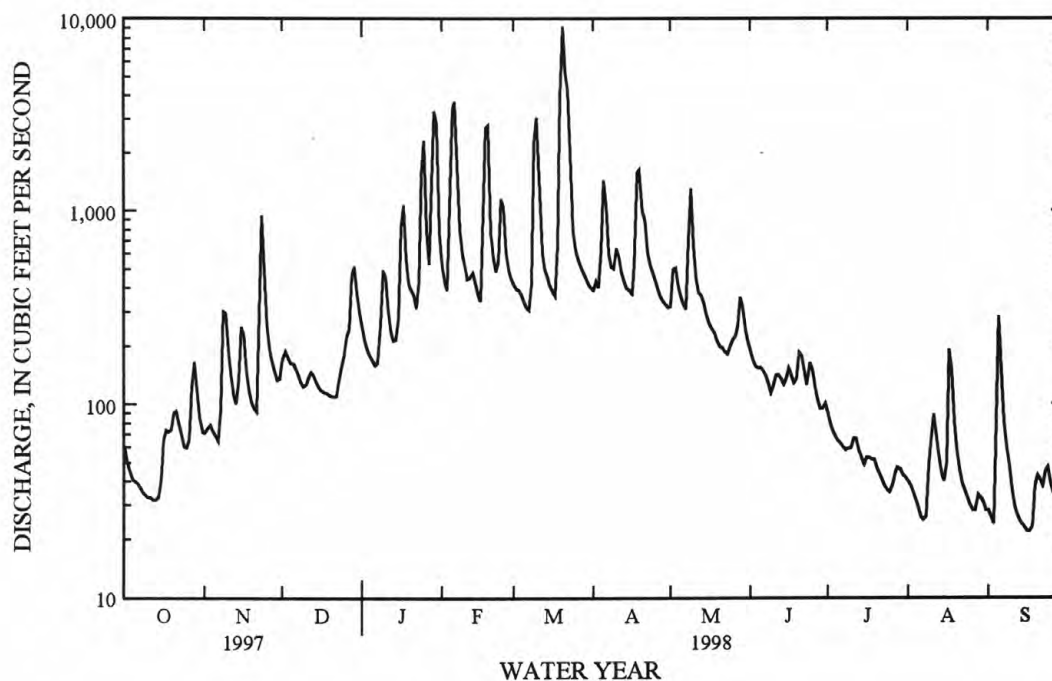
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	232	251	297	422	503	564	466	304	211	154	132	151
MAX	2024	1560	893	1289	1248	1350	1201	893	1359	965	650	1436
(WY)	1973	1986	1958	1978	1979	1998	1987	1958	1972	1975	1955	1979
MIN	13.0	50.5	65.0	95.0	123	126	124	98.3	55.8	25.2	8.60	3.62
(WY)	1964	1968	1966	1966	1968	1981	1966	1991	1964	1966	1963	1954

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1951 - 1998	
ANNUAL TOTAL	105621		142981		306	
ANNUAL MEAN	289		392		619	
HIGHEST ANNUAL MEAN					1973	
LOWEST ANNUAL MEAN					144	
HIGHEST DAILY MEAN	5660	Apr 30	9140	Mar 20	27400	Oct 6 1972
LOWEST DAILY MEAN	29	Sep 9	22	aSep 16	.40	Oct 14 1954
ANNUAL SEVEN-DAY MINIMUM	32	Sep 4	24	Sep 12	1.0	Oct 9 1954
INSTANTANEOUS PEAK FLOW			10100	Mar 20	29900	Oct 6 1972
INSTANTANEOUS PEAK STAGE			15.26	Mar 20	23.25	Oct 6 1972
INSTANTANEOUS LOW FLOW			22	bSep 16	.40	cOct 14 1954
ANNUAL RUNOFF (CFSM)	.94		1.27		.99	
ANNUAL RUNOFF (INCHES)	12.72		17.21		13.47	
10 PERCENT EXCEEDS	525		748		581	
50 PERCENT EXCEEDS	198		158		174	
90 PERCENT EXCEEDS	44		35		44	

a Also Sept. 17, 1998.

b Also Sept. 17, 18, 1998.

c Also Oct. 15, 1954.



CHOWAN RIVER BASIN

02045500 NOTTOWAY RIVER NEAR STONY CREEK, VA

LOCATION.--Lat 36°54'00", long 77°24'00", Sussex County, Hydrologic Unit 03010201, on left bank 15 ft downstream from bridge on U.S. Highway 301, 1.8 mi upstream from Island Swamp, 3.3 mi south of town of Stony Creek, and 4.4 mi upstream from Stony Creek.

DRAINAGE AREA.--579 mi².

PERIOD OF RECORD.--October 1929 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 802: 1935(M). WSP 972: 1931(M), 1932, 1934-35, 1939. WSP 2104: Drainage area. WDR VA-74-1: 1972.

GAGE.--Water-stage recorder. Datum of gage is 58.42 ft above sea level. Prior to Oct. 11, 1934, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Dec. 4-9, Mar. 31, and July 15 to Sept. 1, which are fair. Diurnal fluctuation at low flow caused by Baskerville Mill, 33 mi upstream. Maximum discharge, 25,200 ft³/s, from rating curve extended above 13,000 ft³/s. Minimum gage height, 0.62 ft, Sept. 2, 5, 1932. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 29	1530	5,540	15.81	Mar. 10	1500	7,110	16.90
Feb. 6	0200	6,400	16.43	Mar. 22	0645	*12,100	*19.28
Feb. 20	0830	3,830	14.04				

Minimum discharge, 30 ft³/s, Oct. 14, 15, Sept. 17, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	80	117	318	495	1970	754	693	438	338	151	e63	e39
2	76	122	387	396	1030	706	717	509	279	135	e59	47
3	66	132	343	339	864	671	735	760	238	120	e54	43
4	57	133	e300	305	2150	635	1210	692	226	112	e49	70
5	51	120	e280	279	5440	585	2370	584	213	107	e46	174
6	46	111	e270	261	6290	534	2430	492	210	101	e43	415
7	43	135	e240	249	6090	509	1430	428	206	96	e41	240
8	41	241	e220	340	3980	843	969	1420	192	90	e45	151
9	40	511	e200	1080	1530	3980	867	2690	178	86	e61	108
10	39	413	191	1050	1060	6860	986	2160	174	86	e80	84
11	37	285	207	731	887	6340	1070	1090	189	85	e110	67
12	35	212	232	499	870	3310	874	785	213	86	e130	53
13	34	179	225	402	874	1200	729	714	211	94	e100	44
14	32	255	212	379	804	933	647	660	194	82	e70	38
15	35	396	194	419	694	817	621	577	187	e73	e57	37
16	43	443	182	1580	624	725	593	499	221	e80	e94	33
17	66	348	175	2370	1070	667	732	443	248	e85	e130	31
18	94	242	169	1780	3010	1850	1790	406	206	e82	e175	32
19	101	192	166	966	3550	4020	2490	367	239	e80	e145	36
20	112	167	163	816	3590	7530	2480	328	453	e77	e105	33
21	131	157	160	725	1440	10100	1840	303	353	e70	e73	57
22	130	247	162	619	948	11700	1310	291	274	e64	e61	60
23	117	853	185	702	970	8900	985	271	211	e59	e55	53
24	103	1180	226	2480	2090	5790	852	272	404	e57	e47	47
25	92	552	275	3090	2270	1950	747	306	384	e55	e45	53
26	88	356	344	3030	1450	1230	645	342	270	e56	e43	51
27	107	280	385	1320	977	1070	566	412	204	e74	e44	44
28	183	238	637	3220	831	971	510	489	169	e80	e50	39
29	215	207	910	5330	---	894	473	533	156	e87	e55	35
30	164	204	840	5190	---	819	453	444	152	e73	e59	32
31	129	---	657	4660	---	e732	---	400	---	e69	e45	---
TOTAL	2587	9028	9455	45102	57353	87625	32814	20105	7192	2652	2234	2246
MEAN	83.5	301	305	1455	2048	2827	1094	649	240	85.5	72.1	74.9
MAX	215	1180	910	5330	6290	11700	2490	2690	453	151	175	415
MIN	32	111	160	249	624	509	453	271	152	55	41	31
CFSM	.14	.52	.53	2.51	3.54	4.88	1.89	1.12	.41	.15	.12	.13
IN.	.17	.58	.61	2.90	3.68	5.63	2.11	1.29	.46	.17	.14	.14

e Estimated.

CHOWAN RIVER BASIN

02045500 NOTTOWAY RIVER NEAR STONY CREEK, VA --Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 1998, BY WATER YEAR (WY)

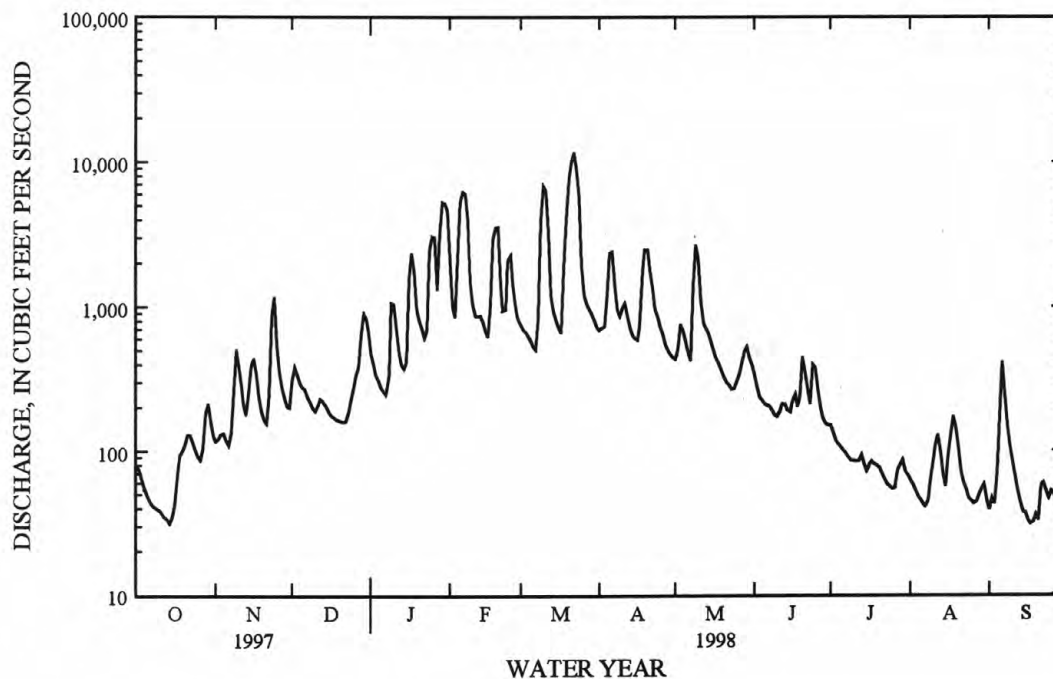
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	313	410	521	831	948	1047	860	540	334	352	304	269
MAX	2666	2800	1783	2578	2355	2827	2261	1878	1612	2423	3057	2191
(WY)	1973	1986	1958	1936	1979	1998	1987	1958	1938	1938	1940	1979
MIN	14.0	43.1	65.7	109	176	196	192	129	74.6	46.6	14.9	9.40
(WY)	1931	1942	1966	1966	1931	1981	1966	1942	1942	1966	1963	1932

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1931 - 1998	
ANNUAL TOTAL	189255		278393			
ANNUAL MEAN	519		763			
HIGHEST ANNUAL MEAN					1100	1973
LOWEST ANNUAL MEAN					191	1942
HIGHEST DAILY MEAN	7000	May 2	11700	Mar 22	24000	Aug 17 1940
LOWEST DAILY MEAN	30	aSep .2	31	Sep 17	4.3	Aug 15 1977
ANNUAL SEVEN-DAY MINIMUM	32	Sep 5	34	Sep 14	6.0	Aug 30 1932
INSTANTANEOUS PEAK FLOW			12100	Mar 22	25200	Aug 17 1940
INSTANTANEOUS PEAK STAGE			19.28	Mar 22	23.66	Aug 17 1940
INSTANTANEOUS LOW FLOW			30	bOct 14	3.4	cAug 15 1977
ANNUAL RUNOFF (CFSM)	.90		1.32		.97	
ANNUAL RUNOFF (INCHES)	12.16		17.89		13.11	
10 PERCENT EXCEEDS	1050		1890		1170	
50 PERCENT EXCEEDS	280		261		303	
90 PERCENT EXCEEDS	51		48		61	

a Also Sept. 7, 8, 10, 1997.

b Also Oct. 15, 1997 and Sept. 17, 30, 1998.

c Also Aug. 16, 1977.



CHOWAN RIVER BASIN

02046000 STONY CREEK NEAR DINWIDDIE, VA

LOCATION.--Lat 37°04'01", long 77°36'10", Dinwiddie County, Hydrologic Unit 03010201, on right bank at upstream side of upstream bridge on U.S. Highway 1, 1.2 mi southwest of Dinwiddie, 1.7 mi downstream from Chamberlains Bed Creek, and 5.7 mi downstream from confluence of White Oak and Butterwood Creeks.

DRAINAGE AREA.--112 mi².

PERIOD OF RECORD.--September 1946 to current year. Published as "at Dinwiddie" September 1946 to September 1947 and October 1949 to September 1950.

REVISED RECORDS.--WSP 1303: 1947(M). WSP 1433: 1951(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 129.94 ft above sea level. Prior to June 12, 1957, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Dec. 25 to Feb. 9, and Mar. 19-22, which are fair. Maximum discharge, 11,400 ft³/s, from rating curve extended above 5,800 ft³/s on basis of contracted-opening measurement of peak flow. No flow part of Oct. 13, 1954. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 29	Unknown	Unknown	Unknown	Mar. 20	Unknown	*4,010	a*13.13
Feb. 6	Unknown	Unknown	Unknown	Mar. 22	Unknown	Unknown	Unknown
Mar. 9	2230	1,940	9.88				

a From high-water mark in well.

Minimum discharge, 0.74 ft³/s, Sept. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	2.1	67	e85	e220	148	118	81	56	16	2.8	1.2
2	1.6	2.8	59	e72	e185	138	126	117	43	13	2.6	1.1
3	1.6	2.8	47	e65	e160	128	120	170	36	11	2.4	1.0
4	1.5	2.4	41	e60	e355	114	442	138	33	11	2.2	4.3
5	1.4	2.1	40	e57	e1100	105	619	114	31	10	2.1	7.0
6	1.3	1.9	34	e53	e1250	98	389	92	30	9.0	1.9	7.7
7	1.2	41	29	e50	e590	96	232	80	27	8.0	1.8	5.9
8	1.1	75	26	e115	e330	206	175	556	25	7.5	1.9	4.7
9	1.0	58	26	e185	e265	1050	181	1060	23	7.5	2.4	3.4
10	1.1	51	27	e160	198	1600	265	522	28	7.3	2.5	2.5
11	.98	32	31	e105	168	690	215	240	30	6.7	2.4	1.9
12	1.0	24	30	e80	183	310	155	168	30	6.1	2.1	1.5
13	.94	21	28	e70	171	218	126	150	29	5.8	2.2	1.2
14	.97	78	27	e76	146	184	113	132	27	5.3	2.2	1.0
15	1.7	90	25	e130	122	158	110	109	35	4.9	1.9	.95
16	1.8	57	23	e315	111	137	101	91	37	5.2	2.0	.88
17	2.1	38	23	e390	423	125	290	81	31	6.2	2.2	.80
18	2.2	29	21	e185	861	564	834	72	25	6.8	3.2	1.1
19	2.6	25	21	e150	656	e1350	569	63	94	6.1	2.4	1.2
20	3.2	22	21	e130	337	e3700	692	55	136	5.5	2.2	1.1
21	2.9	20	20	e120	227	e1650	527	52	91	4.8	1.9	1.2
22	2.4	97	21	e100	172	e1850	274	44	58	4.3	1.6	1.6
23	2.1	119	31	e250	348	744	219	42	47	4.6	1.4	1.6
24	1.7	82	38	e520	726	412	182	47	170	7.8	1.2	1.9
25	1.7	57	e40	e730	486	291	146	49	92	5.7	1.1	2.5
26	2.2	44	e55	e300	275	234	121	46	72	4.8	1.1	2.4
27	5.1	37	e90	e200	200	198	104	79	40	4.3	1.4	2.3
28	4.2	30	e135	e510	167	174	95	143	27	4.0	2.0	2.1
29	3.1	27	e170	e980	---	156	87	105	22	3.7	1.7	1.9
30	2.4	30	e130	e850	---	139	82	79	19	3.4	1.7	1.6
31	2.1	---	e100	e460	---	124	---	96	---	3.1	1.4	---
TOTAL	60.89	1198.1	1476	7553	10432	17091	7709	4873	1444	209.4	61.9	69.53
MEAN	1.96	39.9	47.6	244	373	551	257	157	48.1	6.75	2.00	2.32
MAX	5.1	119	170	980	1250	3700	834	1060	170	16	3.2	7.7
MIN	.94	1.9	20	50	111	96	82	42	19	3.1	1.1	.80
CFSM	.02	.36	.43	2.18	3.33	4.92	2.29	1.40	.43	.06	.02	.02
IN.	.02	.40	.49	2.51	3.46	5.68	2.56	1.62	.48	.07	.02	.02

e Estimated.

CHOWAN RIVER BASIN

02046000 STONY CREEK NEAR DINWIDDIE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	69.7	88.6	108	168	200	220	165	96.3	59.7	47.9	46.0	52.8
MAX	554	510	426	549	541	551	377	351	156	560	288	774
(WY)	1973	1986	1958	1978	1979	1998	1952	1958	1981	1975	1955	1979
MIN	.12	2.99	5.68	15.5	37.5	27.7	27.0	20.9	14.1	2.62	.97	.18
(WY)	1955	1966	1966	1966	1968	1981	1966	1991	1994	1986	1963	1954

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1947 - 1998

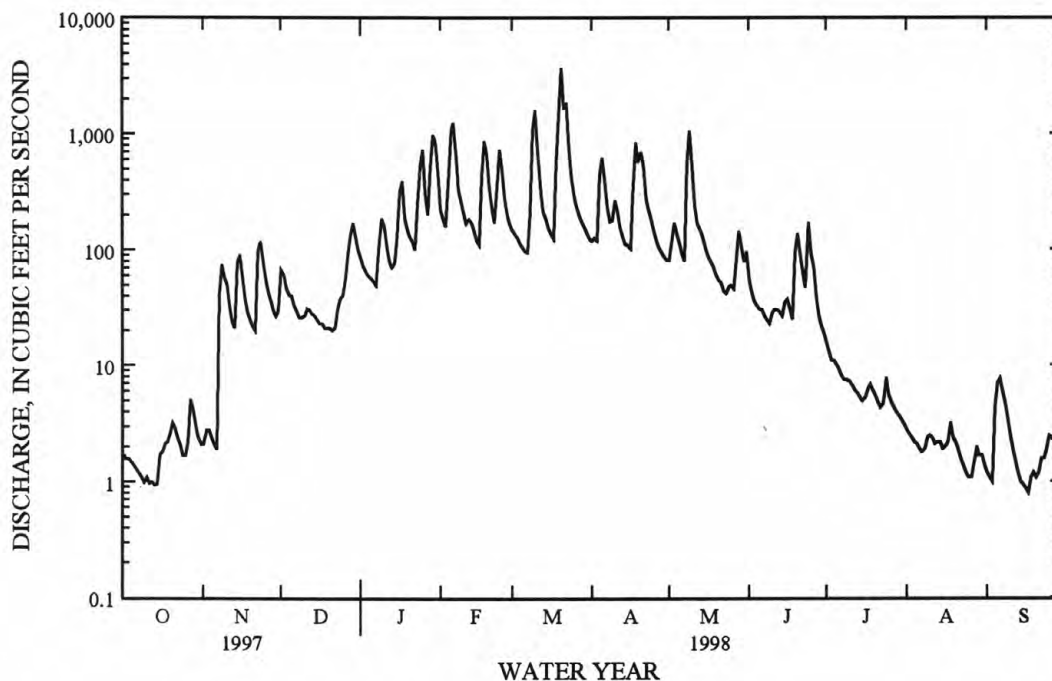
ANNUAL TOTAL	34550.43	52177.82	110
ANNUAL MEAN	94.7	143	231
HIGHEST ANNUAL MEAN			34.1
LOWEST ANNUAL MEAN			7050
HIGHEST DAILY MEAN	1990 Apr 29	e3700 Mar 20	Oct 6 1972
LOWEST DAILY MEAN	.82 Sep 8	.80 Sep 17	e.04 aOct 7 1993
ANNUAL SEVEN-DAY MINIMUM	.92 Sep 4	1.0 Sep 14	e.05 bOct 6 1993
INSTANTANEOUS PEAK FLOW		4010 Mar 20	11400 Oct 6 1972
INSTANTANEOUS PEAK STAGE		13.13 Mar 20	20.84 Oct 6 1972
INSTANTANEOUS LOW FLOW		.74 Sep 17	c.00 Oct 13 1954
ANNUAL RUNOFF (CFSM)	.85	1.28	.98
ANNUAL RUNOFF (INCHES)	11.48	17.33	13.30
10 PERCENT EXCEEDS	215	351	244
50 PERCENT EXCEEDS	39	41	49
90 PERCENT EXCEEDS	1.6	1.7	5.3

a Also Oct. 8, 9, 1993.

b Also Oct. 7, 8, 1998.

c Observed.

e Estimated.



CHOWAN RIVER BASIN

02047000 NOTTOWAY RIVER NEAR SEBRELL, VA

LOCATION.--Lat 36°46'13", long 77°09'59", Southampton County, Hydrologic Unit 03010201, on right bank at bridge on State Highway 653, 1 mi downstream from Three Creek, 2.5 mi southwest of Sebrell, and 5.5 mi upstream from Assamoosick Swamp.

DRAINAGE AREA.--1,421 mi².

PERIOD OF RECORD.--September 1941 to current year.

REVISED RECORDS.--WSP 1333: 1942, 1944, 1948-49. WSP 2104: Drainage area. WDR-91-1: 1982(m).

GAGE.--Water-stage recorder. Datum of gage is 5.94 ft above sea level. Prior to Aug. 23, 1950, nonrecording gage on right bank at site 1,000 ft upstream at same datum. Aug. 23, 1950 to Oct. 1, 1996, water-stage recorder at above site and datum. Nonrecording gage Oct. 1, 1996 to Apr. 9, 1997 at present site and datum. Apr. 9, 1997 to current year, water-stage recorder at present site and datum.

REMARKS.--Records good except those for period of no gage-height record, May 3-7, which is fair. Maximum discharge, 26,000 ft³/s, from rating curve extended above 25,000 ft³/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16,000 ft³/s, Mar. 24, gage height, 21.31 ft; minimum, 52 ft³/s, Oct. 14, 15, 17, gage height, 2.98 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	79	250	746	1830	10500	3840	2260	1120	872	251	100	62
2	90	209	864	1560	10400	3130	1980	1070	777	236	109	65
3	93	188	1000	1300	9250	2440	1820	e1150	567	221	107	66
4	92	191	992	1140	7870	2050	1900	e1360	488	199	93	83
5	85	204	949	1020	7650	1820	2340	e1550	436	188	85	105
6	78	201	894	933	8120	1640	2950	e1500	403	177	81	122
7	73	219	845	881	9300	1510	3510	e1360	381	165	79	279
8	69	321	789	877	11100	1500	4020	1250	354	156	75	328
9	65	469	734	1050	11400	2620	4220	1810	328	148	72	238
10	61	801	684	1620	10300	4160	3760	2460	313	138	74	176
11	60	905	664	2110	8480	6170	3030	3010	301	130	72	137
12	57	818	673	2130	6430	9360	2630	3560	301	126	68	114
13	55	686	697	1690	4710	11000	2390	3980	319	123	92	97
14	53	622	687	1370	3730	10400	2050	3630	326	121	127	83
15	52	727	651	1250	3100	8240	1740	2740	321	123	119	73
16	53	916	604	1500	2630	5710	1560	1960	315	122	104	66
17	52	940	571	2360	2440	3930	1470	1460	329	208	109	62
18	56	883	564	3110	3000	3320	1610	1170	361	241	164	60
19	84	750	542	3720	3660	4350	2140	971	355	163	115	56
20	124	638	512	4190	4200	7140	2750	828	388	165	206	55
21	136	556	484	4140	4900	9780	3320	702	684	128	182	54
22	158	550	471	3510	5580	12700	3900	609	744	113	134	56
23	181	643	509	2830	5550	15300	4270	551	554	104	106	63
24	175	1040	563	2680	4720	15900	4170	511	493	103	90	74
25	163	1490	668	3070	4020	14700	3640	480	512	98	79	70
26	145	1310	764	3590	3890	12300	2860	492	706	94	72	65
27	138	982	878	4230	4050	9590	2180	529	524	91	73	66
28	130	805	1060	5780	4170	6880	1720	601	403	90	77	67
29	168	714	1350	7530	---	4690	1420	727	329	89	70	63
30	286	662	1740	8290	---	3520	1230	873	279	93	69	60
31	294	---	1930	9250	---	2760	---	858	---	102	64	---
TOTAL	3405	19690	25079	90541	175150	202450	78840	44872	13463	4506	3067	2965
MEAN	110	656	809	2921	6255	6531	2628	1447	449	145	98.9	98.8
MAX	294	1490	1930	9250	11400	15900	4270	3980	872	251	206	328
MIN	52	188	471	877	2440	1500	1230	480	279	89	64	54
CFSM	.08	.46	.57	2.06	4.40	4.60	1.85	1.02	.32	.10	.07	.07
IN.	.09	.52	.66	2.37	4.59	5.30	2.06	1.17	.35	.12	.08	.08

e Estimated.

CHOWAN RIVER BASIN

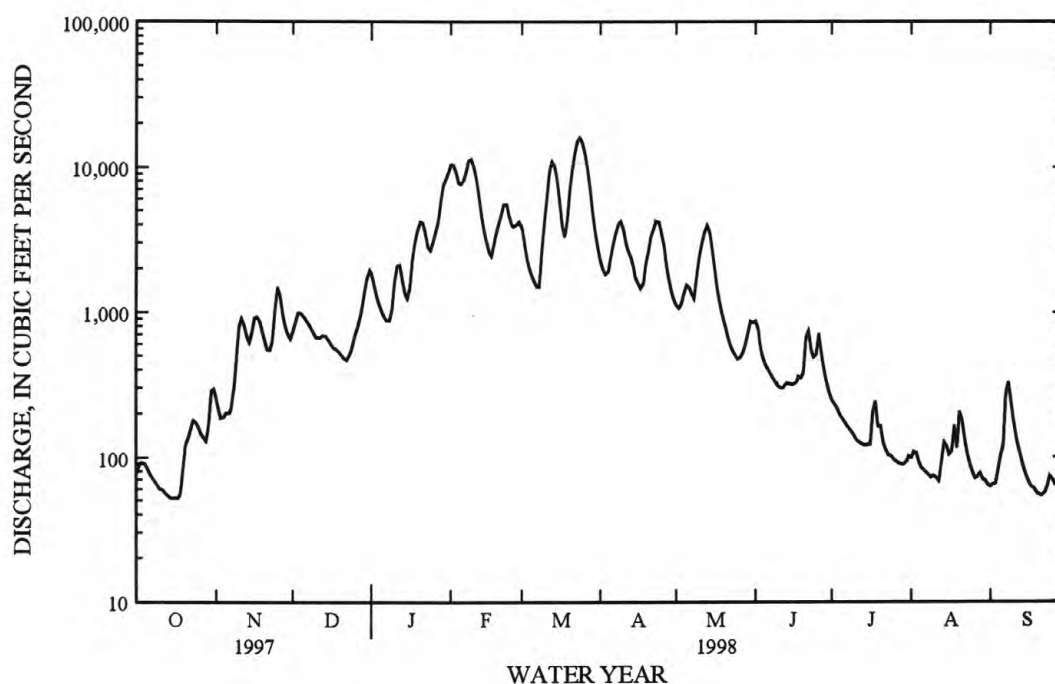
02047000 NOTTOWAY RIVER NEAR SEBRELL, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	656	877	1340	2074	2527	2826	2099	1338	766	729	625	534
MAX	4491	4854	4310	6115	6255	6531	5127	5180	2246	5782	2831	4631
(WY)	1973	1986	1958	1978	1998	1998	1987	1978	1972	1975	1955	1979
MIN	27.4	59.5	98.8	196	516	389	427	300	131	48.9	43.3	27.8
(WY)	1955	1942	1966	1966	1981	1981	1966	1942	1942	1966	1963	1954

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1941 - 1998	
ANNUAL TOTAL	448897		664028		1360	
ANNUAL MEAN	1230		1819		2671	
HIGHEST ANNUAL MEAN					1978	
LOWEST ANNUAL MEAN					1981	
HIGHEST DAILY MEAN	9400	May 4	15900	Mar 24	25500	Jul 19 1975
LOWEST DAILY MEAN	52	Oct 15	52	Oct 15	14	Oct 14 1954
ANNUAL SEVEN-DAY MINIMUM	54	Oct 12	54	Oct 12	15	Oct 8 1954
INSTANTANEOUS PEAK FLOW			16000	Mar 24	26000	Jul 19 1975
INSTANTANEOUS PEAK STAGE			21.31	Mar 24	24.43	Jul 19 1975
INSTANTANEOUS LOW FLOW			52	aOct 14	b12	Oct 23 1941
ANNUAL RUNOFF (CFSM)	.87		1.28		.96	
ANNUAL RUNOFF (INCHES)	11.75		17.38		13.01	
10 PERCENT EXCEEDS	2710		4700		3380	
50 PERCENT EXCEEDS	714		673		742	
90 PERCENT EXCEEDS	78		73		102	

a Also Oct. 15, 17, 1997.
b Observed.



CHOWAN RIVER BASIN

02047500 BLACKWATER RIVER NEAR DENDRON, VA

LOCATION.--Lat 37°01'30", long 76°52'30", Surry County, Hydrologic Unit 03010202, on left bank 10 ft upstream from Walls Bridge on State Highway 617, 1.2 mi downstream from Cypress Swamp, and 3.5 mi southeast of Dendron.

DRAINAGE AREA.--294 mi².

PERIOD OF RECORD.--October 1941 to December 1986, July 1988 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 30.99 ft above sea level (U.S. Army Corps of Engineers bench mark). Prior to Aug. 13, 1980, at site 25 ft upstream at same datum.

REMARKS.--Records good except those for periods of no gage-height record, Nov. 19 to Dec. 8, Feb. 10-17, Feb. 24 to Mar. 16, and May 30 to June 4, which are fair. Maximum discharge, 5,850 ft³/s, from rating curve extended above 4,900 ft³/s. No flow at times most years. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 13.1 ft, from U.S. Army Corps of Engineers floodmarks, discharge, 10,000 ft³/s, from rating curve extended above 4,900 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,030 ft³/s, Feb. 6, gage height, 7.81 ft; no flow part or all of each day Oct. 1 to Nov. 4, Aug. 8 to Sept. 2, and Sept. 20-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	e255	511	3250	e810	530	313	e235	3.6	16	.00
2	.00	.00	e300	504	2580	e710	479	295	e190	1.7	6.1	.00
3	.00	.00	e345	474	1880	e620	432	265	e160	1.8	2.0	1.5
4	.00	1.8	e320	439	1740	e530	531	268	e140	.75	.48	21
5	.00	18	e305	398	3030	e480	784	248	99	3.6	.09	41
6	.00	26	e288	363	3910	e440	993	223	78	3.2	.04	44
7	.00	51	e269	329	3390	e400	992	203	62	1.7	.02	47
8	.00	137	e263	303	3200	e575	986	275	51	.82	.00	36
9	.00	420	251	334	2790	e850	1040	588	44	.62	.00	25
10	.00	626	247	395	e2200	e1400	1000	790	50	7.4	.00	15
11	.00	527	247	428	e1770	e1800	852	778	49	7.0	.00	8.5
12	.00	441	230	399	e1500	e2300	715	713	50	3.9	.00	5.2
13	.00	331	211	365	e1200	e2050	596	844	46	1.5	.00	2.8
14	.00	304	197	348	e980	e1700	532	932	42	.32	.00	1.3
15	.00	284	188	379	e800	e1350	503	865	51	.09	.00	.37
16	.00	273	177	623	e940	e1050	435	721	55	16	.00	.12
17	.00	311	164	903	e1100	855	404	574	54	48	.00	.07
18	.00	355	152	1090	1250	1090	412	455	46	30	.00	.04
19	.00	e310	142	1030	1470	1950	494	357	42	8.5	.00	.02
20	.00	e270	134	934	1400	2990	608	288	42	3.5	.00	.00
21	.00	e240	127	852	1180	3140	675	233	33	.81	.00	.00
22	.00	e309	127	834	1100	3200	756	186	26	.11	.00	.00
23	.00	e425	141	849	1090	3200	764	154	21	3.0	.00	.00
24	.00	e560	145	949	e1050	2680	716	130	16	15	.00	.00
25	.00	e500	161	991	e1000	2050	672	106	22	8.1	.00	.00
26	.00	e445	170	1020	e950	1620	611	88	34	4.5	.00	.00
27	.00	e360	198	989	e890	1300	538	91	22	2.4	.00	.00
28	.00	e305	276	1560	e860	1070	474	112	13	.58	.00	.00
29	.00	e255	336	3130	---	879	407	134	9.7	.10	.00	.00
30	.00	e225	442	3470	---	726	348	e195	6.5	1.2	.00	.00
31	.00	---	503	3360	---	616	---	e290	---	25	.00	---
TOTAL	0.00	8309.80	7311	28553	48500	44431	19279	11714	1789.2	204.80	24.73	248.92
MEAN	.000	.277	.236	.921	1732	1433	643	378	59.6	6.61	.80	8.30
MAX	.00	626	503	3470	3910	3200	1040	932	235	48	16	47
MIN	.00	.00	127	303	800	400	348	88	6.5	.09	.00	.00
CFSM	.00	.94	.80	3.13	5.89	4.88	2.19	1.29	.20	.02	.00	.03
IN.	.00	1.05	.93	3.61	6.14	5.62	2.44	1.48	.23	.03	.00	.03

e Estimated.

CHOWAN RIVER BASIN

02047500 BLACKWATER RIVER NEAR DENDRON, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1986, 1989 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	151	207	318	499	584	662	456	265	145	141	168	138
MAX	1128	1108	1240	1473	1732	1501	1271	879	988	1364	912	1329
(WY)	1973	1980	1958	1978	1998	1975	1989	1958	1963	1945	1969	1979
MIN	.000	.000	2.65	21.1	70.8	79.5	87.2	25.8	2.62	.32	.000	.000
(WY)	(a)	(b)	1981	1981	1942	1981	1981	1991	1944	1957	(c)	(d)

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1942 - 1986
1989 - 1998

ANNUAL TOTAL	99439.52	170365.45	
ANNUAL MEAN	272	467	311
HIGHEST ANNUAL MEAN			622
LOWEST ANNUAL MEAN			57.5
HIGHEST DAILY MEAN	1950	May 3	3910
LOWEST DAILY MEAN	.00	fJul 1	.00
ANNUAL SEVEN-DAY MINIMUM	.00	jJul 1	.00
INSTANTANEOUS PEAK FLOW			4030
INSTANTANEOUS PEAK STAGE			7.81
INSTANTANEOUS LOW FLOW			.00
ANNUAL RUNOFF (CFSM)	.93		1.59
ANNUAL RUNOFF (INCHES)	12.58		21.56
10 PERCENT EXCEEDS	620		1130
50 PERCENT EXCEEDS	164		198
90 PERCENT EXCEEDS	.00		.00

a Monthly mean flow is 0.0 ft³/s in 1955, 1969, 1981, 1984, 1994, 1998.

b Monthly mean flow is 0.0 ft³/s in 1955, 1981.

c Monthly mean flow is 0.0 ft³/s in 1976, 1980, 1993.

d Monthly mean flow is 0.0 ft³/s in 1944, 1954, 1980, 1983, 1993, 1995, 1997.

f Also July 2-16, Aug. 28 to Nov. 3, 1997.

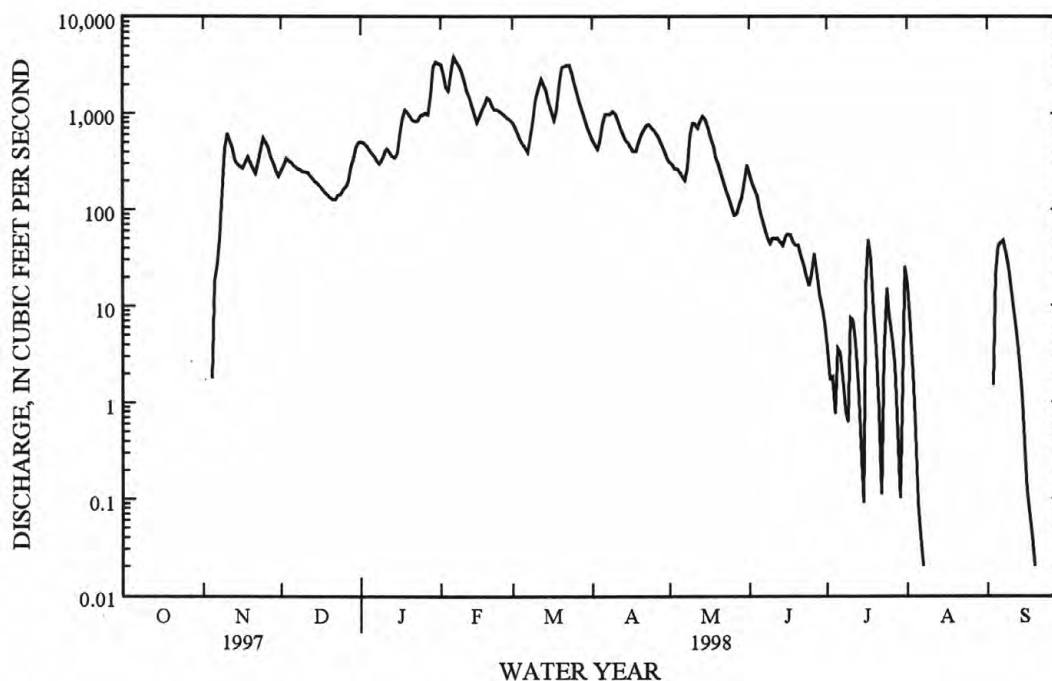
g Also Oct. 2 to Nov. 3, 1997, Aug. 8 to Sept. 2, Sept. 20-30, 1998.

h No flow at times most years.

j Also July 2-10, Aug. 28 to Oct. 28, 1997.

k Also Oct. 2-28, 1997, Aug. 8-27, Sept. 20-24, 1998.

m No flow part or all of each day Oct. 1 to Nov. 3, 1997, Aug. 8 to Sept. 2, Sept. 20-30, 1998.



CHOWAN RIVER BASIN

02049500 BLACKWATER RIVER NEAR FRANKLIN, VA

LOCATION.--Lat 36°45'45", long 76°53'55", Southampton County, Hydrologic Unit 03010202, on right bank 0.4 mi south of Burdette, 0.5 mi upstream from Black Creek, 3.3 mi downstream from Corrowaugh Swamp, and 6.0 mi north of Franklin.

DRAINAGE AREA.--617 mi².

PERIOD OF RECORD.--August 1944 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1.56 ft above sea level.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Nov. 9-14, 24, 25, Feb. 6, 7, and Apr. 28, 29, which are fair, and for periods of tidal effect below 15 ft³/s, which are poor. Low flow reversed by tide some years. Diversion upstream from station by city of Norfolk for municipal water supply most years. Maximum discharge, 9,420 ft³/s, from rating curve extended above 9,400 ft³/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of about 22 ft, discharge, 21,000 ft³/s, from rating curve extended above 9,400 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,250 ft³/s, Feb. 7, gage height, 15.27 ft; minimum daily, 0.80 ft³/s, Oct. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e2.4	10	488	981	4750	1640	1100	529	146	11	12	9.2
2	e2.3	12	570	963	4460	1500	926	480	132	9.7	11	49
3	e2.2	13	659	929	4110	1380	803	437	119	9.0	12	92
4	e2.1	12	724	878	4160	1270	794	432	122	7.7	14	89
5	e2.0	12	714	820	5890	1170	992	443	127	24	15	169
6	e1.9	13	663	763	e6970	1060	1210	436	131	23	15	170
7	e1.8	26	606	710	e7150	956	1380	409	124	15	8.3	104
8	e1.7	49	556	680	6640	912	1440	404	101	11	4.8	66
9	e1.6	e70	514	699	5820	1250	1410	617	72	8.5	3.2	48
10	e1.5	e115	486	677	5010	2050	1320	727	54	6.8	2.9	38
11	e1.4	e210	481	632	4300	2370	1240	784	43	5.5	2.7	33
12	e1.3	e360	472	597	3670	2400	1180	831	38	4.5	2.2	29
13	e1.2	e560	457	605	3100	2390	1110	886	35	3.4	1.9	25
14	e1.1	e720	442	633	2630	2460	979	878	33	2.8	1.8	21
15	e1.0	762	420	648	2260	2560	843	829	33	2.8	1.9	18
16	e.90	726	396	817	2000	2490	738	818	35	4.2	3.1	16
17	e.80	669	369	1350	1910	2250	662	829	33	13	3.9	13
18	e3.5	599	346	1800	2240	2110	628	825	31	139	3.3	11
19	e7.1	531	318	1990	2520	2620	620	754	34	128	1.9	9.4
20	11	479	289	2030	2610	3980	671	670	38	43	1.2	8.2
21	5.4	442	265	1960	2500	4860	738	571	36	28	.96	7.7
22	5.9	445	249	1820	2300	5210	795	462	33	20	e.90	6.9
23	6.4	472	281	1700	2100	5120	831	370	30	16	e.87	6.2
24	5.2	e496	333	1760	2000	4830	830	305	26	14	e.85	6.2
25	7.3	e510	407	1900	1950	4460	823	255	23	12	e.83	7.4
26	6.4	494	451	2000	1910	3930	804	223	20	11	e2.0	7.7
27	7.7	473	489	2010	1850	3160	761	201	17	10	16	7.3
28	7.8	450	626	2450	1750	2500	e720	197	14	11	31	7.1
29	7.0	421	751	3540	---	2010	e640	186	12	11	21	7.6
30	7.1	406	887	4470	---	1640	589	181	11	12	13	6.9
31	7.0	---	964	4840	---	1350	---	164	---	12	9.4	---
TOTAL	122.00	10557	15673	47652	98560	77888	27577	16133	1703	628.9	218.91	1088.8
MEAN	3.94	352	506	1537	3520	2513	919	520	56.8	20.3	7.06	36.3
MAX	11	762	964	4840	7150	5210	1440	886	146	139	31	170
MIN	.80	10	249	597	1750	912	589	164	11	2.8	.83	6.2
(+)	1.14	29.2	29.5	19.9	0	0	.03	0	0	0	0	0
MEAN†	5.08	380	536	1557	3520	2513	919	520	56.8	20.3	7.06	36.3
CFSM†	.01	.62	.87	2.52	5.70	4.07	1.49	.84	.09	.03	.01	.06
IN.†	.01	.69	1.00	2.91	5.94	4.70	1.66	.97	.10	.04	.01	.07

CAL YR 1997 TOTAL 183451.33 MEAN 503 MAX 2650 MIN .77 MEAN‡ 514 CFSM‡ .83 IN.‡ 11.31
WTR YR 1998 TOTAL 297801.61 MEAN 816 MAX 7150 MIN .80 MEAN‡ 823 CFSM‡ 1.33 IN.‡ 18.11

† Average daily diversion, in cubic feet per second, by city of Norfolk.

‡ Adjusted for diversion.

e Estimated

CHOWAN RIVER BASIN

02049500 BLACKWATER RIVER NEAR FRANKLIN, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 1998, BY WATER YEAR (WY) [UNADJUSTED]

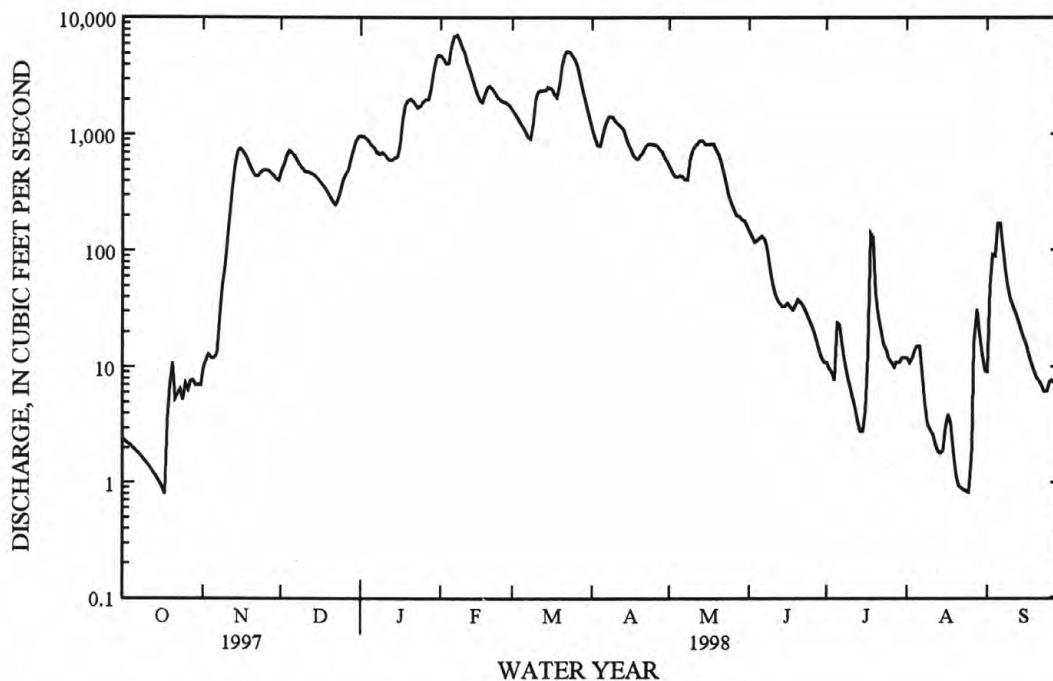
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	291	373	634	1011	1206	1298	918	562	345	294	353	279
MAX	1795	1713	2082	2271	3520	2915	2783	1890	1925	2003	1481	2490
(WY)	1973	1980	1958	1978	1998	1989	1989	1958	1963	1945	1969	1960
MIN	.94	1.69	2.12	12.5	152	158	107	51.4	15.0	3.02	2.08	2.16
(WY)	1988	1981	1981	1981	1981	1981	1995	1985	1986	1986	1995	1995

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1944 - 1998
ANNUAL TOTAL	183451.33	297801.61	
ANNUAL MEAN	503	816	628
HIGHEST ANNUAL MEAN			1155
LOWEST ANNUAL MEAN			133
HIGHEST DAILY MEAN	2650 May 3	7150 Feb 7	9420 Sep 14 1960
LOWEST DAILY MEAN	.77 Jul 15	e.80 Oct 17	.07 Oct 16 1981
ANNUAL SEVEN-DAY MINIMUM	1.1 Oct 11	1.1 Aug 19	.26 Oct 10 1987
INSTANTANEOUS PEAK FLOW		7250 Feb 7	9420 Sep 14 1960
INSTANTANEOUS PEAK STAGE		a15.27 Feb 7	a17.14 Sep 14 1960
INSTANTANEOUS LOW FLOW		(b)	(b)
ANNUAL RUNOFF (CFSM)	.81	1.32	1.02
ANNUAL RUNOFF (INCHES)	11.06	17.95	13.83
10 PERCENT EXCEEDS	1210	2380	1640
50 PERCENT EXCEEDS	342	396	375
90 PERCENT EXCEEDS	2.0	3.4	8.2

a From floodmarks.

b Not determined, tidally affected most years during periods of extreme low flows; minimum measured flow, 2.4 ft³/s (reverse flow), Sept. 17, 1952.

e Estimated.



CHOWAN RIVER BASIN

02051000 NORTH MEHERRIN RIVER NEAR LUNENBURG, VA

LOCATION.--Lat 36°59'53", long 78°21'03", Lunenburg County, Hydrologic Unit 03010204, on right bank at upstream side of bridge on State Highway 40, 0.5 mi downstream from Tusekiah Creek, 4.6 mi upstream from Juniper Creek, and 5.2 mi northwest of Lunenburg.

DRAINAGE AREA.--55.6 mi².

PERIOD OF RECORD.--August 1946 to September 1980, October 1981 to current year.

REVISED RECORDS.--WSP 1303: 1947(M), 1949(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 333.7 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to July 5, 1951, nonrecording gage at same site and datum. July 5, 1951, to July 11, 1980, water-stage recorder at site 20 ft downstream at same datum.

REMARKS.--Records good except those for periods of doubtful or no gage height record, Jan. 15-17, 23-25, 27-29, Feb. 4, 5, and Apr. 16 to May 20, which are fair. Maximum discharge, 14,400 ft³/s, from rating curve extended above 2,320 ft³/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 48 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 4	Unknown	Unknown	Unknown	Mar. 19	0930	*4,240	*19.34
Feb. 17	1400	2,450	13.45	Mar. 21	0400	3,170	16.06

Minimum discharge, 0.53 ft³/s, Sept. 16-18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.7	7.5	33	29	50	45	40	e37	18	8.4	2.9	1.9
2	2.8	11	24	25	42	43	42	e67	17	7.2	2.5	1.6
3	2.6	10	18	23	39	43	36	e73	16	6.9	2.0	1.4
4	2.7	8.2	21	22	e1500	37	518	e52	17	6.7	1.8	4.3
5	2.7	7.0	24	21	e560	35	158	e42	16	7.2	1.6	4.5
6	2.6	6.3	18	20	260	33	76	e33	16	6.7	1.5	2.8
7	2.4	72	16	21	152	33	58	e75	15	6.0	1.4	2.1
8	2.3	39	15	130	87	371	51	e270	14	5.8	67	1.8
9	2.4	20	15	94	64	598	62	e150	14	6.7	75	1.3
10	2.4	13	16	42	54	141	62	e80	17	8.9	20	1.0
11	2.6	11	23	32	49	71	53	e58	17	7.4	19	1.0
12	2.6	9.5	19	29	126	57	45	e50	16	5.8	11	.90
13	2.7	9.0	17	28	69	48	41	e46	15	4.9	5.7	.86
14	3.2	59	16	30	54	46	39	e41	16	4.7	5.0	.79
15	5.7	28	15	e120	46	41	39	e37	15	4.3	4.8	.72
16	6.1	15	15	e300	44	38	e135	e33	15	4.3	9.6	.66
17	5.3	10	14	e140	952	37	e350	e27	18	4.3	12	.64
18	10	10	14	64	280	221	e230	e23	14	4.5	7.5	.71
19	9.5	9.7	14	59	99	2480	e165	e22	15	4.0	5.6	.79
20	9.2	9.5	13	69	74	432	e135	e20	18	3.8	4.5	1.1
21	6.8	10	13	45	62	1250	e100	21	13	3.4	4.1	1.1
22	5.3	161	15	37	53	228	e75	19	13	2.9	3.9	3.3
23	4.3	42	26	e200	300	100	e65	21	12	3.1	3.7	2.5
24	3.8	24	21	e420	178	75	e58	25	14	3.6	3.3	1.4
25	4.7	19	53	e170	79	61	e53	24	12	3.1	3.1	1.2
26	17	17	34	71	60	54	e49	21	11	4.2	2.8	1.4
27	45	16	115	e180	53	51	e44	43	9.7	4.5	2.6	1.4
28	10	15	105	e580	49	47	e41	35	8.7	4.6	3.0	1.3
29	7.7	14	53	e230	---	44	e39	25	10	4.3	2.9	1.0
30	6.5	16	42	104	---	41	e38	22	9.7	3.6	2.6	.82
31	5.9	---	39	63	---	39	---	20	---	3.0	2.2	---
TOTAL	200.5	698.7	876	3398	5435	6840	2897	1512	432.1	158.8	294.6	46.29
MEAN	6.47	23.3	28.3	110	194	221	96.6	48.8	14.4	5.12	9.50	1.54
MAX	45	161	115	580	1500	2480	518	270	18	8.9	75	4.5
MIN	2.3	6.3	13	20	39	33	36	19	8.7	2.9	1.4	.64
CFSM	.12	.42	.51	1.97	3.49	3.97	1.74	.88	.26	.09	.17	.03
IN.	.13	.47	.59	2.27	3.64	4.58	1.94	1.01	.29	.11	.20	.03

e Estimated.

CHOWAN RIVER BASIN

02051000 NORTH MEHERRIN RIVER NEAR LUNENBURG, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	33.8	46.2	54.0	71.9	91.7	97.7	77.6	46.2	27.6	20.7	19.4	26.9
MAX	442	299	186	194	249	293	223	161	154	98.6	138	292
(WY)	1972	1986	1949	1978	1979	1975	1978	1971	1968	1975	1955	1979
MIN	1.70	4.37	7.22	12.7	18.7	32.8	15.3	11.2	3.97	2.72	1.83	.16
(WY)	1994	1992	1966	1955	1968	1985	1995	1964	1964	1957	1977	1954

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

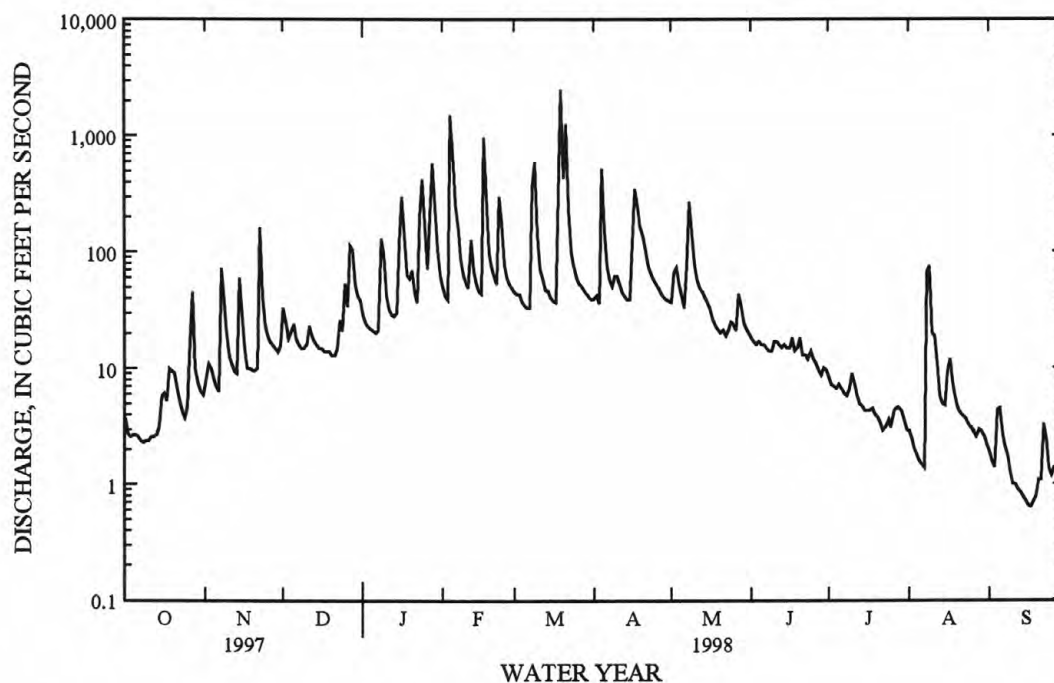
FOR 1998 WATER YEAR

WATER YEARS 1947 - 1998

ANNUAL TOTAL	16740.5	22788.99	50.9
ANNUAL MEAN	45.9	62.4	98.8
HIGHEST ANNUAL MEAN			1972
LOWEST ANNUAL MEAN			21.2
HIGHEST DAILY MEAN	e1380	Apr 28	2480
LOWEST DAILY MEAN	1.4	Sep 9	.64
ANNUAL SEVEN-DAY MINIMUM	1.8	Sep 3	.74
INSTANTANEOUS PEAK FLOW			4240
INSTANTANEOUS PEAK STAGE			19.34
INSTANTANEOUS LOW FLOW			.53
ANNUAL RUNOFF (CFSM)	.82	1.12	.92
ANNUAL RUNOFF (INCHES)	11.20	15.25	12.44
10 PERCENT EXCEEDS	91	122	94
50 PERCENT EXCEEDS	20	18	20
90 PERCENT EXCEEDS	2.9	2.5	3.8

a Also Sept. 6-21 and Oct. 8-14, 1954.

b Also Sept. 17, 18, 1998.



CHOWAN RIVER BASIN

02051500 MEHERRIN RIVER NEAR LAWRENCEVILLE, VA

LOCATION.--Lat 36°43'00", long 77°49'55", Brunswick County, Hydrologic Unit 03010204, on right bank 50 ft upstream from Gholson Bridge on State Highway 715, 0.6 mi upstream from Allen Creek, and 3.0 mi southeast of Lawrenceville.

DRAINAGE AREA.--552 mi².

PERIOD OF RECORD.--October 1928 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 972: 1932(M), 1935. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 136.56 ft above sea level. Prior to Nov. 17, 1931, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Nov. 27 to Dec. 2, Mar. 20-25, June 4-15, July 1-15, Aug. 18-21, and Aug. 30 to Sept. 3, which are fair. Maximum discharge, 38,000 ft³/s, from rating curve extended above 13,000 ft³/s on basis of velocity-area studies and records for Nottoway River near Stony Creek. Minimum gage height, 0.72 ft, Sept. 23, 24, 1932. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 25	0330	5,090	16.68	Feb. 19	1030	6,600	19.50
Jan. 30	0400	6,560	19.42	Mar. 10	1230	6,830	19.90
Feb. 6	0900	8,520	22.31	Mar. 21	Unknown	*14,300	*28.39

Minimum discharge, 28 ft³/s, Sept. 30, gage height, 1.53 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	121	124	e400	437	836	600	560	423	391	e170	67	e56
2	96	134	e370	360	666	570	650	567	294	e150	65	e52
3	82	141	336	303	573	546	661	633	250	e130	62	e62
4	75	138	280	280	2630	527	998	519	e230	e120	60	119
5	72	133	264	266	6510	489	2780	459	e220	e180	58	488
6	72	127	251	252	8110	460	1410	419	e228	e160	55	249
7	71	166	232	246	4230	445	892	394	e210	e125	52	107
8	67	312	208	533	1480	665	730	1320	e200	e105	52	70
9	65	410	197	1710	1040	4930	788	2800	e190	e100	287	66
10	65	269	200	979	815	6690	1170	1220	e185	e200	368	63
11	64	210	226	551	700	3230	993	726	e200	e225	379	60
12	61	177	232	413	680	1020	774	590	e210	e140	214	59
13	60	169	228	352	852	804	633	549	e220	e120	117	56
14	60	306	209	336	703	703	570	510	254	e90	74	53
15	71	461	195	421	585	637	559	459	e230	e85	67	49
16	113	430	185	3040	530	573	537	414	291	82	66	49
17	120	267	182	2970	1320	535	1010	389	375	89	88	48
18	119	209	178	1100	4970	1650	3600	369	286	83	e190	45
19	124	185	173	769	6050	5140	1970	339	269	93	e110	43
20	167	172	171	757	1560	e11000	1680	315	302	82	e70	44
21	166	165	167	723	928	e13500	1380	304	338	75	e63	45
22	136	766	173	545	772	e11500	882	290	301	77	61	46
23	121	1880	228	787	830	e9000	748	276	246	73	60	47
24	105	622	258	4110	2240	e3000	670	295	230	84	59	42
25	101	368	309	3740	1450	e1450	589	319	244	91	58	39
26	108	278	401	1290	896	887	525	367	212	163	59	38
27	153	e250	426	863	721	787	482	438	189	77	61	40
28	240	e220	977	3730	646	719	455	397	173	89	64	36
29	212	e210	1000	5980	---	664	438	427	172	87	66	33
30	147	e235	633	5340	---	616	425	339	189	69	e64	30
31	124	---	496	1260	---	577	---	323	---	83	e60	---
TOTAL	3358	9534	9785	44443	53323	83914	29559	17189	7329	3497	3176	2234
MEAN	108	318	316	1434	1904	2707	985	554	244	113	102	74.5
MAX	240	1880	1000	5980	8110	13500	3600	2800	391	225	379	488
MIN	60	124	167	246	530	445	425	276	172	69	52	30
CFSM	.20	.58	.57	2.60	3.45	4.90	1.78	1.00	.44	.20	.19	.13
IN.	.23	.64	.66	3.00	3.59	5.66	1.99	1.16	.49	.24	.21	.15

e Estimated.

CHOWAN RIVER BASIN

02051500 MEHERRIN RIVER NEAR LAWRENCEVILLE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	307	381	474	735	843	927	750	460	317	316	296	243
MAX	2266	2853	1340	2391	1904	2707	2067	1571	1555	2358	4199	1532
(WY)	1972	1986	1997	1936	1998	1998	1987	1958	1938	1945	1940	1979
MIN	17.1	44.1	64.6	88.8	175	190	162	128	96.5	42.8	33.0	9.70
(WY)	1931	1934	1966	1934	1931	1981	1966	1942	1959	1932	1995	1954

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1929 - 1998

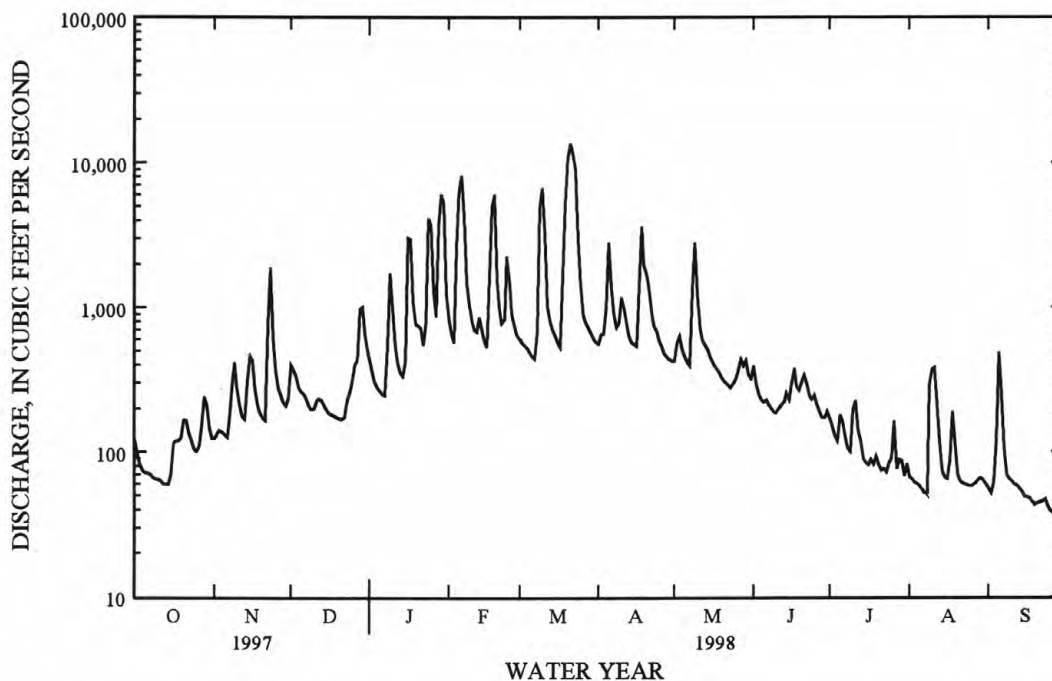
ANNUAL TOTAL	195204		267341									
ANNUAL MEAN	535		732							502		
HIGHEST ANNUAL MEAN										916		1973
LOWEST ANNUAL MEAN										202		1981
HIGHEST DAILY MEAN	8910	Apr 30				e13500	Mar 21			35300	Aug 17	1940
LOWEST DAILY MEAN	60	aOct 13				30	Sep 30			4.2	bOct 7	1954
ANNUAL SEVEN-DAY MINIMUM	63	Oct 8				37	Sep 24			4.6	Oct 4	1954
INSTANTANEOUS PEAK FLOW						14300	Mar 21			38000	Aug 17	1940
INSTANTANEOUS PEAK STAGE						c28.39	Mar 21			42.00	Aug 17	1940
INSTANTANEOUS LOW FLOW						28	Sep 30			4.2	Oct 7	1954
ANNUAL RUNOFF (CFSM)	.97					1.33				.91		
ANNUAL RUNOFF (INCHES)	13.16					18.02				12.37		
10 PERCENT EXCEEDS	1020					1390				974		
50 PERCENT EXCEEDS	307					269				252		
90 PERCENT EXCEEDS	90					61				66		

a Also Oct. 14, 1997.

b Also Oct. 8, 1954.

c From floodmarks.

e Estimated.



CHOWAN RIVER BASIN

02052000 MEHERRIN RIVER AT EMPORIA, VA

LOCATION.--Lat 36°41'24", long 77°32'27", Emporia City, Hydrologic Unit 03010204, on left bank at downstream side of bridge on U.S. Highway 301 and 1.2 mi upstream from Falling Run.

DRAINAGE AREA.--747 mi².

PERIOD OF RECORD.--January 1951 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 67.17 ft above sea level (levels by U.S. Army Corps of Engineers).

REMARKS.--Records good except for period of no gage-height record, Apr. 21 to May 19, which is fair. Prior to November 1965 and since April 1986, low and medium flow regulated by powerplant 0.8 mi upstream from station. Minimum discharge, 5.0 ft³/s, Nov. 11, 1954, gage height, 1.00 ft, result of regulation. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 31.5 ft, from floodmarks, discharge, about 40,000 ft³/s, from rating curve extended above 18,000 ft³/s on basis of record for station near Lawrenceville.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16,000 ft³/s, Mar. 22, gage height, 24.96 ft; minimum, 8.0 ft³/s, Sept. 24, result of regulation; minimum daily, 9.6 ft³/s, Sept. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	142	167	512	591	1830	832	839	e570	445	184	113	60
2	123	187	548	527	1090	789	805	e760	375	165	57	59
3	106	186	504	443	894	715	838	e860	327	145	80	93
4	98	184	438	402	2610	614	1150	e710	306	162	100	164
5	97	160	406	379	7620	646	2970	e630	298	177	84	229
6	84	160	371	373	9200	560	2980	e560	291	189	34	392
7	99	178	341	358	9170	529	1430	e520	292	153	67	146
8	89	259	311	529	4330	919	1050	e1700	270	151	48	126
9	88	511	314	1680	2020	5780	955	e3300	267	136	112	83
10	88	330	296	1930	1320	9010	1240	e1450	260	154	246	85
11	88	280	343	1020	1040	7800	1440	e970	274	214	371	68
12	59	242	344	664	978	3220	1080	e800	283	153	242	68
13	85	216	296	531	993	1450	889	e730	295	153	155	47
14	89	431	300	482	1060	1090	786	e650	293	142	110	63
15	100	430	337	551	848	922	733	e580	314	120	102	57
16	146	672	271	2300	708	838	711	e520	317	152	70	44
17	185	332	263	5140	1100	724	882	e470	328	133	122	29
18	171	292	220	3050	4460	2250	3320	e430	295	102	166	82
19	199	250	283	1380	6800	6480	4200	e375	275	97	159	54
20	207	231	172	1090	5700	9900	2520	346	283	169	113	31
21	223	222	232	1030	2000	14100	e1800	374	298	123	88	64
22	216	347	322	868	1190	15200	e1300	460	303	85	61	57
23	172	2210	302	837	1080	12500	e1050	304	245	109	74	56
24	155	1430	376	3550	2410	6670	e900	338	207	124	69	9.6
25	153	611	380	5850	2990	2430	e820	384	214	42	118	59
26	164	418	527	3630	1540	1490	e740	566	178	159	56	44
27	195	354	556	1640	1080	1220	e660	543	186	149	80	30
28	227	312	838	4430	906	1090	e640	511	195	125	63	50
29	251	285	1450	7420	---	995	e600	509	188	138	65	14
30	241	315	1080	7930	---	918	e580	447	198	88	44	67
31	201	---	836	5030	---	872	---	389	---	147	86	---
TOTAL	4541	12202	13769	65635	76967	112553	39908	21756	8300	4340	3355	2430.6
MEAN	146	407	444	2117	2749	3631	1330	702	277	140	108	81.0
MAX	251	2210	1450	7930	9200	15200	4200	3300	445	214	371	392
MIN	59	160	172	358	708	529	580	304	178	42	34	9.6
CFSM	.20	.54	.59	2.83	3.68	4.86	1.78	.94	.37	.19	.14	.11
IN.	.23	.61	.69	3.27	3.83	5.61	1.99	1.08	.41	.22	.17	.12

e Estimated.

CHOWAN RIVER BASIN

02052000 MEHERRIN RIVER AT EMPORIA, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	421	538	677	1070	1256	1387	1065	665	428	345	299	282
MAX	3057	3711	1772	3063	2749	3631	3077	2244	1399	2647	1536	1810
(WY)	1973	1986	1973	1978	1998	1998	1987	1958	1972	1975	1955	1979
MIN	37.7	60.0	89.9	159	298	261	221	256	137	62.9	46.3	18.7
(WY)	1969	1955	1966	1966	1968	1981	1995	1995	1986	1954	1995	1954

SUMMARY STATISTICS

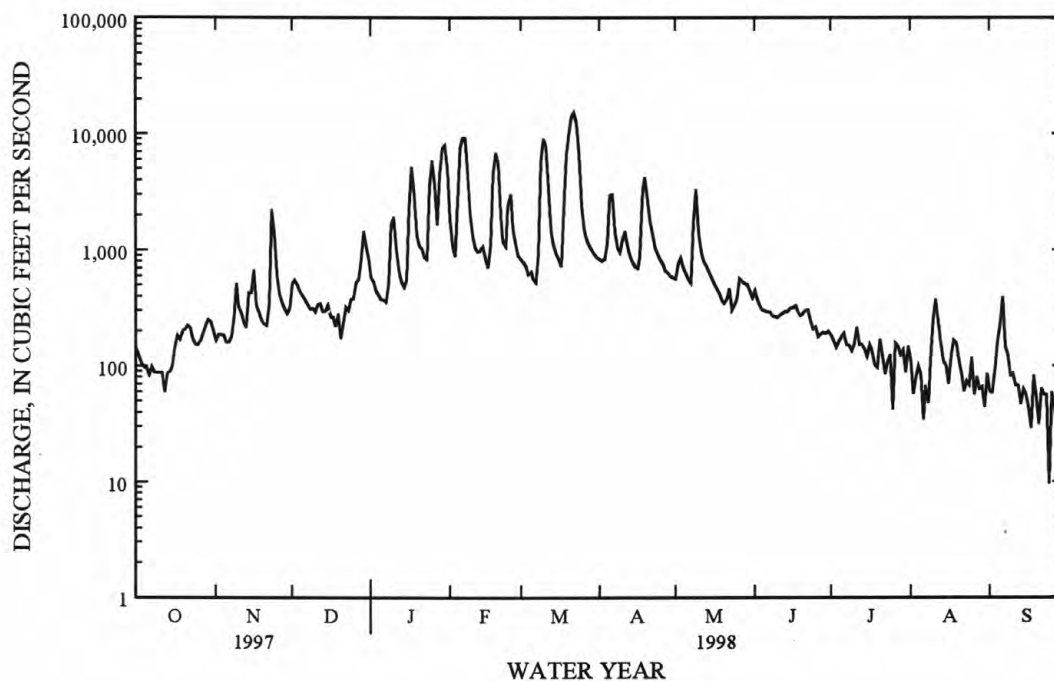
FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1952 - 1998

ANNUAL TOTAL	253408	365756.6	700
ANNUAL MEAN	694	1002	1297
HIGHEST ANNUAL MEAN			1973
LOWEST ANNUAL MEAN			248
HIGHEST DAILY MEAN	9570	May 1	20700
LOWEST DAILY MEAN	59	Oct 12	a7.1
ANNUAL SEVEN-DAY MINIMUM	84	Oct 8	a9.1
INSTANTANEOUS PEAK FLOW		16000	Mar 22
INSTANTANEOUS PEAK STAGE		24.96	Mar 22
INSTANTANEOUS LOW FLOW		a8.0	Sep 24
ANNUAL RUNOFF (CFSM)	.93	1.34	.94
ANNUAL RUNOFF (INCHES)	12.62	18.21	12.73
10 PERCENT EXCEEDS	1360	2340	1440
50 PERCENT EXCEEDS	398	332	360
90 PERCENT EXCEEDS	112	80	71

a Result of regulation.



ROANOKE RIVER BASIN

02053800 SOUTH FORK ROANOKE RIVER NEAR SHAWSVILLE, VA

LOCATION.--Lat 37°08'24", long 80°16'00", Montgomery County, Hydrologic Unit 03010101, on right bank 95 ft downstream from bridge on State Highway 637, 0.3 mi downstream from Georges Run, 1.3 mi downstream from Elliott Creek, and 2.0 mi southwest of Shawsville.

DRAINAGE AREA.--110 mi².

PERIOD OF RECORD.--October 1960 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,361.87 ft above sea level. Prior to Aug. 26, 1974, water-stage recorder, and Aug. 26, 1974, to July 24, 1975, nonrecording gage at site 95 ft upstream at same datum.

REMARKS.--Records good except for period with ice effect, Jan. 1, 2, which is fair. Virginia Department of Emergency Services gage-height radio transmitter at station. Maximum discharge, 14,200 ft³/s, from rating curve extended above 3,700 ft³/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location by the Virginia Department of Environmental Quality - Water Division.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 30, 1959, reached a stage of 9.89 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	0500	3,750	5.56	Mar. 20	1830	*4,030	*6.39
Feb. 4	1430	2,300	4.65	Apr. 19	2000	1,650	3.86
Feb. 17	1730	3,050	5.45				

Minimum discharge, 20 ft³/s, Sept. 15, 16, 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	42	34	e30	217	248	111	198	149	73	42	25
2	28	58	32	e33	188	209	103	195	227	63	39	24
3	27	46	31	35	206	181	97	191	245	62	36	24
4	27	38	34	40	1480	158	205	227	184	62	35	25
5	27	34	34	56	1120	142	194	253	178	73	34	23
6	27	33	32	88	905	129	159	215	167	59	32	22
7	26	33	30	102	617	121	138	196	140	57	32	22
8	26	34	29	1550	443	145	125	205	123	65	59	22
9	26	33	31	392	365	230	177	177	117	70	55	23
10	27	32	34	191	324	231	161	163	135	71	54	23
11	27	32	36	131	329	185	142	278	133	57	51	23
12	27	31	33	111	459	157	125	248	153	53	41	22
13	27	31	32	108	450	141	115	210	144	51	37	22
14	28	36	31	91	345	135	112	180	119	51	35	22
15	28	37	29	223	274	123	105	158	134	48	34	21
16	28	34	29	415	245	115	101	148	111	47	53	21
17	30	32	29	283	1650	108	283	137	101	46	56	22
18	33	31	30	183	1250	116	240	122	91	44	44	24
19	32	31	29	145	683	255	633	113	88	46	40	24
20	32	31	29	120	527	1330	933	107	85	44	34	23
21	31	38	30	100	418	1920	508	105	79	41	32	27
22	31	55	37	94	323	771	365	100	78	42	30	32
23	31	43	37	139	379	458	296	136	74	46	29	26
24	32	37	37	198	375	320	259	136	74	45	28	24
25	38	35	49	188	318	242	214	144	73	44	27	23
26	40	34	43	155	270	200	190	162	67	44	27	22
27	49	33	44	143	247	174	175	372	64	44	26	22
28	38	32	43	221	247	155	160	312	63	44	26	22
29	34	32	37	283	---	140	148	214	80	41	26	21
30	32	34	39	305	---	127	144	178	74	39	25	24
31	32	---	37	265	---	117	---	203	---	40	25	---
TOTAL	950	1082	1061	6418	14654	9083	6718	5783	3550	1612	1144	700
MEAN	30.6	36.1	34.2	207	523	293	224	187	118	52.0	36.9	23.3
MAX	49	58	49	1550	1650	1920	933	372	245	73	59	32
MIN	26	31	29	30	188	108	97	100	63	39	25	21
CFSM	.28	.33	.31	1.88	4.76	2.66	2.04	1.70	1.08	.47	.34	.21
IN.	.32	.37	.36	2.17	4.96	3.07	2.27	1.96	1.20	.55	.39	.24

e Estimated.

ROANOKE RIVER BASIN

02053800 SOUTH FORK ROANOKE RIVER NEAR SHAWSVILLE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	74.2	92.9	102	141	171	215	188	138	103	59.1	54.2	61.3
MAX	294	407	232	299	523	571	750	334	483	205	174	347
(WY)	1972	1986	1973	1996	1998	1993	1987	1978	1972	1972	1994	1989
MIN	21.4	24.4	22.1	18.9	70.1	55.6	51.0	50.7	35.2	20.6	17.4	17.8
(WY)	1992	1982	1966	1966	1981	1981	1966	1963	1966	1966	1963	1968

SUMMARY STATISTICS

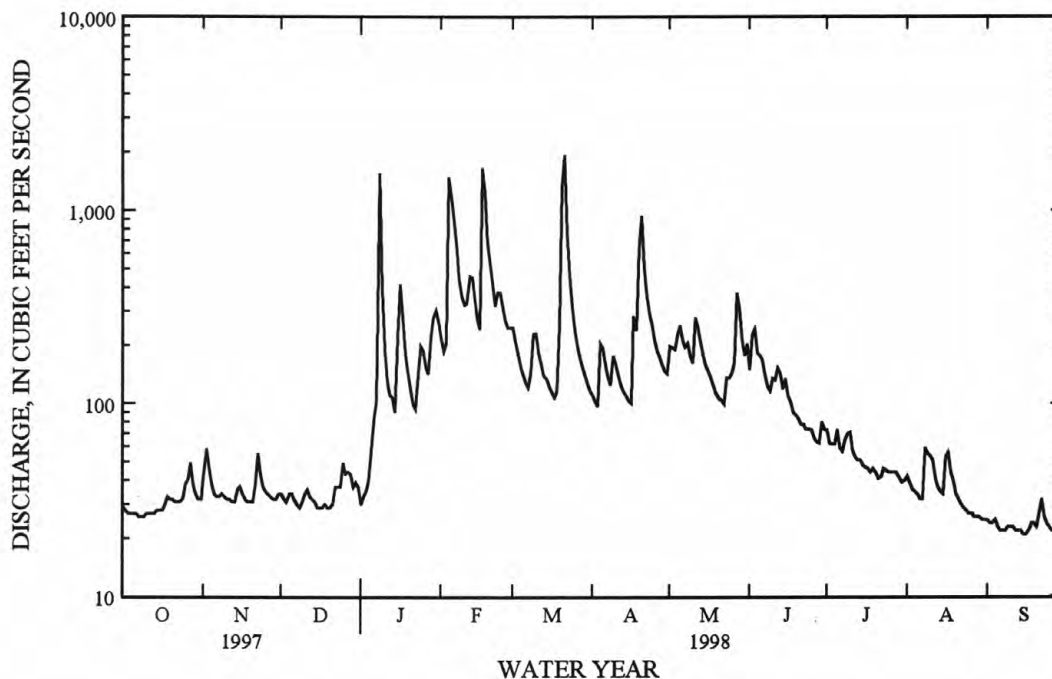
FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1961 - 1998

ANNUAL TOTAL	32294	52755	
ANNUAL MEAN	88.5	145	116
HIGHEST ANNUAL MEAN			205
LOWEST ANNUAL MEAN			46.5
HIGHEST DAILY MEAN	842	Mar 4	6840
LOWEST DAILY MEAN	22	aSep 6	7.5
ANNUAL SEVEN-DAY MINIMUM	23	Sep 3	8.9
INSTANTANEOUS PEAK FLOW			14200
INSTANTANEOUS PEAK STAGE			c11.12
INSTANTANEOUS LOW FLOW			7.5
ANNUAL RUNOFF (CFSM)	.80	1.31	1.06
ANNUAL RUNOFF (INCHES)	10.92	17.84	14.36
10 PERCENT EXCEEDS	194	288	223
50 PERCENT EXCEEDS	58	62	72
90 PERCENT EXCEEDS	27	27	29

- a Also Sept. 7, 8, 1997.
b Also Sept. 16, 29, 1998.
c From high-water mark in well.
d Also July 28, 29, 1966.



ROANOKE RIVER BASIN

02054500 ROANOKE RIVER AT LAFAYETTE, VA

LOCATION.--Lat 37°14'11", long 80°12'34", Montgomery County, Hydrologic Unit 03010101, on right bank 120 ft upstream from bridge on State Highway 603 at Lafayette, 0.4 mi downstream from confluence of North and South Forks, and 1.1 mi upstream from Cove Hollow.

DRAINAGE AREA.--257 mi².

PERIOD OF RECORD.--September 1943 to current year.

REVISED RECORDS.--WSP 1333: 1944-47(M), 1948-49.

GAGE.--Water-stage recorder. Datum of gage is 1,174.47 ft above sea level. Prior to July 30, 1949, nonrecording gage at same site and datum.

REMARKS.--Records good except those for period with ice effect, Jan. 1, and periods of doubtful or no gage-height record, July 13-17, and July 23 to Aug. 18, which are fair. Occasional diurnal fluctuation caused by meat-processing plant upstream from station. Virginia Department of Emergency Services gage-height radio transmitter at station. Maximum discharge, 24,500 ft³/s, from rating curve extended above 12,000 ft³/s on basis of slope-area measurement of peak flow. Minimum discharge, 8.0 ft³/s, Jan. 19, 1959, gage height, 0.60 ft, result of freezeup. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 12.2 ft, from information by local residents, discharge, 19,000 ft³/s, from rating curve extended above 12,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	0900	7,340	8.93	Mar. 20	2115	*7,730	*9.14
Feb. 4	1500	6,130	8.24	Apr. 19	2130	4,700	7.33
Feb. 17	1930	4,530	7.21				

Minimum discharge, 39 ft³/s, Sept. 15, 16, 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	60	61	e60	669	574	370	547	274	148	e70	51
2	55	93	58	64	550	498	334	750	359	127	e67	49
3	53	95	54	75	610	437	311	604	505	122	e63	49
4	52	72	58	83	3980	382	690	838	327	115	e59	50
5	51	63	58	107	3000	338	752	761	310	128	e57	48
6	49	59	55	154	2450	304	592	574	290	112	e55	47
7	48	57	52	161	1670	283	507	501	249	109	e54	46
8	47	59	51	3220	1200	334	449	560	222	115	e61	45
9	46	58	51	933	991	585	642	495	210	126	e112	45
10	47	55	56	464	859	644	612	432	235	130	e105	45
11	46	55	64	291	811	510	529	860	225	111	e115	45
12	45	53	58	231	938	428	456	648	298	103	e80	44
13	45	53	54	236	941	375	414	518	267	e92	e70	43
14	45	59	52	203	766	346	394	435	226	e86	e68	42
15	47	62	50	566	630	313	362	376	254	e80	e66	41
16	46	58	48	1080	553	288	338	333	218	e83	e135	40
17	48	54	49	691	2460	271	1260	308	194	e82	e165	41
18	52	52	50	451	2320	279	965	270	177	84	e104	44
19	52	51	49	338	1320	1360	1870	246	169	82	89	44
20	49	51	48	277	1060	2930	2660	229	166	78	78	44
21	48	61	48	226	889	5040	1270	218	156	73	72	45
22	47	107	58	204	738	2050	868	208	154	72	68	69
23	45	88	70	357	905	1310	679	252	145	e86	65	54
24	47	71	66	500	971	982	581	278	142	e80	63	49
25	58	63	86	500	808	789	488	368	156	e79	61	47
26	60	60	86	383	694	673	430	316	137	e76	58	47
27	75	58	84	335	631	593	390	631	129	e74	56	46
28	65	55	93	1360	591	529	356	583	126	e76	56	44
29	56	54	83	1240	---	476	322	413	191	e72	53	44
30	51	55	80	1100	---	430	308	326	148	e68	52	48
31	50	---	76	869	---	394	---	341	---	e67	51	---
TOTAL	1584	1891	1906	16759	34005	24745	20199	14219	6659	2936	2328	1396
MEAN	51.1	63.0	61.5	541	1214	798	673	459	222	94.7	75.1	46.5
MAX	75	107	93	3220	3980	5040	2660	860	505	148	165	69
MIN	45	51	48	60	550	271	308	208	126	67	51	40
CFSM	.20	.25	.24	2.10	4.73	3.11	2.62	1.78	.86	.37	.29	.18
IN.	.23	.27	.28	2.43	4.92	3.58	2.92	2.06	.96	.42	.34	.20

e Estimated.

ROANOKE RIVER BASIN

02054500 ROANOKE RIVER AT LAFAYETTE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 1997, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	138	173	230	316	403	476	418	288	188	115	113	121
MAX	603	770	913	682	1214	1309	1497	716	791	590	551	570
(WY)	1977	1978	1949	1947	1998	1993	1987	1978	1972	1949	1948	1989
MIN	36.7	44.1	47.0	52.0	83.4	103	102	99.1	61.6	43.2	37.0	29.4
(WY)	1954	1954	1964	1981	1959	1981	1966	1963	1963	1963	1963	1954

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1944 - 1998

ANNUAL TOTAL	72851		128627									
ANNUAL MEAN	200		352									
HIGHEST ANNUAL MEAN									247			
LOWEST ANNUAL MEAN									442			1949
HIGHEST DAILY MEAN	1640	Mar 4							87.0			1981
LOWEST DAILY MEAN	42	aSep 7							11700			Jun 21 1972
ANNUAL SEVEN-DAY MINIMUM	45	Sep 3							10			bJan 14 1959
INSTANTANEOUS PEAK FLOW									42			Jan 14 1959
INSTANTANEOUS PEAK STAGE									7730			Mar 20
INSTANTANEOUS LOW FLOW									9.14			Mar 20
ANNUAL RUNOFF (CFSM)									39			dSep 15
ANNUAL RUNOFF (INCHES)									1.37			f
10 PERCENT EXCEEDS	479								18.62			
50 PERCENT EXCEEDS	108								500			
90 PERCENT EXCEEDS	49								136			

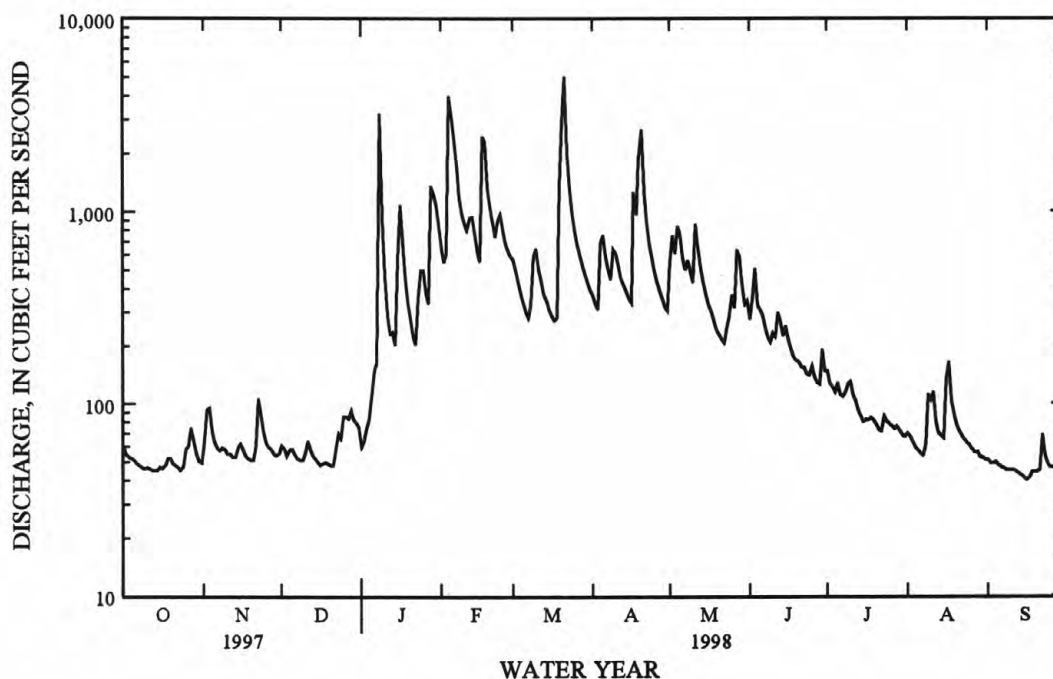
a Also Sept. 8, 1997.

b Also Jan. 15, 18, 19, 1959.

c From high-water mark in gage house.

d Also Sept. 16, 17, 1998.

f Result of freezeup.



ROANOKE RIVER BASIN

02054510 ROANOKE RIVER NEAR WABUN, VA

LOCATION.--Lat 37°14'48", long 87°09'55", Roanoke County, Hydrologic Unit 03010101, on right bank 150 ft downstream from mouth of Dry Hollow, 0.7 mi downstream from bridge on State Highway 5800, 3 mi upstream from Dry Branch, and 5.9 mi southwest of Salem.

DRAINAGE AREA.--273 mi².

PERIOD OF RECORD.--April 1994 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,140 ft above sea level, from topographic map.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Oct. 23, Dec. 8, Mar. 14, 15, and period with ice effect, Dec. 30 to Jan. 1, which are fair. Water is withdrawn upstream for municipal use by Roanoke County, amount unknown. Roanoke County gage-height transmitter at station. Maximum discharge, 15,900 ft³/s, from rating curve extended above 1,660 ft³/s. Minimum discharge, 24 ft³/s, Dec. 30, 1995, gage height, 2.57 ft, result of freezeup. Several observations of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 21, 1992, reached a stage of 13.69 ft, from high-water marks in the gage vicinity, from information by local resident, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	0930	10,400	10.12	Mar. 20	2215	*10,600	*10.19
Feb. 4	1500	8,370	9.32	Apr. 19	2245	6,170	8.34
Feb. 17	1830	6,070	8.29				

Minimum discharge, 41 ft³/s, Sept. 15-18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	62	62	72	e69	623	495	302	511	257	167	71	49
2	57	107	71	78	512	413	278	800	275	151	70	48
3	53	126	67	95	545	363	256	605	564	139	65	47
4	52	92	68	103	4850	322	558	840	350	130	61	47
5	51	79	70	127	3630	285	641	772	328	146	58	47
6	50	71	66	152	2700	255	482	576	311	111	57	45
7	49	70	63	171	1690	257	410	492	267	100	56	44
8	49	70	e62	4020	1120	286	367	548	223	103	63	43
9	47	70	61	962	902	474	510	495	205	118	116	43
10	47	68	64	449	736	536	504	437	231	130	111	43
11	47	66	73	286	686	419	452	841	215	121	120	43
12	49	65	72	234	812	353	395	669	314	109	83	44
13	49	63	66	226	840	316	347	539	281	91	71	44
14	48	67	64	192	660	e305	334	426	242	87	68	44
15	49	74	62	490	528	e275	312	371	263	81	66	43
16	49	72	58	1060	484	238	294	344	225	83	148	41
17	51	67	58	626	2940	218	1160	314	196	82	172	41
18	56	65	60	410	2700	220	880	256	177	85	103	43
19	57	63	59	352	1300	1250	1930	228	175	85	82	44
20	54	62	59	270	985	3330	3140	211	177	84	72	45
21	52	70	59	217	797	6740	1330	199	169	78	67	46
22	52	136	64	192	640	2150	885	189	149	78	63	63
23	e50	122	86	324	806	1220	687	239	141	87	58	54
24	52	76	81	476	882	860	588	277	133	81	56	50
25	65	67	104	490	668	645	504	374	169	79	55	48
26	68	72	113	385	574	542	440	316	154	78	54	47
27	87	70	105	329	516	477	378	601	140	77	51	46
28	81	68	121	1390	502	442	344	602	131	76	50	46
29	67	66	91	1300	---	396	309	425	197	73	50	44
30	62	66	e95	1120	---	350	287	340	165	70	50	46
31	59	---	e90	821	---	321	---	344	---	68	50	---
TOTAL	1721	2292	2304	17416	34628	24753	19304	14181	6824	3048	2317	1378
MEAN	55.5	76.4	74.3	562	1237	798	643	457	227	98.3	74.7	45.9
MAX	87	136	121	4020	4850	6740	3140	841	564	167	172	63
MIN	47	62	58	69	484	218	256	189	131	68	50	41
CFSM	.20	.28	.27	2.06	4.53	2.92	2.36	1.68	.83	.36	.27	.17
IN.	.23	.31	.31	2.37	4.72	3.37	2.63	1.93	.93	.42	.32	.19

e Estimated.

ROANOKE RIVER BASIN

02054510 ROANOKE RIVER NEAR WABUN, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEAR 1994 - 1998, BY WATER YEAR (wy)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	98.2	156	256	550	647	510	307	266	269	131	157	169
MAX	165	352	679	747	1237	798	643	457	373	183	289	599
(WY)	1997	1997	1997	1996	1998	1998	1998	1998	1995	1995	1996	1996
MIN	55.5	76.4	74.3	392	335	288	104	135	112	86.6	62.8	45.9
(WY)	1998	1998	1998	1997	1995	1995	1995	1995	1994	1997	1997	1998

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1994 - 1998

ANNUAL TOTAL	74096	130166	
ANNUAL MEAN	203	357	293
HIGHEST ANNUAL MEAN			357
LOWEST ANNUAL MEAN			192
HIGHEST DAILY MEAN	1830	Mar 4	7790
LOWEST DAILY MEAN	44	aSep 6	41
ANNUAL SEVEN-DAY MINIMUM	47	Sep 3	43
INSTANTANEOUS PEAK FLOW			10600
INSTANTANEOUS PEAK STAGE			10.19
INSTANTANEOUS LOW FLOW			41
ANNUAL RUNOFF (CFSM)	.74	1.31	1.07
ANNUAL RUNOFF (INCHES)	10.10	17.74	14.60
10 PERCENT EXCEEDS	460	798	531
50 PERCENT EXCEEDS	113	131	149
90 PERCENT EXCEEDS	52	49	63

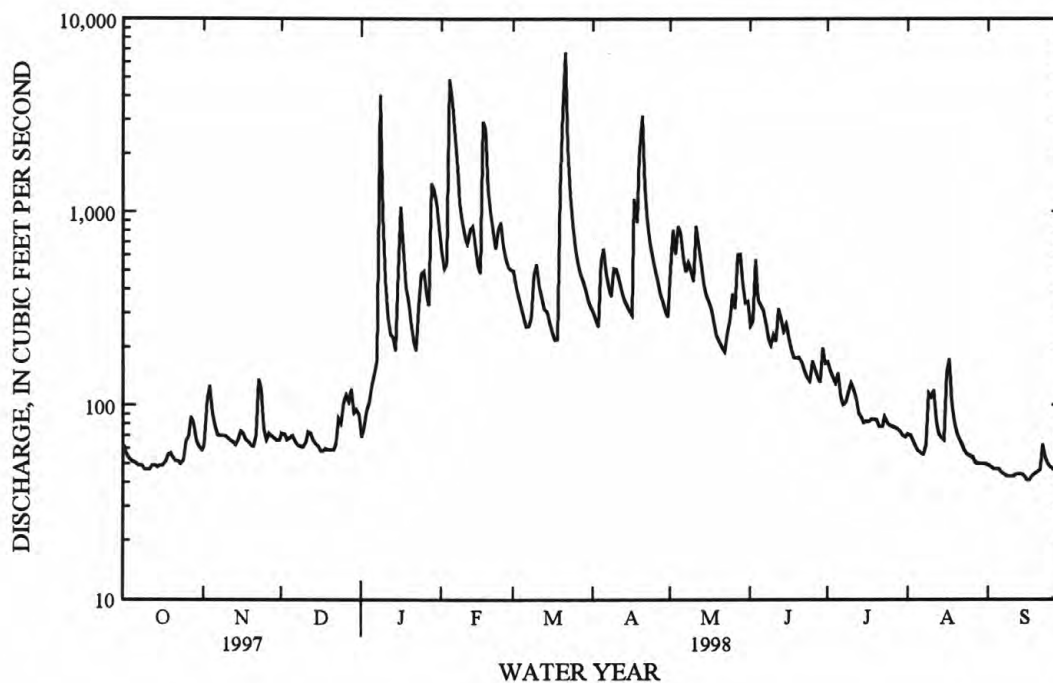
a Also Sept. 7, 9, 1997.

b Also Sept. 17, 1998.

c Also Sept. 12, 13, 1998.

d Also Sept. 16, 17, 18, 1998.

f Result of freezeup.



ROANOKE RIVER BASIN

02054530 ROANOKE RIVER AT GLENVAR, VA

LOCATION.--Lat 37°16'04", long 80°08'23", Roanoke County, Hydrologic Unit 03010101, on left bank 150 ft downstream from bridge on State Highway 1154, 0.2 mi downstream from mouth of Callahan Branch, 0.3 mi south of Glenvar, and 2.5 mi upstream from mouth of Mill Creek.

DRAINAGE AREA.--284 mi².

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

GAGE.--Water-stage recorder. Elevation of gage is 1,100 ft above sea level, from topographic map.

REMARKS.--Records good except those for periods with ice effect, Jan. 1, Mar. 14, and periods of doubtful gage-height record, July 6, 7, and Aug. 17, which are fair. Water is withdrawn upstream for municipal use by Roanoke County, amount unknown. Roanoke County gage-height transmitter at station. Maximum discharge, 19,800 ft³/s, from rating curve extended above 10,900 ft³/s. Several observations of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1972, reached a stage of about 20.2 ft, from information by local resident, discharge, about 25,000 ft³/s, from rating curve extended above 10,900 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1015	10,200	12.25	Mar. 20	2330	*11,400	*12.93
Feb. 4	1730	9,030	11.55	Apr. 19	2245	6,240	9.75
Feb. 17	2015	6,770	10.12				

Minimum discharge, 40 ft³/s, Sept. 16, 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67	66	73	e69	678	552	338	537	293	162	77	52
2	60	99	72	76	547	464	314	905	255	138	74	51
3	57	117	68	92	563	409	291	655	643	130	68	50
4	55	90	70	98	5340	365	586	921	367	125	65	51
5	53	78	72	120	4170	329	703	848	349	138	63	49
6	52	73	68	146	3060	298	521	634	331	e108	62	48
7	51	71	65	171	1950	296	447	538	285	e100	60	47
8	51	72	63	4240	1270	326	401	601	237	105	67	46
9	50	73	63	1080	1010	524	543	541	217	119	121	45
10	50	69	67	482	821	614	541	477	247	129	114	46
11	50	67	75	310	760	477	485	914	230	118	127	45
12	50	66	73	254	890	403	426	746	330	108	93	45
13	50	65	68	244	936	359	372	595	303	93	80	44
14	49	70	65	214	742	e345	356	477	258	90	77	43
15	51	75	63	470	585	326	336	414	280	87	75	42
16	51	74	60	1150	533	282	321	379	240	90	145	41
17	53	69	61	682	3420	263	1230	353	205	88	e181	41
18	58	66	62	443	3190	264	975	296	181	91	116	43
19	61	65	61	371	1520	1340	1930	265	182	89	95	46
20	58	64	60	295	1120	3430	3550	247	185	91	83	46
21	54	71	60	242	904	7690	1520	234	169	84	76	46
22	54	119	67	216	722	2500	982	222	151	83	71	65
23	52	113	83	337	899	1400	759	268	139	93	68	57
24	54	79	80	501	1010	969	647	314	132	87	65	50
25	66	69	96	521	763	727	548	409	169	86	63	48
26	72	74	107	416	651	603	480	349	146	84	61	48
27	84	72	102	352	579	528	416	635	136	81	59	47
28	81	69	113	1500	562	487	379	672	132	84	57	45
29	69	67	93	1460	---	445	345	469	201	78	55	44
30	63	67	98	1250	---	389	327	372	163	74	53	47
31	60	---	94	901	---	358	---	375	---	73	52	---
TOTAL	1786	2289	2322	18703	39195	27762	21069	15662	7156	3106	2523	1418
MEAN	57.6	76.3	74.9	603	1400	896	702	505	239	100	81.4	47.3
MAX	84	119	113	4240	5340	7690	3550	921	643	162	181	65
MIN	49	64	60	69	533	263	291	222	132	73	52	41
CFSM	.20	.27	.26	2.12	4.93	3.15	2.47	1.78	.84	.35	.29	.17
IN.	.23	.30	.30	2.45	5.13	3.64	2.76	2.05	.94	.41	.33	.19

e Estimated.

ROANOKE RIVER BASIN

02054530 ROANOKE RIVER AT GLENVAR, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEAR 1992 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	90.2	153	284	545	651	742	468	334	324	142	141	144
MAX	170	355	715	784	1400	1667	839	610	660	195	295	586
(WY)	1997	1997	1997	1996	1998	1993	1992	1992	1992	1995	1996	1996
MIN	57.6	76.3	74.9	410	339	313	120	154	116	90.7	65.5	47.3
(WY)	1998	1998	1998	1997	1992	1995	1995	1995	1994	1997	1997	1998

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1992 - 1998

ANNUAL TOTAL	78308		142991									
ANNUAL MEAN	215		392							330		
HIGHEST ANNUAL MEAN										392		1998
LOWEST ANNUAL MEAN										209		1995
HIGHEST DAILY MEAN	2050	Mar 4				7690	Mar 21			8380	Apr 22	1992
LOWEST DAILY MEAN	47	Sep 7				41	aSep 16			41	aSep 16	1998
ANNUAL SEVEN-DAY MINIMUM	50	bOct 8				43	cSep 12			43	cSep 12	1998
INSTANTANEOUS PEAK FLOW						11400	Mar 20			19800	Apr 21	1992
INSTANTANEOUS PEAK STAGE						12.93	Mar 20			17.73	Apr 21	1992
INSTANTANEOUS LOW FLOW						40	aSep 16			d40	fDec 30	1995
ANNUAL RUNOFF (CFSM)	.76					1.38				1.16		
ANNUAL RUNOFF (INCHES)	10.26					18.73				15.80		
10 PERCENT EXCEEDS	476					894				647		
50 PERCENT EXCEEDS	113					129				167		
90 PERCENT EXCEEDS	55					51				67		

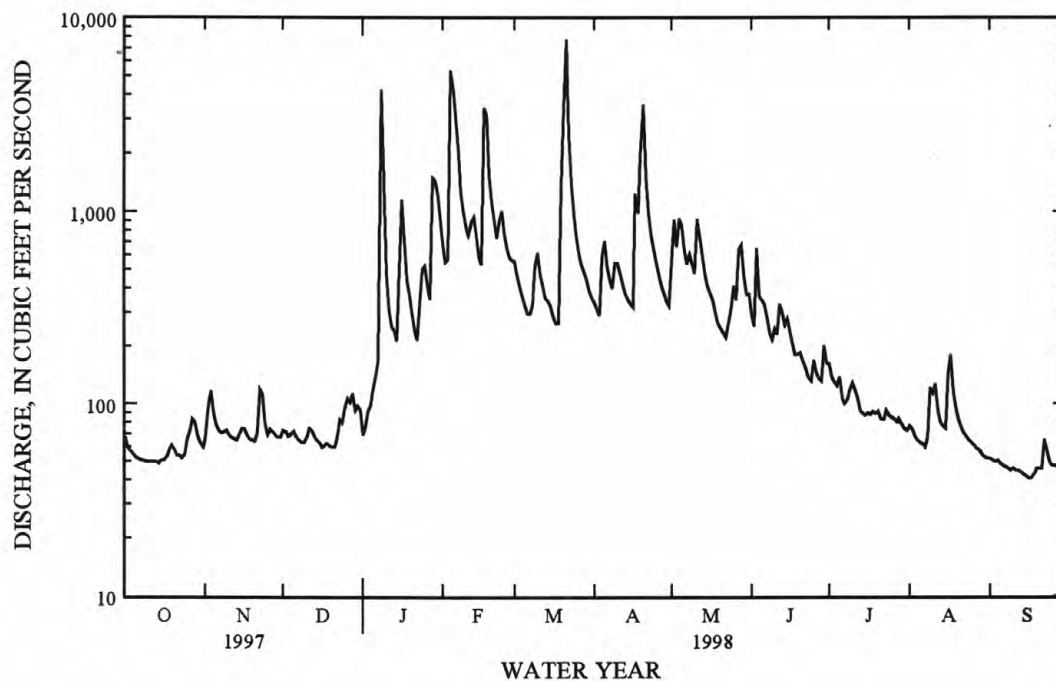
a Also Sept. 17, 1998.

b Also Oct. 9, 1997.

c Also Sept. 13, 14, 1998.

d Also Sept. 16, 17, 1998.

f Result of freezeup.



ROANOKE RIVER BASIN

02055000 ROANOKE RIVER AT ROANOKE, VA

LOCATION.--Lat 37°15'30", long 79°56'20", Roanoke City, Hydrologic Unit 03010101, on left bank 50 ft downstream from Walnut Avenue bridge, 3.2 mi upstream from Tinker Creek, and at mile 360.6.

DRAINAGE AREA.--395 mi².

PERIOD OF RECORD.--February 1899 to current year. Monthly discharge only for some periods, published in WSP 1303. Records for July 1896 to January 1899 published in WSP 11, 15, 27, and 20th Annual Report, Part 4, are unreliable, due to doubtful gage-height record, and should not be used.

REVISED RECORDS.--WSP 972: 1928, 1930, 1933. WSP 1433: 1899-1904, 1914-17(M), 1918-24, 1925-27(M), 1929-34(M), 1935, 1936-39(M). WSP 2104: Drainage area. WDR VA-72-1: 1928(M), 1940(M). See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 906.84 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to June 7, 1937, nonrecording gage on downstream side of highway bridge 50 ft upstream at same datum.

REMARKS.--Records good except those for period of no gage-height record Aug. 2-3, and period of doubtful gage-height record, Aug. 30 to Sept. 30, which are fair. Prior to 1949, diurnal fluctuation at low flow caused by powerplants upstream from station. Since March 1994, water withdrawn upstream for municipal use by the city of Roanoke, amount unknown. American Electric Power and Virginia Department of Emergency Services gage-height radio transmitters at station. Maximum discharge, 32,300 ft³/s, from rating curve extended above 26,000 ft³/s. Practically no flow Dec. 23, 1909, Dec. 19, 1963, when flow was retarded by freezing, gage height, 0.0 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1300	7,700	9.43	Feb. 17	1745	8,990	10.37
Jan. 28	1600	3,790	6.16	Mar. 21	0300	*12,900	*13.01
Feb. 4	1730	11,500	12.14	Apr. 20	0245	5,130	7.40

Minimum daily discharge, 56 ft³/s, Sept. 16, 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	99	156	108	135	1050	749	460	745	381	185	81	e72
2	84	143	109	125	833	644	427	1320	328	165	e83	e68
3	77	154	107	134	805	571	399	944	622	151	e78	e66
4	74	140	114	145	6970	508	809	1170	421	157	71	e68
5	72	118	108	168	5530	455	995	1130	380	160	70	e66
6	69	113	106	195	3980	411	746	919	361	148	69	e65
7	66	119	101	303	2740	396	624	772	325	126	65	e64
8	66	114	97	3980	1800	498	551	820	283	121	368	e66
9	64	109	97	1770	1330	908	699	756	264	140	154	e64
10	63	105	108	814	1100	985	733	650	275	145	155	e62
11	63	104	108	639	1020	731	650	1200	311	136	172	e60
12	65	99	112	612	1080	596	570	1060	375	127	134	e60
13	64	107	106	584	1140	523	500	867	338	118	112	e58
14	64	118	100	521	953	497	473	699	304	106	102	e58
15	66	110	97	747	763	454	447	614	321	102	104	e58
16	64	111	94	1540	719	398	419	586	296	114	276	e56
17	65	106	92	1020	5030	370	1450	548	254	137	303	e56
18	72	101	92	709	4250	391	1360	455	223	102	171	e140
19	76	99	93	613	2050	1360	1560	398	212	105	133	e62
20	73	97	92	592	1530	4080	3840	365	218	104	116	e60
21	69	141	91	567	1250	8810	2020	343	203	97	104	e64
22	67	165	124	532	1030	2960	1470	328	188	125	97	e64
23	66	164	116	663	1390	1810	1210	368	173	117	93	e66
24	75	138	143	801	1470	1350	1060	482	160	103	92	e63
25	102	109	160	788	1130	1050	895	529	178	100	85	e60
26	128	107	154	639	961	878	771	465	174	99	83	e60
27	114	110	195	624	845	766	669	671	164	97	82	e58
28	109	108	181	2770	788	686	614	845	161	94	78	e58
29	94	105	157	2210	---	617	559	600	222	87	79	e60
30	84	109	161	1770	---	540	521	505	207	79	e75	e62
31	77	---	147	1360	---	492	---	456	---	78	e70	---
TOTAL	2391	3579	3670	28070	53537	35484	27501	21610	8322	3725	3755	1944
MEAN	77.1	119	118	905	1912	1145	917	697	277	120	121	64.8
MAX	128	165	195	3980	6970	8810	3840	1320	622	185	368	140
MIN	63	97	91	125	719	370	399	328	160	78	65	56
CFSM	.20	.30	.30	2.29	4.84	2.90	2.32	1.76	.70	.30	.31	.16
IN.	.23	.34	.35	2.64	5.04	3.34	2.59	2.04	.78	.35	.35	.18

e Estimated.

ROANOKE RIVER BASIN

02055000 ROANOKE RIVER AT ROANOKE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1899 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	233	248	351	481	576	699	588	422	307	220	226	201
MAX	1080	1626	1425	1353	1912	2521	2558	1466	1206	1190	2140	1569
(WY)	1907	1986	1902	1937	1998	1899	1987	1901	1972	1905	1940	1928
MIN	47.9	43.8	55.2	65.5	52.5	119	108	112	75.3	45.6	43.5	42.6
(WY)	1992	1932	1918	1981	1934	1981	1942	1941	1926	1930	1981	1930

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1899 - 1998	
ANNUAL TOTAL	108139		193588			
ANNUAL MEAN	296		530		376	
HIGHEST ANNUAL MEAN					836	
LOWEST ANNUAL MEAN					113	
HIGHEST DAILY MEAN	2550		8810		18200	
LOWEST DAILY MEAN	51		56		19	
ANNUAL SEVEN-DAY MINIMUM	56		58		22	
INSTANTANEOUS PEAK FLOW			12900		32300	
INSTANTANEOUS PEAK STAGE			13.01		c23.35	
INSTANTANEOUS LOW FLOW			(d)		(f)	
ANNUAL RUNOFF (CFSM)	.75		1.34		.95	
ANNUAL RUNOFF (INCHES)	10.18		18.23		12.93	
10 PERCENT EXCEEDS	669		1150		762	
50 PERCENT EXCEEDS	166		165		212	
90 PERCENT EXCEEDS	71		66		75	

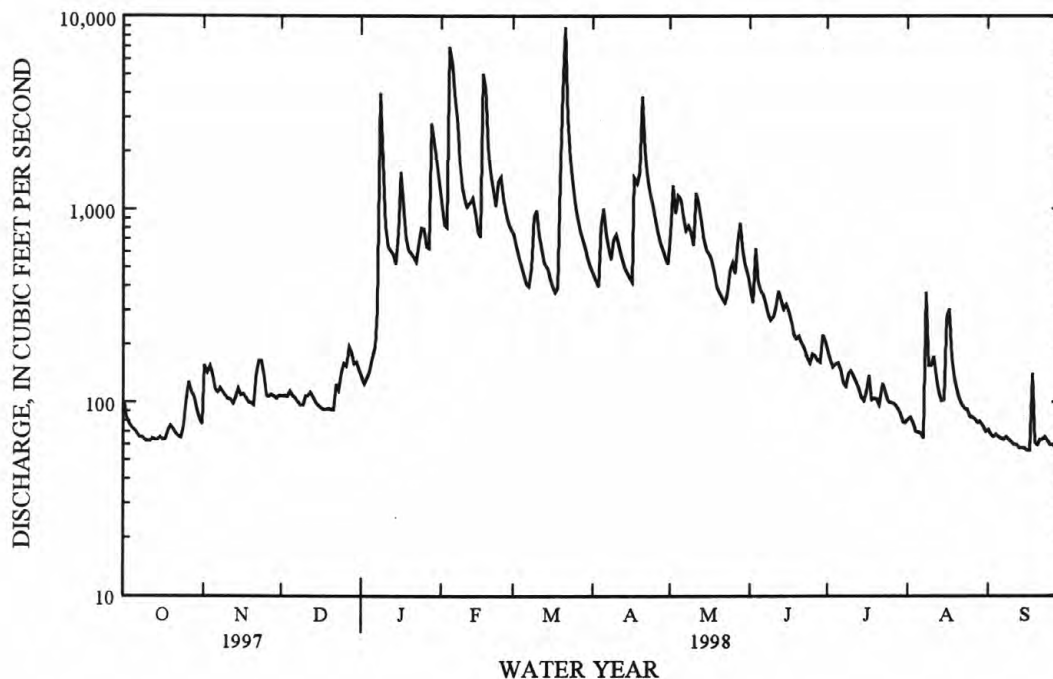
a Also Sept, 23, 1997.

b Also Sept. 17, 1998.

c From floodmark.

d Not determined.

f Practically no flow; retarded by freezing.



ROANOKE RIVER BASIN

02055100 TINKER CREEK NEAR DALEVILLE, VA

LOCATION.--Lat 37°25'03", long 79°56'08", Botetourt County, Hydrologic Unit 03010101, on left bank 1,100 ft downstream from Norfolk Southern Railway bridge, 0.2 mi downstream from unnamed tributary, 0.5 mi south of Glebe Mills, and 1.3 mi northwest of Daleville.

DRAINAGE AREA.--11.7 mi².

PERIOD OF RECORD.--April 1956 to current year.

REVISED RECORDS.--WSP 1904: 1958-60(P). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,217.47 ft above sea level (Norfolk Southern Railway bench mark).

REMARKS.--Records good except those for periods of no gage-height record, Aug. 15-18 and Sept. 11-15, which are fair. Withdrawal of water 1,000 ft downstream of gage by city of Roanoke for Carvins Cove Reservoir. Virginia Department of Emergency Services radio transmitter at station. Maximum discharge, 10,400 ft³/s, from rating curve extended above 130 ft³/s on basis of contracted-opening measurement at gage height 9.82 ft and slope-area measurements at gage heights 8.52 ft, 9.82 ft, and 13.36 ft. Minimum discharge, 0.20 ft³/s, result of freezeup. Minimum gage height, 0.99 ft, June 12, 24, 1970. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1940 reached a stage of 9.0 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	0500	1,670	7.65	Mar. 20	1830	*2,050	*8.18
Feb. 4	1315	1,010	6.40	Apr. 17	0630	580	5.11
Feb. 17	0815	635	5.30				

Minimum discharge, 1.8 ft³/s, Sept. 28, gage-height, 1.16 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	8.0	3.2	3.4	35	32	23	26	11	5.7	3.9	2.4
2	2.7	8.0	3.0	3.4	31	30	22	24	11	5.6	3.6	2.3
3	2.6	4.8	2.9	4.0	38	28	22	25	10	5.5	3.5	2.2
4	2.5	3.8	3.3	4.8	454	27	33	28	10	6.2	3.4	2.3
5	2.3	3.3	3.0	5.2	187	26	26	26	11	6.4	3.3	2.2
6	2.2	3.3	2.8	5.3	149	25	24	23	10	5.5	3.2	2.1
7	2.2	4.3	2.8	9.3	98	24	23	22	9.4	5.2	3.1	2.1
8	2.2	4.0	2.8	207	75	34	22	22	9.0	5.6	9.7	2.2
9	2.2	4.2	2.8	27	61	60	24	20	9.1	5.6	7.4	2.1
10	2.3	4.1	3.5	17	52	38	22	19	9.7	5.4	6.1	2.1
11	2.4	4.1	3.3	14	49	33	20	27	10	5.0	7.6	e2.1
12	2.3	3.8	3.1	13	49	30	19	23	11	4.8	5.0	e2.1
13	2.3	3.7	3.0	14	44	28	18	21	9.9	4.7	4.4	e2.1
14	2.1	4.4	3.0	13	39	27	18	20	9.5	4.6	4.2	e2.1
15	2.1	4.0	2.8	30	35	27	17	19	10	4.5	e4.2	e2.1
16	2.2	3.7	2.8	28	36	26	19	18	9.0	4.4	e12	2.0
17	2.3	3.5	2.8	22	281	25	115	17	8.5	4.5	e15	2.1
18	2.5	3.5	2.8	19	104	29	39	16	7.8	4.2	e10	2.5
19	2.5	3.4	2.8	17	66	52	72	16	7.9	4.1	6.5	2.1
20	2.4	3.3	2.7	15	58	390	61	15	7.2	4.1	4.5	2.1
21	2.4	5.0	2.7	13	48	185	40	14	6.9	3.9	3.5	2.1
22	2.3	5.3	3.8	13	42	75	33	13	6.9	4.5	3.1	2.1
23	2.4	4.0	3.5	36	70	53	33	15	6.7	5.1	2.9	2.0
24	3.3	3.5	3.5	27	56	44	31	16	6.5	4.8	2.8	2.0
25	4.2	3.3	4.4	23	45	38	27	14	6.2	4.6	2.7	2.0
26	4.1	3.2	3.6	19	40	34	25	13	6.0	4.5	2.6	2.1
27	4.3	3.1	4.8	18	37	31	23	23	5.7	4.4	2.6	2.1
28	3.4	3.1	4.6	73	35	29	22	17	6.0	4.3	2.6	2.0
29	3.3	3.1	4.5	55	---	27	21	14	8.7	4.0	2.5	2.0
30	3.1	3.2	4.2	52	---	25	20	13	6.5	3.8	2.5	2.2
31	3.2	---	3.7	42	---	24	---	12	---	4.0	2.4	---
TOTAL	83.2	122.0	102.5	842.4	2314	1556	914	591	257.1	149.5	150.8	63.9
MEAN	2.68	4.07	3.31	27.2	82.6	50.2	30.5	19.1	8.57	4.82	4.86	2.13
MAX	4.3	8.0	4.8	207	454	390	115	28	11	6.4	15	2.5
MIN	2.1	3.1	2.7	3.4	31	24	17	12	5.7	3.8	2.4	2.0
CFSM	.23	.35	.28	2.32	7.06	4.29	2.60	1.63	.73	.41	.42	.18
IN.	.26	.39	.33	2.68	7.36	4.95	2.91	1.88	.82	.48	.48	.20

e Estimated.

ROANOKE RIVER BASIN

02055100 TINKER CREEK NEAR DALEVILLE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	8.20	11.2	10.7	14.6	19.5	23.1	20.1	12.8	8.94	6.76	6.43	6.87
MAX	34.2	118	32.6	35.9	82.6	69.3	87.9	33.8	39.0	21.8	29.8	50.4
(WY)	1980	1986	1973	1996	1998	1993	1987	1958	1972	1973	1984	1979
MIN	2.09	1.76	2.00	1.78	3.78	3.16	3.21	3.44	2.01	1.13	2.01	1.36
(WY)	1987	1982	1966	1966	1981	1981	1981	1981	1988	1966	1981	1968

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

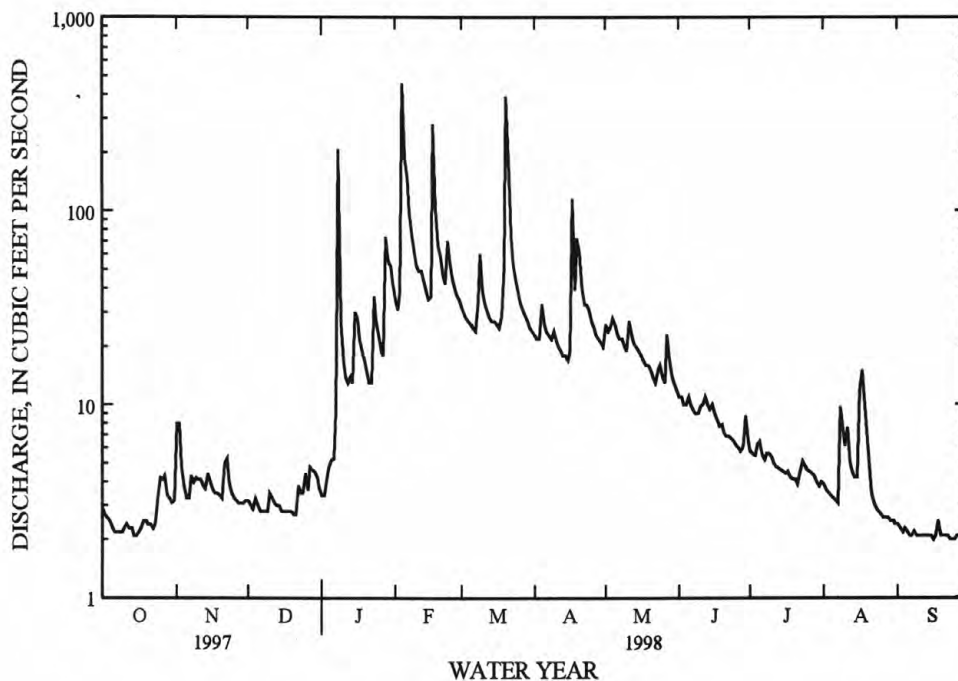
WATER YEARS 1956 - 1998

ANNUAL TOTAL	3164.6	7146.4	
ANNUAL MEAN	8.67	19.6	12.4
HIGHEST ANNUAL MEAN			21.6
LOWEST ANNUAL MEAN			3.23
HIGHEST DAILY MEAN	93	Mar 3	2560
LOWEST DAILY MEAN	2.0	Aug 17	.90
ANNUAL SEVEN-DAY MINIMUM	2.1	Sep 2	.99
INSTANTANEOUS PEAK FLOW		2050	10400
INSTANTANEOUS PEAK STAGE		8.18	b13.36
INSTANTANEOUS LOW FLOW		1.8	c.20
ANNUAL RUNOFF (CFSM)	.74	1.67	1.06
ANNUAL RUNOFF (INCHES)	10.06	22.72	14.43
10 PERCENT EXCEEDS	18	39	24
50 PERCENT EXCEEDS	5.5	6.2	7.0
90 PERCENT EXCEEDS	2.4	2.3	2.6

a Also Sept. 23-25, 28, 29, 1998.

b From floodmarks.

c Result of freezeup.



ROANOKE RIVER BASIN

02056000 ROANOKE RIVER AT NIAGARA, VA

LOCATION.--Lat 37°15'18", long 79°52'18", Roanoke County, Hydrologic Unit 03010101, on right bank 200 ft downstream from powerplant of American Electric Power at Niagara, 2 mi downstream from Tinker Creek, 2.1 mi southeast of Vinton, and at mile 355.3.

DRAINAGE AREA.--512 mi².

PERIOD OF RECORD.--July 1926 to current year.

REVISED RECORDS.--WSP 972: 1927(M), 1929(M), 1934(M), 1937(M). WSP 1303: 1928, 1930, 1933-38, 1940. WSP 2104: Drainage area. WDR VA-72-1: 1928(M), 1930(M), 1933(M), 1935-36(M), 1938(M), 1940, 1944-45(M), 1948-49(M), 1951(M), 1955(M), 1960(M), 1967(M), 1969(M).

GAGE.--Water-stage recorder. Datum of gage is 820.15 ft above sea level (levels by U.S. Army Corps of Engineers).

REMARKS.--Records good except those for period of no gage-height record, Oct. 15 to Nov. 14, and period of doubtful gage height record, June 18 to July 28, which are fair. Flow regulated by dam and powerplant 200 ft upstream from station. Maximum discharge, 52,300 ft³/s, from rating curve extended above 12,000 ft³/s on basis of slope-area measurements at gage heights 18.98 ft and 25.30 ft. Minimum gage height, 0.17 ft, Aug. 25, 1971. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1345	11,500	12.79	Mar. 20	2045	18,400	15.53
Jan. 28	1500	7,770	10.84	Apr. 20	0315	7,840	10.88
Feb. 4	1645	*20,000	*16.06	Aug. 8	1415	4,350	8.45
Feb. 17	1800	12,800	13.37				

Minimum discharge, 70 ft³/s, Sept. 29, gage height, 1.37 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	194	e240	159	207	1330	1000	715	980	527	e350	179	154
2	159	e220	171	193	1080	887	668	1650	472	e330	175	145
3	149	e240	157	203	1110	788	626	1140	749	e350	169	146
4	142	e220	170	214	12400	712	1180	1410	571	e380	162	153
5	136	e190	170	238	8410	666	1280	1420	552	e340	155	137
6	135	e180	149	264	5570	605	999	1130	514	e310	159	141
7	127	e190	148	401	3640	585	878	959	467	e270	147	134
8	129	e180	149	6490	2450	769	795	1020	429	e260	833	149
9	127	e170	160	2230	1910	1320	978	940	409	e300	262	139
10	122	e170	167	980	1550	1360	976	822	435	e310	354	133
11	120	e160	163	660	1460	1030	891	1620	506	e290	447	132
12	123	e150	176	538	1540	860	799	1320	593	e270	235	127
13	146	e160	157	525	1540	752	724	1070	482	e250	206	129
14	126	e180	151	469	1300	713	701	885	453	e230	198	128
15	e125	172	150	979	1060	660	675	774	501	e220	213	129
16	e125	143	148	1970	1020	597	661	793	440	e260	814	126
17	e130	170	144	1280	7590	566	2450	681	406	e290	546	120
18	e140	165	144	879	6190	612	2000	589	e360	e220	288	251
19	e150	152	139	716	2860	1770	2430	529	e345	e230	254	134
20	e140	140	137	622	2130	6360	5620	510	e380	e220	229	125
21	e135	228	142	520	1690	12600	2630	483	e350	e210	213	157
22	e132	281	213	439	1370	4360	1760	458	e330	e270	203	140
23	e130	236	178	1040	2120	2510	1410	539	e310	e240	200	154
24	e150	201	216	1110	2110	1820	1240	667	e300	e220	179	141
25	e170	183	267	1040	1590	1400	1020	663	e330	e210	172	140
26	e200	170	218	826	1320	1170	889	607	e315	e220	184	137
27	e180	156	297	795	1150	1040	792	857	e300	e210	162	123
28	e170	169	296	5220	1060	952	720	1020	e350	e190	159	126
29	e150	159	245	3210	---	879	664	751	e420	184	164	131
30	e130	161	241	2390	---	803	627	626	e385	178	157	140
31	e120	---	245	1770	---	746	---	593	---	182	146	---
TOTAL	4412	5536	5667	38418	78550	50892	37798	27506	12981	7994	7964	4221
MEAN	142	185	183	1239	2805	1642	1260	887	433	258	257	141
MAX	200	281	297	6490	12400	12600	5620	1650	749	380	833	251
MIN	120	140	137	193	1020	566	626	458	300	178	146	120
CFSM	.28	.36	.36	2.42	5.48	3.21	2.46	1.73	.85	.50	.50	.27
IN.	.32	.40	.41	2.79	5.71	3.70	2.75	2.00	.94	.58	.58	.31

e Estimated.

ROANOKE RIVER BASIN

02056000 ROANOKE RIVER AT NIAGARA, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1927 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	355	372	478	644	790	922	833	569	425	293	342	317
MAX	1722	2100	2065	1941	2805	2846	3661	1447	1550	1396	2456	2051
(WY)	1938	1986	1949	1937	1998	1993	1987	1958	1972	1949	1940	1928
MIN	86.0	101	115	110	117	210	157	193	158	109	92.2	84.0
(WY)	1931	1942	1966	1966	1934	1981	1942	1930	1966	1930	1956	1954

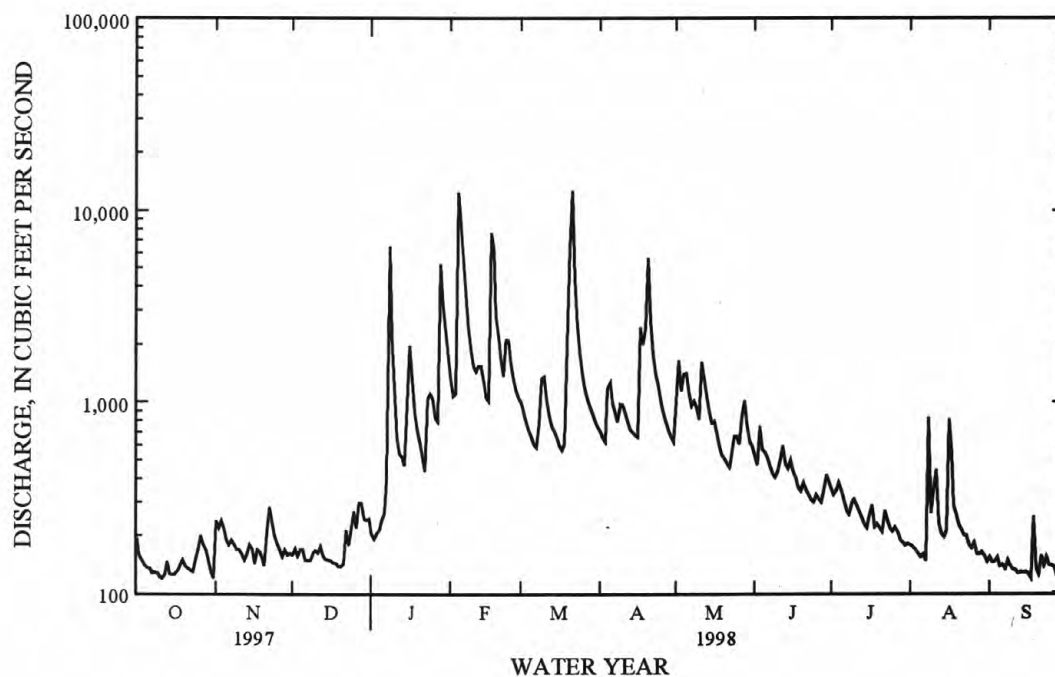
SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1927 - 1998	
ANNUAL TOTAL	155989		281939		527	
ANNUAL MEAN	427		772		984	
HIGHEST ANNUAL MEAN					1949	
LOWEST ANNUAL MEAN					198	
HIGHEST DAILY MEAN	3600	Mar 4	12600	Mar 21	19700	Nov 4 1985
LOWEST DAILY MEAN	120	aSep 21	120	bOct 11	8.0	Oct 9 1954
ANNUAL SEVEN-DAY MINIMUM	126	Oct 6	126	Oct 6	67	Jan 28 1966
INSTANTANEOUS PEAK FLOW			20000	Feb 4	52300	Nov 4 1985
INSTANTANEOUS PEAK STAGE			16.06	Feb 4	c25.30	Nov 4 1985
INSTANTANEOUS LOW FLOW			70	Sep 29	1.0	dOct 16 1956
ANNUAL RUNOFF (CFSM)	.83		1.51		1.03	
ANNUAL RUNOFF (INCHES)	11.33		20.48		13.98	
10 PERCENT EXCEEDS	886		1540		996	
50 PERCENT EXCEEDS	280		310		314	
90 PERCENT EXCEEDS	141		140		137	

a Also Oct. 11, 31, 1997.

b Also Oct. 31, 1997, and Sept. 17, 1998.

c From floodmark.

d Also Oct. 20, 1956, and Nov. 25, 26, 1990.



ROANOKE RIVER BASIN

02056650 BACK CREEK NEAR DUNDEE, VA

LOCATION.--Lat 37°13'39", long 79°52'06", Roanoke County, Hydrologic Unit 03010101, on right bank 65 ft upstream from bridge on State Highway 660, 0.9 mi upstream from Horseshoe Branch, 1.1 mi southeast of Dundee, 2.8 mi west of Hardy Post Office, and at mile 2.4.

DRAINAGE AREA.--56.8 mi².

PERIOD OF RECORD.--July 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 822.67 ft above sea level. Prior to Apr. 4, 1975, nonrecording gage, and Apr. 4, 1975, to Nov. 4, 1985, water-stage recorder, at site 80 ft downstream at same datum.

REMARKS.--Records good except for period of no gage-height record, Oct. 1-22, which is fair. Maximum discharge, 20,000 ft³/s, from rating curve extended above 5,900 ft³/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods of May 30, 1971, and June 21, 1972, reached a stage of 17.5 ft and 20.0 ft, respectively, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	0700	1,880	9.01	Feb. 17	1530	1,400	8.04
Jan. 28	1645	660	6.05	Mar. 20	2115	2,720	10.44
Feb. 4	1315	*3,940	*12.16	Apr. 19	2115	727	6.28

Minimum discharge, 3.0 ft³/s, Sept. 9, 14-16, gage-height 2.41 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e15	32	19	26	154	137	100	141	64	31	10	5.7
2	e14	42	16	27	122	125	90	141	58	25	9.0	5.4
3	e14	32	15	28	123	112	85	105	56	25	7.2	5.7
4	e13	22	20	28	1790	101	158	120	54	25	6.4	6.2
5	e13	19	20	35	651	93	130	144	57	27	5.8	6.0
6	e12	17	16	41	479	87	110	107	59	24	5.4	5.2
7	e12	23	14	74	327	82	100	98	52	22	5.0	5.1
8	e12	23	13	703	250	120	95	104	48	22	81	4.0
9	e13	21	15	286	205	237	132	92	47	28	42	3.4
10	e14	19	18	133	167	188	122	84	54	23	23	4.2
11	e16	18	21	84	161	143	106	152	53	19	22	4.0
12	e15	17	18	67	199	120	96	118	65	18	16	3.9
13	e15	17	16	63	178	107	91	102	55	17	13	3.7
14	e14	32	15	53	154	100	89	91	47	16	13	3.3
15	e13	28	14	143	129	92	86	83	53	14	14	3.3
16	e14	21	14	219	123	86	82	83	47	13	32	3.5
17	e15	17	15	135	873	82	188	110	44	40	40	3.8
18	e17	17	14	93	512	87	142	77	39	19	22	5.6
19	e15	16	14	77	318	131	264	69	38	16	16	5.0
20	e13	16	13	64	254	789	364	65	38	19	13	5.9
21	e11	18	13	55	214	694	233	62	34	13	11	6.5
22	e10	38	18	52	178	343	181	59	34	11	11	7.7
23	9.3	31	22	173	320	251	154	67	32	12	9.9	8.6
24	10	23	20	156	291	203	145	80	31	11	9.5	6.1
25	20	20	39	132	223	167	120	83	30	11	8.9	5.3
26	23	19	32	96	184	145	107	74	28	12	8.1	5.5
27	34	18	33	105	162	132	99	118	26	12	7.7	5.3
28	16	16	43	539	147	123	92	99	26	13	7.5	4.5
29	11	16	32	332	---	113	86	78	46	11	7.1	4.1
30	9.8	18	34	263	---	105	84	67	33	8.4	6.2	4.5
31	9.5	---	28	210	---	99	---	81	---	8.6	5.9	---
TOTAL	442.6	666	634	4492	8888	5394	3931	2954	1348	566.0	488.6	151.0
MEAN	14.3	22.2	20.5	145	317	174	131	95.3	44.9	18.3	15.8	5.03
MAX	34	42	43	703	1790	789	364	152	65	40	81	8.6
MIN	9.3	16	13	26	122	82	82	59	26	8.4	5.0	3.3
CFM5M	.25	.39	.36	2.55	5.59	3.06	2.31	1.68	.79	.32	.28	.09
IN.	.29	.44	.42	2.94	5.82	3.53	2.57	1.93	.88	.37	.32	.10

e Estimated.

ROANOKE RIVER BASIN

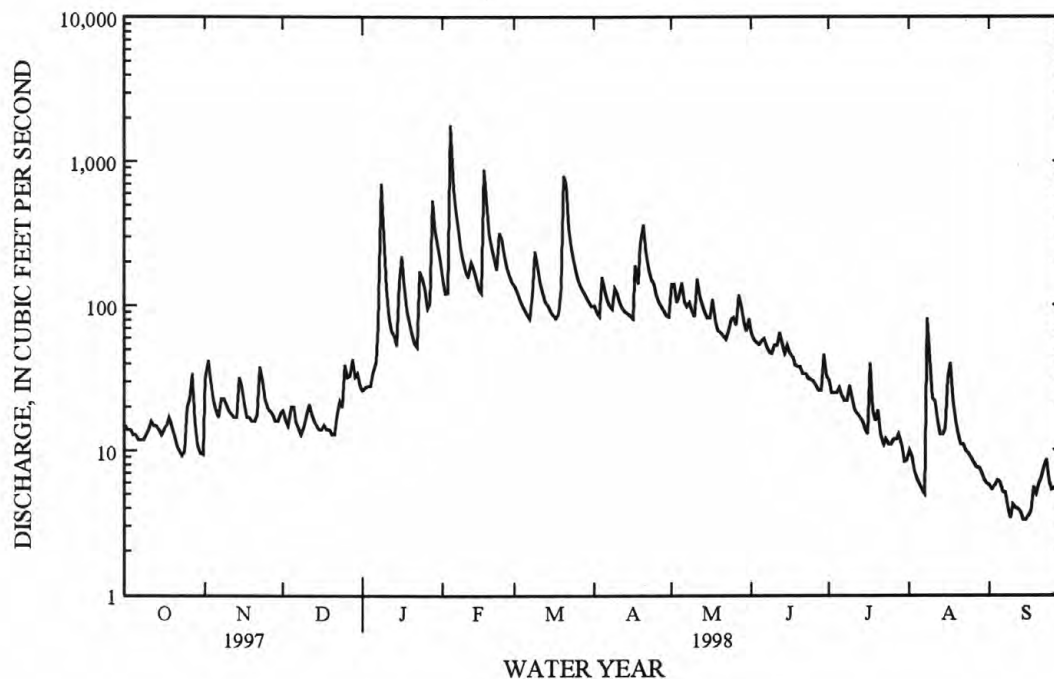
02056650 BACK CREEK NEAR DUNDEE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	35.4	50.1	49.3	72.4	86.5	114	115	68.4	54.9	29.2	25.3	40.6
MAX	154	292	117	146	317	265	396	190	173	110	121	314
(WY)	1977	1986	1987	1996	1998	1993	1987	1978	1992	1989	1985	1979
MIN	5.61	6.58	13.9	11.6	21.6	20.5	22.4	20.8	11.1	6.96	3.47	5.03
(WY)	1992	1982	1981	1981	1989	1981	1981	1981	1986	1981	1981	1998

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1974 - 1998	
ANNUAL TOTAL	16902.8		29955.2			
ANNUAL MEAN	46.3		82.1		61.6	
HIGHEST ANNUAL MEAN					108	
LOWEST ANNUAL MEAN					15.9	
HIGHEST DAILY MEAN	401		1790		4000	
LOWEST DAILY MEAN	5.1		3.3		.90	
ANNUAL SEVEN-DAY MINIMUM	7.1		3.6		1.1	
INSTANTANEOUS PEAK FLOW			3940		20000	
INSTANTANEOUS PEAK STAGE			12.16		c25.10	
INSTANTANEOUS LOW FLOW			3.0		(f)	
ANNUAL RUNOFF (CFSM)	.82		1.44		1.09	
ANNUAL RUNOFF (INCHES)	11.07		19.62		14.75	
10 PERCENT EXCEEDS	92		178		118	
50 PERCENT EXCEEDS	35		32		34	
90 PERCENT EXCEEDS	10		7.4		10	

- a Also Sept. 6, 8, 1997.
b Also Sept. 15, 1998.
c From floodmark, present site.
d Also Sept. 14-16, 1998.
f Not determined.



ROANOKE RIVER BASIN

02056900 BLACKWATER RIVER NEAR ROCKY MOUNT, VA

LOCATION.--Lat 37°02'42", long 79°50'40", Franklin County, Hydrologic Unit 03010101, on right bank 45 ft downstream from bridge on State Highway 122, 3.0 mi northeast of Rocky Mount, and 4.1 mi upstream from Maggodee Creek.

DRAINAGE AREA.--115 mi².

PERIOD OF RECORD.--October 1976 to current year.

GAGE.--Water-stage recorder. Datum of gage is 876.45 ft above sea level.

REMARKS.--Records good except those for period with ice effect, Jan. 1-3, and periods of doubtful gage-height record, Mar. 23 and Sept. 20, which are fair. American Electric Power gage-height transmitter at station with recorder at Roanoke. Maximum discharge, 20,800 ft³/s, from rating curve extended above 7,000 ft³/s on basis of slope-area measurement of peak flow. Minimum gage height, 1.13 ft, July 21, 1986. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location by the Virginia Department of Environmental Quality - Water Division.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1230	2,630	8.00	Feb. 17	1530	2,270	7.37
Jan. 28	0400	2,770	8.26	Mar. 21	0100	2,550	7.87
Feb. 4	1600	*4,850	*11.63	Apr. 19	2300	1,660	6.22

Minimum discharge, 18 ft³/s, Sept. 9-15, 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	60	49	e49	230	225	191	247	112	66	38	25
2	37	108	47	e52	195	208	179	329	105	62	37	25
3	36	84	45	e60	184	193	168	198	111	61	33	25
4	36	59	48	62	2390	182	259	188	104	61	30	28
5	35	52	49	66	1190	174	236	190	114	64	28	29
6	33	49	46	68	708	166	195	173	117	60	27	26
7	32	56	44	86	506	161	182	171	107	57	25	25
8	31	57	42	1110	389	275	175	227	99	58	141	23
9	31	54	43	593	312	667	251	183	96	65	154	21
10	32	50	46	249	264	396	233	168	109	70	62	20
11	32	48	49	160	246	284	197	260	106	58	57	21
12	33	46	48	130	352	241	180	212	136	55	49	21
13	33	46	45	131	266	217	171	185	109	52	44	21
14	35	55	44	111	237	204	168	170	97	50	42	20
15	45	61	44	164	213	191	164	159	99	48	42	21
16	44	53	43	361	205	180	158	155	99	47	55	23
17	38	49	43	199	1290	175	468	156	107	111	94	25
18	38	47	43	151	912	182	275	137	88	65	68	27
19	43	46	42	135	527	232	568	129	84	52	50	31
20	43	47	42	121	415	618	809	123	86	50	44	e28
21	38	47	42	104	341	1400	419	120	78	44	41	43
22	36	66	47	98	287	624	324	116	77	41	39	90
23	36	70	59	335	579	e430	282	125	75	47	38	39
24	36	56	55	258	479	352	264	146	72	45	35	30
25	47	49	83	217	350	298	226	152	73	42	34	28
26	58	48	77	162	296	266	206	131	70	41	32	27
27	82	48	67	288	265	244	193	180	66	41	31	27
28	57	46	86	2050	245	226	187	182	63	46	30	24
29	47	46	74	702	---	210	175	142	76	42	29	22
30	44	47	71	397	---	198	171	127	75	36	27	23
31	43	---	62	291	---	188	---	122	---	34	26	---
TOTAL	1252	1650	1625	8960	13873	9607	7674	5303	2810	1671	1482	838
MEAN	40.4	55.0	52.4	289	495	310	256	171	93.7	53.9	47.8	27.9
MAX	82	108	86	2050	2390	1400	809	329	136	111	154	90
MIN	31	46	42	49	184	161	158	116	63	34	25	20
CFSM	.35	.48	.46	2.51	4.31	2.69	2.22	1.49	.81	.47	.42	.24
IN.	.40	.53	.53	2.90	4.49	3.11	2.48	1.72	.91	.54	.48	.27

e Estimated.

ROANOKE RIVER BASIN

02056900 BLACKWATER RIVER NEAR ROCKY MOUNT, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 1998, BY WATER YEAR (WY)

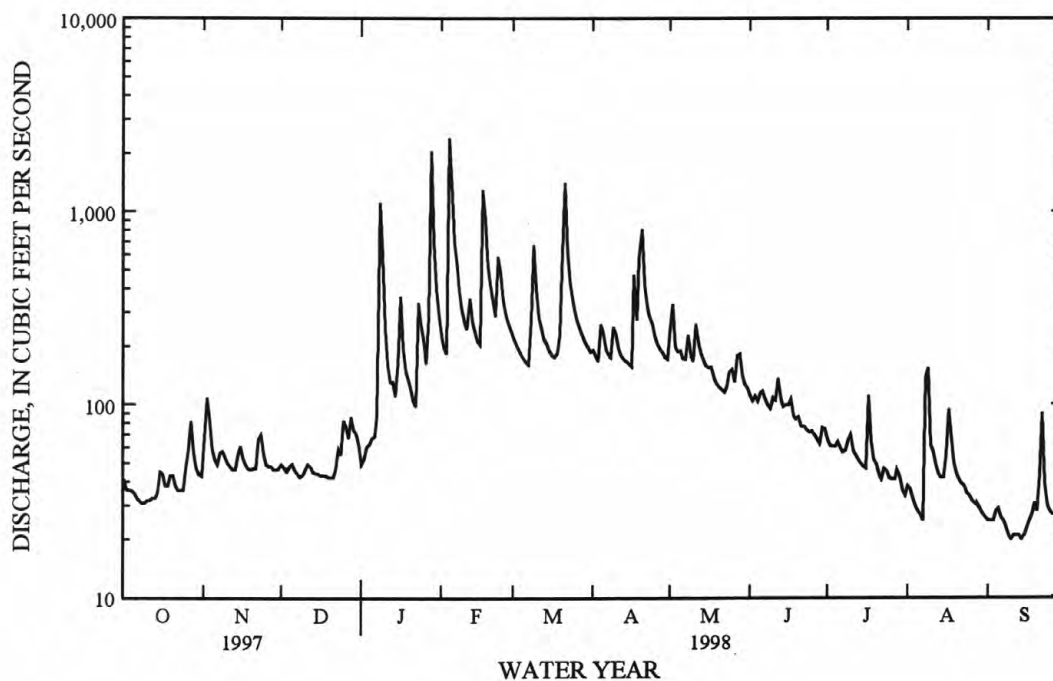
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	104	120	116	166	177	235	249	145	132	86.5	70.4	96.6
MAX	544	584	272	349	495	585	821	346	416	261	205	375
(WY)	1977	1986	1997	1996	1998	1993	1987	1978	1992	1989	1985	1979
MIN	26.5	29.1	47.9	47.0	66.1	60.1	65.3	53.6	38.2	24.6	12.4	23.0
(WY)	1992	1982	1982	1981	1989	1981	1981	1981	1981	1977	1981	1983

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1977 - 1998	
ANNUAL TOTAL	40721		56745		141	
ANNUAL MEAN	112		155		234	
HIGHEST ANNUAL MEAN					46.1	
LOWEST ANNUAL MEAN					1987	
HIGHEST DAILY MEAN	632	Jun 2	2390	Feb 4	5410	Nov 5 1985
LOWEST DAILY MEAN	24	Aug 31	20	aSep 10	7.4	bAug 28 1981
ANNUAL SEVEN-DAY MINIMUM	28	Sep 3	21	Sep 9	7.8	Aug 25 1981
INSTANTANEOUS PEAK FLOW			4850	Feb 4	20800	Nov 5 1985
INSTANTANEOUS PEAK STAGE			11.63	Feb 4	21.92	Nov 5 1985
INSTANTANEOUS LOW FLOW			18	cSep 9	6.6	Jul 21 1986
ANNUAL RUNOFF (CFSM)	.97		1.35		1.23	
ANNUAL RUNOFF (INCHES)	13.17		18.36		16.69	
10 PERCENT EXCEEDS	200		297		240	
50 PERCENT EXCEEDS	88		73		92	
90 PERCENT EXCEEDS	35		31		38	

a Also Sept. 14, 1998.

b Also Aug. 29, 1981.

c Also Sept. 10-15, 29, 1998.



ROANOKE RIVER BASIN

02057400 SMITH MOUNTAIN LAKE NEAR PENHOOK, VA

LOCATION.--Lat 37°02'28", long 79°32'09", Pittsylvania County, Hydrologic Unit 03010101, at dam on Roanoke (Staunton) River 6.5 mi northeast of Penhook and at mile 314.0.

DRAINAGE AREA.--1,024 mi².

PERIOD OF RECORD.--September 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to July 19, 1965, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by concrete dam. Two ungated spillways, one near each end of dam, with crests at elevation 795 ft, are each 105 ft long. Initial filling began in September 1963 during construction; water in reservoir first reached minimum power pool, elevation, 787 ft, in May 1965. Total capacity at maximum pool elevation, 811 ft, is 1,517,000 acre-ft of which 375,000 acre-ft is above the spillway crest; 157,800 acre-ft is normally used for power between elevation 787 ft, minimum power pool, and the spillway crest. Capacity at invert of lowest penstock, elevation, 601 ft, is 100 acre-ft. Figures given herein represent total contents. Reservoir is part of the Smith Mountain Combination Project (pumped storage) which is used for hydroelectric power, flood control, low-water regulation for pollution abatement and water supply, water releases for downstream fish spawning, and recreation.

COOPERATION.--Records were provided by the American Electric Power.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,250,200 acre-ft, Apr. 27, 1978, elevation, 799.8 ft; minimum (after first filling to minimum power pool), 995,400 acre-ft, Jan. 23, 1970, elevation, 787.6 ft.

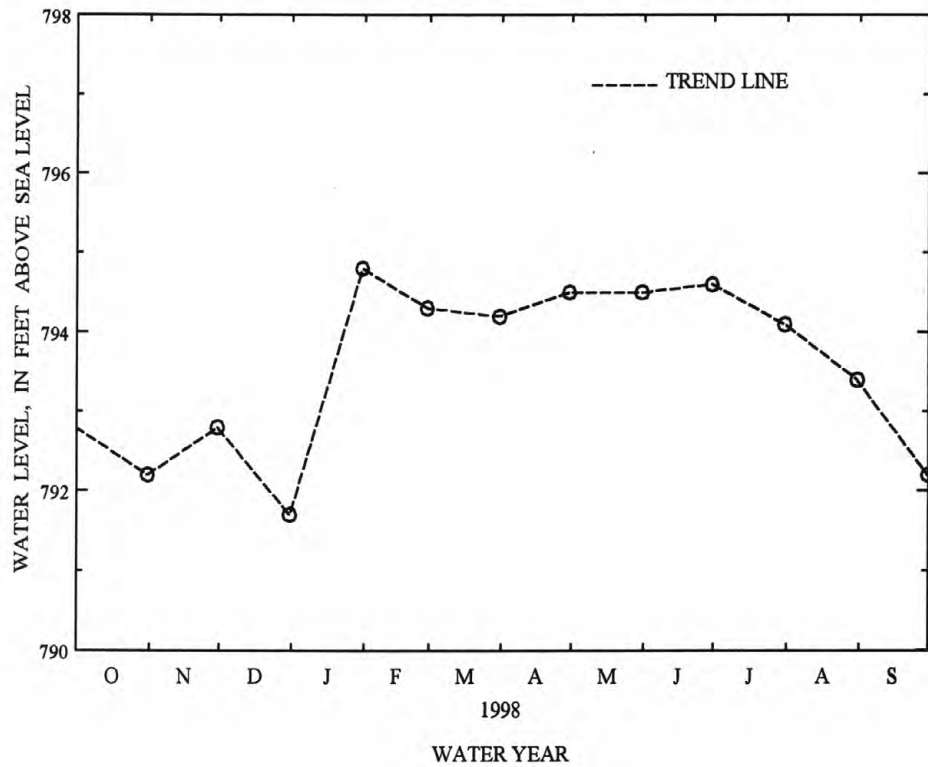
EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,160,000 acre-ft, Jan. 28, elevation, 795.8 ft; minimum, 1,070,600 acre-ft, Jan. 1, elevation, 791.5 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	792.8	1,097,100	-
Oct. 31.....	792.2	1,084,900	-12,200
Nov. 30.....	792.8	1,097,100	+12,200
Dec. 31.....	791.7	1,074,700	-22,400
CAL YR 1997.....			-63,200
Jan. 31.....	794.8	1,137,900	+63,200
Feb. 28.....	794.3	1,127,700	-10,200
Mar. 31.....	794.2	1,125,700	-2,000
Apr. 30.....	794.5	1,131,800	+6,100
May 31.....	794.5	1,131,800	0
June 30.....	794.6	1,133,800	+2,000
July 31.....	794.1	1,123,600	-10,200
Aug. 31.....	793.4	1,109,400	-14,200
Sept. 30.....	792.2	1,084,900	-24,500
WTR YR 1998.....			-12,200

ROANOKE RIVER BASIN

02057400 SMITH MOUNTAIN LAKE NEAR PENHOOK, VA--Continued



ROANOKE RIVER BASIN

02058400 PIGG RIVER NEAR SANDY LEVEL, VA

LOCATION.--Lat 36°56'45", long 79°31'30", Pittsylvania County, Hydrologic Unit 03010101, on left bank 300 ft downstream from Harpen Creek, 0.5 mi upstream from bridge on State Highway 40, and 1.1 mi south of Sandy Level.

DRAINAGE AREA.--350 mi².

PERIOD OF RECORD.--May 1963 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 617.00 ft above sea level (U.S. Army Corps of Engineers bench mark). Prior to Nov. 18, 1963, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. American Electric Power gage-height transmitter at station, recorder at Roanoke. Maximum discharge, 65,600 ft³/s, from rating curve extended above 25,500 ft³/s on basis of slope-area measurement of peak flow. Minimum gage height, 1.95 ft, Aug. 29, 30, 1981. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 28	1330	*12,500	18.52	Feb. 17	1830	6,210	11.44
Feb. 5	0200	6,820	12.32	Apr. 20	0530	4,980	9.63

Minimum discharge, 80 ft³/s, Sept. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	180	242	222	241	502	460	387	423	334	217	152	105
2	161	343	211	243	438	435	395	700	320	204	152	104
3	159	364	196	263	421	416	370	483	316	205	138	103
4	161	252	218	289	3300	394	487	474	352	203	128	118
5	160	209	230	290	3900	385	548	516	341	237	123	128
6	156	201	210	285	1440	373	435	449	338	227	119	116
7	150	240	194	313	960	368	401	435	328	199	117	105
8	149	246	190	1980	706	685	391	686	309	195	128	100
9	149	224	189	1300	565	2770	404	571	299	224	450	94
10	149	209	203	559	488	1260	470	459	326	305	253	90
11	147	197	222	390	459	672	416	522	334	227	198	88
12	145	194	215	339	928	531	389	585	326	196	178	90
13	145	196	199	335	632	472	373	473	341	190	158	89
14	146	245	193	326	496	447	375	436	299	186	152	86
15	165	262	189	603	440	427	381	411	290	177	148	83
16	179	231	186	1340	433	403	368	391	343	169	178	82
17	168	207	186	624	3760	396	2120	406	411	390	267	82
18	179	197	186	422	2650	423	1340	375	327	256	272	117
19	196	194	183	370	943	573	1040	356	283	185	194	101
20	226	192	182	355	689	1160	3450	345	284	179	162	95
21	186	197	181	315	589	2390	1030	340	266	168	150	101
22	168	253	209	292	500	1070	700	335	252	158	144	114
23	160	271	283	1470	1320	678	600	349	255	221	140	137
24	160	233	268	1140	1510	552	541	420	243	176	139	112
25	181	208	359	689	757	489	483	416	229	161	135	102
26	220	200	368	475	584	459	449	368	225	155	131	101
27	336	199	323	859	515	444	426	401	217	153	125	99
28	263	194	392	9520	489	426	416	502	208	166	123	93
29	205	193	355	2540	---	411	399	392	256	166	119	88
30	187	201	335	952	---	397	391	362	259	151	114	87
31	183	---	288	641	---	389	---	340	---	140	109	---
TOTAL	5519	6794	7365	29760	30414	20755	19975	13721	8911	6186	5096	3010
MEAN	178	226	238	960	1086	670	666	443	297	200	164	100
MAX	336	364	392	9520	3900	2770	3450	700	411	390	450	137
MIN	145	192	181	241	421	368	368	335	208	140	109	82
CFM	.51	.65	.68	2.74	3.10	1.91	1.90	1.26	.85	.57	.47	.29
IN.	.59	.72	.78	3.16	3.23	2.21	2.12	1.46	.95	.66	.54	.32

ROANOKE RIVER BASIN

02058400 PIGG RIVER NEAR SANDY LEVEL, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	303	317	361	491	517	608	549	411	344	264	247	306
MAX	1220	995	836	1054	1086	1578	2265	989	1200	814	867	1864
(WY)	1991	1986	1974	1978	1998	1993	1987	1978	1972	1972	1985	1987
MIN	110	103	143	160	228	203	202	165	114	85.4	49.3	70.0
(WY)	1982	1982	1966	1981	1968	1981	1985	1981	1981	1967	1981	1968

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

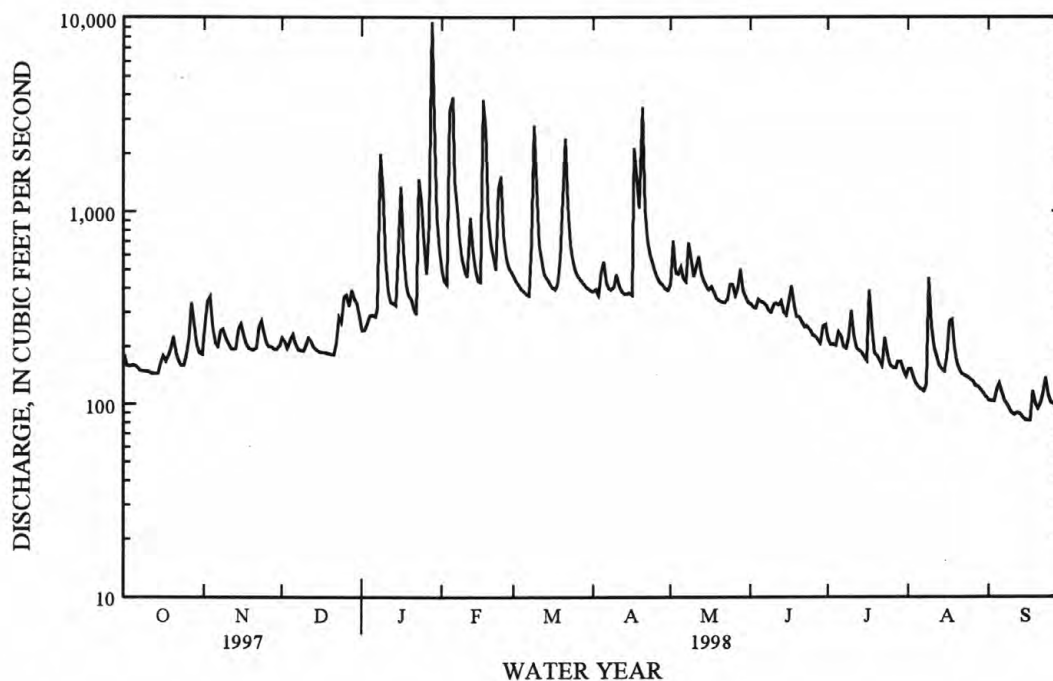
WATER YEARS 1963 - 1998

ANNUAL TOTAL	137785	157506	
ANNUAL MEAN	377	432	394
HIGHEST ANNUAL MEAN			709
LOWEST ANNUAL MEAN			155
HIGHEST DAILY MEAN	3320	9520	34900
LOWEST DAILY MEAN	105	82	25
ANNUAL SEVEN-DAY MINIMUM	125	86	29
INSTANTANEOUS PEAK FLOW		12500	65600
INSTANTANEOUS PEAK STAGE		18.52	b31.12
INSTANTANEOUS LOW FLOW		80	24
ANNUAL RUNOFF (CFSM)	1.08	1.23	1.13
ANNUAL RUNOFF (INCHES)	14.64	16.74	15.29
10 PERCENT EXCEEDS	602	685	606
50 PERCENT EXCEEDS	332	272	262
90 PERCENT EXCEEDS	161	127	126

a Also Sept. 17, 1998.

b From high-water marks.

c Also Aug. 30, 1981.



ROANOKE RIVER BASIN

02059400 LEESVILLE LAKE NEAR LEESVILLE, VA

LOCATION.--Lat 37°05'35", long 79°24'09", Campbell County, Hydrologic Unit 03010101, at Leesville Dam on Roanoke (Staunton) River, 2.0 mi south of Leesville, 3.5 mi upstream from Goose Creek, and at mile 296.

DRAINAGE AREA.--1,505 mi².

PERIOD OF RECORD.--September 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is at sea level. Prior to June 6, 1963, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by concrete dam. Spillway, with crest at elevation 578.0 ft, is equipped with 4 radial gates 35 ft high by 50 ft wide. Storage began on Sept. 29, 1962, during construction, and water in reservoir first reached minimum power pool, elevation, 600.0 ft, on Mar. 5, 1963. Total capacity at maximum pool elevation, 614 ft, is 98,180 acre-ft of which 78,670 acre-ft is above the spillway crest elevation; 38,200 acre-ft is normally used for power between elevations 600.0 ft, minimum power pool, and 613.0 ft. Capacity at invert of lowest penstock, elevation, 579.75 ft, is 21,010 acre-ft. Figures given herein represent total contents. Reservoir is part of the Smith Mountain Combination Project (see station 02057400).

COOPERATION.--Records were provided by the American Electric Power.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 98,180 acre-ft, Feb. 1, 1965, elevation, 614.0 ft; minimum (after first filling to minimum power pool), 39,880 acre-ft, Mar. 19, 1963, elevation, 592.0 ft.

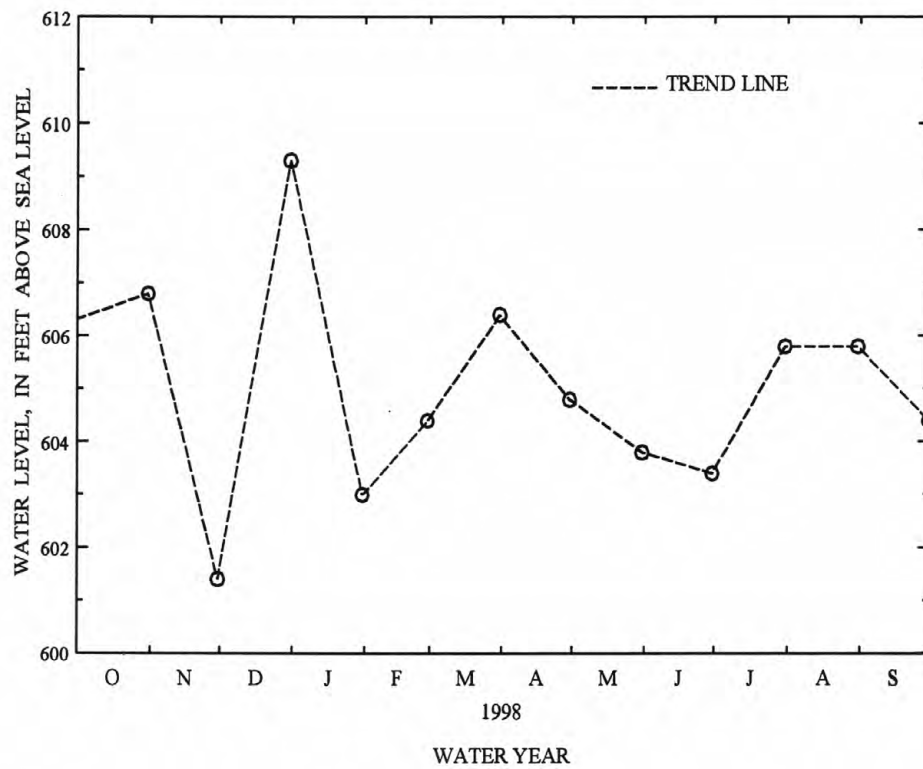
EXTREMES FOR CURRENT YEAR.--Maximum contents, 94,960 acre-ft, Jan. 29, elevation, 613.0 ft; minimum, 58,000 acre-ft, Nov. 24, elevation, 600.3 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	606.3	74,420	-
Oct. 31.....	606.8	75,890	+1,470
Nov. 30.....	601.4	60,950	-14,940
Dec. 31.....	609.3	83,240	+22,290
CAL YR 1997.....			+20,680
Jan. 31.....	603.0	65,240	-18,000
Feb. 28.....	604.4	68,990	+3,750
Mar. 31.....	606.4	74,720	+5,730
Apr. 30.....	604.8	70,060	-4,660
May 31.....	603.8	67,380	-2,680
June 30.....	603.4	66,310	-1,070
July 31.....	605.8	72,950	+6,640
Aug. 31.....	605.8	72,950	0
Sept. 30.....	604.4	68,990	-3,960
WTR YR 1998.....			-5,430

ROANOKE RIVER BASIN

02059400 LEESVILLE LAKE NEAR LEESVILLE, VA--Continued



ROANOKE RIVER BASIN

02059500 GOOSE CREEK NEAR HUDDLESTON, VA

LOCATION.--Lat 37°10'23", long 79°31'14", Bedford County, Hydrologic Unit 03010101, on left bank 0.3 mi upstream from Haden Bridge on State Highway 732, 0.4 mi upstream from Rockcastle Creek, and 3.5 mi northwest of Huddleston.

DRAINAGE AREA.--188 mi².

PERIOD OF RECORD.--March 1925 to August 1928 (gage heights only), September 1930 to current year.

REVISED RECORDS.--WSP 892: 1933, 1935(M), 1939. WSP 972: 1931-32(M), 1934(M), 1935-38, 1940, 1941(M). WSP 1082: 1940(P). WSP 1142: 1938-40(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 592.91 ft above sea level. Mar. 15, 1925, to Aug. 4, 1928, nonrecording gage at site 1,300 ft downstream at different datum.

REMARKS.--Records good except those for period with ice effect, Jan. 1-3, and periods of doubtful gage-height record, Mar. 29 to Apr. 20, Aug. 20-24, which are fair. Prior to October 1954, diurnal fluctuation at low flow caused by mill upstream from station. American Electric Power gage-height transmitter at station with recorder at Roanoke. Maximum discharge, 53,200 ft³/s, from rating curve extended above 11,000 ft³/s on basis of slope-area measurements at gage heights 19.25 ft, 24.1 ft, 24.89 ft, and 37.49 ft. Minimum discharge, 3.0 ft³/s, Aug. 31, 1932, and Jan. 30, 1934, result of freezeup. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	0945	5,520	8.28	Feb. 17	1615	3,830	6.56
Jan. 28	0530	*11,400	*13.06	Mar. 21	0345	6,970	9.57
Feb. 4	1900	11,300	12.97				

Minimum discharge, 31 ft³/s, Sept. 14-17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	156	75	e75	383	251	e218	250	122	92	63	43
2	54	199	70	e86	288	235	e218	377	115	86	55	42
3	53	112	66	e98	258	219	e206	273	114	87	51	42
4	55	83	81	101	5400	205	e495	296	110	86	48	45
5	54	71	80	109	3100	195	e458	288	118	114	46	43
6	53	71	72	112	1340	185	e317	252	118	94	45	40
7	53	134	68	137	969	180	e285	233	109	88	44	41
8	51	110	69	1740	612	327	e261	305	104	90	149	41
9	51	86	69	664	444	810	e399	251	104	100	229	36
10	51	78	72	340	352	533	e451	210	129	97	83	35
11	50	73	80	207	328	344	e303	374	121	81	112	34
12	49	70	72	164	618	274	e278	387	163	75	81	34
13	50	69	70	166	427	238	e260	276	133	75	67	32
14	54	83	67	144	325	226	e257	232	113	73	62	31
15	66	88	66	413	269	211	e245	207	143	69	63	33
16	60	74	69	783	245	197	e260	187	147	76	85	31
17	58	70	72	400	2090	191	e1760	182	158	127	196	31
18	64	68	65	251	1140	199	e726	173	121	84	100	35
19	63	67	62	207	586	291	e1640	154	119	91	76	43
20	60	68	63	197	443	1100	e1850	145	124	85	e70	40
21	56	70	62	165	350	3700	767	141	109	73	e66	42
22	54	113	70	152	284	1010	544	131	108	71	e64	63
23	54	99	80	692	617	561	443	155	107	74	e61	44
24	55	82	76	575	668	412	372	184	120	90	e59	37
25	76	74	112	466	471	327	301	179	103	75	54	37
26	89	71	102	300	371	284	265	153	97	74	52	38
27	100	72	98	792	316	261	237	216	91	73	51	37
28	75	67	137	6020	281	240	221	202	93	76	49	36
29	63	67	116	1550	---	e225	203	154	128	68	48	35
30	62	70	118	800	---	e237	198	136	111	62	46	36
31	60	---	97	552	---	e218	---	125	---	58	44	---
TOTAL	1850	2615	2476	18458	22975	13886	14438	6828	3552	2564	2319	1157
MEAN	59.7	87.2	79.9	595	821	448	481	220	118	82.7	74.8	38.6
MAX	100	199	137	6020	5400	3700	1850	387	163	127	229	63
MIN	49	67	62	75	245	180	198	125	91	58	44	31
CFSM	.32	.46	.42	3.17	4.36	2.38	2.56	1.17	.63	.44	.40	.21
IN.	.37	.52	.49	3.65	4.55	2.75	2.86	1.35	.70	.51	.46	.23

e Estimated.

ROANOKE RIVER BASIN

02059500 GOOSE CREEK NEAR HUDDLESTON, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	134	138	174	232	253	291	266	201	154	116	134	130
MAX	719	642	616	772	821	909	1320	780	802	466	822	1229
(WY)	1938	1986	1949	1936	1998	1975	1987	1989	1995	1949	1940	1987
MIN	27.9	32.9	45.2	46.6	48.5	80.1	73.2	56.8	50.7	26.3	22.9	28.8
(WY)	1932	1932	1966	1966	1934	1981	1942	1981	1932	1966	1932	1933

SUMMARY STATISTICS

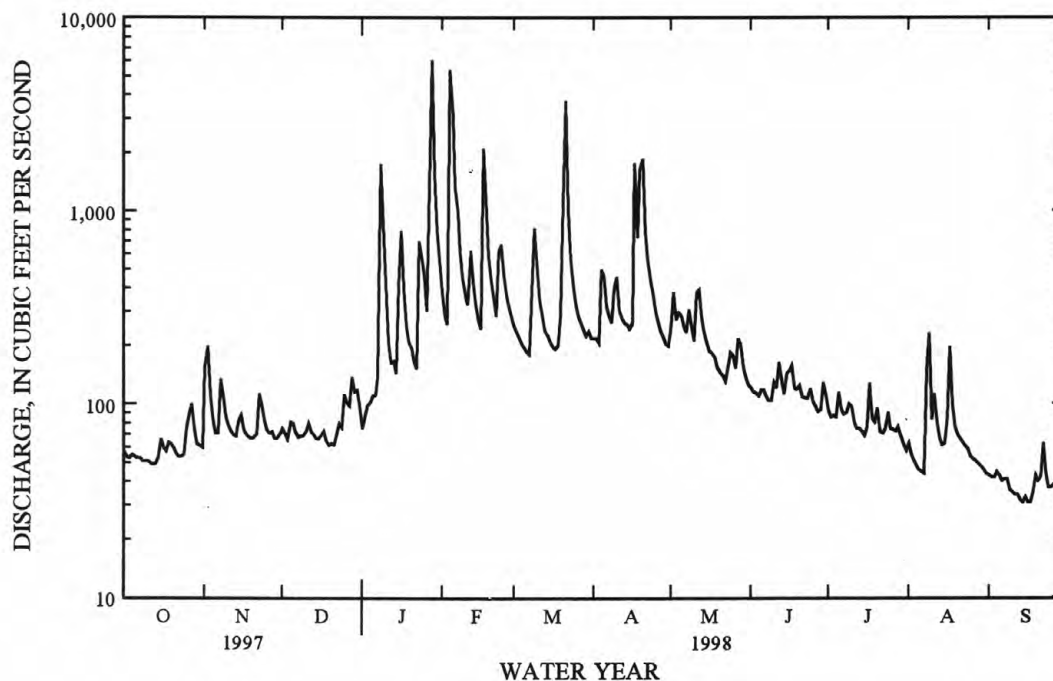
FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1931 - 1998

ANNUAL TOTAL	52661	93118	
ANNUAL MEAN	144	255	185
HIGHEST ANNUAL MEAN			393
LOWEST ANNUAL MEAN			66.8
HIGHEST DAILY MEAN	901	Feb 15	6020
LOWEST DAILY MEAN	36	aSep 5	31
ANNUAL SEVEN-DAY MINIMUM	38	Sep 3	32
INSTANTANEOUS PEAK FLOW			11400
INSTANTANEOUS PEAK STAGE			13.06
INSTANTANEOUS LOW FLOW			31
ANNUAL RUNOFF (CFSM)	.77	1.36	.98
ANNUAL RUNOFF (INCHES)	10.42	18.43	13.36
10 PERCENT EXCEEDS	261	461	325
50 PERCENT EXCEEDS	112	109	113
90 PERCENT EXCEEDS	50	49	48

- a Also Sept. 7, 1997.
b Also Sept. 16, 17, 1998.
c From floodmarks.
d Also Sept. 15-17, 1998.
e Estimated.
f Also Jan. 30, 1934, result of freezeup.



ROANOKE RIVER BASIN

02060500 ROANOKE (STAUNTON) RIVER AT ALTAVISTA, VA

LOCATION.--Lat 37°06'16", long 79°17'44", Pittsylvania County, Hydrologic Unit 03010101, on right bank 12 ft upstream from bridge on alternate U.S. Highway 29, 0.3 mi south of Altavista, 0.3 mi downstream from Sycamore Creek, 3.5 mi upstream from Big Otter River, and at mile 286.5.

DRAINAGE AREA.--1,789 mi².

PERIOD OF RECORD.--August 1930 to current year.

REVISED RECORDS.--WSP 892: 1938(M). WSP 972: 1931-33. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 503.10 ft above sea level. Prior to Feb. 21, 1951, on left bank 50 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1962 by Leesville Lake (station 02059400) 9.5 mi upstream and since 1963 by Smith Mountain Lake (station 02057400) 27.5 mi upstream. U.S. Army Corps of Engineers satellite gage-height telemeter at station. American Electric Power gage-height transmitter at station with recorder at Roanoke. Hadson Power Company gage-height telemeter at station. Maximum discharge, 105,000 ft³/s, from rating curve extended above 52,000 ft³/s on basis of unit hydrograph and flood-routing studies by U.S. Army Corps of Engineers and records for other stations in Roanoke River Basin. Minimum gage height, 1.53 ft, Jan. 2, 1977, result of freezeup. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19,300 ft³/s, Jan. 28, gage height, 19.32 ft; minimum daily, 668 ft³/s, Aug. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	799	851	851	838	9250	2470	2010	2640	1660	896	705	673		
2	783	1100	826	840	5320	2270	2190	3860	1550	783	708	677		
3	789	938	810	872	4870	2280	1900	5000	1400	755	698	703		
4	791	833	843	895	11600	2260	3020	3490	1410	753	687	700		
5	778	839	846	889	15900	2230	4060	3190	1410	784	690	705		
6	773	834	821	913	13800	1870	3110	3110	1420	775	687	677		
7	768	970	816	969	12200	1560	2220	2990	1400	757	691	683		
8	782	917	806	2910	10300	1790	1840	3410	1280	723	904	689		
9	806	885	821	1890	9910	4690	1980	3140	1080	761	872	670		
10	784	848	830	1260	5830	5590	2500	2650	1070	757	724	678		
11	779	852	834	1060	2890	5260	2520	3050	1010	730	749	713		
12	771	843	835	1520	4580	5210	2230	4530	1830	708	741	686		
13	775	830	832	2020	3930	3520	2020	3170	1880	726	721	689		
14	789	827	807	3570	3130	1710	1970	2630	1430	717	711	681		
15	819	843	786	2980	2490	1640	1870	2370	1230	693	719	681		
16	815	811	813	6130	2010	1750	1850	2040	1190	704	1590	686		
17	807	796	795	5130	9930	2000	8060	2000	1110	773	862	687		
18	812	829	802	2240	12400	2320	10300	1950	1250	738	810	691		
19	785	812	807	1520	11900	4130	4950	1840	1140	743	741	712		
20	794	827	820	1790	9850	7650	13100	1640	1060	737	713	744		
21	802	831	826	1680	5320	14800	11500	1580	1040	722	705	709		
22	778	899	825	4310	3950	13700	4640	1500	1030	719	702	720		
23	796	941	829	3850	7400	11700	3440	1470	898	729	689	702		
24	775	859	838	4250	8770	5480	3040	1790	820	724	702	687		
25	801	855	892	3060	3900	2770	2650	1900	821	729	1880	691		
26	878	847	895	2160	2750	2700	2380	1710	804	715	1220	707		
27	895	842	885	3360	2600	2850	1830	2010	805	737	669	686		
28	914	833	929	17300	2540	2810	1800	2870	1220	743	668	699		
29	810	819	927	16300	---	2200	1660	2150	1030	720	2210	763		
30	795	845	915	14300	---	2010	1970	1630	1020	690	732	681		
31	789	---	872	11000	---	2000	---	1650	---	703	673	---		
TOTAL	24832	25856	26034	121806	199320	125220	108610	78960	36298	22944	26573	20870		
MEAN	801	862	840	3929	7119	4039	3620	2547	1210	740	857	696		
MAX	914	1100	929	17300	15900	14800	13100	5000	1880	896	2210	763		
MIN	768	796	786	838	2010	1560	1660	1470	804	690	668	670		
(†)	-5409	-1380	-60	+22830	-3250	+1880	+730	-1350	+471	-1790	-7160	-10400		
MEAN†	627	816	838	4666	7002	4100	3645	2504	1226	682	626	349		
CFSM†	.35	.46	.47	2.61	3.91	2.29	2.04	1.40	.69	.38	.35	.20		
IN.†	.40	.51	.54	3.01	4.08	2.64	2.27	1.61	.76	.44	.40	.22		
CAL YR 1997	TOTAL	579961	MEAN	1589	MAX	7910	MIN	759	MEAN†	1530	CFSM†	.86	IN.†	11.61
WTR YR 1998	TOTAL	817323	MEAN	2239	MAX	17300	MIN	668	MEAN†	2215	CFSM†	1.24	IN.†	16.81

† Total change in contents, equivalent in cubic feet per second, per month, in Smith Mountain and Leesville Lakes; provided by American Electric Power.

† Adjusted for monthly change in contents.

ROANOKE RIVER BASIN

02060500 ROANOKE (STAUNTON) RIVER AT ALTAVISTA, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 1962, BY WATER YEAR (WY) [UNREGULATED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1431	1366	1845	2321	2615	2949	2831	2042	1592	1388	1630	1307
MAX	6570	3335	5971	7148	5338	5313	4818	4825	3056	5354	10210	3461
(WY)	1938	1948	1949	1936	1960	1936	1951	1958	1950	1949	1940	1945
MIN	324	388	528	543	517	1260	815	827	653	442	314	284
(WY)	1931	1932	1932	1956	1934	1940	1942	1934	1956	1932	1932	1954

SUMMARY STATISTICS

WATER YEARS 1931 - 1962

ANNUAL MEAN	1940
HIGHEST ANNUAL MEAN	3424
LOWEST ANNUAL MEAN	915
HIGHEST DAILY MEAN	98300
LOWEST DAILY MEAN	156
ANNUAL SEVEN-DAY MINIMUM	181
INSTANTANEOUS PEAK FLOW	105000
INSTANTANEOUS PEAK STAGE	a40.08
INSTANTANEOUS LOW FLOW	94
ANNUAL RUNOFF (CFSM)	1.08
ANNUAL RUNOFF (INCHES)	14.73
10 PERCENT EXCEEDS	3590
50 PERCENT EXCEEDS	1310
90 PERCENT EXCEEDS	542

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1167	1326	1417	2176	2353	2872	2547	1951	1545	1103	1037	1228
MAX	4811	6190	3622	4643	7119	7795	10930	4716	5684	3363	3108	5246
(WY)	1991	1986	1997	1978	1998	1993	1987	1978	1972	1972	1985	1987
MIN	189	396	351	620	581	338	604	484	220	504	311	439
(WY)	1964	1982	1964	1965	1981	1981	1964	1964	1964	1981	1963	1963

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

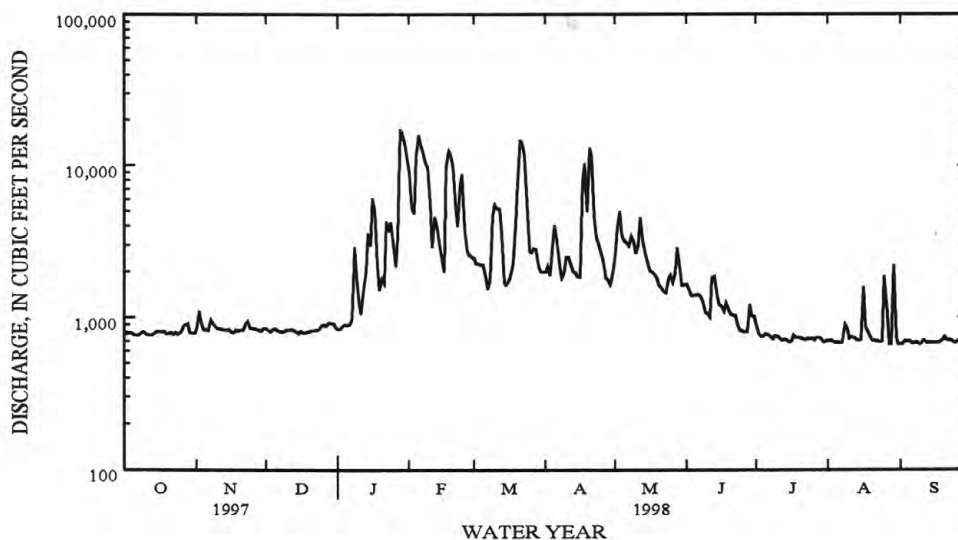
WATER YEARS 1963 - 1998

ANNUAL TOTAL	579961	817323	
ANNUAL MEAN	1589	2239	1723
HIGHEST ANNUAL MEAN			2903
LOWEST ANNUAL MEAN			645
HIGHEST DAILY MEAN	7910	Jun 3	46700
LOWEST DAILY MEAN	759	Sep 22	39
ANNUAL SEVEN-DAY MINIMUM	775	Sep 18	116
INSTANTANEOUS PEAK FLOW			62100
INSTANTANEOUS PEAK STAGE			19.32
INSTANTANEOUS LOW FLOW			b651
ANNUAL RUNOFF (CFSM)	.89	1.25	.96
ANNUAL RUNOFF (INCHES)	12.06	17.00	13.09
10 PERCENT EXCEEDS	2870	4900	3440
50 PERCENT EXCEEDS	1070	914	1030
90 PERCENT EXCEEDS	803	704	267

a From floodmarks.

b Result of regulation.

c Also Aug. 28, 30, 31, Sept. 27, 30, 1968.



ROANOKE RIVER BASIN

02061500 BIG OTTER RIVER NEAR EVINGTON, VA

LOCATION.--Lat 37°12'30", long 79°18'14", Campbell County, Hydrologic Unit 03010101, on right bank 60 ft upstream from bridge on State Highway 682, 2.0 mi southwest of Evington, and 2.1 mi upstream from Flat Creek.

DRAINAGE AREA.--320 mi².

PERIOD OF RECORD.--October 1936 to current year. Monthly discharge only for some periods, published in WSP 1303. Prior to October 1965, published as Otter River near Evington.

REVISED RECORDS.--WSP 852: 1937. WSP 892: 1938-39(M). WSP 972: 1937-39. WSP 1032: 1940. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 544.02 ft above sea level.

REMARKS.--Records good except those for periods with doubtful or no gage-height record, Oct. 4-6, Dec. 1, Feb. 18, and period with ice effect, Jan. 1, 2, which are fair. Maximum discharge, 65,600 ft³/s, from rating curve extended above 24,000 ft³/s on basis of slope-area measurements of 24.96 ft and 29.93 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in October 1937 and August 1939 reached a stage of 23.1 ft, discharge, 27,500 ft³/s, from rating curve extended above 7,000 ft³/s on basis of unit hydrograph and flood-routing studies by U.S. Army Corps of Engineers, and records for other stations in Roanoke River Basin.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 9	0300	5,380	11.90	Mar. 21	0300	5,830	12.77
Jan. 28	1200	*8,260	*15.78	Apr. 17	1200	4,890	10.92
Feb. 4	2100	7,480	15.11	Apr. 20	0100	5,390	11.91
Feb. 17	1900	5,300	11.73				

Minimum discharge 42 ft³/s, Sept. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74	178	e134	e140	720	637	575	614	310	172	102	63
2	68	456	125	e155	639	615	575	942	281	157	97	62
3	66	218	118	197	606	596	565	624	276	149	89	60
4	e71	135	160	208	3730	581	1160	608	269	149	85	62
5	e69	113	172	216	3160	566	1010	645	277	285	82	60
6	e66	105	137	242	1660	533	735	517	278	186	80	56
7	66	370	126	541	1340	515	654	509	262	156	78	55
8	65	280	119	3160	1020	821	612	750	244	157	222	52
9	65	186	122	2940	839	2120	816	720	241	169	578	49
10	66	148	130	900	741	1110	907	595	306	153	185	47
11	64	130	154	598	697	823	728	681	287	140	156	48
12	63	120	137	475	1090	730	655	705	303	130	124	49
13	64	115	126	451	819	674	607	602	279	127	105	47
14	65	136	122	425	729	642	599	546	247	125	138	45
15	70	152	117	401	662	601	586	507	268	123	153	45
16	73	127	116	1910	622	582	562	471	285	120	122	44
17	72	118	118	877	2730	579	2730	494	256	164	199	43
18	78	112	118	615	e1800	594	1290	468	223	136	166	70
19	85	109	114	516	1150	731	1580	415	221	117	123	73
20	81	108	113	509	953	1310	2880	386	240	115	104	61
21	75	111	112	443	849	3910	1210	370	217	111	95	65
22	72	200	121	399	759	1510	950	355	216	109	91	140
23	69	198	151	1310	1150	1030	846	386	224	123	87	92
24	69	149	143	1160	1170	878	752	455	209	131	83	87
25	84	130	234	893	849	781	680	457	189	126	81	85
26	103	124	223	650	751	723	625	391	189	118	77	87
27	162	120	195	972	707	682	583	447	185	124	74	81
28	119	114	279	6850	678	650	559	493	177	134	72	74
29	95	113	242	2240	---	617	536	391	268	122	70	70
30	89	117	239	1140	---	592	513	356	230	109	67	72
31	86	---	198	860	---	578	---	384	---	102	65	---
TOTAL	2414	4792	4715	32393	32620	27311	27080	16284	7457	4339	3850	1944
MEAN	77.9	160	152	1045	1165	881	903	525	249	140	124	64.8
MAX	162	456	279	6850	3730	3910	2880	942	310	285	578	140
MIN	63	105	112	140	606	515	513	355	177	102	65	43
CFSM	.24	.50	.48	3.27	3.64	2.75	2.82	1.64	.78	.44	.39	.20
IN.	.28	.56	.55	3.77	3.79	3.17	3.15	1.89	.87	.50	.45	.23

e Estimated.

ROANOKE RIVER BASIN

02061500 BIG OTTER RIVER NEAR EVINGTON, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	232	258	340	421	497	550	491	382	314	216	241	205
MAX	1163	1200	1192	1045	1165	1332	2062	1335	2124	925	1412	1150
(WY)	1991	1986	1949	1998	1998	1993	1987	1989	1995	1949	1940	1996
MIN	52.5	68.7	68.6	95.7	193	153	127	106	71.0	27.9	33.3	29.9
(WY)	1964	1966	1966	1966	1968	1981	1966	1981	1966	1966	1963	1968

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

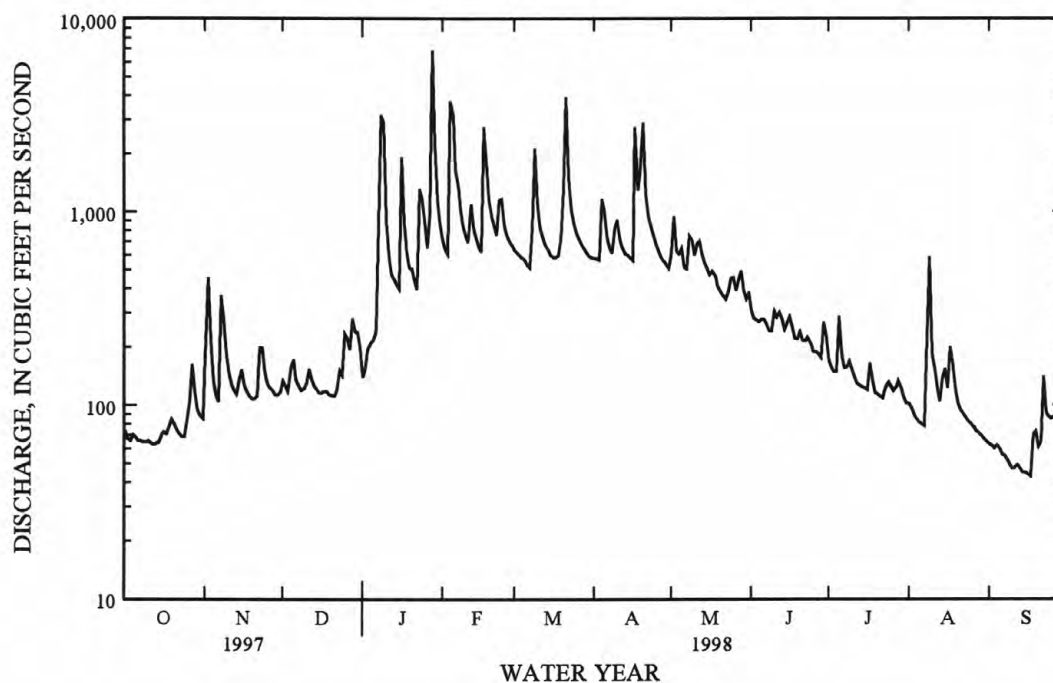
FOR 1998 WATER YEAR

WATER YEARS 1937 - 1998

ANNUAL TOTAL	100496	165199	
ANNUAL MEAN	275	453	345
HIGHEST ANNUAL MEAN			635
LOWEST ANNUAL MEAN			139
HIGHEST DAILY MEAN	1790	Feb 15	35700
LOWEST DAILY MEAN	55	Sep 8	12
ANNUAL SEVEN-DAY MINIMUM	60	Sep 3	13
INSTANTANEOUS PEAK FLOW		8260	Jan 28
INSTANTANEOUS PEAK STAGE		15.78	Jan 28
INSTANTANEOUS LOW FLOW		42	Sep 17
ANNUAL RUNOFF (CFSM)	.86	1.41	1.08
ANNUAL RUNOFF (INCHES)	11.68	19.20	14.63
10 PERCENT EXCEEDS	557	921	630
50 PERCENT EXCEEDS	198	216	220
90 PERCENT EXCEEDS	72	70	82

a Also Sept. 12, 13, 1966.

b Also Sept. 12-14, 1966.



ROANOKE RIVER BASIN

02062500 ROANOKE (STAUNTON) RIVER AT BROOKNEAL, VA

LOCATION.--Lat 37°02'28", long 78°57'02", Campbell County, Hydrologic Unit 03010102, on left bank 1,600 ft upstream from bridge on U.S. Highway 501 at Brookneal, 2.9 mi upstream from Falling River, and at mile 255.9.

DRAINAGE AREA.--2,415 mi².

PERIOD OF RECORD.--April 1923 to current year.

REVISED RECORDS.--WSP 892: 1928(M). WSP 972: 1928-34. WSP 1303: 1924-27(M), 1929(M), 1941(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 351.96 ft above sea level. Apr. 30, 1923, to Aug. 29, 1929, nonrecording gage, Aug. 30, 1929, to Aug. 15, 1940, water-stage recorder, and Aug. 16 to Oct. 1, 1940, nonrecording gage at site 1,800 ft downstream at same datum. Oct. 2, 1940, to Sept. 30, 1941, nonrecording gage at site 1,600 ft downstream at same datum.

REMARKS.--Records good except for estimated discharge, which is fair. Flow regulated since 1962 by Leesville Lake (station 02059400) 40.1 mi upstream and since 1963 by Smith Mountain Lake (station 02057400) 58.1 mi upstream. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 130,000 ft³/s, at present site, from gage-height relation curve, from rating curve extended above 55,000 ft³/s on basis of slope-area measurement by Geological Survey, unit hydrograph and flood-routing studies by U.S. Army Corps of Engineers, and records for other stations in Roanoke River Basin. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 34,900 ft³/s, Jan. 28, gage height, 27.92 ft; minimum daily, 830 ft³/s, Sept. 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1070	e1280	1260	1310	10400	3840	3170	3370	e2350	1500	1040	875		
2	1010	e1500	1200	1230	5620	3650	3360	4760	e2310	1260	1040	856		
3	990	e1750	1160	1290	6710	3630	3060	5800	2060	1200	1000	881		
4	990	e1450	1260	1390	13000	3560	3990	e4950	2090	1170	1010	922		
5	995	e1300	1320	1400	27300	3490	6490	e5300	e2060	1300	966	912		
6	981	1130	1250	1390	19100	3380	4850	e4700	e2080	1350	964	888		
7	974	1490	1180	1700	16600	2810	3770	e4150	e2060	1210	967	841		
8	972	1690	1150	e3400	11800	3410	3310	8870	e1980	1200	978	861		
9	995	1400	1140	e7200	11000	7580	2970	5060	e1750	1170	2060	841		
10	1000	1270	1170	e3150	8530	8310	4000	4050	e1720	1210	1510	836		
11	978	1200	1210	e2080	4190	6760	3860	3520	e1770	1170	1230	855		
12	968	1180	1220	e2200	5860	6420	3630	5250	e1990	1100	1180	876		
13	962	1170	1190	e2500	5810	5770	3200	4640	e2520	1090	1100	854		
14	976	1190	1170	e3650	4520	3300	3180	3670	e2400	1110	1070	842		
15	1050	1210	1110	e4800	3800	3040	3040	3450	e1870	1080	1090	830		
16	1060	1190	1120	e8400	3250	2970	2930	3010	e1890	1060	1130	833		
17	1080	1120	1130	e7200	11600	3080	10200	2920	e1720	1090	1950	845		
18	1190	1130	1110	e4200	19300	3520	15200	2840	1780	1190	1360	860		
19	1120	1120	1110	e2500	15500	5420	7650	2730	e1850	1110	1200	897		
20	1060	1110	1110	e2750	11800	9810	17500	2520	e1830	1120	1090	946		
21	1060	1150	1120	e2600	7710	29200	15800	2420	e1800	1090	1040	935		
22	1030	1290	1150	e3300	5480	20300	7980	2280	e1700	1070	1040	989		
23	1010	1420	1190	e9200	6900	15600	5100	2260	e1600	1070	1010	994		
24	1000	1310	1230	8040	12700	8960	4440	2470	1350	1090	981	893		
25	1020	1210	1390	5480	6370	4520	4000	2740	1330	1100	996	878		
26	1230	1180	1470	3710	4210	3950	3780	2600	1290	1080	2380	906		
27	1440	1170	1410	3960	4030	4020	3100	2620	1270	1070	907	901		
28	1280	1160	1520	27500	3910	4010	2960	3520	1530	1170	865	873		
29	1210	1140	1540	28100	---	3630	2800	3240	1560	1130	1460	863		
30	1070	1160	1490	19900	---	3270	2730	2490	1630	1060	1710	941		
31	1060	---	1430	13600	---	3180	---	2370	---	1030	850	---		
TOTAL	32831	38070	38510	189130	267000	194390	162050	114570	55140	35650	37174	26524		
MEAN	1059	1269	1242	6101	9536	6271	5402	3696	1838	1150	1199	884		
MAX	1440	1750	1540	28100	27300	29200	17500	8870	2520	1500	2380	994		
MIN	962	1110	1110	1230	3250	2810	2730	2260	1270	1030	850	830		
(†)	-5409	-1380	-60	+22830	-3250	+1880	+730	-1350	+471	-1790	-7160	-10400		
MEAN†	885	1223	1240	6837	9420	6331	5426	3652	1854	1092	968	537		
CFSM†	.37	.51	.51	2.83	3.90	2.62	2.25	1.51	.77	.45	.40	.22		
IN.†	.42	.57	.59	3.26	4.06	3.02	2.51	1.74	.86	.52	.46	.25		
CAL YR 1997	TOTAL	809732	MEAN	2218	MAX	10800	MIN	920	MEAN†	2160	CFSM†	.89	IN.†	12.14
WTR YR 1998	TOTAL	1191039	MEAN	3263	MAX	29200	MIN	830	MEAN†	3239	CFSM†	1.34	IN.†	18.21

† Total change in contents, equivalent in cubic feet per second, per month, in Smith Mountain and Leesville Lakes; provided by Appalachian Power Company.

‡ Adjusted for monthly change in contents.

e Estimated.

ROANOKE RIVER BASIN

02062500 ROANOKE (STAUNTON) RIVER AT BROOKNEAL, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1924 - 1962, BY WATER YEAR (WY) [UNREGULATED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1884	1762	2417	3019	3349	3603	3521	2512	1991	1726	2133	1731
MAX	8561	3861	7776	9381	6272	7071	6407	5789	4320	7125	14270	7430
(WY)	1938	1949	1949	1936	1960	1936	1935	1958	1929	1949	1940	1928
MIN	415	527	805	821	754	1666	1083	1132	714	489	384	371
(WY)	1931	1932	1932	1956	1934	1940	1942	1956	1926	1930	1932	1930

SUMMARY STATISTICS

WATER YEARS 1924 - 1962

ANNUAL MEAN	2466
HIGHEST ANNUAL MEAN	4386
LOWEST ANNUAL MEAN	1172
HIGHEST DAILY MEAN	113000
LOWEST DAILY MEAN	e191
ANNUAL SEVEN-DAY MINIMUM	207
INSTANTANEOUS PEAK FLOW	130000
INSTANTANEOUS PEAK STAGE	46.50
INSTANTANEOUS LOW FLOW	(a)
ANNUAL RUNOFF (CFSM)	1.02
ANNUAL RUNOFF (INCHES)	13.88
10 PERCENT EXCEEDS	4450
50 PERCENT EXCEEDS	1720
90 PERCENT EXCEEDS	744

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1625	1847	2091	3110	3386	4123	3633	2729	2174	1519	1417	1722
MAX	6446	8961	5625	7695	9536	11760	14410	7039	7522	4775	4675	8822
(WY)	1991	1986	1997	1978	1998	1993	1987	1978	1995	1972	1985	1996
MIN	325	553	637	867	953	561	921	836	405	683	411	512
(WY)	1964	1982	1964	1981	1981	1981	1981	1964	1964	1963	1964	1965

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1963 - 1998

ANNUAL TOTAL	809732	1191039	
ANNUAL MEAN	2218	3263	2442
HIGHEST ANNUAL MEAN			4440
LOWEST ANNUAL MEAN			853
HIGHEST DAILY MEAN	10800	Mar 4	29200
LOWEST DAILY MEAN	920	Sep 7	830
ANNUAL SEVEN-DAY MINIMUM	946	Sep 3	847
INSTANTANEOUS PEAK FLOW			34900
INSTANTANEOUS PEAK STAGE			27.92
INSTANTANEOUS LOW FLOW			807
ANNUAL RUNOFF (CFSM)	.92	1.35	c136
ANNUAL RUNOFF (INCHES)	12.47	18.35	13.74
10 PERCENT EXCEEDS	4180	7200	4770
50 PERCENT EXCEEDS	1590	1490	1430
90 PERCENT EXCEEDS	1000	970	544

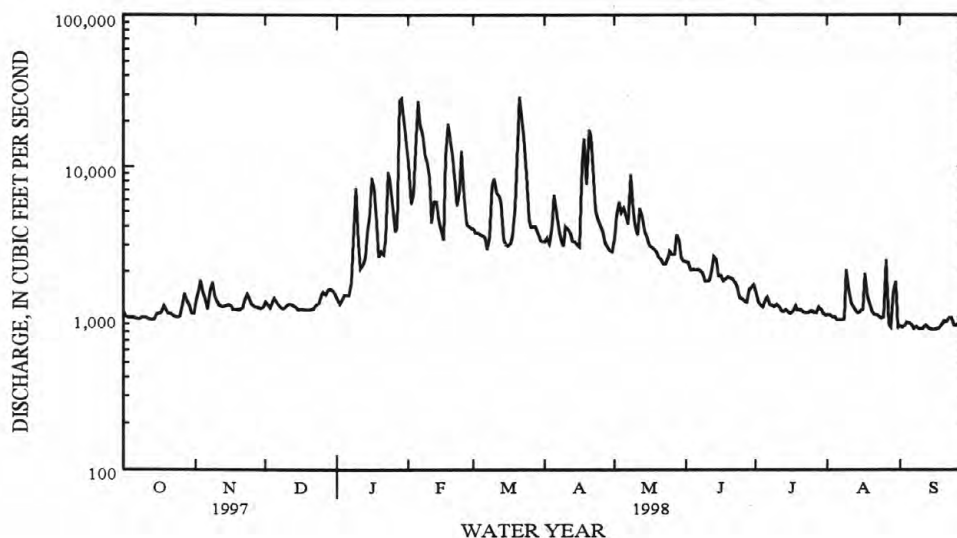
a Probably less than 191 ft³/s.

b Probably occurred Sept. 1, 2, 1932.

c Lowest recorded discharge; may have been lower during period of no gage-height record, July 25, 26, 1966.

d Also July 26, 1966.

e Estimated.



ROANOKE RIVER BASIN

02064000 FALLING RIVER NEAR NARUNA, VA

LOCATION.--Lat 37°07'36", long 78°57'36", Campbell County, Hydrologic Unit 03010102, on left bank at upstream side of bridge on State Highway 643, 2.7 mi northeast of Naruna, and 3.2 mi upstream from Little Falling River.

DRAINAGE AREA.--173 mi².

PERIOD OF RECORD.--July 1929 to January 1935, September 1941 to current year.

REVISED RECORDS.--WSP 1333: 1930, 1931-34(M), 1935. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 412.32 ft above sea level. Prior to Jan. 15, 1935, nonrecording gage at same site and datum.

REMARKS.--Records good except those for period with ice effect, Jan. 1, 2, and periods of doubtful gage-height record, Mar. 23-27, May 14, 15, and Aug. 18, which are fair. Small diurnal fluctuation caused by gristmill at Spring Mills. Maximum discharge, 62,800 ft³/s, from rating curve extended above 7,100 ft³/s on basis of slope-area measurements at gage heights 23.9 ft, 26.5 ft, 29.2 ft, and 36.1 ft. Minimum gage height, 2.18 ft, Oct. 9, 1932. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 26.5 ft, from floodmarks, discharge, 22,000 ft³/s, by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 28	0515	4,280	13.21	Mar. 21	0015	*6,470	*16.36
Feb. 4	1815	3,600	11.94	Apr. 17	1200	3,210	11.15
Feb. 17	1930	3,470	11.68	May 8	0100	2,720	10.10
Mar. 9	1130	2,360	9.28	May 8	1445	3,290	11.32

Minimum daily discharge, 39 ft³/s, Sept. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	278	131	e92	367	251	204	237	167	89	67	54
2	51	287	98	e102	330	240	204	342	154	83	60	53
3	52	201	86	118	321	228	185	237	152	79	55	53
4	52	123	168	140	1930	209	892	242	155	83	52	59
5	51	97	154	135	1300	200	603	763	164	108	50	53
6	49	92	114	127	868	192	325	329	155	86	47	49
7	48	477	97	169	585	188	261	614	150	80	47	48
8	48	250	89	994	384	654	236	2270	144	78	111	46
9	48	162	87	541	301	1550	253	791	142	100	464	44
10	48	120	97	285	257	618	265	427	186	195	164	43
11	48	100	118	213	257	360	223	297	165	107	111	44
12	47	90	98	180	961	291	202	260	164	92	84	43
13	48	85	89	191	420	254	192	240	157	88	73	42
14	50	110	87	182	308	240	193	e215	143	86	69	41
15	73	111	152	547	257	218	193	e194	158	82	68	40
16	66	92	80	997	240	206	182	175	153	79	89	40
17	73	82	77	415	1800	201	1790	861	136	90	198	39
18	213	79	75	285	1200	242	681	269	125	86	e160	41
19	109	76	73	238	519	916	536	200	151	74	100	52
20	83	74	72	226	376	1320	1100	180	171	72	79	50
21	69	77	73	191	328	4010	453	174	133	67	73	48
22	63	154	79	174	277	1080	331	162	120	64	70	81
23	57	132	97	1110	503	e560	291	187	116	66	67	59
24	56	102	91	780	515	e430	261	222	128	84	64	47
25	68	88	195	557	332	e365	238	206	111	72	63	45
26	128	83	158	331	278	e295	224	179	102	67	60	45
27	187	81	143	666	255	e240	213	225	95	85	60	44
28	105	76	185	3880	244	227	210	250	92	121	60	42
29	79	75	160	1480	---	212	210	196	121	83	57	40
30	72	87	156	688	---	202	198	180	100	71	56	40
31	69	---	136	477	---	196	---	199	---	66	55	---
TOTAL	2265	3941	3515	16511	15713	16395	11349	11323	4210	2683	2833	1425
MEAN	73.1	131	113	533	561	529	378	365	140	86.5	91.4	47.5
MAX	213	477	195	3880	1930	4010	1790	2270	186	195	464	81
MIN	47	74	72	92	240	188	182	162	92	64	47	39
CFSM	.42	.76	.66	3.08	3.24	3.06	2.19	2.11	.81	.50	.53	.27
IN.	.49	.85	.76	3.55	3.38	3.53	2.44	2.43	.91	.58	.61	.31

e Estimated.

ROANOKE RIVER BASIN

02064000 FALLING RIVER NEAR NARUNA, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1934, 1942 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	105	126	161	203	237	265	218	166	123	91.4	83.0	123
MAX	399	639	487	636	683	844	552	606	898	334	400	1475
(WY)	1973	1986	1997	1978	1979	1975	1987	1971	1972	1972	1985	1996
MIN	24.5	32.2	44.0	47.9	56.5	62.9	60.2	50.7	25.4	29.9	23.9	20.1
(WY)	1970	1970	1966	1966	1931	1981	1966	1981	1970	1970	1932	1970

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1930 - 1934
1942 - 1998

ANNUAL TOTAL	58530	92163	158
ANNUAL MEAN	160	253	322
HIGHEST ANNUAL MEAN			60.9
LOWEST ANNUAL MEAN			5.0
HIGHEST DAILY MEAN	1010	Feb 15	4010
LOWEST DAILY MEAN	37	aAug 18	39
ANNUAL SEVEN-DAY MINIMUM	40	Sep 2	41
INSTANTANEOUS PEAK FLOW			6470
INSTANTANEOUS PEAK STAGE			16.36
INSTANTANEOUS LOW FLOW			39
ANNUAL RUNOFF (CFSM)	.93	1.46	.91
ANNUAL RUNOFF (INCHES)	12.59	19.82	12.41
10 PERCENT EXCEEDS	298	538	269
50 PERCENT EXCEEDS	117	144	95
90 PERCENT EXCEEDS	50	52	38

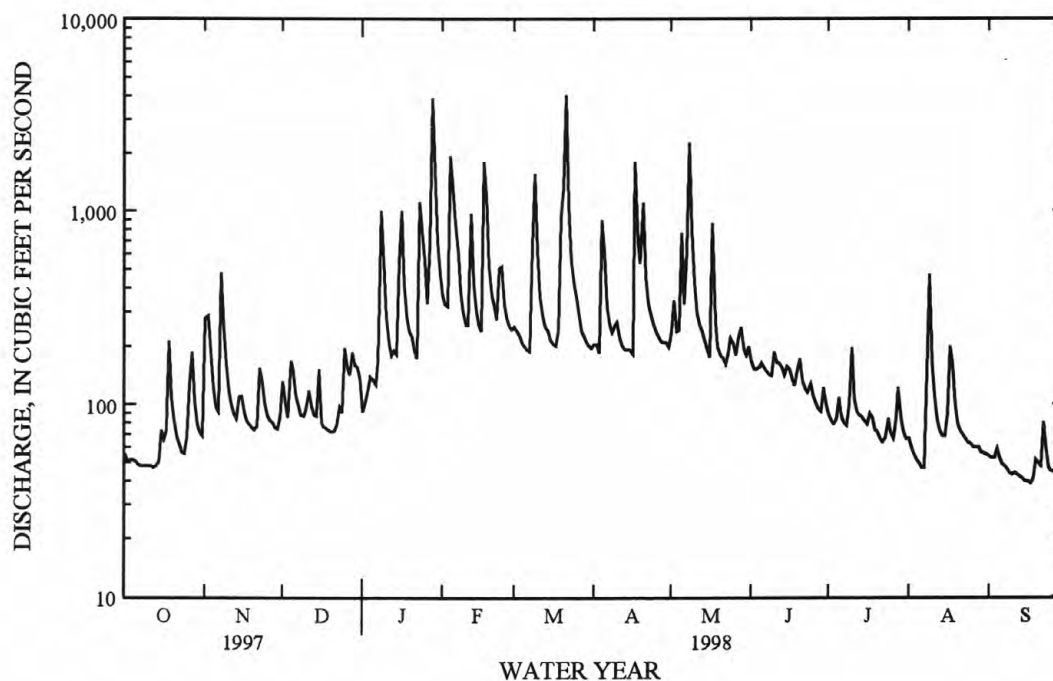
a Also Sept. 8, 1997.

b Also Oct. 9, 14, 1932.

c From high-water mark on gage house.

d Also Sept. 16, 17, 29, 30, 1998.

e Estimated.



ROANOKE RIVER BASIN

02065500 CUB CREEK AT PHENIX, VA

LOCATION.--Lat 37°04'45", long 78°45'50", Charlotte County, Hydrologic Unit 03010102, on right bank 5 ft upstream from bridge on State Highway 40, 0.9 mi west of Phenix, 1.9 mi downstream from Rough Creek, and 6.4 mi upstream from Louse Creek.

DRAINAGE AREA.--98.0 mi².

PERIOD OF RECORD.--August 1946 to current year.

REVISED RECORDS.--WSP 1333: 1947(M), 1948, 1949(M). WSP 2104: Drainage area. WDR VA-76-1: 1975.

GAGE.--Water-stage recorder. Datum of gage is 370.19 ft above sea level. Prior to July 14, 1950, nonrecording gage at same site and datum.

REMARKS.--Records good except for period with ice effect, Jan. 1, which is fair. Maximum discharge, 15,200 ft³/s, from rating curve extended above 5,400 ft³/s on basis of contracted-opening measurement of peak flow. Minimum gage height, 0.74 ft, Oct. 6, 1970. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of August 1940 reached a stage of 17.5 ft, from floodmarks, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 24	1630	1,130	7.63	Mar. 21	1800	2,190	10.21
Jan. 28	2230	*2,690	*11.39	Apr. 5	1030	1,160	7.72
Feb. 5	1130	1,570	9.00	Apr. 18	0530	1,440	8.72
Feb. 18	0930	2,020	9.90	May 9	0400	2,410	10.58
Mar. 20	0200	1,560	8.99				

Minimum daily discharge, 26 ft³/s, Sept. 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	77	91	e76	166	139	131	133	102	61	48	38
2	30	115	78	78	146	146	166	171	91	58	45	37
3	30	72	69	80	136	147	135	137	88	58	43	37
4	30	55	96	83	313	130	251	127	91	58	43	40
5	30	48	105	82	1170	123	843	282	93	71	42	38
6	29	46	82	80	757	119	355	491	90	63	41	35
7	28	145	73	92	475	117	180	184	87	58	41	35
8	28	217	70	155	279	181	160	751	82	58	45	34
9	28	112	68	212	182	478	161	1720	81	66	174	32
10	28	89	74	123	156	695	160	530	109	147	108	32
11	28	77	95	97	147	260	144	209	99	77	66	32
12	28	70	79	88	260	163	133	172	95	62	57	31
13	28	68	72	92	261	146	127	157	90	59	53	31
14	29	87	69	94	162	139	127	141	82	57	51	30
15	40	87	67	151	141	132	130	130	82	56	50	30
16	39	73	65	420	133	126	124	122	94	55	59	30
17	38	67	65	498	400	123	400	268	83	73	84	29
18	144	64	64	174	1440	161	1060	332	75	64	149	30
19	81	63	63	135	562	751	332	141	82	55	74	31
20	54	63	63	132	218	1150	343	121	108	53	57	32
21	43	64	63	112	181	1450	368	115	81	51	52	32
22	38	113	67	102	154	977	189	106	75	50	50	32
23	35	106	82	266	177	356	168	112	77	58	48	32
24	35	81	75	865	288	205	158	133	89	59	46	29
25	42	71	119	595	188	173	144	127	74	55	46	28
26	72	69	109	251	152	158	135	109	69	52	44	29
27	111	67	95	208	142	152	127	150	65	51	43	28
28	63	64	121	1250	139	146	124	161	63	59	43	27
29	47	64	104	1990	---	141	121	123	73	54	41	26
30	43	70	101	661	---	136	120	111	66	50	40	26
31	41	---	94	235	---	132	---	110	---	48	39	---
TOTAL	1372	2464	2538	9477	8925	9452	7116	7676	2536	1896	1822	953
MEAN	44.3	82.1	81.9	306	319	305	237	248	84.5	61.2	58.8	31.8
MAX	144	217	121	1990	1440	1450	1060	1720	109	147	174	40
MIN	28	46	63	76	133	117	120	106	63	48	39	26
CFSM	.45	.84	.84	3.12	3.25	3.11	2.42	2.53	.86	.62	.60	.32
IN.	.52	.94	.96	3.60	3.39	3.59	2.70	2.91	.96	.72	.69	.36

e Estimated.

ROANOKE RIVER BASIN

02065500 CUB CREEK AT PHENIX, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	69.1	92.9	105	133	150	165	145	104	77.8	57.6	54.1	69.5
MAX	293	429	279	478	447	443	354	261	518	192	257	572
(WY)	1972	1986	1997	1978	1979	1975	1983	1971	1972	1972	1985	1996
MIN	14.0	22.7	27.9	35.1	56.4	51.7	50.4	37.8	15.7	19.5	16.2	8.03
(WY)	1971	1970	1966	1966	1968	1981	1966	1981	1970	1966	1964	1968

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

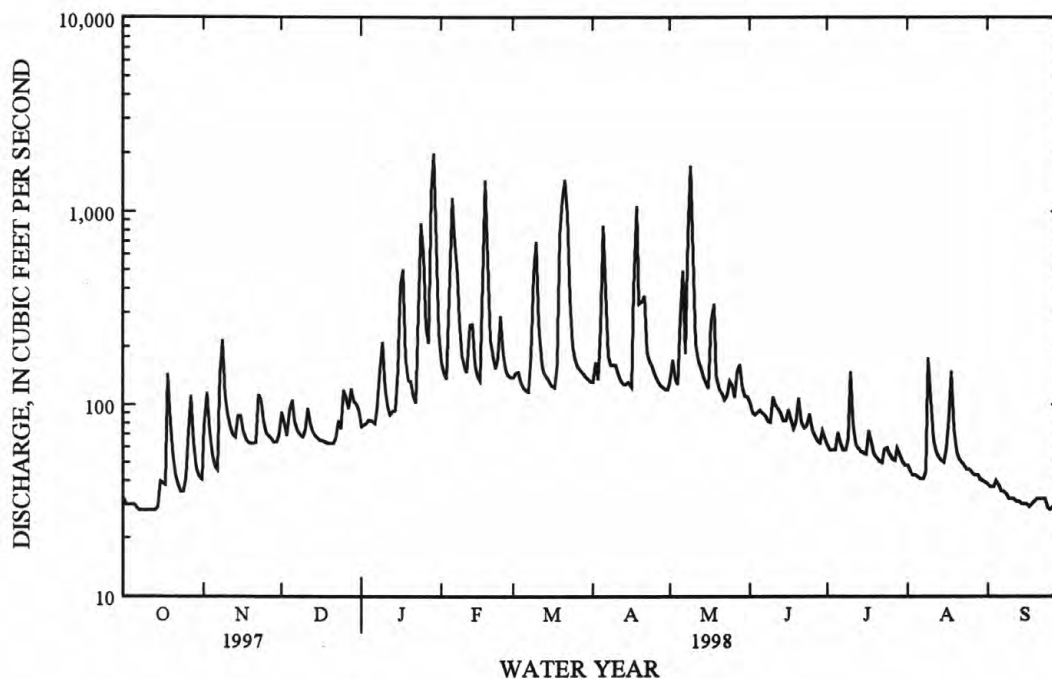
FOR 1998 WATER YEAR

WATER YEARS 1947 - 1998

ANNUAL TOTAL	39417	56227	
ANNUAL MEAN	108	154	
HIGHEST ANNUAL MEAN			102
LOWEST ANNUAL MEAN			188
HIGHEST DAILY MEAN	763	Apr 29	1990 Jan 29
LOWEST DAILY MEAN	26	Sep 8	26 aSep 29
ANNUAL SEVEN-DAY MINIMUM	28	Sep 3	28 Sep 24
INSTANTANEOUS PEAK FLOW			2690 Jan 28
INSTANTANEOUS PEAK STAGE			11.39 Jan 28
INSTANTANEOUS LOW FLOW			26 aSep 29
ANNUAL RUNOFF (CFSM)	1.10	1.57	1.04
ANNUAL RUNOFF (INCHES)	14.96	21.34	14.08
10 PERCENT EXCEEDS	194	272	174
50 PERCENT EXCEEDS	78	87	65
90 PERCENT EXCEEDS	34	33	26

a Also Sept. 30, 1998.

b Also Oct. 7, 1970.



ROANOKE RIVER BASIN

02066000 ROANOKE (STAUNTON) RIVER AT RANDOLPH, VA

LOCATION.--Lat 36°54'54", long 78°44'28", Halifax County, Hydrologic Unit 03010102, on right bank 6 ft downstream from bridge on State Highway 746, 2.8 mi northwest of Randolph, 3.6 mi upstream from Roanoke Creek, and at mile 227.3.

DRAINAGE AREA.--2,977 mi².

PERIOD OF RECORD.--August 1900 to September 1906, October 1927 to September 1930, October 1950 to current year. Monthly discharge only for some periods, published in WSP 1303. Prior to October 1902, published as Staunton River at Randolph. Gage heights collected since 1905 at this site or at former site are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 1203: 1928-30. WSP 1303: 1901-6. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 307.59 ft above sea level. Aug. 27, 1900, to Oct. 13, 1902, nonrecording gage at site 3.2 mi downstream at datum about 5.9 ft lower. Oct. 14, 1902, to Aug. 11, 1906, and Oct. 1, 1927, to Mar. 31, 1930, nonrecording gage at site of original gage at datum 3.93 ft lower than present datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1962 by Leesville Lake (station 02059400) 68.7 mi upstream and since 1963 by Smith Mountain Lake (station 02057400) 86.7 mi upstream. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 97,000 ft³/s, from graph based on gage readings, site and datum then in use. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 16, 1940, reached a stage of 41.6 ft, present site and datum, discharge, 150,000 ft³/s, from information by U.S. Army Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 36,400 ft³/s, Jan. 29, gage height, 27.17 ft; minimum daily, 953 ft³/s, Sept. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1350	1370	1580	1720	15000	4620	3900	3680	3210	1810	1170	1060
2	1160	2120	1570	1550	9870	4550	4040	4990	2910	1590	1170	1060
3	1110	2440	1420	1520	7870	4440	4020	6340	2740	1410	1150	1040
4	1100	1880	1450	1650	10500	4170	4580	6220	2460	1370	1100	1120
5	1100	1480	1750	1750	24800	3990	8250	6320	2440	1460	1090	1140
6	1090	1370	1630	1740	29100	3870	7220	5860	2450	1580	1050	1120
7	1070	1830	1460	1800	23700	3380	5430	5120	2420	1510	1040	1040
8	1070	2810	1380	3670	18100	3770	4330	12800	2360	1390	1060	1010
9	1060	2190	1330	9120	13800	8740	3830	11700	2200	1390	1810	1020
10	1090	1750	1350	4700	12200	12000	4360	7480	2060	1620	2810	967
11	1080	1550	1460	3090	6730	8840	4810	5430	2140	1590	1700	966
12	1070	1460	1480	2460	7020	7470	4490	5670	2050	1390	1480	1010
13	1040	1420	1420	2790	8470	7010	4000	6200	2860	1300	1380	1000
14	1040	1510	1370	3420	6410	4830	3780	4890	2910	1290	1290	980
15	1140	1580	1340	5510	5360	3540	3730	4380	2360	1280	1270	969
16	1210	1520	1320	10400	4570	3330	3570	3970	2270	1240	1360	953
17	1180	1400	1290	10100	9090	3350	8600	4170	2340	1240	2130	955
18	1620	1310	1280	7170	23400	3890	19500	4250	2010	1350	1900	962
19	1670	1320	1260	4160	22700	11000	14500	3730	2150	1340	1720	988
20	1390	1300	1260	3380	17300	11700	13500	3490	2190	1290	1430	1070
21	1260	1290	1260	3430	12100	23300	19400	3140	1990	1300	1310	1120
22	1210	1580	1300	3100	7720	31200	13900	2940	1870	1250	1260	1160
23	1150	1870	1400	7610	6640	24200	6970	2750	1810	1240	1240	1220
24	1130	1770	1440	12100	13400	16300	5800	2810	1730	1230	1200	1140
25	1120	1520	1620	8670	10600	7760	5220	3170	1610	1260	1170	1040
26	1340	1420	1960	6250	6010	5620	4720	3400	1540	1260	2210	1030
27	1940	1380	1880	4780	5100	5340	4220	3250	1480	1230	1830	1070
28	1790	1360	2120	17800	4790	5250	3650	4070	1460	1290	1130	1040
29	1480	1330	2080	33500	---	4960	3550	4400	1930	1380	1090	999
30	1330	1330	1990	31800	---	4280	3360	3630	1860	1280	2390	1010
31	1220	---	1880	23100	---	3980	---	3540	---	1190	1420	---
TOTAL	38610	48460	47330	233840	342350	250680	201230	153790	65810	42350	45360	31259
MEAN	1245	1615	1527	7543	12230	8086	6708	4961	2194	1366	1463	1042
MAX	1940	2810	2120	33500	29100	31200	19500	12800	3210	1810	2810	1220
MIN	1040	1290	1260	1520	4570	3330	3360	2750	1460	1190	1040	953
(†)	-5409	-1380	-60	+22830	-3250	+1880	+730	-1350	+471	-1790	-7160	-10400
MEAN†	1071	1569	1525	8280	12111	8147	6732	4917	2209	1308	1232	695
CFSM†	.36	.53	.51	2.78	4.07	2.74	2.26	1.65	.74	.44	.41	.23
IN.†	.41	.59	.59	3.21	4.24	3.16	2.52	1.90	.83	.51	.48	.26
CAL YR 1997	TOTAL	984273	MEAN	2697	MAX	13400	MIN	959	MEAN†	2638	CFSM†	.89
WTR YR 1998	TOTAL	1501069	MEAN	4113	MAX	33500	MIN	953	MEAN†	4088	CFSM†	1.37
											IN.†	12.03
											IN.†	18.65

† Total change in contents, equivalent in cubic feet per second, per month, in Smith Mountain and Leesville Lakes; provided by Appalachian Power Company.

‡ Adjusted for monthly change in contents.

ROANOKE RIVER BASIN

02066000 ROANOKE (STAUNTON) RIVER AT RANDOLPH, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1901-1906, 1928-1930, 1951-1962, BY WATER YEAR (WY) [UNREGULATED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2434	2112	3590	3457	4788	5322	4969	3197	2755	1970	2530	2181
MAX	6861	4104	9620	6419	11120	11010	9620	8793	4829	6484	13185	8928
(WY)	1930	1958	1902	1902	1902	1903	1901	1901	1929	1905	1901	1928
MIN	782	844	1125	1026	2047	2633	2220	1435	1037	620	450	410
(WY)	1954	1954	1956	1956	1959	1956	1930	1956	1956	1930	1930	1930

SUMMARY STATISTICS

WATER YEARS 1901 - 1906

1928 - 1930

1951 - 1962

ANNUAL MEAN	3357
HIGHEST ANNUAL MEAN	5727
LOWEST ANNUAL MEAN	1501
HIGHEST DAILY MEAN	75100
LOWEST DAILY MEAN	256
ANNUAL SEVEN-DAY MINIMUM	284
INSTANTANEOUS PEAK FLOW	97000
INSTANTANEOUS PEAK STAGE	35.00
INSTANTANEOUS LOW FLOW	256
ANNUAL RUNOFF (CFSM)	1.13
ANNUAL RUNOFF (INCHES)	15.31
10 PERCENT EXCEEDS	6030
50 PERCENT EXCEEDS	2230
90 PERCENT EXCEEDS	1040

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2065	2331	2608	3851	4202	5100	4411	3419	2649	1879	1690	2147
MAX	7906	11230	6887	9532	12230	13970	17570	10060	10260	5635	5988	11350
(WY)	1991	1986	1997	1978	1998	1975	1987	1972	1972	1972	1985	1996
MIN	428	789	1054	1085	1549	769	1270	1038	491	859	493	662
(WY)	1964	1982	1966	1966	1981	1981	1981	1964	1964	1964	1964	1963

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

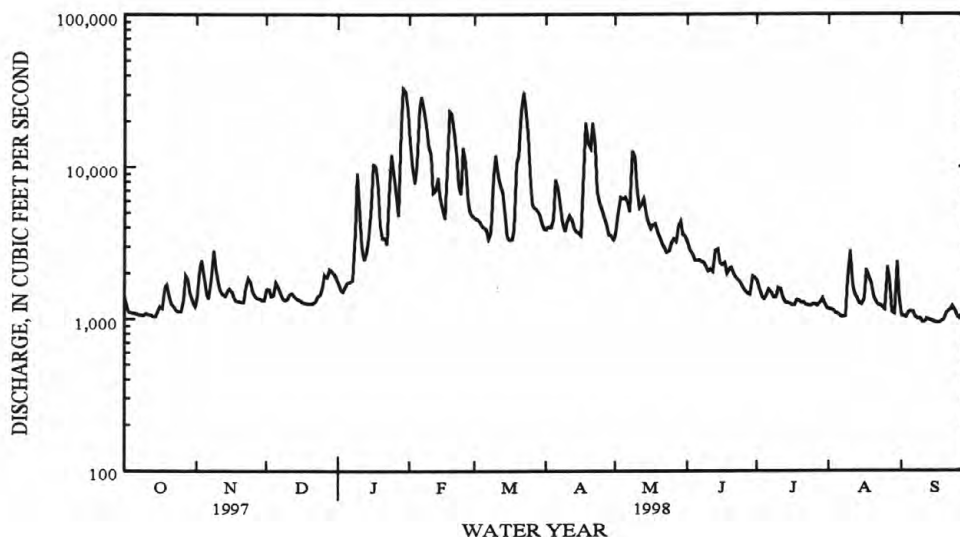
WATER YEARS 1963 - 1998

ANNUAL TOTAL	984273	1501069	
ANNUAL MEAN	2697	4113	3022
HIGHEST ANNUAL MEAN			5102
LOWEST ANNUAL MEAN			1151
HIGHEST DAILY MEAN	13400	Mar 4	33500
LOWEST DAILY MEAN	959	Sep 8	953
ANNUAL SEVEN-DAY MINIMUM	1000	Sep 3	972
INSTANTANEOUS PEAK FLOW			36400
INSTANTANEOUS PEAK STAGE			27.17
INSTANTANEOUS LOW FLOW			945
ANNUAL RUNOFF (CFSM)	.91	1.38	1.02
ANNUAL RUNOFF (INCHES)	12.30	18.76	13.79
10 PERCENT EXCEEDS	4920	9420	5800
50 PERCENT EXCEEDS	2020	1880	1810
90 PERCENT EXCEEDS	1100	1090	865

a Also July 7, 1970.

b Also Sept. 9, 1965.

c Also Sept. 16, 1998.



ROANOKE RIVER BASIN

02067800; 02067820 TALBOTT AND TOWNES RESERVOIRS NEAR KIBLER, VA

LOCATION.--Talbot Dam: Lat 36°40'39", long 80°23'52", Patrick County, Hydrologic Unit 03010103, on Dan River 4.5 mi northeast of Kibler. Townes Dam: Lat 36°41'10", long 80°25'50", Patrick County, Hydrologic Unit 03010103, on Dan River about 4 mi north of Kibler.

DRAINAGE AREA.--Talbot Dam, 20.2 mi²; Townes Dam, 32.9 mi².

PERIOD OF RECORD.--February 1939 to December 1945, January 1948 to September 1960 (published in WSP 1723), and October 1960 to current year.

REMARKS.--The two reservoirs are operated as a unit for storage of water for Pinnacles hydroelectric plant. Total capacity of Talbot Reservoir, 8,040 acre-ft, and Townes Reservoir, 1,380 acre-ft. Storage began in Talbot Reservoir on Feb. 13, 1939, and in Townes Reservoir several months earlier.

COOPERATION.--Records were provided by the city of Danville.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

Date	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	4,740	-
Oct. 31.....	4,270	-470
Nov. 30.....	3,730	-540
Dec. 31.....	3,540	-190
CAL YR 1997.....		-4,720
Jan. 31.....	6,080	+2,540
Feb. 28.....	7,720	+1,640
Mar. 31.....	7,080	-640
Apr. 30.....	6,820	-260
May 31.....	7,780	+960
June 30.....	7,360	-420
July 31.....	6,320	-1,040
Aug. 31.....	5,990	-330
Sept. 30.....	5,080	-910
WTR YR 1998.....		+340



Wading Discharge Measurement

Reed Creek at Grahams Forge, Virginia (03167000)

ROANOKE RIVER BASIN

02068500 DAN RIVER NEAR FRANCISCO, NC

LOCATION.--Lat 36°30'53", long 80°18'11", Stokes County, Hydrologic Unit 03010103, on left bank 200 ft upstream from bridge on State Highway 704, 700 ft downstream of remains of Georges Mill, 0.2 mi downstream of Elk Creek, 3 mi east of Francisco, and 7.9 mi downstream of Little Dan River.

DRAINAGE AREA.--129 mi².

PERIOD OF RECORD.--August 1924 to September 1987. December 1991 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 1303: 1938-50 (monthly runoff). WSP 1433: 1925-26, 1928-29, 1931, 1942, 1948. WDR NC-80-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 831.99 ft above sea level. Prior to Nov. 15, 1929, nonrecording gage at same site and datum.

REMARKS.--Records good except those for discharges above 1,000 ft³/s, which are fair. Since 1938, considerable diurnal fluctuation and regulation by Talbott and Townes Reservoirs (stations 02067800 and 02067820, respectively) and Pinnacles Hydroelectric Plant in Virginia, 28 mi upstream.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1916 reached a stage of about 15 ft, from information by local residents, discharge, 16,000 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67	79	74	74	216	191	260	315	147	148	88	150
2	65	127	64	102	231	162	168	361	239	105	79	74
3	62	97	61	93	239	221	202	310	189	102	75	117
4	66	89	76	81	585	249	244	356	248	104	76	95
5	62	90	77	82	477	231	263	219	186	146	75	75
6	55	90	75	82	254	229	261	199	153	103	70	74
7	135	87	93	146	212	230	253	413	148	100	75	75
8	104	84	84	1010	198	482	213	867	173	121	111	71
9	97	78	105	457	210	982	205	545	157	119	201	60
10	80	75	81	231	218	e420	173	507	243	162	152	56
11	68	75	74	153	218	e352	157	567	258	95	163	55
12	51	71	64	141	311	288	186	419	193	93	109	50
13	58	77	61	142	252	271	214	306	167	135	105	42
14	57	117	60	131	242	288	264	235	144	97	100	48
15	62	76	70	400	224	312	248	229	169	94	98	123
16	51	73	80	393	219	320	246	285	174	e120	215	101
17	52	76	75	200	694	282	1520	290	174	e250	286	93
18	61	121	65	158	626	261	603	274	147	202	162	72
19	67	97	57	151	448	377	807	259	216	146	163	46
20	62	83	63	157	406	490	813	240	141	118	110	47
21	53	74	56	186	297	460	555	220	150	187	101	42
22	54	91	81	121	305	505	420	199	130	161	92	76
23	52	80	96	366	432	440	355	205	200	119	100	65
24	56	75	72	222	345	413	343	390	e150	118	112	58
25	78	111	102	191	370	380	333	246	e110	113	172	53
26	80	95	78	170	365	290	419	186	e120	135	159	49
27	118	78	92	739	365	281	374	264	e130	90	90	50
28	82	70	101	1030	284	275	184	275	e120	92	84	44
29	75	72	91	389	---	273	176	208	e115	85	76	43
30	74	74	99	299	---	267	177	241	108	90	73	56
31	72	---	77	246	---	260	---	218	---	91	70	---
TOTAL	2176	2582	2404	8343	9243	10482	10636	9848	4999	3841	3642	2060
MEAN	70.2	86.1	77.5	269	330	338	355	318	167	124	117	68.7
MAX	135	127	105	1030	694	982	1520	867	258	250	286	150
MIN	51	70	56	74	198	162	157	186	108	85	70	42
†	-8	-9	-3	+41	+30	-10	-4	+16	-7	-17	-5	-15

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 1998*, BY WATER YEAR (WY)

	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949
MEAN	152	159	180	202	226	266	273	223	200	169	168	150
MAX	543	327	479	424	463	571	677	405	438	373	514	630
(WY)	1938	1980	1997	1978	1960	1993	1980	1949	1972	1938	1940	1979
MIN	49.7	61.3	77.5	76.2	94.9	94.2	120	109	78.3	54.8	52.5	50.4
(WY)	1964	1954	1998	1956	1956	1981	1967	1986	1967	1986	1981	1968

ROANOKE RIVER BASIN

02068500 DAN RIVER NEAR FRANCISCO, NC--Continued

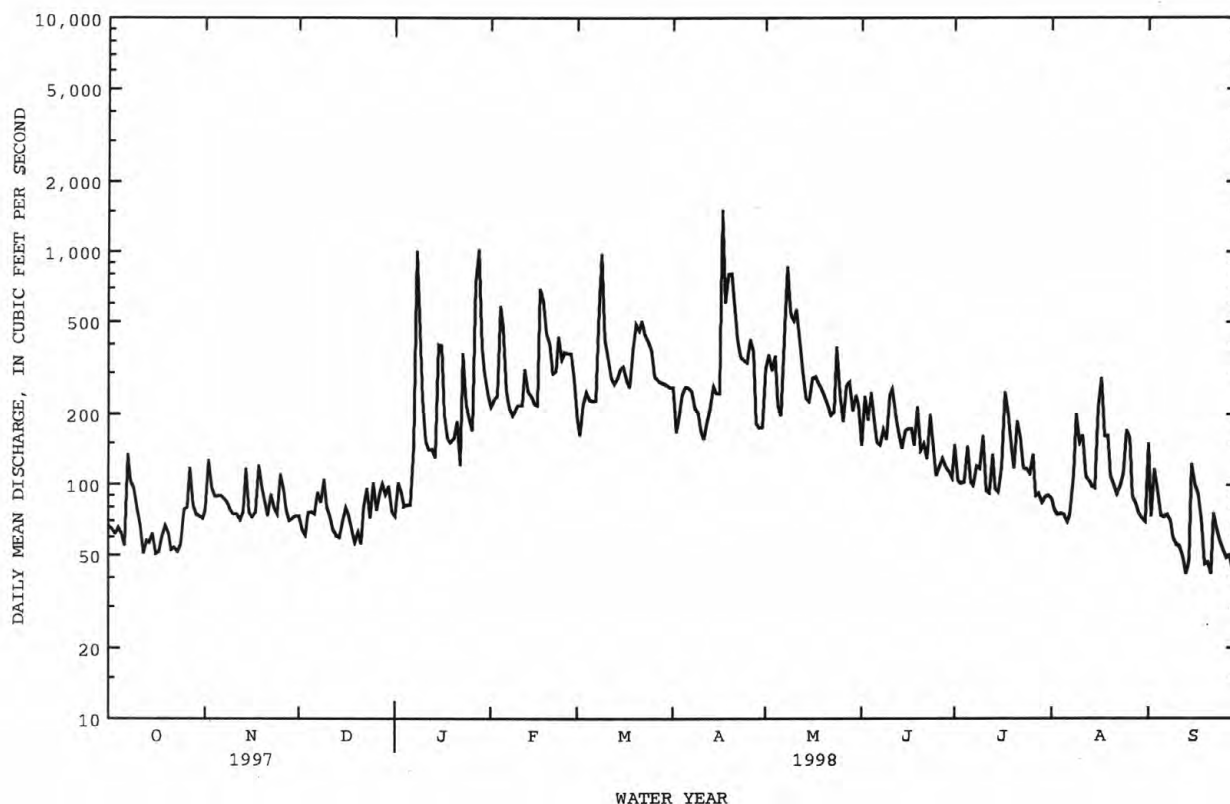
SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1938 - 1998* ^g	
ANNUAL TOTAL	73799		70256		198	(UNADJUSTED)
ANNUAL MEAN	202	‡206	192	‡190	300	1960
HIGHEST ANNUAL MEAN					97.5	1956
LOWEST ANNUAL MEAN	1260	Apr 29	1520	Apr 17	6830	Sep 22 1979
HIGHEST DAILY MEAN	51	Oct 12	42	Sep 13	27	Aug 24 1981
LOWEST DAILY MEAN	56	Oct 12	50	Sep 24	28	Aug 24 1981
ANNUAL SEVEN-DAY MINIMUM			3930	Apr 17	21200	Aug 17 1985
INSTANTANEOUS PEAK FLOW			6.48	Apr 17	19.50	Aug 17 1985
INSTANTANEOUS PEAK STAGE			36	Sep 26	7.1	Sep 8 1932
INSTANTANEOUS LOW FLOW	1.57		1.49		1.53	
ANNUAL RUNOFF (CFSM)	21.28		20.26		20.82	
ANNUAL RUNOFF (INCHES)	381		384		321	
10 PERCENT EXCEEDS	173		141		158	
50 PERCENT EXCEEDS	69		63		85	
90 PERCENT EXCEEDS						

e Estimated.

† Change in contents, equivalent in cubic feet per second, in Talbott and Townes Reservoirs by City of Danville, Virginia.

‡ Adjusted for change in contents.

* Regulated period only (1938-1998). See REMARKS.

^g See PERIOD OF RECORD.

ROANOKE RIVER BASIN

02069700 SOUTH MAYO RIVER NEAR NETTLERIDGE, VA

LOCATION.--Lat 36°34'15", long 80°07'47", Patrick County, Hydrologic Unit 03010103, on right bank 60 ft downstream from bridge on State Highway 700, 1.2 mi southeast of Nettleridge, 1.4 mi downstream from Russell Creek, and 3.6 mi upstream from Spoon Creek.

DRAINAGE AREA.--84.6 mi².

PERIOD OF RECORD.--October 1962 to current year.

REVISED RECORDS.--WSP 2104: Drainage area. WDR VA-74-1: 1972(M).

GAGE.--Water-stage recorder. Datum of gage is 871.60 ft above sea level. Prior to Oct. 9, 1964, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Records good except those for period with ice effect, Jan. 1, 2, and periods of doubtful gage-height record, Mar. 23-25, and Aug. 10, which are fair. Maximum discharge, 20,600 ft³/s, from rating curve extended above 2,900 ft³/s on basis of contracted-opening measurements at gage heights 18.32 ft and 22.00 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location by the Virginia Department of Environmental Quality - Water Division.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 17	1030	*1,680	*7.95	Apr. 19	2000	1,470	7.48

Minimum discharge, 33 ft³/s, Sept. 17, 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	54	55	e52	150	146	115	211	99	74	48	41
2	45	83	50	e56	133	140	106	171	95	67	44	41
3	46	65	50	59	148	134	100	145	97	66	42	41
4	45	55	57	65	740	128	130	156	129	64	40	59
5	43	52	54	63	647	125	108	143	127	66	39	45
6	42	51	50	63	306	122	100	129	109	63	39	42
7	41	52	49	82	220	120	98	277	100	62	38	41
8	41	51	49	500	185	281	97	617	94	64	182	40
9	41	51	49	209	162	652	126	287	95	81	169	39
10	44	50	52	134	146	309	110	232	113	63	e86	37
11	44	50	55	105	148	211	103	324	100	58	94	37
12	42	49	50	93	227	178	98	217	96	58	64	37
13	44	52	49	96	164	158	95	184	91	61	60	35
14	44	62	49	86	147	148	96	167	86	58	57	35
15	49	57	48	238	135	139	94	156	97	56	56	34
16	45	52	48	272	144	131	95	145	99	54	196	34
17	44	51	48	162	415	127	846	140	97	143	156	35
18	46	50	48	127	369	127	330	129	84	66	88	40
19	51	50	47	112	238	171	526	122	82	59	69	37
20	50	50	47	101	203	181	547	117	83	57	61	37
21	46	51	47	91	180	245	284	115	78	54	57	38
22	45	65	64	88	163	194	222	110	78	52	55	48
23	43	57	67	202	240	e160	192	138	75	51	53	41
24	45	52	59	178	218	e145	173	179	74	60	51	39
25	59	50	89	151	183	e132	157	130	82	53	49	38
26	63	50	66	126	166	127	147	115	73	51	47	37
27	90	50	79	322	159	123	141	167	71	50	45	36
28	57	49	86	853	155	117	135	135	69	53	45	34
29	52	49	70	324	---	114	127	117	86	48	44	33
30	50	52	66	220	---	111	126	109	76	46	43	35
31	49	---	60	178	---	107	---	103	---	46	43	---
TOTAL	1492	1612	1757	5408	6491	5303	5624	5487	2735	1904	2160	1166
MEAN	48.1	53.7	56.7	174	232	171	187	177	91.2	61.4	69.7	38.9
MAX	90	83	89	853	740	652	846	617	129	143	196	59
MIN	41	49	47	52	133	107	94	103	69	46	38	33
CFSM	.57	.64	.67	2.06	2.74	2.02	2.22	2.09	1.08	.73	.82	.46
IN.	.66	.71	.77	2.38	2.85	2.33	2.47	2.41	1.20	.84	.95	.51

e Estimated.

ROANOKE RIVER BASIN

02069700 SOUTH MAYO RIVER NEAR NETTLERIDGE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	102	108	119	144	156	189	184	151	130	110	99.2	92.5
MAX	304	339	240	261	352	423	497	295	435	303	407	417
(WY)	1990	1986	1997	1993	1990	1993	1987	1990	1972	1989	1985	1979
MIN	37.1	45.0	55.5	48.6	77.6	65.0	69.7	56.5	45.4	43.2	28.0	38.9
(WY)	1964	1982	1981	1981	1981	1981	1967	1981	1986	1977	1981	1998

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

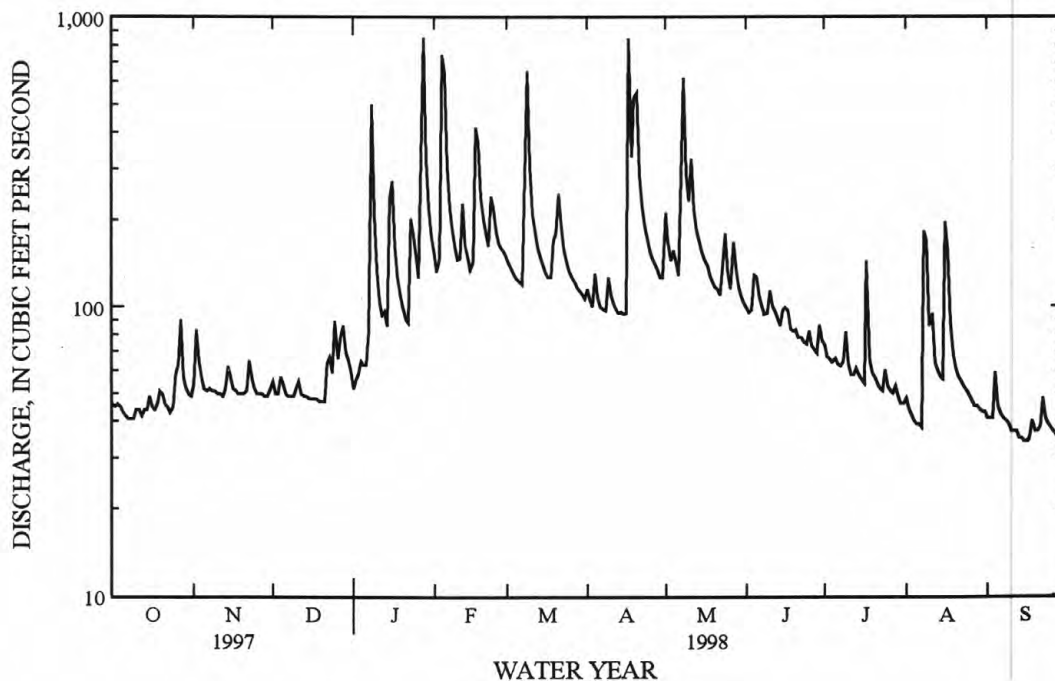
WATER YEARS 1963 - 1998

ANNUAL TOTAL	42400	41139	
ANNUAL MEAN	116	113	132
HIGHEST ANNUAL MEAN			206
LOWEST ANNUAL MEAN			59.3
HIGHEST DAILY MEAN	835	Apr 29	6820
LOWEST DAILY MEAN	41	aOct 7	21
ANNUAL SEVEN-DAY MINIMUM	42	Oct 6	22
INSTANTANEOUS PEAK FLOW			20600
INSTANTANEOUS PEAK STAGE			7.95
INSTANTANEOUS LOW FLOW			33
ANNUAL RUNOFF (CFSM)	1.37	1.33	1.56
ANNUAL RUNOFF (INCHES)	18.64	18.09	21.18
10 PERCENT EXCEEDS	195	205	217
50 PERCENT EXCEEDS	101	78	100
90 PERCENT EXCEEDS	47	42	52

a Also Oct. 8, 9, 1997.

b Also Aug. 30, 1981.

c Also Sept. 9, 1997.



ROANOKE RIVER BASIN

02070000 NORTH MAYO RIVER NEAR SPENCER, VA

LOCATION.--Lat 36°33'58", long 79°59'14", Henry County, Hydrologic Unit 03010103, on left bank 800 ft downstream from bridge on State Highway 629 at Moores Mill, 2.1 mi downstream from Horse Pasture Creek, and 3.8 mi south-east of Spencer.

DRAINAGE AREA.--108 mi².

PERIOD OF RECORD.--October 1928 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 1303: 1929-32(M), 1934(M).

GAGE.--Water-stage recorder. Datum of gage is 730.94 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to Jan. 23, 1936, nonrecording gage at site 800 ft upstream at datum 1.50 ft higher. July 25 to Sept. 27, 1936, nonrecording gage at present site and datum.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Nov. 3, and Aug. 30 to Sept. 30, which are fair. Maximum discharge, 17,200 ft³/s, from rating curve extended above 7,200 ft³/s on basis of slope-area measurement at gage height 13.41 ft and velocity-area study. Minimum gage height, 1.08 ft, Oct. 8, 1954. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 28	0600	*2,650	*6.48	Apr. 17	1400	2,390	6.16
Feb. 4	1700	1,640	5.13	Apr. 19	2400	1,970	5.61
Feb. 17	1530	1,680	5.19	May 7	2330	1,450	4.83

Minimum daily discharge, 44 ft³/s, Sept. 15, 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	62	66	69	146	139	119	171	133	89	61	e54
2	54	79	61	71	131	131	119	193	123	85	57	e53
3	54	e90	60	72	140	124	112	151	120	85	54	e52
4	54	63	68	77	1100	117	137	172	133	82	52	e74
5	54	61	65	77	888	114	122	157	153	85	51	e58
6	53	60	61	75	328	111	113	137	137	81	50	e55
7	53	63	60	84	218	110	110	403	125	79	49	e53
8	52	62	60	529	177	392	110	752	116	90	98	e53
9	52	61	61	239	154	914	121	279	116	142	191	e51
10	53	60	63	128	137	366	116	203	131	88	94	e49
11	53	60	65	102	134	221	112	308	123	80	96	e47
12	53	60	62	92	306	179	107	228	117	77	72	e46
13	53	61	61	93	175	162	105	183	115	78	67	e45
14	53	77	60	87	145	151	106	165	109	76	64	e45
15	56	73	60	330	130	140	106	152	112	73	63	e44
16	55	63	60	434	144	134	105	146	119	71	301	e44
17	54	61	60	171	1010	132	1310	454	119	78	307	e46
18	56	60	60	124	527	134	391	182	107	71	111	e51
19	62	60	59	110	254	184	609	149	106	68	85	e48
20	63	60	59	101	200	217	868	139	108	66	75	e50
21	57	61	59	95	172	361	300	133	101	62	71	e55
22	56	73	68	92	152	235	222	128	100	60	69	e65
23	54	70	83	401	336	179	191	166	99	59	67	e56
24	55	62	72	261	299	159	172	221	100	100	65	e52
25	62	61	110	172	194	145	158	178	97	71	64	e50
26	68	61	88	129	166	139	147	147	92	65	61	e48
27	101	61	95	449	153	134	140	237	89	64	59	e47
28	68	60	118	1740	147	130	136	203	87	68	59	e46
29	61	60	92	460	---	126	131	157	98	63	58	e45
30	60	62	86	235	---	121	130	141	95	59	e56	e48
31	59	---	76	174	---	118	---	163	---	59	e55	---
TOTAL	1794	1927	2178	7273	8063	6019	6725	6598	3380	2374	2682	1530
MEAN	57.9	64.2	70.3	235	288	194	224	213	113	76.6	86.5	51.0
MAX	101	90	118	1740	1100	914	1310	752	153	142	307	74
MIN	52	60	59	69	130	110	105	128	87	59	49	44
CFSM	.54	.59	.65	2.17	2.67	1.80	2.08	1.97	1.04	.71	.80	.47
IN.	.62	.66	.75	2.51	2.78	2.07	2.32	2.27	1.16	.82	.92	.53

e Estimated.

ROANOKE RIVER BASIN

02070000 NORTH MAYO RIVER NEAR SPENCER, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1935, 1937 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	115	107	124	147	159	184	167	137	125	106	99.7	104
MAX	498	392	256	368	364	479	523	329	470	320	446	462
(WY)	1938	1986	1997	1937	1960	1993	1987	1972	1972	1989	1985	1987
MIN	30.4	33.8	43.5	40.6	49.6	85.5	67.1	58.0	45.0	35.2	26.0	25.7
(WY)	1932	1932	1956	1956	1931	1981	1967	1956	1956	1956	1981	1954

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1929 - 1935
1937 - 1998

ANNUAL TOTAL	45216	50543	
ANNUAL MEAN	124	138	131
HIGHEST ANNUAL MEAN			218
LOWEST ANNUAL MEAN			62.6
HIGHEST DAILY MEAN	1400	Apr 29	7460
LOWEST DAILY MEAN	52	aAug 19	15
ANNUAL SEVEN-DAY MINIMUM	53	cOct 6	18
INSTANTANEOUS PEAK FLOW			17200
INSTANTANEOUS PEAK STAGE			6.48
INSTANTANEOUS LOW FLOW			(d) fSep 15
ANNUAL RUNOFF (CFSM)	1.15		1.21
ANNUAL RUNOFF (INCHES)	15.57		16.49
10 PERCENT EXCEEDS	192	235	202
50 PERCENT EXCEEDS	101	92	96
90 PERCENT EXCEEDS	59	54	52

a Also Sept. 8, Oct. 8, 9, 1997.

b Also Sept. 16, 1998.

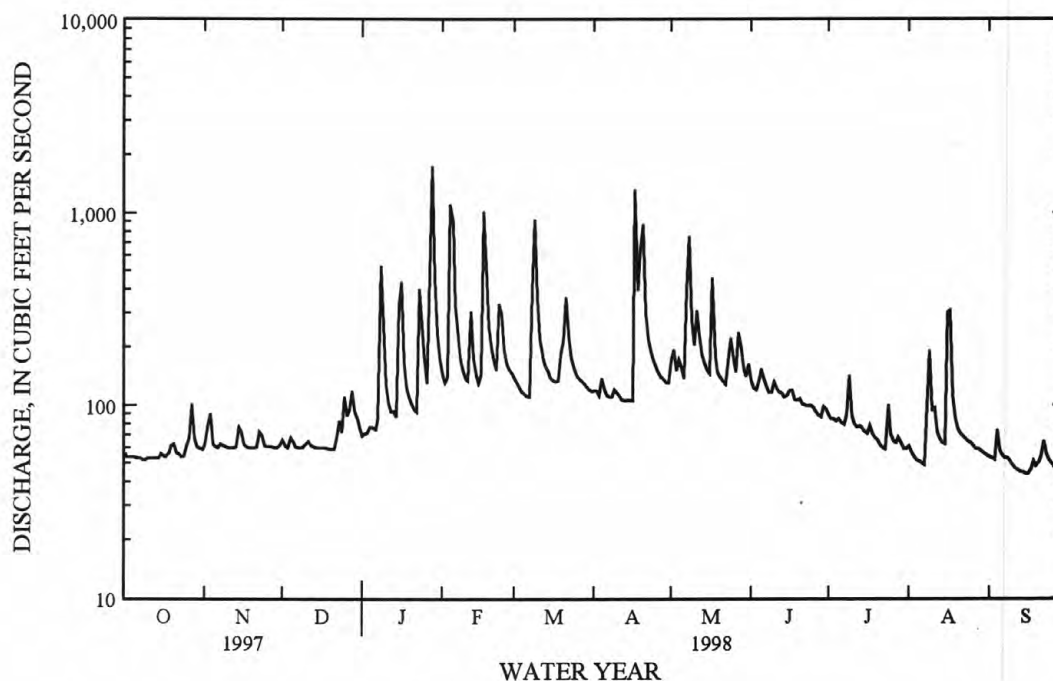
c also Oct. 7, 8, 1997.

d Not determined.

e Estimated.

f Also Sept. 16, 1998.

g Also Aug. 15, 1956.



ROANOKE RIVER BASIN

02071530 SMITH RIVER AT SMITH RIVER CHURCH NEAR WOOLWINE, VA

LOCATION.--Lat 36°46'42", long 80°14'58", Patrick County, Hydrologic Unit 03010103, on left bank 10 ft downstream from bridge on State Highway 708, 119 miles southeast of Woolwine, and 29 miles upstream from Philpott Dam.

DRAINAGE AREA.--26.7 mi².

PERIOD OF RECORD.--October 1994 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 210 ft above sea level, from topographic map.

REMARKS.--Records good. Several observations of water temperature were made during the year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,150 ft³/s, Aug. 17, gage height, 7.68 ft; minimum, 8.8 ft³/s, Sept. 27-29, gage height, 2.42 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e15	25	16	18	64	77	59	75	45	29	17	17
2	e14	37	14	18	57	73	55	62	44	27	15	17
3	e15	22	14	21	68	69	54	60	43	26	14	17
4	e14	19	21	24	347	65	63	62	49	27	14	20
5	e14	17	16	23	197	63	55	60	47	27	13	16
6	e13	17	15	28	125	61	53	56	45	25	13	15
7	e13	16	14	92	100	60	51	67	43	24	13	14
8	e12	18	13	326	85	187	51	87	41	26	101	14
9	e13	17	14	142	75	272	81	66	43	25	46	14
10	e13	16	17	69	68	143	63	64	46	23	41	14
11	e14	16	16	52	87	112	59	89	43	22	37	14
12	e13	16	14	46	98	98	56	68	41	22	26	13
13	e14	21	14	44	81	89	54	63	39	22	23	12
14	e13	31	13	39	72	83	55	60	37	21	21	12
15	e13	22	13	80	66	78	52	57	39	20	21	12
16	13	19	14	74	89	76	53	54	39	23	53	12
17	14	17	13	55	383	74	175	52	37	29	172	11
18	15	16	13	47	193	77	93	50	34	20	45	12
19	17	16	13	44	136	111	173	48	36	19	35	13
20	15	15	12	40	117	157	154	47	33	18	30	13
21	14	17	12	37	101	135	107	47	32	22	27	15
22	14	25	28	42	91	105	91	45	31	24	25	16
23	14	18	21	130	169	93	82	56	30	21	23	13
24	16	16	25	80	123	85	75	71	33	20	22	13
25	23	15	37	62	103	80	69	51	32	19	21	13
26	32	15	20	53	92	75	65	48	29	18	20	12
27	27	15	30	85	89	73	63	85	27	19	20	11
28	17	14	25	237	82	72	61	59	27	19	19	10
29	16	15	23	125	---	67	59	52	41	17	18	10
30	16	18	20	92	---	60	58	49	31	16	18	12
31	16	---	16	75	---	56	---	47	---	18	17	---
TOTAL	482	561	546	2300	3358	2926	2239	1857	1137	688	980	407
MEAN	15.5	18.7	17.6	74.2	120	94.4	74.6	59.9	37.9	22.2	31.6	13.6
MAX	32	37	37	326	383	272	175	89	49	29	172	20
MIN	12	14	12	18	57	56	51	45	27	16	13	10
CFSM	.58	.70	.66	2.78	4.49	3.54	2.80	2.24	1.42	.83	1.18	.51
IN.	.67	.78	.76	3.20	4.68	4.08	3.12	2.59	1.58	.96	1.37	.57

e Estimated.

ROANOKE RIVER BASIN

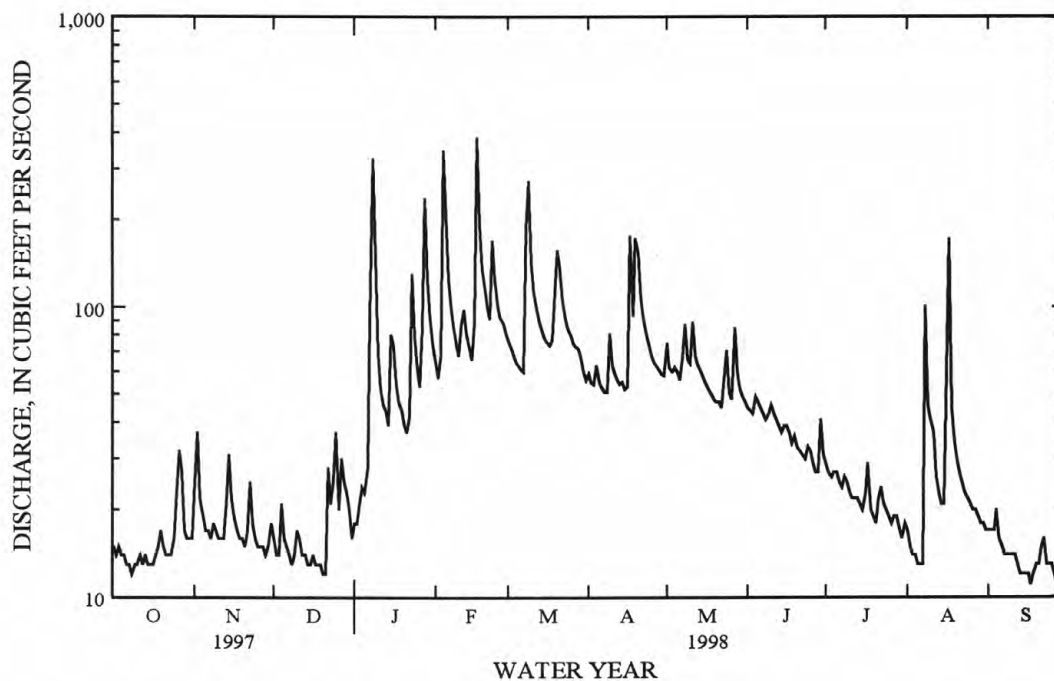
02071530 SMITH RIVER AT SMITH RIVER CHURCH NEAR WOOLWINE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	28.7	35.1	45.7	74.3	75.1	72.8	56.3	50.6	40.5	23.2	29.7	28.5
MAX	49.8	54.3	95.2	86.9	120	94.4	74.6	59.9	50.8	24.5	55.1	70.0
(WY)	1997	1997	1997	1995	1998	1998	1998	1998	1996	1996	1996	1996
MIN	15.5	18.7	17.6	54.5	55.0	52.4	32.3	37.4	30.1	22.2	13.9	13.2
(WY)	1998	1998	1998	1997	1995	1995	1995	1995	1995	1998	1995	1995

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1995 - 1998	
ANNUAL TOTAL	14616		17481			
ANNUAL MEAN	40.0		47.9		46.6	
HIGHEST ANNUAL MEAN					52.5	
LOWEST ANNUAL MEAN					37.0	
HIGHEST DAILY MEAN	222		383		669	
LOWEST DAILY MEAN	12		10		8.1	
ANNUAL SEVEN-DAY MINIMUM	13		12		9.6	
INSTANTANEOUS PEAK FLOW			1150		1420	
INSTANTANEOUS PEAK STAGE			7.68		8.45	
INSTANTANEOUS LOW FLOW			8.8		4.6	
ANNUAL RUNOFF (CFSM)	1.50		1.79		1.74	
ANNUAL RUNOFF (INCHES)	20.36		24.36		23.70	
10 PERCENT EXCEEDS	73		92		81	
50 PERCENT EXCEEDS	31		31		38	
90 PERCENT EXCEEDS	14		13		15	

a Also Sept. 28, 29, 1998.



ROANOKE RIVER BASIN

02071900 PHILPOTT LAKE NEAR PHILPOTT, VA

LOCATION.--Lat 36°46'52", long 80°01'40", Henry County, Hydrologic Unit 03010103, at Philpott Dam on Smith River, 1.5 mi west of Philpott, 12.0 mi upstream from Reed Creek, and at mile 44.3.

DRAINAGE AREA.--216 mi².

PERIOD OF RECORD.--August 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is at sea level.

REMARKS.--Reservoir is formed by concrete dam. Spillway, with crest at elevation 985 ft, is ungated and 120 ft long. Storage began August 1950 during construction; initial filling started in December 1951; water in reservoir first reached rule-curve elevation in July 1953. Total capacity at maximum flood-control pool elevation, 998 ft, is 247,400 acre-ft of which 47,000 acre-ft is above the spillway crest; 34,200 acre-ft is controlled flood storage between elevations 974 ft, maximum power pool, and 985 ft; 57,800 acre-ft is available for power between elevations 951 ft, minimum power pool, and 974 ft; and 108,400 acre-ft is inactive and dead storage below elevation 951 ft. Usable capacity is 92,000 acre-ft between elevations 951 ft and 985 ft. Figures given herein represent total contents. Reservoir is used for flood control, hydroelectric power, water supply, low-water regulation for pollution abatement and industrial water supply, and recreation.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 191,700 acre-ft, June 22, 1972, elevation, 983.06 ft; minimum (after first filling to rule curve), 64,540 acre-ft, Sept. 26, 1956, elevation, 927.59 ft.

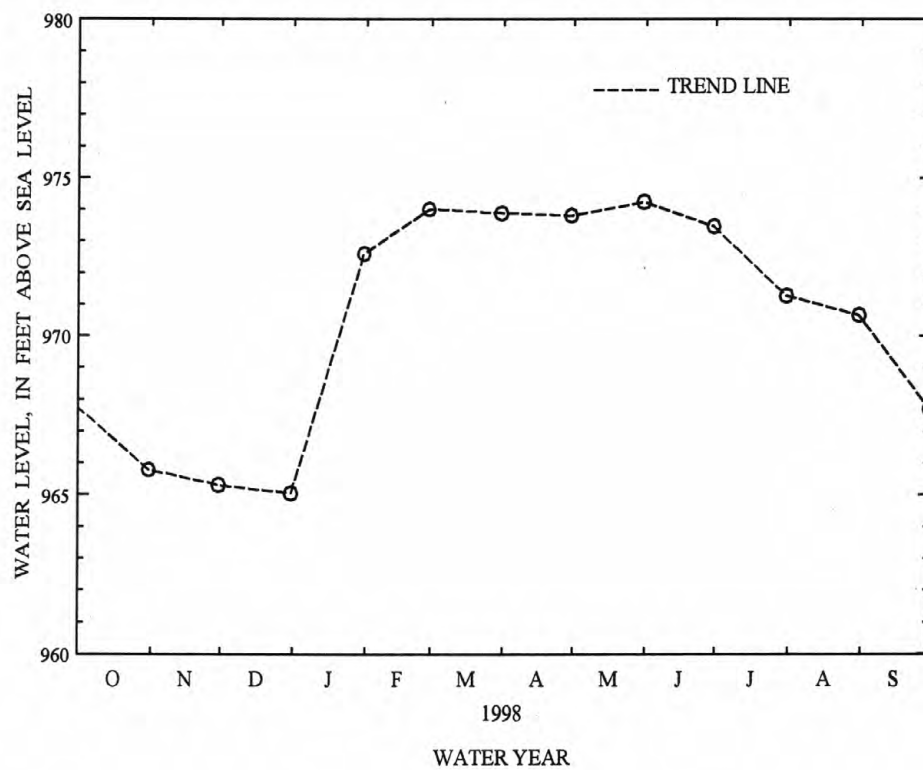
EXTREMES FOR CURRENT YEAR.--Maximum contents, 169,850 acre-ft, Apr. 20, elevation, 975.25 ft; minimum, 140,520 acre-ft, Dec. 19, elevation, 964.64 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	967.80	148,840	-
Oct. 31.....	965.79	143,510	-5,330
Nov. 30.....	965.31	142,260	-1,250
Dec. 31.....	965.05	141,580	-680
CAL YR 1997.....			-21,380
Jan. 31.....	972.61	162,180	+20,600
Feb. 28.....	974.01	166,220	+4,040
Mar. 31.....	973.89	165,870	-350
Apr. 30.....	973.81	165,640	-230
May 31.....	974.24	166,890	+1,250
June 30.....	973.47	164,660	-2,230
July 31.....	971.28	158,420	-6,240
Aug. 31.....	970.67	156,710	-1,710
Sept. 30.....	967.71	148,600	-8,110
WTR YR 1998.....			-240

ROANOKE RIVER BASIN

02071900 PHILPOTT LAKE NEAR PHILPOTT, VA--Continued



ROANOKE RIVER BASIN

02072000 SMITH RIVER NEAR PHILPOTT, VA

LOCATION.--Lat 36°46'50", long 80°01'30", Franklin County, Hydrologic Unit 03010103, on left bank 900 ft down-stream from Philpott Dam, 1.3 mi southwest of Philpott (corrected), 11.6 mi upstream from Reed Creek, and at mile 44.1.

DRAINAGE AREA.--216 mi².

PERIOD OF RECORD.--August 1946 to current year.

REVISED RECORDS.--WSP 1553: 1953(M), 1955-56(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 804.27 ft above sea level (U.S. Army Corps of Engineers bench mark). Prior to Oct. 8, 1952, at site 1.9 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Since August 1950, flow regulated by Philpott Lake (station 02071900) 0.2 mi upstream. Maximum discharge, 17,000 ft³/s, at site then in use, from rating curve extended above 9,700 ft³/s on basis of slope-area measurements at gage heights 18.2 ft and 20.3 ft. Minimum discharge observed, 2.3 ft³/s, result of repairs at dam, but may have been less during periods of estimated record. Minimum daily discharge, 20 ft³/s, caused by turbines being shut down for repair at Philpott Dam. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,420 ft³/s, Oct. 2, gage height, 5.10 ft; minimum daily, 45 ft³/s, Jan. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	218	55	165	165	52	52	312	555	454	357	58	267		
2	218	55	164	165	666	756	351	54	455	358	58	280		
3	225	227	165	53	616	756	352	55	455	206	317	283		
4	53	226	165	53	617	759	53	568	456	57	317	213		
5	53	226	165	213	611	759	53	806	456	57	318	57		
6	217	226	53	160	756	762	453	807	53	367	318	57		
7	219	225	53	172	756	53	453	812	53	360	318	266		
8	218	55	165	173	756	53	453	905	203	363	59	268		
9	53	55	165	179	757	304	453	1170	204	259	58	265		
10	383	168	165	45	756	970	454	816	305	208	371	265		
11	53	167	165	49	763	1290	53	60	294	57	369	265		
12	53	168	165	220	761	1290	53	63	254	57	370	57		
13	223	167	53	181	763	1200	402	63	53	262	266	57		
14	222	168	53	189	52	52	403	64	53	259	214	260		
15	328	55	166	182	53	52	404	167	254	362	58	253		
16	57	55	165	179	360	394	403	55	254	362	61	254		
17	274	168	165	52	360	150	405	55	254	314	368	254		
18	53	166	165	52	945	150	693	558	254	58	367	255		
19	53	168	166	234	1250	150	1250	558	255	58	368	50		
20	222	167	53	190	1250	913	1250	556	53	261	264	50		
21	222	167	53	196	669	62	1280	559	53	262	211	256		
22	222	55	166	181	660	1260	1280	306	406	417	57	256		
23	222	55	165	197	758	1040	1190	55	406	313	58	256		
24	224	167	165	52	757	649	764	55	407	313	395	256		
25	53	166	166	52	755	656	54	205	407	58	383	256		
26	54	165	165	235	757	405	54	204	407	58	386	50		
27	223	166	53	182	760	353	354	461	55	368	281	51		
28	223	166	53	173	52	53	353	456	56	367	229	313		
29	223	53	165	579	---	53	552	456	257	368	50	324		
30	223	53	165	580	---	326	503	53	358	265	50	271		
31	223	---	165	52	---	353	---	53	---	213	358	---		
TOTAL	5507	4180	4222	5385	18068	16075	15087	11610	7884	7644	7355	6265		
MEAN	178	139	136	174	645	519	503	375	263	247	237	209		
MAX	383	227	166	580	1250	1290	1280	1170	456	417	395	324		
MIN	53	53	53	45	52	52	53	53	53	57	50	50		
MIN	53	53	53	45	52	52	53	53	53	57	50	50		
(†)	-2687	-630	-343	+10386	+2037	-176	-116	+630	-1124	-3146	-862	-4089		
MEAN†	91	118	125	509	718	513	499	395	225	145	209	73		
CFSM†	.42	.55	.58	2.36	3.32	2.37	2.31	1.83	1.04	.67	.97	.34		
IN.†	.49	.61	.67	2.72	3.46	2.74	2.58	2.11	1.16	.77	1.12	.37		
CAL YR 1997	TOTAL	104991	MEAN	288	MAX	676	MIN	46	MEAN†	258	CFSM†	1.19	IN.†	16.23
WTR YR 1998	TOTAL	109282	MEAN	299	MAX	1290	MIN	45	MEAN†	299	CFSM†	1.38	IN.†	18.80

† Total change in contents, equivalent in cubic feet per second, per month, in Philpott Lake; provided by U.S. Army Corps of Engineers.

‡ Adjusted for monthly change in contents.

ROANOKE RIVER BASIN

02072000 SMITH RIVER NEAR PHILPOTT, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1950, BY WATER YEAR (WY) [UNREGULATED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	326	318	292	324	339	397	381	442	381	385	338	331
MAX	522	371	507	403	406	474	490	631	562	915	759	531
(WY)	1948	1948	1949	1949	1948	1949	1948	1949	1949	1949	1949	1949
MIN	183	202	166	238	209	303	244	195	284	158	141	166
(WY)	1949	1947	1947	1948	1947	1950	1950	1947	1948	1947	1947	1947

SUMMARY STATISTICS

WATER YEARS 1947 - 1950

ANNUAL MEAN	354
HIGHEST ANNUAL MEAN	517
LOWEST ANNUAL MEAN	237
HIGHEST DAILY MEAN	a4500
LOWEST DAILY MEAN	93
ANNUAL SEVEN-DAY MINIMUM	104
INSTANTANEOUS PEAK FLOW	17000
INSTANTANEOUS PEAK STAGE	20.30
INSTANTANEOUS LOW FLOW	21
ANNUAL RUNOFF (CFSM)	1.64
ANNUAL RUNOFF (INCHES)	22.30
10 PERCENT EXCEEDS	560
50 PERCENT EXCEEDS	274
90 PERCENT EXCEEDS	148

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	238	228	250	277	273	342	389	313	283	243	256	261
MAX	755	835	586	526	718	946	1194	796	827	646	479	724
(WY)	1990	1986	1997	1991	1973	1993	1983	1978	1972	1972	1970	1979
MIN	96.1	70.5	88.0	71.1	58.2	60.5	69.2	61.3	67.2	82.2	77.4	126
(WY)	1952	1953	1996	1953	1953	1953	1969	1964	1964	1964	1964	1956

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1951 - 1998

ANNUAL TOTAL	104991	109282	
ANNUAL MEAN	288	299	279
HIGHEST ANNUAL MEAN			441
LOWEST ANNUAL MEAN			123
HIGHEST DAILY MEAN	676	May 7	1290
LOWEST DAILY MEAN	46	cMar 16	45
ANNUAL SEVEN-DAY MINIMUM	133	Nov 29	75
INSTANTANEOUS PEAK FLOW			1420
INSTANTANEOUS PEAK STAGE			5.10
INSTANTANEOUS LOW FLOW			17
ANNUAL RUNOFF (CFSM)	1.33		1.39
ANNUAL RUNOFF (INCHES)	18.08		18.82
10 PERCENT EXCEEDS	651		756
50 PERCENT EXCEEDS	226		223
90 PERCENT EXCEEDS	52		53

a No gage-height record; discharge computed on basis of records for stations at Bassett and at Martinsville.

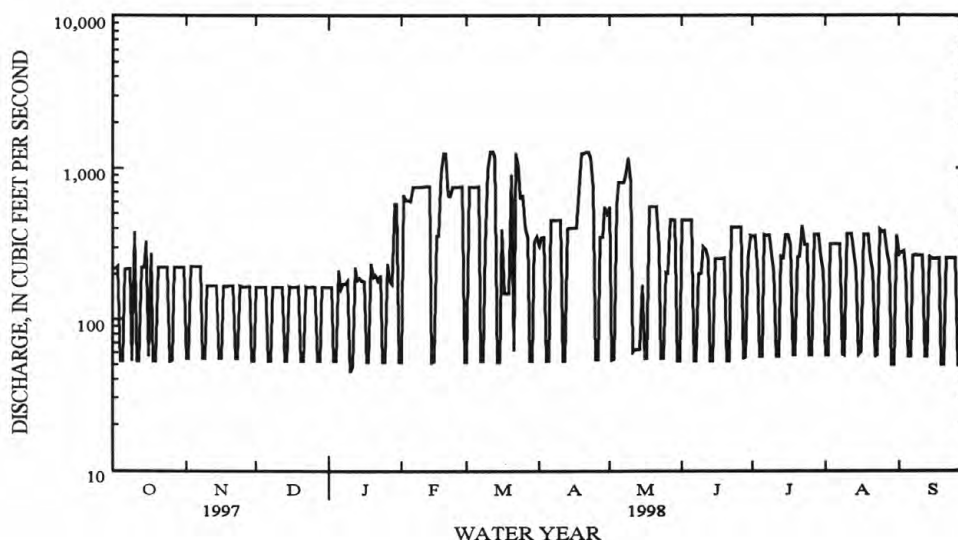
b Also Mar. 12, 1998.

c Also May. 10, 11, 17, 25, and Sept. 20, 21, 1997.

d Caused by turbines being shut down for repair at Philpott Dam.

f Also Sept. 16, 17, 18, 21, 22, 23, 24, 25 and 28, 1998.

g Result of repair at dam, but may have been less during periods of estimated record.



ROANOKE RIVER BASIN

02072500 SMITH RIVER AT BASSETT, VA

LOCATION.--Lat 36°46'12", long 80°00'04", Henry County, Hydrologic Unit 03010103, on left bank 25 ft upstream from bridge on State Highway 666 at north edge of North Bassett, 1.0 mi northwest of Bassett, 3.0 mi downstream from Town Creek, 5.6 mi upstream from Reed Creek, 6.2 mi downstream from Philpott Dam, and at mile 38.1.

DRAINAGE AREA.--259 mi².

PERIOD OF RECORD.--April 1939 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 753.09 ft above sea level (levels by U.S. Army Corps of Engineers).

REMARKS.--No estimated daily discharge. Records good. Since August 1950, flow regulated by Philpott Lake (station 02071900) 6.2 mi upstream. Diversion upstream from station by Henry County Public Service Authority, since 1985, has averaged less than 1.0 ft³/s. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Minimum gage height, 1.06 ft, Sept. 18, 26, 1953. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 19, 1937, reached a stage of about 22.9 ft, from information by local residents, discharge, 38,000 ft³/s, from rating curve extended above 23,000 ft³/s on basis of backwater studies and records for station at Martinsville.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,340 ft³/s, Apr. 19, gage height, 6.11 ft; minimum, 55 ft³/s, Sept. 28; minimum daily, 58 ft³/s, Sept. 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	251	90	200	205	104	109	508	716	e513	419	84	304
2	243	104	196	206	e670	881	430	e148	e537	417	78	315
3	260	265	197	90	e840	884	429	e119	e533	250	357	318
4	76	258	201	91	e1380	884	136	684	e545	89	359	252
5	73	255	200	263	e1160	885	116	e948	e539	102	358	77
6	248	254	77	209	e990	884	547	e940	e110	419	357	73
7	248	259	74	230	e940	104	545	e986	e97	423	358	298
8	246	87	194	509	e905	224	544	e1000	263	425	130	301
9	72	78	197	271	e900	750	551	1490	265	315	98	300
10	411	194	202	94	e900	1080	547	e975	e384	255	424	298
11	73	194	204	88	902	1520	104	e122	e361	86	424	299
12	70	194	201	271	947	1510	101	e116	324	83	421	73
13	239	196	82	231	910	1500	482	e114	100	305	307	69
14	245	208	82	234	123	141	488	e111	96	305	249	285
15	373	84	197	283	105	108	486	e254	316	416	81	278
16	82	78	199	302	454	498	487	e108	319	417	150	279
17	303	190	199	109	880	215	907	e108	321	410	527	277
18	79	193	198	95	1110	217	763	e636	313	83	436	284
19	76	195	198	293	1490	247	1830	e652	313	78	425	64
20	248	192	79	241	1480	1070	1690	e650	95	296	309	63
21	250	198	79	244	893	272	1540	e649	90	293	251	278
22	250	90	215	230	785	1380	1520	e381	468	455	83	286
23	251	82	214	432	1050	1350	1500	e97	477	354	81	277
24	254	196	212	147	955	782	942	e97	476	349	446	274
25	88	195	227	119	914	783	122	e252	476	74	433	275
26	89	196	215	306	899	501	115	e251	475	71	438	64
27	269	196	102	467	897	442	444	e552	96	400	323	58
28	253	199	106	966	116	109	426	e533	85	404	265	322
29	250	77	219	781	---	107	659	e531	308	402	71	343
30	253	78	214	725	---	422	605	e94	419	300	69	302
31	256	---	208	122	---	358	---	e94	---	250	396	---
TOTAL	6379	5075	5388	8854	23699	20217	19564	14408	9714	8945	8788	6986
MEAN	206	169	174	286	846	652	652	465	324	289	283	233
MAX	411	265	227	966	1490	1520	1830	1490	545	455	527	343
MIN	70	77	74	88	104	104	101	94	85	71	69	58
(+)	-2687	-630	-343	+10386	+2037	-176	-116	+630	-1124	-3146	-862	-4098
MEAN†	119	148	163	621	919	646	648	485	286	187	256	96
CFSM†	.46	.57	.63	2.40	3.55	2.50	2.50	1.87	1.11	.72	.99	.37
IN.‡	.53	.64	.72	2.76	3.70	2.88	2.79	2.16	1.23	.83	1.14	.41

CAL YR 1997 TOTAL 128629 MEAN 352 MAX 1100 MIN 63 MEAN‡ 323 CFSM‡ 1.25 IN.‡ 16.93
WTR YR 1998 TOTAL 138017 MEAN 378 MAX 1830 MIN 58 MEAN‡ 378 CFSM‡ 1.46 IN.‡ 19.82

† Total change in contents, equivalent in cubic feet per second, per month, in Philpott Lake; provided by U.S. Army Corps of Engineers.

‡ Adjusted for monthly change in contents.

e Estimated.

ROANOKE RIVER BASIN

02072500 SMITH RIVER AT BASSETT, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1950, BY WATER YEAR (WY) [UNREGULATED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	283	280	324	364	397	415	394	423	352	403	386	370
MAX	616	474	579	752	599	566	593	764	656	1071	1262	970
(WY)	1948	1948	1949	1946	1946	1944	1949	1949	1949	1949	1940	1945
MIN	103	124	157	182	223	201	183	171	160	183	129	133
(WY)	1942	1942	1940	1940	1941	1940	1942	1941	1941	1944	1944	1939

SUMMARY STATISTICS

WATER YEARS 1940 - 1950

ANNUAL MEAN	371
HIGHEST ANNUAL MEAN	604
LOWEST ANNUAL MEAN	270
HIGHEST DAILY MEAN	11600
LOWEST DAILY MEAN	82
ANNUAL SEVEN-DAY MINIMUM	85
INSTANTANEOUS PEAK FLOW	26600
INSTANTANEOUS PEAK STAGE	18.28
INSTANTANEOUS LOW FLOW	58
ANNUAL RUNOFF (CFSM)	1.43
ANNUAL RUNOFF (INCHES)	19.47
10 PERCENT EXCEEDS	601
50 PERCENT EXCEEDS	264
90 PERCENT EXCEEDS	147

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	281	272	302	338	345	421	468	374	336	285	297	309
MAX	944	996	724	655	846	1197	1474	902	1005	759	568	912
(WY)	1990	1986	1997	1991	1998	1993	1987	1978	1992	1972	1994	1979
MIN	121	98.4	110	107	110	114	98.6	86.7	84.4	138	124	157
(WY)	1952	1953	1996	1989	1989	1982	1969	1964	1964	1981	1953	1967

SUMMARY STATISTICS

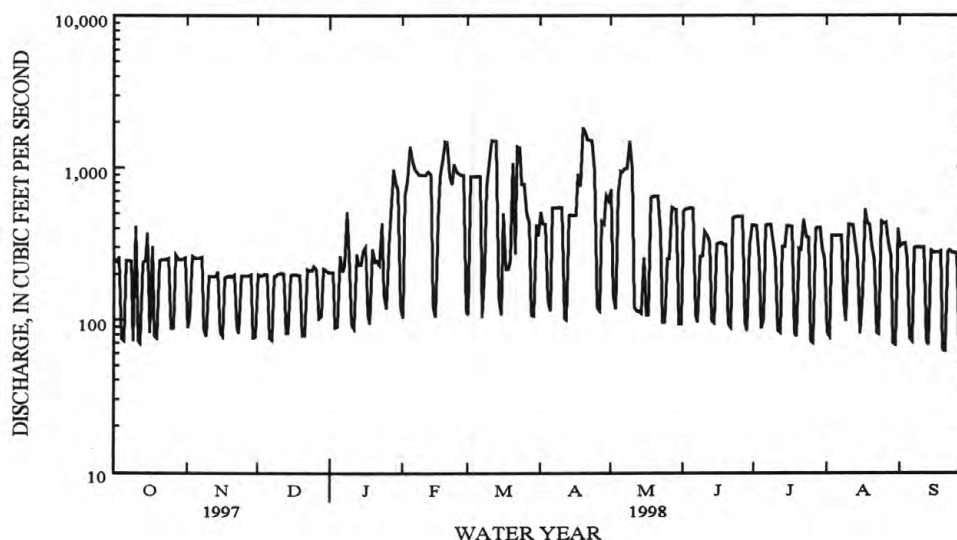
FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1951 - 1998

ANNUAL TOTAL	128629	138017	
ANNUAL MEAN	352	378	335
HIGHEST ANNUAL MEAN			523
LOWEST ANNUAL MEAN			150
HIGHEST DAILY MEAN	1100	Apr 29	6080
LOWEST DAILY MEAN	63	Sep 21	44
ANNUAL SEVEN-DAY MINIMUM	161	Nov 15	67
INSTANTANEOUS PEAK FLOW			17700
INSTANTANEOUS PEAK STAGE			15.20
INSTANTANEOUS LOW FLOW			19
ANNUAL RUNOFF (CFSM)	1.36	1.46	1.30
ANNUAL RUNOFF (INCHES)	18.47	19.82	17.60
10 PERCENT EXCEEDS	739	900	730
50 PERCENT EXCEEDS	284	265	251
90 PERCENT EXCEEDS	87	83	76

a Also Sept. 9, 1944.



ROANOKE RIVER BASIN

02073000 SMITH RIVER AT MARTINSVILLE, VA

LOCATION.--Lat 36°39'40", long 79°52'51", Henry County, Hydrologic Unit 03010103, on right bank at south edge of Martinsville, 800 ft downstream from bridge on U.S. Highways 58 and 220, and 5.0 mi downstream from Beaver Creek.

DRAINAGE AREA.--380 mi².

PERIOD OF RECORD.--August 1929 to current year.

REVISED RECORDS.--WSP 1032: 1933-35(M), 1936-39, 1940-41(P). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 657.22 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since August 1950 by Philpott Lake (station 02071900) 19.6 mi upstream from station. Some additional regulation by powerplant 1,000 ft upstream from station. Maximum discharge, 39,000 ft³/s, from rating curve extended above 17,000 ft³/s on basis of computations of flow over dam at gage heights 16.76 ft and 21.50 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,010 ft³/s, Apr. 19, gage height, 6.75 ft; minimum, 40 ft³/s, Oct. 16, result of regulation; minimum daily, 83 ft³/s, Dec. 13, result of regulation.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	337	250	278	270	266	271	645	922	504	618	138	473		
2	335	233	265	273	670	950	549	569	821	643	153	368		
3	343	306	263	175	1010	1040	595	332	799	436	405	394		
4	165	344	289	178	2440	1060	531	847	824	279	421	377		
5	160	335	273	330	1680	1060	285	1280	784	281	421	161		
6	339	334	155	286	1390	1070	740	1170	500	521	404	147		
7	320	357	151	346	1140	404	719	1470	266	660	394	323		
8	342	232	259	1350	1140	729	738	1800	456	789	435	392		
9	230	168	263	498	1120	1940	763	1880	448	557	258	359		
10	424	278	280	233	1090	1280	727	1300	526	508	556	354		
11	145	274	274	200	1150	1870	236	672	571	195	518	319		
12	150	272	329	352	1430	1820	246	449	497	213	495	210		
13	323	291	83	336	1180	1800	657	315	335	511	433	130		
14	321	332	150	316	490	583	671	327	263	467	371	344		
15	437	184	258	794	260	273	634	342	521	478	107	299		
16	228	166	256	706	735	698	700	335	545	599	357	315		
17	330	272	257	277	2320	331	2620	313	568	572	1030	438		
18	146	273	256	228	1580	384	1060	686	526	309	566	374		
19	195	273	256	420	1880	529	2800	841	511	195	518	133		
20	277	272	148	317	1790	1280	2660	850	271	493	450	120		
21	327	275	146	329	1150	1100	1910	849	258	417	378	302		
22	326	206	314	320	975	1480	1810	744	543	483	119	342		
23	320	175	302	1130	1780	1830	1760	318	718	593	162	344		
24	324	271	301	498	1380	1050	1250	438	711	535	432	336		
25	237	268	383	307	1190	988	394	453	709	240	530	334		
26	222	268	308	433	1130	751	284	402	705	178	510	144		
27	348	269	246	1080	1140	635	619	951	429	465	464	119		
28	345	267	247	3160	439	228	411	822	235	543	394	317		
29	330	157	314	1160	---	260	817	762	474	530	128	363		
30	331	167	308	1000	---	407	774	353	593	476	142	431		
31	328	---	287	498	---	574	---	271	---	367	366	---		
TOTAL	8985	7769	7899	17800	33945	28675	28605	23063	15911	14151	12055	9062		
MEAN	290	259	255	574	1212	925	954	744	530	456	389	302		
MAX	437	357	383	3160	2440	1940	2800	1880	824	789	1030	473		
MIN	145	157	83	175	260	228	236	271	235	178	107	119		
(†)	-2687	-630	-343	+10386	+2037	-176	-116	+630	-1124	-3146	-862	-4089		
MEAN†	203	238	244	909	1285	919	950	764	493	355	361	166		
CFSM†	.53	.63	.64	2.39	3.38	2.42	2.50	2.01	1.30	.93	.95	.44		
IN.†	.62	.70	.74	2.76	3.52	2.79	2.79	2.32	1.45	1.08	1.10	.49		
CAL YR 1997	TOTAL	190540	MEAN	522	MAX	2900	MIN	83	MEAN†	492	CFSM†	1.30	IN.†	17.60
WTR YR 1998	TOTAL	207920	MEAN	570	MAX	3160	MIN	83	MEAN†	570	CFSM†	1.50	IN.†	20.35

† Total change in contents, equivalent in cubic feet per second, per month, in Philpott Lake; provided by U.S. Army Corps of Engineers.

‡ Adjusted for monthly change in contents.

ROANOKE RIVER BASIN

02073000 SMITH RIVER AT MARTINSVILLE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1950, BY WATER YEAR (WY) [UNREGULATED]a

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	459	394	446	567	517	569	539	483	410	443	435	393
MAX	1828	940	975	1415	1048	907	953	964	788	1205	1778	1258
(WY)	1938	1933	1933	1937	1939	1936	1936	1949	1949	1949	1940	1945
MIN	107	113	188	200	160	309	275	227	211	123	111	83.1
(WY)	1932	1932	1934	1934	1931	1940	1942	1934	1931	1930	1932	1932

SUMMARY STATISTICS

WATER YEARS 1930 - 1950

ANNUAL MEAN	471	
HIGHEST ANNUAL MEAN	752	1949
LOWEST ANNUAL MEAN	264	1931
HIGHEST DAILY MEAN	18500	Aug 14 1940
LOWEST DAILY MEAN	b19	Oct 6 1935
ANNUAL SEVEN-DAY MINIMUM	b63	Sep 17 1932
INSTANTANEOUS PEAK FLOW	39000	Oct 19 1937
INSTANTANEOUS PEAK STAGE	21.50	Oct 19 1937
INSTANTANEOUS LOW FLOW	b5.0	May 20 1934
ANNUAL RUNOFF (CFSM)	1.24	
ANNUAL RUNOFF (INCHES)	16.85	
10 PERCENT EXCEEDS	760	
50 PERCENT EXCEEDS	346	
90 PERCENT EXCEEDS	164	

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	400	392	438	507	531	635	657	533	488	418	409	435
MAX	1389	1266	988	1000	1212	1735	2206	1138	1467	1174	1032	1624
(WY)	1990	1986	1997	1991	1998	1993	1987	1978	1992	1989	1985	1987
MIN	163	162	203	206	233	233	206	164	144	195	165	205
(WY)	1952	1953	1996	1957	1968	1981	1969	1964	1964	1981	1953	1951

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

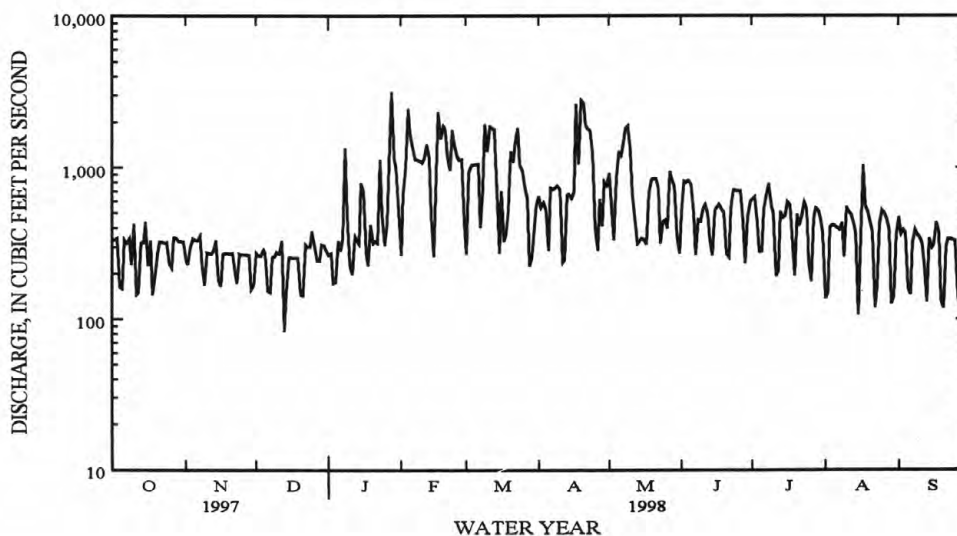
FOR 1998 WATER YEAR

WATER YEARS 1951 - 1998

ANNUAL TOTAL	190540	207920	
ANNUAL MEAN	522	570	487
HIGHEST ANNUAL MEAN			817
LOWEST ANNUAL MEAN			243
HIGHEST DAILY MEAN	2900	Apr 29	3160
LOWEST DAILY MEAN	83	Dec 13	83
ANNUAL SEVEN-DAY MINIMUM	217	Dec 13	217
INSTANTANEOUS PEAK FLOW			6010
INSTANTANEOUS PEAK STAGE			6.75
INSTANTANEOUS LOW FLOW			40
ANNUAL RUNOFF (CFSM)	1.37	1.50	3.8
ANNUAL RUNOFF (INCHES)	18.65	20.35	17.40
10 PERCENT EXCEEDS	919	1150	916
50 PERCENT EXCEEDS	470	394	364
90 PERCENT EXCEEDS	204	195	168

a Prior to regulation from Philpott Lake.

b Result of regulation.



ROANOKE RIVER BASIN

02074000 SMITH RIVER AT EDEN, NC

LOCATION.--Lat 36°31'31", long 79°45'57", Rockingham County, Hydrologic Unit 03010103, on right bank at Eden, 0.3 mi downstream of bridge on State Highway 14, 0.8 mi upstream from bridge on Secondary Road 1714, 1.2 mi south of Virginia-North Carolina State line, 1.3 mi downstream of Stuart Creek, and 3.9 mi upstream from mouth.

DRAINAGE AREA.--538 mi².

PERIOD OF RECORD.--October 1939 to current year. Prior to October 1970, published as "Smith River at Spray".

REVISED RECORDS.--WSP 1433: 1946.

GAGE.--Water-stage recorder. Datum of gage is 539.56 ft above sea level.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Flow regulated since August 1950 by Philpott Lake, 40 mi upstream (usable capacity, 6,325,000,000 ft³). Additional regulation by hydroelectric plant at Martinsville, Virginia, 18 mi upstream. Maximum discharge prior to regulation: 45,600 ft³/s, Aug. 15, 1940, from rating curve extended above 12,000 ft³/s on the basis of computation of peak flow over dam 1.5 mi downstream; gage height: 19.28 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	420	338	380	445	643	490	718	1050	478	573	358	444
2	369	264	e400	429	800	701	749	1090	794	618	202	370
3	243	387	e420	321	1240	1190	714	506	1030	538	218	382
4	411	384	e360	327	3610	1180	693	704	903	423	393	444
5	429	384	e250	454	3060	1160	463	1360	969	307	475	353
6	563	466	e280	510	1750	1170	690	1310	821	316	370	195
7	e500	470	e330	499	1530	955	831	2060	431	588	385	186
8	e450	292	e350	2050	1470	926	836	3820	450	567	482	378
9	e400	349	e360	1110	1370	3150	876	2280	520	828	715	370
10	e350	382	e340	595	1300	1540	836	1530	598	512	388	376
11	e300	383	e300	452	1280	2080	546	1350	673	431	678	e350
12	e350	382	e270	514	2070	1960	358	756	645	265	507	e250
13	e370	391	e250	586	1470	1900	610	514	591	299	469	e170
14	e340	347	e290	532	1130	1150	749	495	387	452	393	e160
15	e300	308	e370	1450	507	463	743	471	405	451	369	e150
16	e280	348	e390	1930	799	660	729	485	600	539	220	e200
17	322	377	385	783	3440	679	4430	477	617	562	1020	e250
18	524	381	381	596	2250	549	1430	439	590	503	636	e240
19	449	379	388	649	2230	778	2900	952	547	238	532	e260
20	424	243	260	641	2040	1330	4630	888	541	270	468	e250
21	425	274	248	565	1580	2220	2370	911	346	426	397	e200
22	467	406	422	545	1180	1510	2110	897	378	408	359	e150
23	456	389	511	1710	1920	2020	2000	650	703	551	196	e130
24	456	378	457	1220	1880	1270	1430	605	705	510	240	e200
25	419	437	576	721	1480	1160	1020	576	695	444	481	e240
26	376	403	594	715	1340	1110	450	569	688	221	471	e250
27	464	259	459	1420	1310	824	630	776	630	240	464	e230
28	493	246	558	6350	1040	542	645	1060	296	501	388	e220
29	478	371	537	2000	---	421	733	898	292	496	354	e210
30	411	380	517	1510	---	506	891	793	530	475	180	e180
31	496	---	503	1070	---	754	---	426	---	392	184	---
TOTAL	12735	10798	12136	32699	45719	36348	36810	30698	17853	13944	12992	7788
MEAN	411	360	391	1055	1633	1173	1227	990	595	450	419	260
MAX	563	470	594	6350	3610	3150	4630	3820	1030	828	1020	444
MIN	243	243	248	321	507	421	358	426	292	221	180	130
†	-87	-21	-11	+335	+72	-6	-4	+21	-38	-101	-28	-136

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 1998*, BY WATER YEAR (WY)

	MEAN	521	510	598	706	757	921	911	720	652	517	499	530
MAX	1572	1530	1376	1453	1633	2519	3016	1567	2026	1374	1454	2030	
(WY)	1990	1986	1997	1979	1998	1993	1987	1978	1972	1989	1985	1996	
MIN	201	211	273	291	325	331	294	266	213	214	194	248	
(WY)	1952	1982	1981	1989	1968	1967	1967	1964	1964	1981	1953	1951	

ROANOKE RIVER BASIN

02074000 SMITH RIVER AT EDEN, NC--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1951 - 1998*	
ANNUAL TOTAL	269466		270520		653	
ANNUAL MEAN	738	↓760	741	↓741	1010	1987
HIGHEST ANNUAL MEAN					309	1981
LOWEST ANNUAL MEAN					16700	Jun 21 1972
HIGHEST DAILY MEAN	5190	Apr 28	6350	Jan 28	46	Aug 14 1967
LOWEST DAILY MEAN	212	Sep 5	130	Sep 23	130	Aug 21 1964
ANNUAL SEVEN-DAY MINIMUM	309	Dec 8	200	Sep 21	24800	Jun 21 1972
INSTANTANEOUS PEAK FLOW			8930	Jan 28	16.24	Jun 21 1972
INSTANTANEOUS PEAK STAGE			9.23	Jan 28	38	Aug 7 1967
INSTANTANEOUS LOW FLOW			137 ^a	Oct 16	473100	
ANNUAL RUNOFF (AC-FT)	534500		536600		1.21	
ANNUAL RUNOFF (CFSM)	1.37		1.38		16.49	
ANNUAL RUNOFF (INCHES)	18.63		18.71		1190	
10 PERCENT EXCEEDS	1230		1490		462	
50 PERCENT EXCEEDS	620		499		228	
90 PERCENT EXCEEDS	327		255			

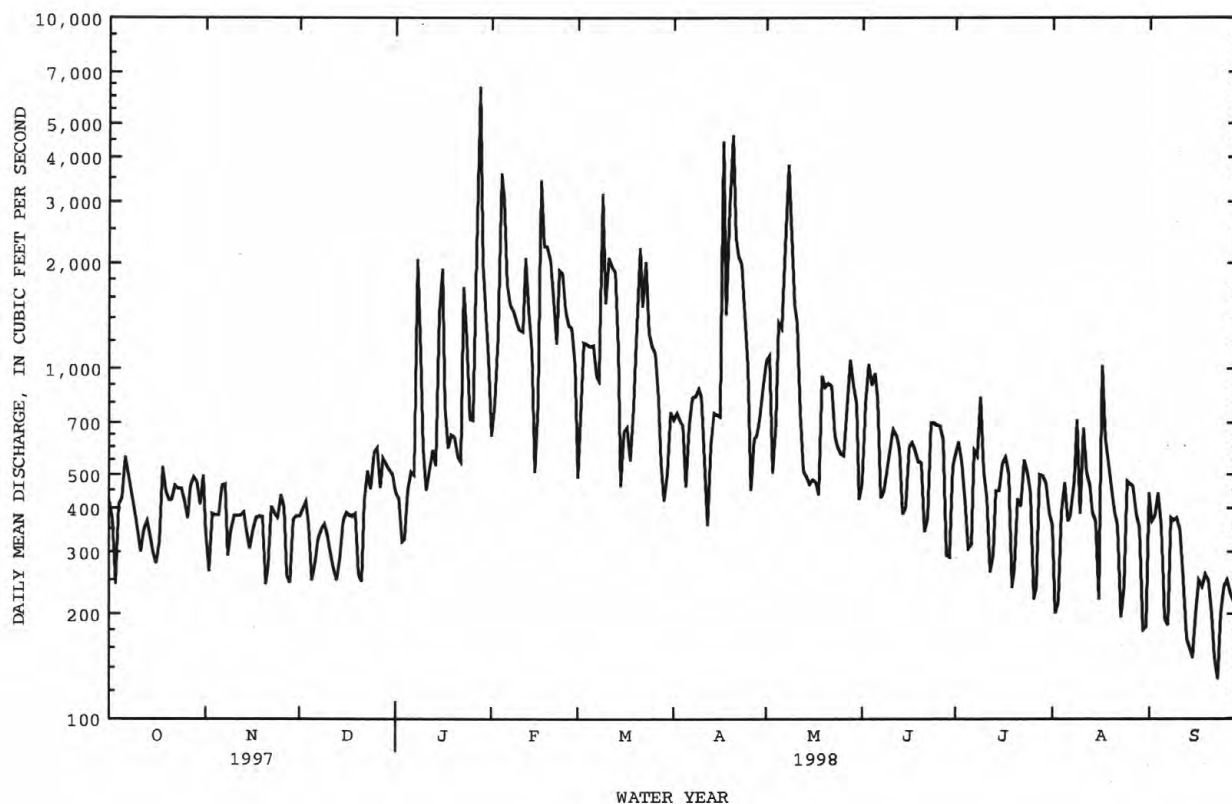
e Estimated.

† Change in contents, equivalent in cubic feet per second, in Philpott Lake provided by U.S. Army Corps of Engineers.

‡ Adjusted for change in contents.

** For regulated period (1951-1998) only. See REMARKS.

a Minimum recorded, could have been less during periods of estimated discharge.



ROANOKE RIVER BASIN

02074500 SANDY RIVER NEAR DANVILLE, VA

LOCATION.--Lat 36°37'10", long 79°30'16", Pittsylvania County, Hydrologic Unit 03010103, on right bank 200 ft downstream from Hickory Forest Creek, 400 ft upstream from bridge on State Highway 863 between Callahans Store and Mount Cross, 5.5 mi northwest of western city limits of Danville, and 5.8 mi upstream from mouth.

DRAINAGE AREA.--112 mi².

PERIOD OF RECORD.--October 1929 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 972: 1930-41. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 460.38 ft above sea level. Prior to June 26, 1942, at site 1,200 ft downstream at datum 5.57 ft lower.

REMARKS.--Records good except for period with ice effect, Jan. 1, 2, which is fair. Diurnal fluctuation at low flow caused by small mill upstream from station. Maximum discharge, 23,000 ft³/s, from rating curve extended above 11,000 ft³/s. Minimum gage height, 0.40 ft, Sept. 29, 1930. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1330	1,800	4.77	Mar. 21	0130	2,890	5.75
Jan. 15	2130	1,920	4.88	Apr. 17	0700	3,250	6.00
Jan. 28	0230	5,220	7.18	Apr. 20	0200	1,590	4.64
Feb. 4	1330	2,570	5.53	May 7	2400	*6,020	*7.63
Feb. 17	1500	2,570	5.53	May 8	1300	3,250	6.00
Mar. 9	0930	1,900	4.95				

Minimum daily discharge, 36 ft³/s, Sept. 15, 16, 17, 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	86	74	e60	144	133	122	145	99	73	51	43
2	52	84	58	e64	131	128	123	171	97	70	49	42
3	53	70	55	65	140	122	116	131	97	67	47	43
4	53	59	65	70	1670	117	151	137	99	65	45	59
5	52	54	61	69	772	115	134	155	107	71	44	48
6	51	53	55	68	305	112	120	124	99	68	44	43
7	50	70	52	108	206	111	117	859	96	65	44	42
8	50	61	51	829	171	306	116	2740	93	78	53	44
9	49	57	51	294	149	1080	124	400	92	102	83	42
10	49	54	55	145	136	282	119	209	100	96	75	41
11	49	52	57	105	139	175	115	196	95	77	81	41
12	47	51	53	89	454	150	112	177	93	72	61	40
13	47	54	51	85	191	138	109	156	91	70	56	38
14	47	78	50	79	153	132	113	144	88	68	54	37
15	53	68	49	783	135	125	112	134	87	65	53	36
16	52	58	48	886	144	121	111	128	88	63	66	36
17	52	54	48	246	1420	119	1720	130	87	70	131	36
18	70	51	48	161	559	128	345	121	84	64	75	64
19	81	51	47	139	221	207	403	113	82	60	62	46
20	81	50	47	122	179	591	758	111	83	63	56	40
21	57	53	47	102	160	1280	225	109	80	59	54	42
22	54	85	62	95	144	321	179	106	80	55	54	62
23	50	67	74	773	385	194	167	118	82	55	53	45
24	49	57	62	378	292	166	149	142	79	54	51	40
25	55	53	102	219	177	150	136	123	76	54	51	39
26	61	53	81	150	153	141	128	110	74	53	48	39
27	86	52	110	853	144	138	123	132	72	53	48	39
28	61	51	149	2990	139	132	119	124	70	59	48	37
29	56	50	99	486	---	129	115	110	75	54	44	36
30	53	65	88	220	---	125	116	104	74	51	44	37
31	52	---	75	168	---	123	---	102	---	49	43	---
TOTAL	1726	1801	2024	10901	9013	7291	6597	7761	2619	2023	1768	1277
MEAN	55.7	60.0	65.3	352	322	235	220	250	87.3	65.3	57.0	42.6
MAX	86	86	149	2990	1670	1280	1720	2740	107	102	131	64
MIN	47	50	47	60	131	111	109	102	70	49	43	36
CFSM	.50	.54	.58	3.14	2.87	2.10	1.96	2.24	.78	.58	.51	.38
IN.	.57	.60	.67	3.62	2.99	2.42	2.19	2.58	.87	.67	.59	.42

e Estimated.

ROANOKE RIVER BASIN

02074500 SANDY RIVER NEAR DANVILLE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	84.0	84.5	108	141	150	177	149	110	88.6	75.9	83.5	85.3
MAX	366	281	249	409	369	738	591	279	376	265	556	739
(WY)	1938	1958	1974	1936	1979	1975	1987	1971	1972	1989	1940	1996
MIN	22.6	32.2	35.2	31.5	40.3	63.9	53.1	52.8	34.1	26.0	17.0	14.2
(WY)	1932	1932	1934	1934	1934	1967	1967	1986	1986	1986	1932	1930

SUMMARY STATISTICS

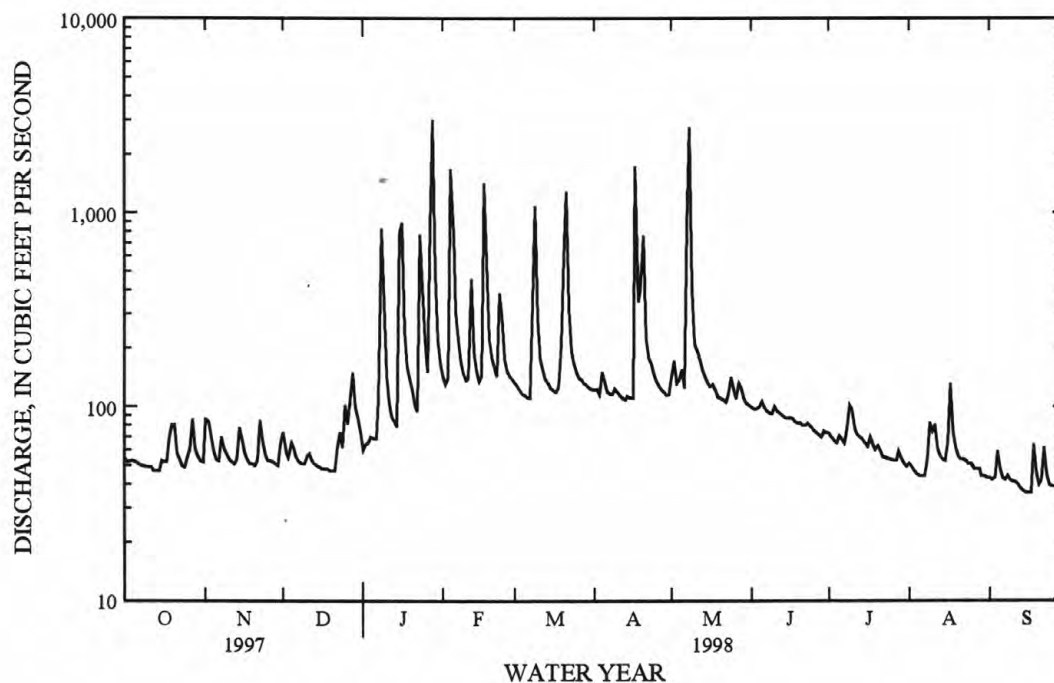
FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1930 - 1998

ANNUAL TOTAL	39164	54801	
ANNUAL MEAN	107	150	
HIGHEST ANNUAL MEAN			111
LOWEST ANNUAL MEAN			191
HIGHEST DAILY MEAN	1910	Apr 29	2990 Jan 28
LOWEST DAILY MEAN	35	Aug 19	36 aSep 15
ANNUAL SEVEN-DAY MINIMUM	39	Aug 13	38 Sep 11
INSTANTANEOUS PEAK FLOW			6020 May 7
INSTANTANEOUS PEAK STAGE			7.63 May 7
INSTANTANEOUS LOW FLOW			36 dSep 15
ANNUAL RUNOFF (CFSM)	.96	1.34	.99
ANNUAL RUNOFF (INCHES)	13.01	18.20	13.48
10 PERCENT EXCEEDS	170	208	167
50 PERCENT EXCEEDS	81	80	72
90 PERCENT EXCEEDS	49	47	35

- a Also Sept. 16, 17, 29, 1998.
b Also Aug. 31 to Sept. 2, 1932.
c From floodmarks, present datum.
d Also Sept. 16-18, 29, 30, 1998.



ROANOKE RIVER BASIN

02075045 DAN RIVER AT SEWAGE TREATMENT PLANT, NEAR DANVILLE, VA

LOCATION.--Lat 36°33'45", long 79°22'12", Pittsylvania County, Hydrologic Unit 03010104, on right bank at foot-bridge at Danville sewage treatment plant, 0.1 mi downstream from Pumpkin Creek, and 0.6 mi southeast of Danville.

DRAINAGE AREA.--2,105 mi², approximately.

PERIOD OF RECORD.--October 1995 to current year.

GAGE.--Water-stage recorder. Datum of gage is 365.19 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. Diurnal fluctuation caused by mills and hydroelectric generating facility at School-field Dam 5.2 mi upstream. Since August 1950, flow regulated by Philpott Lake (station 02071900) 76.6 mi upstream. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 28,200 ft³/s, Jan. 28, gage height, 21.91 ft; minimum, 175 ft³/s, Sept. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	933	1220	1300	1440	2830	2460	2250	2920	1940	1660	1080	608		
2	710	1160	1300	1350	2450	2280	2380	4140	1920	1570	823	814		
3	880	1210	1190	1270	2840	2670	1940	3080	2320	1370	613	878		
4	734	1390	1110	1170	12000	2570	2380	2810	2300	1180	774	1100		
5	640	1160	1290	1420	19200	2370	2250	3990	2760	1210	956	1060		
6	704	1030	1270	1570	9340	2500	2110	3460	2540	1170	953	850		
7	763	1090	1030	1720	4830	2490	2440	4820	2070	1280	674	336		
8	785	1280	887	4820	3790	2910	2230	25100	1910	1610	1260	625		
9	760	998	1020	7050	3330	12600	2510	10900	1900	1710	1530	878		
10	726	861	1050	3280	3040	10400	3070	5240	1900	1600	2100	823		
11	771	847	1180	2290	2860	5250	2860	4570	1960	1200	1850	802		
12	728	1020	1170	1880	4390	4090	2090	4380	2060	1180	1710	751		
13	692	1050	1130	1620	4640	3670	1910	3390	1990	1170	1450	756		
14	695	1220	905	1710	3420	3420	2050	2870	1870	1100	1110	668		
15	889	1440	803	4980	2430	2400	2200	2570	1560	1180	1090	387		
16	1090	1160	1020	14500	2320	2250	2170	2490	1740	1090	1230	583		
17	1040	1040	1010	6090	12400	2300	16200	2330	1910	1250	2140	700		
18	989	1020	1010	3140	16700	2210	24700	2460	1930	1680	2510	895		
19	1180	1020	1010	2460	6770	3460	9570	2460	1700	1360	1770	1180		
20	1290	1020	1000	2530	4660	4680	18800	2380	1510	1070	1570	440		
21	1270	1080	610	2030	4020	10900	11100	2340	1490	1050	1100	579		
22	1000	1570	1040	1830	3210	5250	5660	2200	1490	1060	1060	483		
23	899	1370	1380	5170	3930	4530	4970	2270	1550	1060	1120	867		
24	921	1200	1420	7100	6300	3770	4140	2530	1720	1250	741	800		
25	918	1210	1650	3730	4240	3190	3560	2620	1670	1090	827	821		
26	938	1030	1970	2760	3480	3010	2740	2420	1680	1160	1190	586		
27	1310	1060	2020	4440	3240	2780	2620	2650	1670	1050	1090	748		
28	1560	1080	2640	28200	3150	2460	2840	3120	1580	806	1110	453		
29	1300	1050	2210	21400	---	2070	2550	2610	1500	1130	876	408		
30	1020	1000	1840	5750	---	2050	2780	2470	1190	1150	755	510		
31	1050	---	1680	3930	---	2100	---	1880	---	1110	608	---		
TOTAL	29185	33886	40145	152630	155810	119090	149070	123470	55330	38556	37670	21389		
MEAN	941	1130	1295	4924	5565	3842	4969	3983	1844	1244	1215	713		
MAX	1560	1570	2640	28200	19200	12600	24700	25100	2760	1710	2510	1180		
MIN	640	847	610	1170	2320	2050	1910	1880	1190	806	608	336		
(†)	-2687	-630	-343	+10386	+2037	-176	-116	+630	-1124	-3146	-862	-4089		
MEAN†	855	1109	1284	5259	5637	3836	4965	4003	1807	1142	1187	577		
CFSM†	.41	.53	.61	2.50	2.68	1.82	2.36	1.90	.86	.54	.56	.27		
IN.†	.47	.59	.70	2.88	2.79	2.10	2.63	2.19	.96	.63	.65	.31		
CAL YR 1997	TOTAL	840429	MEAN	2303	MAX	26900	MIN	423	MEAN†	2273	CFSM†	1.08	IN.†	14.78
WTR YR 1998	TOTAL	956231	MEAN	2620	MAX	28200	MIN	336	MEAN†	2619	CFSM†	1.24	IN.†	16.89

† Total change in contents, equivalent in cubic feet per second, per month, in Philpott Lake; provided by U.S. Army Corps of Engineers.

‡ Adjusted for monthly change in contents.

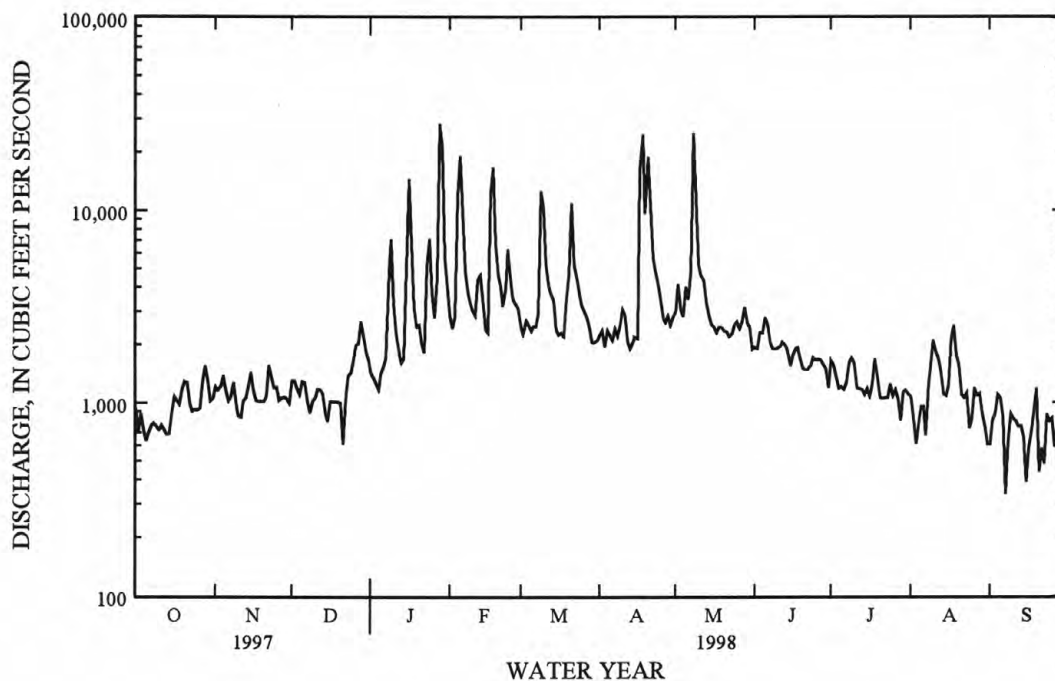
ROANOKE RIVER BASIN

02075045 DAN RIVER AT SEWAGE TREATMENT PLANT, NEAR DANVILLE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1689	1726	2358	4101	4119	3788	3960	3170	2458	1357	1781	3304
MAX	2418	2120	4516	4924	5565	4776	4969	3983	3289	1437	3027	8158
(WY)	1997	1996	1997	1998	1998	1997	1998	1998	1996	1996	1996	1996
MIN	941	1130	1263	2870	3189	2746	2213	2635	1844	1244	1100	713
(WY)	1998	1998	1996	1997	1996	1996	1996	1997	1998	1998	1997	1998

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1994 - 1998	
ANNUAL TOTAL	840429		956231			
ANNUAL MEAN	2303		2620		2808	
HIGHEST ANNUAL MEAN					3035	
LOWEST ANNUAL MEAN					2620	
HIGHEST DAILY MEAN	26900		28200		41500	
LOWEST DAILY MEAN	423		336		311	
ANNUAL SEVEN-DAY MINIMUM	702		618		618	
INSTANTANEOUS PEAK FLOW			30500		47100	
INSTANTANEOUS PEAK STAGE			21.91		28.65	
INSTANTANEOUS LOW FLOW			175		70	
ANNUAL RUNOFF (CFSM)	1.09		1.24		1.33	
ANNUAL RUNOFF (INCHES)	14.85		16.90		18.12	
10 PERCENT EXCEEDS	3840		4650		4530	
50 PERCENT EXCEEDS	1800		1620		1970	
90 PERCENT EXCEEDS	887		794		978	



ROANOKE RIVER BASIN

02075500 DAN RIVER AT PACES, VA

LOCATION.--Lat 36°38'32", long 79°05'23", Halifax County, Hydrologic Unit 03010104, on right bank 100 ft upstream from bridge on State Highway 658, 0.5 mi southeast of Paces, 0.5 mi upstream from Big Toby Creek, 2.7 mi upstream from Birch Creek, and at mile 36.0.

DRAINAGE AREA.--2,550 mi², approximately.

PERIOD OF RECORD.--November 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 322.48 ft above sea level.

REMARKS.--Records fair. Diurnal fluctuation caused by mills 23 mi upstream at Danville. Since August 1950, flow regulated by Philpott Lake (station 02071900) 101.4 mi upstream. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 64,800 ft³/s, from rating curve extended above 32,000 ft³/s. Minimum gage height, 1.71 ft, Sept. 4, 1956. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location. Analytical results of water samples collected for the Albemarle-Pamlico Sound NAWQA are given in the section "Analyses of Samples Collected at Water-Quality Miscellaneous Sampling sites".

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 16, 1940, reached a stage of 32.3 ft, from floodmark.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 30,300 ft³/s, Jan. 29, gage height, 24.71 ft; minimum, 507 ft³/s, Sept. 29, gage height, 2.21 ft; minimum daily, 574 ft³/s, Sept. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1350	1590	1690	2130	4680	3810	3240	3470	2350	1640	1360	840		
2	1360	1660	1910	1990	3780	3250	3360	4730	2400	2320	1320	868		
3	e1120	1580	1770	1940	3680	3380	3230	4640	2560	1550	857	1290		
4	1060	1700	1720	1810	11500	3530	3430	3540	2930	1640	1030	1190		
5	1080	1670	1740	1930	20000	3400	3580	4880	3340	1510	956	1340		
6	972	1540	1790	2030	20300	3030	3090	4780	3530	1480	1220	1290		
7	1000	1530	1650	2200	8750	3280	3080	4820	3000	1510	964	836		
8	1130	1560	1480	4710	5730	4040	3150	18400	2440	1590	1150	631		
9	1110	1590	1300	9620	4900	11000	3710	23100	2360	2080	1660	1050		
10	1110	1370	1590	5970	4390	15900	4480	9340	2380	2310	2300	1050		
11	1070	1120	e1620	3920	4050	8330	4100	6060	2390	1870	2130	1030		
12	1190	1390	e1630	2800	5760	5880	3450	6150	2480	1510	2220	985		
13	995	1410	1600	2650	6910	5150	2710	5100	2570	1500	1810	944		
14	986	1710	1570	2230	5110	4780	2650	4040	2390	1340	1570	892		
15	1200	2040	1180	4790	4030	3940	3000	3740	2100	1440	1320	820		
16	1330	1820	1420	15400	3240	3050	2940	3300	1940	1460	1330	650		
17	1520	1540	1440	12800	12000	2970	11400	3190	2400	1440	2130	820		
18	1480	1440	1440	5890	21600	3410	22900	3210	2340	1610	3300	909		
19	1530	1420	1430	4240	16900	9540	22700	2940	2230	2130	2330	1320		
20	1840	1410	1420	3880	7300	9400	15700	3220	1910	1350	2110	1160		
21	1830	1430	1280	3570	5820	14800	18900	3040	2110	1320	1470	574		
22	1570	2230	1200	2810	4780	10600	e8550	2960	1620	1310	1350	845		
23	1380	2560	1680	5810	4540	6920	6870	2860	1880	1320	1300	1000		
24	1200	1950	1910	10800	7740	5750	5870	3080	2200	1330	1290	1070		
25	1400	1720	2200	7340	6260	4650	4840	3460	2070	1510	819	1030		
26	1160	1620	2740	4840	4960	4280	3990	3270	2020	1500	1280	1010		
27	1640	1500	2960	5030	4480	4030	3380	4180	2000	1350	1380	646		
28	2050	1510	3940	20600	4300	3670	3430	4220	1970	1340	1320	987		
29	1750	1500	3760	29400	---	3070	3200	3750	1930	1050	1300	637		
30	1590	1510	2900	19200	---	2870	3200	3130	1480	1530	952	684		
31	1390	---	2700	6430	---	2860	---	3180	---	1400	870	---		
TOTAL	41393	48620	58660	208760	217490	174570	188130	159780	69320	48240	46398	28398		
MEAN	1335	1621	1892	6734	7768	5631	6271	5154	2311	1556	1497	947		
MAX	2050	2560	3940	29400	21600	15900	22900	23100	3530	2320	3300	1340		
MIN	972	1120	1180	1810	3240	2860	2650	2860	1480	1050	819	574		
(†)	-2687	-630	-343	+10386	+2037	-176	-116	+630	-1124	-3146	-862	-4089		
MEAN‡	1249	1600	1881	7069	7840	5626	6267	5175	2273	1455	1469	810		
CFSM‡	.49	.63	.74	2.77	3.07	2.21	2.46	2.03	.89	.57	.58	.32		
IN.‡	.56	.70	.85	3.20	3.20	2.54	2.74	2.34	.99	.66	.66	.35		
CAL YR 1997	TOTAL	1102929	MEAN	3022	MAX	30000	MIN	736	MEAN‡	2992	CFSM‡	1.17	IN.‡	15.93
WTR YR 1998	TOTAL	1289759	MEAN	3534	MAX	29400	MIN	574	MEAN‡	3533	CFSM‡	1.39	IN.‡	18.81

† Total change in contents, equivalent in cubic feet per second, per month, in Philpott Lake; provided by U.S. Army Corps of Engineers.

‡ Adjusted for monthly change in contents.

e Estimated.

ROANOKE RIVER BASIN

02075500 DAN RIVER AT PACES, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2050	2088	2689	3484	3977	4574	4089	2881	2415	1882	1776	1891
MAX	7253	6184	5734	8407	9141	11190	11500	6505	8987	5091	4833	10200
(WY)	1960	1958	1997	1978	1960	1975	1987	1978	1972	1975	1985	1996
MIN	616	778	1083	1015	1756	1580	1318	1184	860	788	647	452
(WY)	1954	1954	1981	1981	1977	1981	1967	1986	1986	1977	1977	1954

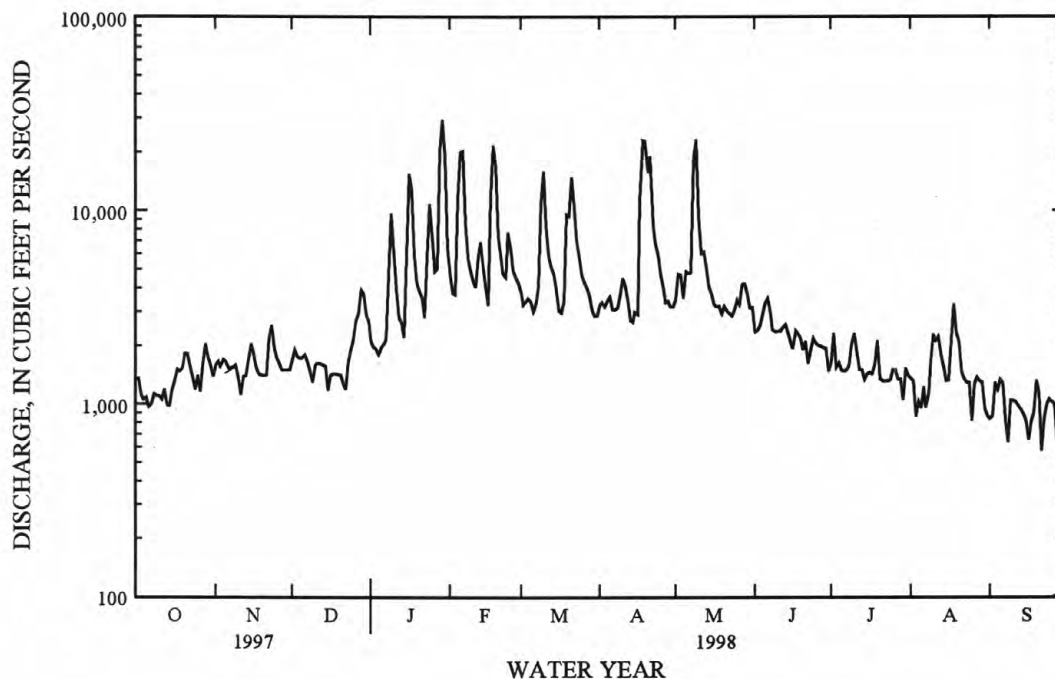
SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1951 - 1998

ANNUAL TOTAL	1102929	1289759	2810
ANNUAL MEAN	3022	3534	4050
HIGHEST ANNUAL MEAN			1979
LOWEST ANNUAL MEAN			1310
HIGHEST DAILY MEAN	30000	Apr 30	29400
LOWEST DAILY MEAN	736	Sep 8	574
ANNUAL SEVEN-DAY MINIMUM	1010	Sep 3	860
INSTANTANEOUS PEAK FLOW		30300	Jan 29
INSTANTANEOUS PEAK STAGE		24.71	Jan 29
INSTANTANEOUS LOW FLOW		507	Sep 29
ANNUAL RUNOFF (CFSM)	1.18	1.39	1.10
ANNUAL RUNOFF (INCHES)	16.09	18.82	14.97
10 PERCENT EXCEEDS	5100	6610	5030
50 PERCENT EXCEEDS	2280	2110	1910
90 PERCENT EXCEEDS	1210	1070	924



ROANOKE RIVER BASIN

02077000 BANISTER RIVER AT HALIFAX, VA

LOCATION.--Lat 36°46'35", long 78°54'58", Halifax County, Hydrologic Unit 03010105, on left bank 10 ft downstream from bridge on State Highway 360, 1,700 ft downstream from Terrible Creek, 1 mi northeast of Halifax, and 10 mi upstream from mouth

DRAINAGE AREA.--547 mi².

PERIOD OF RECORD.--September 1904 to December 1905, October 1928 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 892: 1929-30, 1932-35. WSP 972: 1938(M), 1940. WSP 1112: 1943(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 318.54 ft above sea level (levels by U.S. Army Corps of Engineers). Sept. 28, 1904, to Dec. 31, 1905, nonrecording gage at site 400 ft upstream at different datum. Dec. 9, 1928, to Sept. 20, 1950, water-stage recorder at site 400 ft upstream at present datum.

REMARKS.--Records fair except for periods of doubtful or no gage-height record, Nov. 2-6, 9-14, Dec. 6-9 Jan. 9-13, 23-26, Feb. 7-11, Mar. 20-24, which are poor. Flow regulated by a reservoir and hydroelectric generating facility 0.5 mi upstream from station. Maximum discharge, 50,000 ft³/s, from rating curve extended above 13,000 ft³/s on basis of slope-area measurement of peak flow and velocity-area study. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,900 ft³/s, Jan. 29, gage height, 23.11 ft; minimum daily, 89 ft³/s, Aug. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	201	276	388	393	977	583	552	498	345	223	144	107
2	169	e350	403	344	832	587	552	655	341	219	108	100
3	153	e385	306	335	670	628	535	872	324	193	127	101
4	155	e310	296	358	2060	532	694	682	305	207	112	103
5	149	e260	405	353	5920	482	807	943	316	240	107	111
6	140	e240	e305	366	4540	458	736	885	330	250	133	105
7	144	387	e260	421	e3300	446	616	832	313	212	89	117
8	136	408	e240	1040	e2250	677	522	4820	300	189	140	101
9	153	e295	e235	e1940	e1350	2420	526	6640	286	220	139	100
10	131	e260	255	e1150	e720	2880	572	4060	312	218	221	100
11	143	e240	275	e600	e650	1660	517	1370	349	228	295	98
12	140	e235	270	e480	981	877	481	926	317	199	241	97
13	147	e260	256	e460	1590	702	453	850	328	189	189	96
14	122	e320	240	443	1070	644	461	733	313	178	148	96
15	204	346	233	795	757	570	466	653	285	188	146	96
16	176	300	225	2500	664	492	464	551	290	162	154	95
17	187	275	223	2790	2530	492	2670	516	274	176	198	95
18	384	241	223	1460	6170	589	4730	476	293	158	322	95
19	325	227	219	878	3860	3340	2670	442	246	138	220	94
20	310	225	217	740	1450	e4400	2020	421	289	151	166	94
21	307	234	219	619	969	e6000	2400	402	240	153	155	94
22	230	405	238	519	822	e5100	1270	379	243	153	138	101
23	189	443	292	e2500	745	e2200	890	399	301	129	174	101
24	188	343	338	e2000	1200	e1200	881	462	268	160	96	100
25	194	292	387	e1300	1280	902	736	461	277	152	121	99
26	219	263	470	e1250	901	812	657	436	244	135	119	98
27	308	234	500	1060	687	742	550	548	188	144	106	98
28	324	237	681	4930	603	700	505	432	211	164	127	98
29	248	231	722	9350	---	658	499	440	220	153	101	97
30	222	245	518	6180	---	589	480	396	224	140	108	97
31	208	---	455	1910	---	554	---	362	---	119	100	---
TOTAL	6306	8767	10294	49464	49548	42916	29912	32542	8572	5540	4744	2984
MEAN	203	292	332	1596	1770	1384	997	1050	286	179	153	99.5
MAX	384	443	722	9350	6170	6000	4730	6640	349	250	322	117
MIN	122	225	217	335	603	446	453	362	188	119	89	94
CFSM	.37	.53	.61	2.92	3.24	2.53	1.82	1.92	.52	.33	.28	.18
IN.	.43	.60	.70	3.36	3.37	2.92	2.03	2.21	.58	.38	.32	.20

e Estimated

ROANOKE RIVER BASIN

02077000 BANISTER RIVER AT HALIFAX, VA--Continued

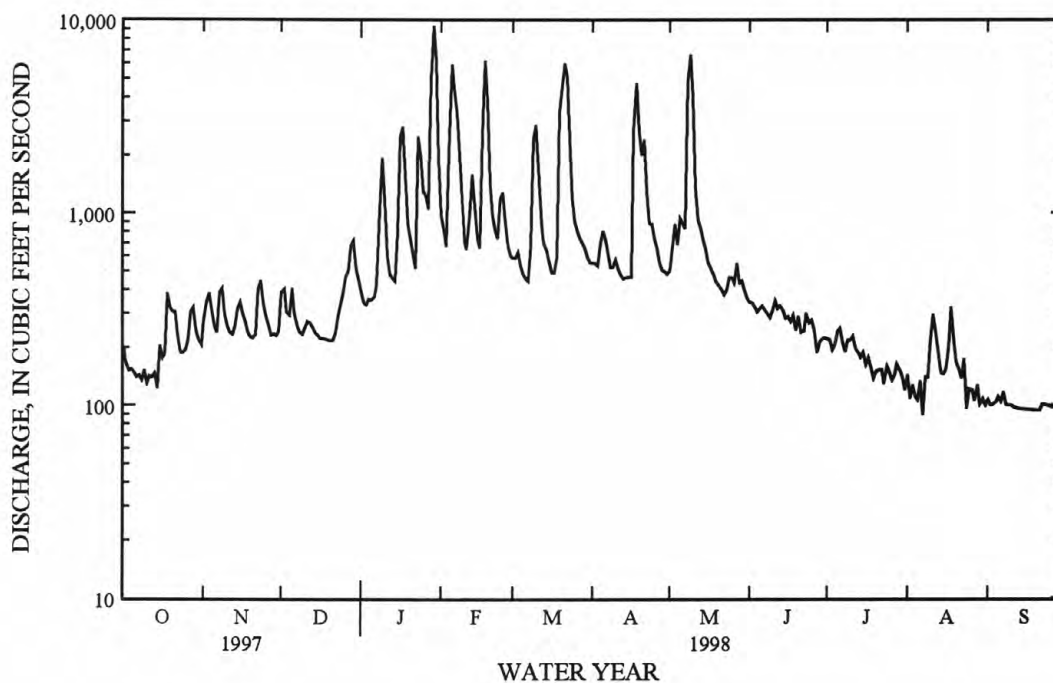
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1905 - 1906, 1929 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	360	398	504	690	772	851	731	488	387	305	329	377
MAX	1691	1431	1211	2125	1857	2738	2121	1374	1588	1065	2898	3717
(WY)	1938	1973	1949	1937	1979	1975	1983	1978	1972	1938	1940	1944
MIN	34.9	86.1	163	170	185	270	196	178	94.0	80.1	48.8	29.4
(WY)	1931	1932	1966	1981	1934	1981	1967	1981	1970	1986	1977	1954

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1905 - 1906 1929 - 1998	
ANNUAL TOTAL	158760		251589			
ANNUAL MEAN	435		689		516	
HIGHEST ANNUAL MEAN					814	
LOWEST ANNUAL MEAN					225	
HIGHEST DAILY MEAN	4940		9350		44700	
LOWEST DAILY MEAN	116		89		6.0	
ANNUAL SEVEN-DAY MINIMUM	122		95		18	
INSTANTANEOUS PEAK FLOW			9900		50000	
INSTANTANEOUS PEAK STAGE			23.11		a40.80	
INSTANTANEOUS LOW FLOW			89		6.0	
ANNUAL RUNOFF (CFSM)	.80		1.26		.94	
ANNUAL RUNOFF (INCHES)	10.80		17.11		12.82	
10 PERCENT EXCEEDS	780		1400		955	
50 PERCENT EXCEEDS	300		316		307	
90 PERCENT EXCEEDS	140		110		113	

a From floodmarks.

b Many days in August and September 1932.



ROANOKE RIVER BASIN

02077500 HYCO RIVER NEAR DENNISTON, VA

LOCATION.--Lat 36°35'16", long 78°53'56", Halifax County, Hydrologic Unit 03010104, on left bank 60 ft upstream from bridge on U.S. Highway 501, 0.8 mi upstream from Mayo Creek, 2.5 mi northeast of Denniston, and 7.3 mi south of South Boston.

DRAINAGE AREA.--289 mi².

PERIOD OF RECORD.--October 1928 to September 1934, October 1950 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 1383: Drainage area, 1930. WSP 1503: 1930(M). WSP 1723: 1930(m). WDR VA-75-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 315.24 ft above sea level. July 10, 1929, to Mar. 14, 1934, nonrecording gage at same site and datum.

REMARKS.--Records good. Small diurnal fluctuation at low flow in some years caused by mill upstream from station. Since September 1964, flow regulated by Hyco Lake 15.7 mi upstream, capacity 75,480 acre-ft, and since Apr. 26, 1974, by Roxboro Steam-Electric Generating Plant Afterbay Reservoir, capacity 12,000 acre-ft. Maximum discharge, 10,800 ft³/s, from rating curve extended above 8,200 ft³/s. Minimum gage height, 3.58 ft, Sept. 14, 1932. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in August 1928 and September 1945 reached stages of 26.4 ft and 25.6 ft, respectively, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,850 ft³/s, Mar. 21, gage height, 20.66 ft; minimum, 6.4 ft³/s, Sept. 28, 29, gage height, 4.28 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	33	53	51	1450	199	204	158	137	51	12	7.9
2	34	35	44	40	1410	194	201	165	132	45	11	8.4
3	34	21	29	36	1280	195	190	153	129	41	9.6	8.9
4	33	19	26	33	1530	185	297	153	134	40	10	40
5	32	22	25	33	2730	179	275	160	133	42	10	39
6	31	18	21	31	3870	174	224	150	128	46	9.5	14
7	31	19	18	32	2620	172	206	151	126	44	9.5	10
8	31	26	17	308	1530	524	195	493	71	44	9.5	9.9
9	30	21	17	343	424	1650	322	570	55	58	14	17
10	30	18	19	122	271	1910	632	222	58	65	22	13
11	30	17	27	161	243	1720	561	190	57	51	20	10
12	29	17	22	148	575	1530	500	179	55	45	15	9.7
13	28	18	19	142	590	402	236	171	53	43	11	9.4
14	29	56	18	139	655	210	197	164	50	43	9.8	8.4
15	34	58	16	472	935	190	195	157	49	34	9.5	8.1
16	41	30	16	1450	893	178	184	153	54	28	10	8.5
17	31	23	16	1590	1640	173	932	148	56	28	93	8.2
18	32	21	16	1630	4430	388	1660	146	50	27	50	8.2
19	34	21	15	1270	4650	3290	1840	143	48	24	25	7.9
20	45	20	16	943	2750	6840	1930	141	47	24	18	7.8
21	34	21	14	817	1710	8370	1690	139	46	24	15	7.7
22	31	269	15	353	449	6270	1460	137	45	18	13	8.0
23	30	119	28	963	305	3180	1230	142	47	12	11	11
24	29	48	24	1660	323	1550	261	171	48	12	9.5	8.2
25	29	33	42	1810	260	1130	200	148	46	11	9.2	8.0
26	30	27	51	1970	232	345	183	150	44	61	9.2	7.8
27	44	23	58	1540	217	275	172	511	42	47	8.9	7.6
28	35	19	164	2750	208	250	168	947	41	22	8.8	7.1
29	30	16	81	4860	---	231	162	215	42	18	8.8	6.6
30	29	19	67	4700	---	218	157	158	44	15	8.5	7.3
31	29	---	69	2510	---	209	---	145	---	13	8.1	---
TOTAL	1005	1107	1063	32907	38180	42331	16664	6830	2067	1076	488.4	333.6
MEAN	32.4	36.9	34.3	1062	1364	1366	555	220	68.9	34.7	15.8	11.1
MAX	45	269	164	4860	4650	8370	1930	947	137	65	93	40
MIN	28	16	14	31	208	172	157	137	41	11	8.1	6.6
CFSM	.11	.13	.12	3.67	4.72	4.72	1.92	.76	.24	.12	.05	.04
IN.	.13	.14	.14	4.24	4.91	5.45	2.14	.88	.27	.14	.06	.04

ROANOKE RIVER BASIN

02077500 HYCO RIVER NEAR DENNISTON, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1934, 1951 - 1964, BY WATER YEAR (WY) [UNREGULATED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	131	182	268	383	537	532	456	216	134	81.7	133	103
MAX	882	758	847	1113	1363	1000	800	767	360	226	600	890
(WY)	1930	1963	1933	1962	1960	1963	1934	1958	1934	1930	1931	1934
MIN	3.67	8.29	28.6	34.2	59.6	119	106	45.3	33.8	14.5	5.65	.71
(WY)	1934	1954	1934	1934	1934	1930	1963	1964	1963	1932	1953	1954

SUMMARY STATISTICS

WATER YEARS 1929 - 1934
1951 - 1964

ANNUAL MEAN	262
HIGHEST ANNUAL MEAN	390
LOWEST ANNUAL MEAN	160
HIGHEST DAILY MEAN	7490
LOWEST DAILY MEAN	.10
ANNUAL SEVEN-DAY MINIMUM	.10
INSTANTANEOUS PEAK FLOW	7630
INSTANTANEOUS PEAK STAGE	21.88
INSTANTANEOUS LOW FLOW	.004
ANNUAL RUNOFF (CFSM)	b.93
ANNUAL RUNOFF (INCHES)	b12.65
10 PERCENT EXCEEDS	b748
50 PERCENT EXCEEDS	b89
90 PERCENT EXCEEDS	b14

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	118	128	207	485	520	612	373	219	114	134	106	150
MAX	805	786	815	1692	1364	1683	1048	1332	647	1492	420	1341
(WY)	1972	1973	1973	1978	1998	1993	1983	1978	1982	1975	1995	1996
MIN	11.7	14.8	21.1	28.5	62.1	44.6	38.7	26.2	17.2	15.8	13.1	11.1
(WY)	1969	1968	1966	1966	1991	1981	1981	1986	1986	1966	1977	1998

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

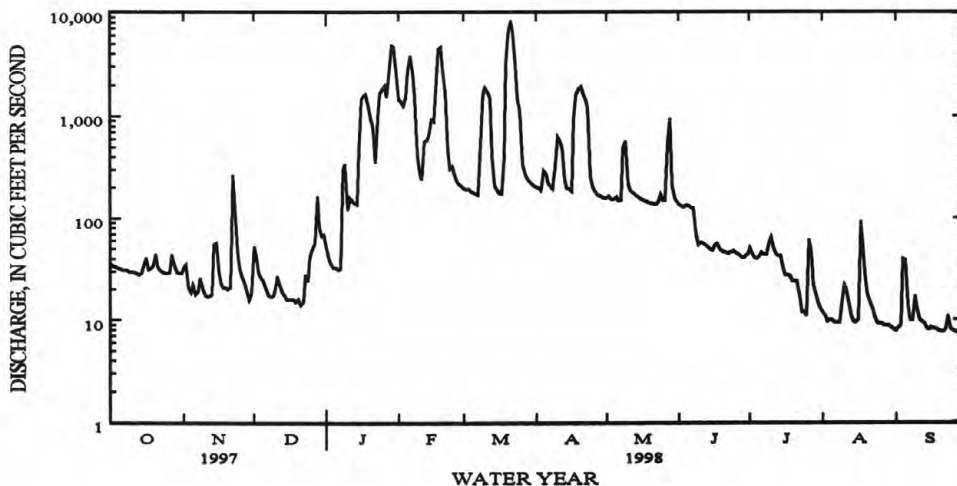
WATER YEARS 1965 - 1998

ANNUAL TOTAL	92750	144052.0	
ANNUAL MEAN	254	395	263
HIGHEST ANNUAL MEAN			536
LOWEST ANNUAL MEAN			37.1
HIGHEST DAILY MEAN	5440	Apr 30	8370
LOWEST DAILY MEAN	14	Dec 21	6.6
ANNUAL SEVEN-DAY MINIMUM	15	Dec 16	7.5
INSTANTANEOUS PEAK FLOW			8850
INSTANTANEOUS PEAK STAGE			20.66
INSTANTANEOUS LOW FLOW			6.4
ANNUAL RUNOFF (CFSM)	.88		1.37
ANNUAL RUNOFF (INCHES)	11.94		18.54
10 PERCENT EXCEEDS	547		1450
50 PERCENT EXCEEDS	75		48
90 PERCENT EXCEEDS	24		10

a Also Aug. 30 to Sept. 25, 1932.

b For water years 1951 to 1964 only.

c Also Sept. 29, 1998.



ROANOKE RIVER BASIN

02079490 JOHN H. KERR RESERVOIR NEAR BOYDTON, VA

LOCATION.--Lat 36°35'56", long 78°18'06", Mecklenburg County, Hydrologic Unit 03010102, at John H. Kerr Dam on Roanoke River, 2.7 mi upstream from Allen Creek, 6.7 mi southeast of Boydton, 18 mi upstream from the Virginia-North Carolina State line, and at mile 178.7.

DRAINAGE AREA.--7,780 mi², approximately.

PERIOD OF RECORD.--July 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is at sea level.

REMARKS.--Reservoir is formed by concrete dam with earth embankments. Spillway, with crest at elevation 288.0 ft, is equipped with 22 radial gates 32 ft high by 42 ft wide. Storage began in September 1950 during construction; initial filling started June 30, 1952; water in reservoir first reached rule-curve elevation in March 1953. Total capacity at top of gates, elevation, 320 ft, is 2,770,000 acre-ft of which 1,281,400 acre-ft is controlled flood storage between elevations 300 ft, top of power pool, and 320 ft; 316,900 acre-ft is available for power between elevations 293.0 ft, bottom of power pool, and 300 ft; 1,171,700 acre-ft is inactive and dead storage below elevation 293.0 ft. Figures given herein represent total contents. Reservoir is used for flood control, hydroelectric power, low-water regulation for navigation and pollution abatement, release of water for downstream fish spawning, water supply, and recreation.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 2,736,460 acre-ft, Apr. 29, 1987, elevation, 319.61 ft; minimum (after first filling to rule curve), 724,700 acre-ft, Feb. 3, 1956, elevation, 280.23 ft.

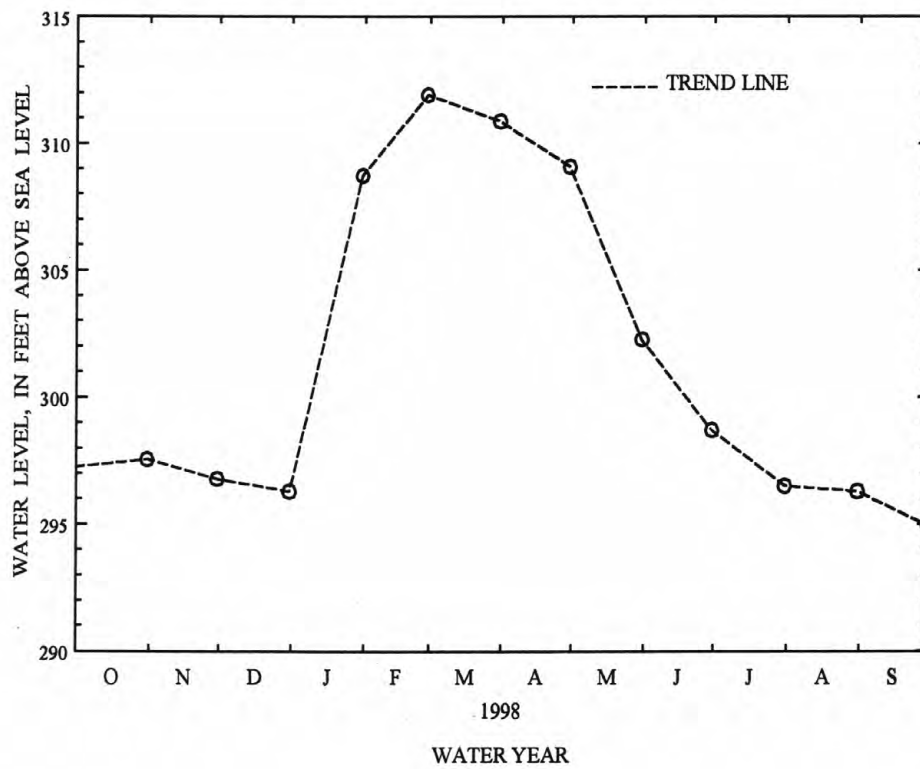
EXTREMES FOR CURRENT YEAR.--Maximum contents, 2,424,860 acre-ft, Feb. 20, elevation, 315.71 ft; minimum, 1,251,630 acre-ft, Dec. 19, elevation, 294.90 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	297.25	1,356,750	-
Oct. 31.....	297.55	1,370,730	+13,980
Nov. 30.....	296.78	1,335,160	-35,570
Dec. 31.....	296.29	1,313,010	-22,150
CAL YR 1996.....			-181,150
Jan. 31.....	308.73	1,967,910	+654,900
Feb. 28.....	311.91	2,164,480	+196,570
Mar. 31.....	310.87	2,098,640	-65,840
Apr. 30.....	309.08	1,988,860	-109,780
May 31.....	302.26	1,604,430	-384,430
June 30.....	298.69	1,424,680	-179,750
July 31.....	296.50	1,322,500	-102,180
Aug. 31.....	296.29	1,313,010	-9,490
Sept. 30.....	294.93	1,252,910	-60,100
WTR YR 1997.....			-103,840

ROANOKE RIVER BASIN

02079490 JOHN H. KERR RESERVOIR NEAR BOYDTON, VA--Continued



KANAWHA RIVER BASIN

03161000 SOUTH FORK NEW RIVER NEAR JEFFERSON, NC

LOCATION.--Lat 36°23'35", long 81°24'26", Ashe County, Hydrologic Unit 05050001, on right bank 600 ft upstream from bridge on State Highways 16 and 88, 0.2 mi downstream of Bear Creek, and 4 mi southeast of Jefferson.

DRAINAGE AREA.--205 mi².

PERIOD OF RECORD.--October 1924 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 1275: 1925-26(M), 1928-30(M), 1931-32, 1933-35(M), 1941-42(m), 1944(m). WDR NC-81-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,657.04 ft above sea level. Prior to Oct. 14, 1934, nonrecording gage on bridge 400 ft downstream at same datum. Oct. 14, 1934, to Mar. 25, 1935, nonrecording gage at present site and datum. U.S. Army Corps of Engineers satellite telemetry at station.

REMARKS.--Records good except those during periods of ice effect, which are poor. Maximum discharge for period of record, from rating curve extended above 14,000 ft³/s on basis of slope-area measurement of peak flow. Minimum discharge for period of record result of freezeup. Minimum discharge for current water year result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 15, 1916, reached a stage of 18.0 ft, from floodmarks witnessed by local resident; discharge, 35,200 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	215	216	197	e264	425	776	637	785	449	588	371	190
2	190	325	211	e268	408	740	637	879	431	432	270	189
3	185	349	193	e268	526	701	571	755	477	366	232	185
4	181	253	206	e268	2840	662	651	1140	616	340	217	187
5	175	226	219	e268	2030	631	677	1060	1130	328	213	187
6	170	212	e210	340	1130	605	578	870	645	331	207	176
7	166	206	e213	661	890	581	548	853	533	315	203	174
8	166	207	e213	6480	768	938	524	1370	486	310	201	176
9	162	201	e216	1910	734	1850	740	1340	461	320	246	231
10	162	193	215	942	709	1440	742	1230	785	305	281	192
11	164	190	217	681	727	1010	667	1270	846	281	300	174
12	161	186	205	567	1070	858	622	1040	616	276	231	170
13	162	191	188	524	892	767	576	905	543	275	210	164
14	162	218	181	469	771	722	560	820	546	267	364	159
15	166	221	e179	598	698	679	557	763	500	268	597	156
16	160	200	e176	929	816	645	541	716	472	261	665	154
17	159	188	e176	636	3570	639	1710	678	447	258	448	154
18	162	182	e173	533	3110	658	1270	637	416	247	359	150
19	223	181	e170	479	1650	970	2120	607	400	238	290	149
20	299	181	169	460	1290	1960	3100	577	399	229	260	156
21	205	179	164	413	1110	2380	1470	625	378	229	242	165
22	179	209	208	397	963	1220	1160	569	379	259	234	219
23	173	219	264	674	1150	982	1010	577	577	225	227	195
24	170	194	244	688	1170	862	893	630	464	232	234	162
25	200	182	402	585	934	786	813	543	395	287	284	157
26	269	180	326	501	840	745	752	530	374	306	251	157
27	471	177	293	494	807	714	715	536	353	317	217	154
28	291	175	333	526	811	679	735	532	339	303	206	149
29	228	171	280	487	---	653	668	479	330	250	199	146
30	209	179	e261	461	---	623	653	472	356	231	199	159
31	198	---	e261	451	---	597	---	487	---	251	196	---
TOTAL	6183	6191	6963	23222	32839	28073	26897	24275	15143	9125	8654	5136
MEAN	199	206	225	749	1173	906	897	783	505	294	279	171
MAX	471	349	402	6480	3570	2380	3100	1370	1130	588	665	231
MIN	159	171	164	264	408	581	524	472	330	225	196	146
CFSM	.97	1.01	1.10	3.65	5.72	4.42	4.37	3.82	2.46	1.44	1.36	.84
IN.	1.12	1.12	1.26	4.21	5.96	5.09	4.88	4.41	2.75	1.66	1.57	.93

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1998, BY WATER YEAR (WY)

	MEAN	364	409	411	478	525	596	570	465	395	334	358	328
MAX	901	1889	797	1346	1173	1316	1350	1052	1036	904	2613	1212	
(WY)	1991	1978	1958	1995	1998	1979	1983	1973	1992	1941	1940	1979	
MIN	117	124	146	140	197	222	236	220	158	111	93.7	99.5	
(WY)	1955	1932	1934	1940	1934	1988	1986	1941	1988	1930	1925	1954	

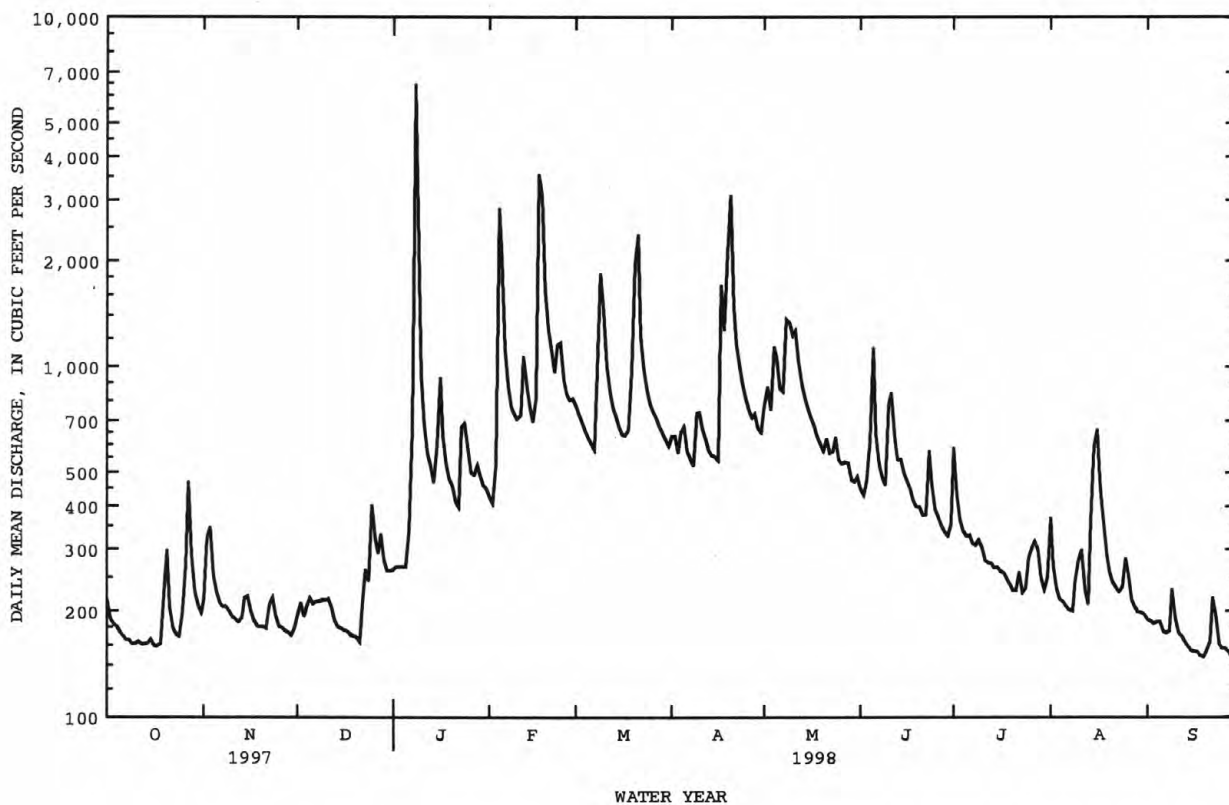
KANAWHA RIVER BASIN

03161000 SOUTH FORK NEW RIVER NEAR JEFFERSON, NC--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1925 - 1998	
ANNUAL TOTAL	139352		192701		435	
ANNUAL MEAN	382		528		669	1949
HIGHEST ANNUAL MEAN					233	1988
LOWEST ANNUAL MEAN					27700	Aug 14 1940
HIGHEST DAILY MEAN	2390	Mar 14	6480	Jan 8	65	Sep 9 1925
LOWEST DAILY MEAN	147	Sep 8	146	Sep 29	72	Aug 21 1925
ANNUAL SEVEN-DAY MINIMUM	160	Sep 17	154	Sep 14	52800*	Aug 14 1940
INSTANTANEOUS PEAK FLOW			8410	Jan 8	22.50	Aug 14 1940
INSTANTANEOUS PEAK STAGE			9.03	Jan 8	52*	Dec 24 1943
INSTANTANEOUS LOW FLOW			112*	Dec 8	2.12	
ANNUAL RUNOFF (CFSM)	1.86		2.58		28.85	
ANNUAL RUNOFF (INCHES)	25.29		34.97		718	
10 PERCENT EXCEEDS	597		966		351	
50 PERCENT EXCEEDS	349		356		173	
90 PERCENT EXCEEDS	175		173			

e Estimated.

* See REMARKS.



KANAWHA RIVER BASIN

03164000 NEW RIVER NEAR GALAX, VA

LOCATION.--Lat 36°38'50", long 80°58'45", Grayson County, Hydrologic Unit 05050001, on left bank at upstream side of bridge on State Highway 94, 500 ft downstream from Meadow Creek, 1.2 mi southwest of Old Town, 3.1 mi southwest of Galax, and 3.6 mi downstream from Elk Creek.

DRAINAGE AREA.--1,131 mi².

PERIOD OF RECORD.--October 1929 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 758: Drainage area, 1933(M). WSP 893: 1930(M), 1935(M).

GAGE.--Water-stage recorder. Datum of gage is 2,208.04 ft above sea level.

REMARKS.--No estimated daily values. Records good. American Electric Power gage-height transmitter at station, recorder at Roanoke. National Weather Service gage-height telemeter at station. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Maximum discharge, 141,000 ft³/s, from rating curve extended above 32,000 ft³/s on basis of computation of peak flow over dam at Fries 6 mi downstream and slope-area measurement of peak flow. Minimum discharge, 193 ft³/s, Jan. 9, 1956, gage height, 0.52 ft, result of freezeup. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 9,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1400	*25,600	*7.55	Apr. 17	2000	9,810	4.13
Feb. 4	2300	14,600	5.24	Apr. 20	0200	23,900	7.21
Feb. 18	0230	21,900	6.81	May 11	0330	13,100	4.92
Mar. 20	2300	17,700	5.91	Aug. 16	1300	9,220	3.98

Minimum discharge, 519 ft³/s, Oct. 11, gage height, 0.81 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	828	688	750	781	2280	3570	2590	3240	2910	1880	981	729
2	700	860	876	809	2130	3330	2630	3980	2480	1920	1040	713
3	656	1040	867	937	2290	3060	2380	3600	2290	1590	928	707
4	628	945	843	1020	9050	2820	2580	4530	2980	1440	855	708
5	617	816	877	1090	11200	2590	3320	5560	3760	1390	829	708
6	609	747	834	1210	6440	2420	2900	4500	3980	1370	813	696
7	592	718	771	1580	4780	2290	2560	4000	2910	1320	799	679
8	580	710	687	16100	3970	2800	2380	5300	2450	1290	815	673
9	575	700	719	11500	3710	5950	2980	6180	2270	1300	819	781
10	575	697	787	4940	3630	6820	3550	7060	3790	1330	865	776
11	563	685	877	3160	3610	4830	3100	11900	6810	1220	974	739
12	575	671	864	2410	4880	3840	2870	8030	5080	1150	948	682
13	580	680	809	2130	5080	3250	2650	5970	4060	1210	999	658
14	572	736	761	1890	4120	2990	2500	4800	3510	1190	917	633
15	576	829	724	2140	3420	2770	2420	4050	3080	1090	944	611
16	575	812	707	4850	3320	2580	2370	3490	2840	1050	4900	607
17	572	743	696	3840	12000	2560	6070	3120	2370	1020	3440	604
18	575	706	688	2870	18100	2540	7690	2810	2090	995	1880	612
19	602	680	697	2390	9380	4190	8750	2560	1950	961	1330	624
20	670	674	708	2060	6760	8870	18300	2390	2130	940	1090	622
21	759	691	677	1810	5600	14100	8930	2760	1820	918	967	633
22	698	774	718	1650	4720	7890	6240	3130	1720	901	915	701
23	617	854	864	2370	4810	5440	5130	2890	1850	909	889	745
24	598	789	902	3310	5360	4420	4350	3730	2400	886	890	718
25	631	733	1230	3180	4430	3790	3780	3440	1950	954	867	662
26	717	701	1480	2640	3730	3420	3390	3320	1880	1130	851	625
27	956	684	1260	2380	3490	3110	3180	4780	1640	1070	862	619
28	1100	672	1230	2540	3560	2910	3230	6240	1540	1160	804	600
29	851	664	1150	2590	---	2760	2960	4290	1470	1030	768	587
30	722	680	1030	2530	---	2640	2770	3280	1480	920	752	624
31	673	---	946	2500	---	2510	---	3490	---	928	743	---
TOTAL	20542	22379	27029	95207	155850	127060	128550	138420	81490	36462	35474	20076
MEAN	663	746	872	3071	5566	4099	4285	4465	2716	1176	1144	669
MAX	1100	1040	1480	16100	18100	14100	18300	11900	6810	1920	4900	781
MIN	563	664	677	781	2130	2290	2370	2390	1470	886	743	587
CFSM	.59	.66	.77	2.72	4.92	3.62	3.79	3.95	2.40	1.04	1.01	.59
IN.	.68	.74	.89	3.13	5.13	4.18	4.23	4.55	2.68	1.20	1.17	.66

KANAWHA RIVER BASIN

03164000 NEW RIVER NEAR GALAX, VA--Continued

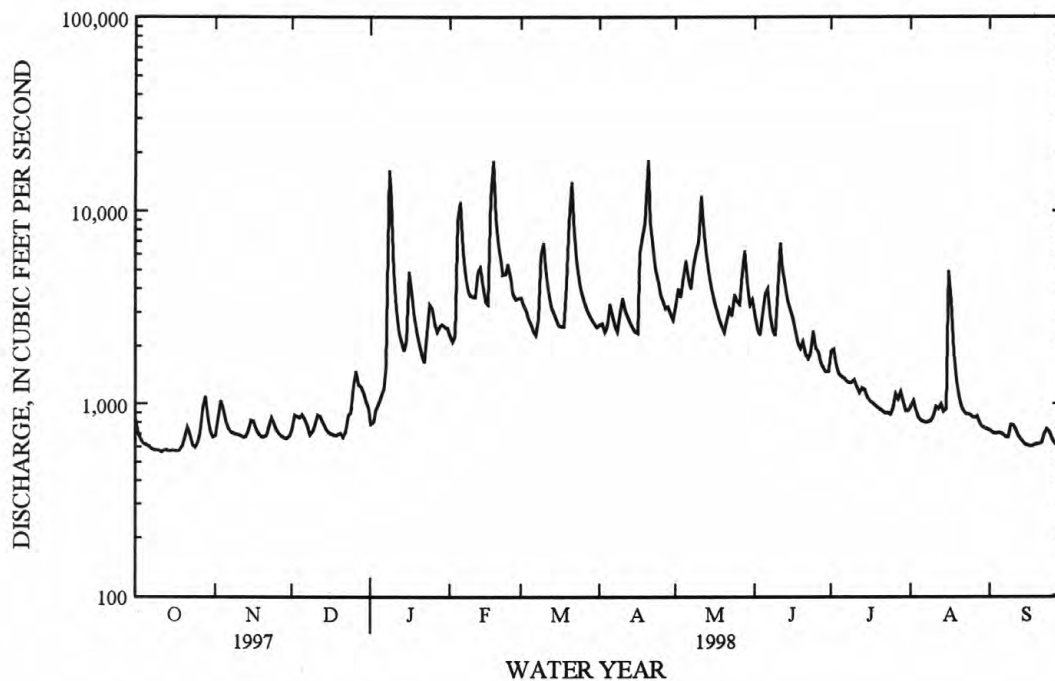
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1408	1643	1834	2250	2629	2931	2659	2164	1719	1381	1383	1244
MAX	3625	7189	4005	5744	5566	5827	6345	4469	5280	4017	8148	4827
(WY)	1977	1978	1962	1995	1998	1993	1987	1973	1992	1949	1940	1989
MIN	435	504	592	568	631	958	1017	811	614	426	453	381
(WY)	1954	1954	1956	1956	1934	1988	1942	1941	1988	1930	1988	1954

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1930 - 1998	
ANNUAL TOTAL	646187		888539			
ANNUAL MEAN	1770		2434		1933	
HIGHEST ANNUAL MEAN					2807	
LOWEST ANNUAL MEAN					1034	
HIGHEST DAILY MEAN	8060	Mar 4	18300	Apr 20	86200	Aug 14 1940
LOWEST DAILY MEAN	484	Sep 8	563	Oct 11	265	Sep 19 1954
ANNUAL SEVEN-DAY MINIMUM	524	Sep 4	573	Oct 11	304	Sep 13 1954
INSTANTANEOUS PEAK FLOW			25600	Jan 8	141000	Aug 14 1940
INSTANTANEOUS PEAK STAGE			7.55	Jan 8	a25.7	Aug 14 1940
INSTANTANEOUS LOW FLOW			519	Oct 11	b193	Jan 9 1956
ANNUAL RUNOFF (CFSM)	1.57		2.15		1.71	
ANNUAL RUNOFF (INCHES)	21.25		29.23		23.22	
10 PERCENT EXCEEDS	3420		4920		3480	
50 PERCENT EXCEEDS	1400		1440		1470	
90 PERCENT EXCEEDS	609		668		676	

a From floodmark.

b Result of freezeup.



KANAWHA RIVER BASIN

03165000 CHESTNUT CREEK AT GALAX, VA

LOCATION.--Lat 36°38'45", long 80°55'10", Galax City, Hydrologic Unit 05050001, on right bank 200 ft upstream from bridge on State Highway 89 and 1.7 mi downstream from Wards Mill Branch.

DRAINAGE AREA.--39.4 mi².

PERIOD OF RECORD.--September 1944 to current year.

REVISED RECORDS.--WSP 1385: 1953.

GAGE.--Water-stage recorder. Concrete control since Aug. 30, 1979. Datum of gage is 2,344.17 ft above sea level. Prior to June 25, 1948, nonrecording gage, and June 25, 1948, to May 28, 1953, water-stage recorder, at site 200 ft upstream at datum 0.86 ft higher.

REMARKS.--Records good except for period with ice effect, Jan. 1-3, which is fair. Maximum discharge, 6,980 ft³/s, from rating curve extended above 2,200 ft³/s on basis of two slope-area and one contracted-opening measurements at gage heights 9.5 ft, 14.4 ft, and 17.4 ft, respectively, site and datum then in use. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 14, 1940, reached a stage of 17.4 ft, at site and datum used 1944-53, discharge, 11,000 ft³/s, by contracted-opening measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 850 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	0500	*2,870	*7.32	Mar. 20	1515	1,540	4.70
Feb. 4	1445	938	3.40	Apr. 19	1900	1,000	3.53
Feb. 17	1430	1,240	4.03				

Minimum discharge, 20 ft³/s, Dec. 18, 19, gage height, 1.27 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	32	33	e34	68	80	104	117	67	55	40	35
2	23	56	29	e35	63	77	91	99	64	50	35	35
3	23	36	28	e41	104	74	88	84	67	48	33	34
4	23	30	33	44	637	72	103	128	153	47	32	36
5	23	28	30	47	245	70	89	108	108	47	31	34
6	23	28	27	53	147	68	84	87	87	45	30	33
7	23	27	26	244	126	68	82	101	77	46	29	33
8	22	27	26	1290	118	159	81	172	71	52	57	35
9	22	27	28	169	112	315	141	106	73	51	58	34
10	22	26	29	92	101	140	100	197	134	45	52	33
11	22	26	29	71	107	103	90	199	132	43	45	33
12	22	26	27	65	120	90	84	122	112	42	40	35
13	23	28	27	62	98	85	81	100	88	46	88	35
14	23	36	26	53	86	83	83	91	77	42	51	36
15	23	30	26	138	77	78	81	86	81	41	51	37
16	22	27	29	115	180	78	85	81	72	39	219	38
17	23	26	28	76	800	78	271	77	68	42	122	38
18	25	26	26	63	296	87	126	73	64	38	64	40
19	25	26	25	59	154	154	380	71	65	38	50	42
20	25	26	25	56	130	629	208	69	63	36	44	43
21	23	29	25	51	110	243	114	79	59	35	41	49
22	23	38	37	53	98	154	95	75	59	35	41	60
23	23	31	35	136	176	130	88	106	59	34	40	53
24	24	28	36	92	122	118	84	118	56	34	52	48
25	32	27	60	74	101	113	76	85	55	41	42	47
26	39	27	38	63	92	108	73	80	54	40	39	48
27	41	27	43	60	90	104	75	138	52	39	37	45
28	28	26	42	96	86	100	75	93	51	39	37	44
29	26	26	37	91	---	97	69	80	50	35	36	42
30	25	29	36	86	---	94	71	74	54	35	36	63
31	25	---	35	77	---	93	---	74	---	46	36	---
TOTAL	769	882	981	3686	4644	3942	3272	3170	2272	1306	1608	1218
MEAN	24.8	29.4	31.6	119	166	127	109	102	75.7	42.1	51.9	40.6
MAX	41	56	60	1290	800	629	380	199	153	55	219	63
MIN	22	26	25	34	63	68	69	69	50	34	29	33
CFSM	.63	.75	.80	3.02	4.21	3.23	2.77	2.60	1.92	1.07	1.32	1.03
IN.	.73	.83	.93	3.48	4.38	3.72	3.09	2.99	2.15	1.23	1.52	1.15

e Estimated.

KANAWHA RIVER BASIN

03165000 CHESTNUT CREEK AT GALAX, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	59.2	63.5	65.3	72.1	83.0	95.4	91.6	76.3	67.7	52.4	49.9	54.0
MAX	197	157	112	161	166	301	233	160	172	150	156	254
(WY)	1948	1980	1958	1995	1998	1993	1983	1973	1992	1989	1949	1989
MIN	19.8	27.3	25.8	23.9	35.9	38.1	37.4	34.2	25.5	20.7	15.6	18.6
(WY)	1964	1982	1964	1956	1989	1988	1989	1956	1988	1986	1981	1954

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1945 - 1998

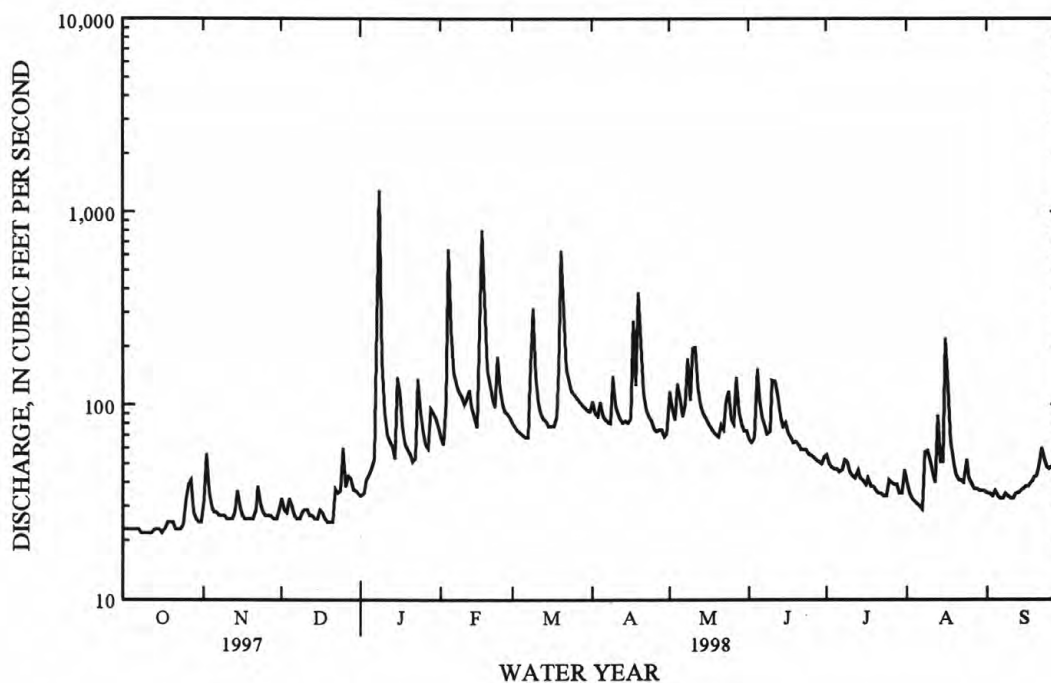
ANNUAL TOTAL	18370	27750	
ANNUAL MEAN	50.3	76.0	69.1
HIGHEST ANNUAL MEAN			107
LOWEST ANNUAL MEAN			37.3
HIGHEST DAILY MEAN	358	Mar 14	1290
LOWEST DAILY MEAN	18	Sep 8	22
ANNUAL SEVEN-DAY MINIMUM	19	Sep 3	22
INSTANTANEOUS PEAK FLOW			2870
INSTANTANEOUS PEAK STAGE			7.32
INSTANTANEOUS LOW FLOW			20
ANNUAL RUNOFF (CFSM)	1.28	1.93	1.75
ANNUAL RUNOFF (INCHES)	17.34	26.20	23.82
10 PERCENT EXCEEDS	82	126	110
50 PERCENT EXCEEDS	42	53	52
90 PERCENT EXCEEDS	23	26	28

a Also Oct. 9-12, 16, 1997.

b From floodmark, site and datum then in use.

c Also Dec. 19, 1997.

d Also part or all of each day Aug. 26-30, 1981.



KANAWHA RIVER BASIN

03165500 NEW RIVER AT IVANHOE, VA

LOCATION.--Lat 36°50'05", long 80°57'10", Wythe County, Hydrologic Unit 05050001, on left bank at Ivanhoe, 2.1 mi downstream from Big Branch, and 2.3 mi upstream from Cripple Creek.

DRAINAGE AREA.--1,340 mi².

PERIOD OF RECORD.--August to December 1927, October 1929 to September 1978, October 1978 to September 1982 (annual maximum only), February 1996 to present. Monthly discharge only for some periods, published in WSP 1305. Gage-height records collected in vicinity, October 1916 to July 1943, are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 783: Drainage area, 1933(M).

GAGE.--Water-stage recorder. Datum of gage is 1,943.09 ft above sea level.

REMARKS.--Records good except those for periods of no gage-height record May 4 to June 3, June 12-14, June 25 to Aug. 7, and Aug. 18-26, which are fair. Large diurnal fluctuation and some regulation caused by powerplants at Buck 2.8 mi upstream and at Byllesby 5.5 mi upstream. Maximum discharge, 155,000 ft³/s, from rating curve extended above 32,000 ft³/s on basis of flood records for other stations on New River. Minimum gage height, 0.59 ft, Oct. 11, 1965. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in July 1916 reached a stage of 34.8 ft, from floodmark, discharge, 132,000 ft³/s, from rating curve extended as explained above. Flood in September 1878 was about 5 ft lower than flood in July 1916 and was the highest known from 1840 to 1916.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 13,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1345	*27,600	*13.73	Mar. 21	0045	20,200	11.28
Feb. 5	0115	17,200	10.09	Apr. 20	0515	24,900	12.94
Feb. 18	0715	23,200	12.40				

Minimum discharge, 389 ft³/s, Sept. 9, gage height, 1.46 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1020	999	868	867	2380	3790	2740	3620	e3450	e2100	e1200	860
2	863	1030	955	844	2270	3600	2890	4380	e3060	e2300	e1260	807
3	745	1210	1070	955	2350	3330	2720	4300	e2870	e2100	e1150	812
4	757	1230	1030	1200	9150	3150	2780	e4760	3580	e1900	e1050	795
5	751	1040	1020	1250	13900	2830	3210	e5840	3770	e1750	e960	811
6	743	934	1020	1320	7540	2710	3050	e4720	3880	e1700	e920	784
7	761	875	936	1700	5240	2650	2750	e4200	3170	e1650	e1300	794
8	648	829	862	17500	4210	2970	2600	e5560	2770	e1620	1240	790
9	686	821	818	14600	3970	5740	2820	e6610	2630	e1600	1040	755
10	685	806	913	5730	3820	8130	3750	e7770	3160	e1650	1060	890
11	680	813	996	3560	3900	5530	3240	e14000	6180	e1550	1260	822
12	670	786	1080	2800	4860	4090	2980	e8990	e5330	e1400	1180	798
13	705	798	953	2460	5500	3620	2770	e6580	e4260	e1500	1510	738
14	712	854	922	2220	4420	3300	2710	e5290	e3690	e1500	1350	717
15	688	933	836	2380	3770	2950	2640	e4520	3190	e1400	1140	674
16	697	963	791	4420	3480	2790	2500	e4010	3020	e1320	3930	686
17	692	889	798	4420	12600	2730	5430	e3660	2870	e1450	4150	677
18	684	838	816	3250	20200	2770	9480	e3360	2470	e1350	e1800	697
19	700	794	844	2650	11200	4090	8640	e3120	2330	e1260	e1500	687
20	739	770	821	2300	7800	9400	20800	e2960	2280	e1200	e1220	714
21	853	782	829	2080	6050	16700	11200	e3310	2290	e1170	e1100	706
22	893	888	889	1970	5080	9270	7240	e3660	2100	e1150	e1050	816
23	753	998	992	2470	4890	6510	5660	e3430	2140	e1120	e1070	868
24	729	958	1130	3460	5840	4890	4980	e4220	2580	e1100	e1100	813
25	747	935	1280	3430	4850	4110	4290	e3960	e2700	e1150	e1130	765
26	848	822	1770	2470	4080	3720	3880	e3850	e2300	e1400	e1050	720
27	1030	815	1480	2340	3890	3460	3700	e5190	e2100	e1350	1010	712
28	1310	798	1360	2570	3740	3200	3600	e6570	e2000	e1450	942	681
29	1140	791	1300	2850	---	3020	3570	e4740	e1900	e1300	904	684
30	864	808	1210	2600	---	2860	3440	e3810	e1800	e1180	873	697
31	1360	---	1040	2530	---	2720	---	e4000	---	e1160	838	---
TOTAL	25153	26807	31629	105196	170980	140630	142060	154990	89870	45830	41287	22770
MEAN	811	894	1020	3393	6106	4536	4735	5000	2996	1478	1332	759
MAX	1360	1230	1770	17500	20200	16700	20800	14000	6180	2300	4150	890
MIN	648	770	791	844	2270	2650	2500	2960	1800	1100	838	674
CFSM	.61	.67	.76	2.53	4.56	3.39	3.53	3.73	2.24	1.10	.99	.57
IN.	.70	.74	.88	2.92	4.75	3.90	3.94	4.30	2.49	1.27	1.15	.63

e Estimated.

KANAWHA RIVER BASIN

03165500 NEW RIVER AT IVANHOE, VA--Continued

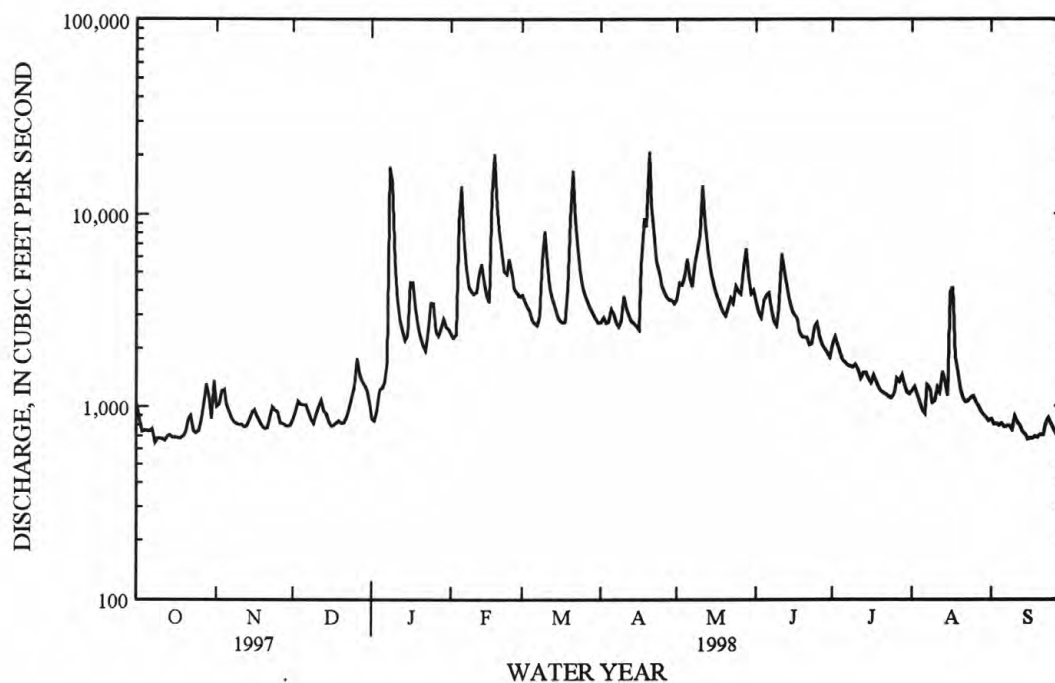
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930-1978, 1996**, 1997-1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1644	1817	2052	2503	2961	3231	2936	2399	1911	1554	1613	1369
MAX	4200	7149	4248	5052	6106	6266	5993	5000	4511	4440	8953	4499
(WY)	1930	1978	1962	1937	1998	1975	1960	1998	1976	1949	1940	1945
MIN	491	578	703	678	693	1450	1289	991	817	485	606	433
(WY)	1931	1932	1940	1940	1934	1931	1942	1941	1930	1930	1956	1954

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1930 - 1978
			1996**
			1997 - 1998

ANNUAL TOTAL	718637	997202	
ANNUAL MEAN	1969	2732	2156
HIGHEST ANNUAL MEAN			3188
LOWEST ANNUAL MEAN			1285
HIGHEST DAILY MEAN	9660	Mar 4	20800
LOWEST DAILY MEAN	590	Sep 9	648
ANNUAL SEVEN-DAY MINIMUM	665	Sep 3	684
INSTANTANEOUS PEAK FLOW			27600
INSTANTANEOUS PEAK STAGE			13.73
INSTANTANEOUS LOW FLOW			389
ANNUAL RUNOFF (CFSM)	1.47	2.04	1.61
ANNUAL RUNOFF (INCHES)	19.95	27.68	21.86
10 PERCENT EXCEEDS	3650	5370	3830
50 PERCENT EXCEEDS	1600	1750	1710
90 PERCENT EXCEEDS	746	763	748

** Partial water year.
a From floodmark.



KANAWHA RIVER BASIN

03167000 REED CREEK AT GRAHAMS FORGE, VA

LOCATION.--Lat 36°56'22", long 80°53'13", Wythe County, Hydrologic Unit 05050001, on left bank 20 ft downstream from bridge on State Highway 619 at Grahams Forge, 2.2 mi downstream from Glade Creek, and at mile 7.3.

DRAINAGE AREA.--247 mi².

PERIOD OF RECORD.--July 1908 to September 1916, January 1927 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 1235: 1912-13, 1915-16. WSP 1275: 1911, 1927-28(M), 1930-34(M). WSP 1705: 1913(M), 1916(M), 1957 calendar year runoff. WSP 1725: 1915 calendar year runoff. WDR VA-92-1: 1984-86(P), 1987, 1988-89(P), 1990-91.

GAGE.--Water-stage recorder. Datum of gage is 1,924.65 ft above sea level. Prior to Oct. 1, 1916, nonrecording gage at same site at datum 0.68 ft lower. Feb. 3, 1927, to Oct. 28, 1934, and June 11, 1974, to July 22, 1975, nonrecording gage, at present site and datum.

REMARKS.--Records good except those for period with ice effect, Dec. 31 to Jan. 2, and period of doubtful gage-height record, Jan. 23, which are fair. Occasional diurnal fluctuation at low flow caused by mills upstream from station. Maximum discharge, 17,500 ft³/s, from rating curve extended above 7,600 ft³/s on basis of velocity-area study and slope-area measurement at gage heights 11.4 ft and 10.01 ft, respectively. Minimum discharge observed, about 5 ft³/s, Dec. 22, 1909, gage height, 0.49 ft, present datum, result of freezeup. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Department of Environmental Quality - Water Division.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 19	1730	*2,400	*5.49	No other peak equal to or greater than base discharge			

Minimum daily discharge, 62 ft³/s, Dec. 20, 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74	76	77	e63	454	381	268	386	304	185	108	75
2	73	90	74	e68	398	348	257	1250	269	167	104	76
3	75	88	74	74	436	322	236	826	264	153	100	77
4	74	84	73	76	1570	301	282	1700	341	147	96	78
5	74	84	72	81	1860	282	308	1460	361	147	95	76
6	74	80	70	104	1190	265	287	993	305	143	94	76
7	73	76	67	130	906	253	264	801	274	138	95	77
8	73	73	65	1160	792	280	248	1100	251	142	141	77
9	74	75	66	689	790	459	321	1160	247	146	110	75
10	74	73	69	347	798	656	615	892	320	139	111	74
11	72	71	72	242	777	493	464	1090	473	132	119	76
12	74	72	74	200	812	396	367	1010	372	130	108	76
13	74	72	72	186	810	339	308	784	331	129	97	77
14	75	80	70	174	635	311	273	636	333	138	95	76
15	73	81	66	216	505	289	254	535	351	128	114	74
16	73	78	63	483	454	271	237	464	389	124	111	75
17	74	73	66	472	1010	261	1140	415	311	121	147	79
18	77	71	63	329	1800	269	1090	371	268	118	130	80
19	76	67	63	267	1140	1120	1440	337	244	116	112	109
20	75	67	62	244	866	1580	2100	312	236	115	97	101
21	75	75	62	222	701	1950	1290	321	216	110	92	91
22	73	97	75	205	582	1220	923	315	211	111	88	106
23	71	89	82	e337	565	847	724	397	204	116	85	97
24	77	78	84	555	647	632	604	690	197	114	83	88
25	77	71	103	432	597	505	500	672	185	113	79	83
26	91	70	106	330	514	436	436	589	175	114	79	82
27	103	69	100	288	466	385	393	691	167	112	78	82
28	88	67	98	429	424	347	365	736	162	109	79	80
29	78	67	88	570	---	319	332	543	162	105	76	80
30	75	68	82	618	---	294	313	416	158	103	77	93
31	73	---	e66	556	---	272	---	348	---	106	77	---
TOTAL	2362	2282	2324	10147	22499	16083	16639	22240	8081	3971	3077	2466
MEAN	76.2	76.1	75.0	327	804	519	555	717	269	128	99.3	82.2
MAX	103	97	106	1160	1860	1950	2100	1700	473	185	147	109
MIN	71	67	62	63	398	253	236	312	158	103	76	74
CFSM	.31	.31	.30	1.33	3.25	2.10	2.25	2.90	1.09	.52	.40	.33
IN.	.36	.34	.35	1.53	3.39	2.42	2.51	3.35	1.22	.60	.46	.37

e Estimated.

KANAWHA RIVER BASIN

03167000 REED CREEK AT GRAHAMS FORGE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 1916, 1927 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	142	163	244	359	466	513	422	324	211	156	140	117
MAX	626	606	790	911	1411	1406	1374	731	732	867	517	488
(WY)	1938	1930	1973	1936	1957	1955	1987	1958	1992	1916	1916	1989
MIN	45.3	50.7	59.9	61.2	63.5	120	101	91.4	74.6	63.5	60.5	51.4
(WY)	1942	1942	1942	1942	1934	1988	1942	1941	1941	1930	1930	1941

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1909 - 1916
1927 - 1998

ANNUAL TOTAL	89137	112171	
ANNUAL MEAN	244	307	270
HIGHEST ANNUAL MEAN			424
LOWEST ANNUAL MEAN			118
HIGHEST DAILY MEAN	2010	Mar 4	2100
LOWEST DAILY MEAN	62	aDec 20	62
ANNUAL SEVEN-DAY MINIMUM	64	Dec 15	64
INSTANTANEOUS PEAK FLOW			2400
INSTANTANEOUS PEAK STAGE			5.49
INSTANTANEOUS LOW FLOW			(c)
ANNUAL RUNOFF (CFSM)	.99	1.24	(d)
ANNUAL RUNOFF (INCHES)	13.42	16.89	14.87
10 PERCENT EXCEEDS	591	786	545
50 PERCENT EXCEEDS	128	142	160
90 PERCENT EXCEEDS	72	73	74

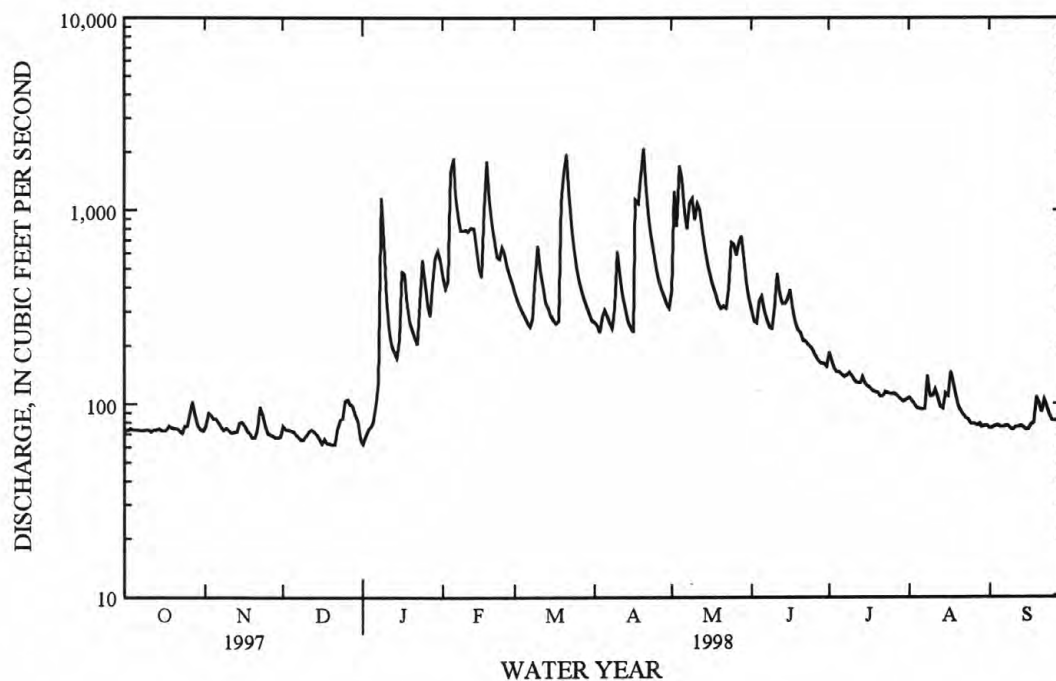
a Also Dec. 21, 1997.

b Present datum, from floodmarks.

c Not determined.

d Probably occurred Jan. 2, 1998, result of freezeup.

f Observed, result of freezeup.



NATIONAL WATER-QUALITY ASSESSMENT PROGRAM
KANAWHA-NEW RIVER BASIN
SURFACE-WATER QUALITY

03167000 REED CREEK AT GRAHAMS FORGE, VA

LOCATION.--Lat 36°56'22", long 80°53'13", Wythe County, Hydrologic Unit 05050001, on left bank 20 ft downstream from bridge on State Highway 619 at Grahams Forge, 2.2 mi downstream from Glade Creek, and at mile 7.3.

DRAINAGE AREA.-- 247 mi².

REMARKS.--Analyzed for pesticide schedules A and B, only detected compounds reported.

PERIOD OF RECORD.--October 1996 to September 1998, discontinued.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (µS/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300)	OXYGEN, DIS- SOLVED (MG/L) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	E. COLI WATER WHOLE TOTAL UREASE (COL / 100 ML) (31633)
OCT 1997												
07...	0805	1.44	76	352	8.1	14.5	14.4	715	8.9	93	99	110
NOV												
03...	1100	1.48	85	366	8.3	9.0	10.3	700	12.0	116	76	70
DEC												
09...	0815	1.41	70	351	8.1	1.0	3.6	705	9.3	76	K38	K28
JAN 1998												
14...	1300	1.79	174	331	8.2	4.0	5.9	713	11.3	97	200	160
FEB												
05...	0845	4.42	2030	180	7.7	6.0	4.7	696	11.7	100	1900	1600
12...	0845	2.85	789	253	8.1	3.0	6.2	700	11.5	101	250	150
MAR												
12...	0945	2.31	406	245	8.2	-5.0	1.7	718	13.6	103	K68	800
APR												
16...	0810	1.96	235	284	8.0	16.0	14.8	703	8.6	92	120	140
20...	1225	4.71	2130	162	7.7	11.5	10.4	710	10.7	102	K6000	K6100
MAY												
07...	0745	2.85	789	263	8.0	16.0	14.1	704	8.1	85	880	910
14...	0800	2.68	656	279	8.1	17.0	15.4	710	8.2	88	280	260
JUN												
04...	0815	2.14	315	342	7.9	19.0	19.1	700	8.0	95	K4300	K2600
JUL												
17...	1030	1.62	121	371	8.2	23.0	22.2	708	8.9	110	150	110
AUG												
04...	1010	1.51	92	359	8.2	24.0	17.9	720	10.1	113	95	81
SEP												
04...	1030	1.44	76	343	8.2	21.0	18.6	706	10.1	117	38	38

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM
KANAWHA-NEW RIVER BASIN
SURFACE-WATER QUALITY

03167000 REED CREEK AT GRAHAMS FORGE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00904)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA- LITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)
OCT 1997											
07...	170	--	40	18	5.9	7	.2	2.6	--	--	--
NOV											
03...	190	--	44	18	6.5	7	.2	3.0	--	--	--
DEC											
09...	170	--	41	18	5.9	7	.2	2.0	--	--	--
JAN 1998											
14...	150	25	38	13	8.1	11	.3	2.0	146	2	124
FEB											
05...	73	--	19	5.9	6.3	16	.3	1.8	--	--	--
12...	110	13	28	9.1	5.8	10	.2	1.6	115	<1	94
MAR											
12...	110	9	28	9.7	5.2	9	.2	1.4	122	<1	100
APR											
16...	140	18	34	12	5.3	8	.2	1.6	144	<1	118
20...	73	6	20	5.8	2.8	7	.1	1.6	81	<1	66
MAY											
07...	120	13	31	10	4.1	7	.2	1.6	131	<1	108
14...	130	21	35	11	4.6	7	.2	1.7	133	2	113
JUN											
04...	160	21	39	15	5.6	7	.2	2.5	169	<1	138
JUL											
17...	180	27	43	18	6.0	7	.2	2.8	190	<1	156
AUG											
04...	170	17	38	18	6.0	7	.2	2.2	185	<1	152
SEP											
04...	170	23	37	18	5.7	7	.2	2.3	174	<2	143
DATE	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
OCT 1997											
07...	14	11	.24	3.9	198	192	.27	40.5	<.010	.581	<.015
NOV											
03...	16	10	.14	3.8	218	200	.30	49.7	<.010	.522	<.015
DEC											
09...	17	11	.33	1.4	199	196	.27	37.6	<.010	.503	<.020
JAN 1998											
14...	18	17	.17	6.3	190	181	.26	89.4	.017	1.03	<.020
FEB											
05...	9.3	12	<.10	5.6	107	101	.15	585	<.010	.877	.049
12...	10	12	<.10	5.6	151	134	.21	322	<.010	1.12	<.020
MAR											
12...	9.7	10	.12	5.0	139	132	.19	152	<.010	.748	<.020
APR											
16...	9.9	9.2	.11	1.6	154	148	.21	97.9	<.010	.585	.022
20...	6.8	4.8	<.10	5.8	100	90	.14	574	<.010	.654	.069
MAY											
07...	8.9	7.6	.17	5.8	149	139	.20	317	<.010	1.09	.041
14...	8.9	8.2	.12	5.4	152	147	.21	269	.012	1.02	.051
JUN											
04...	11	10	.19	4.1	194	175	.26	165	.033	.972	.034
JUL											
17...	10	11	.22	5.7	215	194	.29	70.4	.011	.785	.021
AUG											
04...	12	10	.23	5.2	194	186	.26	48.0	.017	.716	<.020
SEP											
04...	13	10	.24	5.0	194	179	.26	39.7	.016	.494	.086

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM
KANAWHA-NEW RIVER BASIN
SURFACE-WATER QUALITY

03167000 REED CREEK AT GRAHAMS FORGE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	NITRO- GEN DIS- SOLVED (MG/L AS N) (00602)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P) (00660)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
OCT 1997											
07...	<.20	.27	--	.85	.059	E.044	.050	.15	14	18	4.1
NOV											
03...	<.20	<.20	--	--	<.050	<.050	.024	.07	8.2	20	3.2
DEC											
09...	<.10	<.10	--	--	<.050	<.050	<.010	--	6.1	17	<4.0
JAN 1998											
14...	.12	.10	1.2	1.1	<.050	<.050	.021	.06	<10	18	7.9
FEB											
05...	.26	.20	1.1	1.1	.071	E.043	.041	.13	13	33	4.3
12...	.13	<.10	1.3	--	<.050	<.050	.023	.07	<10	11	7.3
MAR											
12...	<.10	<.10	--	--	<.050	<.050	<.010	--	<10	15	4.4
APR											
16...	.15	.19	.74	.77	<.050	<.050	<.010	--	--	42	10
20...	.94	.20	1.6	.86	.125	E.035	.025	.08	18	41	6.1
MAY											
07...	.15	.12	1.2	1.2	<.050	<.050	.014	.04	<10	360	7.3
14...	.17	.12	1.2	1.1	<.050	<.050	.018	.06	12	20	6.3
JUN											
04...	.47	.26	1.4	1.2	<.050	E.036	.034	.10	10	23	5.4
JUL											
17...	.27	.20	1.1	.98	E.041	<.050	.022	.07	<10	23	7.4
AUG											
04...	.21	.17	.92	.88	E.034	<.050	.036	.11	<10	15	6.9
SEP											
04...	.20	.14	.70	.64	E.045	<.050	.032	.10	E6.1	16	6.6

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM
KANAWHA-NEW RIVER BASIN
SURFACE-WATER QUALITY

03167000 REED CREEK AT GRAHAMS FORGE, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. THAN .062 MM (70331)	QUALITY ASSUR- ANCE DATA INDICA- TOR CODE *(99111)
OCT 1997											
07...	1.5	<.20	.012	E.0069	.008	E.0045	E.0043	5	1.0	43	1
NOV											
03...	1.8	<.20	.013	E.0142	.009	E.0045	.0052	2	.46	50	1
DEC											
09...	1.4	<.20	.012	E.0057	.010	E.0047	<.0050	1	.19	50	40
JAN 1998											
14...	2.0	<.20	--	--	--	--	--	3	1.4	35	1
FEB											
05...	3.3	2.3	--	--	--	--	--	106	580	70	10
12...	4.0	.90	--	--	--	--	--	17	36	96	1
MAR											
12...	1.4	.20	--	--	--	--	--	5	5.5	67	1
APR											
16...	1.5	.30	--	--	--	--	--	9	5.7	53	1
20...	3.0	2.5	--	--	--	--	--	100	574	93	1
MAY											
07...	1.5	.20	--	--	--	--	--	29	62	94	1
14...	1.3	.70	--	--	--	--	--	21	37	93	1
JUN											
04...	1.8	.40	--	--	--	--	--	45	38	93	10
JUL											
17...	1.5	.50	--	--	--	--	--	5	1.6	67	1
AUG											
04...	1.4	.30	--	--	--	--	--	4	.99	64	1
SEP											
04...	1.6	.30	--	--	--	--	--	3	.61	52	1

E Estimated.

* The values listed under parameter code 99111 indicate the type of quality-assurance sample associated with each environmental sample, where 1 denotes none, 10 denotes a blank sample, and 40 denotes a spike sample.

KANAWHA RIVER BASIN

03168000 NEW RIVER AT ALLISONIA, VA

LOCATION.--Lat 36°56'15", long 80°44'45", Pulaski County, Hydrologic Unit 05050001, on left bank on State Highway 653, 0.2 mi downstream from Big Reed Island Creek, and 0.5 mi upstream from Allisonia.

DRAINAGE AREA.--2,202 mi².

PERIOD OF RECORD.--September 1929 to current year.

REVISED RECORDS.--WSP 783: Drainage area. WSP 823: 1936. WSP 1305: 1933(M).

GAGE.--Water-stage recorder. Datum of gage is 1,848.36 ft above sea level.

REMARKS.--Records good except those for period of doubtful gage-height record, June 14-17, and period of no gage-height record, Aug. 4-5, which are fair. Large diurnal fluctuation and some regulation by powerplant 25 mi upstream from station. U.S. Army Corps of Engineers satellite gage-height telemeter at station. American Electric Power gage-height transmitter at station. Maximum discharge, 185,000 ft³/s, from rating curve extended above 52,000 ft³/s on basis of flood records for other stations on New River. Minimum gage height, 0.47 ft, Sept. 7, 1930. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 17,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1645	38,200	8.72	Mar. 21	0330	32,500	7.88
Feb. 5	0400	26,000	6.88	Apr. 20	0600	*38,900	*8.82
Feb. 18	0845	32,700	7.92	May 11	1300	19,400	5.86

Minimum discharge, 739 ft³/s, Oct. 8, gage height, 1.03 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1350	1690	1150	1110	4080	5460	4300	4590	4850	2560	1540	1120
2	1130	1460	1230	1040	3710	5180	4290	6600	4390	2980	1590	1090
3	1020	1730	1390	1270	3710	4710	4070	6280	4370	2670	1580	1060
4	976	1600	1350	1530	12200	4460	4100	8330	4470	2300	e1380	1060
5	952	1410	1340	1670	21900	4190	4530	10300	5560	2280	e1300	1060
6	934	1210	1320	1970	12400	3870	4490	8250	5490	2180	1230	1040
7	1010	1160	1200	2510	8820	3780	4100	6770	4650	2130	1180	1050
8	823	1130	1130	26700	7100	3940	3860	7710	4350	2110	1730	1030
9	898	1100	1080	21000	6530	7490	4260	9550	4250	2150	1660	1010
10	901	1080	1150	8350	6420	11000	5480	9310	4490	2190	1470	1110
11	902	1080	1260	5210	6280	8080	4900	16900	8060	1970	1740	1060
12	896	1050	1350	4070	7740	5970	4440	13600	7380	1870	1700	1040
13	897	1060	1260	3490	8740	5040	4240	9780	5740	1860	1810	989
14	897	1130	1190	3110	7080	4570	4050	7720	e5000	1940	1990	945
15	891	1200	1080	3310	5750	4340	3870	6580	e4500	1840	1590	922
16	892	1260	1010	6380	5110	4260	3720	5770	e4200	1710	4290	934
17	906	1180	999	6510	14900	4000	7380	5210	e4000	1940	6620	879
18	925	1110	1050	4710	29500	4020	13200	4670	3450	1760	3760	983
19	938	1070	1060	3870	16400	6690	12700	4410	3200	1640	2300	1010
20	967	1060	1070	3410	11400	14700	32900	4390	3120	1570	1860	971
21	1020	1040	1090	3030	9250	26800	16500	4280	3030	1490	1610	993
22	1130	1200	1140	2720	7760	14500	10800	4740	2860	1500	1460	1100
23	1050	1320	1330	3620	7250	10100	8420	4760	2760	1450	1380	1150
24	957	1310	1460	5190	8560	7620	7090	6350	3200	1460	1420	1120
25	995	1230	1640	5120	7440	6390	6030	6390	3100	1470	1460	1030
26	1100	1120	2220	4170	6220	5680	5440	5510	2930	1710	1340	992
27	1370	1070	2030	3120	5700	5080	4950	6930	2620	1840	1270	962
28	1640	1060	1870	4050	5510	4780	4840	9330	2510	1700	1270	941
29	1520	1050	1750	4740	---	4510	4660	7290	2410	1830	1200	924
30	1170	1070	1600	4540	---	4390	4480	5690	2360	1520	1150	951
31	1210	---	1460	4330	---	4370	---	5020	---	1490	1110	---
TOTAL	32267	36240	41259	155850	257460	209970	208090	223010	123300	59110	56990	30526
MEAN	1041	1208	1331	5027	9195	6773	6936	7194	4110	1907	1838	1018
MAX	1640	1730	2220	26700	29500	26800	32900	16900	8060	2980	6620	1150
MIN	823	1040	999	1040	3710	3780	3720	4280	2360	1450	1110	879
CFSM	.47	.55	.60	2.28	4.18	3.08	3.15	3.27	1.87	.87	.83	.46
IN.	.55	.61	.70	2.63	4.35	3.55	3.52	3.77	2.08	1.00	.96	.52

e Estimated.

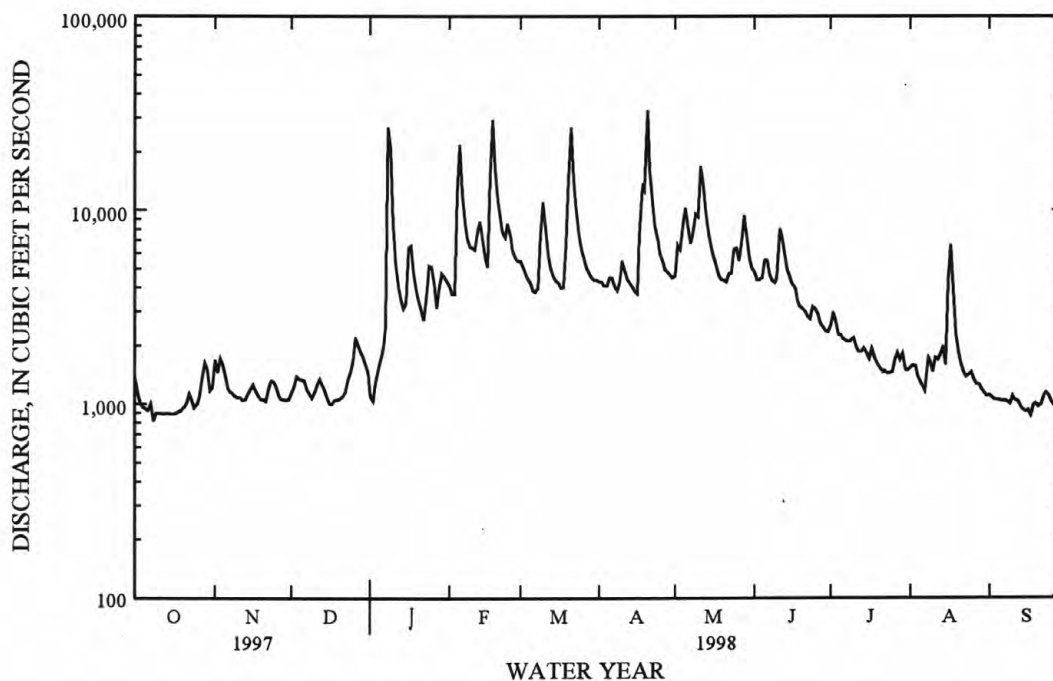
KANAWHA RIVER BASIN

03168000 NEW RIVER AT ALLISONIA, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2305	2621	3014	3820	4518	5080	4603	3755	2891	2275	2213	2010
MAX	6561	9597	6125	8600	9195	10870	11880	7736	8552	6230	11570	8448
(WY)	1990	1978	1962	1995	1998	1993	1987	1973	1992	1949	1940	1989
MIN	726	853	1007	1018	1041	1554	1685	1406	1067	744	850	743
(WY)	1931	1932	1966	1956	1934	1988	1942	1941	1988	1930	1988	1930

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1930 - 1998	
ANNUAL TOTAL	1039484		1434072			
ANNUAL MEAN	2848		3929		3252	
HIGHEST ANNUAL MEAN					4761	
LOWEST ANNUAL MEAN					1681	
HIGHEST DAILY MEAN	16000	Mar 4	32900	Apr 20	95000	Aug 14 1940
LOWEST DAILY MEAN	823	Oct 8	823	Oct 8	453	Sep 6 1930
ANNUAL SEVEN-DAY MINIMUM	888	Oct 8	888	Oct 8	555	Sep 3 1930
INSTANTANEOUS PEAK FLOW			38900	Apr 20	185000	Aug 14 1940
INSTANTANEOUS PEAK STAGE			8.82	Apr 20	23.42	Aug 14 1940
INSTANTANEOUS LOW FLOW			739	Oct 8	412	Sep 7 1930
ANNUAL RUNOFF (CFSM)	1.29		1.78		1.48	
ANNUAL RUNOFF (INCHES)	17.56		24.23		20.07	
10 PERCENT EXCEEDS	5530		7880		5860	
50 PERCENT EXCEEDS	2140		2300		2440	
90 PERCENT EXCEEDS	993		1020		1110	



KANAWHA RIVER BASIN

03169000 CLAYTOR RESERVOIR NEAR RADFORD, VA

LOCATION.--Lat 37°04'28", long 80°35'05", Pulaski County, Hydrologic Unit 05050001, at Claytor Dam on New River, 0.5 mi upstream from Little River, and 5.5 mi upstream from Radford.

DRAINAGE AREA.--2,382 mi².

PERIOD OF RECORD.--May 1939 to current year (monthly figures only).

REVISED RECORDS.--WSP 2108: 1961-65 monthend contents and change in contents.

GAGE.--Water-stage recorder. Datum of gage is approximately at sea level (levels by Appalachian Power Company). Prior to Sept. 11, 1943, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by gravity overflow concrete dam. Spillway with crest at elevation 1,818.5 ft is equipped with 9 lift gates 30 ft high by 50 ft wide. Dam completed and storage began May 22, 1939; water in reservoir reached minimum pool elevation in January 1940. Total level-pool capacity at elevation 1,847.0 ft, 1.5 ft below top of gates, is 230,100 acre-ft of which about 100,000 acre-ft is controlled storage above minimum pool elevation of 1,820.0 ft. Reservoir is used for hydroelectric power and recreation. U.S. Army Corps of Engineers satellite elevation telemeter at station.

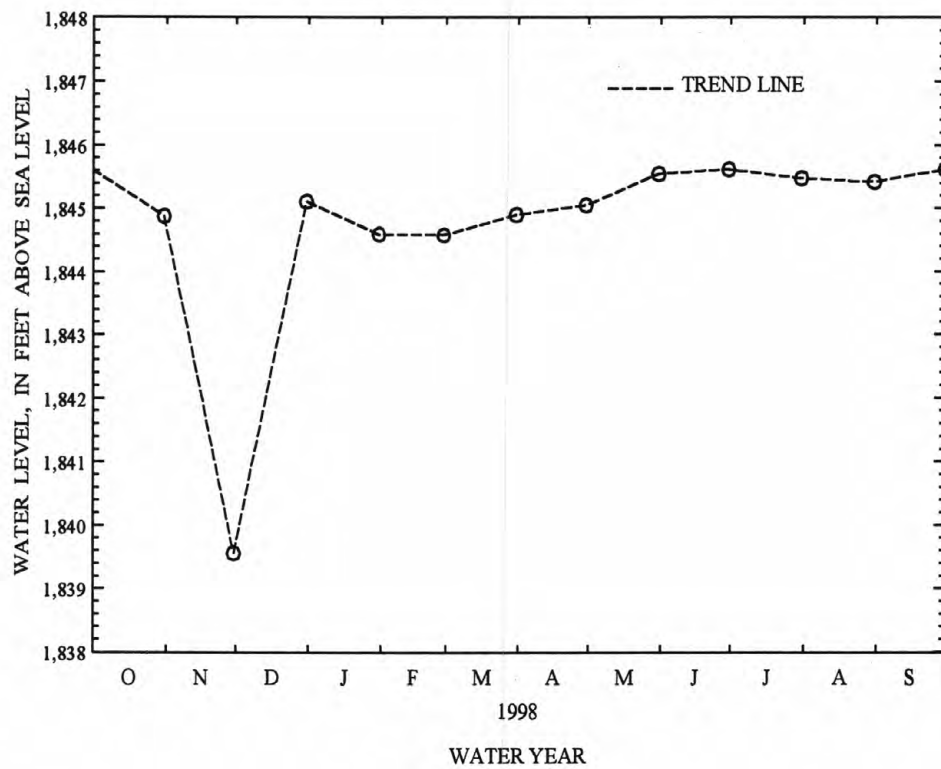
COOPERATION.--Records were provided by the American Electric Power.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	1,845.62	223,900	-
Oct. 31.....	1,844.88	220,700	-3,200
Nov. 30.....	1,839.56	197,900	-22,800
Dec. 31.....	1,845.11	221,700	+23,800
CAL YR 1997.....			-400
Jan. 31.....	1,844.59	219,500	-2,200
Feb. 28.....	1,844.58	219,400	-100
Mar. 31.....	1,844.90	220,800	+1,400
Apr. 30.....	1,845.05	221,400	+600
May 31.....	1,845.55	223,600	+2,200
June 30.....	1,845.62	223,900	+300
July 31.....	1,845.48	223,300	-600
Aug. 31.....	1,845.42	223,000	-300
Sept. 30.....	1,845.62	223,999	+900
WTR YR 1998.....			0

KANAWHA RIVER BASIN

03169000 CLAYTOR RESERVOIR NEAR RADFORD, VA--Continued



KANAWHA RIVER BASIN

03170000 LITTLE RIVER AT GRAYSONTOWN, VA

LOCATION.--Lat 37°02'15", long 80°33'25", Pulaski County, Hydrologic Unit 05050001, on left bank at upstream side of bridge on State Highway 693 at Snowville, 0.5 mi southeast of Graysontown, 7 mi south of Radford, and at mile 8.6.

DRAINAGE AREA.--300 mi².

PERIOD OF RECORD.--October 1928 to current year. Published as "at Graysonton" prior to October 1990.

REVISED RECORDS.--WSP 823: 1929-36. WSP 1143: 1945. WSP 1305: 1929(M). WSP 1555: Drainage area (at site used 1928-41). WSP 1625: 1951(M). WSP 1725: 1936(M).

GAGE.--Water-stage recorder. Datum of gage is 1,816.04 ft above sea level. Prior to Nov. 20, 1931, nonrecording gage at bridge 1.0 mi downstream at datum 17.99 ft lower. Nov. 20, 1931, to Nov. 12, 1941, water-stage recorder 1.2 mi downstream at datum 20.58 ft lower.

REMARKS.--Records good except for period with ice effect, Dec. 31 to Jan. 1, which is fair. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 22,800 ft³/s, from rating curve extended above 16,000 ft³/s on basis of slope-area measurements at gage heights 12.76 ft and 13.40 ft. Minimum discharge, 21 ft³/s, result of freezeup. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	0600	*6,880	*6.42	Mar. 21	0130	6,100	5.99
Feb. 4	2200	4,820	5.25	Apr. 20	0330	3,990	4.74
Feb. 18	0030	4,130	4.83				

Minimum discharge, 70 ft³/s, Dec. 16, gage height, 0.77 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	132	142	147	e100	520	546	467	471	384	251	159	134
2	117	226	144	144	470	513	478	616	345	241	156	131
3	114	315	136	185	455	486	444	528	356	236	137	130
4	116	189	143	203	2110	458	510	619	430	227	126	130
5	114	158	151	219	2920	438	665	719	432	231	120	138
6	109	145	144	308	1550	422	536	625	412	247	117	129
7	107	142	128	384	1230	408	480	541	364	220	113	123
8	105	146	120	3670	974	433	455	585	327	225	517	120
9	105	149	139	1260	902	781	492	583	310	261	792	112
10	105	149	150	610	822	889	598	514	354	234	294	109
11	105	140	162	412	793	591	509	809	450	213	308	110
12	105	136	158	345	1090	505	464	871	600	198	230	110
13	106	136	143	354	1080	471	432	655	492	197	182	108
14	106	148	136	339	834	464	414	563	378	196	167	104
15	110	171	115	429	686	449	409	510	361	190	164	101
16	110	163	106	1040	604	424	405	468	371	180	215	100
17	114	143	121	671	1760	420	736	459	395	199	553	108
18	123	133	143	503	2580	426	984	426	347	221	363	114
19	132	129	141	416	1250	802	1240	385	314	176	252	111
20	127	136	140	377	961	1740	2730	364	325	165	216	115
21	123	143	142	334	832	3760	1210	360	290	160	192	122
22	115	177	150	303	699	1510	864	362	278	223	183	163
23	113	208	196	372	765	1010	720	394	270	200	175	182
24	113	165	187	636	1030	797	645	598	263	177	169	132
25	123	146	206	561	781	682	578	605	287	164	163	121
26	146	139	243	459	666	617	526	503	270	163	160	119
27	178	138	195	408	607	579	499	551	249	163	153	118
28	178	136	192	436	578	547	480	777	237	164	148	113
29	136	135	144	745	---	521	457	559	255	162	146	108
30	127	140	108	690	---	498	442	463	274	145	140	112
31	124	---	e105	596	---	479	---	412	---	141	136	---
TOTAL	3738	4723	4635	17509	29549	22666	19869	16895	10420	6170	6946	3627
MEAN	121	157	150	565	1055	731	662	545	347	199	224	121
MAX	178	315	243	3670	2920	3760	2730	871	600	261	792	182
MIN	105	129	105	100	455	408	405	360	237	141	113	100
CFSM	.40	.52	.50	1.88	3.52	2.44	2.21	1.82	1.16	.66	.75	.40
IN.	.46	.59	.57	2.17	3.66	2.81	2.46	2.09	1.29	.77	.86	.45

e Estimated.

KANAWHA RIVER BASIN

03170000 LITTLE RIVER AT GRAYSONTOWN, VA--Continued

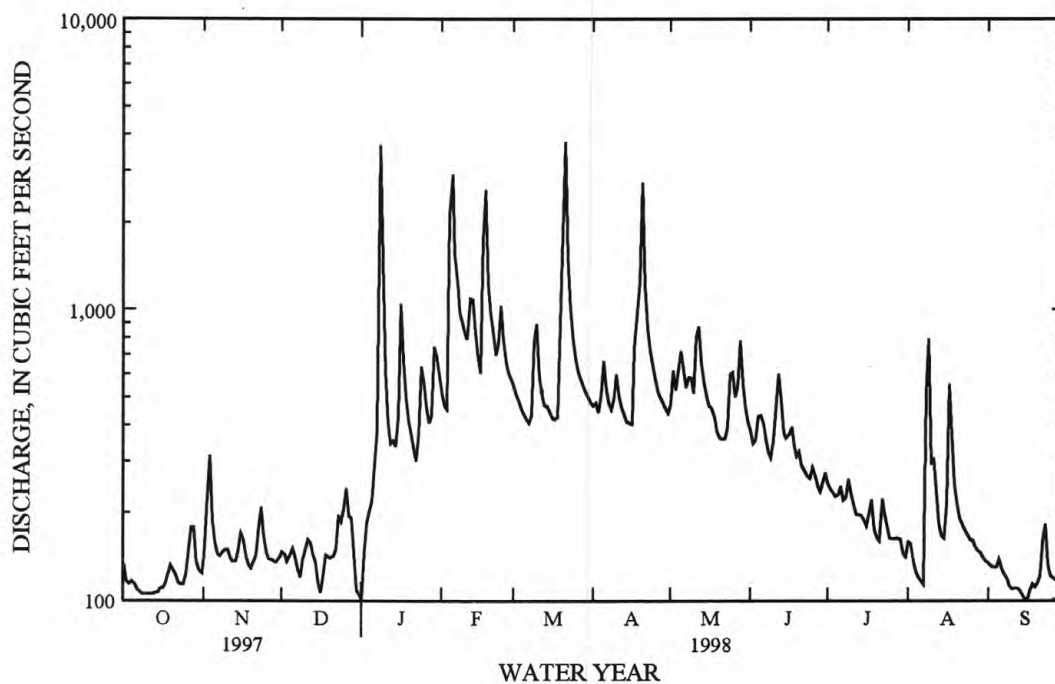
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	299	302	336	409	483	549	510	412	337	268	256	251
MAX	1458	916	860	1050	1055	1213	1445	810	942	945	1584	988
(WY)	1930	1986	1949	1937	1998	1993	1987	1958	1972	1949	1940	1989
MIN	86.7	107	115	108	113	220	146	168	137	108	88.3	76.9
(WY)	1954	1932	1966	1966	1934	1940	1942	1941	1964	1930	1981	1932

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1929 - 1998	
ANNUAL TOTAL	119933		146747			
ANNUAL MEAN	329		402		367	
HIGHEST ANNUAL MEAN					631	
LOWEST ANNUAL MEAN					191	
HIGHEST DAILY MEAN	1710		Mar 4		13200	
LOWEST DAILY MEAN	95		Sep 8		50	
ANNUAL SEVEN-DAY MINIMUM	103		Sep 3		57	
INSTANTANEOUS PEAK FLOW			6880		22800	
INSTANTANEOUS PEAK STAGE			6.42		13.40	
INSTANTANEOUS LOW FLOW			70		b21	
ANNUAL RUNOFF (CFSM)	1.10		1.34		1.22	
ANNUAL RUNOFF (INCHES)	14.87		18.20		16.61	
10 PERCENT EXCEEDS	609		781		622	
50 PERCENT EXCEEDS	261		252		270	
90 PERCENT EXCEEDS	116		115		128	

a Also Sept. 16, 1998.

b Result of freezeup.



NATIONAL WATER-QUALITY ASSESSMENT PROGRAM
KANAWHA-NEW RIVER BASIN
SURFACE-WATER QUALITY

03170000 LITTLE RIVER AT GRAYSONTOWN, VA

LOCATION.--Lat 37°02'15", long 80°33'25", Pulaski County, Hydrologic Unit 05050001, on left bank at upstream side of bridge on State Highway 693 at Snowville, 0.5 mi southeast of Graysontown, 7 mi south of Radford, and at mile 8.6.

DRAINAGE AREA.-- 300 mi².

PERIOD OF RECORD.--October 1996 to September 1998, discontinued.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (μS/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
OCT 1997										
09...	0905	.91	106	87	7.4	13.5	16.3	719	8.8	95
NOV										
05...	0830	1.08	160	85	7.3	-1.0	5.8	720	11.5	98
DEC										
11...	0845	1.09	163	75	7.2	2.5	3.2	708	9.8	79
JAN 1998										
08...	1345	5.38	5050	64	6.8	18.0	11.8	E714	8.3	--
13...	1000	1.47	342	77	7.4	12.0	5.2	713	10.8	91
16...	0825	2.56	1170	74	7.2	6.8	3.8	700	12.4	102
FEB										
05...	1000	4.04	2940	58	6.9	6.0	3.1	699	12.7	103
10...	0945	2.17	829	72	7.2	1.5	3.9	715	12.7	103
MAR										
10...	0900	2.28	922	65	7.8	-1.0	7.3	700	10.8	97
APR										
14...	0910	1.59	415	70	7.5	13.0	12.3	709	9.6	97
MAY										
05...	0915	2.02	711	63	7.5	15.5	12.9	708	9.0	92
JUN										
02...	0915	1.48	348	79	7.4	23.0	20.9	700	8.1	99
JUL										
17...	0845	1.13	179	85	7.4	23.0	24.6	711	7.5	97
AUG										
04...	0830	.97	123	87	7.4	15.5	20.0	717	8.9	104
SEP										
04...	0845	.98	126	91	7.5	20.0	20.4	708	8.4	100

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM
KANAWHA-NEW RIVER BASIN
SURFACE-WATER QUALITY

03170000 LITTLE RIVER AT GRAYSONTOWN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	COLI-FORM, FECAI, 0.7 UM-MF (COLS./100 ML) (31625)	E. COLI WATER WHOLE TOTAL UREASE (COL / 100 ML) (31633)	HARD-NESS TOTAL (MG/L AS CAC03) (00900)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L) (00904)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)
OCT 1997									
09...	62	60	38	--	7.7	4.4	3.0	14	1.8
NOV									
05...	160	140	32	--	6.9	3.6	2.9	15	2.9
DEC									
11...	120	88	31	--	7.0	3.3	2.9	16	1.3
JAN 1998									
08...	--	--	19	2	4.3	1.9	3.0	22	3.4
13...	150	230	29	7	6.4	3.3	3.0	17	1.7
16...	3200	3000	25	3	5.5	2.7	3.9	24	2.2
FEB									
05...	2300	3400	18	--	4.1	2.0	2.7	22	1.9
10...	120	100	25	--	5.6	2.8	3.0	19	1.6
MAR									
10...	>6000	5700	24	7	5.4	2.5	2.8	19	1.7
APR									
14...	44	46	28	3	6.1	3.0	2.7	17	1.2
MAY									
05...	930	580	31	9	9.3	1.8	1.0	7	1.1
JUN									
02...	150	150	31	1	6.9	3.4	2.9	16	1.5
JUL									
17...	150	120	34	3	7.3	3.8	3.0	15	1.6
AUG									
04...	110	100	34	2	7.4	3.8	2.9	15	1.2
SEP									
04...	67	53	38	5	8.0	4.4	3.0	14	1.6

DATE	BICARBONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CARBONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKALINITY WAT DIS TOT IT FIELD MG/L AS CAC03 (39086)	SULFATE DIS-SOLVED (MG/L AS S04) (00945)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)
OCT 1997										
09...	--	--	--	2.6	4.1	<.10	8.9	56	56	.08
NOV										
05...	--	--	--	3.3	5.0	<.10	10	64	56	.09
DEC										
11...	--	--	--	2.9	3.9	<.10	11	55	52	.07
JAN 1998										
08...	20	<1	16	5.0	5.5	<.10	6.9	52	43	.07
13...	27	<1	22	4.1	5.2	<.10	12	63	52	.09
16...	27	<1	22	4.5	6.9	<.10	10	39	52	.05
FEB										
05...	24	<1	20	5.2	4.8	<.10	5.9	45	41	.06
10...	35	<1	29	4.9	5.1	<.10	9.7	47	53	.06
MAR										
10...	21	<1	17	3.5	4.4	<.10	8.6	48	42	.07
APR										
14...	30	<1	24	3.1	3.9	<.10	8.4	50	44	.07
MAY										
05...	27	<1	22	5.2	1.4	<.10	5.3	49	40	.07
JUN										
02...	37	<1	31	2.9	3.9	<.10	11	59	53	.08
JUL										
17...	38	<1	31	2.0	3.7	<.10	9.6	55	51	.07
AUG										
04...	40	<1	32	2.3	4.0	<.10	10	57	53	.08
SEP										
04...	40	<1	33	2.5	4.1	<.10	9.2	63	53	.09

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM
KANAWHA-NEW RIVER BASIN
SURFACE-WATER QUALITY

03170000 LITTLE RIVER AT GRAYSONTOWN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	NITRO- GEN DIS- SOLVED (MG/L AS N) (00602)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)
OCT 1997										
09...	16.1	<.010	.095	<.015	<.20	<.20	--	--	<.050	<.050
NOV										
05...	27.6	.027	.253	<.020	.20	.23	.46	.49	E.033	<.050
DEC										
11...	24.3	<.010	.309	<.020	<.10	<.10	--	--	<.050	<.050
JAN 1998										
08...	709	<.010	.628	.110	9.3	.51	9.9	1.1	1.65	<.050
13...	58.2	<.010	.668	<.020	.14	<.10	.81	--	<.050	<.050
16...	124	<.010	.622	<.020	.91	.19	1.5	.81	.186	<.050
FEB										
05...	357	<.010	.517	.069	1.6	.25	2.1	.76	.414	<.050
10...	105	<.010	.682	<.020	.12	.13	.80	.81	<.050	<.050
MAR										
10...	120	<.010	.463	.044	.49	.31	.96	.77	.084	<.050
APR										
14...	56.1	.011	.236	.030	<.10	<.10	--	--	<.050	<.050
MAY										
05...	94.0	<.010	.353	.027	<.10	<.10	--	--	<.050	<.050
JUN										
02...	55.4	.018	.407	.022	.17	.11	.57	.51	<.050	<.050
JUL										
17...	26.5	<.010	.182	.024	.18	.15	.36	.33	<.050	<.050
AUG										
04...	18.9	.012	.244	<.020	.15	.10	.40	.35	<.050	<.050
SEP										
04...	21.4	.013	.097	.077	.19	<.10	.28	--	<.050	<.050

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM
KANAWHA-NEW RIVER BASIN
SURFACE-WATER QUALITY

03170000 LITTLE RIVER AT GRAYSONTOWN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)	SEDI- MENT, CHARGE, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	QUALITY ASSUR- ANCE DATA INDICA- TOR CODE *(99111)
OCT 1997										
09...	<.010	13	95	7.4	1.7	.50	5	1.4	65	1
NOV										
05...	.012	14	120	3.5	2.7	.20	5	2.2	92	1
DEC										
11...	.012	<5.0	82	5.9	1.3	.20	1	.44	14	10
JAN 1998										
08...	.021	100	320	11	6.3	>17	6	82	79	1
13...	<.010	14	58	<4.0	2.6	.30	1	.92	43	1
16...	.016	25	91	4.4	2.6	1.0	125	396	83	1
FEB										
05...	.025	54	120	10	3.5	4.7	191	1520	73	10
10...	.019	15	52	4.6	1.9	<.20	9	20	69	1
MAR										
10...	.024	68	140	<4.0	3.3	3.8	106	264	90	1
APR										
14...	<.010	10	63	<4.0	1.2	.20	3	3.4	82	1
MAY										
05...	<.010	18	48	7.6	1.7	.30	13	25	83	1
JUN										
02...	.016	18	110	11	1.5	.40	12	11	97	10
JUL										
17...	<.010	17	110	7.7	1.5	.40	5	2.4	86	1
AUG										
04...	.013	13	110	6.6	1.5	.40	5	1.7	79	1
SEP										
04...	.013	16	110	7.7	1.6	.30	2	.68	72	30

* The values listed under parameter code 99111 indicate the type of quality-assurance sample associated with each environmental sample, where 1 denotes none, 10 denotes a blank sample, and 30 denotes a replicate sample.

KANAWHA RIVER BASIN

03170500 LITTLE RIVER RESERVOIR NEAR RADFORD, VA

LOCATION.--Lat 37°04'40", long 80°34'22", Pulaski County, Hydrologic Unit 05050001, on left bank 30 ft upstream from dam, 0.25 mi upstream from mouth of Little River, 3 mi downstream from Meadow Creek, and 4 mi south of Radford.

DRAINAGE AREA.--337 mi².

PERIOD OF RECORD.--September 1943 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,770 ft above sea level, from topographic map.

REMARKS.--Reservoir is operated for generating power for the city of Radford. Missing record is due to instrument malfunction.

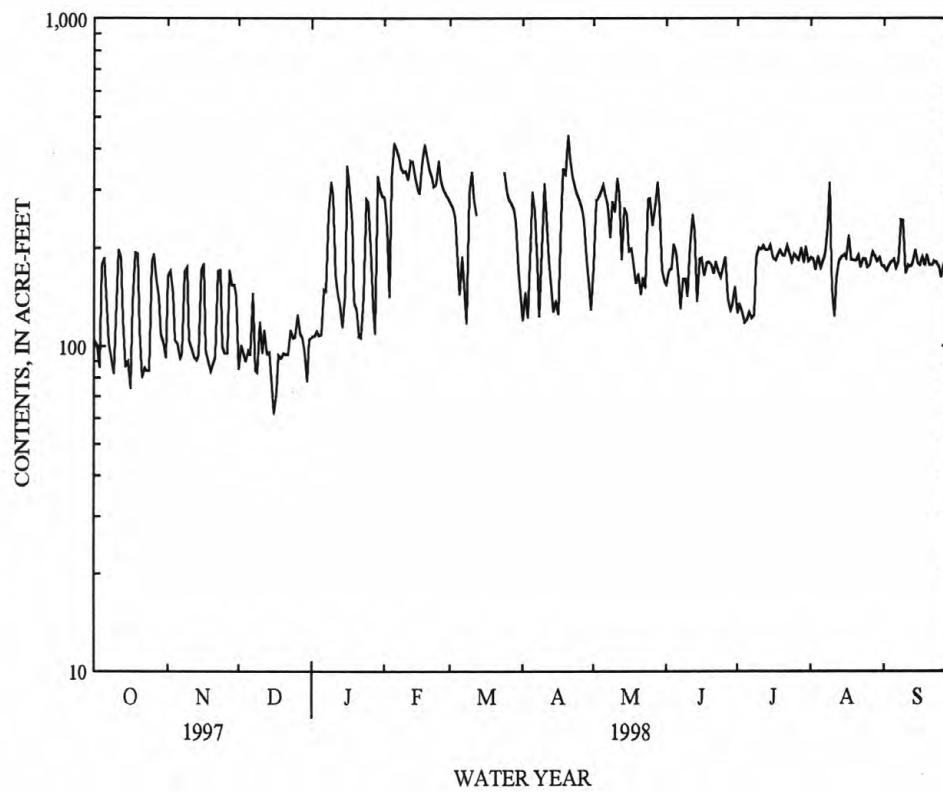
EXTREMES FOR CURRENT YEAR.--Maximum recorded contents, 517 acre-ft, Jan. 8, minimum recorded contents, 6.5 acre-ft, Mar. 23.

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	104	164	85	107	285	276	120	175	155	126	186	175
2	101	170	101	107	232	265	146	281	171	135	184	170
3	86	146	96	111	141	247	122	285	173	128	171	176
4	177	104	90	108	325	192	182	296	205	118	188	181
5	186	102	97	109	417	144	297	311	194	121	174	185
6	130	92	94	149	399	188	257	290	160	127	181	173
7	102	95	145	147	383	152	179	269	130	122	191	181
8	92	169	84	256	349	117	123	215	160	125	232	243
9	82	175	83	317	341	294	192	277	160	188	316	242
10	120	104	119	289	343	342	315	257	142	200	149	167
11	198	99	95	165	323	285	245	326	204	198	123	176
12	186	93	112	143	369	252	184	292	253	203	162	175
13	121	91	95	134	367	---	150	184	225	197	183	180
14	87	94	96	114	329	---	127	264	137	198	188	197
15	90	172	78	144	303	---	138	253	185	204	192	179
16	74	179	62	356	294	---	125	196	186	186	186	176
17	136	97	72	300	365	---	245	199	164	183	218	187
18	193	90	94	239	414	---	350	175	180	190	183	176
19	191	84	92	136	385	---	337	156	181	197	183	190
20	112	88	95	131	349	---	440	166	178	190	182	176
21	80	93	94	107	331	---	376	144	167	189	190	176
22	86	170	94	106	308	---	328	162	181	203	175	181
23	84	171	112	142	314	---	305	151	170	191	185	180
24	84	100	106	282	369	339	293	282	163	181	184	175
25	181	95	107	275	324	296	278	283	177	191	175	162
26	191	95	125	199	303	282	262	234	187	187	178	178
27	160	171	109	133	292	273	239	267	140	184	194	166
28	141	154	107	109	284	262	185	317	129	199	190	163
29	109	154	96	330	---	238	153	265	134	180	182	164
30	103	142	78	299	---	172	129	171	152	201	186	167
31	92	---	105	287	---	140	---	158	---	182	176	---
TOTAL	3879	3753	3018	5831	9238	---	6822	7301	5143	5424	5787	5417
MEAN	125	125	97	188	330	---	227	236	171	175	187	181
MAX	198	179	145	356	417	---	440	326	253	204	316	243
MIN	74	84	62	106	141	---	120	144	129	118	123	162

KANAWHA RIVER BASIN

03170500 LITTLE RIVER RESERVOIR NEAR RADFORD, VA--Continued



KANAWHA RIVER BASIN

03171000 NEW RIVER AT RADFORD, VA

LOCATION.--Lat 37°08'30", long 80°34'10", Pulaski County, Hydrologic Unit 05050001, on left bank 2,000 ft downstream from bridge on U.S. Highway 11 at Radford, 5 mi downstream from Little River, and 5.5 mi downstream from Claytor Dam.

DRAINAGE AREA.--2,748 mi².

PERIOD OF RECORD.--October 1907 to September 1915, August 1939 to current year. Records for August 1898 to September 1907, published in WSP 27, 36, 48, 65, 83, 98, 128, 169, 205, 243, and 536, are unreliable and should not be used. Gage-height records collected at same site since 1895 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 873: Drainage area. WSP 953: 1940-41. WSP 1305: 1908-12. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 1,712.16 ft above sea level. Prior to Aug. 30, 1939, nonrecording gage at highway bridge 2,000 ft upstream at datum 0.85 ft lower.

REMARKS.--Records good except for period of no gage-height record, Jan. 19-21, which is fair. Flow regulated since 1939 by Claytor Reservoir (station 03169000). Some additional regulation at low flow by dam and powerplant on Little River. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. National Weather Service gage-height telemeter at station. Maximum discharge, 218,000 ft³/s, from rating curve extended above 76,000 ft³/s on basis of records for other stations on New River and flow over Claytor Dam, computed by Appalachian Power Company. Minimum gage height, 1.08 ft, Aug. 25, 27, 1944. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 16, 1916, reached a stage of 35.7 ft, discharge, 200,000 ft³/s, at site and datum used by Geological Survey 1907-15, from reports of the National Weather Service.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 43,400 ft³/s, Apr. 20, gage height, 12.89 ft; minimum, 730 ft³/s, Jan. 2, gage height, 1.77 ft; minimum daily, 845 ft³/s, Dec. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1680	1140	997	923	5640	4610	4930	5910	5690	3440	1790	1140
2	1680	1050	944	1640	7630	6030	4870	5840	5140	4740	1960	1400
3	1300	2670	947	963	7000	5650	5700	7480	4950	3900	2060	1790
4	1070	2650	913	1020	11500	5010	4390	8490	7470	2430	1780	1520
5	1160	2580	946	3020	18000	5510	2690	11200	8240	3170	1730	1440
6	1210	5610	927	2470	14600	4850	5710	11200	4190	3080	1600	1150
7	1130	5530	845	4960	12800	4760	6200	8950	4220	2910	1590	1090
8	1140	1510	966	22700	10200	4280	4440	9100	5400	2930	3580	1050
9	1140	1300	962	23800	8790	6820	4960	10900	4820	2870	3690	1160
10	1120	1360	980	11800	9130	11900	4770	9650	6160	2910	2540	1380
11	1120	1310	1040	6510	8020	9150	5970	12300	10700	2840	2530	1590
12	1180	1700	995	5150	8320	7170	3480	14600	8430	2350	2460	1080
13	1260	1230	1000	5290	7540	6410	5400	12100	6590	2550	2130	1070
14	1480	1400	1000	5680	8780	4530	3610	12000	5140	2580	2460	1060
15	1100	1730	969	4990	8380	1900	4490	7040	5940	2520	2330	1020
16	1040	3370	927	6240	9120	5660	4150	6100	6920	2260	6320	1030
17	1030	5410	916	6460	11500	5620	8320	6200	5330	2440	8280	1060
18	1080	1500	914	3000	27900	5960	12400	5550	4830	2580	4450	1670
19	1090	1220	921	e5000	18400	7350	14900	5240	4610	2050	2820	1590
20	1180	1310	929	e4000	13000	14500	37300	4990	4230	1890	2290	1090
21	1550	1460	940	e3500	12100	30900	19000	4800	4390	1810	1950	1090
22	1090	1600	937	7650	11900	17700	12700	5560	4020	1950	1790	1630
23	1540	1620	972	2810	10400	12400	10800	5670	3540	1890	1940	1810
24	1070	1060	1040	3680	9680	11300	8060	8070	3500	1970	1910	1270
25	1020	986	995	4490	7220	8500	7490	8020	4410	2180	2840	1280
26	1690	978	1460	6180	7110	7670	6440	6730	4140	1890	1760	1220
27	1640	875	2650	5820	6600	6430	5980	8490	3380	2380	1660	1040
28	2160	984	2330	4820	5350	6070	5440	10900	3480	2470	1650	1030
29	1800	952	2670	5840	---	3420	5490	8580	3300	2430	1150	1040
30	1670	1030	2640	5530	---	6450	6170	5250	3190	2120	1060	1290
31	2940	---	2130	4780	---	4170	---	6070	---	1900	1210	---
TOTAL	42360	57125	37802	180716	296610	242680	236250	252980	156350	79430	77310	38080
MEAN	1366	1904	1219	5830	10590	7828	7875	8161	5212	2562	2494	1269
MAX	2940	5610	2670	23800	27900	30900	37300	14600	10700	4740	8280	1810
MIN	1020	875	845	923	5350	1900	2690	4800	3190	1810	1060	1020
(†)	-1613	-11495	+11999	-1109	-50	+706	+302	+1109	+151	-302	-151	+454
MEAN†	1314	1521	1606	5794	10590	7851	7885	8196	5217	2553	2489	1284
CFSM†	.48	.55	.58	2.11	3.85	2.86	2.87	2.98	1.90	.93	.91	.47
IN.†	.55	.62	.67	2.43	4.01	3.29	3.20	3.44	2.12	1.07	1.04	.52

CAL YR 1997 TOTAL 1303147 MEAN 3570 MAX 13600 MIN 845 MEAN† 3570 CFSM† 1.30 IN.† 17.64
WTR YR 1998 TOTAL 1697693 MEAN 4651 MAX 37300 MIN 845 MEAN† 4651 CFSM† 1.69 IN.† 22.98

† Total change in contents, equivalent in cubic feet per second, per month, in Claytor Reservoir; provided by American Electric Power.

‡ Adjusted for monthly change in contents.

e Estimated

KANAWHA RIVER BASIN

03171000 NEW RIVER AT RADFORD, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1908 - 1915, BY WATER YEAR (WY) [UNREGULATED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2778	2549	4070	5088	5655	6047	5261	4676	3964	2774	2334	2550
MAX	5958	4877	8505	8679	9654	9332	7463	8512	6834	4479	4446	4571
(WY)	1909	1909	1915	1915	1908	1913	1911	1909	1910	1908	1908	1915
MIN	1666	1575	1801	2826	2808	3442	2774	2544	1557	1618	1480	1327
(WY)	1913	1911	1913	1912	1913	1910	1910	1914	1914	1911	1914	1914

SUMMARY STATISTICS

WATER YEARS 1908 - 1915

ANNUAL MEAN	3971	
HIGHEST ANNUAL MEAN	5522	1908
LOWEST ANNUAL MEAN	2913	1914
HIGHEST DAILY MEAN	38400	Jan 12 1908
LOWEST DAILY MEAN	550	Aug 22 1911
ANNUAL SEVEN-DAY MINIMUM	729	Aug 20 1911
INSTANTANEOUS PEAK FLOW	a46200	bMay 21 1909
INSTANTANEOUS PEAK STAGE	a15.0	bMay 21 1909
INSTANTANEOUS LOW FLOW	(c)	
ANNUAL RUNOFF (CFSM)	1.45	
ANNUAL RUNOFF (INCHES)	19.62	
10 PERCENT EXCEEDS	7360	
50 PERCENT EXCEEDS	2930	
90 PERCENT EXCEEDS	1500	

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2708	3077	3642	4431	5474	6126	5567	4559	3642	2789	2709	2484
MAX	7619	10300	7426	9459	10590	13130	14490	8875	9627	7545	14170	9855
(WY)	1990	1978	1962	1995	1998	1993	1987	1973	1992	1949	1940	1989
MIN	1068	1156	1144	1064	2437	2016	2203	1721	1244	1208	1081	1126
(WY)	1989	1940	1940	1940	1941	1988	1942	1941	1941	1988	1956	1968

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

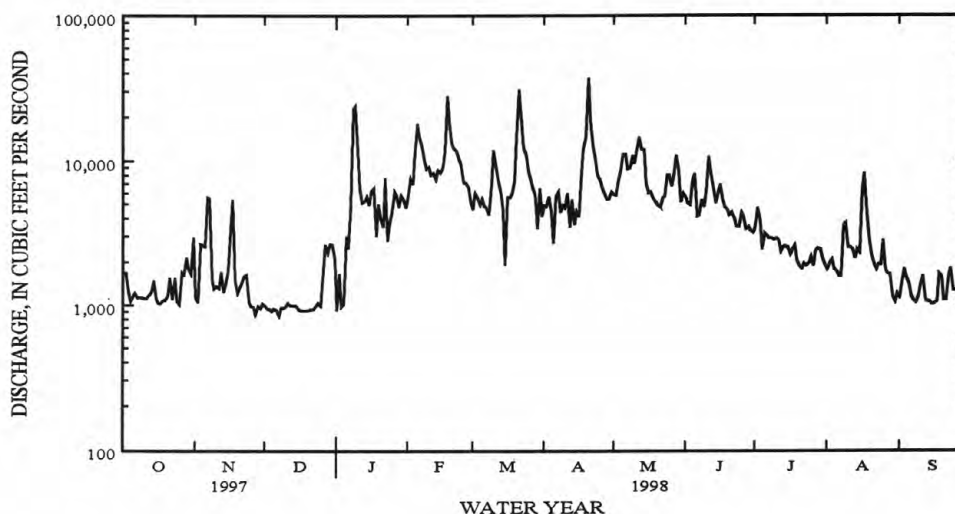
WATER YEARS 1940 - 1998

ANNUAL TOTAL	1303147	1697693	
ANNUAL MEAN	3570	4651	3925
HIGHEST ANNUAL MEAN			5471
LOWEST ANNUAL MEAN			2151
HIGHEST DAILY MEAN	13600	Mar 4	37300
LOWEST DAILY MEAN	845	Dec 7	845
ANNUAL SEVEN-DAY MINIMUM	926	Dec 16	926
INSTANTANEOUS PEAK FLOW			43400
INSTANTANEOUS PEAK STAGE			12.89
INSTANTANEOUS LOW FLOW			730
ANNUAL RUNOFF (CFSM)	1.30	1.69	1.43
ANNUAL RUNOFF (INCHES)	17.64	22.98	19.41
10 PERCENT EXCEEDS	6880	9890	7420
50 PERCENT EXCEEDS	2940	3190	2990
90 PERCENT EXCEEDS	1070	1030	1180

a Site and datum then in use.

b Also Mar. 27, 1913.

c Not determined.



KANAWHA RIVER BASIN

03173000 WALKER CREEK AT BANE, VA

LOCATION.--Lat 37°16'05", long 80°42'35", Giles County, Hydrologic Unit 05050002, on left bank at Bane, 0.2 mi downstream from bridge on State Highway 100, 0.2 mi downstream from Sugar Run, and at mile 7.9.

DRAINAGE AREA.--305 mi².

PERIOD OF RECORD.--March 1938 to current year.

REVISED RECORDS.--WSP 1143: 1939(M), 1940, 1944, 1946. WSP 1305: 1938(M).

GAGE.--Water-stage recorder. Datum of gage is 1,665.92 ft above sea level. Prior to Aug. 1, 1938, nonrecording gage at same site and datum.

REMARKS.--Records good except for period with ice effect Dec. 30 to Jan. 1, which is fair. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 25,000 ft³/s, from rating curve extended above 7,200 ft³/s on basis of slope-area measurements at gage heights 16.50 ft and 19.28 ft. Minimum discharge, 15 ft³/s, Dec. 21, 1958, gage height, 2.42 ft, result of freezeup. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in September 1878 reached a stage of about 23.5 ft, discharge, 40,400 ft³/s, from rating curve extended as explained above.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 5	0100	4,010	9.13	Apr. 17	1630	4,190	9.27
Feb. 18	0400	4,670	9.63	Apr. 20	0130	*7,570	*11.59
Mar. 21	0230	5,470	10.22				

Minimum discharge, 31 ft³/s, Oct. 16, gage height, 2.79 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	49	50	e59	576	630	311	391	463	116	57	42
2	38	53	51	57	489	551	295	1250	381	115	58	42
3	36	54	55	64	502	468	265	922	322	104	56	41
4	36	58	57	71	2430	404	314	1170	305	98	53	41
5	36	59	54	92	2980	351	358	1390	324	97	51	40
6	36	55	52	141	1650	310	330	1030	301	91	51	40
7	35	52	51	195	1160	278	314	837	262	90	50	40
8	35	51	50	2100	985	313	295	977	229	92	80	40
9	35	50	49	1090	973	838	583	1120	212	88	70	39
10	34	50	50	561	983	1140	1350	946	241	97	76	38
11	33	50	52	366	987	827	905	1030	326	89	81	38
12	33	49	55	278	1140	652	690	968	284	83	86	38
13	32	48	58	254	1220	524	562	820	253	80	70	38
14	33	52	55	231	955	465	479	686	228	77	61	37
15	32	53	51	231	752	406	424	579	246	75	60	37
16	32	54	49	527	644	354	374	488	345	75	70	37
17	33	55	47	651	1110	319	1960	423	267	72	75	37
18	35	52	48	471	3380	314	1790	363	229	69	80	37
19	36	50	48	363	1730	1570	2660	317	208	67	78	37
20	36	48	48	308	1260	2110	4810	283	218	65	64	37
21	36	51	47	260	1030	3610	1970	273	199	63	58	41
22	36	61	54	230	846	1710	1260	280	177	62	54	64
23	36	67	60	391	772	1130	962	319	165	65	52	65
24	37	65	76	801	881	866	788	1100	151	66	51	62
25	45	59	87	669	814	700	647	1200	141	66	49	50
26	49	53	102	504	716	589	544	813	131	67	48	46
27	63	50	97	427	669	507	471	1090	122	65	47	44
28	57	49	87	739	653	448	419	1350	115	64	46	43
29	56	48	80	961	---	403	368	851	111	61	44	42
30	51	49	e70	894	---	361	334	639	109	59	43	46
31	47	---	e62	732	---	327	---	560	---	58	40	---
TOTAL	1211	1594	1852	14718	32287	23475	26832	24465	7065	2436	1859	1279
MEAN	39.1	53.1	59.7	475	1153	757	894	789	236	78.6	60.0	42.6
MAX	63	67	102	2100	3380	3610	4810	1390	463	116	86	65
MIN	32	48	47	57	489	278	265	273	109	58	40	37
CF5M	.13	.17	.20	1.56	3.78	2.48	2.93	2.59	.77	.26	.20	.14
IN.	.15	.19	.23	1.80	3.94	2.86	3.27	2.98	.86	.30	.23	.16

e Estimated.

KANAWHA RIVER BASIN

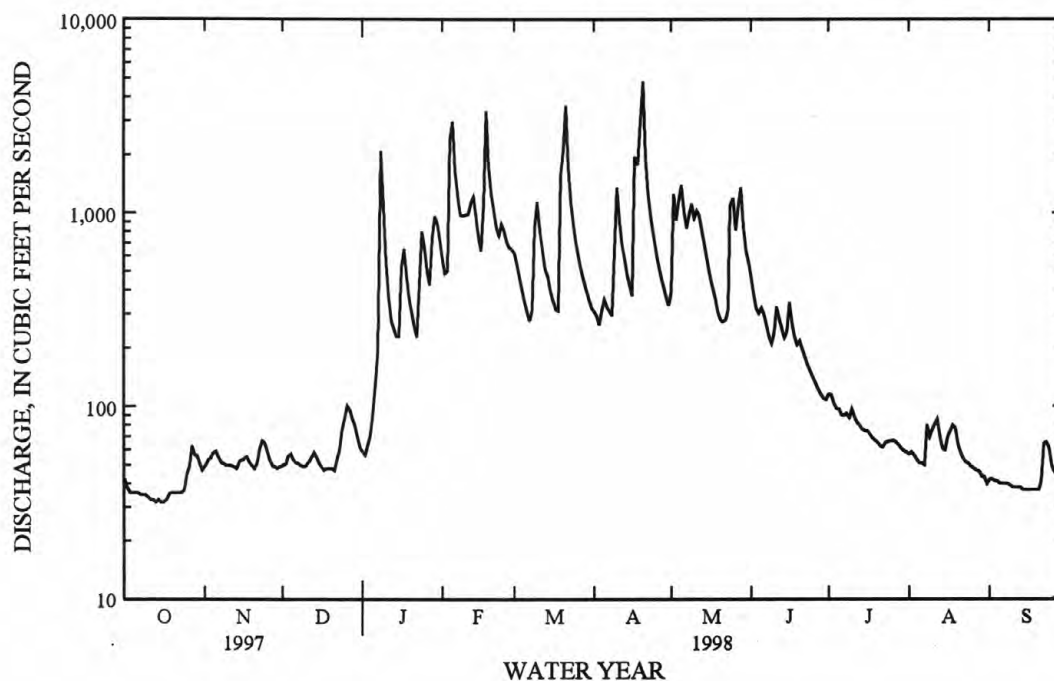
03173000 WALKER CREEK AT BANE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	129	186	318	450	607	702	550	421	242	141	129	98.8
MAX	721	737	941	1191	1577	1800	1806	1044	1125	735	759	639
(WY)	1990	1980	1973	1996	1957	1955	1987	1971	1992	1938	1949	1989
MIN	34.7	43.2	44.9	44.8	95.6	108	126	115	60.6	41.6	33.7	35.6
(WY)	1964	1956	1956	1956	1942	1988	1986	1941	1988	1988	1988	1955

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1938 - 1998	
ANNUAL TOTAL	86785		139073			
ANNUAL MEAN	238		381		329	
HIGHEST ANNUAL MEAN					553	1949
LOWEST ANNUAL MEAN					135	1988
HIGHEST DAILY MEAN	4060	Mar 4	4810	Apr 20	14100	Jun 5 1992
LOWEST DAILY MEAN	29	Sep 23	32	aOct 13	24	bSep 27 1964
ANNUAL SEVEN-DAY MINIMUM	33	Oct 11	33	Oct 11	28	Sep 22 1964
INSTANTANEOUS PEAK FLOW			7570	Apr 20	25000	Jun 5 1992
INSTANTANEOUS PEAK STAGE			11.59	Apr 20	19.28	Jun 5 1992
INSTANTANEOUS LOW FLOW			31	Oct 16	c15	Dec 21 1958
ANNUAL RUNOFF (CFSM)	.78		1.25		1.08	
ANNUAL RUNOFF (INCHES)	10.58		16.96		14.65	
10 PERCENT EXCEEDS	585		1000		737	
50 PERCENT EXCEEDS	113		97		163	
90 PERCENT EXCEEDS	38		40		49	

a Also Oct. 15, 16, 1997.
b Also Sept. 28, 1964.
c Result of freezeup.



KANAWHA RIVER BASIN

03175500 WOLF CREEK NEAR NARROWS, VA

LOCATION.--Lat 37°18'20", long 80°51'00", Giles County, Hydrologic Unit 05050002, on right bank at downstream side of bridge on State Highway 724, 2.8 mi southwest of Narrows, and at mile 3.5.

DRAINAGE AREA.--223 mi².

PERIOD OF RECORD.--July 1908 to September 1916, March 1938 to September 1995 (discontinued as a continuous-record station; converted to a crest-stage partial-record station), 1997.

REVISED RECORDS.--WSP 973: 1940-41(M). WSP 1235: 1912-13, 1915-16. WSP 1505: 1940, monthly and yearly runoff. WSP 1725: 1913(M), 1915-16(M), 1941 calendar year runoff.

GAGE.--Water-stage recorder. Datum of gage is 1,583.83 ft above sea level. July 22, 1908, to Sept. 30, 1916, and Mar. 31 to Nov. 7, 1938, nonrecording gage at same site and datum.

REMARKS.--Records good except those for period with ice effect Dec. 31, and period of no gage-height record, Sept. 4-10, which are fair. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 12,900 ft³/s, from rating curve extended above 5,700 ft³/s on basis of contracted-opening measurement of peak flow. Minimum discharge, 8.8 ft³/s, result of freezeup. Minimum gage height, 2.19 ft, Dec. 24, 1943. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1000	3,230	7.64	Mar. 21	1030	3,330	7.73
Feb. 4	2000	2,370	6.84	Apr. 17	1300	3,570	7.93
Feb. 18	0530	*4,070	*8.34	Apr. 20	0030	2,780	7.23

Minimum discharge, 24 ft³/s, Oct. 8-16, gage height, 2.48 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	35	39	49	341	844	321	305	442	143	63	36
2	28	37	45	47	317	677	322	536	361	117	68	35
3	27	42	49	56	425	563	284	502	307	101	60	34
4	26	48	48	63	1780	470	340	532	322	91	54	33
5	26	48	47	88	1690	400	418	632	355	87	51	e33
6	26	44	46	174	1030	355	424	542	336	84	48	e33
7	25	41	43	237	772	320	399	479	289	78	46	e32
8	25	40	38	1810	666	447	369	554	255	77	57	e34
9	24	38	40	985	709	1140	918	709	236	104	99	e40
10	24	38	41	569	810	1150	1560	655	366	97	123	45
11	24	38	45	387	893	827	1150	747	566	79	207	47
12	25	38	55	295	1240	650	868	712	490	71	128	45
13	24	38	54	274	1270	536	689	613	438	67	86	44
14	24	39	49	240	970	471	585	516	378	66	69	43
15	24	40	43	226	754	409	509	438	389	63	64	38
16	25	43	36	425	655	363	449	371	358	59	83	37
17	25	43	37	449	1360	333	2190	324	293	57	133	37
18	25	40	38	371	3410	328	1730	280	255	57	141	37
19	26	37	37	308	2030	1290	1490	245	312	55	113	41
20	26	36	36	275	1520	1510	2280	215	342	56	91	50
21	26	39	36	229	1240	2970	1390	233	268	55	79	49
22	26	43	46	199	1010	1800	1000	246	236	57	70	56
23	26	48	66	287	923	1130	785	444	220	60	63	67
24	27	48	70	473	998	847	637	1190	204	68	58	61
25	30	46	70	442	851	670	526	1090	172	69	54	56
26	36	40	76	362	778	570	450	812	149	66	50	52
27	46	38	76	318	783	498	395	1020	133	62	47	49
28	48	38	72	397	904	452	351	1050	121	60	42	47
29	42	37	64	416	---	404	310	754	114	58	40	43
30	37	37	53	431	---	368	286	589	112	56	38	52
31	35	---	e50	390	---	335	---	584	---	58	36	---
TOTAL	888	1217	1545	11272	30129	23127	23425	17919	8819	2278	2361	1306
MEAN	28.6	40.6	49.8	364	1076	746	781	578	294	73.5	76.2	43.5
MAX	48	48	76	1810	3410	2970	2280	1190	566	143	207	67
MIN	24	35	36	47	317	320	284	215	112	55	36	32
CF5M	.13	.18	.22	1.63	4.83	3.35	3.50	2.59	1.32	.33	.34	.20
IN.	.15	.20	.26	1.88	5.03	3.86	3.91	2.99	1.47	.38	.39	.22

e Estimated.

KANAWHA RIVER BASIN

03175500 WOLF CREEK NEAR NARROWS, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1908-1916, 1938-1995, 1997-1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	111	164	309	440	561	655	490	372	209	136	113	78.2
MAX	621	754	850	1128	1469	1789	1728	1059	748	964	512	576
(WY)	1990	1978	1973	1957	1957	1955	1987	1971	1992	1916	1916	1989
MIN	21.4	28.6	31.1	50.0	122	113	120	99.4	49.3	32.9	26.8	27.4
(WY)	1964	1940	1940	1940	1942	1988	1995	1941	1914	1988	1988	1964

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1908 - 1916
1938 - 1995
1997 - 1998

ANNUAL TOTAL	81800	124286	
ANNUAL MEAN	224	341	301
HIGHEST ANNUAL MEAN			475
LOWEST ANNUAL MEAN			126
HIGHEST DAILY MEAN	2950	Mar 4	3410
LOWEST DAILY MEAN	20	aSep 6	24
ANNUAL SEVEN-DAY MINIMUM	21	Sep 3	24
INSTANTANEOUS PEAK FLOW			4070
INSTANTANEOUS PEAK STAGE			8.34
INSTANTANEOUS LOW FLOW			24
ANNUAL RUNOFF (CFSM)	1.00	1.53	1.35
ANNUAL RUNOFF (INCHES)	13.65	20.73	18.36
10 PERCENT EXCEEDS	507	910	689
50 PERCENT EXCEEDS	129	113	155
90 PERCENT EXCEEDS	26	36	39

a Also Sept. 7, 8, 1997.

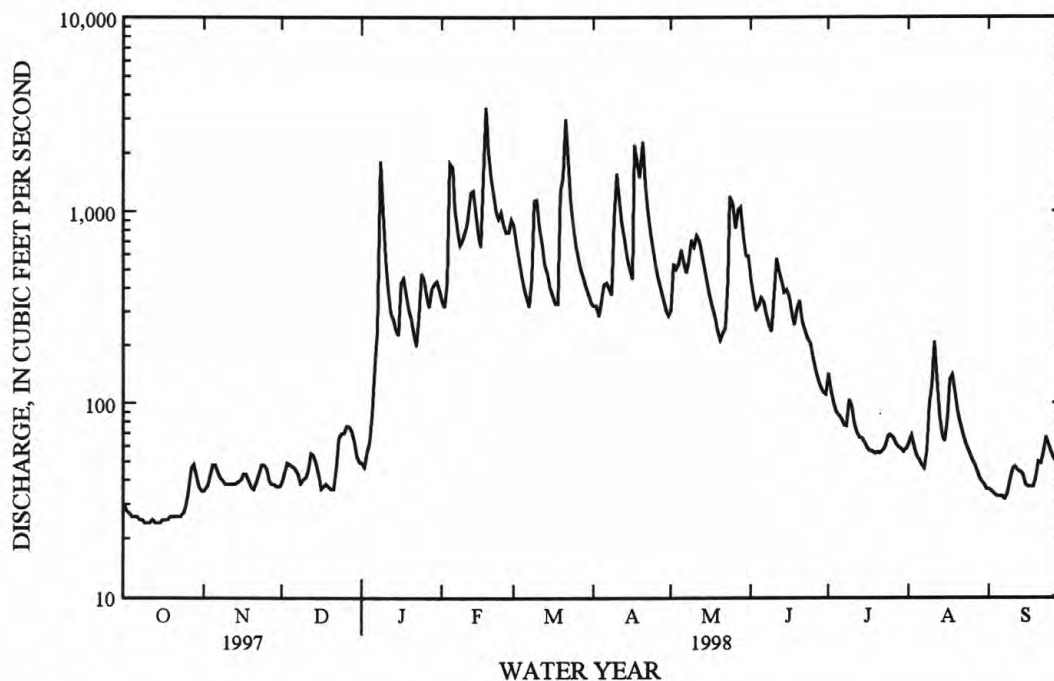
b Also Oct. 10, 11, 13-15, 1997.

c Also Aug. 26, 1995.

d From floodmark in well; floodmark on downstream side of bridge was 13.8 ft.

f Also Oct. 9-16, 1997.

g Result of freezeup.



KANAWHA RIVER BASIN

03176500 NEW RIVER AT GLEN LYN, VA

LOCATION.--Lat 37°22'22", long 80°51'39", Giles County, Hydrologic Unit 05050002, on right bank 90 ft upstream from bridge on U.S. Highway 460 at Glen Lyn, 0.3 mi upstream from East River, and 6.3 mi downstream from Wolf Creek.

DRAINAGE AREA.--3,768 mi².

PERIOD OF RECORD.--August 1927 to current year.

REVISED RECORDS.--WSP 758: Drainage area. WSP 1305: 1928(M), 1930(M).

GAGE.--Water-stage recorder. Datum of gage is 1,490.11 ft above sea level. Aug. 11, 1927, to Oct. 16, 1934, on left bank opposite present site at same datum, and Oct. 17, 1934, to June 16, 1939, on left bank at site 200 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1939 by Claytor Reservoir (station 03169000) 55 mi upstream from station. Water withdrawn by American Electric Power at gage. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 226,000 ft³/s, from rating curve extended above 89,000 ft³/s on basis of slope-area measurement of peak flow. Minimum gage height, 2.10 ft, Sept. 8, 1930. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 56,700 ft³/s, Apr. 20, gage height, 12.93 ft; minimum, 789 ft³/s, Sept. 16, gage height, 2.49 ft; minimum daily, 868 ft³/s, Sept. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1800	2900	1080	2270	6920	7850	4890	8300	7720	3320	2150	962
2	1910	1440	1120	1140	9110	8090	6640	9210	6640	3530	2060	1000
3	1890	1280	1050	1830	11400	8810	6460	9570	7120	5080	2100	1160
4	1550	2730	1070	1190	15200	7220	8350	12600	6820	3560	2030	1670
5	1200	2670	1030	1420	25400	7030	6650	15000	9870	2510	1790	1380
6	1290	2670	1040	3400	24100	7250	4350	15300	8920	3070	1670	1310
7	1350	5390	1020	3210	18300	6090	8220	13100	4220	3070	1550	961
8	1270	5150	962	20300	15800	7420	7990	12500	6030	2930	1740	943
9	1320	1730	1050	35100	14800	7460	7440	15400	6040	2930	4990	870
10	1300	1530	1070	17500	12500	15900	10000	13800	5960	2890	3320	918
11	1280	1580	1100	11600	14300	14800	8880	15800	10700	2850	3020	1190
12	1180	1500	1150	6740	13100	9410	10500	18700	10700	2670	2670	1430
13	1230	1850	1120	5930	12600	9910	5060	16100	9430	2380	2580	950
14	1330	1530	1110	6660	13300	8790	7810	15100	6870	2540	2180	956
15	1480	1640	1100	7370	14200	5310	6080	12500	6120	2530	2530	942
16	1210	1860	1060	9520	10900	4180	6220	8720	7720	2500	2630	868
17	1110	5620	1030	8660	14200	6950	11900	7330	6890	2320	9520	884
18	1100	2930	1020	8170	32800	7310	19300	7770	6280	2520	6620	905
19	1120	1660	1010	4450	30200	13200	20300	6330	5530	2480	4160	1590
20	1150	1430	1020	7120	19900	19200	48700	6030	5580	2170	2760	1520
21	1240	1450	1030	5690	17200	43300	31900	5760	5230	1930	2360	930
22	1600	1670	1090	4480	16100	30000	19500	5750	4920	1870	2070	1030
23	1180	1880	1120	9450	15700	19400	16600	7030	4480	2100	1810	1610
24	1610	1850	1160	4990	14000	16400	12400	10100	3250	2000	1970	1730
25	1260	1260	1270	6220	12300	12700	11500	13500	3820	2050	1940	1130
26	1170	1100	1260	6760	10500	10900	10500	10700	4390	2280	2800	1150
27	1950	1060	1780	9010	9910	9700	7060	10600	4400	1960	1700	1090
28	1790	990	2670	8990	9950	8630	8710	15500	3620	2440	1580	941
29	2250	1070	2380	9350	---	7810	7000	13100	3550	2500	1530	870
30	1980	1050	2760	8980	---	5860	6900	9340	3270	2400	1010	934
31	1860	---	2720	8580	---	8540	---	7300	---	2260	916	---
TOTAL	44960	62470	40452	246080	434690	355420	347810	347840	186090	81640	81756	33824
MEAN	1450	2082	1305	7938	15520	11470	11590	11220	6203	2634	2637	1127
MAX	2250	5620	2760	35100	32800	43300	48700	18700	10700	5080	9520	1730
MIN	1100	990	962	1140	6920	4180	4350	5750	3250	1870	916	868
(†)	-1613	-11495	+11999	-1109	-50	+706	+302	+1109	+151	-302	-151	+454
(‡)	13593	10043	13430	12849	9022	13522	12812	12950	12976	16585	16745	16042
MEAN#	1837	2034	2125	8317	15845	11924	12031	11674	6641	3159	3173	1677
CFSM#	.49	.54	.56	2.21	4.21	3.16	3.19	3.10	1.76	.84	.84	.45
IN.#	.56	.60	.65	2.55	4.38	3.65	3.56	3.57	1.97	.97	.97	.50

CAL YR 1997 TOTAL 1521313 MEAN 4168 MAX 25800 MIN 885 MEAN# 4584 CFSM# 1.22 IN.# 16.52
WTR YR 1998 TOTAL 2263032 MEAN 6200 MAX 48700 MIN 868 MEAN# 6640 CFSM# 1.76 IN.# 23.93

† Total change in contents, equivalent in cubic feet per second, per month, in Claytor Reservoir; provided by American Electric Power.

‡ Total water withdrawal, equivalent in cubic feet per second, per month, by power plant; provided by American Electric Power.

Adjusted for monthly change in contents and water withdrawal.

KANAWHA RIVER BASIN

03176500 NEW RIVER AT GLEN LYN, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 1938, BY WATER YEAR (WY) [UNREGULATED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	4319	4112	4543	6919	6141	7665	7007	5225	3920	3322	3436	3343
MAX	11250	9016	7798	13770	10980	13050	11390	7093	8351	7956	8211	10840
(WY)	1938	1930	1928	1937	1936	1936	1936	1933	1929	1938	1928	1928
MIN	1094	1249	1685	1795	1494	3307	3899	2491	1908	1206	1330	1145
(WY)	1931	1932	1934	1934	1934	1931	1930	1934	1930	1930	1930	1932

SUMMARY STATISTICS WATER YEARS 1928 - 1938

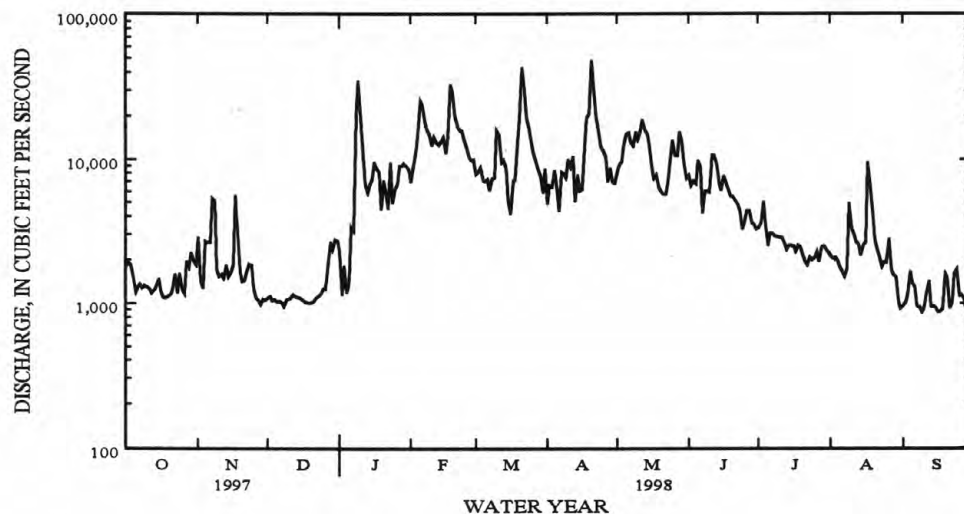
ANNUAL MEAN	4992
HIGHEST ANNUAL MEAN	6859
LOWEST ANNUAL MEAN	3208
HIGHEST DAILY MEAN	57600
LOWEST DAILY MEAN	820
ANNUAL SEVEN-DAY MINIMUM	914
INSTANTANEOUS PEAK FLOW	99000
INSTANTANEOUS PEAK STAGE	16.75
INSTANTANEOUS LOW FLOW	770
ANNUAL RUNOFF (CFSM)	1.32
ANNUAL RUNOFF (INCHES)	17.99
10 PERCENT EXCEEDS	9340
50 PERCENT EXCEEDS	3800
90 PERCENT EXCEEDS	1520

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	3228	3761	4724	6016	7565	8485	7486	6020	4517	3285	3199	2861
MAX	9882	12450	10910	13290	15810	18650	20890	11270	12860	9784	16410	11500
(WY)	1990	1978	1949	1996	1957	1993	1987	1984	1992	1949	1940	1989
MIN	1204	1258	1305	1489	3304	2407	2673	2397	1741	1390	1267	1127
(WY)	1989	1982	1998	1966	1941	1988	1986	1941	1988	1988	1981	1998

SUMMARY STATISTICS FOR 1997 CALENDAR YEAR FOR 1998 WATER YEAR WATER YEARS 1939 - 1998

ANNUAL TOTAL	1521313	2263032	
ANNUAL MEAN	4168	6200	5082
HIGHEST ANNUAL MEAN			7424
LOWEST ANNUAL MEAN			2626
HIGHEST DAILY MEAN	25800	Mar 4	48700
LOWEST DAILY MEAN	885	Aug 28	868
ANNUAL SEVEN-DAY MINIMUM	1030	Dec 3	991
INSTANTANEOUS PEAK FLOW			56700
INSTANTANEOUS PEAK STAGE			12.93
INSTANTANEOUS LOW FLOW			789
ANNUAL RUNOFF (CFSM)	1.11	1.65	1.35
ANNUAL RUNOFF (INCHES)	15.02	22.34	18.32
10 PERCENT EXCEEDS	9020	14500	9760
50 PERCENT EXCEEDS	2870	3400	3710
90 PERCENT EXCEEDS	1120	1070	1560



NATIONAL WATER-QUALITY ASSESSMENT PROGRAM
KANAWHA-NEW RIVER BASIN
SURFACE-WATER QUALITY

03176500 NEW RIVER AT GLEN LYN, VA

LOCATION.--Lat 37°22'22", long 80°51'39", Giles County, Hydrologic Unit 05050002, on right bank 90 ft upstream from bridge on U.S. Highway 460 at Glen Lyn, 0.3 mi upstream from East River, and 6.3 mi downstream from Wolf Creek.

DRAINAGE AREA.--3,768 mi².

REMARKS.--Analyzed for pesticide schedules A and B, only detected compounds reported.

PERIOD OF RECORD.--Water years 1931, 1950, 1952, 1955-56, 1965-1995, 1997-98, discontinued.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1968 to September 1988.

WATER TEMPERATURE: October 1964 to September 1988.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	GAGE HEIGHT (FEET) (00065)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (µS/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED OF (MG/L) (00300)	OXYGEN, DIS- SOLVED CENT SATUR- ATION (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	E. COLI WATER WHOLE TOTAL UREASE (COL / 100 ML) (31633)
OCT 1997												
06...	0930	2.83	1360	192	8.2	20.0	19.9	728	8.1	93	K7	20
NOV												
12...	1145	3.04	1780	189	8.0	8.5	9.5	724	10.4	96	--	K3
DEC												
08...	1200	2.58	995	234	8.5	5.5	3.3	725	13.6	107	K1	K3
JAN 1998												
05...	1115	2.88	1450	193	8.0	9.0	4.6	727	10.4	84	24	K18
08...	1515	8.50	24800	111	7.5	11.5	8.9	702	9.3	87	>600	>800
FEB												
06...	1145	8.31	23700	116	7.4	7.5	4.4	715	12.2	100	430	390
19...	1200	9.24	29200	107	7.4	11.5	5.8	715	11.4	97	250	K120
26...	1245	5.30	8830	112	7.6	12.0	7.1	722	10.2	89	83	K41
MAR												
24...	0945	6.86	16200	116	7.6	7.0	6.4	724	9.2	79	73	93
APR												
22...	0845	7.64	20200	122	7.3	15.5	12.6	719	9.6	96	1000	770
30...	1015	4.66	6080	129	7.9	19.5	14.4	722	8.7	90	43	K18
MAY												
13...	0845	6.82	16000	115	7.6	15.5	15.4	721	7.9	84	220	200
JUN												
09...	0845	4.78	6560	140	7.9	15.5	18.8	715	9.3	106	120	160
JUL												
16...	1000	3.51	2700	159	8.1	26.0	25.4	720	8.3	108	K63	K45
AUG												
05...	0915	3.13	1950	167	8.6	21.5	24.3	726	8.5	107	16	45
SEP												
08...	0845	2.51	910	188	8.3	21.0	23.7	715	8.0	101	23	26

K Results based on colony count outside the acceptance range (non-ideal colony count).

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM
KANAWHA-NEW RIVER BASIN
SURFACE-WATER QUALITY

03176500 NEW RIVER AT GLEN LYN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00904)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA- LITY WAT DIS TOT IT FIELD CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)
OCT 1997												
06...	78	18	17	8.5	6.5	15	.3	1.9	73	<1	60	20
NOV												
12...	76	17	17	8.1	6.8	16	.3	1.9	72	<1	60	20
DEC												
08...	92	29	22	9.1	8.3	16	.4	2.0	78	<1	65	32
JAN 1998												
05...	77	13	17	8.1	7.5	17	.4	1.6	78	<1	64	18
08...	49	9	13	4.1	4.8	17	.3	1.8	49	<1	40	10
FEB												
06...	42	5	11	3.7	4.4	18	.3	1.5	45	<1	37	8.1
19...	42	7	11	3.8	4.0	16	.3	1.3	43	<1	35	6.8
26...	46	11	11	4.1	3.6	14	.2	1.3	42	<1	35	7.7
MAR												
24...	49	9	12	4.3	3.2	12	.2	1.1	48	<1	42	6.6
APR												
22...	52	5	13	4.5	3.1	11	.2	1.2	56	<1	46	6.8
30...	56	9	14	5.1	3.2	11	.2	1.4	57	<1	47	8.6
MAY												
13...	49	7	13	4.4	2.9	11	.2	1.2	52	<1	43	5.7
JUN												
09...	55	7	13	5.4	3.3	11	.2	1.3	59	<1	49	8.1
JUL												
16...	64	13	15	6.6	3.9	11	.2	1.5	63	<1	52	9.8
AUG												
05...	68	15	15	7.2	4.9	13	.3	1.5	65	<1	53	12
SEP												
08...	76	16	17	8.0	5.5	13	.3	1.8	73	<1	60	16
DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)
OCT 1997												
06...	6.3	.11	4.9	114	104	.16	417	<.010	.581	<.015	.21	<.20
NOV												
12...	6.1	.12	6.3	117	105	.16	561	.014	.810	<.020	.15	.13
DEC												
08...	6.9	<.10	3.8	133	129	.18	357	<.010	1.51	<.020	<.10	<.10
JAN 1998												
05...	9.0	<.10	3.7	109	106	.15	427	<.010	.419	<.020	.12	<.10
08...	5.9	<.10	5.5	77	71	.10	5160	<.010	.543	<.020	1.2	.15
FEB												
06...	6.8	<.10	6.7	71	68	.10	4550	<.010	.811	.066	.36	.17
19...	6.4	<.10	6.9	67	64	.09	5280	<.010	.682	.027	.25	.13
26...	5.4	<.10	6.6	76	64	.10	1810	<.010	.724	.038	.18	<.10
MAR												
24...	4.7	<.10	7.0	70	66	.10	3060	.015	.749	<.020	.14	<.10
APR												
22...	3.9	<.10	6.9	73	70	.10	3980	.012	.627	.067	.28	.13
30...	4.8	<.10	6.6	81	75	.11	1330	.026	.717	.038	.16	.14
MAY												
13...	4.0	<.10	7.3	66	66	.09	2850	.011	.585	.036	.19	.12
JUN												
09...	4.3	<.10	7.1	81	75	.11	1430	.010	.603	.026	.14	.12
JUL												
16...	4.6	<.10	6.8	92	82	.13	672	.010	.599	.020	.13	.15
AUG												
05...	6.8	<.10	6.8	92	88	.13	485	<.010	.361	.037	.22	.16
SEP												
08...	5.8	<.10	5.1	--	98	.13	241	<.010	.465	.033	.27	.19

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM
KANAWHA-NEW RIVER BASIN
SURFACE-WATER QUALITY

03176500 NEW RIVER AT GLEN LYN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	NITRO- GEN, TOTAL (MG/L AS N) (00600)	NITRO- GEN DIS- SOLVED (MG/L AS N) (00602)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTH, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHATE, ORTH, DIS- SOLVED (MG/L AS PO4) (00660)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
OCT 1997												
06...	.79	--	<.050	<.050	.015	.05	11	<0.1	<0.1	21	<1	<1
NOV												
12...	.96	.94	<.050	E.043	.060	.18	7.6	<0.1	<0.1	31	<1	<1
DEC												
08...	--	--	E.031	<.050	.032	.10	11	<0.1	0.1	37	<1	<1
JAN 1998												
05...	.54	--	<.050	<.050	.020	.06	10	<0.1	<0.1	23	<1	<1
08...	1.7	.70	.296	<.050	.020	.06	22	--	--	47	--	--
FEB												
06...	1.2	.98	.067	<.050	.026	.08	--	--	--	46	--	--
19...	.93	.81	.055	<.050	.024	.07	18	--	--	36	--	--
26...	.91	--	<.050	<.050	.017	.05	14	<0.1	<0.1	21	1	<1
MAR												
24...	.89	--	<.050	<.050	<.010	--	16	<0.1	<0.1	34	1	<1
APR												
22...	.90	.76	E.030	<.050	.016	.05	20	--	--	41	--	--
30...	.87	.85	<.050	<.050	.022	.07	39	<0.1	--	60	<1	--
MAY												
13...	.77	.71	<.050	<.050	.015	.05	16	<0.1	<0.1	35	2	<1
JUN												
09...	.75	.73	<.050	<.050	.023	.07	10	<0.1	<0.1	35	<1	<1
JUL												
16...	.73	.75	<.050	<.050	.014	.04	13	<0.1	<0.1	16	<1	<1
AUG												
05...	.58	.52	<.050	<.050	.018	.06	16	<0.1	<0.1	23	<1	<1
SEP												
08...	.74	.65	.070	.050	.038	.12	35	<0.1	<0.1	17	<1	<1

E Estimated.

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM
KANAWHA-NEW RIVER BASIN
SURFACE-WATER QUALITY

03176500 NEW RIVER AT GLEN LYN, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE (MG/L AS C) (00689)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	QUALITY ASSUR- ANCE DATA INDICA- TOR CODE *(99111)
OCT 1997												
06...	3.0	1.7	<.20	.012	E.0058	.006	E.0054	.0082	3	11	48	1
NOV												
12...	5.9	1.6	--	.012	E.0141	.007	E.0040	.0091	1	4.8	56	1
DEC												
08...	<1.0	1.5	<.20	.009	E.0053	.006	<.0180	.0067	1	2.7	71	30
JAN 1998												
05...	5.7	1.5	.20	--	--	--	--	--	31	121	82	30
08...	<4.0	3.2	4.8	--	--	--	--	--	240	16100	80	1
FEB												
06...	4.5	4.1	.70	--	--	--	--	--	39	2500	66	1
19...	4.4	1.4	.90	--	--	--	--	--	39	3070	77	1
26...	7.7	1.5	.50	--	--	--	--	--	15	358	96	100
MAR												
24...	4.4	1.4	.70	--	--	--	--	--	16	700	79	1
APR												
22...	5.2	1.9	.60	--	--	--	--	--	19	1040	95	1
30...	14	1.9	.20	--	--	--	--	--	8	131	89	1
MAY												
13...	<4.0	1.4	.50	--	--	--	--	--	13	562	90	1
JUN												
09...	<4.0	1.5	.30	--	--	--	--	--	3	53	93	1
JUL												
16...	<4.0	1.7	.60	--	--	--	--	--	2	15	67	1
AUG												
05...	6.1	1.6	.50	--	--	--	--	--	3	16	40	1
SEP												
08...	<4.0	1.5	.40	--	--	--	--	--	5	12	36	1

E Estimated.

* The values listed under parameter code 99111 indicate the type of quality-assurance sample associated with each environmental sample, where 1 denotes none, 30 denotes a replicate sample, and 100 denotes more than one type of quality-assurance sample.

BIG SANDY RIVER BASIN

03207800 LEVISA FORK AT BIG ROCK, VA

LOCATION.--Lat 37°21'13", long 82°11'45", Buchanan County, Hydrologic Unit 05070202, on left bank at Big Rock, 2,000 ft downstream from Rocklick Creek, and 2,500 ft downstream from bridge on State Highway 645.

DRAINAGE AREA.--297 mi².

PERIOD OF RECORD.--October 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 866.37 ft above sea level.

REMARKS.--Records good except for period of doubtful gage-height record Aug. 3-13, which is fair. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Maximum discharge, 56,000 ft³/s, from rating curve extended above 7,000 ft³/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 29, 1957, reached a stage of about 23.0 ft, information from local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 4	0330	4,560	8.36	Apr. 19	2200	6,380	9.65
Mar. 21	0530	11,100	12.35	May 24	1100	6,430	9.68
Apr. 17	0830	12,900	13.15	June 10	1300	*16,300	*14.56

Minimum discharge, 24 ft³/s, Oct. 17-18, 23-24, gage height, 2.54 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	30	169	59	663	557	525	412	443	365	302	61
2	37	61	123	55	645	487	591	450	379	283	191	59
3	33	70	83	69	1000	452	550	402	430	240	e160	58
4	31	61	74	134	3420	410	951	450	1090	212	e130	55
5	30	51	75	188	1690	402	1220	599	1050	202	e120	52
6	30	45	74	196	1150	385	962	559	888	191	e110	51
7	27	38	63	199	878	392	747	516	654	178	e103	51
8	30	37	57	901	921	419	646	946	514	294	e98	52
9	31	41	55	737	1060	529	771	986	475	444	e130	54
10	31	42	84	393	1260	596	1070	755	6990	290	e450	53
11	36	44	136	275	1450	561	1180	754	2820	228	369	53
12	36	41	111	217	2260	495	1010	683	1470	193	e185	51
13	30	38	87	194	1460	438	797	582	1170	176	e132	49
14	27	46	76	161	1020	411	682	485	928	188	127	48
15	27	50	64	160	762	373	587	410	873	193	129	46
16	27	47	52	212	651	372	600	356	832	172	204	44
17	26	43	55	223	832	420	6380	321	659	165	623	41
18	27	36	49	228	1220	683	2360	284	528	156	364	63
19	28	33	45	226	922	2760	3900	257	457	142	237	177
20	29	32	43	233	793	2280	3780	250	437	138	177	58
21	29	45	43	217	730	6520	1820	500	377	135	142	52
22	27	122	57	208	675	2150	1300	337	347	128	121	103
23	25	104	59	244	870	1340	1020	1860	518	165	109	86
24	28	72	56	299	1670	1000	833	3940	484	281	101	58
25	32	55	59	343	1280	795	694	1830	417	207	90	48
26	46	49	56	315	936	684	608	1350	349	173	82	43
27	56	45	62	331	746	605	542	1140	309	156	77	41
28	44	43	71	802	622	536	477	1060	279	142	73	41
29	34	41	65	979	---	477	431	808	259	132	66	42
30	31	62	65	1150	---	430	407	614	281	122	70	149
31	28	---	64	885	---	398	---	527	---	317	68	---
TOTAL	997	1524	2232	10833	31586	28357	37441	24423	26707	6408	5340	1839
MEAN	32.2	50.8	72.0	349	1128	915	1248	788	890	207	172	61.3
MAX	56	122	169	1150	3420	6520	6380	3940	6990	444	623	177
MIN	25	30	43	55	622	372	407	250	259	122	66	41
CFSM	.11	.17	.24	1.18	3.80	3.08	4.20	2.65	3.00	.70	.58	.21
IN.	.12	.19	.28	1.36	3.96	3.55	4.69	3.06	3.35	.80	.67	.23

e Estimated.

BIG SANDY RIVER BASIN

03207800 LEVISA FORK AT BIG ROCK, VA--Continued

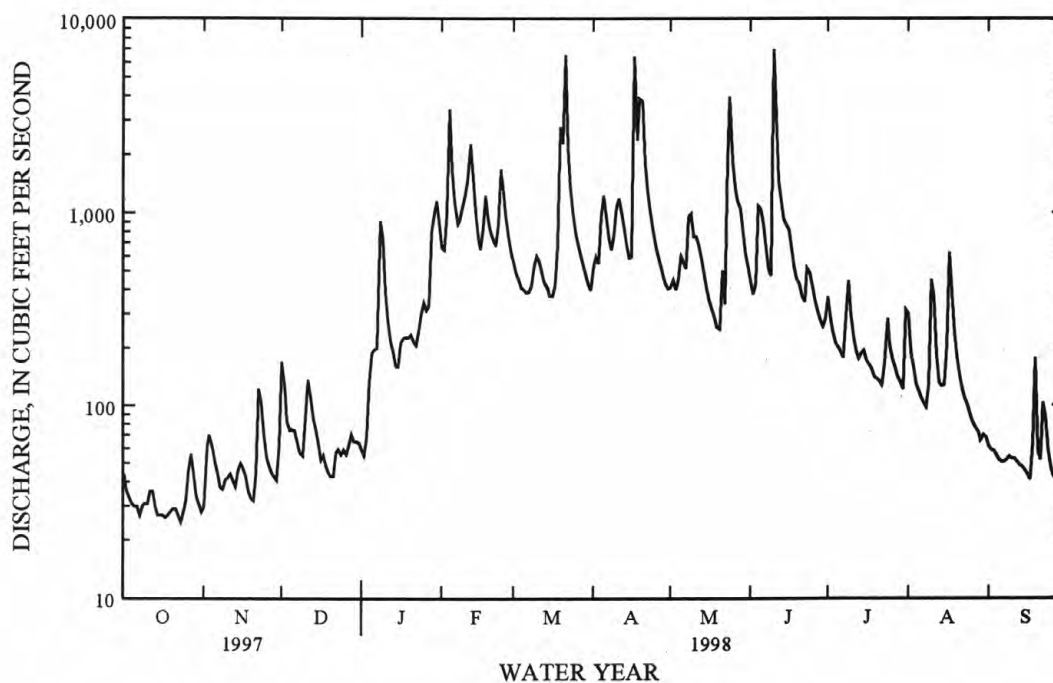
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	133	214	373	572	697	762	705	535	282	153	119	83.7
MAX	692	911	1201	1596	1451	2107	2355	1323	1135	630	325	273
(WY)	1990	1978	1973	1974	1994	1975	1987	1984	1979	1979	1971	1989
MIN	6.85	19.3	72.0	82.7	168	139	154	113	40.2	29.1	33.3	12.6
(WY)	1970	1970	1998	1981	1968	1988	1986	1976	1970	1970	1969	1969

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1968 - 1998	
ANNUAL TOTAL	114391		177687		384	
ANNUAL MEAN	313		487		606	
HIGHEST ANNUAL MEAN					121	
LOWEST ANNUAL MEAN					1979	
HIGHEST DAILY MEAN	4660		6990		24800	
LOWEST DAILY MEAN	25		25		5.1	
ANNUAL SEVEN-DAY MINIMUM	27		27		5.5	
INSTANTANEOUS PEAK FLOW			16300		56000	
INSTANTANEOUS PEAK STAGE			14.56		27.38	
INSTANTANEOUS LOW FLOW			24		5.0	
ANNUAL RUNOFF (CFSM)	1.06		1.64		1.29	
ANNUAL RUNOFF (INCHES)	14.33		22.26		17.57	
10 PERCENT EXCEEDS	688		1060		841	
50 PERCENT EXCEEDS	197		217		186	
90 PERCENT EXCEEDS	37		41		37	

a Also Oct. 18, 23, 24, 1997.

b Also Oct. 13, 14, 17-20, 1969.



BIG SANDY RIVER BASIN

03208500 RUSSELL FORK AT HAYSI, VA

LOCATION.--Lat 37°12'25", long 82°17'45", Dickenson County, Hydrologic Unit 05070202, on right bank 180 ft downstream from bridge on State Highway 63, at Haysi, and 700 ft downstream from McClure River.

DRAINAGE AREA.--286 mi².

PERIOD OF RECORD.--July 1926 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 1003: 1926-43. WSP 1385: 1928(M), 1929, 1933(M), 1935(M), 1937-38(M).

GAGE.--Water-stage recorder. Datum of gage is 1,237.61 ft above sea level. Prior to Dec. 21, 1939, nonrecording gage at highway bridge 180 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Maximum discharge, 59,000 ft³/s, from rating curve extended above 32,000 ft³/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 4	0130	6,860	8.27	Apr. 17	0830	*24,300	*17.21
Mar. 19	0230	5,970	7.72	Apr. 19	2000	10,000	10.18
Mar. 21	0500	7,980	8.93	June 10	1300	12,700	11.65

Minimum discharge, 21 ft³/s, Oct. 24, gage height, 1.99 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	26	151	48	815	438	434	353	222	331	268	46
2	34	36	128	53	772	390	498	501	188	217	131	44
3	30	51	80	51	1480	369	482	435	181	175	97	43
4	28	49	65	87	4570	333	2050	557	271	153	81	43
5	27	42	62	134	1870	317	1960	612	393	148	71	40
6	26	37	56	148	1120	302	1130	547	424	131	65	38
7	25	34	47	176	881	300	787	520	312	119	60	41
8	23	34	42	1190	1040	325	633	1720	236	212	56	43
9	22	34	42	805	1170	536	966	1650	238	289	76	39
10	24	36	69	416	1430	713	1220	1260	6020	176	167	36
11	27	36	124	268	1720	579	1080	2090	2690	135	135	34
12	28	34	98	196	2520	482	871	1410	1240	115	83	34
13	27	30	75	152	1410	411	689	890	1030	104	68	34
14	26	34	62	123	934	379	590	625	825	204	64	33
15	25	38	51	117	694	332	518	472	714	140	72	31
16	25	37	44	170	597	334	1580	378	534	119	111	30
17	25	34	41	184	788	437	11700	311	411	302	1290	29
18	25	29	39	172	1160	1000	2820	251	304	164	502	29
19	25	26	36	174	892	3950	6340	215	278	122	225	29
20	25	25	35	203	732	3200	4820	194	271	108	130	29
21	24	39	34	207	623	5630	1940	334	216	96	100	33
22	28	110	45	195	543	2050	1260	241	210	153	86	39
23	22	90	49	292	615	1170	938	683	1310	151	77	37
24	22	60	45	519	845	821	747	1250	871	140	70	34
25	27	45	46	533	810	639	604	859	1030	107	65	32
26	40	39	47	409	672	534	519	651	567	99	61	30
27	60	36	50	363	583	467	455	489	385	85	58	29
28	47	34	55	818	496	424	388	399	285	79	54	28
29	34	31	54	1210	---	383	335	312	227	73	53	96
30	28	35	55	1500	---	351	317	256	267	67	53	109
31	26	---	54	1110	---	325	---	275	---	369	49	---
TOTAL	896	1221	1881	12023	31782	27921	48671	20740	22150	4883	4478	1192
MEAN	28.9	40.7	60.7	388	1135	901	1622	669	738	158	144	39.7
MAX	60	110	151	1500	4570	5630	11700	2090	6020	369	1290	109
MIN	22	25	34	48	496	300	317	194	181	67	49	28
CFSM	.10	.14	.21	1.36	3.97	3.15	5.67	2.34	2.58	.55	.51	.14
IN.	.12	.16	.24	1.56	4.13	3.63	6.33	2.70	2.88	.64	.58	.16

BIG SANDY RIVER BASIN

03208500 RUSSELL FORK AT HAYSI, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 1998, BY WATER YEAR (WY)

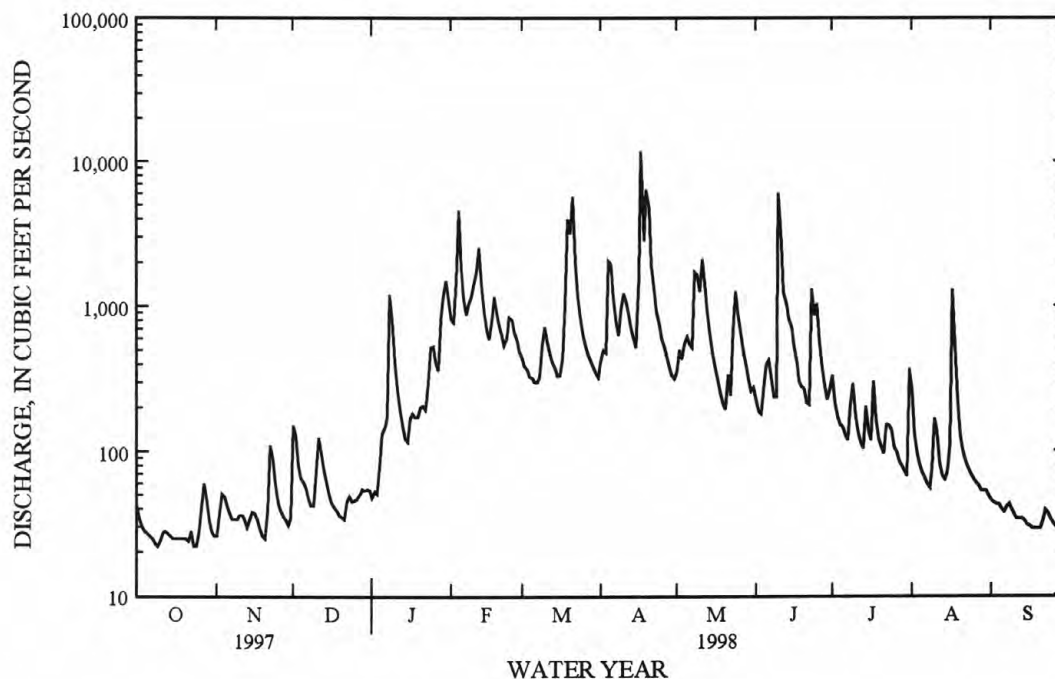
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	88.4	166	334	518	656	777	588	422	188	149	120	64.0
MAX	838	961	1326	2083	1797	2331	1994	1429	738	566	561	608
(WY)	1990	1978	1927	1937	1939	1955	1977	1958	1998	1938	1966	1989
MIN	.98	2.46	11.1	19.6	57.7	168	64.0	63.4	21.6	3.03	8.81	2.07
(WY)	1954	1954	1954	1940	1941	1988	1942	1941	1966	1930	1953	1943

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1926 - 1998	
ANNUAL TOTAL	115202		177838			
ANNUAL MEAN	316		487		338	
HIGHEST ANNUAL MEAN					568	
LOWEST ANNUAL MEAN					100	
HIGHEST DAILY MEAN	8060		11700		30600	
LOWEST DAILY MEAN	22		22		.20	
ANNUAL SEVEN-DAY MINIMUM	24		24		.56	
INSTANTANEOUS PEAK FLOW			24300		59000	
INSTANTANEOUS PEAK STAGE			17.21		28.24	
INSTANTANEOUS LOW FLOW			21		b.20	
ANNUAL RUNOFF (CFSM)	1.10		1.70		1.18	
ANNUAL RUNOFF (INCHES)	14.98		23.13		16.05	
10 PERCENT EXCEEDS	632		1170		742	
50 PERCENT EXCEEDS	184		174		132	
90 PERCENT EXCEEDS	30		30		15	

a Also Oct. 23, 24, 1997.

b Observed.

c Also June 28, 1936.



BIG SANDY RIVER BASIN

03208680 NORTH FORK OF POUND LAKE AT POUND, VA

LOCATION.--Lat 37°07'27", long 82°37'52", Wise County, Hydrologic Unit 05070202, in control tower of North Fork Pound Dam at Pound, 1,200 ft upstream from Stacy Branch, and 1.2 mi upstream from South Fork Pound River.

DRAINAGE AREA.--17.2 mi².

PERIOD OF RECORD.--July 1966 to current year. Published as "North Fork Pound River Lake" prior to October 1993.

GAGE.--Water-stage recorder. Datum of gage is at sea level (U.S. Army Corps of Engineers bench mark). Prior to Aug. 29, 1966, nonrecording gage at same site and datum.

REMARKS.--Lake is formed by rockfill dam. Spillway with crest at elevation 1,644.0 ft is in a saddle 350 ft southeast of dam. Except during major floods, all discharge will be through a diversion tunnel, the invert of the entrance of which is at elevation 1,556.5 ft. Storage began in September 1964 during construction with peak discharge affected thereafter; initial filling for regular operation started July 13, 1966. Total capacity at elevation 1,644.0 ft, top of spillway, is 11,290 acre-ft of which 8,110 acre-ft is flood-control storage for summer operations between elevations 1,611.0 ft, top of summer conservation pool, and 1,644.0 ft; an additional 1,290 acre-ft is available for flood control during the period December to March between elevations 1,601.0 ft, top of winter conservation pool, and 1,611.0 ft; contents at established minimum pool, 1,601.0 ft, is 1,900 acre-ft; dead storage is 7 acre-ft below elevation 1,556.5 ft. Figures given herein represent total contents. Lake is used for flood control, low-water augmentation for water-quality control, and recreation. U.S. Army Corps of Engineers satellite precipitation and elevation telemeter at station.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 6,920 acre-ft, Apr. 8, 1977, elevation, 1,629.41 ft; minimum (after initial filling for regular operation), 1,660 acre-ft, Jan. 23, 1969, elevation, 1,598.62 ft.

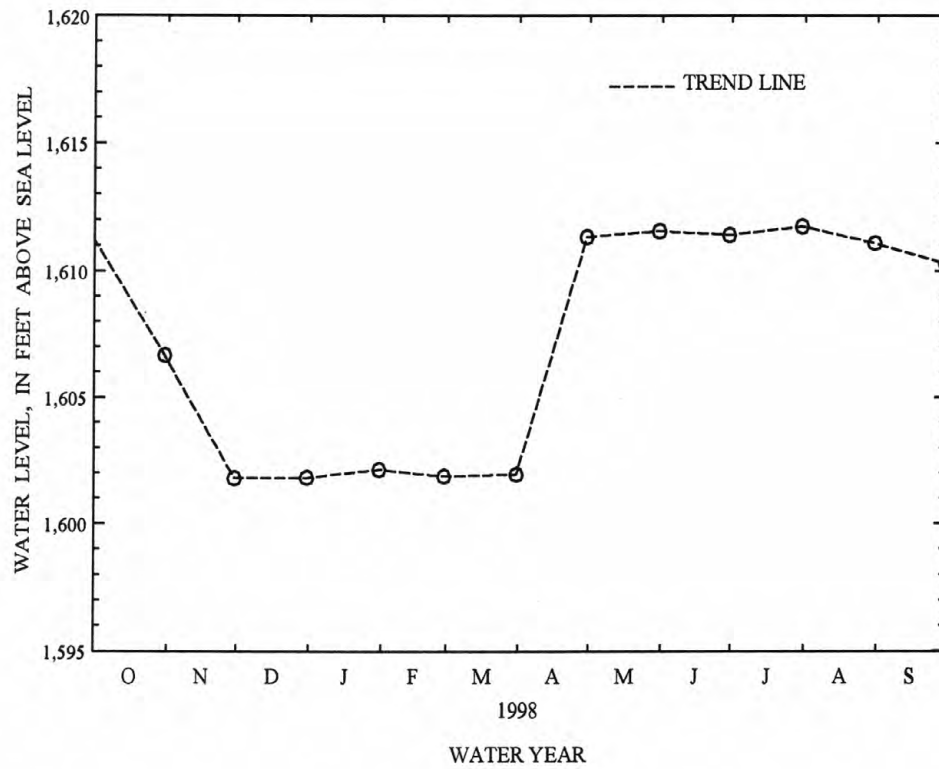
EXTREMES FOR CURRENT YEAR.--Maximum contents, 5,700 acre-ft, Apr. 20, elevation, 1,624.32 ft; minimum, 1,950 acre-ft, Feb. 2, elevation, 1,601.54 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	1,611.35	3,240	-
Oct. 31.....	1,606.67	2,570	-670
Nov. 30.....	1,601.79	1,980	-590
Dec. 31.....	1,601.81	1,980	0
CAL YR 1997.....			-70
Jan. 31.....	1,602.13	2,020	+40
Feb. 28.....	1,601.86	1,990	-30
Mar. 31.....	1,601.94	2,000	+10
Apr. 30.....	1,611.34	3,240	+1,240
May 31.....	1,611.57	3,270	+30
June 30.....	1,611.41	3,250	-20
July 31.....	1,611.74	3,300	+50
Aug. 31.....	1,611.09	3,200	-100
Sept. 30.....	1,610.28	3,070	-130
WTR YR 1998.....			-170

BIG SANDY RIVER BASIN

03208680 NORTH FORK OF POUND LAKE AT POUND, VA--Continued



BIG SANDY RIVER BASIN

03208950 CRANES NEST RIVER NEAR CLINTWOOD, VA

LOCATION.--Lat 37°07'26", long 82°26'20", Dickenson County, Hydrologic Unit 05070202, on left bank on State Highway 649, 500 ft downstream from Clinchfield Railway bridge, 1,000 ft downstream from Rush Creek, and 2.1 mi southeast of Clintwood.

DRAINAGE AREA.--66.5 mi².

PERIOD OF RECORD.--October 1963 to current year.

REVISED RECORDS.--WDR VA-77-1: 1967(M). WDR VA-92-1: 1991(P).

GAGE.--Water-stage recorder. Datum of gage is 1,440.30 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Maximum discharge, 18,000 ft³/s, from rating curve extended above 3,100 ft³/s on basis of slope-area measurement of peak flow. Minimum gage height, 0.91 ft, Sept. 28, 1964. Several measurements of water temperature were made during the year. Water-quality record for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 29, 1957, reached a stage of about 20.0 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 18	2400	1,160	7.27	Apr. 19	1600	2,110	10.00
Apr. 17	0730	*3,410	*12.90				

Minimum discharge, 4.9 ft³/s, Dec. 19, gage height, 1.47 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	7.7	31	13	137	77	87	113	52	70	67	13
2	9.0	11	24	16	123	70	85	141	46	54	42	12
3	8.6	14	16	17	256	67	80	119	45	46	32	12
4	8.4	13	14	32	583	63	431	134	85	42	26	12
5	8.2	13	13	31	285	59	312	130	119	40	23	11
6	7.8	11	12	29	194	53	192	115	117	36	22	10
7	7.4	11	10	56	168	52	142	125	85	34	20	10
8	7.7	11	9.3	384	212	58	121	255	67	48	20	9.7
9	7.6	13	11	136	233	90	222	275	79	69	27	10
10	7.8	12	32	76	264	98	245	277	498	43	29	9.6
11	8.5	11	36	53	327	84	213	393	384	36	22	9.2
12	8.7	11	23	43	424	74	169	248	213	32	19	8.8
13	9.0	9.9	18	37	255	67	137	176	225	32	18	8.5
14	9.5	13	16	32	179	65	122	138	182	39	22	8.3
15	12	19	13	32	136	59	109	113	158	33	33	7.8
16	10	15	14	41	118	67	289	97	118	42	56	7.7
17	9.9	13	14	39	170	85	1860	85	101	52	194	7.5
18	9.6	11	12	37	227	240	494	74	79	37	95	7.4
19	9.7	10	12	40	176	602	1530	67	74	32	52	11
20	9.7	9.8	11	45	147	457	878	62	67	38	35	8.0
21	9.1	18	11	42	127	477	409	79	60	30	28	7.6
22	8.8	39	14	40	110	285	295	66	67	41	24	11
23	8.8	24	15	74	113	194	238	220	247	36	21	11
24	9.2	15	13	100	114	147	197	169	287	35	20	9.3
25	12	11	15	85	105	119	166	114	329	31	18	8.6
26	17	9.3	14	67	98	102	145	107	156	28	17	8.3
27	22	8.8	15	56	92	89	129	92	104	24	16	7.7
28	13	8.4	17	106	83	81	116	80	78	23	15	7.6
29	9.3	8.0	15	152	---	73	104	68	65	21	14	11
30	8.2	9.7	16	219	---	67	101	60	70	20	14	25
31	7.8	---	15	177	---	63	---	55	---	118	13	---
TOTAL	304.3	390.6	501.3	2307	5456	4184	9618	4247	4257	1262	1054	300.6
MEAN	9.82	13.0	16.2	74.4	195	135	321	137	142	40.7	34.0	10.0
MAX	22	39	36	384	583	602	1860	393	498	118	194	25
MIN	7.4	7.7	9.3	13	83	52	80	55	45	20	13	7.4
CFSM	.15	.20	.24	1.12	2.93	2.03	4.82	2.06	2.13	.61	.51	.15
IN.	.17	.22	.28	1.29	3.05	2.34	5.38	2.38	2.38	.71	.59	.17

BIG SANDY RIVER BASIN

03208950 CRANES NEST RIVER NEAR CLINTWOOD, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	30.5	47.9	84.4	119	146	169	139	98.4	53.0	31.6	31.6	23.8
MAX	191	164	228	338	367	434	498	262	236	75.7	142	116
(WY)	1990	1978	1992	1972	1994	1975	1977	1984	1989	1991	1966	1982
MIN	1.67	6.33	4.41	5.98	36.6	37.8	28.1	21.2	7.40	5.50	10.0	3.95
(WY)	1964	1966	1966	1966	1968	1988	1986	1976	1966	1970	1964	1965

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

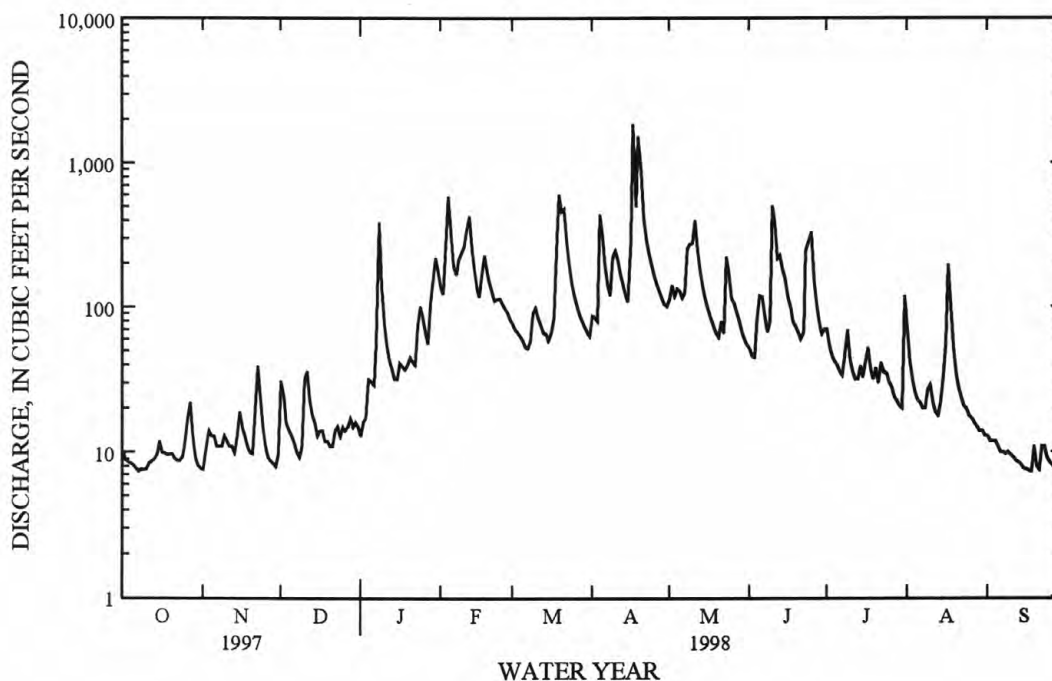
WATER YEARS 1964 - 1998

ANNUAL TOTAL	22769.8	33881.8	
ANNUAL MEAN	62.4	92.8	80.8
HIGHEST ANNUAL MEAN			126
LOWEST ANNUAL MEAN			34.7
HIGHEST DAILY MEAN	1570	Mar 3	8000
LOWEST DAILY MEAN	7.3	aSep 6	.70
ANNUAL SEVEN-DAY MINIMUM	7.6	Sep 2	.93
INSTANTANEOUS PEAK FLOW			3410
INSTANTANEOUS PEAK STAGE			12.90
INSTANTANEOUS LOW FLOW			4.9
ANNUAL RUNOFF (CFSM)	.94	1.40	1.22
ANNUAL RUNOFF (INCHES)	12.74	18.95	16.51
10 PERCENT EXCEEDS	132	226	175
50 PERCENT EXCEEDS	31	42	39
90 PERCENT EXCEEDS	9.0	9.3	8.1

a Also Sept. 7, 8, 1997.

b Also Sept. 18, 1998.

c From floodmark.



BIG SANDY RIVER BASIN

03208990 JOHN W. FLANNAGAN RESERVOIR NEAR HAYSI, VA

LOCATION.--Lat 37°14'00", long 82°20'56", Dickenson County, Hydrologic Unit 05070202, in control tower of John W. Flannagan Dam on Pound River, 1.3 mi upstream from Blacklog Branch, and 3.7 mi northwest of Haysi.

DRAINAGE AREA.--221 mi².

PERIOD OF RECORD.--September 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is at sea level (U.S. Army Corps of Engineers bench mark). Prior to Mar. 31, 1965, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by rockfill dam. Spillway with crest at elevation 1,410.0 ft is in a saddle 0.3 mi upstream from dam and is equipped with 6 radial gates 36 ft high by 42 ft wide. Except during major floods, all discharge will be through a diversion tunnel, the invert of the entrance of which is at elevation 1,230.0 ft. Storage began in September 1961 during construction with peak discharge affected thereafter; initial filling for regular operations started in March 1965. Total capacity at elevation 1,446.0 ft, top of gates, is 145,700 acre-ft of which 78,600 acre-ft is controlled flood storage for summer operations between elevations 1,396.0 ft, top of summer conservation pool, and 1,446.0 ft; an additional 16,500 acre-ft is available for flood control during the period December to March between elevations 1,380.0 ft, top of winter conservation pool, and 1,396.0 ft; contents at established minimum pool, 1,314.0 ft, is 12,000 acre-ft; dead storage is 300 acre-ft below elevation 1,230.0 ft. Figures given herein represent total contents. Reservoir is used for flood control, low-water augmentation for water-quality control, and recreation. U.S. Army Corps of Engineers satellite precipitation and elevation telemeter at station.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 116,500 acre-ft, Apr. 7, 1977, elevation, 1,430.80 ft; minimum (after initial filling for regular operation), 11,800 acre-ft, Apr. 1, 1965, elevation, 1,313.42 ft.

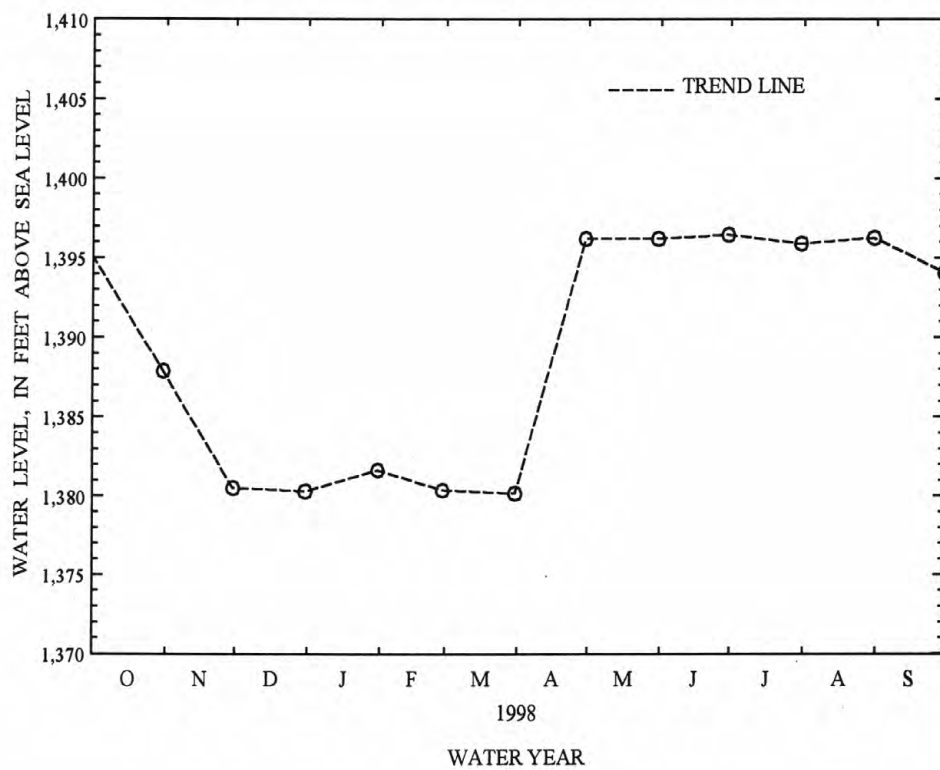
EXTREMES FOR CURRENT YEAR.--Maximum contents, 93,200 acre-ft, Apr. 20, elevation, 1,416.13 ft; minimum, 50,500 acre-ft, Feb. 7, elevation, 1,379.95 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	1,395.28	66,300	-
Oct. 31.....	1,387.90	58,300	-8,000
Nov. 30.....	1,380.52	51,100	-7,200
Dec. 31.....	1,380.31	50,900	-200
CAL YR 1997.....			0
Jan. 31.....	1,381.66	52,100	+1,200
Feb. 28.....	1,380.37	50,900	-1,200
Mar. 31.....	1,380.17	50,700	-200
Apr. 30.....	1,396.21	67,300	+16,600
May 31.....	1,396.21	67,300	0
June 30.....	1,396.46	67,600	+300
July 31.....	1,395.90	67,000	-600
Aug. 31.....	1,396.27	67,400	+400
Sept. 30.....	1,394.07	64,900	-2,500
WTR YR 1998.....			-1,400

BIG SANDY RIVER BASIN

03208990 JOHN W. FLANNAGAN RESERVOIR NEAR HAYSI, VA--Continued



BIG SANDY RIVER BASIN

03209000 POUND RIVER BELOW FLANNAGAN DAM, NEAR HAYSI, VA

LOCATION.--Lat 37°14'13", long 82°20'36", Dickenson County, Hydrologic Unit 05070202, on right bank 1,100 ft upstream from Blacklog Branch, 1,700 ft downstream from John W. Flannagan Dam, 1.4 mi upstream from mouth, and 3.4 mi northwest of Haysi.

DRAINAGE AREA.--221 mi².

PERIOD OF RECORD.--July 1926 to current year. Monthly discharge only for some periods, published in WSP 1305. Prior to October 1963, published as Pound River near Haysi.

REVISED RECORDS.--WSP 953: 1940-41. WSP 1003: 1942, 1943(P). WSP 1275: 1927-30, 1931(M), 1932-39.

GAGE.--Water-stage recorder. Datum of gage is 1,200.00 ft above sea level (U.S. Army Corps of Engineers bench mark). Prior to Dec. 20, 1939, nonrecording gage at site 3.8 mi upstream at different datum. Dec. 20, 1939, to Sept. 30, 1963, water-stage recorder at site 4.6 mi upstream at datum 79.91 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since March 1965 by John W. Flannagan Reservoir (station 03208990) 1,700 ft upstream and since August 1966 by North Fork of Pound Lake (station 03208680) 33 mi upstream. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Maximum discharge, about 30,000 ft³/s, from rating curve extended above 1,750 ft³/s. Maximum discharge since construction of John W. Flannagan Dam in 1965, 4,540 ft³/s. Minimum gage height since construction of John W. Flannagan Dam, 0.91 ft, Sept. 26, 1996, when gates in Flannagan Dam were closed for inspection. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,020 ft³/s, Apr. 22, gage height, 7.78 ft; minimum, 32 ft³/s, Oct. 18-19, gage height, 2.04 ft; minimum daily, 39 ft³/s, Oct. 1-3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	39	77	179	74	648	370	51	301	150	244	360	46		
2	39	79	151	74	733	221	50	339	153	244	152	45		
3	39	131	98	74	547	145	51	495	154	189	62	46		
4	252	302	92	74	1230	147	51	462	222	63	62	54		
5	282	391	93	123	1740	209	51	420	588	63	107	63		
6	152	180	94	212	1150	258	51	424	463	95	53	63		
7	204	72	94	212	579	258	51	425	282	141	53	63		
8	109	72	78	655	313	257	52	1110	231	141	53	64		
9	48	72	53	745	813	258	53	1280	231	190	71	65		
10	49	159	53	490	1060	391	54	1090	137	268	141	65		
11	257	201	98	490	902	389	54	1360	1620	178	139	65		
12	255	200	140	278	1170	309	54	1240	2460	68	133	65		
13	45	200	69	166	673	314	54	682	981	69	98	64		
14	114	200	70	142	293	279	54	417	937	68	60	63		
15	148	200	70	124	310	279	168	420	700	108	60	68		
16	148	200	72	125	347	250	602	372	447	129	156	75		
17	101	200	72	91	637	203	585	186	281	129	376	76		
18	269	123	72	138	650	250	2230	139	244	129	493	75		
19	260	87	72	138	582	1420	694	163	227	129	242	74		
20	108	88	72	367	419	1620	1800	206	151	129	72	74		
21	169	131	72	289	279	975	2980	206	148	129	72	74		
22	174	200	72	189	281	975	3640	208	228	88	72	74		
23	142	210	72	189	485	1680	3950	478	456	262	72	62		
24	143	302	72	189	478	1570	3290	1290	556	194	72	56		
25	400	256	72	246	312	703	1720	654	932	64	72	69		
26	382	197	73	456	336	411	1020	362	929	63	55	75		
27	130	197	74	330	362	339	1220	441	275	64	50	75		
28	145	173	74	577	369	339	1100	376	268	65	50	75		
29	103	138	74	936	---	339	437	360	155	65	50	76		
30	75	138	74	734	---	280	437	170	133	65	50	58		
31	75	---	74	430	---	176	---	150	---	414	50	---		
TOTAL	4856	5176	2595	9357	17698	15614	26604	16226	14739	4247	3608	1967		
MEAN	157	173	83.7	302	632	504	887	523	491	137	116	65.6		
MAX	400	391	179	936	1740	1680	3950	1360	2460	414	493	76		
MIN	39	72	53	74	279	145	50	139	133	63	50	45		
(†)	-4371	-3927	-101	+625	-620	-96	+8994	+15	+141	-277	+152	-1326		
MEAN†	15.6	41.6	80.5	322	610	501	1187	524	496	128	121	21.4		
CFSM†	.07	.19	.36	1.46	2.76	2.27	5.37	2.37	2.24	.58	.55	.10		
IN.†	.08	.21	.42	1.68	2.88	2.61	5.99	2.73	2.50	.67	.63	.11		
CAL YR 1997	TOTAL	83027	MEAN	227	MAX	3850	MIN	27	MEAN†	227	CFSM†	1.03	IN.†	13.95
WTR YR 1998	TOTAL	122687	MEAN	336	MAX	3950	MIN	39	MEAN†	334	CFSM†	1.51	IN.†	20.52

† Total change in contents, equivalent in cubic feet per second, per month, in North Fork of Pound Lake and John W. Flannagan Reservoir; provided by U. S. Army Corps of Engineers.

‡ Adjusted for monthly change in contents.

BIG SANDY RIVER BASIN

03209000 POUND RIVER BELOW FLANNAGAN DAM, NEAR HAYSI, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 1964, BY WATER YEAR (WY) [UNREGULATED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	48.6	132	272	431	534	640	440	287	126	146	93.5	38.8
MAX	362	678	1064	1242	1118	1968	974	892	392	692	400	211
(WY)	1938	1930	1927	1937	1957	1963	1927	1958	1938	1942	1942	1928
MIN	1.00	2.33	8.34	16.0	35.0	226	57.7	45.1	11.3	3.07	4.22	.51
(WY)	1954	1940	1940	1940	1941	1931	1942	1941	1941	1930	1932	1932

SUMMARY STATISTICS

WATER YEARS 1926 - 1964

ANNUAL MEAN	265
HIGHEST ANNUAL MEAN	420
LOWEST ANNUAL MEAN	76.6
HIGHEST DAILY MEAN	16100
LOWEST DAILY MEAN	.10
ANNUAL SEVEN-DAY MINIMUM	.10
INSTANTANEOUS PEAK FLOW	30000
INSTANTANEOUS PEAK STAGE	b16.5
INSTANTANEOUS LOW FLOW	<.10
ANNUAL RUNOFF (CFSM)	1.20
ANNUAL RUNOFF (INCHES)	16.28
10 PERCENT EXCEEDS	630
50 PERCENT EXCEEDS	94
90 PERCENT EXCEEDS	8.0

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1998, BY WATER YEAR (WY) [REGULATED, UNADJUSTED]

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	241	307	338	448	507	535	299	361	187	112	104	96.3
MAX	927	679	1003	1171	1343	1181	1004	1074	756	320	245	405
(WY)	1990	1978	1992	1972	1994	1975	1977	1975	1989	1989	1994	1982
MIN	48.9	24.8	16.1	31.8	92.3	110	46.1	47.4	9.66	5.49	7.13	32.5
(WY)	1989	1966	1966	1966	1992	1988	1995	1982	1966	1965	1965	1967

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1965 - 1998

ANNUAL TOTAL	83027	122687	
ANNUAL MEAN	227	336	294
HIGHEST ANNUAL MEAN			481
LOWEST ANNUAL MEAN			120
HIGHEST DAILY MEAN	3850	Mar 7	4410
LOWEST DAILY MEAN	27	Aug 15	2.3
ANNUAL SEVEN-DAY MINIMUM	33	Aug 13	2.5
INSTANTANEOUS PEAK FLOW			4020
INSTANTANEOUS PEAK STAGE			7.78
INSTANTANEOUS LOW FLOW			32
ANNUAL RUNOFF (CFSM)	1.03	1.52	1.33
ANNUAL RUNOFF (INCHES)	13.98	20.65	18.06
10 PERCENT EXCEEDS	419	772	662
50 PERCENT EXCEEDS	131	169	145
90 PERCENT EXCEEDS	39	57	46

< Less than.

a Also Sept. 10, 12-22, 28-30, 1932.

b From floodmarks, site and datum then in use.

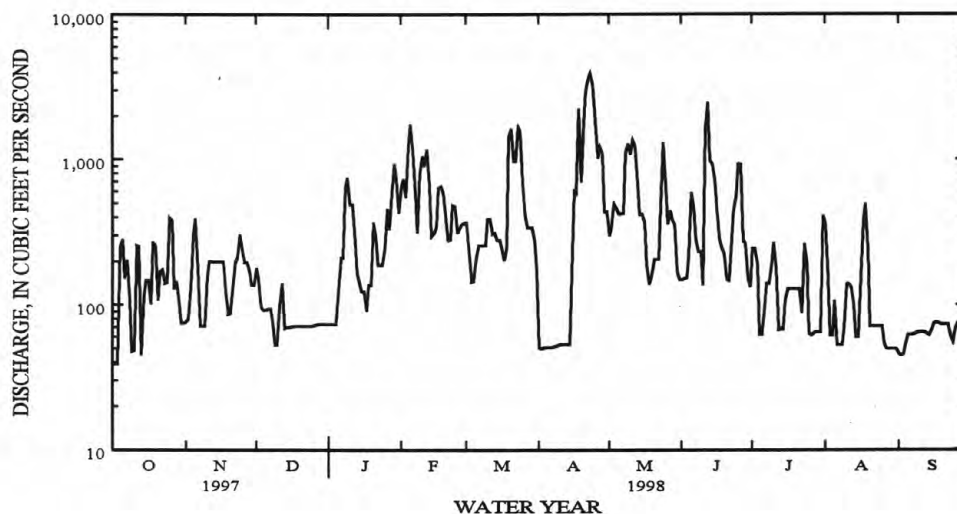
c On several days in September 1932.

d Also Oct. 2, 3, 1997.

f Also June 27-29, 1965.

g Also Oct. 19, 1997.

h Also Aug. 26, 1986.



BIG SANDY RIVER BASIN

03209500 LEVISA FORK AT PIKEVILLE, KY

LOCATION.--Lat 37°27'51", long 82°31'35", Pike County, Hydrologic Unit 05070203, on right bank 20 ft downstream from bridge on State Highway 1426, 0.75 mi downstream from Lanks Branch, 1.0 mi south of Pikeville, 1.5 mi upstream from Harolds Branch, and at mile 117.3.

DRAINAGE AREA.--1,232 mi².

PERIOD OF RECORD.--October 1937 to current year. Gage-height records collected in this vicinity since 1907 are contained in reports of National Weather Service.

REVISED RECORDS.--WRD KY 78-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 631.98 ft above sea level. Prior to Sept. 23, 1944, nonrecording gage at site 2.3 mi downstream at datum 2.65 ft higher. Sept. 23, 1944 to Sept. 30, 1952, water-stage recorder 2.3 mi downstream at datum 1.65 ft higher. Oct. 1, 1952 to Sept. 30, 1979, at site 2.1 mi downstream at same datum.

REMARKS.--Estimated daily discharges: Aug. 9. Records good. Flow regulated since October 1968 by Fishtrap Lake (station 03207995), since August 1966 by North Fork Pound River Lake (station 03208680) and since March 1965 by John W. Flannagan Lake (station 03208990).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	308	224	1080	292	2990	1900	1290	2010	1410	1500	1300	225
2	280	265	990	275	2820	1960	1150	1940	1270	1330	721	213
3	258	311	603	288	2490	1630	1120	2010	1150	1010	532	204
4	261	468	423	373	10100	1370	2280	2310	2150	767	461	194
5	488	790	398	507	9220	1380	3890	2720	2990	665	428	199
6	512	687	391	737	6030	1460	2430	2650	3310	612	397	211
7	407	353	356	836	4320	1450	1790	2390	2330	600	292	214
8	467	298	332	2520	3780	1460	1490	4140	1590	770	269	225
9	304	337	308	3570	4540	1730	1520	5190	1370	1330	340	218
10	248	359	328	2070	5370	2400	2110	5070	11000	1270	444	205
11	301	502	429	1380	5500	2460	2320	5560	10600	1020	563	202
12	518	529	524	1280	7160	1960	2050	4720	10600	678	635	200
13	514	525	458	874	5640	1680	2310	3370	8670	437	614	198
14	290	515	389	692	3460	1570	2220	2420	7420	429	435	193
15	327	476	442	704	2590	1490	1760	1840	5510	502	357	192
16	393	477	304	719	2220	1400	2820	1600	3350	485	609	192
17	374	481	286	720	2440	1310	19800	1360	2340	593	1540	195
18	321	543	278	742	3670	1550	9990	1120	1820	720	1920	196
19	492	457	262	752	3580	8350	14800	1020	1400	623	1130	211
20	473	314	254	993	2800	9700	12900	902	1290	613	804	201
21	320	324	251	1330	2250	13200	11500	1670	1120	565	637	211
22	420	504	255	981	2110	10700	11500	1690	1220	493	489	227
23	416	601	200	1050	2410	7160	11400	4040	2570	570	359	226
24	386	609	202	1390	3740	5120	10400	10900	2960	781	334	197
25	451	793	220	1540	4020	3120	7500	8560	3820	667	288	183
26	641	657	206	1710	2960	2570	6460	6050	2620	437	280	192
27	608	528	223	1610	2450	2070	4780	4680	1690	406	254	201
28	395	514	252	3140	1990	1970	3120	3940	1230	367	239	201
29	384	471	264	5270	---	1750	1730	3010	1140	353	232	202
30	320	473	390	4990	---	1420	1810	2160	1000	332	236	293
31	265	---	616	3550	---	1420	---	1510	---	457	232	---
TOTAL	12142	14385	11914	46885	112650	98710	160240	102552	100940	21382	17371	6221
MEAN	392	480	384	1512	4023	3184	5341	3308	3365	690	560	207
MAX	641	793	1080	5270	10100	13200	19800	10900	11000	1500	1920	293
MIN	248	224	200	275	1990	1310	1120	902	1000	332	232	183

BIG SANDY RIVER BASIN

03209500 LEVISA FORK AT PIKEVILLE, KY

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1998, BY WATER YEAR (WY)

MEAN	829	1153	1617	2370	2891	3022	2337	2070	1060	580	477	464
MAX	3939	3991	5385	6861	6371	8081	7646	6067	3492	1855	1022	1607
(WY)	1990	1978	1973	1974	1994	1975	1977	1984	1979	1979	1971	1989
MIN	158	353	300	278	814	529	388	349	210	200	203	168
(WY)	1970	1970	1981	1981	1992	1988	1986	1976	1988	1988	1969	1969

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1969 - 1998	
ANNUAL TOTAL	455439		705392		1566	
ANNUAL MEAN	1248		1933		2459	
HIGHEST ANNUAL MEAN					522	
LOWEST ANNUAL MEAN					69300	
HIGHEST DAILY MEAN	14200	Mar 7	19800	Apr 17	66	Apr 5 1977
LOWEST DAILY MEAN	190	Sep 8	183	Sep 25	103	Dec 3 1970
ANNUAL SEVEN-DAY MINIMUM	197	Sep 3	195	Sep 12	85500	Oct 10 1968
INSTANTANEOUS PEAK FLOW			22700	Apr 17	52.72	Jan 30 1957
INSTANTANEOUS PEAK STAGE			32.52	Apr 17	66	Jan 30 1957
INSTANTANEOUS LOW FLOW			183	Sep 25	234	Dec 3 1970
10 PERCENT EXCEEDS	2490		5020			
50 PERCENT EXCEEDS	724		793			
90 PERCENT EXCEEDS	262		232			

TENNESSEE RIVER BASIN

03471500 SOUTH FORK HOLSTON RIVER AT RIVERSIDE, NEAR CHILHOWIE, VA

LOCATION.--Lat 36°45'37", long 81°37'53", Smyth County, Hydrologic Unit 06010102, on right bank 400 ft upstream from highway bridge at Riverside, 900 ft upstream from Spring Branch, 3.2 mi downstream from Redstone Branch, 4.0 mi southeast of Chilhowie, and at mile 97.2.

DRAINAGE AREA.--76.1 mi².

PERIOD OF RECORD.--October 1920 to December 1931, July 1942 to current year. Monthly discharge only for some periods, published in WSP 1306. Prior to October 1924, published as "near Chilhowie." June 1907 to December 1909, at site 4.5 mi downstream also published as "near Chilhowie"; records not equivalent.

REVISED RECORDS.--WSP 1033: 1943-44(m). WSP 1306: Drainage area, 1921-31(M).

GAGE.--Water-stage recorder. Datum of gage is 2,106.77 ft above sea level. Nov. 1, 1920, to Nov. 14, 1931, nonrecording gage at site 400 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Prior to August 1951, diurnal fluctuation at low flow caused by mill 500 ft upstream from station. Maximum discharge, 9,600 ft³/s, from rating curve extended above 3,700 ft³/s on basis of slope-area measurement of peak flow. Minimum discharge recorded, 2 ft³/s, but may have been less in 1925 and 1926 before installation of water-stage recorder. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 650 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	0600	1,300	5.04	Apr. 19	2400	1,300	5.04
Feb. 17	1945	*2,190	*6.09	May 11	0800	959	4.50
Mar. 21	0245	959	4.50	June 10	1515	725	4.06
Apr. 17	1045	1,100	4.74				

Minimum discharge, 19 ft³/s, Oct. 13, 31, Nov. 29, Dec. 19, 20, 21, minimum gage height, 1.21 ft, Oct. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	23	33	27	95	233	108	136	203	105	45	28
2	25	28	32	25	92	199	99	212	164	86	40	27
3	24	30	27	26	135	174	94	210	144	79	38	27
4	23	29	26	27	327	147	153	305	165	75	37	27
5	23	27	25	35	325	130	173	303	191	78	35	26
6	23	24	24	50	240	119	160	244	261	70	34	26
7	23	24	23	51	197	110	141	222	235	67	33	26
8	22	24	23	686	179	152	127	260	188	66	34	29
9	22	25	23	301	188	382	144	279	165	66	35	28
10	22	25	27	180	223	376	164	380	488	62	42	27
11	22	24	28	127	282	255	179	873	527	59	41	26
12	22	23	26	100	491	198	175	556	350	56	36	26
13	22	23	24	85	412	162	157	363	314	55	34	25
14	22	25	23	73	298	143	141	273	272	54	33	26
15	22	27	23	78	235	126	126	223	330	52	35	24
16	22	25	22	121	218	114	129	188	294	50	52	24
17	23	24	22	130	1070	107	765	164	231	51	62	24
18	23	23	22	111	1070	109	533	145	188	48	46	24
19	23	23	22	99	560	232	607	131	166	46	41	24
20	23	22	21	89	438	445	966	120	148	45	37	24
21	23	26	21	78	353	816	512	133	129	44	36	24
22	24	30	24	73	286	480	351	121	124	43	34	26
23	24	27	25	111	277	325	272	161	297	45	33	27
24	24	24	24	166	282	247	223	189	179	46	32	25
25	27	23	33	153	243	202	188	213	140	44	31	24
26	29	22	31	131	214	172	164	373	121	44	30	24
27	31	22	34	124	210	151	150	423	110	42	30	24
28	26	22	33	117	239	138	138	399	101	41	30	23
29	23	22	31	100	---	127	123	288	94	40	29	23
30	22	24	31	103	---	116	117	247	102	39	29	24
31	22	---	29	101	---	107	---	255	---	47	28	---
TOTAL	735	740	812	3678	9179	6794	7379	8389	6421	1745	1132	762
MEAN	23.7	24.7	26.2	119	328	219	246	271	214	56.3	36.5	25.4
MAX	31	30	34	686	1070	816	966	873	527	105	62	29
MIN	22	22	21	25	92	107	94	120	94	39	28	23
CFSM	.31	.32	.34	1.56	4.31	2.88	3.23	3.56	2.81	.74	.48	.33
IN.	.36	.36	.40	1.80	4.49	3.32	3.61	4.10	3.14	.85	.55	.37

TENNESSEE RIVER BASIN

03471500 SOUTH FORK HOLSTON RIVER AT RIVERSIDE, NEAR CHILHOWIE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 1932, 1942 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	50.3	70.4	112	155	205	210	171	139	91.7	58.9	54.9	44.9
MAX	162	409	272	353	508	512	570	278	322	172	209	254
(WY)	1990	1978	1973	1996	1957	1955	1987	1945	1923	1989	1942	1989
MIN	19.9	19.9	25.8	28.8	57.2	51.3	52.6	49.1	31.1	22.5	17.5	20.6
(WY)	1954	1954	1956	1956	1931	1988	1986	1926	1988	1988	1988	1988

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1921 - 1932
1942 - 1998

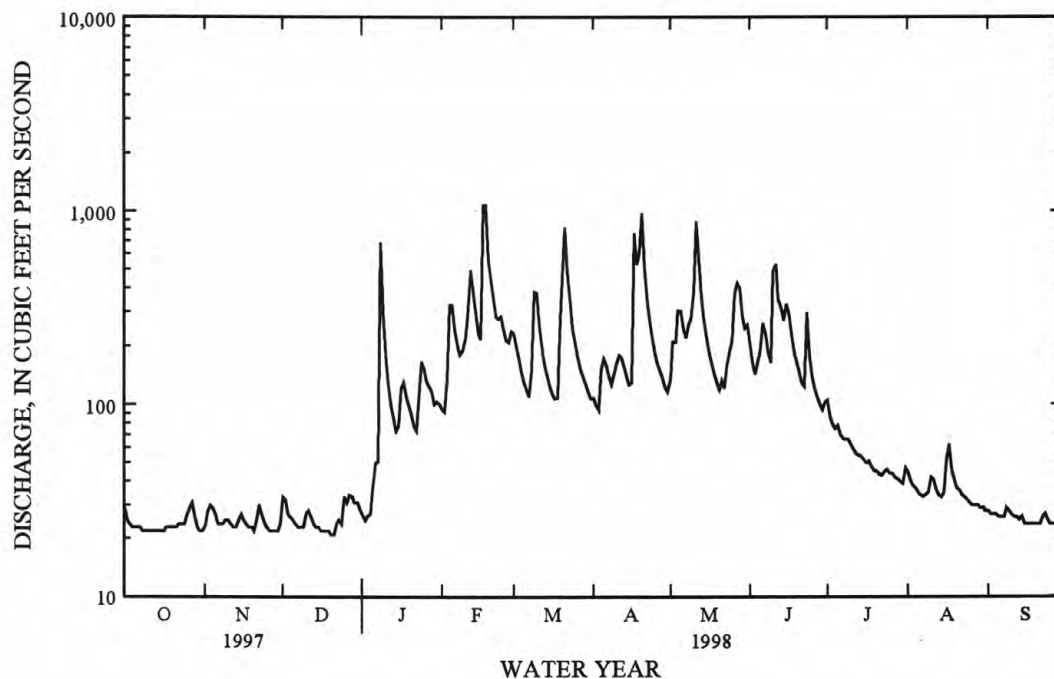
ANNUAL TOTAL	35824	47766	113
ANNUAL MEAN	98.1	131	162
HIGHEST ANNUAL MEAN			53.8
LOWEST ANNUAL MEAN			1974
HIGHEST DAILY MEAN	748	Mar 4	1070
LOWEST DAILY MEAN	21	bDec 20	21
ANNUAL SEVEN-DAY MINIMUM	22	Dec 15	22
INSTANTANEOUS PEAK FLOW			2190
INSTANTANEOUS PEAK STAGE			6.09
INSTANTANEOUS LOW FLOW			19
ANNUAL RUNOFF (CFSM)	1.29	1.72	2.0
ANNUAL RUNOFF (INCHES)	17.51	23.35	20.17
10 PERCENT EXCEEDS	222	302	229
50 PERCENT EXCEEDS	58	66	71
90 PERCENT EXCEEDS	23	23	27

a Also Feb. 18, 1998.

b Also Dec. 21, 1997.

c Also Oct. 31, Nov. 29, and Dec. 19-21, 1997.

b Also Oct. 15, 1943, Aug. 9, 11, 1944, and Oct. 19, 1945.



TENNESSEE RIVER BASIN

03473000 SOUTH FORK HOLSTON RIVER NEAR DAMASCUS, VA

LOCATION.--Lat 36°39'06", long 81°50'39", Washington County, Hydrologic Unit 06010102, on right bank 500 ft upstream from bridge on U.S. Highway 58, 0.7 mi downstream from Laurel Creek, 3.2 mi northwest of Damascus, 4.9 mi upstream from Middle Fork, and at mile 77.2.

DRAINAGE AREA.--301 mi².

PERIOD OF RECORD.--October 1931 to current year. Monthly discharge only for some periods, published in WSP 1306. Published as "at Vestal" prior to October 1978.

REVISED RECORDS.--WSP 823: Drainage area. WSP 1306: 1932-33(M).

GAGE.--Water-stage recorder. Datum of gage is 1,792.30 ft above sea level.

REMARKS.--Records good except for period with ice effect, Jan. 2, which is fair. Prior to 1980, some diurnal fluctuation at low flow caused by powerplant upstream from station. Maximum discharge, 22,000 ft³/s, from rating curve extended above 10,000 ft³/s on basis of slope-area measurement of peak flow. Minimum gage height, 2.07 ft, Aug. 19, 1988. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 8	1000	5,350	8.80	May 11	0030	5,670	9.06
Feb. 18	0030	4,180	7.80	May 20	2200	4,010	7.65
Mar. 21	0500	4,790	8.34	May 27	1800	3,180	6.88
Apr. 17	0815	*6,780	*9.91	June 10	1100	5,350	8.80
Apr. 20	0215	4,970	8.49				

Minimum discharge, 84 ft³/s, Oct. 13, 14, gage height, 2.18 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	110	111	449	186	578	769	530	524	772	581	240	122
2	108	166	367	e180	551	671	481	756	634	465	193	120
3	98	164	280	191	861	613	453	771	567	407	177	117
4	96	159	258	217	2100	528	1700	1040	843	377	168	117
5	93	144	233	331	1890	478	1680	1080	1050	712	160	114
6	91	133	208	496	1260	463	1110	904	1010	458	155	111
7	89	125	187	493	997	464	853	895	921	380	151	109
8	89	122	175	3970	883	646	716	1780	751	380	149	139
9	87	128	183	1830	841	1290	843	2600	679	409	164	141
10	86	130	215	1020	905	1410	896	2940	3220	380	274	120
11	87	126	222	723	1060	996	920	4540	2650	332	273	115
12	87	122	211	567	1890	771	849	2490	1840	306	193	112
13	86	121	200	481	1620	634	745	1550	1560	289	170	108
14	85	135	188	405	1150	567	667	1120	1260	278	163	105
15	87	177	173	487	883	502	592	893	1330	264	168	104
16	87	159	164	731	765	464	684	750	1090	248	262	100
17	87	145	158	728	1990	445	4840	655	867	243	391	101
18	90	134	151	613	3040	456	2800	570	711	236	331	100
19	92	129	145	554	1760	1210	2650	510	667	225	252	105
20	97	124	140	494	1370	1850	4050	778	601	228	209	101
21	93	145	138	431	1130	4100	2270	1590	517	212	186	106
22	97	210	172	407	941	2310	1510	953	482	200	174	128
23	95	176	170	522	951	1450	1140	902	1000	231	163	125
24	96	159	166	658	978	1060	924	1000	716	236	155	110
25	109	147	286	641	874	861	768	1040	781	219	149	105
26	147	141	265	563	764	741	671	1700	589	208	140	104
27	200	135	274	563	734	665	623	2470	547	195	138	102
28	136	129	256	620	790	621	597	2240	460	191	134	101
29	115	125	232	557	---	575	515	1360	415	185	131	104
30	106	130	230	675	---	528	501	1010	503	188	129	104
31	100	---	211	647	---	490	---	973	---	268	125	---
TOTAL	3126	4251	6707	20981	33556	28628	37578	42384	29033	9531	5867	3350
MEAN	101	142	216	677	1198	923	1253	1367	968	307	189	112
MAX	200	210	449	3970	3040	4100	4840	4540	3220	712	391	141
MIN	85	111	138	180	551	445	453	510	415	185	125	100
CFSM	.34	.47	.72	2.25	3.98	3.07	4.16	4.54	3.22	1.02	.63	.37
IN.	.39	.53	.83	2.59	4.15	3.54	4.64	5.24	3.59	1.18	.73	.41

e Estimated.

TENNESSEE RIVER BASIN

03473000 SOUTH FORK HOLSTON RIVER NEAR DAMASCUS, VA--Continued

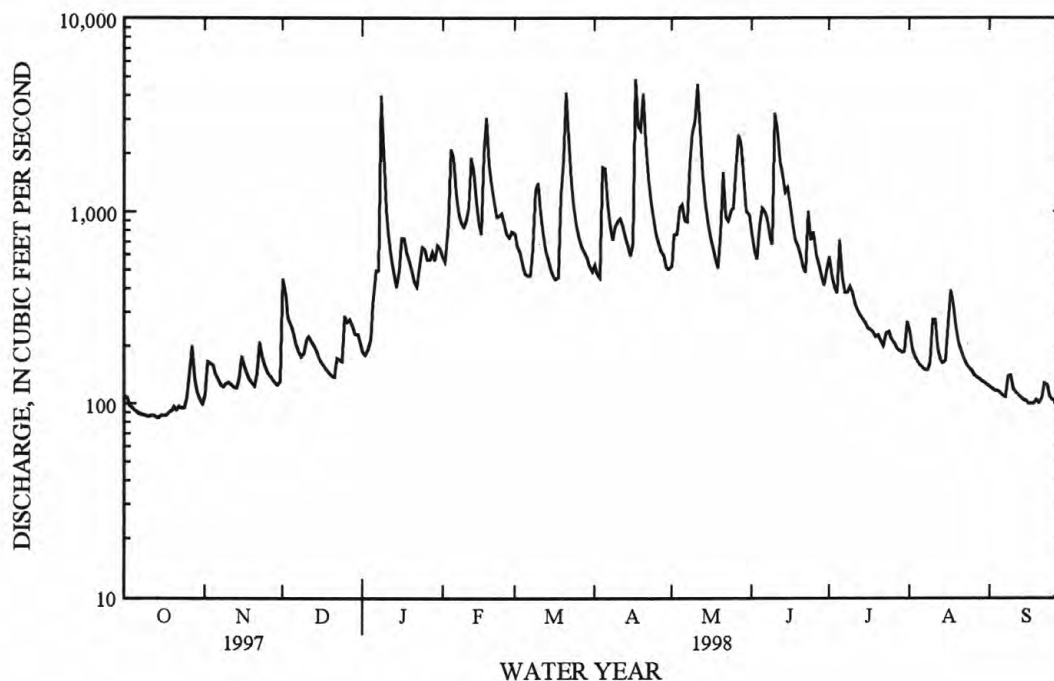
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	215	287	486	672	853	890	727	580	368	286	253	178
MAX	938	1258	1203	1490	2022	2075	1995	1367	968	1079	1193	790
(WY)	1978	1978	1973	1957	1957	1955	1987	1998	1998	1938	1940	1989
MIN	76.5	85.3	93.6	101	200	228	224	155	129	100	89.6	79.0
(WY)	1953	1940	1940	1940	1941	1988	1942	1941	1988	1988	1988	1954

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1932 - 1998	
ANNUAL TOTAL	172955		224992			
ANNUAL MEAN	474		616		481	
HIGHEST ANNUAL MEAN					712	
LOWEST ANNUAL MEAN					245	
HIGHEST DAILY MEAN	3930	Mar 3	4840	Apr 17	12800	Apr 5 1977
LOWEST DAILY MEAN	85	Oct 14	85	Oct 14	40	Dec 27 1983
ANNUAL SEVEN-DAY MINIMUM	86	Oct 9	86	Oct 9	63	Sep 13 1954
INSTANTANEOUS PEAK FLOW			6780	Apr 17	22000	Apr 5 1977
INSTANTANEOUS PEAK STAGE			9.91	Apr 17	17.11	Apr 5 1977
INSTANTANEOUS LOW FLOW			84	aOct 13	30	bOct 14 1941
ANNUAL RUNOFF (CFSM)	1.57		2.05		1.60	
ANNUAL RUNOFF (INCHES)	21.38		27.81		21.72	
10 PERCENT EXCEEDS	1010		1390		1000	
50 PERCENT EXCEEDS	343		405		307	
90 PERCENT EXCEEDS	102		106		112	

a Also Oct. 14, 1997.

b Also Dec. 24, 1943.



TENNESSEE RIVER BASIN

03474000 MIDDLE FORK HOLSTON RIVER AT SEVEN MILE FORD, VA

LOCATION.--Lat 36°48'26", long 81°37'20", Smyth County, Hydrologic Unit 06010102, on right bank at downstream side of bridge on U.S. Highway 11 at Seven Mile Ford, 0.3 mi upstream from Meade Creek, 3.3 mi downstream from Walker Creek, and at mile 32.1

DRAINAGE AREA.--132 mi².

PERIOD OF RECORD.--July 1942 to December 1981, January 1982 to September 1987 (annual maximum only), October 1987 to September 1989, October 1989 to September 1996 (annual maximum only), October 1996 to current year.

REVISED RECORDS.--WSP 973: 1942(m). WSP 1306: 1947(M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,960.00 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. Prior to April 1977, some diurnal fluctuation at low flow caused by mill 9 mi above station. Since May 1936, flow occasionally regulated by the filling or draining of Hungry Mother Lake on Hungry Mother Creek, capacity, about 1,600 acre-ft. Tennessee Valley Authority gage-height data logger at station, called at 6-hour intervals by computer at Knoxville, TN. Maximum discharge, 14,500 ft³/s. Minimum gage height, 0.89 ft, Sept. 8, 1988. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been made at this location.

COOPERATION.--Gage-height record of extremes were provided by Tennessee Valley Authority for the period Jan. 1, 1982, to Sept. 30, 1987, and October 1, 1989 to September 30, 1996.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 17	0915	*2,130	*3.63	June 10	1530	2,030	3.57

Minimum discharge, 27 ft³/s, Nov. 21, gage height, 1.05 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	34	56	38	176	230	150	213	165	150	61	45
2	36	52	45	37	177	206	137	432	149	117	56	44
3	36	45	39	40	356	194	131	350	159	105	54	44
4	35	45	45	44	1040	177	290	868	205	100	52	44
5	36	40	45	55	946	159	285	522	322	102	51	44
6	35	36	41	73	635	133	227	366	282	92	51	43
7	34	34	37	70	495	127	193	358	228	89	49	42
8	34	35	35	713	330	145	172	511	181	86	54	47
9	34	36	35	309	366	228	333	445	170	86	56	44
10	33	34	47	204	419	269	335	509	964	82	144	43
11	34	33	54	144	435	217	317	948	764	78	100	42
12	33	33	63	119	564	182	273	666	448	75	63	42
13	33	31	59	113	473	159	193	472	397	74	54	41
14	33	35	57	107	359	149	174	316	321	84	51	40
15	32	37	54	136	288	137	151	263	353	73	54	38
16	32	35	54	266	259	129	160	222	304	70	82	39
17	32	33	53	217	571	128	1430	203	248	68	158	39
18	33	32	52	169	885	171	781	182	204	66	112	40
19	33	31	35	154	560	680	774	165	205	64	77	39
20	33	31	32	152	452	762	1040	151	185	62	65	39
21	33	37	32	135	371	1470	650	177	156	61	59	41
22	33	46	43	129	321	863	487	159	147	61	56	47
23	32	39	44	175	330	596	324	241	281	64	54	47
24	32	35	43	207	362	328	269	324	183	71	52	41
25	36	32	61	201	318	268	231	308	172	65	50	40
26	45	32	51	179	279	227	204	580	168	62	50	39
27	48	32	53	161	258	202	187	457	132	59	49	39
28	37	31	52	159	246	185	170	350	119	58	48	39
29	34	30	46	168	---	167	146	273	112	57	47	41
30	34	32	46	207	---	152	140	221	146	55	47	57
31	32	---	43	197	---	142	---	186	---	66	46	---
TOTAL	1073	1068	1452	5078	12271	9182	10354	11438	7870	2402	2002	1270
MEAN	34.6	35.6	46.8	164	438	296	345	369	262	77.5	64.6	42.3
MAX	48	52	63	713	1040	1470	1430	948	964	150	158	57
MIN	32	30	32	37	176	127	131	151	112	55	46	38
CFSM	.26	.27	.35	1.24	3.32	2.24	2.61	2.80	1.99	.59	.49	.32
IN.	.30	.30	.41	1.43	3.46	2.59	2.92	3.22	2.22	.68	.56	.36

TENNESSEE RIVER BASIN

03474000 MIDDLE FORK HOLSTON RIVER AT SEVEN MILE FORD, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1981, 1988 - 1989, 1997 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	71.2	95.2	166	234	301	312	248	207	123	82.8	75.6	65.5
MAX	298	580	534	708	870	844	630	433	294	207	210	256
(WY)	1977	1978	1973	1957	1957	1955	1977	1945	1979	1989	1947	1989
MIN	32.4	29.8	34.1	37.0	85.5	74.5	107	73.0	38.9	33.8	28.1	32.4
(WY)	1989	1954	1956	1966	1954	1988	1963	1964	1988	1988	1988	1988

SUMMARY STATISTICS

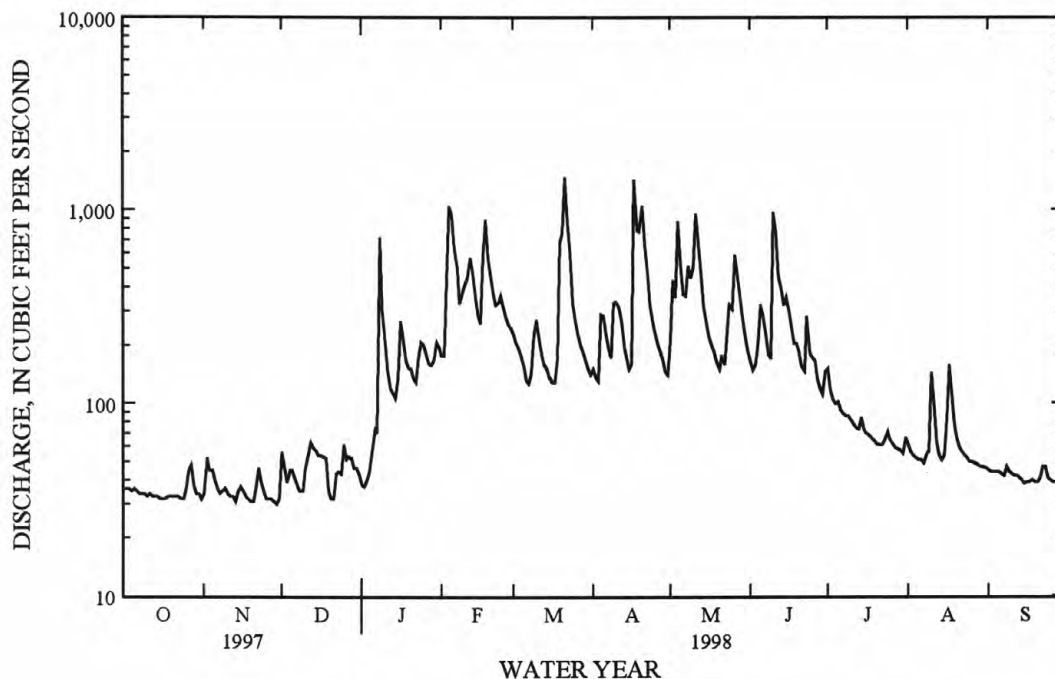
FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1942 - 1981
1988 - 1989
1997 - 1998

ANNUAL TOTAL	57198	65460	
ANNUAL MEAN	157	179	165
HIGHEST ANNUAL MEAN			250
LOWEST ANNUAL MEAN			79.2
HIGHEST DAILY MEAN	1760	Mar 3	5990
LOWEST DAILY MEAN	30	Nov 29	20
ANNUAL SEVEN-DAY MINIMUM	32	Nov 24	24
INSTANTANEOUS PEAK FLOW			2130
INSTANTANEOUS PEAK STAGE			3.63
INSTANTANEOUS LOW FLOW			27
ANNUAL RUNOFF (CFSM)	1.19	1.36	1.25
ANNUAL RUNOFF (INCHES)	16.12	18.45	16.96
10 PERCENT EXCEEDS	339	433	340
50 PERCENT EXCEEDS	87	100	93
90 PERCENT EXCEEDS	34	34	37

a Also Aug. 2, 1964.



NATIONAL WATER-QUALITY ASSESSMENT PROGRAM
TENNESSEE RIVER BASIN
SURFACE-WATER QUALITY

03474000 MIDDLE FORK HOLSTON RIVER AT SEVEN MILE FORD, VA

LOCATION.--Lat 36°48'26", long 81°37'20", Smyth County, Hydrologic Unit 06010102, on right bank at downstream side of bridge on U.S. Highway 11 at Seven Mile Ford, 0.3 mi upstream from Meade Creek, 3.3 mi downstream from Walker Creek, and at mile 32.1

DRAINAGE AREA.--132 mi².

PERIOD OF RECORD.--October 1996 to present.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	GAGE HEIGHT (FEET) (00065)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	E. COLI WATER WHOLE TOTAL UREASE (COL / 100 ML) (31633)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
OCT 1997												
20...	1.08	34	333	8.2	15.0	11.8	709	10.6	300	160	110	38
NOV												
20...	1.09	30	336	8.0	.0	2.2	710	12.6	300	100	92	37
DEC												
18...	1.24	53	264	7.3	-5.0	1.1	707	11.4	150	68	56	30
JAN 1998												
22...	1.54	125	257	7.9	3.0	5.2	709	11.6	810	310	260	30
FEB												
04...	2.74	1040	200	7.0	--	--	692	--	>4100	2500	2200	20
25...	1.95	309	198	8.3	17.0	7.2	707	12.6	150	K31	K17	22

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	BICAR- BONATE WATER DIS IT MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT MG/L AS CACO3 (39086)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
OCT 1997												
20...	15	5.6	2.5	14	10	.23	6.2	184	0	151	202	<.010
NOV												
20...	14	7.1	2.3	15	13	.16	4.5	107	0	88	194	<.010
DEC												
18...	11	6.5	1.8	14	10	.12	2.0	178	0	146	149	<.010
JAN 1998												
22...	9.6	8.4	1.8	14	15	<.10	5.1	126	0	103	148	.013
FEB												
04...	5.9	10	1.8	10	18	<.10	5.1	66	0	54	115	<.010
25...	7.6	5.7	1.4	9.4	10	<.10	5.3	76	1	64	121	<.010

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)
OCT 1997												
20...	1.26	.061	<.20	<.20	.112	.092	.089	11	7.2	1.2	.30	<.003
NOV												
20...	1.51	.229	.15	<.10	.016	.036	.053	12	<4.0	1.1	<.20	<.003
DEC												
18...	.995	<.020	.14	.13	.023	.031	.041	37	<4.0	1.7	.20	<.003
JAN 1998												
22...	1.11	<.020	.13	<.10	.029	.018	.022	30	5.4	1.5	<.20	<.003
FEB												
04...	.985	.051	.87	.17	.139	.023	.030	29	7.8	3.2	2.4	<.003
25...	.869	<.020	<.10	<.10	.010	<.010	.019	16	5.2	1.1	.20	<.003

< Actual value is known to be less than the value shown.

> Actual value is known to be greater than the value shown.

K Results based on colony count outside the acceptance range (non-ideal colony count).

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM
TENNESSEE RIVER BASIN
SURFACE-WATER QUALITY

03474000 MIDDLE FORK HOLSTON RIVER AT SEVEN MILE FORD, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)	ATRA- ZINE, WATER, DISS, REC, (UG/L) (39632)	ACETO- CHLOR, WATER, FLTRD REC, (UG/L) (49260)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	BUTYL- ATE, WATER, DISS, REC, (UG/L) (04028)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	CARBO- FURAN FLTRD 0.7 U GF, REC (UG/L) (82674)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CYANA- ZINE, WATER, DISS, REC, (UG/L) (04041)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	DEETHYL ATRA- ZINE, WATER, DISS, REC, (UG/L) (04040)
OCT 1997												
20...	<.002	.010	<.002	<.002	<.002	<.002	<.004	<.003	<.003	<.004	<.002	E.0132
NOV												
20...	<.002	.008	<.002	<.002	<.002	<.002	<.004	<.003	<.003	<.004	<.002	E.0086
DEC												
18...	<.002	.012	<.002	<.002	<.002	<.002	<.004	<.003	<.003	<.004	<.002	E.0094
JAN 1998												
22...	<.002	.010	<.002	<.002	<.002	<.002	<.004	<.003	<.003	<.004	<.002	E.0093
FEB												
04...	<.002	.005	<.002	<.002	<.002	<.002	<.004	<.003	<.003	<.004	<.002	E.0067
25...	<.002	.008	<.002	<.002	<.002	<.002	<.004	<.003	<.003	<.004	<.002	E.0093
DATE	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	P, P' DDE DISSOLV (UG/L) (34653)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS WATER DISS REC (UG/L) (04095)	LINDANE DIS- SOLVED (UG/L) (39341)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	MALA- THION, DIS- SOLVED (UG/L) (39532)
OCT 1997												
20...	<.017	.007	<.001	E.0009	<.002	<.004	<.003	<.003	<.004	<.002	<.004	<.005
NOV												
20...	<.017	.027	<.001	<.006	<.002	<.004	<.003	<.003	<.004	<.002	<.004	<.005
DEC												
18...	<.017	E.002	<.001	<.006	<.002	<.004	<.003	<.003	<.004	<.002	<.004	<.005
JAN 1998												
22...	<.017	<.002	<.001	<.006	<.002	<.004	<.003	<.003	<.004	<.002	<.004	<.005
FEB												
04...	<.017	<.002	<.001	<.006	<.002	<.004	<.003	<.003	<.004	<.002	<.004	<.005
25...	<.017	<.002	<.001	<.006	<.002	<.004	<.003	<.003	<.004	<.002	<.004	<.005
DATE	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PARA- THION, DIS- SOLVED (UG/L) (39542)
OCT 1997												
20...	.006	<.001	<.006	<.004	<.003	<.003	<.004	<.004	<.004	<.005	<.002	<.004
NOV												
20...	.006	<.001	<.006	<.004	<.003	<.003	<.004	<.004	<.004	<.005	<.002	<.004
DEC												
18...	.007	<.001	<.006	<.004	<.003	<.003	<.004	<.004	<.004	<.005	<.002	<.004
JAN 1998												
22...	.010	<.001	<.006	<.004	<.003	<.003	<.004	<.004	<.004	<.005	<.002	<.004
FEB												
04...	.005	<.001	<.006	<.004	<.003	<.003	<.004	<.004	<.004	<.005	<.002	<.004
25...	.006	<.001	<.006	<.004	<.003	<.003	<.004	<.004	<.004	<.005	<.002	<.004
DATE	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1997												
20...	<.007	E.0049	<.013	E.0041	<.002	<.007	<.010	<.013	<.001	<.002	3	76
NOV												
20...	<.007	<.018	<.070	E.0047	<.002	<.007	<.010	<.013	<.001	<.002	3	33
DEC												
18...	<.007	E.0086	<.013	<.005	<.002	<.007	E.0059	<.013	<.001	<.002	1	50
JAN 1998												
22...	<.007	<.018	<.013	<.005	<.002	<.007	E.0081	<.013	<.001	<.002	5	53
FEB												
04...	<.007	E.0038	<.013	E.0036	<.002	<.007	E.0099	<.013	<.001	<.002	129	66
25...	<.007	<.018	<.013	<.005	<.002	<.007	<.010	<.013	<.001	<.002	5	86

< Actual value is known to be less than the value shown.
E Estimated.

TENNESSEE RIVER BASIN

03475000 MIDDLE FORK HOLSTON RIVER NEAR MEADOWVIEW, VA

LOCATION.--Lat 36°42'47", long 81°49'08", Washington County, Hydrologic Unit 06010102, on left bank 48 ft downstream from bridge on State Highway 803, 0.9 mi upstream from Cedar Creek, 4.1 mi southeast of Meadowview, and at mile 13.2.

DRAINAGE AREA.--211 mi².

PERIOD OF RECORD.--October 1931 to September 1953, May 1976 to current year. Monthly discharge only for October 1931, published in WSP 1306.

REVISED RECORDS.--WSP 823: Drainage area. WSP 1276: 1932-34.

GAGE.--Water-stage recorder. Datum of gage is 1,820.22 ft above sea level.

REMARKS.--Records good except for period with ice effect, Jan. 2, which is fair. Prior to 1954, flow regulated by powerplant 0.9 mi upstream from station. Maximum discharge, 12,500 ft³/s, from rating curve extended above 12,000 ft³/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 29, 1957, reached a stage of 11.8 ft, from floodmark, discharge, 10,000 ft³/s, and flood of Dec. 10, 1972, reached a stage of 11.0 ft, from floodmark, discharge, 8,540 ft³/s, from information by Tennessee Valley Authority. Flood of Mar. 30, 1975, reached a stage of 10.37 ft, discharge, 7,410 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 5	0200	2,090	5.77	Apr. 20	0345	2,390	6.16
Mar. 21	0815	3,110	7.04	June 10	2200	2,880	6.77
Apr. 17	1515	*3,380	*7.35				

Minimum discharge, 51 ft³/s, Dec. 20, gage height, 1.99 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	63	89	68	322	336	303	287	275	271	119	79
2	65	86	86	e66	320	313	291	567	254	212	105	78
3	65	100	72	69	468	297	274	462	256	193	100	78
4	63	84	76	72	1540	277	458	951	267	183	97	77
5	63	80	77	83	1690	261	507	718	429	186	95	76
6	63	70	72	106	1020	229	417	511	381	172	92	75
7	61	66	66	117	811	218	362	475	328	163	91	75
8	61	64	62	925	584	232	329	657	275	163	90	78
9	60	65	63	517	577	301	488	625	257	160	106	80
10	61	64	73	327	624	378	566	643	1580	154	240	75
11	61	62	92	231	628	329	505	1340	1500	145	225	73
12	62	61	92	185	719	286	442	1030	799	140	135	73
13	60	59	91	172	685	255	352	737	685	136	114	72
14	58	63	86	159	538	244	322	524	583	142	106	71
15	59	69	81	176	434	229	294	432	573	135	105	68
16	59	66	78	337	382	221	297	374	516	130	132	67
17	59	62	77	325	454	219	2260	336	428	127	222	69
18	61	59	76	256	1230	236	1480	311	360	124	216	69
19	62	58	69	228	739	1010	1150	288	331	122	145	69
20	61	57	54	227	597	890	1980	270	329	119	121	69
21	58	62	54	206	510	2600	1140	290	282	116	109	71
22	58	83	64	188	443	1490	860	288	268	115	102	78
23	57	78	75	237	438	1010	624	324	395	117	99	83
24	58	67	71	291	503	632	509	407	312	125	95	74
25	64	60	94	294	461	514	446	456	277	119	90	71
26	76	58	91	261	406	448	397	756	283	114	88	70
27	97	57	87	253	375	399	368	666	241	110	87	70
28	77	56	94	257	354	368	343	529	220	108	85	69
29	65	55	83	309	---	341	303	418	209	105	83	68
30	62	58	79	338	---	318	288	347	217	104	82	104
31	60	---	76	348	---	298	---	302	---	118	82	---
TOTAL	1964	1992	2400	7628	17852	15179	18355	16321	13110	4428	3658	2229
MEAN	63.4	66.4	77.4	246	638	490	612	526	437	143	118	74.3
MAX	97	100	94	925	1690	2600	2260	1340	1580	271	240	104
MIN	57	55	54	66	320	218	274	270	209	104	82	67
CFSM	.30	.31	.37	1.17	3.02	2.32	2.90	2.50	2.07	.68	.56	.35
IN.	.35	.35	.42	1.34	3.15	2.68	3.24	2.88	2.31	.78	.64	.39

e Estimated.

TENNESSEE RIVER BASIN

03475000 MIDDLE FORK HOLSTON RIVER NEAR MEADOWVIEW, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 1953, 1976 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	113	133	213	352	463	461	359	303	194	143	145	97.8
MAX	479	739	526	731	1050	899	1158	677	485	420	649	357
(WY)	1977	1978	1943	1996	1994	1993	1987	1990	1981	1938	1940	1989
MIN	45.3	44.3	49.9	52.6	64.0	114	98.3	74.2	61.5	55.5	50.5	50.0
(WY)	1934	1942	1940	1940	1934	1988	1942	1941	1988	1988	1988	1952

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

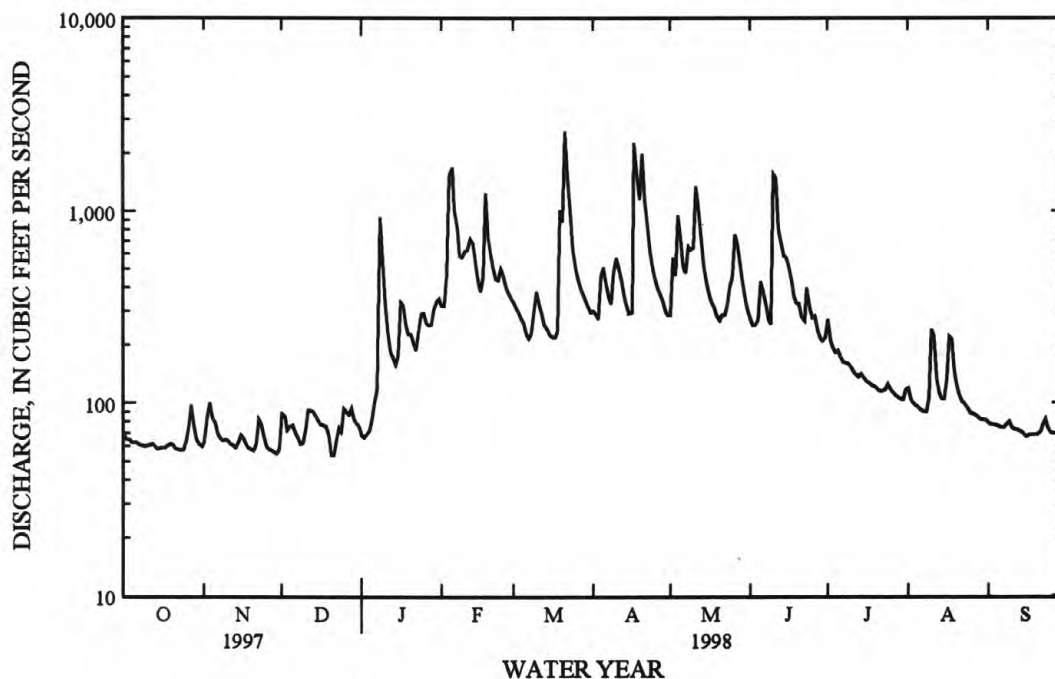
WATER YEARS 1932 - 1953
1976 - 1998

ANNUAL TOTAL	91035	105116	
ANNUAL MEAN	249	288	247
HIGHEST ANNUAL MEAN			356
LOWEST ANNUAL MEAN			105
HIGHEST DAILY MEAN	2640	Mar 4	8220
LOWEST DAILY MEAN	54	aDec 20	b7.0
ANNUAL SEVEN-DAY MINIMUM	59	Nov 24	38
INSTANTANEOUS PEAK FLOW			12500
INSTANTANEOUS PEAK STAGE			7.35
INSTANTANEOUS LOW FLOW			51
ANNUAL RUNOFF (CFSM)	1.18	1.36	1.17
ANNUAL RUNOFF (INCHES)	16.05	18.53	15.94
10 PERCENT EXCEEDS	526	624	500
50 PERCENT EXCEEDS	133	172	147
90 PERCENT EXCEEDS	62	62	62

a Also Dec. 21, 1997.

b Flow was regulated by powerplant.

c Also Dec. 4, 1936, Jan. 21, 22, Feb. 1, 1940, Jan. 8, 1942, and Oct. 15, 16, 31, 1943.



TENNESSEE RIVER BASIN

03478400 BEAVER CREEK AT BRISTOL, VA

LOCATION.--Lat 36°37'54", long 82°08'02", Bristol City, Hydrologic Unit 06010102, on right bank 50 ft upstream from bridge on State Highway 1405, 75 ft downstream from Goose Creek, 0.9 mi downstream from Clear Creek, 3.7 mi northeast of Bristol, VA post office, and at mile 20.6.

DRAINAGE AREA.--27.7 mi².

PERIOD OF RECORD.--July 1957 to current year. Published as "near Bristol" prior to October 1974.

GAGE.--Water-stage recorder. Datum of gage is 1,780.98 ft above sea level.

REMARKS.--Records good except for period of no gage-height record, Oct. 26-27, which is fair. Small diurnal fluctuation at low flow caused by withdrawal of water, which is returned to stream 600 ft upstream from station, for car-washing operation. Since September 1965, some regulation at high flow by flood-control reservoirs, capacity, 7,600 acre-ft. Maximum discharge, 1,600 ft³/s, from rating curve extended above 390 ft³/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1936 reached a stage of about 12 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,080 ft³/s, Apr. 17, gage height, 8.80 ft; minimum, 13 ft³/s, Oct. 9, 12-18, 19-24, 25-26, minimum gage height, 2.75 ft, Nov. 27-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	16	40	15	58	48	57	67	41	83	29	18
2	15	18	23	15	57	47	50	67	39	53	27	18
3	15	17	20	16	102	47	57	69	44	47	26	18
4	15	18	20	16	134	45	125	71	72	48	26	18
5	14	16	18	16	113	43	86	62	60	48	25	17
6	14	15	17	16	93	41	71	58	50	43	25	17
7	14	15	16	40	80	40	64	89	46	41	24	16
8	14	15	15	80	73	51	61	90	44	43	24	18
9	14	14	17	52	68	66	116	78	48	42	24	17
10	14	14	19	38	64	55	99	103	54	39	41	16
11	14	14	18	33	61	50	83	142	49	38	27	16
12	14	14	17	31	59	47	73	104	58	37	25	15
13	14	14	16	30	53	45	68	90	61	37	41	15
14	13	18	16	27	50	44	65	81	52	35	41	15
15	13	16	15	31	48	43	64	74	54	34	31	14
16	13	15	15	33	50	45	110	69	47	33	29	14
17	13	15	15	31	65	43	466	65	45	33	29	14
18	13	14	14	29	66	75	267	61	43	32	30	15
19	13	14	14	33	58	122	285	57	47	35	27	15
20	13	14	14	30	55	135	284	54	43	34	24	14
21	13	18	14	28	52	166	204	55	41	32	23	15
22	13	17	17	31	50	117	146	52	50	30	22	16
23	13	15	15	36	62	94	123	66	99	31	22	15
24	14	15	17	34	60	82	106	56	54	31	21	14
25	14	14	17	31	55	75	93	49	48	30	21	14
26	e22	14	16	29	52	69	84	66	46	29	20	14
27	e20	13	19	39	51	64	82	51	44	29	20	13
28	16	13	18	64	49	60	78	46	42	28	20	13
29	15	13	17	64	---	57	72	44	44	28	19	13
30	14	21	17	67	---	55	68	42	76	28	19	13
31	14	---	16	63	---	52	---	41	---	36	19	---
TOTAL	446	459	542	1098	1838	2023	3607	2119	1541	1167	801	460
MEAN	14.4	15.3	17.5	35.4	65.6	65.3	120	68.4	51.4	37.6	25.8	15.3
MAX	22	21	40	80	134	166	466	142	99	83	41	18
MIN	13	13	14	15	48	40	50	41	39	28	19	13
CFSM	.52	.55	.63	1.28	2.37	2.36	4.34	2.47	1.85	1.36	.93	.55
IN.	.60	.62	.73	1.47	2.47	2.72	4.84	2.85	2.07	1.57	1.08	.62

e Estimated.

TENNESSEE RIVER BASIN

-03478400 BEAVER CREEK AT BRISTOL, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	18.3	19.9	32.0	42.8	55.4	59.7	53.0	41.8	33.1	25.5	21.3	17.9
MAX	76.1	58.0	128	141	131	130	120	129	73.1	53.4	64.5	48.9
(WY)	1973	1978	1973	1974	1994	1963	1998	1958	1972	1972	1982	1982
MIN	8.08	10.3	9.13	8.92	19.5	19.7	19.3	17.7	13.0	10.2	9.96	9.23
(WY)	1970	1970	1966	1966	1981	1988	1985	1985	1988	1988	1988	1969

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

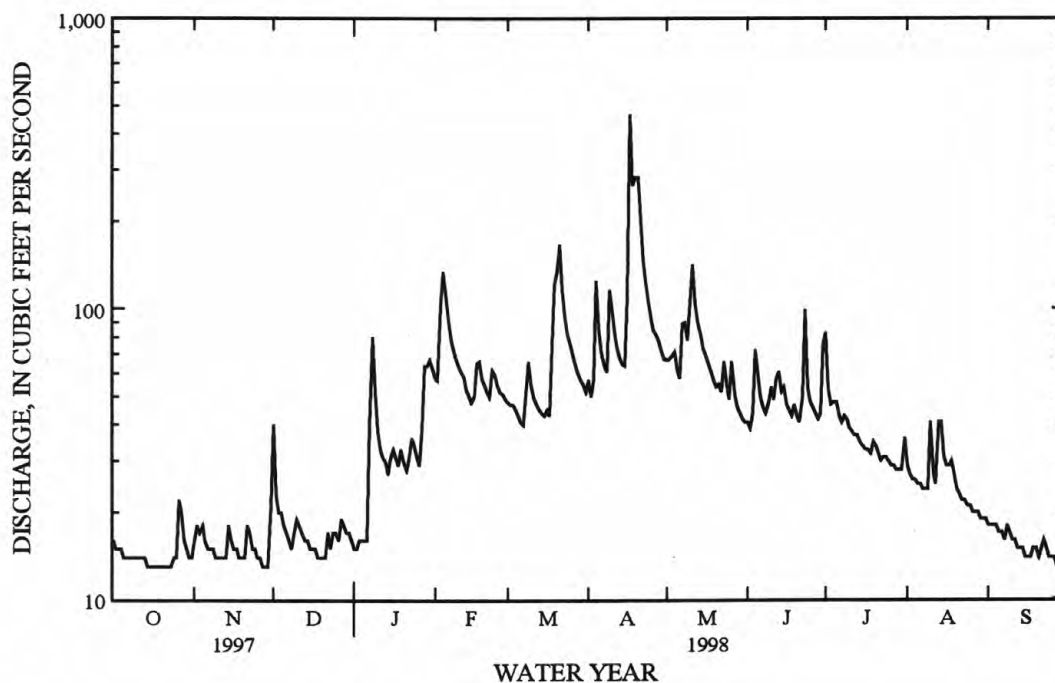
WATER YEARS 1958 - 1998

ANNUAL TOTAL	14430	16101	
ANNUAL MEAN	39.5	44.1	34.9
HIGHEST ANNUAL MEAN			62.8
LOWEST ANNUAL MEAN			16.2
HIGHEST DAILY MEAN	204	Mar 3	580
LOWEST DAILY MEAN	13	aOct 14	7.4
ANNUAL SEVEN-DAY MINIMUM	13	Oct 14	7.6
INSTANTANEOUS PEAK FLOW		1080	1600
INSTANTANEOUS PEAK STAGE		8.80	9.94
INSTANTANEOUS LOW FLOW		13	3.4
ANNUAL RUNOFF (CFSM)	1.43	1.59	1.26
ANNUAL RUNOFF (INCHES)	19.38	21.62	17.14
10 PERCENT EXCEEDS	67	80	63
50 PERCENT EXCEEDS	39	34	27
90 PERCENT EXCEEDS	14	14	12

a Also Oct. 15-23, and Nov. 27-29, 1997.

b Also Sept. 29 and Oct. 5, 15, 18, 19, 23, 24, 1969.

c Also Oct. 12-26, 1997.



TENNESSEE RIVER BASIN

03488000 NORTH FORK HOLSTON RIVER NEAR SALTVILLE, VA

LOCATION.--Lat 36°53'48", long 81°44'47", Smyth County, Hydrologic Unit 06010101, on right bank 0.5 mi upstream from Cedar Branch bridge, 1.5 mi northeast of Saltville, 7.8 mi downstream from Laurel Creek, and at mile 85.0.

DRAINAGE AREA.--222 mi².

PERIOD OF RECORD.--June 1907 to December 1908 (published as "at Saltville"), October 1920 to current year. Monthly discharge only for some periods, published in WSP 1306.

REVISED RECORDS.--WSP 758: Drainage area. WSP 1113: 1944-47. WSP 1306: 1907(M), 1921-22(M), 1924-30(M), 1932-34(M), drainage area at site used 1907-8. WSP 1726: 1947, monthly and yearly runoff.

GAGE.--Water-stage recorder. Datum of gage is 1,703.53 ft above sea level. June 11, 1907, to Nov. 12, 1908, nonrecording gage on highway bridge 2.1 mi downstream at different datum. Nov. 2, 1920, to May 23, 1934, nonrecording gage on highway bridge 0.5 mi downstream at datum 7.74 ft lower.

REMARKS.--Records good except those for period with ice effect, Jan. 2, and period of no gage-height record, June 4-5, which are fair. National Weather Service gage-height telemeter at station. Maximum discharge, 16,500 ft³/s, from rating curve extended above 13,000 ft³/s on basis of slope-area measurement of peak flow. Minimum discharge, 1.0 ft³/s, Oct. 15, 16, 1947, gage height, 0.13 ft, flow retarded by mine cave-in. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 21	0845	6,070	7.94	June 10	1915	3,050	5.42
Apr. 17	1300	*6,570	*8.30				

Minimum discharge, 26 ft³/s, Oct. 8-9, 10-11, gage height, 0.47 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	39	47	51	339	488	252	238	264	169	67	42
2	30	44	56	e50	329	388	262	577	233	148	64	40
3	28	55	65	55	556	333	240	470	225	125	52	40
4	28	69	61	63	2430	286	447	485	e380	115	48	39
5	27	59	57	88	2000	254	583	509	e640	113	45	38
6	29	51	55	177	1060	232	497	437	618	106	43	37
7	27	45	50	218	748	219	407	386	446	98	41	36
8	27	42	44	1590	641	311	343	482	332	95	39	39
9	26	41	44	846	652	859	1500	736	296	106	137	37
10	27	41	52	457	744	914	1740	756	1600	104	403	35
11	26	42	76	295	819	625	1150	1170	1570	91	507	35
12	27	43	82	224	1020	457	814	958	889	83	198	34
13	27	41	69	208	960	358	608	680	835	77	122	33
14	27	43	59	194	684	317	492	517	829	73	100	33
15	28	44	49	193	492	279	411	409	659	74	91	31
16	28	48	43	342	402	256	379	337	555	70	141	31
17	29	48	41	375	528	251	4290	291	428	67	289	31
18	30	44	40	294	1660	297	1960	252	341	65	289	31
19	31	41	39	248	1160	1960	1440	226	297	62	198	31
20	31	39	38	239	936	1540	2200	206	274	61	139	31
21	31	41	37	208	766	4480	1240	304	226	58	104	34
22	32	48	46	187	623	1850	854	291	210	56	86	41
23	32	53	57	296	627	1020	650	356	334	73	75	53
24	33	54	68	464	786	706	512	980	276	81	67	51
25	38	47	78	399	677	536	414	880	230	68	62	45
26	45	43	92	302	574	435	351	725	265	60	57	40
27	55	41	89	267	539	377	310	689	184	56	52	38
28	53	39	81	465	549	342	279	609	163	53	49	35
29	50	39	70	441	---	306	248	476	146	52	47	36
30	43	39	67	420	---	274	234	373	150	50	46	79
31	38	---	60	394	---	250	---	305	---	54	44	---
TOTAL	1014	1363	1812	10050	23301	21200	25107	16110	13895	2563	3702	1156
MEAN	32.7	45.4	58.5	324	832	684	837	520	463	82.7	119	38.5
MAX	55	69	92	1590	2430	4480	4290	1170	1600	169	507	79
MIN	26	39	37	50	329	219	234	206	146	50	39	31
CF5M	.15	.20	.26	1.46	3.75	3.08	3.77	2.34	2.09	.37	.54	.17
IN.	.17	.23	.30	1.68	3.90	3.55	4.21	2.70	2.33	.43	.62	.19

e Estimated.

TENNESSEE RIVER BASIN

03488000 NORTH FORK HOLSTON RIVER NEAR SALTVILLE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1907 - 1909, 1921 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	115	169	330	473	577	607	450	373	226	125	118	86.8
MAX	916	1077	1178	1317	1500	1735	1311	858	1036	353	584	474
(WY)	1977	1978	1927	1957	1957	1955	1987	1990	1907	1938	1940	1989
MIN	24.9	27.5	32.4	49.9	98.0	121	116	80.4	46.3	33.6	25.2	25.8
(WY)	1954	1940	1940	1966	1934	1988	1995	1941	1930	1988	1988	1930

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1907 - 1909
1921 - 1998

ANNUAL TOTAL	87240	121273	
ANNUAL MEAN	239	332	302
HIGHEST ANNUAL MEAN			457
LOWEST ANNUAL MEAN			135
HIGHEST DAILY MEAN	3510	Mar 4	10900
LOWEST DAILY MEAN	26	aSep 5	2.0
ANNUAL SEVEN-DAY MINIMUM	27	Sep 2	21
INSTANTANEOUS PEAK FLOW			16500
INSTANTANEOUS PEAK STAGE			13.57
INSTANTANEOUS LOW FLOW			d1.0
ANNUAL RUNOFF (CFSM)	1.08	1.50	1.36
ANNUAL RUNOFF (INCHES)	14.62	20.32	18.47
10 PERCENT EXCEEDS	578	816	650
50 PERCENT EXCEEDS	92	148	158
90 PERCENT EXCEEDS	30	35	40

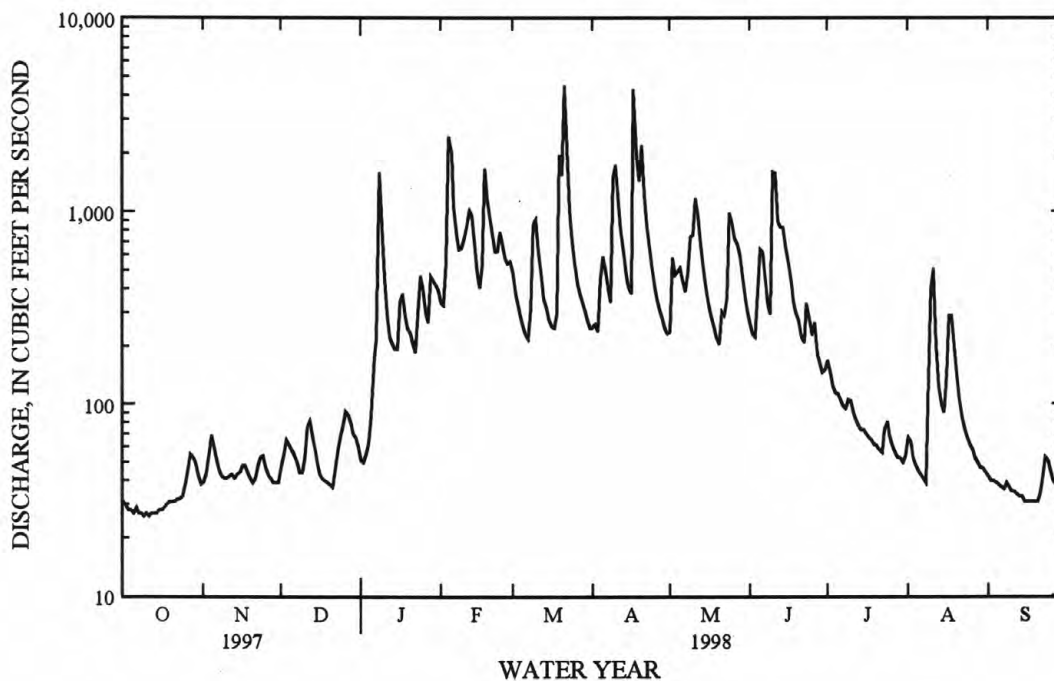
a Also Sept. 6-8, 22, 23, and Oct. 9, 11, 1997.

b Also Oct. 11, 1997.

c Also Oct. 9-11, 1997

d Flow retarded by mine cave-in.

f Also Oct. 16, 1947.



TENNESSEE RIVER BASIN

03524000 CLINCH RIVER AT CLEVELAND, VA

LOCATION.--Lat 36°56'41", long 82°09'18", Russell County, Hydrologic Unit 06010205, on right bank 500 ft upstream from highway bridge at Cleveland, 0.5 mi downstream from Muddy Hollow, 2.3 mi downstream from Weaver Creek, 4.4 mi downstream from Thompson Creek, and at mile 271.6.

DRAINAGE AREA.--528 mi².

PERIOD OF RECORD.--October 1920 to current year. Monthly discharge only for some periods, published in WSP 1306.

REVISED RECORDS.--WSP 823: Drainage area. WSP 1306: 1921-23(M), 1926(M), 1929-31(M). WSP 1706: 1927(M).

GAGE.--Water-stage recorder. Datum of gage is 1,500.24 ft above sea level. Prior to Nov. 1, 1931, nonrecording gage on highway bridge 500 ft downstream at datum 1.0 ft lower.

REMARKS.--Records good except those for periods of no gage-height record, Jan. 8-9, and 27-30, which are fair. National Weather Service gage-height telemeter at station. Maximum discharge, 34,500 ft³/s, from rating curve extended above 26,000 ft³/s on basis of contracted-opening measurement at gage height 24.40 ft. Minimum gage height, 0.96 ft, Feb. 10, 1934. Several measurements of water temperature made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 5,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 4	1115	5,980	9.26	Apr. 17	1245	*13,800	*16.19
Feb. 12	1730	5,530	8.79	Apr. 20	0800	6,560	9.85
Mar. 21	1545	12,200	14.91	June 11	0030	9,740	12.83

Minimum discharge, 55 ft³/s, Oct. 14-17, gage height, 1.24 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	83	75	176	117	1120	1170	751	618	724	563	336	111
2	74	83	177	115	1080	1010	877	665	597	459	270	104
3	71	96	148	133	2030	886	760	688	542	379	197	101
4	66	123	137	167	5660	783	1790	841	646	335	165	98
5	63	132	130	226	4150	704	2110	812	988	328	149	97
6	61	116	124	315	2560	659	1560	736	1080	308	138	94
7	60	102	117	503	1800	640	1210	683	857	291	130	92
8	59	96	108	e3500	1630	710	1000	1040	676	295	124	97
9	59	92	105	e2700	1740	1470	2320	2470	605	404	124	96
10	58	90	118	1350	2260	1840	4670	2090	5210	390	395	91
11	58	92	164	840	2840	1410	3640	3210	6750	299	737	89
12	58	92	181	612	5050	1100	2630	2460	2870	265	407	85
13	58	91	166	503	4310	906	1870	1710	2190	243	270	83
14	56	90	141	426	2740	797	1450	1280	1720	286	210	81
15	55	93	121	373	1840	709	1190	1010	1510	242	266	78
16	55	94	106	397	1430	671	1290	836	1330	224	346	76
17	55	92	97	456	2130	725	10900	725	1040	220	622	75
18	60	90	92	455	4170	862	6840	628	834	211	598	74
19	61	88	88	459	3170	3740	4390	557	752	200	451	73
20	59	83	84	524	2250	3920	6110	503	991	187	331	73
21	58	85	82	510	1820	10600	3940	542	754	178	270	75
22	59	110	89	449	1550	6560	2680	634	638	170	221	83
23	58	153	100	537	1730	3370	1960	740	1320	294	195	135
24	58	132	108	768	2960	2210	1530	1530	1030	359	179	115
25	66	114	122	812	2430	1610	1220	2050	851	297	164	107
26	78	100	124	704	1780	1280	1020	1490	666	236	150	92
27	102	91	127	e680	1460	1070	886	1420	560	199	141	86
28	114	86	133	e810	1290	934	791	1500	486	181	133	82
29	95	82	134	e1000	---	831	695	1160	435	167	125	92
30	88	121	133	e1200	---	745	640	907	458	158	119	181
31	78	---	132	1290	---	674	---	875	---	235	114	---
TOTAL	2083	2984	3864	22931	68980	54596	72720	36410	39110	8603	8077	2816
MEAN	67.2	99.5	125	740	2464	1761	2424	1175	1304	278	261	93.9
MAX	114	153	181	3500	5660	10600	10900	3210	6750	563	737	181
MIN	55	75	82	115	1080	640	640	503	435	158	114	73
CFSM	.13	.19	.24	1.40	4.67	3.34	4.59	2.22	2.47	.53	.49	.18
IN.	.15	.21	.27	1.62	4.86	3.85	5.12	2.57	2.76	.61	.57	.20

e Estimated.

TENNESSEE RIVER BASIN

03524000 CLINCH RIVER AT CLEVELAND, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	264	400	778	1140	1385	1439	1024	804	488	328	315	210
MAX	1389	2011	3043	2817	3360	4572	3414	2254	2016	972	1640	1003
(WY)	1977	1978	1927	1937	1957	1955	1987	1958	1923	1938	1940	1989
MIN	53.8	64.0	80.7	92.1	206	309	228	195	79.7	78.2	63.2	55.3
(WY)	1931	1940	1940	1940	1941	1988	1942	1941	1930	1930	1988	1930

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

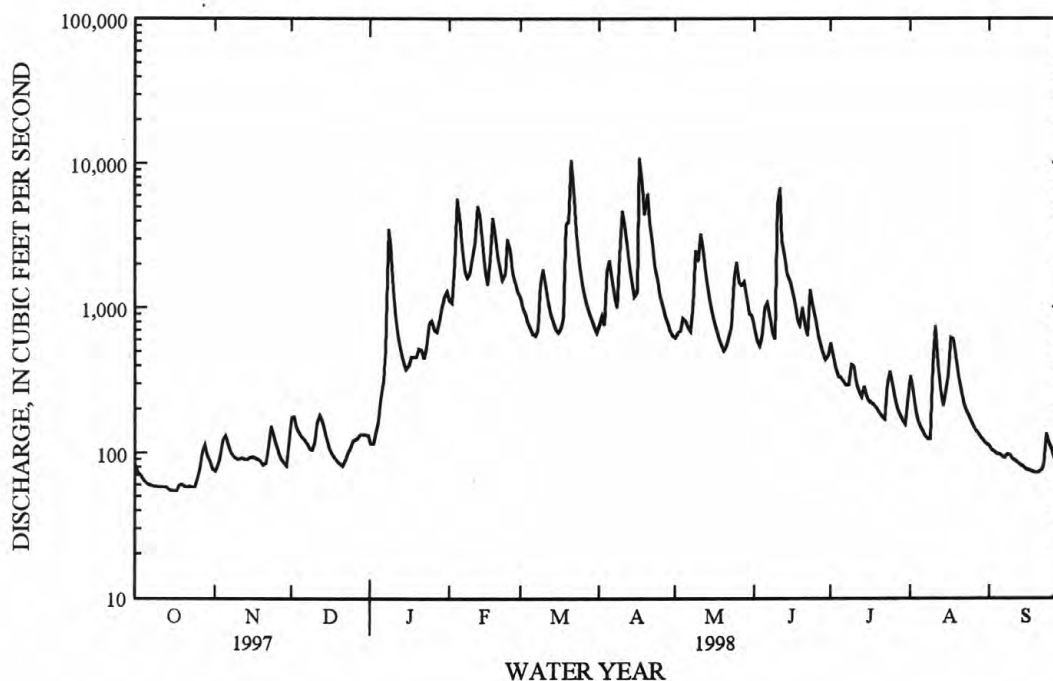
WATER YEARS 1921 - 1998

ANNUAL TOTAL	207117		323174									
ANNUAL MEAN	567		885							712		
HIGHEST ANNUAL MEAN										1076		1972
LOWEST ANNUAL MEAN										287		1988
HIGHEST DAILY MEAN	7670	Mar 4				10900	Apr 17			27800	Apr 5	1977
LOWEST DAILY MEAN	55	aOct 15				55	aOct 15			37	bSep 13	1964
ANNUAL SEVEN-DAY MINIMUM	56	Oct 11				56	Oct 11			40	Sep 13	1964
INSTANTANEOUS PEAK FLOW						13800	Apr 17			34500	Apr 5	1977
INSTANTANEOUS PEAK STAGE						16.19	Apr 17			26.40	Apr 5	1977
INSTANTANEOUS LOW FLOW						55	cOct 14			35	Sep 28	1964
ANNUAL RUNOFF (CFSM)	1.07					1.68				1.35		
ANNUAL RUNOFF (INCHES)	14.59					22.77				18.31		
10 PERCENT EXCEEDS	1330					2230				1570		
50 PERCENT EXCEEDS	287					395				375		
90 PERCENT EXCEEDS	78					82				98		

a Also Oct. 16, 17, 1997.

b Also Sept. 28, 1964.

c Also Oct. 15-17, 1997.



TENNESSEE RIVER BASIN

03524550 GUEST RIVER NEAR MILLER YARD, VA

LOCATION.--Lat 36°52'43", long 82°24'22", Wise County, Hydrologic Unit 06010205, on left bank, 850 ft upstream from footbridge on Guest River Gorge Trail, 210 ft downstream from Lick Branch, and 1,200 ft upstream from mouth.

DRAINAGE AREA.--100 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1996 to September 1998 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 1,400 ft above sea level, from topographic map.

REMARKS.--Records good except those for period of ice effect, Jan. 2, period of no gage-height record, Feb. 8-27, and period of doubtful gage-height record, Apr. 17, which are poor. Maximum discharge, 4,660 ft³/s, from rating curve extended above 1,600 ft³/s. Minimum gage height, 1.82 ft, Sept. 5, 6, 1997.

EXTREMES FOR CURRENT YEAR.--Maximum observed discharge, 4,660 ft³/s, Apr. 17, gage height, 7.65 ft; minimum, 5.9 ft³/s, Sept. 17, gage height, 1.87 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	16	66	51	307	148	206	181	159	131	88	14
2	14	20	66	e50	290	133	231	203	109	92	55	15
3	11	26	53	54	527	123	208	188	100	80	46	14
4	12	31	49	81	1200	117	757	399	466	74	40	12
5	11	31	48	105	627	111	752	354	751	70	30	12
6	11	24	45	114	395	106	507	289	554	67	26	12
7	9.1	21	42	290	305	102	354	267	366	61	23	13
8	7.5	22	39	1810	e290	125	282	360	260	66	24	19
9	9.9	24	41	722	e280	336	674	437	243	106	31	24
10	12	25	105	381	e300	363	665	640	808	83	34	15
11	18	23	189	246	e350	246	532	1340	847	64	37	12
12	14	21	106	169	e450	189	402	711	526	57	27	11
13	13	20	79	125	e400	158	315	438	624	55	23	10
14	10	24	66	107	e300	142	269	314	497	83	22	10
15	9.1	39	57	99	e250	127	238	242	414	65	53	8.8
16	12	35	49	112	e220	145	472	199	305	57	73	8.0
17	11	29	42	108	e350	213	e3500	157	231	68	405	7.6
18	11	24	38	102	e440	482	1280	123	173	53	152	9.4
19	12	22	35	106	e350	1770	1640	109	162	50	79	9.3
20	12	22	33	113	e290	1090	1490	99	137	52	58	14
21	10	34	32	106	e250	1130	929	188	113	46	46	15
22	8.5	110	42	111	e230	684	606	134	116	63	38	33
23	9.3	86	49	403	e220	456	500	303	552	57	34	29
24	11	59	49	459	e230	336	385	374	296	58	29	20
25	19	46	67	337	e210	275	317	231	267	52	25	15
26	31	38	64	247	e190	241	272	256	184	52	24	14
27	49	33	64	216	e180	205	241	209	130	43	22	14
28	41	31	65	322	161	179	226	159	109	36	19	14
29	25	30	59	334	---	157	188	122	98	32	19	15
30	18	32	58	381	---	133	173	108	102	30	18	22
31	16	---	56	360	---	120	---	253	---	63	17	---
TOTAL	477.4	998	1853	8221	9592	10142	18611	9387	9699	1966	1617	441.1
MEAN	15.4	33.3	59.8	265	343	327	620	303	323	63.4	52.2	14.7
MAX	49	110	189	1810	1200	1770	3500	1340	847	131	405	33
MIN	7.5	16	32	50	161	102	173	99	98	30	17	7.6
CFSM	.15	.33	.60	2.65	3.43	3.27	6.20	3.03	3.23	.63	.52	.15
IN.	.18	.37	.69	3.06	3.57	3.77	6.92	3.49	3.61	.73	.60	.16

e Estimated.

TENNESSEE RIVER BASIN

03524550 GUEST RIVER NEAR MILLER YARD, VA--Continued

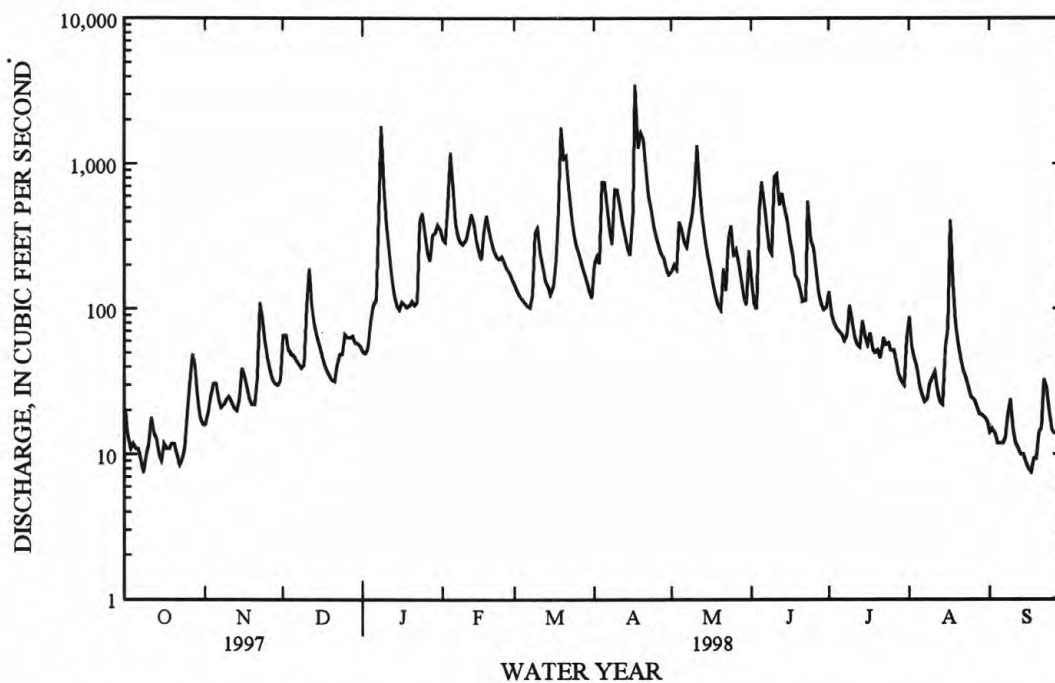
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	40.2	119	207	266	311	398	404	236	215	57.2	35.7	18.3
MAX	65.0	205	354	267	343	470	620	303	323	63.4	52.2	21.8
(WY)	1997	1997	1997	1997	1998	1997	1998	1998	1998	1998	1998	1997
MIN	15.4	33.3	59.8	265	279	327	188	169	106	51.0	19.3	14.7
(WY)	1998	1998	1998	1998	1997	1998	1997	1997	1997	1997	1997	1998

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1996 - 1998	
ANNUAL TOTAL	50848.8		73004.5			
ANNUAL MEAN	139		200		191	
HIGHEST ANNUAL MEAN					200	
LOWEST ANNUAL MEAN					183	
HIGHEST DAILY MEAN	1580	Mar 3	3500	Apr 17	3500	Apr 17 1998
LOWEST DAILY MEAN	6.0	Sep 5	7.5	Oct 8	6.0	Sep 5 1997
ANNUAL SEVEN-DAY MINIMUM	7.5	Sep 2	9.0	Sep 13	7.5	Sep 2 1997
INSTANTANEOUS PEAK FLOW			a4660	Apr 17	a4660	Apr 17 1998
INSTANTANEOUS PEAK STAGE			a7.65	Apr 17	a7.65	Apr 17 1998
INSTANTANEOUS LOW FLOW			5.9	Sep 17	4.9	bSep 5 1997
ANNUAL RUNOFF (CFSM)	1.39		2.00		1.91	
ANNUAL RUNOFF (INCHES)	18.92		27.16		26.00	
10 PERCENT EXCEEDS	359		462		434	
50 PERCENT EXCEEDS	72		99		105	
90 PERCENT EXCEEDS	12		14		15	

a Observed

a Also Sept. 6, 1997.



TENNESSEE RIVER BASIN

03524550 GUEST RIVER NEAR MILLER YARD, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1996 to September 1998.

WATER TEMPERATURE: October 1996 to September 1998.

INSTRUMENTATION.--Water-temperature and specific conductance recorder since October 1996.

REMARKS.--Interruption in record due to instrument malfunction. Records represent specific conductance within 5 microsiemens and water temperature within 0.5°C at sensors.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 956 microsiemens, Sept. 10, 1997; minimum recorded, 131 microsiemens, Apr. 17, 1998.

WATER TEMPERATURE: Maximum recorded, 26.7°C, Aug. 17, 1997; minimum 0.0°C on several days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 848 microsiemens, Oct. 19; minimum recorded, 131 microsiemens, Apr. 17.

WATER TEMPERATURE: Maximum recorded, 25.9°C, Aug. 24; minimum, 0.0°C, Jan. 1-3.

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	605	566	577	709	697	703	551	474	514	659	576	612
2	584	557	564	730	709	717	580	465	523	721	654	672
3	658	584	620	741	724	735	595	539	580	721	670	692
4	675	658	666	768	704	731	539	511	520	698	626	653
5	661	648	653	767	746	757	540	528	534	653	492	589
6	688	661	674	765	739	753	564	531	543	492	412	444
7	727	688	708	739	700	714	598	564	579	431	339	411
8	738	727	732	708	682	695	594	584	589	339	186	225
9	748	732	739	684	658	668	593	569	581	250	212	228
10	750	724	743	670	656	665	630	532	579	273	250	262
11	732	671	707	698	667	683	595	423	499	300	271	285
12	738	687	723	713	698	707	466	439	452	320	299	313
13	734	692	711	727	713	721	482	441	465	349	317	333
14	768	734	757	725	705	715	441	419	430	378	349	366
15	772	761	765	709	651	682	429	418	424	401	374	390
16	782	772	777	697	656	682	434	422	427	421	392	407
17	783	770	776	740	697	721	441	429	434	435	419	429
18	847	783	816	738	676	703	465	441	454	428	412	423
19	848	823	835	677	633	651	493	463	477	456	399	418
20	827	811	820	641	630	636	504	490	496	483	432	448
21	832	810	822	653	615	634	524	499	511	501	458	476
22	835	815	824	666	552	611	526	516	521	466	434	457
23	818	795	806	663	497	537	535	518	525	434	298	380
24	807	783	796	536	504	519	557	534	546	298	273	284
25	783	767	774	525	511	518	556	476	503	292	273	282
26	767	717	739	556	523	542	520	493	507	311	287	301
27	747	689	725	571	554	562	519	481	496	341	311	321
28	771	719	756	569	553	562	544	485	511	359	324	338
29	761	744	755	564	554	559	508	469	481	432	339	380
30	744	698	714	570	545	557	572	508	542	434	389	412
31	712	691	702	---	---	---	638	520	577	411	367	390
MONTH	848	557	735	768	497	655	638	418	510	721	186	407

TENNESSEE RIVER BASIN

03524550 GUEST RIVER NEAR MILLER YARD, VA--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	371	358	365	459	451	454	486	407	451	524	507	517
2	371	361	366	476	458	469	448	384	409	527	506	517
3	366	281	340	517	473	497	393	349	372	533	510	521
4	296	256	280	517	501	509	349	204	257	510	379	423
5	332	291	313	534	513	520	---	---	---	392	359	377
6	362	325	344	537	524	531	260	213	234	385	360	373
7	376	360	369	543	529	534	295	255	273	396	366	385
8	393	366	383	537	491	518	331	295	310	382	348	362
9	389	360	380	511	357	441	331	238	282	394	329	355
10	382	355	371	357	309	325	247	229	237	344	243	307
11	357	311	339	335	315	324	268	241	257	259	227	238
12	313	243	265	372	329	349	284	266	272	277	238	257
13	280	248	259	420	366	393	315	284	294	333	276	305
14	324	276	299	415	398	407	334	315	324	386	333	355
15	359	319	338	430	404	418	359	334	348	419	385	404
16	383	357	370	515	421	446	377	240	348	469	417	448
17	385	250	349	536	402	474	253	131	160	501	461	485
18	254	225	241	403	210	359	255	187	217	532	501	519
19	290	254	272	248	178	211	255	170	219	557	529	547
20	320	283	301	227	211	219	242	172	208	581	554	568
21	355	317	334	236	217	228	330	242	290	608	519	567
22	376	352	366	279	234	253	374	330	351	591	452	503
23	384	373	378	320	277	300	408	374	392	513	392	482
24	397	380	389	365	319	338	415	389	400	502	383	429
25	398	388	394	390	355	370	443	415	432	408	383	391
26	424	392	409	412	388	404	468	439	450	437	394	408
27	432	419	425	425	412	419	480	465	474	458	403	434
28	453	427	441	447	420	434	499	479	491	467	449	458
29	---	---	---	454	435	445	516	489	505	482	464	472
30	---	---	---	479	454	468	527	513	520	503	482	489
31	---	---	---	487	467	474	---	---	---	529	301	416
MONTH	453	225	346	543	178	404	---	---	---	608	227	429

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	409	371	383	555	533	543	647	545	617	748	737	743
2	445	369	407	555	548	552	625	582	598	749	742	745
3	482	445	465	575	554	564	638	606	618	---	---	---
4	524	340	423	590	575	581	660	638	655	---	---	---
5	389	277	305	592	587	589	659	647	653	---	---	---
6	296	272	282	613	591	599	680	659	669	---	---	---
7	324	296	312	630	613	621	702	680	693	---	---	---
8	366	324	345	648	630	641	701	679	690	---	---	---
9	388	364	378	649	625	637	722	679	705	---	---	---
10	401	262	327	659	649	656	747	721	735	---	---	---
11	267	248	256	655	647	652	751	738	743	---	---	---
12	288	261	274	647	605	631	751	719	734	---	---	---
13	318	271	298	607	599	604	736	717	724	---	---	---
14	306	271	293	607	564	582	725	710	719	---	---	---
15	337	305	317	629	584	615	732	672	696	---	---	---
16	376	331	352	605	564	576	777	588	719	---	---	---
17	413	376	391	615	599	605	588	339	428	---	---	---
18	435	413	425	642	615	628	422	349	401	---	---	---
19	463	435	450	646	639	643	428	420	424	---	---	---
20	481	445	469	645	624	635	455	424	441	---	---	---
21	501	465	487	663	624	646	496	455	474	---	---	---
22	522	493	507	669	659	664	530	496	512	---	---	---
23	519	295	383	669	630	646	568	530	548	---	---	---
24	447	391	426	667	654	663	589	568	581	---	---	---
25	399	371	381	666	622	637	611	589	601	---	---	---
26	453	399	428	643	627	632	635	611	623	---	---	---
27	483	453	466	677	643	664	654	635	644	---	---	---
28	512	483	497	678	667	672	679	654	666	---	---	---
29	536	512	525	667	662	665	693	679	686	---	---	---
30	558	536	549	667	663	666	719	693	704	---	---	---
31	---	---	---	670	606	651	737	719	727	---	---	---
MONTH	558	248	393	678	533	625	777	339	627	---	---	---

TENNESSEE RIVER BASIN

03524550 GUEST RIVER NEAR MILLER YARD, VA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	16.7	15.0	16.0	10.2	8.6	9.4	8.1	6.8	7.7	.7	.0	.2
2	16.2	13.7	14.7	10.9	9.8	10.2	6.8	5.8	6.3	.5	.0	.1
3	15.7	12.7	14.0	9.9	9.1	9.4	7.1	5.8	6.4	1.2	.0	.5
4	16.4	13.3	14.5	9.1	6.8	8.1	7.9	7.1	7.5	2.7	.9	1.7
5	17.1	14.0	15.2	7.4	5.4	6.3	7.3	4.6	6.1	4.4	2.1	3.0
6	17.4	14.5	15.6	6.8	5.6	6.2	4.6	2.4	3.3	6.9	4.4	5.7
7	17.6	14.6	15.8	8.1	6.4	7.1	2.4	1.8	2.1	9.2	6.9	7.6
8	17.9	14.9	16.1	7.8	7.5	7.7	2.2	1.6	1.9	10.4	9.2	10.1
9	18.3	15.1	16.5	8.2	7.4	7.7	3.2	2.1	2.6	10.2	7.7	9.0
10	17.7	16.5	17.0	8.1	6.9	7.5	5.5	3.2	4.1	7.7	5.9	6.5
11	19.1	17.1	17.7	7.7	7.2	7.4	5.5	5.0	5.2	6.0	5.3	5.7
12	18.8	16.0	17.3	7.2	6.4	6.9	5.0	4.3	4.6	6.8	6.0	6.4
13	18.7	15.9	17.1	7.3	6.0	6.6	4.3	3.1	3.8	7.6	6.8	7.1
14	17.2	14.5	16.0	8.0	7.3	7.6	3.1	1.8	2.5	6.8	5.4	6.0
15	14.6	12.2	13.2	7.4	5.9	6.7	1.9	.8	1.3	6.8	6.2	6.5
16	13.6	10.8	12.1	5.9	4.0	5.0	1.5	.3	.8	7.2	6.7	7.0
17	12.3	11.5	11.9	4.2	2.7	3.4	1.5	.1	.7	6.7	6.1	6.5
18	13.4	11.6	12.3	3.2	1.4	2.3	1.8	.3	1.0	6.1	5.0	5.5
19	13.4	12.0	12.6	4.0	2.2	2.8	1.9	.5	1.1	5.4	4.8	5.0
20	12.4	10.7	11.7	3.8	1.9	2.9	2.3	.6	1.4	4.8	3.5	3.9
21	11.7	10.4	10.8	4.5	3.2	3.6	3.6	1.9	2.7	4.2	3.0	3.6
22	10.9	9.0	9.9	6.8	4.5	5.9	5.2	3.6	4.4	5.5	4.2	4.8
23	9.5	6.9	8.2	7.5	6.2	7.0	6.4	5.2	5.7	6.9	5.5	6.4
24	8.4	7.5	7.9	6.2	4.2	5.4	6.3	5.6	5.9	6.9	5.4	6.3
25	11.8	8.4	9.9	4.3	2.9	3.6	6.9	6.2	6.5	5.4	4.3	4.8
26	12.5	11.1	11.6	3.9	2.5	3.2	7.0	6.1	6.5	4.7	3.9	4.3
27	12.5	10.5	11.7	4.4	2.8	3.6	6.1	4.0	5.1	4.4	1.6	3.5
28	10.5	8.8	9.6	5.2	3.1	4.1	4.0	2.7	3.5	3.3	1.4	2.4
29	9.6	7.3	8.3	6.1	4.6	5.3	2.7	1.8	2.2	4.4	2.9	3.6
30	9.4	6.7	7.9	7.9	6.1	7.0	2.2	1.6	2.0	5.1	4.4	4.7
31	9.6	7.0	8.1	---	---	---	1.6	.7	1.4	4.8	4.2	4.5
MONTH	19.1	6.7	12.9	10.9	1.4	6.0	8.1	.1	3.8	10.4	.0	4.9

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	4.2	2.9	3.7	9.8	8.8	9.3	16.2	14.6	15.5	14.5	13.2	13.8
2	5.1	3.8	4.4	8.9	7.4	8.1	15.1	12.4	13.9	14.0	12.7	13.4
3	5.5	4.7	5.2	7.4	6.1	6.6	13.5	11.4	12.1	14.0	12.7	13.3
4	4.7	3.9	4.2	6.2	5.6	5.9	12.1	9.3	10.6	13.3	12.0	12.5
5	4.3	3.9	4.2	7.1	5.6	6.3	---	---	---	13.2	11.6	12.4
6	4.8	4.2	4.5	7.2	6.0	6.6	11.2	8.3	9.9	14.9	11.4	13.2
7	5.6	4.5	5.1	8.4	6.9	7.6	12.2	9.4	10.8	14.8	13.9	14.3
8	5.9	5.1	5.5	10.4	8.4	9.4	14.2	11.2	12.6	14.5	13.8	14.0
9	6.4	5.3	5.8	10.6	8.4	10.0	13.5	11.7	12.9	14.4	13.6	14.0
10	6.5	5.3	6.0	8.4	4.6	6.3	11.7	9.4	10.4	14.0	13.2	13.5
11	6.9	5.8	6.3	4.6	3.3	3.9	10.8	8.2	9.5	14.1	13.1	13.5
12	6.9	6.1	6.5	4.0	2.2	3.0	11.8	8.7	10.3	14.6	12.4	13.6
13	6.1	5.9	6.0	3.6	1.6	2.8	12.3	9.5	11.0	16.0	13.0	14.5
14	6.2	5.4	5.8	6.2	2.8	4.3	14.2	11.6	12.7	18.0	14.9	16.3
15	5.7	4.3	5.2	6.7	4.0	5.3	14.0	11.8	12.9	19.2	16.0	17.7
16	6.6	5.5	6.0	6.1	4.5	5.5	14.0	12.6	13.3	19.1	17.5	18.4
17	8.0	6.6	7.3	7.4	5.8	6.7	12.9	11.8	12.3	20.6	17.6	19.0
18	7.7	7.3	7.4	8.8	6.8	7.7	12.4	11.4	11.6	20.5	17.1	18.9
19	7.4	7.1	7.3	9.5	8.4	9.0	11.6	11.2	11.5	20.8	17.2	18.9
20	7.4	7.0	7.2	9.8	8.7	9.2	11.7	10.5	11.1	21.1	18.6	19.7
21	7.1	6.4	6.9	9.3	7.2	8.3	12.0	10.2	11.3	20.7	19.3	20.0
22	7.1	5.6	6.4	7.2	6.1	6.6	11.7	11.0	11.2	20.1	18.9	19.5
23	7.1	6.7	7.0	7.0	5.3	6.2	12.0	10.6	11.3	19.1	17.6	18.2
24	6.7	5.8	6.3	7.5	5.9	6.7	12.6	10.4	11.6	19.1	17.1	18.0
25	7.2	5.2	6.3	7.3	6.2	6.7	13.8	10.7	12.3	19.4	17.8	18.7
26	8.1	5.7	7.0	10.3	6.4	8.4	14.8	12.3	13.6	19.1	18.1	18.7
27	10.1	8.1	9.1	13.0	9.5	11.3	14.3	12.4	13.4	18.8	17.9	18.3
28	11.2	9.5	10.1	14.5	11.6	13.1	13.4	10.8	12.3	20.1	17.4	18.8
29	---	---	---	15.8	12.8	14.1	13.3	11.9	12.7	20.8	18.2	19.6
30	---	---	---	16.3	13.0	14.7	14.0	12.6	13.3	22.4	19.3	20.7
31	---	---	---	16.7	14.1	15.4	---	---	---	21.1	19.7	20.4
MONTH	11.2	2.9	6.2	16.7	1.6	7.9	---	---	---	22.4	11.4	16.6

TENNESSEE RIVER BASIN

03524550 GUEST RIVER NEAR MILLER YARD, VA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	21.8	19.2	20.4	22.0	20.4	21.3	22.4	20.4	21.4	24.2	20.8	22.3
2	21.7	18.8	20.2	22.1	19.7	21.0	23.5	20.1	21.6	23.6	20.1	21.8
3	21.4	19.6	20.5	23.0	19.5	21.1	23.5	19.3	21.3	---	---	---
4	20.2	17.9	18.8	22.5	20.4	21.4	23.8	19.5	21.5	---	---	---
5	18.6	17.2	17.8	23.7	20.9	22.1	24.0	19.8	21.8	---	---	---
6	18.0	15.5	16.8	24.6	21.2	22.6	24.6	20.7	22.5	---	---	---
7	15.5	13.9	14.8	24.1	21.6	22.8	25.0	21.1	22.9	---	---	---
8	15.7	13.6	14.7	22.8	22.1	22.4	25.0	22.1	23.5	---	---	---
9	15.4	14.9	15.1	23.9	21.6	22.6	25.4	22.5	23.8	---	---	---
10	16.1	15.2	15.7	24.6	22.0	23.1	24.9	23.3	24.0	---	---	---
11	17.3	15.7	16.5	24.0	22.0	23.0	25.0	22.6	23.6	---	---	---
12	18.4	16.7	17.3	24.8	21.0	22.8	25.1	22.2	23.6	---	---	---
13	19.1	17.8	18.4	24.7	22.0	23.3	25.5	22.1	23.7	---	---	---
14	18.4	17.1	17.6	23.1	22.3	22.6	24.1	22.8	23.2	---	---	---
15	19.1	17.0	18.0	23.9	21.5	22.5	23.3	22.2	22.8	---	---	---
16	20.5	17.8	19.0	23.8	21.7	22.7	22.7	22.1	22.3	---	---	---
17	21.0	18.1	19.5	23.9	21.7	22.6	22.1	21.0	21.6	---	---	---
18	21.0	18.2	19.7	24.0	20.9	22.4	22.7	20.5	21.6	---	---	---
19	20.9	19.6	20.2	24.1	21.6	22.5	24.1	21.9	22.7	---	---	---
20	22.2	18.8	20.5	23.7	20.8	22.1	23.9	20.5	22.1	---	---	---
21	21.4	20.1	20.5	24.9	21.1	22.9	24.3	20.7	22.2	---	---	---
22	22.0	19.7	20.7	24.3	22.1	23.2	24.7	20.9	22.6	---	---	---
23	21.1	19.5	20.3	24.5	22.7	23.4	25.3	21.6	23.3	---	---	---
24	21.7	19.9	20.6	24.4	22.6	23.2	25.9	22.5	24.0	---	---	---
25	21.8	19.0	20.5	24.7	22.2	23.1	25.5	22.0	23.7	---	---	---
26	22.4	20.3	21.4	24.2	22.2	23.1	25.4	22.3	23.8	---	---	---
27	23.9	21.3	22.5	23.9	21.9	22.9	25.5	22.3	23.7	---	---	---
28	23.8	21.8	22.8	23.7	21.6	22.7	25.2	21.4	23.2	---	---	---
29	23.0	21.6	22.3	24.6	21.5	23.0	24.0	21.5	22.7	---	---	---
30	22.9	21.1	22.0	23.6	22.1	23.0	24.8	21.7	23.0	---	---	---
31	---	---	---	23.3	21.7	22.7	24.5	21.2	22.8	---	---	---
MONTH	23.9	13.6	19.2	24.9	19.5	22.6	25.9	19.3	22.8	---	---	---

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM
TENNESSEE RIVER BASIN
SURFACE-WATER QUALITY

03524550 GUEST RIVER NEAR MILLER YARD, VA

LOCATION.--Lat 36°52'43", long 82°24'22", Wise County, Hydrologic Unit 06010205, on left bank, 850 ft upstream from footbridge on Guest River Gorge Trail, 210 ft downstream from Lick Branch, and 1,200 ft upstream from mouth.

DRAINAGE AREA.--100 mi².

PERIOD OF RECORD.--October 1996 to present.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	GAGE HEIGHT (FEET) (00065)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	E. COLI WATER WHOLE TOTAL UREASE (COL / 100 ML) (31633)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
OCT 1997												
21...	1.96	12	810	8.3	9.0	10.2	724	10.5	K58	K24	K15	65
NOV												
19...	2.05	21	656	8.3	2.0	2.0	726	13.8	K11	<1	K3	54
DEC												
17...	2.21	42	432	7.9	1.0	.1	721	13.0	57	29	K12	35
JAN 1998												
09...	4.04	713	226	7.5	8.0	8.8	716	10.5	4500	800	600	18
21...	2.64	107	488	7.9	.0	2.8	725	13.2	280	42	42	36
FEB												
26...	3.03	30	412	8.0	-1.0	5.4	720	12.0	530	180	140	34
DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	BICAR- BONATE WATER DIS IT MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT MG/L AS CACO3 (39086)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
OCT 1997												
21...	33	51	5.5	240	21	.25	1.2	155	0	127	524	<.010
NOV												
19...	27	36	4.0	190	20	.16	.76	126	0	117	434	<.010
DEC												
17...	17	23	2.5	110	17	<.10	2.4	96	0	79	265	<.010
JAN 1998												
09...	7.8	11	1.8	50	14	<.10	4.7	36	0	30	135	<.010
21...	19	30	2.5	120	37	.12	4.6	84	0	69	296	.023
FEB												
26...	19	17	2.1	120	11	<.10	4.9	56	0	46	256	<.010
DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)
OCT 1997												
21...	<.050	<.015	<.20	<.20	.038	<.010	.013	13	11	2.6	.20	<.003
NOV												
19...	.612	.210	.21	.14	.026	<.010	.016	20	4.0	20	<.20	<.003
DEC												
17...	.448	<.020	.12	.12	.019	.029	.027	31	9.5	1.9	<.20	<.003
JAN 1998												
09...	.601	<.020	.23	.17	.272	<.010	<.010	32	105	2.5	1.3	<.003
21...	.674	.108	.25	.19	.029	<.010	.014	23	72	1.6	<.20	<.003
FEB												
26...	.475	.040	<.10	<.10	<.010	<.010	.012	15	129	1.4	.20	<.003

< Actual value is known to be less than the value shown.

K Results based on colony count outside the acceptance range (non-ideal colony count).

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM
TENNESSEE RIVER BASIN
SURFACE-WATER QUALITY

03524550 GUEST RIVER NEAR MILLER YARD, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)	ATRA- ZINE, WATER, DISS, REC, (UG/L) (39632)	ACETO- CHLOR, WATER, FLTRD REC (UG/L) (49260)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	BEN- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82673)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)
OCT 1997												
21...	<.002	E.007	<.002	<.002	<.002	<.002	<.004	<.011	<.011	<.004	<.002	<.009
NOV												
19...	<.002	<.001	<.002	.0056	<.002	<.002	<.004	<.003	<.003	<.004	<.002	<.002
DEC												
17...	<.002	<.001	<.002	<.002	<.002	<.002	<.004	<.003	<.003	<.004	<.002	<.002
JAN 1998												
09...	<.002	E.003	<.002	<.002	<.002	<.002	<.004	<.003	<.003	<.004	<.002	E.0024
21...	<.002	<.001	<.002	<.002	<.002	<.002	<.004	<.003	<.003	<.004	<.002	<.002
FEB												
26...	<.002	<.001	<.002	<.002	<.002	<.002	<.004	<.003	<.003	<.004	<.002	<.002
DATE	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	P,P' DDE DISSOLV (UG/L) (34653)	EPIC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS WATER DISS REC (UG/L) (04095)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (39341)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MALA- THION, DIS- SOLVED (UG/L) (82671)	(39532)
OCT 1997												
21...	<.017	<.002	<.001	<.006	<.002	<.004	<.003	<.003	<.004	<.002	<.004	<.005
NOV												
19...	<.017	E.001	<.001	<.006	<.002	<.004	<.003	<.003	E.003	<.002	<.004	<.005
DEC												
17...	<.017	<.002	<.001	<.006	<.002	<.004	<.003	<.003	<.004	<.002	<.004	<.005
JAN 1998												
09...	<.017	<.002	<.001	<.006	<.002	<.004	<.003	<.003	<.004	<.002	<.004	<.005
21...	<.017	<.002	<.001	<.006	<.002	<.004	<.003	<.003	<.004	<.002	<.004	<.005
FEB												
26...	<.017	<.002	<.001	<.006	<.002	<.004	<.003	<.003	<.004	<.002	<.004	<.005
DATE	METHO- LACHLOR WATER DISSOLV (UG/L) (39415)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PARA- THION, DIS- SOLVED (UG/L) (39542)
OCT 1997												
21...	<.002	<.001	<.006	<.004	<.003	<.003	<.007	<.004	<.004	<.005	<.002	<.004
NOV												
19...	<.002	<.001	<.006	<.004	<.003	<.003	<.004	<.004	<.004	<.005	<.002	<.004
DEC												
17...	<.002	<.001	<.006	<.004	<.003	<.003	<.004	<.004	<.004	<.005	<.002	<.004
JAN 1998												
09...	<.002	<.001	<.006	<.004	<.003	<.003	<.004	<.004	<.004	<.005	<.002	<.004
21...	<.002	<.001	<.006	<.004	<.003	<.003	<.004	<.004	<.004	<.005	<.002	<.004
FEB												
26...	<.002	<.001	<.006	<.004	<.003	<.003	<.004	<.004	<.004	<.005	<.002	<.004
DATE	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	PRO- PARGITE FLTRD 0.7 U GF, REC (UG/L) (82685)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1997												
21...	<.007	E.0169	<.013	<.005	<.002	<.011	E.0285	<.013	<.001	<.002	--	--
NOV												
19...	<.007	E.0128	<.013	<.005	<.002	<.007	.0158	<.013	<.001	<.002	4	54
DEC												
17...	<.007	<.018	<.013	<.005	<.002	<.007	.0264	<.013	<.001	<.002	2	31
JAN 1998												
09...	<.007	E.0061	<.013	<.005	<.002	<.007	.0418	<.013	<.001	<.002	46	63
21...	<.007	E.0052	<.013	<.005	<.002	<.007	.0367	<.013	<.001	<.002	3	92
FEB												
26...	<.007	<.018	<.013	<.005	<.002	<.007	.0252	<.013	<.001	<.002	5	68

< Actual value is known to be less than the value shown.
E Estimated.

TENNESSEE RIVER BASIN

03526000 COPPER CREEK NEAR GATE CITY, VA

LOCATION.--Lat 36°40'26", long 82°33'57", Scott County, on right bank at upstream side of highway bridge, 0.2 mi upstream from Plank Camp Creek, 1.1 mi downstream from Obeys Creek, and 2.6 mi northeast of Gate City.

DRAINAGE AREA.--106 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1947 to September 1972, October 1973 to February 1996 (annual maximum only), March 1996 to September 1998 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

REVISED RECORDS.--WSP 1143: 1948. WSP 1306: 1948-50(M). WSP 1556: 1951(M).

GAGE.--Water-stage recorder. Datum of gage is 1,301.95 ft above sea level (Virginia Department of Transportation bench mark). Prior to Aug. 30, 1953, nonrecording gage on highway bridge at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Maximum discharge, 7,660 ft³/s, from rating curve extended above 3,500 ft³/s. Minimum gage height, 1.90 ft, Dec. 5, 1969. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,200 ft³/s and maximum for year (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 4	0630	1,650	7.82	Apr. 20	0345	1,900	8.22
Apr. 9	2130	1,240	7.10	May 11	0645	1,210	7.03
Apr. 17	1445	*4,880	*11.51				

Minimum discharge, 23 ft³/s, Dec. 17, 20-21, gage height 2.01 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	27	37	38	259	125	148	152	86	336	70	31
2	33	29	47	38	225	118	158	160	83	174	54	30
3	31	31	45	36	384	110	146	171	84	138	47	31
4	30	34	38	36	1310	105	542	445	219	113	45	33
5	30	33	34	41	668	98	530	350	265	103	44	33
6	30	34	32	44	424	94	312	274	240	94	43	34
7	30	30	31	104	310	90	243	247	150	86	42	34
8	30	27	29	668	268	99	209	256	120	82	42	35
9	31	27	31	496	248	266	727	320	127	92	46	35
10	31	26	38	217	232	275	687	404	151	80	53	36
11	31	27	50	133	229	183	399	959	296	72	102	33
12	31	27	53	101	247	150	292	592	185	69	66	32
13	30	27	40	86	222	131	241	404	168	66	52	32
14	29	28	34	75	186	122	215	301	148	64	51	31
15	29	29	31	70	157	113	193	243	139	62	51	31
16	29	28	28	81	144	116	321	207	129	60	62	30
17	30	28	26	94	214	130	3560	182	111	59	130	30
18	30	27	26	81	417	241	1220	161	99	60	107	30
19	30	26	26	77	279	873	1210	146	99	59	69	29
20	29	26	25	83	234	643	1470	136	93	58	53	29
21	29	30	25	87	212	766	718	129	87	56	47	29
22	28	38	31	85	188	521	504	123	103	53	43	30
23	28	46	32	204	183	363	389	131	549	59	41	30
24	28	39	35	238	197	275	309	145	248	60	39	28
25	30	32	42	178	178	224	257	122	174	54	38	27
26	36	29	43	136	158	193	223	125	147	52	36	27
27	45	28	43	185	148	171	201	119	135	50	35	27
28	44	27	43	483	136	157	186	105	118	48	34	27
29	35	26	39	486	---	145	164	97	107	47	33	28
30	30	27	39	398	---	134	156	92	156	46	33	29
31	27	---	38	324	---	126	---	88	---	59	32	---
TOTAL	975	893	1111	5403	8057	7157	15930	7386	4816	2511	1640	921
MEAN	31.5	29.8	35.8	174	288	231	531	238	161	81.0	52.9	30.7
MAX	45	46	53	668	1310	873	3560	959	549	336	130	36
MIN	27	26	25	36	136	90	146	88	83	46	32	27
CFSM	.30	.28	.34	1.64	2.71	2.18	5.01	2.25	1.51	.76	.50	.29
IN.	.34	.31	.39	1.90	2.83	2.51	5.59	2.59	1.69	.88	.58	.32

TENNESSEE RIVER BASIN

03526000 COPPER CREEK NEAR GATE CITY, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 1972, 1996**, 1997 - 1998 BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	47.5	74.9	151	217	297	288	223	169	88.6	73.5	58.8	46.0
MAX	184	182	327	559	646	784	531	539	228	200	151	124
(WY)	1972	1960	1997	1972	1957	1963	1998	1958	1950	1949	1996	1966
MIN	21.9	21.1	28.2	30.1	71.0	92.7	78.6	54.7	35.8	28.9	26.4	19.6
(WY)	1964	1954	1966	1966	1954	1970	1963	1964	1964	1955	1953	1955

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1948 - 1972
1996**
1997 - 1998

ANNUAL TOTAL	50712	56800	
ANNUAL MEAN	139	156	143
HIGHEST ANNUAL MEAN			208
LOWEST ANNUAL MEAN			80.7
HIGHEST DAILY MEAN	1800	Mar 3	3560
LOWEST DAILY MEAN	25	aDec 20	25
ANNUAL SEVEN-DAY MINIMUM	27	Dec 15	27
INSTANTANEOUS PEAK FLOW			4880
INSTANTANEOUS PEAK STAGE			11.51
INSTANTANEOUS LOW FLOW			23
ANNUAL RUNOFF (CFSM)	1.31	1.47	1.35
ANNUAL RUNOFF (INCHES)	17.80	19.93	18.32
10 PERCENT EXCEEDS	314	322	300
50 PERCENT EXCEEDS	83	81	75
90 PERCENT EXCEEDS	30	29	28

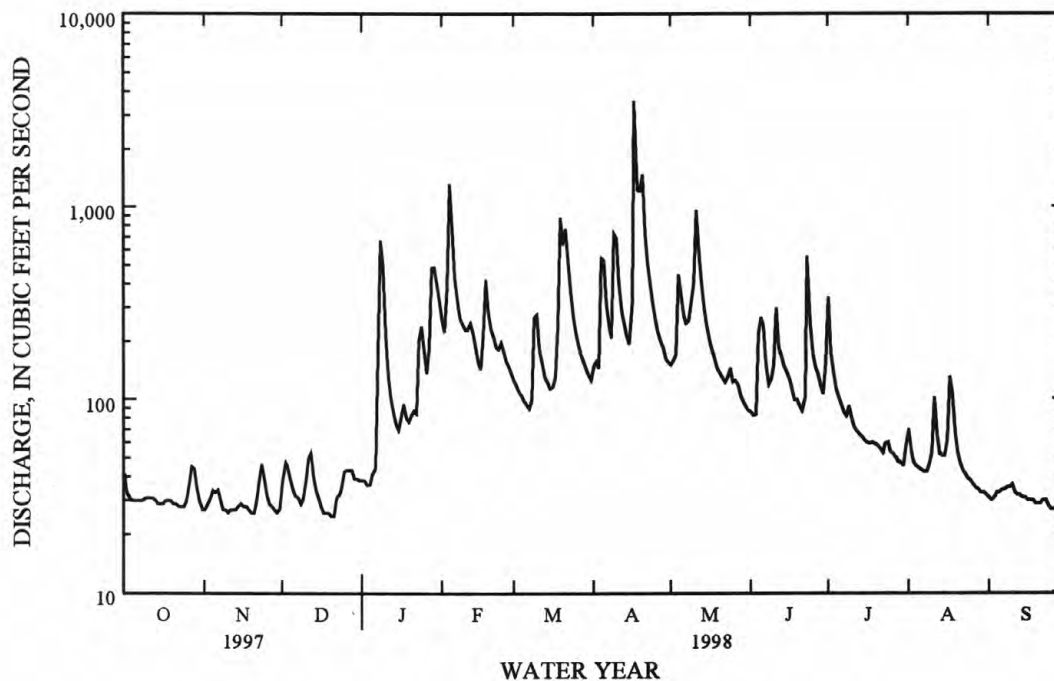
** Partial water year.

a Also Dec. 21, 1997.

b Higher maximum occurred during period of non-continuous record; 7,660 ft³/s, Apr. 5, 1977, gage height, 13.57 ft.

c Also Dec. 20-21, 1997.

d Result of freezeup.



TENNESSEE RIVER BASIN

03526000 COPPER CREEK NEAR GATE CITY, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1996 to September 1998.

WATER TEMPERATURE: October 1996 to September 1998.

INSTRUMENTATION.--Water-temperature and specific conductance recorder since October 1996.

REMARKS.--Interruption in record due to conductance probe being out of the water. Records represent specific conductance within 5 microsiemens and water temperature within 0.5°C at sensors.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 401 microsiemens, Oct. 5, 1996; minimum recorded 188 microsiemens, Apr. 17, 1998.

WATER TEMPERATURE: Maximum recorded, 25.9°C, July 21, 1997; minimum recorded, 0.0°C, Dec. 17, 1997.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 386 microsiemens, Jan. 7; minimum recorded 188 microsiemens, Apr. 17.

WATER TEMPERATURE: Maximum recorded, 25.3°C, July 21; minimum recorded, 0.0°C, Dec. 17.

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	341	335	339	336	333	335	323	315	320	338	334	336
2	342	336	340	336	329	333	326	318	322	341	337	339
3	347	340	344	332	328	330	323	319	321	347	339	343
4	350	347	349	331	328	329	323	318	321	344	337	341
5	352	349	350	330	327	328	329	322	327	342	337	340
6	351	347	349	330	326	328	331	329	330	352	342	346
7	351	347	349	330	327	329	333	329	331	386	348	361
8	348	345	347	332	330	331	334	329	331	374	298	336
9	347	344	345	336	332	335	337	324	329	320	297	309
10	346	341	344	338	334	336	329	325	326	334	318	327
11	346	341	344	335	333	334	331	327	329	334	330	332
12	345	340	343	335	332	334	332	328	330	340	333	336
13	345	342	344	333	328	331	336	332	334	342	332	338
14	346	344	345	328	323	326	342	336	340	337	331	334
15	345	342	344	327	325	326	345	342	344	337	332	335
16	345	342	343	327	324	326	345	341	343	344	333	338
17	345	342	344	326	323	325	343	335	340	351	338	346
18	344	340	342	327	324	325	338	333	336	351	344	346
19	342	339	341	326	322	324	334	329	332	346	340	343
20	341	337	339	326	323	325	332	325	329	345	340	342
21	339	337	338	326	314	320	328	321	325	345	341	343
22	338	336	337	322	317	319	322	312	316	347	338	343
23	337	335	336	324	320	322	319	315	317	349	338	343
24	337	333	336	326	323	324	318	312	316	354	347	351
25	336	331	334	328	325	327	321	315	319	357	351	355
26	334	320	329	332	327	330	324	319	320	357	348	354
27	326	319	324	335	332	333	326	321	323	350	335	344
28	326	324	325	336	332	334	329	325	327	335	326	332
29	329	324	327	334	330	332	334	329	331	346	326	339
30	331	329	330	333	321	328	348	332	338	350	340	347
31	333	330	332	---	---	---	348	334	337	356	340	349
MONTH	352	319	340	338	314	329	348	312	329	386	297	341

TENNESSEE RIVER BASIN

03526000 COPPER CREEK NEAR GATE CITY, VA--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	358	349	354	310	298	305	297	283	290	298	288	292
2	357	351	355	311	298	305	309	297	303	297	283	291
3	357	299	341	310	300	305	315	296	306	312	281	299
4	299	264	274	312	304	308	320	290	306	312	281	302
5	291	274	281	312	300	307	318	303	310	315	299	307
6	291	287	289	312	305	309	311	296	301	312	298	307
7	298	291	295	315	305	310	320	300	309	310	295	303
8	303	298	301	311	299	305	331	317	324	311	298	305
9	308	301	304	321	295	305	330	269	301	320	291	307
10	308	302	305	326	316	321	297	268	284	315	298	309
11	308	299	304	321	314	317	303	297	299	313	291	300
12	306	301	304	320	314	317	304	284	294	302	288	296
13	306	297	302	321	312	317	294	285	290	300	284	294
14	303	294	299	320	308	314	301	290	296	300	286	294
15	302	296	299	318	306	313	299	292	295	302	286	293
16	303	297	300	320	302	308	318	257	304	303	287	293
17	304	291	299	314	307	310	257	188	225	304	287	297
18	305	294	298	316	251	301	264	242	255	301	287	296
19	305	301	304	293	273	279	266	251	259	---	---	---
20	308	304	306	286	273	281	262	259	261	---	---	---
21	311	302	307	285	279	283	268	261	264	---	---	---
22	311	302	307	286	282	284	274	268	271	---	---	---
23	309	304	307	289	284	287	277	274	275	304	292	299
24	311	306	309	291	286	289	280	277	279	306	298	302
25	316	309	312	294	290	292	285	280	283	311	302	307
26	316	307	312	297	289	294	288	282	286	311	299	304
27	314	304	310	298	288	295	291	285	288	313	306	309
28	314	302	308	302	286	295	293	285	290	318	310	313
29	---	---	---	302	287	295	293	284	289	321	308	316
30	---	---	---	304	285	295	295	286	290	321	306	314
31	---	---	---	304	284	295	---	---	---	322	309	316
MONTH	358	264	307	326	251	301	331	188	288	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	322	306	315	325	279	302	321	312	316	347	344	346
2	317	307	312	334	301	325	326	313	321	347	343	345
3	318	291	311	342	322	339	328	319	323	345	338	343
4	304	231	287	343	336	339	336	327	333	343	336	341
5	311	281	299	340	333	337	342	336	339	346	336	342
6	330	311	325	335	328	333	339	332	337	340	332	336
7	334	328	331	333	328	331	343	331	337	335	328	331
8	335	326	331	337	330	334	345	319	334	331	325	328
9	333	310	325	339	323	334	339	304	327	333	325	329
10	335	324	330	336	322	332	325	301	308	332	327	329
11	347	299	322	341	334	337	321	315	319	334	328	331
12	341	319	334	341	331	337	331	320	326	334	330	333
13	341	324	334	343	331	336	336	313	329	335	331	333
14	339	330	335	343	332	338	332	311	325	337	332	335
15	333	324	328	338	330	335	344	328	338	336	332	334
16	333	324	329	334	329	331	338	319	329	338	333	336
17	331	320	327	337	326	331	332	308	319	337	331	335
18	332	322	328	332	326	330	348	332	343	340	335	337
19	331	317	324	329	310	323	361	347	357	338	336	337
20	329	320	324	329	319	326	363	357	360	338	335	337
21	329	321	325	331	327	329	359	356	357	340	336	338
22	331	282	320	334	328	331	358	353	356	340	336	338
23	323	251	283	333	322	325	359	351	355	341	335	339
24	320	299	311	333	326	329	355	348	352	338	334	336
25	323	319	321	335	331	333	352	346	349	341	334	336
26	328	306	322	339	331	335	351	345	348	342	335	339
27	331	322	326	338	330	334	349	344	346	343	337	340
28	327	320	324	339	328	334	350	344	347	340	336	338
29	327	321	325	337	327	332	350	345	347	337	325	332
30	324	250	312	335	327	332	349	344	347	337	331	334
31	---	---	---	335	320	328	349	344	347	---	---	---
MONTH	347	231	321	343	279	331	363	301	338	347	325	336

TENNESSEE RIVER BASIN

03526000 COPPER CREEK NEAR GATE CITY, VA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	17.0	15.1	16.1	11.7	9.7	10.6	9.6	6.9	8.9	1.5	.1	.3
2	15.6	13.0	14.4	11.8	10.6	11.3	6.9	4.6	5.8	.7	.1	.2
3	15.1	11.9	13.7	10.7	9.3	10.0	7.8	5.7	6.7	2.1	.1	1.0
4	16.0	12.7	14.4	9.8	7.3	8.6	9.0	7.8	8.4	3.4	1.3	2.3
5	16.9	13.8	15.3	8.1	5.3	6.7	8.1	4.9	6.4	5.8	2.1	3.7
6	17.1	14.2	15.7	7.6	6.2	6.9	4.9	2.7	3.6	7.3	5.8	6.4
7	17.2	14.2	15.8	9.0	7.3	8.1	2.8	2.1	2.5	10.0	7.2	8.2
8	17.6	14.8	16.3	9.0	8.4	8.7	2.6	1.1	2.0	12.1	10.0	11.2
9	17.9	15.0	16.6	9.0	8.1	8.5	4.6	2.6	3.6	11.9	9.1	10.8
10	17.7	16.6	17.2	9.0	7.8	8.4	6.8	4.6	5.5	9.1	6.9	7.8
11	19.6	17.3	18.2	8.9	8.3	8.6	6.1	5.3	5.6	7.1	6.1	6.6
12	18.9	16.3	17.7	8.5	7.2	7.9	5.5	4.7	5.2	8.0	6.9	7.3
13	18.8	16.0	17.5	8.3	6.6	7.4	5.1	3.6	4.5	8.7	7.8	8.1
14	18.0	14.6	16.4	8.8	7.9	8.3	3.6	1.9	2.6	7.8	5.8	6.8
15	14.6	11.6	13.1	7.9	5.7	6.9	2.1	.3	1.3	7.8	7.1	7.4
16	13.2	10.2	11.9	5.7	4.5	5.1	1.8	.1	1.0	8.3	7.7	8.0
17	12.8	11.9	12.4	4.9	3.1	4.0	2.0	.0	1.1	8.0	6.7	7.4
18	13.9	11.9	12.9	3.7	1.5	2.8	2.2	.2	1.3	6.7	5.2	6.1
19	14.1	12.5	13.3	5.2	2.8	3.8	2.4	.4	1.5	6.6	5.9	6.2
20	13.0	10.7	12.0	4.9	2.3	3.7	3.2	.7	2.0	5.9	4.2	5.0
21	12.5	10.6	11.2	6.0	3.9	4.6	5.0	2.4	3.5	5.8	3.7	4.7
22	11.7	10.0	10.8	8.5	6.0	7.4	7.3	5.0	6.1	7.2	5.6	6.2
23	10.1	6.7	8.4	8.8	7.2	8.0	7.9	6.6	7.1	8.7	7.2	8.0
24	9.3	7.5	8.3	7.2	4.7	5.8	7.2	6.3	6.7	8.8	7.6	8.4
25	13.4	9.3	11.3	4.7	2.4	3.7	7.7	6.4	6.9	7.6	6.1	7.0
26	14.1	13.0	13.5	4.5	2.7	3.6	7.5	6.3	6.8	6.8	5.1	5.9
27	14.0	10.8	12.4	5.0	3.0	4.1	6.7	4.8	5.6	5.8	4.2	5.1
28	10.8	8.7	9.9	5.7	3.3	4.5	5.1	3.9	4.5	7.4	4.2	6.1
29	10.0	7.2	8.7	6.7	4.7	5.6	3.9	2.3	3.1	8.2	6.6	7.4
30	9.8	6.6	8.3	9.8	6.7	8.3	3.5	2.4	3.0	8.5	7.4	7.9
31	10.1	7.0	8.6	---	---	---	2.4	1.4	1.8	8.2	7.2	7.7
MONTH	19.6	6.6	13.3	11.8	1.5	6.7	9.6	.0	4.3	12.1	.1	6.3

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.2	5.4	6.4	11.9	10.2	11.0	18.2	15.8	17.0	15.8	14.4	15.0
2	7.7	6.1	6.9	10.9	9.0	9.9	17.5	13.4	15.4	15.1	13.6	14.4
3	8.5	7.7	8.0	9.0	7.2	7.9	15.0	12.4	13.5	15.6	13.6	14.4
4	8.5	8.0	8.1	7.9	6.5	7.0	13.3	11.1	12.1	13.9	13.1	13.5
5	8.3	8.0	8.1	9.6	6.3	7.7	13.2	10.1	11.4	14.8	12.3	13.5
6	8.6	7.8	8.2	9.2	7.3	8.2	14.1	9.9	11.9	16.4	12.6	14.5
7	9.0	7.8	8.4	10.5	8.1	9.3	14.8	10.9	12.8	15.8	14.7	15.3
8	8.7	7.8	8.3	12.8	10.1	11.4	16.4	12.9	14.5	15.3	14.6	15.0
9	9.4	8.0	8.6	12.4	9.9	11.5	15.4	12.8	14.1	16.1	14.3	15.1
10	9.1	7.5	8.4	9.9	6.5	8.0	12.8	10.8	11.7	15.6	14.0	14.5
11	9.4	8.1	8.7	6.7	5.0	5.9	13.7	10.0	11.5	15.1	13.7	14.2
12	9.4	8.3	8.8	6.9	3.6	5.1	14.7	10.3	12.4	15.7	13.3	14.4
13	8.3	7.8	8.1	6.3	2.9	4.6	14.8	11.1	13.0	17.4	13.5	15.3
14	9.0	7.2	7.9	8.6	3.9	6.0	15.4	13.3	14.1	18.9	15.3	17.0
15	8.2	5.5	6.9	9.6	5.1	7.2	15.5	12.9	14.1	19.9	16.4	18.1
16	8.7	7.1	7.9	9.1	7.1	8.1	14.9	13.5	14.1	19.4	17.4	18.5
17	10.5	8.5	9.3	9.9	7.7	8.8	13.7	12.9	13.3	21.1	17.7	19.2
18	10.3	9.4	9.9	10.8	8.8	9.7	13.6	12.6	13.0	20.8	16.7	18.7
19	9.5	9.1	9.3	12.6	10.8	11.6	12.9	12.5	12.7	21.0	16.5	18.7
20	9.1	8.7	8.9	12.5	11.1	11.7	13.7	12.0	12.8	21.8	17.9	19.7
21	9.5	8.3	8.9	11.5	9.3	10.5	13.7	11.8	12.8	22.0	18.7	20.2
22	9.3	7.2	8.3	9.4	8.6	9.0	13.1	12.3	12.6	20.7	18.4	19.7
23	9.1	8.5	8.9	10.1	7.3	8.7	13.6	11.7	12.6	19.4	17.9	18.5
24	8.7	7.4	8.1	10.9	8.7	9.7	14.4	11.5	12.9	20.5	17.7	18.9
25	9.8	6.5	8.1	10.2	8.6	9.4	15.4	11.4	13.4	21.0	18.6	19.8
26	10.8	7.2	9.0	13.7	8.4	10.8	16.7	13.4	14.9	20.9	18.6	19.8
27	13.5	10.1	11.6	16.4	11.3	13.6	15.5	13.4	14.4	20.4	19.0	19.6
28	13.7	11.4	12.3	17.6	13.1	15.2	15.3	11.9	13.6	22.3	18.3	20.0
29	---	---	---	18.3	14.0	16.0	15.6	13.1	14.3	22.8	18.7	20.7
30	---	---	---	19.0	14.1	16.4	15.9	14.2	14.9	23.8	19.7	21.6
31	---	---	---	18.7	15.2	16.9	---	---	---	23.4	20.5	22.0
MONTH	13.7	5.4	8.6	19.0	2.9	9.9	18.2	9.9	13.4	23.8	12.3	17.4

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM
TENNESSEE RIVER BASIN
SURFACE-WATER QUALITY

03526000 COPPER CREEK NEAR GATE CITY, VA

LOCATION.--Lat 36°40'26", long 82°33'57", Scott County, on right bank at upstream side of highway bridge, 0.2 mi upstream from Plank Camp Creek, 1.1 mi downstream from Obeyes Creek, and 2.6 mi northeast of Gate City.

DRAINAGE AREA.--106 mi².

PERIOD OF RECORD.--October 1996 to present.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	GAGE HEIGHT (FEET) (00065)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	COLI- FORM, TOTAL, IMMED. PER (COLS. 100 ML) (31501)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	E. COLI WATER WHOLE TOTAL UREASE (COL / 100 ML) (31633)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
OCT 1997												
20...	2.01	29	341	8.2	6.0	10.6	727	9.8	450	120	110	38
NOV												
18...	2.08	28	327	8.1	-3.5	1.3	731	13.6	150	78	53	42
DEC												
16...	2.11	32	345	8.3	-3.0	-2	728	12.6	86	K35	33	45
JAN 1998												
09...	4.68	484	305	8.1	7.0	10.8	717	9.1	5400	2300	2400	44
20...	--	81	344	8.3	-1.0	4.1	726	11.8	170	K52	K33	47
FEB												
04...	7.72	1590	264	8.0	4.0	7.8	712	10.4	3600	2900	2100	40
25...	3.26	182	315	8.3	.0	6.3	726	11.7	K90	70	K10	42

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS S04) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CAC03 (39086)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
OCT 1997												
20...	19	2.1	2.2	4.7	3.8	<.10	6.7	222	0	182	196	<.010
NOV												
18...	18	2.3	1.6	5.8	4.4	<.10	4.9	157	4	135	191	<.010
DEC												
16...	17	3.2	1.4	8.1	6.5	<.10	2.7	210	0	172	196	.020
JAN 1998												
09...	9.2	3.7	1.9	10	9.1	<.10	5.7	150	0	123	185	<.010
20...	14	3.5	1.4	9.4	7.7	.10	4.2	242	1	201	208	<.010
FEB												
04...	9.1	2.2	1.6	7.9	5.2	<.10	5.2	170	1	139	153	<.010
25...	13	2.6	1.2	6.9	5.7	<.10	4.8	181	6	158	177	<.010

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTH, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)
OCT 1997												
20...	.439	.044	<.20	<.20	<.010	<.010	.010	5.0	3.5	1.8	.40	<.003
NOV												
18...	.649	<.020	<.10	<.10	<.010	<.010	.020	5.9	1.3	1.1	.20	<.003
DEC												
16...	.785	<.020	<.10	<.10	.012	<.010	.015	<10	<4.0	1.9	.30	<.003
JAN 1998												
09...	1.79	<.020	.79	.15	.095	<.010	.012	20	<4.0	2.9	3.0	<.003
20...	1.31	<.020	<.10	<.10	.020	<.010	<.010	<10	<4.0	1.2	<.20	<.003
FEB												
04...	1.32	<.020	.68	.11	.118	.017	.023	<10	<4.0	3.0	2.7	<.003
25...	1.31	<.020	<.10	<.10	<.010	<.010	.010	<10	<4.0	.80	.20	<.003

< Actual value is known to be less than the value shown.

K Results based on colony count outside the acceptance range (non-ideal colony count).

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM
TENNESSEE RIVER BASIN
SURFACE-WATER QUALITY

03526000 COPPER CREEK NEAR GATE CITY, VA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)	ATRA- ZINE, WATER, DISS, REC, (UG/L) (39632)	ACETO- CHLOR, WATER, FLTRD REC, (UG/L) (49260)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	BUTYL- ATE, WATER, DISS, REC, (UG/L) (04028)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CYANA- ZINE, WATER, DISS, REC, (UG/L) (04041)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	DEETHYL ATRA- ZINE, WATER, DISS, REC, (UG/L) (04040)
OCT 1997												
20...	<.002	E.008	<.002	<.002	<.002	<.002	<.004	<.009	<.011	<.004	<.002	E.0131
NOV												
18...	<.002	.005	<.002	<.002	<.002	<.002	<.004	<.003	<.003	<.004	<.002	E.0033
DEC												
16...	<.002	.005	<.002	<.002	<.002	<.002	<.004	<.003	<.003	<.004	<.002	E.0055
JAN 1998												
09...	<.002	E.004	<.002	<.002	<.002	<.002	<.004	<.003	<.003	<.004	<.002	E.0032
20...	<.002	.005	<.002	<.002	<.002	<.002	<.004	<.003	<.003	<.004	<.002	E.0052
FEB												
04...	<.002	E.003	<.002	<.002	<.002	<.002	<.004	<.003	<.003	<.004	<.002	E.0025
25...	<.002	.005	<.002	<.002	<.002	<.002	<.004	<.003	<.003	<.004	<.002	E.0042
DATE	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	P, P' DDE DISSOLV (UG/L) (34653)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS WATER DISS REC (UG/L) (04095)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	MALA- THION, DIS- SOLVED (UG/L) (39532)	
OCT 1997												
20...	<.017	<.002	<.001	<.006	<.002	<.004	<.003	<.003	<.004	<.002	<.005	
NOV												
18...	<.017	<.002	<.001	<.006	<.002	<.004	<.003	<.003	<.004	<.002	<.005	
DEC												
16...	<.017	<.002	<.001	<.006	<.002	<.004	<.003	<.003	<.004	<.002	<.005	
JAN 1998												
09...	<.017	<.002	<.001	<.006	<.002	<.004	<.003	<.003	<.004	<.002	<.005	
20...	<.017	<.002	<.001	<.006	<.002	<.004	<.003	<.003	<.004	<.002	<.005	
FEB												
04...	<.017	<.002	<.001	<.006	<.002	<.004	<.003	<.003	<.004	<.002	<.005	
25...	<.017	<.002	<.001	<.006	<.002	<.004	<.003	<.003	<.004	<.002	<.005	
DATE	METHYL AZIN- PHOS WAT FLT 0.7 U DISSOLV (UG/L) (39415)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	METRI- BUZIN WATER FLTRD 0.7 U DISSOLV (UG/L) (82630)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PARA- THION, DIS- SOLVED (UG/L) (39542)	
OCT 1997												
20...	<.002	<.001	<.006	<.004	<.003	<.003	<.008	<.004	<.004	<.005	<.004	
NOV												
18...	<.002	<.001	<.006	<.004	<.003	<.003	<.004	<.004	<.004	<.005	<.004	
DEC												
16...	<.002	<.001	<.006	<.004	<.003	<.003	<.004	<.004	<.004	<.005	<.004	
JAN 1998												
09...	<.002	<.001	<.006	<.004	<.003	<.003	<.004	<.004	<.004	<.005	<.004	
20...	<.002	<.001	<.006	<.004	<.003	<.003	<.004	<.004	<.004	<.005	<.004	
FEB												
04...	<.002	<.001	<.006	<.004	<.003	<.003	<.004	<.004	<.004	<.005	<.004	
25...	<.002	<.001	<.006	<.004	<.003	<.003	<.004	<.004	<.004	<.005	<.004	
DATE	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	
OCT 1997												
20...	<.007	<.018	<.013	<.005	<.002	<.014	E.0151	<.013	<.001	<.002	2	
NOV												
18...	<.007	<.018	<.013	<.005	<.002	<.007	<.010	<.013	<.001	<.002	1	
DEC												
16...	<.007	<.018	<.013	<.005	<.002	<.007	.0159	<.013	<.001	<.002	1	
JAN 1998												
09...	<.007	<.018	<.013	<.005	<.002	<.007	.0332	<.013	<.001	<.002	75	
20...	<.007	<.018	<.013	<.005	<.002	<.007	.017	<.013	<.001	<.002	1	
FEB												
04...	<.007	<.018	<.013	<.005	E.0013	<.007	.0189	<.013	<.001	<.002	160	
25...	<.007	<.018	<.013	<.005	<.002	<.007	.0181	<.013	<.001	<.002	20	

< Actual value is known to be less than the value shown.
E Estimated.

TENNESSEE RIVER BASIN

03528000 CLINCH RIVER ABOVE TAZEWEILL, TN

LOCATION.--Lat 36°25'30", long 83°23'54", Claiborne County, Hydrologic Unit 06010205, on right bank 0.4 mi upstream from Grissom Island, 4.6 mi downstream from Big War Creek, 10 mi east of Tazewell, and at mile 159.8.

DRAINAGE AREA.--1,474 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1918 to current year. Published as "near Lone Mountain" October 1918 to September 1927; as "near Tazewell" August 1927 to December 1936; and as "above Tazewell" July 1935 to current year. Prior to April 1919, monthly discharge only, published in WSP 1306. Gage-height record "near Tazewell" January 1937 to July 1941.

REVISED RECORDS.--WSP 803: Drainage area at site "near Tazewell". WSP 1306: Drainage area at site "near Lone Mountain". WSP 1336: 1928.

GAGE.--Data collection platform. Datum of gage is 1,060.7 ft above sea level. April 1, 1919, to Sept. 30, 1927, nonrecording gage on railroad bridge 23.3 mi downstream at datum 102.7 ft lower. Aug. 8, 1927, to July 16, 1941, water-stage recorder at site 8.0 mi downstream at datum 47.2 ft lower. Water-stage recorder at present site and datum since July 29, 1935.

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 February 1862 reached a stage of about 24 ft, present site and datum, from information by local resident, discharge, about 66,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 14,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar 19	2100	14,700	9.80	Apr 18	0400	*35,900	*16.72
Mar 22	2130	16,800	10.61				

Minimum discharge, 171 ft³/s, Oct 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	364	262	318	e550	3570	2480	2000	2710	1880	1370	467	302
2	322	251	395	e500	2990	2280	2460	2680	1690	1630	602	288
3	273	247	433	e460	3120	2070	2650	2590	1390	1330	662	279
4	244	246	471	448	8520	1860	6220	3890	1270	1120	574	270
5	225	256	488	468	12800	1700	8820	5000	2140	959	484	266
6	213	280	436	586	8740	1550	6620	4160	3290	863	422	258
7	206	310	407	988	5470	1440	4540	3710	2950	810	380	249
8	199	325	386	5800	4110	1450	3550	4050	2350	758	352	247
9	192	301	383	8750	3660	1940	5060	4160	1930	869	337	250
10	189	275	493	5880	3540	3380	8460	6480	2190	819	335	257
11	185	271	631	3340	3910	3780	8790	10700	6770	868	372	252
12	185	264	789	2280	4650	e3100	6720	11300	10500	802	553	256
13	184	263	741	1750	7160	e2600	5100	7120	5570	686	926	242
14	183	269	620	1450	6540	2220	4050	4870	4670	623	815	234
15	185	282	536	1270	4460	1970	3390	3720	3920	614	842	228
16	184	289	469	1290	3390	1840	3660	3000	3380	666	773	222
17	178	282	416	1400	2980	1940	28000	2520	2860	594	1510	217
18	173	276	375	1380	4320	2670	33800	2150	2300	556	2010	209
19	178	267	346	1360	6670	11400	27600	1870	1910	561	1570	202
20	178	258	324	1350	5550	12600	25600	1650	1730	561	1120	197
21	178	269	312	1360	4330	11700	18100	1490	1730	564	857	198
22	185	418	386	1370	3660	14900	10500	1440	1690	505	686	203
23	185	522	504	1650	3260	12500	7370	1520	1730	498	590	203
24	185	546	494	3060	3150	6220	5660	1780	3120	855	513	203
25	187	484	588	3140	4070	4410	4550	2300	2370	793	461	219
26	214	428	622	2620	3870	3490	3670	3760	1980	775	423	240
27	298	374	e642	2460	3220	2930	3190	3160	1630	644	391	249
28	333	335	e700	5550	2780	2530	3220	2580	1390	564	364	235
29	318	304	e650	6630	---	2260	2790	2510	1210	496	340	223
30	306	293	e600	4820	---	2040	2540	2180	1220	453	326	214
31	286	---	e575	4100	---	1850	---	1830	---	470	314	---
TOTAL	6915	9447	15530	78060	134490	129100	258680	112880	82760	23676	20371	7112
MEAN	223	315	501	2518	4803	4165	8623	3641	2759	764	657	237
MAX	364	546	789	8750	12800	14900	33800	11300	10500	1630	2010	302
MIN	173	246	312	448	2780	1440	2000	1440	1210	453	314	197
CFSM	.15	.21	.34	1.71	3.26	2.83	5.85	2.47	1.87	.52	.45	.16
IN.	.17	.24	.39	1.97	3.39	3.26	6.53	2.85	2.09	.60	.51	.18

e Estimated

TENNESSEE RIVER BASIN

03528000 CLINCH RIVER ABOVE TAZEWEEL, TN--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	664	1117	2364	3485	4173	4318	3113	2325	1303	958	866	534
MAX	2871	4794	9107	9500	9426	11950	8860	6382	3865	3251	4411	2939
(WY)	1990	1978	1927	1937	1957	1963	1977	1929	1989	1938	1942	1989
MIN	145	159	217	285	572	990	711	547	301	239	169	136
(WY)	1964	1940	1940	1940	1941	1988	1986	1941	1988	1988	1925	1955

SUMMARY STATISTICS

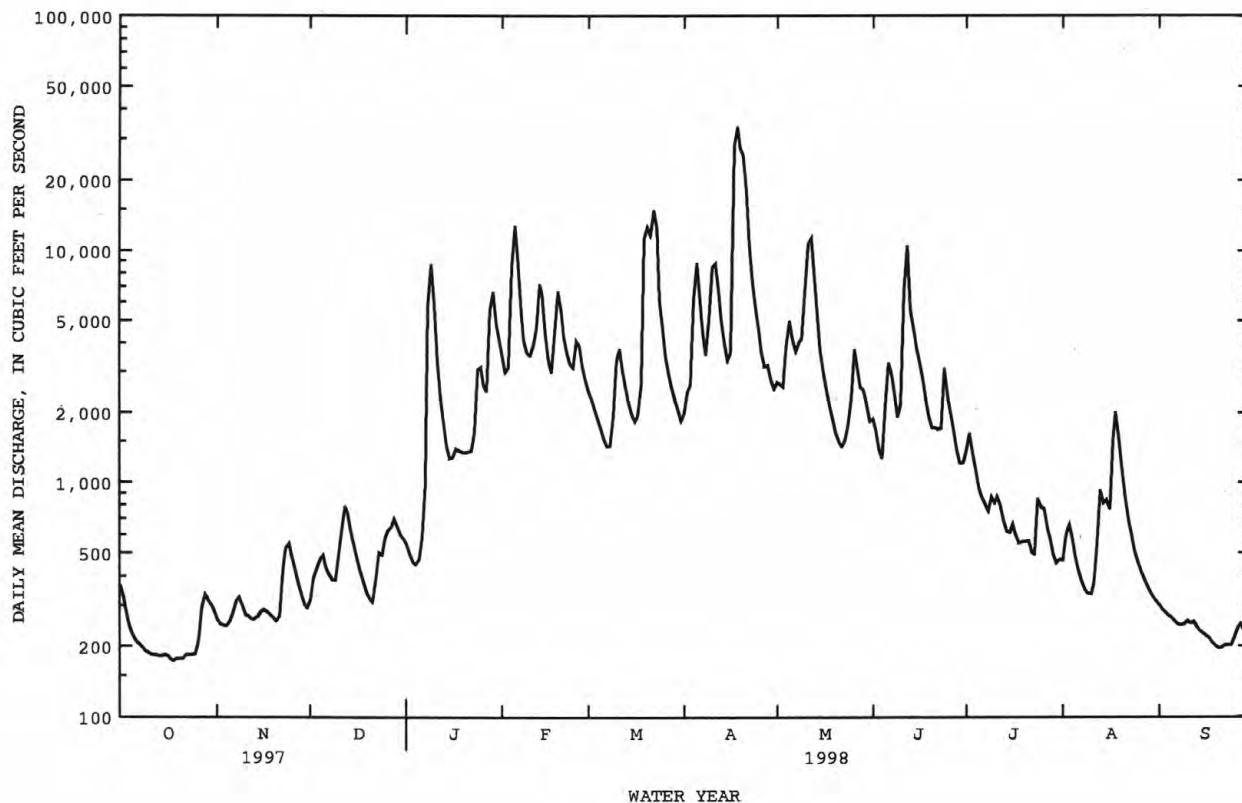
FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1919 - 1998

ANNUAL TOTAL	710407	879021	
ANNUAL MEAN	1946	2408	2093
HIGHEST ANNUAL MEAN			3269
LOWEST ANNUAL MEAN			850
HIGHEST DAILY MEAN	26600	Mar 4	33800
LOWEST DAILY MEAN	173	Oct 18	173
ANNUAL SEVEN-DAY MINIMUM	179	Oct 15	179
INSTANTANEOUS PEAK FLOW			35900
INSTANTANEOUS PEAK STAGE			16.72
INSTANTANEOUS LOW FLOW			171
ANNUAL RUNOFF (CFSM)	1.32	1.63	1.42
ANNUAL RUNOFF (INCHES)	17.93	22.18	19.29
10 PERCENT EXCEEDS	4640	5610	4690
50 PERCENT EXCEEDS	1050	988	1120
90 PERCENT EXCEEDS	225	235	271

a From floodmarks.



TENNESSEE RIVER BASIN

03528000 CLINCH RIVER ABOVE TAZEWELL, TN--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1963-65, 1971-80, April to September 1996.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STANDARD) (00400)	TEMPERATURE WATER (DEG C) (00010)	BAROMETRIC PRESSURE (MM HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PERCENT SATURATION) (00301)	COLIFORM, FECAL, 0.7, UM-MF (COLS./100 ML) (31625)	E. COLI WATER WHOLE TOTAL UREASE (COL /100 ML) (31633)	COLIFORM, TOTAL, IMMEDIATE (COLS. PER 100 ML) (31501)	HARDNESS TOTAL (MG/L AS CaCO3) (00900)	HARDNESS NONCARBONIC (MG/L AS CaCO3) (00904)
OCT 07...	1345	406	8.4	20.0	737	13.0	148	K510	K12	100	180	32
NOV 24...	1230	399	8.3	6.0	744	12.0	99	92	42	5100	170	14
DEC 15...	1215	406	7.9	2.5	738	13.3	101	K2	<2	70	170	28
JAN 20...	1300	322	8.5	6.0	739	14.0	116	K73	K54	K8800	140	20
FEB 10...	1315	307	7.3	8.5	740	13.4	118	95	36	>2000	130	28
MAR 12...	1230	283	7.4	6.0	750	12.6	103	140	130	K16000	120	15
MAY 21...	1300	305	8.6	23.0	735	10.1	123	540	40	950	140	23

DATE	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	MAGNESIUM DIS-SOLVED (MG/L AS Mg) (00925)	SODIUM DIS-SOLVED (MG/L AS Na) (00930)	SODIUM PERCENT (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM DIS-SOLVED (MG/L AS K) (00935)	CARBONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	BICARBONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	ALKALINITY TOTAL DIS IT FIELD (MG/L AS CaCO3) (39086)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
OCT 07...	41	19	21	20	.7	2.8	10	161	151	1.2	46
NOV 24...	43	15	15	16	.5	2.8	5	182	157	1.4	49
DEC 15...	45	13	18	19	.6	2.2	--	168	138	3.6	53
JAN 20...	38	9.6	8.7	12	.3	1.6	10	121	115	.7	31
FEB 10...	36	9.1	8.3	12	.3	1.4	0	123	101	10	25
MAR 12...	34	8.1	6.1	10	.2	1.3	0	126	103	7.6	23
MAY 21...	36	12	6.2	9	.2	1.4	5	131	117	.7	29

DATE	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	NITROGEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)
OCT 07...	8.2	<.10	2.0	230	229	.31	--	<.010	<.050	<.015	<.20
NOV 24...	8.2	<.10	1.3	235	230	.32	--	<.010	.202	<.020	<.10
DEC 15...	8.5	<.10	1.2	231	225	.31	.384	.014	.398	<.020	<.10
JAN 20...	8.6	<.10	4.3	189	175	.26	.982	.013	.995	<.020	<.10
FEB 10...	12	<.10	5.4	165	163	.22	--	<.010	1.21	.020	<.10
MAR 12...	6.1	<.10	3.9	157	148	.21	--	<.010	.625	<.020	<.10
MAY 21...	3.9	<.10	1.0	174	160	.24	.300	.010	.310	.043	<.10

K--Results based on non-ideal colony count.

TENNESSEE RIVER BASIN

03528000 CLINCH RIVER ABOVE TAZEWEEL, TN--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 07...	.48	--	.091	<.010	<.010	8.5	5.0	2.2	.20	--	--
NOV 24...	.15	.35	.022	.012	.027	19	2.2	1.9	.30	8	93
DEC 15...	.11	.51	<.010	<.010	.015	21	<4.0	1.6	.20	2	92
JAN 20...	.12	1.1	.015	<.010	<.010	13	<4.0	1.1	.20	18	84
FEB 10...	.14	1.3	.024	<.010	.017	<10	<4.0	1.1	.40	--	--
MAR 12...	.13	.76	<.010	<.010	<.010	13	<4.0	1.0	.50	14	75
MAY 21...	.14	.45	<.010	<.010	<.010	<10	<4.0	1.2	.30	4	30

TENNESSEE RIVER BASIN

03531500 POWELL RIVER NEAR JONESVILLE, VA

LOCATION.--Lat 36°39'43", long 83°05'42", Lee County, Hydrologic Unit 06010206, on right bank 175 ft downstream from highway bridge, 2 mi southeast of Jonesville, 10 mi upstream from Wallen Creek, and at mile 143.1.

DRAINAGE AREA.--319 mi².

PERIOD OF RECORD.--October 1931 to current year. Monthly discharge only for some periods, published in WSP 1306.

REVISED RECORDS.--WSP 823: Drainage area. WSP 1033: 1932-44. WSP 1436: 1946(M), 1948(M).

GAGE.--Water-stage recorder. Datum of gage is 1,259.08 ft above sea level.

REMARKS.--Records good except for period of no gage-height record, Apr. 19-20, which is fair. National Weather Service gage-height telemeter at station. Tennessee Valley Authority gage-height data recorder at station, called at 6-hour intervals by computer at Knoxville, Tennessee. Maximum discharge, 57,000 ft³/s, from rating curve extended above 20,000 ft³/s on basis of slope-area measurement of peak flow. Minimum gage height, 0.68 ft, Oct. 18, 1961, result of storage behind temporary dam. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 5,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 19	0900	5,140	10.31	Apr. 20	Unknown	Unknown	Unknown
Apr. 17	1415	*13,700	*21.55				

Minimum discharge, 43 ft³/s, Sept. 19-21, 29, gage height, 1.19 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	73	56	88	122	729	447	523	839	312	397	204	59
2	59	58	192	102	594	416	697	942	270	301	159	57
3	54	73	145	111	604	383	605	868	244	255	122	56
4	51	86	117	123	2870	353	2120	1560	378	232	107	55
5	48	73	110	184	2050	328	2580	1530	981	209	97	54
6	47	71	98	242	1310	304	1590	1220	1090	192	91	52
7	47	68	86	322	940	294	1050	1030	727	172	86	52
8	46	66	74	3000	856	308	810	1050	523	162	83	59
9	47	63	74	2280	807	599	1600	1160	472	180	80	65
10	47	66	193	1240	836	932	2050	1790	917	187	93	68
11	49	66	509	719	877	700	1930	2760	876	156	141	55
12	51	60	309	521	1270	562	1470	2060	802	145	109	52
13	54	56	202	426	1200	475	1050	1440	853	137	97	50
14	53	60	151	367	878	429	866	1040	869	137	154	48
15	54	81	121	333	686	391	758	809	826	178	460	45
16	53	95	102	424	590	388	1470	656	770	141	276	45
17	56	73	92	435	608	511	11000	560	570	131	626	44
18	54	61	86	403	1210	798	4450	470	445	127	554	44
19	53	55	80	393	1100	4270	e4400	409	384	120	296	43
20	53	50	74	421	944	2820	e7000	364	376	122	198	43
21	51	57	72	383	830	2960	3290	347	325	135	149	48
22	51	236	103	351	710	1910	2280	356	338	120	124	49
23	51	277	155	554	694	1280	1880	391	372	116	109	49
24	51	153	134	1100	713	924	1510	712	402	137	97	51
25	53	98	202	890	646	740	1210	450	327	144	91	48
26	82	75	206	649	581	645	1020	468	296	135	81	45
27	169	64	183	626	542	558	895	439	255	123	74	44
28	156	58	196	1770	490	505	868	361	226	112	70	44
29	93	54	171	1660	---	458	714	323	209	106	66	43
30	71	54	156	1160	---	416	671	296	309	101	64	73
31	61	---	143	941	---	381	---	275	---	103	60	---
TOTAL	1938	2463	4624	22252	26165	26485	62357	26975	15744	5013	5018	1540
MEAN	62.5	82.1	149	718	934	854	2079	870	525	162	162	51.3
MAX	169	277	509	3000	2870	4270	11000	2760	1090	397	626	73
MIN	46	50	72	102	490	294	523	275	209	101	60	43
CFSM	.20	.26	.47	2.25	2.93	2.68	6.52	2.73	1.65	.51	.51	.16
IN.	.23	.29	.54	2.59	3.05	3.09	7.27	3.15	1.84	.58	.59	.18

e Estimated.

TENNESSEE RIVER BASIN

03531500 POWELL RIVER NEAR JONESVILLE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 1998, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	154	317	661	947	1082	1146	818	578	319	233	201	118
MAX	1086	1405	2026	2765	2666	3423	2542	1436	1601	825	1187	603
(WY)	1978	1974	1973	1937	1994	1963	1977	1984	1989	1941	1942	1982
MIN	22.9	29.7	46.5	57.8	124	281	169	108	46.7	47.7	49.0	24.5
(WY)	1955	1954	1966	1940	1941	1988	1986	1941	1936	1944	1953	1955

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1932 - 1998

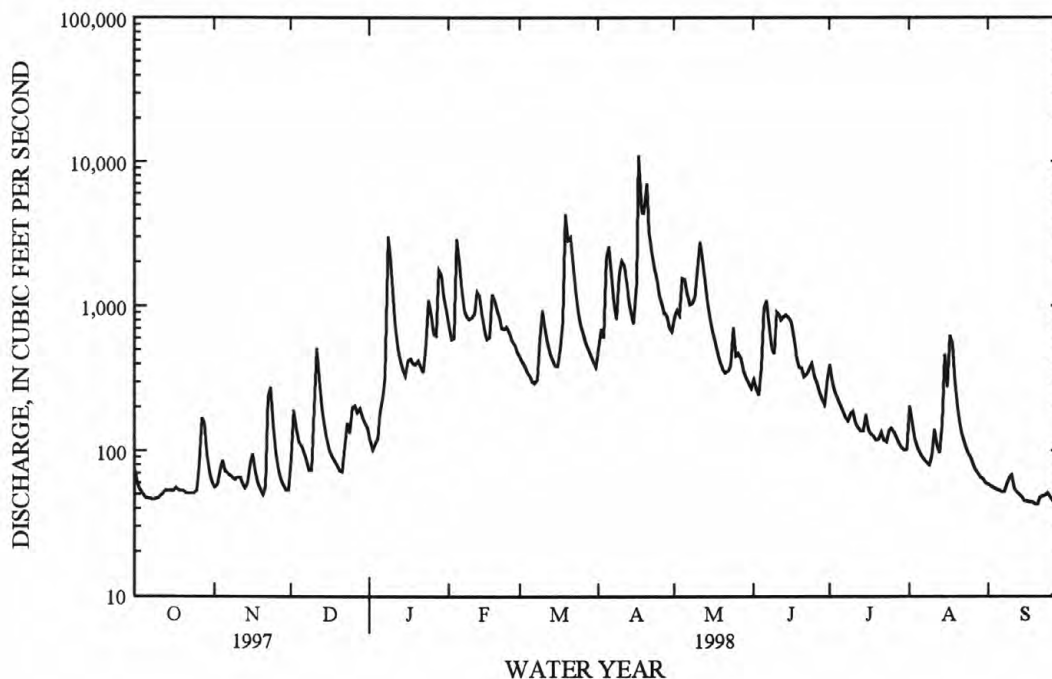
ANNUAL TOTAL	192629		200574									
ANNUAL MEAN	528		550							545		
HIGHEST ANNUAL MEAN										943		1974
LOWEST ANNUAL MEAN										218		1941
HIGHEST DAILY MEAN				7150	Mar 3		11000	Apr 17		35000	Apr 5	1977
LOWEST DAILY MEAN				46	Oct 8		43	aSep 19		18	Oct 3	1933
ANNUAL SEVEN-DAY MINIMUM				47	Oct 5		45	Sep 14		18	Sep 11	1954
INSTANTANEOUS PEAK FLOW							13700	Apr 17		57000	Apr 5	1977
INSTANTANEOUS PEAK STAGE							21.55	Apr 17		b44.32	Apr 5	1977
INSTANTANEOUS LOW FLOW							43	cSep 19		17	dSep 19	1954
ANNUAL RUNOFF (CFSM)				1.65			1.72			1.71		
ANNUAL RUNOFF (INCHES)				22.46			23.39			23.23		
10 PERCENT EXCEEDS				1260			1230			1230		
50 PERCENT EXCEEDS				261			255			256		
90 PERCENT EXCEEDS				54			53			54		

a Also Sept. 20, 29, 1998.

b From floodmark.

c Also Sept. 20, 21, 29, 1998.

d Also Sept. 20, 1954, and as a result of storage behind temporary dam Oct. 18, 1961.



DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or floodflow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to these events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at crest-stage partial-record stations are presented in the following table. Discharge measurements made at miscellaneous sites and for special studies are given in separate tables.

Crest-stage partial-record stations

The following table contains annual maximum discharges for crest-stage stations. A crest-stage gage is a device that will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained but is not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Maximum discharge at crest-stage partial-record stations during water year 1998

Station name and number	Location and drainage area	Period of record (water years)	Water year 1998 maximum		Period of record maximum			
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
POTOMAC RIVER BASIN								
Buffalo Branch tributary near Christian, VA (01622400)	Lat 38°11'55", long 79°13'10", Augusta County, Hydrologic Unit 02070005, on left up- stream wingwall of culvert on State Highway 42, 0.8 mi upstream from mouth, and 1.3 mi north of Christian. Datum of gage is 1,622.53 ft above sea level. Drainage area is 0.49 mi ² .	1967-98	1- 8-98	4.76	101	9- 6-96	7.68	244
Chub Run near Stanley, VA (01629945)	Lat 38°34'31", long 78°27'32", Page County, Hydrologic Unit 02070005, at culvert on State Highway 689, 2.2 mi east of Stanley, and 3.1 mi upstream from mouth. Datum of gage is 1,023.05 ft above sea level. Drainage area is 3.16 mi ² .	1959-69a, 1970-98	2- 5-98	4.57	486	9- 6-96	>10.08	*
Crooked Run near Mt. Jackson, VA (01632970)	Lat 38°45'44", long 78°41'06", Shenandoah County, Hydrologic Unit 02070006, on right up- stream wingwall of culvert on State Highway 263, 0.4 mi up- stream from mouth, and 2.3 mi west of Mt. Jackson. Datum of gage is 962.84 ft above sea level. Drainage area is 6.49 mi ² .	1972-98	1- 8-98	3.68	395	1-19-96	11.34	5,700
Pughs Run near Woodstock, VA (01633650)	Lat 38°55'48", long 78°32'43", Shenandoah County, Hydrologic Unit 02070006, on left up- stream wingwall of culvert on State Highway 623, 4.0 mi northwest of Woodstock, and 5.4 mi upstream from mouth. Datum of gage is 1,027.27 ft above sea level. Drainage area is 3.66 mi ² .	1971-98	2- 5-98	5.19	139	9- 6-96	13.39	1,100

* Discharge not determined.

> Greater than.

a Records provided by U.S. Department of Agriculture, Soil Conservation Service.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Maximum discharge at crest-stage partial-record stations during water year 1998--Continued

Station name and number	Location and drainage area	Period of record (water years)	Water year 1998 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
POTOMAC RIVER BASIN--Continued								
Fourmile Run at Alexandria, VA (01652500)	Lat 38°50'35", long 77°05'09", Arlington County, Hydrologic Unit 02070010, on left up- stream wingwall of bridge on Shirlington Road, at Arlington County-Alexandria City line, 0.1 mi upstream from Interstate Highway 395, and 2.5 mi upstream from mouth. Datum of gage is 28.57 ft above sea level. Drainage area is 13.8 mi ² .	1947, 1952-69†b, 1970-73b, 1974-75†, 1976-77, 1979-82†, 1983-98	9-22-98	7.94	2,310	7-22-69	11.60	14,600
GREAT WICOMICO RIVER BASIN								
Bush Mill Stream near Heaths- ville, VA (01661800)	Lat 37°52'36", long 76°29'42", Northumberland County, Hydrologic Unit 02080102, on right bank 12 ft upstream from bridge on State High- way 601, 2.2 mi northwest of Howland, and 3.0 mi southwest of Heathsville. Datum of gage is 22.22 ft above sea level. Drainage area is 6.82 mi ² .	1964-69†, 1970-86†, 1987-98	2- 5-98	7.36	485	7-30-79	8.52	714
RAPPAHANNOCK RIVER BASIN								
Pony Mountain Branch near Culpeper, VA (01665050)	Lat 38°27'04", long 77°57'24", Culpeper County, Hydrologic Unit 02080103, at culvert on State Highway 3, 0.3 mi upstream from mouth, and 2.7 mi southeast of Culpeper. Elevation of gage is 335 ft above sea level, from topo- graphic map. Drainage area is 0.30 mi ² .	1958-69a, 1970-98	1- 8-98	1.92	71	8-16-70	4.02	196
Farmers Hall Creek near Champlain, VA (01668300)	Lat 38°00'05", long 76°58'40", Essex County, Hydrologic Unit 02080104, on left up- stream wingwall of culvert on U.S. Highway 17, 1.0 mi upstream from Rouzie Swamp, and 1.2 mi southeast of Champlain. Datum of gage is 42.10 ft above sea level. Drainage area is 2.18 mi ² .	1966-98	2- 5-98	5.49	100	8-20-69	19.2	510
PIANKATANK RIVER BASIN								
My Ladys Swamp near Saluda, VA (01669800)	Lat 37°34'34", long 76°31'30", Middlesex County, Hydrologic Unit 02080102, on left upstream wingwall of culvert on State Highway 629, 1.45 mi upstream from mouth, and 4.4 mi southeast of Saluda. Datum of gage is 4.16 ft above sea level. Drainage area is 4.81 mi ² .	1970-98	2- 5-98	8.13	524	1- 2-85	8.38	592

† Operated as a continuous-record gaging station.

a Records provided by U.S. Department of Agriculture, Soil Conservation Service.

b At different site and datum 6.02 feet lower.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Maximum discharge at crest-stage partial-record stations during water year 1998--Continued

Station name and number	Location and drainage area	Period of record (water years)	Water year 1998 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
YORK RIVER BASIN								
Pamunkey Creek at Lahore, VA (01670180)	Lat 36°11'53", long 77°58'09", Orange County, Hydrologic Unit 02080106, on right bank on upstream side of bridge on State Highway 669, 0.45 mi south of Lahore, and 3.8 mi upstream from Lake Anna. Elevation of gage is 200 ft above sea level, from topographic map. Drainage area is 40.5 mi ² .	1989-91†, 1992-98	3-21-98	9.23	1,670	6-27-95	17.20	6,900
Contrary Creek near Mineral, VA (01670300)	Lat 38°03'53", long 77°52'45", Louisa County, Hydrologic Unit 02080106, on left bank 200 ft downstream from bridge on U.S. Highway 522, 4.0 mi northeast of Mineral. Elevation of gage is 275 ft above sea level, from topo- graphic map. Drainage area is 5.53 mi ² .	1976-86†, 1987-98	3-21-98	3.63	1,000	11-28-93	6.94	7,050
Waldrop Creek near Louisa, VA (01671650)	Lat 38°00'08", long 78°04'22", Louisa County, Hydrologic Unit 02080106 on left up- stream wingwall of culvert on State Highway 632, 2.3 mi upstream from mouth, and 4.2 mi southwest of Louisa. Datum of gage is 361.41 ft above sea level. Drainage area is 2.85 mi ² .	1969-98	5- 8-98	6.97	357	8-20-69	21.00	2,500
Reedy Creek near Dawn, VA (01674200)	Lat 37°52'55", long 77°21'35", Caroline County Hydrologic Unit 02080105, at bridge on U.S. Highway 301, 3.3 mi north of Dawn, and 11 mi south of Bowling Green. Drainage area is 16.8 mi ² .	1951-69, 1972-98	2- 5-98	5.10	191	8-20-69	7.28	2,500
JAMES RIVER BASIN								
Jackson River at Falling Spring, VA (02012500)	Lat 37°52'36", long 79°58'39", Alleghany County, Hydrologic Unit 02080201, on right bank 20 ft upstream from Smith Bridge, 0.8 mi south of Falling Spring, and 5.5 mi north of Covington. Datum of gage is 1,333.49 ft above sea level. Drainage area is 411 mi ² .	1925-84†, 1987-98	3-23-98	9.52	6,180	3-17-36 c1913	14.74 20	24,700 d50,000
Cowpasture River near Head Waters, VA (02015600)	Lat 38°19'30", long 79°26'14", Highland County, Hydrologic Unit 02080201, on left down- stream wingwall of bridge on U. S. Highway 250, 1.2 mi west of Head Waters, and 3 mi upstream from Shaw Fork. Datum of gage is 1,985.65 ft above sea level. Drainage area is 11.3 mi ² .	1949-94, 1996-98	1- 8-98	6.13	190	6-17-49	6.5	5,650

† Operated as a continuous-record gaging station.

c Maximum known historical peak outside period of record.

d Approximate.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Maximum discharge at crest-stage partial-record stations during water year 1998--Continued

Station name and number	Location and drainage area	Period of record (water years)	Water year 1998 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
JAMES RIVER BASIN--Continued								
Craig Creek tributary near New Castle, VA (02017700)	Lat 37°33'21", long 79°59'52", Craig County, Hydrologic Unit 02080201, on right up- stream wingwall of culvert on State Highway 606, 0.4 mi upstream from mouth, and 7.1 mi northeast of New Castle. Drainage area is 2.05 mi ² .	1968-98	3-21-98	Unknown	Unknown	11- 4-85	13.45	1,100
Renick Run near Buchanan, VA (02020100)	Lat 37°35'27", long 79°38'04", Botetourt County, Hydrologic Unit 02080201, on left up- stream wingwall of culvert on Frontage Road F054 of Interstate Highway 81 between Exits 48 and 49, 2.2 mi upstream from mouth, and 4.8 mi northeast of Buchanan. Datum of gage is 1,261.85 ft above sea level. Drainage area is 2.06 mi ² .	1967-98	2- 5-98	6.86	628	8-20-69	9.90	1,210
South River near Steeles Tavern, VA (02023300)	Lat 37°55'50", long 79°09'55", Augusta County, Hydrologic Unit 02080202, at bridge on State Highway 608, 2.5 mi northeast of Vesuvius, 3 mi east of Steeles Tavern, and 5 mi south of Greenville. Elevation of gage is 1,600 ft above sea level, from topo- graphic map. Drainage area is 15.7 mi ² .	1951-98	-	<2.04	<135	8-20-69	8.70	4,700
James River at Bedford Dam near Major, VA (02024750)	Lat 37°34'40", long 79°22'36", Amherst County, Hydrologic Unit 02080203, on left bank 10 ft upstream from head- gates on headrace to city of Bedford hydroelectric plant, 1.2 mi north of Major, and 1.4 mi upstream from Blue Ridge Parkway. Drainage area is 3,070 mi ² .	1989-98	1- 8-98	10.59	70,800	1-20-96	14.63	104,000
Buffalo River tributary near Amherst, VA (02027700)	Lat 37°33'45", long 78°57'35", Amherst County, Hydrologic Unit 02080203, on left bank just upstream from culvert on U.S. Highway 60, 0.8 mi upstream from mouth, and 5.2 mi southeast of Amherst. Datum of gage is 583.66 ft above sea level. Drainage area is 0.46 mi ² .	1966-98	1-28-98	3.47	34	9- 6-96	7.33	196
Stockton Creek near Afton, VA (02030800)	Lat 38°01'48", long 78°48'30", Albemarle County, Hydrologic Unit 02080204, on left up- stream wingwall of culvert on State Highway 6, 1.7 mi east of Afton, and 4.3 mi upstream from Stony Run. Datum of gage is 835.27 ft above sea level. Drainage area is 2.80 mi ² .	1967-98	1- 8-98	6.49	284	6-21-72 11-23-92	9.68 e9.73	678 425

< Less than.

e Affected by debris jam at upstream end of culvert.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Maximum discharge at crest-stage partial-record stations during water year 1998--Continued

Station name and number	Location and drainage area	Period of record (water years)	Water year 1998 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
JAMES RIVER BASIN--Continued								
Muddy Run near Stanardsville, VA (02032300)	Lat 38°14'05", long 78°37'02", Albemarle County, Hydrologic Unit 02080204, on right downstream abutment of bridge on State Highway 810, 0.7 mi upstream from mouth, and 11 mi southwest of Stanardsville. Datum of gage is 756.79 ft above sea level. Drainage area is 3.36 mi ² .	1967-98	5- 8-98	6.24	1,760	5-13-73 8-28-79	8.33 8.33	* *
Moores Creek near Char- lottesville, VA (02033300)	Lat 38°00'25", long 78°34'25", Albemarle County, Hydrologic unit 02080204, on right down- stream wingwall of culvert on access road, 30 ft north of U.S. Highway 29, 2.8 mi upstream from Morey Creek, and 4 mi southwest of Char- lottesville. Datum of gage is 505.40 ft above sea level. Drainage area is 3.52 mi ² .	1967-98	5- 8-98	14.68	206	6- 2-79	18.74	*
Willis River at Lakeside Village, VA (02034500)	Lat 37°40'00", long 78°10'00", Cumberland County, Hydrologic Unit 02080205, on left bank 15 ft upstream from bridge on State Highway 690, 0.4 mi east of Lakeside Village, 6.9 mi upstream from mouth, and 7.7 mi downstream from Reynolds Creek. Datum of gage is 178.98 ft above sea level. Drainage area is 262 mi ² .	1927-86†, 1987-98	1-28-98	17.04	4,430	6-22-72	29.80	24,000
Falling Creek near Chesterfield, VA (02038000)	Lat 37°31'21" long 77°31'21", Chesterfield County, Hydrologic Unit 02080206, on left bank 50 ft upstream from bridge on State Highway 651, 0.8 mi downstream from Licking Creek, 2.8 mi upstream from Pocoshock Creek, and 4.7 mi northwest of Chesterfield. Elevation of gage is 126.39 ft above sea level. Drainage area is 32.8 mi ² .	1955-94†, 1996-98	3-19-98	11.30	1,620	10- 1-79	15.32	5,930
Holiday Creek near Toga, VA (02038840)	Lat 37°25'58", long 78°41'12", Buckingham County Hydrol- ogic Unit 02080207, on left bank 40 ft downstream from State Forest Road 2307 (old Richmond Road), 1.8 mi up- stream from confluence of North Holiday Creek, and 5.2 mi south-southwest of Toga. Datum of gage is 614.40 ft above sea level. Drainage area is 1.68 mi ² .	1971-98	1-28-98	2.42	144	6-21-72	6.72	2,820

* Discharge not determined.

† Operated as a continuous-record gaging station.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Maximum discharge at crest-stage partial-record stations during water year 1998--Continued

Station name and number	Location and drainage area	Period of record (water years)	Water year 1998 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
JAMES RIVER BASIN--Continued								
North Holiday Creek near Toga, VA (02038845)	Lat 37°26'09", long 78°40'04", Buckingham County, Hydro- logic Unit 02080207, on left bank 18 ft upstream from State Forest Road 2307 (old Richmond Road), 1.0 mi up- stream from confluence of Holiday Creek, and 4.5 mi south-southwest of Toga. Datum of gage is 588.84 ft above sea level. Drainage area is 1.31 mi ² .	1971-98	1-28-98	2.78	59	6-21-72	6.79	1,570
Flat Creek near Amelia, VA (02040500)	Lat 37°23'27", long 78°03'45", Amelia County, Hydrologic Unit 02080207, at bridge on State Highway 681, 0.5 mi downstream from Horsepen Creek and 6.0 mi northwest of Amelia. Elevation of gage is 240 ft above sea level, from topographic map. Drainage area is 73.0 mi ² .	1947, 1954-70, 1972-98	12- 2-96 1-28-98	7.25 9.70	f978 2,290	4-16-87	12.38	5,260
Bailey Branch tributary at Spring Grove, VA (02042250)	Lat 37°10'29", long 76°59'13", Surry County, Hydrologic Unit 02080206, on right up- stream wingwall of culvert on State Highway 10, 1.0 mi northwest of Spring Grove. Datum of gage is 61.39 ft above sea level. Drainage area is 0.71 mi ² .	1967-98	2- 5-98	3.44	44	7-14-75	6.52	282
Jordans Branch at Richmond, VA (02042400)	Lat 37°35'10", long 77°29'55", Henrico County, Hydrologic Unit 02080206, on left down- stream wall of bridge on U.S. Highway 250 (Broad Street), at Richmond, and 2.0 mi up- stream from mouth. Drainage area is 2.53 mi ² .	1965-98	3-19-98	10.48	1,340	6-22-91	13.10	2,760
West Branch Long Hill Swamp near Lightfoot, VA (02042780)	Lat 37°18'50", long 77°46'01", James City County, Hydrologic Unit 02080206, on left up- stream wingwall of culvert on State Highway 612, 2.2 mi upstream from mouth, and 2.0 mi south of Lightfoot. Drainage area is 2.47 mi ² .	1970-76, 1978-98	-	g	g	9- 1-75	5.20	320

CHOWAN RIVER BASIN

Falls Creek tributary near Victoria, VA (02044200)	Lat 37°02'04", long 78°10'26", Lunenburg County, Hydrologic Unit 03010201, at upstream end of culvert on State High- way 49, 3.6 mi northeast of Victoria. Datum of gage is 409.21 ft above sea level. Drainage area is 0.34 mi ² .	1962-98	3-19-98	4.36	70	6-21-72	9.15	343
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f Published incorrectly in the 1997 report.
g Affected by backwater from beaver dam.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Maximum discharge at crest-stage partial-record stations during water year 1998--Continued

Station name and number	Location and drainage area	Period of record (water years)	Water year 1998 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
CHOWAN RIVER BASIN--Continued								
Blackwater River tributary near Holland, VA (02050050)	Lat 36°38'44", long 76°51'29", Suffolk City, Hydrologic Unit 03010202, on left up- stream wingwall of culvert on State Highway 272, 3.0 mi upstream from mouth, and 4.9 mi southwest of Holland. Datum of gage is 29.25 ft above sea level. Drainage area is 2.76 mi ² .	1967-98	2- 5-98	6.34	231	8- 3-73	7.65	408
ROANOKE RIVER BASIN								
Powells Creek near Turbeville, VA (02075350)	Lat 36°34'50", long 79°11'20", Halifax County, Hydrologic Unit 03010104, at culvert on U.S. Highway 58, 0.8 mi up- stream from mouth, 1.1 mi east of Halifax-Pittsylvania County line, and 8.8 mi southwest of Turbeville. Datum of gage is 386.76 ft above sea level. Drainage area is 0.28 mi ² .	1958-69a, 1970-98	-	<4.21	<42	7-11-65	7.86	384
Dan River at South Boston, VA (02076000)	Lat 36°41'37", long 78°54'09", South Boston City, Hydro- logic Unit 03010104, on left bank 100 ft upstream from Norfolk and Western Railroad bridge at South Boston. Datum of gage is 299.23 ft above sea level. Drainage area is 2,730 mi ² .	1900-07†, 1923-52†, 1953-62h, 1980-98h	1-30-98	27.34	*	8-16-40	31.8	81,000
Bearskin Creek near Chatham, VA (02076200)	Lat 36°50'30", long 79°29'05", Pittsylvania County, Hydro- logic Unit 03010105, on left upstream wingwall of culvert on State Highway 57, 4.5 mi west of Chatham, and 6 mi upstream from mouth. Eleva- tion of gage is 630 ft above sea level, from topographic map. Drainage area is 4.06 mi ² .	1967-98	2- 4-98	5.52	393	6-29-95	19.90	2,850
Blacks Creek near Mt. Airy, VA (02076700)	Lat 36°56'40", long 79°09'56", Pittsylvania County, Hydro- logic Unit 03010105, on left upstream wingwall of culvert on State Highway 40, 1.5 mi east of Mt. Airy, and 3.5 mi upstream from mouth. Eleva- tion of gage is 420 ft above sea level, from topographic map. Drainage area is 3.44 mi ² .	1966-98	1-28-98	7.40	526	9- 8-87	119.5	2,200

* Discharge not determined.

† Operated as a continuous-record gaging station.

< Less than.

a Records provided by U.S. Department of Agriculture, Soil Conservation Service.

h Operated as a stage-only station.

j From high-water marks.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Maximum discharge at crest-stage partial-record stations during water year 1998--Continued

Station name and number	Location and drainage area	Period of record (water years)	Water year 1998 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
ROANOKE RIVER BASIN--Continued								
Roanoke River at Buggs Island, VA (02079500)	Lat 36°36'06", long 78°17'56", Mecklenburg County, Hydro- logic Unit 03010106, on left bank 1,200 ft downstream from John H. Kerr dam, 5.3 mi upstream from bridge on U.S. Highway 1, and 6.7 mi southeast of Boydton. Datum of gage is 196.72 ft above sea level. Drainage area is 7,789 mi ² .	1947-62‡, 1963-98	2-23-98	10.13	*	12- 7-48	14.97	76,000
KANAWHA RIVER BASIN								
Mira Fork tributary near Dugspur, VA (03167300)	Lat 36°50'16", long 80°35'47", Carroll County, Hydrologic Unit 05050001, on left up- stream wingwall of culvert on U.S. Highway 221, 1.3 mi upstream from mouth, and 2.2 mi northeast of Dugspur. Datum of gage is 2,602.96 ft above sea level. Drainage area is 0.62 mi ² .	1967-98	1- 8-98	5.67	165	4-21-92	7.20	257
Thorne Springs Branch near Dublin, VA (03168750)	Lat 37°05'30", long 80°44'34", Pulaski County, Hydrologic Unit 05050001, at pond dam just upstream from U.S. Highway 11, 3.3 mi southwest of Dublin, and 4.3 mi up- stream from mouth. Elevation of gage is 1,975 ft above sea level, from topographic map. Drainage area is 4.77 mi ² .	1957-69a, 1970-98	3-21-98	2.23	127	5-28-73	8.01	2,200
BIG SANDY RIVER BASIN								
Russell Fork at Council, VA (03208040)	Lat 37°04'41", long 82°03'56", Buchanan County, Hydrologic Unit 05070202, on left bank 50 ft upstream from bridge on State Highway 80, 750 ft downstream from Ball Creek, 0.6 mi southeast of Council, and 4.7 mi upstream from Hurricane Creek. Elevation of gage is 1,680 ft above sea level, from topographic map. Drainage area is 10.2 mi ² .	1981-83‡, 1984-98	4-17-98	6.65	1,320	4-17-98	6.65	1,320
North Fork Pound River at Pound, VA (03208700)	Lat 37°07'32", long 82°37'36", Wise County, Hydrologic Unit 05070202, on right bank at Pound, 700 ft downstream from Stacy Branch, and 1,600 ft downstream from North Fork Pound River dam. Datum of gage is 1,500.00 ft above sea level. Drainage area is 18.5 mi ² . Prior to Oct. 1, 1965, at datum 44.88 ft higher.	1963-87‡, 1988-98	4-17-98	51.54	349	3-12-63	61.58	4,480

* Discharge not determined.

‡ Operated as a continuous-record gaging station.

a Records provided by U.S. Department of Agriculture, Soil Conservation Service.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Maximum discharge at crest-stage partial-record stations during water year 1998--Continued

Station name and number	Location and drainage area	Period of record (water years)	Water year 1998 maximum		Period of record maximum			
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
BIG SANDY RIVER BASIN--Continued								
Pound River above Indian Creek, at Pound, VA (03208800)	Lat 37°07'26", long 82°36'29", Wise County, Hydrologic Unit 05070202, on left bank at Pound, 1,600 ft down- stream from confluence of North and South Forks, 0.5 mi upstream from bridge on U.S. Highway 23, and 0.7 mi upstream from Indian Creek. Datum of gage is 1,535.64 ft above sea level. Drainage area is 36.7 mi ² .	1966-78†, 1979-98	4-17-98	12.60	1,780	5-18-75	19.44	3,460
Pound River below Bold Camp Creek at Pound, VA (03208850)	Lat 37°07'19", long 82°35'55", Wise County, Hydrologic Unit 05070202, at Pound, on left bank 1,000 ft upstream from bridge on State Highway 83, 0.3 mi downstream from Bold Camp Creek, and 0.5 mi downstream from Indian Creek. Datum of gage is 1,527.36 ft above sea level. Drainage area is 61.2 mi ² .	1966-78†, 1979-98	4-17-98	17.40	3,020	5-18-75	25.64	6,290
Pound River near Georges Fork, VA (03208900)	Lat 37°09'51", long 82°31'30", Dickenson County, Hydro- logic Unit 05070202, on right bank 50 ft upstream from bridge on State High- way 624, 150 ft upstream from Camp Creek, and 2.6 mi northwest of Georges Fork. Datum of gage is 1,470.39 ft above sea level. Drainage area is 82.5 mi ² .	1964-82†, 1983-98	4-17-98	9.54	3,540	5-18-75	14.91	10,900
Russell Fork at Bartlick, VA (03209200)	Lat 37°14'45", long 82°19'25", Dickenson County, Hydrologic Unit 05070202, on left bank at Bartlick just upstream from bridge on State High- way 611, 0.2 mi downstream from Pound River, and 1.1 mi upstream from Fall Branch. Datum of gage is 1,165.00 ft above sea level. Drainage area is 526 mi ² .	1963-82†, 1983-98	4-17-98	18.59	17,300	4- 4-77	27.55	50,000
Knox Creek at Kelsa, VA (03213590)	Lat 37°27'02", long 82°03'34", Buchanan County, Hydrologic Unit 05070201, on downstream end of right bridge pier on State Highway 697, 0.3 mi downstream from Pawpaw Creek, 0.8 mi northeast of Kelsa, and 10.0 mi upstream from mouth. Elevation of gage is 945 ft above sea level, from topographic map. Drainage area is 84.3 mi ² .	1980-81†, 1982-98	6-10-98	14.10	7,330	5- 7-84	20.2	13,000

† Operated as a continuous-record gaging station.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Maximum discharge at crest-stage partial-record stations during water year 1998--Continued

Station name and number	Location and drainage area	Period of record (water years)	Water year 1998 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
TENNESSE RIVER BASIN								
Cedar Creek near Meadowview, VA (03475600)	Lat 36°44'50", long 81°51'20", Washington County, Hydro- logic Unit 06010102, on left downstream wingwall of cul- vert on U.S. Highway 11, 1.2 mi south of Meadowview, and 2.5 mi upstream from mouth. Datum of gage is 2,034.66 ft above sea level. Drainage area is 3.38 mi ² .	1967-98	4-17-98	Unknown	Unknown	7-10-71	7.54	92
Lick Creek near Chatham Hill, VA (03487800)	Lat 36°57'44", long 81°28'21", Smyth County, Hydrologic Unit 06010101, on left bank 270 ft upstream from bridge on State Highway 42, 2.9 mi northeast of Chatham Hill, and 1.6 mi upstream from mouth. Datum of gage is 2,076.97 ft above sea level. Drainage area is 25.5 mi ² .	1966-68†, 1969-98	4-17-98	5.08	903	11- 7-77	8.09	2,660
Brumley Creek at Brumley Gap, VA (03488450)	Lat 36°47'30", long 82°01'10", Washington County, Hydro- logic Unit 06010101, on left downstream wingwall of bridge of State Highway 611, 0.2 mi upstream from mouth, 0.8 mi southeast of Brumley Gap, and 2.7 mi downstream from Lee Creek. Datum of gage is 1,489.16 ft above sea level. Drainage area is 21.1 mi ² .	1979-81†, 1982-98	4-17-98	5.48	919	5- 7-84	6.60	1,500
Cove Creek near Shelleys, VA (03489800)	Lat 36°39'13", long 82°21'16", Scott County, Hydrologic Unit 06010101, on right down- stream wingwall of bridge on U.S. Highway 58 and 421, 1.5 mi northwest of Shelleys, and at mile 3.3. Datum of gage is 1,381.53 ft above sea level. Drainage area is 17.3 mi ² .	1951-98	4-17-98	6.81	1,350	3-12-63	8.40	2,500
North Fork Holston River near Gate City, VA (03490000)	Lat 36°36'31", long 82°34'05", Scott County, Hydrologic Unit 06010101, on left bank 75 ft upstream from bridge on U.S. Highway 23, 1.6 mi downstream from Big Mountain Creek, 2.1 mi southeast of Gate City, and at mile 8.8. Datum of gage is 1,197.56 ft above sea level. Drainage area is 672 mi ² .	1932-81†, 1982-98k	4-17-98	14.11	22,700	4- 5-77 c1862	19.79 k22.5	41,000 k54,000

† Operated as a continuous-record gaging station.

c Maximum known historical peak outside period of record.

k Records provided by Tennessee Valley Authority.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Maximum discharge at crest-stage partial-record stations during water year 1998--Continued

Station name and number	Location and drainage area	Period of record (water years)	Water year 1998 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
TENNESSEE RIVER BASIN--Continued								
Clinch River at Richlands, VA (03521500)	Lat 37°05'10", long 81°46'52", Tazewell County, Hydrologic Unit 06010205, on right bank 1.0 mi southeast of Richlands, 1.6 mi downstream from Middle Creek, 2.2 mi upstream from Big Creek, and at mile 321.0. Datum of gage is 1,924.08 ft above sea level. Drainage area is 137 mi ² .	1946-89†, 1990-98	3-21-98	12.63	5,150	6-22-01	k21.3	k11,500
Guest River at Coeburn, VA (03524500)	Lat 36°55'45", long 82°27'23", Wise County, Hydrologic Unit 06010205, on right bank 30 ft downstream from bridge on State Highway 72, 1.0 mi southwest of Coeburn, 1.4 mi upstream from Jaybird Branch, 1.8 mi downstream from Pine Camp Creek, and at mile 6.3. Datum of gage is 1,935.80 ft above sea level. Drainage area is 87.3 mi ² .	1950-59†, 1960-78, 1979-81†, 1982-98	4-17-98	10.52	3,530	4- 5-77	20.95	18,000
Stony Creek at Ka, VA (03524900)	Lat 36°48'57", long 82°37'02", Scott County, Hydrologic Unit 06010205, at Ka, on left bank 300 ft upstream from bridge on State High- way 619, 600 ft downstream from Straight Fork, and 4.2 mi upstream from mouth. Elevation of gage is 1,510 ft above sea level, from topo- graphic map. Drainage area is 30.9 mi ² .	1981†, 1982-98	3-19-98	6.00	3,200	5- 7-84	7.31	8,010

† Operated as a continuous-record gaging station.

k Records provided by Tennessee Valley Authority.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Maximum discharge at crest-stage partial-record stations during water year 1998--Continued

Station name and number	Location and drainage area	Period of record (water years)	Water year 1998 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)

FOOTNOTES FOR CREST-STAGE PARTIAL-RECORD STATIONS: 1998 water year

* Discharge not determined.

† Operated as a continuous-record gaging station.

< Less than.

> Greater than.

a Records provided by U.S. Department of Agriculture, Soil Conservation Service.

b At different site and datum 6.02 feet lower.

c Maximum known historical peak outside period of record.

d Approximate.

e Affected by debris jam at upstream end of culvert.

f Published incorrectly in the 1997 report.

g Affected by backwater from beaver dam.

h Operated as stage-only station.

j From high-water marks.

k Records provided by Tennessee Valley Authority.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Special study and miscellaneous sites

Discharge measurements in the following table were made at special study and miscellaneous sites throughout the State. Data for miscellaneous sites provided by the Virginia Department of Environmental Quality - Water Division are noted by an "[a]".

Discharge measurements made at special study and miscellaneous sites during water year 1998

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
POTOMAC RIVER BASIN						
01605200 West Strait Creek [a]	Strait Creek	Lat 38°24'57", long 79°34'24", Highland County, at Monterey sewage treatment plant discharge, 0.3 mi upstream from Burners Run, and 0.4 mi downstream from bridge on U.S. Highway 220.	1.50	1995-97	10-10-97	.271
01616200 Clearbrook Run [a]	Hot Run	Lat 39°15'06", long 78°05'31", Frederick County, upstream from W.S. Frey Company discharge, 0.04 mi downstream from U.S. Highway 11, and 0.4 mi southeast of Clear Brook.	1.4	1994-97	7-23-98 9-30-98	3.05 1.52
01621100 Muddy Creek [a]	Dry River	Lat 38°27'58", long 78°58'33", Rockingham County, 60 ft upstream from Wampler and Longacre discharge, 350 ft downstream from bridge on U.S. Highway 33, and 0.2 mi west of Hinton.	16.4	1963, 1976, 1979, 1981, 1991-94, 1997	9- 3-98	2.15
01621210 War Branch [a]	Muddy Creek	Lat 38°27'58", long 78°58'38", Rockingham County, 500 ft upstream from mouth, and 0.3 mi west of Hinton.	12.5	1979, 1981, 1991-94, 1997	9- 3-98	.840
01622220 Unnamed tribu- tary [a]	Middle River	Lat 38°04'23", long 79°14'57", Augusta County, at Castaline Trout Farms-Middlebrook, 0.6 mi upstream from bridge on State Highway 602, 0.7 mi upstream from mouth, and 2.4 mi north- west of Middlebrook.	1.13	1994-97	6-24-98	2.44
016222990 Unnamed tribu- tary [a] (No.2)	Middle River	Lat 38°07'58", long 79°13'30", Augusta County, 150 ft down- stream from Camp Shenandoah Lake, 0.4 mi upstream from mouth, and 2.0 mi southwest of Swoope.	0.99	1996-97	10-10-97 6-24-98 9-10-98	.791 1.65 .889
01622468 Jennings Branch [a]	Middle River	Lat 38°16'57", long 79°13'47", Augusta County, at Whites Store, 200 ft upstream from Stoutameyer Branch, and 3.5 mi northwest of Lone Fountain.	9.2	1996-97	10-10-97 7-16-98 9-22-98	.208 .378 .007
01624350 Middle River [a]	North River	Lat 38°11'25", long 78°58'27", Augusta County, 500 ft up- stream from Staunton/Verona sewage treatment plant discharge, 1,500 ft upstream from Lewis Creek, and 2.0 mi southwest of Verona.	-	1991-93, 1995, 1997	9- 3-98	61.3

a Provided by the Virginia Department of Environmental Quality - Water Division.

Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
POTOMAC RIVER BASIN--Continued						
01624880 Meadow Run [a]	Christians Creek	Lat 38°09'17", long 78°55'24", Augusta County, 0.2 mi downstream from bridge on State Highway 254, 0.4 mi upstream from Coleytown Run, and 1.0 mi northwest of Hermitage.	11.83	1995-97	7-13-98 9-30-98	5.76 2.71
01624940 Unnamed tributary [a] (No.3)	Middle River	Lat 38°14'54", long 78°57'37", Augusta County, at Mt. Sidney/ Fort Defiance sewage treatment plant, 100 ft upstream from Railroad bridge, 0.3 mi downstream from culvert on U.S. Highway 11, and 0.7 mi south of Mount Sidney.	0.25	1996-97	10-10-97 6-23-98 9-30-98	.098 .858 .146
01625847 South Fork Shenandoah River [a]	South Fork Shenandoah River	Lat 38°01'07", long 79°01'08", Augusta County, at Stuarts Draft sewage treatment plant, 0.8 mi downstream from bridge on State Highway 608, and 1.2 mi southeast of Stuarts Draft.	52.47	1997	7-13-98 9-29-98	20.6 8.98
01626575 Jones Hollow Run [a]	South River	Lat 38°03'45", long 78°52'24", Waynesboro City at culverts on Hunter Street in Waynesboro, 0.6 mi upstream from mouth, and 0.8 mi downstream from Jones Hollow Dam.	2.6	1997	7-13-98 9- 3-98	.762 .040
01626952 Porterfield Run [a]	South River	Lat 38°08'04", long 78°52'00", Augusta County, 0.3 mi upstream from mouth, 0.5 mi downstream from culvert on State Highway 865, and 0.8 mi east of Madrid.	4.79	-	6-23-98 9- 3-98	1.84 .667
01628590 Unnamed tributary [a] (No.2)	Cub Run	Lat 38°22'43", long 78°48'21", Rockingham County, at Lawyer Road sewage treatment plant, 0.4 mi upstream from mouth, and 0.5 mi south of Penn Laird.	0.687	1994-97	6-23-98 9- 3-98	.250 .030
01629945 Hawksbill Chub Run	Hawksbill Creek	Lat 38°34'31", long 78°27'32", Page County, at culvert on State Highway 689, 2.2 mi east of Stanley, and 3.1 mi upstream from mouth.	3.16	1994	1-15-98	5.71
01632700 Holmans Creek [a]	North Fork Shenandoah River	Lat 38°42'57", long 78°45'37", Shenandoah County, 100 ft downstream from Lake Wunder, 0.2 mi upstream from State Highway 728 and 1.4 mi west of Forestville.	4.96	1994-97	7-28-98 9-30-98	1.45 .720
01632970 Crooked Run	Mill Creek	Lat 38°45'44", long 78°41'06", Shenandoah County, at culvert on State Highway 263, 0.4 mi upstream from mouth and 2.3 mi west of Mt. Jackson.	6.49	1994	1-15-98	5.65
01633570 North Fork Shenandoah River [a]	Shenandoah River	Lat 38°49'34", long 78°32'03", Shenandoah County, upstream from Aileen, Inc. water intake, 1.5 mi downstream from Stony Creek, and 1.7 mi east of Edinburg.	644	1993-95, 1997	7-28-98 9-30-98	154 95.7

a Provided by the Virginia Department of Environmental Quality - Water Division.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
POTOMAC RIVER BASIN--Continued						
01633650 Pughs Run	Shenandoah River	Lat 38°55'48", long 78°32'43", Shenandoah County, on left upstream wingwall of culvert on State Highway 623, 4.0 mi northwest of Woodstock, and 5.4 mi upstream from mouth.	3.66	1996	1-8-98	41.2
01633730 Toms Brook [a]	North Fork Shenandoah River	Lat 38°56'42", long 78°26'32", Shenandoah County, at bridge on U.S. Highway 11, at Toms Brook.	9.35	1952-54, 1969-70, 1994-97	7-28-98	2.16
01636210 Happy Creek [a]	Shenandoah River	Lat 38°54'20", long 78°11'10", Warren County, at bridge on Criser Road (Kerfoot Avenue), at Front Royal, 2.3 mi up- stream from Leach Run, and 2.9 mi upstream from mouth.	14.0	1948-77†, 1981-83, 1991-97	7- 9-98 9-14-98	5.54 .464
01636225 Unnambd tribu- tary [a]	Crooked Run	Lat 39°02'56", long 78°10'29", Frederick County, at culvert on State Highway 636, 1.5 mi upstream from mouth, and 2.4 mi north of Nineveh.	0.60	1993-97	7- 9-98	.090
01636228 Crooked Run [a]	Shenandoah River	Lat 38°59'14", long 78°11'00", Warren County, 0.7 mi upstream from bridge on State Highway 627, 0.7 mi north of Cedarville.	29.88	1997	7- 9-98 9-14-98	3.18 1.98
01636240 Crooked Run [a]	Shenandoah River	Lat 38°57'22", long 78°11'53", Warren County, 100 ft down- stream from bridge on U.S. Highways 340 and 522, 0.6 mi north of Riverton, and 0.9 mi upstream from mouth.	-	1991-97	7- 9-98 9-14-98	8.37 3.17
01636266 Manassas Run [a]	Shenandoah River	Lat 38°54'49", long 78°05'58", Warren County, 100 ft upstream from bridge on State Highway 79, 1.3 mi west of Linden.	5.25	1991-97	7- 9-98 9-14-98	2.39 .191
01636295 Roseville Run [a]	Spout Run	Lat 39°05'18", long 78°03'51", Clarke County, at Boyce sewage treatment plant discharge, at Boyce town boundary, and 100 ft downstream from bridge on U.S. Highway 340.	2.47	1995-97	7-23-98 9-14-98	.351 .077
01636345 Unnamed tribu- tary [a]	Wheat Spring Branch	Lat 39°07'26", long 77°54'54", Clarke County, at S.M. Perry discharge, 50 ft upstream from culvert on State High- way 612, 1.3 mi upstream from mouth, and 4.0 mi southeast of Berryville.	0.61	-	7-23-98	0
01652500 Fourmile Run	Potomac River	Lat 38°50'35", long 77°05'09", Arlington County, at bridge on Shirlington Road, 0.1 mi upstream from Interstate Highway 395, and 2.5 mi upstream from mouth.	13.8	1951-69†, 1970-73, 1974-75†, 1976-77c, 19079-82†, 1983-92	9-10-98	3.21

† Operated as a continuous-record gaging station.

a Provided by the Virginia Department of Environmental Quality - Water Division.

c Prior to Sept. 28, 1973, at site 0.4 mi downstream at datum 6.02 ft lower.

Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
POTOMAC RIVER BASIN--Continued						
01657865 Neabsco Creek trib- utary	Neabsco Creek	Lat 38°39'13", long 77°17'48", Prince William County, in Dale City, 0.2 mi upstream from Prince William Parkway.	-	1997	10- 8-97	.02
GREAT WICOMICO RIVER BASIN						
01661800 Bush Mill Stream [b]	Great Wicomico River	Lat 37°52'36", long 76°29'40", Northumberland County, at bridge on State Highway 601, 2.2 mi northwest of Howland, 3.0 mi southwest of Heathsville, and 3.5 mi upstream from mouth.	6.82	1964-69†, 1970-86†, 1987-93, 1996-97	6- 3-98	4.83
RAPPAHANNOCK RIVER BASIN						
01661835 Unnamed tribu- tary [a]	Hickman Run	Lat 38°45'14", long 78°06'24", Rappahannock County, 50 ft upstream from culvert on State Highway 641, 0.8 mi southwest of Flint Hill.	0.125	1994-97	10-14-97 7-21-98 9-16-98	.017 .040 0
01662010 Unnamed tribu- tary [a] (No.8)	Rappahannock River	Lat 38°39'50", long 77°54'50", Culpeper County, at South Wales sewage treatment plant discharge, 0.7 mi upstream from confluence with Rappahannock River, and 1.9 mi north of Jeffersonton.	1.21	1995-97	10-14-97 7-21-98 9-16-98	<.001 <.001 <.001
01662050 Unnamed tribu- tary [a]	Great Run	Lat 38°43'00", long 77°48'57", Fauquier County, upstream from Warrenton sewage treat- ment plant discharge, at Warrenton, and 300 ft up- stream from bridge on U.S. Highway 211.	-	1993-97	10-14-97 7-21-98 9-16-98	.134 .310 .138
01662320 Thornton River [a]	Hazel River	Lat 38°39'29", long 78°13'13", Rappahannock County, at Sperry- ville, 0.25 mi upstream from con- fluence with N.F. Thornton River and 0.3 mi downstream from bridge on U.S. Highway 522.	10.4	1995-97	10-14-97 7-21-98 9-16-98	3.84 3.38 .575
01665050 Pony Mountain Branch	Mountain Run	Lat 38°27'04", long 77°57'24", Culpeper County, at culvert on State Highway 3, 0.3 mi upstream from mouth, and 2.7 mi southeast of Culpeper.	.30	1983, 1994	1-13-98	.17
01668300 Farmers Hall Creek	Rappahannock River	Lat 38°00'05", long 76°58'40", Essex County, at culvert on U.S. Highway 17, 1.2 mi southeast of Champlain.	2.18	1969, 1991, 1996-97	5-18-98	1.93
PIANKATANK RIVER BASIN						
01669800 My Ladys Swamp	Piankatank River	Lat 37°34'34", long 76°31'30", Middlesex County, at culvert on State Highway 629, 4.4 mi southeast of Saluda, and 1.45 upstream from mouth.	4.81	1996-97	6- 3-98	4.66

† Operated as a continuous-record gaging station.
< Less than.

a Provided by the Virginia Department of Environmental Quality - Water Division.

b Provided by both the U.S. Geological Survey and Virginia Department of Environmental Quality - Water Division.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
YORK RIVER BASIN						
01670180 Pamunkey Creek	Lake Anna	Lat 36°11'53", long 77°58'09", Orange County, at bridge on State Highway 669, 0.45 mi south of Lahore, and 3.8 mi upstream from Lake Anna.	40.5	1989-91, 1994, 1997	3-31-98	58.8
01670320 Freshwater Creek [a]	Contrary Creek	Lat 38°00'33", long 77°53'56", Louisa County, 20 ft upstream from Mineral sewage treatment plant, 600 ft upstream from culvert on State Highway 618, and 0.5 mi east of Mineral.	-	1991-97	10- 9-97 6-30-98 9- 1-98	.063 .322 0
01671270 Licking- hole Creek [a]	South Anna River	Lat 38°04'33", long 78°08'55", Louisa County, 700 ft down- stream from Izac Lake, 0.5 mi upstream from mouth, and 2.1 mi east of Boswells Tavern.	2.73	-	10- 9-97 9- 1-98	.051 .012
01671925 Northeast Creek [a]	South Anna River	Lat 37°58'39", long 77°56'22", Louisa County, at Louisa WTP discharge, 300 ft downstream from culvert on U.S. Highway 33, and 2.5 mi south of Mineral.	10.07	1994-97	10- 9-97 6-30-98 9- 1-98	.508 2.55 .051
01673610 Unnamed tribu- tary [a]	Clopton Swamp	Lat 37°33'05", long 77°06'22", New Kent County, at Kenwood Farmes sewage treatment plant discharge, 0.6 mi upstream from mouth, and 1.6 mi northeast of Quinton.	0.22	1994-97	10- 8-97 9- 1-98 9-28-98	.051 .117 .149
01674160 Polecat Creek [a]	Mattaponi River	Lat 37°58'09", long 77°32'20", Caroline County, 150 ft down- stream from culvert on State Highway 601, 0.7 mi northeast of Cedar Fork, and 2.1 mi west of Golansville.	1.15	1994-97	10-14-97 11-19-97 12- 9-97 1- 5-98 2- 3-98 3- 3-98 4- 7-98 5- 7-98 6- 2-98 7- 6-98 8- 5-98 9- 2-98	.002 .120 .193 .299 1.38 5.34 1.64 .680 .117 .011 .003 .002
01674171 Unnamed tribu- tary [a]	Polecat Creek	Lat 37°57'56", long 77°29'17", Caroline County, 200 ft up- stream from mouth, 1.2 mi south of Golansville, and 2.4 mi north of Carmel Church.	3.94	1994-97	10-14-97 11-19-97 12- 9-97 1- 5-98 2- 3-98 2- 6-98 3- 3-98 4- 7-98 5- 7-98 6- 2-98 7- 6-98 8- 5-98 9- 2-98	.006 1.24 2.41 1.73 8.24 42.4 13.6 12.1 6.09 3.74 .212 0 0

a Provided by the Virginia Department of Environmental Quality - Water Division.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
YORK RIVER BASIN--Continued						
01674172 Polecat Creek [a]	Mattaponi River	Lat 37°58'13", long 77°29'13", Caroline County, 150 ft upstream from bridge on State Highway 652, 0.5 mi upstream from Stevens Mill Run, and 1.1 mi southeast of Golansville.	10.8	1994-97	10-14-97	.002
					11-19-97	4.35
					12- 9-97	4.71
					1- 5-98	5.62
					2- 3-98	21.1
					3- 3-98	44.0
					4- 7-98	26.5
					5- 7-98	18.8
					6- 2-98	6.58
					7- 6-98	.446
					8- 5-98	0
					9- 2-98	0
					01674174 Stevens Mill Run [a]	Polecat Creek
11-19-97	4.24					
12- 9-97	3.03					
1- 5-98	5.68					
2- 3-98	65.2					
3- 3-98	37.7					
4- 7-98	27.2					
4-27-98	8.37					
5- 7-98	14.8					
6- 2-98	2.00					
7- 6-98	.472					
8- 5-98	.166					
9- 2-98	.100					
01674180 Polecat Creek [a]	Mattaponi River	Lat 37°57'20", long 77°22'08", Caroline County, 200 ft upstream from bridge on State Highway 601, 0.25 mi southeast of Penola, and 2.2 mi upstream from mouth.	48.3	1994-97	10-14-97	.975
					11-19-97	27.5
					12- 9-97	23.7
					1- 5-98	32.8
					2- 3-98	138
					2- 6-98	841
					3- 3-98	166
					4- 7-98	149
					5- 7-98	121
					6- 2-98	26.5
					7- 6-98	8.32
					8- 5-98	.406
					9- 2-98	.022
01674200 Reedy Creek	Mattaponi River	Lat 37°52'55", long 77°21'35", Caroline County, at bridge on U.S. Highway 301, 3.3 mi north of Dawn and 11 mi south of Bowling Green.	16.8	1950, 1952-53, 1955-57, 1961, 1969, 1973-75, 1990-93, 1996-97	5-18-98	19.2
JAMES RIVER BASIN						
02011010 Warm Springs Run [a]	James River	Lat 38°02'57", long 79°47'43", Bath County, 100 ft upstream from Warm Springs sewage treatment plant, 0.2 mi down- stream from unnamed tributary, and 0.3 mi northwest of Warm Springs.	2.96	1991-97	6-26-98	5.58
					9-29-98	2.43
02011830 Hot Springs Run [a]	Cedar Creek	Lat 38°00'33", long 79°51'47", Bath County, 50 ft upstream from Hot Springs Regional sewage treatment plant, 0.5 mi east of Bacova Junction, and 0.7 mi downstream from bridge on State Highway 615.	4.32	1993-97	6-26-98	2.99
					9-29-98	1.91

a Provided by the Virginia Department of Environmental Quality - Water Division.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
JAMES RIVER BASIN--Continued						
02012500 Jackson River	James River	Lat 37°52'36", long 79°58'39", Alleghany County, at Smith Bridge, 0.8 mi south of Falling Spring, and 1.6 mi downstream from Falling Spring Creek.	411	1925-96	10-16-97 3-31-98	219 428
02012980 Jerrys Run [a]	Dunlap Creek	Lat 37°48'37", long 80°11'25", Alleghany County, at I-64 Rest Area, 0.6 mi east of Exit 2, and 5.3 mi north of Alleghany.	1.89	1996-97	6-22-98	.273
02015300 Wilson Creek [a]	Jackson River	Lat 37°50'37", long 79°48'01", Alleghany County, at Tukes Trailer Court discharge, 1.5 mi northwest of Longdale, and 2.5 mi upstream from mouth.	28.34	1995-97	6-25-98 9-22-98	7.11 .095
02015600 Cowpasture River	James River	Lat 38°19'30", long 79°26'14", Highland County, on left down- stream wingwall of bridge on U.S. Highway 250, 1.2 mi west of Head Waters, and 3 mi upstream from Shaw Fork.	11.3	1995-97	1-10-98	49.2
02017700 Craig Creek tribu- tary	Craig Creek	Lat 37°33'21", long 79°59'52", Craig County, at culvert on State Highway 606, 0.4 mi up- stream from mouth, and 7.1 mi northeast of New Castle.	2.05	1968-71 1992, 1994	*6-23-95 1- 6-98	147 2.56
02018310 Unnamed tribu- tary (No.3) [a]	James River	Lat 37°38'17", long 79°47'52", Botetourt County, at Eagle Rock, 50 ft downstream from culvert on State Highway 688, and 300 ft upstream from mouth.	0.87	1997	10-24-97 6-22-98	0 0
02018810 Crooked Run [a]	North Fork	Lat 37°30'44", long 79°55'40", Botetourt County, at Camp Fincastle Lake outfall, 0.3 mi downstream from Woodville Spring, and 2.8 mi northwest of Fincastle.	-	-	6-22-98 9- 9-98	1.47 .853
02018850 Borden Creek [a]	Catawba Creek	Lat 37°32'17", long 79°54'24", Botetourt County, 0.7 mi downstream from culvert on State Highway 666, 1.0 mi upstream from confluence with Sukey Johnson Branch, and 1.6 mi west of Flatwoods.	-	1997	10-24-97 6-22-98 9- 9-98	.731 2.06 .815
02020100 Renick Run	James River	Lat 37°35'27", long 79°38'04", Botetourt County, at culvert on Frontage Road of Interstate Highway 81, 4.8 miles north- east of Buchanan.	2.06	1969-71, 1995-97	1-13-98	1.80
02021080 Alum Creek [a]	Brattons Run	Lat 37°54'36", long 79°36'27", Rockbridge County, 300 ft south of State Highway 633, 1.2 mi upstream from mouth, and 4.6 mi south of Millboro.	3.21	1992-97	9-22-98	.028

a Provided by the Virginia Department of Environmental Quality - Water Division.

Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
JAMES RIVER BASIN--Continued						
02021110 Brattons Run [a]	Calfpasture River	Lat 37°58'07", long 79°30'17", Rockbridge County, 200 ft upstream from bridge on State Highway 39, 0.7 mi southwest of Goshen, and 1.0 mi down- stream from bridge on State Highway 780.	28.86	1991-97	6-25-98 9-22-98	7.48 .207
02021400 Unnamed tribu- tary [a]	Byrd Spring Creek tributary	Lat 38°02'26", long 79°23'12", Augusta County, at Castaline Trout Farm - Craigsville, 0.3 mi upstream from State Highway 683, and 2.7 mi south of Craigville.	0.38	1994-97	7-16-98	1.63
02021670 Cedar Creek [a]	Cedar Grove Branch	Lat 37°53'32", long 79°18'49", Rockbridge County, 1.6 mi northwest of Fairfield, 1.9 mi upstream from culverts on State Highway 712, and 3.3 mi upstream from mouth.	1.75	-	7-16-98 9-10-98	.756 .437
02023390 Moore's Creek [a]	South River	Lat 37°55'57", long 79°13'52", Rockbridge County, at Wilco Travel Plaza, 200 ft upstream from State Highway 917 and 0.3 mi south of Raphine.	0.70	1994-97	6-24-98	.722
02023395 Moore's Creek [a]	South River	Lat 37°54'57", long 79°14'10", Rockbridge County, at Raphine Motel sewage treatment plant, 0.6 mi upstream from bridge on U. S. Highway 11, and 1.5 mi south of Raphine.	2.46	1994-97	6-24-98 9-10-98	3.06 1.23
02023410 Marl- brook Creek [a]	South River	Lat 37°52'59", long 79°16'57", Rockbridge County, 30 ft up- stream from culvert on U.S. Highway 11, 500 ft downstream from culvert on State Highway 613, and at Fairfield.	1.38	-	6-24-98 9-10-98	1.88 .362
02024208 Indian Gap Run [a]	Maury River	Lat 37°43'38", long 79°21'38", Rockbridge County, at Buena Vista City 600 ft upstream from mouth, and 0.2 mi downstream from culvert on U.S. Highway 501.	4.57	1995-97	7-13-98 9-22-98	.492 .271
02025610 Harris Creek [a]	James River	Lat 37°32'53", long 79°08'30", Amherst County, at Old Dominion Job Corps discharge, 0.9 mi up- stream from confluence with Fall- ing Rock Creek, and 2.5 mi north- west of Faulconerville.	11.4	1995-97	7- 6-98	7.97
02025680 Unnamed tribu- tary [a]	Harris Creek	Lat 37°28'43", long 79°08'11", Amherst County, at bridge on private road, 100 ft upstream from Ivanhoe Forest Subdivision sewage treatment plant, and 1.4 mi south of Monroe.	0.50	1993-97	7- 6-98	.210
02025850 Ivy Creek [a]	Blackwater Creek	Lat 37°23'36", long 79°18'35", Bedford County, 100 ft down- stream from Ivy Hill Lake, 2.1 mi upstream from State Highway 662, and 2.7 mi northeast of Norwood.	9.68	1994-97	7- 1-98	5.65

Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
JAMES RIVER BASIN--Continued						
02025890 Unnamed tribu- tary [a]	Tussocky Creek	Lat 37°17'55", long 79°09'04", Campbell County, at Evergreen Mobile Home Park, 1.0 mi up- stream from confluence with tributary from Willow Lake, and 2.8 mi southeast of City Farm.	0.20	1996-97	7- 1-98 9-21-98	.018 .013
02025970 Wreck Island Creek [a]	James River	Lat 37°28'52", long 78°53'43", Appomattox County, 50 ft up- stream from Appomattox Line Company discharge, 2.0 mi downstream from bridge on State Highway 683, and 3.0 mi south of Riverville.	56.11	1993-97	7- 6-98 9-21-98	36.5 22.2
02027700 Tribu- tary	Buffalo River	Lat 37°33'45", long 78°57'35", Amherst County, at culvert on U.S. Highway 60, 5.2 mi southeast of Amherst.	0.46	1966-71, 1996-97	3-23-98	1.71
02028480 Unnamed tribu- tary [a]	South Fork Rockfish River	Lat 37°54'16", long 78°57'51", Nelson County, 200 ft upstream from Wintergreen Mountain sewage treatment plant, 2.8 mi northeast of Love.	0.34	1993-97	7- 6-98	.236
02030400 Turpin Creek [a]	Slate River	Lat 37°14'19", long 78°28'50", Buckingham County, at Bucking- ham Medium Security Institute #3 discharge, 1.5 mi upstream from Peyton Creek, and 2.0 mi northwest of Dillwyn.	1.32	1994-97	10- 7-97 7-30-98 9-21-98	.271 .499 .250
02030755 Unnamed tribu- tary [a]	North Creek	Lat 37°45'28", long 78°15'38", Fluvanna County, at Village Nursing Center discharge, 0.2 mi south of Fork Union, and 0.5 mi upstream from mouth.	0.08	1994-97	10- 8-97 6-30-98 9-28-98	<.001 .002 <.001
02030760 North Creek [a]	South Creek	Lat 37°45'27", long 78°15'02", Fluvanna County, 100 ft upstream from Fork Union Military Academy sewage treatment plant, at bridge on State Highway 652, and 0.8 mi southeast of Fork Union.	2.0	1990-97	10- 8-97 6-30-98 9-28-98	.131 .664 .122
02032300 Muddy Run	Buck Mountain Creek	Lat 38°14'05", long 78°37'02", Albemarle County, at bridge on State Highway 810, 0.7 mi upstream from mouth, and 11 mi southwest of Stanardsville.	3.36	-	*2- 2-83 *4- 4-83 *3-24-89 1-13-98	12.3 27.3 25.3 8.13
02033300 Moore's Creek	Rivanna River	Lat 38°00'25", long 78°34'25", Albemarle County, at culvert on access road, 30 ft north of U.S. Highway 29, 2.8 mi upstream from Morey Creek, and 4 mi southwest of Charlottesville.	3.52	1969, 1990, 1991, 1996-97	3-31-98	8.55

* Not previously published.

< Less than.

a Provided by the Virginia Department of Environmental Quality - Water Division.

Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
JAMES RIVER BASIN--Continued						
02033390 Biscuit Run [a]	Moore's Creek	Lat 37°59'57", long 78°31'09", Albemarle County, at Southwood Mobile Home Park discharge, 1.1 mi upstream from Inter- state Highway 64, 0.8 mi south of Charlottesville City limits and 1.3 mi upstream from mouth.	12.56	1994-97	10- 9-97 7-15-98 9-15-98	3.47 6.09 1.68
02033570 Shadwell Creek[a]	Rivanna River	Lat 38°01'13", long 78°25'27", Albemarle County, at Ramada Inn discharge, 0.3 mi upstream from bridge on U.S. Highway 250, and 1.6 mi west of Shadwell.	0.624	-	10- 9-97 7-15-98 9-15-98	.035 .146 .030
02033670 Rivanna River[a]	James River	Lat 38°00'24", long 78°24'02", Albemarle County, at bridge on State Highway 729, 0.4 mi upstream from Camp Branch, and 0.5 mi southwest of Shadwell.	-	1993, 1995, 1997	10- 8-97 8-31-98	82.7 120
02033800 Mechunk Creek [a]	Rivanna River	Lat 38°59'03", long 78°18'44", Fluvanna County, at bridge on U.S. Highway 250, 5.0 mi west of Zion Crossroads.	-	1941, 1951, 1953-54, 1964, 1994-97	10- 8-97 8-31-98 9-28-98	5.19 1.61 .494
02036000 Beaverdam Creek [a]	James River	Lat 37°38'50", long 77°49'34", Goochland County, at bridge on State Highway 6, at State Farm, and 1.7 mi northwest of Crozier.	40.0	1943, 1951-54, 1995-97	10- 7-97 8-31-98 9-28-98	3.16 1.04 .695
02038000 Falling Creek	James River	Lat 37°26'37", long 77°31'21", Chesterfield County, at bridge on State Highway 651, 2.8 mi upstream from Pocoshock Creek and 4.7 mi northwest of Ches- terfield.	32.8	1955-94†, 1996-97	5-29-98	26.0
02038670 Unnamed tribu- tary [a]	James River	Lat 37°23'48", long 77°22'36", Henrico County, 0.2 mi downstream from culvert on Kingsland Road, 0.8 mi upstream from mouth, and 4.4 mi east of Centralia.	0.77	1997	10-10-97 8-24-98	.057 .026
02038730 Fourmile Creek [b]	James River	Lat 37°27'16", long 77°19'53", Henrico County, at bridge on Doran Road, 0.2 mi upstream from confluence with Ross Run, and 3.7 mi east of Richmond Heights.	4.01	1980-83, 1997	10-10-97 8-24-98	.442 .102
02038810 South Fork Appomattox River [a]	Appomattox River	Lat 37°21'13", long 78°48'50", Appomattox County, at Appo- mattox lagoon discharge, 200 ft downstream from culvert on U.S. Highway 460 bypass, and 0.8 mi southeast of Appomattox.	0.46	1994-97	7- 6-98 8-25-98	.113 .069
02038840 Holiday Creek	Appomattox River	Lat 37°25'58", long 78°41'12", Buckingham County, at State Forest Road 2307 (old Rich- mond Road), 1.8 mi upstream from confluence with North Holiday Creek, and 5.2 mi south-southwest of Toga.	1.68	1972, 1989-90, 1994, 1997	1- 8-98	4.72

† Operated as a continuous-record gaging station.

a Provided by the Virginia Department of Environmental Quality - Water Division.

b Provided by both the U.S. Geological Survey and Virginia Department of Environmental Quality - Water Division.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
JAMES RIVER BASIN--Continued						
02038845 North Holiday Creek	Holiday Creek	Lat 37°26'09", long 78°40'04", Buckingham County, at State Forest Road 2307 (old Rich- mond Road), 1.0 mi upstream from mouth, and 4.5 mi south- southwest of Toga.	1.31	1972-73, 1989-90, 1994, 1997	1- 8-98	2.86
02040500 Flat Creek	Appomattox River	Lat 37°23'37", long 78°03'45", Amelia County, at bridge on State Highway 681, 0.5 mi downstream from Horsepen Creek, and 6.0 mi northwest of Amelia.	73.0	1947-78, 1952-54, 1971-72, 1977, 1981-85, 1987-89, 1992, 1996-97	5-29-98	44.1
02040590 Nibbs Creek [a]	Flat Creek	Lat 37°22'02", long 77°59'33", Amelia County, 150 ft upstream from Courthouse Branch, 0.2 mi downstream from bridge on State Highway 681, and 1.8 mi north of Amelia Courthouse.	15.51	1997	10- 7-97 9-14-98 9-23-98	1.38 .551 1.58
02041700 Cattail Run [a]	Appomattox River	Lat 37°12'58", long 77°26'39", Dinwiddie County, at Peters- burg, 500 ft upstream from U.S. Highway 1 and 460, and 0.7 mi upstream from mouth.	8.61	1993-97	10- 9-97 9-14-98	.290 .455
02041745 Poor Creek	Appomattox River	Lat 37°12'56", long 77°22'29", Petersburg City, 100 ft up- stream from Siege Road, 2.8 mi southwest of entrance to Petersburg National Battle- field, and 1.5 mi west of Fort Lee.	-	-	9-10-98	.09
02041748 Poor Creek	Appomattox River	Lat 37°13'49", long 77°22'32", Petersburg City, 0.5 mi west of Siege Road, 2.0 mi south- west of entrance to Petersburg National Battlefield, and 2.0 mi west of Fort Lee.	-	-	9- 9-98	.10
02041758 Harrison Creek	Appomattox River	Lat 37°13'58", long 77°21'50", Petersburg City, 75 ft down- stream from Siege Road, 1.3 mi southwest of entrance to Petersburg National Battle- field, and 1.0 mi west of Fort Lee.	-	-	9- 9-98	0
02041760 Harrison Creek	Appomattox River	Lat 37°14'25", long 77°21'50", Petersburg City, 100 ft down- stream of State Highway 36, 0.5 mi west of entrance to Petersburg National Battle- field, and 1.0 mi west of Fort Lee	-	-	9- 9-98	.10
02041790 Harrison Branch [a]	Appomattox River	Lat 37°15'45", long 77°21'22", Prince George County, at Red Hill Mobil Home Park, 1.1 mi upstream from mouth, 1.8 mi west of Jefferson Park, and 3.0 mi east of Colonial Heights.	1.28	1996-97	10- 9-97 8-24-98 9-28-98	.035 .220 .005

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
JAMES RIVER BASIN--Continued						
02041810 Swift Creek	Appomattox River	Lat 37°27'18", long 77°42'11", Chesterfield County, on left bank, 5 ft upstream from bridge on State Route 667 and 0.9 mi upstream from mouth at Swift Creek Reservoir.	21.4	1987-88, 1991-93, 1996-97	10-20-97	.05
					11-24-97	9.64
					11-24-97	9.04
					12-15-97	4.21
					1- 7-98	4.10
02041820 Blackman Creek	Deep Creek	Lat 37°24'54", long 77°43'38", Chesterfield County, on right bank, 60 ft upstream from bridge on State Route 667, and 0.7 mi upstream from mouth at Deep Creek.	5.80	1987-88, 1992-93, 1996-97	10-20-97	0
					11-14-97	0
					11-26-97	.48
					11-26-97	.51
					12-16-97	.40
	1- 8-98	2.79				
02041830 Horsepen Creek	Deep Creek	Lat 37°25'24", long 77°43'33", Chesterfield County, on right bank, 15 ft downstream from bridge on State Route 667, and 0.9 mi up- stream from mouth at Deep Creek.	3.72	1987-88, 1992-93, 1996-97	10-20-97	0
					11-14-97	7.74
					11-25-97	1.12
					12-16-97	.34
					12-16-97	.36
	1- 8-98	1.44				
02041840 Otterdale Branch	Deep Creek	Lat 37°26'28", long 77°42'40", Chesterfield County, on right bank, 10 ft downstream from bridge on State Route 667, and 0.7 mi upstream from mouth at Swift Creek Reservoir.	3.59	1987-88, 1991-93, 1996-97	10-20-97	.01
					11-14-97	10.0
					11-24-97	1.61
					12-15-97	.58
					12-15-97	.57
	1- 7-98	1.24				
02041850 Tomahawk Creek	Swift Creek	Lat 37°28'08", long 77°40'54", Chesterfield County, on right bank, 15 ft downstream from bridge on State Route 652, and 1.4 mi upstream from mouth at Swift Creek Reservoir.	4.20	1987-88, 1991-93, 1996-97	10-20-97	0
					11-14-97	10.1
					11-24-97	2.87
					11-24-97	2.85
					12-15-97	1.12
	1- 7-98	1.87				
02041860 Little Tomahawk Creek	Tomahawk Creek	Lat 37°27'53", long 77°40'21", Chesterfield County, on right bank, 15 ft downstream from bridge on unimproved road, and 1.3 mi upstream from mouth at Swift Creek Reservoir.	2.31	1987-88, 1991-93, 1996-97	10-20-97	0
					11-14-97	6.06
					11-24-97	.97
					12-15-97	.31
					12-15-97	.30
	1-7-98	.67				
	1-7-98	.62				
02041862 Little Tomahawk tributary (No.1)	Little Tomahawk Creek	Lat 37°27'05", long 77°40'23", Chesterfield County, 0.6 mi west of State Route 604, and 0.2 mi upstream from mouth.	0.19	1997	10-20-97	0
					11- 7-97	.56
					11- 7-97	2.17
					11- 7-97	1.22
					11- 7-97	1.15
					11- 7-97	.80
					11- 7-97	.64
					11- 7-97	1.02
					11- 7-97	.99
					11- 7-97	1.71
					11- 7-97	1.61
					11- 7-97	1.57
					11- 7-97	.37
					11- 7-97	.36
					11- 7-97	.28
					11- 7-97	.24
					11- 7-97	.21
					11-25-97	.01
					12-17-97	0
						1-12-98

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Discharge measurements made at special study and miscellaneous sites during water year 1998						
Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
JAMES RIVER BASIN--Continued						
0204186350	Swift Creek	Lat 37°25'37", long 77°40'57",	0.05	1997	10-20-97	.06
Swift Creek		Chesterfield County, 1.7 mi			11- 7-97	1.96
tributary		north of U.S. Highway 360, 4.3			11- 7-97	1.60
		mi south-east of Hallsboro,			11- 7-97	1.31
		and 0.3 mi upstream from mouth.			11- 7-97	2.12
					11- 7-97	2.00
					11- 7-97	9.31
					11- 7-97	6.70
					11- 7-97	4.22
					11-25-97	.04
					12-17-97	.07
					1-12-98	.17
02041870	Swift Creek	Lat 37°23'55", long 77°41'27",	2.96	1991-93,	10-20-97	0
Dry		Chesterfield County, on left		1996-97	11- 7-97	.60
Creek		bank 10 ft upstream from			11-25-97	.54
		unimproved road 0.3 south of			12-16-97	.10
		U.S. Highway 360 and 0.3 mi			1- 8-98	16.4
		upstream from mouth at Swift				
		Creek Reservoir.				
02041880	Dry Creek	Lat 37°23'56", Long 77°41'06",	2.37	1992-93,	10-20-97	0
Ashbrook		Chesterfield County, on right		1996-97		
Creek		bank at dam for Ashbrook Lake				
		about 0.1 mi upstream of mouth				
		at Swift Creek Reservoir.				
02041890	Dry Creek	Lat 37°24'39", long 77°41'16",	2.75	1991-93,	10-20-97	.03
West		Chesterfield County, 0.2 mi		1996-97	11-14-97	3.07
Branch		upstream from mouth at Swift			11-25-97	.55
		Creek Reservoir			12-16-97	.23
					1- 8-98	18.6
02042075	James River	Lat 37°14'43", long 77°19'34",	-	1995-97	10- 9-97	.203
Bailey		Prince George County, at Fort			8-24-98	.262
Creek [a]		Lee Military Reservation, 0.7			9-28-98	.242
		mi upstream from bridge on State				
		Highway 630, and 1.2 mi south				
		of Jefferson Park.				
02042080	James River	Lat 37°16'26", long 77°17'24",	14.0	1992-97	10- 9-97	2.84
Bailey		Hopewell City and Prince			8-24-98	3.16
Creek [a]		George County line, at bridge			9-28-98	2.46
		on State Highway 156, at				
		Hopewell, and 0.4 mi down-				
		stream from Manchester Run.				
02042190	Queens Creek	Lat 37°20'36", long 77°04'36",	5.07	1993-97	10- 8-97	.212
Courthouse		Charles City County, at Charles				
Creek [a]		City, 50 ft upstream from				
		Charles City Middle School				
		sewage treatment plant, 0.3 mi				
		upstream from bridge on State				
		Highway 155, and 1.2 mi up-				
		stream from mouth.				
02042250	Bailey Branch	Lat 37°10'29", long 76°59'13",	0.71	1968-70,	5-27-98	1.13
Bailey		Surry County, at culvert on		1992,		
Branch		State Highway 10, 1.0 mi		1996-97		
tributary		northwest of Sring Grove.				
02042400	Upham Brook	Lat 37°35'10", long 77°29'55",	2.53	1984-85,	5-18-98	.90
Jordans		Henrico County, at bridge on		1989-90,		
Branch		U.S. Highway 250 (Broad Street)		1996-97		
		at Richmond, and 2.0 mi				
		upstream from mouth.				

Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
JAMES RIVER BASIN--Continued						
02042455	Chickahominy	Lat 37°28'05", long 77°12'32",	-	1984-85,	10-22-97	7.80
White Oak	River	Henrico County, at bridge on		1987-89,	1-15-98	25.3
Swamp		State Highway 156, at Elko.		1991,	4-16-98	20.1
				1995-97	7-16-98	2.76
02042478	Schiminoe	Lat 37°27'27", long 77°05'23",	-	1996-97	10-22-97	.15
Schiminoe	Creek	New Kent County, upstream of			1-15-98	1.60
Creek		culvert on U.S. Highway 60,			4-16-98	2.25
tributary		2.8 mi west of Providence Forge,			7-16-98	.21
		and 0.4 mi upstream from mouth.				
02042726	Chickahominy	Lat 37°28'52", long 76°58'21",	9.25	1895,	10-22-97	3.29
Diascund	River	New Kent County, at bridge on		1987-91,	1-15-98	9.01
Creek		State Highway 628, 2.4 mi south		1995-97	4-16-98	15.0
		of New Kent, and 6.0 mi			7-16-98	6.11
		upstream from Timber Swamp.				
CHOWAN RIVER BASIN						
02044900	Nottoway	Lat 36°58'51", long 77°44'28",	3.84	1994-97	10-10-97	.006
Great	River	Dinwiddie County, at town of				
Creek [a]		McKenney sewage treatment plant,				
		1.1 mi west of McKenney, and				
		1.8 mi upstream from mouth.				
02045275	Sturgeon	Lat 36°51'35", long 77°50'05",	1.68	-	6-23-98	.095
Unnamed	Creek	Brunswick County, 0.7 mi up-			9- 1-98	.002
tribu-		stream from culvert on State			9-14-98	.003
tary [a]		Highway 642, 2.4 mi upstream			9-28-98	.004
		from mouth and 2.8 mi east of				
		Alberta.				
02046250	Nottoway	Lat 36°56'53", long 77°23'24",	236	1994-97	10-10-97	1.81
Stony	River	Sussex County, at Stony Creek			8-10-98	4.22
Creek [a]		sewage treatment plant, 0.2 mi			9-23-98	2.60
		downstream from bridge on				
		Interstate Highway 95, 0.6 mi				
		east of Stony Creek, and 0.9 mi				
		upstream from mouth.				
02046265	Rowanty	Lat 37°09'20", long 77°37'32",	-	-	9-10-98	.03
Hatcher	Creek	Dinwiddie County, 25 ft up-				
Run		stream from State Highway 627,				
		1.0 mi north of Five Forks,				
		and 12.0 mi southwest of				
		Petersburg.				
02050050	Blackwater River	Lat 36°38'44", long 76°51'29",	2.76	1968-70,	5-27-98	.18
Blackwater		Suffolk City, at culvert on		1996-97		
River		State Highway 272, 4.9 mi				
tributary		southwest of Holland, and 3.0				
		mi upstream from mouth.				
ROANOKE RIVER BASIN						
02055515	Tinker Creek	Lat 37°16'20", long 79°56'08",	5.0	1994-97	9- 9-98	7.72
Lick		Roanoke City, at Roanoke,				
Run [a]		along Norfolk Avenue, 300 ft				
		downstream from U.S. High-				
		way 220, and 1.0 mi upstream				
		from mouth.				

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
ROANOKE RIVER BASIN--Continued						
02056800 South Fork Blackwater River [a]	Blackwater River	Lat 37°00'39", long 80°02'53", Franklin County, at Callaway, at Callaway Elem. School sewage treatment plant discharge, and 400 ft downstream from bridge on State Highway 641.	22.17	1995, 1997	9- 9-98	2.96
02057060 Gills Creek	Blackwater River	Lat 39°06'25", long 79°43'51", Franklin County, 0.8 mi south on Jack-O-Lantern Branch Trail in Booker T. Washington National Monument, 35 ft upstream of confluence with Jack-O-Lantern Branch, 5.5 mi southeast of Burnt Chimney, and 8.0 mi south- west of Moneta.	-	-	8-26-98	9.47
0205706010 Jack-O- Lantern Branch	Gills Creek	Lat 37°06'54", long 79°43'50", Franklin County, 0.5 mi south on Farm Trail Loop in Booker T. Washington Monument, 5.0 mi southeast of Burnt Chimney, and 7.5 mi southwest of Moneta.	-	-	8-25-98	.07
0205706020 Jack-O- Lantern tribu- tary (No.1)	Jack-O-Lantern Branch	Lat 37°06'42", long 79°43'45", Franklin County, 0.5 mi south on Jack-O-Lantern Branch Trail in Booker T. Washington National Monument, 1.0 mi south of State Highway 122, 5.0 mi southeast of Burnt Chimney, and 7.0 mi southwest of Moneta.	-	-	8-25-98	.12
0205706030 Jack-O- Lantern Branch	Gills Creek	Lat 37°06'24", long 79°43'50", Franklin County, 0.8 mi south on Jack-O-Lantern Branch Trail in Booker T. Washington National Monument, 40 ft upstram of con- fluence with Gills Creek, 5.5 mi southwest of Burnt Chimney, and 8.0 mi southwest of Moneta.	-	-	8-26-98	.39
02057695 Unnamed tribu- tary [a]	Powder Mill Creek	Lat 37°00'32", long 79°53'29", Franklin County, at Rocky Mount, 800 ft east of Main Street, and 0.25 mi upstream from culvert on State Street.	-	-	5-22-98 9- 9-98	.021 .003
02059440 Unnamed tribu- tary [a] (No.1)	South Fork Goose Creek	Lat 37°23'52", long 79°45'08", Bedford County, at Woodhaven discharge, 200 ft upstream from culvert on State Highway 697, and 1.5 mi east of Villamont.	0.31	1996-97	10-24-97	.503
02060900 Roaring Run [a]	Big Otter River	Lat 37°24'28", long 79°24'11", Bedford County, at Gunnoe Sausage discharge, 500 ft upstream from bridge on State Highway 643, and 0.3 mi south of Cifax.	0.70	1994-97	10-24-97 7- 1-98	.129 .271
02061460 Buffalo Creek [a]	Big Otter River	Lat 37°18'18", long 79°17'24", Campbell County, 300 ft upstream from bridge on U.S. Highway 460, and 0.5 mi northwest of New London.	5.86	1993-97	7- 1-98	3.55

a Provided by the Virginia Department of Environmental Quality - Water Division.

Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
ROANOKE RIVER BASIN--Continued						
02063800 Mollys Creek [a]	Falling River	Lat 37°12'05", long 79°03'18", at Thousand Trails sewage treatment plant discharge, 0.7 mi upstream from bridge on State Highway 654, and 2.7 mi southeast of Winfall.	13.92	1995-97	8-25-98	3.48
02065010 Phelps Creek [a]	Falling River	Lat 37°04'06", long 78°57'06", Campbell County, 500 ft downstream from Brookneal Reservoir, 0.3 mi upstream from mouth, and 1.5 mi north of Brookneal.	3.95	1995, 1997	10- 9-97 8-25-98	1.14 1.21
02066520 Twittys Creek [a]	Roanoke Creek	Lat 36°59'22", long 78°36'13", Charlotte County, at Drakes Branch sewage treatment plant discharge, at Drakes Branch, and 0.25 mi downstream from bridge on State Highway 47.	22.66	1995, 1997	10- 9-97	.614
02072530 Blackberry Creek [a]	Smith River	Lat 36°44'42", long 80°04'48", Henry County, at Fairway Acres discharge, 500 ft upstream from bridge on State Highway 687, and 2.0 mi northeast of Sandville.	3.94	1997	9- 9-98	1.99
02075091.25 Unnamed tributary [a]	Hogans Creek	Lat 36°32'30", long 79°22'22", Pittsylvania County, at Goodyear Tire and Rubber plant discharge, 0.4 mi upstream from bridge on State Highway 736, 1.1 mi southeast of Danville City limits, and 1.5 mi upstream from mouth.	0.89	1994-97	9-10-98	.125
02075191 Cane Creek [a]	Dan River	Lat 36°36'00", long 79°19'34", Pittsylvania County, 0.3 mi downstream from bridge on State Highway 730, and 1.7 mi west of Ringgold.	3.94	-	†11-18-96 †5-23-97 †6-25-97 †9-18-97 9-10-98	2.07 2.06 1.68 1.23 1.20
02075350 Powells Creek	Dan River	Lat 36°34'50", long 79°11'20", Halifax County, at culvert on U.S. Highway 58, 1.1 mi east of Halifax-Pittsylvania county line, 8.8 mi southwest of Turbeville, and 0.8 mi upstream from mouth.	028	1993, 1996	6-10-98	.10
02076100 Wet Sleeve Creek [a]	Banister River	Lat 36°46'18", long 79°32'52", Pittsylvania County, 0.4 mi downstream from bridge on State Highway 815, 1.3 mi upstream from mouth, and 2.8 mi northeast of Swansonville.	3.75	1993-95, 1997	9-10-98	1.02
02076200 Bearskin Creek	Banister River	Lat 36°50'30", long 79°29'05", Pittsylvania County, at culvert on State Highway 57, 4.5 miles west of Chatham.	4.06	1969-72, 1996-97	1- 6-98	2.76
02076280 Dry Fork [a]	White Oak Creek	Lat 36°44'40", long 79°23'48", Pittsylvania County, at Vulcan Materials Company discharge, 0.6 mi south of Dry Fork, and 0.7 mi upstream from bridge on State Highway 718.	2.42	1994-95, 1997	9-10-98	0

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
YADKIN RIVER BASIN						
02113540 Unnamed tributary [a] (No. 1)	Birds Branch	Lat 36°38'18", long 80°32'05", Patrick County, at Doe Run Lodge discharge, 0.25 mi south of Pilot Mtn. Overlook, and 3.0 mi northwest of Ararat.	-	1995-97	8- 4-98	.090
02113541 Unnamed tributary [a] (No. 2)	Birds Branch	Lat 36°38'16", long 80°32'30", Patrick County, at Groundhog Mtn. Resort discharge, 0.45 mi southwest of Pilot Mtn. Overlook, and 3.1 mi northwest of Ararat.	-	1995-97	8- 4-98	.040
KANAWHA RIVER BASIN						
03162705 Peggies Branch [a]	New River	Lat 36°36'08", long 81°20'22", Grayson County, 0.2 mi downstream from bridge on State Hihgway 728, 0.3 mi north of Oak Hill, and 1.6 mi upstream from mouth.	1.54	1995, 1997	8- 4-98	.403
03162750 Fox Creek [a]	New River	Lat 36°41'22", long 81°25'52", Grayson County, at Rivers Casuals sewage treatment plant, 400 ft upstream from bridge on State Highway 16, and 1.1 mi southeast of Troutdale.	13.82	1994-95, 1997	8- 4-98	3.06
03162852 Peach Bottom Creek [b]	New River	Lat 36°36'01" long 81°06'41", Grayson County, at Independence sewage treatment plant, 200 ft upstream from State Highway 697, and 2.7 mi southeast of Independence.	-	1993-95, 1997	8- 4-98	8.58
03163480 Stone Creek [a]	Elk Creek	Lat 36°43'27", long 81°10'45", Grayson County, at Perry Manufacturing sewage treatment plant, 0.2 mi north of Elk Creek, and 0.3 mi upstream from bridge on State Highway 659.	2.31	1994-95, 1997	8- 5-98	1.14
03164100 Bull Run [a]	New River	Lat 36°42'28", long 81°02'11", Grayson County, 0.5 mi upstream from bridge on State Highway 648, 1.3 mi northwest of Providence, and 2.5 mi southwest of Stevens Creek.	0.32	1995, 1997	8- 4-98	.240
03166100 Buddle Branch [a]	New River	Lat 36°50'17", long 80°55'00", Wythe County, 100 ft east of State Highway 636, 0.6 mi upstream from culvert on State Highway 69, and 0.9 mi south of Austinville.	-	1993-97	8- 5-98	.154
0316612010 Unnamed tributary [a] (No.1)	Buddle Branch	Lat 36°51'21", long 80°54'18", Wythe County, 10 ft upstream from confluence with Buddle Branch, 0.6 mi northeast of Austinville.	-	1997	8- 5-98	.955

a Provided by the Virginia Department of Environmental Quality - Water Division.

b Provided by both the U.S. Geological Survey and Virginia Department of Environmental Quality - Water Division.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
KANAWHA RIVER BASIN--Continued						
03167100 McGavock Creek [a]	Reed Creek	Lat 36°57'58", long 80°51'07", Wythe County, at I-81 Auto & Truck Stop sewage treatment plant discharge, at exit 86, and 2.8 mi northeast of Grahams Forge.	0.12	1995-97	8- 3-98	.003
03167150 Big Reed Island Creek [a]	New River	Lat 36°41'20", long 80°31'42", Carroll County, at Olde Mill Golf Resort, 0.2 mi down- stream from bridge on State Highway 618, and 2.1 mi south of Laurel Fork.	20.2	1994-97	8- 4-98	14.4
03167600 Unnamed tribu- tary [a] (No.1)	East Fork Little Reed Island Creek	Lat 36°40'00", long 80°41'43", Carroll County, at Lakeview Motel sewage treatment plant discharge, at Fancy Gap, and 1.1 mi upstream from mouth.	0.13	1995-97	8- 4-98	.057
03167608 East Fork Little Reed Island Creek [a]	Reed Island Creek	Lat 36°40'27", long 80°42'42", Carroll County, at Days Inn discharge, 200 ft upstream from I-77, and 1.2 mi northeast of Fancy Gap.	3.21	1996-97	8- 4-98	3.02
03167610 Unnamed tribu- tary [a]	East Fork Little Reed Island Creek Tributary (No.2)	Lat 36°40'26", long 80°41'42", Carroll County, at Utts Campground discharge, at culvert on U.S. Highway 52, and 0.5 mi north of Fancy Gap.	0.15	1995-97	8- 4-98	.035
03168450 Peak Creek [a]	New River	Lat 37°02'50", long 80°47'32", Pulaski County, at Pulaski, 600 ft downstream from bridge on State Highway 610, and 0.4 mi upstream from Tract Fork.	-	1995, 1997	8-21-98	3.62
03168480 Tract Fork [a]	Peak Creek	Lat 37°02'50", long 80°47'14", Pulaski County, at Pulaski, 100 ft upstream from mouth, and 1.9 mi downstream from Harbison Branch.	25.55	1994-95	8-21-98	3.01
03169220 Dodd Creek [a]	West Fork	Lat 36°54'38", long 80°20'20", Floyd County, at Floyd sewage treatment plant, 900 ft down- stream from bridge on U.S. Highway 221, and 0.8 mi west of Floyd.	19.25	1996-97	8- 3-98	14.0
03171170 Crab Creek [a]	New River	Lat 37°09'26", long 80°28'15", Montgomery County, at Town of Christiansburg discharge, 200 ft upstream from culvert on State Highway 660, and 3.9 mi northwest of Christiansburg.	13.79	1995, 1997	8- 3-98	6.13
03171700 Crab Orchard Creek [a]	Walker Creek	Lat 37°05'36", long 81°06'37", Bland County, 0.4 mi down- stream from bridge on State Highway 605, 0.7 mi southeast of Bland.	15.91	1993-97	8-28-98	1.72

a Provided by the Virginia Department of Environmental Quality - Water Division.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
KANAWHA RIVER BASIN--Continued						
03174580 Hunting Camp Creek [a]	Wolf Creek	Lat 37°09'25", long 81°08'55", Bland County, at GIV Inc. dis- charge, 0.3 mi north of Bastian, and 1.1 mi upstream from mouth.	29.8	1995, 1997	8- 3-98	.508
03174600 Wolf Creek [a]	New River	Lat 37°10'38", long 81°09'10", Bland County, at Kegley Manor sewage treatment plant dis- charge, 0.4 mi upstream from U.S. Highway 21 and 52, 0.8 mi upstream from Hunting Camp Creek, and 1.7 mi north of Bastian.	99.0	1994-95, 1997	8- 3-98	9.89
BIG SANDY RIVER BASIN						
03207227 Right Fork [a]	Garden Creek	Lat 37°10'02", long 82°00'53", Buchanan County, at Skeggs, 600 ft upstream from Skeggs Branch, and 1.5 mi south of Mount Heron.	12.0	1995-97	8-27-98	2.66
03207350 Levisa Fork [b]	Big Sandy River	Lat 37°14'21", long 82°04'02", Buchanan County, at Oakwood sewage treatment plant, 0.1 mi downstream from Laurel Branch, and 1.8 mi east of Vansant.	177	1993-97	8-27-98	43.3
03207438 Slate Creek [a]	Levisa Fork	lat 37°18'45", long 81°58'36", Buchanan County, at J. M. Bevins Elementary School sewage treatment plant, 50 ft south of State Highway 83, 600 ft upstream from Twin Branch, and 0.9 mi southeast of Stacy.	16.12	1994-97	8-27-98	1.13
03208340 McClure Creek [a]	McClure River	Lat 37°01'03", long 82°17'46", Dickenson County, 100 ft west of State Highway 63, 0.2 mi downstream from Trammel Branch, and 0.3 mi northwest of Trammel.	4.02	1994-97	8-25-98	1.72
03208364 McClure Creek [a]	McClure River	Lat 37°04'04", long 82°20'40", Dickenson County, at Ervinton Elementary School sewage treat- ment plant, 0.2 mi upstream from bridge on State Highway 652, 0.2 mi upstream from Open Fork, and 0.3 mi southeast of Nora.	22.0	1994-97	8-25-98	11.4
03208368 Spring Fork [a]	Open Fork	Lat 37°02'59", long 82°21'36", Dickenson County, 400 ft up- stream from confluence with Open Fork, 1.6 mi southeast of Nora.	5.18	1997	8-25-98	1.65
03208700 North Fork Pound River	Pound River	Lat 37°07'32", long 82°37'36", Wise County 700 ft down- stream from Stacy Branch, 1,600 ft downstream from North Fork Pound River dam, and at Pound.	18.5	1963-97	1- 6-98 5-21-98 5-21-98	27.8 3.16 3.45

a Provided by the Virginia Department of Environmental Quality - Water Division.

b Provided by both the U.S. Geological Survey and Virginia Department of Environmental Quality - Water Division.

Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Discharge measurements made at special study and miscellaneous sites during water year 1998 - Continued						
Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
BIG SANDY RIVER BASIN--Continued						
03208800 Pound River	Russell Fork	Lat 37°07'26", long 82°36'29", Wise County, 1,600 ft down- stream from confluence of North and South Forks, 0.5 mi upstream from U.S. Highway 23, 0.7 mi upstream from Indian Creek, and at Pound.	36.7	1966-81, 1984-97	4- 2-98 8-11-98	45.5 21.5
03208900 Pound River	Russell Fork	Lat 37°09'51", long 82°31'30", Dickenson County, 50 ft up- stream from State Highway 624, 150 ft upstream from Camp Creek, and 2.6 mi northwest of Georges Fork.	82.5	1964-97	5-21-98 8-11-98	93.9 52.2
0320890475 Laurel Creek [a]	Georges Fork	Lat 37°08'02", long 82°29'25", Dickenson County, 1.1 mi south of Georges Fork, 1.4 mi upstream from mouth.	0.189	1997	8-25-98	.035
0320890485 Georges Fork [a]	Pound River	Lat 37°09'01", long 82°29'25", Dickenson County, 50 ft down- stream from Laurel Creek, 300 ft downstream from bridge on State Highway 83, and 0.2 mi northwest of Georges Fork.	5.57	1994-97	8-25-98	2.53
03209200 Russell Fork	Levisa Fork	Lat 37°14'45", long 82°19'25", Dickenson County, at bridge on State Highway 611, 0.2 mi downstream from Pound River, and at Bartlick.	526	1963-97	5-21-98 8-11-98	546 346
03213570 Right Fork [a]	Knox Creek	Lat 37°22'53", long 82°00'01", Buchanan County, at Hurley Middle School sewage treat- ment plant, 200 ft downstream from Straight Fork, 0.1 mi upstream from mouth, and at Blackey.	8.53	1994-97	8-27-98	.305
TENNESSEE RIVER BASIN						
03472200 Big Laurel Creek [a]	Whitetop Laurel Creek	Lat 36°41'15", long 81°32'54", Smyth County, at Grindstone Recreation Area sewage treat- ment plant, 0.1 mi upstream from bridge on State Highway 603, and 1.9 mi north of Mt. Rogers.	0.53	1994-95, 1997	8- 5-98	.121
03473840 Unnamed tribu- tary [a]	Hungry Mother Creek	Lat 36°52'20", long 81°30'42", Smyth County, at Hungry Mother State Park Campground D sewage treatment plant, 400 ft down- stream from bridge on park road, and 2.7 mi north of Marion.	2.17	1993-95	8-26-98	.270
03475595 Cedar Creek [a]	Middle Fork Holston River	Lat 36°44'55", long 81°51'26", Washington County, at Meadowview Elem. School sewage treatment plant, 0.1 mi north of Cedarville, and 3.4 mi upstream from mouth.	3.38	1995, 1997	8- 5-98	.895

a Provided by the Virginia Department of Environmental Quality - Water Division.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
TENNESSEE RIVER BASIN--Continued						
03475600 Cedar Creek	Middle Fork Holston River	Lat 36°44'50", long 81°51'20", Washington County, at culvert on U.S. Highway 11, 1.2 mi south of Meadowview, and 2.5 mi upstream from mouth.	3.38	1969, 1990, 1992-94	3-24-98	5.28
03475630 Wolf Creek [b]	South Fork Holston River	Lat 36°41'11", long 81°58'56", Washington County, at town of Abingdon sewage treatment plant, 100 ft downstream from bridge on State Highway 670, and 1.6 mi south of Abingdon.	15.95	1948, 1988, 1993-95, 1997	10-30-97 12- 1-97 12- 5-97 12- 5-97 1- 8-98 2- 3-98 2-23-98 3-20-98 4-17-98 5- 1-98 7- 2-98 8-21-98 9-17-98 9-17-98 9-29-98 9-29-98	11.0 18.4 9.28 12.0 28.5 60.3 45.8 89.3 248 27.2 24.8 15.8 11.0 10.6 9.15 9.64
034765085 Sinking Creek [a]	Paperville Creek	Lat 36°39'44", long 82°03'56", Washington County, on State Highway 808, 0.2 mi downstream from bridge on U.S. Highway 11, and 5.6 mi southwest of Abingdon.	0.59	1993-97	8- 5-98	1.06
03487800 Lick Creek	North Fork Holston River	Lat 36°57'44", long 81°28'21", Smyth County, 270 ft upstream from bridge on State Highway 42, 1.6 mi upstream from mouth, and 2.9 mi northeast of Chatham Hill.	25.5	1966-68 1990, 1992, 1994	4-13-98	64.1
03488450 Brumley Creek	North Fork Holston River	Lat 36°47'30", long 82°01'10", Washington County, at bridge on State Highway 611, 0.2 mi upstream from mouth, 0.8 mi southeast of Brumley Gap, and 2.7 mi downstream from Lee Creek.	21.1	1979-81, 1982-85, 1992, 1994	3-24-98	85.0
03488490 Canoe Branch[a]	North Fork Holston River	Lat 36°45'12", long 82°02'42", Washington County, at Greendale Elementary School discharge, 2.4 mi upstream from mouth, and 2.4 mi southeast of Holston.	0.05	1997	8-26-98	<.001
03489860 Hilton Creek [a]	North Fork Holston River	Lat 36°39'12", long 82°27'50", Scott County, at Hilton Elementary School sewage treatment plant, 0.2 mi south- east of Hilton, and 0.4 mi upstream from mouth.	1.05	1993-95, 1997	5-19-98 8-24-98	.998 .248
03489867 Unnamed tribu- tary [a] (No.8)	North Fork Holston River	Lat 36°38'24", long 82°29'33", Scott County, at Brickyard Gap, 300 ft upstream from bridge on State Highway 896, 0.3 mi upstream from mouth, and 1.7 mi southwest of Hilton.	2.95	-	8-24-98	.387

< Less than.

a Provided by the Virginia Department of Environmental Quality - Water Division.

b Provided by both the U.S. Geological Survey and Virginia Department of Environmental Quality - Water Division.

Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
TENNESSEE RIVER BASIN--Continued						
03489950 Unnamed tribu- tary [a] (No.1)	Little Moccasin Creek	Lat 36°38'13", long 82°40'00", Scott County, 400 ft upstream from culvert on State Highway 870, 600 ft upstream from mouth, and 3.1 mi northeast of Kermit.	0.20	1997	8-24-98	.063
03521500 Clinch River	Tennessee River	Lat 37°05'10", long 81°46'52", Tazewell County, 1.0 mi south- east of Richlands, 1.7 mi downstream from Indian Creek.	137	1945-97	1- 5-98	75.8
03521550 Big Creek [a]	Clinch River	Lat 37°09'14", long 81°47'02", Tazewell County at Seaboard No.2 Mine discharge, at mouth of Wildcat Hollow, and 0.6 mi southeast of Coaldan.	3.86	1997	8-27-98	.178
03523050 Big Cedar Creek [a]	Clinch River	Lat 36°55'19", long 82°03'10", Russell County, at Lebanon sewage treatment plant, 200 ft downstream from Little Cedar Creek, and 2.1 mi north- east of Lebanon.	-	1993-95, 1997	8-26-98	25.7
03524018 Hurricane Fork [a]	Dumps Creek	Lat 36°59'06", long 82°10'58", Russell County, 0.6 mi down- stream from Laurel Branch, 1.1 mi upstream from the mouth, and 1.6 mi north of South Clinchfield.	10.3	1995-97	8-25-98	1.79
03524025 Dumps Creek [a]	Clinch River	Lat 36°57'23", long 82°10'46", Russell County, 300 ft down- stream from Millstone Branch, 0.5 mi south of South Clinchfield, and 2.0 mi up- stream from mouth.	20.9	1995-97	8-25-98	7.95
03524596 Corder Branch [a]	Little Stony Creek	Lat 36°53'04", long 82°27'51", Wise County, 100 ft downstream from Ramey Branch, 0.6 mi up- stream from mouth, and 4.1 mi south of Coeburn.	3.55	1995, 1997	8-26-98	.137
03527505 Unnamed tribu- tary [a] (No.7)	North Fork Clinch River	Lat 36°42'40", long 82°47'15", Scott County, at Empire Mobile Home Park sewage treatment plant discharge, 0.6 mi upstream from mouth, and 0.7 mi southeast of Duffield.	1.91	1995, 1997	8-24-98	.077
03529420 Callahan Creek [a]	Powell River	Lat 36°55'03", long 82°47'29", Wise County, at Interstate R/R discharge, 0.6 mi southeast of Andover, 0.6 mi downstream from Preacher Creek, and 1.0 mi up- stream from mouth.	27.4	1995, 1997	8-25-98	7.41
03529430 Lick Branch [a]	Pigeon Creek	Lat 36°52'55", long 82°50'00", Wise County, at confluence with Pigeon Creek, at Lower Exeter, 500 ft north of State Highway 68, and 1.5 mi west of Imboden.	-	1997	8-25-98	.774

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at special study and miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
TENNESSEE RIVER BASIN--Continued						
03531190 Station Creek [a]	Powell River	Lat 36°42'34", long 82°57'33", Lee County, at Dot Mobile Home Park sewage treatment plant, 500 ft upstream from bridge on U.S. Highway 58, and at Dot.	3.29	1994-95, 1997	8-24-98	0
03531200 Station Creek [a]	Powell River	Lat 36°41'58", long 83°00'02", Lee County, at Lee County Industrial Park discharge, 1.3 mi upstream from mouth, and 2.4 mi west of Dot.	7.55	1994-95, 1997	8-24-98	1.08

a Provided by the Virginia Department of Environmental Quality - Water Division.

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY, AND MISCELLANEOUS SITES

Samples are collected at partial-record, special study, and miscellaneous sites to give better areal coverage. The results of these samples are given herein.

WATER QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

JAMES RIVER BASIN

02041745

POOR CREEK AT HWY 460 AT PETERSBURG, VA

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCTANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLI-FORM, FECAL, UM-MF (COLS./100 ML) (31625)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML) (31673)
SEP 1998 10...	1000	.09	185	7.4	19.5	19.2	750	7.5	K2700	K2000	650

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY WAT DIS TOT IT (MG/L AS CACO3) (39086)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)
SEP 1998 10...	20	2.7	8.4	3.0	39	16	14	.69	17	.031	.316

DATE	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
SEP 1998 10...	.410	.65	.63	.085	.058	.061	19	120	39

K Results based on colony count outside the acceptance range (non-ideal colony count).

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY,
AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

JAMES RIVER BASIN--Continued

02041748

POOR CR NR BLANDFORD CEMETARY AT PETERSBURG , VA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
SEP 1998 09...	1530	.10	163	7.3	20.5	18.6	752	8.0	K1900	>210	1200

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY WAT DIS TOT IT FIELD MG/L AS CAC03 (39086)	SULFATE DIS- SOLVED (MG/L AS S04) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
SEP 1998 09....	17	3.0	7.2	3.0	40	18	10	.48	19	.010	.185

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
SEP 1998 09...	.205	.35	.33	.050	.048	.028	25	87	25

> Actual value is known to be greater than the value shown.

K Results based on colony count outside the acceptance range (non-ideal colony count).

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY, AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

JAMES RIVER BASIN--Continued

02041758

HARRISON CREEK AT SIEGE RD AT PETERSBURG, VA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	COLI- FORM, TOTAL, IMMED. (COLS. PER (31501)	COLI- FORM, FECAL, UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
SEP 1998											
09...	1230	.00	143	7.5	19.0	18.0	753	8.2	650	520	500
*09...	1245	.00	143	7.5	19.0	18.0	753	8.2	650	520	500

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY WAT DIS TOT IT FIELD (MG/L AS CAC03) (39086)	SULFATE DIS- SOLVED (MG/L AS S04) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS ST02) (00955)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
SEP 1998											
09...	18	2.0	5.9	2.8	46	8.5	7.3	.15	16	<.010	<.050
09...	18	2.0	6.0	3.1	46	8.5	7.5	.16	16	<.010	<.050

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
SEP 1998									
09...	<.020	.24	.17	.046	<.010	.019	25	34	17
09...	.028	.25	.17	.052	.017	.019	27	26	18

* Replicate sample.

< Actual value is known to be less than the value shown.

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY,
AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

JAMES RIVER BASIN--Continued

02041760

HARRISON CREEK AT HWY 36 AT PETERSBURG, VA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- PER ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
SEP 1998 09...	0930	.10	81	6.8	15.5	17.3	754	7.5	>270	1100	540

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT DIS TOT IT FIELD (MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
SEP 1998 09...	6.9	1.2	4.5	2.1	30	2.7	6.8	<.10	18	<.010	.081

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
SEP 1998 09...	.085	.15	.13	.036	.029	.029	<16	560	159

< Actual value is known to be less than the value shown.
> Actual value is known to be greater than the value shown.

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY,
AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

JAMES RIVER BASIN--Continued

02042287

CHICKAHOMINY RIVER NEAR ATLEE, VA

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	ANC WATER UNFLTRD FET FIELD MG/L AS CACO3 (00410)
OCT 1997												
22...	0900	1.87	547	6.3	9.1	13.4	43	12	34	11	170	24
NOV												
07...	0900	2.35	372	6.6	7.2	9.8	22	7.8	28	11	90	--
08...	0915	4.59	235	6.2	--	9.6	13	4.7	18	8.7	52	--
09...	0930	5.39	182	6.1	9.3	9.7	9.9	3.3	14	6.3	39	10
10...	1330	4.51	182	6.2	13.4	10.6	10	3.2	14	5.6	36	11
12...	1330	2.50	203	6.2	11.0	9.4	12	3.8	15	6.2	44	14
JAN 1998												
14...	0930	2.48	178	7.0	1.5	4.8	10	3.1	15	3.6	23	22
APR												
16...	0700	2.85	103	6.5	--	16.5	7.4	2.4	7.7	2.2	8.8	23
JUL												
08...	0845	1.70	141	6.4	--	24.6	9.7	3.3	11	3.7	8.1	38

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	H-2 / H-1 STABLE ISOTOPE RATIO PER MIL (82082)	O-18 / O-16 STABLE ISOTOPE RATIO PER MIL (82085)	LIGHT ABSOR- BENCE AT 253.7 NM (PER CM)** (99905)
OCT 1997											
22...	36	.14	.013	10	358	--	44	1700	-21.5	-3.47	.134
NOV											
07...	31	.12	<.010	8.6	220	--	88	731	-28.4	-4.57	.143
08...	20	.12	.011	6.0	143	--	320	543	-44.0	-7.24	.230
09...	16	.10	.029	5.8	115	--	380	346	-49.7	-7.80	.352
10...	16	.10	<.010	6.6	114	--	270	227	--	--	.442
12...	18	<.10	<.010	8.3	131	--	290	360	-49.2	-7.79	.266
JAN 1998											
14...	20	.10	<.010	9.2	125	--	610	151	--	--	.296
APR											
16...	9.1	.11	.012	6.2	81	--	1100	205	--	--	.350
JUL											
08...	12	.14	<.010	9.0	103	19	1100	498	--	--	.468

** Abbreviations used: NM, nanometers; PER CM, per centimeter.

< Actual value is known to be less than the value shown.

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY,
AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

JAMES RIVER BASIN--Continued

02042440

CHICKAHOMINY RIVER AT RT 156 NR SEVEN PINES, VA

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	ANC WATER UNFLTRD FET FIELD MG/L AS CACO3 (00410)
OCT 1997												
22...	1015	84.88	212	6.3	10.1	12.4	14	3.6	16	4.4	46	9
JAN 1998												
14...	0930	85.71	150	6.9	2.8	6.0	7.3	2.1	13	3.1	17	13
APR												
16...	0845	85.42	102	6.7	--	18.0	7.5	2.3	8.0	2.1	5.2	24
JUL												
08...	0920	85.35	121	6.3	--	25.1	9.1	2.8	8.7	2.4	2.6	40
*08...	0925	83.35	121	6.3	--	25.1	9.1	2.8	8.7	2.5	2.7	40

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	H-2 / H-1 STABLE ISOTOPE RATIO PER MIL (82082)	O-18 / O-16 STABLE ISOTOPE RATIO PER MIL (82085)	LIGHT ABSOR- BENCE AT 253.7 NM (PER CM)** (99905)
OCT 1997											
22...	22	<.10	<.010	14	146	--	150	494	-25.8	-4.52	.160
JAN 1998											
14...	19	<.10	<.010	6.3	101	--	440	63	--	--	.221
APR											
16...	10	.13	<.010	2.9	71	--	970	140	--	--	.335
JUL											
08...	11	.12	<.010	9.5	91	17	1200	755	--	--	.397
08...	11	.14	<.010	9.3	94	14	1300	754	--	--	.398

* Replicate sample.

** Abbreviations used: NM, nanometers; PER CM, per centimeter.

< Actual value is known to be less than the value shown.

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY,
AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

JAMES RIVER BASIN--Continued

02042447

CHICKAHOMINY RIV TRIB 7 NR WHITE OAK SWAMP, VA

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	ANC WATER UNFLTRD FET FIELD MG/L AS CACO3 (00410)
OCT 1997												
22...	1400	96.96	39	6.7	14.7	12.3	1.7	.78	3.7	1.3	1.9	7
JAN 1998												
14...	1415	97.11	37	6.6	4.0	6.2	2.8	.84	4.6	1.3	4.6	6
*14...	1430	--	--	--	--	--	2.8	.84	4.6	1.3	4.7	--
APR												
16...	1230	97.05	41	6.4	--	15.9	2.3	.74	3.8	1.1	3.1	5
JUL												
06...	1345	97.07	37	6.3	--	20.8	1.6	.67	3.5	1.5	.99	3

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	H-2 / H-1 STABLE ISOTOPE RATIO PER MIL (82082)	O-18 / O-16 STABLE ISOTOPE RATIO PER MIL (82085)	LIGHT ABSOR- BENCE AT 253.7 NM (PER CM)** (99905)
OCT 1997											
22...	6.5	<.10	.010	8.8	42	--	300	12	-36.5	-6.29	.155
JAN 1998											
14...	7.4	<.10	<.010	8.3	48	--	320	36	--	--	.111
14...	7.3	<.10	.011	8.3	45	--	330	36	--	--	--
APR											
16...	6.0	<.10	<.010	5.8	35	--	210	28	--	--	.140
JUL											
06...	6.1	<.10	<.010	7.8	42	96	620	10	--	--	.280

* Replicate sample.

** Abbreviations used: NM, nanometers; PER CM, per centimeter.

< Actual value is known to be less than the value shown.

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY,
AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

JAMES RIVER BASIN--Continued

02042454

CANAL SWAMP AT ELKO, VA

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	ANC WATER UNFLTRD FET FIELD MG/L AS CACO3 (00410)
OCT 1997												
22...	1500	97.15	96	6.4	14.1	13.9	12	1.0	4.3	2.0	9.5	25
JAN 1998												
14...	1240	98.51	64	6.6	4.2	6.5	6.3	.71	3.3	1.3	5.3	14
APR												
16...	1045	97.57	37	6.3	--	16.6	3.9	.56	2.3	.85	2.8	8
*16...	1050	97.57	37	6.3	--	16.0	3.9	.56	2.3	.82	2.7	--
JUL												
06...	1015	98.06	55	6.5	--	23.3	7.0	.61	2.5	1.3	1.3	21

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	H-2 / H-1 STABLE ISOTOPE RATIO PER MIL (82082)	O-18 / O-16 STABLE ISOTOPE RATIO PER MIL (82085)	LIGHT ABSOR- BENCE AT 253.7 NM (PER CM)** (99905)
OCT 1997											
22...	6.2	<.10	.017	8.7	81	--	910	140	-34.3	-6.02	.387
JAN 1998											
14...	4.9	<.10	.031	6.7	58	--	860	81	--	--	.234
APR											
16...	3.3	<.10	.028	4.8	40	--	750	60	--	--	.282
16...	3.3	<.10	.014	4.9	39	--	570	60	--	--	.317
JUL											
06...	3.9	<.10	.023	7.0	57	95	840	93	--	--	.334

* Replicate sample.

** Abbreviations used: NM, nanometers; PER CM, per centimeter.

< Actual value is known to be less than the value shown.

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY, AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

JAMES RIVER BASIN--Continued

02042455

WHITE OAK SWAMP AT RT 156 AT ELKO, VA

		DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)			PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)		TEMPER- ATURE AIR (DEG C) (00020)		TEMPER- ATURE WATER (DEG C) (00010)		OXYGEN, DIS- SOLVED (MG/L) (00300)		OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	
DATE	TIME	GAGE HEIGHT (FEET) (00065)												
OCT 1997														
22...	0745	1.85	7.8	102	6.2	10.5	12.7	7.1	67					
NOV														
07...	1015	2.55	--	82	6.4	--	10.5	--	--					
08...	1030	3.41	--	73	5.8	9.6	10.6	--	--					
09...	1100	2.88	--	68	5.9	12.2	11.0	--	--					
*09...	1105	2.88	--	68	5.9	12.2	11.0	--	--					
12...	1500	2.09	--	86	5.8	--	10.6	--	--					
JAN 1998														
15...	0830	1.14	25	67	6.5	1.5	3.5	12.1	92					
APR														
16...	0745	2.08	20	45	6.3	19.0	16.5	7.2	77					
JUL														
16...	0745	1.44	2.8	73	6.5	25.0	23.3	5.1	61					
		CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	ANC WATER UNFLTRD FET FIELD MG/L AS CACO3 (00410)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)				
OCT 1997														
22...	8.1	1.3	7.6	2.5	21	7	10	<.10	<.010					
NOV														
07...	7.1	1.1	4.9	4.4	10	--	9.2	<.10	.023					
08...	4.1	.96	5.4	3.2	12	--	7.5	<.10	.043					
09...	4.6	.93	4.8	2.8	12	5	6.4	<.10	.021					
09...	4.6	.93	4.8	2.8	12	5	6.4	<.10	.021					
12...	--	--	--	--	--	--	--	--	--					
JAN 1998														
15...	4.5	.82	5.7	1.5	6.3	9	8.7	<.10	.022					
APR														
16...	3.9	.75	3.2	1.1	3.1	9	4.6	<.10	.026					
JUL														
16...	6.7	.86	4.0	.67	2.1	16	6.4	<.10	<.010					
		SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	H-2 / H-1 STABLE ISOTOPE RATIO PER MIL (82082)	O-18 / O-16 STABLE ISOTOPE RATIO PER MIL (82085)	LIGHT ABSOR- BENCE AT 253.7 NM (PER CM)** (99905)					
OCT 1997														
22...	8.3	86	--	220	30	-27.9	-5.08	.231						
NOV														
07...	6.1	64	--	350	38	-42.2	-6.90	.325						
08...	6.1	66	--	670	64	-50.3	-8.10	.418						
09...	6.1	57	--	450	40	-51.7	-8.08	.358						
09...	6.1	57	--	450	40	-51.4	-8.11	.358						
12...	--	--	--	--	--	-46.9	-7.42	.273						
JAN 1998														
15...	6.5	65	--	670	20	--	--	.257						
APR														
16...	3.0	45	--	910	22	--	--	.439						
JUL														
16...	5.5	55	41	590	59	--	--	.330						

* Replicate sample.

** Abbreviations used: NM, nanometers; PER CM, per centimeter.

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ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY,
AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

JAMES RIVER BASIN--Continued

02042470

CHICKAHOMINY RIVER AT RT 609 AT ROXBURY, VA

DATE	TIME	GAGE HEIGHT (FEET) (00065)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	ANC WATER UNFLTRD FET FIELD MG/L AS CAC03 (00410)
OCT 1997												
22...	1130	88.98	138	6.2	12.0	12.4	10	2.2	9.6	2.7	27	9
JAN 1998												
14...	1530	90.22	122	6.8	3.5	6.7	6.4	1.7	11	2.6	14	10
APR												
16...	1330	90.27	82	6.8	--	18.7	6.7	1.7	6.2	1.6	4.2	20
JUL												
06...	1500	88.43	110	6.6	--	26.1	9.4	2.3	7.0	1.3	1.7	35

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	H-2 / H-1 STABLE ISOTOPE RATIO PER MIL (82082)	O-18 / O-16 STABLE ISOTOPE RATIO PER MIL (82085)	LIGHT ABSOR- BENCE AT 253.7 NM (PER CM)** (99905)
OCT 1997											
22...	14	<.10	<.010	11	99	--	120	178	-27.8	-4.85	.188
JAN 1998											
14...	16	<.10	<.010	7.2	86	--	510	33	--	--	.230
APR											
16...	8.2	<.10	.032	2.3	63	--	730	74	--	--	.345
JUL											
06...	8.1	.12	<.010	9.3	87	15	750	197	--	--	.480

** Abbreviations used: NM, nanometers; PER CM, per centimeter.

< Actual value is known to be less than the value shown.

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY,
AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

JAMES RIVER BASIN--Continued

02042478

SCHIMINOE CREEK TRIB NEAR PROVIDENCE FORGE, VA

DATE	TIME	GAGE HEIGHT (FEET) (00065)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)
OCT 1997									
22...	0930	.74	.15	106	7.2	11.5	12.0	5.5	50
NOV									
17...	1425	--	--	--	--	--	--	--	--
JAN 1998									
15...	0950	1.01	1.6	88	6.8	1.5	4.5	12.1	95
FEB									
18...	1205	1.35	--	51	6.5	--	9.8	--	--
APR									
16...	0930	.85	2.3	56	6.3	20.5	15.7	9.3	97
JUL									
16...	0900	.62	.21	84	7.0	26.0	22.8	7.3	86
AUG									
26...	1100	.52	--	127	6.8	--	22.3	6.9	--

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	ANC WATER UNFLTRD FET FIELD MG/L AS CACO3 (00410)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
OCT 1997									
22...	17	1.2	2.2	2.4	5.4	42	4.2	<.10	.019
NOV									
17...	--	--	--	--	--	--	--	--	--
JAN 1998									
15...	11	1.2	3.7	1.2	11	20	6.5	<.10	<.010
FEB									
18...	--	--	--	--	--	--	--	--	--
APR									
16...	4.4	2.0	5.1	1.5	8.9	16	3.4	<.10	<.010
JUL									
16...	13	.77	1.9	1.2	2.9	32	3.5	<.10	<.010
AUG									
26...	22	1.1	2.4	1.5	.79	56	3.4	<.10	<.010

DATE	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	H-2 / H-1 STABLE ISOTOPE RATIO PER MIL (82082)	O-18 / O-16 STABLE ISOTOPE RATIO PER MIL (82085)	LIGHT ABSOR- BENCE AT 253.7 NM (PER CM)** (99905)
OCT 1997								
22...	4.3	91	--	1200	5.4	-29.2	-4.31	.449
NOV								
17...	--	--	--	--	--	-44.8	-7.33	.347
JAN 1998								
15...	6.9	73	--	210	54	--	--	.353
FEB								
18...	--	--	--	--	--	--	--	--
APR								
16...	10	54	--	160	34	--	--	.222
JUL								
16...	5.2	63	21	890	33	--	--	.410
AUG								
26...	5.3	88	--	82	25	-21.3	-3.04	--

** Abbreviations used: NM, nanometers; PER CM, per centimeter.
< Actual value is known to be less than the value shown.

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY,
AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

JAMES RIVER BASIN--Continued

02042726

DIASCUND CREEK AT RT 628 NEAR NEW KENT, VA

DATE	TIME	GAGE HEIGHT (FEET) (00065)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)
OCT 1997												
22...	1100	3.76	3.3	77	6.7	10.0	11.9	6.8	62	10	.80	4.2
JAN 1998												
15...	1120	3.67	9.0	65	6.9	2.0	3.5	11.5	88	8.2	.63	3.2
FEB												
16...	1645	3.66	--	53	6.8	5.7	6.1	--	--	--	--	--
17...	0940	3.91	--	48	6.7	--	8.5	--	--	--	--	--
17...	1430	4.16	--	43	6.7	12.4	10.1	--	--	--	--	--
17...	1755	4.38	--	45	6.8	13.3	10.6	--	--	--	--	--
18...	1000	4.10	--	47	6.8	11.9	9.2	--	--	--	--	--
18...	1400	4.02	--	47	6.9	17.3	13.5	--	--	--	--	--
*18...	1405	4.02	--	47	7.0	17.3	13.5	--	--	--	--	--
19...	1340	3.80	--	51	6.9	19.7	14.0	--	--	--	--	--
20...	1300	3.72	--	56	6.8	--	8.9	--	--	--	--	--
APR												
16...	1130	3.64	15	59	6.7	25.0	20.7	8.4	97	8.1	.69	2.8
JUL												
16...	1100	3.39	6.1	71	6.7	27.0	25.9	5.4	67	10	.70	2.9
AUG												
26...	1745	3.36	--	83	6.8	30.7	28.0	7.5	93	11	.74	3.5

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	ANC WATER UNFLTRD FET FIELD MG/L AS CACO3 (00410)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)
OCT 1997												
22...	1.7	3.2	26	6.8	<.10	<.010	6.3	65	--	--	--	--
JAN 1998												
15...	.99	1.8	21	5.3	<.10	<.010	4.8	52	--	--	--	--
FEB												
16...	--	--	--	--	--	--	--	--	<.010	.126	<.020	.20
17...	--	--	14	--	--	--	--	--	<.010	.131	<.020	.24
17...	--	--	11	--	--	--	--	--	<.010	.128	<.020	.29
17...	--	--	--	--	--	--	--	--	<.010	.129	<.020	.32
18...	--	--	13	--	--	--	--	--	<.010	.130	<.020	.34
18...	--	--	12	--	--	--	--	--	<.010	.126	<.020	.30
18...	--	--	14	--	--	--	--	--	<.010	<.050	<.020	.31
19...	--	--	17	--	--	--	--	--	<.010	.130	<.020	.31
20...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
16...	.73	1.6	21	4.1	<.10	<.010	2.5	48	--	--	--	--
JUL												
16...	.75	.78	29	4.6	<.10	<.010	5.2	60	--	--	--	--
AUG												
26...	.82	.74	31	5.1	.11	<.010	6.0	63	--	--	--	--

* Replicate sample.

< Actual value is known to be less than the value shown.

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY,
AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

JAMES RIVER BASIN--Continued

02042726

DIASCUND CREEK AT RT 628 NEAR NEW KENT, VA--Continued

DATE	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	H-2 / H-1 STABLE ISOTOPE RATIO PER MIL (82082)	O-18 / O-16 STABLE ISOTOPE RATIO PER MIL (82085)	LIGHT ABSOR- BENCE AT 253.7 NM (PER CM)** (99905)
OCT 1997										
22...	--	--	--	--	--	380	25	-36.7	-5.86	.261
JAN 1998										
15...	--	--	--	--	--	140	30	--	--	.231
FEB										
16...	.15	.031	<.010	.031	--	--	--	--	--	.154
17...	.19	.023	.018	.026	--	--	--	--	--	.145
17...	.20	.042	.015	.025	--	--	--	--	--	.175
17...	.19	.079	<.010	.024	--	--	--	--	--	.196
18...	.20	.071	.017	.024	--	--	--	--	--	.268
18...	.19	.059	.011	.023	--	--	--	--	--	.212
18...	.19	.057	<.010	.010	--	--	--	--	--	.212
19...	.22	.045	.024	.029	--	--	--	--	--	.204
20...	--	--	--	--	--	--	--	--	--	.181
APR										
16...	--	--	--	--	--	730	47	--	--	.302
JUL										
16...	--	--	--	--	20	1100	54	--	--	.389
AUG										
26...	--	--	--	--	--	510	64	--	--	--

** Abbreviations used: NM, nanometers; PER CM, per centimeter.

< Actual value is known to be less than the value shown.

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY,
AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

CHOWAN RIVER BASIN

02046265

HATCHER RUN AT RT 627 NEAR FIVE FORKS, VA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
SEP 1998 10...	1310	.03	79	6.6	24.0	22.3	750	5.1	450	450	K8

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
SEP 1998 10...	4.5	1.5	5.1	2.3	11	13	4.3	.12	10	<.010	<.050

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
SEP 1998 10...	.040	.83	.53	.034	<.010	<.010	21	500	693

< Actual value is known to be less than the value shown.

K Results based on colony count outside the acceptance range (non-ideal colony count).

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY,
AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

ROANOKE RIVER BASIN

02057060

GILLS CR AB JACK-O-LANTERN BR NR BURNT CHIMNEY,

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
AUG 1998 26...	1115	9.5	74	7.5	27.0	23.5	730	7.4	720	540	220

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT DIS TOT IT (MG/L AS CACO3) (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
AUG 1998 26...	5.8	2.3	3.3	2.2	27	1.3	2.8	<.10	16	.016	.320

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
AUG 1998 26...	.103	.19	.14	.048	.013	.016	<16	20	24

< Actual value is known to be less than the value shown.

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY,
AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

ROANOKE RIVER BASIN--Continued

0205706010 JACK-O-LANTERN BR NR HALEFORD CH NR SCRUGGS, VA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
AUG 1998 25...	1245	.07	89	7.2	30.5	19.1	733	--	>290	K1100	920

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
AUG 1998 25...	5.3	3.7	3.4	1.2	30	1.9	4.2	<.10	27	.011	.538

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
AUG 1998 25...	.095	<.10	<.10	.012	<.010	.019	<16	<10	12

< Actual value is known to be less than the value shown.

> Actual value is known to be greater than the value shown.

K Results based on colony count outside the acceptance range (non-ideal colony count).

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY,
AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

ROANOKE RIVER BASIN--Continued

0205706020

JACK-O-LANTERN TRIB 1 AT MOUTH NR SCRUGGS, VA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
AUG 1998 25...	1600	.12	70	7.6	31.0	22.0	730	7.3	350	270	1500

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
AUG 1998 25...	4.8	3.0	3.9	1.5	30	1.5	1.9	<.10	30	.010	.118

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
AUG 1998 25...	.071	.10	<.10	.019	<.010	.015	<16	13	8.6

< Actual value is known to be less than the value shown.

ANALYSES OF SAMPLES COLLECTED AT PARTIAL-RECORD, SPECIAL STUDY,
AND MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

ROANOKE RIVER BASIN--Continued

0205706030

JACK-O-LANTERN BR AT MOUTH NEAR SCRUGGS, VA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	COLI- FORM, TOTAL, IMMED. PER 100 ML) (31501)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
AUG 1998 26...	0900	.39	75	7.4	21.0	20.1	730	8.4	K2420	K570	>1200

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
AUG 1998 26...	5.1	3.4	3.7	1.6	33	1.8	2.4	<.10	29	.010	.176

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
AUG 1998 26...	.094	<.10	<.10	<.010	<.010	.015	<16	49	24

K Results based on colony count outside the acceptance range (non-ideal colony count).

< Actual value is known to be less than the value shown.

> Actual value is known to be greater than the value shown.

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CONVERSION FACTORS AND VERTICAL DATUM

Multiply	By	To obtain
<i>Length</i>		
inch (in.)	2.54×10^1	millimeter
	2.54×10^{-2}	meter
foot (ft)	3.048×10^{-1}	meter
mile (mi)	1.609×10^0	kilometer
<i>Area</i>		
acre	4.047×10^3	square meter
	4.047×10^{-1}	square hectometer
	4.047×10^{-3}	square kilometer
square mile (mi ²)	2.590×10^0	square kilometer
<i>Volume</i>		
gallon (gal)	3.785×10^0	liter
	3.785×10^0	cubic decimeter
	3.785×10^{-3}	cubic meter
million gallons (Mgal)	3.785×10^3	cubic meter
	3.785×10^{-3}	cubic hectometer
cubic foot (ft ³)	2.832×10^1	cubic decimeter
	2.832×10^{-2}	cubic meter
cubic-foot-per-second day [(ft ³ /s) d]	2.447×10^3	cubic meter
	2.447×10^{-3}	cubic hectometer
acre-foot (acre-ft)	1.233×10^3	cubic meter
	1.233×10^{-3}	cubic hectometer
	1.233×10^{-6}	cubic kilometer
<i>Flow</i>		
cubic foot per second (ft ³ /s)	2.832×10^1	liter per second
	2.832×10^1	cubic decimeter per second
	2.832×10^{-2}	cubic meter per second
gallon per minute (gal/min)	6.309×10^{-2}	liter per second
	6.309×10^{-2}	cubic decimeter per second
	6.309×10^{-5}	cubic meter per second
million gallons per day (Mgal/d)	4.381×10^1	cubic decimeter per second
	4.381×10^{-2}	cubic meter per second
<i>Mass</i>		
ton (short)	9.072×10^{-1}	megagram or metric ton

Sea level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment for the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

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