Calendar for Water Year 2004

2003

October

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
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November

S	M	T	W	T	F	S
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9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

December

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

2004

January

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

February

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29						

March

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

April

S	M	T	W	T	F	S
				1	2	3
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11	12	13	14	15	16	17
18	19	20	21	22	23	24
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May

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23	24	25	26	27	28	29
30	31					

June

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		1	2	3	4	5
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20	21	22	23	24	25	26
27	28	29	30			

July

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

August

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

September

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

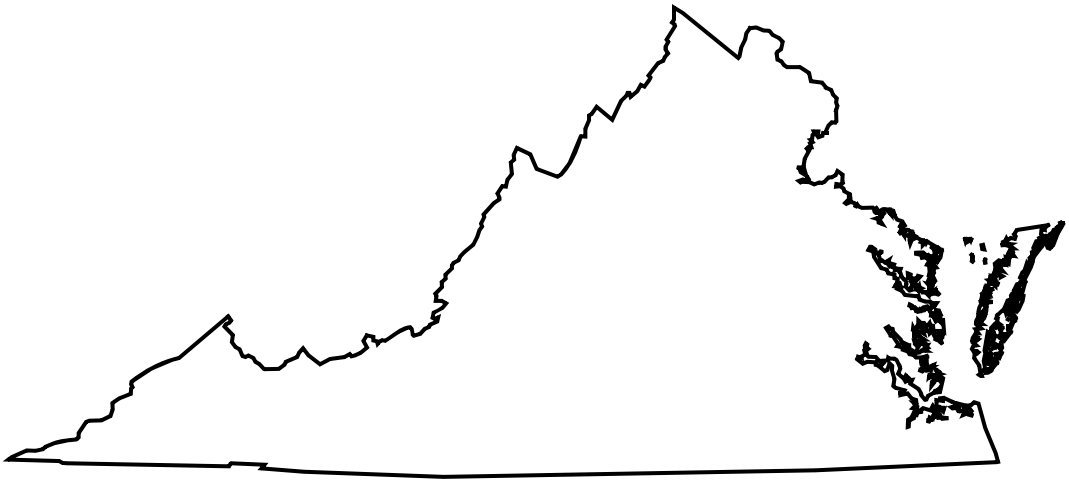
U.S. Department of the Interior
U.S. Geological Survey

Water Resources Data Virginia Water Year 2004

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

By Roger K. White, Donald C. Hayes, Joel R. Guyer, and Eugene D. Powell

Water-Data Report VA-04-1



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

U.S. DEPARTMENT OF THE INTERIOR

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2005

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 2004 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 176 gaging stations; stage only at 3 gaging stations; stage and contents at 11 lakes and reservoirs; and water quality at 18 gaging stations. Also included are data for 49 crest-stage partial-record stations. Locations of these sites are shown on figures 4 and 5. Miscellaneous hydrologic data were collected at 172 measuring sites and 12 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.

14. SUBJECT TERMS

*Virginia, *Hydrologic data, *Surface water, *Water quality
Flow rate, Gaging stations, Lakes, Reservoirs, Chemical analyses, Sediments, Water temperatures, Sampling sites, Water analyses.

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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]

	Station number	Page
NORTH ATLANTIC SLOPE BASINS		
POTOMAC RIVER BASIN		
Potomac River:		
Back Creek:		
Hogue Creek near Hayfield (d)	01613900	40
Opequon Creek near Stephens City (d)	01614830	42
Opequon Creek near Berryville (d)	01615000	44
Dry Marsh Run near Berryville (d)	01616100	46
North River (head of Shenandoah River) near Stokesville (d)	01620500	48
Dry River:		
Muddy Creek at Mount Clinton (d,c,t)	01621050	50
North River near Burketown (d)	01622000	56
Middle River:		
Middle River near Grottoes (d)	01625000	58
South River near Waynesboro (d)	01626000	60
South River at Harriston (d)	01627500	62
South Fork Shenandoah River:		
Madison Run:		
South Fork Shenandoah River (continuation of North River) near Lynnwood (d)	01628500	64
South Fork Shenandoah River near Luray (d)	01629500	66
Gooney Run near Glen Echo	01630700	68
South Fork Shenandoah River at Front Royal (d,c,s)	01631000	70
North Fork Shenandoah River at Cootes Store (d)	01632000	72
Linville Creek at Broadway (d)	01632082	74
Smith Creek near New Market (d)	01632900	76
North Fork Shenandoah River at Mount Jackson (d)	01633000	78
North Fork Shenandoah River near Strasburg (d,c,s)	01634000	80
Cedar Creek near Winchester (d)	01634500	82
Cedar Creek above Highway 11 near Middletown (d)	01635090	84
Passage Creek near Buckton (d)	01635500	86
Shenandoah River:		
Manassas Run at Route 645 near Front Royal (d)	0163626650	88
Spout Run at Route 621 near Millwood (d)	01636316	90
Shenandoah River at Millville, WV (d)	01636500	92
Piney Run near Lovettsville (d)	01636690	94
Catoctin Creek:		
South Fork Catoctin Creek at Route 698 near Waterford (d)	01638350	96
North Fork Catoctin Creek at Route 681 near Waterford (d)	01638420	98
Catoctin Creek at Taylorstown (d)	01638480	100
Potomac River at Point of Rocks, MD (d)	01638500	102
Limestone Branch near Leesburg (d)	01643590	104
Goose Creek near Middleburg (d)	01643700	106
North Fork Goose Creek at Route 729 near Lincoln (d)	01643805	108
Beaverdam Creek at Route 734 near Mountville (d)	01643880	110
Goose Creek near Leesburg (d)	01644000	112
Broad Run near Leesburg (d)	01644280	114
Difficult Run near Great Falls (d)	01646000	116
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SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME

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Fourmile Run at Alexandria (d)	01652500	136
Potomac River at Cameron Street Dock at Alexandria (e)	0165258890	138
Cameron Run at Alexandria (d)	01653000	140
Accotink Creek near Annandale (d,c,t)	01654000	142
Occoquan River:		
Cedar Run near Catlett (d)	01656000	148
Goslin Run near Aden (d,c,m,s)	01656102	150
Quantico Creek:		
South Fork Quantico Creek near Independent Hill (d,c,m,s)	01658500	154
Chopawamsic Creek:		
North Branch Chopawamsic Creek near Independent Hill (d,c,s)	01659000	158
Middle Branch Chopawamsic Creek near Garrisonville (d)	01659500	162
South Branch Chopawamsic Creek near Garrisonville (d)	01660000	164
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Rappahannock River:		
Hazel River:		
Thornton River:		
Battle Run near Laurel Mills (d)	01662800	170
Hazel River near Rixeyville (d)	01663500	172
Rappahannock River at Remington (d)	01664000	174
Rapidan River near Ruckersville (d)	01665500	176
Robinson River near Locust Dale (d)	01666500	178
Rapidan River near Culpeper (d)	01667500	180
Rappahannock River near Fredericksburg (d,c,t,s)	01668000	182
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PIANKATANK RIVER BASIN		
Dragon Swamp (head of Piankatank River) at Mascot (d)	01669520	198
YORK RIVER BASIN		
North Anna River at Hart Corner near Doswell (d)	01671020	200
Little River near Doswell (d)	01671100	202
South Anna River near Ashland (d)	01672500	204
Pamunkey River (continuation of North Anna River) near Hanover (d,c,s)	01673000	206
Totopotomoy Creek near Studley (d)	01673550	212
Cohoke Creek near Lester Manor (d)	01673638	214
Po River (head of Mattaponi River) near Spotsylvania (d)	01673800	216
Mattaponi River near Bowling Green (d)	01674000	218
Mattaponi River near Beulahville (d,c,s)	01674500	220

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

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	Station number	Page
SOUTH ATLANTIC SLOPE BASINS		
JAMES RIVER BASIN		
Jackson River (head of James River) near Bacova (d,t)	02011400	226
Back Creek near Sunrise (d)	02011460	230
Back Creek at Sunrise (d)	02011470	232
Little Back Creek near Sunrise (d)	02011490	234
Back Creek near Mountain Grove (d,t)	02011500	236
Lake Moomaw near Hot Springs (e)	02011795	240
Jackson River below Gathright Dam, near Hot Springs (d,t)	02011800	242
Jackson River at Filtration Plant, at Covington (t)	02012800	246
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Jackson River below Dunlap Creek, at Covington (d)	02013100	250
Potts Creek near Covington (d)	02014000	252
Cowpasture River:		
Bullpasture River at Williamsville (d)	02015700	254
Cowpasture River near Clifton Forge (d)	02016000	256
James River at Lick Run (d)	02016500	258
Craig Creek:		
Johns Creek at New Castle (d)	02017500	260
Craig Creek at Parr (d)	02018000	262
Catawba Creek near Catawba (d)	02018500	264
James River at Buchanan (d)	02019500	266
Calfpasture River (head of Maury River) above Mill Creek at Goshen (d)	02020500	268
Maury River at Rockbridge Baths (d)	02021500	270
Kerrs Creek near Lexington (d)	02022500	272
Maury River near Buena Vista (d)	02024000	274
Pedlar River at Forest Road near Buena Vista (d)	02024915	276
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James River at Bent Creek (d)	02026000	280
Tye River near Lovingston (d)	02027000	282
Piney River at Piney River (d)	02027500	284
Rockfish River near Greenfield (d)	02028500	286
James River at Scottsville (d)	02029000	288
Hardware River below Briery Creek near Scottsville (d)	02030000	290
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Mechums River near White Hall (d).	02031000	292
North Fork Rivanna River near Earlysville (d)	02032640	294
Rivanna River at Palmyra (d)	02034000	296
James River at Cartersville (d,c,t,s)	02035000	298
Fine Creek at Fine Creek Mills (d)	02036500	312
James River & Kanawha Canal near Richmond (d)	02037000	314
James River near Richmond (d)	02037500	316
Appomattox River:		
Holiday Creek near Andersonville (d)	02038850	318
Buffalo Creek near Hampden Sydney (d)	02039000	320
Appomattox River at Farmville (d)	02039500	322
Appomattox River at Mattoax (d)	02040000	324
Deep Creek near Mannboro (d)	02041000	326

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

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	Station number	Page
SOUTH ATLANTIC SLOPE BASINS--Continued		
JAMES RIVER BASIN--Continued		
Appomattox River at Matoaca (d,c,s)	02041650	328
Chickahominy River:		
Chickahominy River near Providence Forge (d)	02042500	334
Warwick River:		
Beaverdam Creek:		
Baptist Run at Route 637 near Yorktown (d,c)	0204278995	336
CHOWAN RIVER BASIN		
Nottoway River near Rawlings (d)	02044500	340
Nottoway River near Stony Creek (d)	02045500	342
Stony Creek near Dinwiddie (d)	02046000	344
Nottoway River near Sebrell (d).	02047000	346
Blackwater River near Dendron (d)	02047500	350
Blackwater River near Franklin (d)	02049500	352
Chowan River:		
North Meherrin River near Lunenburg (d)	02051000	354
Meherrin River near Lawrenceville (d)	02051500	356
Meherrin River at Emporia (d)	02052000	358
ROANOKE RIVER BASIN		
South Fork Roanoke River near Shawsville (d)	02053800	360
Roanoke River at Lafayette (d)	02054500	362
Roanoke River at Glenvar (d)	02054530	364
Roanoke River at Roanoke (d)	02055000	366
Tinker Creek near Daleville (d)	02055100	368
Roanoke River at Niagara (d)	02056000	370
Back Creek near Dundee (d)	02056650	372
Blackwater River near Rocky Mount (d)	02056900	374
Smith Mountain Lake near Penhook (e)	02057400	376
Pigg River near Sandy Level (d)	02058400	378
Leesville Lake near Leesville (e)	02059400	380
Goose Creek near Huddleston (d)	02059500	382
Roanoke (Staunton) River at Altavista (d)	02060500	384
Big Otter River near Evington (d)	02061500	386
Roanoke (Staunton) River at Brookneal (d)	02062500	388
Falling River near Naruna (d)	02064000	390
Cub Creek at Phenix (d).	02065500	392
Roanoke (Staunton) River at Randolph (d)	02066000	394
Dan River:		
Talbott and Townes Reservoirs near Kibler (e)	02067800,02067820	396
Dan River near Francisco, NC (d)	02068500	400
South Mayo River near Nettleridge (d)	02069700	402
North Mayo River near Spencer (d)	02070000	404

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

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	Station number	Page
SOUTH ATLANTIC SLOPE BASINS--Continued		
ROANOKE RIVER BASIN--Continued		
Smith River at Smith River Church near Woolwine (d).	02071530	406
Philpott Lake near Philpott (e)	02071900	408
Smith River near Philpott (d).	02072000	410
Smith River at Bassett (d)	02072500	412
Smith River at Martinsville (d)	02073000	414
Smith River at Eden, NC (d)	02074000	416
Sandy River near Danville (d)	02074500	418
Dan River at Sewage Treatment Plant, near Danville (d)	02075045	420
Dan River at Paces (d).	02075500	422
Dan River at South Boston (e)	02076000	424
Banister River:		
Banister River at Halifax (d)	02077000	426
Hyco River near Denniston (d).	02077500	428
John H. Kerr Reservoir near Boydton (e).	02079490	430
Roanoke River at Buggs Island (c,e,t)	02079500	432
Allen Creek near Boydton (d)	02079640	442
OHIO RIVER BASIN		
Ohio River:		
KANAWHA RIVER BASIN		
South Fork New River (head of Kanawha River) near Jefferson, NC (d)	03161000	444
New River near Galax (d)	03164000	446
Chestnut Creek at Galax (d)	03165000	448
New River at Ivanhoe(d).	03165500	450
Reed Creek at Grahams Forge (d)	03167000	452
New River at Allisonia (d)	03168000	454
Claytor Reservoir near Radford (e)	03169000	456
Little River at Graysontown (d)	03170000	458
Little River Reservoir near Radford (e)	03170500	460
New River at Radford (d).	03171000	462
Walker Creek at Bane (d)	03173000	464
Wolf Creek near Narrows (d)	03175500	466
New River at Glen Lyn (d)	03176500	468
BIG SANDY RIVER BASIN		
Levisa Fork at Big Rock (d)	03207800	470
Russell Fork at Haysi (d)	03208500	472
North Fork of Pound Lake at Pound (e)	03208680	474
Cranes Nest River near Clintwood (d)	03208950	476
John W. Flannagan Reservoir near Haysi (e)	03208990	478
Pound River below Flannagan Dam, near Haysi (d)	03209000	480
Levisa Fork at Pikeville, KY (d)	03209500	482

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

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	Station number	Page
TENNESSEE RIVER BASIN		
French Broad River (head of Tennessee River):		
South Fork Holston River at Riverside, near Chilhowie (d)	03471500	484
South Fork Holston River near Damascus (d)	03473000	486
Middle Fork Holston River at Seven Mile Ford (d)	03474000	488
Middle Fork Holston River near Meadowview (d)	03475000	490
Beaver Creek at Bristol (d)	03478400	492
North Fork Holston River near Saltville (d)	03488000	494
Tennessee River:		
Clinch River at Cleveland (d)	03524000	496
Clinch River at Speers Ferry (d)	03527000	498
Clinch River above Tazewell, TN (d)	03528000	500
Powell River:		
Powell River at Big Stone Gap (d)	03529500	502
Powell River near Jonesville (d)	03531500	504
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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. 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]

Station name	Station number	Drainage area (mi2)	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			
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
Blacks Run at Rt 726 at Harrisonburg (d)	01621410	11.2	2000-02
Blacks Run at Rt 704 near Mt. Crawford (d)	01621470	19.4	1999-01
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 Dooms, 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
Deer Run near Grottoes, Va. (d)	01628150	1.17	1980-82
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
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
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

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

Station name	Station number	Drainage area (mi2)	Period of record (water years)
POTOMAC RIVER BASIN--Continued			
Cedar Run near Aden (d)	01656100	155	1973-87, 1996-99
Cedar Run at Route 646 near Aden	01656120	-	1996-2000
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
Little Creek at Mockingbird Road at Triangle (d)	01658698	-	1999-2001
Little Creek at Geiger Road at Quantico (d)	01658705	-	1999-2001
Chopawamsic Creek at Russell Road near Joplin (d)	01660100	-	1996-2002
Cannon Creek near Garrisonville, Va. (d)	01660380	10.2	1994-96
Upper Machodoc Creek at Dahlgren, Va. (e)	01660810	-	1992-98
GREAT WICOMICO RIVER BASIN			
Bush Mill Stream near Heathsville, Va. (d)	01661800*	6.82	1964-87
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
Rappahannock River at Kellys Ford, Va. (d)	01664500	641	1925-52
Mountain Run near Culpeper, Va. (d)	01665000	15.9	1949-97
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
Cat Point Creek near Montross (d)	01668500	45.6	1944-99
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

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

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

Station name	Station number	Drainage area (mi2)	Period of record (water years)
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
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
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 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 Arvonia (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,

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

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

Station name	Station number	Drainage area (mi2)	Period of record (water years)
JAMES RIVER BASIN--Continued			
Falling Creek near Chesterfield, Va.. (d)	02038000*	32.8	1955-94
Falling Creek near Drewrys Bluff, Va. (d)	02038500	54	1942-56, 1957-64
Vaughans Creek near Hixburg, Va. (d)	02038880	23.2	1980-81
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
Upham Brook near Richmond, Va. (d)	02042426	37.6	1989-94
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
Lake Drummond in Great Dismal Swamp (e)	02043600	-	1926-2002
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
Roanoke River near Wabun	02054510	273	1994-99
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
Falling River at Spring Mills, Va. (d)	02063500	52.2	1954-60
Little Falling River at Hat Creek, Va. (d)	02064500	43	1929-36

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

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

Station name	Station number	Drainage area (mi2)	Period of record (water years)
ROANOKE RIVER BASIN--Continued			
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
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
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
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
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

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

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

Station name	Station number	Drainage area (mi2)	Period of record (water years)
TENNESSEE RIVER BASIN			
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
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
Guest River at Miller Yard, Va. (d)	03524550	100	1997-98
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
Copper Creek near Gate City, Va. (d)	03526000*	106	1948-72 1996-98
Quillen Springs near Gate City, Va. (d)	03526500	-	1954-56
North Fork Clinch River at Duffield, Va. (d)	03527500	23.1	1953-59
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.

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.

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

Station name	Station number	Drainage area (mi^2)	Type of record	Period of record (water years)
POTOMAC RIVER BASIN				
Blacks Run at Rt 726 at Harrisonburg	01621410	72.6	C	2001-02
Blacks Run at Rt 704 near Mt. Crawford	01621470	19.4	C,T,SC	1999-01
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	1949
			C,T,SC	1994
South Fork Shenandoah River near Luray, Va.	01629500	1,377	SC	1949
			C,T,SC	1994
South Fork Shenandoah River at Front Royal	01631000	1,642	C,SED	1996-02
North Fork Shenandoah River near Strasburg	01634000	768	C,SED	1996-02
Catoctin Creek at Taylorstown, Va.	01638480	89.6	C	1993-95
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
Cedar Run near Aden, Va.	01656100	155	SED	1996-99
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,T,SC,SED	1995-96
Quantico Creek near Dumfries, Va.	01658480	6.90	C	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
Little Creek at Mockingbird Road at Triangle	01658698	-	C	1999-01
Little Creek at Geiger Road at Quantico	01658705	-	C	1999-01
Chopawamsic Creek at I-95 near Joplin	01660100		C	1996-02
Beaverdam Run near Garrisonville, Va.	01660500	12.7	C,M,SED	1997-01
RAPPAHANNOCK RIVER BASIN				
Carter Run near Marshall, Va.	01661900	19.5	SED	1977-78
Hazel River at Rixeyville, Va.	01663500	287	T	1951-55
			SC	1953-55
			SED	1952-55
Rappahannock River at Remington, Va.	01664000	620	SC,T	1951-56, 1965-86
			SED	1951-93
Rapidan River near Culpeper, Va.	01667500	472	T	1946,1951-56
			SC	1953-56
			SED	1951-56
Mountain Run near Burr Hill, Va.	01667870	28.8	C,T,SC	1990-92
Rappahannock River at VEPCO Dam, at Fredericksburg, Va.	01668020	-	T,SC	1971-72

DISCONTINUED SURFACE-WATER-QUALITY STATIONS--Continued

Station name	Station number	Drainage area (mi^2)	Type of record	Period of record (water years)
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
Mattaponi River near Bowling Green, Va.	01674000	257	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	1969-86
			C	1930,1948, 1968-86
James River at Buchanan, Va.	02019500	2,075	T	1948,1951-56, 1968-86
			SC	1953-56, 1968-86
			SED	1951-56
			C	1930,1948, 1951-56, 1968-86
James River at Bent Creek, Va.	02026000	3,683	T	1948
James River at Scottsville, Va.	02029000	4,584	T,SC	1951-56,1987
			SED	1951-56
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,T,SC,SED	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	1984,1987-91
			SED	1988-91
Chickahominy River near Providence Forge, Va.	02042500	248	C,T,SC	1969-70, 1972-91 1995-98
			SED	1990-91
Chickahominy River above Walkers Dam, at Walkers, Va.	02042720	301	C,T,SC	1983-91
			SED	1990-91

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

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				
Diascund Creek at Rt. 628, near New Kent, Va.	02042726	9.25	C,T,SC	1986-91
			SED	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	1986-91
			SED	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	1947
			C,T,SC,SED	1978-96
Blackwater River at Zuni, Va.	02048000	456	T	1947
Blackwater River near Franklin, Va.	02049500	617	C,T,SC,SED	1947, 1952, 1975-96
North Meherrin River near Lunenburg, Va.	02051000	55.6	T	1947
Meherrin River at Emporia, Va.	02052000	747	T,SC	1968-80
			C	1968-93
ROANOKE RIVER BASIN				
Roanoke River at Lafayette, Va.	02054500	257	T,SC	1951
Roanoke River at Altavista, Va.	02060500	1,789	T	1951,1953-56, 1968-86
			SC	1953-56, 1968-86
			SED	1953-56
			C	1951,1953-56, 1968-86
Roanoke River at Randolph, Va.	02066000	2,977	T,SC	1951-56, 1968-62
			SED	1954-81
			C	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

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

DISCONTINUED SURFACE-WATER-QUALITY STATIONS--Continued

Station name	Station number	Drainage area (mi^2)	Type of record	Period of record (water years)
BIG SANDY RIVER BASIN				
Levisa Fork near Grundy, Va.	03207500	235	T,SC	1950
			SED	1986
Levisa Fork at Big Rock, Va.	03207800	297	T,SC	1970-81
			SED	1970-81
Grissom Creek near Council, Va.	03208034	2.82	C,T,SC,SED	1982-83
Barton Fork near Council, Va.	03208036	10.2	C,T,SC,SED	1981-83
Russell Fork at Council, Va.	03208040	1.23	T,SC	1981-83
			C	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	1950,1968-73
			SC	1950
			C	1950,1952, 1968-86
Middle Fork Holston River at Seven Mile Ford,Va.	03474000	132	C,T,SC,SED	1997-98
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
North Fork Holston River near Gate City, Va.	03490000	672	T	1950-51, 1968-78
			SC	1950-51
			SED	1935-38, 1963-65
Guest River near Miller Yard,Va.	03524550	100	C,T,SC,SED	1997-98
Copper Creek near Gate City, Va.	03526000	106	C,T,SC,SED	1997-98
Clinch River at Speers Ferry, Va.	03527000	1,126	T	1950,1965-67
			SC	1950
			SED	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)

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				
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	1954-56
			SED	1954-81
			C	1954-93
Dan River at South Boston, Va.	02076000	2,730	T	1952
			SC	1951-52
Roanoke River at Clarksville, Va.	02079000	7,320	C	1987-91
Lake Gaston near Elams, N.C.	02079785	-	T,SC	1988
			SED	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
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, N.C.	0207988490	-	C,T,SC	1989-90
Lake Gaston tributary near Tillans Chapel, near Elams, N.C.	0207988510	-	C,T,SC	1989-90
Pea Hill Creek tributary No. 5, near Henrico, N.C.	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	1950,1968-83
			C	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	1968-88
			T	1964-88
			C,T,SC,SED	1931,1950, 1952,1955-56, 1965-95

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

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

INTRODUCTION

The Water Resources Discipline of the U.S. Geological Survey (USGS), 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 176 gaging stations; stage only at 3 gaging stations; stage and contents at 11 lakes and reservoirs; and water quality at 18 gaging stations. Also included are data for 49 crest-stage partial-record stations. Locations of these sites are shown on figures 4 and 5. Miscellaneous hydrologic data were collected at 172 measuring sites and 12 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 l975 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-04-1." For archiving and general distribution, the reports for l971-74 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 USGS Virginia Water Science Center at the address given on the back of the title page or by telephone (804) 261-2600.

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 USGS Virginia Water Science Center home page is:

http://va.water.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, Robert G. Burnley, Executive Director.

VIRGINIA DEPARTMENT OF TRANSPORTATION, Charles D. Nottingham, Commissioner.

CITY OF ALEXANDRIA, Vola Lawson, City Manager.

CITY OF DANVILLE, Barry Dunkley, 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 REGIONAL COMMISSION, G. Mark Gibb, Executive Director.

WEST PIEDMONT PLANNING DISTRICT COMMISSION, Robert W. Dowd, Executive Director.

CITY OF NORFOLK, Regina V. K. Williams, City Manager.

HAMPTON ROADS PLANNING DISTRICT COMMISSION, Arthur L. Collins, Executive Director.

WASHINGTON COUNTY SERVICE AUTHORITY, David S. Dawson, General Manager.

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, Chopawamsic, and Aquia Creek Basins. Other cooperators that provided funds for the collection of records are the American Electric Power, Dominion 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 Robert G. Burnley, director. Published material for the gaging-station records is supplied through the Division of Water Resource Management, Larry G. Lawson, P.E., director.

SUMMARY OF HYDROLOGIC CONDITIONS

Surface-Water Discharge

Statewide, annual mean discharges for the 2004 water year were above the normal range of flow (above the 75th percentile of annual mean flows) based on streamflow data at the farthest downstream gaged locations in the Shenandoah, Potomac, Rappahannock, York, James, Kanawha, Big Sandy, and most of the Tennessee River Basins. Annual mean discharges were in the normal range of flow (between the 25th and 75th percentile of annual mean flows) in the Roanoke River Basin and one sub-basin of the Tennessee River Basin on the Powell River near Jonesville, Va., streamflow-gaging station. Even though most annual mean discharges at streamflow-gaging stations were above the normal range of flow, only 3 of 145 streamflow-gaging stations with more than 5 years of record set records for highest annual mean discharge. Figure 1 shows annual mean discharges with the long-term mean discharges at four selected streamflow-gaging stations throughout the State.

Monthly mean discharges generally were above the normal range of flow during the fall of 2003 and dropped to the normal range of flow during the winter and spring months of 2004. A few streamflow-gaging stations continued to decline to the below normal range of flows in March, 2004 and rebounded to the normal range of flows by April, 2004. Most streamflow-gaging stations in the eastern and southern areas of the State recorded flows above the normal range of flow during the summer, while streamflow gages in the western areas of the State generally recorded flows in the normal range of flow. Figure 2 shows the distribution of monthly and annual mean discharges for four selected streamflow-gaging stations throughout the State.

Seven Hurricanes and tropical storms (Alex, Bonnie, Charley, Frances, Gaston, Ivan, and Jeanne) caused heavy precipitation and affected streamflows in Virginia from July through September, 2004. Hurricane Alex never made landfall in Virginia; however, it did cause heavy precipitation and some flooding in southeastern Virginia in early August. Central and eastern Virginia had precipitation for 10 of the first 16 days in August. A significant portion of the total precipitation came from Tropical Storm Bonnie, Hurricane Charley, and stationary weather fronts that helped direct the storm paths. Central Virginia received 4-6 inches of rain over the four-day period August 12-16, 2004. Southeast Virginia received 6-8 inches of rain during the same time period. Some flooding occurred in the southeast and southwest portions of the State.

On Monday, August 30, 2004, tropical storm Gaston dropped 10-14 inches of rain across central Virginia causing major flooding in low-lying areas. Much of the rain fell in a six hour period between 2 pm and 8 pm. The heaviest rain covered an area from Petersburg, Va., north through Richmond, to Ashland, Va., and from Crew, Va. (50 miles south west of Richmond), to Central Garage, Va. (30 miles north east of Richmond). Much of the city of Richmond received 12 inches of rain. Flooding killed eight people in Richmond. The Shockoe Bottom area of Richmond, (low-lying area where the James River passes through Richmond) had 6-8 feet of water in some areas from drainage to the James River. Many people were trapped in vehicles that stalled. Many vehicles parked in the area were swept away or pushed into buildings. Mandatory evacuation below Falling Creek Reservoir in Chesterfield County south of Richmond, Va., was prompted when flow over the spillway increased beyond maximum design levels. The reservoir dam did not fail. Falling Creek near Chesterfield, Va., Totopotomoy Creek near Studley, Va., and Chickahominy River near Providence Forge, Va., streamflow-gaging stations recorded new record peaks for their period of record (table 1).

Remnants of Hurricane Frances spawned nine tornados in Virginia while dumping heavy rains in western North Carolina and Virginia. Some areas of the mountains of North Carolina received over 14 inches of rain on September 8, 2004. The same storm caused rainfall totals of greater than 8 inches in the upper Roanoke Valley of Virginia with greater localized amounts in the mountains(10-12 inches near Buffalo Mountain, Va.). The greatest precipitation was along the east face of the Blue Ridge Mountains from Roanoke, Va., southwest to Ashville, N.C. Central Virginia also received heavy rains as lines of severe thunderstorms passed from west to east. Caroline county had the worst damage when a tornado destroyed houses and other structures in Bowling Green, Va.

Expected rainfall amounts from remnants of Hurricane Ivan were less than the expected 10-12 inches in the mountains of Virginia. Documentation from Nexrad radar and IFLOWs precipitation gages show that most counties in the mountains of Virginia received less than 4 inches of rain while counties in the northern portion of the Shenandoah Valley received 4-6 inches of rain.

Rainfall amounts from remnants of Hurricane Jeanne have totaled between 4 and 6 inches across most of the upper Roanoke, upper James, and Shenandoah River Basins. Greatest rainfall amounts were observed in Patrick County where 11.41 and 7.87 inches of rain were recorded at raingages just west of Stuart, Va. Just south of Covington, Va., 7.65 inches of rainfall were recorded. Streamflow at the USGS and State surface-water gage locations ranged between 5 and 15 year recurrence intervals. In the upper James, Johns Creek at New Castle, Va., streamflow gaging station recorded a new record peak for period of record.

Table 1: Maximum, period of record, instantaneous peak discharges recorded during 2004 water year [--; not computed]

Gaging Station	Maximum instantaneous discharge, in cubic feet per second	Recurrence interval, in years	Length of record, in years
Totopotomoy Creek near Studley, Va.	11,300	>500	27
Falling Creek near Chesterfield, Va.	17,800	>500	48
Chickahominy River near Providence Forge, Va.	18,900	>500	63
Smith River at Smith River Church near Woolwine, Va.	3,520	--	10
Wolf Creek near Narrows, Va.	16,100	>500	74
North Fork Holston River near Saltville, Va.	17,100	50	87

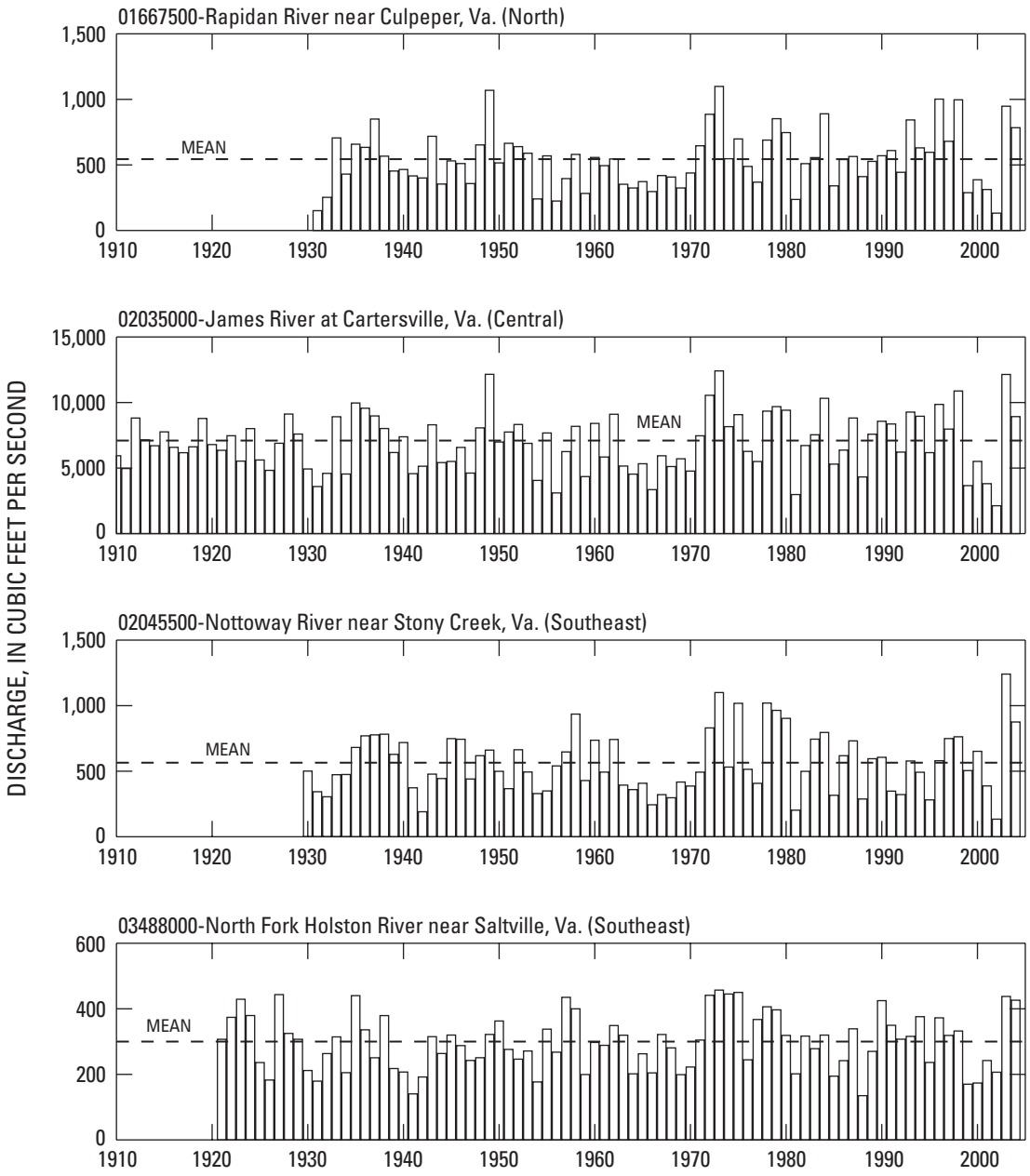


Figure1. Annual mean discharge at four selected stream-gaging stations.

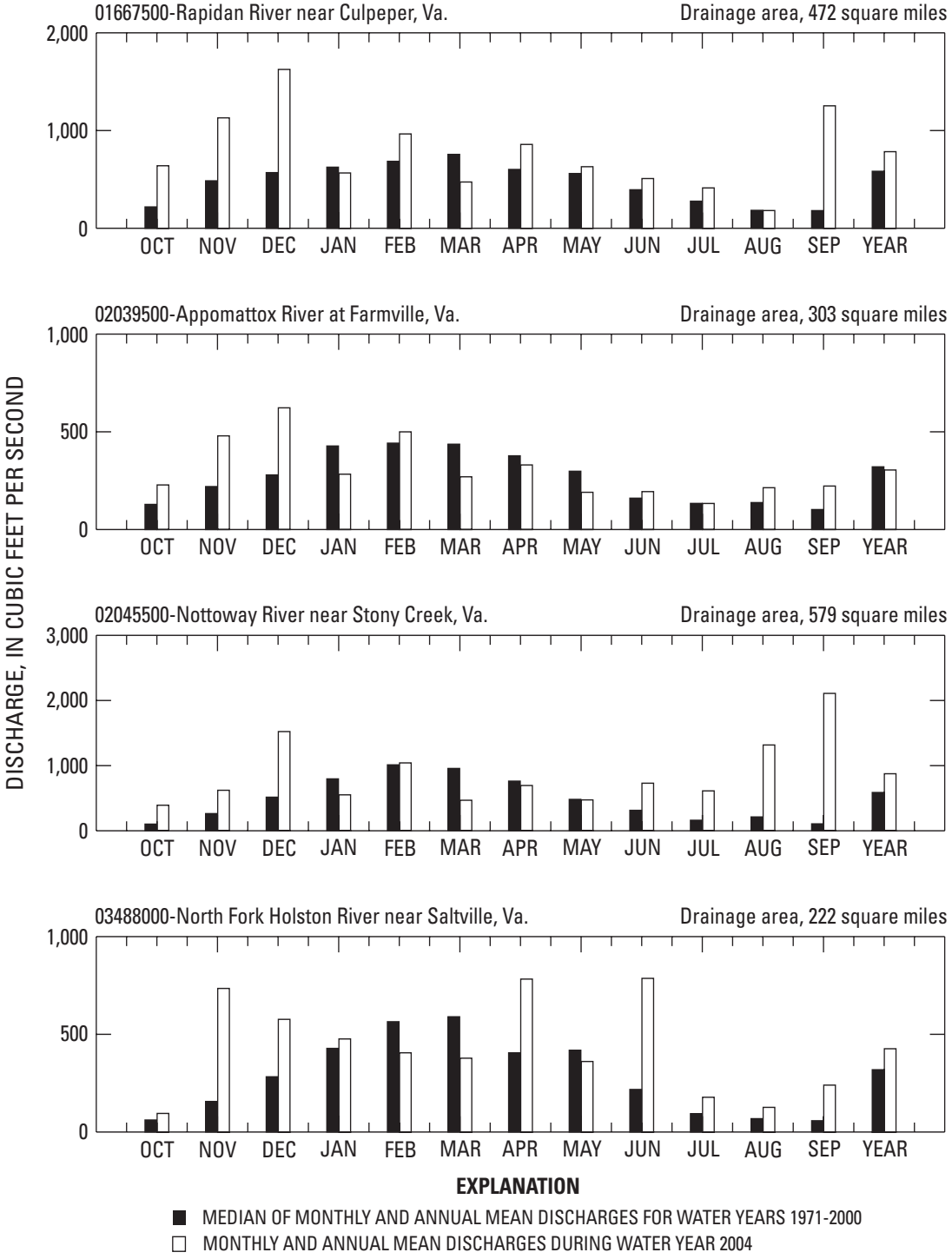


Figure 2. Monthly and annual mean discharges during 2004 water year and median of monthly and annual mean discharges for 1971-2000 water years at four representative stream-gaging stations.

DOWNSTREAM ORDER AND STATION NUMBER

Since October 1, 1950, hydrologic-station records in USGS reports have been listed in order of downstream direction along the main stream. All stations on a tributary entering upstream from a main-stream station are listed before that station. A station on a tributary entering between two main-stream stations is listed between those stations. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary on which a station is located with respect to the stream to which it is immediately tributary is indicated by an indention in that list of stations in the front of this report. Each indentation represents one rank. This downstream order and system of indentation indicates which stations are on tributaries between any two stations and the rank of the tributary on which each station is located.

As an added means of identification, each hydrologic station and partial-record station has been assigned a station number. These station numbers are in the same downstream order used in this report. In assigning a station number, 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 composed of both types of stations. Gaps are consecutive. The complete 8-digit (or 10-digit) number for each station such as 09004100, which appears just to the left of the station name, includes a 2-digit part number “09” plus the 6-digit (or 8-digit) downstream order number “004100.” In areas of high station density, an additional two digits may be added to the station identification number to yield a 10-digit number. The stations are numbered in downstream order as described above between stations of consecutive 8-digit numbers.

NUMBERING SYSTEM FOR WELLS AND MISCELLANEOUS SITES

The USGS well and miscellaneous site-numbering system is based on the grid system of latitude and longitude. The system provides the geographic location of the well or miscellaneous site and a unique number for each site. The number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude, and the next 7 digits denote degrees, minutes, and seconds of longitude; the last 2 digits are a sequential number for wells within a 1-second grid. In the event that the latitude-longitude coordinates for a well and miscellaneous site are the same, a sequential number such as “01,” “02,” and so forth, would be assigned as one would for wells (see fig. 3). The 8-digit, downstream order station numbers are not assigned to wells and miscellaneous sites where only random water-quality samples or discharge measurements are taken.

Downstream Order System

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

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-identfication 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.

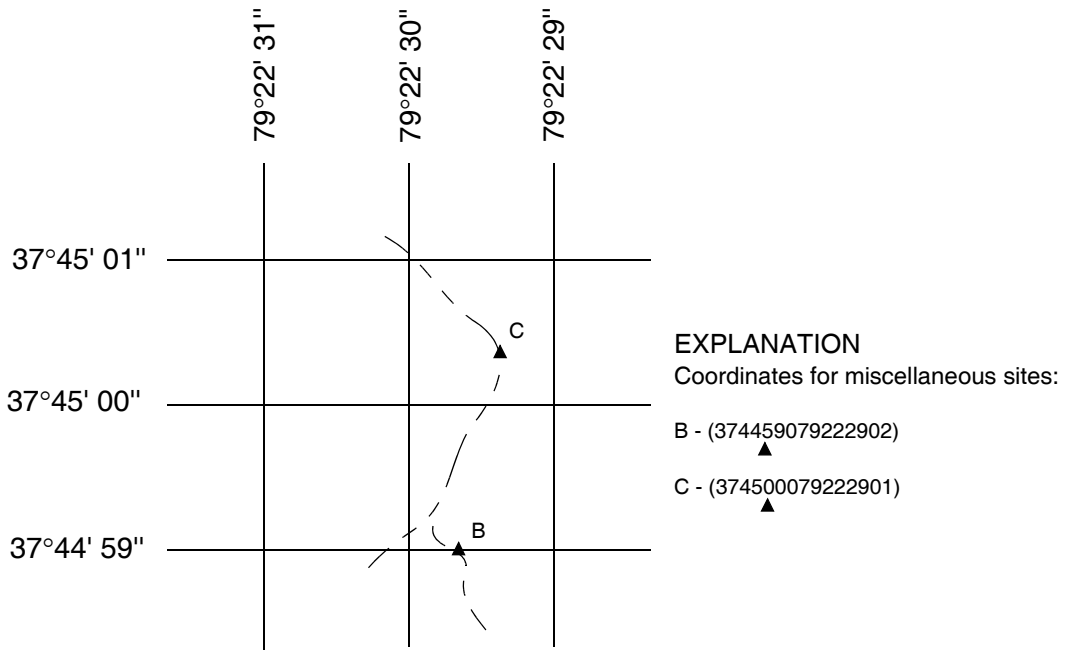


Figure 3. System for numbering selected miscellaneous sites.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Benchmark Network is a network of 61 sites in small drainage basins in 39 States that was established in 1963 to provide consistent streamflow data representative of undeveloped watersheds nationwide, and from which data could be analyzed on a continuing basis for use in comparison and contrast with conditions observed in basins more obviously affected by human activities. At selected sites, water-quality information is being gathered on major ions and nutrients, primarily to assess the effects of acid deposition on stream chemistry. Additional information on the Hydrologic Benchmark Program may be accessed from *http://water.usgs.gov/hbn/*.

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

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) is a network of monitoring sites that provide continuous measurement and assessment of the chemical constituents in precipitation throughout the United States. As the lead Federal agency, the USGS works together with over 100 organizations to provide a long-term, spatial and temporal record of atmospheric deposition generated from this network of 250 precipitation-chemistry monitoring sites. The USGS supports 74 of these 250 sites. This long-term, nationally consistent monitoring program, coupled with ecosystem research, provides critical information toward a national scorecard to evaluate the effectiveness of ongoing and future regulations intended to reduce atmospheric emissions and subsequent impacts to the Nation's land and water resources. Reports and other information on the NADP/NTN Program, as well as data from the individual sites, may be accessed from *http://bqs.usgs.gov/acidrain/*.

The USGS National Water-Quality Assessment (NAWQA) Program 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; to provide an improved understanding of the primary natural and human factors affecting these observed conditions and trends; and to provide information that supports development and evaluation of management, regulatory, and monitoring decisions by other agencies.

Assessment activities are being conducted in 42 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 is 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 water-resources managers to use in making decisions 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 may be accessed from *http://water.usgs.gov/nawqa/*.

The USGS National Streamflow Information Program (NSIP) is a long-term program with goals to provide framework streamflow data across the Nation. Included in the program are creation of a permanent Federally funded streamflow network, research on the nature of streamflow, regional assessments of streamflow data and databases, and upgrades in the streamflow information delivery systems. Additional information about NSIP may be accessed from *http://water.usgs.gov/nsip/*.

EXPLANATION OF STAGE AND WATER-DISCHARGE RECORDS

Data Collection and Computation

The base data collected at gaging stations (fig. 4) consist of records of stage and measurements of discharge of streams or canals, and stage, surface area, and volume of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge relation or the stage-capacity relation, weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from a water-stage recorder that is either downloaded electronically in the field to a laptop computer or similar device or is transmitted using telemetry such as GOES satellite, land-line or cellular-phone modems, or by radio transmission. Measurements of discharge are made with a current meter or acoustic Doppler current profiler, using the general methods adopted by the USGS. These methods are described in standard textbooks, USGS Water-Supply Paper 2175, and the Techniques of Water-Resources Investigations of the United States Geological Survey (TWRIs), Book 3, Chapters A1 through A19 and Book 8, Chapters A2 and B2. The methods are consistent with the American Society for Testing and Materials (ASTM) standards and generally follow the standards of the International Organization for Standards (ISO).

For stream-gaging stations, discharge-rating tables for any stage are prepared from stage-discharge curves. If extensions to the rating curves are necessary to express discharge greater than measured, the extensions are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, or computation of flow over dams and weirs), step-backwater techniques, velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables, then the monthly and yearly mean discharges are computed from the daily values. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features of the stream channel, the daily mean discharge is computed by the shifting-control method in which correction factors based on individual discharge measurements and notes by engineers and observers are used when applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the controlling section, the daily mean discharge is computed by the shifting-control method.

The stage-discharge relation at some stream-gaging stations is affected by backwater from reservoirs, tributary streams, or other sources. Such an occurrence 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 at some distance from the base gage.

An index velocity is measured using ultrasonic or acoustic instruments at some stream-gaging stations and this index velocity is used to calculate an average velocity for the flow in the stream. This average velocity along with a stage-area relation is then used to calculate average discharge.

At some stations, 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.

At some stream-gaging stations in the northern United States, the stage-discharge relation is affected by ice in the winter; therefore, computation of the discharge in the usual manner is impossible. Discharge for periods of ice effect is computed on the basis of gage-height record and occasional winter-discharge measurements. Consideration is given to the available information on temperature and precipitation, notes by gage observers and hydrologists, and comparable records of discharge from other stations in the same or nearby basins.

For a lake or reservoir station, capacity tables giving the volume or contents for any stage are prepared from stage-area relation curves defined by surveys. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly changes are computed.

If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys, the computed contents may be increasingly in error due to the gradual accumulation of sediment.

For some stream-gaging stations, periods of time occur when no gage-height record is obtained or the recorded gage height is faulty and cannot be used to compute daily discharge or contents. Such a situation can happen when the recorder stops or otherwise fails to operate properly, the intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods, the daily discharges are estimated on the basis of recorded range in stage, prior and subsequent records, discharge measurements, weather records, and comparison with records from other stations in the same or nearby basins. Likewise, lake or reservoir volumes may be estimated on the basis of operator's log, prior and subsequent records, inflow-outflow studies, and other information.

Data Presentation

The records published for each continuous-record surface-water discharge station (stream-gaging station) consist of five parts: (1) the station manuscript or description; (2) the data table of daily mean values of discharge for the current water year with summary data; (3) a tabular statistical summary of monthly mean flow data for a designated period, by water year; (4) 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; and (5) a hydrograph of discharge.

Station Manuscript

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

LOCATION.—Location information 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 term indicates the time 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 its flow reasonably can be considered equivalent to flow at the present station.

REVISED RECORDS.—If a critical error in published records is discovered, a revision is included in the first report published following discovery of the error.

GAGE.—The type of gage in current use, the datum of the current gage referred to a standard datum, 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 either will be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily discharge table. (See section titled Identifying Estimated Daily Discharge.) Information is presented 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, the outlet works and spillway, and the purpose and use of the reservoir.

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

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

REVISIONS.—Records are revised if errors in published records are discovered. Appropriate updates are made in the USGS distributed data system, NWIS, and subsequently to its Web-based National data system, NWISWeb (*http://water.usgs.gov/nwis/nwis*). Users are encouraged to obtain all required data from NWIS or NWISWeb to ensure that they have the most recent data updates. Updates to NWISWeb are made on an annual basis.

Although rare, occasionally the records of a discontinued gaging station may need revision. Because no current or, possibly, future station manuscript would be published for these stations 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 revised after the station was

discontinued. If, however, the data for a discontinued station were obtained by computer retrieval, the data would be current. 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 stage-capacity table when daily volumes are given.

Peak Discharge Greater than Base Discharge

Tables of peak discharge above base discharge are included for some stations where secondary instantaneous peak discharge data are used in flood-frequency studies of highway and bridge design, flood-control structures, and other flood-related projects. The base discharge value is selected so an average of three peaks a year will be reported. This base discharge value has a recurrence interval of approximately 1.1 years or a 91-percent chance of exceedence in any 1 year.

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 arithmetic 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 is 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). Values for cubic feet per second per square mile and runoff in inches or in acre-feet may be omitted if extensive regulation or diversion is in effect 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 volumes are given. These values are identified by a symbol and a corresponding footnote.

Statistics of Monthly Mean Data

A tabular summary of the mean (line headed MEAN), maximum (MAX), and minimum (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 values. 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. The designated period will consist of all of the station record within the specified water years, including complete months of record for partial water years, and may coincide with the period of record for the station. The water years for which the statistics are computed are 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 records within the specified water years, including complete months of record for partial water years, and may coincide with the period of record for the station. The water years for which the statistics are computed are 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 the dates of occurrence do not fall within the selected water years listed in the heading, it will be noted in the REMARKS paragraph or in footnotes. Selected streamflow duration-curve statistics and runoff data also are given. Runoff data may be omitted if extensive regulation or diversion of flow is in effect in the drainage basin.

The following summary statistics data are provided with each continuous record of discharge. Comments that 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.

ANNUAL MEAN.—The arithmetic mean for the individual daily mean discharges for the year noted or for the designated period.

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

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

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

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

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

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

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

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

ANNUAL RUNOFF.—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 equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.
>
> Cubic feet per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming the runoff is distributed uniformly in time and area.
>
> Inches (INCHES) indicate 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 table lists annual maximum stage and discharge at crest-stage stations, and the second table lists 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 often made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for a 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. This identification is shown either by flagging individual daily values with the letter "e" and noting in a table footnote, "e–Estimated," or by listing the dates of the estimated record in the REMARKS paragraph of the station description.

Accuracy of Field Data and Computed Results

The accuracy of streamflow data 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 observations of stage, measurements of discharge, and interpretations of records.

The degree of accuracy of the records is stated in the REMARKS in the station description. "Excellent" indicates that about 95 percent of the daily discharges are within 5 percent of the true value; "good" within 10 percent; and "fair," within 15 percent. "Poor" indicates that daily discharges have less than "fair" accuracy. Different accuracies may be attributed to different parts of a given record.

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

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, values 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 Data Records Available

Information of a more detailed nature than that published for most of the stream-gaging stations such as discharge measurements, gage-height records, and rating tables is available from the District office. Also, most stream-gaging station records are available in computer-usable form and many statistical analyses have been made.

Information on the availability of unpublished data or statistical analyses may be obtained from the District office (see address that is shown on the back of the title page of this report).

The following information is provided with each precipitation station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.—See Data Presentation in the EXPLANATION OF STAGE- AND WATER-DISCHARGE RECORDS section of this report (same comments apply).

PERIOD OF RECORD.—See Data Presentation in the EXPLANATION OF STAGE- AND WATER-DISCHARGE RECORDS section of this report (same comments apply).

INSTRUMENTATION.—Information on the type of rainfall collection system is given.

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

EXPLANATION OF WATER-QUALITY RECORDS

Collection and Examination of Data

Surface-water samples for analysis usually are collected at or near stream-gaging stations. The quality-of-water records are given immediately following the discharge records at these stations.

The descriptive heading for water-quality records gives the period of record for all water-quality data; the period of daily record for parameters that are measured on a daily basis (specific conductance, water temperature, sediment discharge, and so forth); extremes for the current year; and general remarks.

For ground-water records, no descriptive statements are given; however, the well number, depth of well, sampling date, or other pertinent data are given in the table containing the chemical analyses of the ground water.

Water Analysis

Most of the methods used for collecting and analyzing water samples are described in the TWRIs. A list of TWRIs is provided in this report.

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 at several verticals to obtain a representative sample needed for an accurate mean concentration and for use in calculating load.

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 and minimum values (and sometimes mean or median values) for each constituent measured, and are based on 15-minute or 1-hour intervals of recorded data beginning at 0000 hours and ending at 2400 hours for the day of record.

SURFACE-WATER-QUALITY RECORDS

Records of surface-water quality ordinarily are obtained at or near stream-gaging stations because discharge data is useful in the interpretation of surface-water quality. Records of surface-water quality in this report 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 *continuous-record station* is a site where data are collected on a regularly scheduled basis. Frequency may be one 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 continuous- or partial-record station, where 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 *continuous records* as used in this report and *continuous recordings* that refer to a continuous graph or a series of discrete values recorded at short intervals. 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 4.

Accuracy of the Records

One of four accuracy classifications is applied for measured physical properties at continuous-record stations on a scale ranging from poor to excellent. The accuracy rating is based on data values recorded before any shifts or corrections are made. Additional consideration also is given to the amount of publishable record and to the amount of data that have been corrected or shifted.

Rating classifications for continuous water-quality records

[≤, less than or equal to; ±, plus or minus value shown; °C, degree Celsius; >, greater than; %, percent; mg/L, milligram per liter; pH unit, standard pH unit]

Measured physical property	Rating			
	Excellent	Good	Fair	Poor
Water temperature	≤ ±0.2 °C	> ±0.2 to 0.5 °C	> ±0.5 to 0.8 °C	> ±0.8 °C
Specific conductance	≤ ±3%	> ±3 to 10%	> ±10 to 15%	> ±15%
Dissolved oxygen	≤ ±0.3 mg/L	> ±0.3 to 0.5 mg/L	> ±0.5 to 0.8 mg/L	> ±0.8 mg/L
pH	≤ ±0.2 unit	> ±0.2 to 0.5 unit	> ±0.5 to 0.8 unit	> ±0.8 unit
Turbidity	≤ ±5%	> ±5 to 10%	> ±10 to 15%	> ±15%

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 is assuring that the data obtained represent the naturally occurring quality of the water. To ensure this, certain measurements, such as water temperature, pH, and dissolved oxygen, must be made on site when the samples are taken. To assure that measurements made in the laboratory also represent the naturally occurring water, carefully prescribed procedures must 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 on-site measurements and for collecting, treating, and shipping samples are given in TWRIs Book 1, Chapter D2; Book 3, Chapters A1, A3, and A4; and Book 9, Chapters A1-A9. These TWRIs are listed in this report. Also, detailed information on collecting, treating, and shipping samples can be obtained from the USGS District office (see address that is shown on the back of title page in this report).

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 District office.

Sediment

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

During periods of rapidly changing flow or rapidly changing concentration, samples may be 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.

At other stations, suspended-sediment samples are collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observation, 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

Samples for biochemical oxygen demand (BOD) and indicator bacteria are analyzed locally. All other samples are analyzed in the USGS laboratory in Lakewood, Colorado, unless otherwise noted. Methods used in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chapter C1. Methods used by the USGS laboratories are given in the TWRIs, Book 1, Chapter D2; Book 3, Chapter C2; and Book 5, Chapters A1, A3, and A4. These methods are consistent with ASTM standards and generally follow ISO standards.

Data Presentation

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

In the descriptive headings, if the location is identical to that of the discharge gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information 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 information in the EXPLANATION OF STAGE- AND WATER-DISCHARGE RECORDS section of this report (same comments apply).

DRAINAGE AREA.—See Data Presentation information in the EXPLANATION OF STAGE- AND WATER-DISCHARGE RECORDS section of this report (same comments apply).

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

INSTRUMENTATION.—Information on instrumentation is given only if a water-quality monitor temperature 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 USGS by a cooperating organization are identified here.

EXTREMES.—Maximums and minimums are given only for parameters measured daily or more frequently. For parameters measured weekly or less frequently, true maximums or minimums may not have been obtained. Extremes, when given, are provided for both the period of record and for the current water year.

REVISIONS.—Records are revised if errors in published water-quality records are discovered. Appropriate updates are made in the USGS distributed data system, NWIS, and subsequently to its Web-based National data system, NWISWeb (*http://waterdata.usgs.gov/nwis*). Users of USGS water-quality data are encouraged to obtain all required data from NWIS or NWISWeb to ensure that they have the most recent updates. Updates to the NWISWeb are made on an annual basis.

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

Remark Codes

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

Printed Output	Remark
E or 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).
V	Analyte was detected in both the environmental sample and the associated blanks.
&	Biological organism estimated as dominant.

Water-Quality Control Data

The USGS National Water Quality Laboratory collects quality-control data on a continuing basis to evaluate selected analytical methods to determine long-term method detection levels (LT-MDLs) and laboratory reporting levels (LRLs). These values are re-evaluated each year on the basis of the most recent quality-control data and, consequently, may change from year to year.

This reporting procedure limits the occurrence of false positive error. Falsely reporting a concentration greater than the LT-MDL for a sample in which the analyte is not present is 1 percent or less. Application of the LRL limits the occurrence of false negative error. The chance of falsely reporting a non-detection for a sample in which the analyte is present at a concentration equal to or greater than the LRL is 1 percent or less.

Accordingly, concentrations are reported as less than LRL for samples in which the analyte was either not detected or did not pass identification. Analytes detected at concentrations between the LT-MDL and the LRL and that pass identification criteria are estimated. Estimated concentrations will be noted with a remark code of “E.” These data should be used with the understanding that their uncertainty is greater than that of data reported without the E remark code.

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 office 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. These data are not presented in this report but are available from the District office.

Blank Samples

Blank samples are collected and analyzed to ensure that environmental samples have not been contaminated in 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. Many types of blank samples are possible; each is 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. The reference material 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. Many types of replicate samples are 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:

Concurrent samples—A type of replicate sample in which the samples are collected simultaneously with two or more samplers or by using one sampler and alternating the collection of samples into two or more compositing containers.

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, each subsample 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.

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 from http://water.usgs.gov.

Water-quality data and ground-water data also are available through the WWW. In addition, data can be provided in various machine-readable formats on various media. Information about the availability of specific types of data or products, and user charges, can be obtained locally from each Water Discipline District Office (See address that is shown on the back of the title page of this report.)

DEFINITION OF TERMS

Specialized technical terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. Terms such as algae, water level, and precipitation are used in their common everyday meanings, definitions of which are given in standard dictionaries. Not all terms defined in this alphabetical list apply to every State. See also table for converting English units to International System (SI) Units. Other glossaries that also define water-related terms are accessible from *http://water.usgs.gov/glossaries.html*.

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

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

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

Adjusted discharge is discharge data that have been mathematically adjusted (for example, to remove the effects of a daily tide cycle or reservoir storage).

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Blue-green algae (*Cyanophyta*) are a group of phytoplankton and periphyton organisms with a blue pigment in addition to a green pigment called chlorophyll. Blue-green algae can cause nuisance water-quality conditions in lakes and slow-flowing rivers; however, they are found commonly in streams throughout the year. The abundance of blue-green algae in phytoplankton samples is expressed as the number of cells per milliliter (cells/mL) or biovolume in cubic micrometers per milliliter (μm^3/mL). The abundance of blue-green algae in periphyton samples is given in cells per square centimeter (cells/cm^2) or biovolume per square centimeter ($\mu m^3/cm^2$). (See also "Phytoplankton"and "Periphyton")

Bottom material (See "Bed material")

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

Canadian Geodetic Vertical Datum 1928 is a geodetic datum derived from a general adjustment of Canada's first order level network in 1928.

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

$$\text{sphere } 4/3\ \pi r^3 \quad \text{cone } 1/3\ \pi r^2 h \quad \text{cylinder } \pi r^2 h.$$

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

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

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

Cfs-day (See "Cubic foot per second-day")

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Diatoms *(Bacillariophyta)* are unicellular or colonial algae with a siliceous cell wall. The abundance of diatoms in phytoplankton samples is expressed as the number of cells per milliliter (cells/mL) or biovolume in cubic micrometers per milliliter (μm^3/mL). The abundance of diatoms in periphyton samples is given in cells per square centimeter (cells/cm^2) or biovolume per square centimeter ($\mu m^3/cm^2$). (See also "Phytoplankton" and "Periphyton")

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

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

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

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

Dissolved-solids concentration in water is the quantity of dissolved material in a sample of water. It is determined either analytically by the "residue-on-evaporation" method, or mathematically by totaling the concentrations of individual constituents reported in a comprehensive chemical analysis. During the analytical determination, the bicarbonate (generally a major

dissolved component of water) is converted to carbonate. In the mathematical calculation, the bicarbonate value, in milligrams per liter, is multiplied by 0.4917 to convert it to carbonate. Alternatively, alkalinity concentration (as mg/L $CaCO_3$) can be converted to carbonate concentration by multiplying by 0.60.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Filtered pertains to constituents in a water sample passed through a filter of specified pore diameter, most commonly 0.45 micrometer or less for inorganic analytes and 0.7 micrometer for organic analytes.

Filtered, recoverable is the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that has passed through a filter has been extracted. Complete recovery is not achieved by the extraction procedure and thus the analytical determination represents something less than 95 percent of the total constituent concentration in the sample. To achieve comparability of analytical data, equivalent extraction procedures are required of all laboratories performing such analyses because different procedures are likely to produce different analytical results.

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

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

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

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

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

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

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

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

Green algae *(Chlorophyta)* are unicellular or colonial algae with chlorophyll pigments similar to those in terrestrial green plants. Some forms of green algae produce mats or floating "moss" in lakes. The abundance of green algae in phytoplankton samples is expressed as the number of cells per milliliter (cells/mL) or biovolume in cubic micrometers per milliliter (μm^3/mL). The abundance of green algae in periphyton samples is given in cells per square centimeter (cells/cm^2) or biovolume per square centimeter ($\mu m^3/cm^2$). (See also "Phytoplankton" and "Periphyton")

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

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

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

High tide is the maximum height reached by each rising tide. The high-high and low-high tides are the higher and lower of the two high tides, respectively, of each tidal day. See NOAA Web site: *http://www.csc.noaa.gov/text/glossary.html* (see "High water")

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

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

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

Horizontal datum (See "Datum")

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

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

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

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

International Boundary Commission Survey Datum refers to a geodetic datum established at numerous monuments along the United States-Canada boundary by the International Boundary Commission.

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

Laboratory reporting level (LRL) generally is equal to twice the yearly determined long-term method detection level (LT-MDL). The LRL controls false negative error. The probability of falsely reporting a nondetection for a sample that contained an analyte at a concentration equal to or greater than the LRL is predicted to be less than or equal to 1 percent. The value of the LRL will be reported with a "less than" (<) remark code for samples in which the analyte was not detected. The National Water Quality Laboratory (NWQL) collects quality-control data from selected analytical methods on a continuing basis to determine LT-MDLs and to establish LRLs. These values are reevaluated annually on the basis of the most current quality-control data and, therefore, may change. The LRL replaces the term 'non-detection value' (NDV).

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

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

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

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

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

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

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

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

Low tide is the minimum height reached by each falling tide. The high-low and low-low tides are the higher and lower of the two low tides, respectively, of each tidal day. See NOAA Website: *http://www.csc.noaa.gov/text/glossary.html* (see "Low water")

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

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

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

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

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

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

Megahertz is a unit of frequency. One megahertz equals one million cycles per second.

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

Metamorphic stage refers to the stage of development that an organism exhibits during its transformation from an immature form to an adult form. This developmental process exists for most insects, and the degree of difference from the immature stage to

the adult form varies from relatively slight to pronounced, with many intermediates. Examples of metamorphic stages of insects are egg-larva-adult or egg-nymph-adult.

Method code is a one-character code that identifies the analytical or field method used to determine a value stored in the National Water Information System (NWIS).

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

Method of Cubatures is a method of computing discharge in tidal estuaries based on the conservation of mass equation.

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

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

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

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

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

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

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

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

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

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

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

National Geodetic Vertical Datum of 1929 (NGVD 29) is a fixed reference adopted as a standard geodetic datum for elevations determined by leveling. It formerly was called "Sea Level Datum of 1929" or "mean sea level." Although the datum was derived from the mean sea level at 26 tide stations**,** it does not necessarily represent local mean sea level at any particular place. *See NOAA Web site: http://www.ngs.noaa.gov/faq.shtml#WhatVD29VD88* (See "North American Vertical Datum of 1988")

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

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

Nonfilterable refers to the portion of the total residue retained by a filter.

North American Datum of 1927 (NAD 27) is the horizontal control datum for the United States that was defined by a location and azimuth on the Clarke spheroid of 1866.

North American Datum of 1983 (NAD 83) is the horizontal control datum for the United States, Canada, Mexico, and Central America that is based on the adjustment of 250,000 points including 600 satellite Doppler stations that constrain the system to a geocentric origin. NAD 83 has been officially adopted as the legal horizontal datum for the United States by the Federal government.

North American Vertical Datum of 1988 (NAVD 88) is a fixed reference adopted as the official civilian vertical datum for elevations determined by Federal surveying and mapping activities in the United States. This datum was established in 1991 by minimum-constraint adjustment of the Canadian**,** Mexican, and United States first-order terrestrial leveling networks.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Recoverable is the amount of a given constituent that is in solution after a representative water sample has been extracted or digested. Complete recovery is not achieved by the extraction or digestion and thus the determination represents something less than 95 percent of the constituent present in the sample. To achieve comparability of analytical data, equivalent extraction or digestion procedures are required of all laboratories performing such analyses because different procedures are likely to produce different analytical results. (See also "Bed material")

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

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

Return period (See "Recurrence interval")

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

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

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

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

Salinity is the total quantity of dissolved salts, measured by weight in parts per thousand. Values in this report are calculated from specific conductance and temperature. Seawater has an average salinity of about 35 parts per thousand (for additional information, refer to: Miller, R.L., Bradford, W.L., and Peters, N.E., 1988, Specific conductance: theoretical considerations and application to analytical quality control: U.S. Geological Survey Water-Supply Paper 2311, 16 p.)

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

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

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

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

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

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

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

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

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

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

Stage (See "Gage height")

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

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

Substrate is the physical surface upon which an organism lives.

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

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

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

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

Surrogate is an analyte that behaves similarly to a target analyte, but that is highly unlikely to occur in a sample. A surrogate is added to a sample in known amounts before extraction and is measured with the same laboratory procedures used to measure the target analyte. Its purpose is to monitor method performance for an individual sample.

Suspended is the amount (concentration) of undissolved material in a water-sediment mixture. Most commonly refers to that 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-micrometer filter has been extracted or digested. Complete recovery is not achieved by the extraction or digestion procedures and thus the determination represents less than 95 percent of the constituent present in the sample. To achieve comparability of analytical data, equivalent extraction or digestion procedures are required of all laboratories performing such analyses because different procedures are likely to produce different analytical results. (See also "Suspended")

Suspended sediment is sediment carried in suspension by the turbulent components of the fluid or by the Brownian movement (a law of physics). (See also "Sediment")

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Turbidity is an expression of the optical properties of a liquid that causes light rays to be scattered and absorbed rather than transmitted in straight lines through water. Turbidity, which can make water appear cloudy or muddy, is caused by the presence of suspended and dissolved matter, such as clay, silt, finely divided organic matter, plankton and other microscopic organisms, organic acids, and dyes (ASTM International, 2003, D1889–00 Standard test method for turbidity of water, *in* ASTM International, Annual Book of ASTM Standards, Water and Environmental Technology, v. 11.01: West Conshohocken, Pennsylvania, 6 p.). The color of water, whether resulting from dissolved com-

pounds or suspended particles, can affect a turbidity measurement. To ensure that USGS turbidity data can be understood and interpreted properly within the context of the instrument used and site conditions encountered, data from each instrument type are stored and reported in the National Water Information System (NWIS) using parameter codes and measurement reporting units that are specific to the instrument type, with specific instruments designated by the method code. The respective measurement units, many of which also are in use internationally, fall into two categories: (1) the designations NTU, NTRU, BU, AU, and NTMU signify the use of a broad spectrum incident light in the wavelength range of 400-680 nanometers (nm), but having different light detection configurations; (2) The designations FNU, FNRU, FBU, FAU, and FNMU generally signify an incident light in the range between 780-900 nm, also with varying light detection configurations. These reporting units are equivalent when measuring a calibration solution (for example, formazin or polymer beads), but their respective instruments may not produce equivalent results for environmental samples. Specific reporting units are as follows:

NTU (Nephelometric Turbidity Units): white or broadband [400-680 nm] light source, 90 degree detection angle, one detector.

NTRU (Nephelometric Turbidity Ratio Units): white or broadband [400-680 nm] light source, 90 degree detection angle, multiple detectors with ratio compensation.

BU (Backscatter Units): white or broadband [400-680 nm] light source, 30 ± 15 degree detection angle (backscatter).

AU (Attenuation Units): white or broadband [400-680 nm] light source, 180 degree detection angle (attenuation).

NTMU (Nephelometric Turbidity Multibeam Units): white or broadband [400-680 nm] light source, multiple light sources, detectors at 90 degrees and possibly other angles to each beam.

FNU (Formazin Nephelometric Units): near infrared [780-900 nm] or monochrome light source, 90 degree detection angle, one detector.

FNRU (Formazin Nephelometric Ratio Units): near infrared [780-900 nm] or monochrome light source, 90 degree detection angle, multiple detectors, ratio compensation.

FBU (Formazin Backscatter Units): near infrared [780-900 nm] or monochrome light source, 30±15 degree detection angle.

FAU (Formazin Attenuation Units): near infrared [780-900 nm] light source, 180 degree detection angle.

FNMU (Formazin Nephelometric Multibeam Units): near infrared [780-900 nm] or monochrome light source, multiple light sources, detectors at 90 degrees and possibly other angles to each beam.

For more information please see http://water.usgs.gov/owq/FieldManual/Chapter6/6.7_contents.html.

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

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

Unfiltered pertains to the constituents in an unfiltered, representative water-suspended sediment sample.

Unfiltered, recoverable is the amount of a given constituent in a representative water-suspended sediment sample that has been extracted or digested. Complete recovery is not achieved by the extraction or digestion treatment and thus the determination represents less than 95 percent of the constituent present in the sample. To achieve comparability of analytical data, equivalent extraction or digestion procedures are required of all laboratories performing such analyses because different procedures are likely to produce different analytical results.

Vertical datum (See "Datum")

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

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

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

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

Watershed (See "Drainage basin")

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

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

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

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

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

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

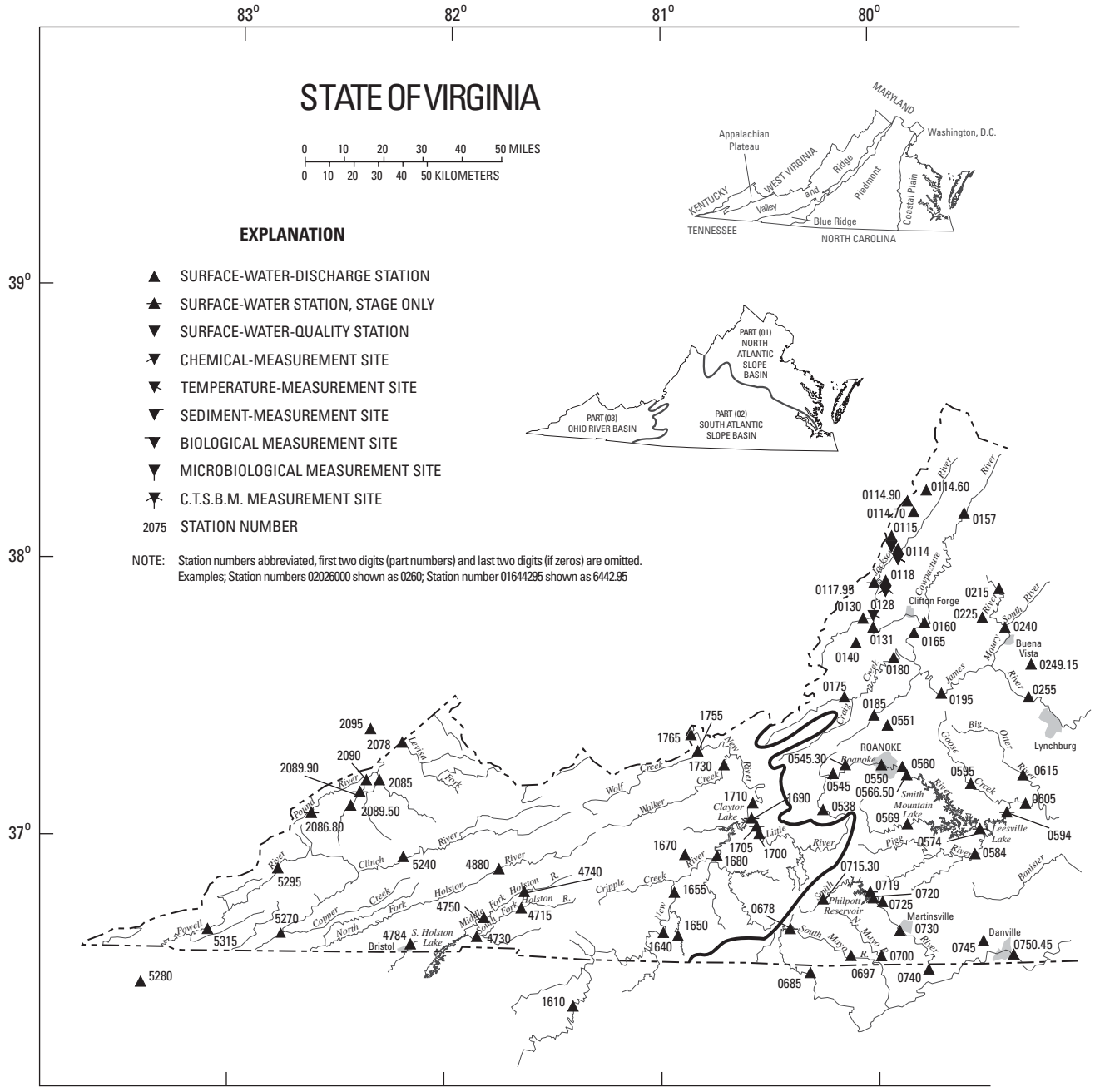
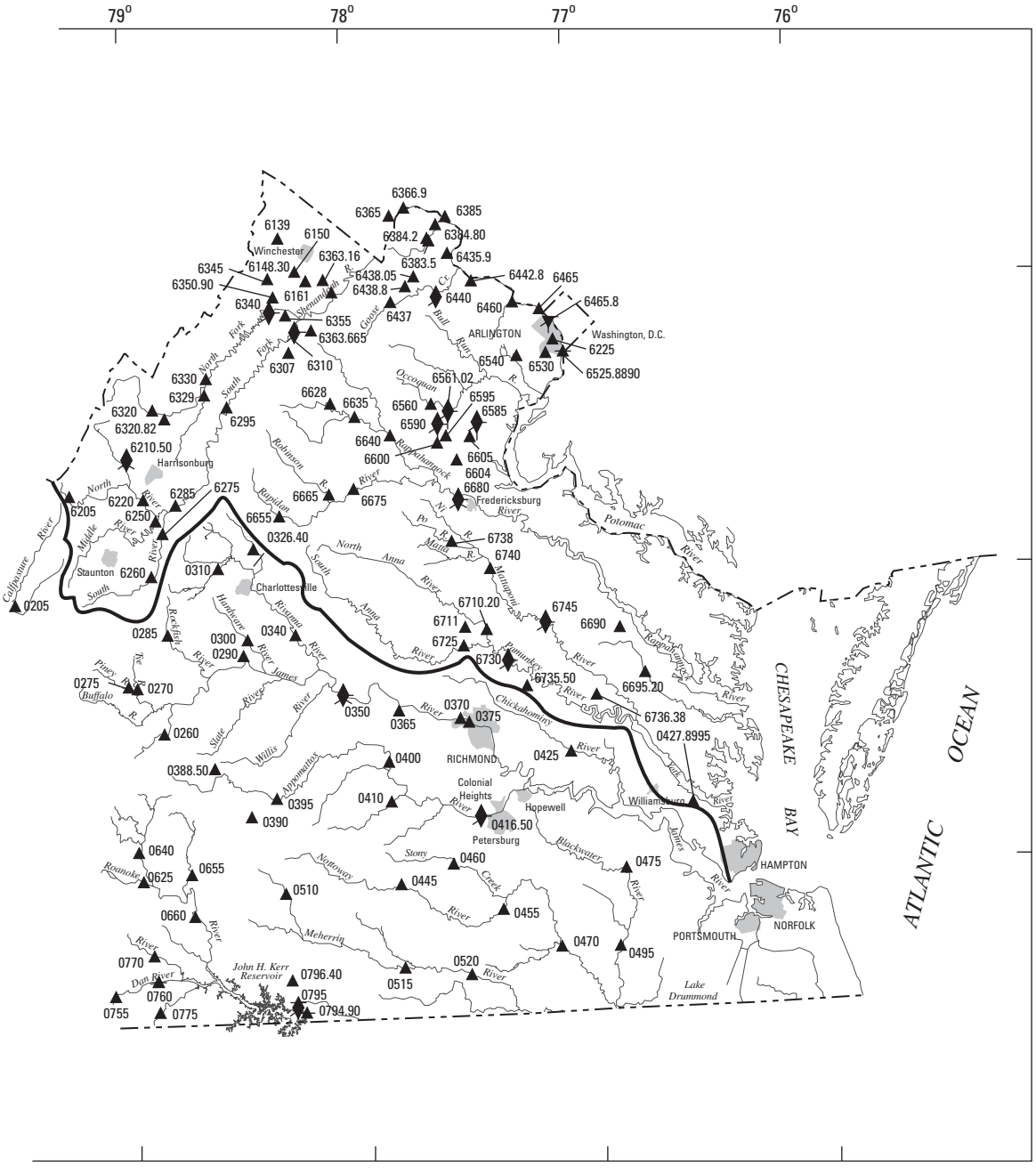


Figure 4. Location of surface-water-discharge and surface-water-quality data-collection stations.


79°
78°
77°
76°
6366.9
6365
6385
6384.2
6384.80
6139
6150
Winchester
6363.16
6148.30
6345
6350.90
6161
6340
6355
6363.665
6307
6310
6438.05
6383.5
6435.9
6442.8
6465
6438.8
6440
6460
6465.8
6437
6225
6540
6530
6525.8890
6330
6329
6320
6320.82
6295
6628
6635
6561.02
6595
6560
6585
6590
6640
6600
6605
6604
6680
6210.50
Harrisonburg
6285
6275
6220
6205
6250
6655
6665
6675
Fredericksburg
6738
6740
0326.40
0310
Staunton
6260
Charlottesville
0205
6710.20
6745
6711
6690
0285
0300
0340
6725
0290
6730
6735.50
6695.20
0275
0270
0350
0365
0370
0375
6736.38
0427.8995
0260
0400
RICHMOND
0425
0388.50
0395
0410
Colonial Heights
Hopewell
Williamsburg
0390
0416.50
Petersburg
0640
0625
0655
0460
0475
HAMPTON
0445
0510
0455
NORFOLK
0660
0470
0495
PORTSMOUTH
0770
0520
0515
0796.40
0795
0794.90
0760
0755
0775
Lake Drummond
Potomac River
Rappahannock River
Mattaponi River
Pamunkey River
Chickahominy River
James River
Appomattox River
Blackwater River
Nottoway River
Meherrin River
Dan River
John H. Kerr Reservoir
Roanoke River
Staunton River
Banister River
Pittsylvania
Buffalo
Piney River
Tye River
Rockfish River
Hardware River
Rivanna River
South Anna River
North Anna River
Mattaponi R.
Pamunkey R.
Mat R.
Po R.
Ni River
Rapidan R.
Robinson R.
Rappahannock River
Occoquan R.
Bull Run
Cedar Run
Goose Creek
Shenandoah River
North Fork Shenandoah River
South Fork Shenandoah River
Calfpasture River
North River
Middle River
South River
Jackson River
Stony Creek
Willis River
Slate River
Appomattox River
Jones Creek
James River
Chickahominy River
Rappahannock River
Potomac River
CHESAPEAKE BAY
ATLANTIC OCEAN
ARLINGTON
Washington, D.C.

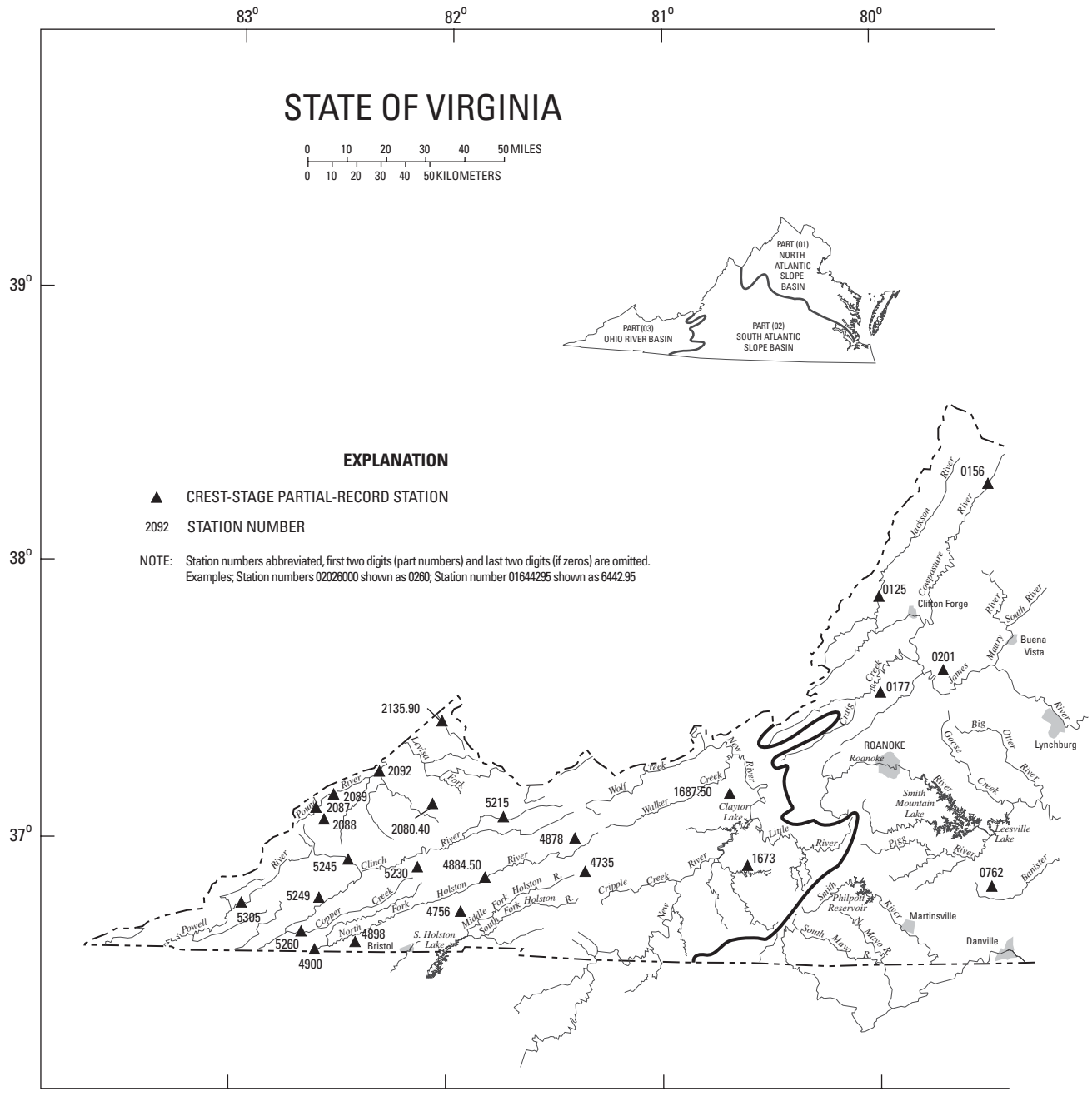
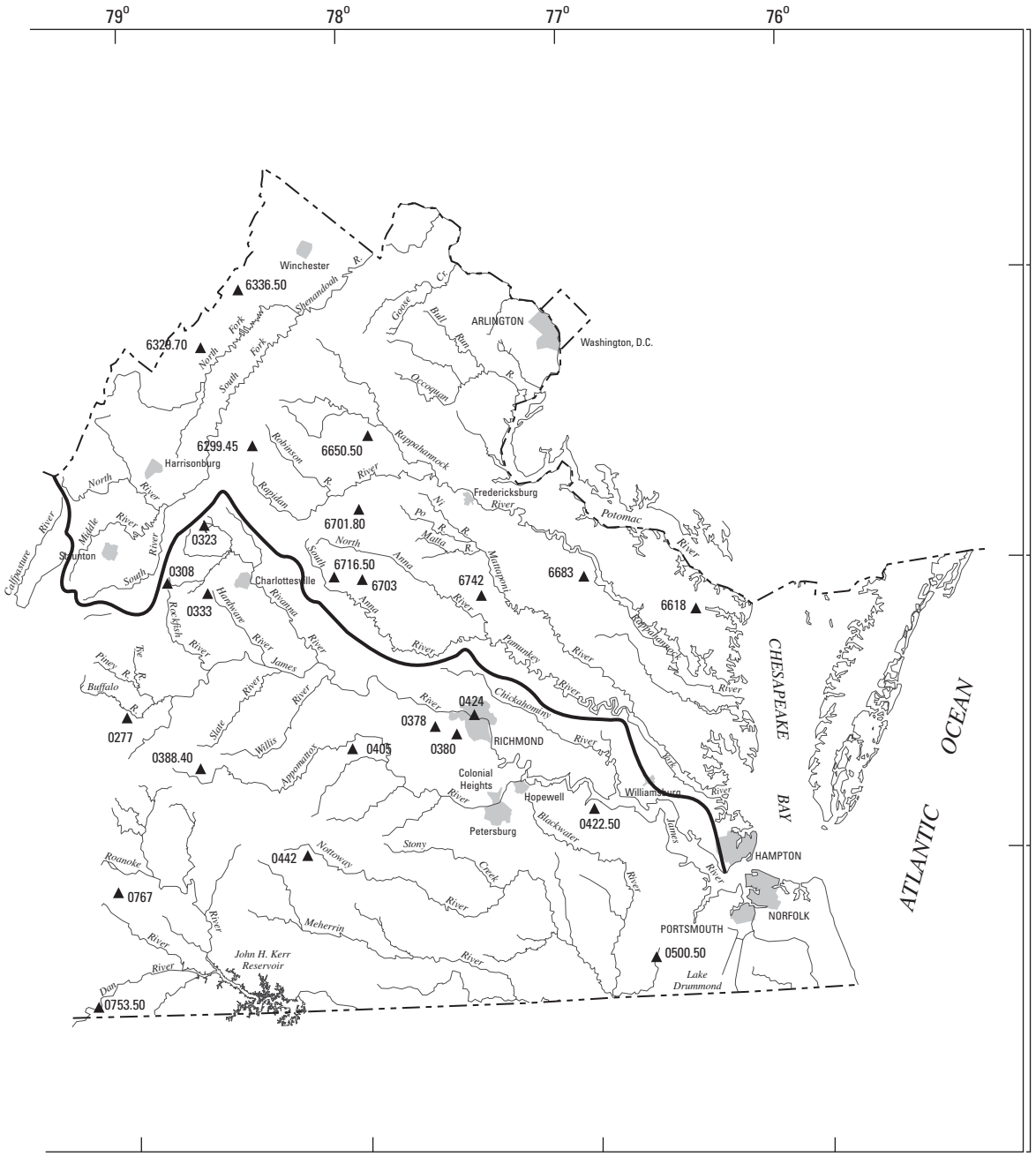


Figure 5. Location of surface-water partial-record stations.


79°
78°
77°
76°
Winchester
6336.50
6329.70
ARLINGTON
Washington, D.C.
6299.45
Harrisonburg
6650.50
Fredericksburg
6701.80
0323
0308
0333
Charlottesville
6716.50
6703
6742
6683
6618
0424
0378
0380
RICHMOND
0277
0388.40
0405
Colonial Heights
Hopewell
Petersburg
0422.50
Williamsburg
0442
0767
HAMPTON
NORFOLK
PORTSMOUTH
0500.50
Lake Drummond
John H. Kerr Reservoir
0753.50
CHESAPEAKE BAY
ATLANTIC OCEAN
Shenandoah R.
North Fork Shenandoah River
South Fork Shenandoah River
Goose Cr.
Bull Run
Occoquan R.
Rappahannock River
Robinson R.
Rapidan River
North Anna River
South Anna River
Pamunkey River
Mattaponi R.
Potomac River
Chickahominy River
James River
Rivanna River
Hardware River
Rockfish River
Buffalo R.
Piney R.
Tye R.
North River
Middle River
South River
Calfpasture River
Staunton
Harrisonburg
Willis River
Appomattox River
Blackwater River
Nottoway River
Meherrin River
Stony Creek
Roanoke River
Dan River

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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).
V	Analyte was detected in both the enviromental sample and the associated blanks.
&	Biological organism estimated as dominant.

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).

01613900 HOGUE CREEK NEAR HAYFIELD, VA

LOCATION.--Lat 39°12'52", long 78°17'17", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--Records good except those for period with ice effect, Jan. 8-10, and periods of doubtful or no gage-height record, Jan. 11 to Feb. 5 and Feb. 9, 10, which are fair. Maximum discharge, 4,090 ft^3/s, from rating curve extended above 870 ft^3/s. Several measurements of water temperature were made during the year.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 11	0245	919	4.69	Sep 17	2145	1,750	6.34
Apr 12	2245	483	3.55	Sep 28	1430	*2,390	*7.39
Apr 26	1145	499	3.60				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.6	5.9	20	12	e3.8	19	82	27	7.5	2.8	2.7	1.2
2	4.0	5.6	15	12	e3.7	19	216	27	6.1	2.8	2.2	1.1
3	3.6	5.4	12	11	e4.5	17	95	39	5.4	2.5	2.7	1.2
4	3.8	5.1	11	10	e4.2	17	58	25	5.1	3.5	2.1	1.2
5	3.9	5.4	12	10	e4.0	15	39	22	17	37	1.8	1.2
6	3.3	7.0	12	9.1	37	27	30	19	11	7.1	1.6	1.6
7	3.2	10	11	7.7	112	25	25	18	8.0	5.0	1.5	1.8
8	3.0	8.5	9.8	e7.3	76	24	22	19	6.5	4.1	1.4	16
9	3.0	7.1	9.7	e6.5	e40	20	20	14	5.7	3.4	1.4	59
10	3.3	6.1	22	e5.7	e35	17	17	12	5.1	3.2	1.3	8.2
11	3.2	5.9	426	e6.0	40	15	16	10	12	2.9	1.3	4.9
12	3.1	44	104	e6.5	34	14	103	9.5	34	2.5	1.4	3.7
13	3.2	28	55	e5.8	33	12	262	8.8	15	2.5	2.1	3.2
14	5.6	17	38	e5.4	34	12	147	8.1	11	2.7	1.7	2.9
15	14	15	30	e5.2	28	11	74	8.2	8.8	2.4	1.5	2.9
16	6.3	10	25	e5.0	22	12	46	19	7.7	2.2	1.4	2.9
17	5.0	8.7	47	e4.8	19	13	31	16	6.9	2.2	1.3	270
18	5.5	7.8	44	e5.9	17	12	25	39	6.2	3.5	1.2	470
19	4.8	108	32	e5.6	32	23	21	116	5.4	2.7	1.3	79
20	4.3	95	24	e5.4	55	19	19	52	4.8	2.2	1.3	37
21	4.2	42	19	e5.2	93	19	20	32	4.4	2.1	1.7	22
22	4.2	25	19	e5.1	68	15	17	24	4.4	2.2	1.4	13
23	4.2	19	37	e5.0	45	14	19	15	4.6	2.2	1.2	10
24	4.0	19	69	e4.7	40	13	23	12	4.2	1.9	1.2	9.4
25	3.8	23	55	e4.5	34	12	18	9.6	9.2	1.9	1.1	5.7
26	4.4	17	37	e4.3	27	11	282	10	16	2.1	1.1	5.3
27	9.1	15	28	e4.2	23	12	166	9.1	8.3	2.1	1.1	5.3
28	12	28	22	e4.1	20	11	79	8.3	3.4	2.1	1.2	482
29	9.3	40	19	e4.0	19	11	50	7.2	3.0	1.8	1.2	158
30	7.6	25	17	e3.9	---	9.7	36	6.4	2.8	1.7	1.2	50
31	6.4	---	14	e3.8	---	12	---	6.6	---	1.9	1.2	---
TOTAL	159.9	658.5	1,295.5	195.7	1,003.2	482.7	2,058	648.8	249.5	119.2	46.8	1,729.7
MEAN	5.16	21.9	41.8	6.31	34.6	15.6	68.6	20.9	8.32	3.85	1.51	57.7
MAX	14	108	426	12	112	27	282	116	34	37	2.7	482
MIN	3.0	5.1	9.7	3.8	3.7	9.7	16	6.4	2.8	1.7	1.1	1.1
CFSM	0.34	1.46	2.79	0.42	2.31	1.04	4.57	1.40	0.55	0.26	0.10	3.84
IN.	0.40	1.63	3.21	0.49	2.49	1.20	5.10	1.61	0.62	0.30	0.12	4.29

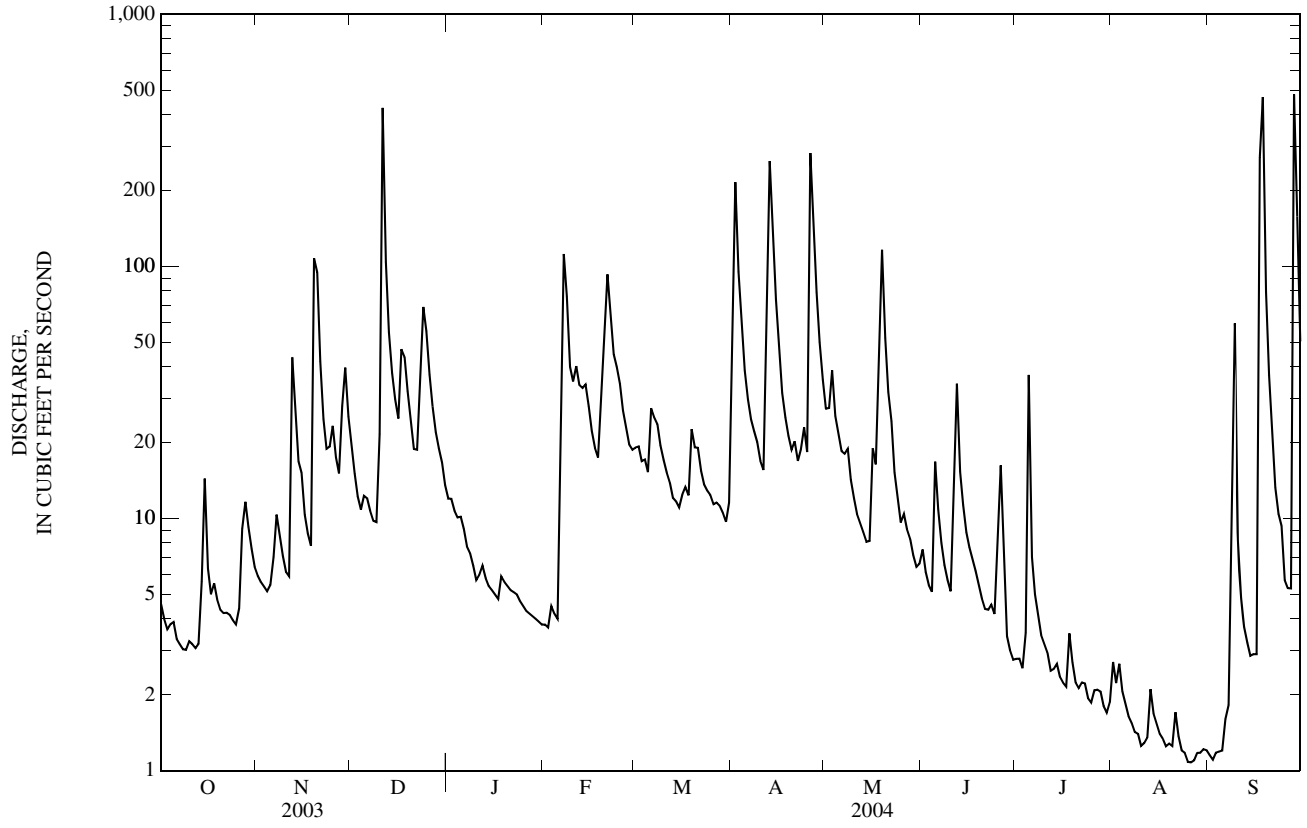
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1986, 1993 - 2004, BY WATER YEAR (WY)

MEAN	6.76	12.5	16.3	18.7	25.6	37.7	26.9	17.2	12.5	4.70	4.98	7.28
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	0.52	1.08	1.06	1.72	2.22	5.81	6.31	2.17	0.98	0.81	0.31	0.78
(WY)	(1964)	(1966)	(1966)	(1966)	(2002)	(1981)	(1963)	(1969)	(1969)	(1964)	(1999)	(1963)

01613900 HOGUE CREEK NEAR HAYFIELD, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1960 - 1986 1993 - 2004	
ANNUAL TOTAL	10,424.7		8,647.5			
ANNUAL MEAN	28.6		23.6		15.9	
HIGHEST ANNUAL MEAN					32.2	1996
LOWEST ANNUAL MEAN					3.84	1969
HIGHEST DAILY MEAN	426	Dec 11	482	Sep 28	1,060	Sep 6, 1996
LOWEST DAILY MEAN	1.6	Aug 25	1.1	aAug 25	0.06	Sep 14, 1968
ANNUAL SEVEN-DAY MINIMUM	1.8	bAug 22	1.2	cAug 23	0.19	Aug 7, 1999
MAXIMUM PEAK FLOW			2,390	Sep 28	4,090	Sep 6, 1996
MAXIMUM PEAK STAGE			7.39	Sep 28	9.71	Sep 6, 1996
INSTANTANEOUS LOW FLOW			0.97	Aug 25	0.00	dSep 14, 1968
ANNUAL RUNOFF (CFSM)	1.90		1.58		1.06	
ANNUAL RUNOFF (INCHES)	25.85		21.45		14.40	
10 PERCENT EXCEEDS	69		44		35	
50 PERCENT EXCEEDS	12		9.6		5.3	
90 PERCENT EXCEEDS	3.0		1.9		1.2	

a Also Aug. 26, 27 and Sept. 2, 2004.
b Also Aug. 23, 24, 2003.
c Also Aug. 24-30, 2004.
d No flow part of day, cause unknown.
e Estimated.



01614830 OPEQUON CREEK NEAR STEPHENS CITY, VA

LOCATION.--Lat 39°06'32", long 78°12'18", NAD83, Frederick County, Hydrologic Unit Code 02070004, on right bank, 5 ft upstream from U.S. Highway 11, 1.5 mi north of Stephens City.

DRAINAGE AREA.--14.8 mi^2.

PERIOD OF RECORD.--December 2000 to current year.

GAGE.--Water-stage recorder. Datum of gage is 705 ft NGVD of 1929, from topographic map.

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

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.6	8.6	14	15	9.1	15	14	15	11	7.8	7.2	4.9
2	8.2	8.5	13	16	9.0	15	15	16	10	8.3	6.8	4.7
3	7.9	8.5	12	15	10	14	14	17	9.8	7.7	6.5	4.7
4	8.2	8.5	12	15	9.6	15	13	15	9.8	8.0	6.3	4.7
5	7.8	10	13	15	9.2	14	12	14	15	19	6.2	4.8
6	7.5	11	12	14	23	19	12	14	12	9.8	6.1	5.2
7	7.1	11	12	13	40	16	12	16	11	9.3	6.1	5.2
8	6.9	9.4	12	13	27	16	12	18	10	8.9	6.0	8.6
9	6.7	9.0	11	13	19	15	12	14	9.9	8.4	5.9	26
10	6.7	8.4	14	12	19	14	12	14	9.7	8.2	5.9	9.8
11	6.6	8.5	96	12	20	14	12	14	11	8.1	5.9	8.4
12	6.8	21	28	12	19	14	19	13	15	8.1	7.0	7.9
13	6.7	20	23	12	19	13	37	12	12	8.1	7.1	7.6
14	9.0	17	22	12	19	13	27	12	11	7.9	6.3	7.3
15	15	14	22	12	17	13	20	13	11	7.6	6.0	7.5
16	9.9	12	21	11	16	14	18	13	11	7.4	5.9	7.0
17	9.6	11	23	11	15	14	17	12	10	7.4	5.8	36
18	9.8	9.2	21	12	15	13	16	12	10	15	5.6	115
19	9.2	37	19	11	19	15	15	15	9.5	10	5.4	21
20	8.8	26	18	10	24	13	15	13	9.2	8.8	5.3	16
21	8.8	16	17	10	26	13	15	12	9.2	7.9	5.6	15
22	8.6	14	18	10	21	13	15	12	9.2	7.7	5.5	13
23	8.5	13	21	9.9	19	12	15	11	9.1	7.5	5.3	12
24	8.2	15	24	10	19	12	17	11	8.8	7.2	5.2	12
25	8.0	17	21	9.7	18	12	15	10	8.9	7.0	5.1	11
26	8.1	14	18	9.9	17	12	36	11	8.6	7.1	5.1	11
27	11	13	17	9.9	16	12	26	11	8.3	7.0	5.1	10
28	10	16	17	9.9	16	12	18	11	7.9	6.8	5.0	186
29	9.9	18	17	9.6	15	12	17	10	7.8	6.4	5.0	68
30	11	14	16	9.5	---	12	16	10	7.6	6.4	5.0	24
31	8.9	---	16	9.3	---	12	---	10	---	6.3	4.9	---
TOTAL	268.0	418.6	620	363.7	524.9	423	514	401	303.3	261.1	180.1	674.3
MEAN	8.65	14.0	20.0	11.7	18.1	13.6	17.1	12.9	10.1	8.42	5.81	22.5
MAX	15	37	96	16	40	19	37	18	15	19	7.2	186
MIN	6.6	8.4	11	9.3	9.0	12	12	10	7.6	6.3	4.9	4.7
CFSM	0.57	0.92	1.32	0.77	1.19	0.90	1.13	0.85	0.67	0.55	0.38	1.48
IN.	0.66	1.02	1.52	0.89	1.28	1.04	1.26	0.98	0.74	0.64	0.44	1.65

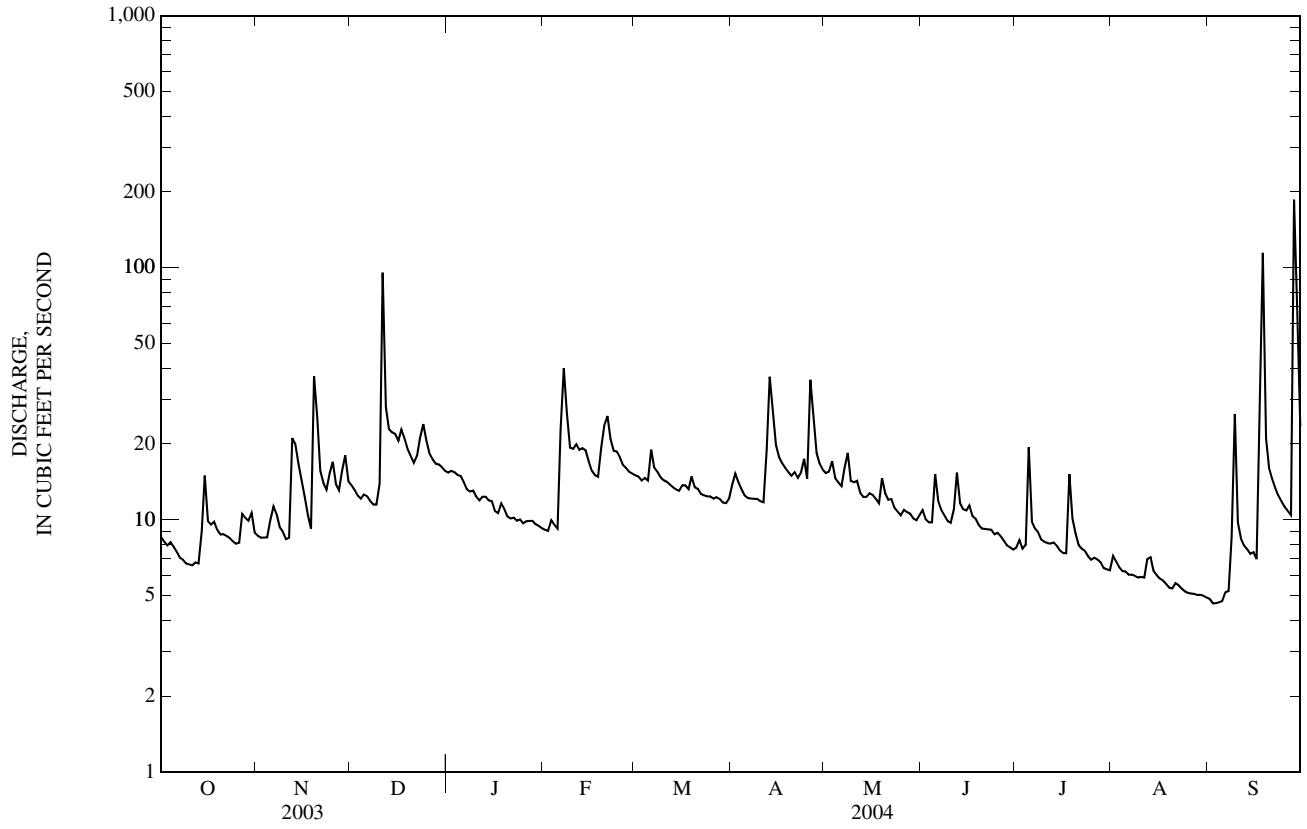
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2004, BY WATER YEAR (WY)

MEAN	4.44	8.24	12.6	7.54	8.63	13.6	12.1	10.6	11.1	8.43	5.37	10.1
MAX	8.65	14.0	20.0	13.1	18.1	32.2	20.1	18.9	24.4	19.4	11.1	22.5
(WY)	(2004)	(2004)	(2004)	(2003)	(2004)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2004)
MIN	2.03	2.07	2.26	2.04	1.72	1.61	2.08	4.97	4.75	2.54	1.19	1.73
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2001)	(2002)	(2002)	(2002)

01614830 OPEQUON CREEK NEAR STEPHENS CITY, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2001 - 2004	
ANNUAL TOTAL	6,266.6		4,952.0			
ANNUAL MEAN	17.2		13.5		10.6	
HIGHEST ANNUAL MEAN					15.8	2003
LOWEST ANNUAL MEAN					2.45	2002
HIGHEST DAILY MEAN	96	Mar 6	186	Sep 28	186	Sep 28, 2004
LOWEST DAILY MEAN	4.8	Feb 16	4.7	Sep 2	0.79	Aug 21, 2002
ANNUAL SEVEN-DAY MINIMUM	5.4	Feb 13	4.8	Aug 30	0.89	Aug 17, 2002
MAXIMUM PEAK FLOW			691	Sep 28	691	Sep 28, 2004
MAXIMUM PEAK STAGE			a7.67	Sep 28	a7.67	Sep 28, 2004
INSTANTANEOUS LOW FLOW			4.6	bSep 1	0.47	Oct 10, 2002
ANNUAL RUNOFF (CFSM)	1.13		0.890		0.698	
ANNUAL RUNOFF (INCHES)	15.34		12.12		9.48	
10 PERCENT EXCEEDS	27		19		20	
50 PERCENT EXCEEDS	14		12		8.3	
90 PERCENT EXCEEDS	7.3		6.5		1.7	

a From floodmark.
b Also Sept. 2-5, 2004.



01615000 OPEQUON CREEK NEAR BERRYVILLE, VA

LOCATION.--Lat 39°10'29", long 78°04'42", NAD83, Frederick County, Hydrologic Unit 02070004, on left bank, 1,200 ft upstream of bridge on State Highway 7, 0.4 mi upstream from Abrams Creek, and 5.0 mi west of Berryville.

DRAINAGE AREA.--57.3 mi^2.

PERIOD OF RECORD.--October 1943 to September 1997, October 2002 to current year.

REVISED RECORDS.--WSP 2103: Drainage area. WDR VA-72-1: 1971 (P).

GAGE.--Water-stage recorder. Datum of gage is 503.24 ft NGVD of 1929. Prior to July 26, 1949, nonrecording gage, at site 1,200 ft downstream, July 26, 1949 to September 30, 1997, water-stage recorder at same site and datum, and October 15, 2002 to current year, at present site and same datum.

REMARKS.--Records good except for period with ice effect, Jan. 6 to Feb. 5, which is fair. Some diurnal fluctuation caused by mills upstream. Records from July 18, 1988 to Sept. 30, 1997 affected by water discharged from treatment plant, which was diverted from another drainage basin for municipal supply. Present location of the gage is upstream from treatment plant and as a result, records after 2003 are no longer affected by this inflow. Statistics of monthly mean data and summary statistics after 2003 reflect unregulated flow only for the period of record. Maximum discharge, 12,600 ft^3/s, from rating curve extended above 4,800 ft^3/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 October 1942 reached a stage of 18.4 ft, discharge not determined, from information by local residents.

REVISIONS.--Previously unpublished daily discharges for Oct. 1-14, 2002 are reported in the following table.

Oct. 1	e12	Oct. 3	e9.0	Oct. 5	e8.0	Oct. 7	e6.5	Oct. 9	e5.5	Oct. 11	e20	Oct. 13	e27
Oct. 2	e10	Oct. 4	e8.5	Oct. 6	e7.5	Oct. 8	e6.0	Oct. 10	e8.0	Oct. 12	e50	Oct. 14	e20

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 850 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	2230	1,950	9.93	Jul 18	1515	902	7.30
Dec 11	0915	2,880	11.97	Sep 18	0600	1,910	9.84
Feb 6	1900	1,540	8.93	Sep 28	2130	*3,680	*13.57
Apr 13	0200	1,450	8.72				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	39	65	49	e17	41	53	52	30	15	25	7.5
2	41	35	52	50	e16	40	137	49	23	20	23	7.7
3	38	32	44	50	e20	38	190	81	20	16	14	7.7
4	38	30	41	47	e19	39	107	53	19	16	13	7.7
5	35	30	48	46	e18	39	68	44	116	43	11	7.5
6	33	52	51	e40	504	186	54	39	68	34	10	8.3
7	32	48	51	e33	493	125	46	44	42	33	10	9.6
8	31	38	48	e30	195	87	41	129	29	25	9.7	20
9	30	32	49	e29	115	64	39	57	24	17	9.7	261
10	29	30	64	e28	121	55	34	48	22	16	9.4	42
11	28	29	1,590	e27	182	49	32	48	25	15	9.6	22
12	28	183	246	e28	148	43	160	36	134	16	15	18
13	27	135	130	e29	154	36	790	30	58	17	52	16
14	31	74	110	e28	156	34	374	28	42	15	19	14
15	130	57	107	e28	105	33	144	31	34	14	15	15
16	54	50	105	e27	75	34	94	36	38	13	13	14
17	41	44	138	e26	59	40	76	44	28	13	11	137
18	41	38	142	e27	54	35	64	31	25	284	11	1,140
19	36	683	100	e26	84	61	57	60	22	78	11	137
20	32	443	81	e25	139	54	51	55	19	44	10	68
21	30	138	68	e24	162	47	53	41	19	23	14	52
22	29	88	69	e23	116	38	47	69	19	23	12	40
23	28	64	131	e22	82	34	44	41	19	22	10	32
24	27	62	233	e21	75	32	51	31	18	17	9.4	28
25	26	114	177	e21	72	30	41	26	18	15	8.9	25
26	26	70	107	e20	58	28	261	27	21	15	8.5	23
27	42	58	82	e20	53	28	214	27	17	15	8.4	22
28	65	102	68	e19	46	28	95	24	16	14	8.2	1,150
29	63	169	62	e19	43	26	69	21	15	12	8.2	929
30	60	85	58	e18	---	25	58	20	15	12	8.4	147
31	50	---	52	e18	---	29	---	21	---	12	8.1	---
TOTAL	1,246	3,052	4,369	898	3,381	1,478	3,544	1,343	995	924	405.5	4,408.0
MEAN	40.2	102	141	29.0	117	47.7	118	43.3	33.2	29.8	13.1	147
MAX	130	683	1,590	50	504	186	790	129	134	284	52	1,150
MIN	26	29	41	18	16	25	32	20	15	12	8.1	7.5
CFSM	0.70	1.78	2.46	0.51	2.03	0.83	2.06	0.76	0.58	0.52	0.23	2.56
IN.	0.81	1.98	2.84	0.58	2.19	0.96	2.30	0.87	0.65	0.60	0.26	2.86

01615000 OPEQUON CREEK NEAR BERRYVILLE, VA—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

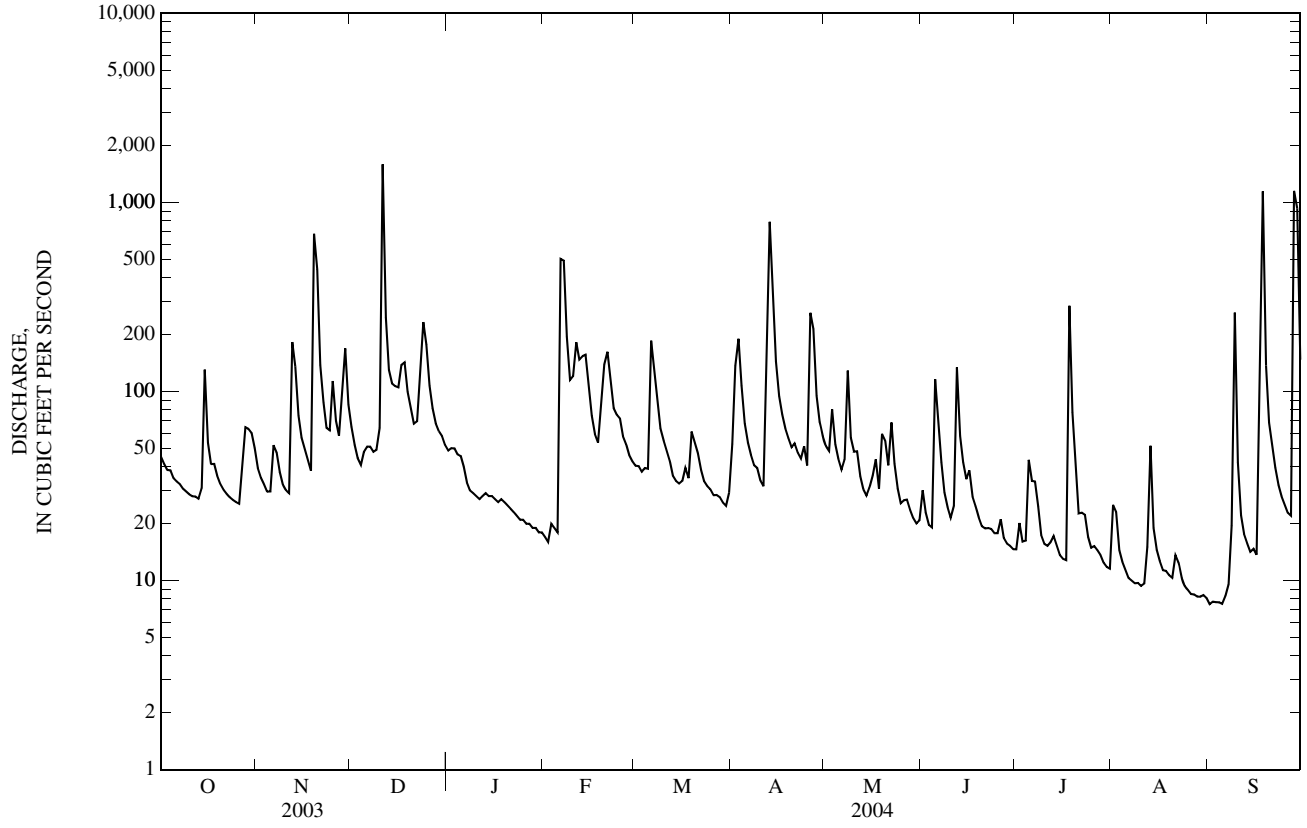
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2004, BY WATER YEAR (WY)

MEAN	29.5	36.6	53.8	59.5	72.3	91.8	65.3	48.6	38.3	22.2	22.9	28.8
MAX	186	146	167	288	250	309	254	269	347	120	130	230
(WY)	(1977)	(1971)	(1973)	(1996)	(1984)	(1993)	(1952)	(1988)	(1972)	(1975)	(1955)	(1996)
MIN	2.67	2.61	2.83	4.63	12.0	16.8	11.0	10.3	5.58	1.87	0.92	1.32
(WY)	(1966)	(1966)	(1966)	(1966)	(1947)	(1981)	(1947)	(1969)	(1966)	(1966)	(1966)	(1965)

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1944 - 2004	
ANNUAL TOTAL	39,928		26,043.5			
ANNUAL MEAN	109		71.2		47.4	
HIGHEST ANNUAL MEAN					114	1996
LOWEST ANNUAL MEAN					14.5	1947
HIGHEST DAILY MEAN	1,590	Dec 11	1,590	Dec 11	4,670	Jun 22, 1972
LOWEST DAILY MEAN	18	Aug 24	7.5	Sep 1	a0.20	Sep 12, 1966
ANNUAL SEVEN-DAY MINIMUM	19	Aug 23	7.8	Aug 31	0.27	Sep 7, 1966
MAXIMUM PEAK FLOW			3,680	Sep 28	12,600	May 18, 1988
MAXIMUM PEAK STAGE			13.57	Sep 28	b13.57	Sep 28, 2004
INSTANTANEOUS LOW FLOW			c6.5	Sep 1	d0.20	Sep 11, 1966
ANNUAL RUNOFF (CFSM)	1.91		1.24		0.826	
ANNUAL RUNOFF (INCHES)	25.92		16.91		11.23	
10 PERCENT EXCEEDS	244		137		90	
50 PERCENT EXCEEDS	55		36		19	
90 PERCENT EXCEEDS	27		14		5.4	

a Also Sept. 13, 1966.
b At current location.
c Also Sept. 5, 2004.
d Also Sept. 12, 13, 1966.
e Estimated.



01616100 DRY MARSH RUN NEAR BERRYVILLE, VA

LOCATION.--Lat 39°11'33", long 78°04'07", NAD83, Clarke County, Hydrologic Unit 02070004, on right bank, 20 ft upstream from bridge on State Highway 645 (Wrights Mill Road), 5.8 mi northwest of Berryville, and 4.5 mi east of Winchester.

DRAINAGE AREA.--11.4 mi^2.

PERIOD OF RECORD.--August 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is 540 ft NGVD of 1929, from topographic map.

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

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	10	18	22	12	16	13	16	15	10	10	5.7
2	12	9.8	17	22	12	17	16	16	12	10	10	5.7
3	12	9.8	16	21	13	16	18	17	12	9.8	9.7	5.7
4	12	9.8	16	20	13	15	18	15	12	10	9.3	5.6
5	11	9.7	17	20	13	15	17	15	22	11	9.1	5.3
6	11	10	17	18	31	19	16	15	22	10	8.3	5.3
7	11	10	16	17	48	18	16	14	18	9.9	8.0	5.4
8	10	9.2	16	17	38	18	15	15	17	9.9	7.8	7.3
9	10	8.8	15	17	28	17	15	14	16	9.3	7.8	13
10	10	8.7	16	16	26	16	14	13	15	9.2	7.8	8.6
11	9.8	8.9	165	16	28	16	14	13	16	9.1	7.7	7.5
12	10	11	57	16	27	16	19	12	20	9.9	8.6	7.2
13	10	13	39	16	27	15	50	12	17	13	11	6.8
14	11	12	36	16	28	15	52	11	16	15	8.8	6.5
15	15	12	34	15	24	15	34	11	16	11	8.1	6.4
16	12	12	31	15	22	15	28	12	16	10	7.8	6.4
17	11	11	31	14	20	15	25	13	16	9.6	7.6	14
18	11	10	31	15	19	14	23	12	15	21	7.5	39
19	11	36	29	14	20	15	21	16	14	16	7.3	24
20	10	48	27	14	22	14	20	18	13	13	7.3	18
21	10	28	25	13	23	14	20	16	13	12	7.3	15
22	9.9	23	24	14	21	12	19	21	13	14	7.2	13
23	9.9	21	25	13	20	12	18	17	13	18	6.9	12
24	9.7	20	28	13	20	12	17	16	12	17	6.7	11
25	9.3	19	31	13	18	12	16	15	12	14	6.3	10
26	9.5	18	29	13	17	12	21	15	12	14	6.1	9.7
27	11	17	27	13	17	12	21	14	12	13	6.0	9.3
28	11	18	25	13	16	12	18	14	12	12	6.0	58
29	11	21	24	13	16	12	17	13	11	11	6.0	70
30	11	19	24	13	---	12	17	12	10	11	6.0	33
31	10	---	22	12	---	12	---	13	---	10	5.8	---
TOTAL	335.1	473.7	928	484	639	451	628	446	440	372.7	239.8	444.4
MEAN	10.8	15.8	29.9	15.6	22.0	14.5	20.9	14.4	14.7	12.0	7.74	14.8
MAX	15	48	165	22	48	19	52	21	22	21	11	70
MIN	9.3	8.7	15	12	12	12	13	11	10	9.1	5.8	5.3
CFSM	0.95	1.39	2.63	1.37	1.93	1.28	1.84	1.26	1.29	1.05	0.68	1.30
IN.	1.09	1.55	3.03	1.58	2.09	1.47	2.05	1.46	1.44	1.22	0.78	1.45

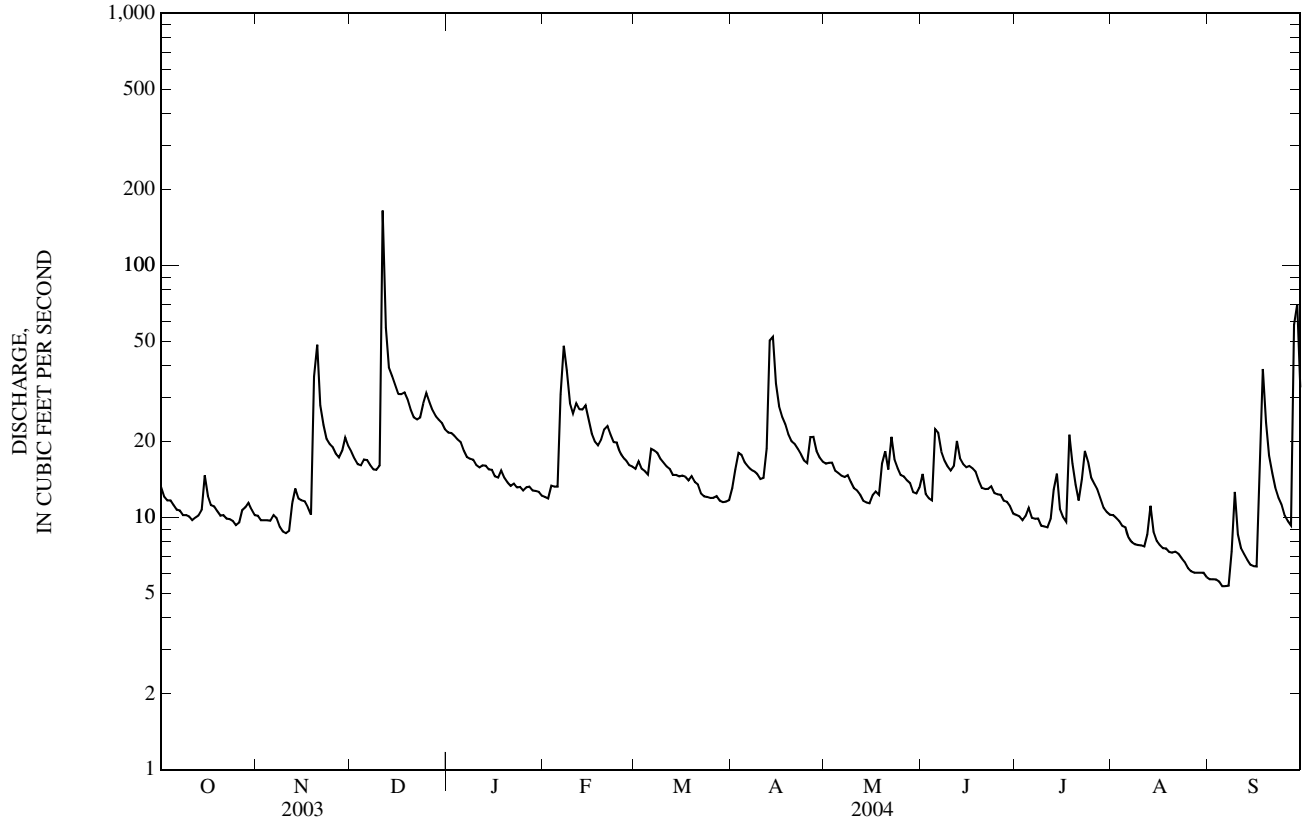
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2004, BY WATER YEAR (WY)

MEAN	6.71	11.1	22.0	17.5	19.0	29.5	23.8	19.1	23.6	13.3	7.85	9.01
MAX	10.8	15.8	29.9	19.4	22.0	44.5	26.7	23.8	32.5	14.5	7.97	14.8
(WY)	(2004)	(2004)	(2004)	(2003)	(2004)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2004)
MIN	2.61	6.48	14.1	15.6	15.9	14.5	20.9	14.4	14.7	12.0	7.74	1.66
(WY)	(2003)	(2003)	(2003)	(2004)	(2003)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2002)

01616100 DRY MARSH RUN NEAR BERRYVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2002 - 2004	
ANNUAL TOTAL	7,693.1		5,881.7			
ANNUAL MEAN	21.1		16.1		17.2	
HIGHEST ANNUAL MEAN					18.3	2003
LOWEST ANNUAL MEAN					16.1	2004
HIGHEST DAILY MEAN	165	Dec 11	165	Dec 11	165	Dec 11, 2003
LOWEST DAILY MEAN	5.7	Aug 31	5.3	aSep 5	1.4	bSep 20, 2002
ANNUAL SEVEN-DAY MINIMUM	6.0	Aug 26	5.5	Sep 1	1.4	Sep 19, 2002
MAXIMUM PEAK FLOW			318	Dec 11	318	Dec 11, 2003
MAXIMUM PEAK STAGE			3.48	Dec 11	3.48	Dec 11, 2003
INSTANTANEOUS LOW FLOW			5.3	cSep 4	1.3	dSep 18, 2002
ANNUAL RUNOFF (CFSM)	1.85		1.41		1.51	
ANNUAL RUNOFF (INCHES)	25.10		19.19		20.46	
10 PERCENT EXCEEDS	36		25		31	
50 PERCENT EXCEEDS	16		14		14	
90 PERCENT EXCEEDS	8.3		8.2		6.3	

a Also Sept. 6, 2004.
b Also Sept. 21, 24, 25, 2002.
c Also Sept. 5-8, 2004.
d Also Sept. 20, 21, 24-26, 2002.



01620500 NORTH RIVER NEAR STOKESVILLE, VA

LOCATION.--Lat 38°20'15", long 79°14'24", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to June 10, 1958, at site 575 ft downstream at datum 6.0 ft lower. Prior to Oct. 25, 1996, at site 400 ft upstream at datum 3.2 ft higher.

REMARKS.--Records good except those for periods of partial or doubtful gage-height record, Jan. 6-8, Feb. 6, and Sept. 28, and period with ice effect, Jan. 21 to Feb. 3, which are fair. Maximum discharge, 9,530 ft^3/s, from rating curve extended above 900 ft^3/s on basis of computation of peak flow over dam at site 2.8 mi downstream. 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.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1545	581	3.82	Sep 18	1015	313	3.12
Apr 13	2315	316	3.19	Sep 28	1800	811	4.24
Sep 8	1945	*1,850	*5.47				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	16	62	26	e5.4	21	18	36	25	3.1	2.6	2.0
2	26	16	50	24	e5.1	25	18	36	20	6.2	3.3	1.7
3	21	15	40	23	e6.2	36	17	49	16	5.6	3.4	1.5
4	18	15	34	23	5.7	43	17	55	14	10	2.8	1.3
5	16	14	31	24	5.4	44	17	51	19	43	3.7	1.2
6	13	15	27	e22	e30	73	17	43	17	33	4.4	1.6
7	11	15	23	e21	100	90	16	35	15	26	3.5	2.4
8	10	14	20	e19	73	76	16	29	13	21	3.1	489
9	9.2	13	19	19	56	60	16	24	12	16	2.7	530
10	8.3	12	25	17	46	48	14	21	11	14	2.3	174
11	7.9	12	165	16	39	39	14	19	11	13	2.0	89
12	7.4	21	120	15	34	35	25	19	11	13	3.2	56
13	7.2	117	83	14	31	30	158	17	9.9	13	19	38
14	8.5	99	68	13	30	26	249	15	8.8	13	27	28
15	26	73	54	13	29	24	136	15	9.1	10	21	22
16	26	56	43	12	26	29	86	21	9.5	8.0	17	19
17	26	44	45	11	23	35	64	127	8.2	6.6	14	45
18	25	36	46	10	21	40	49	93	7.8	8.1	12	257
19	24	272	41	10	20	56	39	70	7.0	7.2	9.6	164
20	22	285	34	9.0	22	65	33	61	6.1	7.0	8.8	93
21	20	139	29	e8.3	40	65	28	56	5.4	6.4	11	61
22	19	88	26	e7.8	48	54	24	48	4.8	5.6	9.3	41
23	18	65	26	e7.2	44	43	22	38	4.7	4.9	8.6	29
24	16	54	48	e6.8	39	36	19	30	4.4	4.0	7.6	23
25	14	46	79	e6.5	34	31	18	25	4.1	3.6	6.3	19
26	13	38	72	e6.7	30	27	33	22	4.0	3.5	5.3	16
27	15	33	60	e6.8	27	24	62	21	3.6	3.4	4.4	15
28	17	39	48	e6.5	24	22	61	31	3.2	3.4	3.8	e352
29	17	68	40	e6.2	22	20	51	34	2.8	2.8	3.3	362
30	17	71	35	e5.9	---	19	42	32	2.5	2.7	3.0	150
31	17	---	29	e5.6	---	19	---	30	---	2.5	2.4	---
TOTAL	526.5	1,801	1,522	415.3	915.8	1,255	1,379	1,203	289.9	319.6	230.4	3,083.7
MEAN	17.0	60.0	49.1	13.4	31.6	40.5	46.0	38.8	9.66	10.3	7.43	103
MAX	31	285	165	26	100	90	249	127	25	43	27	530
MIN	7.2	12	19	5.6	5.1	19	14	15	2.5	2.5	2.0	1.2
CFSM	0.99	3.49	2.85	0.78	1.84	2.35	2.67	2.26	0.56	0.60	0.43	5.98
IN.	1.14	3.90	3.29	0.90	1.98	2.71	2.98	2.60	0.63	0.69	0.50	6.67

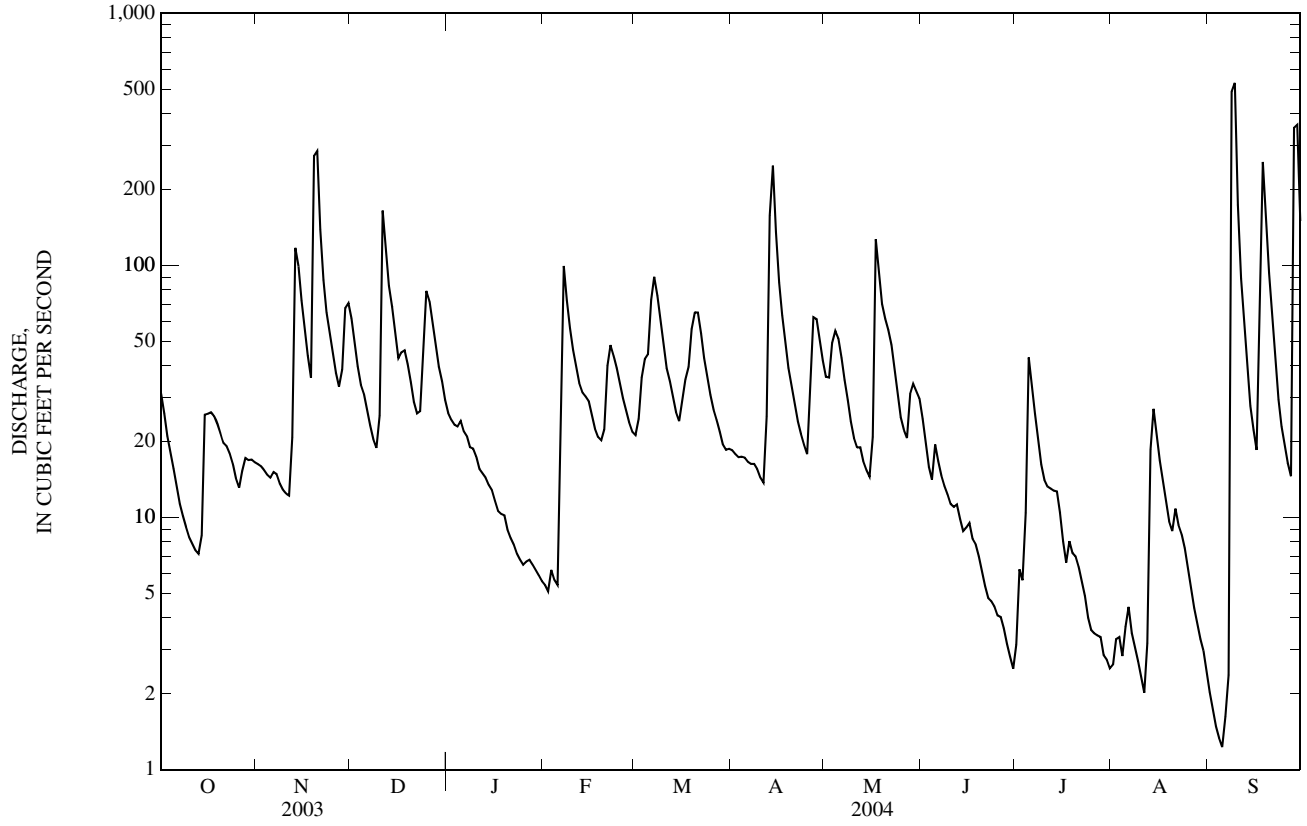
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 2004, BY WATER YEAR (WY)

MEAN	13.7	26.9	27.4	33.1	36.5	56.7	47.0	35.0	24.1	7.22	8.59	13.4
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	0.21	0.41	0.71	0.74	3.67	8.21	11.1	5.32	1.65	0.76	0.26	0.25
(WY)	(1964)	(1954)	(1999)	(1981)	(2002)	(1981)	(1999)	(1977)	(1999)	(1999)	(1987)	(1963)

01620500 NORTH RIVER NEAR STOKESVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1947 - 2004	
ANNUAL TOTAL	19,362.1		12,941.2			
ANNUAL MEAN	53.0		35.4		27.4	
HIGHEST ANNUAL MEAN					53.1	2003
LOWEST ANNUAL MEAN					9.52	1999
HIGHEST DAILY MEAN	1,140	Sep 19	530	Sep 9	3,300	Nov 5, 1985
LOWEST DAILY MEAN	3.7	Jul 30	1.2	Sep 5	0.10	aSep 15, 1962
ANNUAL SEVEN-DAY MINIMUM	3.8	Jul 28	1.7	Aug 31	0.12	Sep 29, 1968
MAXIMUM PEAK FLOW			1,850	Sep 8	9,530	Jun 17, 1949
MAXIMUM PEAK STAGE			5.47	Sep 8	b19.80	Nov 5, 1985
INSTANTANEOUS LOW FLOW			1.1	Sep 5	0.10	cSep 15, 1962
ANNUAL RUNOFF (CFSM)	3.08		2.06		1.59	
ANNUAL RUNOFF (INCHES)	41.88		27.99		21.64	
10 PERCENT EXCEEDS	116		68		61	
50 PERCENT EXCEEDS	30		21		12	
90 PERCENT EXCEEDS	7.0		4.1		1.1	

a Also Sept. 16, 19-22, 1962, and Sept. 9, 11, 12, 1966.
b From floodmarks, backwater from Elkhorn Lake.
c Also Sept. 16, 19-22, 1962, and Sept. 7-13, 1966.
e Estimated.



01621050 MUDDY CREEK AT MOUNT CLINTON, VA

LOCATION.--Lat 38°29'12", long 78°57'37", NAD83, Rockingham County, Hydrologic Unit 02070005, on right downstream side of bridge on State Highway 726, at Mount Clinton.

DRAINAGE AREA.--14.2 mi^2.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 1,320 ft NGVD of 1929, from topographic map.

REMARKS.--Records good except for period with ice effect, Jan. 23 to Feb. 2, 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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 150 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1330	*539	*5.30	May 16	2000	199	4.26
Dec 10	2400	313	4.67	Sep 28	1700	422	4.98

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	8.5	15	16	e7.0	14	9.7	11	8.6	4.6	6.0	0.90
2	20	8.2	14	15	e6.8	14	9.2	12	7.9	3.9	6.4	0.90
3	19	8.1	13	15	7.7	13	8.6	11	7.5	3.5	3.2	0.90
4	18	7.8	12	14	6.6	12	8.4	9.8	7.6	4.3	2.5	0.89
5	17	8.1	13	14	6.5	12	8.0	9.2	13	5.1	3.2	0.83
6	16	8.4	12	13	30	16	7.8	8.7	10	3.6	2.6	1.2
7	16	7.9	12	12	40	13	7.7	8.5	8.7	3.6	2.0	1.3
8	15	7.5	12	12	25	12	7.9	8.4	8.2	3.8	1.9	13
9	14	7.0	12	12	18	12	7.6	8.1	7.9	3.0	1.8	16
10	14	6.9	36	11	19	11	7.4	7.9	7.9	3.5	1.7	6.8
11	14	6.5	86	10	20	11	7.4	7.8	8.7	3.7	1.6	5.3
12	13	11	34	11	18	10	19	7.5	9.9	5.1	3.2	4.4
13	13	14	27	10	19	10	42	6.7	8.3	3.8	7.4	3.8
14	23	9.8	26	10	19	9.7	34	6.2	8.0	3.1	3.0	3.4
15	21	8.8	24	10	17	9.5	22	6.1	7.8	2.6	2.3	3.2
16	15	8.6	23	9.3	15	14	18	19	7.5	2.5	2.0	2.9
17	14	8.0	27	9.1	14	12	16	11	7.0	2.4	1.8	6.5
18	13	7.8	24	9.3	14	11	14	11	6.3	2.5	1.7	13
19	13	105	22	8.8	25	16	13	10	5.9	4.0	1.6	8.0
20	12	35	20	8.4	49	13	12	15	5.7	3.7	1.7	6.6
21	12	23	18	8.1	41	12	12	12	5.3	2.3	2.5	5.7
22	12	19	20	8.1	25	11	11	10	5.1	3.7	1.9	5.2
23	11	17	23	e7.9	22	11	11	9.0	5.6	3.9	1.5	4.8
24	11	17	28	e7.8	21	10	11	8.3	5.4	2.5	1.4	4.3
25	10	16	24	e7.8	19	10	11	8.0	5.9	2.1	1.2	3.9
26	10	14	22	e7.6	17	9.6	18	8.0	6.1	2.7	1.2	3.6
27	11	14	20	e7.5	16	9.7	16	8.5	5.0	2.8	1.2	3.4
28	10	20	19	e7.5	15	9.3	12	14	4.9	2.4	1.1	128
29	9.6	19	18	e7.4	15	8.9	11	10	4.6	1.9	1.1	38
30	9.2	16	18	e7.2	---	9.2	11	9.2	4.1	1.9	1.1	20
31	8.9	---	17	e7.0	---	9.8	---	9.3	---	1.8	1.0	---
TOTAL	435.7	467.9	691	313.8	567.6	355.7	403.7	301.2	214.4	100.3	72.8	316.72
MEAN	14.1	15.6	22.3	10.1	19.6	11.5	13.5	9.72	7.15	3.24	2.35	10.6
MAX	23	105	86	16	49	16	42	19	13	5.1	7.4	128
MIN	8.9	6.5	12	7.0	6.5	8.9	7.4	6.1	4.1	1.8	1.0	0.83
CFSM	0.99	1.10	1.57	0.71	1.38	0.81	0.95	0.68	0.50	0.23	0.17	0.74
IN.	1.14	1.23	1.81	0.82	1.49	0.93	1.06	0.79	0.56	0.26	0.19	0.83

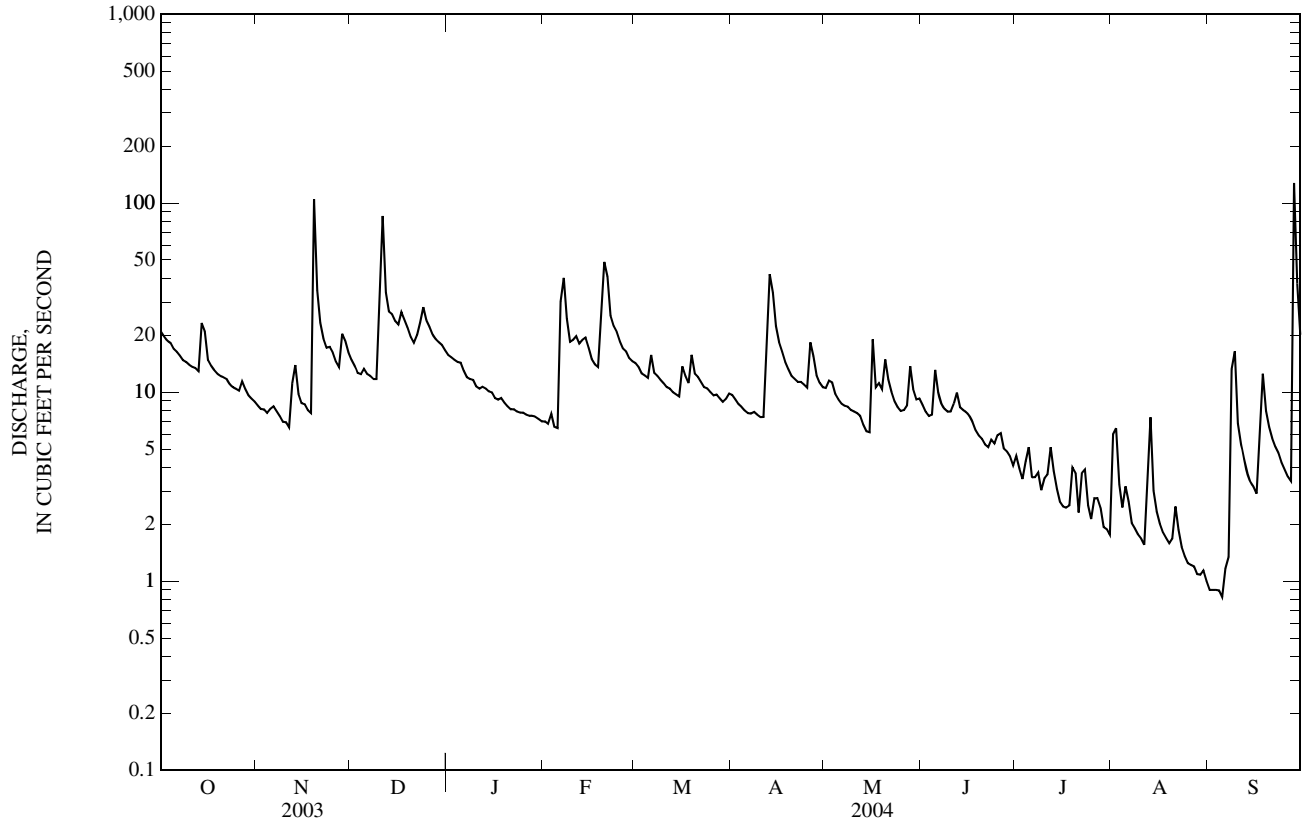
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 2004, BY WATER YEAR (WY)

MEAN	6.82	7.16	10.0	15.8	16.9	19.0	12.2	10.3	11.5	8.44	7.66	15.7
MAX	22.1	19.3	37.5	66.9	63.5	44.0	26.3	22.7	40.8	35.7	33.8	105
(WY)	(1996)	(1997)	(1997)	(1996)	(1998)	(1998)	(2003)	(1998)	(2003)	(2003)	(1996)	(1996)
MIN	0.96	0.92	0.96	0.73	0.59	0.81	2.64	2.30	1.01	1.20	0.97	0.71
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(1999)	(1999)	(1999)	(1999)	(2002)	(2001)

01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1993 - 2004	
ANNUAL TOTAL	9,485.8		4,240.82			
ANNUAL MEAN	26.0		11.6		12.0	
HIGHEST ANNUAL MEAN					30.0	1996
LOWEST ANNUAL MEAN					1.92	2002
HIGHEST DAILY MEAN	697	Sep 19	128	Sep 28	1,760	Sep 6, 1996
LOWEST DAILY MEAN	4.8	Feb 16	0.83	Sep 5	0.29	Sep 14, 2002
ANNUAL SEVEN-DAY MINIMUM	4.9	Feb 13	0.93	Aug 30	0.33	Sep 11, 2002
MAXIMUM PEAK FLOW			539	Nov 19	3,850	Sep 6, 1996
MAXIMUM PEAK STAGE			5.30	Nov 19	10.37	Sep 6, 1996
INSTANTANEOUS LOW FLOW			0.80	aSep 4	0.27	bOct 5, 2001
ANNUAL RUNOFF (CFSM)	1.83		0.816		0.844	
ANNUAL RUNOFF (INCHES)	24.85		11.11		11.47	
10 PERCENT EXCEEDS	45		20		24	
50 PERCENT EXCEEDS	18		9.6		5.4	
90 PERCENT EXCEEDS	8.2		2.5		1.2	

a Also Sept. 5, 2004.
b Also Sept. 14, 2002.
e Estimated.



01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: January 2002 to September 2003.
WATER TEMPERATURE: January 2002 to September 2003.

INSTRUMENTATION.--Water-quality monitor January 2002 to September 2003.

REMARKS.--Water temperatures were measured in field at time of sampling.

EXTREMES FOR PERIOD OF DAILY RECORD--
SPECIFIC CONDUCTANCE: Maximum, 596 microsiemens/cm, Nov. 1-3, 2002; minimum, 136 microsiemens/cm, July 6, Sept. 19, 2003.
WATER TEMPERATURE: Maximum, 31.0-C, Aug. 2, 2002; minimum, 0.0-C, on many day during winter periods.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Sample type	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Sampling method, code (82398)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
NOV												
04...	1145	Environmental	1028	80020	7.8	40	728	16.8	171	8.2	505	21.0
JAN												
06...	1015	Environmental	1028	80020	13	40	727	11.7	97	8.1	470	4.0
MAR												
02...	1030	Environmental	1028	80020	14	40	727	11.2	107	8.0	470	15.5
APR												
08...	1045	Environmental	1028	80020	8.1	40	724	12.9	125	8.3	443	13.0
MAY												
04...	1100	Environmental	1028	80020	10	40	734	12.8	128	8.4	421	12.5
JUN												
02...	1030	Environmental	1028	80020	8.1	40	724	11.6	128	8.3	470	22.5
JUL												
01...	*0930*	*Blank*	*1028*	*80020*	--	--	--	--	--	--	--	--
01...	1015	Environmental	1028	80020	5.2	40	731	11.5	132	8.2	455	24.0
01...	*1016*	*Replicate*	*1028*	*80020*	--	*40*	--	--	--	--	--	--
SEP												
01...	1000	Environmental	1028	80020	1.0	40	733	10.4	120	8.1	477	23.0

Date	Temperature, water, deg C (00010)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Bicarbonate, wat flt incrm. titr., field, mg/L (00453)	Chloride, water, fltrd, mg/L (00940)	Sulfate water, fltrd, mg/L (00945)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Particulate nitrogen, susp, water, mg/L (49570)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, wat unf by analysis, mg/L (62855)
NOV													
04...	14.0	196	240	9.76	11.4	.09	6.52	6.61	.084	.07	.016	.043	7.70
JAN													
06...	5.5	190	232	8.90	12.2	<.04	7.47	7.49	.024	.10	.016	.051	8.09
MAR													
02...	11.0	189	230	9.19	12.4	<.04	7.05	7.09	.035	.06	.014	.043	7.39
APR													
08...	11.5	166	203	8.67	11.4	<.04	5.35	5.38	.032	.05	<.006	.032	6.12
MAY													
04...	13.5	193	236	7.59	10.4	<.04	4.94	4.98	.038	.06	.026	.065	5.36
JUN													
02...	17.5	189	231	9.14	11.5	<.04	6.02	6.10	.077	.13	.044	.104	7.10
JUL													
01...	--	--	--	*<.20*	*<.2*	*<.04*	--	*<.06*	*<.008*	--	*<.006*	*<.004*	*<.03*
01...	20.0	210	252	8.87	10.1	<.04	4.88	4.92	.037	.11	.047	.095	4.96
01...	--	*210*	*252*	*9.03*	*10.1*	*<.04*	*4.95*	*4.98*	*.037*	*.09*	*.045*	*.095*	*5.26*
SEP													
01...	20.5	213	260	8.01	9.4	<.04	3.67	3.69	.020	<.02	.054	.088	4.06

Agency collecting sample: 1028 - U.S. Geological Survey
Agency analyzing sample: 80020 - USGS-National Water Quality Lab, Denver, CO
Sampling method: 40 - Multiple verticles

01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Total carbon, suspnd sedimnt total, mg/L (00694)	Inorganic carbon, suspnd sedimnt total, mg/L (00688)	Organic carbon, suspnd sedimnt total, mg/L (00689)	Organic carbon, water, fltrd, mg/L (00681)	2,6-Diethylaniline water fltrd 0.7u GF ug/L (82660)	CIAT, water, fltrd, ug/L (04040)	Acetochlor, water, fltrd, ug/L (49260)	Alachlor, water, fltrd, ug/L (46342)	alpha-HCH, water, fltrd, ug/L (34253)	alpha-HCH-d6, surrog, wat flt 0.7u GF percent recovry (91065)	Atrazine, water, fltrd, ug/L (39632)	Azinphosmethyl, water, fltrd 0.7u GF ug/L (82686)	Benfluralin, water, fltrd 0.7u GF ug/L (82673)
NOV													
04...	.5	<.1	.5	1.8	<.006	E.192	<.006	<.005	<.005	94.7	.136	<.050	<.010
JAN													
06...	1.0	<.1	1.0	1.5	<.006	E.151	<.006	<.005	<.005	92.7	.110	<.050	<.010
MAR													
02...	.5	<.1	.5	1.6	<.006	E.149	<.006	<.005	<.005	97.3	.112	<.050	<.010
APR													
08...	.4	<.1	.4	1.7	<.006	E.105	<.006	<.005	<.005	95.7	.096	<.050	<.010
MAY													
04...	.5	.6	<.1	2.1	<.006	E.088	<.006	<.005	<.005	96.9	.168	<.050	<.010
JUN													
02...	.9	<.1	.9	2.3	<.006	E.059	<.006	<.005	<.005	97.6	.736	<.050	<.010
JUL													
01...	--	--	--	--	*<.006*	*<.006*	*<.006*	*<.005*	*<.005*	*85.3*	*<.007*	*<.050*	*<.010*
01...	.8	<.1	.8	2.2	<.006	E.109	<.006	<.005	<.005	88.2	.163	<.050	<.010
01...	*.8*	*<.1*	*.7*	*2.2*	*<.006*	*E.127*	*<.006*	*<.005*	*<.005*	*92.9*	*.174*	*<.050*	*<.010*
SEP													
01...	.4	<.1	.4	2.4	<.006	E.083	<.006	<.005	<.005	92.5	.076	<.050	<.010

Date	Butylate, water, fltrd, ug/L (04028)	Carbaryl, water, fltrd 0.7u GF ug/L (82680)	Carbofuran, water, fltrd 0.7u GF ug/L (82674)	Chlorpyrifos water, fltrd, ug/L (38933)	cis-Permethrin water fltrd 0.7u GF ug/L (82687)	Cyanazine, water, fltrd, ug/L (04041)	DCPA, water fltrd 0.7u GF ug/L (82682)	Desulfinyl fipronil, water, fltrd, ug/L (62170)	Diazinon, water, fltrd, ug/L (39572)	Diazinon-d10 surrog. wat flt 0.7u GF percent recovry (91063)	Dieldrin, water, fltrd, ug/L (39381)	Disulfoton, water, fltrd 0.7u GF ug/L (82677)	EPTC, water, fltrd 0.7u GF ug/L (82668)
NOV													
04...	<.004	<.041	<.020	<.005	<.006	<.018	<.003	<.012	<.005	101	<.009	<.02	<.004
JAN													
06...	<.004	<.041	<.020	<.005	<.006	<.018	<.003	<.012	<.005	113	<.009	<.02	<.004
MAR													
02...	<.004	<.041	<.020	<.005	<.006	<.018	<.003	<.012	<.005	126	<.009	<.02	<.004
APR													
08...	<.004	<.041	<.020	<.005	<.006	<.018	<.003	<.012	<.005	112	<.009	<.02	<.004
MAY													
04...	<.004	<.041	<.020	<.005	<.006	<.018	<.003	<.012	<.005	110	<.009	<.02	<.004
JUN													
02...	<.004	<.041	<.020	<.005	<.006	<.018	<.003	<.012	<.005	99.9	<.009	<.02	<.004
JUL													
01...	*<.004*	*<.041*	*<.020*	*<.005*	*<.006*	*<.018*	*<.003*	*<.012*	*<.005*	*96.4*	*<.009*	*<.02*	*<.004*
01...	<.004	<.041	<.020	<.005	<.006	<.018	<.003	<.012	<.005	91.1	<.009	<.02	<.004
01...	*<.004*	*<.041*	*<.020*	*<.005*	*<.006*	*<.018*	*<.003*	*<.012*	*<.005*	*101*	*<.009*	*<.02*	*<.004*
SEP													
01...	<.004	<.041	<.020	<.005	<.006	<.018	<.003	<.012	<.005	95.0	<.009	<.02	<.004

01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Ethalfluralin, water, fltrd 0.7u GF ug/L (82663)	Ethoprop, water, fltrd 0.7u GF ug/L (82672)	Desulfinylfipronil amide, wat flt ug/L (62169)	Fipronil sulfide water, fltrd, ug/L (62167)	Fipronil sulfone water, fltrd, ug/L (62168)	Fipronil, water, fltrd, ug/L (62166)	Fonofos water, fltrd, ug/L (04095)	Lindane water, fltrd, ug/L (39341)	Linuron water fltrd 0.7u GF ug/L (82666)	Malathion, water, fltrd, ug/L (39532)	Methyl parathion, water, fltrd 0.7u GF ug/L (82667)	Metolachlor, water, fltrd, ug/L (39415)	Metribuzin, water, fltrd, ug/L (82630)
NOV													
04...	<.009	<.005	<.029	<.013	<.024	<.016	<.003	<.004	<.035	<.027	<.015	E.007	<.006
JAN													
06...	<.009	<.005	<.029	<.013	<.024	<.016	<.003	<.004	<.035	<.027	<.015	E.008	<.006
MAR													
02...	<.009	<.005	<.029	<.013	<.024	<.016	<.003	<.004	<.035	<.027	<.015	E.009	E.005
APR													
08...	<.009	<.005	<.029	<.013	<.024	<.016	<.003	<.004	<.035	<.027	<.015	E.006	<.006
MAY													
04...	<.009	<.005	<.029	<.013	<.024	<.016	<.003	<.004	<.035	<.027	<.015	.044	<.006
JUN													
02...	<.009	<.005	<.029	<.013	<.024	<.016	<.003	<.004	<.035	<.027	<.015	.052	<.006
JUL													
01...	*<.009*	*<.005*	*<.029*	*<.013*	*<.024*	*<.016*	*<.003*	*<.004*	*<.035*	*<.027*	*<.015*	*<.013*	*<.006*
01...	<.009	<.005	<.029	<.013	<.024	<.016	<.003	<.004	<.035	<.027	<.015	E.012	<.006
01...	*<.009*	*<.005*	*<.029*	*<.013*	*<.024*	*<.016*	*<.003*	*<.004*	*<.035*	*<.027*	*<.015*	*E.013*	*<.006*
SEP													
01...	<.009	<.005	<.029	<.013	<.024	<.016	<.003	<.004	<.035	<.027	<.015	E.007	<.006

Date	Molinate, water, fltrd 0.7u GF ug/L (82671)	Napropamide, water, fltrd 0.7u GF ug/L (82684)	p,p'-DDE, water, fltrd, ug/L (34653)	Parathion, water, fltrd, ug/L (39542)	Pebulate, water, fltrd 0.7u GF ug/L (82669)	Pendimethalin, water, fltrd 0.7u GF ug/L (82683)	Phorate water fltrd 0.7u GF ug/L (82664)	Prometon, water, fltrd, ug/L (04037)	Propyzamide, water, fltrd 0.7u GF ug/L (82676)	Propachlor, water, fltrd, ug/L (04024)	Propanil, water, fltrd 0.7u GF ug/L (82679)	Propargite, water, fltrd 0.7u GF ug/L (82685)	Simazine, water, fltrd, ug/L (04035)
NOV													
04...	<.003	<.007	<.003	<.010	<.004	<.022	<.011	.01	<.004	<.025	<.011	<.02	.054
JAN													
06...	<.003	<.007	<.003	<.010	<.004	<.022	<.011	M	<.004	<.025	<.011	<.02	.045
MAR													
02...	<.003	<.007	<.003	<.010	<.004	<.022	<.011	<.01	<.004	<.025	<.011	<.02	.038
APR													
08...	<.003	<.007	<.003	<.010	<.004	<.022	<.011	<.01	<.004	<.025	<.011	<.02	.033
MAY													
04...	<.003	<.007	<.003	<.010	<.004	<.022	<.011	<.01	<.004	<.025	<.011	<.02	.059
JUN													
02...	<.003	<.007	<.003	<.010	<.004	E.015	<.011	.01	<.004	<.025	<.011	<.02	.255
JUL													
01...	*<.003*	*<.007*	*<.003*	*<.010*	*<.004*	*<.022*	*<.011*	*<.01*	*<.004*	*<.025*	*<.011*	*<.02*	*<.005*
01...	<.003	<.007	<.003	<.010	<.004	<.022	<.011	.01	<.004	<.025	<.011	<.02	.062
01...	*<.003*	*<.007*	*<.003*	*<.010*	*<.004*	*<.022*	*<.011*	*.01*	*<.004*	*<.025*	*<.011*	*<.02*	*.064*
SEP													
01...	<.003	<.007	<.003	<.010	<.004	<.022	<.011	<.01	<.004	<.025	<.011	<.02	.032

01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Tebu-thiuron water fltrd 0.7u GF ug/L (82670)	Terba-cil, water, fltrd 0.7u GF ug/L (82665)	Terbu-fos, water, fltrd 0.7u GF ug/L (82675)	Thio-bencarb water fltrd 0.7u GF ug/L (82681)	Tri-allate, water, fltrd 0.7u GF ug/L (82678)	Tri-flur-alin, water, fltrd 0.7u GF ug/L (82661)	Sus-pended sedi-ment concen-tration mg/L (80154)	Sus-pended sedi-ment dis-charge, tons/d (80155)	Sampler type, code (84164)
NOV									
04...	E.01	<.034	<.02	<.010	<.002	<.009	13	.27	3070
JAN									
06...	E.01	<.034	<.02	<.010	<.002	<.009	30	1.1	3070
MAR									
02...	E.01	<.034	<.02	<.010	<.002	<.009	22	.83	3070
APR									
08...	E.01	<.034	<.02	<.010	<.002	<.009	46	1.0	3070
MAY									
04...	<.02	<.034	<.02	<.010	<.002	<.009	28	.76	3070
JUN									
02...	<.02	<.034	<.02	<.010	<.002	<.009	21	.46	3070
JUL									
01...	*<.02*	*<.034*	*<.02*	*<.010*	*<.002*	*<.009*	*.0*	--	--
01...	<.02	<.034	<.02	<.010	<.002	<.009	14	.20	3070
01...	*<.02*	*<.034*	*<.02*	*<.010*	*<.002*	*<.009*	*16*	--	*3070*
SEP									
01...	<.02	<.034	<.02	<.010	<.002	<.009	5	.01	3070

Sampler type: 3070 - Grab sample

Remark codes used in this table:
< -- Less than
E -- Estimated value
M-- Presence verified, not quantified

01622000 NORTH RIVER NEAR BURKETOWN, VA

LOCATION.--Lat 38°20'25", long 78°54'49", NAD83, Rockingham County, Hydrologic Unit 02070005, on right bank 0.8 mi downstream from Pleasant Run, 2.8 mi northeast of Burketown, and 8.5 mi upstream from Middle River.

DRAINAGE AREA.--379 mi^2.

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 NGVD of 1929. Prior to Dec. 12, 1938, nonrecording gage at site 3.0 mi downstream at different datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 10, 11, and Jan. 26 to Feb. 2, which are fair. At a point 26.8 mi upstream from station, there is an aqueduct tunnel diversion of about 2.4 ft^3/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 ft^3/s, from rating curve extended above 16,000 ft^3/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. 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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1930	6,400	10.59	Sep 9	0400	4,390	8.50
Dec 11	0515	2,760	6.57	Sep 28	2130	*9,050	*13.06
Apr 14	0545	2,910	6.76				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	563	238	606	492	e152	425	334	516	389	142	110	87
2	512	229	552	454	e150	410	318	498	334	142	127	85
3	460	226	503	431	169	423	302	531	293	133	118	85
4	427	223	468	405	161	464	289	513	271	149	121	86
5	394	219	471	393	162	485	278	511	415	186	135	89
6	366	236	435	374	530	566	268	484	329	137	138	92
7	334	232	402	346	1,290	639	264	434	290	131	127	98
8	313	218	371	327	1,150	684	264	390	258	129	121	333
9	298	206	348	311	948	630	260	346	247	122	120	3,710
10	286	202	378	e295	882	568	251	312	265	122	114	2,560
11	271	198	2,380	e265	874	503	241	304	260	122	112	1,630
12	265	241	1,970	279	769	461	355	329	318	225	115	1,050
13	252	542	1,490	265	735	421	1,360	258	278	226	205	736
14	267	690	1,240	253	735	391	2,720	239	273	166	128	470
15	501	666	1,000	248	678	369	1,950	225	265	149	119	304
16	397	594	827	231	612	447	1,430	282	254	143	116	253
17	394	521	858	223	551	499	1,120	663	266	135	112	302
18	389	455	888	221	510	504	875	762	255	136	110	1,830
19	374	2,250	810	214	509	637	703	848	219	146	110	1,790
20	354	3,750	721	200	610	676	587	734	198	164	106	1,270
21	334	2,360	634	194	768	723	514	682	191	137	110	927
22	318	1,650	588	190	837	682	462	615	183	134	106	651
23	304	1,250	615	185	788	604	429	534	180	134	100	437
24	289	970	732	183	717	542	395	447	177	131	92	319
25	271	781	906	176	648	486	353	390	173	121	89	262
26	258	637	940	e175	581	443	479	365	196	127	87	222
27	288	557	852	e170	527	417	583	345	163	125	87	205
28	277	533	752	e168	483	386	660	539	158	125	88	3,070
29	265	606	668	e162	450	357	636	492	149	120	88	4,560
30	260	614	601	e160	---	335	575	448	147	115	92	2,690
31	245	---	541	e155	---	344	---	438	---	112	88	---
TOTAL	10,526	22,094	24,547	8,145	17,976	15,521	19,255	14,474	7,394	4,386	3,491	30,203
MEAN	340	736	792	263	620	501	642	467	246	141	113	1,007
MAX	563	3,750	2,380	492	1,290	723	2,720	848	415	226	205	4,560
MIN	245	198	348	155	150	335	241	225	147	112	87	85
CFSM	0.90	1.94	2.09	0.69	1.64	1.32	1.69	1.23	0.65	0.37	0.30	2.66
IN.	1.03	2.17	2.41	0.80	1.76	1.52	1.89	1.42	0.73	0.43	0.34	2.96

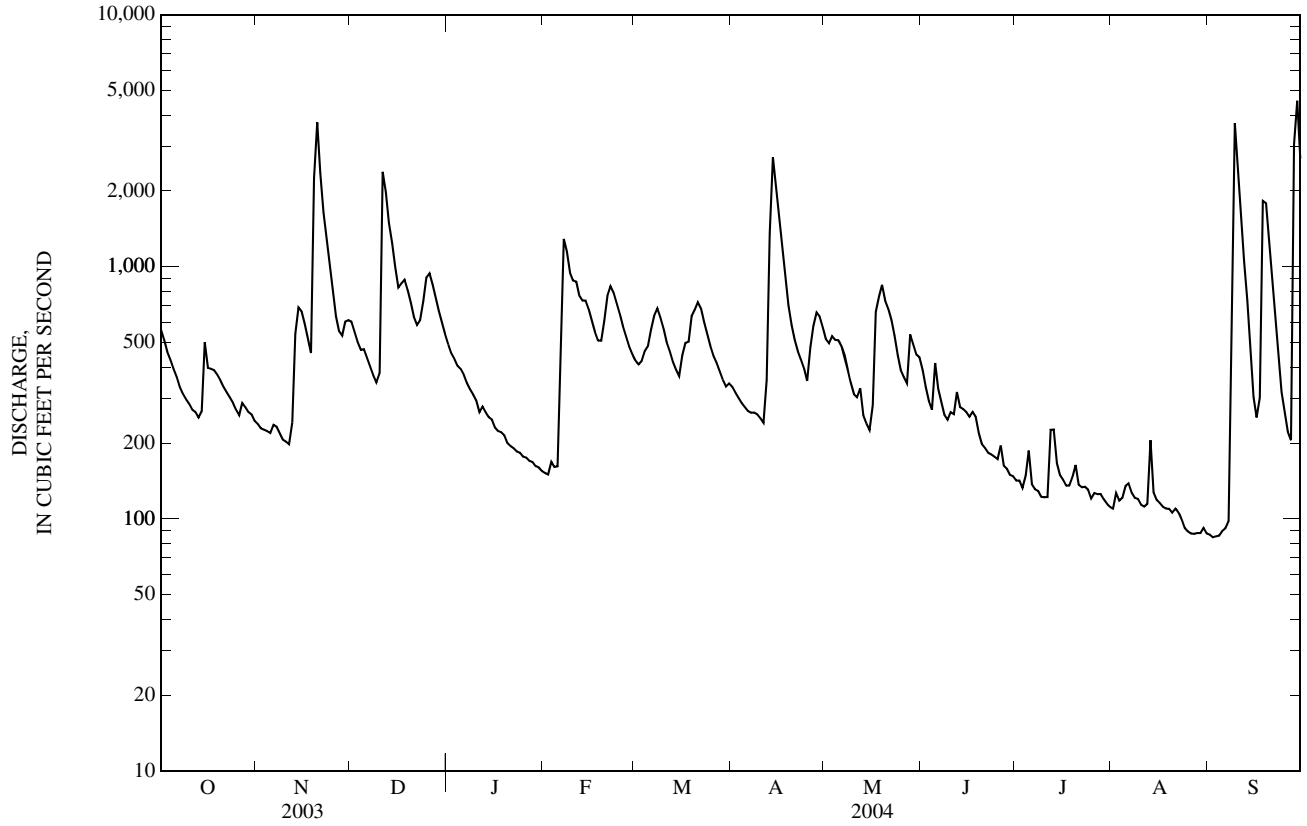
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 1972, 1976 - 2004, BY WATER YEAR (WY)

MEAN	244	288	338	430	517	707	613	494	341	197	235	245
MAX	1,500	2,080	1,087	1,777	1,841	1,932	1,831	1,486	1,704	809	1,102	3,130
(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	41.5	41.0	34.2
(WY)	(1931)	(1931)	(1966)	(1966)	(1931)	(1981)	(1981)	(1930)	(1977)	(1999)	(1964)	(1930)

01622000 NORTH RIVER NEAR BURKETOWN, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1926 - 1972 1976 - 2004	
ANNUAL TOTAL	281,402		178,012			
ANNUAL MEAN	771		486		386	
HIGHEST ANNUAL MEAN					871	1996
LOWEST ANNUAL MEAN					145	1999
HIGHEST DAILY MEAN	7,540	Sep 19	4,560	Sep 29	e32,000	Sep 7, 1996
LOWEST DAILY MEAN	135	Feb 13	85	aSep 2	22	Sep 24, 1930
ANNUAL SEVEN-DAY MINIMUM	142	bFeb 11	87	Aug 29	30	Dec 20, 1930
MAXIMUM PEAK FLOW			9,050	Sep 28	70,400	Sep 6, 1996
MAXIMUM PEAK STAGE			13.06	Sep 28	c36.70	Sep 6, 1996
INSTANTANEOUS LOW FLOW			80	dSep 1	f16	Nov 23, 1965
ANNUAL RUNOFF (CFSM)	2.03		1.28		1.02	
ANNUAL RUNOFF (INCHES)	27.62		17.47		13.84	
10 PERCENT EXCEEDS	1,690		863		834	
50 PERCENT EXCEEDS	542		334		206	
90 PERCENT EXCEEDS	180		122		64	

a Also Sept. 3, 2004.
b Also Feb. 12, 2003.
c From high-water mark in gage house.
d Also Sept. 2-4, 2004.
e Estimated.
f Result of temporary dam upstream.



01625000 MIDDLE RIVER NEAR GROTTOES, VA

LOCATION.--Lat 38°15'42", long 78°51'43", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to Sep. 1, 1938, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Oct. 1-15, Oct. 31 to Dec. 4, and Feb. 12, and periods with ice effect, Jan. 10, 11, and Jan. 22 to Feb. 3, which are fair. There are discharges of about 6.4 ft^3/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 and irrigation upstream from station. Maximum discharge, 44,300 ft^3/s, from rating curve extended above 15,000 ft^3/s on basis of slope-area measurement at gage height 33.09 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.--Maximum stage since at least 1877, that of Sep. 7, 1996.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 11	0800	3,320	9.80	Sep 9	0945	3,580	10.15
Feb 7	0030	3,270	9.73	Sep 29	0500	*9,590	*16.79

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e530	e205	e500	444	e198	339	267	293	240	136	151	93
2	e480	e200	e445	422	e195	330	261	315	208	272	207	90
3	e435	e198	e400	413	e230	327	249	354	187	171	150	89
4	e410	e195	e370	398	268	329	236	314	189	342	150	89
5	e380	e220	407	389	262	328	221	297	351	352	144	89
6	e350	e500	387	391	1,140	347	216	274	323	194	161	92
7	e335	e940	369	355	2,580	371	213	262	247	168	146	115
8	e315	e680	354	333	1,460	360	211	243	215	153	129	197
9	e300	e490	348	331	978	346	212	230	205	144	120	2,230
10	e285	e410	426	e320	899	331	206	224	220	140	116	881
11	e270	e350	2,690	e300	1,030	312	201	215	212	142	110	421
12	e265	e375	1,750	314	e800	298	265	207	241	249	118	273
13	e260	e1,300	1,120	318	734	283	1,400	203	218	274	193	210
14	e250	e1,000	918	300	708	270	2,180	209	195	262	166	177
15	e483	e770	811	291	654	265	1,330	192	231	191	144	156
16	359	e650	738	277	582	314	843	198	667	162	131	144
17	302	e550	894	262	519	457	652	196	269	152	122	153
18	286	e470	1,060	269	483	444	548	188	222	158	116	723
19	276	e840	835	273	460	423	479	219	210	179	111	737
20	269	e2,200	721	252	467	391	430	256	196	239	110	416
21	252	e1,200	624	241	510	359	402	238	179	169	110	288
22	242	e920	581	e240	596	341	371	230	173	147	117	227
23	234	e800	645	e230	542	319	348	236	168	145	113	191
24	226	e730	769	e225	493	299	331	204	182	195	107	168
25	221	e650	885	e222	458	290	312	186	169	176	101	152
26	260	e610	779	e220	419	274	332	180	165	157	98	144
27	277	e540	668	e218	397	270	387	277	155	151	96	139
28	249	e475	594	e215	372	272	340	306	144	153	96	2,560
29	231	e600	545	e210	354	257	313	354	139	143	94	6,420
30	217	e550	521	e205	---	250	299	287	132	131	97	1,480
31	e211	---	485	e200	---	263	---	251	---	128	99	---
TOTAL	9,460	19,618	22,639	9,078	18,788	10,059	14,055	7,638	6,652	5,775	3,923	19,144
MEAN	305	654	730	293	648	324	468	246	222	186	127	638
MAX	530	2,200	2,690	444	2,580	457	2,180	354	667	352	207	6,420
MIN	211	195	348	200	195	250	201	180	132	128	94	89
CFSM	0.81	1.74	1.95	0.78	1.73	0.87	1.25	0.66	0.59	0.50	0.34	1.70
IN.	0.94	1.95	2.25	0.90	1.86	1.00	1.39	0.76	0.66	0.57	0.39	1.90

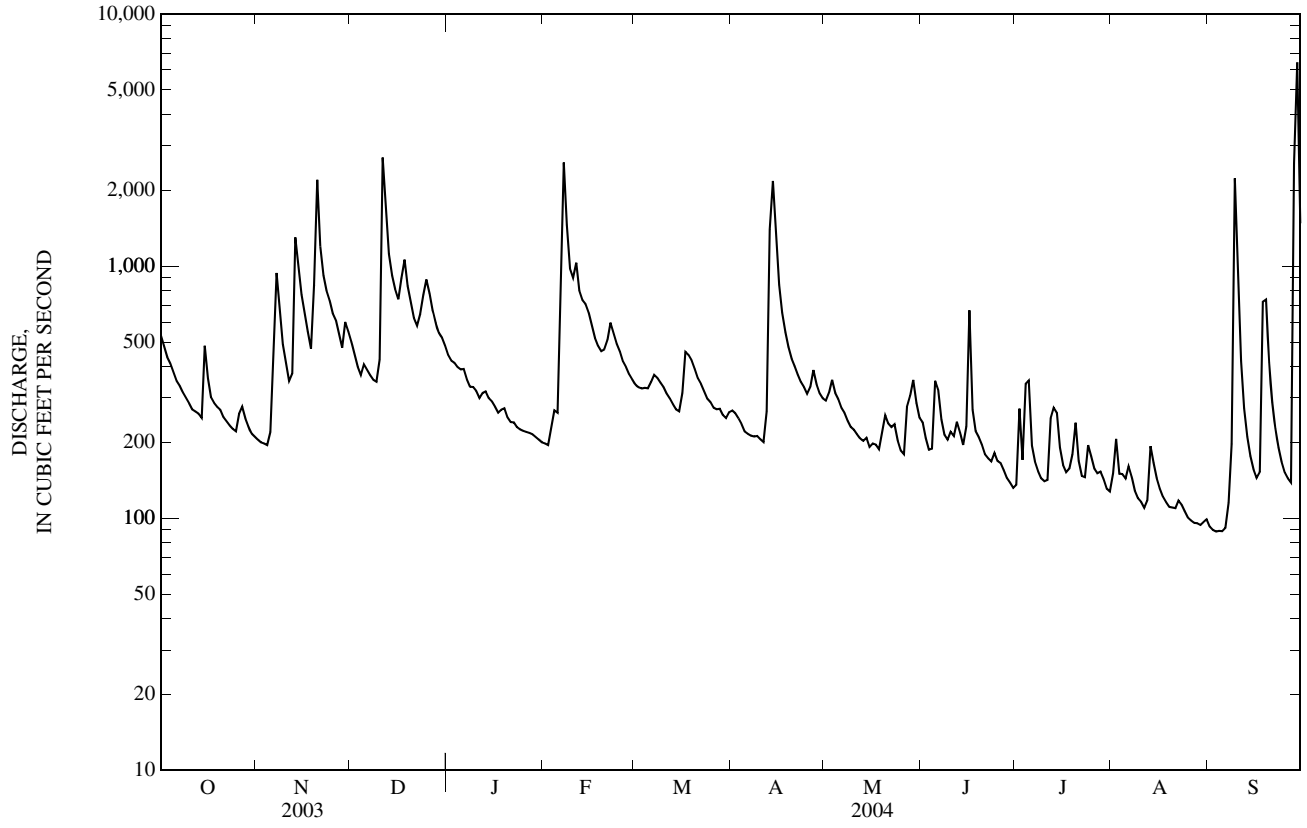
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 2004, BY WATER YEAR (WY)

MEAN	229	236	303	396	468	576	461	342	261	178	192	217
MAX	1,138	2,019	1,111	1,436	2,288	1,704	1,674	963	1,128	705	1,017	1,887
(WY)	(1980)	(1986)	(1949)	(1996)	(1998)	(1936)	(1987)	(1989)	(2003)	(1972)	(1940)	(1996)
MIN	57.6	58.9	55.8	56.4	50.2	78.2	95.8	89.7	47.1	47.2	31.8	37.8
(WY)	(2002)	(1931)	(1966)	(2002)	(2002)	(2002)	(1981)	(1969)	(2002)	(1966)	(2002)	(2002)

01625000 MIDDLE RIVER NEAR GROTTOES, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1928 - 2004	
ANNUAL TOTAL	250,082		146,829			
ANNUAL MEAN	685		401		321	
HIGHEST ANNUAL MEAN					623	1998
LOWEST ANNUAL MEAN					75.6	2002
HIGHEST DAILY MEAN	9,220	Sep 19	6,420	Sep 29	26,000	Nov 5, 1985
LOWEST DAILY MEAN	121	Feb 13	89	aSep 3	18	Sep 14, 2002
ANNUAL SEVEN-DAY MINIMUM	e130	bFeb 8	92	Aug 31	20	Sep 9, 2002
MAXIMUM PEAK FLOW			9,590	Sep 29	44,300	Sep 7, 1996
MAXIMUM PEAK STAGE			16.79	Sep 29	c35.62	Sep 7, 1996
INSTANTANEOUS LOW FLOW			87	dSep 5	f8.9	Dec 31, 2001
ANNUAL RUNOFF (CFSM)	1.83		1.07		0.855	
ANNUAL RUNOFF (INCHES)	24.81		14.57		11.62	
10 PERCENT EXCEEDS	1,290		747		637	
50 PERCENT EXCEEDS	459		272		188	
90 PERCENT EXCEEDS	185		143		82	

a Also Sept. 4, 5, 2004.
b Also Feb. 9, 2003.
c From high-water mark in gage house.
d Also Sept. 6, 2004.
e Estimated.
f Result of freezeup.



01626000 SOUTH RIVER NEAR WAYNESBORO, VA

LOCATION.--Lat 38°03'27", long 78°54'29", NAD83, 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 mi^2, of which 41 mi^2 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 NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 10, 11, and Jan. 27 to Feb. 2, which are fair. There is discharge of about 6.1 ft^3/s from a wastewater treatment plant upstream from station, originating from well fields. Flow from 41 mi^2 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 ft^3/s, from rating curve extended above 4,200 ft^3/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 ft^3/s.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 6	2030	1,250	5.53	Jul 4	0500	1,470	5.86
Nov 19	1500	2,930	7.68	Sep 8	2130	1,380	5.73
Dec 11	0100	1,740	6.24	Sep 28	1530	*6,460	*10.45
Apr 13	2030	1,040	5.19				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	313	139	314	214	e92	137	115	136	131	97	58	39
2	282	132	272	207	e90	135	111	160	109	104	60	37
3	255	128	247	204	127	134	105	204	98	79	57	35
4	236	134	233	198	159	131	103	199	100	797	54	35
5	220	170	246	195	145	129	99	184	248	320	55	35
6	205	804	233	198	310	136	96	168	235	189	64	44
7	192	965	221	182	736	140	93	154	187	148	55	78
8	178	640	209	172	497	134	92	138	161	125	51	630
9	169	455	203	170	357	126	91	128	143	106	48	889
10	163	368	306	e165	304	124	89	120	139	97	47	494
11	158	322	1,440	e150	296	123	87	113	166	106	46	341
12	153	308	897	160	264	114	220	106	228	103	56	217
13	143	417	588	162	245	108	815	104	205	95	70	187
14	140	392	495	148	232	105	877	99	178	99	58	143
15	200	331	430	143	219	104	599	91	161	82	53	105
16	173	303	378	137	204	126	432	88	181	74	50	104
17	148	284	436	131	190	153	345	102	157	71	48	139
18	140	267	487	136	183	143	289	102	145	74	46	390
19	133	1,190	412	142	177	151	254	119	127	73	45	303
20	131	1,800	354	127	176	143	226	126	115	68	43	215
21	129	1,070	309	121	178	140	217	103	104	63	43	176
22	126	716	289	120	174	135	197	213	98	61	44	146
23	128	543	292	116	167	125	183	207	98	75	42	126
24	124	443	345	116	162	122	171	139	118	91	40	111
25	120	405	377	110	156	120	160	116	97	70	39	101
26	116	366	330	109	150	115	171	118	93	73	38	92
27	183	327	297	e105	151	114	179	214	86	76	37	92
28	213	338	273	e102	146	113	158	172	78	73	37	2,130
29	194	398	256	e100	141	106	146	148	75	66	36	1,870
30	176	352	243	e98	---	105	138	126	71	61	43	877
31	159	---	227	e94	---	111	---	130	---	60	44	---
TOTAL	5,400	14,507	11,639	4,532	6,428	3,902	6,858	4,327	4,132	3,676	1,507	10,181
MEAN	174	484	375	146	222	126	229	140	138	119	48.6	339
MAX	313	1,800	1,440	214	736	153	877	214	248	797	70	2,130
MIN	116	128	203	94	90	104	87	88	71	60	36	35
CFSM	1.37	3.81	2.96	1.15	1.75	0.99	1.80	1.10	1.08	0.93	0.38	2.67
IN.	1.58	4.25	3.41	1.33	1.88	1.14	2.01	1.27	1.21	1.08	0.44	2.98

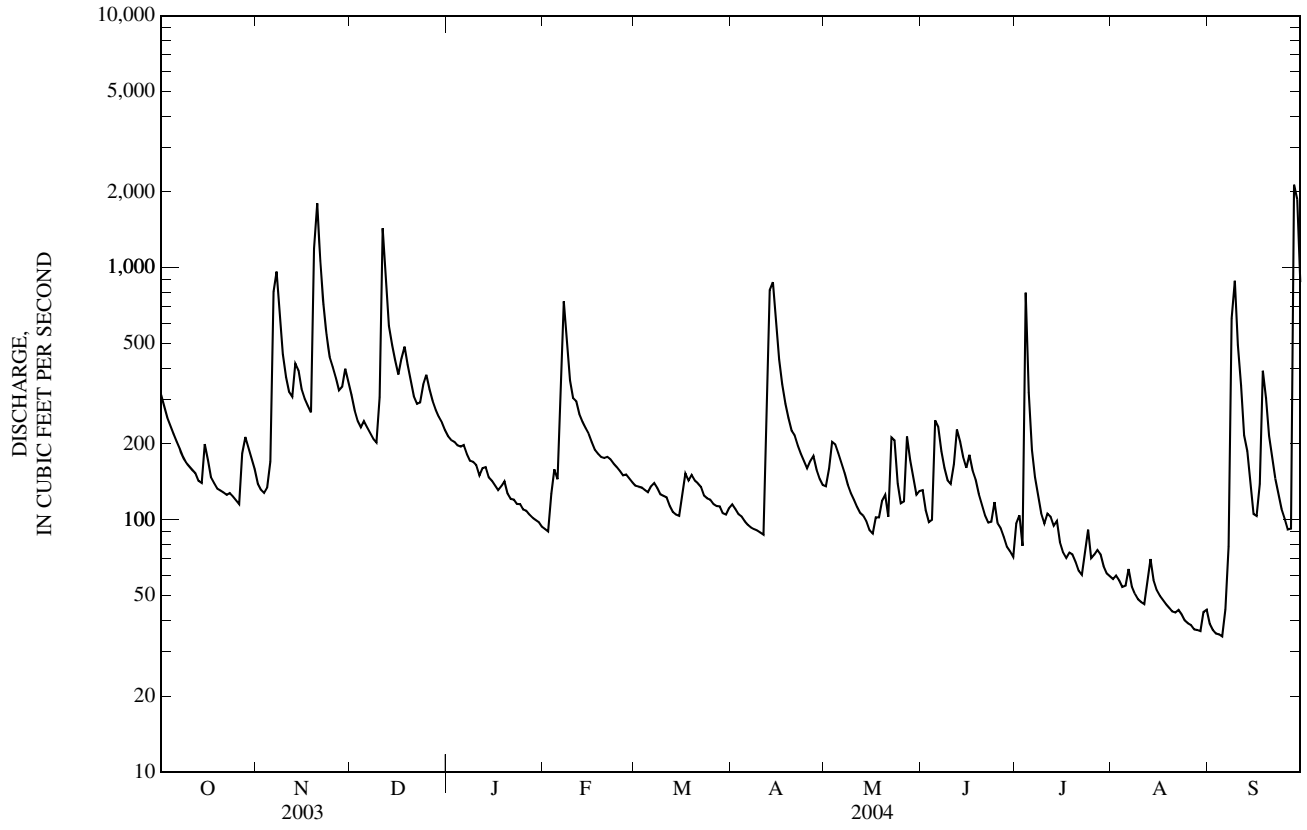
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2004, BY WATER YEAR (WY)

MEAN	110	135	137	174	205	274	239	165	119	67.9	79.2	101
MAX	549	1,214	375	767	1,312	748	1,062	485	875	305	700	776
(WY)	(1973)	(1986)	(2004)	(1996)	(1998)	(1993)	(1987)	(1989)	(1972)	(1972)	(1955)	(2003)
MIN	25.5	24.7	24.2	23.6	23.8	49.0	44.0	50.4	22.1	21.5	18.5	18.4
(WY)	(1966)	(2002)	(1966)	(1966)	(2002)	(1981)	(1981)	(1981)	(2002)	(2002)	(2002)	(2002)

01626000 SOUTH RIVER NEAR WAYNESBORO, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1953 - 2004	
ANNUAL TOTAL	117,713		77,089			
ANNUAL MEAN	323		211		150	
HIGHEST ANNUAL MEAN					312	1998
LOWEST ANNUAL MEAN					37.1	2002
HIGHEST DAILY MEAN	8,110	Sep 19	2,130	Sep 28	9,670	Aug 18, 1955
LOWEST DAILY MEAN	51	Feb 13	35	aSep 3	16	bSep 12, 2002
ANNUAL SEVEN-DAY MINIMUM	56	Feb 8	38	Aug 30	16	cSep 11, 2002
MAXIMUM PEAK FLOW			6,460	Sep 28	17,500	Nov 4, 1985
MAXIMUM PEAK STAGE			10.45	Sep 28	15.30	Nov 4, 1985
INSTANTANEOUS LOW FLOW			33	Sep 5	d7.0	Jul 18, 1966
ANNUAL RUNOFF (CFSM)	2.54		1.66		1.18	
ANNUAL RUNOFF (INCHES)	34.48		22.58		16.05	
10 PERCENT EXCEEDS	532		382		302	
50 PERCENT EXCEEDS	224		142		83	
90 PERCENT EXCEEDS	73		61		32	

a Also Sept. 4, 5, 2004.
b Also Sept. 13-15, 19, 24, 25 and Oct. 9, 2002.
c Also Sept. 12, 2002.
d Result of regulation from unknown source upstream from gage.
e Estimated.



01627500 SOUTH RIVER AT HARRISTON, VA

LOCATION.--Lat 38°13'07", long 78°50'12", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to Sept. 1, 1938, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 9-11 and Jan. 27 to Feb. 2, which are fair. There are discharges of about 12.0 ft^3/s from industrial and municipal wastewater treatment plants upstream from station, originating from well fields. Maximum discharge, 28,900 ft^3/s, from rating curve extended above 10,000 ft^3/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.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 7	0215	1,880	5.64	Apr 14	0100	1,690	5.42
Nov 19	2230	4,560	8.35	Jul 4	1100	1,990	5.77
Dec 11	0600	3,420	7.28	Sep 9	0100	3,270	7.13
Feb 6	2200	1,370	4.98	Sep 28	2200	*12,300	*12.26

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	501	244	502	364	e169	225	197	225	201	141	114	78
2	439	232	445	345	e168	223	195	256	180	224	122	75
3	390	225	400	336	207	220	189	312	165	160	113	75
4	356	226	380	324	267	217	183	322	165	1,070	105	74
5	333	244	403	321	248	213	176	299	386	573	106	73
6	306	1,180	386	322	668	228	171	276	394	306	117	80
7	287	1,590	362	300	1,230	236	168	256	302	236	109	129
8	269	1,080	341	279	872	229	168	235	255	204	100	726
9	258	769	328	e275	630	223	167	220	228	181	96	2,020
10	251	617	381	e265	543	220	163	204	215	169	91	821
11	245	533	2,580	e245	508	214	161	191	233	168	89	548
12	241	529	1,580	259	456	203	286	182	316	187	97	348
13	231	940	1,020	260	414	196	1,360	176	300	164	132	286
14	228	776	846	248	390	191	1,480	170	258	174	112	247
15	299	634	736	240	367	188	1,040	164	240	155	101	194
16	276	553	649	230	335	223	750	163	255	142	96	180
17	240	501	732	221	309	261	594	160	248	137	90	300
18	228	450	812	225	295	249	492	176	224	138	88	965
19	221	1,730	705	234	286	255	423	190	208	137	86	646
20	217	2,910	608	218	283	247	374	202	198	133	92	427
21	213	1,640	528	205	284	241	359	184	185	126	97	321
22	209	1,110	488	202	281	233	325	228	176	122	92	263
23	208	867	494	197	265	222	299	297	179	120	85	228
24	207	707	604	197	259	212	280	215	192	215	79	204
25	201	662	683	194	254	206	262	185	179	142	76	189
26	199	581	608	188	243	199	278	175	170	140	76	177
27	282	523	536	e185	242	197	292	312	162	138	76	171
28	323	508	484	e180	235	196	261	270	154	135	75	3,450
29	299	610	446	e178	230	189	241	227	150	125	76	4,070
30	277	556	418	e175	---	186	231	198	144	119	80	1,510
31	260	---	389	e170	---	192	---	196	---	115	83	---
TOTAL	8,494	23,727	19,874	7,582	10,938	6,734	11,565	6,866	6,662	6,296	2,951	18,875
MEAN	274	791	641	245	377	217	386	221	222	203	95.2	629
MAX	501	2,910	2,580	364	1,230	261	1,480	322	394	1,070	132	4,070
MIN	199	225	328	170	168	186	161	160	144	115	75	73
CFSM	1.29	3.73	3.02	1.15	1.78	1.02	1.82	1.04	1.05	0.96	0.45	2.97
IN.	1.49	4.16	3.49	1.33	1.92	1.18	2.03	1.20	1.17	1.10	0.52	3.31

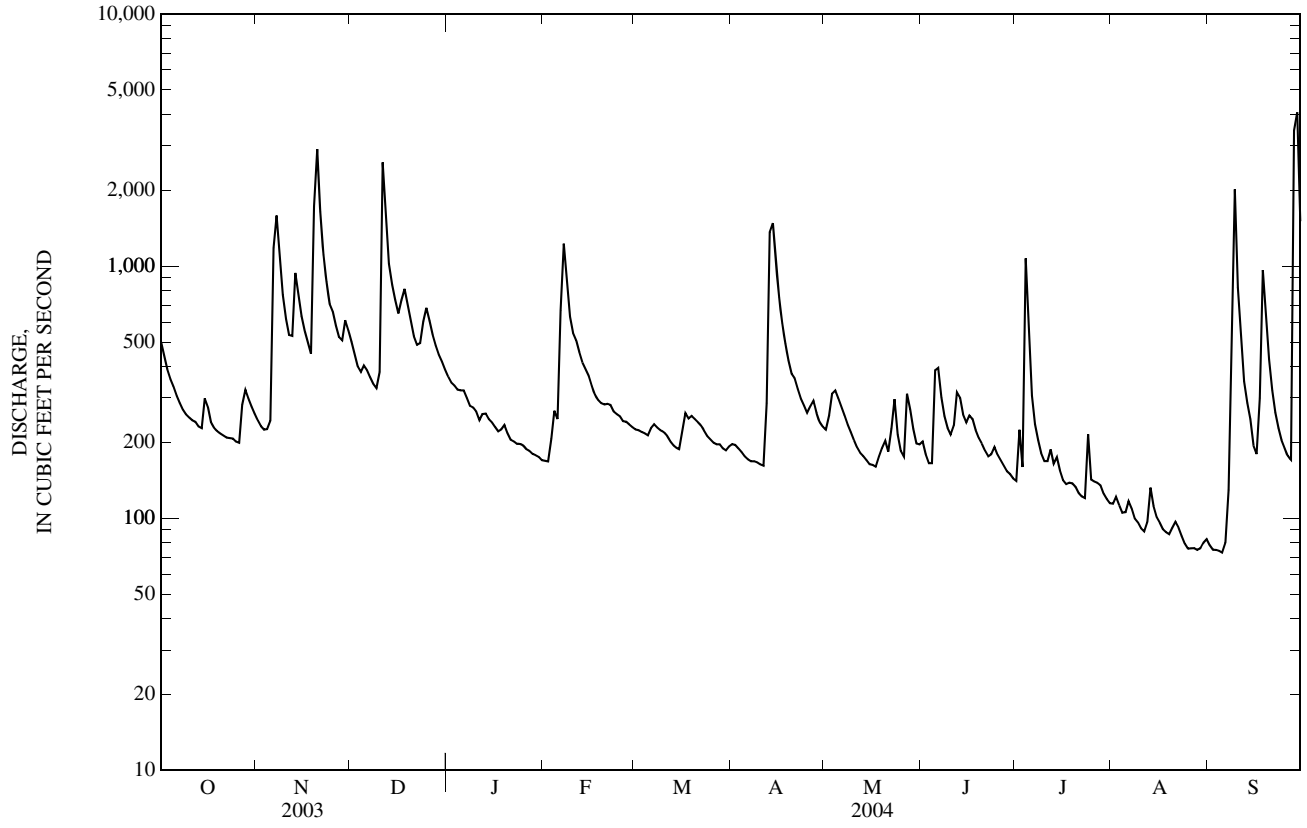
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 1951, 1969 - 2004, BY WATER YEAR (WY)

MEAN	218	237	253	306	350	400	392	281	208	133	147	202
MAX	1,048	1,988	802	1,252	2,160	1,407	1,414	819	1,454	520	925	1,185
(WY)	(1943)	(1986)	(1949)	(1996)	(1998)	(1936)	(1987)	(1989)	(1972)	(1972)	(1940)	(2003)
MIN	46.5	54.0	53.8	55.7	55.4	97.8	93.1	83.2	47.6	46.8	38.5	41.0
(WY)	(1931)	(1931)	(1932)	(2002)	(2002)	(2002)	(1981)	(1930)	(2002)	(2002)	(2002)	(1930)

01627500 SOUTH RIVER AT HARRISTON, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1926 - 1951 1969 - 2004	
ANNUAL TOTAL	189,213		130,564			
ANNUAL MEAN	518		357		261	
HIGHEST ANNUAL MEAN					516	1998
LOWEST ANNUAL MEAN					69.8	2002
HIGHEST DAILY MEAN	12,500	Sep 19	4,070	Sep 29	16,400	Nov 5, 1985
LOWEST DAILY MEAN	87	Feb 14	73	Sep 5	a25	Aug 24, 1930
ANNUAL SEVEN-DAY MINIMUM	92	Feb 8	77	Aug 24	36	Aug 21, 2002
MAXIMUM PEAK FLOW			12,300	Sep 28	28,900	Sep 6, 1996
MAXIMUM PEAK STAGE			12.26	Sep 28	b17.20	Oct 15, 1942
INSTANTANEOUS LOW FLOW			73	cAug 25	a17	Nov 14, 1941
ANNUAL RUNOFF (CFSM)	2.45		1.68		1.23	
ANNUAL RUNOFF (INCHES)	33.20		22.91		16.74	
10 PERCENT EXCEEDS	896		664		494	
50 PERCENT EXCEEDS	345		234		155	
90 PERCENT EXCEEDS	128		118		68	

a Probably result of regulation by mill then in existence upstream from station.
b Peak discharge 23,100 ft^3/s.
c Also Aug. 26 and Sept. 2, 4-6, 2004.
e Estimated.



01628500 SOUTH FORK SHENANDOAH RIVER NEAR LYNNWOOD, VA

LOCATION.--Lat 38°19'21", long 78°45'17", NAD83, Rockingham County, Hydrologic Unit 02070005, on left bank 1.2 mi northeast of Lynnwood and 3.3 mi downstream from confluence of North and South Rivers.

DRAINAGE AREA.--1,084 mi^2.

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 NGVD of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 27 to Feb. 2, which is fair. Diurnal fluctuation at low flow prior to 1960 caused by mill at Lynnwood and since by irrigation. 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 ft^3/s, from rating curve extended above 22,000 ft^3/s on basis of computations of flow over dam at gage heights 23.60 ft and 27.2 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.--Maximum stage since at least 1870, that of Sept. 7, 1996.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 20	0330	13,400	12.60	Sep 9	0945	11,000	11.51
Dec 11	1030	10,200	11.04	Sep 29	0300	*32,900	*18.92
Apr 14	0530	7,500	9.26				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,780	775	1,620	1,390	e590	1,160	856	1,120	951	597	387	276
2	1,600	754	1,480	1,310	e570	1,130	840	1,140	856	753	481	267
3	1,440	734	1,360	1,260	679	1,110	807	1,250	780	602	415	262
4	1,340	729	1,280	1,210	783	1,130	778	1,210	753	1,570	396	262
5	1,250	742	1,340	1,190	766	1,150	747	1,170	1,170	1,540	397	259
6	1,170	1,830	1,280	1,170	2,300	1,220	728	1,120	1,210	782	434	264
7	1,100	2,700	1,210	1,090	5,910	1,330	718	1,050	985	649	404	315
8	1,030	1,950	1,140	1,030	3,890	1,360	713	981	870	580	372	835
9	995	1,460	1,090	1,010	2,840	1,300	712	915	823	533	356	8,310
10	962	1,220	1,140	990	2,570	1,210	694	864	865	506	344	4,780
11	930	1,110	7,760	918	2,730	1,120	682	827	867	504	329	2,910
12	910	1,170	6,200	938	2,330	1,060	806	847	1,030	743	340	1,830
13	881	3,880	3,970	940	2,160	992	3,800	777	959	879	516	1,320
14	857	2,930	3,230	901	2,120	938	7,090	747	869	694	437	993
15	1,300	2,230	2,750	875	1,980	903	4,950	714	840	579	388	757
16	1,120	1,870	2,350	836	1,800	987	3,340	711	1,300	516	362	658
17	1,010	1,630	2,520	799	1,630	1,260	2,580	995	964	489	348	784
18	974	1,440	2,990	802	1,520	1,230	2,080	1,150	887	493	334	3,550
19	946	3,160	2,520	814	1,460	1,290	1,740	1,340	797	518	328	3,560
20	916	10,700	2,200	768	1,550	1,310	1,510	1,320	738	575	324	2,360
21	887	6,100	1,910	732	1,730	1,330	1,380	1,200	693	499	335	1,680
22	865	3,990	1,750	717	1,920	1,280	1,260	1,130	667	458	333	1,250
23	836	3,070	1,860	710	1,840	1,180	1,180	1,160	656	461	318	955
24	813	2,470	2,170	706	1,700	1,090	1,120	992	680	583	303	790
25	784	2,190	2,610	691	1,580	1,020	1,040	879	650	495	288	699
26	763	1,840	2,480	659	1,450	962	1,120	849	657	462	282	639
27	857	1,630	2,200	e660	1,350	927	1,330	996	612	457	278	605
28	973	1,530	1,960	e658	1,270	906	1,320	1,220	576	452	277	7,970
29	899	1,740	1,770	e655	1,210	861	1,260	1,170	554	431	277	20,700
30	854	1,690	1,640	e640	---	827	1,180	1,040	537	407	278	6,800
31	807	---	1,510	e620	---	850	---	974	---	391	281	---
TOTAL	31,849	69,264	71,290	27,689	54,228	34,423	48,361	31,858	24,796	19,198	10,942	76,640
MEAN	1,027	2,309	2,300	893	1,870	1,110	1,612	1,028	827	619	353	2,555
MAX	1,780	10,700	7,760	1,390	5,910	1,360	7,090	1,340	1,300	1,570	516	20,700
MIN	763	729	1,090	620	570	827	682	711	537	391	277	259
CFSM	0.95	2.13	2.12	0.82	1.73	1.02	1.49	0.95	0.76	0.57	0.33	2.36
IN.	1.09	2.38	2.45	0.95	1.86	1.18	1.66	1.09	0.85	0.66	0.38	2.63

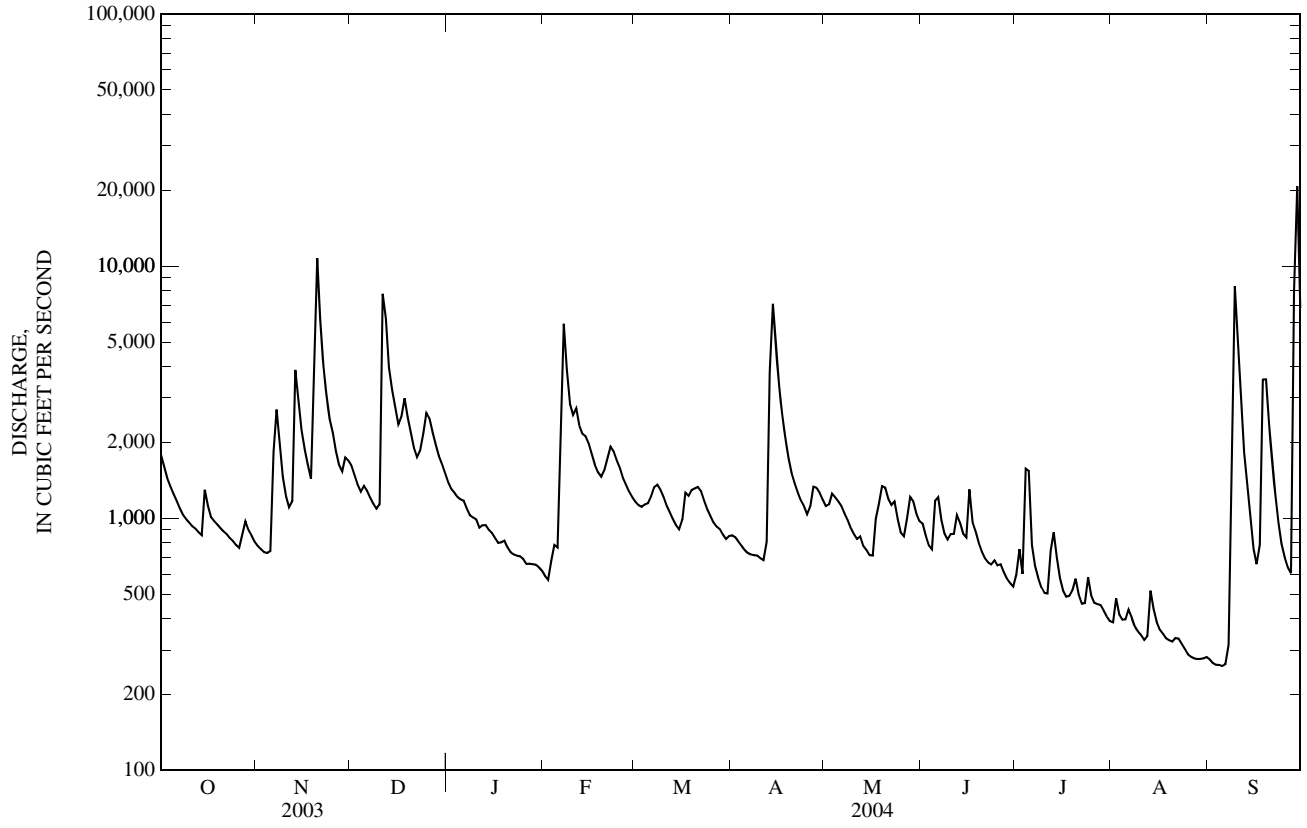
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2004, BY WATER YEAR (WY)

MEAN	714	788	957	1,223	1,441	1,855	1,572	1,201	881	547	607	688
MAX	4,172	6,886	3,302	4,904	6,939	5,785	5,454	3,086	3,656	2,013	2,895	5,822
(WY)	(1943)	(1986)	(1949)	(1996)	(1998)	(1936)	(1987)	(1989)	(1972)	(1949)	(1940)	(1996)
MIN	122	150	156	154	168	333	317	362	215	155	137	142
(WY)	(1931)	(1931)	(1966)	(1966)	(2002)	(2002)	(1981)	(1977)	(2002)	(2002)	(2002)	(2002)

01628500 SOUTH FORK SHENANDOAH RIVER NEAR LYNNWOOD, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1931 - 2004	
ANNUAL TOTAL	787,777		500,538			
ANNUAL MEAN	2,158		1,368		1,037	
HIGHEST ANNUAL MEAN					2,020	1996
LOWEST ANNUAL MEAN					306	2002
HIGHEST DAILY MEAN	33,800	Sep 19	20,700	Sep 29	e63,500	Sep 7, 1996
LOWEST DAILY MEAN	370	Feb 14	259	Sep 5	84	aJul 7, 2002
ANNUAL SEVEN-DAY MINIMUM	393	Feb 9	267	Aug 31	90	bAug 21, 2002
MAXIMUM PEAK FLOW			32,900	Sep 29	107,000	Sep 7, 1996
MAXIMUM PEAK STAGE			18.92	Sep 29	c30.84	Sep 7, 1996
INSTANTANEOUS LOW FLOW			259	dSep 3	f32	Sep 20, 1932
ANNUAL RUNOFF (CFSM)	1.99		1.26		0.957	
ANNUAL RUNOFF (INCHES)	27.03		17.18		13.00	
10 PERCENT EXCEEDS	3,980		2,470		2,120	
50 PERCENT EXCEEDS	1,550		983		600	
90 PERCENT EXCEEDS	603		426		234	

a Also Aug. 25, 2002.
b Also Aug. 22, 2002.
c From high-water mark in gage house.
d Also Sept. 4-6, 2004.
e Estimated.
f Result of regulation.



01629500 SOUTH FORK SHENANDOAH RIVER NEAR LURAY, VA

LOCATION.--Lat 38°38'46", long 78°32'05", NAD83, 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 mi^2.

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 NGVD of 1929. April 1925 to September 1930, nonrecording gage at same site and datum.

REMARKS.--Records good except those for period with ice effect, Jan. 25 to Feb. 2, and period of no gage-height record, Feb. 24, which are fair. Diurnal fluctuation at low and medium flow caused by powerplant 10 mi upstream from station. Virginia Department of Emergency Services and National Weather Service gage-height transmitters at station. Maximum discharge, 112,000 ft^3/s, from rating curve extended above 86,300 ft^3/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 Mar. 18, 1936, reached a stage of 23.6 ft, from floodmarks, discharge, 81,600 ft^3/s.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 20	1030	16,000	10.95	Apr 14	1915	10,100	8.41
Dec 11	1700	14,600	10.43	Sep 9	1730	14,200	10.25
Feb 7	0900	9,720	8.24	Sep 29	1130	*36,000	*16.24

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,620	1,020	2,320	2,060	e760	1,400	1,120	1,670	1,240	598	485	364
2	2,330	968	2,150	1,930	e730	1,350	1,150	1,690	1,140	681	494	351
3	2,100	946	1,970	1,850	796	1,320	1,150	1,940	985	859	597	333
4	1,930	913	1,840	1,800	1,080	1,320	1,140	1,950	894	797	511	327
5	1,810	915	1,880	1,730	1,090	1,360	1,060	1,830	1,220	2,800	503	324
6	1,690	1,280	1,880	1,700	2,200	1,460	988	1,740	1,890	1,640	528	323
7	1,590	3,220	1,760	1,610	8,690	1,630	965	1,630	1,540	926	556	347
8	1,480	2,820	1,670	1,490	6,630	1,700	956	1,520	1,230	771	506	655
9	1,390	2,090	1,580	1,440	4,350	1,680	943	1,390	1,070	674	470	11,600
10	1,320	1,740	1,630	1,400	3,540	1,580	897	1,270	1,040	619	448	8,710
11	1,280	1,520	11,200	1,310	3,670	1,480	871	1,190	1,090	593	431	5,120
12	1,240	1,510	10,200	1,290	3,240	1,370	1,080	1,130	1,230	601	423	3,310
13	1,210	4,060	6,580	1,320	2,850	1,280	4,500	1,130	1,360	1,100	519	2,280
14	1,200	4,650	5,060	1,280	2,690	1,200	9,060	999	1,200	1,060	733	1,720
15	1,490	3,370	4,330	1,220	2,540	1,140	8,150	968	1,080	800	592	1,230
16	1,680	2,690	3,620	1,190	2,310	1,170	5,530	940	1,340	657	521	944
17	1,390	2,310	3,630	1,110	2,080	1,520	4,200	988	1,500	597	487	900
18	1,280	2,020	4,580	1,110	1,920	1,630	3,380	1,470	1,160	588	459	5,590
19	1,230	2,500	3,960	1,110	1,830	1,690	2,780	1,670	1,190	590	445	6,660
20	1,180	12,900	3,390	1,050	1,820	1,790	2,390	1,900	999	604	461	4,400
21	1,130	9,320	2,920	964	1,940	1,780	2,150	1,690	890	676	441	3,040
22	1,080	6,190	2,590	947	2,150	1,750	1,970	1,560	812	581	454	2,240
23	1,060	4,610	2,600	944	2,210	1,630	1,810	1,550	821	565	449	1,680
24	997	3,690	2,960	910	e2,060	1,490	1,720	1,470	808	574	419	1,280
25	973	3,290	3,990	e900	1,920	1,390	1,590	1,190	796	700	400	1,020
26	889	2,760	3,800	e870	1,780	1,310	1,610	1,100	777	593	381	884
27	1,010	2,400	3,360	e850	1,650	1,240	1,980	1,080	763	566	363	788
28	1,240	2,270	2,950	e840	1,560	1,200	1,930	1,530	686	555	359	2,370
29	1,240	2,370	2,640	e830	1,480	1,130	1,870	1,760	646	542	354	28,500
30	1,160	2,390	2,430	e820	---	1,070	1,760	1,510	620	515	445	11,500
31	1,080	---	2,250	e790	---	1,070	---	1,310	---	485	398	---
TOTAL	43,299	92,732	107,720	38,665	71,566	44,130	70,700	44,765	32,017	23,907	14,632	108,790
MEAN	1,397	3,091	3,475	1,247	2,468	1,424	2,357	1,444	1,067	771	472	3,626
MAX	2,620	12,900	11,200	2,060	8,690	1,790	9,060	1,950	1,890	2,800	733	28,500
MIN	889	913	1,580	790	730	1,070	871	940	620	485	354	323
CFSM	1.01	2.24	2.52	0.91	1.79	1.03	1.71	1.05	0.78	0.56	0.34	2.63
IN.	1.17	2.51	2.91	1.04	1.93	1.19	1.91	1.21	0.86	0.65	0.40	2.94

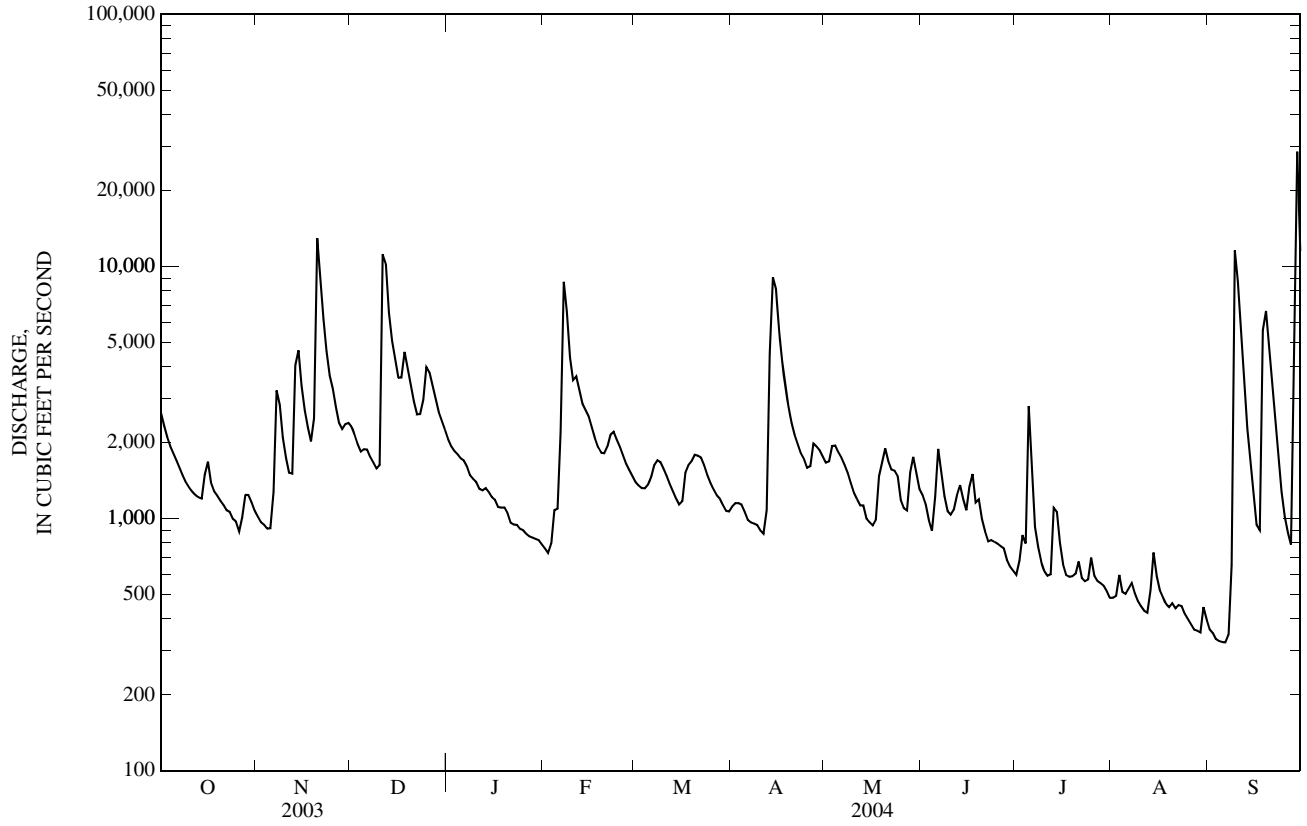
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 1930, 1939 - 1951, 1980 - 2004, BY WATER YEAR (WY)

MEAN	995	1,151	1,340	1,556	1,989	2,241	2,166	1,657	1,257	755	837	1,161
MAX	6,332	8,783	3,821	6,490	9,892	7,143	7,412	4,449	4,372	2,460	3,637	8,043
(WY)	(1943)	(1986)	(1949)	(1996)	(1998)	(1993)	(1987)	(1989)	(2003)	(1949)	(1940)	(1996)
MIN	237	249	307	260	276	482	452	499	332	231	216	228
(WY)	(2002)	(2002)	(2002)	(1981)	(2002)	(2002)	(1981)	(1930)	(1999)	(2002)	(2002)	(2002)

01629500 SOUTH FORK SHENANDOAH RIVER NEAR LURAY, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1926 - 1930, 1939 - 1951, 1980 - 2004	
ANNUAL TOTAL	1,112,474		692,923			
ANNUAL MEAN	3,048		1,893		1,414	
HIGHEST ANNUAL MEAN					2,707	1996
LOWEST ANNUAL MEAN					440	2002
HIGHEST DAILY MEAN	38,900	Sep 19	28,500	Sep 29	84,400	Sep 7, 1996
LOWEST DAILY MEAN	490	Feb 14	323	Sep 6	a135	bSep 28, 1930
ANNUAL SEVEN-DAY MINIMUM	529	Feb 9	338	Sep 1	168	Aug 21, 2002
MAXIMUM PEAK FLOW			36,000	Sep 29	112,000	Sep 7, 1996
MAXIMUM PEAK STAGE			16.24	Sep 29	26.95	Sep 7, 1996
INSTANTANEOUS LOW FLOW			322	cSep 3	a70	Sep 27, 1941
ANNUAL RUNOFF (CFSM)	2.21		1.37		1.03	
ANNUAL RUNOFF (INCHES)	30.05		18.72		13.95	
10 PERCENT EXCEEDS	5,790		3,440		2,820	
50 PERCENT EXCEEDS	2,100		1,320		834	
90 PERCENT EXCEEDS	767		538		354	

a Result of regulation.
b Also Sept. 16, 1925; data collected for only part of 1925 water year.
c Also Sept. 5, 6, 2004.
e Estimated.



01630700 GOONEY RUN NEAR GLEN ECHO, VA

LOCATION.--Lat 38°50'06", long 78°13'55", NAD83, Warren County, Hydrologic Unit 02070005, on right bank along State Highway 649 (Browntown Road), 40 ft upstream from bridge on State Highway 622, 6.3 mi southwest of Front Royal, and 1.1 mi south of Glen Echo.

DRAINAGE AREA.--20.6 mi^2.

PERIOD OF RECORD.--May 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is 810.97 ft NAVD of 1988.

REMARKS.--Records good except those for period with ice effect, Jan. 7 to Feb. 5, and period of doubtful gage-height record, Sept. 1-5, which are fair. Miscellaneous water-quality data collected at this site in 1968 and 1969 were published as site 01630600.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	25	41	46	e16	25	48	35	17	5.0	6.9	e1.2
2	37	24	37	45	e15	26	75	79	13	4.6	5.7	e1.1
3	34	23	34	42	e24	26	84	131	13	4.2	3.8	e0.98
4	32	22	33	41	e19	27	73	91	14	9.3	2.9	e0.99
5	30	23	38	41	e18	27	63	73	59	8.4	2.9	e1.0
6	27	28	34	38	126	58	55	60	31	7.2	3.1	1.9
7	26	26	32	e35	84	50	50	75	23	5.5	2.3	4.7
8	24	23	30	e33	55	47	46	73	19	4.8	2.0	152
9	23	22	30	e32	46	43	42	59	16	3.7	1.8	269
10	22	21	130	e28	50	39	37	52	15	3.5	1.6	71
11	22	21	515	e29	44	36	35	46	19	3.8	1.4	43
12	22	33	198	e31	41	33	78	41	27	4.4	2.9	30
13	20	36	130	e29	40	31	155	36	18	5.6	12	24
14	25	33	108	e27	37	29	142	33	16	6.7	4.9	20
15	34	31	87	e27	34	28	104	31	14	6.3	4.1	22
16	22	30	75	e26	31	43	81	31	13	3.7	3.2	18
17	21	29	90	e25	29	36	68	28	16	3.1	2.8	286
18	22	28	77	e26	28	33	60	25	17	4.7	7.7	467
19	20	197	67	e25	30	37	53	26	12	4.7	3.8	186
20	19	162	59	e24	32	33	49	24	11	3.9	3.8	105
21	18	102	54	e23	36	33	48	23	9.6	3.0	3.7	74
22	18	75	54	e22	32	31	41	22	9.5	3.4	4.3	57
23	17	59	62	e21	30	30	41	20	10	4.7	3.0	45
24	17	66	107	e19	30	29	38	18	9.5	4.7	2.4	38
25	16	61	105	e19	28	28	34	16	8.3	4.1	2.0	33
26	16	50	88	e18	27	27	51	23	8.3	5.3	1.7	29
27	37	44	75	e18	26	27	49	23	6.8	5.0	1.5	27
28	30	51	65	e17	25	26	42	23	6.1	5.4	1.4	479
29	36	49	59	e17	25	25	39	17	5.7	3.8	1.3	352
30	29	43	55	e17	---	24	36	15	5.2	2.8	1.6	173
31	26	---	50	e16	---	27	---	17	---	2.4	1.5	---
TOTAL	784	1,437	2,619	857	1,058	1,014	1,817	1,266	462.0	147.7	104.0	3,011.87
MEAN	25.3	47.9	84.5	27.6	36.5	32.7	60.6	40.8	15.4	4.76	3.35	100
MAX	42	197	515	46	126	58	155	131	59	9.3	12	479
MIN	16	21	30	16	15	24	34	15	5.2	2.4	1.3	0.98
CFSM	1.23	2.33	4.10	1.34	1.77	1.59	2.94	1.98	0.75	0.23	0.16	4.87
IN.	1.42	2.59	4.73	1.55	1.91	1.83	3.28	2.29	0.83	0.27	0.19	5.44

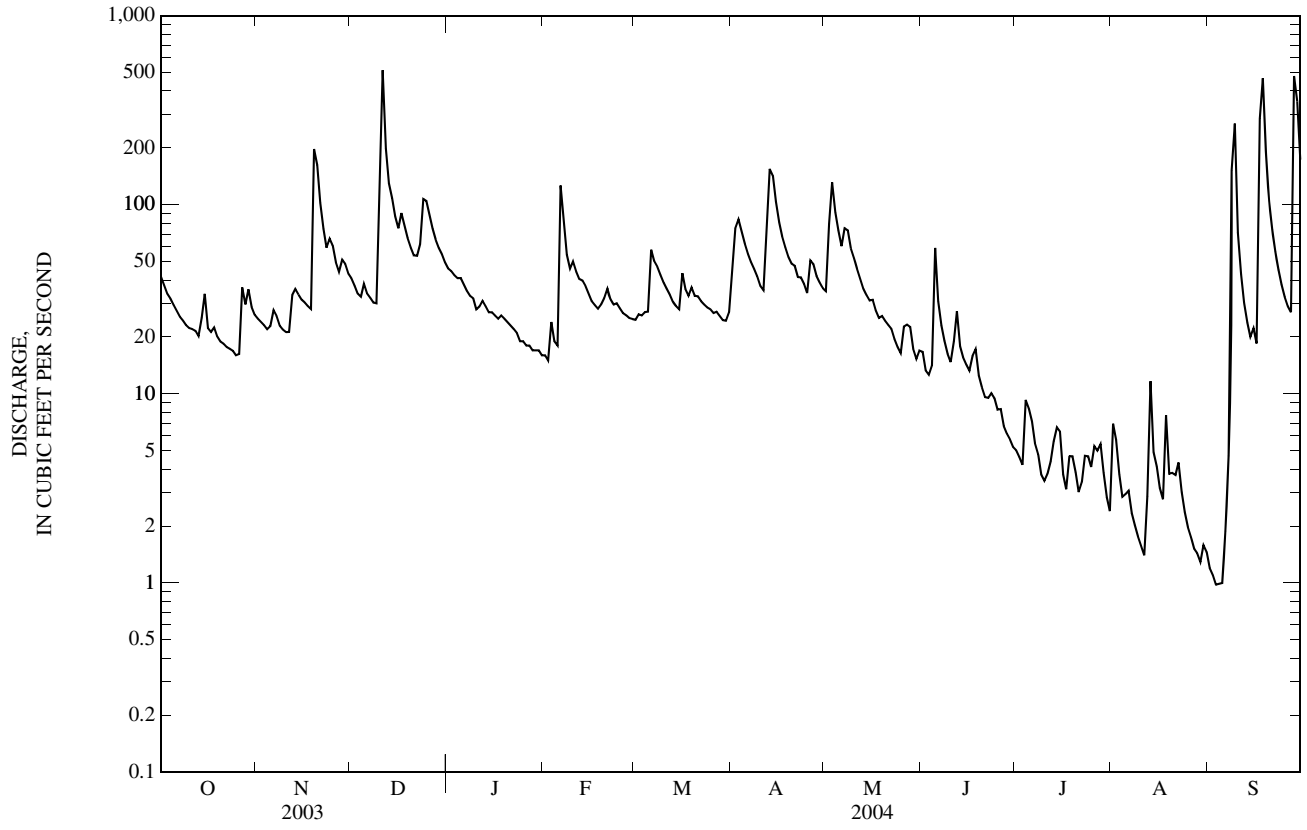
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2004, BY WATER YEAR (WY)

MEAN	19.6	41.7	58.2	31.8	35.6	67.6	69.2	52.7	32.9	13.4	4.43	69.7
MAX	25.3	47.9	84.5	35.9	36.5	102	77.7	64.5	73.6	33.8	9.40	106
(WY)	(2004)	(2004)	(2004)	(2003)	(2004)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	14.0	35.4	32.0	27.6	34.7	32.7	60.6	40.8	9.60	1.69	0.53	2.17
(WY)	(2003)	(2003)	(2003)	(2004)	(2003)	(2004)	(2004)	(2004)	(2002)	(2002)	(2002)	(2002)

01630700 GOONEY RUN NEAR GLEN ECHO, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2002 - 2004	
ANNUAL TOTAL	21,169.4		14,577.57			
ANNUAL MEAN	58.0		39.8		45.7	
HIGHEST ANNUAL MEAN					51.6	2003
LOWEST ANNUAL MEAN					39.8	2004
HIGHEST DAILY MEAN	1,040	Sep 19	515	Dec 11	1,040	Sep 19, 2003
LOWEST DAILY MEAN	3.2	Aug 26	e0.98	Sep 3	0.18	aAug 26, 2002
ANNUAL SEVEN-DAY MINIMUM	4.6	Aug 20	1.2	Aug 30	0.25	Aug 22, 2002
MAXIMUM PEAK FLOW			2,080	Sep 17	2,650	Sep 19, 2003
MAXIMUM PEAK STAGE			8.08	Sep 17	8.89	Sep 19, 2003
INSTANTANEOUS LOW FLOW			(b)	(c)	0.17	dAug 17, 2002
ANNUAL RUNOFF (CFSM)	2.82		1.93		2.22	
ANNUAL RUNOFF (INCHES)	38.23		26.32		30.13	
10 PERCENT EXCEEDS	110		75		95	
50 PERCENT EXCEEDS	42		27		29	
90 PERCENT EXCEEDS	11		3.8		5.2	

a Also Aug. 27 and Sept. 14, 2002.
b Not determined.
c Probably occurred Sept. 3, 2004.
d Also Aug. 23, 24, 26-28, and Sept. 19, 2002.
e Estimated.



01631000 SOUTH FORK SHENANDOAH RIVER AT FRONT ROYAL, VA

LOCATION.--Lat 38°54'50", long 78°12'39", NAD83, 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 mi^2.

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 NGVD of 1929. June 1899 to July 1906, nonrecording gage at site 1.0 mi upstream at different datum.

REMARKS.--Records good except for period with ice effect, Jan. 21 to Feb. 4, which is poor. 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 ft^3/s, from rating curve extended above 92,000 ft^3/s on basis of slope-area measurement of peak flow. 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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 8,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 20	2015	15,300	9.19	Apr 14	2400	9,390	6.94
Dec 12	0300	15,300	9.21	Sep 10	0415	14,300	8.85
Feb 7	2015	9,180	6.84	Sep 29	2100	*34,400	*14.77

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,830	1,270	2,550	2,410	e880	1,680	1,430	1,850	1,370	768	562	585
2	2,490	1,220	2,400	2,260	e880	1,660	1,620	1,820	1,310	748	558	531
3	2,250	1,180	2,250	2,150	e920	1,620	1,710	2,280	1,240	773	562	517
4	2,070	1,160	2,090	2,080	e1,100	1,600	1,680	2,310	1,130	910	628	514
5	1,910	1,140	2,100	2,020	1,710	1,570	1,580	2,170	1,270	1,140	581	503
6	1,820	1,170	2,120	1,960	2,170	1,780	1,480	2,010	1,570	2,290	554	509
7	1,690	1,810	2,030	1,900	7,140	1,880	1,390	1,940	1,760	1,350	562	513
8	1,600	3,030	1,910	1,780	7,430	1,980	1,360	1,910	1,430	991	575	691
9	1,510	2,450	1,840	1,700	5,040	1,980	1,360	1,690	1,200	853	556	7,080
10	1,450	2,010	1,840	1,640	4,000	1,910	1,310	1,580	1,110	789	524	11,500
11	1,390	1,720	9,910	1,610	3,730	1,810	1,260	1,460	1,120	750	504	6,370
12	1,350	1,680	12,500	1,540	3,660	1,700	1,360	1,390	1,240	724	499	4,170
13	1,320	1,850	7,600	1,540	3,190	1,580	3,240	1,330	1,290	740	518	2,710
14	1,290	4,750	5,620	1,540	2,940	1,520	7,580	1,290	1,310	1,120	542	1,980
15	1,440	3,640	4,800	1,510	2,820	1,440	8,670	1,200	1,210	1,030	680	1,560
16	1,670	2,910	4,130	1,440	2,610	1,460	6,160	1,200	1,140	837	634	1,150
17	1,600	2,540	3,870	1,400	2,390	1,530	4,640	1,160	1,410	735	585	1,430
18	1,450	2,230	4,500	1,320	2,230	1,840	3,720	1,230	1,370	742	562	5,290
19	1,370	2,560	4,490	1,360	2,100	1,880	3,120	1,520	1,160	731	544	7,930
20	1,330	8,420	3,830	1,360	2,040	1,930	2,820	1,670	1,180	695	525	5,760
21	1,290	10,700	3,330	e1,300	2,080	1,990	2,490	1,800	1,050	687	548	3,840
22	1,250	6,650	2,970	e1,250	2,210	1,960	2,210	1,610	981	719	543	2,720
23	1,220	4,970	2,830	e1,200	2,350	1,910	2,040	1,500	929	665	548	2,020
24	1,190	4,070	3,100	e1,150	2,300	1,780	1,910	1,520	932	662	546	1,570
25	1,160	3,550	3,910	e1,100	2,180	1,680	1,790	1,410	924	632	531	1,280
26	1,130	3,140	4,160	e1,050	2,050	1,580	1,860	1,280	921	721	521	1,100
27	1,160	2,710	3,770	e1,000	1,910	1,520	2,170	1,240	892	668	510	996
28	1,260	2,560	3,350	e980	1,800	1,480	2,260	1,280	879	640	506	3,460
29	1,450	2,490	3,020	e960	1,730	1,430	2,080	1,600	825	617	502	22,300
30	1,400	2,590	2,780	e940	---	1,360	1,980	1,650	796	598	515	18,600
31	1,330	---	2,580	e900	---	1,350	---	1,480	---	577	546	---
TOTAL	47,670	92,170	118,180	46,350	77,590	52,390	78,280	49,380	34,949	25,902	17,071	119,179
MEAN	1,538	3,072	3,812	1,495	2,676	1,690	2,609	1,593	1,165	836	551	3,973
MAX	2,830	10,700	12,500	2,410	7,430	1,990	8,670	2,310	1,760	2,290	680	22,300
MIN	1,130	1,140	1,840	900	880	1,350	1,260	1,160	796	577	499	503
CFSM	0.94	1.87	2.32	0.91	1.63	1.03	1.59	0.97	0.71	0.51	0.34	2.42
IN.	1.08	2.09	2.68	1.05	1.76	1.19	1.77	1.12	0.79	0.59	0.39	2.70

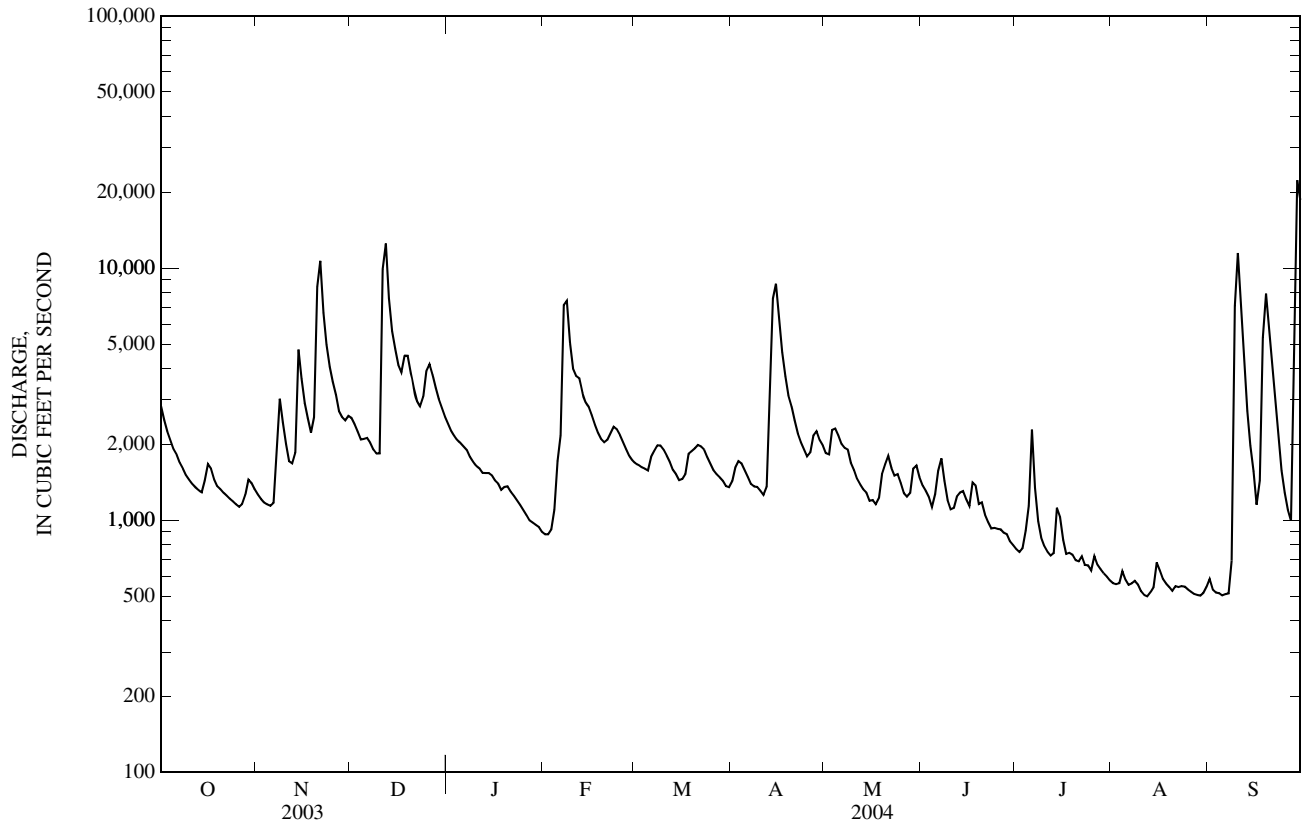
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2004, BY WATER YEAR (WY)

MEAN	1,137	1,229	1,488	1,880	2,201	2,827	2,448	1,840	1,351	807	930	1,069
MAX	8,678	10,130	4,795	7,876	10,600	10,300	7,963	4,807	6,586	2,876	6,807	9,631
(WY)	(1943)	(1986)	(1973)	(1996)	(1998)	(1936)	(1987)	(1989)	(1972)	(1949)	(1955)	(1996)
MIN	225	242	268	285	311	510	516	578	377	252	260	280
(WY)	(1931)	(1931)	(1966)	(1966)	(2002)	(2002)	(1981)	(1977)	(1999)	(1966)	(2002)	(2002)

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

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1931 - 2004	
ANNUAL TOTAL	1,180,094		759,111			
ANNUAL MEAN	3,233		2,074		1,597	
HIGHEST ANNUAL MEAN					3,189	1996
LOWEST ANNUAL MEAN					493	2002
HIGHEST DAILY MEAN	41,700	Sep 20	22,300	Sep 29	114,000	Oct 16, 1942
LOWEST DAILY MEAN	726	Feb 14	499	Aug 12	107	Nov 18, 1930
ANNUAL SEVEN-DAY MINIMUM	754	Feb 9	519	Aug 24	152	Sep 6, 1966
MAXIMUM PEAK FLOW			34,400	Sep 29	130,000	Oct 16, 1942
MAXIMUM PEAK STAGE			14.77	Sep 29	a34.80	Oct 16, 1942
INSTANTANEOUS LOW FLOW			482	bAug 29	59	Jan 30, 1934
ANNUAL RUNOFF (CFSM)	1.97		1.26		0.973	
ANNUAL RUNOFF (INCHES)	26.74		17.20		13.21	
10 PERCENT EXCEEDS	6,140		3,790		3,200	
50 PERCENT EXCEEDS	2,370		1,540		948	
90 PERCENT EXCEEDS	942		594		385	

a From floodmarks.
b Also Aug. 30, 2004.
e Estimated.



01632000 NORTH FORK SHENANDOAH RIVER AT COOTES STORE, VA

LOCATION.--Lat 38°38'13", long 78°51'10", NAD83, 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 mi^2.

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. WDR VA-03-1: 1997-2002.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,051.8 ft NGVD of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Nov. 15, 1937, nonrecording gage at same site and datum.

REMARKS.--Records fair except those for periods of doubtful gage-height record, Dec. 4-10 and June 27 to July 6, and periods with ice effect, Jan. 11, 17-23, 26-28, which are poor. National Weather Service gage-height telemeter and Virginia Department of Emergency Services gage-height radio transmitter at station. Maximum discharge, 63,400 ft^3/s, from rating curve extended above 9,000 ft^3/s on basis of indirect 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.--Maximum stage since at least 1836, that of Oct. 15, 1942.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1615	11,500	11.35	Sep 9	0015	3,770	6.84
Dec 11	0230	6,910	8.85	Sep 28	1700	*15,200	*13.09
Apr 13	2115	7,060	8.94				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75	70	273	198	50	216	193	406	271	e29	20	11
2	68	69	230	178	49	219	282	392	242	e28	26	11
3	61	66	190	166	48	230	291	613	214	e26	25	11
4	56	64	e171	157	50	233	279	523	190	e44	23	9.0
5	53	63	e169	148	50	231	254	459	287	e64	21	10
6	49	67	e165	136	398	286	232	416	291	e31	21	9.0
7	47	69	e158	116	1,440	333	217	379	249	26	20	9.0
8	44	67	e149	101	715	341	212	355	219	26	19	521
9	42	64	e130	100	475	311	203	325	193	23	18	1,480
10	40	62	e172	87	403	285	186	306	172	22	18	399
11	37	61	4,150	e86	433	263	176	303	168	23	17	229
12	36	73	1,280	84	399	250	587	283	339	27	17	158
13	35	293	673	82	379	232	4,010	262	298	41	66	116
14	40	280	507	77	402	214	3,220	294	257	30	39	85
15	127	226	394	76	356	202	1,200	412	402	27	33	62
16	94	185	328	69	302	232	786	469	303	24	28	51
17	80	153	443	e66	268	286	606	893	263	23	26	139
18	78	130	510	e64	249	277	506	796	228	21	24	759
19	72	3,890	406	e66	258	349	446	669	223	22	23	511
20	68	2,670	331	e66	369	392	413	751	199	23	21	296
21	65	924	275	e62	766	392	387	584	169	20	21	205
22	63	515	251	e58	632	337	364	485	145	19	21	152
23	61	347	326	e60	461	293	345	406	124	19	21	117
24	59	295	606	61	383	267	328	350	91	23	20	89
25	56	283	719	60	334	245	311	304	70	22	19	67
26	53	232	542	e58	291	226	657	283	69	21	17	55
27	56	195	415	e56	264	214	802	332	e52	21	16	48
28	72	227	339	e54	241	201	605	438	e46	21	15	5,390
29	79	325	290	52	225	187	497	397	e41	19	14	3,000
30	75	299	260	53	---	180	440	325	e27	19	13	791
31	72	---	224	51	---	186	---	299	---	19	13	---
TOTAL	1,913	12,264	15,076	2,748	10,690	8,110	19,035	13,509	5,842	803	695	14,790.0
MEAN	61.7	409	486	88.6	369	262	634	436	195	25.9	22.4	493
MAX	127	3,890	4,150	198	1,440	392	4,010	893	402	64	66	5,390
MIN	35	61	130	51	48	180	176	262	27	19	13	9.0
CFSM	0.29	1.95	2.32	0.42	1.76	1.25	3.02	2.08	0.93	0.12	0.11	2.35
IN.	0.34	2.17	2.67	0.49	1.89	1.44	3.37	2.39	1.03	0.14	0.12	2.62

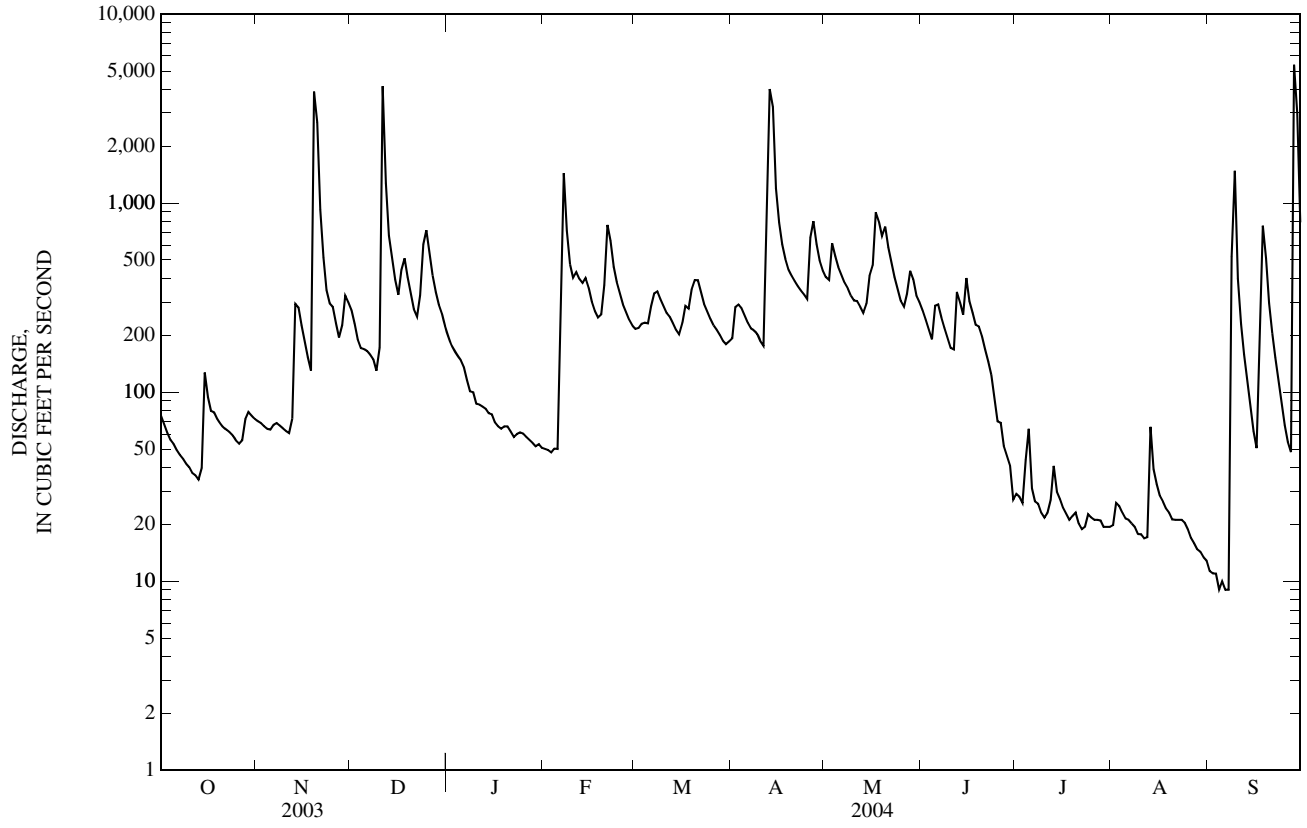
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 2004, BY WATER YEAR (WY)

MEAN	123	148	186	214	286	411	350	273	137	64.9	85.8	96.8
MAX	1,401	1,883	850	1,114	1,182	1,536	1,156	964	906	552	697	1,582
(WY)	(1943)	(1986)	(1974)	(1996)	(1998)	(1936)	(1987)	(1942)	(1972)	(1949)	(1955)	(1996)
MIN	0.76	3.26	3.04	5.13	11.3	38.4	27.7	24.3	6.10	1.15	0.52	0.66
(WY)	(1931)	(1931)	(1966)	(1966)	(1934)	(1981)	(1981)	(1977)	(1977)	(1999)	(1930)	(1930)

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

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1925 - 2004	
ANNUAL TOTAL	135,474.3		105,475.0			
ANNUAL MEAN	371		288		198	
HIGHEST ANNUAL MEAN					463	1996
LOWEST ANNUAL MEAN					58.1	1934
HIGHEST DAILY MEAN	8,990	Sep 19	5,390	Sep 28	26,400	Sep 6, 1996
LOWEST DAILY MEAN	e9.6	aSep 12	b9.0	Sep 4	0.20	cAug 28, 1957
ANNUAL SEVEN-DAY MINIMUM	10	Aug 26	10	Sep 1	0.27	Sep 3, 1966
MAXIMUM PEAK FLOW			15,200	Sep 28	63,400	Sep 6, 1996
MAXIMUM PEAK STAGE			13.09	Sep 28	d27.86	Sep 6, 1996
INSTANTANEOUS LOW FLOW			9.0	fSep 4	0.20	Aug 28, 1957
ANNUAL RUNOFF (CFSM)	1.77		1.37		0.943	
ANNUAL RUNOFF (INCHES)	24.00		18.68		12.81	
10 PERCENT EXCEEDS	782		512		433	
50 PERCENT EXCEEDS	180		186		63	
90 PERCENT EXCEEDS	30		21		4.8	

a Also Sept. 17, 2003.
b Also Sept. 6, 7, 2004.
c Also Aug. 29, Sept. 4, 1957, and Sept. 7-10, 1966.
d From floodmarks.
e Estimated.
f Also Sept. 5-8, 2004.



01632082 LINVILLE CREEK AT BROADWAY, VA

LOCATION.--Lat 38°36'24", long 78°48'12", NAD83, Rockingham County, Hydrologic Unit 02070006, on left bank at Broadway, 170 ft downstream from bridge on State Highway 1421, and 1.1 mi upstream from mouth.

DRAINAGE AREA.--45.5 mi^2.

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

GAGE.--Water-stage recorder. Datum of gage is 1,029.90 ft NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 9-11 and Jan. 22 to Feb. 2, and period of no gage-height record, July 8, which are fair. Maximum discharge, 17,800 ft^3/s, from rating curve extended above 1,860 ft^3/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.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1500	1,740	5.27	Sep 8	1845	848	4.18
Dec 11	0100	1,800	5.33	Sep 18	0400	1,170	4.62
Apr 13	1945	640	3.85	Sep 28	1700	*3,620	*6.86

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	93	24	49	53	e20	52	34	31	23	17	25	8.1
2	84	23	44	52	e19	49	33	32	21	14	21	8.2
3	76	23	41	48	25	45	31	32	20	14	14	8.2
4	70	22	40	46	23	43	29	28	21	18	12	8.2
5	64	22	43	45	23	39	28	27	49	18	13	7.6
6	57	25	40	42	216	56	27	26	30	15	12	8.2
7	50	24	38	38	247	46	27	25	25	16	12	8.7
8	46	21	36	36	117	44	28	25	24	e15	11	129
9	44	20	36	e35	79	39	28	24	22	14	11	88
10	41	20	111	e33	105	37	26	25	22	14	10	30
11	38	20	612	e32	122	35	26	25	24	14	10	22
12	36	28	191	34	91	34	104	24	27	16	14	18
13	35	68	132	33	112	32	301	26	22	16	21	17
14	61	39	118	32	105	31	217	23	21	15	14	16
15	125	34	97	31	82	31	132	22	21	13	12	15
16	56	33	86	29	71	46	99	26	20	13	11	16
17	47	30	165	29	63	44	80	25	19	13	11	103
18	42	28	134	29	59	40	68	25	20	13	10	344
19	38	404	106	28	102	60	62	25	20	13	10	69
20	36	159	87	27	184	53	54	27	18	12	10	41
21	35	91	76	25	204	50	49	25	17	12	11	33
22	33	73	83	e25	133	45	45	23	16	12	11	28
23	31	62	103	e24	108	42	42	21	17	16	10	25
24	29	61	128	e23	98	38	38	20	16	13	9.6	23
25	28	58	102	e22	84	37	35	20	16	12	9.4	22
26	28	51	84	e22	72	35	68	20	17	12	9.0	20
27	33	47	77	e22	66	35	52	21	15	12	8.7	21
28	31	57	71	e21	59	34	39	38	15	11	8.5	1,260
29	28	58	66	e21	54	33	35	29	14	11	8.4	392
30	26	51	62	e21	---	33	33	25	14	11	8.9	188
31	25	---	57	e20	---	34	---	24	---	10	8.3	---
TOTAL	1,466	1,676	3,115	978	2,743	1,272	1,870	789	626	425	366.8	2,977.2
MEAN	47.3	55.9	100	31.5	94.6	41.0	62.3	25.5	20.9	13.7	11.8	99.2
MAX	125	404	612	53	247	60	301	38	49	18	25	1,260
MIN	25	20	36	20	19	31	26	20	14	10	8.3	7.6
CFSM	1.04	1.23	2.21	0.69	2.08	0.90	1.37	0.56	0.46	0.30	0.26	2.18
IN.	1.20	1.37	2.55	0.80	2.24	1.04	1.53	0.65	0.51	0.35	0.30	2.43

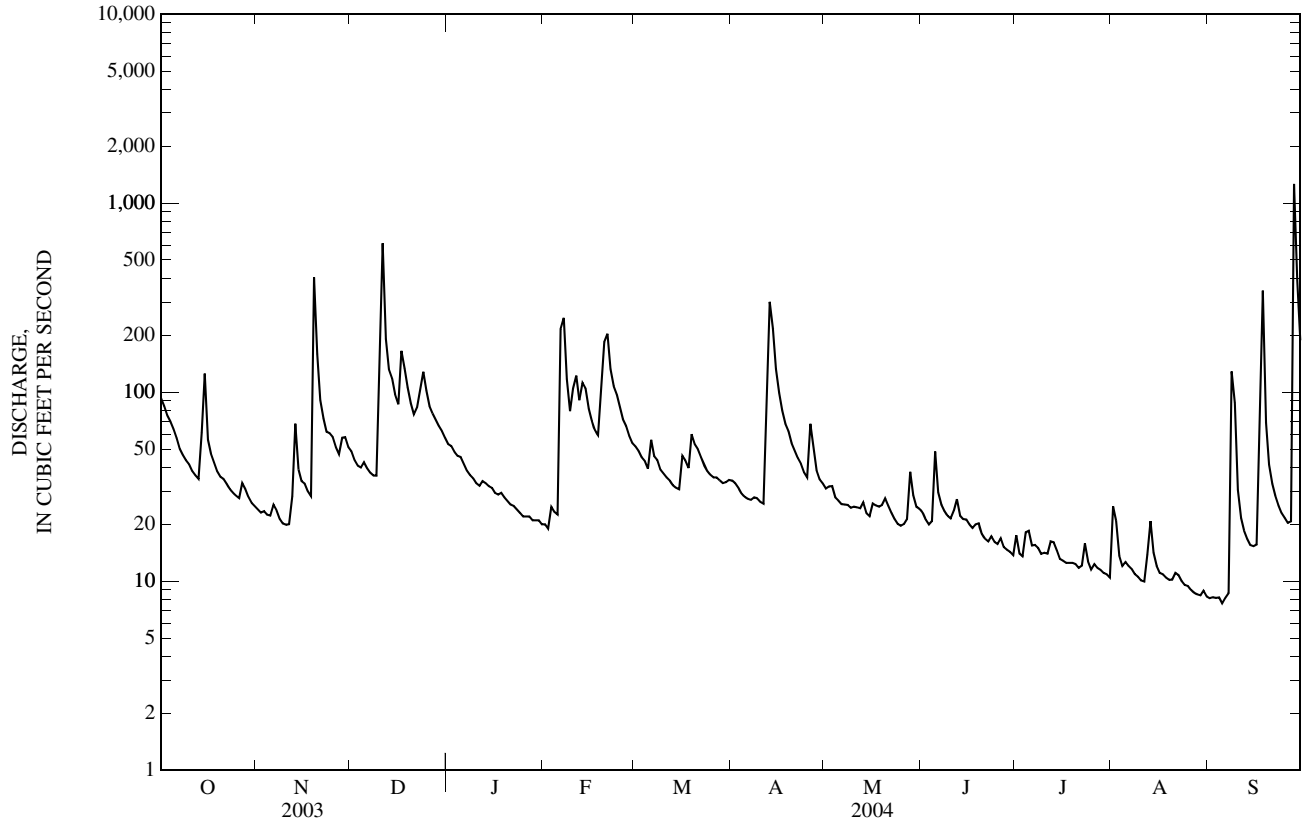
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 2004, BY WATER YEAR (WY)

MEAN	24.3	31.8	35.6	54.1	51.8	71.4	49.5	35.4	32.0	21.4	25.0	45.9
MAX	108	144	115	213	195	206	135	91.0	186	100	138	275
(WY)	(1991)	(1986)	(1997)	(1996)	(1998)	(1994)	(1993)	(1989)	(2003)	(2003)	(1996)	(1996)
MIN	6.48	6.11	5.53	4.75	4.16	6.96	11.5	12.9	6.58	3.62	4.31	5.21
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(1995)	(1986)	(1999)	(1999)	(1999)	(1986)

01632082 LINVILLE CREEK AT BROADWAY, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1985 - 2004	
ANNUAL TOTAL	39,766.9		18,304.0			
ANNUAL MEAN	109		50.0		39.9	
HIGHEST ANNUAL MEAN					108	2003
LOWEST ANNUAL MEAN					8.22	2002
HIGHEST DAILY MEAN	3,020	Sep 19	1,260	Sep 28	e4,700	Sep 6, 1996
LOWEST DAILY MEAN	9.9	Feb 16	7.6	Sep 5	1.7	Aug 11, 1999
ANNUAL SEVEN-DAY MINIMUM	e16	Feb 11	8.1	Aug 31	2.3	Aug 7, 1999
MAXIMUM PEAK FLOW			3,620	Sep 28	17,800	Sep 6, 1996
MAXIMUM PEAK STAGE			6.86	Sep 28	13.23	Sep 6, 1996
INSTANTANEOUS LOW FLOW			7.6	aSep 2	1.0	bAug 8, 1999
ANNUAL RUNOFF (CFSM)	2.39		1.10		0.877	
ANNUAL RUNOFF (INCHES)	32.51		14.97		11.92	
10 PERCENT EXCEEDS	226		100		82	
50 PERCENT EXCEEDS	61		29		19	
90 PERCENT EXCEEDS	25		12		6.9	

a Also Sept. 3-6, 2004.
b Also Aug. 13, 1999.
e Estimated.



01632900 SMITH CREEK NEAR NEW MARKET, VA

LOCATION.--Lat 38°41'36", long 78°38'34", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to Aug. 2, 1963, on right bank a short distance downstream, at datum 0.71 ft higher.

REMARKS.--Records good except those for periods with ice effect, Jan. 9-11 and Jan. 22 to Feb. 4, which are fair. Maximum discharge, 12,400 ft^3/s, from rating curve extended above 2,300 ft^3/s on basis of contracted-opening measurement at gage height 16.38 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. 1, 1959, reached a stage of 10.7 ft, discharge not determined, from information by local residents.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 650 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1730	863	6.34	Sep 9	0745	1,570	7.85
Dec 11	0730	2,180	9.12	Sep 18	1200	1,610	7.95
Feb 7	0030	825	5.82	Sep 29	0545	*2,810	*9.95

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	161	62	106	122	e49	88	80	90	54	39	27	20
2	150	60	98	117	e48	87	85	91	49	38	28	19
3	137	58	92	114	e59	83	90	139	46	37	27	19
4	130	56	90	109	e54	82	82	101	45	40	27	19
5	123	56	98	108	56	80	74	92	107	49	27	19
6	117	66	96	103	295	118	70	86	86	54	27	19
7	109	70	92	95	520	111	69	80	62	42	26	20
8	103	61	91	91	258	97	70	77	54	41	25	65
9	98	56	89	e88	174	89	71	71	50	38	25	670
10	97	54	124	e82	187	85	65	68	47	37	24	112
11	93	53	1,290	e77	256	81	63	65	50	37	23	69
12	92	66	381	82	193	79	149	61	71	37	26	54
13	89	147	253	83	190	75	499	58	55	39	45	46
14	90	103	223	80	193	72	374	59	49	65	31	41
15	189	87	198	78	164	70	229	55	47	40	27	38
16	110	78	180	74	141	88	177	57	73	36	26	36
17	96	73	293	70	127	115	152	65	66	34	25	86
18	92	69	301	72	121	97	135	64	48	44	24	1,130
19	87	365	218	71	126	129	123	74	51	41	23	272
20	83	372	186	66	145	122	114	63	46	36	23	158
21	79	192	163	63	187	112	108	59	44	34	24	119
22	78	155	162	e62	152	102	100	59	43	33	24	97
23	74	135	201	e60	127	94	97	58	43	33	23	82
24	72	128	262	e58	121	89	96	55	44	38	22	72
25	69	143	246	e57	114	86	88	48	44	34	21	65
26	67	122	192	e55	105	82	174	49	47	33	21	60
27	74	112	170	e54	100	81	183	52	43	32	20	56
28	84	116	156	e53	94	80	122	80	41	31	20	354
29	75	134	147	e52	90	75	104	72	40	30	20	1,170
30	69	113	140	e51	---	72	95	57	38	29	20	272
31	65	---	129	e50	---	78	---	56	---	28	20	---
TOTAL	3,052	3,362	6,467	2,397	4,446	2,799	3,938	2,161	1,583	1,179	771	5,259
MEAN	98.5	112	209	77.3	153	90.3	131	69.7	52.8	38.0	24.9	175
MAX	189	372	1,290	122	520	129	499	139	107	65	45	1,170
MIN	65	53	89	50	48	70	63	48	38	28	20	19
CFSM	1.06	1.20	2.24	0.83	1.64	0.97	1.41	0.75	0.57	0.41	0.27	1.88
IN.	1.22	1.34	2.58	0.96	1.77	1.12	1.57	0.86	0.63	0.47	0.31	2.10

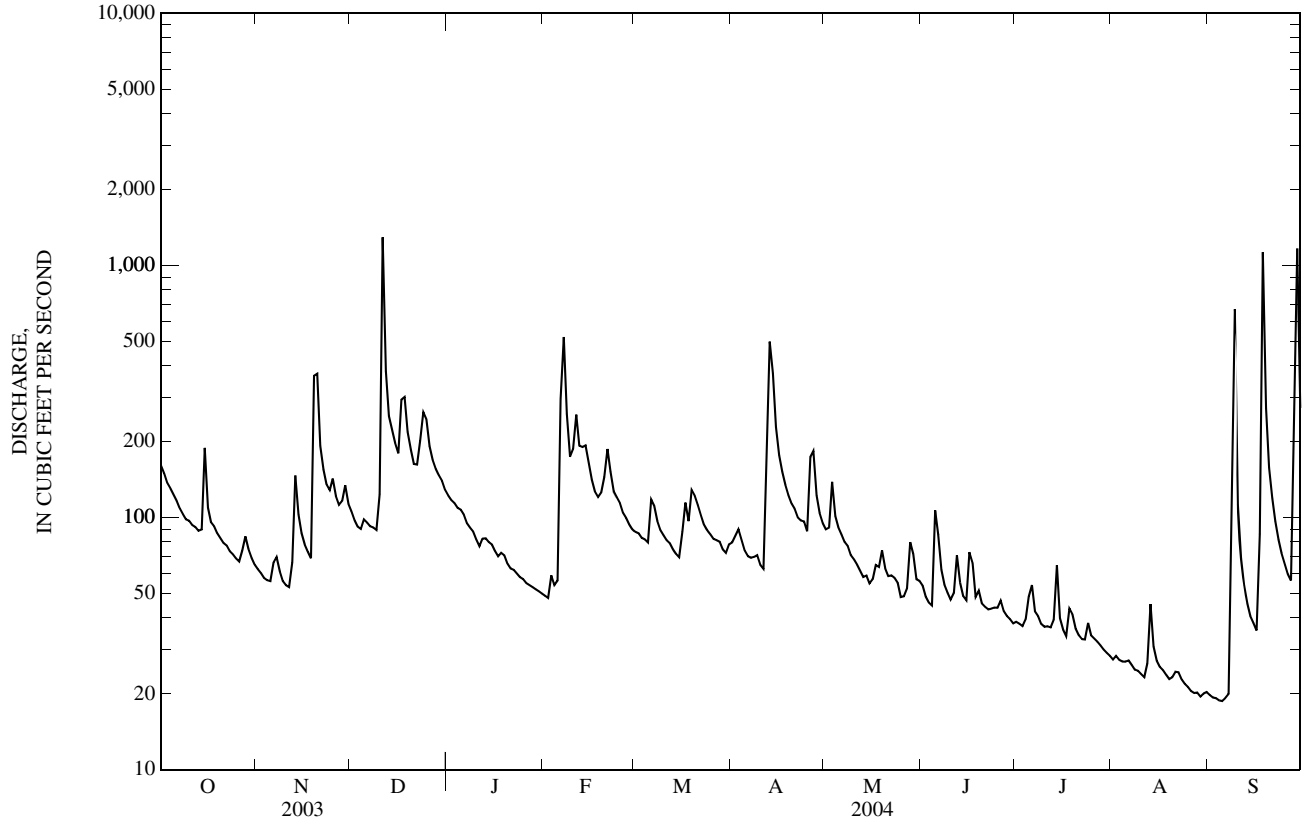
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2004, BY WATER YEAR (WY)

MEAN	52.5	57.8	70.6	98.3	113	152	116	82.3	61.0	36.9	36.2	50.0
MAX	297	324	240	423	447	530	372	238	294	131	139	408
(WY)	(1973)	(1986)	(1997)	(1996)	(1998)	(1994)	(1987)	(1988)	(1972)	(2003)	(1996)	(1996)
MIN	8.56	11.0	8.86	10.1	9.58	18.4	19.4	20.0	12.3	8.64	6.83	9.36
(WY)	(1987)	(1966)	(1966)	(1966)	(2002)	(2002)	(1981)	(1969)	(1999)	(2002)	(2002)	(1986)

01632900 SMITH CREEK NEAR NEW MARKET, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1960 - 2004	
ANNUAL TOTAL	68,897		37,414			
ANNUAL MEAN	189		102		77.0	
HIGHEST ANNUAL MEAN					178	2003
LOWEST ANNUAL MEAN					17.0	2002
HIGHEST DAILY MEAN	4,840	Sep 19	1,290	Dec 11	5,190	Jan 19, 1996
LOWEST DAILY MEAN	a28	Feb 16	19	bSep 2	e2.8	Sep 14, 2002
ANNUAL SEVEN-DAY MINIMUM	e33	Feb 10	19	cAug 31	e3.3	Sep 8, 2002
MAXIMUM PEAK FLOW			2,810	Sep 29	12,400	Sep 6, 1996
MAXIMUM PEAK STAGE			9.95	Sep 29	17.62	Sep 6, 1996
INSTANTANEOUS LOW FLOW			18	dSep 4	(f)	(g)
ANNUAL RUNOFF (CFSM)	2.03		1.10		0.826	
ANNUAL RUNOFF (INCHES)	27.50		14.93		11.22	
10 PERCENT EXCEEDS	374		181		154	
50 PERCENT EXCEEDS	119		75		42	
90 PERCENT EXCEEDS	54		28		15	

a Result of freezeup.
b Also Sept. 3-6, 2004.
c Also Sept. 1, 2004.
d Also Sept. 6, 2004.
e Estimated.
f Not determined.
g Probably occurred Sept. 14, 2002.



01633000 NORTH FORK SHENANDOAH RIVER AT MOUNT JACKSON, VA

LOCATION.--Lat 38°44'44", long 78°38'20", NAD83, 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 mi^2.

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 NGVD of 1929. 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 those for periods with ice effect, Jan. 18, 19, and Jan. 22 to Feb. 4, and period of no gage-height record, Feb. 24, which are 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 ft^3/s, Sept. 6, 1996, from rating curve extended above 19,000 ft^3/s on basis of peak runoff for stations at Cootes Store and near Strasburg. 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 ft^3/s, from rating curve extended above 18,000 ft^3/s on basis of peak runoff for flood in October, 1942 for stations at Cootes Store and near Strasburg.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	2215	11,900	12.81	Sep 9	0600	5,230	8.71
Dec 11	0815	9,440	11.46	Sep 28	2345	*14,700	*14.11
Apr 14	0230	7,660	10.38				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	482	229	585	536	e165	450	351	558	342	122	73	42
2	443	224	514	495	e160	439	433	528	293	119	117	42
3	402	219	454	470	e190	438	513	778	255	113	95	42
4	376	213	417	450	e188	438	484	744	229	117	82	41
5	360	209	430	430	185	436	436	625	421	171	78	42
6	336	224	414	410	682	543	393	542	489	168	79	41
7	316	231	390	374	2,800	645	365	473	368	125	74	44
8	299	217	366	350	1,660	637	355	434	305	121	71	454
9	285	209	343	342	1,120	585	354	382	266	110	68	3,180
10	275	204	391	327	959	533	324	348	238	104	59	982
11	265	198	6,020	302	1,150	482	303	334	236	107	56	526
12	257	221	2,630	309	1,000	454	477	311	452	112	64	348
13	248	529	1,570	304	942	425	4,170	279	466	129	150	262
14	245	636	1,260	291	1,030	393	5,070	280	366	166	137	211
15	548	518	1,040	284	891	369	2,080	495	501	121	104	184
16	414	440	874	266	743	402	1,330	475	487	105	91	165
17	338	383	1,080	250	639	552	1,030	1,080	415	98	79	447
18	321	333	1,350	e245	580	523	858	925	321	104	73	2,980
19	301	3,050	1,080	e240	590	640	739	955	307	113	69	1,470
20	282	5,000	894	234	827	738	648	915	277	101	67	866
21	268	1,750	751	214	1,440	750	593	798	235	96	72	605
22	259	1,080	685	e210	1,350	654	531	658	206	88	74	458
23	249	801	823	e200	1,020	557	494	527	185	93	69	369
24	239	665	1,190	e195	e858	497	467	439	179	110	60	312
25	232	662	1,510	e192	751	454	423	353	164	99	56	274
26	225	553	1,230	e188	642	419	757	324	169	96	53	248
27	236	491	997	e185	574	398	1,300	376	154	94	50	229
28	258	482	840	e180	517	382	941	530	142	90	49	3,410
29	260	711	735	e175	477	353	754	611	130	83	48	7,010
30	247	641	667	e170	---	334	634	436	124	78	49	1,970
31	235	---	591	e165	---	346	---	375	---	75	47	---
TOTAL	9,501	21,323	32,121	8,983	24,130	15,266	27,607	16,888	8,722	3,428	2,313	27,254
MEAN	306	711	1,036	290	832	492	920	545	291	111	74.6	908
MAX	548	5,000	6,020	536	2,800	750	5,070	1,080	501	171	150	7,010
MIN	225	198	343	165	160	334	303	279	124	75	47	41
CFSM	0.61	1.40	2.05	0.57	1.64	0.97	1.82	1.08	0.57	0.22	0.15	1.80
IN.	0.70	1.57	2.36	0.66	1.77	1.12	2.03	1.24	0.64	0.25	0.17	2.00

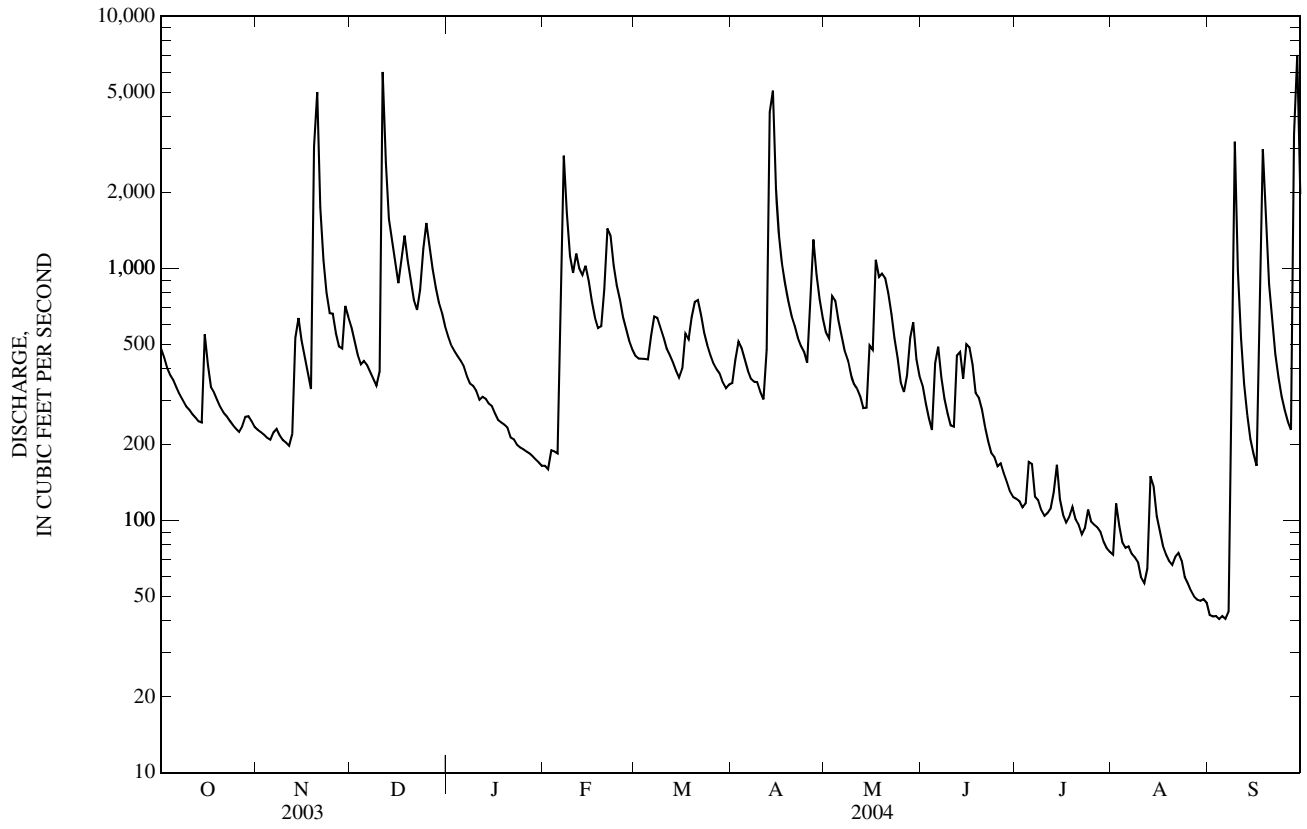
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2004, BY WATER YEAR (WY)

MEAN	233	296	385	473	576	832	648	519	322	169	213	241
MAX	1,580	2,371	1,272	2,283	2,445	2,387	2,193	1,418	1,483	834	1,403	2,804
(WY)	(1980)	(1986)	(1973)	(1996)	(1998)	(1994)	(1987)	(1988)	(1972)	(1949)	(1955)	(1996)
MIN	22.2	26.3	22.7	30.1	29.4	119	79.2	84.3	31.1	8.80	15.0	26.2
(WY)	(1987)	(1966)	(1966)	(1966)	(2002)	(1981)	(1981)	(1969)	(1999)	(1999)	(2002)	(1954)

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

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1944 - 2004	
ANNUAL TOTAL	328,820		197,536			
ANNUAL MEAN	901		540		408	
HIGHEST ANNUAL MEAN					935	1996
LOWEST ANNUAL MEAN					136	1981
HIGHEST DAILY MEAN	14,000	Sep 19	7,010	Sep 29	32,200	Sep 6, 1996
LOWEST DAILY MEAN	e140	Feb 16	41	aSep 4	1.8	Aug 13, 1999
ANNUAL SEVEN-DAY MINIMUM	e152	Feb 10	42	Sep 1	2.8	Aug 7, 1999
MAXIMUM PEAK FLOW			14,700	Sep 28	103,000	Sep 6, 1996
MAXIMUM PEAK STAGE			14.11	Sep 28	22.17	Sep 6, 1996
INSTANTANEOUS LOW FLOW			39	bSep 1	1.5	cAug 12, 1999
ANNUAL RUNOFF (CFSM)	1.78		1.07		0.806	
ANNUAL RUNOFF (INCHES)	24.17		14.52		10.96	
10 PERCENT EXCEEDS	1,910		1,010		876	
50 PERCENT EXCEEDS	564		366		189	
90 PERCENT EXCEEDS	189		89		44	

a Also Sept. 6, 2004.
b Also Sept. 4, 5, 2004.
c Also Aug. 13, 1999.
e Estimated.



01634000 NORTH FORK SHENANDOAH RIVER NEAR STRASBURG, VA

LOCATION.--Lat 38°58'36", long 78°20'10", NAD83, Warren County, Hydrologic Unit 02070006, on right bank at upstream 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 mi^2.

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 NGVD of 1929. Prior to Sept. 21, 1930, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 11 and Jan. 17 to Feb. 5, which are poor. 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 ft^3/s, from rating curve extended above 46,000 ft^3/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.--Maximum stage since at least 1870, that of Sept. 7, 1996.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 20	1215	10,900	12.71	Apr 14	1530	7,750	10.32
Dec 11	2115	9,840	11.94	Sep 9	1830	6,370	9.17
Feb 7	1100	6,530	9.31	Sep 29	1415	*12,900	*14.14

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	819	411	1,040	921	e340	845	672	901	550	243	177	126
2	750	398	940	860	e330	812	722	826	499	239	183	122
3	689	389	840	809	e320	789	864	852	450	240	175	122
4	641	383	765	772	e330	785	916	1,060	419	249	238	114
5	617	401	761	738	e340	779	843	972	652	261	208	111
6	585	438	766	701	1,790	923	769	848	643	290	179	110
7	557	420	737	653	4,200	1,070	716	751	695	359	164	110
8	525	419	689	607	3,290	1,080	683	708	557	282	157	361
9	507	401	650	585	2,140	1,050	668	665	497	240	154	3,820
10	477	385	666	572	1,670	973	653	608	413	236	150	2,950
11	468	381	5,340	e540	1,740	891	616	559	383	225	160	1,290
12	441	427	5,720	525	1,780	816	759	552	610	216	188	801
13	440	532	2,900	522	1,620	789	3,380	517	749	197	288	588
14	441	846	2,100	512	1,670	726	6,340	474	717	229	225	466
15	544	905	1,830	496	1,620	694	4,140	465	713	266	389	383
16	774	774	1,560	477	1,410	694	2,490	688	977	278	297	303
17	622	691	1,520	e460	1,200	773	1,780	801	833	215	227	644
18	542	625	1,980	e430	1,090	904	1,430	1,380	726	338	198	3,580
19	509	1,010	1,820	e430	1,030	924	1,220	1,260	581	306	176	3,710
20	483	6,110	1,530	e440	1,210	1,050	1,080	1,060	522	259	168	1,840
21	459	3,750	1,290	e420	1,660	1,130	964	1,100	500	265	278	1,240
22	441	2,120	1,170	e400	2,290	1,100	863	935	444	223	233	913
23	427	1,520	1,150	e410	1,860	976	795	794	391	213	199	710
24	413	1,260	1,410	e400	1,530	871	748	684	368	200	192	577
25	401	1,190	2,140	e410	1,360	810	705	607	357	198	175	488
26	395	1,100	1,990	e390	1,210	761	854	548	313	220	163	441
27	418	946	1,640	e380	1,070	713	1,850	505	310	212	150	404
28	430	899	1,390	e370	978	692	1,700	538	321	209	144	1,870
29	460	1,000	1,230	e350	901	660	1,290	724	321	200	137	8,310
30	443	1,170	1,120	e360	---	630	1,040	784	210	193	132	4,260
31	425	---	1,020	e350	---	616	---	586	---	180	132	---
TOTAL	16,143	31,301	49,704	16,290	41,979	26,326	41,550	23,752	15,721	7,481	6,036	40,764
MEAN	521	1,043	1,603	525	1,448	849	1,385	766	524	241	195	1,359
MAX	819	6,110	5,720	921	4,200	1,130	6,340	1,380	977	359	389	8,310
MIN	395	381	650	350	320	616	616	465	210	180	132	110
CFSM	0.68	1.36	2.09	0.68	1.88	1.11	1.80	1.00	0.68	0.31	0.25	1.77
IN.	0.78	1.52	2.41	0.79	2.03	1.28	2.01	1.15	0.76	0.36	0.29	1.97

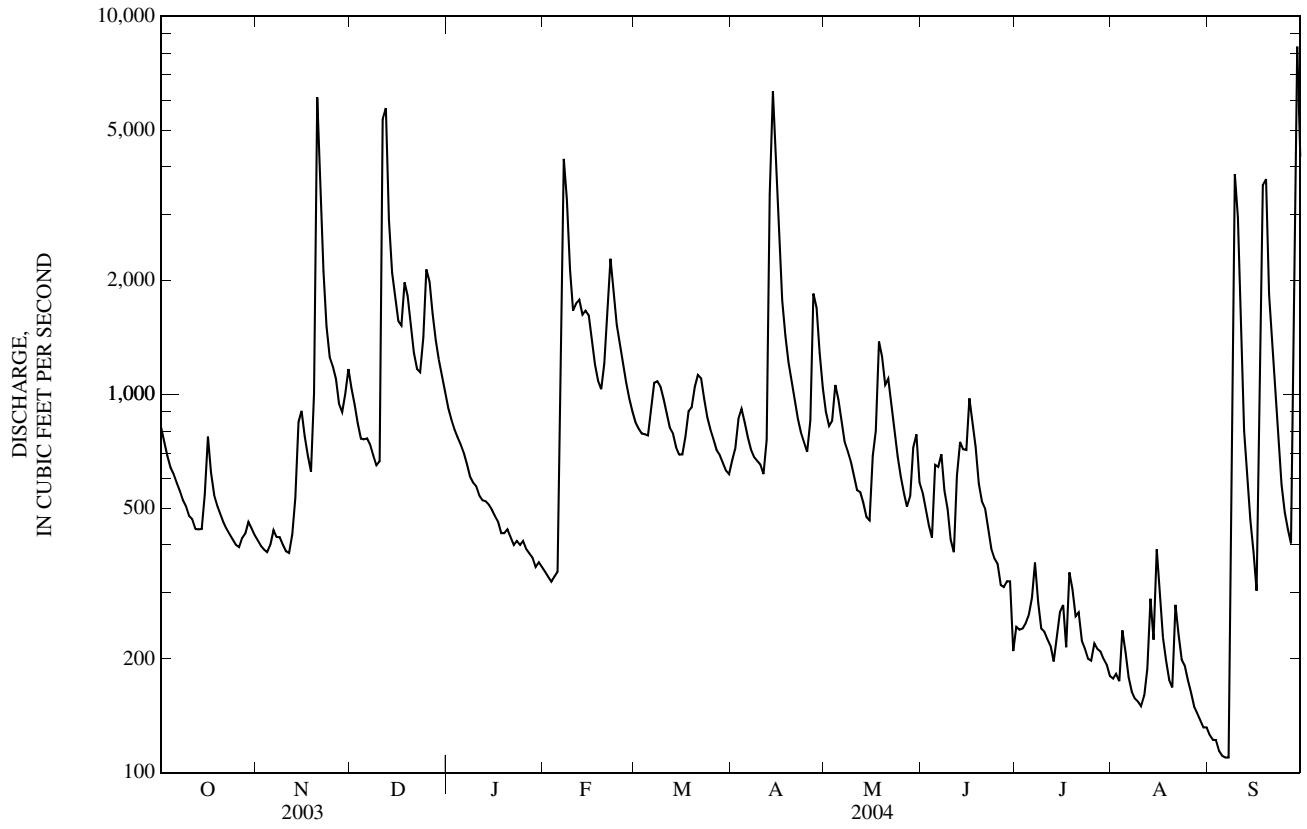
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 2004, BY WATER YEAR (WY)

MEAN	398	427	547	685	870	1,151	988	764	491	298	353	349
MAX	3,488	2,813	1,955	3,394	3,466	5,017	2,876	1,821	2,234	1,169	2,510	3,838
(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	182	154	84.6	56.6	66.7	67.1
(WY)	(1931)	(1931)	(1932)	(1966)	(1931)	(1931)	(1981)	(1969)	(1999)	(1999)	(1930)	(1986)

01634000 NORTH FORK SHENANDOAH RIVER NEAR STRASBURG, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1925 - 2004	
ANNUAL TOTAL	500,002		317,047			
ANNUAL MEAN	1,370		866		610	
HIGHEST ANNUAL MEAN					1,360	1996
LOWEST ANNUAL MEAN					226	1934
HIGHEST DAILY MEAN	14,100	Sep 20	8,310	Sep 29	60,700	Sep 7, 1996
LOWEST DAILY MEAN	278	Feb 16	110	aSep 6	35	bOct 15, 1985
ANNUAL SEVEN-DAY MINIMUM	301	Aug 23	116	Sep 1	45	Sep 13, 1986
MAXIMUM PEAK FLOW			12,900	Sep 29	114,000	Sep 7, 1996
MAXIMUM PEAK STAGE			14.14	Sep 29	32.27	Sep 7, 1996
INSTANTANEOUS LOW FLOW			109	cSep 5	6.0	Feb 9, 1934
ANNUAL RUNOFF (CFSM)	1.78		1.13		0.794	
ANNUAL RUNOFF (INCHES)	24.22		15.36		10.79	
10 PERCENT EXCEEDS	2,970		1,670		1,290	
50 PERCENT EXCEEDS	946		642		319	
90 PERCENT EXCEEDS	369		209		111	

a Also Sept. 7, 2004.
b Also Sept. 14, 18, 1986.
c Also Sept. 6, 7, 2004.
e Estimated.



01634500 CEDAR CREEK NEAR WINCHESTER, VA

LOCATION.--Lat 39°04'52", long 78°19'46", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 8-10 and Jan. 24 to Feb. 5, and periods of no gage-height record, Jan. 11-23 and Mar. 8-23, which are fair. Maximum discharge, 22,000 ft^3/s, from rating curve extended above 15,000 ft^3/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 Mar. 17, 1936, reached a stage of about 25 ft, discharge, about 18,000 ft^3/s, from information by local residents.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1830	2,500	7.47	Jul 5	0200	1,940	6.48
Dec 11	0530	4,890	11.25	Sep 9	0130	2,270	7.06
Feb 6	1830	1,590	5.85	Sep 17	2300	3,700	9.44
Apr 13	0030	3,240	8.71	Sep 28	1700	*5,900	*12.70
Apr 26	1500	2,850	8.06				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	69	60	175	114	e34	126	184	200	49	22	23	9.8
2	62	58	144	110	e33	128	499	184	41	28	22	9.7
3	55	56	123	102	e38	119	369	248	38	23	18	9.5
4	54	54	112	95	e37	120	284	174	36	27	16	9.7
5	52	58	119	92	e35	114	221	155	130	358	14	9.6
6	47	85	113	84	419	207	184	138	85	56	14	10
7	43	92	101	69	819	176	166	134	58	36	13	13
8	41	76	93	e64	369	e165	154	184	47	31	13	123
9	39	66	89	e59	256	e145	144	128	42	25	12	680
10	37	61	106	e52	215	e135	126	110	38	23	12	102
11	36	60	2,520	e55	235	e125	116	97	44	23	12	54
12	35	224	620	e58	206	e115	468	88	230	24	15	39
13	34	233	364	e57	200	e110	1,710	78	94	26	30	32
14	36	156	305	e54	216	e105	840	72	72	24	21	27
15	172	130	251	e53	179	e100	439	71	64	20	16	28
16	73	113	213	e51	145	e120	318	91	62	18	14	29
17	59	99	369	e48	124	e140	257	295	53	17	14	502
18	61	88	349	e50	115	e130	216	133	51	25	13	1,500
19	55	796	257	e49	153	e165	187	165	46	24	13	319
20	50	697	206	e47	275	e185	168	127	39	20	13	163
21	48	349	168	e44	471	e170	161	110	35	17	14	108
22	47	248	159	e42	371	e145	141	104	34	17	16	78
23	45	192	222	e41	267	e123	143	83	33	17	14	58
24	43	175	333	e38	238	119	165	70	32	17	13	49
25	41	229	335	e38	212	114	129	60	29	16	12	43
26	39	170	257	e37	175	105	1,540	67	30	18	11	40
27	61	150	209	e37	154	101	847	63	27	20	11	37
28	109	187	177	e36	138	97	415	57	25	19	11	1,850
29	80	298	159	e36	129	89	299	55	24	17	11	1,020
30	71	209	147	e35	---	85	237	46	23	15	11	373
31	63	---	126	e35	---	94	---	46	---	14	10	---
TOTAL	1,757	5,469	8,921	1,782	6,258	3,972	11,127	3,633	1,611	1,037	452	7,325.3
MEAN	56.7	182	288	57.5	216	128	371	117	53.7	33.5	14.6	244
MAX	172	796	2,520	114	819	207	1,710	295	230	358	30	1,850
MIN	34	54	89	35	33	85	116	46	23	14	10	9.5
CFSM	0.55	1.77	2.79	0.56	2.10	1.24	3.60	1.14	0.52	0.32	0.14	2.37
IN.	0.63	1.98	3.22	0.64	2.26	1.43	4.02	1.31	0.58	0.37	0.16	2.65

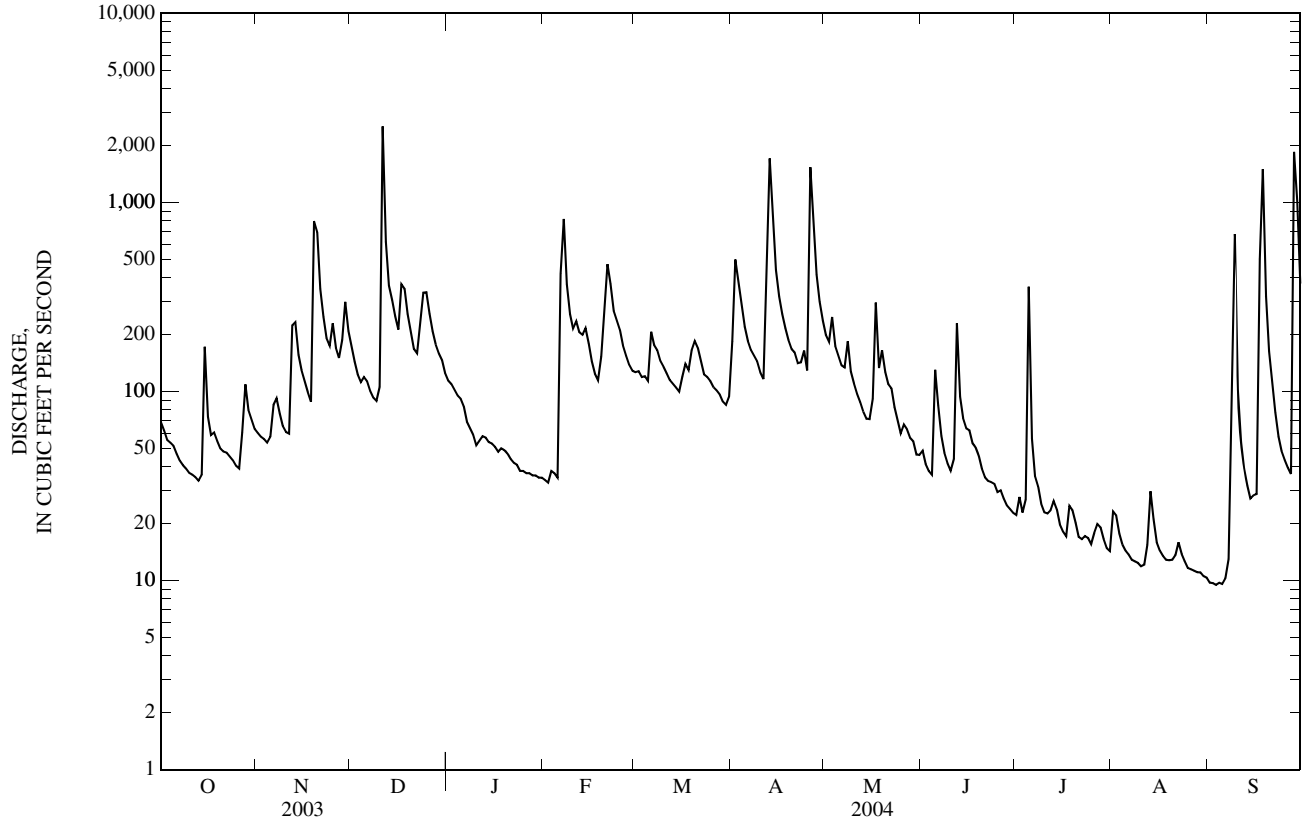
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2004, BY WATER YEAR (WY)

MEAN	59.3	70.7	93.3	113	145	207	177	129	85.5	32.8	38.1	44.8
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	16.4	38.2	37.0	24.5	10.5	6.06	4.52	6.95
(WY)	(1964)	(1966)	(1966)	(1966)	(2002)	(1981)	(1947)	(1969)	(1969)	(1966)	(1957)	(1986)

01634500 CEDAR CREEK NEAR WINCHESTER, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1938 - 2004	
ANNUAL TOTAL	83,330		53,344.3			
ANNUAL MEAN	228		146		99.4	
HIGHEST ANNUAL MEAN					223	2003
LOWEST ANNUAL MEAN					28.3	1969
HIGHEST DAILY MEAN	3,000	Sep 19	2,520	Dec 11	e13,900	Oct 15, 1942
LOWEST DAILY MEAN	19	Aug 26	9.5	Sep 3	2.8	aSep 7, 1964
ANNUAL SEVEN-DAY MINIMUM	20	bAug 24	9.8	Aug 31	3.0	cSep 2, 1966
MAXIMUM PEAK FLOW			5,900	Sep 28	22,000	Oct 15, 1942
MAXIMUM PEAK STAGE			12.70	Sep 28	d27.00	Oct 15, 1942
INSTANTANEOUS LOW FLOW			9.5	fSep 1	g1.5	Feb 2, 1992
ANNUAL RUNOFF (CFSM)	2.22		1.42		0.965	
ANNUAL RUNOFF (INCHES)	30.10		19.27		13.11	
10 PERCENT EXCEEDS	488		296		214	
50 PERCENT EXCEEDS	125		78		42	
90 PERCENT EXCEEDS	34		17		10	

a Also Sept. 3, 4, 7, 8, 1966.
b Also Aug. 25, 26, 2003.
c Also Sept. 3, 1966.
d From floodmarks.
e Estimated.
f Also Sept. 2-6, 2004.
g Result of freezeup.



01635090 CEDAR CREEK ABOVE HIGHWAY 11 NEAR MIDDLETOWN, VA

LOCATION.--Lat 39°00'24", long 78°18'59", NAD83, Warren County, Hydrologic Unit Code 01070006, on left bank, 5 ft upstream from U.S. Highway 11, 1.5 mi north of Strasburg.

DRAINAGE AREA.--153 mi^2.

PERIOD OF RECORD.--November 2000 to current year.

GAGE.--Water-stage recorder. Datum of gage is 600 ft NGVD of 1929, from topographic map..

REMARKS.--Records fair except for period with ice effect, Jan. 7 to Feb. 3, which is poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	98	99	228	191	e77	194	161	310	93	50	35	30
2	94	97	196	185	e76	191	751	276	85	54	44	30
3	89	95	175	177	e80	184	538	374	75	52	37	30
4	86	92	165	166	83	180	384	263	73	53	33	29
5	85	97	172	160	83	174	283	230	191	369	32	30
6	82	119	167	151	493	274	226	209	164	87	32	31
7	77	123	156	e122	1,630	282	198	197	116	59	31	33
8	76	114	147	e120	739	262	183	289	96	52	30	52
9	75	103	143	e117	430	224	174	196	85	45	30	841
10	74	100	162	e110	384	201	151	171	78	41	30	148
11	74	99	3,970	e113	451	182	137	152	83	39	32	87
12	73	210	1,210	e116	388	172	337	137	340	40	40	66
13	73	282	655	e112	372	157	2,590	124	169	44	48	57
14	75	195	519	e105	408	145	1,510	116	135	44	51	52
15	198	167	428	e102	331	139	834	115	120	39	39	53
16	123	152	355	e97	263	143	571	142	124	37	37	55
17	104	142	594	e95	231	165	446	405	107	35	35	356
18	103	132	648	e96	214	150	367	213	105	57	33	2,360
19	98	706	444	e94	242	233	316	227	94	54	33	338
20	93	847	353	e92	449	213	281	196	83	48	34	162
21	91	416	288	e90	812	220	268	170	76	40	36	113
22	89	298	267	e87	687	193	233	169	70	36	37	87
23	87	239	347	e86	455	172	216	141	68	36	37	71
24	84	215	517	e85	389	159	265	122	64	36	34	61
25	82	277	586	e84	347	153	205	110	61	33	32	56
26	80	221	430	e83	285	137	1,780	116	60	35	32	52
27	90	199	346	e82	249	131	1,380	118	58	39	31	52
28	138	207	294	e80	220	124	691	104	56	38	31	2,350
29	118	364	266	e80	202	115	472	101	55	36	31	1,270
30	111	261	244	e78	---	109	370	88	53	33	31	382
31	103	---	210	e78	---	118	---	84	---	31	30	---
TOTAL	2,923	6,668	14,682	3,434	11,070	5,496	16,318	5,665	3,037	1,692	1,078	9,334
MEAN	94.3	222	474	111	382	177	544	183	101	54.6	34.8	311
MAX	198	847	3,970	191	1,630	282	2,590	405	340	369	51	2,360
MIN	73	92	143	78	76	109	137	84	53	31	30	29
CFSM	0.62	1.45	3.10	0.72	2.49	1.16	3.56	1.19	0.66	0.36	0.23	2.03
IN.	0.71	1.62	3.57	0.83	2.69	1.34	3.97	1.38	0.74	0.41	0.26	2.27

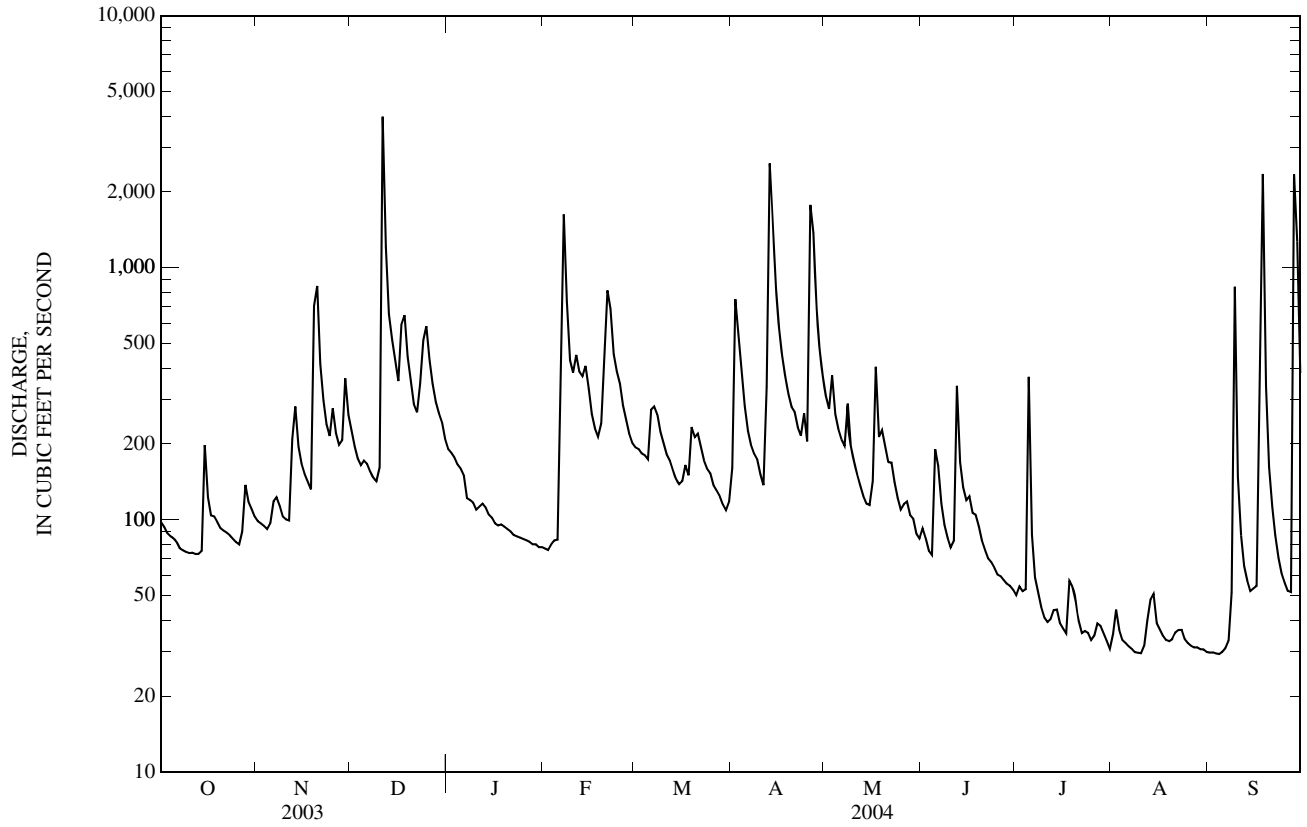
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2004, BY WATER YEAR (WY)

MEAN	63.5	155	202	136	198	324	352	228	191	68.1	46.3	160
MAX	94.3	222	474	323	382	700	544	366	486	131	70.7	311
(WY)	(2004)	(2004)	(2004)	(2003)	(2004)	(2003)	(2004)	(2003)	(2003)	(2003)	(2003)	(2004)
MIN	21.6	28.6	23.5	25.0	26.4	65.9	172	149	88.5	40.8	26.5	26.3
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2001)	(2002)	(2002)	(2002)	(2001)

01635090 CEDAR CREEK ABOVE HIGHWAY 11 NEAR MIDDLETOWN, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2001 - 2004	
ANNUAL TOTAL	117,858		81,397			
ANNUAL MEAN	323		222		196	
HIGHEST ANNUAL MEAN					302	2003
LOWEST ANNUAL MEAN					63.5	2002
HIGHEST DAILY MEAN	3,970	Dec 11	3,970	Dec 11	3,970	Dec 11, 2003
LOWEST DAILY MEAN	43	Aug 26	29	Sep 4	10	Sep 13, 2002
ANNUAL SEVEN-DAY MINIMUM	48	Aug 22	30	Aug 30	12	Sep 9, 2002
MAXIMUM PEAK FLOW			8,270	Sep 28	9,320	Jan 2, 2003
MAXIMUM PEAK STAGE			11.36	Sep 28	11.94	Jan 2, 2003
INSTANTANEOUS LOW FLOW			29	aAug 8	9.0	Sep 13, 2002
ANNUAL RUNOFF (CFSM)	2.11		1.45		1.28	
ANNUAL RUNOFF (INCHES)	28.66		19.79		17.42	
10 PERCENT EXCEEDS	682		429		430	
50 PERCENT EXCEEDS	175		120		91	
90 PERCENT EXCEEDS	67		36		23	

a Also Aug. 9-11, 31, and Sept. 1-4, 2004.
e Estimated.



01635500 PASSAGE CREEK NEAR BUCKTON, VA

LOCATION.--Lat 38°57'29", long 78°16'00", NAD83, 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 mi^2.

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 NGVD of 1929. 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.--Records good except for period of no gage-height record, Jan. 8 to Feb. 18, which is fair. 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. Maximum discharge, 23,000 ft^3/s, from rating curve extended above 5,200 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 20	0130	1,200	6.37	Sep 9	0930	1,390	6.68
Dec 11	1430	2,300	7.97	Sep 18	1445	1,840	7.35
Apr 13	0630	1,610	7.02	Sep 28	2315	*3,690	*9.58

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	31	107	89	e26	69	70	112	23	11	5.6	6.2
2	49	29	94	86	e25	68	141	107	20	10	6.0	4.3
3	41	28	85	82	e28	66	184	172	17	9.6	6.3	3.5
4	37	27	79	78	e35	64	148	122	16	9.8	5.4	3.4
5	35	27	86	75	e32	62	113	101	91	11	5.0	3.2
6	31	35	85	70	e215	127	97	89	78	15	4.9	3.2
7	27	36	79	63	e530	135	89	85	47	11	4.2	3.5
8	25	33	75	e54	e350	104	82	124	33	9.4	4.4	25
9	23	29	74	e48	e260	88	82	86	26	8.5	5.1	643
10	22	27	97	e44	e225	80	74	72	21	7.8	4.2	77
11	20	26	1,610	e45	e269	73	69	62	27	7.4	3.8	36
12	20	41	585	e47	e185	70	171	55	74	7.3	3.8	23
13	18	100	318	e45	e150	64	1,230	49	51	8.0	5.5	17
14	22	80	255	e43	e165	60	793	45	35	8.9	6.7	14
15	104	65	219	e42	e140	57	392	51	48	8.8	7.8	13
16	58	58	192	e40	e115	65	257	53	167	8.6	5.9	12
17	40	54	320	e38	e95	88	198	53	67	7.9	5.3	137
18	37	49	371	e42	e85	75	161	42	52	10	5.1	1,380
19	33	400	237	e38	101	89	137	42	40	17	4.6	292
20	30	677	186	e36	116	87	120	39	33	15	3.9	117
21	28	273	152	e33	169	84	121	36	27	13	4.2	77
22	26	189	140	e32	149	74	104	35	23	9.7	4.8	57
23	25	149	154	e31	116	65	98	30	22	8.2	4.1	44
24	23	135	204	e31	106	62	102	27	21	11	4.0	35
25	22	167	235	e30	101	60	84	23	19	9.6	3.9	30
26	21	127	170	e29	88	57	250	24	18	8.7	3.8	26
27	28	111	144	e28	82	56	414	39	17	8.5	3.5	23
28	43	112	127	e28	76	55	210	34	14	8.5	3.3	1,190
29	40	154	117	e27	72	50	155	34	12	7.6	3.2	1,740
30	39	121	110	e27	---	49	127	24	11	6.8	3.8	358
31	34	---	97	e27	---	52	---	21	---	6.2	6.7	---
TOTAL	1,056	3,390	6,804	1,428	4,106	2,255	6,273	1,888	1,150	299.8	148.8	6,393.3
MEAN	34.1	113	219	46.1	142	72.7	209	60.9	38.3	9.67	4.80	213
MAX	104	677	1,610	89	530	135	1,230	172	167	17	7.8	1,740
MIN	18	26	74	27	25	49	69	21	11	6.2	3.2	3.2
CFSM	0.39	1.29	2.50	0.52	1.61	0.83	2.38	0.69	0.44	0.11	0.05	2.43
IN.	0.45	1.44	2.88	0.61	1.74	0.96	2.66	0.80	0.49	0.13	0.06	2.71

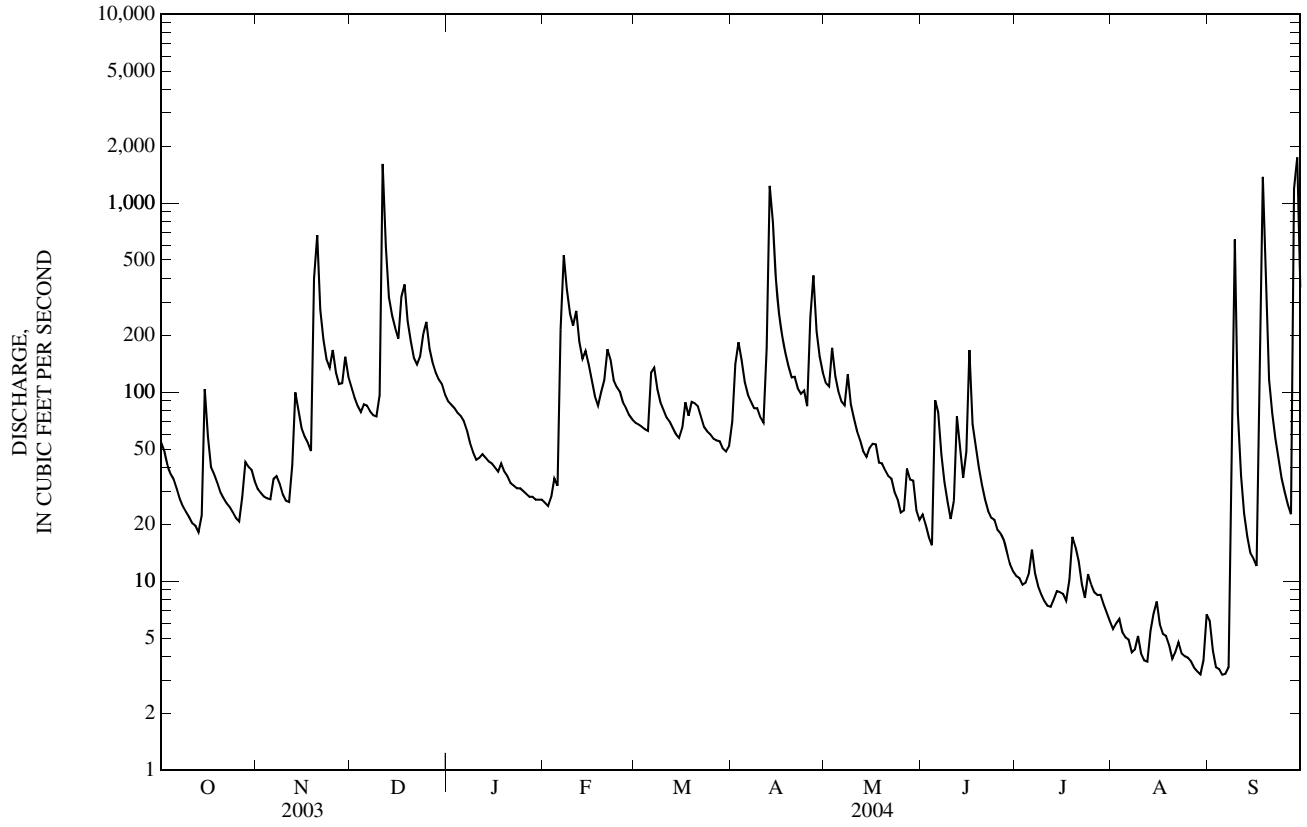
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 2004, BY WATER YEAR (WY)

MEAN	38.9	44.3	69.0	96.4	118	157	137	94.1	53.4	18.7	24.6	32.7
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	5.59	1.87	1.94	2.37
(WY)	(1964)	(1966)	(1966)	(1966)	(1934)	(1959)	(1981)	(1963)	(1999)	(1934)	(1963)	(1936)

01635500 PASSAGE CREEK NEAR BUCKTON, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1933 - 2004	
ANNUAL TOTAL	62,371.0		35,191.9			
ANNUAL MEAN	171		96.2		73.4	
HIGHEST ANNUAL MEAN					168	2003
LOWEST ANNUAL MEAN					20.0	1934
HIGHEST DAILY MEAN	2,830	Sep 19	1,740	Sep 29	9,290	Oct 15, 1942
LOWEST DAILY MEAN	6.1	Aug 27	3.2	aAug 29	0.40	Jul 20, 1934
ANNUAL SEVEN-DAY MINIMUM	6.6	Aug 23	3.6	Aug 24	0.50	Jul 15, 1934
MAXIMUM PEAK FLOW			3,690	Sep 28	23,000	Sep 6, 1996
MAXIMUM PEAK STAGE			9.58	Sep 28	15.89	Sep 6, 1996
INSTANTANEOUS LOW FLOW			2.8	Aug 30	b0.10	Aug 5, 1932
ANNUAL RUNOFF (CFSM)	1.95		1.10		0.836	
ANNUAL RUNOFF (INCHES)	26.43		14.91		11.36	
10 PERCENT EXCEEDS	397		185		160	
50 PERCENT EXCEEDS	88		47		26	
90 PERCENT EXCEEDS	18		6.6		4.4	

a Also Sept. 5, 6, 2004.
b Observed.
e Estimated.



0163626650 MANASSAS RUN AT ROUTE 645 NEAR FRONT ROYAL, VA

LOCATION.--Lat 38°56'03", long 78°07'41", NAD83, Warren County, Hydrologic Unit 02070005, on right bank at end of State Highway 645, 5.6 mi northeast of Front Royal, and 7.5 mi upstream from mouth.

DRAINAGE AREA.--11.2 mi^2.

PERIOD OF RECORD.--May 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is 540 ft NGVD of 1929, from topographic map.

REMARKS.--Records good except those for period with ice effect, Jan. 7 to Feb. 6, period of doubtful or no gage-height record, June 2-4, and periods Feb. 7-16 and June 21 to Sept. 27, which are fair.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	11	39	37	e13	12	24	20	6.3	e3.3	3.9	0.48
2	11	10	36	36	e12	12	65	71	e4.6	e4.9	5.1	0.48
3	9.7	9.3	32	34	e18	12	78	104	e4.1	e3.8	3.1	0.49
4	9.2	8.8	31	33	e15	12	56	64	e46	e5.5	2.3	0.49
5	7.9	10	34	32	e14	12	42	50	49	e97	2.1	0.50
6	6.5	11	32	29	e100	43	34	41	25	e35	2.1	1.4
7	5.9	9.9	31	e26	56	36	28	54	18	21	1.6	1.0
8	5.4	8.3	29	e25	36	31	24	53	15	15	1.3	13
9	4.7	7.4	30	e24	29	25	21	42	13	6.7	1.3	33
10	4.5	6.9	54	e21	31	21	18	41	12	5.1	1.1	4.4
11	4.5	6.9	286	e22	30	18	16	33	29	5.0	1.1	2.8
12	4.2	11	115	e24	27	16	54	27	56	5.7	4.4	2.4
13	3.9	13	83	e24	27	14	133	23	37	6.9	19	2.0
14	8.7	11	74	e22	25	13	110	21	30	7.4	3.7	2.2
15	17	10	66	e22	22	12	77	19	25	5.4	3.4	4.3
16	7.4	9.4	60	e21	e18	17	60	20	22	3.4	2.6	3.6
17	6.4	9.0	72	e20	16	15	50	18	19	2.8	2.4	31
18	6.5	8.6	63	e21	15	13	43	15	30	5.0	1.9	82
19	5.7	93	55	e20	17	14	38	14	24	4.3	1.6	23
20	5.1	69	49	e19	21	11	33	14	15	3.4	1.7	11
21	5.3	50	44	e18	29	12	33	13	e12	2.7	1.7	5.8
22	5.1	42	42	e17	25	10	27	13	e11	2.5	2.6	4.4
23	4.8	37	44	e16	21	9.2	25	10	e11	7.1	1.0	3.5
24	4.5	43	82	e15	20	8.8	22	8.5	e9.8	7.6	0.67	3.1
25	4.2	48	77	e15	17	8.7	19	8.7	e7.3	4.0	0.52	2.7
26	4.5	41	64	e14	15	7.9	42	9.7	e7.7	5.5	0.53	2.4
27	19	37	56	e14	14	8.0	37	8.6	e6.0	5.7	0.51	2.3
28	13	45	50	e14	13	7.3	28	8.2	e4.8	9.3	0.49	194
29	20	48	47	e14	12	6.7	24	7.8	e4.2	4.4	0.49	82
30	16	43	44	e14	---	6.6	22	5.7	e3.8	3.2	0.51	35
31	13	---	40	e13	---	8.1	---	6.4	---	2.7	0.50	---
TOTAL	256.6	767.5	1,861	676	708	452.3	1,283	843.6	557.6	301.3	75.22	554.74
MEAN	8.28	25.6	60.0	21.8	24.4	14.6	42.8	27.2	18.6	9.72	2.43	18.5
MAX	20	93	286	37	100	43	133	104	56	97	19	194
MIN	3.9	6.9	29	13	12	6.6	16	5.7	3.8	2.5	0.49	0.48
CFSM	0.74	2.28	5.36	1.95	2.18	1.30	3.82	2.43	1.66	0.87	0.22	1.65
IN.	0.85	2.55	6.18	2.25	2.35	1.50	4.26	2.80	1.85	1.00	0.25	1.84

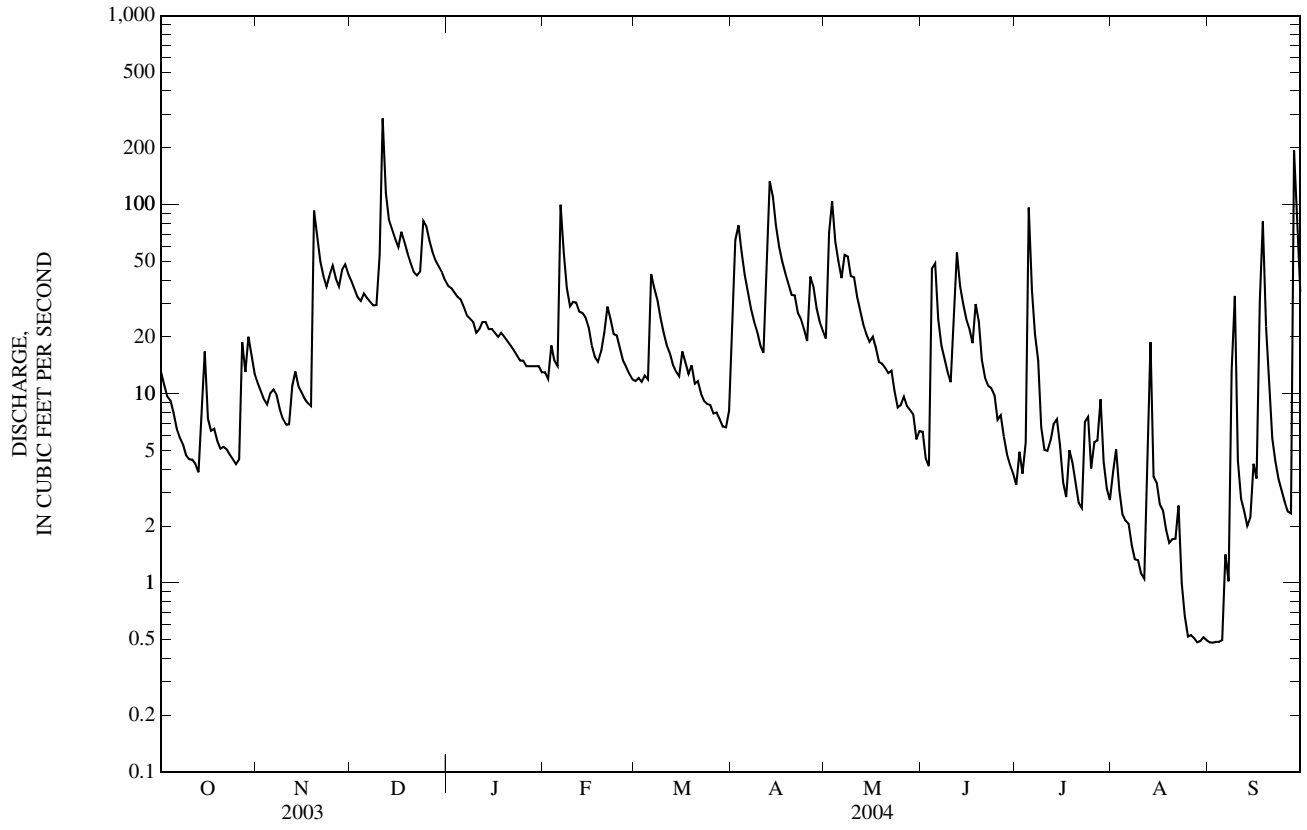
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2004, BY WATER YEAR (WY)

MEAN	7.96	19.3	37.3	20.8	21.1	35.7	40.3	19.4	25.2	9.13	4.82	21.2
MAX	8.28	25.6	60.0	21.8	24.4	56.8	42.8	27.2	51.5	16.2	10.4	43.1
(WY)	(2004)	(2004)	(2004)	(2004)	(2004)	(2003)	(2004)	(2004)	(2003)	(2003)	(2003)	(2003)
MIN	7.64	13.1	14.7	19.7	17.7	14.6	37.9	8.19	5.62	1.48	1.63	2.05
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2004)	(2003)	(2002)	(2002)	(2002)	(2002)	(2002)

0163626650 MANASSAS RUN AT ROUTE 645 NEAR FRONT ROYAL, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2002 - 2004	
ANNUAL TOTAL	11,261.7		8,336.86			
ANNUAL MEAN	30.9		22.8		24.3	
HIGHEST ANNUAL MEAN					25.9	2003
LOWEST ANNUAL MEAN					22.8	2004
HIGHEST DAILY MEAN	286	Dec 11	286	Dec 11	286	Dec 11, 2003
LOWEST DAILY MEAN	2.2	Jul 27	0.48	aSep 1	0.28	bAug 2, 2002
ANNUAL SEVEN-DAY MINIMUM	3.7	Aug 20	0.49	Aug 28	0.37	Aug 20, 2002
MAXIMUM PEAK FLOW			662	Sep 28	685	Sep 23, 2003
MAXIMUM PEAK STAGE			6.65	Sep 28	6.75	Sep 23, 2003
INSTANTANEOUS LOW FLOW			0.42	cAug 25	0.22	dAug 2, 2002
ANNUAL RUNOFF (CFSM)	2.75		2.03		2.17	
ANNUAL RUNOFF (INCHES)	37.40		27.69		29.54	
10 PERCENT EXCEEDS	67		51		55	
50 PERCENT EXCEEDS	22		14		15	
90 PERCENT EXCEEDS	5.7		2.6		3.6	

a Also Sept. 2, 2004.
b Also Aug. 23, 2002.
c Also Aug. 29 and Sept. 1, 2, 8, 2004.
d Also Aug. 3, 23, 2002.
e Estimated.



01636316 SPOUT RUN AT ROUTE 621 NEAR MILLWOOD, VA

LOCATION.--Lat 39°04'01", long 78°00'13", NAD83, Clarke County, Hydrologic Unit 02070007, on left bank, 300 ft downstream from bridge on State Highway 621, 2 mi west of Millwood, 10 mi south of Berryville, and 0.2 mi upstream from mouth.

DRAINAGE AREA.--21.3 mi^2.

PERIOD OF RECORD.--August 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is 440 ft NGVD of 1929, from topographic map.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Dec. 11, Feb. 9, and Apr. 4, 5, which are fair.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	27	38	44	28	34	30	35	26	20	18	12
2	42	26	36	45	28	33	36	41	25	20	19	12
3	40	26	35	44	31	32	44	43	25	20	18	12
4	39	26	34	43	32	32	e38	36	25	20	17	12
5	38	28	36	42	33	32	e36	34	38	20	17	12
6	37	29	36	40	107	48	34	32	32	21	17	12
7	36	29	35	38	159	44	33	32	28	21	17	12
8	35	26	34	37	84	41	32	37	26	20	17	14
9	34	26	33	37	e60	38	32	32	26	20	16	18
10	33	26	38	36	55	36	31	30	25	19	16	13
11	32	26	e450	35	65	35	31	30	27	20	24	12
12	31	37	118	35	58	34	36	29	35	20	18	12
13	31	36	82	35	59	32	142	28	28	20	20	12
14	33	32	76	35	60	32	124	29	27	20	16	12
15	46	31	75	34	50	31	70	30	26	19	15	13
16	34	32	69	33	44	32	57	30	25	18	14	13
17	32	31	72	33	42	31	52	33	25	18	14	15
18	32	31	73	34	41	31	48	30	25	20	14	27
19	31	99	63	33	41	33	45	30	24	20	14	19
20	30	108	57	32	45	30	43	30	23	19	13	16
21	29	55	53	31	46	30	42	29	23	18	13	15
22	29	47	53	31	43	29	39	38	22	18	13	15
23	28	43	57	30	40	29	38	31	23	20	13	14
24	27	42	75	30	41	28	38	29	22	20	13	13
25	28	49	76	30	39	28	36	28	22	19	13	13
26	28	42	61	31	37	28	48	28	23	19	13	13
27	31	40	56	30	36	28	52	27	21	18	12	13
28	31	42	53	30	35	27	40	27	21	18	12	82
29	32	50	51	29	34	27	37	26	21	18	12	107
30	30	41	49	29	---	27	35	26	20	17	12	35
31	29	---	46	28	---	27	---	26	---	18	12	---
TOTAL	1,032	1,183	2,120	1,074	1,473	999	1,399	966	759	598	472	600
MEAN	33.3	39.4	68.4	34.6	50.8	32.2	46.6	31.2	25.3	19.3	15.2	20.0
MAX	46	108	450	45	159	48	142	43	38	21	24	107
MIN	27	26	33	28	28	27	30	26	20	17	12	12
CFSM	1.56	1.85	3.21	1.63	2.38	1.51	2.19	1.46	1.19	0.91	0.71	0.94
IN.	1.80	2.07	3.70	1.88	2.57	1.74	2.44	1.69	1.33	1.04	0.82	1.05

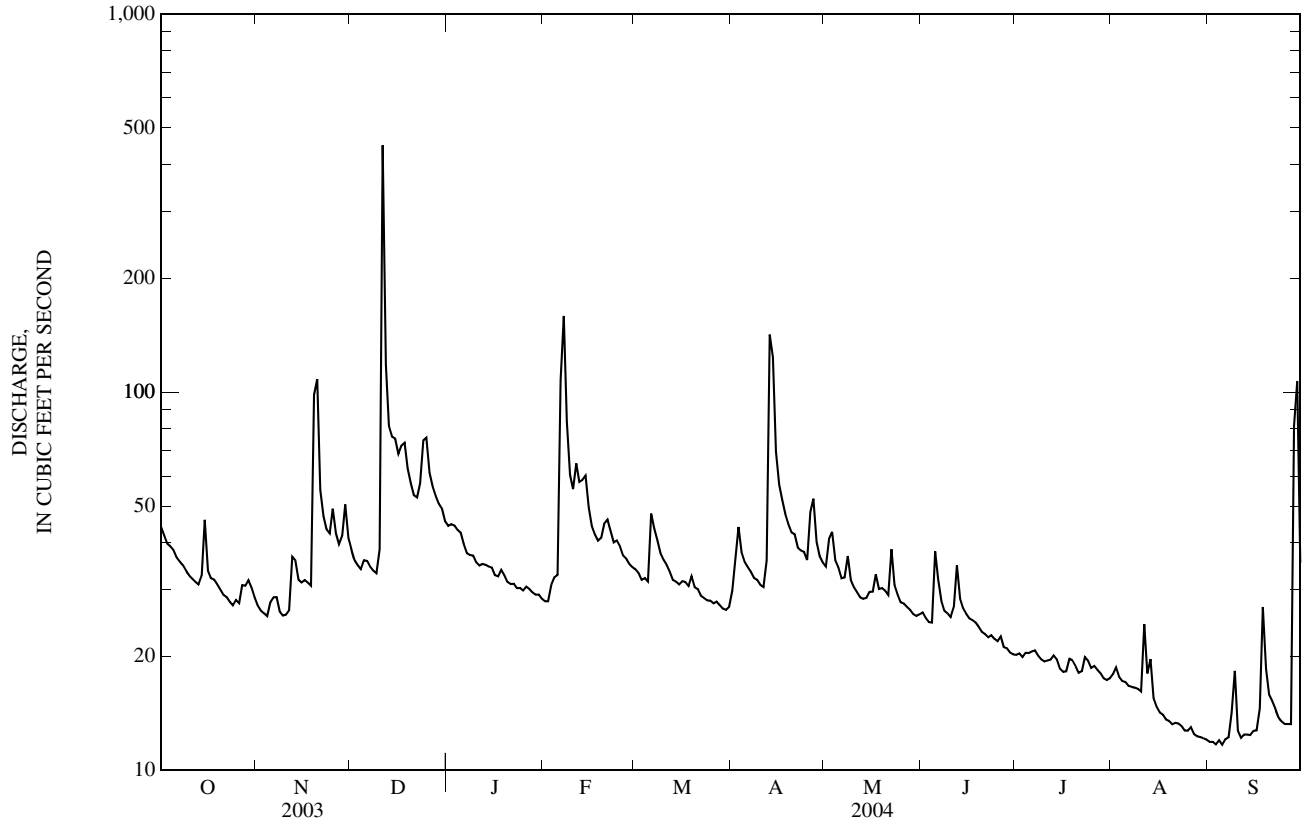
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2004, BY WATER YEAR (WY)

MEAN	20.7	27.0	46.5	34.4	38.9	52.1	44.8	34.6	40.7	31.6	22.1	27.6
MAX	33.3	39.4	68.4	34.6	50.8	71.9	46.6	38.0	56.0	43.9	29.1	56.7
(WY)	(2004)	(2004)	(2004)	(2004)	(2004)	(2003)	(2004)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	8.07	14.6	24.5	34.1	26.7	32.2	42.9	31.2	25.3	19.3	15.2	5.97
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2004)	(2003)	(2004)	(2004)	(2004)	(2004)	(2002)

01636316 SPOUT RUN AT ROUTE 621 NEAR MILLWOOD, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2002 - 2004	
ANNUAL TOTAL	16,479		12,675			
ANNUAL MEAN	45.1		34.6		35.9	
HIGHEST ANNUAL MEAN					37.2	2003
LOWEST ANNUAL MEAN					34.6	2004
HIGHEST DAILY MEAN	e450	Dec 11	e450	Dec 11	e450	Dec 11, 2003
LOWEST DAILY MEAN	17	Feb 12	12	aAug 27	5.2	bSep 12, 2002
ANNUAL SEVEN-DAY MINIMUM	18	Feb 8	12	Aug 27	5.4	Sep 8, 2002
MAXIMUM PEAK FLOW			(c)	Dec 11	(c)	Dec 11, 2003
MAXIMUM PEAK STAGE			(d)	Dec 11	(d)	Dec 11, 2003
INSTANTANEOUS LOW FLOW			11	fSep 3	4.8	Sep 21, 2002
ANNUAL RUNOFF (CFSM)	2.12		1.63		1.69	
ANNUAL RUNOFF (INCHES)	28.78		22.14		22.92	
10 PERCENT EXCEEDS	72		52		58	
50 PERCENT EXCEEDS	36		31		31	
90 PERCENT EXCEEDS	23		15		13	

a Also Aug. 28 to Sept. 7 and Sept. 11-14, 2004.
b Also Sept. 13, 19, 2002.
c Not determined, between 741 ft^3/s and 909 ft^3/s.
d Not determined, between 4.51 ft and 4.85 ft.
e Estimated.
f Also Sept. 4, 5, 2004.



01636500 SHENANDOAH RIVER AT MILLVILLE, WV

LOCATION.--Lat 39°16'55", long 77°47'22", NAD 27, 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 mi^2.

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 with satellite telemeter. Datum of gage is 293.00 ft above NGVD 29. Apr. 15, 1895, to Mar. 31, 1909, nonrecording gage at site 0.8 mi downstream at datum 0.32 ft higher.

REMARKS.--Records good except those for periods of estimated daily discharges (doubtful or no gage-height record), which are poor. Some regulation by upstream hydroelectric plants, including that of Potomac Light and Power Company, 0.5 mi upstream from 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 ft^3/s.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 15,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 21	0500	26,300	10.87	Sep 10	1400	17,600	8.91
Dec 12	0830	31,100	11.83	Sep 19	0830	15,100	8.24
Feb 8	0200	18,700	9.17	Sep 30	0630	*44,500	*14.15
Apr 15	0630	20,400	9.59				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e5,000	2,410	e4,800	4,700	2,410	3,450	2,710	4,200	2,670	1,310	1,060	720
2	e4,600	2,270	4,660	4,430	2,670	3,360	3,460	3,930	2,430	1,270	997	795
3	e4,200	2,220	4,320	4,210	2,470	3,220	4,730	5,260	2,290	1,230	959	709
4	e3,800	2,130	3,990	4,020	2,490	3,160	4,530	4,960	2,130	1,260	990	683
5	e3,550	2,100	3,890	3,850	2,650	3,130	4,060	4,760	3,540	1,510	1,050	681
6	e3,350	2,270	3,910	3,740	3,410	3,470	3,640	4,340	3,580	2,250	1,070	669
7	e3,150	2,320	3,820	3,560	10,000	4,270	3,340	3,970	3,390	2,970	961	640
8	e3,000	3,390	3,640	3,390	16,700	4,280	3,100	4,380	3,330	2,100	906	755
9	e2,850	4,090	3,440	3,210	11,200	4,200	2,990	3,930	2,690	1,650	1,020	1,850
10	e2,700	3,440	3,400	3,090	8,080	4,060	2,890	3,560	2,350	1,430	897	15,800
11	e2,550	3,010	16,200	2,910	7,400	3,830	2,770	3,190	2,140	1,370	945	9,920
12	e2,500	2,810	28,200	2,840	7,310	3,590	2,720	2,890	2,500	1,300	1,080	6,050
13	e2,450	3,160	17,400	2,850	6,720	3,370	6,580	2,730	2,850	1,310	987	4,330
14	e2,450	4,330	11,900	2,830	6,220	3,150	16,300	2,580	2,780	1,330	1,020	3,270
15	e2,900	6,100	9,670	2,770	5,940	3,000	19,000	2,400	2,730	1,690	956	2,630
16	e3,500	5,030	8,330	2,690	5,470	2,850	13,400	2,420	2,640	1,630	1,110	2,180
17	e3,300	4,380	7,420	2,570	4,960	2,930	9,600	2,980	2,690	1,450	1,200	1,810
18	e2,900	3,960	8,240	2,550	4,560	3,140	7,530	3,190	2,880	1,320	1,030	7,520
19	e2,650	4,140	8,940	2,450	4,240	3,650	6,250	3,550	2,610	1,370	952	13,800
20	e2,500	11,200	7,720	2,510	4,220	3,730	5,380	3,660	2,220	1,360	965	9,980
21	e2,450	22,300	6,630	2,540	4,580	3,860	4,910	3,600	2,110	1,240	890	6,620
22	e2,350	13,300	5,890	2,350	5,460	3,910	4,490	3,830	1,920	1,250	852	4,830
23	e2,300	9,330	5,420	2,350	5,730	3,820	4,160	3,390	1,830	1,260	908	3,800
24	e2,250	7,310	5,740	2,240	5,220	3,620	3,980	3,010	1,760	1,250	853	3,060
25	2,140	6,710	7,360	2,180	4,860	3,360	3,750	2,850	1,700	1,100	834	2,510
26	2,070	5,980	8,450	1,840	4,520	3,190	3,680	2,630	1,670	1,160	820	2,190
27	2,160	5,220	7,670	1,880	4,180	3,020	6,300	2,380	1,600	1,250	782	1,950
28	2,350	e4,700	6,670	1,980	3,860	2,910	6,300	2,340	1,530	1,210	743	2,370
29	2,580	e4,610	5,960	2,360	3,650	2,790	5,260	2,430	1,470	1,110	759	24,300
30	2,760	e5,000	5,410	2,700	---	2,680	4,640	2,890	1,450	1,110	719	36,400
31	2,540	---	4,950	2,430	---	2,630	---	2,900	---	1,070	678	---
TOTAL	89,850	159,220	234,040	90,020	161,180	105,630	172,450	105,130	71,480	44,120	28,993	172,822
MEAN	2,898	5,307	7,550	2,904	5,558	3,407	5,748	3,391	2,383	1,423	935	5,761
MAX	5,000	22,300	28,200	4,700	16,700	4,280	19,000	5,260	3,580	2,970	1,200	36,400
MIN	2,070	2,100	3,400	1,840	2,410	2,630	2,710	2,340	1,450	1,070	678	640
CFSM	0.96	1.76	2.50	0.96	1.84	1.13	1.90	1.12	0.79	0.47	0.31	1.91
IN.	1.11	1.96	2.88	1.11	1.98	1.30	2.12	1.29	0.88	0.54	0.36	2.13

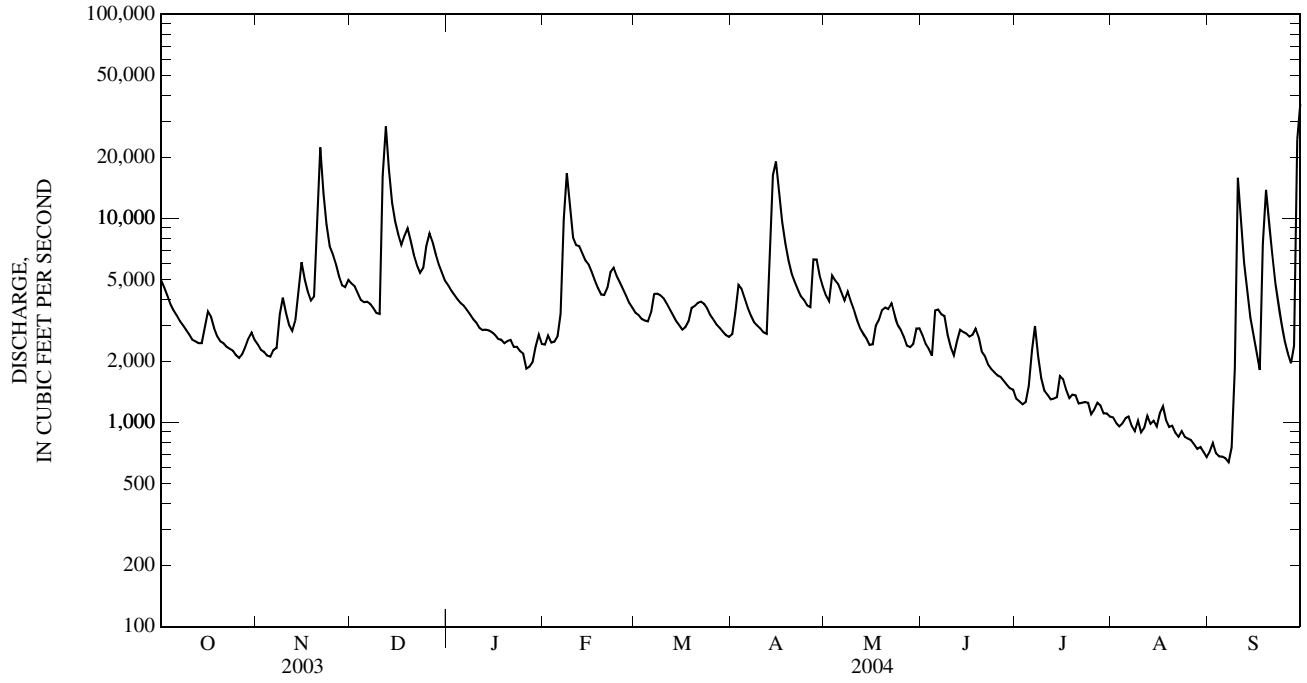
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1895 - 2004, BY WATER YEAR (WY)

MEAN	1,934	1,896	2,528	3,212	3,916	5,039	4,399	3,358	2,445	1,453	1,616	1,594
MAX	16,250	13,350	8,164	13,470	18,100	17,540	12,840	8,701	10,380	4,809	10,390	14,780
(WY)	(1943)	(1986)	(1973)	(1996)	(1998)	(1936)	(1901)	(1901)	(1972)	(1972)	(1955)	(1996)
MIN	343	388	410	475	471	929	992	1,001	643	402	388	411
(WY)	(1931)	(1932)	(1966)	(2002)	(2002)	(1931)	(1981)	(1969)	(1999)	(1966)	(1930)	(1963)

01636500 SHENANDOAH RIVER AT MILLVILLE, WV—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1895 - 2004	
ANNUAL TOTAL	2,237,230		1,434,935			
ANNUAL MEAN	6,129		3,921		2,776	
HIGHEST ANNUAL MEAN					5,618	1996
LOWEST ANNUAL MEAN					927	2002
HIGHEST DAILY MEAN	60,600	Sep 20	36,400	Sep 30	192,000	Oct 16, 1942
LOWEST DAILY MEAN	1,350	Feb 18	640	Sep 7	194	Jul 24, 1930
ANNUAL SEVEN-DAY MINIMUM	1,400	Feb 12	700	Sep 1	240	Sep 7, 1966
MAXIMUM PEAK FLOW			44,500	Sep 30	230,000	Oct 16, 1942
MAXIMUM PEAK STAGE			14.15	Sep 30	(a)32.40	Oct 16, 1942
INSTANTANEOUS LOW FLOW			473	Sep 9	59	Oct 4, 1930
ANNUAL RUNOFF (CFSM)	2.03		1.30		0.919	
ANNUAL RUNOFF (INCHES)	27.54		17.66		12.48	
10 PERCENT EXCEEDS	12,600		6,900		5,630	
50 PERCENT EXCEEDS	4,490		3,000		1,620	
90 PERCENT EXCEEDS	1,840		1,070		610	

a From floodmarks.
e Estimated.



01636690 PINEY RUN NEAR LOVETTSVILLE, VA

LOCATION.--Lat 39°18'39", long 77°43'07", NAD83, Loudoun County, Hydrologic Unit 02070008, on right bank 100 ft downstream from State Highway 671, 0.2 mi south of Loudoun Heights, and 1.3 mi upstream from mouth.

DRAINAGE AREA.--13.70 mi^2.

PERIOD OF RECORD.--October 2001 to current year.

GAGE.--Water-stage recorder. Datum of gage is 396.78 ft NAVD of 1988.

REMARKS.--Records good except those for periods with ice effect, Jan. 8-11 and Jan. 16 to Feb. 2, and periods of doubtful gage-height record, Feb. 8-19, Feb. 22 to Apr. 11, and May 5, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	16	28	23	e12	e21	e44	19	15	9.4	4.5	2.5
2	15	16	25	25	e12	e20	e80	31	12	9.1	4.4	2.3
3	13	16	24	23	31	e21	e68	79	11	8.6	4.2	2.3
4	15	14	22	22	32	e22	e43	32	11	9.2	3.9	2.2
5	14	17	26	22	21	e21	e35	e26	327	10	3.8	2.2
6	12	22	26	21	128	e60	e29	25	111	8.4	3.7	2.3
7	12	18	23	19	96	e33	e26	23	55	14	3.5	2.7
8	11	15	21	e17	e41	e32	e26	23	36	16	3.4	5.1
9	11	13	21	e16	e26	e26	e26	20	27	8.6	3.4	6.1
10	10	13	29	e17	e27	e25	e24	19	24	7.7	3.3	3.3
11	10	13	352	e17	e30	e24	e23	17	28	7.5	4.0	2.7
12	10	26	81	18	e27	e23	40	16	46	7.8	27	2.5
13	9.8	21	53	17	e26	e21	169	15	24	8.0	7.0	2.5
14	14	16	53	17	e26	e21	106	15	20	7.3	5.0	2.4
15	35	15	49	16	e21	e21	56	14	117	6.6	4.6	3.3
16	13	15	42	e15	e20	e24	43	17	73	6.1	4.2	3.1
17	11	14	58	e16	e17	e23	36	14	33	5.9	4.0	7.1
18	12	14	44	e17	e18	e22	32	14	26	6.1	4.0	32
19	11	126	36	e15	e26	e31	29	19	22	6.2	3.9	6.2
20	10	82	32	e14	31	e22	27	15	18	5.6	3.6	4.0
21	10	41	29	e14	34	e22	27	15	17	5.3	3.6	3.5
22	10	32	29	e13	e29	e19	24	30	16	5.3	3.7	3.2
23	10	27	32	e14	e27	e19	23	16	15	7.5	3.4	3.0
24	9.3	33	54	e14	e26	e19	23	15	14	8.0	3.2	2.9
25	9.0	52	41	e15	e25	e19	21	13	13	6.0	3.0	2.9
26	9.1	29	33	e16	e24	e18	45	14	13	6.1	2.9	2.9
27	28	25	30	e17	e23	e17	35	13	11	6.1	2.8	2.9
28	23	46	28	e16	e22	e17	24	13	11	5.6	2.7	247
29	47	55	27	e15	e21	e17	22	12	10	4.9	2.6	74
30	25	32	26	e14	---	e17	20	11	9.7	4.6	3.0	24
31	19	---	24	e13	---	e21	---	12	---	4.6	2.9	---
TOTAL	464.2	874	1,398	528	899	718	1,226	617	1,165.7	232.1	139.2	463.1
MEAN	15.0	29.1	45.1	17.0	31.0	23.2	40.9	19.9	38.9	7.49	4.49	15.4
MAX	47	126	352	25	128	60	169	79	327	16	27	247
MIN	9.0	13	21	13	12	17	20	11	9.7	4.6	2.6	2.2
CFSM	1.09	2.13	3.29	1.24	2.26	1.69	2.98	1.45	2.84	0.55	0.33	1.13
IN.	1.26	2.37	3.80	1.43	2.44	1.95	3.33	1.68	3.17	0.63	0.38	1.26

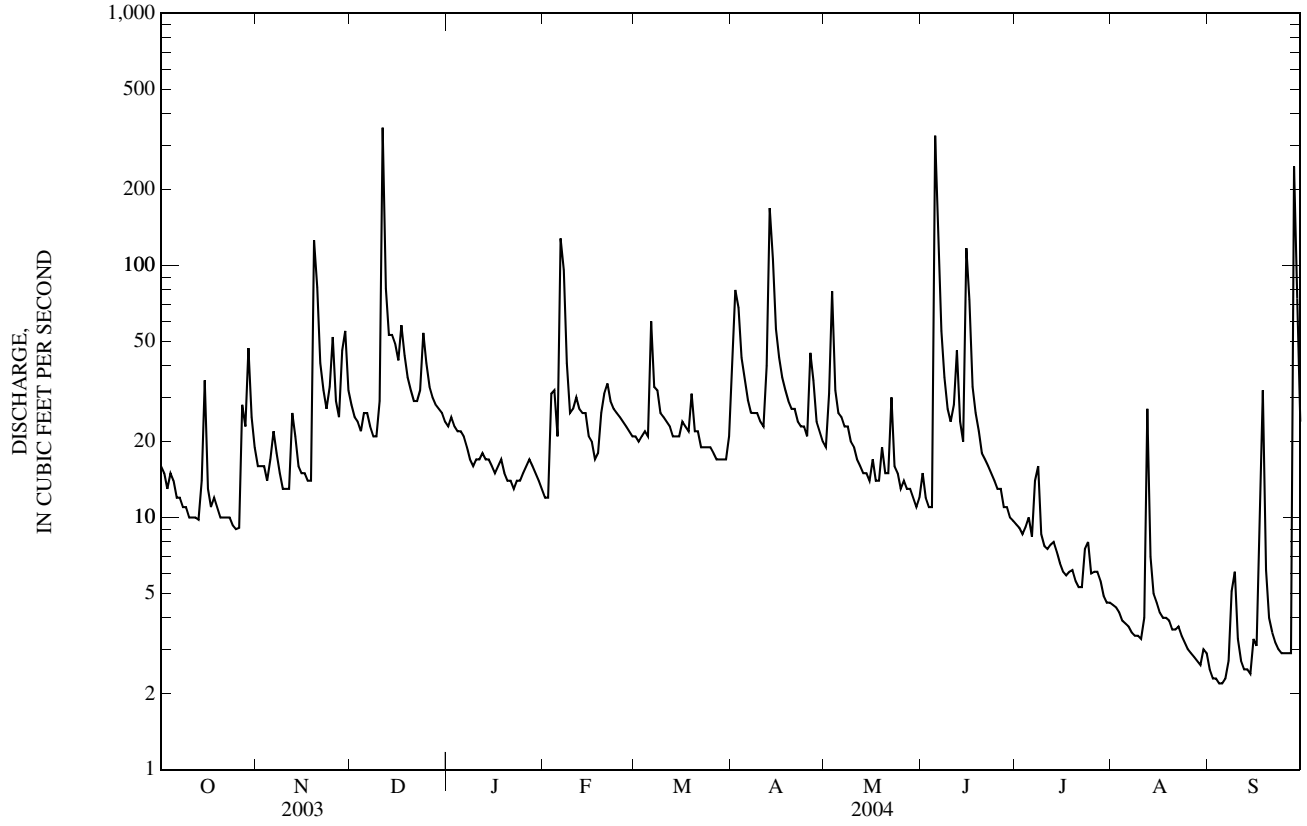
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2004, BY WATER YEAR (WY)

MEAN	6.56	13.8	22.2	16.1	18.4	26.0	26.3	28.5	26.3	5.87	3.70	14.4
MAX	15.0	29.1	45.1	29.1	31.0	49.1	40.9	59.7	38.9	9.12	6.41	27.0
(WY)	(2004)	(2004)	(2004)	(2003)	(2004)	(2003)	(2004)	(2003)	(2004)	(2003)	(2003)	(2003)
MIN	0.87	1.34	1.45	2.08	1.83	5.68	5.33	5.99	2.39	1.00	0.20	0.83
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

01636690 PINEY RUN NEAR LOVETTSVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2002 - 2004	
ANNUAL TOTAL	11,031.1		8,724.3			
ANNUAL MEAN	30.2		23.8		17.3	
HIGHEST ANNUAL MEAN					25.6	2003
LOWEST ANNUAL MEAN					2.42	2002
HIGHEST DAILY MEAN	436	May 16	352	Dec 11	436	May 16, 2003
LOWEST DAILY MEAN	2.7	Aug 25	2.2	aSep 4	0.03	bAug 22, 2002
ANNUAL SEVEN-DAY MINIMUM	3.6	Aug 19	2.4	Sep 1	0.04	Aug 17, 2002
MAXIMUM PEAK FLOW			685	Jun 5	685	Jun 5, 2004
MAXIMUM PEAK STAGE			7.66	Jun 5	7.66	Jun 5, 2004
INSTANTANEOUS LOW FLOW			2.2	cSep 3	0.02	Aug 22, 2002
ANNUAL RUNOFF (CFSM)	2.21		1.74		1.26	
ANNUAL RUNOFF (INCHES)	29.95		23.69		17.16	
10 PERCENT EXCEEDS	56		41		37	
50 PERCENT EXCEEDS	19		17		8.1	
90 PERCENT EXCEEDS	5.9		3.7		0.87	

a Also Sept. 5, 2004.
b Also Aug. 23, 2002.
c Also Sept. 4-6, 2004.
e Estimated.



01638350 SOUTH FORK CATOCTIN CREEK AT ROUTE 698 NEAR WATERFORD, VA

LOCATION.--Lat 39°11'28", long 77°36'56", NAD83, Loudoun County, Hydrologic Unit 02070008, on right bank 50 ft downstream from State Highway 698 and 0.25 mi northwest of Waterford.

DRAINAGE AREA.--31.6 mi^2..

PERIOD OF RECORD.--July 2001 to current year.

REVISED RECORDS.--WDR VA-03-01: 2001-2002(M).

GAGE.--Water-stage recorder. Datum of gage is 335.84 ft NAVD of 1988.

REMARKS.--Records good except for period with ice effect, Jan. 7 to Feb. 2, which is fair.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	40	60	38	e20	27	57	28	28	11	4.8	3.6
2	29	34	51	40	e22	28	162	118	21	11	4.8	3.4
3	26	31	45	39	72	27	149	392	17	9.8	4.6	3.3
4	31	28	43	37	99	29	88	85	16	17	4.4	3.2
5	28	43	51	41	58	28	63	65	665	16	4.0	3.2
6	22	57	52	38	607	170	51	54	164	11	3.6	4.0
7	21	43	48	e30	354	77	46	48	81	11	3.3	5.3
8	19	31	43	e29	130	78	40	56	59	18	3.1	8.7
9	18	26	42	e30	69	53	38	42	47	11	3.1	13
10	17	26	67	e27	121	47	33	77	40	9.1	3.0	6.9
11	17	26	1,450	e27	117	41	31	41	45	8.8	14	4.7
12	16	53	149	e28	83	37	90	35	116	8.7	18	4.3
13	15	51	97	e28	79	32	363	31	49	9.5	14	4.1
14	27	32	95	e27	64	30	205	28	40	11	7.1	4.1
15	114	28	112	e26	50	29	102	27	39	9.4	5.9	7.7
16	27	28	92	e25	40	30	74	32	58	7.7	4.9	8.9
17	20	27	162	e23	34	33	61	27	38	6.9	4.3	36
18	19	25	108	e27	33	29	53	26	36	6.7	7.8	105
19	17	550	80	e25	38	44	46	60	27	6.9	5.2	19
20	15	236	68	e25	47	31	41	34	23	6.3	4.3	9.0
21	15	89	59	e23	51	29	40	34	21	5.6	4.2	6.7
22	14	67	57	e21	44	25	36	55	20	5.6	4.8	5.6
23	13	57	61	e21	37	23	37	30	20	7.2	4.2	5.0
24	12	61	103	e21	40	22	54	25	19	7.3	3.8	4.7
25	12	113	79	e20	40	22	33	26	17	6.0	3.8	4.4
26	12	59	60	e22	32	21	81	27	17	6.5	3.8	4.2
27	108	51	53	e24	30	22	81	22	14	7.8	3.7	4.3
28	65	120	49	e23	29	21	40	37	13	9.4	3.6	1,150
29	221	145	47	e22	27	19	33	23	13	6.6	3.7	261
30	72	70	45	e22	---	19	30	19	12	5.3	3.6	48
31	49	---	40	e21	---	24	---	21	---	4.8	3.6	---
TOTAL	1,123	2,247	3,568	850	2,467	1,147	2,258	1,625	1,775	278.9	167.0	1,751.3
MEAN	36.2	74.9	115	27.4	85.1	37.0	75.3	52.4	59.2	9.00	5.39	58.4
MAX	221	550	1,450	41	607	170	363	392	665	18	18	1,150
MIN	12	25	40	20	20	19	30	19	12	4.8	3.0	3.2
CFSM	1.15	2.37	3.64	0.87	2.69	1.17	2.38	1.66	1.87	0.28	0.17	1.85
IN.	1.32	2.65	4.20	1.00	2.90	1.35	2.66	1.91	2.09	0.33	0.20	2.06

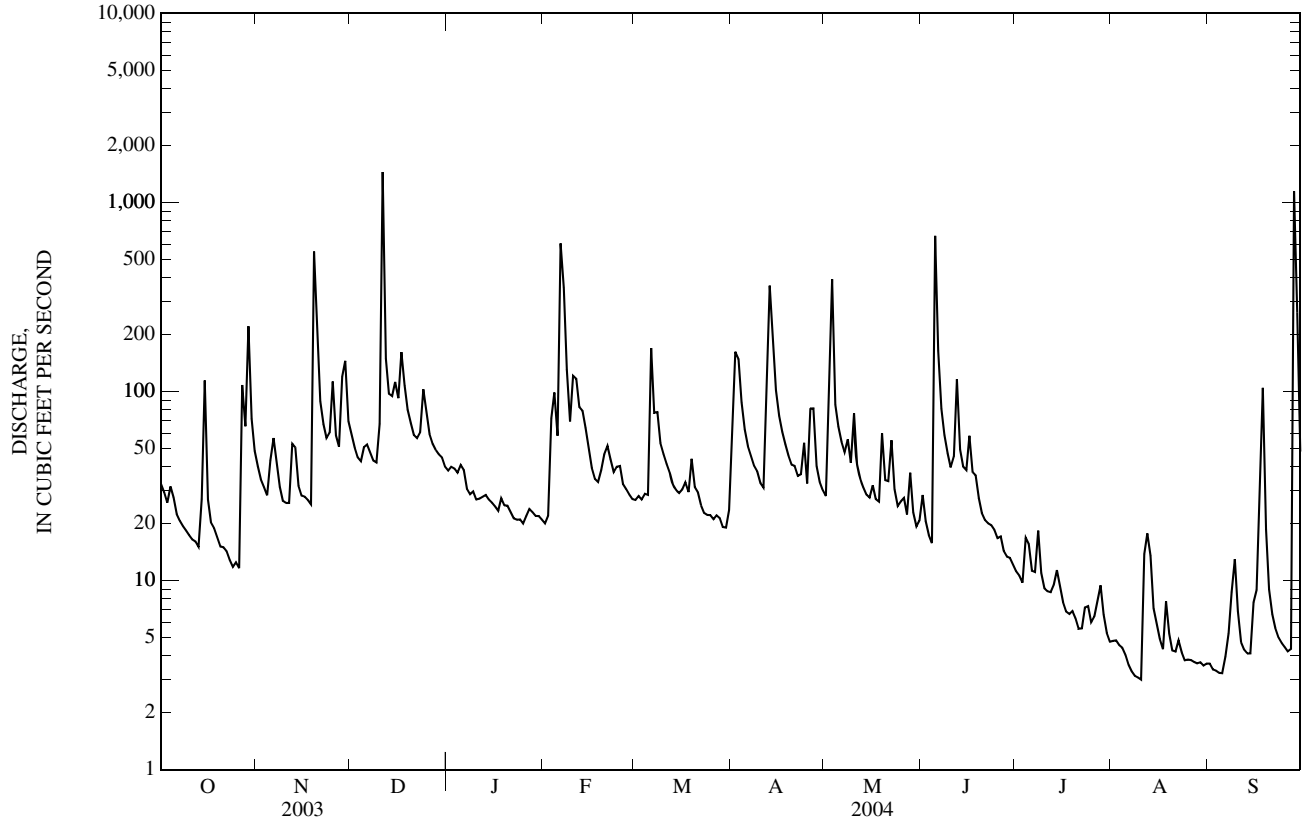
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2004, BY WATER YEAR (WY)

MEAN	19.6	41.7	61.1	36.6	50.0	62.0	52.6	71.1	61.9	19.3	11.9	50.6
MAX	36.2	74.9	115	76.1	85.1	127	75.3	139	108	31.0	26.5	119
(WY)	(2004)	(2004)	(2004)	(2003)	(2004)	(2003)	(2004)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	5.22	5.13	5.88	6.35	6.10	22.3	17.1	22.3	18.0	6.88	2.05	7.83
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

01638350 SOUTH FORK CATOCTIN CREEK AT ROUTE 698 NEAR WATERFORD, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2001 - 2004	
ANNUAL TOTAL	29,711.1		19,257.2			
ANNUAL MEAN	81.4		52.6		45.3	
HIGHEST ANNUAL MEAN					72.9	2003
LOWEST ANNUAL MEAN					10.4	2002
HIGHEST DAILY MEAN	1,840	Sep 23	1,450	Dec 11	1,840	Sep 23, 2003
LOWEST DAILY MEAN	9.1	Aug 25	3.0	Aug 10	0.07	Sep 14, 2002
ANNUAL SEVEN-DAY MINIMUM	13	Aug 28	3.4	Aug 30	0.18	Sep 14, 2002
MAXIMUM PEAK FLOW			4,210	Sep 28	5,700	Sep 23, 2003
MAXIMUM PEAK STAGE			11.24	Sep 28	12.10	Sep 23, 2003
INSTANTANEOUS LOW FLOW			2.7	Aug 11	0.01	Sep 20, 2002
ANNUAL RUNOFF (CFSM)	2.58		1.67		1.43	
ANNUAL RUNOFF (INCHES)	34.98		22.67		19.48	
10 PERCENT EXCEEDS	154		93		96	
50 PERCENT EXCEEDS	45		28		20	
90 PERCENT EXCEEDS	15		4.8		3.3	

e Estimated.



01638420 NORTH FORK CATOCTIN CREEK AT ROUTE 681 NEAR WATERFORD, VA

LOCATION.--Lat 39°12'18", long 77°37'26", NAD83, Loudoun County, Hydrologic Unit 02070008, on left bank 2 ft downstream from State Highway 681 and 2.2 mi northeast of Waterford.

DRAINAGE AREA.--23.1 mi^2.

PERIOD OF RECORD.--July 2001 to current year.

GAGE.--Water-stage recorder. Datum of gage is 325.21 ft NAVD of 1988, from topographic map.

REMARKS.--Records good except those for period of no gage-height record, July 7, 8, which is fair, and period with ice effect, Jan. 7 to Feb. 2, which is poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	31	46	33	e13	23	37	26	21	10	4.1	2.1
2	24	28	40	35	e18	24	89	90	14	10	4.1	2.0
3	22	26	36	33	40	23	87	206	13	9.3	4.0	1.8
4	25	24	35	32	72	25	59	56	12	12	3.8	1.7
5	23	31	40	33	39	25	46	45	587	13	3.4	1.7
6	20	41	40	30	418	94	39	39	146	10	3.3	1.9
7	19	35	35	e26	259	50	37	36	68	e13	3.0	2.1
8	18	27	32	e24	77	48	34	39	49	e20	2.6	4.6
9	18	24	31	e23	43	37	33	31	40	11	2.5	9.9
10	17	23	44	e23	70	34	30	30	34	9.0	2.3	4.7
11	17	23	897	e24	71	31	29	27	36	8.7	5.0	3.1
12	17	35	120	e23	53	29	49	24	78	8.5	27	2.6
13	16	35	81	e23	52	26	242	22	37	9.7	11	2.5
14	21	26	77	e22	45	25	171	21	32	9.4	6.5	2.6
15	65	25	76	e21	36	25	81	21	31	7.7	5.3	3.7
16	25	24	65	e19	31	26	63	23	45	6.5	4.3	4.2
17	21	24	101	e19	27	28	54	20	28	6.0	3.9	18
18	21	23	74	e22	27	25	48	19	28	6.4	4.9	52
19	20	325	60	e22	31	35	43	31	23	6.8	4.7	13
20	18	141	53	e19	37	26	39	22	20	6.1	4.0	6.1
21	18	62	47	e16	40	26	39	24	19	5.2	3.7	4.5
22	17	50	46	e16	35	23	35	69	18	4.9	3.9	3.7
23	17	43	49	e15	30	21	35	26	18	6.3	3.7	3.2
24	15	44	73	e15	32	20	39	21	17	6.9	3.3	3.0
25	15	84	60	e14	31	21	30	21	15	5.5	3.1	2.9
26	15	47	48	e15	27	20	56	19	16	6.0	2.9	2.8
27	46	42	44	e16	25	17	56	17	13	7.4	2.9	3.0
28	44	89	41	e14	24	21	34	17	12	7.4	2.8	735
29	105	93	39	e14	23	18	29	15	12	5.3	2.4	170
30	47	52	39	e14	---	19	27	14	11	4.6	2.3	36
31	35	---	35	e13	---	21	---	15	---	4.3	2.1	---
TOTAL	827	1,577	2,504	668	1,726	886	1,690	1,086	1,493	256.9	142.8	1,104.4
MEAN	26.7	52.6	80.8	21.5	59.5	28.6	56.3	35.0	49.8	8.29	4.61	36.8
MAX	105	325	897	35	418	94	242	206	587	20	27	735
MIN	15	23	31	13	13	17	27	14	11	4.3	2.1	1.7
CFSM	1.15	2.28	3.50	0.93	2.58	1.24	2.44	1.52	2.15	0.36	0.20	1.59
IN.	1.33	2.54	4.03	1.08	2.78	1.43	2.72	1.75	2.40	0.41	0.23	1.78

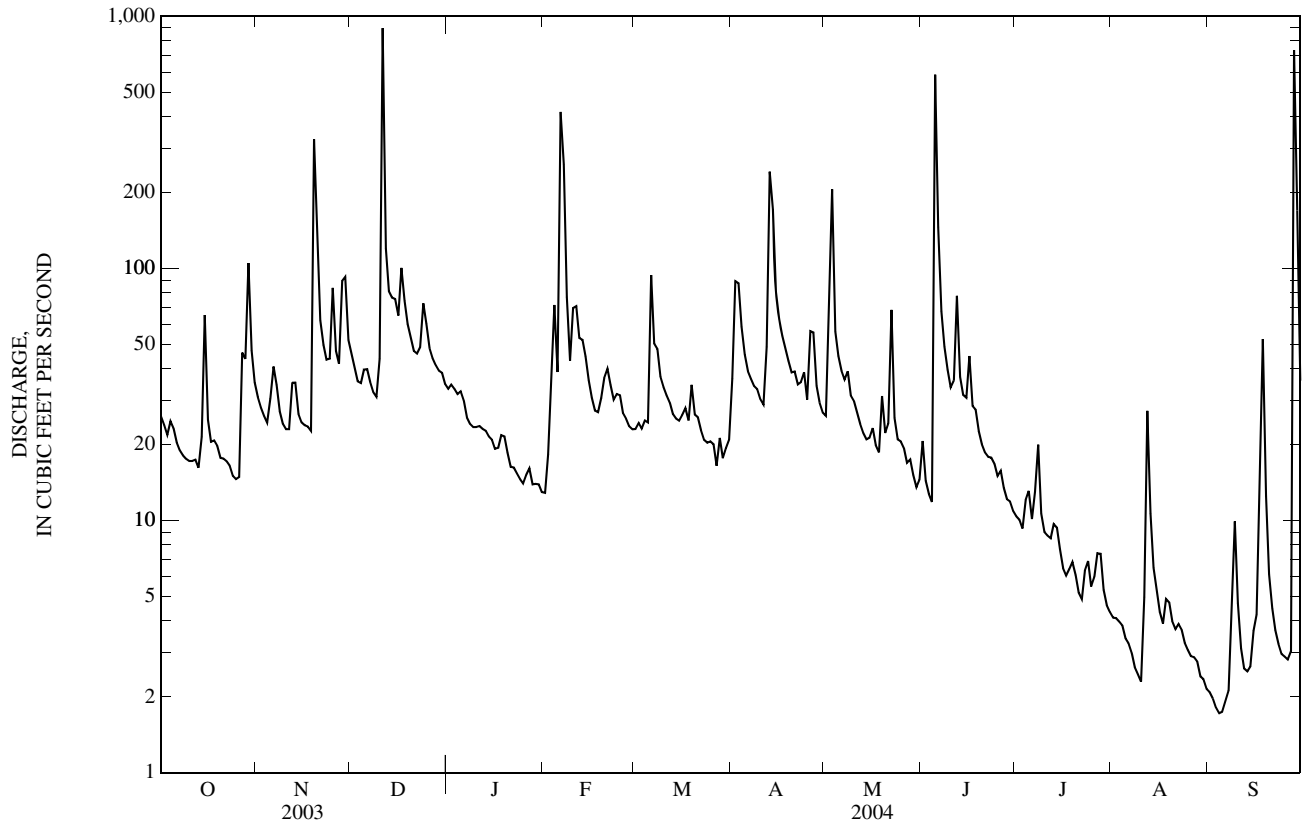
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2004, BY WATER YEAR (WY)

MEAN	11.3	24.7	38.0	24.9	34.6	44.7	38.3	51.9	42.6	8.96	5.51	25.0
MAX	26.7	52.6	80.8	50.7	59.5	95.4	56.3	112	73.3	17.0	13.3	59.2
(WY)	(2004)	(2004)	(2004)	(2003)	(2004)	(2003)	(2004)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	1.27	1.96	2.22	2.56	2.59	10.1	7.41	8.65	4.79	1.63	0.04	1.01
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

01638420 NORTH FORK CATOCTIN CREEK AT ROUTE 681 NEAR WATERFORD, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2001 - 2004	
ANNUAL TOTAL	20,499.4		13,961.1			
ANNUAL MEAN	56.2		38.1		29.8	
HIGHEST ANNUAL MEAN					47.5	2003
LOWEST ANNUAL MEAN					3.69	2002
HIGHEST DAILY MEAN	1,060	May 16	897	Dec 11	1,060	May 16, 2003
LOWEST DAILY MEAN	4.2	Aug 25	1.7	aSep 4	0.00	bAug 9, 2002
ANNUAL SEVEN-DAY MINIMUM	6.5	Aug 19	1.9	Aug 31	0.00	Aug 9, 2002
MAXIMUM PEAK FLOW			2,170	Sep 28	2,170	Sep 28, 2004
MAXIMUM PEAK STAGE			10.97	Sep 28	10.97	Sep 28, 2004
INSTANTANEOUS LOW FLOW			1.6	aSep 4	0.00	(c)
ANNUAL RUNOFF (CFSM)	2.43		1.65		1.29	
ANNUAL RUNOFF (INCHES)	33.01		22.48		17.51	
10 PERCENT EXCEEDS	104		65		64	
50 PERCENT EXCEEDS	34		24		13	
90 PERCENT EXCEEDS	10		3.9		1.1	

a Also Sept. 5, 2004.
b Also Aug. 10-31 and Sept. 7-20, 2002.
c No flow part or all of many days in August and September 2002.
e Estimated.



01638480 CATOCTIN CREEK AT TAYLORSTOWN, VA

LOCATION.--Lat 39°15'16", long 77°34'35", NAD83, 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 mi^2.

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

GAGE.--Water-stage recorder. Datum of gage is 247.37 ft NGVD of 1929. Prior to Nov. 3, 1983, at site 60 ft upstream at datum 1.78 ft higher.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Oct. 1, 2, Feb. 9, 10, Apr. 15-22, May 4, 5, 28, June 3, 4, 6-11, 13-21, and Sept. 18, and period with ice effect, Jan. 8 to Feb. 3, which are fair. Maximum discharge, 23,800 ft^3/s, from rating curve extended above 7,400 ft^3/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.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1730	2,970	9.11	Apr 13	2215	1,770	7.23
Dec 11	0600	7,700	13.91	May 3	0100	2,690	8.69
Feb 6	1400	2,150	7.84	Jun 5	1230	3,840	10.19
Apr 13	0245	1,220	6.26	Sep 28	2245	*9,440	*15.31

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e100	133	194	161	e51	89	146	136	90	39	17	6.5
2	e89	114	159	160	e48	92	429	325	82	38	17	6.1
3	81	100	136	160	e110	90	452	1,200	e65	35	16	6.0
4	86	91	128	153	286	91	303	e290	e60	40	15	5.7
5	85	100	143	153	210	93	222	e220	1,680	60	14	5.7
6	74	161	149	154	982	413	178	187	e300	42	13	5.7
7	70	126	137	131	1,070	276	166	158	e180	52	11	6.4
8	67	99	127	e115	450	261	157	173	e160	102	11	9.8
9	64	85	121	e102	e230	184	146	140	e110	49	10	26
10	61	81	142	e90	e270	156	129	160	e90	37	9.8	19
11	60	79	4,580	e96	360	136	121	120	e110	35	14	10
12	60	115	646	e105	270	124	190	102	364	37	104	8.0
13	59	135	452	e100	258	109	1,060	89	e200	38	57	7.7
14	70	93	414	e94	219	101	835	80	e115	38	34	7.5
15	275	84	432	e90	161	98	e400	77	e120	35	24	8.1
16	105	81	404	e82	129	99	e270	88	e180	28	19	11
17	80	79	510	e85	113	111	e230	77	e130	26	16	17
18	75	75	429	e92	109	98	e200	69	e120	25	18	e243
19	68	919	333	e82	122	138	e175	124	e80	27	19	89
20	62	803	295	e77	152	111	e150	89	e70	25	16	35
21	60	292	255	e70	167	101	e165	78	e65	22	13	25
22	59	220	237	e67	148	90	e145	201	63	20	13	20
23	58	187	242	e66	123	82	183	101	62	26	13	18
24	54	171	317	e64	123	80	243	78	60	30	11	15
25	52	299	330	e62	129	79	182	69	54	25	9.4	14
26	52	181	243	e58	108	76	265	86	55	24	8.8	14
27	169	159	217	e56	101	74	392	70	49	28	8.3	13
28	206	267	196	e55	96	76	255	e80	44	35	7.8	3,060
29	490	436	189	e54	91	69	187	74	44	27	7.8	1,660
30	235	224	181	e53	---	67	158	62	41	20	7.4	217
31	161	---	168	e52	---	79	---	63	---	18	6.9	---
TOTAL	3,287	5,989	12,506	2,939	6,686	3,743	8,134	4,866	4,843	1,083	561.2	5,589.2
MEAN	106	200	403	94.8	231	121	271	157	161	34.9	18.1	186
MAX	490	919	4,580	161	1,070	413	1,060	1,200	1,680	102	104	3,060
MIN	52	75	121	52	48	67	121	62	41	18	6.9	5.7
CFSM	1.18	2.23	4.50	1.06	2.57	1.35	3.03	1.75	1.80	0.39	0.20	2.08
IN.	1.36	2.49	5.19	1.22	2.78	1.55	3.38	2.02	2.01	0.45	0.23	2.32

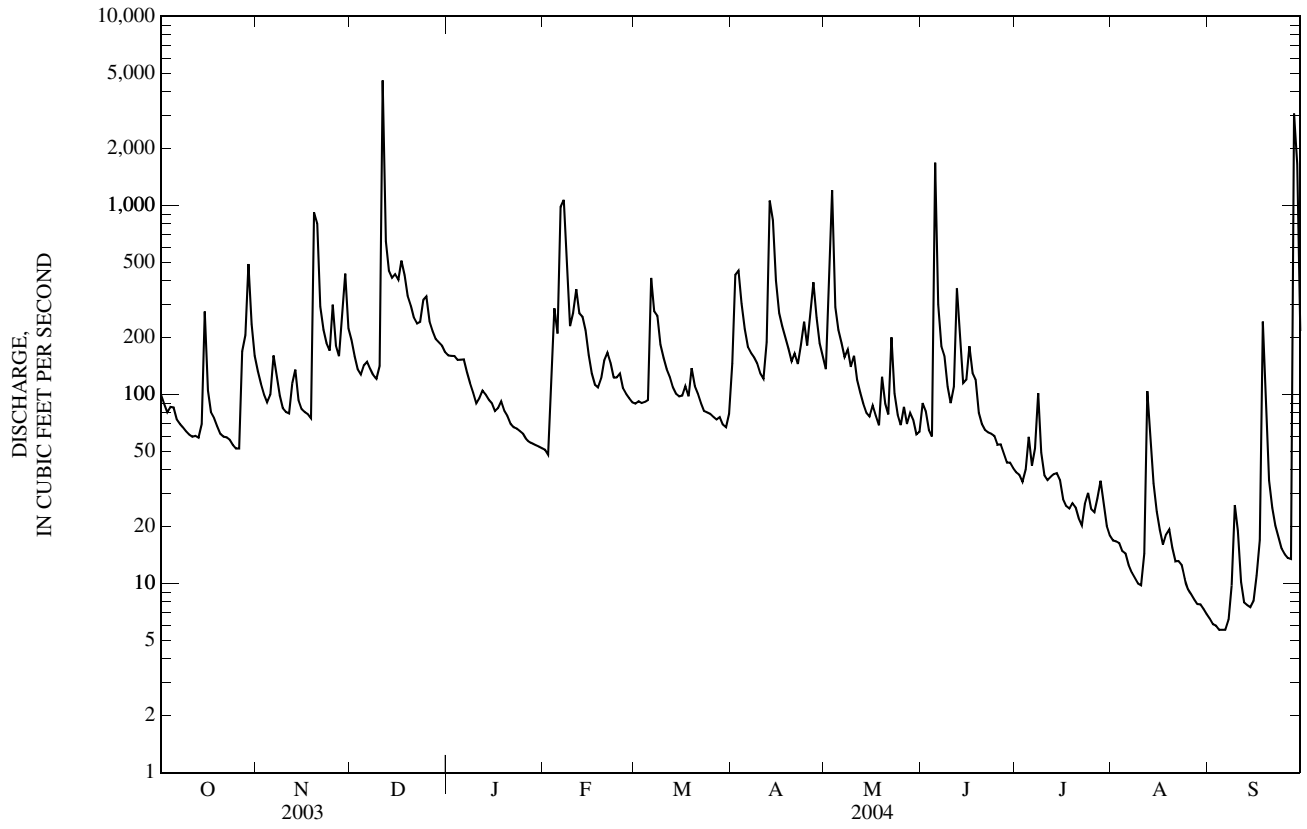
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1971 - 2004, BY WATER YEAR (WY)

MEAN	63.0	63.5	120	130	144	188	161	127	98.2	46.1	31.0	58.0
MAX	414	200	403	488	382	580	476	452	706	284	186	331
(WY)	(1977)	(2004)	(2004)	(1998)	(1998)	(1993)	(1983)	(2003)	(1972)	(1987)	(1984)	(2003)
MIN	2.07	5.16	3.88	10.2	12.8	43.7	37.7	26.6	6.82	1.35	1.25	1.05
(WY)	(1987)	(1992)	(1999)	(1981)	(2002)	(1981)	(2002)	(1999)	(1999)	(1999)	(1999)	(1986)

01638480 CATOCTIN CREEK AT TAYLORSTOWN, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1971 - 2004	
ANNUAL TOTAL	87,299		60,226.4			
ANNUAL MEAN	239		165		102	
HIGHEST ANNUAL MEAN					207	2003
LOWEST ANNUAL MEAN					20.9	2002
HIGHEST DAILY MEAN	5,400	Sep 23	4,580	Dec 11	e9,530	Jun 22, 1972
LOWEST DAILY MEAN	e32	Feb 14	5.7	aSep 4	0.09	bAug 14, 1999
ANNUAL SEVEN-DAY MINIMUM	e39	Feb 8	6.0	Sep 1	0.10	Aug 14, 1999
MAXIMUM PEAK FLOW			9,440	Sep 28	23,800	Jun 22, 1972
MAXIMUM PEAK STAGE			15.31	Sep 28	c23.83	Jun 22, 1972
INSTANTANEOUS LOW FLOW			5.6	aSep 4	0.08	Aug 14, 1999
ANNUAL RUNOFF (CFSM)	2.67		1.84		1.14	
ANNUAL RUNOFF (INCHES)	36.24		25.00		15.45	
10 PERCENT EXCEEDS	451		293		212	
50 PERCENT EXCEEDS	133		92		48	
90 PERCENT EXCEEDS	46		15		7.1	

a Also Sept. 5, 6, 2004.
b Also Aug. 19, 20, 1999.
c From floodmarks, site and datum then in use.
e Estimated.



01638500 POTOMAC RIVER AT POINT OF ROCKS, MD

LOCATION.--Lat 39°16'24.9", long 77°32'35.2", 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 mi^2.
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 National Geodetic Vertical Datum of 1929. Prior to Oct. 28, 1929, nonrecording gage at same site. Prior to Sept. 2, 1902, at datum about 0.45 ft higher.
REMARKS.--Records good, except those for estimated daily discharges (erroneous or missing record, ice effect), which are fair. 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. U.S. Geological Survey satellite collection platform 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 ft^3/s from rating curve extended as explained in footnotes.
EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 35,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 21	1145	83,200	15.40	Apr 15	0815	81,700	15.21
Dec 12	1515	*118,000	*19.58	Apr 27	2200	51,900	11.15
Dec 26	0300	38,500	9.08	Sep 10	1230	56,900	11.87
Feb 8	0800	57,300	11.93	Sep 19	0445	84,700	15.59
Apr 3	1100	39,500	9.24	Sep 30	0845	98,100	17.25

Minimum discharge, 1,960 ft^3/s, Sept. 4.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17,400	10,800	17,600	15,600	e5,500	14,900	10,200	19,500	11,100	4,800	3,720	2,300
2	14,700	9,670	15,900	e14,400	e5,400	15,700	16,100	17,200	9,730	4,580	12,200	2,400
3	12,300	8,840	e14,800	e13,700	5,670	19,200	37,500	19,900	8,970	4,410	10,000	2,400
4	10,900	8,400	e14,000	e13,000	6,500	24,800	32,900	21,500	8,170	4,040	6,540	2,030
5	9,990	7,890	13,200	13,400	6,380	23,700	26,100	20,800	14,900	3,910	5,080	2,070
6	9,230	8,000	12,900	15,100	10,600	25,600	21,700	17,900	14,800	4,160	4,420	2,030
7	8,960	8,490	12,400	16,700	21,000	30,000	18,000	16,000	12,900	6,450	3,900	2,000
8	8,390	9,050	11,700	15,600	51,100	31,600	15,400	14,900	11,400	e6,270	3,470	2,080
9	7,610	10,500	11,000	14,000	43,000	e27,400	14,700	14,000	9,780	4,880	3,240	3,610
10	7,050	9,950	10,600	12,900	29,400	e22,900	14,100	12,800	8,450	4,250	3,150	48,400
11	6,520	8,980	35,300	11,300	25,100	19,900	13,300	11,500	7,840	3,890	2,970	30,000
12	6,240	8,890	105,000	10,400	24,000	17,700	12,100	10,500	8,650	3,720	3,200	17,900
13	5,990	14,000	69,600	10,500	23,100	15,800	e23,000	9,530	11,000	3,980	2,980	13,000
14	6,130	24,700	41,400	10,400	20,100	14,100	62,000	8,900	15,500	5,930	3,540	10,200
15	7,820	25,100	32,300	9,780	19,100	12,500	77,800	9,000	15,000	5,850	3,500	8,460
16	8,430	20,800	27,400	9,040	18,000	11,500	53,300	9,810	13,500	5,340	3,380	6,600
17	9,850	17,300	24,000	8,120	16,000	11,100	36,600	10,600	11,600	4,330	3,640	5,710
18	9,420	15,200	22,900	7,310	14,800	11,100	28,300	10,800	10,900	3,690	3,800	26,100
19	8,580	16,100	23,300	e7,500	13,700	12,100	23,500	12,300	10,400	4,120	3,120	78,300
20	8,010	27,900	21,800	e7,350	12,900	14,400	20,200	19,600	9,320	4,420	2,750	41,300
21	7,600	75,200	19,100	7,210	15,600	17,600	17,800	19,100	8,580	3,550	2,690	23,900
22	7,210	49,700	16,800	6,880	24,200	19,600	16,300	17,000	7,980	3,580	3,860	17,100
23	6,740	33,000	15,400	e6,200	30,100	22,000	15,600	18,000	7,330	3,460	4,010	14,500
24	6,460	25,700	17,200	5,940	24,800	19,700	14,800	15,600	6,910	3,510	3,460	10,900
25	6,240	22,600	31,000	5,630	21,800	17,000	13,700	13,500	6,330	3,450	3,100	9,150
26	5,950	20,600	36,900	4,690	19,500	15,000	14,100	12,100	6,010	3,480	2,810	8,360
27	6,310	18,200	30,200	4,730	17,500	13,500	37,100	11,300	5,790	3,480	2,660	7,190
28	8,050	16,300	24,900	e5,100	15,700	12,400	43,900	10,200	5,630	3,440	2,530	11,300
29	15,000	17,200	21,500	e5,300	14,900	11,400	30,800	9,640	5,510	3,690	2,460	46,300
30	14,500	18,100	19,100	e5,600	---	10,400	23,500	10,200	5,090	3,860	2,420	85,600
31	12,500	---	17,200	e5,700	---	9,880	---	12,200	---	3,840	2,280	---
TOTAL	280,080	567,160	786,400	299,080	555,450	544,480	784,400	435,880	289,070	132,360	120,880	541,190
MEAN	9,035	18,910	25,370	9,648	19,150	17,560	26,150	14,060	9,636	4,270	3,899	18,040
MAX	17,400	75,200	105,000	16,700	51,100	31,600	77,800	21,500	15,500	6,450	12,200	85,600
MIN	5,950	7,890	10,600	4,690	5,400	9,880	10,200	8,900	5,090	3,440	2,280	2,000
CFSM	0.94	1.96	2.63	1.00	1.98	1.82	2.71	1.46	1.00	0.44	0.40	1.87
IN.	1.08	2.19	3.03	1.15	2.14	2.10	3.02	1.68	1.11	0.51	0.47	2.09

e Estimated

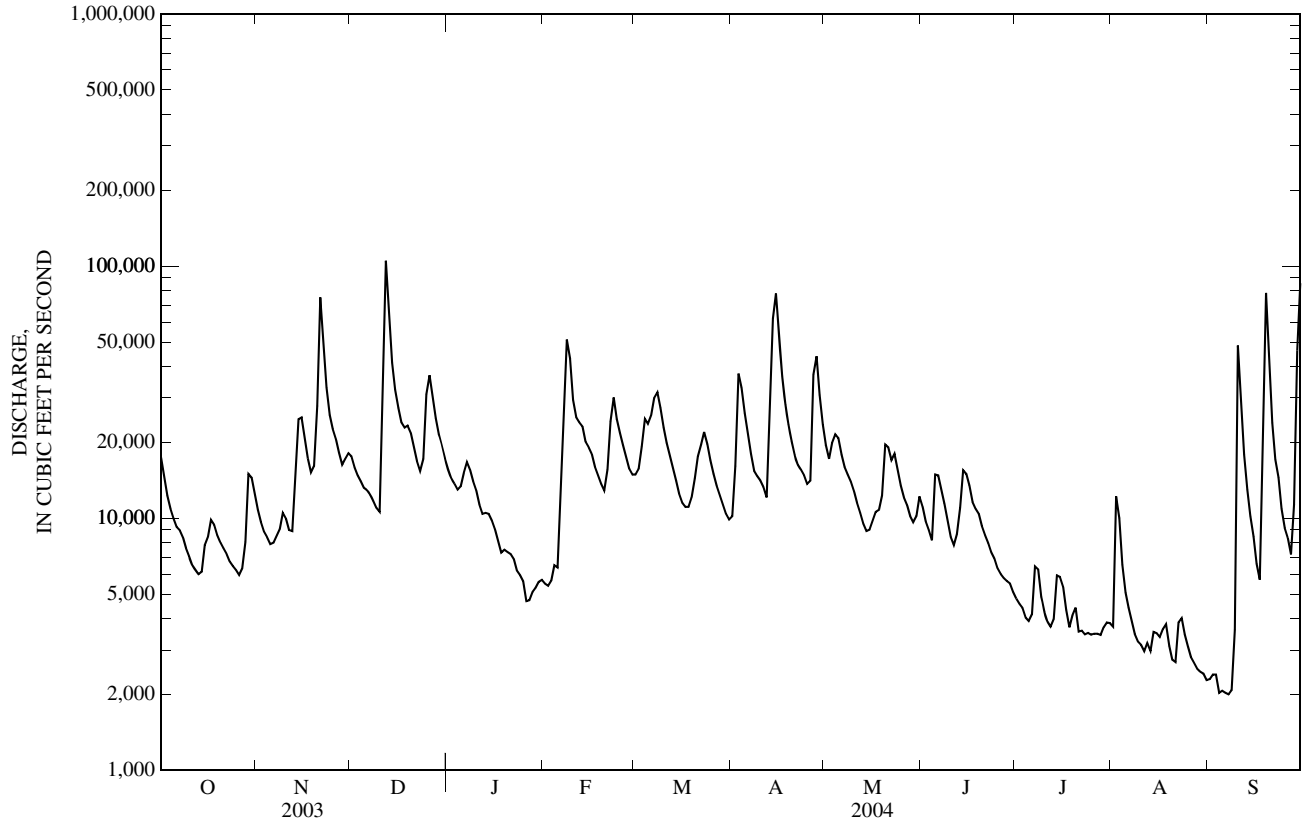
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1895 - 2004, BY WATER YEAR (WY)

MEAN	5,025	5,771	8,684	11,400	14,350	19,750	16,570	12,380	8,150	4,503	4,275	4,070
MAX	37,030	39,000	32,610	42,160	47,870	68,360	43,840	41,970	40,400	16,000	23,580	38,300
(WY)	(1943)	(1986)	(1973)	(1996)	(1998)	(1936)	(1993)	(1924)	(1972)	(1949)	(1955)	(1996)
MIN	706	840	1,253	1,703	1,982	5,400	4,368	3,276	1,932	1,056	771	834
(WY)	(1931)	(1931)	(1966)	(1981)	(2002)	(1931)	(1915)	(1930)	(1969)	(1966)	(1930)	(1930)

01638500 POTOMAC RIVER AT POINT OF ROCKS, MD—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1895 - 2004	
ANNUAL TOTAL	7,245,440		5,336,430			
ANNUAL MEAN	19,850		14,580		9,562	
HIGHEST ANNUAL MEAN					18,750	1996
LOWEST ANNUAL MEAN					4,015	2002
HIGHEST DAILY MEAN	112,000	Sep 21	105,000	Dec 12	434,000	Mar 19, 1936
LOWEST DAILY MEAN	2,040	Feb 18	2,000	Sep 7	540	Sep 10, 1914
ANNUAL SEVEN-DAY MINIMUM	3,190	Feb 13	2,140	Sep 2	593	Sep 6, 1966
MAXIMUM PEAK FLOW			118,000	Dec 12	(a)480,000	Mar 19, 1936
MAXIMUM PEAK STAGE			19.58	Dec 12	41.03	Mar 19, 1936
INSTANTANEOUS LOW FLOW			1,960	Sep 4	530	(b)
ANNUAL RUNOFF (CFSM)	2.06		1.51		0.991	
ANNUAL RUNOFF (INCHES)	27.93		20.57		13.46	
10 PERCENT EXCEEDS	42,300		26,500		21,000	
50 PERCENT EXCEEDS	14,800		11,400		5,410	
90 PERCENT EXCEEDS	4,910		3,600		1,680	

a From rating curve extended above 300,000 ft^3/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.
b Sept. 11, 12, 1966.



DAILY MEAN DISCHARGE - 2004 WATER YEAR

01643590 LIMESTONE BRANCH NEAR LEESBURG, VA

LOCATION.--Lat 39°10'03", long 77°32'09", NAD83, Loudoun County, Hydrologic Unit Code 02070008, on left bank, 70 ft downstream from U.S. Highway 15 and 4 mi north of Leesburg.

DRAINAGE AREA.--7.83 mi^2.

PERIOD OF RECORD.--August 2001 to current year.

REVISED RECORDS.--WDR VA-03-1: 2001-02(M).

GAGE.--Water-stage recorder. Datum of gage is 219.97 ft NAVD of 1988.

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

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	16	14	7.3	4.2	8.1	23	8.8	6.7	2.7	2.4	2.4
2	9.1	12	11	7.7	4.2	8.5	55	23	5.6	2.6	2.3	2.4
3	8.0	10	10	7.7	12	8.0	37	29	4.7	2.7	2.4	2.5
4	9.5	10	9.6	7.7	13	8.9	26	13	4.6	2.9	2.3	2.5
5	8.5	12	12	8.7	8.6	9.1	18	11	84	2.9	2.1	2.5
6	7.9	12	11	7.6	158	44	14	9.3	20	2.5	1.9	2.9
7	7.9	13	9.6	6.7	65	22	13	8.2	12	2.9	1.9	3.0
8	7.0	15	8.7	6.6	28	20	11	8.8	9.0	4.2	1.9	3.4
9	7.7	11	8.2	6.7	19	16	10	7.3	7.6	2.8	1.9	3.1
10	7.8	8.7	17	6.1	25	15	8.9	7.5	6.8	2.6	2.0	2.9
11	7.7	15	633	5.9	22	13	8.7	6.9	9.4	2.5	3.4	2.8
12	7.0	17	35	6.0	19	11	47	6.5	16	2.4	2.7	2.9
13	6.4	13	22	5.9	19	9.5	97	5.8	7.6	2.4	3.3	2.8
14	16	7.7	23	5.7	16	9.1	48	5.0	7.0	4.2	2.9	3.0
15	19	7.6	27	6.1	14	8.5	26	5.3	11	3.0	2.5	3.3
16	7.6	8.0	21	5.4	12	9.1	19	5.7	9.0	2.8	2.4	3.3
17	7.7	7.6	42	5.1	11	9.4	15	5.6	7.8	2.7	2.7	3.8
18	7.6	9.2	24	6.3	11	9.1	13	5.9	7.5	2.6	3.0	15
19	7.0	210	18	5.7	12	11	11	15	6.0	2.5	2.2	3.9
20	6.7	46	15	5.0	13	9.3	10	7.3	5.2	2.3	2.3	2.6
21	7.5	28	12	4.9	13	8.8	10	12	5.0	2.1	2.6	2.2
22	6.3	21	11	5.0	12	8.0	9.2	21	4.3	2.6	2.7	1.9
23	6.2	17	10	4.6	11	7.5	11	6.9	4.2	3.6	2.5	1.8
24	6.0	25	18	4.9	12	7.1	11	6.2	4.4	3.8	2.6	1.8
25	6.0	29	13	4.8	11	7.1	9.6	6.5	3.7	2.8	2.4	3.4
26	6.5	20	11	5.4	10	6.6	22	7.5	3.7	2.7	2.3	2.4
27	38	19	9.7	5.6	9.3	7.1	18	5.6	3.5	3.4	2.5	2.4
28	18	34	9.2	5.3	8.7	6.7	12	6.6	3.1	5.5	2.5	300
29	44	24	8.6	4.9	8.3	6.9	10	7.0	2.9	3.8	2.5	23
30	20	17	8.2	4.8	---	6.7	8.9	5.4	2.7	2.8	2.5	8.8
31	17	---	7.7	4.4	---	7.5	---	5.6	---	2.5	2.4	---
TOTAL	352.6	694.8	1,089.5	184.5	581.3	338.6	632.3	285.2	285.0	91.8	76.0	418.7
MEAN	11.4	23.2	35.1	5.95	20.0	10.9	21.1	9.20	9.50	2.96	2.45	14.0
MAX	44	210	633	8.7	158	44	97	29	84	5.5	3.4	300
MIN	6.0	7.6	7.7	4.4	4.2	6.6	8.7	5.0	2.7	2.1	1.9	1.8
CFSM	1.45	2.95	4.47	0.76	2.55	1.39	2.68	1.17	1.21	0.38	0.31	1.78
IN.	1.67	3.29	5.16	0.87	2.75	1.60	2.99	1.35	1.35	0.43	0.36	1.98

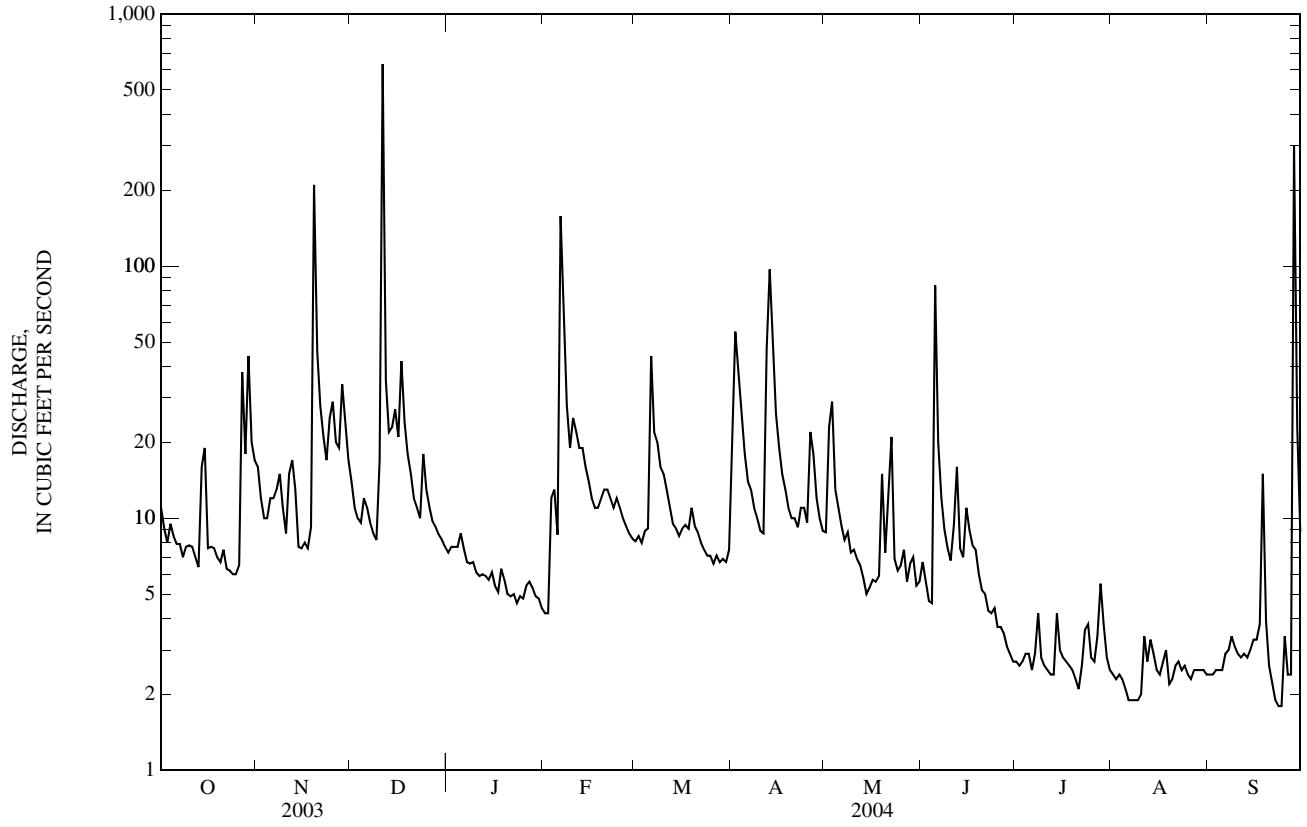
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2004, BY WATER YEAR (WY)

MEAN	6.41	11.4	15.4	10.4	12.5	13.9	12.8	16.1	14.2	3.51	4.19	20.4
MAX	11.4	23.2	35.1	23.3	20.0	25.6	21.1	35.0	31.1	6.26	9.26	47.4
(WY)	(2004)	(2004)	(2004)	(2003)	(2004)	(2003)	(2004)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	2.26	2.35	1.96	1.88	1.68	5.19	3.66	4.01	1.97	1.31	0.85	2.54
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

01643590 LIMESTONE BRANCH NEAR LEESBURG, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2001 - 2004	
ANNUAL TOTAL	8,412.7		5,030.3			
ANNUAL MEAN	23.0		13.7		11.8	
HIGHEST ANNUAL MEAN					19.2	2003
LOWEST ANNUAL MEAN					2.48	2002
HIGHEST DAILY MEAN	976	Sep 23	633	Dec 11	976	Sep 23, 2003
LOWEST DAILY MEAN	2.9	Aug 14	1.8	Sep 23	0.68	Aug 21, 2002
ANNUAL SEVEN-DAY MINIMUM	3.6	Aug 10	2.0	Aug 4	0.72	Aug 17, 2002
MAXIMUM PEAK FLOW			2,660	Dec 11	8,950	Sep 23, 2003
MAXIMUM PEAK STAGE			7.45	Dec 11	a11.19	Sep 23, 2003
INSTANTANEOUS LOW FLOW			1.6	bAug 6	0.60	cAug 13, 2002
ANNUAL RUNOFF (CFSM)	2.93		1.75		1.50	
ANNUAL RUNOFF (INCHES)	39.82		23.81		20.39	
10 PERCENT EXCEEDS	34		22		21	
50 PERCENT EXCEEDS	10		7.7		5.3	
90 PERCENT EXCEEDS	4.6		2.5		1.2	

a From floodmarks.
b Also Sept. 23, 24, 2004.
c Also Aug. 14, 19-22, 2002.



01643700 GOOSE CREEK NEAR MIDDLEBURG, VA

LOCATION.--Lat 38°59'11", long 77°47'48", NAD83, Loudoun County, Hydrologic Unit 02070008, on right bank 250 ft upstream from bridge on State Highway 611, 2.0 mi downstream from Panther Skin Creek, and 3.4 mi northwest of Middleburg.

DRAINAGE AREA.--123 mi^2.

PERIOD OF RECORD.--October 1965 to September 1967, July 1969 to September 1996, June 2001 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 329.80 ft NGVD of 1929. October 1965 to September 1967, at site 300 ft downstream at datum 0.73 ft lower.

REMARKS.--Records good except those for periods of doubtful, partial, or no gage-height record, Oct. 15, Nov. 9, 10, 25, 26, Dec. 2-4, 6-9, 12-18, May 13, 14, and Sept. 28, 29, which are fair, and for period of no gage-height record, Jan. 17 to Feb. 17, which is poor. Maximum discharge, 23,000 ft^3/s, from rating curve extended above 3,000 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,350 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	2015	3,150	8.86	May 3	0315	3,150	8.86
Dec 11	0745	*10,200	*15.85	Jun 5	1030	1,810	6.93
Apr 13	2400	1,610	6.60	Sep 28	---	unknown	unknown

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	225	150	272	186	e65	119	164	162	79	43	30	7.8
2	210	138	235	189	e63	121	370	264	65	42	68	6.4
3	194	131	208	177	e107	116	575	1,450	58	38	37	5.7
4	188	122	195	168	e289	119	411	500	56	113	30	6.0
5	176	136	221	169	e236	118	306	352	786	86	32	5.7
6	164	183	e205	158	e1,150	291	251	280	302	57	26	5.7
7	155	167	187	136	e1,660	234	220	263	193	51	21	9.5
8	149	139	173	133	e689	231	197	469	150	91	18	47
9	141	126	168	131	e335	195	182	252	125	49	16	185
10	136	119	188	128	e327	178	163	245	107	42	15	53
11	130	118	5,190	138	e518	166	151	200	115	40	24	32
12	128	140	e930	131	e326	153	253	174	419	59	34	25
13	121	161	e580	120	e286	138	977	155	182	88	41	21
14	127	126	e460	113	e274	131	877	145	149	59	30	19
15	e290	121	e480	110	e228	127	513	143	130	51	26	23
16	142	118	e400	105	e188	134	370	157	120	39	22	28
17	125	117	e550	e99	e166	141	296	179	107	35	18	42
18	124	112	e470	e111	159	126	251	133	172	34	16	473
19	114	983	362	e102	159	139	219	132	132	37	16	138
20	107	789	314	e90	171	120	194	142	97	43	17	82
21	106	424	274	e84	182	116	207	128	84	31	16	63
22	101	320	257	e82	170	107	172	129	83	28	18	52
23	95	264	253	e80	159	103	166	107	83	28	16	44
24	92	256	370	e78	159	101	190	96	78	67	12	39
25	89	401	358	e71	154	102	149	88	67	36	10	36
26	88	263	306	e69	139	97	293	94	66	36	8.8	33
27	183	239	272	e68	134	96	334	88	57	38	8.1	32
28	201	321	249	e68	126	95	242	83	53	67	8.7	e1,680
29	286	433	231	e67	122	90	205	74	49	48	9.6	e3,010
30	205	303	219	e66	---	88	179	67	45	32	9.2	369
31	167	---	197	e66	---	101	---	71	---	27	8.4	---
TOTAL	4,759	7,420	14,774	3,493	8,741	4,193	9,077	6,822	4,209	1,535	661.8	6,572.8
MEAN	154	247	477	113	301	135	303	220	140	49.5	21.3	219
MAX	290	983	5,190	189	1,660	291	977	1,450	786	113	68	3,010
MIN	88	112	168	66	63	88	149	67	45	27	8.1	5.7
CFSM	1.25	2.01	3.87	0.92	2.45	1.10	2.46	1.79	1.14	0.40	0.17	1.78
IN.	1.44	2.24	4.47	1.06	2.64	1.27	2.75	2.06	1.27	0.46	0.20	1.99

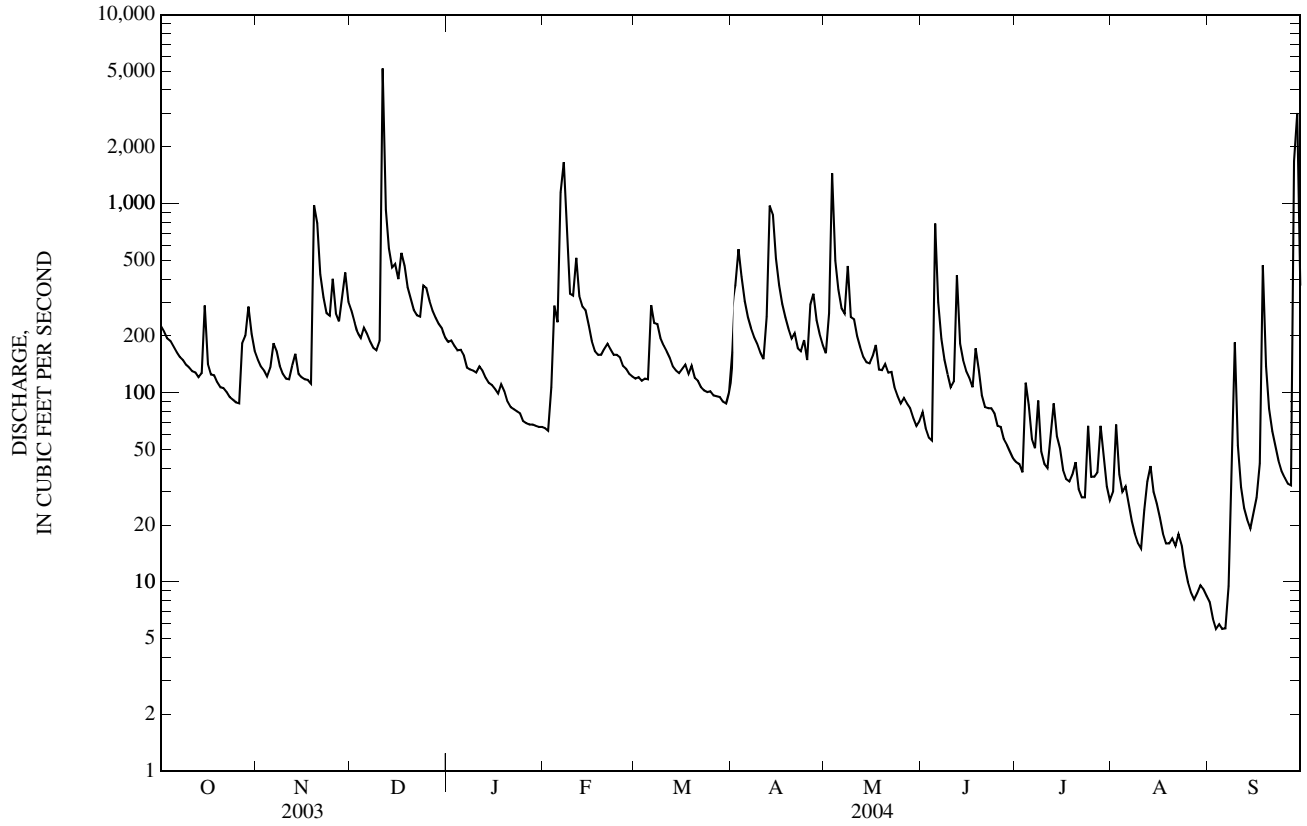
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1967, 1969 - 1996, 2001 - 2004, BY WATER YEAR (WY)

MEAN	84.5	94.8	154	163	202	240	224	169	131	56.2	51.2	83.4
MAX	602	247	477	520	609	722	688	463	645	217	206	890
(WY)	(1980)	(2004)	(2004)	(1996)	(1984)	(1993)	(1983)	(1989)	(1972)	(1972)	(1967)	(2003)
MIN	0.00	3.41	4.17	7.65	10.4	33.3	43.5	26.1	15.2	2.81	0.41	0.00
(WY)	(1992)	(1992)	(1966)	(1966)	(2002)	(2002)	(1981)	(1985)	(1986)	(1966)	(1991)	(1991)

01643700 GOOSE CREEK NEAR MIDDLEBURG, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1966 - 1967, 1969 - 1996, 2001 - 2004	
ANNUAL TOTAL	127,058		72,257.6			
ANNUAL MEAN	348		197		136	
HIGHEST ANNUAL MEAN					301	2003
LOWEST ANNUAL MEAN					20.8	2002
HIGHEST DAILY MEAN	14,000	Sep 23	5,190	Dec 11	e14,000	Sep 23, 2003
LOWEST DAILY MEAN	52	Aug 26	5.7	aSep 3	0.00	(b)
ANNUAL SEVEN-DAY MINIMUM	56	Feb 9	6.5	Aug 31	0.00	(b)
MAXIMUM PEAK FLOW			10,200	Dec 11	23,000	Sep 23, 2003
MAXIMUM PEAK STAGE			15.85	Dec 11	27.46	Jun 22, 1972
INSTANTANEOUS LOW FLOW			5.3	cSep 2	0.00	(d)
ANNUAL RUNOFF (CFSM)	2.83		1.61		1.11	
ANNUAL RUNOFF (INCHES)	38.43		21.85		15.07	
10 PERCENT EXCEEDS	613		354		309	
50 PERCENT EXCEEDS	210		130		72	
90 PERCENT EXCEEDS	80		28		6.0	

a Also Sept. 5, 6, 2004.
b No flow many days in September 1985, September and October 1986, and September to November 1991.
c Also Sept. 3-6, 2004.
d No flow part or all of many days in September 1985, September and October 1986, and September to November 1991.
e Estimated.



01643805 NORTH FORK GOOSE CREEK AT ROUTE 729 NEAR LINCOLN, VA

LOCATION.--Lat 39°04'20", long 77°41'02", NAD83, Loudoun County, Hydrologic Unit Code 02070008, on left bank, 5 ft downstream from bridge on State Highway 729, 5 mi south of Lincoln.

DRAINAGE AREA.--38.2 mi^2.

PERIOD OF RECORD.--July 2001 to current year.

GAGE.--Water-stage recorder. Datum of gage is 300 ft NGVD of 1929, from topographic map.

REMARKS.--Records good except those for period with ice effect, Jan. 18 to Feb. 2, and period June 7 to Sept. 26, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	58	75	45	e20	36	61	33	31	16	9.4	e5.5
2	40	50	61	49	e32	38	199	241	26	17	9.1	e5.2
3	36	46	54	47	135	36	248	737	21	14	e7.9	e4.9
4	40	41	50	46	171	39	154	187	20	26	e7.5	e4.7
5	37	84	61	50	104	38	104	125	1,030	29	e7.6	e4.5
6	33	86	62	47	1,450	292	77	95	327	21	e6.9	e5.0
7	30	65	54	39	866	149	63	82	133	18	e7.0	e6.8
8	29	50	48	42	235	133	52	91	91	23	e6.5	9.3
9	28	43	46	38	118	88	47	62	63	17	e6.3	12
10	27	40	92	e36	206	70	38	123	49	15	e6.2	7.2
11	26	39	2,370	e35	186	58	34	60	51	12	8.1	e6.1
12	25	98	342	e34	139	47	179	44	139	11	14	e5.9
13	23	82	154	e37	132	37	839	39	69	14	18	e5.6
14	40	57	138	e32	104	33	520	36	53	19	11	e6.8
15	129	51	145	e30	79	32	211	34	62	15	8.5	9.8
16	44	47	110	e28	61	35	142	44	51	12	7.0	8.4
17	33	43	218	e27	50	38	108	35	41	12	e6.6	151
18	30	40	158	e32	47	32	86	33	127	8.8	e6.7	333
19	27	1,050	103	e30	56	46	68	61	52	9.8	e6.6	57
20	24	479	82	e29	64	32	55	42	35	10	e6.3	23
21	23	149	67	e27	69	29	55	36	30	7.0	e6.2	16
22	23	100	62	e26	59	24	46	44	27	8.6	e6.4	11
23	21	79	62	e24	51	22	45	32	30	12	e7.0	7.0
24	19	89	126	e24	54	21	60	28	28	10	e6.8	e6.4
25	19	132	106	e23	53	23	39	25	27	9.6	e6.4	e6.1
26	20	78	76	e24	45	21	100	27	26	13	e5.9	e6.1
27	142	66	65	e26	42	22	122	25	20	15	e5.7	7.1
28	85	177	58	e25	39	21	60	33	21	21	e5.7	2,430
29	301	200	55	e24	37	19	44	24	18	15	e5.7	475
30	108	93	53	e23	---	18	37	21	17	11	e5.6	100
31	72	---	48	e21	---	23	---	23	---	6.0	e5.6	---
TOTAL	1,578	3,712	5,201	1,020	4,704	1,552	3,893	2,522	2,715	447.8	234.2	3,736.4
MEAN	50.9	124	168	32.9	162	50.1	130	81.4	90.5	14.4	7.55	125
MAX	301	1,050	2,370	50	1,450	292	839	737	1,030	29	18	2,430
MIN	19	39	46	21	20	18	34	21	17	6.0	5.6	4.5
CFSM	1.33	3.24	4.39	0.86	4.25	1.31	3.40	2.13	2.37	0.38	0.20	3.26
IN.	1.54	3.61	5.06	0.99	4.58	1.51	3.79	2.46	2.64	0.44	0.23	3.64

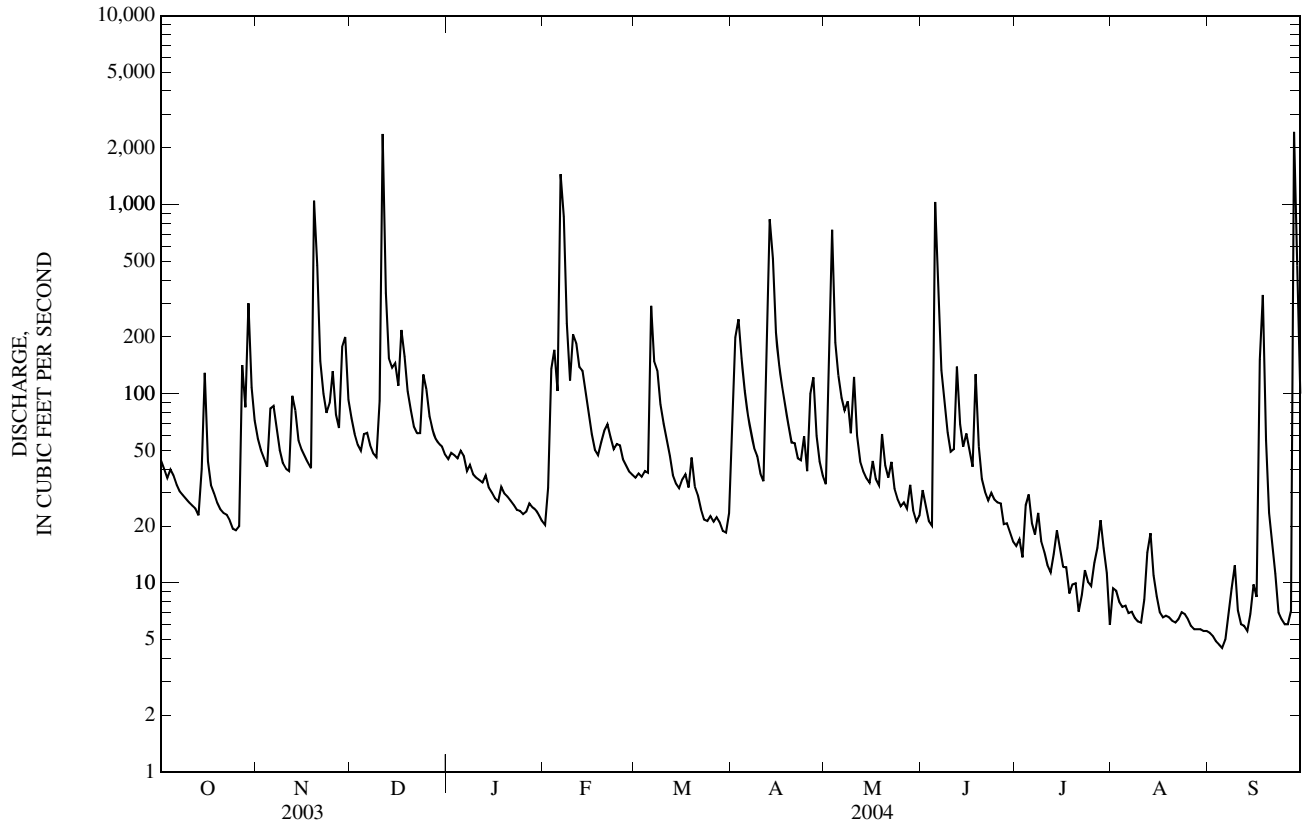
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2004, BY WATER YEAR (WY)

MEAN	27.3	61.4	83.3	51.6	88.0	85.4	78.8	120	104	31.4	14.2	84.1
MAX	50.9	124	168	113	162	180	130	237	197	68.9	27.6	181
(WY)	(2004)	(2004)	(2004)	(2003)	(2004)	(2003)	(2004)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	6.10	7.22	9.04	8.79	8.33	25.8	23.5	42.8	25.6	10.9	3.13	10.0
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

01643805 NORTH FORK GOOSE CREEK AT ROUTE 729 NEAR LINCOLN, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2001 - 2004	
ANNUAL TOTAL	46,307		31,315.4			
ANNUAL MEAN	127		85.6		70.5	
HIGHEST ANNUAL MEAN					111	2003
LOWEST ANNUAL MEAN					15.1	2002
HIGHEST DAILY MEAN	3,040	Sep 23	2,430	Sep 28	3,040	Sep 23, 2003
LOWEST DAILY MEAN	14	Aug 25	e4.5	Sep 5	1.2	Aug 23, 2002
ANNUAL SEVEN-DAY MINIMUM	17	Aug 22	e5.1	Aug 31	1.5	Aug 18, 2002
MAXIMUM PEAK FLOW			10,200	Sep 28	13,500	Sep 23, 2003
MAXIMUM PEAK STAGE			12.80	Sep 28	a13.45	Sep 23, 2003
INSTANTANEOUS LOW FLOW			(b)	(c)	0.85	dAug 20, 2002
ANNUAL RUNOFF (CFSM)	3.32		2.24		1.85	
ANNUAL RUNOFF (INCHES)	45.09		30.50		25.08	
10 PERCENT EXCEEDS	243		143		142	
50 PERCENT EXCEEDS	60		38		27	
90 PERCENT EXCEEDS	22		7.0		5.5	

a From floodmarks.
b Not determined.
c Probably occurred Sept. 5, 2004.
d Also Aug. 23, 2002.
e Estimated.



01643880 BEAVERDAM CREEK AT ROUTE 734 NEAR MOUNTVILLE, VA

LOCATION.--Lat 39°02'16", long 77°43'20", NAD83, Loudoun County, Hydrologic Unit 02070008, on left bank 250 ft downstream from State Highway 743 and 2.0 mi northwest of Mountville.

DRAINAGE AREA.--47.2 mi^2.

PERIOD OF RECORD.--July 2001 to current year.

GAGE.--Water-stage recorder. Datum of gage is 307.03 ft NAVD of 1988.

REMARKS.--Records fair.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e60	60	96	65	25	38	57	46	25	8.0	3.2	e2.3
2	e50	52	80	69	26	39	145	86	19	7.4	3.6	e2.1
3	e48	48	69	66	52	35	160	600	15	6.3	2.9	e1.8
4	51	44	69	62	109	37	115	130	14	26	2.0	e1.7
5	48	75	78	67	77	37	86	100	529	23	2.0	e1.6
6	41	97	77	62	873	192	70	82	177	16	1.9	e1.5
7	37	75	69	48	670	114	62	79	102	12	1.6	2.8
8	35	56	62	48	201	113	54	118	71	24	1.2	6.7
9	33	47	59	44	115	80	51	67	53	11	0.95	20
10	31	43	79	44	169	69	44	60	41	8.1	1.3	13
11	29	43	2,330	41	162	61	40	54	37	7.5	4.6	8.3
12	28	85	288	37	122	55	100	47	100	8.6	13	6.7
13	26	89	187	40	116	46	600	41	47	13	15	6.6
14	34	56	171	38	104	43	359	38	39	14	7.6	7.0
15	136	50	170	37	83	41	178	35	33	8.3	5.5	9.9
16	47	47	147	36	64	42	128	52	30	6.2	e5.0	11
17	37	45	233	29	54	47	104	54	28	5.5	e4.5	33
18	35	41	173	35	51	40	87	39	52	4.7	e4.0	145
19	30	726	136	35	59	53	74	40	28	5.3	e3.7	26
20	26	326	120	44	72	40	64	41	22	4.5	e3.4	12
21	26	157	109	27	79	37	69	38	19	3.9	e3.2	8.3
22	25	122	104	26	65	30	57	40	19	3.5	e3.1	6.5
23	22	102	106	23	55	26	53	30	18	3.5	e3.3	5.4
24	20	108	153	23	59	26	67	25	19	3.9	e3.2	4.8
25	19	172	128	21	57	27	46	23	14	3.7	e2.8	4.4
26	20	104	107	24	46	25	112	29	14	e5.2	e2.7	4.4
27	86	91	95	29	44	25	120	22	11	e6.4	e2.6	4.4
28	82	157	87	30	40	25	68	22	9.9	e8.0	e2.6	650
29	185	194	82	28	38	22	58	18	9.3	6.4	e2.5	266
30	99	111	78	29	---	21	54	16	8.6	3.6	e2.4	84
31	71	---	69	26	---	28	---	18	---	2.8	e2.4	---
TOTAL	1,517	3,423	5,811	1,233	3,687	1,514	3,282	2,090	1,603.8	270.3	117.75	1,357.2
MEAN	48.9	114	187	39.8	127	48.8	109	67.4	53.5	8.72	3.80	45.2
MAX	185	726	2,330	69	873	192	600	600	529	26	15	650
MIN	19	41	59	21	25	21	40	16	8.6	2.8	0.95	1.5
CFSM	1.04	2.42	3.97	0.84	2.69	1.03	2.32	1.43	1.13	0.18	0.08	0.96
IN.	1.20	2.70	4.58	0.97	2.91	1.19	2.59	1.65	1.26	0.21	0.09	1.07

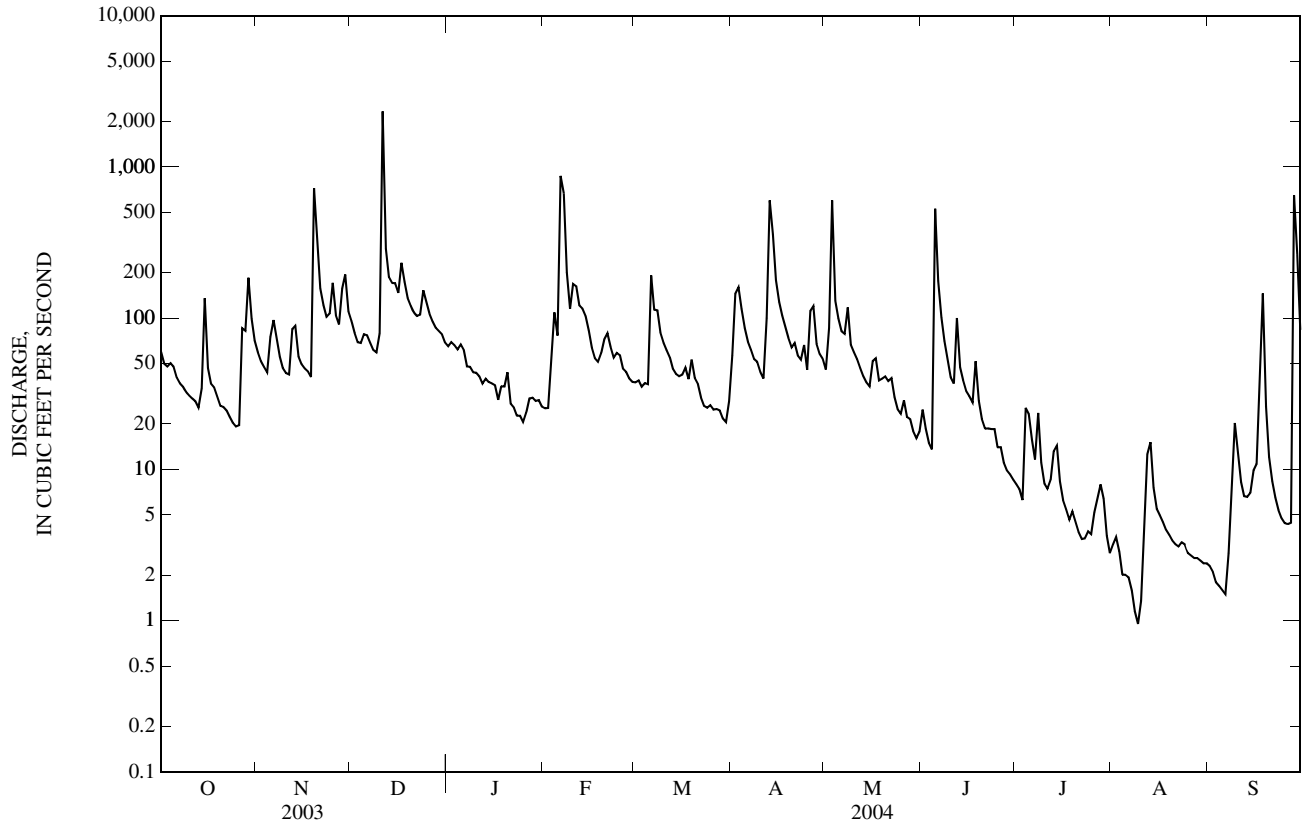
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2004, BY WATER YEAR (WY)

MEAN	25.1	61.2	90.2	53.4	75.6	93.5	78.7	113	92.1	28.2	11.9	91.6
MAX	48.9	114	187	115	127	210	109	242	203	70.5	34.2	312
(WY)	(2004)	(2004)	(2004)	(2003)	(2004)	(2003)	(2004)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	1.02	3.30	4.95	5.38	3.34	21.9	23.3	30.6	20.0	5.37	0.64	2.84
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

01643880 BEAVERDAM CREEK AT ROUTE 734 NEAR MOUNTVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2001 - 2004	
ANNUAL TOTAL	52,764		25,906.05			
ANNUAL MEAN	145		70.8		70.1	
HIGHEST ANNUAL MEAN					129	2003
LOWEST ANNUAL MEAN					10.2	2002
HIGHEST DAILY MEAN	5,000	Sep 23	2,330	Dec 11	5,000	Sep 23, 2003
LOWEST DAILY MEAN	11	Aug 25	0.95	Aug 9	0.02	aAug 26, 2002
ANNUAL SEVEN-DAY MINIMUM	17	Aug 20	1.6	Aug 4	0.03	Aug 21, 2002
MAXIMUM PEAK FLOW			6,070	Dec 11	22,000	Sep 23, 2003
MAXIMUM PEAK STAGE			12.20	Dec 11	b17.00	Sep 23, 2003
INSTANTANEOUS LOW FLOW			0.90	cAug 9	0.02	dAug 26, 2002
ANNUAL RUNOFF (CFSM)	3.06		1.50		1.49	
ANNUAL RUNOFF (INCHES)	41.59		20.42		20.19	
10 PERCENT EXCEEDS	263		129		152	
50 PERCENT EXCEEDS	77		40		32	
90 PERCENT EXCEEDS	29		3.9		1.6	

a Also Aug. 27, 2002.
b From floodmarks.
c Also Aug. 10, 2004.
d Also Aug. 27, 28, 2002.
e Estimated.



01644000 GOOSE CREEK NEAR LEESBURG, VA

LOCATION.--Lat 39°01'10", long 77°34'39", NAD83, 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 mi^2.

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 NGVD of 1929. 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, non-recording gage at site 400 ft downstream at datum 4.20 ft lower than present datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 8-19 and Jan. 21 to Feb. 3, which are fair. National Weather Service gage-height telemeter at station. Maximum discharge, 78,100 ft^3/s, from rating curve extended above 11,000 ft^3/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 ft^3/s, site and datum in use 1930-38, from information by local residents.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 20	0115	6,820	10.40	Apr 14	0145	4,020	6.61
Dec 11	1545	*16,200	*17.31	May 3	0845	4,620	7.45
Feb 6	2215	9,340	13.13	Sep 29	0245	9,230	13.03

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	515	500	751	526	e178	313	369	451	222	121	81	23
2	481	441	657	529	e175	313	970	487	195	118	122	21
3	436	407	579	523	e275	311	1,440	2,690	167	110	102	21
4	429	378	545	493	784	306	1,050	1,150	153	115	83	20
5	420	464	605	498	649	311	771	827	1,800	299	84	19
6	386	801	623	507	3,010	901	621	679	1,190	167	77	19
7	358	647	558	426	4,620	784	538	585	593	144	61	20
8	341	497	517	e370	1,830	684	478	950	441	233	54	32
9	322	423	495	e340	903	544	446	592	369	153	49	229
10	309	388	534	e300	942	479	401	586	311	117	46	142
11	298	375	11,600	e310	1,290	431	368	493	291	106	44	69
12	292	477	3,430	e350	869	404	623	421	936	107	78	50
13	282	604	1,700	e330	781	356	3,030	376	496	198	109	42
14	282	438	1,390	e305	746	328	2,810	342	399	169	95	38
15	965	396	1,420	e295	623	319	1,490	338	343	163	71	41
16	427	378	1,180	e265	514	315	1,050	362	324	117	62	54
17	332	367	1,630	e270	456	367	842	434	293	98	53	71
18	310	347	1,590	e305	433	319	721	345	536	89	48	1,340
19	291	2,070	1,120	e280	431	351	631	339	381	91	45	457
20	268	3,350	953	244	479	314	553	341	284	97	43	212
21	259	1,260	821	e230	512	290	569	333	236	93	42	147
22	257	929	766	e225	480	268	504	330	220	83	41	116
23	245	762	749	e220	430	244	472	287	256	104	42	97
24	231	730	956	e215	425	239	593	254	223	150	38	84
25	223	1,270	1,100	e195	433	241	443	233	192	116	33	76
26	219	797	842	e192	387	239	664	244	182	96	30	70
27	911	698	754	e190	364	235	1,140	229	165	117	29	67
28	968	731	688	e188	344	238	689	231	148	357	28	2,600
29	1,280	1,460	648	e185	324	223	565	212	140	221	26	5,100
30	865	850	618	e182	---	217	502	186	128	121	24	936
31	600	---	557	e180	---	238	---	185	---	93	24	---
TOTAL	13,802	23,235	40,376	9,668	23,687	11,122	25,343	15,512	11,614	4,363	1,764	12,213
MEAN	445	774	1,302	312	817	359	845	500	387	141	56.9	407
MAX	1,280	3,350	11,600	529	4,620	901	3,030	2,690	1,800	357	122	5,100
MIN	219	347	495	180	175	217	368	185	128	83	24	19
CFSM	1.34	2.33	3.92	0.94	2.46	1.08	2.54	1.51	1.17	0.42	0.17	1.23
IN.	1.55	2.60	4.52	1.08	2.65	1.25	2.84	1.74	1.30	0.49	0.20	1.37

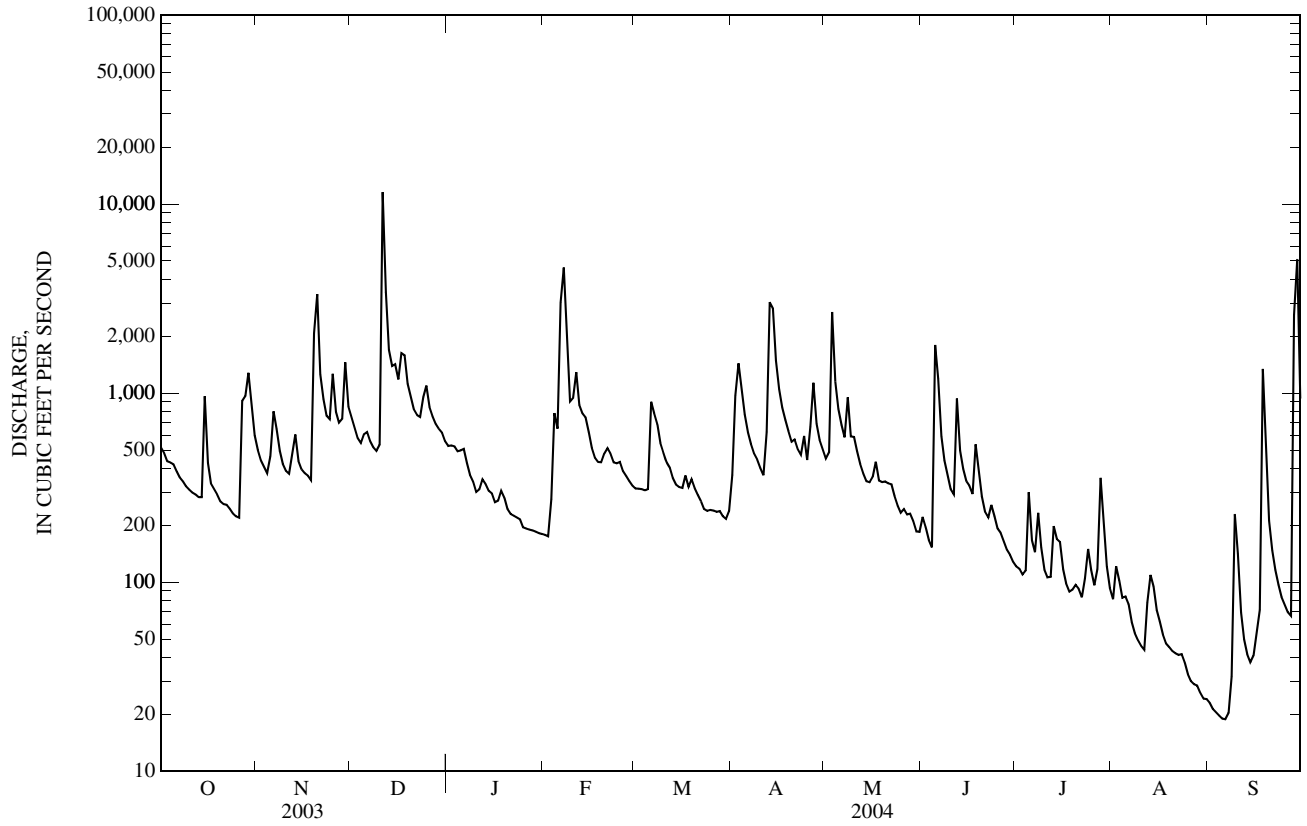
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 1912, 1930 - 2004, BY WATER YEAR (WY)

MEAN	194	225	339	409	509	597	519	377	273	140	153	158
MAX	2,265	1,155	1,316	1,499	1,621	1,892	1,766	1,324	2,887	1,207	1,188	1,715
(WY)	(1943)	(1933)	(1993)	(1996)	(1998)	(1993)	(1983)	(2003)	(1972)	(1956)	(1937)	(2003)
MIN	2.12	3.83	14.8	25.8	26.3	83.6	141	85.5	24.8	6.46	1.86	1.38
(WY)	(1931)	(1931)	(1966)	(1966)	(1931)	(1931)	(1981)	(1969)	(1999)	(1999)	(1930)	(1985)

01644000 GOOSE CREEK NEAR LEESBURG, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1909 - 1912 1930 - 2004	
ANNUAL TOTAL	340,131		192,699			
ANNUAL MEAN	932		526		327	
HIGHEST ANNUAL MEAN					811	2003
LOWEST ANNUAL MEAN					55.2	1931
HIGHEST DAILY MEAN	20,800	Sep 23	11,600	Dec 11	e53,600	Jun 22, 1972
LOWEST DAILY MEAN	96	Feb 17	19	aSep 5	0.40	bSep 27, 1941
ANNUAL SEVEN-DAY MINIMUM	e119	Feb 11	20	Sep 1	0.45	Sep 19, 1985
MAXIMUM PEAK FLOW			16,200	Dec 11	78,100	Jun 22, 1972
MAXIMUM PEAK STAGE			17.31	Dec 11	c30.59	Jun 22, 1972
INSTANTANEOUS LOW FLOW			19	dSep 5	(f)	(g)
ANNUAL RUNOFF (CFSM)	2.81		1.59		0.984	
ANNUAL RUNOFF (INCHES)	38.11		21.59		13.37	
10 PERCENT EXCEEDS	1,730		966		714	
50 PERCENT EXCEEDS	577		342		162	
90 PERCENT EXCEEDS	198		70		18	

a Also Sept. 6, 2004.
b Also Sept. 28-30, 1941.
c From high-water mark in gage house.
d Also Sept. 6, 7, 2004.
e Estimated.
f Not determined.
g Probably occurred Sept. 27-30, 1941.



01644280 BROAD RUN NEAR LEESBURG, VA

LOCATION.--Lat 39°02'47", long 77°25'57", NAD83, Loudoun County, Hydrologic Unit 02070008, on right bank 15 ft upstream from State Highway 7 and 8 mi southeast of Leesburg.

DRAINAGE AREA.--76.1 mi^2.

PERIOD OF RECORD.--October 2001 to current year.

GAGE.--Water-stage recorder. Datum of gage is 193.65 ft NAVD of 1988.

REMARKS.--Records good except for period of doubtful or no gage-height record, Oct. 1 to Mar. 4, which is poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	e106	e53	e66	e24	e45	361	39	103	9.5	23	5.7
2	e29	76	e50	e61	e26	e42	1,190	57	34	8.9	261	6.0
3	e27	58	e47	e64	e93	e40	938	358	21	8.0	285	5.5
4	e28	49	e45	e60	e148	e39	305	112	15	40	57	5.1
5	e25	295	e83	e57	e105	38	145	62	445	79	114	5.7
6	e23	1,600	e81	e52	e1,010	673	89	45	265	37	43	4.8
7	e19	463	e69	e47	e1,180	327	72	51	68	45	27	4.7
8	17	e140	e60	e42	e187	183	59	143	41	285	20	14
9	16	e95	e56	e39	e135	111	51	56	31	45	16	110
10	15	e76	e266	e38	e204	80	43	71	26	35	16	31
11	14	e60	e3,580	e38	e208	52	37	46	26	34	20	17
12	13	e103	e828	e37	e122	44	451	31	287	20	76	13
13	12	e130	e178	e36	e144	36	2,460	26	77	13	244	9.2
14	50	e83	e174	e30	e128	32	1,140	22	43	13	60	7.8
15	600	e65	e220	e30	e97	29	295	19	31	22	47	42
16	106	e52	e226	e31	e84	32	142	23	40	12	29	54
17	49	e41	e386	e29	e77	54	93	69	152	8.8	23	122
18	e35	e38	e289	e33	e74	40	72	32	286	8.1	18	1,170
19	e28	626	e153	e32	e70	44	59	29	71	7.3	16	248
20	e23	1,150	e118	e27	e77	43	50	22	35	6.7	14	73
21	e20	281	e92	e26	e74	37	52	20	25	6.0	12	45
22	e17	e160	e78	e27	e71	31	44	51	24	5.8	13	34
23	e15	e100	e71	e26	e69	27	52	27	77	112	11	26
24	e13	e79	e124	e25	e72	24	144	17	36	242	10	20
25	e12	e110	e116	e25	e66	27	52	15	22	53	11	18
26	18	e100	e105	e25	e60	28	225	47	18	31	e9.2	16
27	1,540	e82	e93	e25	e56	27	431	23	16	29	7.3	14
28	e850	e77	e83	e24	e52	30	107	28	13	508	6.3	717
29	e720	e205	e77	e24	e48	26	64	22	12	151	5.9	830
30	e390	e105	e76	e24	---	24	47	15	10	47	5.6	146
31	e145	---	e67	e24	---	24	---	17	---	29	5.4	---
TOTAL	4,901	6,605	7,944	1,124	4,761	2,289	9,270	1,595	2,350	1,951.1	1,505.7	3,814.5
MEAN	158	220	256	36.3	164	73.8	309	51.5	78.3	62.9	48.6	127
MAX	1,540	1,600	3,580	66	1,180	673	2,460	358	445	508	285	1,170
MIN	12	38	45	24	24	24	37	15	10	5.8	5.4	4.7
CFSM	2.08	2.89	3.37	0.48	2.16	0.97	4.06	0.68	1.03	0.83	0.64	1.67
IN.	2.40	3.23	3.88	0.55	2.33	1.12	4.53	0.78	1.15	0.95	0.74	1.86

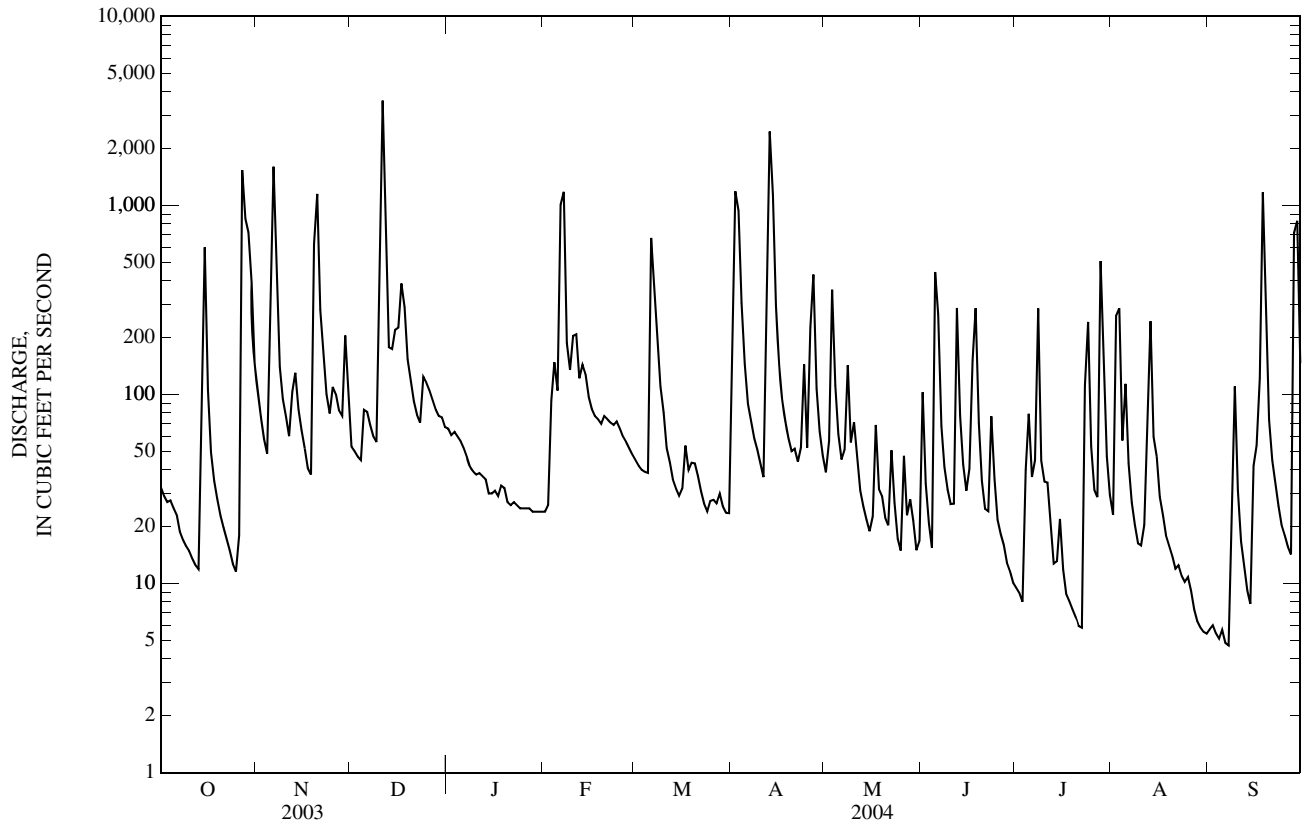
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2004, BY WATER YEAR (WY)

MEAN	86.5	143	160	91.6	140	167	165	187	116	61.7	41.7	137
MAX	158	220	256	216	244	351	309	407	228	101	59.5	254
(WY)	(2004)	(2004)	(2004)	(2003)	(2003)	(2003)	(2004)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	16.7	11.6	20.4	22.0	11.8	73.8	84.4	51.5	40.1	21.2	17.2	28.7
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2004)	(2002)	(2004)	(2002)	(2002)	(2002)	(2002)

01644280 BROAD RUN NEAR LEESBURG, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2002 - 2004	
ANNUAL TOTAL	78,968.2		48,110.3			
ANNUAL MEAN	216		131		124	
HIGHEST ANNUAL MEAN					204	2003
LOWEST ANNUAL MEAN					37.9	2002
HIGHEST DAILY MEAN	5,200	May 16	3,580	Dec 11	5,200	May 16, 2003
LOWEST DAILY MEAN	7.5	Jan 28	4.7	Sep 7	1.3	aAug 21, 2002
ANNUAL SEVEN-DAY MINIMUM	8.2	Jan 24	5.4	Sep 1	1.6	Aug 17, 2002
MAXIMUM PEAK FLOW			4,490	Dec 11	6,890	May 16, 2003
MAXIMUM PEAK STAGE			9.18	Dec 11	10.43	May 16, 2003
INSTANTANEOUS LOW FLOW			3.9	bSep 6	1.3	cAug 20, 2002
ANNUAL RUNOFF (CFSM)	2.84		1.73		1.64	
ANNUAL RUNOFF (INCHES)	38.60		23.52		22.22	
10 PERCENT EXCEEDS	526		285		276	
50 PERCENT EXCEEDS	64		45		34	
90 PERCENT EXCEEDS	17		13		6.0	

a Also Aug. 22, 2002.
b Also Sept. 7, 2004.
c Also Aug. 21, 22, 2002.
e Estimated.



01646000 DIFFICULT RUN NEAR GREAT FALLS, VA

LOCATION.--Lat 38°58'33", long 77°14'45", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--Records good except those for period with ice effect, Jan. 9 to Feb. 2, and period of no gage-height record, Apr. 30 to May 1, which are fair. Maximum discharge, 32,200 ft^3/s, from rating curve extended above 1,600 ft^3/s on basis of contracted- opening measurement at gage height 13.18 ft and slope-area measurement at gage height 21.40 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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct 27	1900	1,010	7.04	Apr 13	0130	1,120	7.29
Nov 6	0030	1,190	7.44	Jun 5	1515	1,210	7.49
Nov 20	0130	1,940	8.88	Jul 28	0430	1,130	7.31
Dec 11	0700	*5,070	*12.20	Sep 29	0230	1,200	7.46
Feb 6	2230	1,430	7.95				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	66	81	74	e34	60	234	e60	115	35	88	18
2	46	60	70	99	e34	79	330	71	53	34	100	18
3	44	56	65	85	187	65	220	162	43	32	121	17
4	45	56	63	78	146	69	108	83	40	128	48	17
5	44	200	193	128	96	64	82	65	657	74	55	16
6	43	509	205	119	633	372	71	60	152	45	34	16
7	42	180	115	77	536	124	69	57	74	122	29	18
8	42	90	88	69	175	102	67	86	58	102	27	107
9	41	73	84	e64	110	76	65	58	51	44	26	79
10	40	66	138	e61	137	70	61	69	48	37	25	26
11	40	64	2,140	e62	129	68	61	54	57	34	58	20
12	40	91	199	e64	101	65	230	50	269	32	88	19
13	38	133	120	e60	97	60	606	47	68	33	124	18
14	47	69	217	e57	91	59	262	46	55	32	44	18
15	296	62	286	e55	84	59	119	44	60	39	58	43
16	59	60	159	e53	74	82	91	76	92	29	33	52
17	47	58	427	e54	69	80	82	54	82	26	29	66
18	44	56	191	e83	70	65	75	49	290	28	33	421
19	42	550	121	e73	71	64	72	47	180	27	28	57
20	40	748	102	e50	73	60	68	47	59	39	25	30
21	40	131	91	e45	77	60	67	47	49	28	32	26
22	39	92	88	e43	70	55	64	74	83	24	39	25
23	38	79	85	e42	65	53	79	46	125	42	25	22
24	37	77	280	e41	67	53	110	42	60	44	23	21
25	37	128	147	e40	69	60	65	42	48	29	22	20
26	38	75	99	e38	62	56	164	107	48	28	22	19
27	703	69	88	e37	61	60	163	45	42	141	21	20
28	220	190	83	e36	60	58	80	45	40	484	21	241
29	394	320	81	e36	60	53	68	40	38	60	20	491
30	119	99	82	e35	---	52	e64	38	36	38	19	64
31	79	---	76	e35	---	54	---	43	---	31	20	---
TOTAL	2,871	4,507	6,264	1,893	3,538	2,357	3,897	1,854	3,072	1,921	1,337	2,025
MEAN	92.6	150	202	61.1	122	76.0	130	59.8	102	62.0	43.1	67.5
MAX	703	748	2,140	128	633	372	606	162	657	484	124	491
MIN	37	56	63	35	34	52	61	38	36	24	19	16
CFSM	1.60	2.59	3.49	1.05	2.11	1.31	2.24	1.03	1.77	1.07	0.74	1.17
IN.	1.84	2.90	4.02	1.22	2.27	1.51	2.50	1.19	1.97	1.23	0.86	1.30

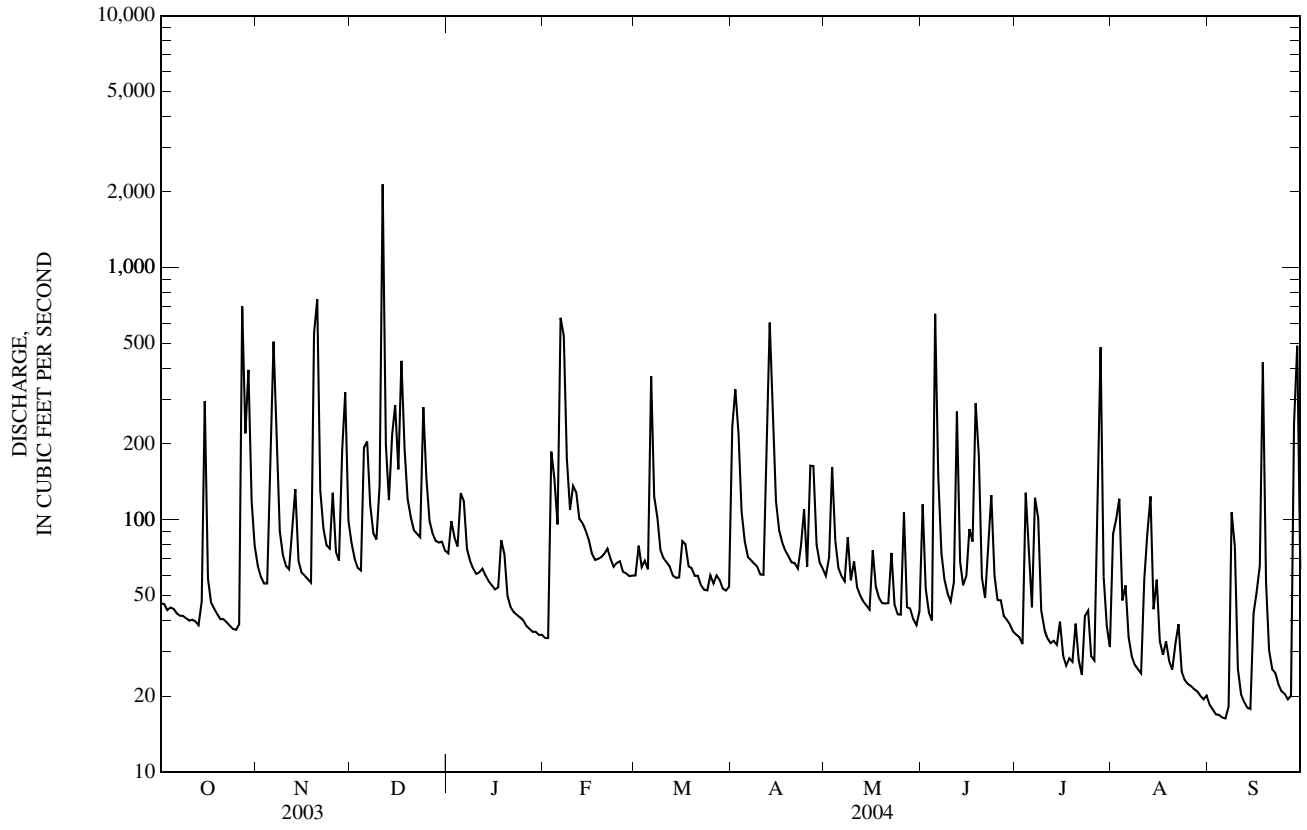
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 2004, BY WATER YEAR (WY)

MEAN	40.2	51.6	61.8	73.5	82.1	90.4	82.6	72.1	69.7	42.1	39.7	40.1
MAX	317	150	202	194	228	227	224	203	1,210	116	143	245
(WY)	(1980)	(2004)	(2004)	(1996)	(1998)	(1993)	(1973)	(1989)	(1972)	(2003)	(1955)	(1975)
MIN	4.69	7.75	11.4	16.5	17.5	33.2	31.5	21.8	10.0	4.52	1.88	5.57
(WY)	(1942)	(1942)	(1966)	(1966)	(2002)	(1981)	(1985)	(1955)	(1986)	(1955)	(1966)	(1986)

01646000 DIFFICULT RUN NEAR GREAT FALLS, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1935 - 2004	
ANNUAL TOTAL	49,692		35,536			
ANNUAL MEAN	136		97.1		62.0	
HIGHEST ANNUAL MEAN					184	1972
LOWEST ANNUAL MEAN					28.4	1966
HIGHEST DAILY MEAN	2,140	Dec 11	2,140	Dec 11	e25,000	Jun 22, 1972
LOWEST DAILY MEAN	e16	Feb 14	16	aSep 5	0.10	bSep 7, 1966
ANNUAL SEVEN-DAY MINIMUM	e19	Feb 8	17	Sep 1	0.16	Sep 3, 1966
MAXIMUM PEAK FLOW			5,070	Dec 11	32,200	Jun 22, 1972
MAXIMUM PEAK STAGE			12.20	Dec 11	c21.40	Jun 22, 1972
INSTANTANEOUS LOW FLOW			16	aSep 5	0.05	dSep 9, 1966
ANNUAL RUNOFF (CFSM)	2.35		1.68		1.07	
ANNUAL RUNOFF (INCHES)	31.93		22.83		14.56	
10 PERCENT EXCEEDS	257		182		107	
50 PERCENT EXCEEDS	73		61		38	
90 PERCENT EXCEEDS	36		28		13	

a Also Sept. 6, 2004.
b Also Sept. 8, 9, 1966.
c From floodmarks.
d Also Sept. 10, 1966
e Estimated.



01646500 POTOMAC RIVER NEAR WASHINGTON, DC

LOCATION.--Lat 38°56'59.2", long 77°07'39.5", 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 mi^2.

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 National Geodetic Vertical Datum of 1929. 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.

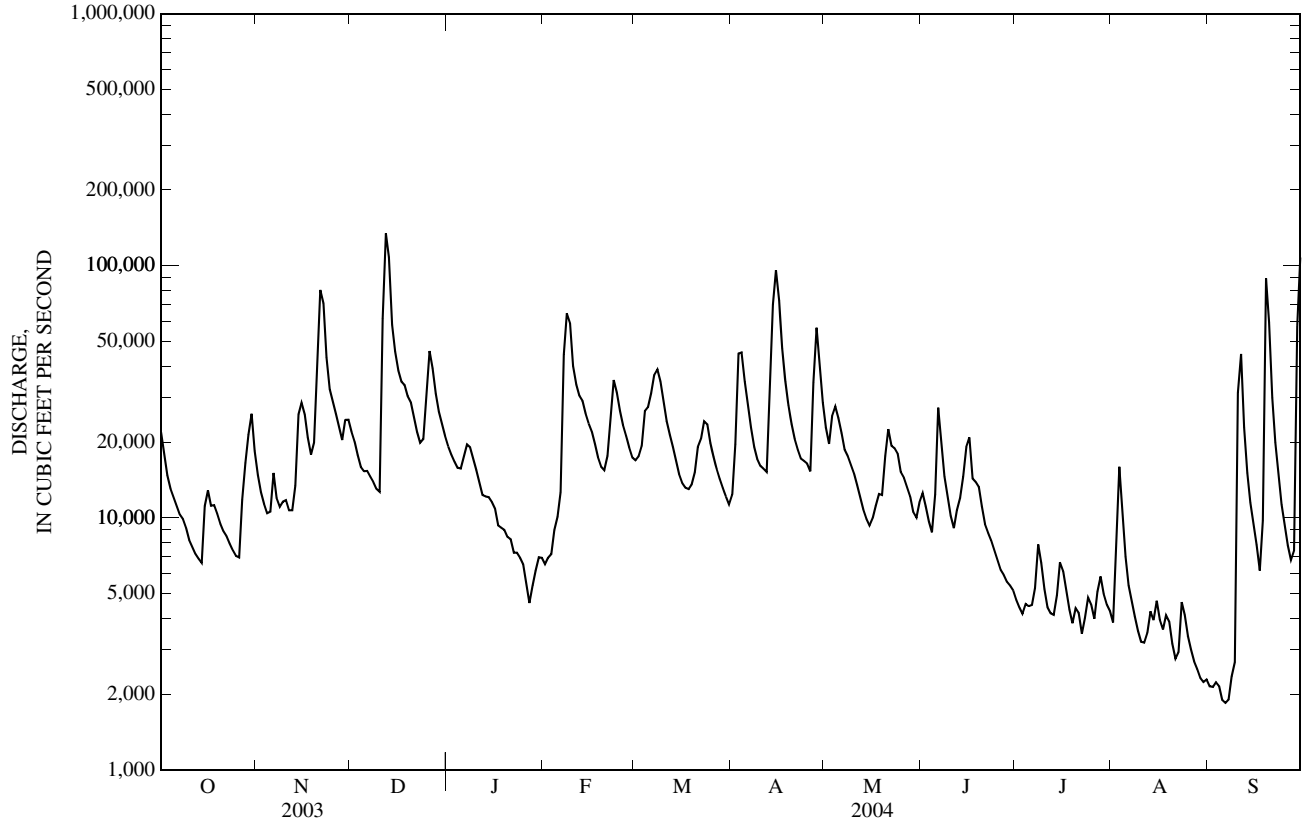
REMARKS.--Records good except those for estimated daily discharges (ice effect and erroneous data), which are fair. Diversions at Great Falls through aqueducts, and since June 1959, from gage pool at Little Falls Dam, for municipal supply of Washington, D.C.; since October 1958, at Rockville Filtration 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. U.S. Geological Survey satellite collection platform at station.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 45,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 21	2000	98,300	8.79	Apr 15	1415	103,000	8.95
Dec 12	2015	*154,000	*10.87	Apr 28	0415	62,000	7.29
Dec 26	1215	47,500	6.57	Sep 10	2030	61,800	7.28
Feb 8	1545	73,600	7.81	Sep 19	1300	102,000	8.91
Apr 3	1815	53,000	6.85	Sep 30	1230	119,000	9.53

Minimum discharge, 1,680 ft^3/s, Sept. 5, 6.



DAILY MEAN DISCHARGE - 2004 WATER YEAR

01646500 POTOMAC RIVER NEAR WASHINGTON, DC—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21,800	14,800	22,000	19,200	6,560	16,900	12,400	22,800	12,500	4,740	3,850	2,150
2	17,700	12,700	20,000	17,900	6,950	17,600	19,600	19,700	11,100	4,410	7,560	2,140
3	14,800	11,300	17,800	16,700	7,190	19,300	44,800	25,300	9,670	4,170	16,000	2,230
4	13,100	10,400	15,900	15,800	8,960	26,500	45,300	27,700	8,770	4,560	10,300	2,150
5	12,000	10,600	15,300	15,700	10,100	27,500	34,800	24,900	12,400	4,460	7,020	1,900
6	11,100	15,100	15,400	17,500	12,700	31,300	27,800	21,700	27,400	4,510	5,400	1,850
7	10,300	12,000	14,600	19,600	e44,400	36,900	22,800	18,700	19,500	5,260	4,670	1,900
8	9,890	11,100	13,900	19,100	64,800	38,800	19,100	17,600	14,600	7,840	4,060	2,350
9	9,150	11,600	13,100	17,100	59,300	34,800	17,100	16,300	12,100	6,630	3,560	2,680
10	8,170	11,800	12,700	15,500	40,000	28,800	16,100	15,000	10,200	5,220	3,230	31,300
11	7,680	10,700	61,800	e13,800	33,800	24,200	15,700	13,500	9,110	4,420	3,200	44,700
12	7,190	10,700	134,000	12,300	30,600	21,400	15,200	12,000	10,700	4,180	3,490	22,900
13	6,900	13,400	108,000	12,200	29,100	19,100	27,400	10,800	12,000	4,130	4,260	15,100
14	6,640	25,800	58,300	12,100	26,000	16,900	70,200	9,910	14,600	4,930	3,930	11,500
15	11,200	28,600	45,600	11,600	23,700	14,900	96,200	9,340	19,100	6,670	4,690	9,470
16	12,800	25,700	38,400	e10,900	22,100	13,700	72,800	9,990	20,800	6,160	3,950	7,820
17	11,200	20,800	34,800	e9,330	19,600	13,200	47,000	11,200	14,300	5,180	3,610	6,190
18	11,200	17,800	33,700	e9,150	17,400	13,000	34,800	12,400	13,900	4,340	4,110	9,760
19	10,400	19,900	30,500	e8,960	16,000	13,600	27,900	12,300	13,300	3,820	3,880	89,200
20	9,470	41,300	28,800	e8,410	15,500	15,200	23,600	17,600	11,100	4,390	3,170	59,700
21	8,850	80,200	25,100	e8,230	17,600	19,100	20,600	22,500	9,430	4,200	2,760	30,000
22	8,450	71,000	21,900	e7,280	24,300	20,600	18,600	19,300	8,700	3,470	2,930	19,900
23	7,910	43,300	19,900	e7,280	35,200	24,200	17,200	18,900	8,130	4,000	4,630	14,700
24	7,430	32,400	20,500	e6,950	31,500	23,500	16,800	18,000	7,390	4,830	4,120	11,300
25	7,080	29,000	31,300	e6,550	26,600	19,900	16,400	15,200	6,780	4,540	3,400	9,280
26	6,970	25,800	45,900	5,450	23,400	17,500	15,300	14,400	6,210	3,980	3,010	7,790
27	11,800	22,900	39,200	4,590	21,100	15,600	34,500	13,300	5,940	5,090	2,700	6,800
28	16,500	20,400	31,100	5,390	19,000	14,300	56,800	12,200	5,580	5,850	2,510	7,400
29	21,400	24,500	26,400	6,180	17,300	13,200	39,900	10,600	5,390	5,010	2,320	57,700
30	25,900	24,500	23,600	6,980	---	12,100	28,600	10,000	5,160	4,540	2,230	108,000
31	18,400	---	21,200	6,950	---	11,300	---	11,500	---	4,280	2,290	---
TOTAL	363,380	710,100	1,040,700	354,680	710,760	634,900	955,300	494,640	345,860	149,810	136,840	599,860
MEAN	11,720	23,670	33,570	11,440	24,510	20,480	31,840	15,960	11,530	4,833	4,414	20,000
MAX	25,900	80,200	134,000	19,600	64,800	38,800	96,200	27,700	27,400	7,840	16,000	108,000
MIN	6,640	10,400	12,700	4,590	6,560	11,300	12,400	9,340	5,160	3,470	2,230	1,850
(†)	641	588	578	611	620	583	602	662	656	739	700	670
MEAN‡	12,350	24,260	34,180	12,060	25,130	21,080	32,460	16,630	12,180	5,572,	5,114	20,680
CFSM‡	1.07	2.10	2.96	1.04	2.17	1.82	2.81	1.44	1.05	0.48	0.44	1.79
IN.‡	1.23	2.34	3.41	1.20	2.34	2.10	3.13	1.66	1.18	0.56	0.51	2.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2004, BY WATER YEAR (WY)

MEAN	6,032	7,425	10,990	13,710	17,130	23,540	20,220	14,710	9,146	4,887	4,776	5,130
MAX	44,100	42,030	37,630	52,890	61,040	76,510	57,850	40,410	46,630	21,040	28,210	44,620
(WY)	(1943)	(1986)	(1997)	(1996)	(1998)	(1936)	(1993)	(1989)	(1972)	(1949)	(1955)	(1996)
MIN	583	700	1,038	1,682	1,882	6,225	5,810	3,921	1,536	599	538	679
(WY)	(1931)	(1931)	(1966)	(1981)	(2002)	(2002)	(1995)	(1969)	(1999)	(1999)	(1966)	(1930)

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1930 - 2004	
ANNUAL TOTAL	9,320,040		6,496,830			
ANNUAL MEAN	25,530		17,750		11,500	
ANNUAL MEAN‡	26,150		18,390		11,974	
HIGHEST ANNUAL MEAN					23,760	1996
HIGHEST ANNUAL MEAN‡					24,370	1996
LOWEST ANNUAL MEAN					4,017	2002
LOWEST ANNUAL MEAN‡					4,664	2002
HIGHEST DAILY MEAN	150,000	Sep 21	‘		426,000	Mar 19, 1936
LOWEST DAILY MEAN	2,260	Feb 18	1,850	Sep 6	(a)121	Sep 9, 1966
LOWEST DAILY MEAN‡	2,800	Feb 18	2,530	Sep 6	(b)601	Sep 10, 1966
ANNUAL SEVEN-DAY MINIMUM	3,880	Feb 14	2,050	Sep 1	181	Sep 7, 1966
MAXIMUM PEAK FLOW			154,000	Dec 12	484,000	Mar 19, 1936
MAXIMUM PEAK STAGE			10.87	Dec 12	(c)28.10	Mar 19, 1936
INSTANTANEOUS LOW FLOW			1,680	Sep 5	66	Sep 9, 1966
ANNUAL RUNOFF (CFSM)	2.21		1.54		0.995	
ANNUAL RUNOFF (CFSM)‡	2.26		1.59		1.03	
ANNUAL RUNOFF (INCHES)	29.99		20.91		13.52	
ANNUAL RUNOFF (INCHES)‡	30.68		21.64		14.07	
10 PERCENT EXCEEDS	59,900		34,600		25,800	
50 PERCENT EXCEEDS	17,800		13,400		6,520	
90 PERCENT EXCEEDS	5,990		4,160		1,660	

e Estimated
† 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.
a Minimum daily discharge observed at gaging station, does not include diversion of 489 ft^3/s.
b Includes diversion of 449 ft^3/s for municipal use.
c At previous site, 1 mi upstream at same datum.

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.

REMARKS.--Missing record July 29 to Aug 10, Sept. 3-7 due to instrument malfunction.

EXTREMES FOR PERIOD OF DAILY RECORD--
SPECIFIC CONDUCTANCE: Maximum, 1,260 (road salt) microsiemens/cm, Dec. 11, 2002; minimum, 68 microsiemens/cm, Oct. 23, 1990.
WATER TEMPERATURE (water years 1989-93, 1995-99, 2001-03): Maximum, 33.5°C, July 11, 1993; minimum, 0.0°C, on many day during winter periods.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 1,820 microsiemens/cm, Feb. 6; minimum, 121 microsiemens/cm, Nov. 19.
WATER TEMPERATURE: Maximum, 30.0°C, July 7; minimum, 0.0°C, on several days.

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

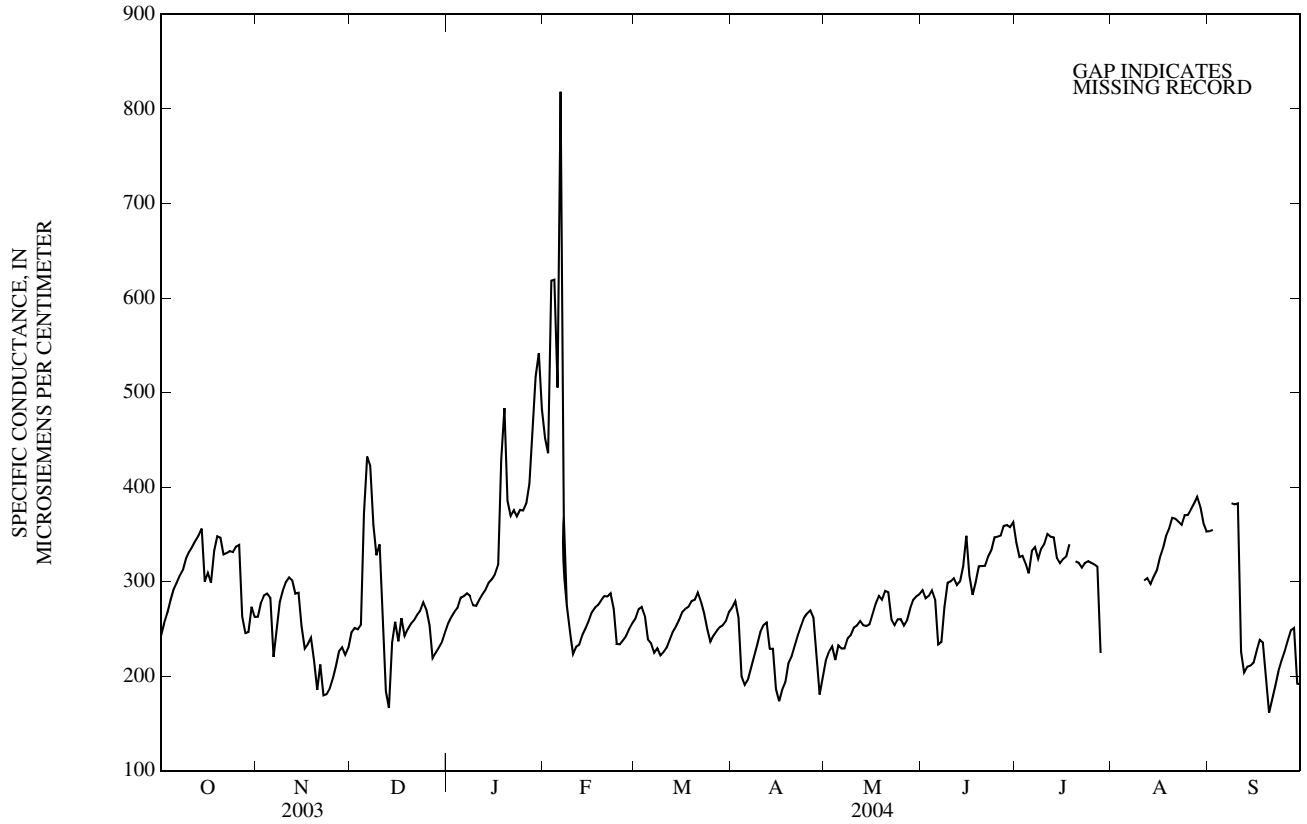
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	253	226	243	274	255	263	254	237	246	259	252	256
2	261	250	256	282	273	277	255	246	251	267	256	262
3	274	261	267	290	279	286	252	246	249	273	264	268
4	287	273	280	298	284	287	258	251	254	275	269	272
5	296	287	292	294	174	283	540	257	372	296	275	283
6	301	296	299	239	130	220	519	379	432	287	280	284
7	312	301	306	269	230	249	465	398	423	292	285	287
8	321	298	312	288	269	279	398	338	360	289	280	285
9	329	314	324	296	287	290	338	319	328	284	270	275
10	334	318	332	305	294	300	461	319	339	278	270	274
11	340	334	337	306	303	304	597	156	249	285	277	281
12	347	339	343	308	292	301	220	153	184	291	283	287
13	354	343	349	292	284	287	176	152	166	295	289	292
14	359	352	356	293	283	288	365	173	235	302	294	299
15	354	239	300	288	228	253	359	235	257	307	300	303
16	321	296	309	232	226	229	241	233	237	313	305	308
17	317	288	299	242	226	234	295	238	261	327	310	318
18	344	317	333	244	237	240	248	238	243	636	318	429
19	354	343	348	251	121	216	254	246	249	582	402	483
20	357	334	346	194	178	185	258	252	255	404	372	386
21	334	326	329	239	193	212	261	255	259	392	331	369
22	332	328	330	194	172	180	268	259	265	383	373	375
23	334	331	332	184	178	181	271	266	269	380	362	369
24	335	328	331	194	183	187	301	267	278	383	371	376
25	340	334	337	204	192	197	274	268	270	380	369	375
26	341	327	339	222	202	211	276	223	254	398	374	383
27	336	202	263	236	220	226	224	216	219	421	396	403
28	255	239	245	249	194	230	227	223	225	489	418	460
29	268	201	247	230	201	222	234	226	230	533	489	517
30	277	268	273	237	224	230	241	233	236	566	512	542
31	271	255	263	---	---	---	257	241	246	512	457	483
MONTH	359	201	307	308	121	245	597	152	269	636	252	348

01646500 POTOMAC RIVER NEAR WASHINGTON, DC—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	467	442	452	266	257	261	287	259	273	223	209	217
2	444	428	436	285	261	271	288	271	279	242	217	226
3	998	423	618	276	269	273	280	249	262	242	208	232
4	853	524	619	272	253	263	249	186	200	227	205	217
5	597	464	505	258	220	239	194	189	191	236	227	232
6	1,820	467	818	280	220	235	201	192	196	236	225	229
7	534	264	369	232	220	225	213	201	208	240	225	229
8	298	256	275	234	223	230	228	212	222	248	237	240
9	289	223	246	230	217	222	239	227	233	250	239	244
10	235	217	223	229	219	226	250	239	247	258	246	252
11	234	228	231	233	227	230	263	247	254	257	250	254
12	237	230	233	247	232	239	272	211	257	261	255	258
13	250	236	244	260	243	247	241	200	229	262	247	254
14	254	249	250	257	248	253	240	208	229	262	245	253
15	264	254	258	264	254	260	208	174	186	263	247	255
16	271	261	267	277	261	268	180	168	173	274	260	266
17	280	268	272	274	268	271	191	180	186	292	272	277
18	279	269	275	281	270	273	199	189	194	295	275	285
19	285	278	280	283	274	279	224	199	214	289	276	281
20	288	282	285	282	279	281	227	214	221	295	284	290
21	287	281	284	298	278	288	238	226	232	301	278	289
22	294	281	288	287	267	278	247	237	243	281	252	260
23	289	250	271	277	253	267	267	247	252	259	251	254
24	252	225	234	260	240	250	267	256	262	263	256	260
25	235	231	234	242	232	236	280	261	266	269	254	260
26	242	233	238	247	239	243	282	265	270	260	246	253
27	247	239	243	253	240	248	268	247	262	267	251	259
28	253	244	250	262	244	252	254	186	221	284	264	271
29	261	253	256	261	249	254	186	177	180	284	276	281
30	---	---	---	270	253	258	209	185	199	289	280	285
31	---	---	---	273	262	268	---	---	---	291	284	287
MONTH	1,820	217	326	298	217	254	288	168	228	301	205	256
		JUNE			JULY			AUGUST			SEPTEMBER	
1	295	286	291	360	306	342	---	---	---	355	351	353
2	289	278	282	333	306	326	---	---	---	358	352	354
3	294	280	285	330	325	327	---	---	---	---	---	---
4	301	286	291	334	274	319	---	---	---	---	---	---
5	307	258	281	326	274	309	---	---	---	---	---	---
6	276	191	233	341	322	332	---	---	---	---	---	---
7	259	210	236	344	331	336	---	---	---	---	---	---
8	288	258	273	333	317	324	---	---	---	384	381	383
9	306	286	299	342	317	335	---	---	---	388	374	382
10	307	294	300	357	313	340	---	---	---	452	272	383
11	312	297	304	361	324	350	306	295	301	272	197	226
12	312	289	296	360	329	347	308	297	304	225	197	204
13	311	292	300	368	331	347	304	292	297	213	202	210
14	340	301	316	347	307	325	308	302	305	212	210	211
15	363	330	348	332	298	319	317	304	312	221	211	214
16	332	292	306	341	302	324	329	317	325	231	221	226
17	325	257	286	343	312	326	341	329	335	244	231	238
18	317	266	299	358	321	340	356	341	348	252	225	236
19	319	313	316	---	---	---	364	351	356	271	136	195
20	322	312	317	325	319	321	369	364	367	176	135	161
21	322	312	317	326	314	320	369	365	366	185	170	176
22	333	321	327	323	303	315	367	358	363	198	185	190
23	341	326	333	326	315	320	367	357	360	212	197	206
24	360	339	347	324	319	322	372	367	370	221	212	216
25	358	339	347	336	308	320	372	369	371	230	221	226
26	353	345	349	328	310	318	380	372	376	249	230	237
27	363	353	359	329	181	316	389	378	383	252	246	248
28	371	355	360	258	166	224	393	386	390	258	195	251
29	367	345	358	---	---	---	387	369	379	242	148	192
30	370	352	363	---	---	---	371	356	362	222	162	191
31	---	---	---	---	---	---	356	351	353	---	---	---
MONTH	371	191	311	368	166	324	393	292	349	452	135	244
YEAR	1,820	121	287									

01646500 POTOMAC RIVER NEAR WASHINGTON, DC—Continued



DAILY MEAN SPECIFIC CONDUCTIVITY - 2004 WATER YEAR

01646500 POTOMAC RIVER NEAR WASHINGTON, DC—Continued

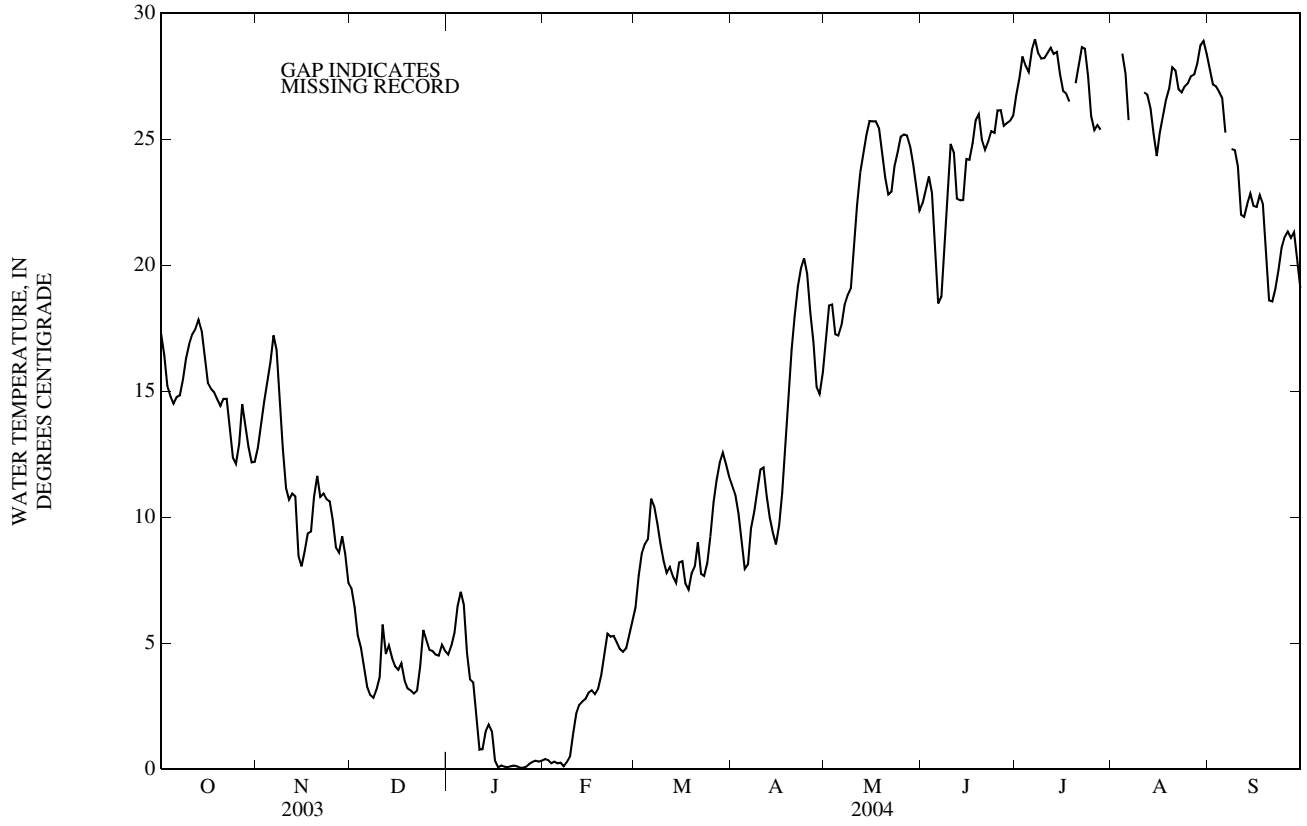
TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	18.0	17.1	17.3	13.2	12.3	12.8	7.4	7.0	7.2	4.8	4.3	4.5
2	17.1	15.8	16.4	14.1	13.2	13.7	7.1	6.0	6.4	5.2	4.6	4.9
3	15.8	14.6	15.2	15.2	14.1	14.6	6.0	5.1	5.3	5.9	5.1	5.4
4	15.2	14.5	14.8	16.0	14.7	15.3	5.1	4.6	4.8	7.1	5.9	6.5
5	14.8	14.2	14.5	18.3	15.3	16.1	4.9	3.6	4.1	7.3	6.9	7.0
6	15.3	14.5	14.8	18.7	16.9	17.2	3.6	3.1	3.3	7.1	5.7	6.5
7	15.3	14.5	14.8	17.0	15.9	16.6	3.4	2.7	3.0	5.7	4.1	4.6
8	16.5	14.7	15.5	15.9	13.6	14.9	3.0	2.5	2.8	4.1	3.3	3.6
9	17.2	15.5	16.3	13.6	11.7	12.7	3.5	3.0	3.2	3.7	3.0	3.4
10	17.6	16.3	16.9	11.7	10.6	11.2	4.5	3.5	3.7	3.0	1.3	2.1
11	17.9	16.8	17.3	10.9	10.5	10.7	8.3	4.5	5.7	1.3	0.5	0.8
12	18.4	16.9	17.5	11.1	10.6	10.9	4.9	4.4	4.6	1.1	0.6	0.8
13	18.8	17.2	17.8	11.3	9.6	10.8	5.0	4.8	4.9	2.0	1.1	1.5
14	17.7	17.2	17.4	9.6	8.0	8.5	4.8	4.1	4.4	2.0	1.4	1.8
15	17.2	15.8	16.4	8.5	7.5	8.1	4.3	3.9	4.1	1.9	0.9	1.5
16	15.8	14.8	15.3	9.0	8.3	8.7	4.1	3.7	3.9	0.9	0.1	0.3
17	15.3	14.7	15.1	9.8	9.0	9.4	4.6	3.8	4.2	0.2	0.0	0.1
18	15.5	14.6	15.0	9.8	9.3	9.4	3.9	3.4	3.5	0.2	0.1	0.1
19	15.2	14.3	14.7	13.7	9.5	10.8	3.4	3.0	3.2	0.4	0.0	0.1
20	15.1	14.0	14.4	12.1	11.3	11.6	3.3	2.9	3.1	0.3	0.0	0.1
21	15.3	14.2	14.7	11.3	10.5	10.8	3.3	2.7	3.0	0.3	0.0	0.1
22	15.0	14.1	14.7	11.2	10.7	10.9	3.7	2.7	3.1	0.3	0.0	0.2
23	14.1	12.7	13.5	10.9	10.5	10.7	4.7	3.7	4.1	0.2	0.0	0.1
24	13.0	11.9	12.4	11.0	10.3	10.6	6.5	4.7	5.5	0.2	0.0	0.1
25	13.0	11.5	12.1	10.7	9.4	9.9	5.7	4.9	5.2	0.1	0.0	0.1
26	13.7	12.2	12.9	9.4	8.5	8.8	4.9	4.6	4.7	0.2	0.0	0.1
27	14.9	13.7	14.5	9.0	8.2	8.6	4.9	4.5	4.7	0.3	0.1	0.2
28	14.3	13.4	13.6	10.2	8.9	9.2	4.8	4.2	4.5	0.4	0.2	0.3
29	13.4	12.3	12.8	10.0	7.8	8.5	4.9	4.1	4.5	0.4	0.2	0.3
30	12.7	11.7	12.2	7.8	7.2	7.4	5.3	4.6	4.9	0.4	0.2	0.3
31	12.6	11.7	12.2	---	---	---	5.1	4.3	4.7	0.4	0.2	0.3
MONTH	18.8	11.5	14.9	18.7	7.2	11.3	8.3	2.5	4.3	7.3	0.0	1.9
		FEBRUARY			MARCH			APRIL			MAY	
1	0.5	0.3	0.4	7.0	5.8	6.4	11.7	10.9	11.2	18.3	16.1	17.0
2	0.4	0.3	0.4	8.4	7.0	7.7	11.1	10.6	10.9	19.4	17.8	18.4
3	0.4	0.1	0.2	9.4	7.8	8.6	10.6	9.8	10.1	19.5	17.8	18.4
4	0.5	0.2	0.3	9.4	8.6	8.9	9.8	8.3	9.1	17.8	16.5	17.3
5	0.3	0.1	0.2	10.0	8.5	9.1	8.4	7.3	8.0	17.9	16.5	17.2
6	0.5	0.1	0.3	11.8	10.0	10.7	9.1	7.1	8.1	18.7	16.6	17.6
7	0.3	0.0	0.1	10.9	9.8	10.4	10.9	8.4	9.6	19.1	17.7	18.4
8	0.7	0.1	0.3	10.4	9.1	9.7	10.9	9.9	10.2	19.2	18.4	18.8
9	0.9	0.1	0.5	9.2	8.6	8.9	11.8	10.3	11.1	20.1	18.2	19.1
10	2.1	0.9	1.4	8.9	7.8	8.3	12.6	11.3	11.9	21.5	19.7	20.6
11	2.7	1.7	2.2	8.4	7.0	7.8	12.7	11.3	12.0	23.4	21.0	22.4
12	2.8	2.3	2.6	8.4	7.3	8.0	11.3	9.6	10.8	24.2	23.2	23.7
13	3.2	2.2	2.7	8.3	7.0	7.7	10.2	9.6	10.0	25.1	23.5	24.4
14	3.1	2.5	2.8	7.9	7.1	7.4	9.8	8.9	9.4	26.0	23.8	25.2
15	3.6	2.5	3.0	9.0	7.6	8.2	9.4	8.4	8.9	26.9	24.5	25.7
16	3.6	2.6	3.1	8.9	7.6	8.3	10.4	9.1	9.7	26.6	25.0	25.7
17	3.3	2.6	3.0	7.6	7.2	7.4	12.1	9.9	11.0	26.3	25.2	25.7
18	3.6	2.7	3.2	7.7	6.7	7.1	14.2	11.6	12.8	25.8	25.1	25.4
19	4.4	3.1	3.7	8.0	7.6	7.8	16.4	13.7	14.9	25.2	23.8	24.5
20	5.3	3.9	4.5	9.3	7.3	8.1	18.0	15.7	16.7	23.9	23.0	23.5
21	5.7	4.9	5.4	9.4	8.5	9.0	19.0	17.1	18.0	23.3	22.3	22.8
22	5.7	4.7	5.3	8.5	7.1	7.8	19.9	18.5	19.2	23.9	22.0	22.9
23	5.7	4.7	5.3	8.5	6.7	7.7	20.4	19.2	19.9	24.8	23.1	23.9
24	5.4	4.8	5.0	9.1	7.2	8.2	21.0	19.5	20.3	24.9	23.8	24.5
25	5.3	4.1	4.8	10.5	8.4	9.2	20.7	18.8	19.7	25.6	24.6	25.1
26	5.1	4.3	4.7	11.5	9.8	10.6	18.8	17.3	18.1	25.7	24.7	25.2
27	5.4	4.2	4.8	11.7	11.1	11.5	17.5	15.9	17.0	25.5	24.8	25.1
28	6.1	4.5	5.3	13.0	11.7	12.2	15.9	14.7	15.2	25.4	24.3	24.7
29	6.3	5.2	5.9	13.2	12.1	12.6	15.7	14.0	14.9	24.5	23.4	24.0
30	---	---	---	12.8	11.6	12.1	17.0	14.6	15.7	23.5	22.1	23.0
31	---	---	---	11.7	11.5	11.6	---	---	---	22.3	21.9	22.2
MONTH	6.3	0.0	2.8	13.2	5.8	9.0	21.0	7.1	13.1	26.9	16.1	22.3

01646500 POTOMAC RIVER NEAR WASHINGTON, DC—Continued

TEMPERATURE, WATER, DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	23.2	21.9	22.5	28.1	25.6	26.7	---	---	---	28.4	27.2	27.8
2	23.5	22.5	23.0	28.7	26.1	27.4	---	---	---	27.7	26.7	27.2
3	24.3	23.1	23.5	29.7	26.9	28.3	---	---	---	27.8	26.5	27.1
4	23.2	21.9	22.9	28.7	26.7	27.9	29.2	27.7	28.4	27.3	26.5	26.9
5	21.9	19.5	20.6	28.9	26.6	27.7	28.0	26.7	27.6	27.0	26.1	26.6
6	19.5	17.7	18.5	29.8	27.5	28.5	26.7	25.1	25.8	26.1	24.8	25.3
7	20.2	18.0	18.7	30.0	27.9	29.0	---	---	---	---	---	---
8	22.1	20.1	20.8	29.2	27.8	28.4	---	---	---	25.0	24.5	24.6
9	24.0	22.1	23.1	29.1	27.6	28.2	---	---	---	24.8	24.3	24.6
10	25.7	24.0	24.8	29.3	27.3	28.2	---	---	---	24.6	22.7	23.9
11	25.1	22.8	24.5	29.5	27.3	28.4	27.8	25.6	26.9	22.7	21.6	22.0
12	23.7	21.8	22.6	29.2	27.9	28.6	27.5	25.8	26.8	22.6	21.3	21.9
13	23.4	21.8	22.6	29.3	27.5	28.4	26.9	25.3	26.2	22.8	21.8	22.4
14	23.7	21.9	22.6	29.3	27.7	28.5	26.3	24.5	25.2	23.0	22.6	22.8
15	25.2	23.6	24.2	28.1	27.0	27.6	25.1	23.4	24.3	22.6	21.9	22.3
16	24.8	23.6	24.2	27.8	26.3	26.9	26.4	23.9	25.3	22.9	21.9	22.3
17	25.5	24.1	24.8	27.8	26.1	26.8	26.9	24.6	25.9	23.3	22.3	22.8
18	26.2	25.3	25.7	27.0	26.0	26.5	27.7	25.2	26.6	23.1	21.6	22.4
19	26.3	25.6	26.0	---	---	---	28.1	26.0	27.0	21.6	18.7	20.2
20	25.6	24.4	25.0	28.7	25.7	27.2	29.0	26.5	27.8	19.0	18.2	18.6
21	25.1	24.1	24.6	29.2	26.6	27.9	28.4	27.3	27.7	19.2	17.8	18.6
22	25.8	24.1	24.9	29.8	27.5	28.6	27.7	26.0	27.0	19.9	18.2	19.1
23	25.6	24.9	25.3	29.3	27.7	28.6	28.3	25.3	26.9	20.3	19.1	19.8
24	26.5	24.4	25.2	28.3	27.2	27.5	28.2	25.9	27.1	21.1	20.3	20.7
25	27.0	25.5	26.1	27.2	25.4	25.9	28.2	26.2	27.2	21.9	20.7	21.1
26	26.7	25.8	26.1	25.9	25.0	25.4	28.5	26.3	27.5	21.8	20.8	21.3
27	26.4	24.8	25.5	26.5	24.0	25.6	28.5	26.7	27.6	21.5	20.7	21.1
28	26.6	24.7	25.6	26.4	24.0	25.4	29.2	27.1	28.0	21.6	20.7	21.3
29	27.0	24.7	25.7	---	---	---	29.6	27.7	28.7	21.0	19.6	20.2
30	27.1	24.8	25.9	---	---	---	29.3	28.5	28.9	19.6	18.6	19.1
31	---	---	---	---	---	---	28.9	27.8	28.4	---	---	---
MONTH	27.1	17.7	23.9	30.0	24.0	27.6	29.6	23.4	27.0	28.4	17.8	22.6
YEAR	30.0	0.0	14.7									



DAILY MEAN WATER TEMPERATURE - 2004 WATER YEAR

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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 mi^2.

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/cm, Sept. 12, 1981; minimum, 116 microsiemens/cm, 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.

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Sample type	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Sampling method, code (82398)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
OCT												
08...	0930	Environmental	1028	80020	9,810	40	765	10.6	106	8.1	316	20.0
08...	*0935*	*Replicate*	*1028*	*80020*	--	*70*	--	--	--	--	--	--
NOV												
05...	1045	Environmental	1028	80020	9,720	40	768	10.4	105	7.8	289	29.0
12...	1045	Environmental	1028	80020	10,500	40	757	11.8	107	8.1	313	15.0
12...	*1050*	*Replicate*	*1028*	*80020*	--	*70*	--	--	--	--	--	--
DEC												
08...	1030	Environmental	1028	80020	14,100	40	765	--	--	8.1	297	5.0
08...	*1031*	*Replicate*	*1028*	*80020*	--	*70*	--	--	--	--	--	--
JAN												
07...	1100	Environmental	1028	80020	19,800	40	774	17.1	130	8.2	282	4.0
29...	1115	Environmental	1028	80020	6,230	70	757	--	--	8.2	385	2.0
FEB												
17...	1030	Environmental	1028	80020	19,600	40	774	14.4	107	8.1	274	5.0
MAR												
02...	1330	Environmental	1028	80020	17,600	40	765	17.4	146	8.2	263	20.5
17...	1000	Environmental	1028	80020	13,100	40	758	14.4	121	8.3	261	5.5
APR												
05...	1000	Environmental	1028	80020	35,400	40	757	13.2	110	8.0	188	7.0
07...	0915	Environmental	1028	80020	23,400	40	760	13.4	115	7.9	203	9.5
23...	0900	Environmental	1028	80020	17,100	40	759	9.8	107	8.2	246	27.0
23...	*0905*	*Replicate*	*1028*	*80020*	--	*40*	--	--	--	--	--	--
MAY												
10...	1045	Environmental	1028	80020	15,200	40	762	9.7	107	8.2	244	29.5
10...	*1050*	*Replicate*	*1028*	*80020*	--	*70*	--	--	--	--	--	--
11...	1130	Environmental	1028	80020	13,800	40	770	10.8	122	8.2	247	31.5
11...	*1131*	*Replicate*	*1028*	*80020*	--	*40*	--	--	--	--	--	--
JUN												
02...	1000	Environmental	1028	80020	11,500	40	755	9.3	110	8.4	278	24.5
02...	*1005*	*Replicate*	*1028*	*80020*	--	*40*	--	--	--	--	--	--
03...	*1050*	*Blank*	*1028*	*80020*	--	*40*	--	--	--	--	--	--
03...	1130	Environmental	1028	80020	9,620	40	767	9.5	111	8.6	286	26.0
JUL												
08...	0945	Environmental	1028	80020	7,710	40	756	7.9	102	8.2	321	28.0
08...	*0947*	*Replicate*	*1028*	*80020*	--	*40*	--	--	--	--	--	--
08...	0950	Environmental	1028	80020	7,710	40	763	7.9	102	8.4	313	31.0
AUG												
04...	0920	Environmental	1028	80020	10,900	40	754	7.8	102	--	342	31.0
04...	*0925*	*Replicate*	*1028*	*80020*	--	*40*	--	--	--	--	--	--
SEP												
01...	1115	Environmental	1028	80020	2,120	40	771	8.0	101	8.3	354	38.0
14...	0800	Environmental	1028	80020	11,800	40	765	8.7	101	8.0	200	21.0
14...	*0805*	*Replicate*	*1028*	*80020*	--	*40*	--	--	--	--	--	--
17...	0800	Environmental	1028	80020	6,150	40	757	8.6	101	8.1	224	22.5
17...	*0805*	*Replicate*	*1028*	*80020*	--	*40*	--	--	--	--	--	--
21...	0845	Environmental	1028	80020	31,300	40	768	10.0	105	8.0	172	19.5
21...	*0850*	*Replicate*	*1028*	*80020*	--	*40*	--	--	--	--	--	--
30...	0830	Environmental	1028	80020	112,000	40	761	10.2	111	8.0	198	20.5
30...	*0831*	*Replicate*	*1028*	*80020*	--	*40*	--	--	--	--	--	--
30...	*0835*	*Replicate*	*1028*	*80020*	--	*40*	--	--	--	--	--	--
30...	*0836*	*Replicate*	*1028*	*80020*	--	*40*	--	--	--	--	--	--

Agency collecting sample: 1028 - U.S. Geological Survey
Agency analyzing sample: 80020 - USGS-National Water Quality Lab, Denver, CO
Sampler type: 3060 - Weighted-bottle sampler
Sampling method code: 40 - Multiple verticles
70 - Grab sample

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium, water, fltrd, mg/L (00930)	Alkalinity, wat flt fxd end lab, mg/L as CaCO3 (29801)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Bicarbonate, wat flt incrm. titr., field, mg/L (00453)	Carbonate, wat flt incrm. titr., field, mg/L (00452)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)
OCT													
08...	15.5	140	41.0	8.90	2.58	7.44	113	--	--	--	12.3	<.2	8.45
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV													
05...	16.0	--	--	--	--	--	--	96	116	--	12.8	--	--
12...	11.0	--	--	--	--	--	--	--	--	--	--	--	3.9
12...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC													
08...	--	--	--	--	--	--	--	--	--	--	--	--	7.5
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN													
07...	4.5	--	--	--	--	--	--	89	107	--	12.4	--	--
29...	.5	170	49.7	12.1	2.36	17.6	120	--	--	--	28.1	<.2	6.59
FEB													
17...	3.5	--	--	--	--	--	--	--	--	--	--	--	6.5
MAR													
02...	8.0	--	--	--	--	--	--	81	98	--	13.9	--	--
17...	7.5	--	--	--	--	--	--	--	--	--	--	--	4.3
APR													
05...	7.5	--	--	--	--	--	--	--	--	--	--	--	6.6
07...	8.5	--	--	--	--	--	--	55	67	--	10.4	--	--
23...	19.5	110	33.9	6.53	1.81	6.65	--	--	--	--	10.3	<.2	6.33
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY													
10...	20.3	--	--	--	--	--	--	--	--	--	--	--	5.9
10...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	22.0	--	--	--	--	--	--	E81	E95	E2	10.9	--	--
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN													
02...	23.0	--	--	--	--	--	--	--	--	--	--	--	5.7
02...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	23.5	--	--	--	--	--	--	92	107	3	12.7	--	--
JUL													
08...	28.0	120	35.1	8.84	2.61	10.8	101	--	--	--	18.1	<.2	4.76
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
08...	28.5	--	--	--	--	--	--	98	117	1	19.2	--	--
AUG													
04...	28.4	--	--	--	--	--	--	--	--	--	--	--	5.7
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP													
01...	28.0	--	--	--	--	--	--	110	132	--	18.8	--	--
14...	23.0	--	--	--	--	--	--	--	--	--	--	--	6.9
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
17...	23.0	--	--	--	--	--	--	--	--	--	--	--	7.5
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
21...	18.0	--	--	--	--	--	--	--	--	--	--	--	8.1
21...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	19.3	--	--	--	--	--	--	--	--	--	--	--	6.5
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	*6.5*
30...	--	--	--	--	--	--	--	--	--	--	--	--	--

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Sulfate water, fltrd, mg/L (00945)	Residue on evap. at 180degC wat flt mg/L (70300)	Residue fixed non-filterable, mg/L (00540)	Residue total at 105 deg. C, suspended, mg/L (00530)	Residue volatile, suspended, mg/L (00535)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Particulate nitrogen, susp, water, mg/L (49570)	Orthophosphate, water, fltrd, mg/L as P (00671)
OCT													
08...	22.7	179	--	12	<10	.18	.19	<.04	--	2.08	<.008	--	.04
08...	--	--	--	--	--	--	--	--	--	--	--	*.03*	--
NOV													
05...	23.3	--	--	--	--	--	--	<.04	1.43	1.45	.015	.03	.016
12...	--	--	--	<10	<10	.21	.20	<.04	--	1.41	<.008	--	E.01
12...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC													
08...	--	--	--	<10	<10	.15	.16	<.04	--	1.87	<.008	--	E.01
08...	--	--	--	--	--	--	--	--	--	--	--	*<.02*	--
JAN													
07...	27.3	--	--	--	--	--	--	<.04	1.59	1.75	.161	.04	.013
29...	29.3	226	--	<10	<10	.11	--	--	--	2.58	--	.04	E.01
FEB													
17...	--	--	--	<10	<10	.21	--	--	--	1.64	--	.06	.02
MAR													
02...	23.1	--	--	--	--	--	--	<.04	1.49	1.50	.013	.03	E.005
17...	--	--	--	<10	<10	--	--	<.04	1.55	1.55	.007	.03	E.005
APR													
05...	--	--	38	60	22	--	--	E.02	1.25	1.26	.008	.29	.009
07...	18.0	--	--	--	--	--	--	<.04	1.26	1.34	.082	.06	<.006
23...	20.6	140	--	14	<10	--	--	<.04	1.48	1.49	.008	.10	.016
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY													
10...	--	--	--	28	<10	--	--	<.04	1.24	1.24	.006	.16	.008
10...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	18.4	--	--	--	--	--	--	<.04	--	1.11	<.008	.19	<.006
11...	--	--	--	--	--	--	--	--	--	--	--	*.19*	--
JUN													
02...	--	--	--	20	<10	--	--	<.04	1.28	1.29	.007	.20	.007
02...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	*<.04*	--	*<.06*	*<.008*	*<.02*	*<.006*
03...	22.9	--	--	--	--	--	--	<.04	1.07	1.07	.009	.21	<.006
JUL													
08...	24.9	177	--	17	<10	--	--	<.04	1.01	1.02	.008	.13	E.004
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
08...	25.2	--	--	--	--	--	--	<.04	1.00	1.01	.008	.12	E.003
AUG													
04...	--	--	--	33	<10	--	--	.05	1.25	1.26	.009	.11	.040
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP													
01...	31.3	--	--	--	--	--	--	E.02	1.16	1.17	.009	.03	.025
14...	--	--	--	53	<10	--	--	.06	1.14	1.15	.012	.20	.040
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	12	<10	--	--	E.03	1.30	1.31	.009	.15	.041
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	137	158	21	--	--	E.03	1.21	1.22	.007	.37	.044
21...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	237	273	37	--	--	<.04	1.13	1.14	.008	.96	.081
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	*233*	*273*	*40*	*.44*	--	*<.04*	*1.14*	*1.15*	*.009*	*.93*	*.080*
30...	--	--	--	--	--	--	--	--	--	--	--	--	--

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Phos-phorus, water, fltrd, mg/L (00666)	Phos-phorus, water, unfltrd mg/L (00665)	Total nitro-gen, wat flt by anal ysis, mg/L (62854)	Total nitro-gen, wat unf by anal ysis, mg/L (62855)	Total nitro-gen, water, fltrd, mg/L (00602)	Total nitro-gen, water, unfltrd mg/L (00600)	Total carbon, suspnd sedimnt total, mg/L (00694)	Inor-ganic carbon, suspnd sedimnt total, mg/L (00688)	Organic carbon, suspnd sedimnt total, mg/L (00689)	Organic carbon, water, fltrd, mg/L (00681)	Organic carbon, water, unfltrd mg/L (00680)	Iron, water, fltrd, ug/L (01046)	Mangan-ese, water, fltrd, ug/L (01056)
OCT													
08...	.035	.051	--	--	2.3	2.3	--	--	--	--	2.2	22	4.9
08...	*.04*	--	*2.15*	--	--	--	*.5*	*<.1*	--	*2.3*	--	--	--
NOV													
05...	--	.036	--	1.79	--	--	.2	<.1	.2	3.0	--	--	--
12...	.019	.028	--	--	1.6	1.6	--	--	--	--	3.4	--	--
12...	*.01*	--	*1.68*	--	--	--	--	--	--	--	--	--	--
DEC													
08...	.021	.034	--	--	2.0	2.0	--	--	--	--	--	--	--
08...	*.02*	--	*1.94*	--	--	--	*.3*	*<.1*	--	*2.4*	*2.3*	--	--
JAN													
07...	--	.032	--	2.06	--	--	.5	<.1	.5	2.1	--	--	--
29...	.02	--	2.49	--	2.7	--	.1	<.1	.1	1.7	--	31	13.3
FEB													
17...	.03	--	1.85	--	1.8	--	.5	<.1	.5	2.0	--	--	--
MAR													
02...	--	.023	--	1.74	--	--	.2	<.1	.2	2.1	--	--	--
17...	<.01	--	1.68	--	--	--	.3	<.1	.3	1.8	--	--	--
APR													
05...	<.01	--	1.51	--	--	--	2.9	.1	2.7	3.1	--	--	--
07...	--	.036	--	1.59	--	--	.4	<.1	.4	2.5	--	--	--
23...	.02	--	1.63	--	--	--	1.0	<.1	1.0	2.1	--	9	E.7
23...	*.022*	*.055*	--	--	--	--	--	--	--	--	--	--	--
MAY													
10...	.01	--	1.36	--	--	--	1.1	<.1	1.1	2.3	--	--	--
10...	*.019*	*.051*	--	--	--	--	--	--	--	--	--	--	--
11...	--	.049	--	1.52	--	--	1.1	<.1	1.1	2.1	--	--	--
11...	--	--	--	--	--	--	*1.1*	*<.1*	*1.1*	*2.0*	--	--	--
JUN													
02...	.02	--	1.48	--	--	--	1.3	<.1	1.2	2.5	--	--	--
02...	*.016*	*.071*	--	--	--	--	--	--	--	--	--	--	--
03...	--	*<.004*	--	*<.03*	--	--	*<.1*	*<.1*	*<.1*	*1.0*	--	--	--
03...	--	.058	--	1.53	--	--	1.3	<.1	1.2	3.1	--	--	--
JUL													
08...	.014	.048	1.20	--	--	--	1.1	<.1	1.1	2.8	--	13	1.1
08...	*.02*	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	.047	--	1.43	--	--	.7	<.1	.7	3.1	--	--	--
AUG													
04...	.054	.097	1.54	--	--	--	1.5	<.1	1.5	2.9	--	--	--
04...	*.06*	--	--	--	--	--	--	--	--	--	--	--	--
SEP													
01...	--	.049	--	1.51	--	--	.4	<.1	.4	3.0	--	--	--
14...	.050	E.117	1.46	--	--	--	1.8	<.1	1.8	4.5	--	--	--
14...	*.05*	--	--	--	--	--	--	--	--	--	--	--	--
17...	.051	.075	1.56	--	--	--	.8	<.1	.7	3.1	--	--	--
17...	*.05*	--	--	--	--	--	--	--	--	--	--	--	--
21...	.054	.22	1.60	--	--	--	4.4	.2	4.2	5.1	--	--	--
21...	*.04*	--	--	--	--	--	--	--	--	--	--	--	--
30...	.097	.37	1.55	--	--	--	10.6	.3	10.3	5.5	--	--	--
30...	*.08*	--	--	--	--	--	--	--	--	--	--	--	--
30...	*.08*	*.40*	--	--	*1.6*	--	*10.4*	*.3*	*10.1*	*5.5*	--	--	--
30...	*.09*	--	--	--	--	--	--	--	--	--	--	--	--

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	2,6-Diethylaniline water fltrd 0.7u GF ug/L (82660)	CIAT, water, fltrd, ug/L (04040)	Acetochlor, water, fltrd, ug/L (49260)	Alachlor, water, fltrd, ug/L (46342)	alpha-HCH, water, fltrd, ug/L (34253)	alpha-HCH-d6, surrog, wat flt 0.7u GF percent recovry (91065)	Atrazine, water, fltrd, ug/L (39632)	Azinphosmethyl, water, fltrd 0.7u GF ug/L (82686)	Benfluralin, water, fltrd 0.7u GF ug/L (82673)	Butylate, water, fltrd, ug/L (04028)	Carbaryl, water, fltrd 0.7u GF ug/L (82680)	Carbofuran, water, fltrd 0.7u GF ug/L (82674)	Chlorpyrifos water, fltrd, ug/L (38933)
OCT													
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV													
05...	<.006	E.043	<.006	<.005	<.005	90.2	.038	<.050	<.010	<.004	<.041	<.020	<.005
12...	--	--	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC													
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN													
07...	<.006	E.035	<.006	<.005	<.005	92.0	.027	<.050	<.010	<.004	<.041	<.020	<.005
29...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR													
02...	<.006	E.027	<.006	<.005	<.005	96.4	.023	<.050	<.010	<.004	<.041	<.020	<.005
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR													
05...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	<.006	E.018	<.006	<.005	<.005	97.3	.018	<.050	<.010	<.004	<.041	<.020	<.005
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY													
10...	--	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	<.006	E.034	.009	<.005	<.005	94.8	.162	<.050	<.010	<.004	<.041	<.020	<.005
11...	*<.006*	*E.039*	*.009*	*<.005*	*<.005*	*98.7*	*.167*	*<.050*	*<.010*	*<.004*	*<.041*	*<.020*	*<.005*
JUN													
02...	--	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	<.006	E.043	<.006	<.005	<.005	98.9	.247	<.050	<.010	<.004	<.041	<.020	<.005
JUL													
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
08...	<.006	E.048	<.006	<.005	<.005	96.9	.108	<.050	<.010	<.004	E.009	<.020	<.005
AUG													
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP													
01...	<.006	E.048	<.006	<.005	<.005	80.8	.057	<.050	<.010	<.004	<.041	<.020	<.005
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	cis-Permethrin water fltrd 0.7u GF ug/L (82687)	Cyanazine, water, fltrd, ug/L (04041)	DCPA, water fltrd 0.7u GF ug/L (82682)	Desulfinyl fipronil, water, fltrd, ug/L (62170)	Diazinon, water, fltrd, ug/L (39572)	Diazinon-d10 surrog. wat flt 0.7u GF percent recovry (91063)	Dieldrin, water, fltrd, ug/L (39381)	Disulfoton, water, fltrd 0.7u GF ug/L (82677)	EPTC, water, fltrd 0.7u GF ug/L (82668)	Ethalfluralin, water, fltrd 0.7u GF ug/L (82663)	Ethoprop, water, fltrd 0.7u GF ug/L (82672)	Desulfinyl-fipronil amide, wat flt ug/L (62169)	Fipronil sulfide water, fltrd, ug/L (62167)
OCT													
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV													
05...	<.006	<.018	<.003	<.012	<.005	104	<.009	<.02	<.004	<.009	<.005	<.029	<.013
12...	--	--	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC													
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN													
07...	<.006	<.018	<.003	<.012	<.005	114	<.009	<.02	<.004	<.009	<.005	<.029	<.013
29...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR													
02...	<.006	<.018	<.003	<.012	<.005	121	<.009	<.02	<.004	<.009	<.005	<.029	<.013
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR													
05...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	<.006	<.018	<.003	<.012	<.005	109	<.009	<.02	<.004	<.009	<.005	<.029	<.013
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY													
10...	--	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	<.006	<.018	<.003	<.012	<.005	111	<.009	<.02	<.004	<.009	<.005	<.029	<.013
11...	*<.006*	*<.018*	*<.003*	*<.012*	*<.005*	*117*	*<.009*	*<.02*	*<.006*	*<.009*	*<.005*	*<.029*	*<.013*
JUN													
02...	--	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	<.006	<.018	<.003	<.012	<.005	108	<.009	<.02	<.004	<.009	<.005	<.029	<.013
JUL													
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
08...	<.006	<.018	<.003	E.002	E.003	107	<.009	<.02	<.004	<.009	<.005	<.029	<.013
AUG													
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP													
01...	<.006	<.018	<.003	<.012	<.005	94.0	<.009	<.02	<.004	<.009	<.005	<.029	<.013
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Fipronil sulfone water, fltrd, ug/L (62168)	Fipronil, water, fltrd, ug/L (62166)	Fonofos water, fltrd, ug/L (04095)	Lindane water, fltrd, ug/L (39341)	Linuron water fltrd 0.7u GF ug/L (82666)	Malathion, water, fltrd, ug/L (39532)	Methyl parathion, water, fltrd 0.7u GF ug/L (82667)	Metolachlor, water, fltrd, ug/L (39415)	Metribuzin, water, fltrd, ug/L (82630)	Molinate, water, fltrd 0.7u GF ug/L (82671)	Napropamide, water, fltrd 0.7u GF ug/L (82684)	p,p-' DDE, water, fltrd, ug/L (34653)	Parathion, water, fltrd, ug/L (39542)
OCT													
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV													
05...	<.024	<.016	<.003	<.004	<.035	<.027	<.015	.014	<.006	<.003	<.007	<.003	<.010
12...	--	--	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC													
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN													
07...	<.024	<.016	<.003	<.004	<.035	<.027	<.015	E.012	<.006	<.003	<.007	<.003	<.010
29...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR													
02...	<.024	<.016	<.003	<.004	<.035	<.027	<.015	E.011	<.006	<.003	<.007	<.003	<.010
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR													
05...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	<.024	<.016	<.003	<.004	<.035	<.027	<.015	E.011	<.006	<.003	<.007	<.003	<.010
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY													
10...	--	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	<.024	<.016	<.003	<.004	<.035	<.027	<.015	.039	<.006	<.003	<.007	<.003	<.010
11...	*<.024*	*<.016*	*<.003*	*<.004*	*<.035*	*<.027*	*<.015*	*.039*	*<.006*	*<.003*	*<.007*	*<.003*	*<.010*
JUN													
02...	--	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	<.024	<.016	<.003	<.004	<.035	<.027	<.015	.060	<.006	<.003	<.007	<.003	<.010
JUL													
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
08...	<.024	<.016	<.003	<.004	<.035	<.027	<.015	.023	<.006	<.003	<.007	<.003	<.010
AUG													
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP													
01...	<.024	<.016	<.003	<.004	<.035	<.027	<.015	.014	<.006	<.003	<.007	<.003	<.010
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Pebulate, water, fltrd 0.7u GF ug/L (82669)	Pendimethalin, water, fltrd 0.7u GF ug/L (82683)	Phorate water fltrd 0.7u GF ug/L (82664)	Prometon, water, fltrd, ug/L (04037)	Propyzamide, water, fltrd 0.7u GF ug/L (82676)	Propachlor, water, fltrd, ug/L (04024)	Propanil, water, fltrd 0.7u GF ug/L (82679)	Propargite, water, fltrd 0.7u GF ug/L (82685)	Simazine, water, fltrd, ug/L (04035)	Tebuthiuron water fltrd 0.7u GF ug/L (82670)	Terbacil, water, fltrd 0.7u GF ug/L (82665)	Terbufos, water, fltrd 0.7u GF ug/L (82675)	Thiobencarb water fltrd 0.7u GF ug/L (82681)
OCT													
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV													
05...	<.004	<.022	<.011	.01	<.004	<.025	<.011	<.02	.013	<.02	<.034	<.02	<.010
12...	--	--	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC													
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN													
07...	<.004	<.022	<.011	.01	<.004	<.025	<.011	<.02	.011	<.02	<.034	<.02	<.010
29...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR													
02...	<.004	<.022	<.011	<.01	<.004	<.025	<.011	<.02	.012	<.02	<.034	<.02	<.010
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR													
05...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	<.004	<.022	<.011	.01	<.004	<.025	<.011	<.02	.010	<.02	<.034	<.02	<.010
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY													
10...	--	--	--	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--	--	--	--
11...	<.004	<.022	<.011	.01	<.004	<.025	<.011	<.02	.060	<.02	<.034	<.02	<.010
11...	*<.004*	*<.022*	*<.011*	*.01*	*<.004*	*<.025*	*<.011*	*<.02*	*.062*	*<.02*	*<.034*	*<.02*	*<.010*
JUN													
02...	--	--	--	--	--	--	--	--	--	--	--	--	--
02...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	<.004	<.022	<.011	.01	<.004	<.025	<.011	<.02	.076	<.02	<.034	<.02	<.010
JUL													
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
08...	<.004	<.022	<.011	.02	<.008	<.025	<.011	<.02	.033	<.02	<.034	<.02	<.010
AUG													
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP													
01...	<.004	<.022	<.011	<.02	<.004	<.025	<.011	<.02	.018	<.02	<.034	<.02	<.010
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Tri-allate, water, fltrd 0.7u GF ug/L (82678)	Tri-flur-alin, water, fltrd 0.7u GF ug/L (82661)	Sus-pended sedi-ment concen-tration mg/L (80154)	Sus-pended sedi-ment dis-charge, tons/d (80155)	Sampler type, code (84164)
OCT					
08...	--	--	--	--	3060
08...	--	--	--	--	*3060*
NOV					
05...	<.002	<.009	6	157	3060
12...	--	--	3	85	3060
12...	--	--	--	--	*3060*
DEC					
08...	--	--	5	190	3060
08...	--	--	--	--	*3060*
JAN					
07...	<.002	<.009	6	321	3060
29...	--	--	1	17	3060
FEB					
17...	--	--	10	529	3060
MAR					
02...	<.002	<.009	3	143	3060
17...	--	--	5	177	3060
APR					
05...	--	--	80	7,650	3060
07...	<.002	<.009	18	1,140	3060
23...	--	--	15	693	3060
23...	--	--	--	--	*3060*
MAY					
10...	--	--	20	821	3060
10...	--	--	--	--	*3060*
11...	<.002	<.009	17	633	3060
11...	*<.002*	*<.009*	--	--	*3060*
JUN					
02...	--	--	24	745	3060
02...	--	--	--	--	*3060*
03...	--	--	--	--	*3060*
03...	<.002	<.009	20	519	3060
JUL					
08...	--	--	19	396	3060
08...	--	--	--	--	*3060*
08...	<.002	<.009	19	396	3060
AUG					
04...	--	--	33	971	3060
04...	--	--	--	--	*3060*
SEP					
01...	<.002	<.009	8	46	3060
14...	--	--	60	1,910	3060
14...	--	--	--	--	*3060*
17...	--	--	17	282	3060
17...	--	--	--	--	*3060*
21...	--	--	173	14,600	3060
21...	--	--	--	--	*3060*
30...	--	--	392	119,000	3060
30...	--	--	--	--	*3060*
30...	--	--	*384*	--	*3060*
30...	--	--	--	--	*3060*

Remark codes used in this table:
< -- Less than
E -- Estimated value

Sampler type: 3060 - Weighted-bottle sampler

01652500 FOURMILE RUN AT ALEXANDRIA, VA

LOCATION.--Lat 38°50'36", long 77°04'45", NAD83, Arlington County, Hydrologic Unit 02070010, on left bank at upstream side of bridge on Shirlington Road, at Arlington County-Alexandria City line, 0.1 mi upstream from I-395, and 2.5 mi upstream from mouth.

DRAINAGE AREA.--13.8 mi^2.

PERIOD OF RECORD.--October 1951 to current year.

GAGE.--Water-stage recorder. Datum of gage is 28.57 ft NGVD of 1929. May 4, 1951 to Sept. 30, 1969, water stage recorder, Oct. 1, 1969 to Sept. 27, 1973, nonrecording gage, at site 0.4 mi downstream at datum 6.02 lower (annual maximum only). Sept. 28, 1973 to Sept. 26, 1975, water-stage recorder. Sept. 27, 1975 to Sept. 30, 1977, nonrecording gage, at present site and datum (annual maximum only). July 1979 to September 1982, water stage recorder. October 1982 to September 1998, nonrecording gage (annual maximum only). October 1998 to present, water stage recorder.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Nov. 24 to Dec. 3, Jan. 23 to Feb. 20, and Sept. 18-22, and period with ice effect, Jan. 9-17, which are poor. Maximum discharge, 14,600 ft^3/s, from rating curve extended above 670 ft^3/s on basis of slope-area measurement of peak flow at gage height, 11.6 ft, site and datum then in use. Several measurements of water temperature were made during the year. Water-quality records for some periods have been collected at this location.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct 14	2220	2,540	7.94	Aug 2	1705	1,870	7.26
Nov 19	1515	3,120	8.54	Aug 11	1700	3,130	8.55
Dec 11	0205	2,470	7.87	Aug 12	1920	1,940	7.33
Jun 17	1830	2,450	7.85	Sep 28	1805	*3,840	*9.29
Jun 22	1635	2,150	7.55				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	7.5	e24	7.1	e4.5	6.3	145	9.5	29	6.1	45	5.1
2	6.6	7.3	e13	28	e5.0	21	84	63	6.9	6.1	130	4.6
3	6.6	7.4	e10	7.8	e90	6.6	28	87	5.9	5.9	16	4.5
4	6.3	7.4	13	7.8	e19	13	21	12	7.6	156	20	4.6
5	6.1	124	178	45	e14	6.8	11	15	202	14	10	4.4
6	6.2	95	63	9.2	e310	181	9.7	9.4	13	6.8	5.2	5.3
7	6.1	24	31	6.7	e40	22	11	19	7.2	8.7	4.6	6.3
8	6.5	9.8	24	6.4	e22	14	8.8	13	6.3	5.9	4.5	28
9	6.4	7.7	22	e6.0	e17	8.7	8.7	7.9	6.5	5.5	4.6	20
10	6.4	7.2	54	e5.6	e19	7.8	8.0	9.4	6.5	5.1	4.9	5.3
11	6.4	7.4	352	e5.4	e17	7.6	8.0	7.9	114	5.2	165	4.9
12	6.4	59	21	e5.6	e13	7.5	223	7.6	35	6.4	237	4.9
13	6.7	22	14	e5.8	e12	6.8	159	7.3	6.7	5.5	44	5.3
14	191	9.0	126	e5.6	e11	6.8	49	7.2	6.3	21	51	15
15	43	8.3	54	e5.4	e10	7.3	20	20	11	6.1	13	22
16	6.8	8.5	26	e5.2	e8.6	46	14	20	11	5.3	8.1	7.9
17	5.7	9.3	182	e5.0	e8.8	10	12	7.7	127	17	6.8	33
18	5.2	8.0	29	62	e9.0	9.0	11	8.6	30	27	7.2	e100
19	4.9	366	18	7.9	e8.4	12	13	8.1	14	5.8	6.5	e20
20	4.9	50	13	5.4	e8.2	7.2	13	6.0	6.3	5.3	6.4	e9.0
21	5.4	20	11	5.4	8.0	7.5	11	6.4	5.9	5.1	42	e6.6
22	5.6	15	11	5.6	6.9	6.6	11	8.9	130	90	9.0	e5.0
23	5.6	13	11	e5.4	6.6	6.8	41	6.8	27	14	8.4	4.7
24	4.5	e14	105	e5.2	9.4	6.9	13	6.8	8.2	6.9	8.9	5.8
25	4.7	e45	15	e4.9	6.5	11	8.8	86	7.0	4.6	8.4	4.6
26	65	e20	11	e4.8	5.9	7.8	72	20	8.0	8.0	6.4	4.5
27	313	e16	9.6	e4.8	6.0	15	17	7.8	6.0	124	6.3	4.9
28	25	e110	8.8	e4.7	6.0	7.4	11	22	6.2	48	5.8	376
29	187	e35	9.1	e4.7	6.2	7.3	8.9	5.9	5.8	7.0	5.4	23
30	13	e22	11	e4.6	---	7.1	8.7	5.2	5.8	6.2	6.6	9.0
31	8.7	---	7.2	e4.5	---	7.5	---	24	---	6.1	9.0	---
TOTAL	982.7	1,154.8	1,476.7	297.5	708.0	498.3	1,059.6	545.4	862.1	644.6	906.0	754.2
MEAN	31.7	38.5	47.6	9.60	24.4	16.1	35.3	17.6	28.7	20.8	29.2	25.1
MAX	313	366	352	62	310	181	223	87	202	156	237	376
MIN	4.5	7.2	7.2	4.5	4.5	6.3	8.0	5.2	5.8	4.6	4.5	4.4
CFSM	2.30	2.79	3.45	0.70	1.77	1.16	2.56	1.27	2.08	1.51	2.12	1.82
IN.	2.65	3.11	3.98	0.80	1.91	1.34	2.86	1.47	2.32	1.74	2.44	2.03

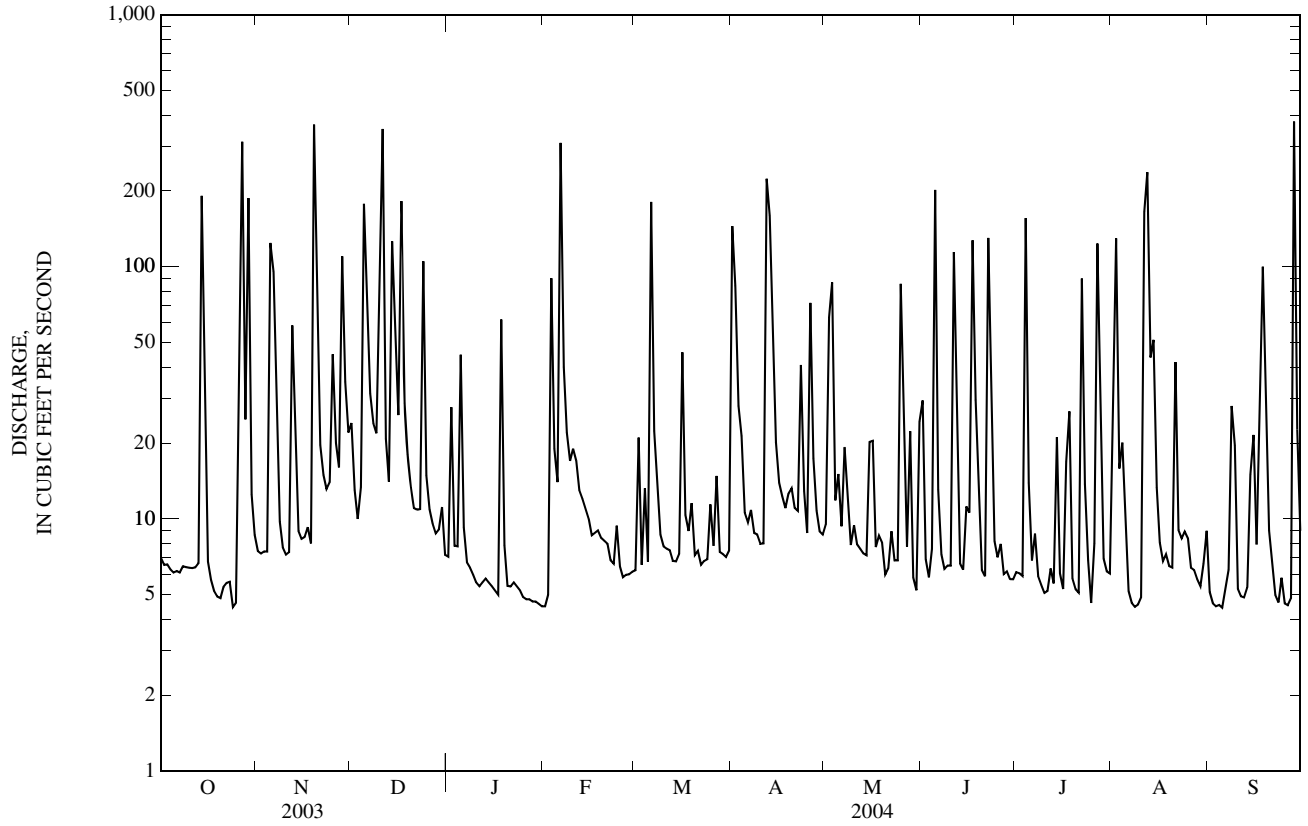
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 1969, 1974 - 1975, 1979 - 1982, 1999 - 2004, BY WATER YEAR (WY)

MEAN	11.6	13.6	16.2	15.1	19.1	23.7	18.3	17.4	17.8	17.2	19.7	19.3
MAX	39.0	38.5	47.6	35.6	59.7	44.3	42.0	52.3	51.4	56.2	64.3	85.0
(WY)	(1980)	(2004)	(2004)	(1964)	(2003)	(1953)	(1952)	(1953)	(2003)	(2003)	(1967)	(1999)
MIN	2.54	2.57	3.07	3.84	4.84	6.05	6.79	6.90	5.22	1.78	2.01	1.94
(WY)	(1964)	(1966)	(1966)	(1981)	(2002)	(1981)	(1967)	(1961)	(1954)	(1957)	(1962)	(1954)

01652500 FOURMILE RUN AT ALEXANDRIA, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1952 - 1969, 1974 - 1975, 1979 - 1982, 1999 - 2004	
ANNUAL TOTAL	14,907.1		9,889.9			
ANNUAL MEAN	40.8		27.0		17.3	
HIGHEST ANNUAL MEAN					38.6	2003
LOWEST ANNUAL MEAN					7.72	1959
HIGHEST DAILY MEAN	860	Feb 22	376	Sep 28	1,060	Sep 14, 1966
LOWEST DAILY MEAN	4.5	Oct 24	4.4	Sep 5	0.70	(a)
ANNUAL SEVEN-DAY MINIMUM	5.1	Oct 19	4.7	Jan 26	0.94	Aug 12, 1957
MAXIMUM PEAK FLOW			3,840	Sep 28	14,600	Jul 22, 1969
MAXIMUM PEAK STAGE			9.29	Sep 28	b17.80	Jun 21, 1972
INSTANTANEOUS LOW FLOW			3.8	cJan 20	0.53	Oct 7, 2002
ANNUAL RUNOFF (CFSM)	2.96		1.96		1.25	
ANNUAL RUNOFF (INCHES)	40.18		26.66		17.02	
10 PERCENT EXCEEDS	98		63		34	
50 PERCENT EXCEEDS	13		8.6		6.1	
90 PERCENT EXCEEDS	6.4		5.2		2.8	

a Many days in August 1957.
b From floodmarks.
c Also Jan. 21, July 25, and Sept. 5, 2004.
e Estimated.



0165258890 POTOMAC RIVER AT CAMERON STREET DOCK AT ALEXANDRIA, VA

LOCATION.--Lat 38°48'19", long 77°02'18" NAD83, Alexandria City, Hydrologic Unit 02070010, on upstream side of dock at end of Cameron Street, 0.8 mi upstream from Woodrow Wilson Memorial Bridge.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--July 2004 to September 2004.

GAGE.--Water-stage recorder. Datum of gage is -3.64 ft NAVD of 1988.

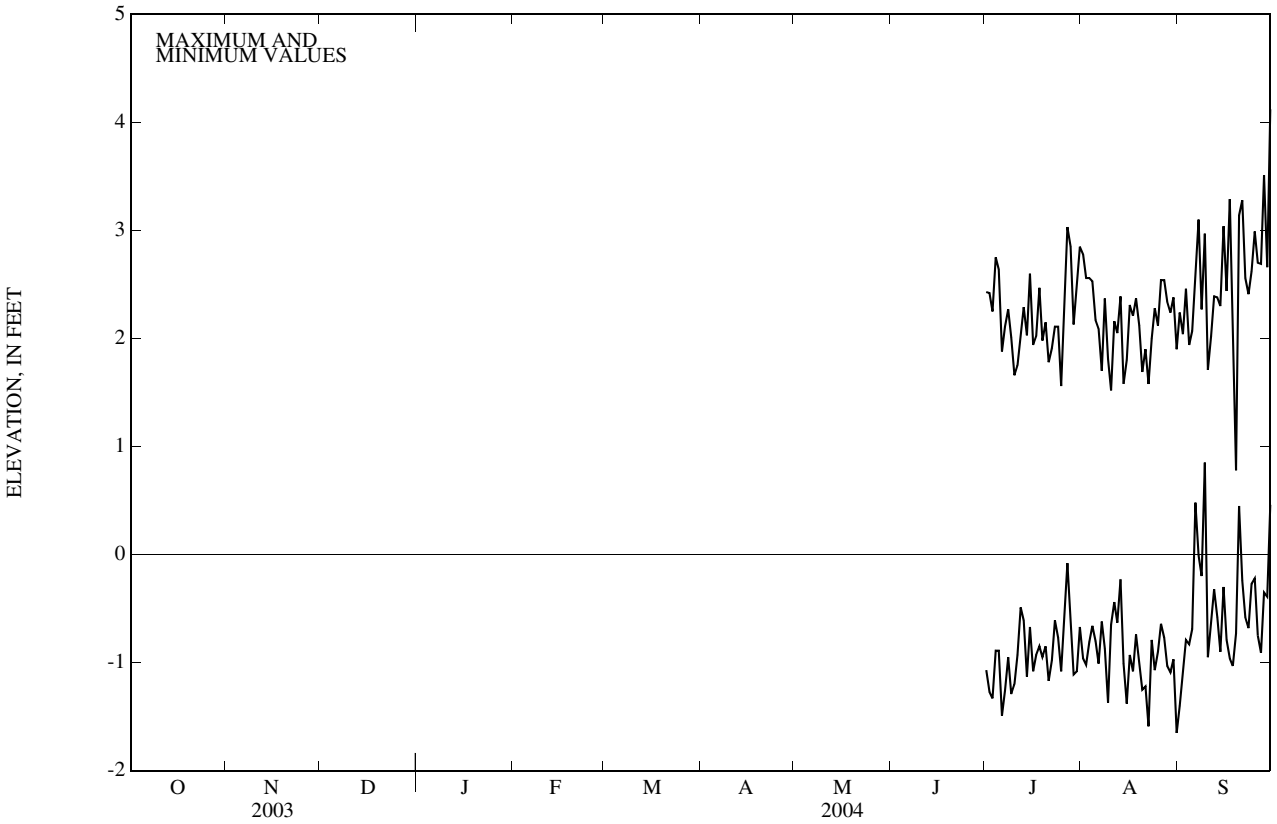
REMARKS.--Records good. Daily instantaneous maximum and minimum tide stages are shown in table below.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 4.12 ft, Sept. 30; minimum elevation, -1.65 ft, Aug. 31.

TIDE ELEVATION ABOVE NAVD 1988, FEET
JULY 2004 TO SEPTEMBER 2004

DAY	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	2.43	-1.07	2.78	-0.96	2.24	-1.40
2	---	---	---	---	---	---	2.42	-1.27	2.56	-1.02	2.04	-1.07
3	---	---	---	---	---	---	2.25	-1.33	2.56	-0.81	2.46	-0.79
4	---	---	---	---	---	---	2.75	-0.89	2.53	-0.66	1.94	-0.83
5	---	---	---	---	---	---	2.64	-0.89	2.17	-0.80	2.07	-0.69
6	---	---	---	---	---	---	1.88	-1.49	2.09	-1.01	2.58	0.48
7	---	---	---	---	---	---	2.11	-1.26	1.70	-0.62	3.10	-0.01
8	---	---	---	---	---	---	2.27	-0.95	2.37	-0.87	2.27	-0.20
9	---	---	---	---	---	---	2.01	-1.29	1.81	-1.37	2.97	0.85
10	---	---	---	---	---	---	1.66	-1.20	1.52	-0.65	1.71	-0.95
11	---	---	---	---	---	---	1.75	-0.93	2.16	-0.44	2.02	-0.65
12	---	---	---	---	---	---	2.03	-0.49	2.05	-0.63	2.39	-0.32
13	---	---	---	---	---	---	2.29	-0.61	2.39	-0.23	2.38	-0.58
14	---	---	---	---	---	---	2.03	-1.13	1.58	-1.01	2.30	-0.90
15	---	---	---	---	---	---	2.60	-0.67	1.80	-1.38	3.04	-0.30
16	---	---	---	---	---	---	1.94	-1.08	2.31	-0.93	2.44	-0.79
17	---	---	---	---	---	---	2.02	-0.93	2.21	-1.08	3.29	-0.96
18	---	---	---	---	---	---	2.47	-0.85	2.37	-0.74	2.39	-1.03
19	---	---	---	---	---	---	1.98	-0.95	2.12	-1.02	0.78	-0.73
20	---	---	---	---	---	---	2.15	-0.85	1.69	-1.25	3.14	0.45
21	---	---	---	---	---	---	1.78	-1.17	1.90	-1.22	3.28	-0.24
22	---	---	---	---	---	---	1.91	-0.98	1.58	-1.59	2.56	-0.58
23	---	---	---	---	---	---	2.11	-0.61	2.00	-0.79	2.41	-0.68
24	---	---	---	---	---	---	2.11	-0.77	2.28	-1.07	2.62	-0.27
25	---	---	---	---	---	---	1.56	-1.08	2.12	-0.90	2.99	-0.22
26	---	---	---	---	---	---	2.23	-0.50	2.54	-0.64	2.70	-0.75
27	---	---	---	---	---	---	3.03	-0.08	2.54	-0.77	2.69	-0.91
28	---	---	---	---	---	---	2.85	-0.66	2.34	-1.03	3.51	-0.35
29	---	---	---	---	---	---	2.13	-1.11	2.24	-1.09	2.66	-0.39
30	---	---	---	---	---	---	2.52	-1.08	2.38	-0.97	4.12	0.46
31	---	---	---	---	---	---	2.85	-0.67	1.90	-1.65	---	---
MAX	---	---	---	---	---	---	3.03	-0.08	2.78	-0.23	4.12	0.85
MIN	---	---	---	---	---	---	1.56	-1.49	1.52	-1.65	0.78	-1.40

0165258890 POTOMAC RIVER AT CAMERON STREET DOCK AT ALEXANDRIA, VA—Continued



01653000 CAMERON RUN AT ALEXANDRIA, VA

LOCATION.--Lat 38°48'23", long 77°06'35", NAD83, 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 mi^2.

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 31.74 ft NGVD of 1929. 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 those for periods with ice effect, Jan. 9-17 and Jan. 19 to Feb. 2, which are poor. 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 ft^3/s, from rating curve extended above 2,500 ft^3/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.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	23	27	29	e16	18	139	24	51	12	158	4.8
2	13	18	20	54	e18	40	124	52	25	11	186	3.4
3	10	17	17	34	141	21	76	134	11	9.5	61	2.5
4	10	16	20	31	72	30	47	45	13	129	54	3.0
5	10	83	168	70	42	20	29	30	334	44	46	3.2
6	11	136	85	43	522	181	23	24	58	17	20	4.3
7	12	65	38	26	165	45	24	42	29	12	15	6.6
8	13	25	29	23	72	42	23	40	22	11	13	82
9	11	19	26	e22	50	21	21	21	17	9.8	11	49
10	13	19	50	e21	52	22	19	27	16	8.4	11	11
11	13	16	592	e20	50	19	20	18	110	7.6	153	7.6
12	12	68	69	e21	38	21	239	15	101	18	333	5.0
13	12	53	47	e22	36	20	220	14	25	10	105	4.2
14	170	20	158	e21	32	17	105	16	22	30	74	4.5
15	100	16	123	e20	31	17	58	14	22	19	41	30
16	12	15	75	e19	24	61	43	45	35	9.8	22	26
17	7.8	16	246	e18	25	32	40	18	125	56	13	64
18	6.2	18	84	94	27	30	36	16	56	61	11	140
19	5.7	476	57	e35	25	41	32	23	41	16	11	22
20	4.7	123	47	e25	25	20	30	11	14	9.9	9.8	9.2
21	5.1	43	38	e22	25	19	31	18	10	8.1	37	6.8
22	4.8	32	37	e23	21	15	25	17	129	93	22	5.1
23	6.3	25	37	e22	20	15	49	15	128	46	9.4	4.0
24	5.2	46	142	e21	26	16	43	10	31	21	8.1	3.9
25	6.1	50	59	e20	23	20	22	50	24	12	5.9	4.6
26	39	26	41	e19	18	18	95	69	25	13	5.3	4.3
27	379	21	36	e19	18	28	58	22	16	183	5.6	4.2
28	59	151	34	e18	18	17	28	45	13	136	4.5	384
29	244	76	32	e18	18	15	24	13	12	23	4.6	113
30	37	29	36	e17	---	15	24	11	11	14	4.5	26
31	27	---	29	e16	---	17	---	16	---	12	7.9	---
TOTAL	1,271.9	1,741	2,499	863	1,650	913	1,747	915	1,526	1,062.1	1,462.6	1,038.2
MEAN	41.0	58.0	80.6	27.8	56.9	29.5	58.2	29.5	50.9	34.3	47.2	34.6
MAX	379	476	592	94	522	181	239	134	334	183	333	384
MIN	4.7	15	17	16	16	15	19	10	10	7.6	4.5	2.5
CFSM	1.22	1.72	2.39	0.83	1.69	0.87	1.73	0.88	1.51	1.02	1.40	1.03
IN.	1.40	1.92	2.76	0.95	1.82	1.01	1.93	1.01	1.68	1.17	1.61	1.15

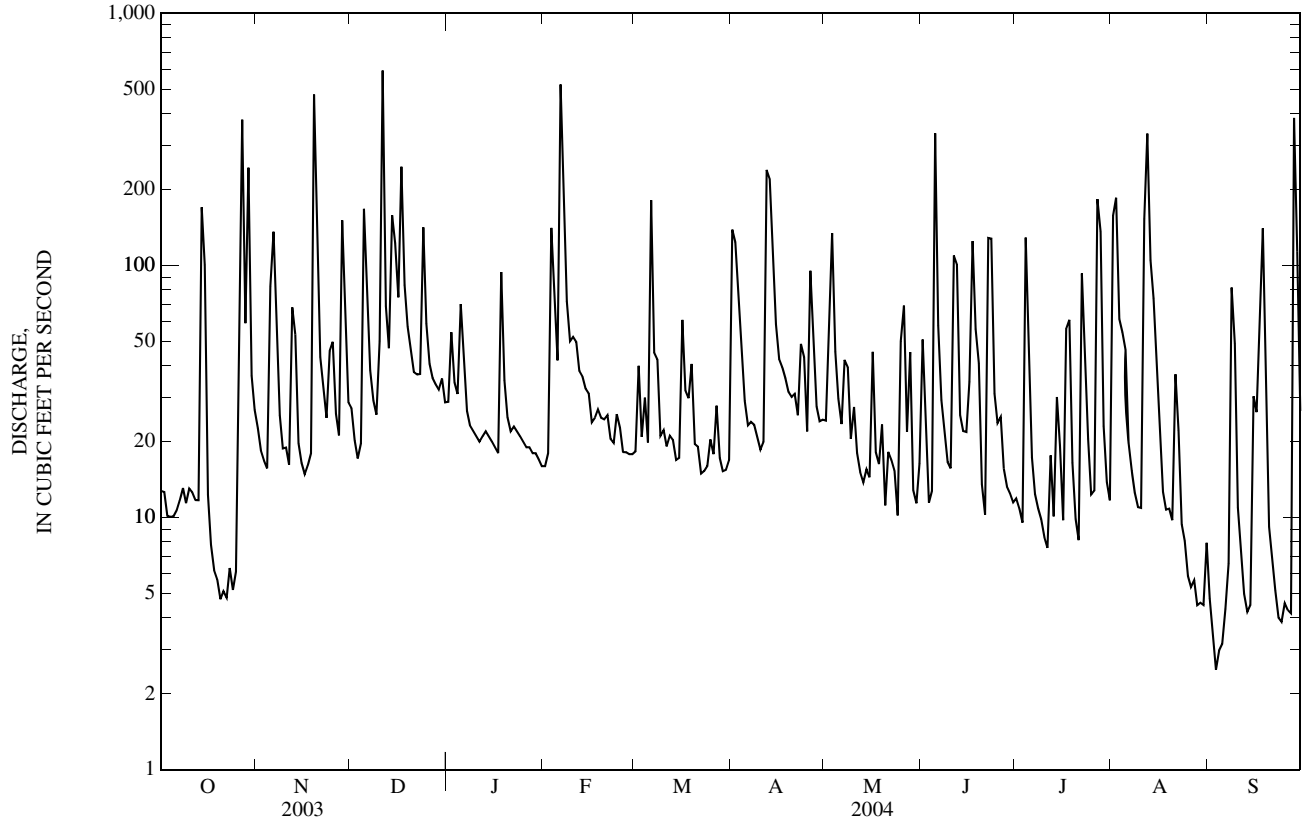
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2004, BY WATER YEAR (WY)

MEAN	30.9	31.2	39.5	42.4	47.1	55.2	41.7	38.9	37.4	45.4	36.1	33.2
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	9.10	19.9	10.6	8.59	7.93	2.51	3.85	5.31
(WY)	(1964)	(1966)	(1966)	(1966)	(2002)	(1966)	(1969)	(1956)	(1956)	(1957)	(1957)	(1977)

01653000 CAMERON RUN AT ALEXANDRIA, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1956 - 2004	
ANNUAL TOTAL	22,018.0		16,688.8			
ANNUAL MEAN	60.3		45.6		37.4	
HIGHEST ANNUAL MEAN					64.4	1972
LOWEST ANNUAL MEAN					15.6	2002
HIGHEST DAILY MEAN	1,330	Feb 22	592	Dec 11	3,680	Jun 22, 1972
LOWEST DAILY MEAN	4.7	Oct 20	2.5	Sep 3	1.0	aAug 11, 2002
ANNUAL SEVEN-DAY MINIMUM	5.4	Oct 19	4.0	Sep 1	1.1	Aug 14, 2002
MAXIMUM PEAK FLOW			4,220	Nov 19	19,900	Jun 22, 1972
MAXIMUM PEAK STAGE			7.27	Nov 19	18.14	Jun 22, 1972
INSTANTANEOUS LOW FLOW			2.2	bSep 3	1.0	cAug 10, 2002
ANNUAL RUNOFF (CFSM)	1.79		1.35		1.11	
ANNUAL RUNOFF (INCHES)	24.30		18.42		15.06	
10 PERCENT EXCEEDS	126		111		75	
50 PERCENT EXCEEDS	29		23		16	
90 PERCENT EXCEEDS	12		8.1		4.8	

a Also Aug. 15-18, 2002.
b Also Sept. 4, 2004.
c Also Aug. 11, 12, 14-19, 2002.
e Estimated.



01654000 ACCOTINK CREEK NEAR ANNANDALE, VA

LOCATION.--Lat 38°48'46", long 77°13'42", NAD83, 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 mi^2.

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 NGVD of 1929 (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.--Records good except those for periods with ice effect, Jan. 9, 10, 14-17 and Jan. 20 to Feb. 2, which are fair. Maximum discharge, 12,000 ft^3/s, from rating curve extended above 6,600 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,400 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	2130	2,140	9.08	Jul 28	0300	2,030	8.94
Dec 11	0545	*4,280	*11.31	Sep 18	0245	1,630	8.36
Jun 5	1430	2,500	9.53	Sep 28	2230	3,500	10.60

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	18	19	16	e7.9	15	131	14	64	7.9	51	4.5
2	10	16	16	44	e11	31	156	27	14	7.6	106	3.9
3	8.9	15	16	19	138	15	62	108	8.9	7.0	31	3.8
4	9.2	15	15	18	57	21	31	23	9.0	104	17	3.8
5	9.0	120	182	63	25	16	20	17	642	21	24	3.7
6	8.2	213	90	27	446	180	18	15	37	9.3	8.4	3.9
7	8.2	74	30	17	154	31	17	24	16	7.9	7.1	4.3
8	8.0	30	22	15	46	32	16	38	13	10	6.4	105
9	8.7	22	21	e15	30	19	16	15	11	6.4	6.1	36
10	7.7	20	58	e14	45	17	15	30	10	6.1	6.1	6.7
11	7.5	19	1,160	14	34	17	15	15	69	6.1	132	5.1
12	7.4	69	41	15	26	16	199	13	136	6.0	84	4.7
13	7.0	74	26	15	25	15	249	12	15	6.5	61	4.6
14	78	23	142	e13	23	15	73	11	13	33	37	4.2
15	160	20	112	e12	21	15	31	12	16	12	27	27
16	16	22	53	e12	19	50	23	22	30	5.9	11	20
17	12	18	250	e12	18	23	21	12	16	6.4	8.6	95
18	11	17	51	73	18	19	19	11	14	12	7.8	305
19	11	334	29	24	18	19	18	13	20	6.5	7.8	14
20	10	142	23	e13	18	15	17	11	9.1	16	6.8	8.1
21	11	27	21	e12	18	15	17	10	8.4	5.4	37	6.6
22	10	19	20	e12	17	14	16	30	98	7.7	13	6.3
23	8.9	17	19	e10	16	14	43	9.8	115	13	6.7	5.9
24	8.6	31	174	e10	17	13	31	9.3	15	11	6.1	5.5
25	8.7	56	36	e9.4	18	16	15	35	11	5.9	5.8	5.2
26	22	17	23	e9.0	15	14	109	41	11	6.7	5.7	5.0
27	420	15	20	e8.8	15	20	45	9.8	9.4	196	5.6	4.9
28	54	186	19	e8.5	15	14	17	22	8.5	322	5.4	591
29	219	78	19	e8.2	15	13	15	9.3	8.1	13	5.0	111
30	33	22	20	e8.1	---	13	15	8.2	7.9	8.9	5.0	14
31	21	---	17	e8.0	---	13	---	12	---	7.3	6.9	---
TOTAL	1,225.0	1,749	2,744	555.0	1,325.9	740	1,470	639.4	1,455.3	894.5	748.3	1,418.7
MEAN	39.5	58.3	88.5	17.9	45.7	23.9	49.0	20.6	48.5	28.9	24.1	47.3
MAX	420	334	1,160	73	446	180	249	108	642	322	132	591
MIN	7.0	15	15	8.0	7.9	13	15	8.2	7.9	5.4	5.0	3.7
CFSM	1.68	2.48	3.77	0.76	1.95	1.02	2.09	0.88	2.06	1.23	1.03	2.01
IN.	1.94	2.77	4.34	0.88	2.10	1.17	2.33	1.01	2.30	1.42	1.18	2.25

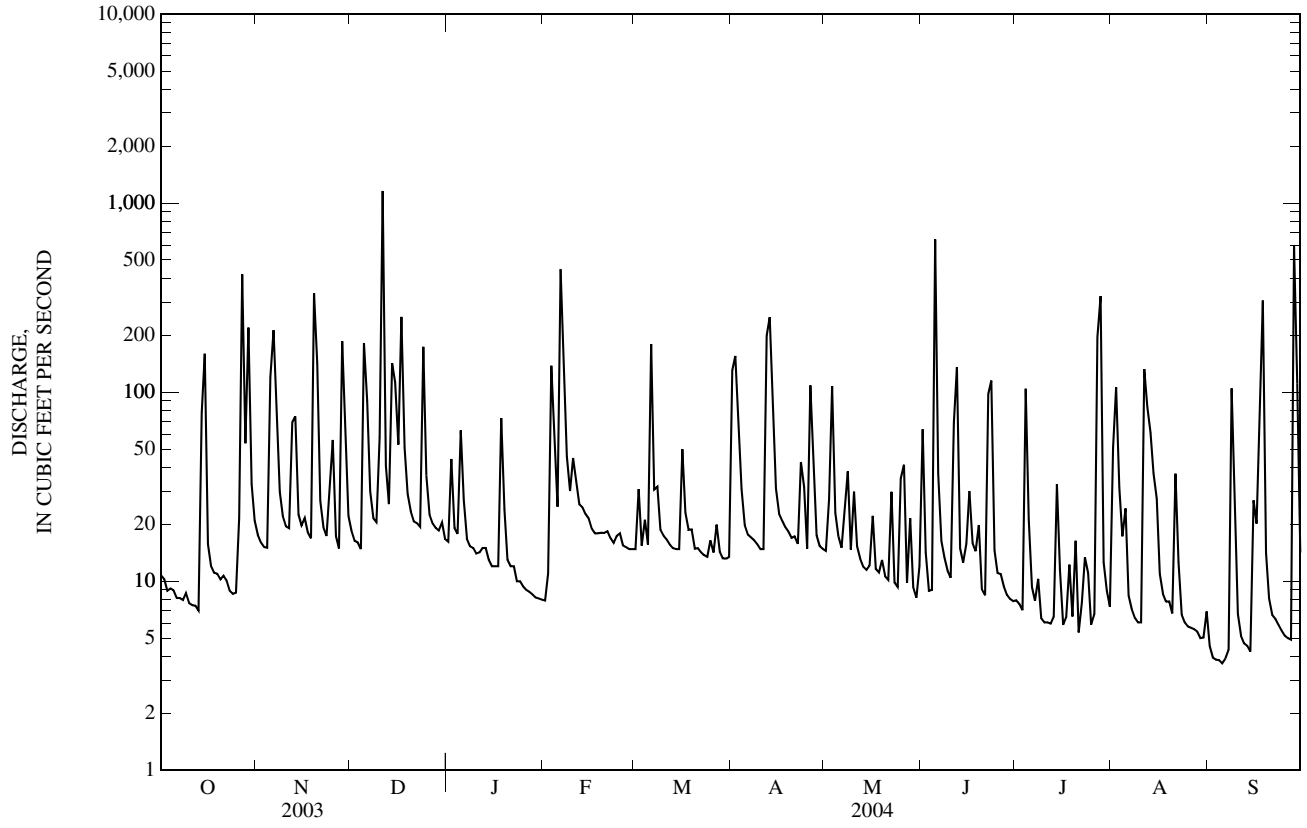
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 2004, BY WATER YEAR (WY)

MEAN	18.1	24.5	29.1	32.1	36.3	42.3	35.3	32.8	26.5	21.4	22.2	23.5
MAX	76.6	70.4	88.5	87.0	113	114	94.5	125	212	74.5	123	120
(WY)	(1980)	(1994)	(2004)	(1996)	(1998)	(1993)	(1983)	(1989)	(1972)	(1969)	(1967)	(1996)
MIN	2.03	3.25	5.48	4.53	3.76	10.6	8.40	8.46	2.83	1.81	1.94	0.45
(WY)	(1955)	(1955)	(1966)	(1981)	(2002)	(1981)	(1985)	(1986)	(1986)	(1955)	(1957)	(1954)

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1948 - 2004	
ANNUAL TOTAL	21,513.7		14,965.1			
ANNUAL MEAN	58.9		40.9		28.6	
HIGHEST ANNUAL MEAN					50.9	2003
LOWEST ANNUAL MEAN					10.8	2002
HIGHEST DAILY MEAN	1,340	Feb 22	1,160	Dec 11	e3,300	Jun 22, 1972
LOWEST DAILY MEAN	e3.8	Feb 14	3.7	Sep 5	0.00	aAug 5, 1999
ANNUAL SEVEN-DAY MINIMUM	e4.4	Feb 8	4.0	Sep 1	0.00	bAug 5, 1999
MAXIMUM PEAK FLOW			4,280	Dec 11	12,000	Jun 22, 1972
MAXIMUM PEAK STAGE			11.31	Dec 11	c15.96	Jun 22, 1972
INSTANTANEOUS LOW FLOW			3.6	dSep 4	0.00	(f)
ANNUAL RUNOFF (CFSM)	2.51		1.74		1.22	
ANNUAL RUNOFF (INCHES)	34.06		23.69		16.55	
10 PERCENT EXCEEDS	120		100		52	
50 PERCENT EXCEEDS	20		16		12	
90 PERCENT EXCEEDS	7.0		6.5		3.2	

a Also Aug. 6-13, 1999 and Aug. 12, 18-23, 2002.
b Also Aug. 17, 2002.
c From high-water mark in gage house.
d Also Sept. 5, 6, 2004.
e Estimated.
f No flow part or all of each day Aug. 5-14, 1999 and Aug. 12, 13, 18-24, 2002.



01654000 ACCOTINK CREEK NEAR ANNANDALE, VA—Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Sample type	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Sampling method, code (82398)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
NOV												
04...	1200	Environmental	1028	80020	15	40	764	8.5	85	7.1	280	26.0
JAN												
06...	1245	Environmental	1028	80020	22	40	765	11.2	93	7.0	245	4.0
MAR												
03...	0945	Environmental	1028	80020	15	40	769	11.2	97	7.2	473	13.0
APR												
06...	1015	Environmental	1028	80020	18	40	763	13.8	114	7.3	349	9.0
MAY												
12...	*0800*	*Blank*	*1028*	*80020*	--	--	--	--	--	--	--	--
12...	*0845*	*Blank*	*1028*	*80020*	--	--	--	--	--	--	--	--
12...	0915	Environmental	1028	80020	13	40	767	6.7	74	7.0	291	24.0
JUN												
02...	1145	Environmental	1028	80020	12	40	761	7.5	83	6.9	200	25.0
02...	*1146*	*Replicate*	*1028*	*80020*	--	*40*	--	--	--	--	--	--
JUL												
07...	1015	Environmental	1028	80020	7.8	40	759	7.2	86	7.1	221	29.0
SEP												
02...	0930	Environmental	1028	80020	4.1	40	768	7.5	84	7.2	316	22.0

Date	Temperature, water, deg C (00010)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Bicarbonate, wat flt incrm. titr., field, mg/L (00453)	Chloride, water, fltrd, mg/L (00940)	Sulfate water, fltrd, mg/L (00945)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Particulate nitrogen, susp, water, mg/L (49570)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, wat unf by analysis, mg/L (62855)
NOV													
04...	15.5	47	57	45.5	9.7	<.04	--	.70	E.006	.07	E.003	.024	.97
JAN													
06...	7.5	31	37	49.2	8.6	E.03	.85	.86	.013	.07	.007	.051	1.20
MAR													
03...	9.5	36	44	107	11.3	<.04	1.22	1.24	.025	.08	<.006	.024	1.62
APR													
06...	7.0	40	48	69.1	11.4	<.04	--	1.21	E.007	.04	<.006	.026	1.39
MAY													
12...	--	--	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	*<.20*	*<.2*	--	--	--	--	*.03*	--	--	--
12...	20.5	40	49	54.1	9.0	.07	.86	.92	.060	.05	<.006	.045	1.26
JUN													
02...	20.5	E30	E37	33.9	6.8	.05	.76	.81	.050	.12	.008	.073	1.22
02...	--	--	--	--	--	*.05*	*.76*	*.81*	*.050*	--	*.010*	*.072*	*1.18*
JUL													
07...	24.5	35	42	35.0	8.0	<.04	.72	.73	.010	.03	E.004	.039	.97
SEP													
02...	21.0	48	59	56.4	7.7	<.04	--	.60	<.008	<.02	<.006	.024	.75

Agency collecting sample: 1028 - U.S. Geological Survey
Agency analyzing sample: 80020 - USGS-National Water Quality Lab, Denver, CO
Sampling method: 40 - Multiple verticles

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Total carbon, suspnd sedimnt total, mg/L (00694)	Inorganic carbon, suspnd sedimnt total, mg/L (00688)	Organic carbon, suspnd sedimnt total, mg/L (00689)	Organic carbon, water, fltrd, mg/L (00681)	2,6-Diethylaniline water fltrd 0.7u GF ug/L (82660)	CIAT, water, fltrd, ug/L (04040)	Acetochlor, water, fltrd, ug/L (49260)	Alachlor, water, fltrd, ug/L (46342)	alpha-HCH, water, fltrd, ug/L (34253)	alpha-HCH-d6, surrog, wat flt 0.7u GF percent recovry (91065)	Atrazine, water, fltrd, ug/L (39632)	Azinphosmethyl, water, fltrd 0.7u GF ug/L (82686)	Benfluralin, water, fltrd 0.7u GF ug/L (82673)
NOV													
04...	.3	<.1	.3	3.7	<.006	<.006	<.006	<.005	<.005	92.0	E.005	<.050	<.010
JAN													
06...	.7	--	--	--	<.006	<.006	<.006	<.005	<.005	94.6	<.007	<.050	<.010
MAR													
03...	.6	<.1	.6	4.4	<.006	E.006	<.006	<.005	<.005	86.4	.007	<.050	<.010
APR													
06...	.4	<.1	.4	3.2	<.006	<.006	<.006	<.005	<.005	92.8	E.006	<.050	<.010
MAY													
12...	--	--	--	--	*<.006*	*<.006*	*<.006*	*<.005*	*<.005*	*85.9*	*<.007*	*<.050*	*<.010*
12...	*<.1*	*<.1*	*<.1*	*.5*	*<.006*	*<.006*	*<.006*	*<.005*	*<.005*	*87.7*	*<.007*	*<.050*	*<.010*
12...	.2	<.1	.2	3.6	<.006	E.021	<.006	<.005	<.005	84.8	.091	<.050	<.010
JUN													
02...	.7	<.1	.7	6.1	<.006	E.014	<.007	<.005	<.005	90.7	.078	E.035	E.005
02...	--	--	--	--	*<.006*	*<.014*	*<.006*	*<.005*	*<.005*	*91.5*	*.079*	*E.035*	*E.005*
JUL													
07...	.3	<.1	.3	4.1	<.006	E.004	<.006	<.005	<.005	82.5	.011	<.050	<.010
SEP													
02...	.2	<.1	.2	3.7	<.006	<.006	<.006	<.005	<.005	98.0	<.010	<.050	<.010

Date	Butylate, water, fltrd, ug/L (04028)	Carbaryl, water, fltrd 0.7u GF ug/L (82680)	Carbofuran, water, fltrd 0.7u GF ug/L (82674)	Chlorpyrifos water, fltrd, ug/L (38933)	cis-Permethrin water fltrd 0.7u GF ug/L (82687)	Cyanazine, water, fltrd, ug/L (04041)	DCPA, water fltrd 0.7u GF ug/L (82682)	Desulfinyl fipronil, water, fltrd, ug/L (62170)	Diazinon, water, fltrd, ug/L (39572)	Diazinon-d10 surrog. wat flt 0.7u GF percent recovry (91063)	Dieldrin, water, fltrd, ug/L (39381)	Disulfoton, water, fltrd 0.7u GF ug/L (82677)	EPTC, water, fltrd 0.7u GF ug/L (82668)
NOV													
04...	<.004	E.009	<.020	<.005	<.006	<.018	<.003	<.012	E.005	110	<.009	<.02	<.010
JAN													
06...	<.004	E.037	<.020	<.005	<.006	<.018	<.003	<.012	.012	127	<.009	<.02	<.004
MAR													
03...	<.004	<.041	<.020	<.020	<.006	<.018	<.003	E.005	<.005	119	<.009	<.02	<.004
APR													
06...	<.004	<.041	<.020	<.005	<.006	<.018	<.003	E.008	<.005	112	<.009	<.02	<.004
MAY													
12...	*<.004*	*<.041*	*<.020*	*<.005*	*<.006*	*<.018*	*<.003*	*<.012*	*<.005*	*106*	*<.009*	*<.02*	*<.004*
12...	*<.004*	*<.041*	*<.020*	*<.005*	*<.006*	*<.018*	*<.003*	*<.012*	*<.005*	*114*	*<.009*	*<.02*	*<.008*
12...	<.004	E.017	<.020	<.005	<.006	<.018	<.003	<.012	<.005	110	<.009	<.02	<.004
JUN													
02...	<.045	E.171	<.020	<.013	<.006	<.018	<.003	E.005	.022	116	<.009	<.02	<.005
02...	*<.044*	*E.169*	*<.020*	*<.014*	*<.006*	*<.018*	*<.003*	*E.005*	*<.022*	*112*	*<.009*	*<.02*	*<.008*
JUL													
07...	<.004	E.037	<.020	<.005	<.006	<.018	<.003	E.005	.007	106	<.009	<.02	<.004
SEP													
02...	<.004	E.011	<.020	<.005	<.006	<.018	<.003	<.012	<.005	109	<.009	<.02	<.004

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Ethalfluralin, water, fltrd 0.7u GF ug/L (82663)	Ethoprop, water, fltrd 0.7u GF ug/L (82672)	Desulfinylfipronil amide, wat flt ug/L (62169)	Fipronil sulfide water, fltrd, ug/L (62167)	Fipronil sulfone water, fltrd, ug/L (62168)	Fipronil, water, fltrd, ug/L (62166)	Fonofos water, fltrd, ug/L (04095)	Lindane water, fltrd, ug/L (39341)	Linuron water fltrd 0.7u GF ug/L (82666)	Malathion, water, fltrd, ug/L (39532)	Methyl parathion, water, fltrd 0.7u GF ug/L (82667)	Metolachlor, water, fltrd, ug/L (39415)	Metribuzin, water, fltrd, ug/L (82630)
NOV													
04...	<.009	<.005	<.029	<.013	<.024	<.010	<.003	<.004	<.035	<.027	<.015	<.013	<.006
JAN													
06...	<.009	<.005	<.029	<.013	<.024	E.019	<.003	<.004	<.035	<.027	<.015	E.006	<.006
MAR													
03...	<.009	<.005	<.029	<.013	<.024	<.016	<.003	<.004	<.035	<.027	<.015	<.013	<.006
APR													
06...	<.009	<.005	<.029	<.013	<.024	E.042	<.003	<.004	<.035	<.027	<.015	E.006	<.006
MAY													
12...	*<.009*	*<.005*	*<.029*	*<.013*	*<.024*	*<.016*	*<.003*	*<.004*	*<.035*	*<.027*	*<.015*	*<.013*	*<.006*
12...	*<.009*	*<.005*	*<.029*	*<.013*	*<.024*	*<.016*	*<.003*	*<.004*	*<.035*	*<.027*	*<.015*	*<.013*	*<.006*
12...	<.009	<.005	<.029	<.013	<.024	E.015	<.003	<.004	<.035	E.016	<.015	.020	<.006
JUN													
02...	<.009	<.005	<.029	E.004	<.024	E.029	<.003	<.004	<.035	<.027	<.015	.017	<.006
02...	*<.009*	*<.005*	*<.029*	*E.004*	*<.024*	*E.027*	*<.003*	*<.004*	*<.035*	*<.027*	*<.015*	*.018*	*<.006*
JUL													
07...	<.009	<.005	<.029	E.004	<.024	E.019	<.003	<.004	<.035	<.027	<.015	E.008	<.006
SEP													
02...	<.009	<.005	<.029	<.013	<.024	<.016	<.003	<.004	<.035	<.027	<.015	<.013	<.006

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Molinate, water, fltrd 0.7u GF ug/L (82671)	Napropamide, water, fltrd 0.7u GF ug/L (82684)	p,p-' DDE, water, fltrd, ug/L (34653)	Parathion, water, fltrd, ug/L (39542)	Pebulate, water, fltrd 0.7u GF ug/L (82669)	Pendimethalin, water, fltrd 0.7u GF ug/L (82683)	Phorate water fltrd 0.7u GF ug/L (82664)	Prometon, water, fltrd, ug/L (04037)	Propyzamide, water, fltrd 0.7u GF ug/L (82676)	Propachlor, water, fltrd, ug/L (04024)	Propanil, water, fltrd 0.7u GF ug/L (82679)	Propargite, water, fltrd 0.7u GF ug/L (82685)	Simazine, water, fltrd, ug/L (04035)
NOV													
04...	<.003	<.007	<.003	<.010	<.004	<.022	<.011	.01	<.004	<.025	<.011	<.02	.079
JAN													
06...	<.003	<.007	<.003	<.010	<.004	<.022	<.011	.01	<.004	<.025	<.011	<.02	.058
MAR													
03...	<.003	<.007	<.003	<.010	<.004	<.022	<.011	.01	.024	<.025	<.011	<.02	.024
APR													
06...	<.003	<.007	<.003	<.010	<.004	.026	<.011	.03	<.004	<.025	<.011	<.02	.100
MAY													
12...	*<.003*	*<.007*	*<.003*	*<.010*	*<.004*	*<.022*	*<.011*	*<.01*	*<.004*	*<.025*	*<.011*	*<.02*	*<.005*
12...	*<.003*	*<.007*	*<.003*	*<.010*	*<.004*	*<.022*	*<.011*	*<.01*	*<.004*	*<.025*	*<.011*	*<.02*	*<.005*
12...	<.003	<.007	<.003	<.010	<.004	E.011	<.011	.03	<.004	<.025	<.011	<.02	.699
JUN													
02...	<.003	<.007	<.003	<.010	<.004	<.022	<.011	.06	<.004	<.025	<.011	<.02	.059
02...	*<.003*	*<.007*	*<.003*	*<.010*	*<.004*	*<.022*	*<.011*	*.06*	*<.004*	*<.025*	*<.011*	*<.02*	*.059*
JUL													
07...	<.003	<.007	<.003	<.010	<.004	<.022	<.011	.08	<.020	<.025	<.011	<.02	.017
SEP													
02...	<.003	<.007	<.003	<.010	<.004	<.022	<.011	E.03	<.004	<.025	<.011	<.02	.016

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Tebu-thiuron water fltrd 0.7u GF ug/L (82670)	Terba-cil, water, fltrd 0.7u GF ug/L (82665)	Terbu-fos, water, fltrd 0.7u GF ug/L (82675)	Thio-bencarb water fltrd 0.7u GF ug/L (82681)	Tri-allate, water, fltrd 0.7u GF ug/L (82678)	Tri-flur-alin, water, fltrd 0.7u GF ug/L (82661)	Sus-pended sedi-ment concen-tration mg/L (80154)	Sus-pended sedi-ment dis-charge, tons/d (80155)	Sampler type, code (84164)
NOV									
04...	<.02	<.034	<.02	<.010	<.002	<.009	2	.08	3070
JAN									
06...	<.02	<.034	<.02	<.010	<.002	<.009	11	.65	3070
MAR									
03...	<.02	<.034	<.02	<.010	<.002	E.006	5	.20	3070
APR									
06...	<.02	<.034	<.02	<.010	<.002	E.006	4	.19	3070
MAY									
12...	*<.02*	*<.034*	*<.02*	*<.010*	*<.002*	*<.009*	--	--	--
12...	*<.02*	*<.034*	*<.02*	*<.010*	*<.002*	*<.009*	--	--	--
12...	.02	<.034	<.02	<.010	<.002	<.009	4	.14	3070
JUN									
02...	<.02	<.034	<.02	<.010	<.002	E.005	10	.32	3070
02...	*<.02*	*<.087*	*<.02*	*<.010*	*<.002*	*E.005*	*10*	--	*3070*
JUL									
07...	<.02	<.034	<.02	<.010	<.002	<.009	5	.11	3070
SEP									
02...	<.02	<.034	<.02	<.010	<.002	<.009	20	.22	3070

Remark codes used in this table:
< -- Less than
E -- Estimated value
Sampler type: 3070 - Grab sample

01656000 CEDAR RUN NEAR CATLETT, VA

LOCATION.--Lat 38°38'12", long 77°37'30", NAD83, 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 mi^2.

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 NGVD of 1929. July 1950 to December 1986, water-stage recorder at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 9-11, 14-25, and periods of doubtful or no gage-height record, Jan. 26 to Feb. 5 and July 27, which are fair. Maximum discharge, 32,500 ft^3/s, from rating curve extended above 7,000 ft^3/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 OUTSIDE PERIOD OF RECORD.--Flood of Oct. 15, 1942, reached a stage of about 22 ft, discharge not determined, from information by local residents.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct 27	2200	1,820	8.56	Apr 13	0230	1,970	8.85
Dec 11	1000	*6,380	*14.28	Sep 29	0615	3,230	10.83
Feb 6	2230	2,220	9.29				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	139	110	70	e27	45	117	78	29	12	17	1.6
2	42	111	90	74	e26	48	244	86	21	13	22	1.6
3	36	96	77	81	e161	49	341	143	16	12	19	1.5
4	32	84	72	75	e763	46	193	101	14	20	11	1.0
5	31	77	120	79	e758	45	125	75	305	42	8.0	0.62
6	29	441	228	105	1,330	108	96	62	166	23	6.6	1.0
7	29	282	170	76	1,350	100	80	77	77	44	5.9	1.8
8	28	155	129	61	468	77	72	208	50	144	5.4	11
9	24	112	121	e54	252	59	70	100	37	46	4.5	54
10	22	93	218	e48	253	53	61	65	28	29	4.0	12
11	21	87	3,850	e58	247	50	55	50	25	22	3.5	6.5
12	21	100	763	55	188	47	346	41	87	19	4.5	4.9
13	20	364	415	51	166	42	1,330	35	51	20	10	3.8
14	21	147	306	e47	152	38	826	30	38	22	9.1	3.2
15	262	106	464	e42	134	37	337	27	32	39	6.9	5.4
16	83	89	343	e38	106	61	197	24	30	19	6.9	11
17	51	84	772	e40	86	102	147	40	22	14	5.3	7.4
18	39	75	500	e42	79	79	119	36	77	12	5.0	332
19	33	480	281	e41	76	128	99	29	50	11	4.6	79
20	28	789	200	e39	80	90	84	26	35	11	2.8	36
21	26	260	152	e37	87	76	80	27	30	10	5.7	23
22	25	170	136	e36	79	58	75	25	28	8.8	9.6	17
23	23	132	126	e35	67	49	64	21	59	17	7.5	13
24	20	121	160	e33	63	45	82	18	43	23	6.0	11
25	18	233	164	e32	64	44	63	16	29	18	6.0	10
26	18	140	122	e31	56	42	90	19	27	14	5.6	8.7
27	998	112	106	e30	52	43	187	21	23	e14	4.6	7.0
28	688	130	93	e29	49	47	109	50	19	15	2.6	689
29	701	255	86	e29	46	41	100	30	16	13	2.1	1,760
30	333	137	85	e28	---	38	88	19	14	9.7	1.8	336
31	191	---	75	e27	---	44	---	19	---	7.6	1.8	---
TOTAL	3,942	5,601	10,534	1,523	7,265	1,831	5,877	1,598	1,478	724.1	215.3	3,450.02
MEAN	127	187	340	49.1	251	59.1	196	51.5	49.3	23.4	6.95	115
MAX	998	789	3,850	105	1,350	128	1,330	208	305	144	22	1,760
MIN	18	75	72	27	26	37	55	16	14	7.6	1.8	0.62
CFSM	1.36	2.00	3.64	0.53	2.68	0.63	2.10	0.55	0.53	0.25	0.07	1.23
IN.	1.57	2.23	4.20	0.61	2.89	0.73	2.34	0.64	0.59	0.29	0.09	1.37

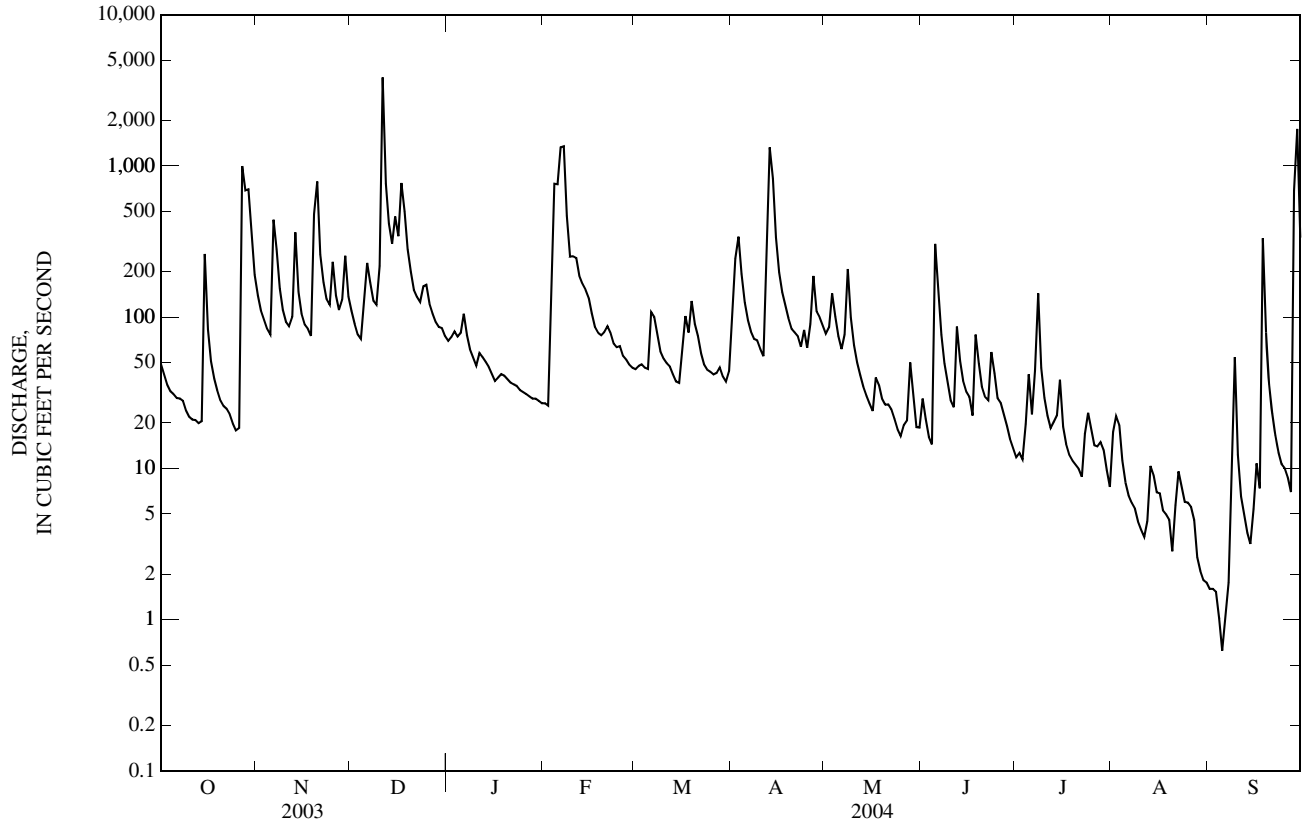
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 1986, 1990 - 2004, BY WATER YEAR (WY)

MEAN	45.4	64.2	110	140	166	174	124	78.0	72.9	30.5	42.5	43.9
MAX	450	248	379	467	501	531	544	381	917	323	407	388
(WY)	(1980)	(1973)	(1993)	(1978)	(1998)	(1993)	(1983)	(2003)	(1972)	(1956)	(1955)	(1975)
MIN	0.40	3.15	3.53	4.64	6.09	22.3	19.6	9.41	1.38	0.74	0.58	0.37
(WY)	(1987)	(1966)	(1966)	(1981)	(2002)	(1981)	(1985)	(1956)	(1999)	(1963)	(1966)	(1954)

01656000 CEDAR RUN NEAR CATLETT, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1951 - 1986 1990 - 2004	
ANNUAL TOTAL	80,898.6		44,038.42			
ANNUAL MEAN	222		120		90.7	
HIGHEST ANNUAL MEAN					193	2003
LOWEST ANNUAL MEAN					16.5	2002
HIGHEST DAILY MEAN	3,850	Dec 11	3,850	Dec 11	e18,500	Jun 22, 1972
LOWEST DAILY MEAN	3.4	Aug 26	0.62	Sep 5	0.00	(a)
ANNUAL SEVEN-DAY MINIMUM	6.2	Aug 21	1.3	bAug 31	0.00	(c)
MAXIMUM PEAK FLOW			6,380	Dec 11	32,500	Jun 22, 1972
MAXIMUM PEAK STAGE			14.28	Dec 11	d27.66	Jun 22, 1972
INSTANTANEOUS LOW FLOW			0.42	Sep 5	0.00	(f)
ANNUAL RUNOFF (CFSM)	2.37		1.29		0.971	
ANNUAL RUNOFF (INCHES)	32.22		17.54		13.19	
10 PERCENT EXCEEDS	517		254		192	
50 PERCENT EXCEEDS	99		48		28	
90 PERCENT EXCEEDS	20		7.5		2.0	

a Many days in 1954, 1957, 1959, 1963-64, 1966, 1983, and 1993.
b Also Sept. 1, 2004.
c Many days in 1954, 1957, 1959, 1963-64, 1966, and 1983.
d From floodmarks.
e Estimated.
f Many days in 1954, 1957, 1959, 1963-64, 1991, and 1993.



01656102 GOSLIN RUN NEAR ADEN, VA

LOCATION.--Lat 38°36'40", long 77°33'03", NAD83, Prince William County, Hydrologic Unit 02070010, on left bank at upstream side of bridge on Quantico Marine Corps Base Road MCB-8, 3.5 mi south of Aden, and 0.5 mi above mouth.

DRAINAGE AREA.--4.64 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 2002 to December 2003 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 180 ft NGVD of 1929, from topographic map.

REMARKS.-- Records fair except those for discharges above 75 ft^3/s, which are poor. Water-quality records for some prior periods have been collected at this site.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	5.3	9.7	---	---	---	---	---	---	---	---	---
2	1.4	4.5	6.7	---	---	---	---	---	---	---	---	---
3	1.2	3.8	5.2	---	---	---	---	---	---	---	---	---
4	1.1	3.1	4.6	---	---	---	---	---	---	---	---	---
5	1.1	4.7	16	---	---	---	---	---	---	---	---	---
6	0.96	56	23	---	---	---	---	---	---	---	---	---
7	0.92	32	15	---	---	---	---	---	---	---	---	---
8	0.92	12	11	---	---	---	---	---	---	---	---	---
9	0.85	7.0	9.8	---	---	---	---	---	---	---	---	---
10	0.84	5.7	25	---	---	---	---	---	---	---	---	---
11	0.81	4.2	614	---	---	---	---	---	---	---	---	---
12	0.83	7.9	31	---	---	---	---	---	---	---	---	---
13	0.77	47	16	---	---	---	---	---	---	---	---	---
14	1.1	11	30	---	---	---	---	---	---	---	---	---
15	8.6	6.6	32	---	---	---	---	---	---	---	---	---
16	2.1	4.9	22	---	---	---	---	---	---	---	---	---
17	1.5	4.1	73	---	---	---	---	---	---	---	---	---
18	1.4	3.4	34	---	---	---	---	---	---	---	---	---
19	1.2	56	17	---	---	---	---	---	---	---	---	---
20	0.98	79	11	---	---	---	---	---	---	---	---	---
21	1.0	23	8.0	---	---	---	---	---	---	---	---	---
22	1.0	14	6.9	---	---	---	---	---	---	---	---	---
23	0.93	9.8	5.9	---	---	---	---	---	---	---	---	---
24	0.88	9.8	12	---	---	---	---	---	---	---	---	---
25	0.84	21	9.3	---	---	---	---	---	---	---	---	---
26	0.94	11	6.5	---	---	---	---	---	---	---	---	---
27	28	8.9	5.5	---	---	---	---	---	---	---	---	---
28	13	28	4.7	---	---	---	---	---	---	---	---	---
29	40	42	4.4	---	---	---	---	---	---	---	---	---
30	15	15	4.2	---	---	---	---	---	---	---	---	---
31	7.9	---	3.5	---	---	---	---	---	---	---	---	---
TOTAL	139.47	540.7	1,076.9	---	---	---	---	---	---	---	---	---
MEAN	4.50	18.0	34.7	---	---	---	---	---	---	---	---	---
MAX	40	79	614	---	---	---	---	---	---	---	---	---
MIN	0.77	3.1	3.5	---	---	---	---	---	---	---	---	---
CFSM	0.97	3.88	7.49	---	---	---	---	---	---	---	---	---
IN.	1.12	4.33	8.63	---	---	---	---	---	---	---	---	---

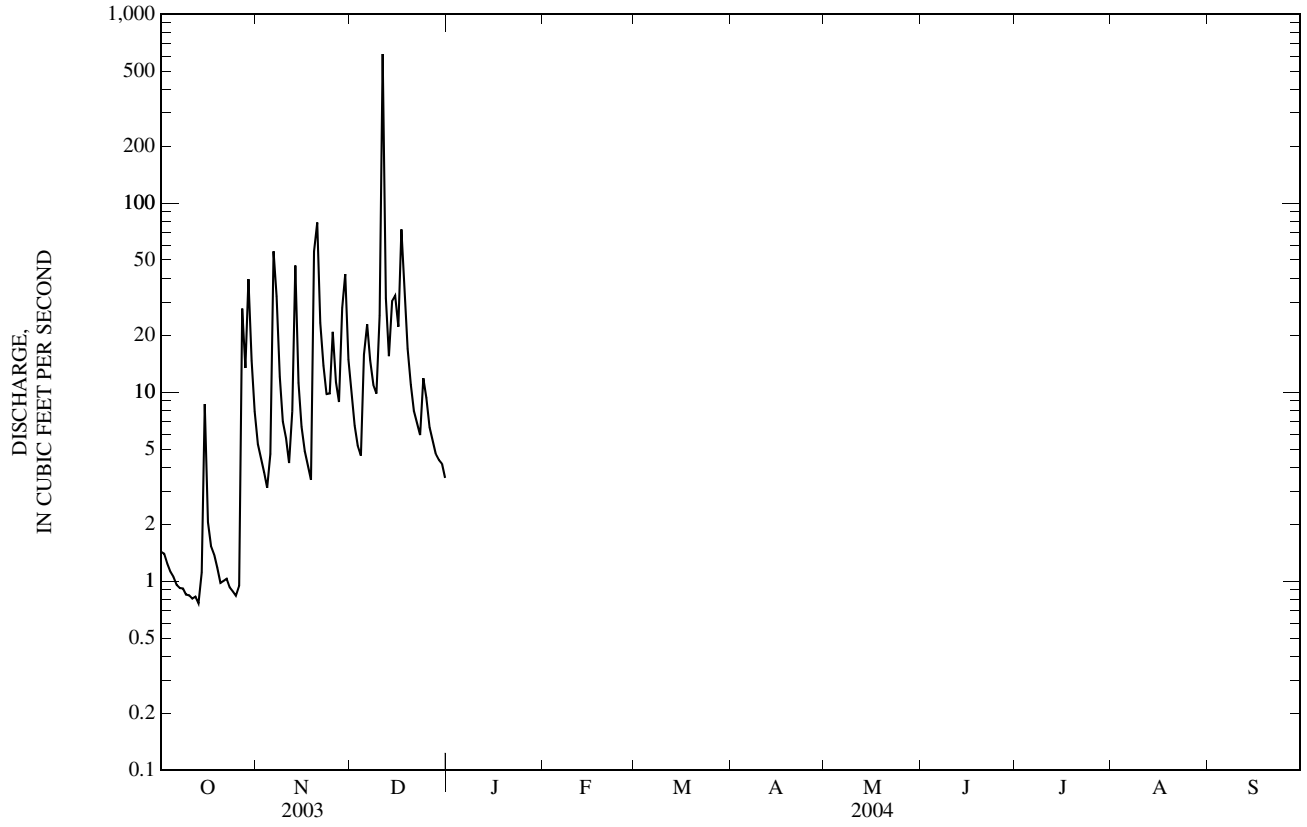
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2004, BY WATER YEAR (WY)

MEAN	2.58	13.8	22.7	10.8	36.1	30.6	12.4	10.5	10.7	1.46	0.51	5.23
MAX	4.50	18.0	34.7	10.8	36.1	30.6	12.4	19.7	21.0	2.93	1.02	10.5
(WY)	(2004)	(2004)	(2004)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	0.65	9.64	10.6	10.8	36.1	30.6	12.4	1.08	0.31	0.00	0.00	0.00
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2002)	(2002)	(2002)	(2002)	(2002)

01656102 GOSLIN RUN NEAR ADEN, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2002 - 2004	
ANNUAL TOTAL	6,100.09					
ANNUAL MEAN	16.7				11.1	
HIGHEST ANNUAL MEAN					19.1	2004
LOWEST ANNUAL MEAN					0.27	2002
HIGHEST DAILY MEAN	614	Dec 11	614	Dec 11	614	Dec 11, 2003
LOWEST DAILY MEAN	0.12	Aug 26	0.77	Oct 13	0.00	(a)
ANNUAL SEVEN-DAY MINIMUM	0.29	Aug 21	0.85	Oct 7	0.00	(a)
MAXIMUM PEAK FLOW			2,400	Dec 11	2,400	Dec 11, 2003
MAXIMUM PEAK STAGE			9.21	Dec 11	9.21	Dec 11, 2003
INSTANTANEOUS LOW FLOW			0.74	bOct 13	0.00	(c)
ANNUAL RUNOFF (CFSM)	3.60				2.40	
ANNUAL RUNOFF (INCHES)	48.91				32.60	
10 PERCENT EXCEEDS	34		33		25	
50 PERCENT EXCEEDS	5.3		6.8		2.3	
90 PERCENT EXCEEDS	0.74		0.92		0.00	

a Many days in June to October 2002.
b Also Oct. 14, 2003.
c No flow part or all of many days June to October, 2002.



01656102 GOSLIN RUN NEAR ADEN, VA—Continued

SUSPENDED-SEDIMENT
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	5	0.02	19	0.27	8	0.21	---	---	---	---	---	---
2	8	0.03	18	0.22	7	0.13	---	---	---	---	---	---
3	8	0.03	15	0.16	25	0.34	---	---	---	---	---	---
4	5	0.02	23	0.19	20	0.25	---	---	---	---	---	---
5	5	0.01	16	0.29	22	1.4	---	---	---	---	---	---
6	5	0.01	171	32	25	1.6	---	---	---	---	---	---
7	5	0.01	74	6.7	12	0.48	---	---	---	---	---	---
8	5	0.01	61	2.0	10	0.31	---	---	---	---	---	---
9	7	0.02	38	0.73	9	0.25	---	---	---	---	---	---
10	6	0.01	28	0.43	432	77	---	---	---	---	---	---
11	5	0.01	19	0.21	458	1,600	---	---	---	---	---	---
12	6	0.01	19	1.2	119	10	---	---	---	---	---	---
13	4	0.00	92	19	68	2.9	---	---	---	---	---	---
14	11	0.09	10	0.31	65	6.8	---	---	---	---	---	---
15	65	2.3	5	0.10	22	2.1	---	---	---	---	---	---
16	13	0.07	4	0.05	16	0.97	---	---	---	---	---	---
17	13	0.05	3	0.03	34	6.3	---	---	---	---	---	---
18	13	0.05	5	0.04	16	1.4	---	---	---	---	---	---
19	9	0.03	3	0.28	11	0.53	---	---	---	---	---	---
20	9	0.02	10	1.4	8	0.25	---	---	---	---	---	---
21	6	0.02	16	1.0	7	0.15	---	---	---	---	---	---
22	5	0.02	10	0.37	7	0.13	---	---	---	---	---	---
23	5	0.01	9	0.23	6	0.10	---	---	---	---	---	---
24	4	0.01	10	0.35	18	0.67	---	---	---	---	---	---
25	4	0.00	21	1.4	9	0.22	---	---	---	---	---	---
26	4	0.00	7	0.20	7	0.12	---	---	---	---	---	---
27	39	2.9	7	0.17	6	0.09	---	---	---	---	---	---
28	48	2.3	63	18	6	0.07	---	---	---	---	---	---
29	84	12	76	14	6	0.07	---	---	---	---	---	---
30	35	1.3	12	0.49	8	0.09	---	---	---	---	---	---
31	31	0.68	---	---	9	0.09	---	---	---	---	---	---
TOTAL	---	22.04	---	101.82	---	1,715.02	---	---	---	---	---	---
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---

01656102 GOSLIN RUN NEAR ADEN, VA—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--February 2002 to January 2004 (discontinued).

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Sample type	Gage height, feet (00065)	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Ammonia + org-N, water, fltrd, mg/L as N (00623)
OCT												
21...	1130	Environmental	3.02	.99	753	9.3	90	6.7	67	24.5	13.7	.12
NOV												
18...	1030	Environmental	3.25	3.4	760	10.7	93	6.7	55	14.0	9.3	.12
JAN												
06...	1200	Environmental	3.24	3.2	759	12.3	99	6.7	48	2.0	6.0	.11

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	E coli, m-TEC MF, water, col/ 100 mL (31633)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Suspended sediment concentration mg/L (80154)
OCT										
21...	.16	<.04	<.06	<.008	<.02	.007	.019	78	84	5
NOV										
18...	.14	<.04	<.06	<.008	<.02	.006	.013	57	44	2
JAN										
06...	.20	<.04	E.03n	<.008	<.02	.004	.016	26	33	--

Remark codes used in this table:
< -- Less than
E -- Estimated value

Value qualifier codes used in this table:
n -- Below the LRL and above the LT-MDL

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA

LOCATION.--Lat 38°35'14", long 77°25'43", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--Records good except those for period Oct. 4-14, and periods of doubtful or no gage-height record, Dec. 4-8, 21-23, 26, 27, Dec. 29 to Jan. 4, Jan. 12, 13, Apr. 28, and July 31 to Aug. 6, which are fair.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	2400	265	5.17	Apr 12	2400	290	5.33
Dec 11	0400	*1,080	*8.00	Jul 27	0545	210	4.78
Dec 17	1515	206	4.75	Sep 18	0115	248	5.05
Feb 6	2030	395	5.90	Sep 28	2230	530	6.50

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	6.3	9.0	e6.6	4.7	5.2	17	6.8	7.8	1.3	e4.0	0.88
2	2.3	5.6	7.6	e7.0	4.7	5.8	30	8.8	1.3	1.2	e9.0	0.85
3	2.1	5.2	7.0	e6.8	16	5.6	25	31	0.72	1.1	e8.0	0.73
4	2.4	4.7	e6.5	e6.3	15	5.5	13	14	0.70	2.4	e6.0	0.63
5	2.4	5.0	e25	9.1	10	5.4	9.3	8.5	27	3.5	e5.0	0.59
6	2.2	51	e40	9.6	142	11	8.4	6.9	8.2	1.9	e4.0	0.61
7	2.1	26	e20	6.9	98	7.6	8.2	10	4.6	1.7	3.4	0.72
8	1.9	10	e15	6.4	28	6.5	7.6	20	3.1	1.6	3.2	7.7
9	1.9	7.4	8.7	7.1	17	5.6	7.3	7.9	2.5	1.3	2.3	22
10	1.7	6.8	17	6.3	20	5.5	6.5	6.1	2.2	1.1	1.4	3.8
11	1.7	5.6	365	5.8	16	5.5	6.5	5.1	1.8	1.1	1.2	2.2
12	1.8	11	23	e6.6	13	5.4	64	4.2	5.7	1.0	1.9	1.5
13	1.8	35	12	e6.3	11	4.9	118	3.8	2.4	1.1	5.4	1.2
14	5.5	10	34	6.4	9.7	4.7	51	3.3	2.1	1.3	3.2	0.93
15	21	7.5	33	6.3	8.7	4.8	23	3.0	2.0	1.6	4.4	1.9
16	2.9	6.7	20	5.2	7.4	7.8	15	2.5	1.7	0.78	2.8	2.2
17	2.0	6.6	97	5.2	7.2	9.0	13	2.6	3.4	0.66	2.1	13
18	1.8	6.1	31	9.3	7.3	7.7	11	2.7	31	0.78	4.2	58
19	1.7	63	15	9.0	7.1	12	10	2.8	11	0.79	5.8	8.2
20	1.6	65	11	5.9	6.9	7.6	9.3	2.9	4.2	0.67	2.8	6.1
21	1.8	14	e9.4	5.0	6.9	6.8	8.8	2.7	3.4	0.57	3.3	4.4
22	1.9	9.5	e8.3	5.4	5.7	5.7	8.2	2.2	5.5	0.55	3.5	2.8
23	1.9	8.4	e7.8	5.1	5.1	5.3	8.3	1.8	6.9	1.1	1.9	2.0
24	1.9	8.9	18	4.8	5.4	4.9	10	1.6	4.4	0.73	1.6	1.5
25	2.0	17	13	4.3	5.6	5.0	8.1	1.4	3.1	0.74	1.4	1.3
26	2.2	9.5	e9.2	5.9	5.3	5.0	12	3.1	3.0	0.84	1.2	1.2
27	47	8.4	e7.4	5.7	5.5	5.8	18	1.4	2.4	38	1.0	1.2
28	18	25	7.1	5.6	5.2	5.8	e9.4	1.5	1.9	4.9	0.92	100
29	43	36	e6.9	5.5	5.2	5.1	7.8	1.1	1.6	2.7	0.85	65
30	13	12	e6.8	5.8	---	5.1	7.1	0.70	1.3	2.2	0.84	8.0
31	7.5	---	e6.9	5.3	---	5.4	---	1.1	---	e1.8	1.1	---
TOTAL	203.2	493.2	897.6	196.5	499.6	193.0	550.8	171.50	156.92	81.01	97.71	321.14
MEAN	6.55	16.4	29.0	6.34	17.2	6.23	18.4	5.53	5.23	2.61	3.15	10.7
MAX	47	65	365	9.6	142	12	118	31	31	38	9.0	100
MIN	1.6	4.7	6.5	4.3	4.7	4.7	6.5	0.70	0.70	0.55	0.84	0.59
CFSM	0.86	2.15	3.79	0.83	2.25	0.81	2.40	0.72	0.68	0.34	0.41	1.40
IN.	0.99	2.40	4.37	0.96	2.43	0.94	2.68	0.84	0.76	0.39	0.48	1.56

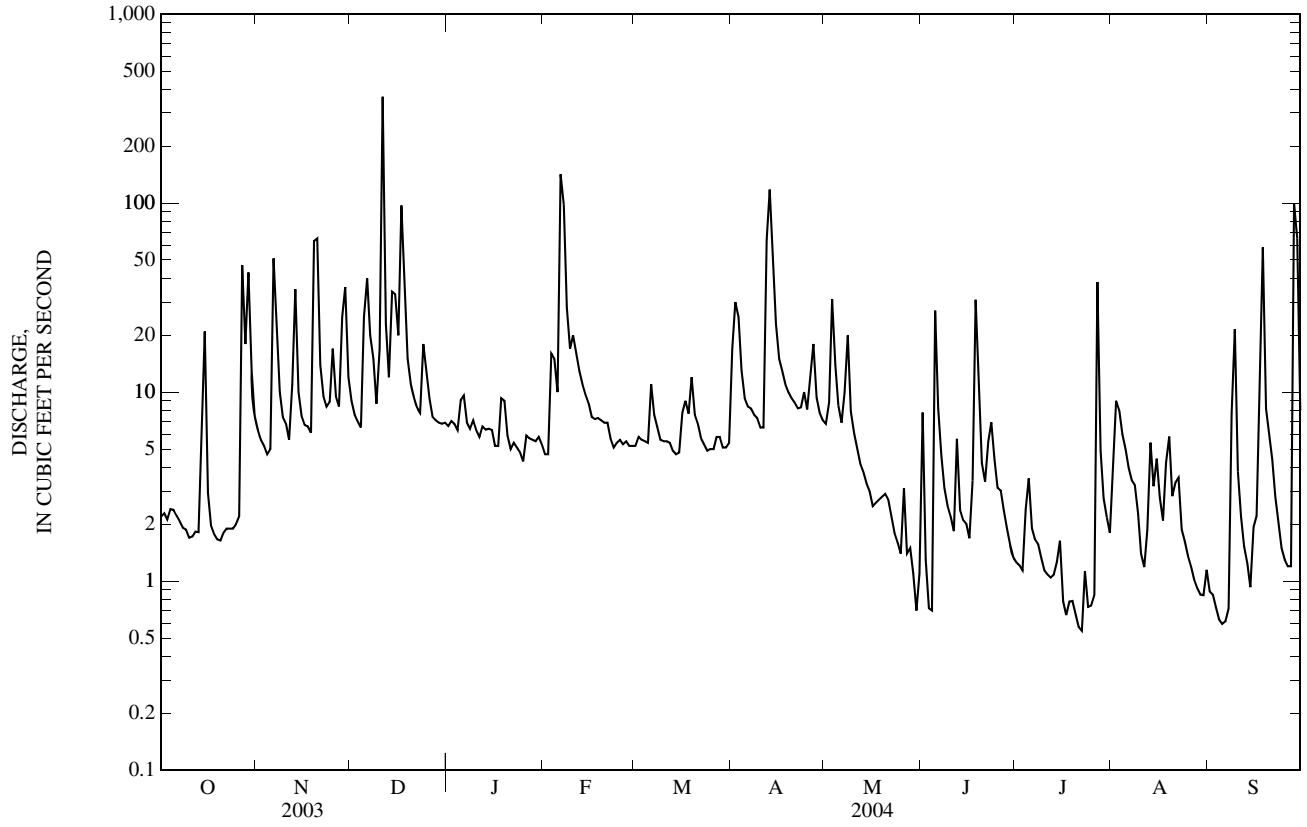
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2004, BY WATER YEAR (WY)

MEAN	3.13	5.76	8.10	9.83	12.0	13.7	11.5	8.12	4.89	2.66	2.51	3.40
MAX	23.9	19.2	29.0	31.2	54.0	35.0	33.0	42.8	48.8	15.1	24.5	37.2
(WY)	(1980)	(1953)	(2004)	(1996)	(1998)	(1994)	(1983)	(1989)	(1972)	(1975)	(1955)	(1975)
MIN	0.07	0.23	0.58	1.01	1.30	1.77	2.90	1.38	0.23	0.05	0.01	0.00
(WY)	(1989)	(1999)	(1966)	(1981)	(2002)	(1981)	(1969)	(1999)	(1999)	(1963)	(1963)	(1964)

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1951 - 2004	
ANNUAL TOTAL	5,532.91		3,862.18			
ANNUAL MEAN	15.2		10.6		7.10	
HIGHEST ANNUAL MEAN					13.5	1998
LOWEST ANNUAL MEAN					1.29	2002
HIGHEST DAILY MEAN	393	Feb 22	365	Dec 11	770	Jun 22, 1972
LOWEST DAILY MEAN	0.59	Aug 26	0.55	Jul 22	0.00	(a)
ANNUAL SEVEN-DAY MINIMUM	0.67	Aug 21	0.69	Jul 16	0.00	(a)
MAXIMUM PEAK FLOW			1,080	Dec 11	4,160	May 6, 1989
MAXIMUM PEAK STAGE			8.00	Dec 11	11.62	May 6, 1989
INSTANTANEOUS LOW FLOW			0.53	bJun 4	0.00	(a)
ANNUAL RUNOFF (CFSM)	1.98		1.38		0.929	
ANNUAL RUNOFF (INCHES)	26.94		18.81		12.62	
10 PERCENT EXCEEDS	32		20		14	
50 PERCENT EXCEEDS	6.8		5.6		2.7	
90 PERCENT EXCEEDS	1.6		1.2		0.20	

a No flow at times many years.
b Also July. 21, 22, 2004.
e Estimated.



01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA—Continued

SUSPENDED-SEDIMENT
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	4	0.02	5	0.09	6	0.16	2	0.05	8	0.10	6	0.09
2	4	0.03	2	0.04	8	0.16	4	0.12	8	0.10	5	0.08
3	5	0.03	2	0.03	7	0.13	3	0.09	11	0.52	5	0.07
4	5	0.03	3	0.04	4	0.08	2	0.07	11	0.46	7	0.11
5	3	0.02	5	0.10	4	0.22	7	0.22	10	0.27	7	0.10
6	4	0.03	55	8.2	3	0.33	7	0.19	96	81	20	0.74
7	4	0.03	14	1.2	3	0.16	6	0.10	100	28	13	0.27
8	6	0.06	6	0.15	2	0.06	5	0.09	39	3.1	8	0.13
9	7	0.07	4	0.08	2	0.04	5	0.09	27	1.2	6	0.09
10	4	0.05	3	0.06	25	4.8	4	0.07	47	2.6	5	0.07
11	4	0.04	4	0.07	154	166	4	0.07	24	1.1	4	0.05
12	5	0.08	10	1.2	42	2.8	6	0.12	16	0.53	5	0.07
13	4	0.07	34	4.9	13	0.42	8	0.17	14	0.41	6	0.08
14	10	0.50	7	0.20	38	6.0	10	0.17	9	0.24	4	0.06
15	43	3.8	4	0.08	18	2.0	12	0.20	14	0.34	5	0.06
16	10	0.08	2	0.04	12	0.66	12	0.17	12	0.24	11	0.28
17	6	0.03	2	0.04	70	18	12	0.17	14	0.26	10	0.25
18	6	0.03	4	0.07	32	3.6	24	0.63	8	0.15	9	0.18
19	4	0.02	46	23	6	0.23	14	0.35	6	0.11	35	1.3
20	5	0.02	51	13	3	0.09	11	0.18	7	0.13	9	0.18
21	3	0.02	14	0.55	1	0.03	9	0.13	7	0.13	6	0.11
22	3	0.02	10	0.26	0.0	0.01	9	0.12	8	0.12	7	0.11
23	3	0.02	6	0.15	3	0.08	8	0.11	7	0.10	5	0.08
24	4	0.02	7	0.19	19	1.3	8	0.10	7	0.10	5	0.06
25	3	0.02	18	0.99	10	0.40	7	0.08	8	0.12	5	0.07
26	2	0.01	11	0.28	2	0.07	7	0.11	8	0.12	6	0.08
27	62	8.4	6	0.13	2	0.05	7	0.11	8	0.11	7	0.11
28	26	1.7	27	6.1	3	0.06	7	0.11	5	0.07	8	0.12
29	34	5.0	35	5.1	4	0.09	7	0.11	5	0.07	6	0.08
30	11	0.42	9	0.28	3	0.07	8	0.12	---	---	5	0.07
31	6	0.12	---	---	1	0.03	8	0.11	---	---	4	0.06
TOTAL	---	20.79	---	66.62	---	208.13	---	4.53	---	121.80	---	5.21
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	48	4.0	8	0.15	125	5.5	12	0.04	9	0.09	7	0.02
2	68	5.5	9	0.21	17	0.07	10	0.03	9	0.19	6	0.01
3	51	3.9	82	7.8	10	0.02	9	0.03	8	0.18	5	0.01
4	14	0.50	14	0.56	8	0.02	9	0.06	8	0.14	7	0.01
5	9	0.22	9	0.20	115	14	8	0.08	8	0.11	9	0.01
6	6	0.14	9	0.16	71	1.7	8	0.04	8	0.08	9	0.01
7	5	0.11	33	3.4	20	0.25	7	0.03	8	0.07	6	0.01
8	4	0.09	95	8.5	9	0.08	7	0.03	6	0.05	69	3.5
9	6	0.11	11	0.23	8	0.05	6	0.02	4	0.03	75	8.4
10	6	0.10	9	0.15	9	0.05	6	0.02	5	0.02	6	0.06
11	6	0.10	9	0.12	7	0.04	5	0.02	4	0.01	8	0.05
12	105	54	9	0.10	16	0.23	5	0.01	5	0.03	5	0.02
13	163	66	9	0.09	12	0.08	4	0.01	10	0.15	2	0.00
14	50	8.3	8	0.07	9	0.05	5	0.02	6	0.05	4	0.00
15	18	1.2	6	0.05	9	0.05	21	0.08	5	0.07	7	0.04
16	14	0.58	7	0.05	9	0.04	25	0.05	4	0.03	5	0.03
17	10	0.34	6	0.05	12	0.20	26	0.05	4	0.02	31	6.7
18	10	0.31	7	0.05	365	80	27	0.06	52	1.8	135	39
19	12	0.34	9	0.07	63	2.4	28	0.06	36	0.82	28	0.62
20	10	0.26	9	0.07	14	0.16	28	0.05	12	0.09	22	0.36
21	9	0.22	8	0.06	16	0.15	29	0.05	4	0.03	19	0.23
22	9	0.20	7	0.04	51	1.9	30	0.04	4	0.04	18	0.13
23	10	0.23	6	0.03	27	0.63	29	0.09	4	0.02	15	0.08
24	15	0.43	7	0.03	13	0.15	16	0.03	5	0.02	6	0.03
25	10	0.23	9	0.03	10	0.08	13	0.03	6	0.02	4	0.01
26	27	1.2	14	0.12	10	0.08	7	0.02	6	0.02	2	0.00
27	30	1.8	10	0.04	12	0.07	179	57	6	0.02	4	0.01
28	10	0.30	8	0.03	13	0.07	23	0.32	6	0.01	80	79
29	10	0.21	6	0.02	13	0.06	11	0.08	6	0.01	94	27
30	9	0.17	7	0.01	13	0.05	9	0.05	8	0.02	17	0.39
31	---	---	13	0.09	---	---	9	0.06	7	0.02	---	---
TOTAL	---	151.09	---	22.58	---	108.23	---	58.56	---	4.26	---	165.74
YEAR	937.54											

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 2003 TO SEPTEMBER 2004

Date	Time	Sample type	Gage height, feet (00065)	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Ammonia + org-N, water, fltrd, mg/L as N (00623)
OCT												
21...	1000	Environmental	1.50	1.8	753	9.3	88	6.9	68	20.0	12.6	.11
NOV												
18...	0915	Environmental	1.70	6.1	760	10.7	94	6.7	57	10.0	9.5	.12
JAN												
06...	1030	Environmental	1.85	9.3	759	11.8	95	6.7	69	1.0	6.2	.20
FEB												
19...	0900	Environmental	1.77	6.9	750	12.9	89	6.9	62	2.0	1.7	E.06n
MAR												
24...	0915	Environmental	1.64	4.8	762	13.6	107	7.0	65	4.5	5.4	E.09n
APR												
15...	0915	Environmental	2.22	24	752	12.2	101	6.8	51	10.0	7.8	.16
MAY												
19...	0830	Environmental	1.64	2.8	753	8.1	89	7.0	74	25.5	20.2	.25
JUN												
09...	0900	Environmental	1.53	2.5	756	10.3	113	7.1	71	21.5	20.3	.21
JUL												
14...	1000	Environmental	1.40	1.0	750	7.0	84	7.0	78	24.5	23.9	.18
AUG												
10...	1000	Environmental	1.44	1.4	752	7.9	88	7.1	70	23.0	20.0	.16
SEP												
13...	0940	Environmental	1.43	1.2	755	7.5	82	6.6	66	24.5	19.5	.22

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	E coli, m-TEC MF, water, col/ 100 mL (31633)	Fecal coliform, M-FC 0.7u MF col/ 100 mL (31625)	Suspended sediment concentration mg/L (80154)
OCT										
21...	.16	<.04	<.06	<.008	<.02	.005	.019	E17k	27	2
NOV										
18...	.16	<.04	<.06	<.008	<.02	.010	.018	29	E15k	3
JAN										
06...	.21	<.04	.08	<.008	<.02	.011	.025	21	29	6
FEB										
19...	E.06n	<.04	.09	E.006n	<.02	.005	.016	E6k	E7k	4
MAR										
24...	.26	<.04	<.06	<.008	<.02	.007	.016	E9k	E8k	4
APR										
15...	.25	<.04	E.05n	<.008	<.02	.009	.026	22	27	15
MAY										
19...	.36	E.03n	.09	<.008	<.02	.011	.032	33	35	10
JUN										
09...	.33	<.04	.08	E.005n	<.02	.018	.037	38	48	8
JUL										
14...	.28	<.04	<.06	<.008	<.02	.006	.029	310	350	4
AUG										
10...	.26	<.04	E.05n	<.008	<.02	.008	.028	110	110	5
SEP										
13...	.35	<.04	.07	<.008	<.02	.006	.022	91	60	3

Remark codes used in this table:
< -- Less than
E -- Estimated value

Value qualifier codes used in this table:
k -- Counts outside acceptable range
n -- Below the LRL and above the LT-MDL

01659000 NORTH BRANCH CHOPAWAMSIC CREEK NEAR INDEPENDENT HILL, VA

LOCATION.--Lat 38°33'58", long 77°25'48", NAD83, Prince William County, Hydrologic unit 02070011, on left bank, 10 ft downstream from Highway MCB-1, 1.0 mi upstream from Chopawamsic Creek, and 4.8 mi south of Independent Hill.

DRAINAGE AREA.--5.79 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1951 to June 1957, March 2000 to December 2003 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 230 ft NGVD of 1929, from topographic map. May 1951 to June 1957, at site 1,000 ft uptream at different datum.

REMARKS.--No estimated daily discharges. Records good except those for discharges greater than 100 ft^3/s, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	5.6	9.1	---	---	---	---	---	---	---	---	---
2	2.2	5.1	7.5	---	---	---	---	---	---	---	---	---
3	2.0	4.8	6.6	---	---	---	---	---	---	---	---	---
4	2.0	4.5	6.4	---	---	---	---	---	---	---	---	---
5	2.0	5.3	17	---	---	---	---	---	---	---	---	---
6	2.0	29	20	---	---	---	---	---	---	---	---	---
7	1.9	21	12	---	---	---	---	---	---	---	---	---
8	1.9	9.2	9.3	---	---	---	---	---	---	---	---	---
9	2.0	6.6	8.8	---	---	---	---	---	---	---	---	---
10	2.5	5.8	13	---	---	---	---	---	---	---	---	---
11	3.0	5.5	192	---	---	---	---	---	---	---	---	---
12	3.4	9.3	23	---	---	---	---	---	---	---	---	---
13	3.8	32	13	---	---	---	---	---	---	---	---	---
14	5.2	11	23	---	---	---	---	---	---	---	---	---
15	12	8.0	24	---	---	---	---	---	---	---	---	---
16	3.4	7.1	16	---	---	---	---	---	---	---	---	---
17	2.5	6.7	63	---	---	---	---	---	---	---	---	---
18	2.3	6.2	26	---	---	---	---	---	---	---	---	---
19	2.1	40	15	---	---	---	---	---	---	---	---	---
20	2.0	63	12	---	---	---	---	---	---	---	---	---
21	2.1	15	9.8	---	---	---	---	---	---	---	---	---
22	2.0	10	9.3	---	---	---	---	---	---	---	---	---
23	1.9	8.4	8.7	---	---	---	---	---	---	---	---	---
24	1.8	8.2	15	---	---	---	---	---	---	---	---	---
25	1.7	14	13	---	---	---	---	---	---	---	---	---
26	2.0	9.0	10	---	---	---	---	---	---	---	---	---
27	17	7.7	9.1	---	---	---	---	---	---	---	---	---
28	12	14	8.4	---	---	---	---	---	---	---	---	---
29	25	31	8.2	---	---	---	---	---	---	---	---	---
30	10	12	8.0	---	---	---	---	---	---	---	---	---
31	6.7	---	7.5	---	---	---	---	---	---	---	---	---
TOTAL	142.6	415.0	623.7	---	---	---	---	---	---	---	---	---
MEAN	4.60	13.8	20.1	---	---	---	---	---	---	---	---	---
MAX	25	63	192	---	---	---	---	---	---	---	---	---
MIN	1.7	4.5	6.4	---	---	---	---	---	---	---	---	---
CFSM	0.79	2.39	3.47	---	---	---	---	---	---	---	---	---
IN.	0.92	2.67	4.01	---	---	---	---	---	---	---	---	---

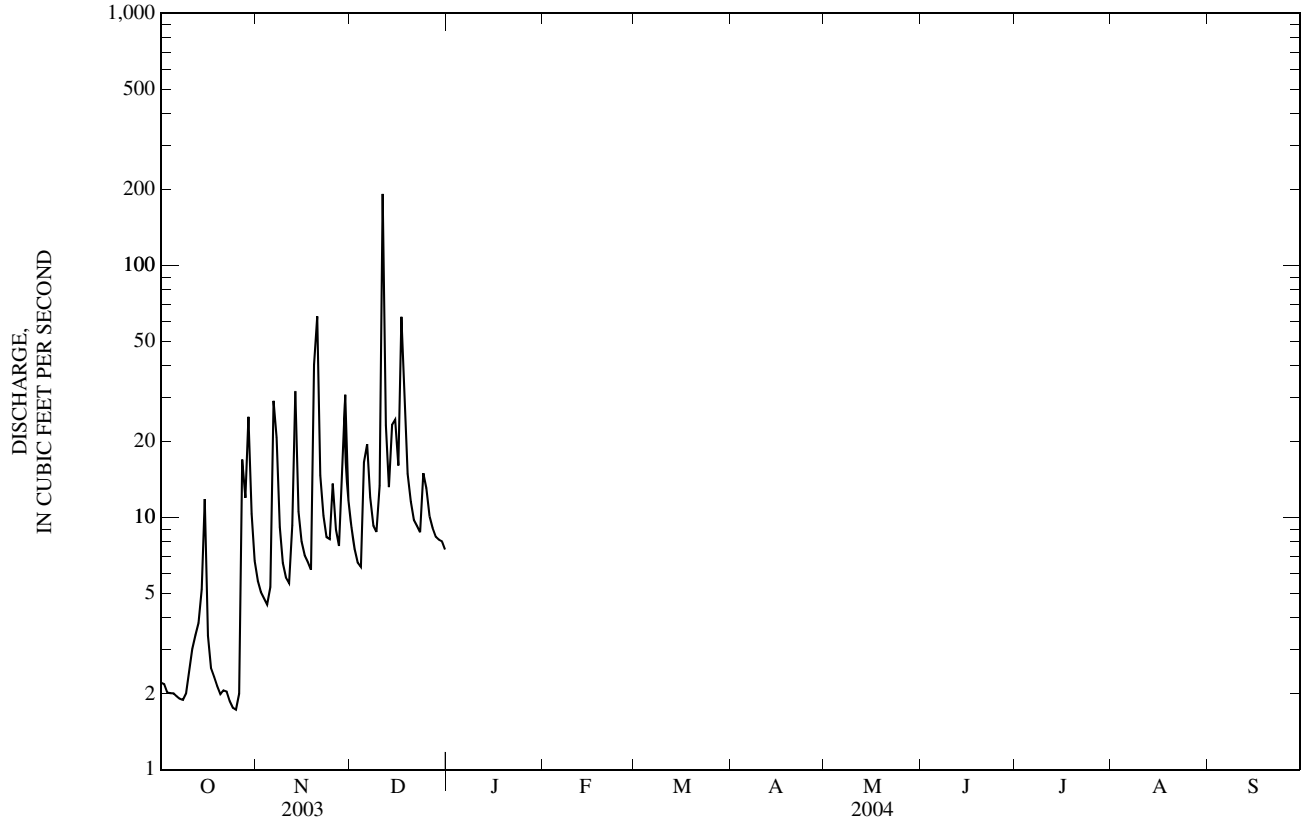
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2004, BY WATER YEAR (WY)

MEAN	1.54	4.95	6.13	5.52	6.95	10.2	8.66	5.14	4.39	2.37	2.59	1.79
MAX	4.60	13.8	20.1	11.4	16.7	17.0	19.0	15.5	12.5	5.69	16.2	7.11
(WY)	(2004)	(2004)	(2004)	(1953)	(2003)	(1953)	(1952)	(2003)	(1951)	(2001)	(1955)	(2003)
MIN	0.30	0.51	1.22	1.05	1.51	4.82	3.69	1.17	0.58	0.19	0.03	0.04
(WY)	(1955)	(1955)	(2002)	(1955)	(2002)	(2002)	(1955)	(2002)	(1954)	(1955)	(2002)	(1954)

01659000 NORTH BRANCH CHOPAWAMSIC CREEK NEAR INDEPENDENT HILL, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1951 - 2004	
ANNUAL TOTAL	3,893.0					
ANNUAL MEAN	10.7				4.96	
HIGHEST ANNUAL MEAN					12.8	2004
LOWEST ANNUAL MEAN					1.47	2002
HIGHEST DAILY MEAN	192	Dec 11	192	Dec 11	192	Dec 11, 2003
LOWEST DAILY MEAN	1.0	Aug 25	1.7	Oct 25	0.00	(a)
ANNUAL SEVEN-DAY MINIMUM	1.2	Aug 21	1.9	Oct 20	0.00	(a)
MAXIMUM PEAK FLOW			379	Dec 11	415	Feb 22, 2003
MAXIMUM PEAK STAGE			7.68	Dec 11	b8.04	Nov 21, 1952
INSTANTANEOUS LOW FLOW			1.7	cOct 9	0.00	(d)
ANNUAL RUNOFF (CFSM)	1.84				0.857	
ANNUAL RUNOFF (INCHES)	25.01				11.65	
10 PERCENT EXCEEDS	22		25		10	
50 PERCENT EXCEEDS	5.8		8.3		2.1	
90 PERCENT EXCEEDS	1.8		2.0		0.29	

a Many days in October 1954 and August to October 2002.
b At datum then in use.
c Also Oct. 24, 25, 2003.
d No flow part or all of many days in October 1954, September 2000, and June to October 2002.



01659000 NORTH BRANCH CHOPAWAMSIC CREEK NEAR INDEPENDENT HILL, VA—Continued

SUSPENDED-SEDIMENT
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Day	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	6	0.03	13	0.19	10	0.25	---	---	---	---	---	---
2	4	0.03	15	0.21	9	0.18	---	---	---	---	---	---
3	4	0.02	12	0.16	7	0.13	---	---	---	---	---	---
4	6	0.03	12	0.14	6	0.10	---	---	---	---	---	---
5	6	0.03	8	0.11	105	5.1	---	---	---	---	---	---
6	5	0.03	15	1.6	9	0.46	---	---	---	---	---	---
7	4	0.02	22	1.2	7	0.24	---	---	---	---	---	---
8	5	0.03	13	0.33	6	0.16	---	---	---	---	---	---
9	6	0.03	12	0.22	5	0.13	---	---	---	---	---	---
10	5	0.03	12	0.18	10	0.83	---	---	---	---	---	---
11	5	0.04	11	0.16	147	101	---	---	---	---	---	---
12	6	0.06	43	1.7	30	2.0	---	---	---	---	---	---
13	7	0.07	59	7.2	15	0.56	---	---	---	---	---	---
14	8	0.14	18	0.50	58	6.1	---	---	---	---	---	---
15	20	0.90	7	0.16	131	9.4	---	---	---	---	---	---
16	8	0.08	5	0.10	54	2.4	---	---	---	---	---	---
17	6	0.04	5	0.10	88	15	---	---	---	---	---	---
18	7	0.04	3	0.05	58	4.9	---	---	---	---	---	---
19	5	0.03	31	9.1	40	1.6	---	---	---	---	---	---
20	5	0.03	37	10	28	0.88	---	---	---	---	---	---
21	4	0.02	18	0.71	14	0.38	---	---	---	---	---	---
22	6	0.03	14	0.39	9	0.23	---	---	---	---	---	---
23	8	0.04	9	0.21	6	0.14	---	---	---	---	---	---
24	8	0.04	6	0.15	19	0.95	---	---	---	---	---	---
25	7	0.03	22	0.83	34	1.2	---	---	---	---	---	---
26	6	0.03	16	0.39	24	0.66	---	---	---	---	---	---
27	16	0.83	13	0.26	21	0.51	---	---	---	---	---	---
28	16	0.45	17	1.1	18	0.41	---	---	---	---	---	---
29	18	1.4	24	2.7	14	0.32	---	---	---	---	---	---
30	18	0.51	14	0.43	11	0.24	---	---	---	---	---	---
31	11	0.20	---	---	7	0.15	---	---	---	---	---	---
TOTAL	---	5.29	---	40.58	---	156.61	---	---	---	---	---	---
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---

01659000 NORTH BRANCH CHOPAWAMSIC CREEK NEAR INDEPENDENT HILL, VA—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--February 2002 to January 2004 (discontinued).

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Sample type	Gage height, feet (00065)	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Ammonia + org-N, water, fltrd, mg/L as N (00623)
OCT												
21...	0815	Environmental	3.10	2.0	753	9.3	90	7.0	51	15.0	12.2	E.10n
NOV												
18...	0815	Environmental	3.31	6.1	760	10.8	93	6.7	43	8.0	9.0	.12
JAN												
06...	0900	Environmental	3.50	10	759	11.7	94	6.6	41	.5	6.1	.17

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Suspended sediment concentration mg/L (80154)
OCT								
21...	.12	<.04	<.06	<.008	<.02	.007	.019	3
NOV								
18...	.18	<.04	<.06	<.008	<.02	.014	.016	2
JAN								
06...	.23	<.04	<.06	<.008	<.02	.009	.019	--

Remark codes used in this table:
< -- Less than
E -- Estimated value

Value qualifier codes used in this table:
n -- Below the LRL and above the LT-MDL

01659500 MIDDLE BRANCH CHOPAWAMSIC CREEK NEAR GARRISONVILLE, VA

LOCATION.--Lat. 38°33'26", long 77°25'31", NAD83, Stafford County, Hydrologic Unit 02070011, on left bank 300 feet upstream of culvert on route MCB-1, 0.4 mi upstream from confluence with North Branch Chopawamsic Creek, and 5.8 mi north of Garrisonville.

DRAINAGE AREA.--4.51 mi^2.

PERIOD OF RECORD.--October 1951 to September 1956, September 1989 to September 1992 (annual maximum only), March 2000 to September 2000, October 2001 to December 2003 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 192.97 ft NGVD of 1929. October 1951 to September 1956 and September 1989 to September 1992, at same site and different datum.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Oct. 1-14, Nov. 9-14, and Dec. 9-31, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e1.2	3.5	6.0	---	---	---	---	---	---	---	---	---
2	e1.1	3.3	5.1	---	---	---	---	---	---	---	---	---
3	e1.0	3.0	4.8	---	---	---	---	---	---	---	---	---
4	e1.0	3.0	4.7	---	---	---	---	---	---	---	---	---
5	e0.96	3.1	8.3	---	---	---	---	---	---	---	---	---
6	e0.98	15	10	---	---	---	---	---	---	---	---	---
7	e0.95	16	7.5	---	---	---	---	---	---	---	---	---
8	e1.0	8.3	6.3	---	---	---	---	---	---	---	---	---
9	e1.0	e5.5	e5.8	---	---	---	---	---	---	---	---	---
10	e1.1	e4.8	e7.6	---	---	---	---	---	---	---	---	---
11	e1.3	e4.6	e51	---	---	---	---	---	---	---	---	---
12	e1.5	e8.0	e12	---	---	---	---	---	---	---	---	---
13	e1.8	e19	e7.1	---	---	---	---	---	---	---	---	---
14	e2.6	e6.5	e11	---	---	---	---	---	---	---	---	---
15	7.2	5.5	e12	---	---	---	---	---	---	---	---	---
16	2.6	4.0	e8.7	---	---	---	---	---	---	---	---	---
17	2.1	4.0	e17	---	---	---	---	---	---	---	---	---
18	1.9	3.7	e12	---	---	---	---	---	---	---	---	---
19	1.8	13	e8.9	---	---	---	---	---	---	---	---	---
20	1.8	28	e7.5	---	---	---	---	---	---	---	---	---
21	1.8	9.1	e6.5	---	---	---	---	---	---	---	---	---
22	1.8	6.8	e6.1	---	---	---	---	---	---	---	---	---
23	1.7	5.7	e5.9	---	---	---	---	---	---	---	---	---
24	1.6	5.3	e8.5	---	---	---	---	---	---	---	---	---
25	1.6	7.1	e7.6	---	---	---	---	---	---	---	---	---
26	1.7	5.8	e6.9	---	---	---	---	---	---	---	---	---
27	7.3	5.3	e6.4	---	---	---	---	---	---	---	---	---
28	6.6	6.2	e5.7	---	---	---	---	---	---	---	---	---
29	12	13	e5.5	---	---	---	---	---	---	---	---	---
30	6.3	7.1	e6.0	---	---	---	---	---	---	---	---	---
31	4.2	---	e6.4	---	---	---	---	---	---	---	---	---
TOTAL	81.49	233.2	284.8	---	---	---	---	---	---	---	---	---
MEAN	2.63	7.77	9.19	---	---	---	---	---	---	---	---	---
MAX	12	28	51	---	---	---	---	---	---	---	---	---
MIN	0.95	3.0	4.7	---	---	---	---	---	---	---	---	---
CFSM	0.58	1.72	2.04	---	---	---	---	---	---	---	---	---
IN.	0.67	1.92	2.35	---	---	---	---	---	---	---	---	---

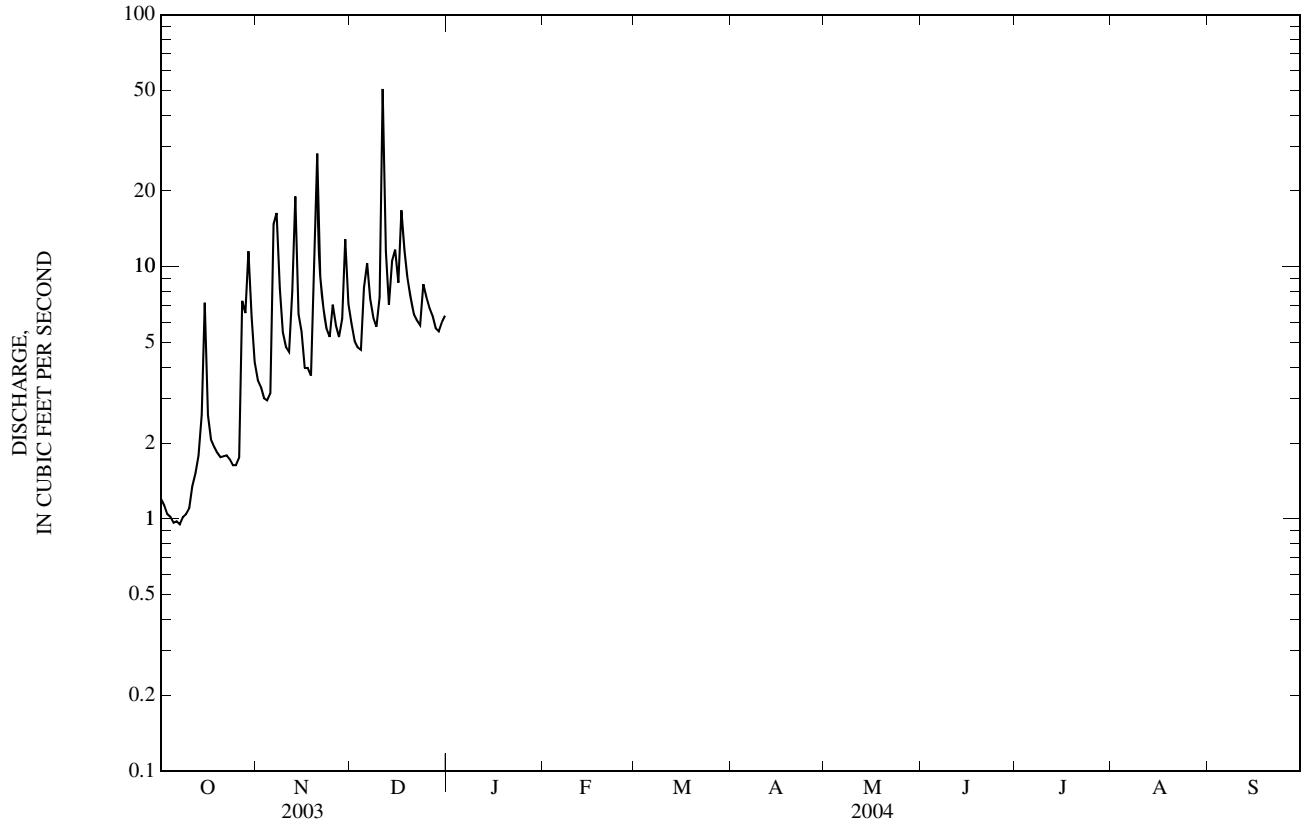
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 1956, 2000, 2002 - 2004, BY WATER YEAR (WY)

MEAN	1.00	3.01	3.60	3.57	4.98	6.58	6.33	3.97	2.70	1.60	2.47	1.31
MAX	2.63	7.77	9.19	6.91	12.3	11.8	11.7	10.5	7.95	4.65	13.5	4.51
(WY)	(2004)	(2004)	(2004)	(1952)	(2003)	(2003)	(1952)	(2003)	(2003)	(2003)	(1955)	(2003)
MIN	0.09	0.27	0.75	0.92	0.81	1.42	1.83	1.00	0.71	0.25	0.03	0.01
(WY)	(1955)	(1955)	(2002)	(1955)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

01659500 MIDDLE BRANCH CHOPAWAMSIC CREEK NEAR GARRISONVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1952 - 1956, 2000, 2002 - 2004	
ANNUAL TOTAL	2,547.79					
ANNUAL MEAN	6.98				3.43	
HIGHEST ANNUAL MEAN					6.52	2004
LOWEST ANNUAL MEAN					0.72	2002
HIGHEST DAILY MEAN	177	Feb 22	e51	Dec 11	177	Feb 22, 2003
LOWEST DAILY MEAN	e0.95	Oct 7	e0.95	Oct 7	0.00	aAug 11, 2002
ANNUAL SEVEN-DAY MINIMUM	0.98	Oct 3	0.98	Oct 3	0.00	Aug 11, 2002
MAXIMUM PEAK FLOW			b62	Nov 20	512	Feb 22, 2003
MAXIMUM PEAK STAGE			b2.96	Nov 20	4.51	Feb 22, 2003
INSTANTANEOUS LOW FLOW			(c)		0.00	(d)
ANNUAL RUNOFF (CFSM)	1.55				0.761	
ANNUAL RUNOFF (INCHES)	21.02				10.34	
10 PERCENT EXCEEDS	13		12		7.0	
50 PERCENT EXCEEDS	4.2		5.8		1.7	
90 PERCENT EXCEEDS	1.6		1.1		0.25	

a Also many other days August to October 2002.
b Probably was higher during period of doubtful gage-height record, Dec. 11, 2003.
c Not determined.
d No flow part or all of many days August to October 2002.
e Estimated.



01660000 SOUTH BRANCH CHOPAWAMSIC CREEK NEAR GARRISONVILLE, VA

LOCATION.--Lat 38°32'22", long 77°25'30", NAD83, Stafford County, Hydrologic Unit 02070011, on left bank, 10 ft downstream of Highway MCB-1, 1.8 mi upstream from Chopawamsic Creek, and 4.3 mi north of Garrisonville.

DRAINAGE AREA.--2.56 mi^2.

PERIOD OF RECORD.--May 1951 to June 1957, September 1989 to September 1992 (annual maximum only), March 2000 to December 2003 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 207.01 ft NGVD of 1929. May 1951 to September 1992, at site 200 ft downstream at different datum.

REMARKS.--Records good except for period of partial or no gage-height record, Nov. 5 to Dec. 31, which is poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.52	1.6	e4.2	---	---	---	---	---	---	---	---	---
2	0.47	1.9	e3.8	---	---	---	---	---	---	---	---	---
3	0.44	2.1	e3.7	---	---	---	---	---	---	---	---	---
4	0.40	2.2	e3.7	---	---	---	---	---	---	---	---	---
5	0.41	e2.3	e7.0	---	---	---	---	---	---	---	---	---
6	0.41	e13	e7.4	---	---	---	---	---	---	---	---	---
7	0.45	e11	e4.5	---	---	---	---	---	---	---	---	---
8	0.50	e5.2	e4.4	---	---	---	---	---	---	---	---	---
9	0.52	e4.1	e4.3	---	---	---	---	---	---	---	---	---
10	0.52	e3.0	e6.0	---	---	---	---	---	---	---	---	---
11	0.55	e3.0	e39	---	---	---	---	---	---	---	---	---
12	0.55	e6.4	e11	---	---	---	---	---	---	---	---	---
13	0.53	e14	e4.9	---	---	---	---	---	---	---	---	---
14	3.2	e4.4	e6.6	---	---	---	---	---	---	---	---	---
15	6.2	e3.7	e8.1	---	---	---	---	---	---	---	---	---
16	1.0	e3.1	e5.2	---	---	---	---	---	---	---	---	---
17	0.92	e3.0	e14	---	---	---	---	---	---	---	---	---
18	0.94	e2.9	e7.6	---	---	---	---	---	---	---	---	---
19	0.90	e10	e6.0	---	---	---	---	---	---	---	---	---
20	0.93	e20	e5.0	---	---	---	---	---	---	---	---	---
21	1.1	e6.1	e4.6	---	---	---	---	---	---	---	---	---
22	1.1	e4.5	e4.5	---	---	---	---	---	---	---	---	---
23	1.2	e4.1	e4.4	---	---	---	---	---	---	---	---	---
24	0.89	e4.1	e6.7	---	---	---	---	---	---	---	---	---
25	0.78	e5.8	e5.3	---	---	---	---	---	---	---	---	---
26	0.91	e3.9	e4.7	---	---	---	---	---	---	---	---	---
27	6.1	e4.0	e4.6	---	---	---	---	---	---	---	---	---
28	2.3	e5.5	e4.3	---	---	---	---	---	---	---	---	---
29	14	e11	e4.2	---	---	---	---	---	---	---	---	---
30	2.7	e4.9	e4.5	---	---	---	---	---	---	---	---	---
31	1.7	---	e4.6	---	---	---	---	---	---	---	---	---
TOTAL	53.14	170.8	208.8	---	---	---	---	---	---	---	---	---
MEAN	1.71	5.69	6.74	---	---	---	---	---	---	---	---	---
MAX	14	20	39	---	---	---	---	---	---	---	---	---
MIN	0.40	1.6	3.7	---	---	---	---	---	---	---	---	---
CFSM	0.67	2.22	2.63	---	---	---	---	---	---	---	---	---
IN.	0.77	2.48	3.03	---	---	---	---	---	---	---	---	---

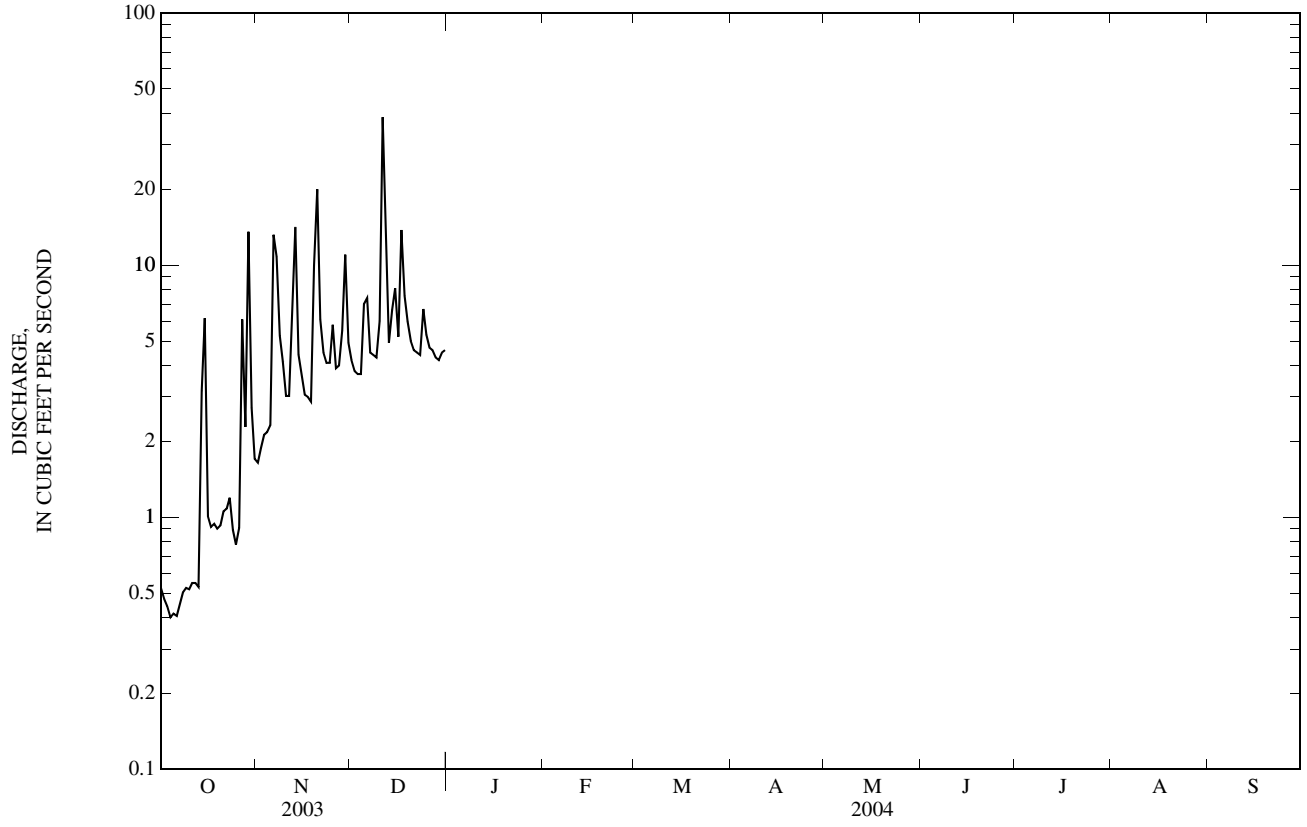
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 1957, 2000 - 2004, BY WATER YEAR (WY)

MEAN	1.48	2.38	2.34	2.36	2.94	4.68	3.65	2.34	2.02	1.68	1.63	1.88
MAX	4.01	5.69	6.74	4.34	6.61	9.37	7.48	7.84	7.00	4.98	6.58	5.85
(WY)	(2002)	(2004)	(2004)	(1952)	(2003)	(1953)	(1952)	(2003)	(2003)	(2003)	(1955)	(2002)
MIN	0.23	0.40	0.52	0.88	0.98	0.87	1.03	0.75	0.43	0.09	0.34	0.03
(WY)	(1955)	(1955)	(2002)	(1955)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(1953)	(1954)

01660000 SOUTH BRANCH CHOPAWAMSIC CREEK NEAR GARRISONVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1951 - 1957 2000 - 2004	
ANNUAL TOTAL	1,827.87					
ANNUAL MEAN	5.01				2.43	
HIGHEST ANNUAL MEAN					4.70	2004
LOWEST ANNUAL MEAN					1.29	1954
HIGHEST DAILY MEAN	98	Feb 22	e39	Dec 11	98	Feb 22, 2003
LOWEST DAILY MEAN	0.40	Oct 4	0.40	Oct 4	0.02	aSep 1, 1954
ANNUAL SEVEN-DAY MINIMUM	0.44	Sep 30	0.44	Oct 2	0.02	Sep 1, 1954
MAXIMUM PEAK FLOW			791	(b)	791	(b)
MAXIMUM PEAK STAGE			c7.68	(b)	c7.68	(b)
INSTANTANEOUS LOW FLOW			0.30	Oct 3	0.00	Jul 3, 1956
ANNUAL RUNOFF (CFSM)	1.96				0.949	
ANNUAL RUNOFF (INCHES)	26.56				12.89	
10 PERCENT EXCEEDS	10		11		5.0	
50 PERCENT EXCEEDS	2.7		4.1		1.2	
90 PERCENT EXCEEDS	0.88		0.52		0.30	

a Many days in September and October 1954, and July 3, 1956.
b Probably occurred Dec. 11, 2003.
c From floodmarks.
e Estimated.



01660400 AQUIA CREEK NEAR GARRISONVILLE, VA

LOCATION.--Lat 38°29'25", long 77°26'01", NAD83, Stafford County. Hydrologic Unit 02070011, on right bank at bridge on State Highway 641, 1.1 mi northwest of Garrisonville, and 3.0 mi upstream from Beaverdam Run.

DRAINAGE AREA.--34.9 mi^2.

PERIOD OF RECORD.--September 1971 to September 1997, November 1999 to current year.

GAGE.--Water-stage recorder. Datum of gage is 120 ft NGVD of 1929, from topographic map.

REMARKS.--Records good except for period with ice effect, Jan. 19 to Feb. 2, which is fair. Maximum discharge, 11,600 ft^3/s, from rating curve extended above 1,600 ft^3/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 by the Virginia Department of Environmental Quality - Water Division.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 13	0100	541	3.54	Jul 15	0100	603	3.72
Nov 20	0015	684	3.94	Aug 3	0500	603	3.72
Dec 11	1000	*1,940	*6.51	Aug 12	2115	505	3.43
Feb 6	1930	924	4.54	Sep 17	2345	511	3.45
Apr 12	2315	734	4.07	Sep 28	2215	1,460	5.66

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	31	49	33	e28	26	54	36	44	5.8	61	12
2	17	27	41	33	e26	26	111	38	18	5.4	128	11
3	15	26	36	35	78	28	109	72	14	5.5	247	9.5
4	15	24	33	34	75	27	57	57	12	7.8	63	8.7
5	15	25	129	35	50	26	43	52	107	21	40	9.1
6	15	172	132	43	377	31	40	45	48	12	38	10
7	14	127	72	34	408	40	36	43	27	17	24	13
8	14	59	53	30	145	32	33	73	21	13	18	43
9	14	42	48	31	75	28	32	53	17	8.7	16	82
10	14	35	65	31	76	27	31	41	15	6.6	14	22
11	14	33	1,190	41	68	27	31	41	15	5.8	12	15
12	14	61	159	30	52	29	166	39	18	6.5	106	12
13	14	253	84	31	47	30	416	37	20	48	111	10
14	16	66	146	32	44	29	279	36	19	119	49	9.8
15	95	45	165	33	44	23	113	30	17	205	57	15
16	30	38	104	33	43	33	63	31	17	35	31	21
17	20	36	300	35	43	44	50	30	17	19	22	66
18	17	34	164	39	42	36	48	57	17	19	19	174
19	15	169	89	e40	42	37	48	31	19	30	18	40
20	14	324	64	e30	41	35	49	27	19	78	71	22
21	14	87	52	e25	40	31	49	24	16	21	26	17
22	14	57	48	e25	38	31	48	24	14	14	21	16
23	13	46	45	e24	33	29	43	24	15	29	18	14
24	12	40	66	e24	31	29	40	24	15	20	15	12
25	12	61	64	e22	31	30	38	22	23	16	13	12
26	14	44	46	e32	30	32	40	20	22	17	12	12
27	98	38	42	e31	29	34	53	18	13	174	11	12
28	79	70	39	e30	28	36	49	22	9.7	70	10	327
29	141	157	38	e29	27	22	44	17	8.8	33	10	376
30	68	63	38	e32	---	20	37	14	6.8	22	11	53
31	39	---	34	e30	---	22	---	17	---	17	14	---
TOTAL	903	2,290	3,635	987	2,091	930	2,250	1,095	644.3	1,101.1	1,306	1,456.1
MEAN	29.1	76.3	117	31.8	72.1	30.0	75.0	35.3	21.5	35.5	42.1	48.5
MAX	141	324	1,190	43	408	44	416	73	107	205	247	376
MIN	12	24	33	22	26	20	31	14	6.8	5.4	10	8.7
CFSM	0.83	2.19	3.36	0.91	2.07	0.86	2.15	1.01	0.62	1.02	1.21	1.39
IN.	0.96	2.44	3.87	1.05	2.23	0.99	2.40	1.17	0.69	1.17	1.39	1.55

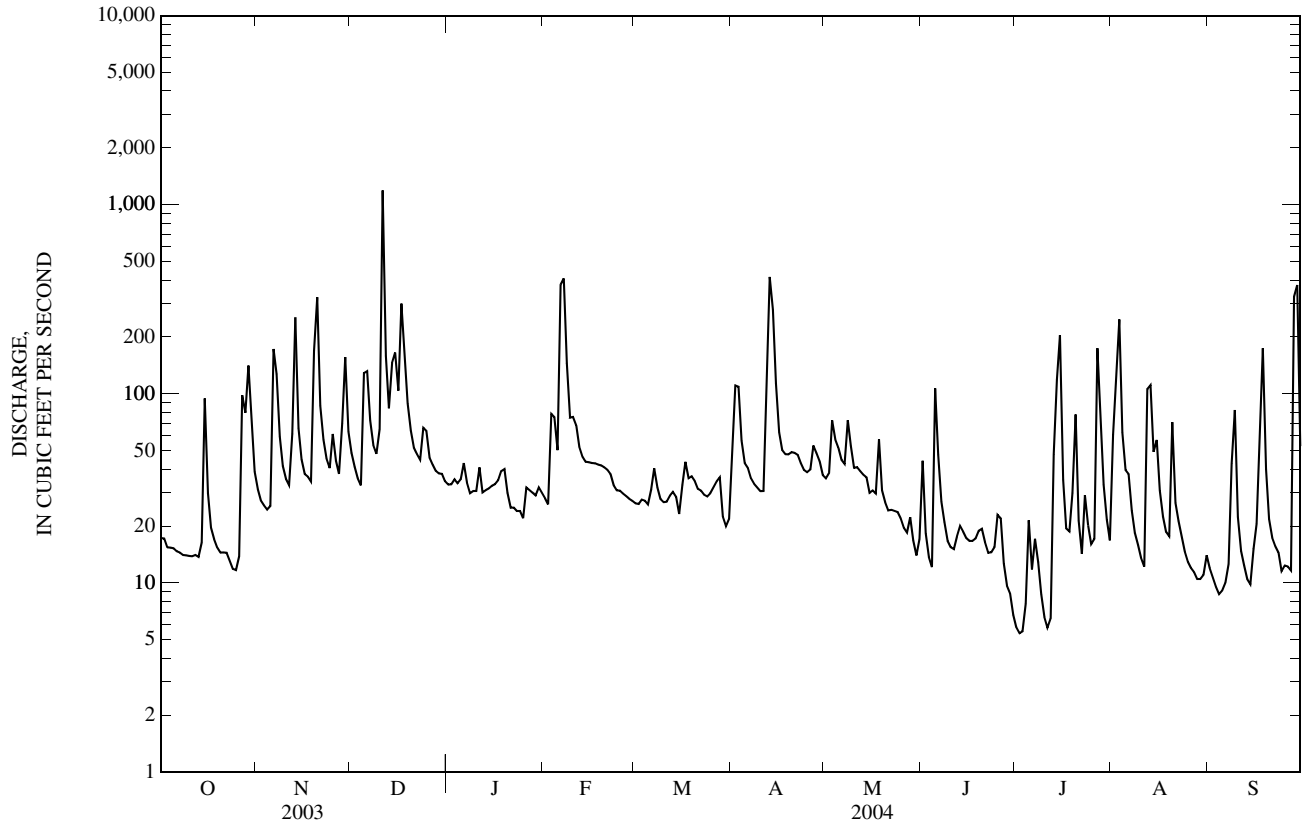
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1971 - 1997, 2000 - 2004, BY WATER YEAR (WY)

MEAN	22.2	32.1	43.6	48.6	52.6	60.1	53.9	38.9	26.3	17.0	13.0	20.5
MAX	138	91.3	117	118	124	175	141	144	234	103	65.8	174
(WY)	(1980)	(1973)	(2004)	(1978)	(1979)	(1994)	(1973)	(1989)	(1972)	(1975)	(1984)	(1975)
MIN	0.42	1.95	4.70	3.93	5.80	8.71	11.6	10.8	2.84	1.38	0.15	0.06
(WY)	(1981)	(1992)	(2002)	(1981)	(2002)	(1981)	(1981)	(1986)	(1986)	(2002)	(1983)	(1980)

01660400 AQUIA CREEK NEAR GARRISONVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1971 - 1997 2000 - 2004	
ANNUAL TOTAL	24,217.4		18,688.5			
ANNUAL MEAN	66.3		51.1		35.9	
HIGHEST ANNUAL MEAN					58.6	1972
LOWEST ANNUAL MEAN					7.77	2002
HIGHEST DAILY MEAN	1,190	Dec 11	1,190	Dec 11	3,900	Jun 22, 1972
LOWEST DAILY MEAN	4.7	Aug 26	5.4	Jul 2	0.00	(a)
ANNUAL SEVEN-DAY MINIMUM	6.3	Aug 21	7.1	Jun 28	0.01	Sep 11, 1980
MAXIMUM PEAK FLOW			1,940	Dec 11	11,600	Jun 22, 1972
MAXIMUM PEAK STAGE			6.51	Dec 11	16.32	Jun 22, 1972
INSTANTANEOUS LOW FLOW			4.6	Jul 2	0.00	(b)
ANNUAL RUNOFF (CFSM)	1.90		1.46		1.03	
ANNUAL RUNOFF (INCHES)	25.81		19.92		13.98	
10 PERCENT EXCEEDS	138		100		70	
50 PERCENT EXCEEDS	38		31		18	
90 PERCENT EXCEEDS	13		13		1.5	

a No flow many days in September 1980, August 1983, August, September 1988, and September 1991.
b No flow part or all of many days in September 1980, August 1983, August, September 1988, and September 1991.
e Estimated.



01660500 BEAVERDAM RUN NEAR GARRISONVILLE, VA

LOCATION.--Lat 38°30'25", long 77°25'44", NAD83, Stafford County, Hydrologic unit 02070011, on right bank, 3.4 miles upstream from mouth and 2.2 miles north of Garrisonville.

DRAINAGE AREA.--12.7 mi^2.

PERIOD OF RECORD.--May 1951 to June 1957, March 1997 to December 2003 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 150.43 ft NGVD of 1929. May 1951 to June 1957, at site 500 ft. upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Lunga Reservoir 2.5 mi upstream, capacity 420 acre-ft. Statistics of monthly mean data and summary statistics for water years 1951 - 1957 (unregulated flow) are available in 1998 data book.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.3	20	25	---	---	---	---	---	---	---	---	---
2	4.8	16	20	---	---	---	---	---	---	---	---	---
3	2.5	12	15	---	---	---	---	---	---	---	---	---
4	1.8	10	12	---	---	---	---	---	---	---	---	---
5	1.7	9.9	30	---	---	---	---	---	---	---	---	---
6	1.3	38	42	---	---	---	---	---	---	---	---	---
7	1.2	47	36	---	---	---	---	---	---	---	---	---
8	1.1	35	27	---	---	---	---	---	---	---	---	---
9	1.0	23	23	---	---	---	---	---	---	---	---	---
10	1.1	16	25	---	---	---	---	---	---	---	---	---
11	1.9	12	228	---	---	---	---	---	---	---	---	---
12	1.7	16	162	---	---	---	---	---	---	---	---	---
13	2.1	44	105	---	---	---	---	---	---	---	---	---
14	3.5	30	94	---	---	---	---	---	---	---	---	---
15	16	21	90	---	---	---	---	---	---	---	---	---
16	11	17	71	---	---	---	---	---	---	---	---	---
17	9.1	14	96	---	---	---	---	---	---	---	---	---
18	8.2	11	101	---	---	---	---	---	---	---	---	---
19	6.0	32	77	---	---	---	---	---	---	---	---	---
20	4.5	85	58	---	---	---	---	---	---	---	---	---
21	3.9	62	43	---	---	---	---	---	---	---	---	---
22	5.3	42	34	---	---	---	---	---	---	---	---	---
23	4.2	29	29	---	---	---	---	---	---	---	---	---
24	2.8	23	35	---	---	---	---	---	---	---	---	---
25	2.0	25	37	---	---	---	---	---	---	---	---	---
26	2.7	19	31	---	---	---	---	---	---	---	---	---
27	14	16	26	---	---	---	---	---	---	---	---	---
28	22	21	22	---	---	---	---	---	---	---	---	---
29	38	39	19	---	---	---	---	---	---	---	---	---
30	35	31	18	---	---	---	---	---	---	---	---	---
31	26	---	16	---	---	---	---	---	---	---	---	---
TOTAL	241.7	815.9	1,647	---	---	---	---	---	---	---	---	---
MEAN	7.80	27.2	53.1	---	---	---	---	---	---	---	---	---
MAX	38	85	228	---	---	---	---	---	---	---	---	---
MIN	1.0	9.9	12	---	---	---	---	---	---	---	---	---
CFSM	0.61	2.14	4.18	---	---	---	---	---	---	---	---	---
IN.	0.71	2.39	4.82	---	---	---	---	---	---	---	---	---

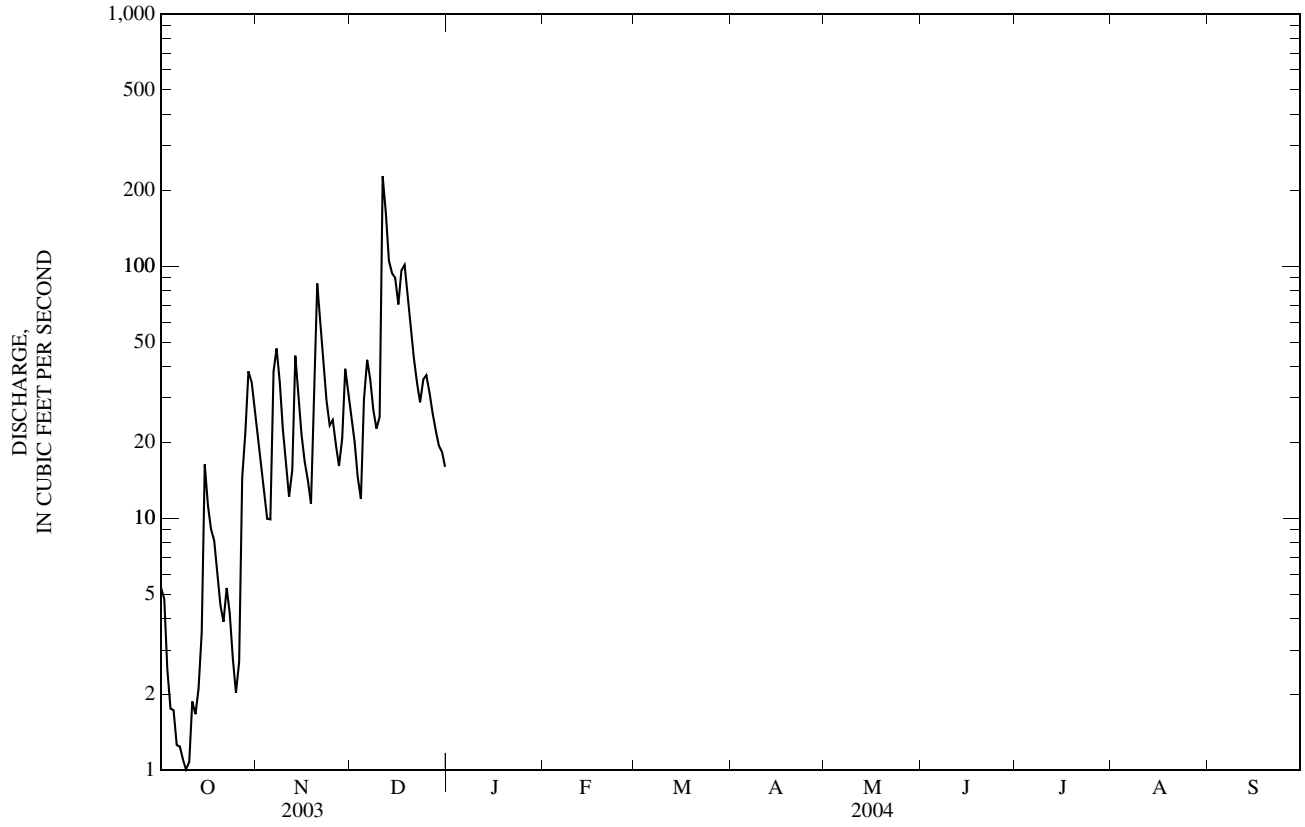
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 2004, BY WATER YEAR (WY)

MEAN	3.46	7.25	11.2	8.91	20.7	20.3	13.4	12.2	9.92	5.03	3.21	5.49
MAX	7.80	27.2	53.1	23.4	70.8	46.4	29.9	36.1	33.0	13.1	7.32	18.5
(WY)	(2004)	(2004)	(2004)	(1998)	(1998)	(1998)	(2003)	(2003)	(2003)	(2003)	(1998)	(2003)
MIN	0.75	0.83	0.89	0.91	0.88	1.87	1.70	1.30	1.28	0.61	0.53	0.28
(WY)	(2003)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2000)	(2002)	(2002)	(2002)	(2002)

01660500 BEAVERDAM RUN NEAR GARRISONVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1997 - 2004	
ANNUAL TOTAL	9,572.0					
ANNUAL MEAN	26.2				9.87	
HIGHEST ANNUAL MEAN					29.4	2004
LOWEST ANNUAL MEAN					0.99	2002
HIGHEST DAILY MEAN	228	Dec 11	228	Dec 11	250	Feb 5, 1998
LOWEST DAILY MEAN	1.0	Oct 9	1.0	Oct 9	0.04	Oct 7, 2002
ANNUAL SEVEN-DAY MINIMUM	1.3	Oct 4	1.3	Oct 4	0.11	Oct 18, 2002
MAXIMUM PEAK FLOW			285	Dec 11	a285	Dec 11, 2003
MAXIMUM PEAK STAGE			2.79	Dec 11	a2.79	Dec 11, 2003
INSTANTANEOUS LOW FLOW			0.74	Oct 4	b0.04	(c)
ANNUAL RUNOFF (CFSM)	2.06				0.777	
ANNUAL RUNOFF (INCHES)	28.04				10.56	
10 PERCENT EXCEEDS	58		75		26	
50 PERCENT EXCEEDS	19		20		3.5	
90 PERCENT EXCEEDS	3.0		1.9		0.81	

a Prior to regulation, 1951-57, maximum peak flow, 1,370 ft^3/s, Aug. 15, 1955, gage height, 7.03 ft.
b Prior to regulation, 1951-57, instantaneous low flow, .01 ft^3/s, many days in 1954 and 1955.
c Many days in August to October 2002.



01662800 BATTLE RUN NEAR LAUREL MILLS, VA

LOCATION.--Lat 38°39'20", long 78°04'26", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 9-12, 16, 17, and Jan. 20 to Feb. 2, which are fair. Maximum discharge, 9,120 ft^3/s, from rating curve extended above 2,500 ft^3/s on basis of velocity-area study and 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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 310 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1600	489	5.60	May 7	2230	398	5.04
Dec 11	0200	2,340	10.93	Sep 17	2315	680	6.65
Feb 6	1500	636	6.42	Sep 28	1845	*6,490	*12.09
May 2	2300	563	6.02				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	29	42	44	e21	26	28	26	19	8.3	27	2.5
2	35	27	38	44	e27	26	28	75	15	7.6	19	2.4
3	32	26	36	43	90	25	26	122	14	6.8	12	2.4
4	32	25	35	41	68	25	24	64	14	27	8.8	2.4
5	30	33	42	41	46	24	22	51	59	15	8.3	2.4
6	29	60	39	39	320	35	21	43	31	10	8.0	3.0
7	28	39	36	36	189	27	21	84	23	23	6.6	4.2
8	27	33	34	36	96	26	21	94	20	21	6.1	16
9	27	30	34	e35	73	24	21	53	17	11	5.7	65
10	25	28	58	e33	75	24	19	45	15	8.9	5.3	14
11	24	27	764	e31	65	23	19	39	17	8.6	5.1	9.1
12	24	31	185	e33	57	22	57	34	30	24	5.2	7.8
13	23	36	113	34	54	21	169	31	18	21	9.4	6.9
14	30	29	105	32	50	21	131	28	17	33	8.2	6.1
15	53	29	99	32	46	21	79	27	41	23	7.4	12
16	26	27	87	e30	41	36	60	26	35	13	5.9	9.5
17	24	26	108	e28	39	31	51	29	21	11	5.4	54
18	24	25	97	32	38	28	44	27	17	12	5.0	99
19	23	123	84	29	37	32	39	27	14	12	7.8	30
20	21	88	73	e28	37	29	36	34	12	16	8.5	20
21	22	61	66	e26	37	28	37	28	11	10	6.1	15
22	21	50	62	e29	34	26	32	25	11	9.0	6.4	13
23	20	43	61	e27	32	24	32	22	13	9.1	5.1	11
24	19	45	71	e25	31	24	33	21	12	13	4.7	10
25	18	54	66	e24	30	23	29	19	11	8.9	4.3	9.3
26	19	42	59	e22	29	23	38	20	11	10	4.2	8.8
27	47	39	56	e26	28	23	38	20	9.1	11	3.9	8.8
28	37	50	52	e25	27	22	30	27	9.2	9.4	3.7	951
29	50	54	50	e24	27	21	28	19	8.1	7.7	3.4	219
30	37	45	48	e23	---	21	26	17	7.5	6.8	3.2	71
31	32	---	45	e22	---	24	---	19	---	6.5	3.0	---
TOTAL	897	1,254	2,745	974	1,744	785	1,239	1,196	551.9	413.6	222.7	1,685.6
MEAN	28.9	41.8	88.5	31.4	60.1	25.3	41.3	38.6	18.4	13.3	7.18	56.2
MAX	53	123	764	44	320	36	169	122	59	33	27	951
MIN	18	25	34	22	21	21	19	17	7.5	6.5	3.0	2.4
CFSM	1.05	1.51	3.21	1.14	2.18	0.92	1.50	1.40	0.67	0.48	0.26	2.04
IN.	1.21	1.69	3.70	1.31	2.35	1.06	1.67	1.61	0.74	0.56	0.30	2.27

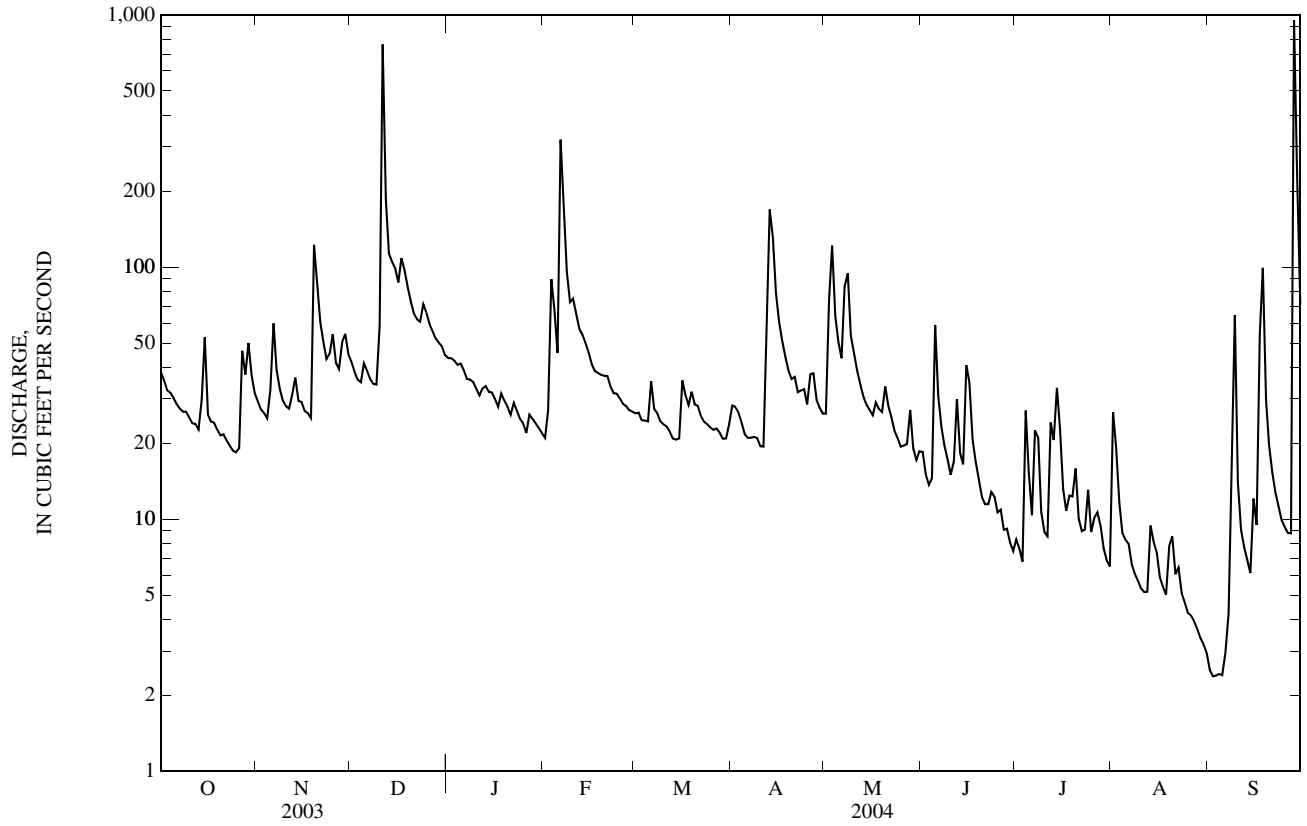
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 1995, 1997 - 2004, BY WATER YEAR (WY)

MEAN	16.8	22.8	27.0	32.9	40.2	47.6	40.5	32.4	23.0	11.7	11.8	15.8
MAX	119	106	88.5	116	132	144	150	85.9	91.8	39.9	73.8	106
(WY)	(1980)	(1986)	(2004)	(1978)	(1998)	(1993)	(1983)	(1988)	(1972)	(1972)	(1994)	(2003)
MIN	0.92	1.94	1.82	1.45	4.42	12.5	9.31	7.19	1.68	0.96	0.42	0.50
(WY)	(1992)	(1999)	(1966)	(1966)	(2002)	(1981)	(1981)	(1999)	(1999)	(1999)	(1966)	(2002)

01662800 BATTLE RUN NEAR LAUREL MILLS, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1958 - 1995 1997 - 2004	
ANNUAL TOTAL	21,141		13,707.8			
ANNUAL MEAN	57.9		37.5		26.9	
HIGHEST ANNUAL MEAN					50.4	2003
LOWEST ANNUAL MEAN					7.82	2002
HIGHEST DAILY MEAN	1,090	Sep 23	951	Sep 28	2,000	Oct 9, 1976
LOWEST DAILY MEAN	13	Aug 26	2.4	aSep 2	0.00	bSep 3, 1966
ANNUAL SEVEN-DAY MINIMUM	15	cFeb 8	2.6	Aug 31	0.00	dSep 6, 1966
MAXIMUM PEAK FLOW			6,490	Sep 28	9,120	fOct 9, 1976
MAXIMUM PEAK STAGE			12.09	Sep 28	g14.40	Jun 27, 1995
INSTANTANEOUS LOW FLOW			2.2	Sep 5	0.00	bSep 3, 1966
ANNUAL RUNOFF (CFSM)	2.10		1.36		0.973	
ANNUAL RUNOFF (INCHES)	28.49		18.48		13.22	
10 PERCENT EXCEEDS	107		63		56	
50 PERCENT EXCEEDS	39		27		15	
90 PERCENT EXCEEDS	19		7.8		2.6	

a Also Sept. 3-5, 2004.
b Also Sept. 6-13, 1966.
c Also Feb. 9, 2003.
d Also Sept. 7, 1966.
e Estimated.
f Also June 27, 1995.
g From high-water mark in gage house. Result of backwater from bridge collapse.



01663500 HAZEL RIVER AT RIXEYVILLE, VA

LOCATION.--Lat 38°35'30", long 77°57'54", NAD83, Culpeper County, Hydrologic Unit 02080103, on right bank, 40 ft upstream from bridge on State Highway 229, 0.5 mi upstream from Waterford Run, 1.2 mi northeast of Rixeyville, 2.8 mi downstream from Thornton River, and 9.1 mi upstream from mouth.

DRAINAGE AREA.--287 mi^2.

PERIOD OF RECORD.--August 1942 to September 1992, October 2001 to current year.

REVISED RECORDS.--WSP 971: 1942. WSP 1922: 1957-58. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 288.30 ft NGVD of 1929. Prior to Sept. 30, 1992, water-stage recorder at site on right downstream side of bridge, Oct. 1, 2001 to current, at present site and at same datum.

REMARKS.--Records good except those for period with ice effect, Jan. 17 to Feb. 3, and period Feb. 3 to June 22, which are fair. Maximum discharge, 60,000 ft^3/s, from rating curve extended above 27,000 ft^3/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 Apr. 26, 1937 reached a stage of 28.4 ft, from floodmarks, discharge, 43,500 ft^3/s, from information by local residents.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,300 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 11	1015	11,400	19.39	Sep 18	0415	7,590	15.44
Feb 6	2000	3,900	10.79	Sep 29	0245	*11,600	*19.61
Sep 9	0730	5,560	13.03				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	530	430	550	565	e265	342	385	409	328	195	114	61
2	499	400	506	553	e260	347	524	660	265	166	226	58
3	456	380	469	540	e320	344	519	1,300	235	145	147	56
4	441	365	452	522	745	338	488	852	226	254	126	54
5	423	368	520	517	549	336	437	706	912	333	131	54
6	397	592	530	513	2,040	407	406	614	642	230	127	55
7	379	583	483	463	1,880	420	389	561	429	188	112	79
8	368	473	460	441	1,120	394	377	773	348	217	102	e200
9	356	425	449	451	809	371	377	538	300	164	95	3,280
10	346	398	489	416	751	359	345	476	268	144	89	1,010
11	333	389	7,090	381	751	347	329	428	253	137	84	563
12	331	412	2,290	478	648	338	514	392	443	144	81	413
13	317	601	1,460	440	609	322	2,280	362	323	223	92	327
14	327	469	1,260	406	581	312	2,100	338	277	286	129	267
15	775	435	1,210	398	542	313	1,380	329	267	325	116	260
16	413	413	1,030	358	490	449	1,060	311	304	180	105	261
17	356	402	1,150	e320	458	531	899	323	264	149	93	303
18	342	385	1,140	e393	448	440	776	326	274	142	87	3,970
19	327	870	947	e379	438	517	685	547	236	185	94	1,330
20	314	1,670	841	e300	437	469	618	447	209	198	198	808
21	308	1,020	754	e270	450	449	608	389	192	148	113	596
22	300	810	715	e305	436	414	542	338	e180	133	105	463
23	288	687	711	e300	408	388	511	305	199	133	98	372
24	281	621	833	e290	404	376	523	447	207	162	89	314
25	275	679	952	e270	396	364	445	302	184	153	83	281
26	278	570	830	e260	372	347	508	391	187	143	78	253
27	921	534	762	e405	362	345	622	342	173	168	75	237
28	739	540	703	e370	351	342	494	362	157	160	72	2,810
29	693	745	664	e330	344	321	449	324	150	142	68	5,800
30	585	589	641	e320	---	313	419	271	142	126	65	1,560
31	475	---	594	e280	---	341	---	277	---	116	64	---
TOTAL	13,173	17,255	31,485	12,234	17,664	11,696	20,009	14,440	8,574	5,589	3,258	26,095
MEAN	425	575	1,016	395	609	377	667	466	286	180	105	870
MAX	921	1,670	7,090	565	2,040	531	2,280	1,300	912	333	226	5,800
MIN	275	365	449	260	260	312	329	271	142	116	64	54
CFSM	1.48	2.00	3.54	1.38	2.12	1.31	2.32	1.62	1.00	0.63	0.37	3.03
IN.	1.71	2.24	4.08	1.59	2.29	1.52	2.59	1.87	1.11	0.72	0.42	3.38

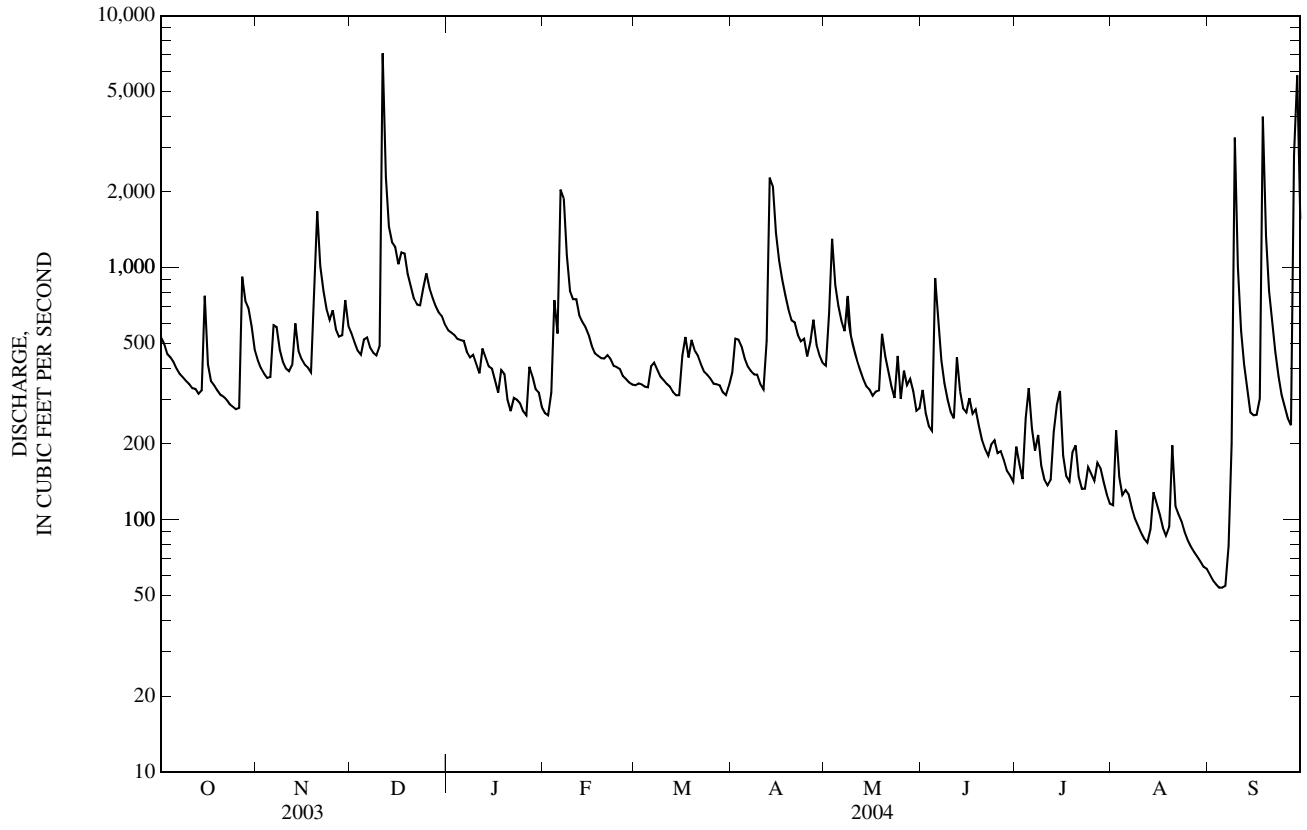
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 1992, 2002 - 2004, BY WATER YEAR (WY)

MEAN	278	304	347	376	467	548	527	419	292	168	182	206
MAX	2,587	1,874	1,168	1,137	1,397	1,191	1,787	910	1,483	706	1,539	1,504
(WY)	(1943)	(1986)	(1951)	(1978)	(1984)	(1975)	(1983)	(1988)	(1972)	(1949)	(1955)	(1979)
MIN	14.8	36.3	34.6	59.0	75.6	148	134	101	41.8	15.8	5.85	11.2
(WY)	(1964)	(1966)	(1966)	(1981)	(2002)	(1981)	(1981)	(1977)	(1977)	(1966)	(1966)	(1985)

01663500 HAZEL RIVER AT RIXEYVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1943 - 1992 2002 - 2004	
ANNUAL TOTAL	257,916		181,472			
ANNUAL MEAN	707		496		342	
HIGHEST ANNUAL MEAN					633	1979
LOWEST ANNUAL MEAN					109	2002
HIGHEST DAILY MEAN	8,210	Sep 19	7,090	Dec 11	34,600	Oct 15, 1942
LOWEST DAILY MEAN	124	Aug 27	54	aSep 4	1.1	bSep 10, 1966
ANNUAL SEVEN-DAY MINIMUM	175	Aug 21	57	Aug 31	1.4	Sep 7, 1966
MAXIMUM PEAK FLOW			11,600	Sep 29	60,000	Oct 15, 1942
MAXIMUM PEAK STAGE			19.61	Sep 29	31.80	Oct 15, 1942
INSTANTANEOUS LOW FLOW			53	Sep 5	0.70	Sep 22, 2002
ANNUAL RUNOFF (CFSM)	2.46		1.73		1.19	
ANNUAL RUNOFF (INCHES)	33.43		23.52		16.19	
10 PERCENT EXCEEDS	1,230		809		696	
50 PERCENT EXCEEDS	530		378		212	
90 PERCENT EXCEEDS	225		130		43	

a Also Sept. 5, 2004.
b Also Sept. 11, 12, 1966 and Sept. 21, 22, 2002.
e Estimated.



01664000 RAPPAHANNOCK RIVER AT REMINGTON, VA

LOCATION.--Lat 38°31'50", long 77°48'49", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to Nov. 21, 1951, nonrecording gage at bridge 80 ft downstream at same datum.

REMARKS.--Records good except those for period with ice effect, Jan. 21-24, and periods of doubtful or no gage-height record, Feb. 4-6, May 8, and July 12, 13, which are fair. National Weather Service gage-height telemeter at station. Maximum discharge, 90,000 ft^3/s, from rating curve extended above 43,000 ft^3/s on basis of slope-area measurement of peak flow. 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.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 11	2045	*19,700	*18.76	Sep 18	1345	7,680	12.37
Feb 7	0615	9,050	13.28	Sep 29	1245	18,200	18.13
Apr 14	0300	6,680	11.58				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,050	950	1,120	1,030	575	619	724	764	695	362	193	83
2	1,010	844	1,020	1,010	582	619	1,040	1,090	587	342	338	76
3	908	777	948	1,010	781	629	1,340	2,160	492	290	301	73
4	851	733	894	960	e1,700	608	1,170	1,660	459	369	226	70
5	828	705	1,000	943	e1,220	609	980	1,320	1,660	833	204	69
6	784	1,300	1,130	964	e2,050	716	867	1,150	1,680	509	210	72
7	755	1,300	1,030	854	5,900	904	806	1,060	1,020	416	185	80
8	731	1,030	963	783	2,910	762	768	e3,200	814	812	158	234
9	708	871	927	812	1,730	719	757	1,480	699	420	144	3,200
10	676	786	987	768	1,520	674	701	1,180	604	314	134	1,520
11	654	748	12,700	647	1,610	641	658	1,020	550	279	124	806
12	648	780	9,860	887	1,330	620	892	901	803	e268	127	532
13	638	1,300	3,180	815	1,210	587	4,910	821	802	e410	153	416
14	593	1,000	2,540	741	1,150	557	5,120	755	629	655	216	330
15	1,400	864	2,520	709	1,070	554	2,630	741	593	901	202	321
16	928	801	2,170	641	956	719	1,900	690	668	425	171	388
17	712	766	2,650	611	868	1,050	1,580	894	551	304	145	434
18	670	727	2,840	719	837	847	1,360	773	956	265	132	5,380
19	638	1,020	2,010	697	812	958	1,210	933	733	305	127	2,330
20	599	4,090	1,720	573	816	890	1,100	824	542	409	449	1,320
21	586	2,160	1,500	e530	835	810	1,090	825	447	312	218	962
22	577	1,620	1,390	e500	824	743	1,010	739	438	248	175	744
23	534	1,350	1,350	e480	762	686	922	654	562	266	158	587
24	511	1,200	1,440	e470	744	659	988	753	522	758	137	483
25	491	1,430	1,850	480	742	640	851	610	442	397	121	424
26	491	1,200	1,550	427	691	618	907	688	422	301	111	379
27	1,510	1,080	1,400	695	670	618	1,320	668	390	322	105	351
28	2,600	1,050	1,290	708	641	629	1,030	719	337	329	99	3,150
29	1,910	1,560	1,220	639	623	579	889	708	314	285	94	15,700
30	1,530	1,240	1,180	653	---	553	810	559	293	237	90	3,780
31	1,100	---	1,090	556	---	608	---	544	---	209	87	---
TOTAL	27,621	35,282	67,469	22,312	36,159	21,425	40,330	30,883	19,704	12,552	5,334	44,294
MEAN	891	1,176	2,176	720	1,247	691	1,344	996	657	405	172	1,476
MAX	2,600	4,090	12,700	1,030	5,900	1,050	5,120	3,200	1,680	901	449	15,700
MIN	491	705	894	427	575	553	658	544	293	209	87	69
CFSM	1.44	1.90	3.51	1.16	2.01	1.11	2.17	1.61	1.06	0.65	0.28	2.38
IN.	1.66	2.12	4.05	1.34	2.17	1.29	2.42	1.85	1.18	0.75	0.32	2.66

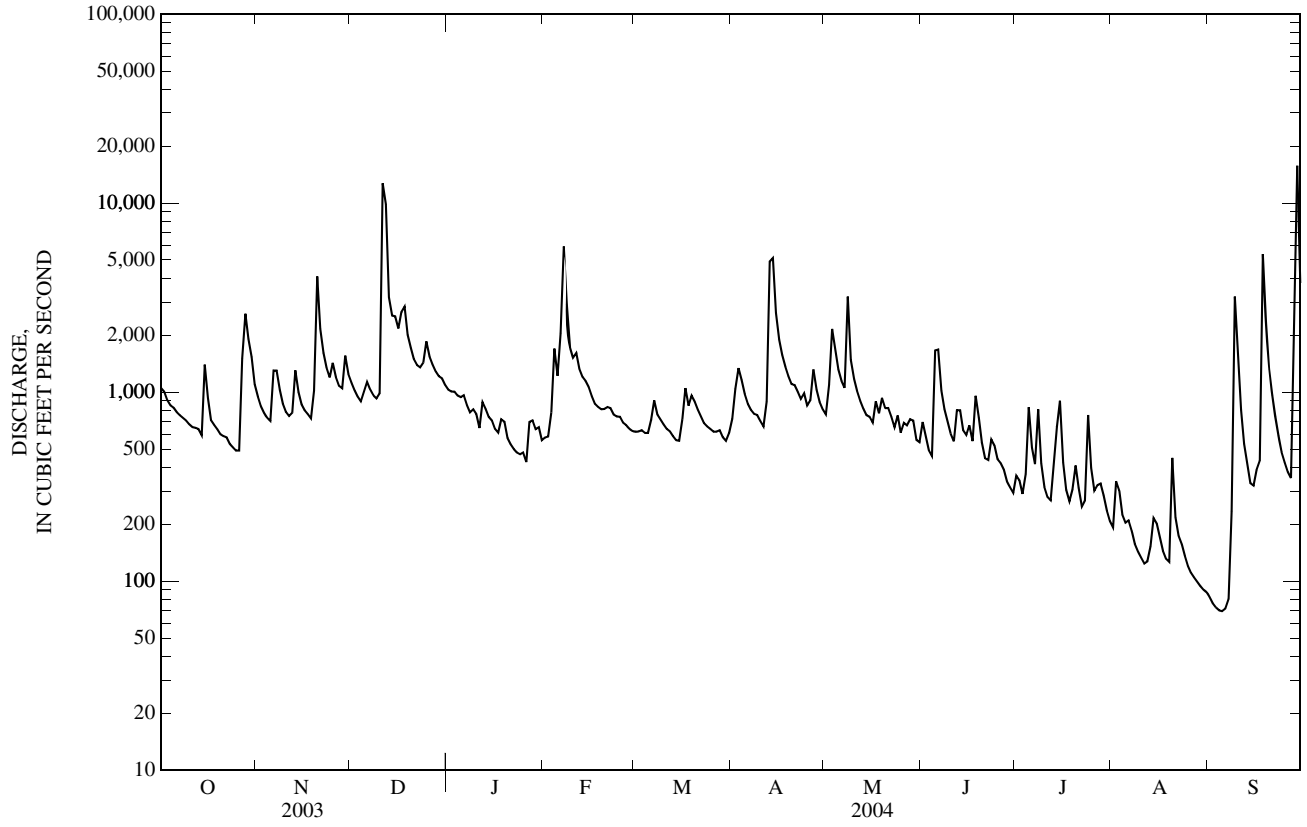
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 2004, BY WATER YEAR (WY)

MEAN	486	575	729	841	992	1,187	1,043	833	606	343	361	412
MAX	4,895	2,575	2,176	2,480	3,496	3,751	3,784	2,177	3,520	974	2,926	2,815
(WY)	(1943)	(1986)	(2004)	(1998)	(1998)	(1993)	(1983)	(1989)	(1972)	(1949)	(1955)	(1996)
MIN	27.3	61.8	61.1	78.3	143	292	248	198	54.1	30.1	13.2	15.4
(WY)	(1987)	(1966)	(1966)	(1966)	(2002)	(1981)	(1981)	(1977)	(1999)	(1966)	(1966)	(1985)

01664000 RAPPAHANNOCK RIVER AT REMINGTON, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1943 - 2004	
ANNUAL TOTAL	529,431		363,365			
ANNUAL MEAN	1,450		993		699	
HIGHEST ANNUAL MEAN					1,240	2003
LOWEST ANNUAL MEAN					195	2002
HIGHEST DAILY MEAN	12,700	Dec 11	15,700	Sep 29	64,000	Oct 16, 1942
LOWEST DAILY MEAN	163	Feb 17	69	Sep 5	2.9	Sep 12, 1966
ANNUAL SEVEN-DAY MINIMUM	332	Feb 11	75	Sep 1	3.2	Sep 7, 1966
MAXIMUM PEAK FLOW			19,700	Dec 11	90,000	Oct 16, 1942
MAXIMUM PEAK STAGE			18.76	Dec 11	a30.00	Oct 16, 1942
INSTANTANEOUS LOW FLOW			68	bSep 5	1.1	Sep 10, 1966
ANNUAL RUNOFF (CFSM)	2.34		1.60		1.13	
ANNUAL RUNOFF (INCHES)	31.77		21.80		15.31	
10 PERCENT EXCEEDS	2,580		1,610		1,410	
50 PERCENT EXCEEDS	1,070		742		420	
90 PERCENT EXCEEDS	458		232		75	

a From floodmarks.
b Also Sept. 6, 2004.
e Estimated.



01665500 RAPIDAN RIVER NEAR RUCKERSVILLE, VA

LOCATION.--Lat 38°16'50", long 78°20'24", NAD83, Madison County, Hydrologic Unit 02080103, on left bank 10 ft downstream from bridge on U.S. Highway 29, 0.2 mi downstream from Elk Run, 1.7 mi upstream from White Run, 3.6 mi northeast of Ruckersville, and at mile 63.5.

DRAINAGE AREA.--114 mi^2.

PERIOD OF RECORD.--September 1942 to June 1995, October 1998 to current year.

REVISED RECORDS.--WSP 1171: 1944-45(M). WSP 1382: 1943(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 439.44 ft NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 10, 11, and Jan. 24 to Feb. 2, which are fair. Diversion 0.4 mi upstream from station since 1973 by Rapidan Service Authority for municipal water supply of Greene County and town of Stanardsville averaged about 0.77 ft^3/s. Maximum discharge, 106,000 ft^3/s, from rating curve extended above 8,700 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,400 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 12	2245	3,510	6.46	Sep 9	0245	*9,740	9.59
Dec 11	0130	6,020	7.91	Sep 17	2145	5,860	8.32
Feb 6	1730	2,340	5.58	Sep 28	1845	9,690	*9.98

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	240	178	281	236	e98	121	145	144	98	75	60	23
2	217	167	262	228	e112	122	162	323	84	74	67	21
3	194	159	246	218	303	121	156	588	78	66	58	20
4	182	151	236	210	220	120	151	399	81	170	51	19
5	169	239	267	212	174	119	143	328	439	273	57	18
6	158	526	259	203	1,140	139	140	278	215	226	63	32
7	149	362	239	188	731	134	138	243	164	161	50	63
8	140	275	229	181	411	134	139	224	139	142	46	651
9	132	237	225	183	318	128	133	200	124	114	43	3,420
10	127	217	415	e165	281	125	127	182	146	103	41	641
11	121	201	2,480	e155	255	123	125	173	161	98	41	351
12	118	460	919	182	230	119	258	161	215	114	42	251
13	112	628	630	163	215	115	754	150	151	103	56	199
14	130	323	573	155	202	113	825	142	135	111	53	164
15	259	282	519	151	191	112	584	135	150	85	50	148
16	146	260	453	141	177	170	441	151	154	74	44	131
17	129	243	507	139	169	168	361	150	144	68	41	864
18	122	226	469	146	164	150	310	279	137	102	40	1,360
19	116	495	413	141	160	155	271	222	177	84	37	592
20	111	615	367	129	157	145	244	222	142	72	51	384
21	110	469	329	123	158	143	227	167	128	64	43	287
22	108	392	306	143	151	138	207	142	124	86	43	229
23	104	342	293	124	144	134	190	124	129	109	39	190
24	101	315	335	e115	143	131	180	113	121	87	36	164
25	98	303	366	e102	138	127	167	105	106	71	33	146
26	99	269	344	e92	132	124	189	105	107	83	32	131
27	371	250	320	e135	129	126	180	108	93	85	30	126
28	259	289	298	e120	125	123	156	133	86	76	28	2,400
29	258	341	281	e115	124	117	145	123	81	67	27	1,200
30	215	299	269	e110	---	115	138	101	75	63	27	586
31	191	---	250	e105	---	125	---	101	---	58	29	---
TOTAL	4,986	9,513	13,380	4,810	6,952	4,036	7,386	6,016	4,184	3,164	1,358	14,811
MEAN	161	317	432	155	240	130	246	194	139	102	43.8	494
MAX	371	628	2,480	236	1,140	170	825	588	439	273	67	3,420
MIN	98	151	225	92	98	112	125	101	75	58	27	18
CFSM	1.41	2.78	3.79	1.36	2.10	1.14	2.16	1.70	1.22	0.90	0.38	4.33
IN.	1.63	3.10	4.37	1.57	2.27	1.32	2.41	1.96	1.37	1.03	0.44	4.83

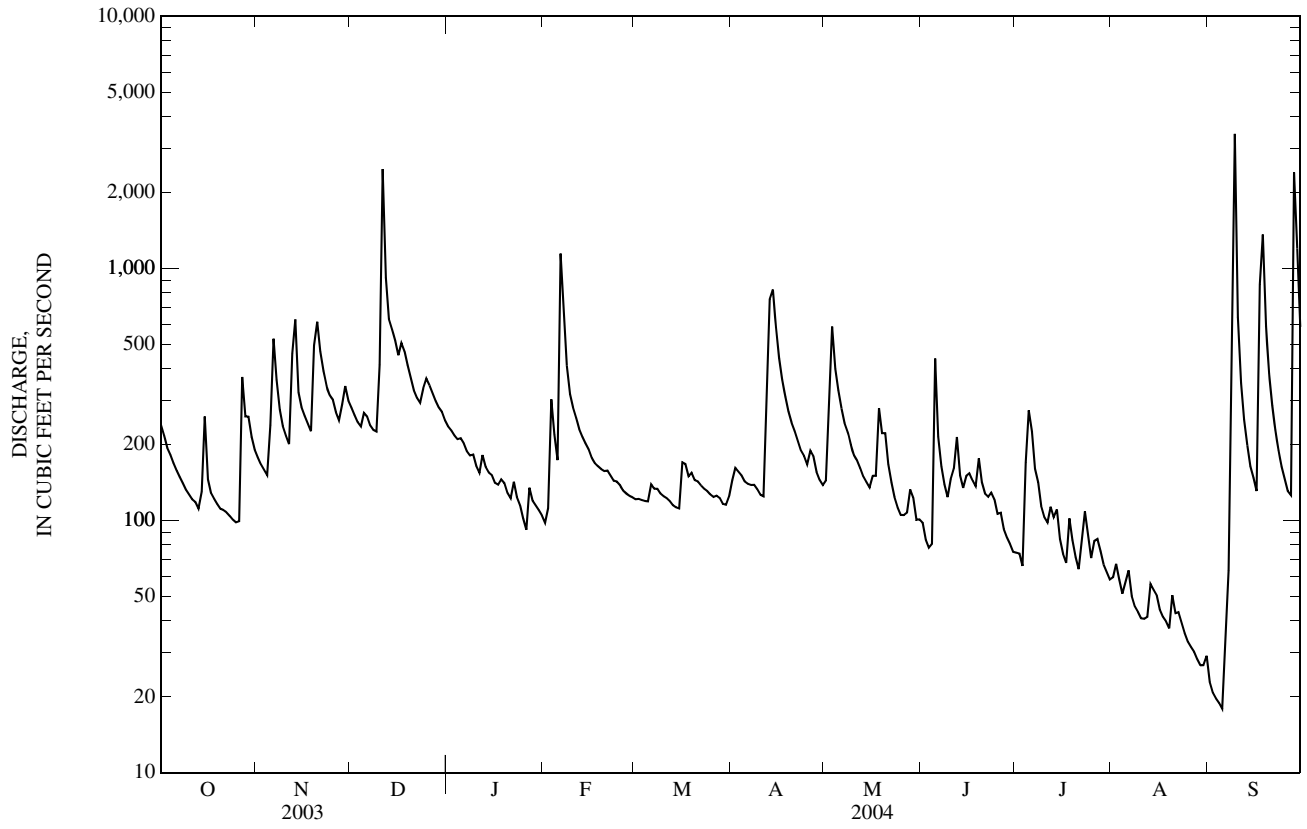
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 1995, 1999 - 2004, BY WATER YEAR (WY)

MEAN	128	138	161	170	194	242	225	177	163	78.5	89.7	105
MAX	976	798	465	483	485	570	692	376	1,675	378	760	771
(WY)	(1943)	(1986)	(1951)	(1978)	(1984)	(1993)	(1983)	(1978)	(1995)	(1949)	(1955)	(2003)
MIN	9.44	23.7	20.4	21.0	41.5	79.7	72.8	48.0	23.3	6.99	4.99	5.83
(WY)	(1964)	(1999)	(1966)	(1981)	(2002)	(1981)	(1981)	(1977)	(1977)	(1977)	(2002)	(1954)

01665500 RAPIDAN RIVER NEAR RUCKERSVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1943 - 1995 1999 - 2004	
ANNUAL TOTAL	121,629		80,596			
ANNUAL MEAN	333		220		154	
HIGHEST ANNUAL MEAN					337	1949
LOWEST ANNUAL MEAN					50.2	2002
HIGHEST DAILY MEAN	9,810	Sep 19	3,420	Sep 9	e29,400	Jun 27, 1995
LOWEST DAILY MEAN	60	Jul 31	18	Sep 5	0.45	Sep 13, 2002
ANNUAL SEVEN-DAY MINIMUM	64	Jul 25	22	Aug 30	1.1	Sep 9, 2002
MAXIMUM PEAK FLOW			9,740	Sep 9	106,000	Jun 27, 1995
MAXIMUM PEAK STAGE			9.59	Sep 9	a31.30	Jun 27, 1995
INSTANTANEOUS LOW FLOW			16	Sep 5	0.21	Sep 13, 2002
ANNUAL RUNOFF (CFSM)	2.92		1.93		1.35	
ANNUAL RUNOFF (INCHES)	39.69		26.30		18.36	
10 PERCENT EXCEEDS	568		386		309	
50 PERCENT EXCEEDS	229		147		97	
90 PERCENT EXCEEDS	83		62		20	

a From floodmarks.
e Estimated.



01666500 ROBINSON RIVER NEAR LOCUST DALE, VA

LOCATION.--Lat 38°19'30", long 78°05'44", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 9-11, 17-19, 21-23 and Jan. 25 to Feb. 2, and periods of doubtful or no gage-height record, Apr. 21, 22, June 6, 7, July 25, 26, Aug. 3, and Sept. 12-14, which are fair. 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 ft^3/s.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 13	0230	1,850	7.94	Sep 9	0630	4,260	12.95
Dec 11	0600	7,170	15.32	Sep 18	0115	3,160	11.09
Feb 6	1930	3,290	11.39	Sep 29	0030	*13,200	*18.55

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	318	271	308	319	e160	210	212	202	169	135	208	67
2	296	250	295	313	e175	211	240	362	154	144	155	64
3	267	237	283	305	444	209	245	538	141	129	e118	65
4	257	227	278	299	419	209	241	369	142	222	106	67
5	246	328	316	300	311	207	224	312	475	336	106	68
6	235	1,130	349	297	1,570	247	212	278	e295	305	123	70
7	225	628	315	274	1,180	243	207	252	e240	218	104	81
8	217	448	302	264	631	232	204	307	207	219	96	424
9	207	376	298	e255	449	223	201	242	185	178	92	2,350
10	204	346	374	e235	407	218	192	221	173	156	87	683
11	196	331	3,850	e225	385	213	188	228	181	147	83	403
12	194	409	1,010	275	340	210	374	217	267	157	84	e285
13	186	871	691	254	323	202	1,170	200	214	222	93	e235
14	185	379	630	244	304	199	994	192	191	381	97	e209
15	510	335	628	241	289	199	615	192	206	177	104	199
16	245	310	569	227	269	299	465	180	296	147	92	186
17	209	300	815	e220	257	291	392	180	217	131	87	385
18	195	286	664	e215	253	240	345	240	282	140	84	1,550
19	186	596	538	e230	248	258	310	314	261	170	82	609
20	178	843	475	215	246	253	284	281	201	147	101	402
21	176	526	429	e210	247	248	e265	233	180	132	114	316
22	172	437	407	e195	239	232	e250	210	171	122	109	259
23	164	385	398	e205	231	219	236	186	229	140	99	227
24	160	357	432	204	232	212	230	174	189	166	93	202
25	156	358	485	e190	227	205	214	165	171	e145	86	187
26	160	320	437	e165	219	200	253	161	171	e130	83	172
27	968	303	407	e220	217	200	267	166	161	140	79	164
28	512	324	381	e195	211	198	228	171	146	129	73	3,620
29	528	397	364	e185	209	189	209	177	141	116	72	4,450
30	372	327	353	e175	---	186	201	156	134	108	73	1,010
31	302	---	331	e165	---	199	---	160	---	103	72	---
TOTAL	8,426	12,635	17,412	7,316	10,692	6,861	9,668	7,266	6,190	5,292	3,055	19,009
MEAN	272	421	562	236	369	221	322	234	206	171	98.5	634
MAX	968	1,130	3,850	319	1,570	299	1,170	538	475	381	208	4,450
MIN	156	227	278	165	160	186	188	156	134	103	72	64
CFSM	1.52	2.35	3.14	1.32	2.06	1.24	1.80	1.31	1.15	0.95	0.55	3.54
IN.	1.75	2.63	3.62	1.52	2.22	1.43	2.01	1.51	1.29	1.10	0.63	3.95

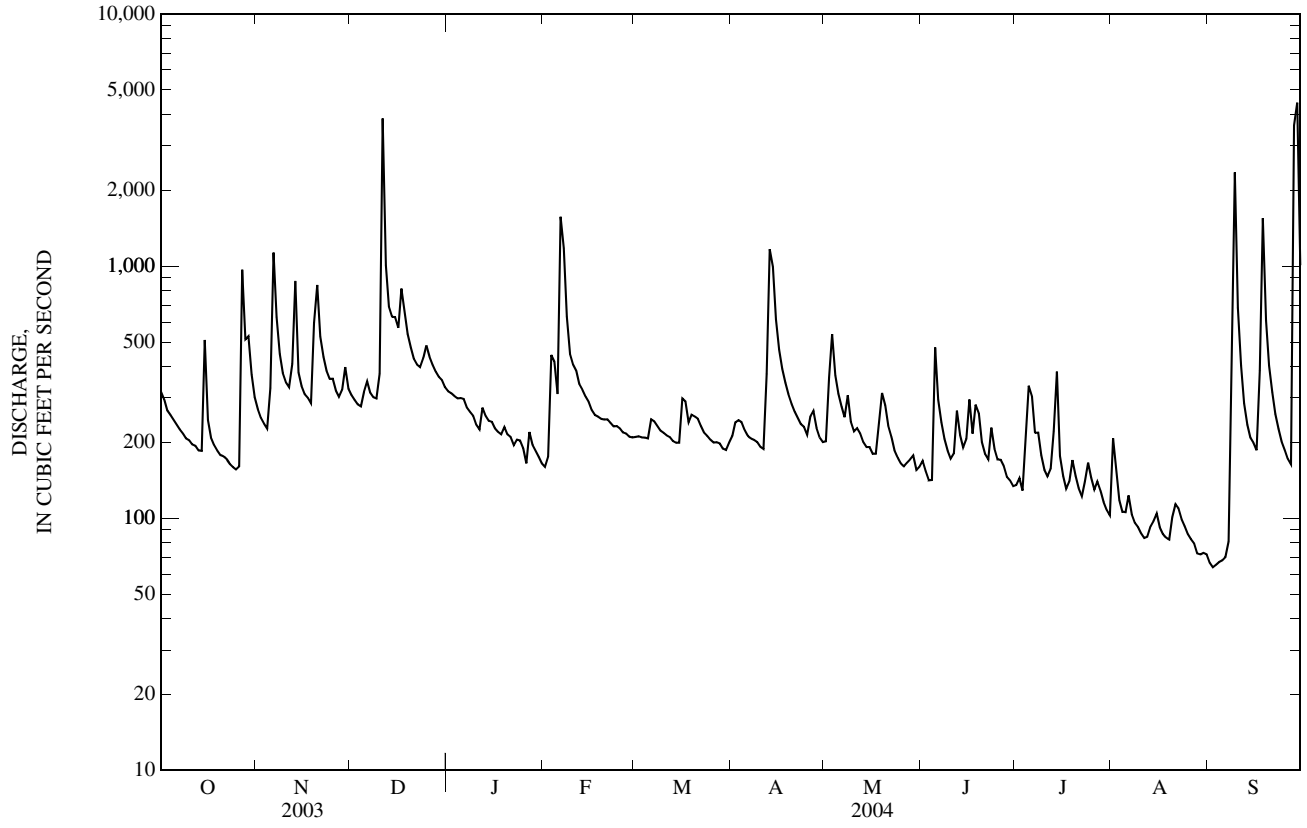
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2004, BY WATER YEAR (WY)

MEAN	168	213	232	266	300	345	305	247	211	128	135	180
MAX	783	1,350	624	752	1,254	980	989	625	1,154	522	1,063	1,119
(WY)	(1991)	(1986)	(1973)	(1978)	(1998)	(1993)	(1983)	(1989)	(1995)	(1949)	(1955)	(1996)
MIN	18.5	35.1	32.0	47.5	52.5	105	89.3	70.9	33.4	21.3	7.34	8.05
(WY)	(1964)	(1966)	(1966)	(1966)	(2002)	(1981)	(1981)	(1977)	(1999)	(1944)	(2002)	(1954)

01666500 ROBINSON RIVER NEAR LOCUST DALE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1944 - 2004	
ANNUAL TOTAL	162,045		113,822			
ANNUAL MEAN	444		311		227	
HIGHEST ANNUAL MEAN					445	1973
LOWEST ANNUAL MEAN					61.6	2002
HIGHEST DAILY MEAN	9,900	Sep 19	4,450	Sep 29	14,700	Jun 22, 1972
LOWEST DAILY MEAN	e105	Jan 24	64	Sep 2	1.8	aSep 13, 1954
ANNUAL SEVEN-DAY MINIMUM	118	bJan 28	68	Aug 31	2.5	Aug 21, 2002
MAXIMUM PEAK FLOW			13,200	Sep 29	25,400	Jun 27, 1995
MAXIMUM PEAK STAGE			18.55	Sep 29	c23.92	Sep 6, 1996
INSTANTANEOUS LOW FLOW			64	dSep 1	1.2	fSep 7, 1954
ANNUAL RUNOFF (CFSM)	2.48		1.74		1.27	
ANNUAL RUNOFF (INCHES)	33.68		23.65		17.23	
10 PERCENT EXCEEDS	695		468		427	
50 PERCENT EXCEEDS	308		225		147	
90 PERCENT EXCEEDS	135		115		40	

a Also Sept. 27, 1954.
b Also Jan. 29, 2004.
c Backwater from debris.
d Also Sept. 2, 3, 2004.
e Estimated.
f Also Sept. 12, 1954.



01667500 RAPIDAN RIVER NEAR CULPEPER, VA

LOCATION.--Lat 38°21'01", long 77°58'30", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 25 and Jan. 27 to Feb. 2, and periods of doubtful or no gage-height record, Feb. 10-18, 24, which are 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 ft^3/s, from rating curve extended above 43,000 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 6	0530	5,750	7.20	Feb 6	2345	8,860	9.90
Nov 13	0645	5,830	7.28	Sep 9	1115	7,560	8.81
Nov 20	0045	4,680	6.19	Sep 18	0715	5,990	7.42
Dec 11	1200	13,700	13.67	Sep 29	0815	*14,300	*14.06

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	856	681	1,030	837	e375	437	486	471	385	268	284	112
2	801	616	955	800	e390	433	568	917	335	270	379	103
3	704	567	895	788	861	430	586	1,920	294	245	252	97
4	647	534	856	756	1,480	424	558	1,290	277	567	215	94
5	613	590	920	735	906	422	505	1,000	1,000	964	201	93
6	562	3,960	1,210	756	3,450	481	472	846	957	1,020	245	93
7	530	2,090	1,110	674	4,360	521	465	729	594	672	212	117
8	501	1,340	1,010	632	2,070	468	459	759	481	1,040	185	332
9	474	1,060	947	633	1,410	448	460	624	416	472	170	5,120
10	457	926	1,040	626	e1,100	437	432	560	378	367	161	2,080
11	433	859	10,300	507	e970	422	422	536	512	335	158	1,210
12	419	908	2,930	650	e880	418	706	514	719	308	154	848
13	406	3,380	2,030	625	e800	400	2,900	467	539	517	173	654
14	388	1,430	1,850	565	e760	388	2,980	436	431	668	189	517
15	1,010	1,160	1,880	549	e700	387	1,960	422	404	395	210	458
16	586	1,040	1,730	513	e650	576	1,470	395	711	292	187	426
17	454	980	2,360	473	e620	845	1,210	441	1,100	254	166	435
18	421	899	2,130	524	e600	600	1,030	454	833	260	155	3,690
19	396	1,630	1,660	560	586	574	903	1,110	767	341	150	1,850
20	379	2,960	1,440	483	576	565	811	784	498	289	218	1,240
21	368	1,740	1,270	425	569	543	751	650	408	243	189	927
22	367	1,440	1,180	461	543	504	693	552	377	237	181	733
23	348	1,260	1,120	500	513	471	630	452	498	349	168	593
24	336	1,160	1,120	466	e506	456	601	401	429	473	151	495
25	324	1,190	1,290	e410	499	445	551	369	380	299	140	437
26	330	1,040	1,190	336	475	434	701	353	371	283	132	390
27	2,010	962	1,110	e520	463	435	793	374	337	333	128	359
28	1,510	961	1,040	e470	445	451	608	427	294	306	123	2,890
29	1,370	1,410	975	e440	439	419	533	527	277	270	119	8,990
30	1,050	1,130	933	e425	---	405	495	384	261	241	115	2,220
31	785	---	883	e410	---	439	---	366	---	222	114	---
TOTAL	19,835	39,903	50,394	17,549	27,996	14,678	25,739	19,530	15,263	12,800	5,624	37,603
MEAN	640	1,330	1,626	566	965	473	858	630	509	413	181	1,253
MAX	2,010	3,960	10,300	837	4,360	845	2,980	1,920	1,100	1,040	379	8,990
MIN	324	534	856	336	375	387	422	353	261	222	114	93
CFSM	1.36	2.82	3.44	1.20	2.05	1.00	1.82	1.33	1.08	0.87	0.38	2.66
IN.	1.56	3.14	3.97	1.38	2.21	1.16	2.03	1.54	1.20	1.01	0.44	2.96

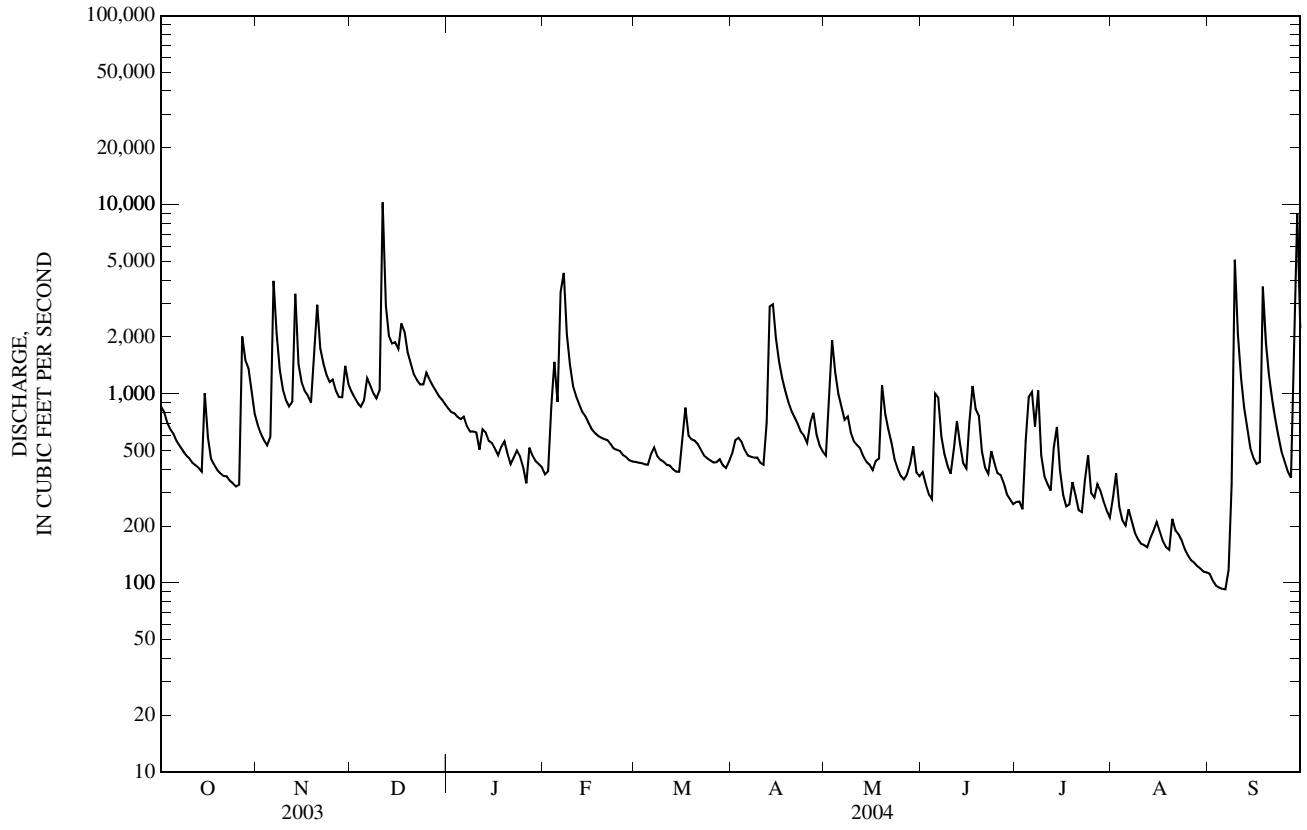
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2004, BY WATER YEAR (WY)

MEAN	415	471	558	658	736	841	773	575	490	304	326	393
MAX	3,163	2,690	1,653	1,924	3,048	2,236	2,615	1,734	2,901	1,206	2,323	2,908
(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	83.1	45.0	12.6	14.0
(WY)	(1931)	(1931)	(1931)	(1966)	(1931)	(1931)	(1981)	(1956)	(1999)	(1999)	(2002)	(1954)

01667500 RAPIDAN RIVER NEAR CULPEPER, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1931 - 2004	
ANNUAL TOTAL	419,296		286,914			
ANNUAL MEAN	1,149		784		544	
HIGHEST ANNUAL MEAN					1,099	1973
LOWEST ANNUAL MEAN					132	2002
HIGHEST DAILY MEAN	16,600	Sep 19	10,300	Dec 11	e43,500	Jun 28, 1995
LOWEST DAILY MEAN	196	Aug 27	93	aSep 5	1.5	Sep 18, 2002
ANNUAL SEVEN-DAY MINIMUM	229	Aug 23	101	bAug 31	2.1	cSep 14, 2002
MAXIMUM PEAK FLOW			14,300	Sep 29	59,300	Jun 28, 1995
MAXIMUM PEAK STAGE			14.06	Sep 29	d30.40	Jun 28, 1995
INSTANTANEOUS LOW FLOW			92	aSep 5	1.2	Sep 17, 2002
ANNUAL RUNOFF (CFSM)	2.43		1.66		1.15	
ANNUAL RUNOFF (INCHES)	33.05		22.61		15.65	
10 PERCENT EXCEEDS	1,920		1,420		1,080	
50 PERCENT EXCEEDS	858		520		339	
90 PERCENT EXCEEDS	296		240		83	

a Also Sept. 6, 2004.
b Also Sept. 1, 2004.
c Also Sept. 15, 2002.
d From high-water mark in gage house.
e Estimated.



01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA

LOCATION.--Lat 38°18'30", long 77°31'46", NAD83, Spotsylvania County, Hydrologic Unit 02080104, on right bank, along State Highway 618 (River Road), 3.1 mi upstream from Dominion Virginia Power dam, 0.7 mi downstream from Motts Run, and 5.3 mi upstream from Fredericksburg.

DRAINAGE AREA.--1,596 mi^2.

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. WDR VA-03-1: 2001(M).

GAGE.--Water-stage recorder. Datum of gage is 70 ft NGVD of 1929, from topographic map. Prior to Jan. 15, 1922, nonrecording gage, at site 1.5 mi downstream at datum of 56.18 ft. Jan. 15 to Aug. 2, 1966, water-stage recorder at same site and datum. Aug. 2, 1966 to Oct. 17, 2000, at same site, at datum 1.00 ft lower. Oct. 17, 2000 to current year, at present site and datum.

REMARKS.--Records good except those for periods of doubtful gage-height record, Dec. 12, 21, 28, and Jan. 7, 8, 10, 11, 14, 16, which are fair. Maximum discharge, 140,000 ft^3/s, from rating curve extended above 76,000 ft^3/s on basis of flow-over-dam and slope-area measurements at gage heights 26.1 ft and 26.9 ft, site and datum then use.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1889 was probably several feet lower than that of Oct. 16, 1942.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 16,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 20	0930	17,300	7.70	Apr 14	0915	16,100	7.38
Dec 11	2345	*39,100	*12.69	Sep 18	1700	16,300	7.45
Feb 7	0730	25,100	9.65	Sep 29	1315	35,100	11.87

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,360	2,510	3,060	2,440	1,590	1,250	1,590	1,460	1,220	535	477	187
2	2,190	2,230	2,720	2,400	1,310	1,250	2,540	1,820	1,290	616	874	172
3	2,030	2,040	2,440	2,400	1,490	1,260	3,480	5,180	984	565	1,680	160
4	1,870	1,920	2,330	2,340	4,570	1,240	2,730	4,370	850	535	975	147
5	1,770	1,920	2,820	2,300	3,690	1,230	2,140	2,900	1,500	1,830	630	142
6	1,660	8,040	4,290	2,400	6,360	1,330	1,810	2,400	4,590	1,980	648	141
7	1,540	8,120	3,750	e2,170	20,300	1,890	1,640	2,130	2,460	1,560	617	148
8	1,460	4,050	3,090	e1,970	10,000	1,610	1,560	5,320	1,790	2,100	491	196
9	1,410	3,010	2,790	1,940	4,960	1,480	1,510	3,190	1,450	1,570	407	5,850
10	1,340	2,520	2,840	e1,970	3,960	1,350	1,460	2,240	1,220	888	364	6,680
11	1,300	2,330	27,900	e1,880	3,880	1,280	1,350	1,910	1,290	688	335	2,810
12	1,260	2,320	e26,000	1,680	3,220	1,220	1,830	1,720	1,690	619	427	1,720
13	1,260	9,290	8,180	2,000	2,840	1,180	13,000	1,570	2,180	1,710	586	1,220
14	1,230	4,580	6,140	e1,840	2,610	1,100	14,200	1,410	1,420	1,570	499	924
15	2,840	3,110	7,050	1,700	2,430	1,110	7,710	1,320	1,190	2,560	559	793
16	2,970	2,660	6,170	e1,600	2,200	1,340	4,710	1,270	1,690	1,210	498	793
17	1,800	2,450	8,070	1,360	1,980	3,030	3,570	1,260	2,090	729	413	879
18	1,500	2,340	10,400	1,590	1,880	2,220	2,990	1,520	2,100	615	350	8,810
19	1,410	2,890	5,760	1,780	1,830	2,060	2,590	1,880	2,290	576	314	7,060
20	1,310	13,700	4,570	1,570	1,800	2,100	2,320	1,910	1,550	1,810	493	3,590
21	1,240	6,310	e3,840	1,230	1,810	1,810	2,170	1,930	1,100	896	861	2,410
22	1,230	4,360	3,560	1,320	1,790	1,640	2,100	1,630	934	597	479	1,800
23	1,170	3,650	3,380	1,350	1,650	1,470	1,880	1,460	1,050	785	396	1,370
24	1,110	3,230	3,420	1,340	1,570	1,380	1,790	1,320	1,200	1,510	349	1,070
25	1,080	3,610	4,070	1,380	1,560	1,340	1,720	1,290	1,050	1,360	296	891
26	1,080	3,340	3,690	4,000	1,490	1,300	1,640	1,160	999	805	259	784
27	4,140	2,830	3,370	4,040	1,410	1,280	2,480	1,310	878	1,030	236	714
28	8,960	2,740	e3,080	4,430	1,360	1,340	2,250	1,570	747	1,040	220	3,520
29	5,380	4,930	2,900	3,170	1,280	1,290	1,760	1,630	640	785	207	32,700
30	5,150	3,750	2,810	2,520	---	1,200	1,570	1,360	589	626	202	13,300
31	3,150	---	2,640	2,170	---	1,230	---	1,100	---	528	204	---
TOTAL	68,200	120,780	177,130	66,280	96,820	45,810	94,090	62,540	44,031	34,228	15,346	100,981
MEAN	2,200	4,026	5,714	2,138	3,339	1,478	3,136	2,017	1,468	1,104	495	3,366
MAX	8,960	13,700	27,900	4,430	20,300	3,030	14,200	5,320	4,590	2,560	1,680	32,700
MIN	1,080	1,920	2,330	1,230	1,280	1,100	1,350	1,100	589	528	202	141
CFSM	1.38	2.52	3.58	1.34	2.09	0.93	1.97	1.26	0.92	0.69	0.31	2.11
IN.	1.59	2.82	4.13	1.54	2.26	1.07	2.19	1.46	1.03	0.80	0.36	2.35

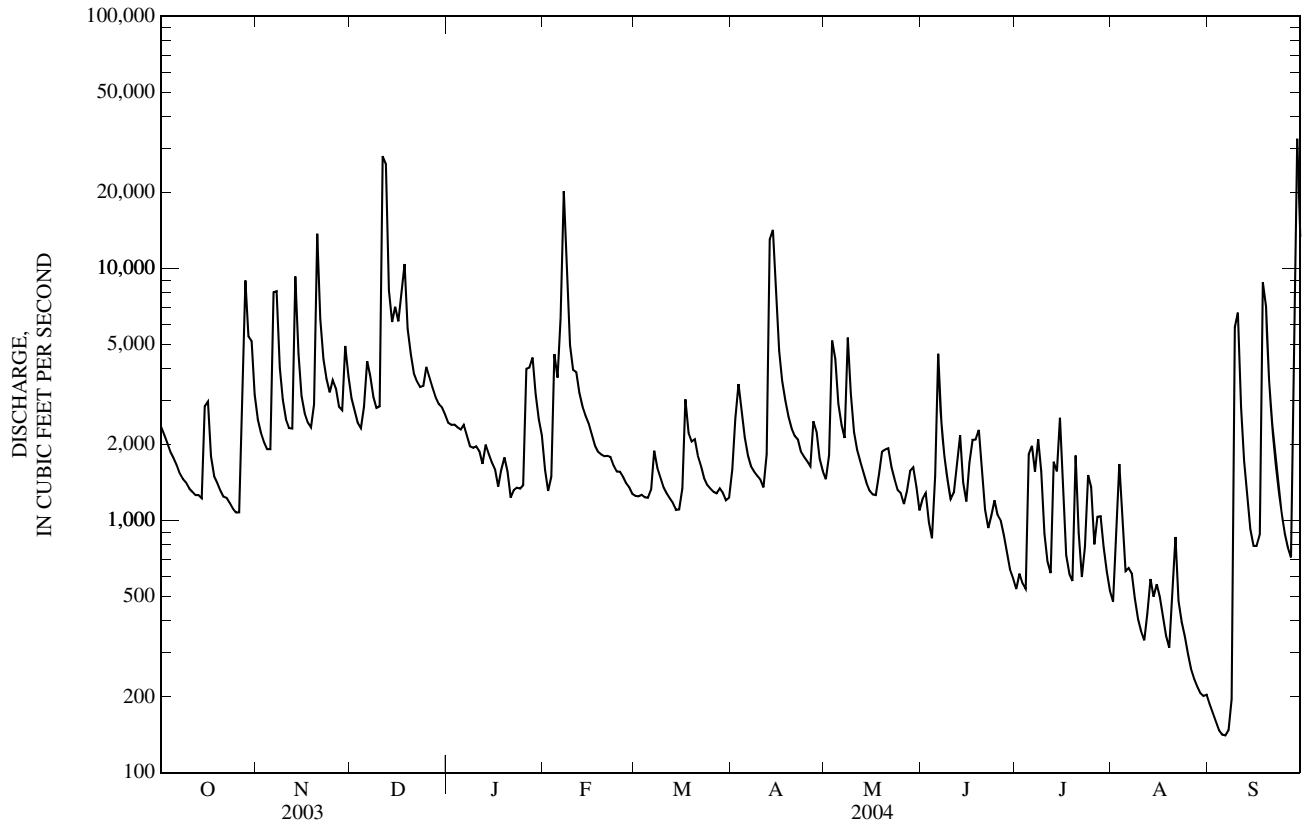
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1907 - 2004, BY WATER YEAR (WY)

MEAN	1,142	1,336	1,697	2,182	2,494	2,700	2,485	1,904	1,443	913	995	1,016
MAX	11,090	6,522	5,714	6,472	8,880	8,505	9,484	10,310	7,112	3,368	7,190	6,924
(WY)	(1943)	(1986)	(2004)	(1996)	(1998)	(1993)	(1983)	(1924)	(1972)	(1949)	(1955)	(1996)
MIN	15.3	75.4	147	268	224	526	587	492	179	78.6	21.1	46.5
(WY)	(1931)	(1931)	(1931)	(1966)	(1931)	(1931)	(1981)	(1956)	(1999)	(1930)	(1930)	(1930)

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1907 - 2004	
ANNUAL TOTAL	1,413,732		926,236			
ANNUAL MEAN	3,873		2,531		1,688	
HIGHEST ANNUAL MEAN					3,292	2003
LOWEST ANNUAL MEAN					440	1931
HIGHEST DAILY MEAN	34,500	Feb 23	32,700	Sep 29	127,000	Oct 16, 1942
LOWEST DAILY MEAN	549	Aug 27	141	Sep 6	5.0	aOct 11, 1930
ANNUAL SEVEN-DAY MINIMUM	712	Aug 22	157	Sep 1	8.3	Oct 9, 1930
MAXIMUM PEAK FLOW			39,100	Dec 11	140,000	Oct 16, 1942
MAXIMUM PEAK STAGE			12.69	Dec 11	b26.90	Oct 16, 1942
INSTANTANEOUS LOW FLOW			136	cSep 5	5.0	Oct 11, 1930
ANNUAL RUNOFF (CFSM)	2.43		1.59		1.06	
ANNUAL RUNOFF (INCHES)	32.95		21.59		14.37	
10 PERCENT EXCEEDS	8,050		4,570		3,340	
50 PERCENT EXCEEDS	2,660		1,680		986	
90 PERCENT EXCEEDS	997		583		230	

a Also Oct. 12, 1930.
b From floodmarks, site and datum then in use.
c Also Sept. 6, 7, 2004.
e Estimated.



01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1929-30, 1956, 1967-74, 1978 to 1999, 2001 to current year.

PERIOD OF CONTINUOUS (15-MINUTE INTERVAL) RECORD.--
SPECIFIC CONDUCTANCE: March 2004 to current.
WATER TEMPERATURE: March 2004 to current.
pH: March 2004 to current.
TURBIDITY: March 2004 to current.

INSTRUMENTATION.-- Water-quality monitor January 2004 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.--Water samples were collected by the U.S. Geological Survey and analyzed by either the U.S. Geological Survey (Agency Code 1028) or by the Virginia Division of Consolidated Laboratory Services (VDCLS, Agency Code 85116), using analytical methods approved by the U.S. Geological Survey. Analyses performed by VDCLS are reported to U.S. Geological Survey rounding specifications. Results of chemical analyses provided by VDCLS were quality-assured and approved by the U.S. Geological Survey.

EXTREMES FOR CURRENT YEAR.--
TURBIDITY: Maximum, 824 FNU, Sept. 9; minimum, 1.10 FNU, Aug. 29, 31.
pH: Maximum, 9.3 standard units, Mar. 26, 27, 29, 30; minimum, 6.6 standard units, Sept. 9, 10, 11, 12.
SPECIFIC CONDUCTANCE: Maximum, 113 microsiemens/cm, Sept. 8, 9; minimum, 42 microsiemens/cm, Sept. 28.
WATER TEMPERATURE: Maximum, 30.3°C, Aug. 1; minimum, 6.2°C, Mar. 18.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Sample type	Agency analyzing sample, code (00028)	Gage height, feet (00065)	Instantaneous discharge, cfs (00061)	Turbidity, NTU (00076)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
OCT												
09...	0900	Environmental	85116	2.86	1,420	3.2	763	9.4	96	7.7	87	15.5
NOV												
06...	1255	Blank	85116	--	--	.65	--	--	--	--	--	--
06...	1300	Environmental	85116	5.88	11,000	140	760	8.6	91	7.0	81	19.5
20...	1125	Blank	85116	--	--	3.5	--	--	--	--	--	--
20...	1130	Environmental	85116	7.54	16,700	170	756	9.8	93	7.0	76	--
DEC												
04...	1200	Environmental	85116	3.23	2,330	6.4	770	13.2	99	7.1	81	.0
11...	1015	Environmental	85116	11.02	31,100	320	744	11.8	97	6.9	61	9.0
JAN												
08...	1145	Environmental	85116	3.08	1,970	6.4	767	14.0	103	7.5	77	.0
08...	1200	Replicate	85116	3.08	1,970	5.7	--	--	--	--	--	--
FEB												
07...	1445	Environmental	85116	8.37	19,800	190	750	13.8	100	6.5	74	7.0
11...	1130	Environmental	85116	3.82	4,000	23	763	13.5	101	7.0	79	6.0
MAR												
18...	1145	Environmental	85116	3.17	2,190	--	761	12.2	100	6.9	87	8.0
APR												
08...	1130	Environmental	85116	2.92	1,550	3.8	750	11.3	106	7.7	76	14.0
08...	1145	Replicate	85116	2.93	1,570	2.5	--	--	--	--	--	--
13...	1100	Environmental	85116	7.01	14,800	100	751	10.8	95	7.0	83	8.0
15...	1015	Environmental	85116	5.03	8,030	90	757	11.1	97	7.1	71	13.0
MAY												
06...	1430	Environmental	85116	3.26	2,360	17	760	10.2	106	7.4	71	22.0
14...	1515	Environmental	1028	2.89	1,420	--	763	9.6	118	8.1	78	29.0
21...	1315	Environmental	1028	3.12	2,020	--	762	--	--	7.1	78	--
JUN												
03...	1015	Environmental	85116	2.69	993	7.0	760	8.7	101	7.9	85	23.0
22...	1500	Environmental	1028	2.64	903	--	755	8.6	107	7.8	88	30.0
JUL												
06...	1100	Environmental	1028	3.00	1,680	--	756	7.5	94	7.3	94	26.0
08...	1045	Environmental	85116	2.88	1,400	26	756	7.4	91	7.2	82	26.0
15...	1130	Environmental	1028	3.46	2,860	--	752	7.3	91	7.2	92	25.0
AUG												
05...	1055	Blank	85116	--	--	.50	--	--	--	--	--	--
05...	1100	Environmental	85116	2.44	601	20	753	7.2	92	7.2	96	21.5
SEP												
09...	1045	Environmental	85116	2.81	1,240	7.1	753	7.7	93	7.1	106	24.0
29...	1115	Environmental	85116	11.79	34,700	190	757	7.6	84	6.3	58	21.5

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Temperature, water, deg C (00010)	Silica, water, fltrd, mg/L (00955)	Residue fixed non-filterable, mg/L (00540)	Residue total at 105 deg. C, suspended, mg/L (00530)	Residue volatile, suspended, mg/L (00535)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Total nitrogen, water, fltrd, mg/L (00602)	Phosphorus, suspnd sedimnt total, mg/L (00667)
OCT													
09...	16.4	13.9	<3	3	<3	.007	.68	.682	<.002	.008	.021	.75	.007
NOV													
06...	--	.100	<3	<3	<3	<.004	<.004	<.004	<.002	.002	.004	.06	<.001
06...	17.8	11.0	237	264	27	<.004	.54	.535	<.002	.017	.036	.79	.286
20...	--	.100	<3	<3	<3	.007	<.004	<.004	<.002	.009	.002	<.004	.002
20...	12.6	9.00	328	369	41	.021	.65	.660	.006	.048	.072	1.1	.255
DEC													
04...	3.7	14.0	3	4	<3	.006	#	#	<.002	.008	.024	.96	.014
11...	5.9	6.00	380	429	49	.078	.45	.455	.003	.050	.073	.82	.430
JAN													
08...	2.8	15.1	<3	3	<3	<.004	.83	.829	<.002	.011	.014	.91	.010
08...	--	14.1	<3	3	<3	<.004	.81	.816	<.002	.010	.015	.92	.010
FEB													
07...	1.5	4.90	375	418	43	.211	.71	.719	.008	.057	.077	1.3	.375
11...	3.3	9.80	23	26	3	.035	.93	.934	.004	.015	.031	1.2	.044
MAR													
18...	6.6	10.7	10	12	<3	.017	.74	.747	.005	.006	.012	.92	.022
APR													
08...	11.7	7.80	3	4	<3	.006	.28	.281	<.002	<.002	.010	.41	.011
08...	--	7.80	3	3	<3	<.004	.29	.290	<.002	<.002	.010	.40	.010
13...	9.0	7.40	373	423	50	.134	.64	.648	.007	.015	.037	1.5	.427
15...	9.2	9.30	125	142	17	.043	.76	.758	.003	.015	.034	.98	.142
MAY													
06...	17.2	2.80	18	22	4	.007	.54	.544	<.002	.013	.020	.67	.035
14...	25.8	--	--	--	--	--	--	--	--	--	--	--	--
21...	22.2	--	--	--	--	--	--	--	--	--	--	--	--
JUN													
03...	22.8	11.7	3	3	<3	<.004	.55	.552	.004	.010	.018	.66	.012
22...	26.1	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
06...	26.3	--	--	--	--	--	--	--	--	--	--	--	--
08...	25.8	11.2	11	14	3	.051	.66	.665	.007	.030	.043	1.0	.042
15...	25.6	--	--	--	--	--	--	--	--	--	--	--	--
AUG													
05...	--	<.100	<3	<3	<3	<.004	<.004	<.004	<.002	.003	.001	<.004	<.001
05...	27.5	10.2	24	27	3	.011	.28	.282	.006	.031	.061	.90	<.020
SEP													
09...	24.4	6.90	12	14	<3	.029	.27	.271	<.002	.014	.022	.50	.067
29...	19.7	5.80	238	266	28	.027	.50	.506	.005	.052	.087	.99	.372

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Total nitrogen, suspnd sedimnt total, mg/L (00601)	Total carbon, suspnd sedimnt total, mg/L (00694)	Inorganic carbon, suspnd sedimnt total, mg/L (00688)	Organic carbon, water, fltrd, mg/L (00681)	Pheophytin a, phytoplankton, ug/L (62360)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)
OCT								
09...	.02	.3	<.02	<2.0	<.5	1.1	--	3
NOV								
06...	<.01	.1	<.02	<2.0	<.5	<.5	50	<1
06...	.87	8.4	M	4.7	8.3	10.6	82	296
20...	<.01	M	<.02	<2.0	<.5	<.5	100	<1
20...	1.0	9.6	.1	6.9	5.8	5.3	79	310
DEC								
04...	.02	.3	<.02	<2.0	<.5	.6	--	4
11...	.94	9.3	<.02	6.7	4.9	8.1	51	790
JAN								
08...	.05	.5	<.02	<2.0	<.5	.5	--	14
08...	.03	.3	<.02	<2.0	<.5	.6	--	17
FEB								
07...	.45	4.8	<.02	5.5	1.7	5.8	78	514
11...	.11	.9	<.02	2.6	<.5	1.5	--	28
MAR								
18...	.07	.6	<.02	3.4	1.1	6.7	97	14
APR								
08...	.07	.5	<.02	<2.0	<.5	6.2	63	8
08...	.05	.5	<.02	<2.0	<.5	5.0	47	9
13...	1.3	11.7	.1	6.5	18.2	45.9	74	551
15...	.30	2.7	<.02	3.6	2.5	7.4	84	166
MAY								
06...	.11	1.0	<.02	2.3	<.5	1.0	97	23
14...	--	--	--	--	--	--	100	7
21...	--	--	--	--	--	--	97	51
JUN								
03...	.04	.4	<.02	3.1	.8	<.5	95	5
22...	--	--	--	--	--	--	96	13
JUL								
06...	--	--	--	--	--	--	98	26
08...	.14	1.4	<.02	3.8	2.6	<.5	--	29
15...	--	--	--	--	--	--	98	131
AUG								
05...	.03	.1	<.02	<2.0	<.5	<.5	--	<1
05...	.10	.7	<.02	5.1	.9	.9	--	47
SEP								
09...	.17	1.2	<.02	2.5	2.9	.8	67	19
29...	.86	8.3	<.02	8.8	8.7	1.5	52	568

Remark codes used in this table:
< -- Less than
M-- Presence verified, not quantified

Value flags used in this table:
-- Reviewed and rejected (DQI=Q or X)

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA—Continued

TURBIDITY, WATER, MONOCHROME NEAR INFRA-RED LED LIGHT, 780-900 NM, DETECTION ANGLE 90 +/ -2.5 DEGREES, FNU
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	48.8	3.70	6.80	8.40	5.10	5.90
2	---	---	---	---	---	---	71.3	8.00	15.7	19.5	5.10	5.70
3	---	---	---	---	---	---	97.1	25.7	37.1	683	19.5	81.0
4	---	---	---	---	---	---	109	20.0	29.9	239	94.2	182
5	---	---	---	3.90	2.80	3.20	67.0	8.70	14.1	95.2	13.0	47.6
6	---	---	---	4.20	2.80	3.00	---	---	---	30.7	19.1	25.2
7	---	---	---	9.30	4.00	6.80	---	---	---	23.9	14.1	18.0
8	---	---	---	13.8	6.50	7.30	---	---	---	---	---	---
9	---	---	---	11.8	4.80	6.30	3.60	2.60	3.00	---	---	---
10	---	---	---	5.80	3.50	4.10	7.70	2.50	2.90	---	---	---
11	---	---	---	4.60	2.90	3.20	3.34	2.30	2.60	---	---	---
12	---	---	---	22.7	2.60	3.00	58.9	2.40	2.80	---	---	---
13	---	---	---	5.10	2.10	2.60	305	58.9	252	---	---	---
14	---	---	---	28.5	1.90	2.50	261	177	200	---	---	---
15	---	---	---	26.0	2.10	3.20	542	70.1	99.0	6.20	3.70	4.60
16	---	---	---	194	1.90	4.40	71.8	39.5	54.0	20.7	3.10	4.20
17	---	---	---	69.0	3.90	29.4	42.9	26.3	32.8	22.9	2.60	3.40
18	---	---	---	33.9	12.5	19.2	27.2	18.9	23.4	84.7	4.10	7.30
19	---	---	---	14.5	8.40	10.7	19.9	15.4	18.1	33.8	6.00	13.1
20	---	---	---	16.9	8.40	11.4	16.4	12.5	14.7	71.1	20.7	39.0
21	---	---	---	28.8	5.80	8.90	13.4	10.7	12.3	85.8	31.3	70.8
22	---	---	---	7.30	4.00	4.95	13.5	10.1	11.4	31.3	19.7	22.1
23	---	---	---	7.40	3.20	4.00	10.6	7.70	9.30	21.1	9.40	12.4
24	---	---	---	15.1	3.10	3.90	9.10	7.10	7.70	12.7	6.80	7.70
25	---	---	---	---	---	---	8.90	7.50	8.00	9.00	4.90	5.90
26	---	---	---	---	---	---	9.25	7.00	8.20	8.50	4.80	6.05
27	---	---	---	---	---	---	30.6	8.90	16.4	8.70	4.80	6.20
28	---	---	---	---	---	---	29.9	17.2	24.6	39.8	5.00	18.0
29	---	---	---	---	---	---	18.3	8.90	12.2	142	12.9	19.9
30	---	---	---	25.5	2.80	4.75	9.20	6.20	7.30	89.3	8.50	13.7
31	---	---	---	26.3	2.90	3.60	---	---	---	10.6	7.60	8.65
MAX	---	---	---	194	12.5	29.4	542	177	252	683	94.2	182
MIN	---	---	---	3.90	1.90	2.50	3.34	2.30	2.60	6.20	2.60	3.40

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA—Continued

TURBIDITY, WATER, MONOCHROME NEAR INFRA-RED LED LIGHT, 780-900 NM, DETECTION ANGLE 90 +/ -2.5 DEGREES, FNU—CONTINUED

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	23.4	7.10	10.1	23.7	3.10	4.40	---	---	---	8.20	1.30	1.90
2	17.4	7.60	9.60	29.4	2.50	4.61	---	---	---	4.10	1.30	1.80
3	---	---	---	19.2	2.10	3.00	---	---	---	5.50	1.30	2.00
4	9.90	3.30	4.50	7.40	2.60	3.50	---	---	---	43.9	1.50	2.75
5	202	3.40	6.85	58.5	6.80	31.0	---	---	---	34.5	1.60	2.65
6	555	108	168	184	40.6	121	---	---	---	15.8	1.50	2.30
7	125	36.4	69.6	692	85.9	183	---	---	---	12.0	1.60	2.30
8	36.4	15.0	21.8	267	61.2	91.8	---	---	---	4.10	1.50	2.00
9	32.2	9.60	11.6	147	73.6	110	---	---	---	824	1.80	18.2
10	11.9	7.20	9.30	342	22.5	48.5	---	---	---	657	146	273
11	11.5	6.40	7.80	25.9	13.0	17.7	14.9	2.80	3.62	150	59.4	90.5
12	65.6	10.3	23.1	37.6	8.80	12.5	61.6	1.79	3.42	61.3	29.2	41.7
13	39.4	26.8	33.4	218	10.3	80.4	57.8	6.32	12.8	30.4	19.6	25.3
14	27.3	17.6	21.5	92.1	38.4	66.5	7.86	4.59	5.61	22.2	13.6	17.4
15	20.7	11.1	16.1	190	73.8	118	7.06	3.73	5.58	27.0	10.7	13.4
16	30.5	10.5	12.3	103	41.9	73.8	12.7	2.57	3.73	19.0	7.20	10.8
17	110	28.4	49.3	42.6	15.4	24.4	6.08	2.27	3.10	43.1	5.80	9.30
18	807	79.4	122	22.1	9.20	15.9	9.49	1.78	2.59	592	30.3	242
19	132	99.2	110	12.1	7.40	9.50	49.3	1.38	2.09	342	97.2	164
20	---	---	---	140	10.0	89.0	236	1.28	2.83	98.7	42.7	66.5
21	---	---	---	93.7	19.8	44.0	111	3.78	8.53	43.5	23.8	31.7
22	---	---	---	---	---	---	---	---	---	24.5	13.6	18.9
23	14.1	8.40	9.90	38.9	9.32	11.9	---	---	---	14.7	9.10	12.3
24	30.0	11.1	12.7	193	11.9	17.4	36.1	5.17	14.2	11.3	6.40	8.40
25	19.8	8.40	10.2	159	36.9	62.5	---	---	---	8.50	4.80	6.30
26	13.0	7.40	9.15	65.2	17.8	28.9	7.70	1.30	2.10	9.80	4.50	5.20
27	---	---	---	56.8	12.4	24.6	5.00	1.40	2.10	8.30	2.90	4.20
28	---	---	---	36.8	16.2	21.9	4.00	1.20	2.00	564	2.30	3.60
29	35.1	3.60	5.65	---	---	---	2.99	1.10	1.80	---	---	---
30	23.6	3.10	4.70	---	---	---	3.60	1.20	1.50	---	---	---
31	---	---	---	---	---	---	14.0	1.10	1.50	---	---	---
MAX	807	108	168	692	85.9	183	236	6.32	14.2	824	146	273
MIN	9.90	3.10	4.50	7.40	2.10	3.00	2.99	1.10	1.50	4.10	1.30	1.80

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA—Continued

PH, WATER, UNFILTERED, FIELD, STANDARD UNITS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	8.4	7.5	8.0	8.5	7.5	7.9
2	---	---	---	---	---	---	7.9	7.5	7.6	8.6	7.5	7.8
3	---	---	---	---	---	---	7.6	7.4	7.5	7.8	7.3	7.4
4	---	---	---	---	---	---	8.0	7.4	7.5	7.4	7.3	7.3
5	---	---	---	8.4	7.5	7.8	8.7	7.5	7.7	7.7	7.4	7.4
6	---	---	---	8.2	7.5	7.7	8.8	7.5	8.0	8.2	7.4	7.6
7	---	---	---	8.5	7.5	7.8	9.0	7.5	8.2	8.4	7.4	7.7
8	---	---	---	8.3	7.5	7.8	---	---	---	---	---	---
9	---	---	---	8.5	7.5	7.8	9.0	7.5	8.2	7.4	7.1	7.3
10	---	---	---	8.5	7.5	7.9	9.0	7.6	8.3	7.8	7.3	7.4
11	---	---	---	8.8	7.6	8.1	9.0	7.5	7.6	8.3	7.4	7.6
12	---	---	---	8.8	7.6	8.4	7.6	7.4	7.5	8.8	7.4	7.7
13	---	---	---	8.9	7.6	8.5	7.4	7.0	7.1	9.0	7.5	8.1
14	---	---	---	8.9	7.7	8.6	7.1	7.0	7.1	---	---	---
15	---	---	---	9.1	7.7	8.8	7.2	7.1	7.2	9.0	7.4	8.4
16	---	---	---	9.1	7.6	7.8	7.4	7.2	7.2	9.0	7.4	8.4
17	---	---	---	7.6	7.4	7.5	7.5	7.2	7.3	9.1	7.5	8.5
18	---	---	---	7.8	7.4	7.5	7.7	7.3	7.4	9.1	7.4	8.5
19	---	---	---	8.4	7.4	7.7	7.8	7.3	7.4	8.8	7.3	7.7
20	---	---	---	8.5	7.5	7.7	7.9	7.3	7.5	7.4	7.2	7.2
21	---	---	---	8.7	7.5	7.9	8.1	7.4	7.6	7.5	7.1	7.2
22	---	---	---	9.0	7.5	8.2	8.2	7.4	7.6	8.5	7.2	7.5
23	---	---	---	9.0	7.6	8.5	8.3	7.4	7.6	8.7	7.3	8.0
24	---	---	---	9.1	7.6	8.6	8.5	7.4	7.7	8.9	6.9	8.3
25	---	---	---	9.2	7.6	8.8	8.2	7.4	7.6	8.9	7.4	8.4
26	---	---	---	9.3	7.7	8.9	7.8	7.5	7.6	8.9	7.3	8.5
27	---	---	---	9.3	7.8	8.9	7.9	7.5	7.6	8.9	7.3	8.3
28	---	---	---	9.2	7.5	8.8	8.2	7.5	7.6	8.9	7.2	7.7
29	---	---	---	9.3	7.8	8.9	8.5	7.5	7.8	8.8	7.2	7.7
30	---	---	---	9.3	7.9	8.8	8.7	7.5	7.9	8.8	7.3	7.7
31	---	---	---	9.0	7.7	8.4	---	---	---	8.3	7.2	7.6
MAX	---	---	---	9.3	7.9	8.9	9.0	7.6	8.3	9.1	7.5	8.5
MIN	---	---	---	7.6	7.4	7.5	7.1	7.0	7.1	7.4	6.9	7.2

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA—Continued

PH, WATER, UNFILTERED, FIELD, STANDARD UNITS—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	8.8	7.4	8.2	9.0	8.6	8.7	8.5	7.8	8.1	8.6	7.3	7.7
2	8.8	7.3	8.5	9.0	8.6	8.8	8.0	7.1	7.4	8.7	7.4	7.8
3	---	---	---	8.9	8.4	8.8	7.5	7.1	7.3	8.7	7.4	8.1
4	9.0	7.7	7.9	8.8	7.8	8.3	7.5	7.0	7.1	8.8	7.6	8.3
5	7.7	7.4	7.6	7.8	7.3	7.3	7.4	7.2	7.3	8.6	7.7	8.3
6	7.4	7.2	7.2	7.3	7.1	7.2	8.4	7.3	7.5	8.3	7.5	7.7
7	7.4	7.2	7.2	7.1	7.0	7.0	8.5	7.6	8.1	8.4	7.4	7.6
8	8.1	7.3	7.4	7.1	7.0	7.0	8.7	7.9	8.2	8.2	7.4	7.7
9	8.5	7.3	7.8	7.1	6.9	7.0	8.9	8.2	8.5	7.8	6.6	7.4
10	8.6	7.4	8.1	7.1	6.9	7.0	9.0	8.3	8.6	6.7	6.6	6.6
11	8.5	7.4	7.6	7.4	7.0	7.2	9.1	8.4	8.8	6.7	6.6	6.6
12	8.4	7.3	7.6	7.9	7.1	7.3	9.0	7.5	8.6	6.8	6.6	6.7
13	8.0	7.4	7.5	7.6	7.0	7.2	8.5	7.4	7.7	6.8	6.7	6.8
14	8.1	7.3	7.5	7.5	7.2	7.2	8.4	7.5	8.1	7.2	6.8	6.9
15	8.3	7.4	7.8	7.4	7.2	7.2	8.6	7.3	7.6	7.4	7.2	7.2
16	8.2	7.4	7.6	7.4	7.2	7.3	8.9	8.4	8.6	7.6	7.3	7.4
17	7.6	7.3	7.4	7.6	7.3	7.4	9.0	8.6	8.8	7.6	7.3	7.5
18	7.4	7.2	7.3	7.8	7.3	7.5	9.2	8.6	9.0	7.5	6.8	7.3
19	7.3	7.2	7.3	8.3	7.5	7.7	9.2	8.6	8.9	7.2	6.9	7.1
20	7.6	7.3	7.4	7.8	7.2	7.3	9.1	8.3	8.7	7.3	7.2	7.2
21	7.9	7.4	7.6	7.5	7.2	7.2	8.9	7.2	7.5	7.4	7.3	7.3
22	---	---	---	---	---	---	8.4	7.2	7.4	7.5	7.3	7.4
23	8.0	7.3	7.6	7.5	7.0	7.2	8.7	7.7	8.1	7.6	7.4	7.5
24	8.1	7.3	7.6	7.2	7.0	7.0	8.8	7.7	8.3	7.7	7.4	7.5
25	8.1	7.3	7.7	7.0	6.9	7.0	---	---	---	7.8	7.4	7.6
26	8.2	7.3	7.7	7.1	7.0	7.0	9.0	7.5	8.2	7.9	7.4	7.7
27	8.4	7.4	8.0	7.4	7.0	7.1	8.9	7.4	8.1	7.8	7.5	7.7
28	8.6	7.8	8.4	7.7	7.2	7.3	8.9	7.4	8.1	7.7	6.7	7.5
29	8.8	8.1	8.5	8.0	7.3	7.5	8.8	7.3	8.1	---	---	---
30	8.9	8.4	8.6	8.3	7.4	7.8	8.5	7.3	7.7	---	---	---
31	---	---	---	8.5	7.6	8.0	8.4	7.2	7.5	---	---	---
MAX	9.0	8.4	8.6	9.0	8.6	8.8	9.2	8.6	9.0	8.8	7.7	8.3
MIN	7.3	7.2	7.2	7.0	6.9	7.0	7.4	7.0	7.1	6.7	6.6	6.6

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	82	79	81	79	78	79
2	---	---	---	---	---	---	103	82	86	79	77	78
3	---	---	---	---	---	---	102	93	97	91	77	83
4	---	---	---	---	---	---	101	93	96	77	73	73
5	---	---	---	87	85	86	94	86	90	75	73	74
6	---	---	---	85	83	85	86	83	86	75	71	74
7	---	---	---	95	83	84	83	81	83	72	70	72
8	---	---	---	105	90	92	---	---	---	---	---	---
9	---	---	---	92	87	90	79	79	79	83	73	78
10	---	---	---	87	82	84	81	79	80	76	75	76
11	---	---	---	83	79	82	82	80	81	77	75	76
12	---	---	---	80	77	79	83	75	81	79	76	77
13	---	---	---	77	75	77	88	66	77	83	77	81
14	---	---	---	77	74	75	76	72	74	---	---	---
15	---	---	---	75	72	74	75	73	74	79	77	78
16	---	---	---	73	71	72	73	71	72	80	78	79
17	---	---	---	101	71	92	71	71	71	80	77	79
18	---	---	---	92	84	90	76	71	71	82	77	80
19	---	---	---	91	90	91	73	71	72	79	77	78
20	---	---	---	99	89	95	73	73	73	82	75	77
21	---	---	---	89	84	86	76	73	74	83	76	78
22	---	---	---	85	82	83	78	75	75	78	76	78
23	---	---	---	83	80	82	77	76	77	81	78	80
24	---	---	---	81	78	80	77	76	77	82	80	82
25	---	---	---	80	78	79	79	77	78	87	77	84
26	---	---	---	80	78	79	79	77	77	79	75	77
27	---	---	---	80	78	79	88	76	77	85	77	82
28	---	---	---	80	78	79	89	86	88	84	79	81
29	---	---	---	82	80	81	87	82	84	84	79	82
30	---	---	---	83	80	82	82	79	81	87	82	85
31	---	---	---	81	79	81	---	---	---	83	81	83
MAX	---	---	---	105	90	95	103	93	97	91	82	85
MIN	---	---	---	73	71	72	71	66	71	72	70	72

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	82	80	81	92	90	91	97	93	95	99	97	98
2	83	80	82	92	89	91	101	72	94	101	97	99
3	---	---	---	91	89	90	107	82	92	102	98	100
4	84	82	84	91	88	89	98	83	95	104	98	103
5	83	81	82	103	84	88	96	93	95	108	101	105
6	94	79	85	103	88	99	95	93	94	108	102	106
7	81	80	81	88	86	87	100	92	95	109	104	108
8	80	79	80	90	84	86	105	100	104	113	102	108
9	80	79	80	92	83	88	106	103	104	113	44	104
10	82	79	81	93	83	88	104	98	101	52	43	51
11	83	78	81	98	93	94	101	97	99	53	51	52
12	91	78	82	99	94	96	101	85	98	55	53	54
13	99	82	92	98	80	86	92	85	88	57	55	56
14	90	84	86	99	85	93	91	87	90	61	57	60
15	86	83	86	99	86	95	99	85	89	64	60	62
16	85	82	84	98	94	95	102	98	99	69	64	65
17	104	83	91	94	93	93	102	96	99	74	68	72
18	88	82	85	94	92	93	103	94	99	92	59	71
19	86	81	84	95	93	95	103	95	100	71	65	68
20	93	86	88	100	79	88	101	94	100	65	62	64
21	90	88	89	87	78	81	107	89	102	64	62	63
22	---	---	---	---	---	---	105	99	103	66	63	64
23	88	86	87	84	81	83	107	101	103	69	66	67
24	91	86	88	91	81	84	103	94	99	69	68	69
25	91	88	90	---	---	---	---	---	---	71	69	70
26	92	84	89	---	---	---	100	94	98	73	70	72
27	90	84	88	---	---	---	100	94	98	76	72	74
28	92	89	91	91	87	89	101	95	98	82	42	78
29	92	90	91	97	88	92	101	95	99	---	---	---
30	92	90	91	99	97	98	104	97	101	---	---	---
31	---	---	---	97	95	96	102	98	100	---	---	---
MAX	104	90	92	103	97	99	107	103	104	113	104	108
MIN	80	78	80	84	78	81	91	72	88	52	42	51

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	11.9	10.9	11.4	19.8	17.9	18.6
2	---	---	---	---	---	---	10.9	9.7	10.1	21.6	19.3	20.0
3	---	---	---	---	---	---	10.1	9.2	9.6	21.1	17.2	18.7
4	---	---	---	---	---	---	10.7	8.8	9.7	17.3	15.8	16.6
5	---	---	---	14.0	11.2	12.0	10.3	8.1	9.6	17.1	14.8	15.9
6	---	---	---	14.8	13.9	14.1	10.8	8.1	9.5	18.6	15.4	16.4
7	---	---	---	14.2	12.6	13.5	12.8	9.6	10.7	20.5	17.1	18.2
8	---	---	---	13.4	10.5	11.8	---	---	---	---	---	---
9	---	---	---	10.5	9.0	9.4	14.2	11.5	12.6	20.9	17.1	18.0
10	---	---	---	9.0	7.4	7.8	14.0	12.5	13.4	22.7	19.6	20.6
11	---	---	---	8.9	6.3	7.4	14.0	11.7	12.9	24.0	21.4	22.4
12	---	---	---	9.3	7.4	8.5	11.7	10.2	11.0	25.1	22.2	23.5
13	---	---	---	9.0	7.3	8.6	10.2	8.8	8.9	25.8	23.0	24.5
14	---	---	---	9.0	7.3	8.3	9.5	8.9	9.2	---	---	---
15	---	---	---	11.2	8.4	10.2	11.2	9.0	9.7	26.4	24.1	25.5
16	---	---	---	11.1	8.5	9.7	12.8	9.8	10.7	26.2	24.0	25.6
17	---	---	---	8.5	6.9	7.6	14.9	11.6	12.4	25.7	23.8	25.1
18	---	---	---	7.6	6.2	6.8	17.5	13.8	14.8	25.8	23.6	25.2
19	---	---	---	8.4	6.9	7.5	19.6	16.5	17.4	25.2	23.4	24.1
20	---	---	---	10.0	6.8	7.8	21.1	18.4	19.3	23.6	22.1	22.4
21	---	---	---	11.1	9.4	10.0	21.6	19.4	20.5	23.2	21.5	22.2
22	---	---	---	9.4	8.0	9.1	22.2	19.8	20.9	25.4	21.8	23.0
23	---	---	---	9.2	7.0	8.4	22.8	20.6	21.7	27.1	24.1	25.3
24	---	---	---	10.0	7.2	8.6	22.8	20.9	22.0	27.6	25.2	26.7
25	---	---	---	12.2	9.0	10.2	22.2	19.3	20.0	28.1	25.7	27.2
26	---	---	---	14.7	11.2	12.6	19.3	18.0	18.7	27.9	26.0	27.0
27	---	---	---	14.9	13.9	14.4	18.3	16.4	17.6	26.8	24.7	26.1
28	---	---	---	15.4	13.9	14.8	16.8	14.4	15.8	26.6	24.6	25.2
29	---	---	---	14.9	13.5	14.0	18.0	14.8	16.2	25.0	23.1	24.4
30	---	---	---	13.8	12.1	12.3	19.1	16.5	17.8	24.3	21.9	22.2
31	---	---	---	12.3	11.7	12.0	---	---	---	23.1	21.3	21.8
MAX	---	---	---	15.4	13.9	14.8	22.8	20.9	22.0	28.1	26.0	27.2
MIN	---	---	---	7.6	6.2	6.8	9.5	8.1	8.9	17.1	14.8	15.9

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	24.1	21.6	22.6	28.7	26.5	27.2	30.3	28.8	29.2	28.9	25.7	27.5
2	24.2	21.9	23.6	29.5	27.1	28.0	28.9	27.4	28.0	28.0	25.6	27.2
3	---	---	---	29.7	27.8	28.6	27.9	26.3	27.5	27.7	24.9	26.4
4	24.7	21.7	23.0	28.6	27.5	28.3	28.7	26.1	27.3	27.6	25.1	26.4
5	21.7	18.9	20.2	28.5	27.0	27.5	28.6	25.9	27.6	26.6	24.9	25.8
6	19.5	17.7	18.6	28.0	25.9	27.4	25.9	24.2	24.8	25.6	23.8	24.0
7	21.6	18.7	19.2	27.5	26.2	26.8	24.5	22.6	23.8	25.1	23.5	23.8
8	24.1	20.5	21.4	27.6	25.4	26.5	25.7	23.0	23.6	25.1	24.1	24.4
9	26.5	22.8	24.2	27.7	25.3	26.4	27.4	24.0	24.6	25.0	21.8	24.4
10	27.2	25.0	26.3	28.3	26.2	27.5	28.4	25.2	26.0	22.6	20.8	21.4
11	27.1	24.3	25.6	29.4	27.0	28.0	29.0	26.1	27.3	22.4	20.8	21.7
12	25.4	22.8	24.1	29.2	28.0	28.5	28.0	25.1	26.7	23.2	20.9	21.9
13	24.7	22.4	22.7	28.1	25.1	27.5	26.4	24.7	25.1	23.3	21.6	22.8
14	24.2	21.8	22.5	28.6	26.4	27.4	25.6	23.1	24.9	23.3	22.1	22.4
15	25.9	23.4	24.2	27.3	24.9	26.5	23.6	22.1	22.9	22.4	21.6	21.8
16	26.0	24.9	25.6	27.0	24.3	25.9	26.3	23.2	23.9	22.6	21.3	21.6
17	28.4	25.1	26.0	27.4	25.4	26.6	26.9	24.9	25.3	23.0	22.0	22.7
18	28.7	26.2	27.5	26.8	25.6	26.2	28.0	25.2	26.0	23.1	20.6	21.7
19	27.7	26.0	27.1	28.1	25.3	26.1	29.2	25.8	26.7	20.6	19.1	19.6
20	26.8	24.2	25.8	26.7	24.4	26.4	29.9	26.5	28.0	19.1	17.4	18.4
21	25.7	23.4	25.0	27.4	24.5	25.9	28.9	25.9	27.1	19.1	16.7	17.8
22	---	---	---	---	---	---	26.3	24.3	25.3	19.9	17.5	18.6
23	26.3	24.8	25.4	27.9	26.9	27.5	27.4	24.4	25.0	20.9	18.1	19.5
24	26.6	23.8	24.8	27.7	25.7	26.3	27.9	25.3	26.0	21.3	19.8	20.5
25	26.6	25.3	25.6	---	---	---	---	---	---	21.6	19.9	21.1
26	26.3	24.7	25.5	---	---	---	28.8	25.4	26.5	21.5	20.1	21.0
27	25.9	23.6	25.2	---	---	---	29.3	26.0	27.2	21.2	20.2	20.5
28	26.2	24.4	25.5	27.1	24.9	25.8	30.0	26.4	27.9	20.8	20.3	20.5
29	27.2	24.8	25.7	27.8	25.6	26.8	30.1	27.0	28.6	---	---	---
30	28.2	25.5	26.4	29.1	26.9	27.5	29.5	27.5	28.2	---	---	---
31	---	---	---	30.1	27.8	28.3	29.1	26.2	27.7	---	---	---
MAX	28.7	26.2	27.5	30.1	28.0	28.6	30.3	28.8	29.2	28.9	25.7	27.5
MIN	19.5	17.7	18.6	26.7	24.3	25.8	23.6	22.1	22.9	19.1	16.7	17.8

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01669000 PISCATAWAY CREEK NEAR TAPPAHANNOCK, VA

LOCATION.--Lat 37°52'37", long 76°54'02", NAD83, 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 mi^2.

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 0.50 ft NGVD of 1929. Prior to May 2, 2001, at same site, at datum 2.00 ft higher.

REMARKS.--Records good except those for period with ice effect, Jan. 9-12, and period of no gage-height record, Jan. 21 to Feb. 3, which are fair. Maximum discharge, 2,380 ft^3/s, from rating curve extended above 1,400 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Aug 16	2245	514	6.99	Aug 31	1345	*652	*7.30

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	52	35	36	e27	39	42	28	26	11	45	192
2	45	48	33	37	e26	40	50	28	22	11	53	79
3	43	47	32	38	e39	39	44	47	17	11	87	59
4	42	47	32	37	49	37	39	49	17	29	91	54
5	41	47	50	38	43	36	33	36	37	134	59	50
6	40	64	60	47	47	39	30	31	37	62	59	53
7	40	107	46	40	138	43	29	27	24	36	53	58
8	40	72	40	36	90	43	29	26	19	37	43	66
9	41	51	38	e35	65	40	28	24	19	31	38	70
10	41	45	38	e33	61	38	28	27	18	24	36	60
11	42	44	61	e31	58	36	28	24	30	20	33	48
12	43	44	60	e34	55	35	37	23	45	18	34	43
13	43	44	45	35	54	32	89	23	35	22	38	40
14	42	41	65	34	53	31	98	25	23	34	68	39
15	54	39	97	34	53	32	74	26	21	119	110	49
16	57	39	62	32	53	49	59	28	18	67	324	64
17	47	40	56	32	49	68	51	29	19	37	319	55
18	42	39	56	36	49	50	41	33	19	51	130	72
19	40	43	50	41	49	44	36	30	18	46	91	77
20	39	65	46	37	47	40	35	27	18	37	74	51
21	39	59	43	e33	46	39	35	28	12	34	65	42
22	40	45	43	e29	43	37	36	33	12	29	68	39
23	39	41	42	e31	43	35	33	34	22	28	62	37
24	38	39	44	e28	48	34	35	27	24	74	55	36
25	38	37	46	e26	43	37	34	21	17	109	50	35
26	39	36	41	e24	41	36	33	23	22	99	47	34
27	44	35	39	e27	40	30	48	27	24	80	45	34
28	53	36	39	e29	40	30	41	32	17	88	44	54
29	85	39	39	e32	40	29	32	30	14	121	43	77
30	98	38	39	e30	---	28	28	24	11	76	65	56
31	65	---	37	e29	---	29	---	25	---	52	441	---
TOTAL	1,445	1,423	1,454	1,041	1,489	1,175	1,255	895	657	1,627	2,770	1,723
MEAN	46.6	47.4	46.9	33.6	51.3	37.9	41.8	28.9	21.9	52.5	89.4	57.4
MAX	98	107	97	47	138	68	98	49	45	134	441	192
MIN	38	35	32	24	26	28	28	21	11	11	33	34
CFSM	1.66	1.69	1.68	1.20	1.83	1.35	1.49	1.03	0.78	1.87	3.19	2.05
IN.	1.92	1.89	1.93	1.38	1.98	1.56	1.67	1.19	0.87	2.16	3.68	2.29

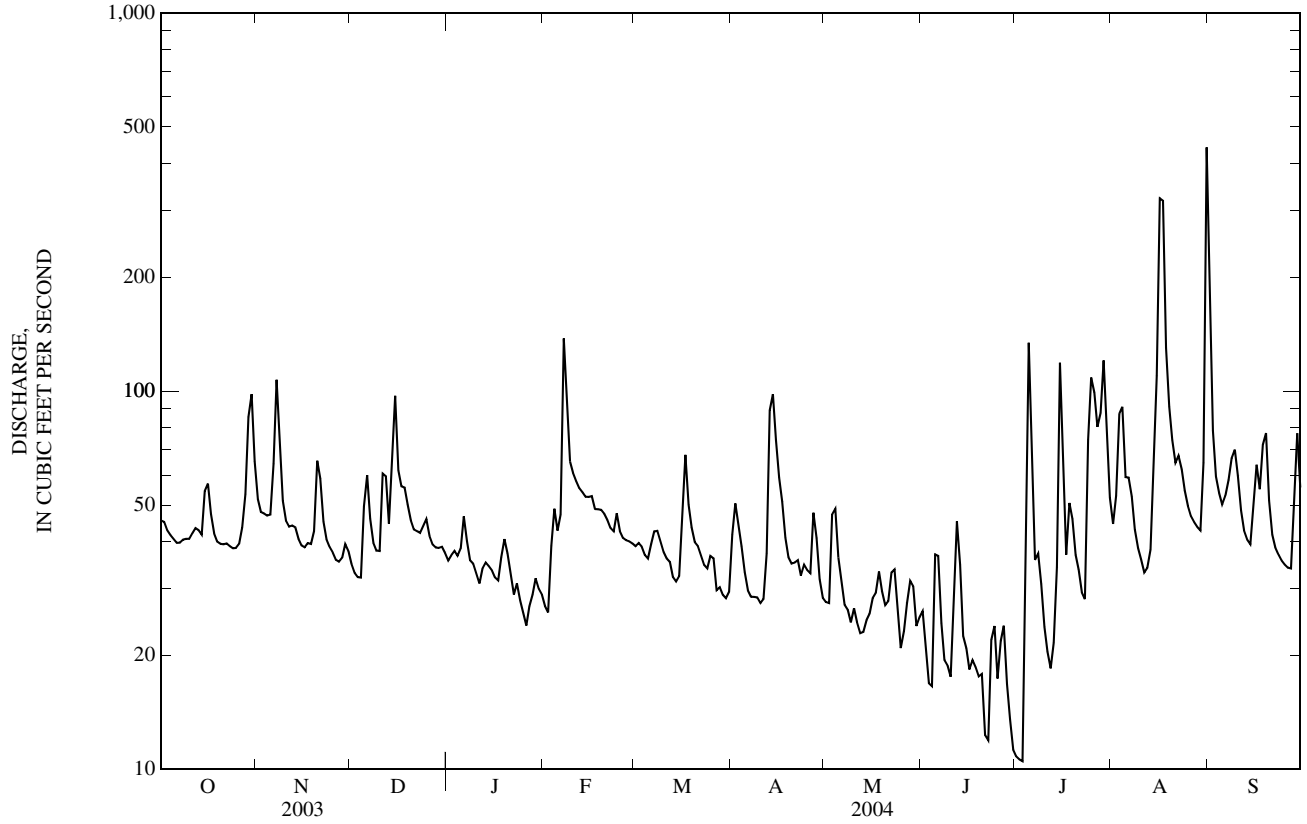
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 2004, BY WATER YEAR (WY)

MEAN	18.9	26.5	30.1	36.5	43.6	51.7	47.9	36.2	25.0	18.4	18.8	17.8
MAX	63.4	74.1	74.7	88.4	124	118	109	87.0	111	105	89.4	85.9
(WY)	(1980)	(1980)	(1997)	(1978)	(1998)	(1994)	(1958)	(1958)	(1972)	(1975)	(2004)	(2003)
MIN	1.30	6.30	9.20	7.93	14.0	13.5	13.4	5.19	1.12	0.74	0.18	0.28
(WY)	(1955)	(1955)	(1966)	(1955)	(1955)	(1981)	(1985)	(1999)	(1999)	(2002)	(2002)	(1954)

01669000 PISCATAWAY CREEK NEAR TAPPAHANNOCK, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1952 - 2004	
ANNUAL TOTAL	17,262		16,954			
ANNUAL MEAN	47.3		46.3		30.9	
HIGHEST ANNUAL MEAN					56.8	1958
LOWEST ANNUAL MEAN					9.24	2002
HIGHEST DAILY MEAN	552	Sep 19	441	Aug 31	1,080	Aug 13, 1955
LOWEST DAILY MEAN	e10	Jan 27	11	aJun 30	0.00	bAug 11, 1999
ANNUAL SEVEN-DAY MINIMUM	e11	cJan 22	14	Jun 27	0.00	dAug 9, 2002
MAXIMUM PEAK FLOW			652	Aug 31	2,380	Aug 20, 1969
MAXIMUM PEAK STAGE			f7.30	Aug 31	g7.52	hAug 20, 1969
INSTANTANEOUS LOW FLOW			9.9	Jul 4	0.00	(j)
ANNUAL RUNOFF (CFSM)	1.69		1.65		1.10	
ANNUAL RUNOFF (INCHES)	22.93		22.52		14.98	
10 PERCENT EXCEEDS	68		68		62	
50 PERCENT EXCEEDS	41		39		22	
90 PERCENT EXCEEDS	19		24		5.0	

a Also July 1-3, 2004.
b Also Aug. 12, 13, 1999 and Aug. 9 to Sept. 1, 2002.
c Also Jan. 23, 2003.
d Many days in August 2002.
e Estimated.
f Backwater from debris.
g From high-water mark in gage house.
h Also Sept. 18, 2003.
j No flow part or all of many days in August 1999 and July to September 2002.



01669520 DRAGON SWAMP AT MASCOT, VA

LOCATION.--Lat 37°38'02", long 76°41'47", NAD83, 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 mi^2.

PERIOD OF RECORD.--August 1981 to current year.

GAGE.--Water-stage recorder. Datum of gage is 21.60 ft NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 10-13, 16-18 and Jan. 23 to Feb. 3, and periods of no gage-height record, Feb. 24, Aug. 11, and Sept. 22, 23, which are fair. Maximum discharge, 6,600 ft^3/s, from rating curve extended above 2,150 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 9	1100	780	6.87	Jul 26	0545	*2,930	*9.54
Dec 15	0545	708	6.65	Aug 6	0945	780	6.77
Apr 15	1330	1,560	7.88	Aug 17	1445	1,340	7.59

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	219	240	187	185	e125	129	132	178	40	105	486	308
2	198	241	180	182	e120	127	150	179	39	140	375	482
3	180	227	173	182	e140	126	165	196	36	289	526	520
4	168	207	168	180	199	126	170	197	40	270	650	373
5	159	184	207	185	213	127	165	187	68	223	705	243
6	152	183	231	197	235	130	157	193	71	191	766	187
7	148	269	238	195	446	134	146	196	71	248	642	161
8	143	371	252	187	427	151	135	187	71	308	438	147
9	138	749	265	184	463	155	127	168	69	325	300	171
10	134	640	259	e180	412	160	120	146	64	288	234	186
11	131	444	291	e165	305	166	123	128	66	220	e200	184
12	128	320	308	e155	252	160	133	112	86	169	177	170
13	123	259	312	e158	225	150	193	98	88	161	164	146
14	119	222	490	162	209	139	601	86	82	174	169	125
15	136	199	678	159	197	131	1,460	74	81	153	233	122
16	135	184	653	e150	187	148	1,180	66	83	167	636	121
17	130	174	660	e145	179	167	701	157	85	154	1,290	110
18	132	168	560	e155	175	165	437	170	80	161	1,250	108
19	134	175	427	183	170	173	308	122	88	173	1,040	105
20	134	257	349	200	166	185	251	95	70	153	778	100
21	135	284	297	195	162	187	221	78	57	156	521	89
22	129	283	266	177	157	170	200	83	52	140	347	e220
23	121	307	245	e170	154	154	185	80	90	118	262	e250
24	112	307	246	e155	e150	142	174	76	108	250	227	197
25	105	276	238	e140	149	133	163	64	103	1,770	216	181
26	100	243	224	e115	144	126	166	54	153	2,800	225	165
27	102	219	215	e120	140	121	193	49	227	2,010	220	151
28	104	204	209	e130	137	117	185	44	210	1,370	196	147
29	173	204	202	e135	133	113	182	40	167	995	171	153
30	210	194	198	e130	---	109	177	36	126	775	156	158
31	226	---	190	e128	---	107	---	37	---	637	246	---
TOTAL	4,458	8,234	9,418	5,084	6,171	4,428	8,700	3,576	2,671	15,093	13,846	5,780
MEAN	144	274	304	164	213	143	290	115	89.0	487	447	193
MAX	226	749	678	200	463	187	1,460	197	227	2,800	1,290	520
MIN	100	168	168	115	120	107	120	36	36	105	156	89
CFSM	1.33	2.54	2.81	1.52	1.97	1.32	2.69	1.07	0.82	4.51	4.14	1.78
IN.	1.54	2.84	3.24	1.75	2.13	1.53	3.00	1.23	0.92	5.20	4.77	1.99

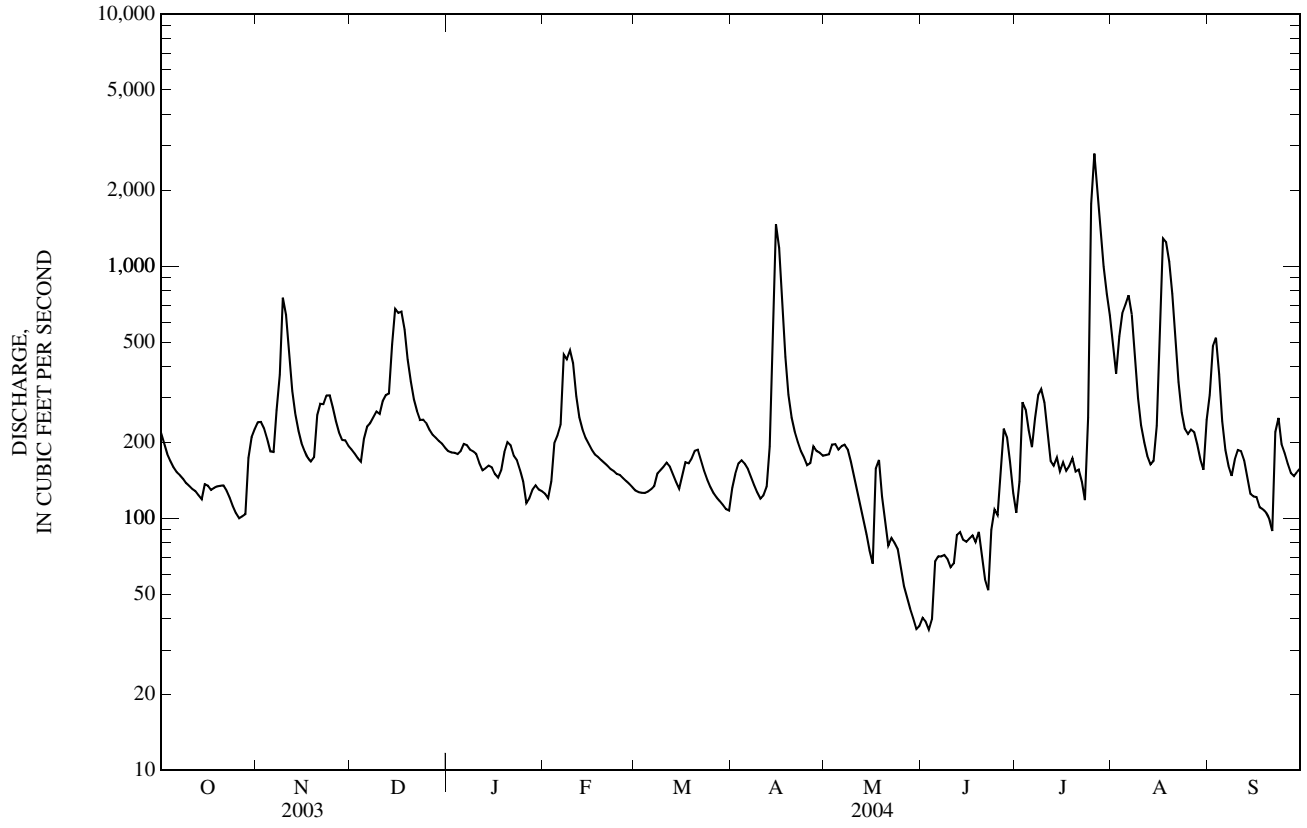
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 2004, BY WATER YEAR (WY)

MEAN	62.6	93.2	121	152	190	224	191	129	83.0	73.0	88.8	107
MAX	293	290	331	340	608	567	450	307	305	487	447	696
(WY)	(1997)	(1986)	(1997)	(1993)	(1998)	(1994)	(1983)	(2003)	(2003)	(2004)	(2004)	(1999)
MIN	0.80	9.22	39.5	45.9	44.3	45.7	31.2	22.5	2.38	0.20	0.23	0.79
(WY)	(1999)	(1999)	(1989)	(1989)	(2002)	(2002)	(1985)	(1999)	(1999)	(2002)	(2002)	(1997)

01669520 DRAGON SWAMP AT MASCOT, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1982 - 2004	
ANNUAL TOTAL	103,729		87,459			
ANNUAL MEAN	284		239		126	
HIGHEST ANNUAL MEAN					248	2003
LOWEST ANNUAL MEAN					31.7	2002
HIGHEST DAILY MEAN	2,140	Sep 21	2,800	Jul 26	6,050	Sep 17, 1999
LOWEST DAILY MEAN	e64	Jan 25	36	aMay 30	0.00	bJul 18, 2002
ANNUAL SEVEN-DAY MINIMUM	e71	Jan 23	38	May 29	0.00	cJul 18, 2002
MAXIMUM PEAK FLOW			2,930	Jul 26	6,600	Sep 17, 1999
MAXIMUM PEAK STAGE			9.54	Jul 26	13.21	Sep 17, 1999
INSTANTANEOUS LOW FLOW			35	dMay 30	0.00	(f)
ANNUAL RUNOFF (CFSM)	2.63		2.21		1.16	
ANNUAL RUNOFF (INCHES)	35.73		30.12		15.83	
10 PERCENT EXCEEDS	541		437		265	
50 PERCENT EXCEEDS	210		170		85	
90 PERCENT EXCEEDS	109		89		6.9	

a Also June 3, 2004.
b Also July 19-25, and Aug. 6-28, 2002.
c Also July 19, and Aug 6-22, 2002.
d Also May 31 and June 3, 4, 2004.
e Estimated.
f No flow part or all of many days in August 1998 and July, August 2002.



01671020 NORTH ANNA RIVER AT HART CORNER, NEAR DOSWELL, VA

LOCATION.--Lat 37°51'01", long 77°25'40", NAD83, 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 mi^2.

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

GAGE.--Water-stage recorder. Elevation of gage is 43 ft NGVD of 1929, from topographic map.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Dec. 7, 8, 13, 21, 27, 28, Jan. 7, 8, 10, 11, 14, 16, 17, 20-26, 28, Jan. 30 to Feb. 2, Feb. 4, 5, 8, 9, 13, 16, 17, 29, Mar. 23, Aug. 24, and Sept. 16, which are 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 ft^3/s, from rating curve extended above 10,100 ft^3/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.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	268	715	698	591	e275	273	334	252	252	95	260	97
2	252	340	672	370	e275	279	592	263	251	92	308	81
3	239	306	654	344	324	273	580	334	240	89	965	75
4	235	301	439	337	e610	271	339	1,030	238	108	1,240	73
5	232	303	811	349	e640	269	308	662	270	109	599	78
6	227	1,910	2,210	844	1,380	279	285	557	262	131	619	82
7	224	4,730	e1,160	e618	3,190	312	272	401	252	339	439	99
8	224	3,170	e780	e360	e3,110	448	268	334	244	294	257	187
9	191	1,170	677	339	e1,540	407	266	270	164	374	242	661
10	107	803	637	e335	795	285	259	247	89	287	234	406
11	106	731	3,140	e360	652	267	263	239	87	208	233	278
12	144	713	5,620	323	637	263	310	236	104	208	256	252
13	260	752	e3,440	326	e620	260	1,540	234	108	286	418	241
14	263	781	2,350	e325	610	256	2,440	231	122	241	423	237
15	219	734	2,590	318	598	258	2,360	230	162	250	630	400
16	308	695	1,940	e310	e585	342	1,150	198	184	244	341	e629
17	296	690	1,840	e305	e575	619	560	101	156	215	296	450
18	282	680	2,370	342	574	514	486	101	352	239	279	1,420
19	272	755	1,500	641	572	500	459	125	515	225	257	1,210
20	174	3,050	843	e605	569	425	443	244	524	231	245	657
21	101	1,970	e710	e345	568	296	432	252	541	224	239	472
22	101	958	685	e310	541	306	369	249	171	218	242	298
23	97	761	670	e308	309	e280	278	243	116	145	205	259
24	95	723	872	e304	292	278	273	237	248	94	e88	203
25	93	731	1,000	e300	287	277	266	233	255	97	77	107
26	95	707	691	e295	279	274	270	199	216	105	74	100
27	253	686	e650	301	278	276	286	113	178	1,210	72	98
28	789	687	e636	e305	276	276	270	191	140	851	70	117
29	955	724	630	531	e275	273	203	236	101	639	71	863
30	933	728	628	e556	---	271	161	247	94	566	105	551
31	826	---	618	e298	---	335	---	250	---	308	177	---
TOTAL	8,861	32,004	42,161	12,195	21,236	9,942	16,322	8,739	6,636	8,722	9,961	10,681
MEAN	286	1,067	1,360	393	732	321	544	282	221	281	321	356
MAX	955	4,730	5,620	844	3,190	619	2,440	1,030	541	1,210	1,240	1,420
MIN	93	301	439	295	275	256	161	101	87	89	70	73
(†)	149	137	141	157	150	164	152	174	172	180	184	163
MEAN‡	291	1,071	1,365	398	737	326	549	288	227	287	327	361
CFSM‡	.63	2.31	2.95	.86	1.59	.70	1.19	.62	.49	.62	.71	.78
IN.‡	.72	2.58	3.40	.99	1.72	.81	1.32	.72	.55	.72	.82	.87

CAL YR 2003 MEAN‡ 832 CFSM‡ 1.80 IN.‡ 24.40
WTR YR 2004 MEAN‡ 517 CFSM‡ 1.12 IN.‡ 15.20

† Total diversion, equivalent in cubic feet per second, per month; provided by Hanover County Department of Public Utilities.
‡ Adjusted for diversion.

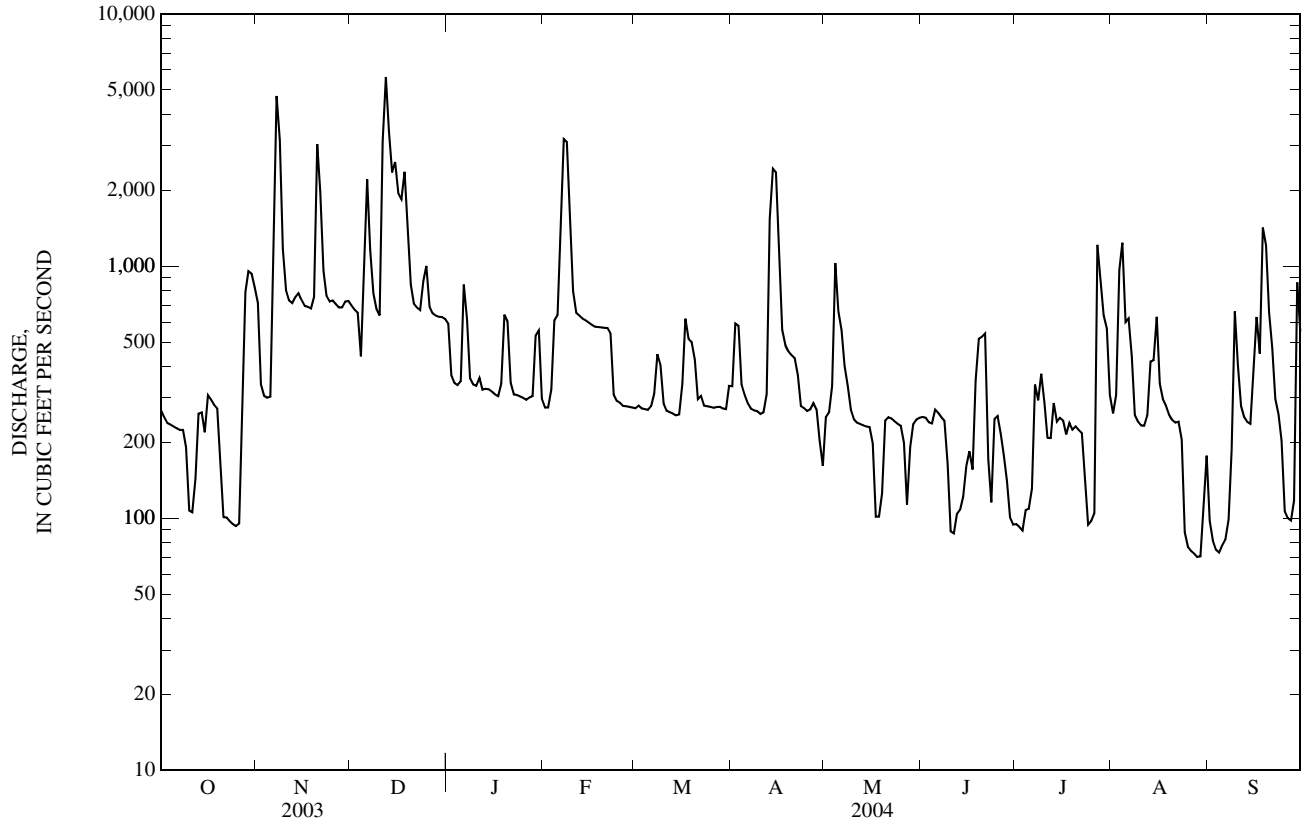
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2004, BY WATER YEAR (WY)

MEAN	198	329	396	497	678	784	628	424	271	168	156	190
MAX	1,428	1,561	1,360	1,389	2,660	2,345	1,887	1,217	1,140	591	614	1,204
(WY)	(1980)	(1986)	(2004)	(1998)	(1998)	(1994)	(1983)	(1990)	(2003)	(1984)	(1984)	(2003)
MIN	41.7	39.9	47.4	57.5	58.6	72.5	82.7	61.9	37.9	36.5	37.3	39.5
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(1999)	(2002)	(2002)	(2002)	(2002)

01671020 NORTH ANNA RIVER AT HART CORNER, NEAR DOSWELL, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1980 - 2004	
ANNUAL TOTAL	301,890		187,460			
ANNUAL MEAN	827		512		392	
HIGHEST ANNUAL MEAN					731	1998
LOWEST ANNUAL MEAN					51.4	2002
HIGHEST DAILY MEAN	6,940	Sep 20	5,620	Dec 12	10,900	Mar 30, 1994
LOWEST DAILY MEAN	59	Aug 30	70	Aug 28	27	Jul 12, 2002
ANNUAL SEVEN-DAY MINIMUM	63	Aug 25	80	Aug 24	33	aJul 31, 2002
MAXIMUM PEAK FLOW			5,960	Dec 12	12,000	Mar 29, 1994
MAXIMUM PEAK STAGE			18.18	Dec 12	21.80	Mar 29, 1994
INSTANTANEOUS LOW FLOW			68	Aug 29	25	bJul 12, 2002
ANNUAL RUNOFF (CFSM)	1.79		1.11		0.846	
ANNUAL RUNOFF (INCHES)	24.26		15.06		11.49	
10 PERCENT EXCEEDS	1,990		866		820	
50 PERCENT EXCEEDS	417		296		150	
90 PERCENT EXCEEDS	86		107		53	

a Also Aug. 1, 2002.
b Also July 13, 2002.
e Estimated.



01671100 LITTLE RIVER NEAR DOSWELL, VA

LOCATION.--Lat 37°52'22", long 77°30'47", NAD83, 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 mi^2.

PERIOD OF RECORD.--October 1961 to September 1999, October 2000 to current year.

REVISED RECORDS.--WDR VA-70-1: 1969.

GAGE.--Water-stage recorder. Datum of gage is 132.30 ft NGVD of 1929 (levels by La Prade Bros., Engineers).

REMARKS.--Records good except those for period with ice effect, Jan. 25 to Feb. 2, and period of no gage-height record, Aug. 19, which are fair. Maximum discharge, 12,000 ft^3/s, from rating curve extended above 7,600 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 650 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 8	0600	914	4.83	Apr 15	0300	789	4.64
Dec 12	1330	*1,870	*5.90	Sep 9	1400	729	4.54
Dec 16	0130	970	4.91	Sep 18	1300	759	4.59
Feb 8	1200	914	4.83				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	76	128	109	124	e93	88	92	69	80	23	61	32
2	67	97	99	122	e90	90	120	73	70	19	74	35
3	59	77	87	130	126	88	157	110	51	17	343	37
4	52	65	78	128	211	91	155	152	44	18	318	35
5	45	58	113	136	225	90	129	163	56	27	172	30
6	40	124	212	189	254	97	106	131	54	27	137	28
7	37	561	268	204	587	108	90	106	52	31	109	31
8	36	836	205	166	855	120	81	86	47	28	79	132
9	35	398	153	141	511	114	75	69	41	25	53	618
10	32	192	130	130	269	112	71	60	36	23	39	311
11	32	128	572	119	209	103	69	53	32	22	33	142
12	32	105	1,620	115	181	87	92	47	36	22	54	86
13	31	107	982	119	163	82	431	41	35	24	209	58
14	31	113	503	124	150	78	683	37	36	25	170	45
15	43	119	806	122	140	74	684	34	39	33	259	98
16	44	105	840	114	130	122	355	32	48	40	210	164
17	58	99	578	104	121	326	217	30	41	42	161	194
18	62	96	596	122	117	311	165	29	42	49	112	686
19	55	103	467	174	113	192	140	32	81	40	e85	481
20	47	310	311	189	113	147	124	42	138	37	64	261
21	42	458	232	171	111	126	113	46	132	34	54	152
22	39	311	196	152	108	111	103	44	78	32	48	99
23	35	192	170	115	105	97	95	41	53	48	41	73
24	33	145	182	108	101	89	89	40	45	49	35	57
25	32	135	219	e100	96	83	80	42	47	52	30	48
26	31	124	224	e85	95	80	75	41	53	59	28	43
27	39	110	182	e92	93	78	80	50	42	199	26	38
28	83	97	158	e99	89	80	82	64	36	221	25	50
29	137	106	142	e104	86	80	81	81	31	220	24	299
30	179	103	135	e100	---	79	75	78	27	144	24	166
31	168	---	129	e96	---	78	---	73	---	101	32	---
TOTAL	1,732	5,602	10,698	3,994	5,542	3,501	4,909	1,996	1,603	1,731	3,109	4,529
MEAN	55.9	187	345	129	191	113	164	64.4	53.4	55.8	100	151
MAX	179	836	1,620	204	855	326	684	163	138	221	343	686
MIN	31	58	78	85	86	74	69	29	27	17	24	28
CFSM	0.52	1.75	3.23	1.20	1.79	1.06	1.53	0.60	0.50	0.52	0.94	1.41
IN.	0.60	1.95	3.72	1.39	1.93	1.22	1.71	0.69	0.56	0.60	1.08	1.57

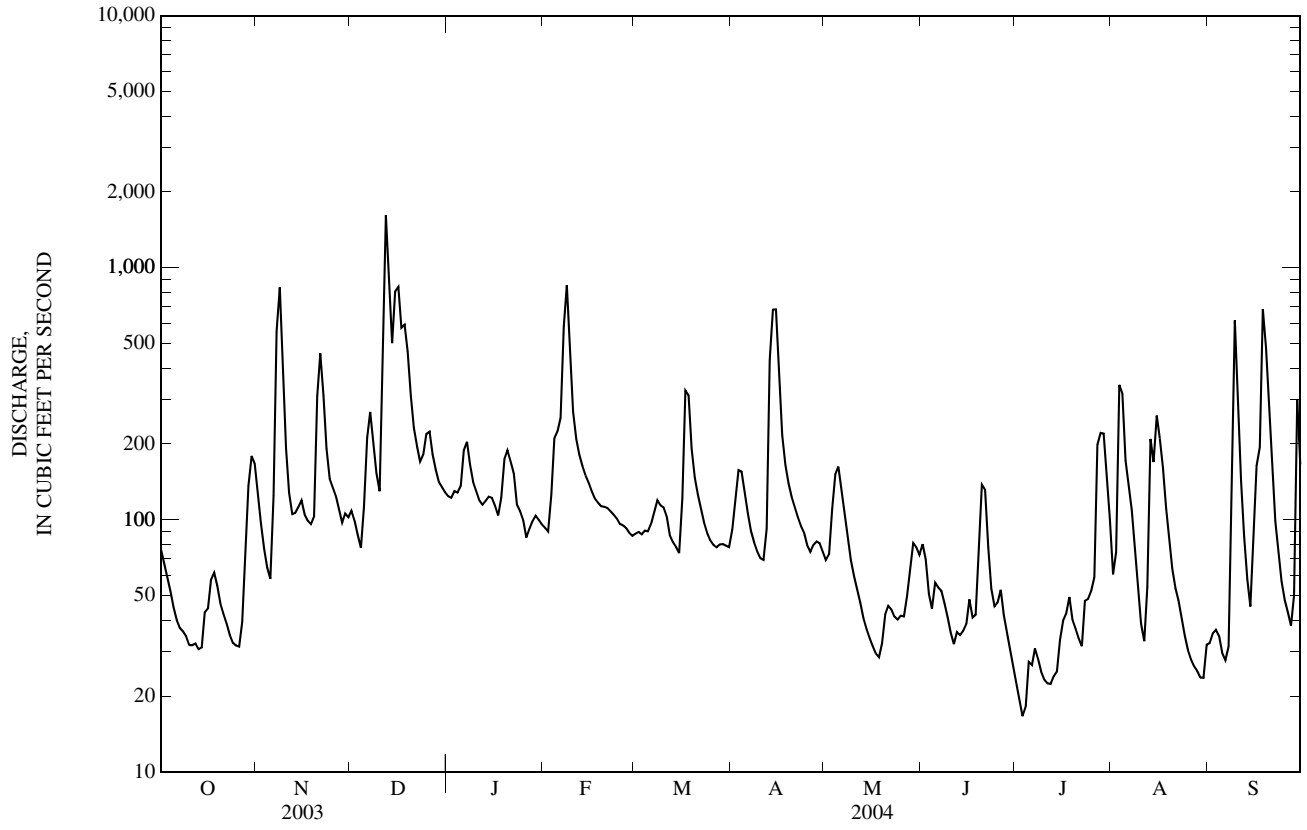
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1999, 2001 - 2004, BY WATER YEAR (WY)

MEAN	51.6	75.6	105	143	164	192	145	100	67.5	38.9	48.1	43.2
MAX	264	340	345	491	590	583	391	311	532	288	653	404
(WY)	(1980)	(1973)	(2004)	(1978)	(1998)	(1994)	(1993)	(1990)	(1972)	(1975)	(1969)	(1975)
MIN	1.03	2.12	14.8	20.5	16.9	31.9	39.9	18.1	4.14	1.23	1.04	0.70
(WY)	(1969)	(2002)	(2002)	(1981)	(2002)	(2002)	(2002)	(1999)	(1999)	(2002)	(1999)	(1968)

01671100 LITTLE RIVER NEAR DOSWELL, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1962 - 1999 2001 - 2004	
ANNUAL TOTAL	69,379.9		48,946			
ANNUAL MEAN	190		134		97.4	
HIGHEST ANNUAL MEAN					181	1998
LOWEST ANNUAL MEAN					14.6	2002
HIGHEST DAILY MEAN	1,990	Feb 23	1,620	Dec 12	9,800	Aug 21, 1969
LOWEST DAILY MEAN	7.0	Aug 30	17	Jul 3	0.05	Aug 23, 2002
ANNUAL SEVEN-DAY MINIMUM	9.0	Aug 26	23	Jun 30	0.14	Aug 17, 2002
MAXIMUM PEAK FLOW			1,870	Dec 12	12,000	Aug 21, 1969
MAXIMUM PEAK STAGE			5.90	Dec 12	11.09	Aug 21, 1969
INSTANTANEOUS LOW FLOW			15	aJul 3	0.04	bAug 23, 2002
ANNUAL RUNOFF (CFSM)	1.78		1.25		0.911	
ANNUAL RUNOFF (INCHES)	24.12		17.02		12.37	
10 PERCENT EXCEEDS	457		256		195	
50 PERCENT EXCEEDS	101		92		50	
90 PERCENT EXCEEDS	31		32		5.6	

a Also July 4, 2004.
b Also Aug. 24, 2002.
e Estimated.



01672500 SOUTH ANNA RIVER NEAR ASHLAND, VA

LOCATION.--Lat 37°47'49", long 77°32'56", NAD83, Hanover County, Hydrologic Unit 02080106, on left bank at downstream side of bridge on State Highway 54, 4.5 mi northewst of Ashland, and 7.6 mi upstream from Newfound River.

DRAINAGE AREA.--394 mi^2.

PERIOD OF RECORD.--October 1930 to September 1997, October 1998 to September 2002 (annual maximum only), June 2003 to current year.

REVISED RECORDS.--WSP 801: 1935(M). WSP 1502: 1935, 1939. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 83.74 ft NGVD of 1929. Prior to Jan. 6, 1997, water-stage recorder at site on right downstream side of old bridge on State Highway 54, Jan. 6 to Sept. 30, 1997, at site on right bank, 160 ft downstream, at same datum, June 27, 2003 to current year, at present site, at same datum.

REMARKS.--Records good except for period with ice effect, Jan. 25 to Feb. 2, which is fair. Since 1966, diversion 150 ft upstream from station for town of Ashland water supply has averaged less than 0.6 ft^3/s. Capicity of diversion pickup is about 1.5 ft^3/s. Maximum discharge, 17,100 ft^3/s, from rating curve extended above 12,600 ft^3/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 Aug. 15, 1928 reached a stage of about 24 ft, discharge, about 14,500 ft^3/s.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 8	0215	2,220	8.80	Apr 14	2000	2,290	9.00
Dec 14	1530	*3,740	*12.47	Sep 18	0100	2,850	10.38
Feb 9	2130	2,520	9.56				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	347	458	585	407	e360	282	330	233	240	110	236	207
2	293	356	451	403	e350	283	454	269	288	100	726	166
3	259	306	387	428	421	290	501	470	223	93	1,220	128
4	241	276	351	429	694	288	454	794	171	120	1,590	110
5	220	255	605	468	927	284	387	628	189	208	709	98
6	211	580	1,180	666	889	325	319	397	192	443	700	98
7	203	1,930	1,440	634	2,190	396	285	307	200	724	466	132
8	198	2,160	928	496	2,360	413	271	257	189	531	304	590
9	192	2,110	681	433	2,440	353	265	229	159	344	218	1,480
10	184	792	594	411	1,540	314	252	206	145	267	179	846
11	181	522	2,470	368	788	287	246	188	137	189	156	439
12	180	444	2,970	348	667	277	362	173	227	153	185	268
13	174	448	2,770	391	576	264	1,460	164	218	302	546	204
14	170	620	3,290	402	517	249	2,210	155	233	247	626	176
15	227	603	2,670	391	477	244	1,970	144	212	162	806	406
16	331	441	1,960	362	439	548	1,080	136	936	138	544	460
17	366	394	1,880	331	400	1,100	711	132	1,030	121	363	582
18	252	379	1,770	366	381	796	556	170	704	142	286	1,830
19	206	439	1,540	518	377	557	468	171	1,080	141	251	1,510
20	187	1,370	1,020	544	373	455	411	172	699	132	207	619
21	176	1,880	775	440	369	418	372	179	319	164	178	339
22	165	1,420	655	372	353	362	341	233	217	141	190	257
23	155	725	590	342	332	324	318	204	183	264	186	214
24	150	565	653	348	322	298	303	180	169	131	169	188
25	146	498	715	e320	324	286	273	152	179	135	144	167
26	145	483	619	e310	316	281	276	132	278	214	125	152
27	178	456	534	e350	306	272	321	139	208	740	116	144
28	423	415	482	e380	294	279	305	205	163	1,420	116	226
29	772	484	453	e410	288	281	289	240	136	618	105	501
30	808	789	441	e390	---	275	251	289	116	439	120	1,220
31	696	---	426	e370	---	274	---	249	---	303	246	---
TOTAL	8,436	22,598	35,885	12,828	20,070	11,355	16,041	7,597	9,440	9,236	12,013	13,757
MEAN	272	753	1,158	414	692	366	535	245	315	298	388	459
MAX	808	2,160	3,290	666	2,440	1,100	2,210	794	1,080	1,420	1,590	1,830
MIN	145	255	351	310	288	244	246	132	116	93	105	98
CFSM	0.69	1.91	2.94	1.05	1.76	0.93	1.36	0.62	0.80	0.76	0.98	1.16
IN.	0.80	2.13	3.39	1.21	1.89	1.07	1.51	0.72	0.89	0.87	1.13	1.30

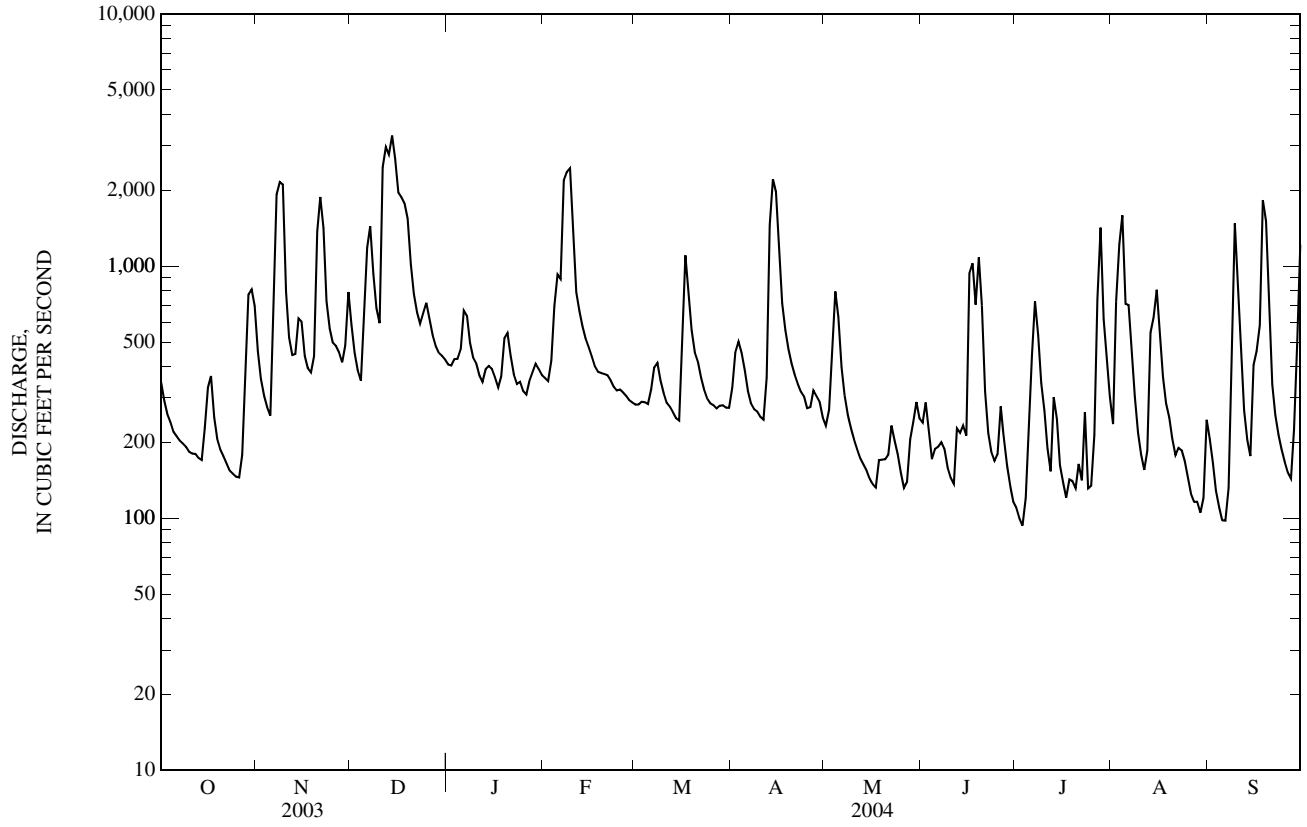
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 1997, 2003 - 2004, BY WATER YEAR (WY)

MEAN	227	278	402	534	581	648	571	352	243	197	238	190
MAX	1,434	1,389	1,375	1,850	1,436	1,774	1,968	963	1,998	820	2,349	1,116
(WY)	(1973)	(1986)	(1949)	(1978)	(1979)	(1994)	(1937)	(1990)	(1972)	(1945)	(1969)	(2003)
MIN	10.5	25.7	50.2	67.7	87.5	117	166	95.1	56.7	24.5	12.2	6.53
(WY)	(1931)	(1931)	(1931)	(1966)	(1931)	(1981)	(1985)	(1969)	(1977)	(1977)	(1932)	(1932)

01672500 SOUTH ANNA RIVER NEAR ASHLAND, VA—Continued

SUMMARY STATISTICS	FOR 2004 WATER YEAR		WATER YEARS 1931 - 1997 2003 - 2004	
ANNUAL TOTAL	179,256			
ANNUAL MEAN	490		369	
HIGHEST ANNUAL MEAN			689	1973
LOWEST ANNUAL MEAN			107	1981
HIGHEST DAILY MEAN	3,290	Dec 14	16,000	Aug 23, 1969
LOWEST DAILY MEAN	93	Jul 3	2.3	Sep 13, 1966
ANNUAL SEVEN-DAY MINIMUM	120	Jun 28	4.4	Sep 16, 1932
MAXIMUM PEAK FLOW	3,740	Dec 14	17,100	Aug 23, 1969
MAXIMUM PEAK STAGE	12.47	Dec 14	24.99	Aug 23, 1969
INSTANTANEOUS LOW FLOW	85	Jul 4	0.10	Sep 12, 1966
ANNUAL RUNOFF (CFSM)	1.24		0.938	
ANNUAL RUNOFF (INCHES)	16.92		12.74	
10 PERCENT EXCEEDS	961		804	
50 PERCENT EXCEEDS	330		196	
90 PERCENT EXCEEDS	151		47	

e Estimated.



01673000 PAMUNKEY RIVER NEAR HANOVER, VA

LOCATION.--Lat 37°46'04", long 77°19'56", NAD83, Hanover County, Hydrologic Unit 02080106, on right bank 100 ft down- stream 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 mi^2.

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 NGVD of 1929. Prior to Oct. 15 1976, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records poor. 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. Statistics of monthly mean data and summary statistics for water years 1942 - 1971 (unregulated flow) are available in previous data books, water years 1991 - 1998. Unknown amount of diversion for irrigation upstream from gage. Maximum discharge, 40,300 ft^3/s, from rating curve extended above 22,000 ft^3/s.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1928 reached a stage of 32.6 ft, from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	866	1,470	1,630	1,380	854	755	860	624	631	265	779	3,120
2	739	1,060	1,380	1,210	831	749	1,180	668	626	254	1,690	893
3	666	786	1,250	1,080	900	762	1,420	971	628	239	2,100	438
4	624	720	1,140	1,080	1,470	749	1,260	1,520	537	217	3,360	364
5	594	693	1,110	1,090	1,980	748	1,010	2,170	601	338	2,800	319
6	561	1,050	2,540	1,680	2,240	778	884	1,430	620	418	1,780	324
7	545	3,930	3,490	1,830	4,240	898	784	1,130	576	879	1,530	359
8	532	5,540	2,580	1,470	6,010	1,090	741	842	566	1,230	981	1,370
9	520	6,160	1,820	1,140	7,040	1,130	718	727	517	863	718	3,240
10	449	4,870	1,530	1,080	6,050	920	701	603	366	847	601	4,170
11	392	2,440	3,020	1,030	3,980	775	697	549	335	558	538	2,210
12	387	1,470	5,780	981	2,110	733	756	518	391	466	538	1,020
13	468	1,360	9,710	966	1,690	705	2,310	490	447	471	1,030	711
14	516	1,400	9,050	1,010	1,540	679	4,360	468	412	744	1,820	597
15	612	1,580	8,430	993	1,460	664	5,480	447	455	564	2,150	875
16	605	1,400	7,670	959	1,380	820	5,810	426	859	518	1,870	1,930
17	736	1,280	6,500	896	1,280	2,020	3,890	409	1,550	448	1,270	1,540
18	705	1,230	6,000	921	1,270	2,170	1,800	553	1,040	470	1,010	3,490
19	615	1,230	5,960	1,300	1,250	1,650	1,340	424	1,490	491	846	5,580
20	560	2,510	4,980	1,560	1,240	1,370	1,190	477	1,710	443	730	5,090
21	431	4,250	3,000	1,320	1,230	1,050	1,110	565	1,250	449	635	2,470
22	387	4,320	2,020	997	1,210	953	1,040	564	859	448	596	1,060
23	369	2,710	1,770	946	1,010	861	850	601	485	513	600	714
24	353	1,710	1,750	900	832	801	796	541	411	425	487	608
25	342	1,490	2,450	846	825	761	746	501	587	321	382	466
26	344	1,410	2,000	762	817	742	708	470	600	377	339	383
27	372	1,370	1,750	783	806	736	853	399	659	1,050	308	358
28	854	1,300	1,590	883	785	743	802	402	450	3,110	291	401
29	1,520	1,380	1,500	1,040	764	743	745	634	355	2,510	275	1,190
30	1,940	1,490	1,460	1,280	---	730	597	631	292	1,570	935	2,260
31	1,780	---	1,420	1,080	---	747	---	664	---	1,170	7,750	---
TOTAL	20,384	63,609	106,280	34,493	57,094	29,032	45,438	21,418	20,305	22,666	40,739	47,550
MEAN	658	2,120	3,428	1,113	1,969	937	1,515	691	677	731	1,314	1,585
MAX	1,940	6,160	9,710	1,830	7,040	2,170	5,810	2,170	1,710	3,110	7,750	5,580
MIN	342	693	1,110	762	764	664	597	399	292	217	275	319
CFSM	0.61	1.96	3.17	1.03	1.82	0.87	1.40	0.64	0.63	0.68	1.22	1.47
IN.	0.70	2.19	3.66	1.19	1.96	1.00	1.56	0.74	0.70	0.78	1.40	1.64

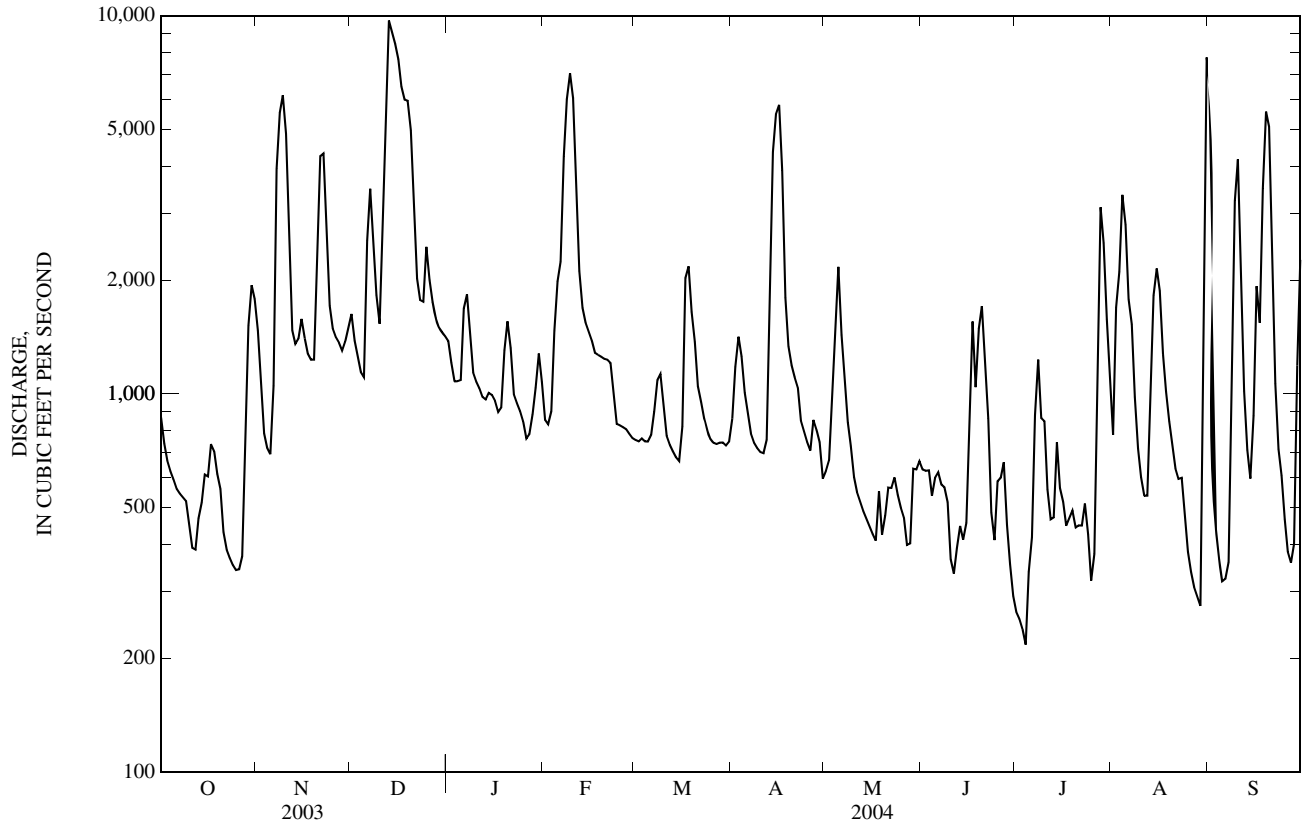
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 2004, BY WATER YEAR (WY)

MEAN	651	841	1,256	1,538	1,791	1,996	1,709	1,128	809	517	444	591
MAX	3,461	3,505	3,450	4,334	7,118	5,430	5,009	2,821	4,293	2,747	2,025	2,939
(WY)	(1980)	(1986)	(1997)	(1978)	(1998)	(1994)	(1984)	(1978)	(1972)	(1975)	(1985)	(1975)
MIN	63.7	67.1	131	190	160	248	293	197	72.2	48.9	89.5	60.2
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(1981)	(2002)	(1999)	(2002)	(2002)	(1999)	(1998)

01673000 PAMUNKEY RIVER NEAR HANOVER, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1972 - 2004	
ANNUAL TOTAL	739,755		509,008			
ANNUAL MEAN	2,027		1,391		1,102	
HIGHEST ANNUAL MEAN					1,859	1998
LOWEST ANNUAL MEAN					147	2002
HIGHEST DAILY MEAN	14,400	Feb 25	9,710	Dec 13	25,000	Jun 23, 1972
LOWEST DAILY MEAN	256	Aug 30	217	Jul 4	24	Jul 23, 2002
ANNUAL SEVEN-DAY MINIMUM	291	Aug 25	280	Jun 29	33	Aug 10, 2002
MAXIMUM PEAK FLOW			10,400	Aug 31	a29,900	Jun 23, 1972
MAXIMUM PEAK STAGE			21.50	Aug 31	a29.22	Jun 23, 1972
INSTANTANEOUS LOW FLOW			205	Jul 4	b20	Jul 23, 2002
ANNUAL RUNOFF (CFSM)	1.87		1.29		1.02	
ANNUAL RUNOFF (INCHES)	25.46		17.52		13.85	
10 PERCENT EXCEEDS	5,220		2,860		2,560	
50 PERCENT EXCEEDS	1,090		877		582	
90 PERCENT EXCEEDS	375		412		112	

a Prior to regulation, 1942-71, maximum peak flow, 40,300 ft^3/s, Aug. 23, 1969, gage height, 31.12 ft, from flood marks.
b Prior to regulation, 1942-71, instantaneous low flow, 12 ft^3/s, Sept. 12, 1966.



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.--Water samples were collected by the U.S. Geological Survey and analyzed by either the U.S. Geological Survey (Agency Code 1028) or by the Virginia Division of Consolidated Laboratory Services (VDCLS, Agency Code 85116), using analytical methods approved by the U.S. Geological Survey. Analyses performed by VDCLS are reported to U.S. Geological Survey rounding specifications. Results of chemical analyses provided by VDCLS were quality-assured and approved by the U.S. Geological Survey.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Sample type	Agency analyzing sample, code (00028)	Gage height, feet (00065)	Instantaneous discharge, cfs (00061)	Turbidity, NTU (00076)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
OCT												
07...	1130	Environmental	85116	5.58	552	9.6	764	9.0	91	7.2	118	23.5
30...	1500	Environmental	85116	10.63	1,940	16	767	9.3	90	7.1	80	26.0
NOV												
04...	1230	Environmental	85116	6.23	724	6.1	763	8.5	86	6.9	109	30.0
20...	1425	Blank	85116	--	--	.60	--	--	--	--	--	--
20...	1430	Environmental	85116	13.56	3,090	31	758	9.3	92	7.0	72	--
DEC												
09...	1300	Environmental	85116	9.92	1,810	17	764	12.0	95	7.0	80	15.0
09...	1315	Replicate	85116	9.90	1,810	15	--	--	--	--	--	--
15...	1045	Environmental	85116	20.66	8,540	21	758	12.0	96	6.8	58	7.0
JAN												
12...	1230	Environmental	85116	7.01	984	8.3	757	14.3	103	7.0	93	13.5
FEB												
05...	1140	Blank	85116	--	--	.15	--	--	--	--	--	--
05...	1145	Environmental	85116	10.61	2,040	26	774	#	#	7.2	78	3.0
10...	1130	Environmental	85116	18.79	6,120	30	762	12.5	94	6.8	65	11.0
MAR												
09...	1145	Environmental	85116	7.54	1,120	7.5	760	10.5	95	7.7	85	12.0
09...	1200	Replicate	85116	7.52	1,120	7.2	--	--	--	--	--	--
APR												
07...	1100	Environmental	85116	6.23	783	5.6	752	10.4	96	7.0	99	23.0
15...	1330	Environmental	85116	18.20	5,630	27	758	10.0	91	6.7	64	20.0
MAY												
04...	1230	Environmental	85116	8.46	1,380	14	762	8.9	91	7.2	91	15.0
JUN												
01...	0945	Environmental	85116	5.60	632	11	753	7.4	86	7.0	104	24.0
18...	1145	Environmental	85116	6.68	897	50	756	6.6	81	6.8	92	32.0
JUL												
06...	1515	Environmental	85116	4.67	428	9.8	756	6.8	87	7.1	137	32.0
08...	1340	Blank	85116	--	--	.10	--	--	--	--	--	--
08...	1345	Environmental	85116	7.88	1,220	26	757	6.8	84	6.9	84	31.5
28...	1015	Environmental	85116	13.81	3,290	40	757	6.8	84	6.5	72	27.0
AUG												
03...	1115	Environmental	85116	11.49	2,320	90	757	6.7	83	6.6	80	26.5
03...	1130	Replicate	85116	11.54	2,330	85	--	--	--	--	--	--
16...	1015	Environmental	85116	10.23	1,920	33	764	7.8	87	6.6	79	24.0
31...	1015	Environmental	85116	20.33	7,980	310	757	5.8	69	5.7	49	28.5
SEP												
07...	1345	Environmental	85116	5.59	308	30	760	7.0	83	6.8	163	31.0
09...	1400	Environmental	85116	16.30	3,870	100	753	7.0	84	6.5	79	27.5
09...	1415	Replicate	85116	16.34	3,900	75	--	--	--	--	--	--

01673000 PAMUNKEY RIVER NEAR HANOVER, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Temperature, water, deg C (00010)	Silica, water, fltrd, mg/L (00955)	Residue fixed non-filterable, mg/L (00540)	Residue total at 105 deg. C, suspended, mg/L (00530)	Residue volatile, suspended, mg/L (00535)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Total nitrogen, water, fltrd, mg/L (00602)	Phosphorus, suspnd sedimnt total, mg/L (00667)
OCT													
07...	16.1	14.1	4	6	<3	.053	.35	.354	.002	.023	.048	.75	.016
30...	14.1	13.0	22	26	4	.006	.19	.192	<.002	.015	.030	.50	.041
NOV													
04...	16.0	13.0	4	5	<3	.028	.25	.253	<.002	.025	.056	.56	.017
20...	--	.200	<3	<3	<3	.007	<.004	<.004	<.002	.003	.002	<.004	.001
20...	14.3	12.0	69	80	11	.005	.21	.213	<.002	.022	.026	.49	.064
DEC													
09...	5.4	11.5	9	12	3	.028	.29	.292	<.002	.012	.028	.80	.030
09...	--	12.5	13	16	3	.059	.29	.294	<.002	.020	.028	.79	.030
15...	5.7	8.50	12	14	<3	.021	.26	.257	.002	.015	.029	.55	.033
JAN													
12...	1.8	12.6	4	5	<3	.016	.37	.370	<.002	.020	.038	.57	.016
FEB													
05...	--	<.100	<3	<3	<3	<.004	<.004	<.004	<.002	.002	.005	.02	.002
05...	2.4	12.1	28	33	5	.043	.33	.336	.002	.015	.030	.59	.038
10...	3.5	7.60	17	21	4	.036	.35	.358	.004	.010	.026	.69	.036
MAR													
09...	10.6	10.2	7	9	<3	.006	.23	.235	<.002	.019	.027	.66	.018
09...	--	10.1	6	8	<3	.005	.23	.236	<.002	.018	.028	.66	.015
APR													
07...	11.1	10.7	4	5	<3	.007	.21	.210	<.002	.019	.033	.42	.014
15...	11.0	9.30	25	30	5	.041	.28	.278	.003	.006	.022	.66	.155
MAY													
04...	16.4	11.6	27	31	4	.027	.28	.283	<.002	.021	.040	.59	.034
JUN													
01...	22.2	13.2	19	23	4	.023	.37	.378	.004	.060	.080	.66	.023
18...	25.1	11.2	49	56	7	.036	.28	.286	.002	.024	.046	.65	.073
JUL													
06...	27.4	13.8	9	12	3	.027	.31	.315	<.002	.045	.055	.58	.020
08...	--	<.100	<3	<3	<3	<.004	<.004	<.004	<.002	.003	.015	.05	.001
08...	25.5	11.5	9	33	24	.019	.33	.335	<.002	.030	.046	.65	.052
28...	25.6	10.8	88	102	14	.071	.22	.221	.002	.022	.038	.62	.105
AUG													
03...	25.5	14.2	142	159	17	.018	.28	.276	<.002	.023	.042	.58	.142
03...	--	14.0	138	157	19	.016	.27	.275	<.002	.022	.041	.60	.120
16...	21.3	13.5	36	41	5	.007	.25	.250	<.002	.029	.055	.64	.059
31...	23.2	4.40	391	440	49	.049	.28	.277	<.002	.008	.022	.60	.411
SEP													
07...	23.4	16.2	45	51	6	.055	.54	.542	.002	.031	.061	.77	.064
09...	23.3	11.9	300	340	40	.039	.26	.261	.003	.022	.047	.75	.297
09...	--	12.0	325	370	45	.039	.26	.260	.003	.025	.045	.78	.329

01673000 PAMUNKEY RIVER NEAR HANOVER, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Total nitrogen, suspnd sedimnt total, mg/L (00601)	Total carbon, suspnd sedimnt total, mg/L (00694)	Inorganic carbon, suspnd sedimnt total, mg/L (00688)	Organic carbon, water, fltrd, mg/L (00681)	Pheophytin a, phytoplankton, ug/L (62360)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)
OCT								
07...	.04	.4	<.02	5.1	<.5	<.5	--	6
30...	.14	1.3	<.02	5.4	<.5	2.0	86	29
NOV								
04...	.04	.5	<.02	5.3	<.5	.6	--	7
20...	.05	M	<.02	<2.0	<.5	<.5	--	--
20...	.28	2.6	M	5.5	1.3	3.0	82	82
DEC								
09...	.07	.9	<.02	4.7	<.5	1.1	--	14
09...	.07	1.0	<.02	5.0	<.5	1.2	--	20
15...	.13	1.1	<.02	5.9	<.5	1.2	75	19
JAN								
12...	.06	.7	<.02	4.2	<.5	.5	--	6
FEB								
05...	<.01	.1	<.02	<2.0	<.5	<.5	50	1
05...	.13	1.4	<.02	4.0	<.5	1.4	85	39
10...	.14	1.2	<.02	5.8	<.5	1.1	90	22
MAR								
09...	.07	.6	<.02	3.8	<.5	2.9	91	10
09...	.07	.6	<.02	3.7	<.5	2.6	88	10
APR								
07...	.05	.4	<.02	4.1	<.5	1.2	--	7
15...	.15	1.4	<.02	6.5	<.5	<.5	64	42
MAY								
04...	.12	1.4	<.02	5.8	1.1	1.6	88	34
JUN								
01...	.08	.7	<.02	4.7	<.5	<.5	--	20
18...	.27	2.8	<.02	7.6	1.8	1.0	96	67
JUL								
06...	.06	.6	<.02	4.6	<.5	<.5	90	17
08...	<.01	M	<.02	<2.0	<.5	<.5	--	<1
08...	.15	1.6	<.02	5.2	1.8	<.5	92	38
28...	.35	3.8	M	5.1	2.5	3.2	55	181
AUG								
03...	.45	4.8	.1	6.7	2.1	2.3	88	190
03...	.43	4.7	<.02	6.7	2.5	1.4	90	178
16...	.18	1.9	<.02	9.1	1.8	.7	88	46
31...	1.2	11.9	.1	7.6	<.5	1.9	94	483
SEP								
07...	.17	1.9	<.02	5.0	<.5	<.5	96	53
09...	.80	8.8	.1	7.8	13.7	3.1	87	382
09...	1.1	11.3	M	8.0	10.7	2.9	90	410

Remark codes used in this table:
< -- Less than
M -- Presence verified, not quantified

Value flags used in this table:
-- Reviewed and rejected (DQI=Q or X)

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01673550 TOTOPOTOMOY CREEK NEAR STUDLEY, VA

LOCATION.--Lat 37°39'46", long 77°15'28", NAD83, 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 mi^2.

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 38.36 ft NGVD of 1929.

REMARKS.--Records good except for periods with ice effect, Jan. 9-12 and Jan. 22 to Feb. 3, and period of no gage-height record, Aug. 30 to Sept. 30, which are fair. Maximum discharge, 11,300 ft^3/s, from rating curve extended above 2,040 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 160 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 7	1530	190	5.18
Dec 12	0230	284	6.14
Dec 15	0900	309	6.36
Feb 7	2000	272	6.03
Jul 28	1930	458	7.40
Aug 2	1430	691	8.05
Aug 15	1100	221	5.53
Aug 16	0800	300	6.28
Aug 18	1900	205	5.37
Aug 22	1530	163	4.85
Aug 31	---	*11,300	*16.37

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	38	36	38	e28	28	34	23	16	14	34	e580
2	40	34	32	38	e27	28	42	24	14	11	339	e165
3	38	33	30	40	e26	28	35	48	11	9.5	321	e100
4	37	32	30	39	62	28	31	60	12	20	148	e84
5	37	34	71	40	45	27	27	34	31	37	70	e84
6	35	76	88	48	63	30	25	30	34	21	53	e86
7	34	172	55	42	216	36	25	30	21	16	46	e84
8	33	96	43	36	138	42	24	24	16	24	34	e120
9	33	52	39	e35	64	38	24	22	14	30	28	e180
10	33	43	41	e32	53	31	23	21	13	15	24	e130
11	34	39	165	e30	47	29	23	20	15	11	22	e100
12	34	38	189	e32	43	27	37	19	28	11	21	e80
13	33	37	71	35	41	26	118	17	33	13	28	e71
14	32	34	140	35	39	25	90	16	19	15	98	e67
15	48	32	261	32	38	25	85	16	14	15	192	e100
16	51	33	104	31	35	53	58	19	20	12	250	e110
17	37	34	78	29	34	92	42	39	35	9.1	190	e87
18	32	33	92	36	34	47	37	86	31	9.2	134	e150
19	31	42	70	46	34	41	34	57	20	9.9	106	e100
20	29	91	58	36	33	39	31	26	15	10	60	e74
21	29	74	52	31	32	32	30	22	12	8.4	58	e60
22	30	46	48	e29	31	30	28	22	11	7.4	118	e45
23	29	40	46	e30	30	28	28	23	10	15	66	e35
24	28	37	53	e28	30	27	32	18	10	26	43	e28
25	27	35	75	e27	29	27	31	15	9.8	30	33	e25
26	28	35	52	e25	29	27	28	14	20	34	30	e24
27	32	33	45	e26	28	27	35	15	33	72	29	e25
28	57	36	43	e29	28	27	33	19	19	365	27	e100
29	91	53	41	e31	28	26	27	21	12	227	26	e120
30	101	47	41	e30	---	25	25	19	12	70	e860	e93
31	53	---	40	e28	---	26	---	16	---	36	e3,840	---
TOTAL	1,229	1,459	2,229	1,044	1,365	1,022	1,142	835	560.8	1,203.5	7,328	3,107
MEAN	39.6	48.6	71.9	33.7	47.1	33.0	38.1	26.9	18.7	38.8	236	104
MAX	101	172	261	48	216	92	118	86	35	365	3,840	580
MIN	27	32	30	25	26	25	23	14	9.8	7.4	21	24
CFSM	1.51	1.86	2.74	1.29	1.80	1.26	1.45	1.03	0.71	1.48	9.02	3.95
IN.	1.74	2.07	3.16	1.48	1.94	1.45	1.62	1.19	0.80	1.71	10.40	4.41

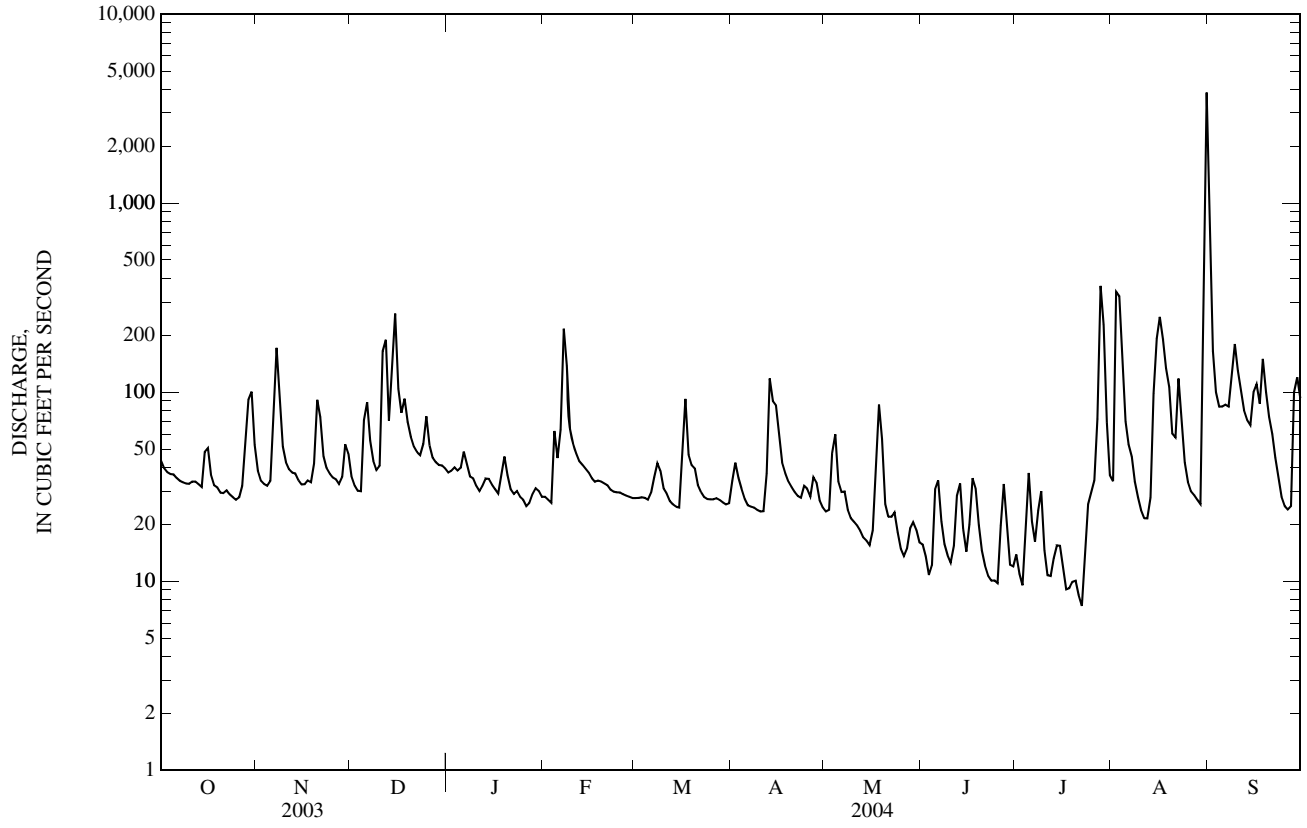
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 2004, BY WATER YEAR (WY)

MEAN	14.6	22.7	26.0	33.5	36.8	47.5	40.8	29.7	18.9	15.0	23.3	20.4
MAX	54.0	80.8	71.9	114	103	127	106	83.2	63.8	66.9	236	114
(WY)	(1980)	(1986)	(2004)	(1978)	(1998)	(1984)	(1984)	(2003)	(2003)	(2003)	(2004)	(2003)
MIN	2.72	4.04	9.00	10.3	9.91	12.7	12.3	8.46	2.75	0.20	0.92	1.18
(WY)	(2002)	(2002)	(2002)	(1981)	(2002)	(1981)	(1985)	(1985)	(2002)	(2002)	(1995)	(1997)

01673550 TOTOPOTOMOY CREEK NEAR STUDLEY, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1978 - 2004	
ANNUAL TOTAL	21,788.1		22,524.3			
ANNUAL MEAN	59.7		61.5		27.4	
HIGHEST ANNUAL MEAN					61.5	2004
LOWEST ANNUAL MEAN					7.64	2002
HIGHEST DAILY MEAN	798	Sep 19	e3,840	Aug 31	e3,840	Aug 31, 2004
LOWEST DAILY MEAN	9.4	Jan 27	7.4	Jul 22	e0.00	aJul 13, 2002
ANNUAL SEVEN-DAY MINIMUM	10	Jan 22	9.4	Jul 16	e0.00	bJul 13, 2002
MAXIMUM PEAK FLOW			11,300	Aug 31	11,300	Aug 31, 2004
MAXIMUM PEAK STAGE			c16.37	Aug 31	c16.37	Aug 31, 2004
INSTANTANEOUS LOW FLOW			6.9	Jul 22	d0.00	fJul 13, 2002
ANNUAL RUNOFF (CFSM)	2.28		2.35		1.05	
ANNUAL RUNOFF (INCHES)	30.94		31.98		14.20	
10 PERCENT EXCEEDS	109		99		54	
50 PERCENT EXCEEDS	40		33		17	
90 PERCENT EXCEEDS	20		16		4.0	

a Also July 14-25 and Aug. 7-28, 2002.
b Also July 14-19 and Aug. 7-22, 2002.
c From flood marks.
d Observed.
e Estimated.
f Probably no flow part or all of each day July 13-25 and Aug. 7-28, 2002.



01673638 COHOKE MILL CREEK NEAR LESTER MANOR, VA

LOCATION.--Lat 37°37'36," long 76°57'46", NAD83, King William County, Hydrologic unit 02080106, on right bank at downstream side of culvert on State Highway 626, 3.2 mi northeast of Lester Manor and 4.7 mi above mouth.

DRAINAGE AREA.--9.07 mi^2.

PERIOD OF RECORD.--October 1998 to current year.

GAGE.--Water-stage recorder. Datum of gage is 40 ft NGVD of 1929, from topographic map.

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

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	14	13	13	11	10	12	16	9.7	4.6	21	32
2	13	13	13	14	11	10	11	16	8.8	4.2	23	23
3	12	13	13	14	16	10	10	28	8.2	4.3	40	20
4	12	13	13	14	16	10	8.8	20	10	5.2	24	19
5	12	13	21	14	14	9.4	7.6	18	20	8.3	20	19
6	12	27	18	15	15	10	7.4	17	13	6.0	20	19
7	12	48	15	13	28	10	7.4	16	11	5.3	17	19
8	12	18	14	13	17	12	7.5	15	9.0	4.9	16	19
9	11	15	14	13	14	10	7.4	14	7.8	4.3	15	25
10	11	14	14	13	14	9.7	7.3	14	7.0	3.9	15	20
11	11	14	24	12	13	9.9	7.5	14	6.9	3.5	14	18
12	11	14	18	13	13	9.5	11	13	8.8	4.5	14	17
13	11	14	15	13	13	8.5	67	13	7.8	5.5	16	17
14	11	13	40	13	12	8.4	80	12	6.8	7.1	24	17
15	16	13	30	12	12	8.6	40	12	6.0	6.4	36	20
16	13	13	19	12	12	14	26	13	7.9	5.3	56	21
17	12	14	18	12	12	13	22	15	7.9	4.6	29	19
18	12	14	18	14	12	10	20	13	8.0	10	32	23
19	11	17	16	15	12	10	19	12	15	8.1	48	20
20	11	28	16	13	12	9.4	18	12	8.7	8.4	24	18
21	11	17	16	12	11	8.8	18	12	6.3	6.5	20	17
22	12	15	15	12	11	8.4	17	15	5.4	5.2	22	16
23	11	14	15	12	11	8.1	17	13	5.8	5.2	19	16
24	12	14	16	12	11	8.3	18	11	5.1	58	17	15
25	12	14	15	11	11	8.3	17	10	5.1	78	16	15
26	12	14	15	12	11	8.1	18	9.9	18	34	16	15
27	15	14	14	13	10	7.8	21	10	11	26	16	16
28	16	14	14	13	10	7.9	17	10	7.4	22	15	22
29	32	15	14	12	10	7.6	16	11	6.0	21	15	24
30	18	14	14	13	---	7.7	16	9.8	5.2	18	128	18
31	15	---	14	12	---	8.0	---	9.7	---	17	212	---
TOTAL	405	487	524	399	375	291.4	571.9	424.4	263.6	405.3	1,000	579
MEAN	13.1	16.2	16.9	12.9	12.9	9.40	19.1	13.7	8.79	13.1	32.3	19.3
MAX	32	48	40	15	28	14	80	28	20	78	212	32
MIN	11	13	13	11	10	7.6	7.3	9.7	5.1	3.5	14	15
CFSM	1.44	1.79	1.86	1.42	1.43	1.04	2.10	1.51	0.97	1.44	3.56	2.13
IN.	1.66	2.00	2.15	1.64	1.54	1.20	2.35	1.74	1.08	1.66	4.10	2.37

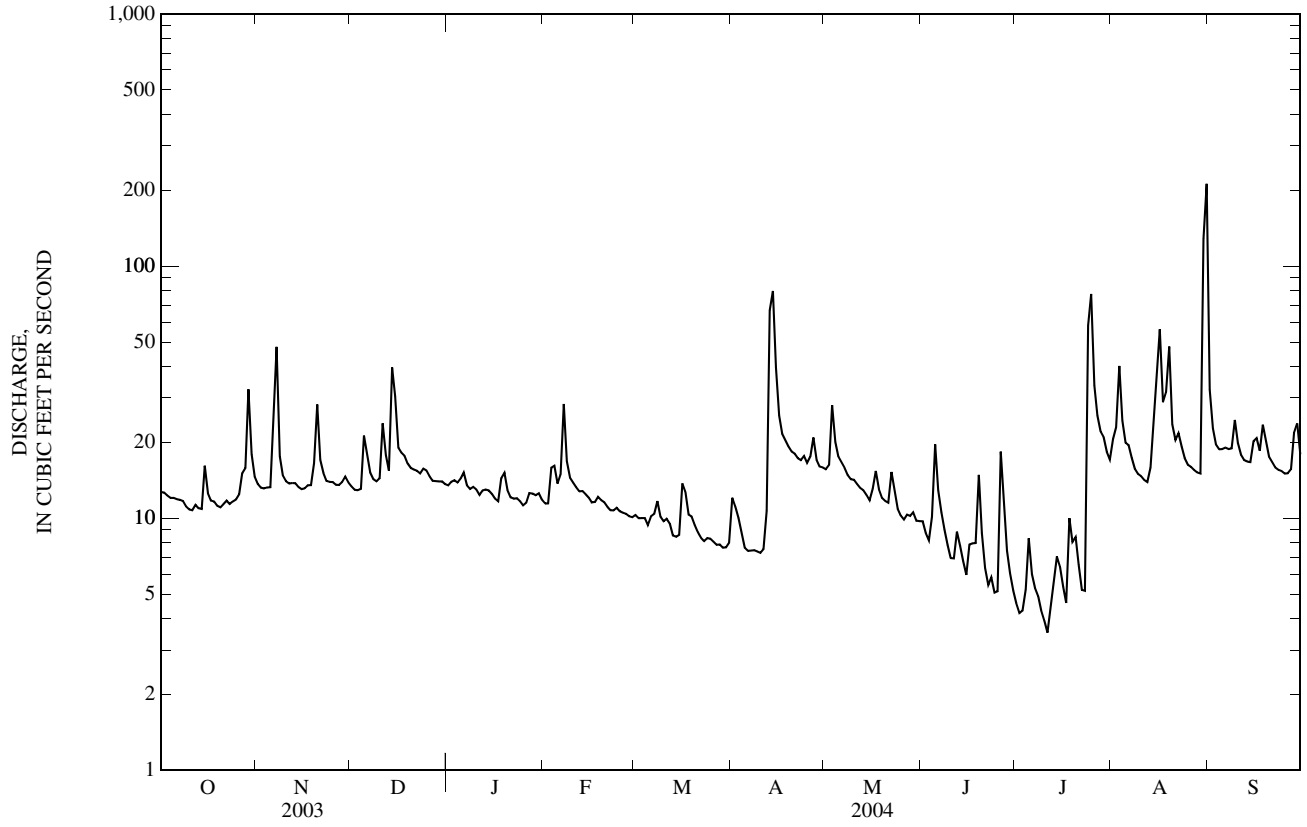
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1999 - 2004, BY WATER YEAR (WY)

MEAN	4.86	6.50	7.85	8.31	8.92	10.2	11.9	9.17	6.62	6.38	11.9	14.4
MAX	13.1	16.2	16.9	12.9	13.5	16.9	23.4	22.0	17.4	14.2	32.3	34.6
(WY)	(2004)	(2004)	(2004)	(2004)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2004)	(2003)
MIN	0.33	2.90	4.19	5.77	4.53	3.15	4.51	3.46	0.02	0.00	0.00	0.00
(WY)	(2003)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(1999)	(2002)	(2002)	(2002)	(2002)

01673638 COHOKE MILL CREEK NEAR LESTER MANOR, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1999 - 2004	
ANNUAL TOTAL	6,631.9		5,725.6			
ANNUAL MEAN	18.2		15.6		8.91	
HIGHEST ANNUAL MEAN					15.6	2004
LOWEST ANNUAL MEAN					2.74	2002
HIGHEST DAILY MEAN	294	Sep 19	212	Aug 31	415	Sep 16, 1999
LOWEST DAILY MEAN	4.3	Jul 13	3.5	Jul 11	0.00	(a)
ANNUAL SEVEN-DAY MINIMUM	5.1	Jan 22	4.6	Jul 7	0.00	(a)
MAXIMUM PEAK FLOW			733	Aug 30	1,430	Sep 16, 1999
MAXIMUM PEAK STAGE			9.09	Aug 30	b10.30	Sep 16, 1999
INSTANTANEOUS LOW FLOW			3.4	Jul 11	0.00	(c)
ANNUAL RUNOFF (CFSM)	2.00		1.72		0.982	
ANNUAL RUNOFF (INCHES)	27.20		23.48		13.35	
10 PERCENT EXCEEDS	30		22		17	
50 PERCENT EXCEEDS	14		13		6.1	
90 PERCENT EXCEEDS	6.0		7.5		0.90	

a No flow many days in June to October 2002.
b From floodmarks.
c No flow part or all of many days in May to October 2002.



01673800 PO RIVER NEAR SPOTSYLVANIA, VA

LOCATION.--Lat 38°10'17", long 77°35'41", NAD83, 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 mi^2.

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 Sep. 30, 1964, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods of doubtful gage-height record, Oct. 9, 10, 13, 14, 24-26, and periods with ice effect, Jan. 9-11 and Jan. 22 to Feb. 2, which are fair. Maximum discharge, 10,900 ft^3/s, from rating curve extended above 3,400 ft^3/s. Maximum discharge, 10,900 ft^3/s, from rating curve extended above 3,400 ft^3/s. Several measurements of water temperature were made during the year.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 900 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 7	0500	2,800	11.66	Dec 18	1430	904	7.29
Nov 20	2400	1,370	8.76	Feb 7	2130	1,930	10.07
Dec 12	0430	*3,160	*12.23	Apr 13	2200	961	7.49

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	61	115	74	e47	51	79	39	54	8.0	28	18
2	24	49	91	77	e46	51	143	52	36	6.9	78	17
3	22	42	75	89	88	51	186	126	22	5.0	546	11
4	21	39	68	82	228	50	137	195	17	4.0	403	8.0
5	20	60	190	86	151	50	88	90	55	21	75	7.1
6	19	1,040	561	116	324	60	66	62	90	32	70	6.9
7	18	2,300	277	90	1,330	80	59	49	46	21	47	7.1
8	17	584	158	72	1,060	73	57	65	32	25	31	23
9	e16	153	124	e69	253	69	55	59	25	17	24	153
10	e15	105	117	e66	184	56	51	43	21	12	20	55
11	15	87	1,280	e60	156	52	49	37	21	7.1	17	30
12	16	84	2,270	63	126	50	124	33	67	5.1	43	22
13	e15	367	300	71	111	47	714	30	67	6.8	119	19
14	e14	340	308	69	101	43	868	26	33	33	87	16
15	53	128	609	65	93	44	452	23	25	111	90	27
16	59	97	399	59	82	73	173	20	24	51	60	42
17	28	87	452	50	72	194	121	19	25	23	39	64
18	21	78	808	74	72	106	98	19	26	25	30	211
19	19	157	328	144	73	89	84	30	82	22	24	115
20	18	883	186	94	71	76	74	39	48	98	20	46
21	17	720	141	65	70	66	67	30	24	76	17	31
22	16	168	122	e64	65	59	60	26	19	37	17	25
23	15	121	112	e60	59	50	54	22	20	43	16	22
24	e14	101	134	e55	58	47	52	19	23	43	14	19
25	e14	117	164	e49	59	47	48	18	20	44	12	17
26	e13	109	120	e45	56	47	47	15	18	35	10	15
27	62	86	102	e47	54	47	66	15	15	313	9.7	14
28	172	85	92	e51	53	52	61	44	13	180	9.8	52
29	171	281	87	e56	50	49	46	62	11	78	8.5	539
30	208	188	85	e52	---	45	41	37	9.1	45	7.8	177
31	89	---	79	e50	---	48	---	39	---	33	14	---
TOTAL	1,249	8,717	9,954	2,164	5,192	1,922	4,220	1,383	988.1	1,460.9	1,986.8	1,809.1
MEAN	40.3	291	321	69.8	179	62.0	141	44.6	32.9	47.1	64.1	60.3
MAX	208	2,300	2,270	144	1,330	194	868	195	90	313	546	539
MIN	13	39	68	45	46	43	41	15	9.1	4.0	7.8	6.9
CFSM	0.52	3.75	4.15	0.90	2.31	0.80	1.82	0.58	0.43	0.61	0.83	0.78
IN.	0.60	4.19	4.78	1.04	2.50	0.92	2.03	0.66	0.47	0.70	0.95	0.87

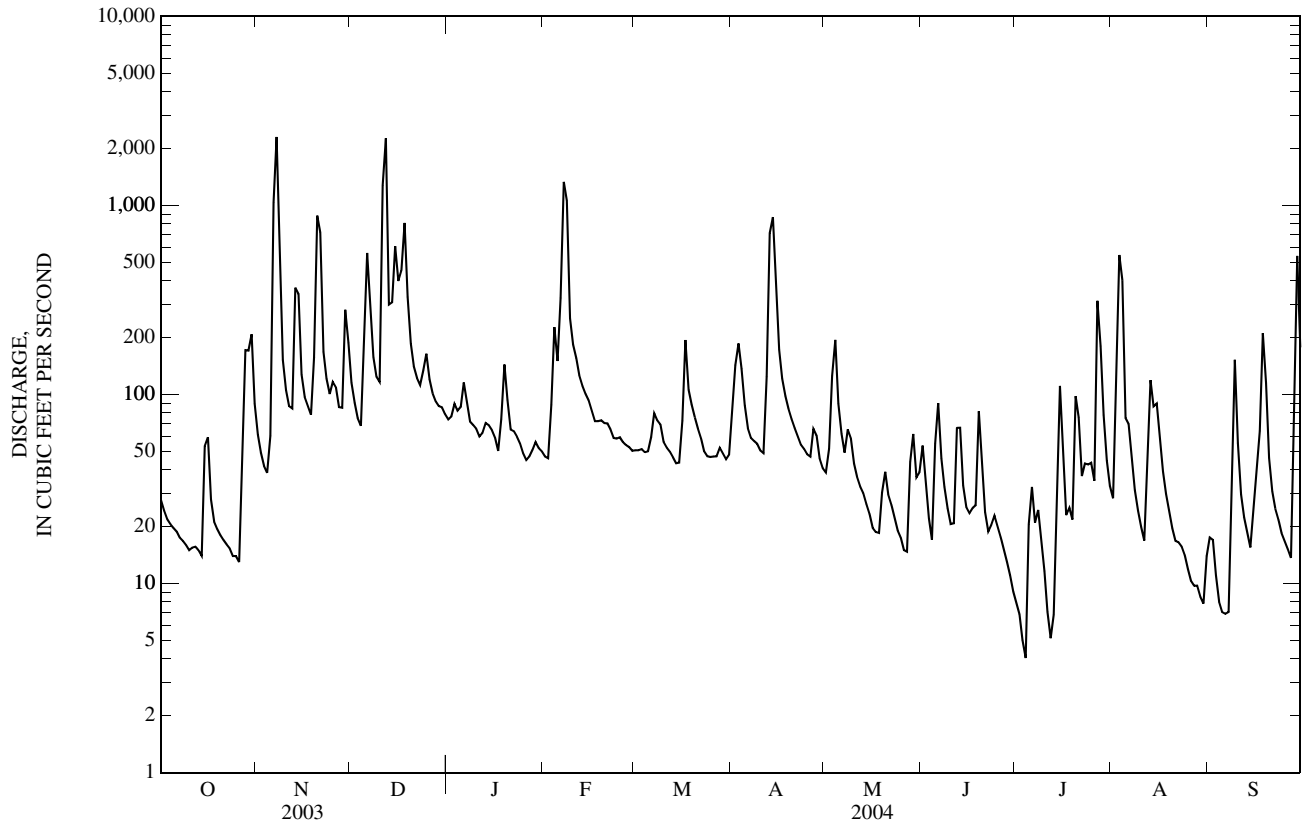
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2004, BY WATER YEAR (WY)

MEAN	40.5	67.1	87.6	111	134	151	114	75.6	52.4	29.1	24.2	29.5
MAX	275	291	321	326	560	566	397	221	490	145	207	268
(WY)	(1980)	(2004)	(2004)	(1978)	(1998)	(1994)	(1983)	(1972)	(1972)	(1984)	(1969)	(1975)
MIN	0.24	0.85	5.90	10.4	9.05	25.2	27.1	8.63	1.67	0.10	0.25	0.21
(WY)	(1992)	(1992)	(1999)	(1981)	(2002)	(1981)	(1981)	(1999)	(1999)	(2002)	(1963)	(2002)

01673800 PO RIVER NEAR SPOTSYLVANIA, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1963 - 2004	
ANNUAL TOTAL	61,615.04		41,045.9			
ANNUAL MEAN	169		112		76.1	
HIGHEST ANNUAL MEAN					164	1972
LOWEST ANNUAL MEAN					11.8	2002
HIGHEST DAILY MEAN	2,930	Feb 23	2,300	Nov 7	8,160	Jun 22, 1972
LOWEST DAILY MEAN	0.25	Aug 28	4.0	Jul 4	0.00	aAug 20, 2002
ANNUAL SEVEN-DAY MINIMUM	1.2	Aug 26	8.1	Jun 28	0.00	Aug 20, 2002
MAXIMUM PEAK FLOW			3,160	Dec 12	10,900	Jun 22, 1972
MAXIMUM PEAK STAGE			12.23	Dec 12	19.03	Jun 22, 1972
INSTANTANEOUS LOW FLOW			4.0	bJul 4	0.00	cAug 19, 2002
ANNUAL RUNOFF (CFSM)	2.18		1.45		0.983	
ANNUAL RUNOFF (INCHES)	29.61		19.73		13.35	
10 PERCENT EXCEEDS	399		189		149	
50 PERCENT EXCEEDS	75		54		34	
90 PERCENT EXCEEDS	12		15		2.3	

a Also Aug. 21-27, 2002.
b Also July 5, 2004.
c Also part or all of each day Aug. 20-28, 2002.
e Estimated.



01674000 MATTAPONI RIVER NEAR BOWLING GREEN, VA

LOCATION.--Lat 38°03'42", long 77°23'09", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to Aug. 17, 1978, gage located on left bank at same datum.

REMARKS.--Records good except those for period with ice effect, Jan. 25 to Feb. 2, and period of doubtful gage-height record, Aug. 25, which are fair. Some diurnal fluctuation from gristmill upstream on Po River. Maximum discharge, 13,400 ft^3/s, from rating curve extended above 8,100 ft^3/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 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 ft^3/s, from rating curve extended above 8,100 ft^3/s.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 8	1700	3,730	11.83	Dec 13	0900	*4,230	*12.36
Nov 22	0900	2,030	9.76	Feb 9	0300	3,030	11.02

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	173	458	442	341	e230	208	208	139	124	26	138	54
2	136	307	447	319	e220	202	281	133	145	24	291	50
3	113	211	344	320	237	201	361	192	105	22	316	43
4	97	165	273	328	359	198	426	296	77	22	361	35
5	84	141	274	335	490	198	446	342	91	42	585	32
6	76	298	381	371	617	206	388	313	152	49	556	31
7	71	916	626	416	773	233	320	220	179	64	343	31
8	67	3,290	904	395	2,090	255	273	173	137	56	204	35
9	65	2,670	707	342	2,700	259	225	157	98	49	122	139
10	63	1,170	509	306	1,460	246	198	150	76	39	83	309
11	63	650	631	268	879	214	187	126	63	32	61	237
12	62	424	2,110	268	673	199	215	108	92	27	50	113
13	61	383	3,960	275	547	192	495	102	135	29	133	75
14	59	460	2,340	282	461	185	1,150	95	140	31	310	59
15	90	651	1,420	275	405	181	1,920	84	95	106	463	102
16	138	662	1,820	258	361	204	1,610	74	77	189	497	197
17	152	467	1,780	228	322	355	979	66	73	152	353	175
18	121	343	1,610	247	303	446	619	65	72	101	215	445
19	93	297	1,840	325	289	447	433	68	66	104	157	823
20	78	457	1,550	394	279	373	339	81	80	107	115	902
21	72	1,020	985	368	270	314	280	88	86	119	86	474
22	67	1,910	737	315	259	278	243	81	56	136	79	213
23	59	1,140	599	282	246	249	212	72	48	97	70	143
24	54	673	538	269	234	226	192	65	49	90	68	112
25	50	498	555	e220	232	213	173	55	51	85	e62	95
26	49	405	602	e210	228	206	162	49	58	100	52	83
27	66	354	568	e235	226	201	177	47	53	311	44	75
28	168	322	484	e250	217	201	189	51	41	435	40	95
29	311	314	425	e270	209	202	180	95	34	496	37	293
30	450	338	388	e255	---	198	153	117	30	440	35	501
31	506	---	369	e240	---	192	---	99	---	231	46	---
TOTAL	3,714	21,394	30,218	9,207	15,816	7,482	13,034	3,803	2,583	3,811	5,972	5,971
MEAN	120	713	975	297	545	241	434	123	86.1	123	193	199
MAX	506	3,290	3,960	416	2,700	447	1,920	342	179	496	585	902
MIN	49	141	273	210	209	181	153	47	30	22	35	31
CFSM	0.47	2.77	3.79	1.16	2.12	0.94	1.69	0.48	0.34	0.48	0.75	0.77
IN.	0.54	3.10	4.37	1.33	2.29	1.08	1.89	0.55	0.37	0.55	0.86	0.86

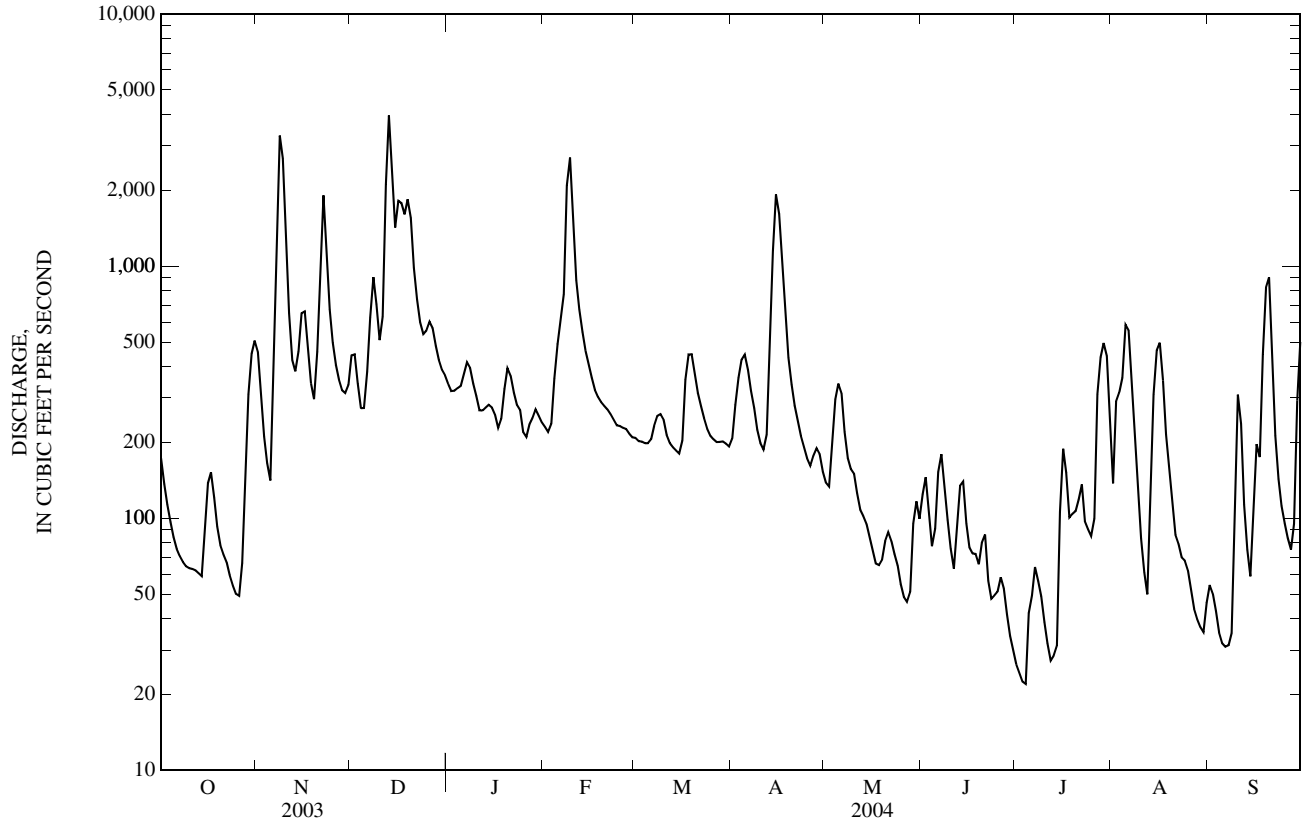
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 2004, BY WATER YEAR (WY)

MEAN	117	171	270	347	404	468	377	247	140	102	111	86.8
MAX	860	721	1,041	1,174	1,706	1,540	1,164	707	1,111	853	939	714
(WY)	(1943)	(1973)	(1949)	(1978)	(1998)	(1994)	(1983)	(1972)	(1972)	(1945)	(1955)	(1975)
MIN	0.00	1.13	15.2	34.7	26.2	56.4	69.2	22.9	5.26	0.45	0.00	0.43
(WY)	(2003)	(2002)	(2002)	(1981)	(2002)	(2002)	(2002)	(1999)	(1999)	(2002)	(2002)	(1954)

01674000 MATTAPONI RIVER NEAR BOWLING GREEN, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1943 - 2004	
ANNUAL TOTAL	169,389		123,005			
ANNUAL MEAN	464		336		236	
HIGHEST ANNUAL MEAN					516	1972
LOWEST ANNUAL MEAN					23.3	2002
HIGHEST DAILY MEAN	5,380	Feb 24	3,960	Dec 13	12,200	Jun 23, 1972
LOWEST DAILY MEAN	11	Aug 30	22	aJul 3	0.00	(b)
ANNUAL SEVEN-DAY MINIMUM	13	Aug 27	28	Jun 28	0.00	(c)
MAXIMUM PEAK FLOW			4,230	Dec 13	13,400	Jun 23, 1972
MAXIMUM PEAK STAGE			12.36	Dec 13	d18.95	Jun 23, 1972
INSTANTANEOUS LOW FLOW			21	Jul 4	0.00	(f)
ANNUAL RUNOFF (CFSM)	1.81		1.31		0.918	
ANNUAL RUNOFF (INCHES)	24.52		17.80		12.47	
10 PERCENT EXCEEDS	1,050		637		537	
50 PERCENT EXCEEDS	242		210		120	
90 PERCENT EXCEEDS	55		52		10	

a Also July 4, 2004.
b Also many days in September, October 1954, September 1966, and July, August, October, November 2002.
c Many days in September, October 1954, and August, October, November 2002.
d From floodmark in well.
e Estimated.
f Many days in September, October 1954, September 1966, and July to September, October, November 2002.



01674500 MATTAPONI RIVER NEAR BEULAHVILLE, VA

LOCATION.--Lat 37°53'16", long 77°09'47", NAD83, 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 mi^2.

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 NGVD of 1929 (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.--No estimated daily discharges. Records good except those for discharges greater than 2,500 ft^3/s, which are fair. Diurnal fluctuation at times during low flow caused by gristmill on Po River. Maximum discharge, 16,900 ft^3/s, from rating curve extended above 11,760 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,030	1,070	777	950	673	543	521	485	360	143	1,020	2,240
2	600	1,030	768	896	675	538	649	457	342	125	1,480	1,160
3	494	875	803	870	685	532	773	568	346	110	1,760	466
4	432	647	772	853	819	525	832	794	309	122	1,570	365
5	395	526	763	857	916	519	838	876	342	253	1,250	317
6	365	615	897	947	1,030	531	811	835	381	253	1,160	299
7	345	1,160	993	992	1,490	579	739	749	423	300	1,170	293
8	325	1,580	1,070	1,010	1,880	646	635	633	422	568	1,020	357
9	307	1,770	1,170	1,020	1,920	676	573	527	370	323	680	895
10	297	1,930	1,310	942	1,980	656	530	459	297	226	490	1,180
11	295	2,480	1,560	798	2,350	608	511	420	243	184	391	1,130
12	300	2,740	1,730	720	2,600	564	540	385	305	150	348	978
13	295	2,400	1,740	723	2,360	525	864	343	367	164	344	633
14	284	1,780	1,970	733	1,900	496	1,250	312	401	189	582	443
15	388	1,180	2,810	749	1,440	474	1,590	292	363	369	996	444
16	475	1,010	3,650	740	1,090	524	1,820	268	338	343	1,250	643
17	492	1,070	3,510	688	911	755	2,080	248	306	321	1,360	826
18	472	1,110	3,090	685	823	921	2,320	279	277	435	1,420	1,160
19	430	993	2,870	785	770	1,030	2,230	272	255	417	1,190	1,450
20	370	952	2,780	873	742	1,040	1,850	303	224	466	750	1,580
21	328	1,060	2,690	922	715	923	1,260	317	203	330	561	1,670
22	303	1,210	2,590	884	686	794	834	326	204	298	487	1,750
23	285	1,400	2,380	802	652	697	677	296	245	315	424	1,480
24	270	1,650	2,080	754	623	621	602	261	216	310	387	670
25	258	1,920	1,810	659	608	553	556	231	195	300	346	454
26	257	1,910	1,560	568	593	513	526	207	231	314	311	393
27	279	1,540	1,410	590	583	494	629	207	249	421	284	359
28	377	1,090	1,350	671	574	488	630	217	236	992	261	432
29	605	913	1,270	743	559	481	581	231	197	1,390	242	829
30	929	819	1,150	765	---	473	533	232	163	1,620	386	959
31	1,040	---	1,040	706	---	469	---	281	---	1,420	2,300	---
TOTAL	13,322	40,430	54,363	24,895	32,647	19,188	28,784	12,311	8,810	13,171	26,220	25,855
MEAN	430	1,348	1,754	803	1,126	619	959	397	294	425	846	862
MAX	1,040	2,740	3,650	1,020	2,600	1,040	2,320	876	423	1,620	2,300	2,240
MIN	257	526	763	568	559	469	511	207	163	110	242	293
CFSM	0.72	2.24	2.92	1.34	1.87	1.03	1.60	0.66	0.49	0.71	1.41	1.43
IN.	0.82	2.50	3.36	1.54	2.02	1.19	1.78	0.76	0.55	0.82	1.62	1.60

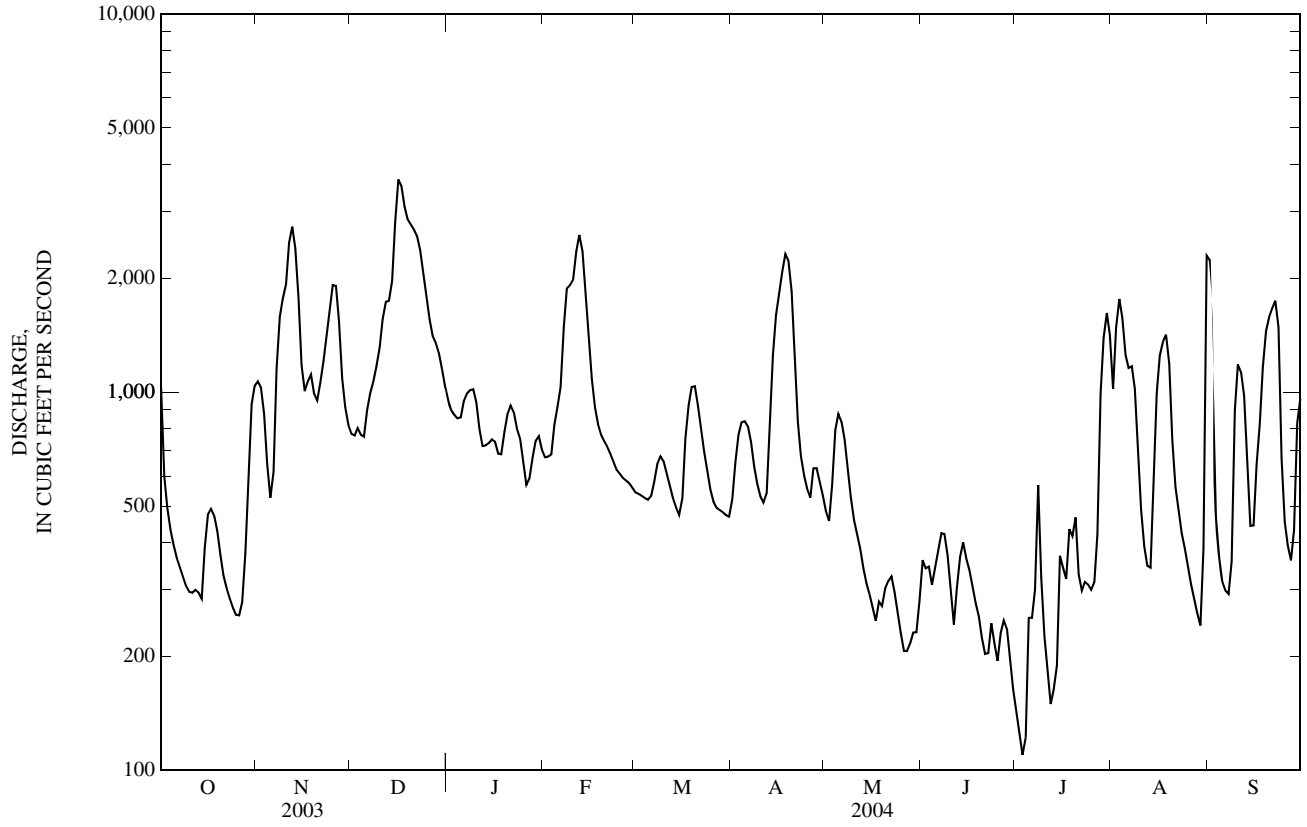
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1987, 1990 - 2004, BY WATER YEAR (WY)

MEAN	303	425	624	778	909	1,059	947	634	407	284	323	250
MAX	1,801	1,461	2,115	2,418	3,100	2,483	3,291	1,912	3,217	2,119	2,409	1,287
(WY)	(1980)	(1973)	(1949)	(1978)	(1998)	(1979)	(1984)	(1978)	(1972)	(1945)	(1969)	(1975)
MIN	19.5	36.3	86.4	131	104	168	183	88.5	22.1	10.8	3.59	9.90
(WY)	(2002)	(2002)	(2002)	(1981)	(2002)	(2002)	(2002)	(1999)	(1999)	(2002)	(2002)	(2002)

01674500 MATTAPONI RIVER NEAR BEULAHVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1942 - 1987 1990 - 2004	
ANNUAL TOTAL	363,105		299,996			
ANNUAL MEAN	995		820		577	
HIGHEST ANNUAL MEAN					1,210	1972
LOWEST ANNUAL MEAN					81.9	2002
HIGHEST DAILY MEAN	4,720	Feb 27	3,650	Dec 16	16,200	Jun 25, 1972
LOWEST DAILY MEAN	103	Aug 30	110	Jul 3	0.25	Aug 27, 2002
ANNUAL SEVEN-DAY MINIMUM	113	Aug 27	157	Jun 28	0.34	Aug 21, 2002
MAXIMUM PEAK FLOW			3,760	Dec 16	16,900	Jun 25, 1972
MAXIMUM PEAK STAGE			15.35	Dec 16	24.09	Aug 23, 1969
INSTANTANEOUS LOW FLOW			100	Jul 4	0.22	aAug 24, 2002
ANNUAL RUNOFF (CFSM)	1.66		1.36		0.959	
ANNUAL RUNOFF (INCHES)	22.48		18.57		13.03	
10 PERCENT EXCEEDS	2,150		1,740		1,320	
50 PERCENT EXCEEDS	736		634		360	
90 PERCENT EXCEEDS	236		266		58	

a Also Aug. 25, 27, 2002.



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.--Water samples were collected by the U.S. Geological Survey and analyzed by either the U.S. Geological Survey (Agency Code 1028) or by the Virginia Division of Consolidated Laboratory Services (VDCLS, Agency Code 85116), using analytical methods approved by the U.S. Geological Survey. Analyses performed by VDCLS are reported to U.S. Geological Survey rounding specifications. Results of chemical analyses provided by VDCLS were quality-assured and approved by the U.S. Geological Survey.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Sample type	Agency analyzing sample, code (00028)	Gage height, feet (00065)	Instantaneous discharge, cfs (00061)	Turbidity, NTU (00076)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
OCT												
07...	0930	Environmental	85116	5.33	348	5.8	765	11.0	108	6.7	59	12.5
30...	1130	Environmental	85116	8.40	932	9.4	764	8.7	81	6.4	56	17.5
30...	1145	Replicate	85116	8.41	935	9.4	--	--	--	--	--	--
NOV												
04...	1030	Environmental	85116	7.12	651	6.3	763	8.2	81	6.2	58	22.0
24...	1110	Blank	85116	--	--	.60	--	--	--	--	--	--
24...	1115	Environmental	85116	11.00	1,630	12	759	8.8	80	6.1	47	17.5
DEC												
09...	0930	Environmental	85116	9.45	1,150	9.8	766	12.5	91	6.5	51	2.5
09...	0945	Replicate	85116	9.44	1,150	11	--	--	--	--	--	--
15...	1330	Environmental	85116	14.00	2,850	20	760	11.5	89	6.0	39	7.5
JAN												
12...	1015	Environmental	85116	7.40	717	13	757	13.8	97	6.4	53	8.0
12...	1030	Replicate	85116	7.38	713	8.2	--	--	--	--	--	--
FEB												
05...	1400	Environmental	85116	8.38	928	10	772	#	#	6.4	58	6.0
10...	1315	Environmental	85116	12.00	1,970	16	763	12.3	89	6.0	60	12.0
MAR												
09...	1015	Environmental	85116	7.20	678	5.7	760	10.2	92	6.9	53	7.5
APR												
07...	0915	Environmental	85116	7.57	751	6.5	752	10.6	96	6.5	55	16.0
19...	1215	Environmental	85116	12.65	2,240	9.9	761	7.7	80	6.0	50	25.0
MAY												
04...	1045	Environmental	85116	7.78	794	10	762	8.5	85	6.7	51	11.0
JUN												
01...	1100	Environmental	85116	5.38	366	25	754	7.4	85	6.6	57	--
JUL												
06...	1315	Environmental	85116	4.63	252	16	757	6.9	85	6.5	50	25.5
28...	1225	Blank	85116	--	--	.30	--	--	--	--	--	--
28...	1230	Environmental	85116	8.70	1,000	22	757	6.3	75	5.9	50	24.0
AUG												
03...	1415	Environmental	85116	11.38	1,760	17	757	5.4	66	5.6	43	29.5
16...	1215	Environmental	85116	9.73	1,270	9.6	764	7.1	80	6.0	50	25.0
SEP												
01...	1115	Environmental	85116	12.72	2,270	--	765	5.2	60	5.4	34	25.0
07...	1130	Environmental	85116	4.98	292	9.9	761	7.2	83	6.2	57	27.0

01674500 MATTAPONI RIVER NEAR BEULAHVILLE, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Temperature, water, deg C (00010)	Silica, water, fltrd, mg/L (00955)	Residue fixed non-filterable, mg/L (00540)	Residue total at 105 deg. C, suspended, mg/L (00530)	Residue volatile, suspended, mg/L (00535)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Total nitrogen, water, fltrd, mg/L (00602)	Phosphorus, suspnd sedimnt total, mg/L (00667)
OCT													
07...	14.5	11.5	4	7	3	.058	.29	.296	<.002	.007	.039	.55	.019
30...	12.3	8.90	12	15	3	.009	.11	.109	<.002	.014	.038	.50	.040
30...	--	8.90	12	15	3	.009	.11	.109	<.002	.014	.038	.50	.040
NOV													
04...	14.5	11.0	4	7	3	.027	.11	.106	<.002	.007	.050	.51	.024
24...	--	<.100	<3	<3	<3	.004	<.004	<.004	<.002	.002	.001	<.004	.002
24...	10.9	9.50	7	8	<3	.005	.06	.062	<.002	.007	.026	.47	.035
DEC													
09...	2.5	8.80	3	5	<3	.028	.22	.222	<.002	.005	.022	.68	.020
09...	--	9.10	4	6	<3	.026	.22	.221	<.002	.006	.020	.63	.025
15...	4.5	7.00	8	10	<3	.008	.14	.145	<.002	.009	.022	.45	.031
JAN													
12...	.6	7.65	4	5	<3	.034	.36	.356	<.002	.007	.029	.56	.013
12...	--	7.74	4	5	<3	.038	.36	.358	<.002	.007	.017	.53	.013
FEB													
05...	.6	8.10	5	7	<3	.043	.38	.384	<.002	.006	.018	.61	.015
10...	2.0	6.20	5	7	<3	.056	.36	.361	.003	.005	.019	.65	.019
MAR													
09...	10.5	5.00	5	7	<3	.016	.22	.222	<.002	.007	.015	.74	.017
APR													
07...	10.2	6.20	6	8	<3	.007	.15	.148	<.002	.003	.022	.43	.019
19...	17.2	7.50	3	5	<3	.011	.09	.094	<.002	.002	.022	.44	.020
MAY													
04...	15.7	6.50	11	14	3	.054	.22	.222	<.002	.006	.028	.60	.042
JUN													
01...	21.6	9.20	21	28	7	.042	.32	.326	.005	.009	.038	.72	.054
JUL													
06...	25.7	6.10	13	16	3	.024	.16	.159	<.002	.008	.018	.51	.043
28...	--	<.100	<3	<3	<3	<.004	<.004	<.004	<.002	.004	.015	<.004	.001
28...	23.7	8.10	36	43	7	.037	.18	.186	<.002	.011	.031	.60	.063
AUG													
03...	24.7	7.40	8	12	4	.031	.12	.127	.005	.012	.022	.57	<.043
16...	21.3	9.60	9	12	3	.006	.15	.154	<.002	.015	.041	.55	.037
SEP													
01...	23.3	5.40	14	18	4	.016	.11	.108	<.002	.004	.028	.48	.047
07...	22.1	10.8	<3	<3	<3	.041	.39	.388	.002	.012	.033	.69	.025

01674500 MATTAPONI RIVER NEAR BEULAHVILLE, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Total nitrogen, suspnd sedimnt total, mg/L (00601)	Total carbon, suspnd sedimnt total, mg/L (00694)	Inorganic carbon, suspnd sedimnt total, mg/L (00688)	Organic carbon, water, fltrd, mg/L (00681)	Pheophytin a, phytoplankton, ug/L (62360)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)
OCT								
07...	.06	.9	<.02	7.5	<.5	<.5	--	5
30...	.16	1.8	<.02	7.5	<.5	.8	24	17
30...	.16	1.8	<.02	7.5	<.5	.8	20	17
NOV								
04...	.10	1.0	<.02	8.0	<.5	.7	--	8
24...	.03	.1	<.02	<2.0	<.5	<.5	100	<1
24...	.12	1.5	<.02	8.7	<.5	.7	94	10
DEC								
09...	.08	.8	<.02	4.9	<.5	.7	--	9
09...	.07	.7	<.02	5.1	<.5	.7	--	10
15...	.13	1.3	<.02	7.0	<.5	1.1	13	61
JAN								
12...	.07	.6	<.02	4.2	<.5	.6	--	5
12...	.06	.7	<.02	3.7	<.5	<.5	--	7
FEB								
05...	.05	.7	<.02	3.6	<.5	.7	78	15
10...	.08	.9	<.02	4.9	<.5	.8	94	11
MAR								
09...	.12	1.3	<.02	4.2	.8	2.9	84	10
APR								
07...	.10	1.0	<.02	5.6	.8	3.1	--	10
19...	.11	1.0	<.02	7.1	<.5	2.6	50	12
MAY								
04...	.17	2.2	<.02	7.0	.8	1.3	83	18
JUN								
01...	.22	2.7	<.02	7.5	1.1	<.5	--	27
JUL								
06...	.20	2.3	<.02	6.6	1.1	.7	91	19
28...	<.01	.1	<.02	<2.0	<.5	<.5	--	1
28...	.26	3.2	<.02	8.7	1.8	1.6	77	48
AUG								
03...	.16	1.8	<.02	11.4	<.5	.9	--	15
16...	.14	1.7	<.02	6.9	.6	.6	69	13
SEP								
01...	.22	1.9	<.02	8.8	<.5	.7	95	16
07...	.11	1.3	<.02	6.0	<.5	.6	93	8

Remark codes used in this table:
< -- Less than

Value flags used in this table:
-- Reviewed and rejected (DQI=Q or X)

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02011400 JACKSON RIVER NEAR BACOVA, VA

LOCATION.--Lat 38°02'32", long 79°52'53", NAD83, 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 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,639.20 ft NGVD of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 21 to Feb. 3, which is poor. U.S. Army Corps of Engineers satellite water temperature, precipitation and gage-height telemeter at station. Maximum discharge, 30,000 ft^3/s, from rating curve extended above 1,300 ft^3/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 ft^3/s, and flood of Dec. 26, 1973, reached a stage of 13.88 ft, discharge, 7,560 ft^3/s, from rating curve extended as explained above.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 13	0100	2,890	9.41	2330	2,170	8.45
Nov 19	1930	*9,230	*14.65	2400	1,920	8.07
Dec 11	0500	2,120	8.38	1800	3,330	9.94

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	138	102	246	174	e62	204	164	240	301	61	73	28
2	125	96	214	194	e60	266	154	247	242	71	56	27
3	112	91	191	208	e64	335	145	455	200	70	50	27
4	105	87	180	208	66	307	140	344	178	66	45	27
5	100	87	183	214	73	288	134	290	294	68	52	26
6	93	117	172	212	514	485	124	248	342	60	62	27
7	85	159	155	184	925	506	119	213	250	55	46	29
8	80	139	141	173	452	437	117	186	206	55	41	631
9	76	124	134	171	299	352	114	168	230	52	38	836
10	73	115	233	159	247	299	104	150	201	57	37	287
11	70	111	1,440	142	222	261	100	138	177	63	35	180
12	67	546	734	140	202	237	290	129	170	83	37	137
13	65	1,690	499	138	198	211	1,280	119	150	88	49	113
14	72	701	424	127	203	189	1,450	128	137	68	42	94
15	199	468	348	124	184	177	776	123	150	59	37	81
16	152	350	285	109	166	207	526	142	171	55	35	72
17	129	281	307	101	149	256	398	135	149	52	36	195
18	120	231	295	108	140	227	315	146	132	57	34	1,080
19	110	3,610	254	106	152	256	264	304	120	55	33	473
20	100	2,190	218	93	226	243	231	229	109	53	33	273
21	94	980	185	e90	593	256	210	359	99	48	37	197
22	91	652	173	e86	464	240	188	566	94	46	41	159
23	86	488	196	e82	361	213	170	306	94	48	36	134
24	81	404	415	e80	323	194	159	223	91	45	33	114
25	75	372	451	e74	290	178	145	179	81	42	31	100
26	72	293	348	e76	257	164	527	162	86	41	30	89
27	96	255	287	e74	225	155	650	341	76	43	34	81
28	152	262	249	e73	204	148	447	949	71	44	38	1,520
29	136	315	222	e73	197	136	328	640	67	41	32	1,250
30	123	271	220	e70	---	133	271	400	64	40	31	551
31	110	---	193	e64	---	150	---	378	---	48	30	---
TOTAL	3,187	15,587	9,592	3,927	7,518	7,710	10,040	8,637	4,732	1,734	1,244	8,838
MEAN	103	520	309	127	259	249	335	279	158	55.9	40.1	295
MAX	199	3,610	1,440	214	925	506	1,450	949	342	88	73	1,520
MIN	65	87	134	64	60	133	100	119	64	40	30	26
CFSM	0.65	3.29	1.96	0.80	1.64	1.57	2.12	1.76	1.00	0.35	0.25	1.86
IN.	0.75	3.67	2.26	0.92	1.77	1.82	2.36	2.03	1.11	0.41	0.29	2.08

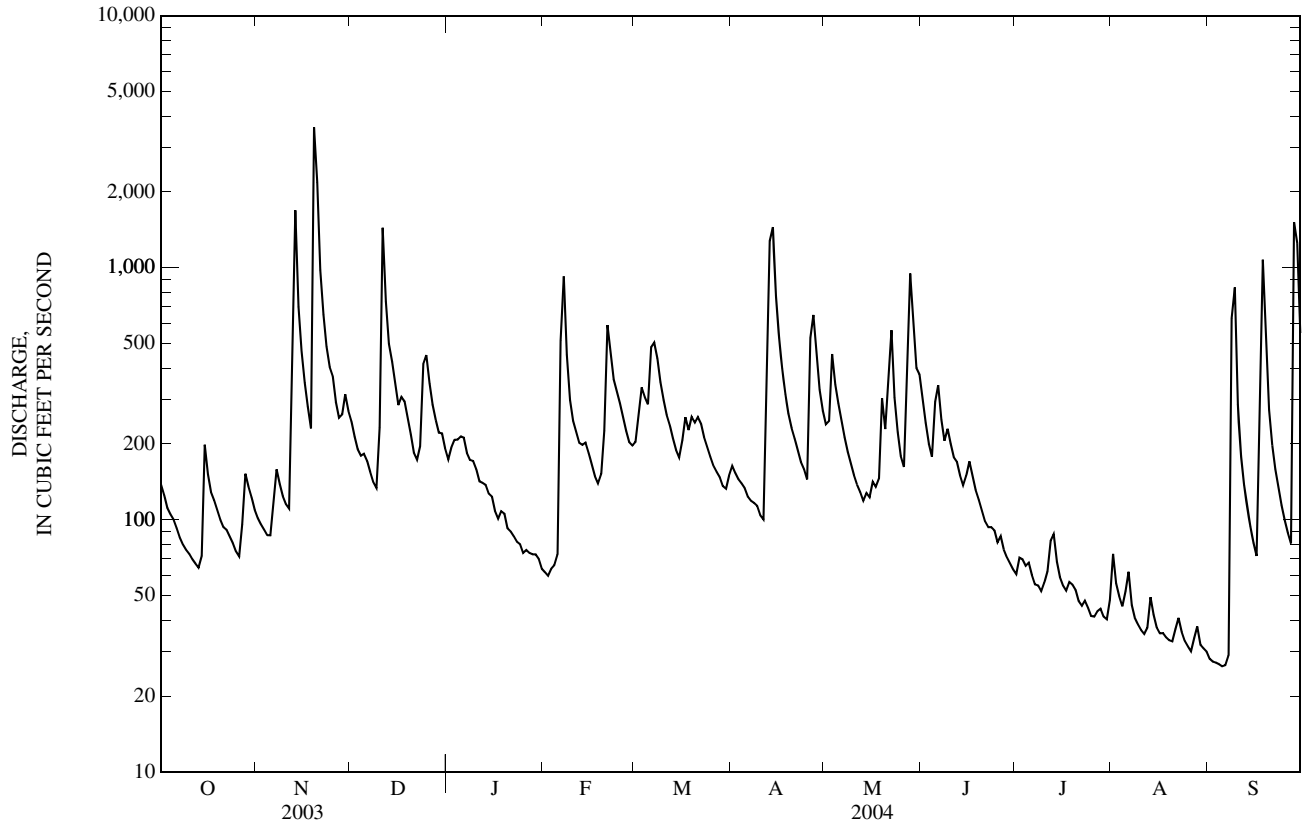
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 2004, BY WATER YEAR (WY)

MEAN	79.1	134	162	224	247	353	281	231	141	61.9	56.8	77.6
MAX	367	762	419	703	604	767	814	508	518	138	282	342
(WY)	(1980)	(1986)	(1997)	(1996)	(1998)	(1993)	(1987)	(1989)	(2003)	(2003)	(1984)	(1979)
MIN	19.6	16.7	25.4	31.6	34.7	68.0	70.3	52.9	27.6	19.1	20.6	20.1
(WY)	(2002)	(2002)	(1999)	(1981)	(2002)	(1981)	(1999)	(1999)	(1999)	(1999)	(1988)	(1998)

02011400 JACKSON RIVER NEAR BACOVA, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1975 - 2004	
ANNUAL TOTAL	112,024		82,746			
ANNUAL MEAN	307		226		170	
HIGHEST ANNUAL MEAN					278	2003
LOWEST ANNUAL MEAN					66.9	1999
HIGHEST DAILY MEAN	3,610	Nov 19	3,610	Nov 19	8,820	Jan 19, 1996
LOWEST DAILY MEAN	44	Aug 27	26	Sep 5	13	aAug 13, 1999
ANNUAL SEVEN-DAY MINIMUM	49	Aug 22	27	Sep 1	13	Sep 8, 2002
MAXIMUM PEAK FLOW			9,230	Nov 19	30,000	Nov 4, 1985
MAXIMUM PEAK STAGE			14.65	Nov 19	b22.25	Nov 4, 1985
INSTANTANEOUS LOW FLOW			26	cSep 4	12	dSep 11, 2002
ANNUAL RUNOFF (CFSM)	1.94		1.43		1.08	
ANNUAL RUNOFF (INCHES)	26.38		19.48		14.63	
10 PERCENT EXCEEDS	657		451		365	
50 PERCENT EXCEEDS	196		150		87	
90 PERCENT EXCEEDS	63		45		27	

a Also Sept. 26, 1999 and Sept. 9-14, 2002.
b From floodmark.
c Also Sept. 5, 6, 2004.
d Also Sept. 12-14, 2002.
e Estimated.



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 Oct. 3, 2000. No variation of temperature was found within the cross section.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum recorded, 31.1°C, July 6, 1999; minimum recorded, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum recorded, 26.9°C, July 5, 6; minimum recorded, 0.0°C, on many days during winter.

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	12.4	11.3	11.7	12.8	8.8	11.0	6.7	4.6	4.9	5.3	2.8	3.5
2	12.8	9.9	11.0	14.3	11.0	12.1	4.6	2.8	3.9	6.7	4.6	5.7
3	11.7	8.1	9.9	14.6	11.3	13.1	3.9	2.5	3.2	9.5	6.4	7.8
4	10.6	9.2	9.9	14.3	11.0	12.8	3.5	2.8	3.2	11.0	9.2	10.2
5	12.4	9.5	10.2	14.6	11.7	13.1	4.2	2.8	3.5	10.2	8.1	10.2
6	14.3	10.6	11.7	14.6	13.9	14.3	4.6	3.9	3.9	8.1	2.5	6.0
7	15.0	11.3	12.8	14.6	12.8	13.9	4.6	2.8	3.5	2.5	0.0	1.1
8	15.8	12.4	13.9	12.8	9.5	11.0	3.9	1.4	2.8	0.7	0.0	0.0
9	15.0	13.9	14.3	9.5	7.1	8.1	4.6	2.5	3.5	2.1	0.7	1.4
10	16.5	14.3	15.0	8.1	5.3	7.1	5.7	3.5	3.9	2.8	0.7	2.1
11	16.5	14.3	15.0	8.5	6.4	7.1	5.7	4.9	5.3	0.7	0.0	0.0
12	16.5	14.6	15.8	11.3	8.5	9.9	5.3	4.6	4.9	2.8	0.0	0.4
13	17.7	14.6	16.1	11.3	7.1	9.2	4.6	3.9	4.2	4.6	2.5	3.2
14	16.5	14.6	15.8	7.1	5.7	6.4	3.9	2.1	2.8	3.9	1.8	3.2
15	14.6	11.7	13.1	7.8	6.7	6.7	4.9	3.2	3.9	3.9	1.8	3.2
16	13.5	9.9	11.7	8.8	7.8	8.1	4.6	3.2	3.9	1.8	0.0	0.7
17	12.1	10.2	11.3	11.0	8.8	9.5	4.6	3.5	4.2	1.8	0.0	0.4
18	13.1	10.2	11.7	9.9	9.2	9.5	3.5	2.8	3.2	3.5	1.8	2.5
19	13.1	9.2	11.3	12.1	9.9	11.0	3.9	3.2	3.2	2.5	0.4	1.8
20	13.1	9.2	11.3	10.2	8.8	9.2	3.2	1.8	2.8	0.4	0.0	0.0
21	12.8	9.9	11.7	9.2	7.8	8.8	2.8	1.1	1.8	0.0	0.0	0.0
22	12.1	10.6	11.3	9.2	7.8	8.8	3.9	1.1	2.1	0.0	0.0	0.0
23	10.6	8.5	9.2	9.2	7.8	8.8	6.0	3.5	4.2	0.0	0.0	0.0
24	9.9	6.4	8.5	8.8	7.8	8.5	6.4	4.9	6.0	0.4	0.0	0.0
25	10.6	6.7	8.5	7.8	5.7	6.7	4.9	3.2	3.9	0.0	0.0	0.0
26	11.0	8.8	9.9	6.7	5.3	6.0	3.9	2.5	2.8	0.0	0.0	0.0
27	11.3	9.9	11.0	8.1	6.4	7.4	4.2	2.5	3.2	0.0	0.0	0.0
28	10.6	8.8	9.9	9.2	7.4	8.5	4.9	2.8	3.5	0.0	0.0	0.0
29	11.3	9.2	9.5	7.4	4.2	5.7	5.7	3.5	4.2	0.0	0.0	0.0
30	11.3	7.4	9.2	5.7	3.5	4.6	6.0	4.2	5.3	0.0	0.0	0.0
31	12.1	8.1	9.9	---	---	---	4.9	3.2	3.9	0.0	0.0	0.0
MAX	17.7	14.6	16.1	14.6	13.9	14.3	6.7	4.9	6.0	11.0	9.2	10.2
MIN	9.9	6.4	8.5	5.7	3.5	4.6	2.8	1.1	1.8	0.0	0.0	0.0

02011400 JACKSON RIVER NEAR BACOVA, VA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
		FEBRUARY			MARCH			APRIL			MAY	
1	0.0	0.0	0.0	8.1	4.2	6.0	8.5	7.1	7.8	14.6	13.5	13.9
2	0.0	0.0	0.0	9.5	6.7	8.1	7.8	6.4	7.1	15.8	13.5	14.3
3	0.0	0.0	0.0	9.5	6.7	8.1	9.5	6.4	7.4	13.9	11.0	12.4
4	0.7	0.0	0.0	10.2	8.5	9.5	9.2	6.7	8.1	12.8	9.5	11.0
5	0.0	0.0	0.0	12.1	8.8	9.9	9.9	5.3	7.4	14.3	11.0	12.1
6	0.7	0.0	0.0	11.7	9.5	11.3	10.6	4.9	7.4	16.9	12.1	13.5
7	2.5	0.7	2.1	9.9	7.8	8.8	11.7	7.4	9.2	18.9	13.9	15.8
8	3.5	1.4	2.1	8.5	5.3	6.7	12.1	9.2	10.6	18.1	15.8	16.5
9	2.5	1.4	2.1	6.4	4.9	5.7	13.9	9.2	11.3	20.1	15.0	16.5
10	4.2	2.5	3.2	8.1	5.7	6.4	14.3	9.5	11.3	20.1	15.4	17.3
11	4.9	2.8	3.5	7.8	4.6	6.0	12.8	9.9	10.6	20.5	16.5	18.5
12	5.3	3.2	4.2	8.5	5.3	6.0	9.9	7.4	8.5	21.3	16.5	18.5
13	6.0	3.5	4.2	8.1	4.2	6.0	8.8	7.4	7.4	21.3	17.3	19.7
14	4.6	3.2	3.5	8.1	4.9	7.1	8.8	7.8	8.1	21.7	18.1	20.1
15	4.9	2.1	3.5	10.6	6.7	8.5	10.6	6.4	7.8	22.1	18.5	20.1
16	4.9	1.8	3.2	9.2	7.1	8.1	12.1	8.1	9.9	20.1	18.1	19.3
17	3.9	1.4	2.5	7.1	5.3	6.4	13.9	9.9	11.3	20.1	17.3	18.9
18	4.6	1.1	2.5	7.8	4.9	6.4	15.8	11.3	12.8	20.1	17.3	18.9
19	6.0	1.8	3.5	9.9	6.7	7.4	16.9	12.4	14.3	18.9	17.3	17.7
20	6.7	3.2	4.6	10.2	6.0	8.1	16.9	13.5	14.6	19.3	16.9	17.7
21	5.7	3.9	4.9	9.2	6.4	8.5	17.3	13.5	15.0	18.9	16.5	17.3
22	5.7	3.2	4.2	7.4	4.6	5.7	16.1	13.1	14.6	18.5	15.4	16.5
23	5.7	3.5	4.2	7.8	2.8	4.9	16.9	13.1	15.0	20.5	17.3	18.5
24	5.7	4.6	4.6	7.1	4.2	5.7	19.3	13.9	15.8	20.1	17.7	18.5
25	6.7	3.9	4.9	11.7	5.3	8.5	18.5	15.4	16.9	21.7	17.7	19.3
26	4.6	3.5	3.9	14.3	8.5	11.0	17.3	12.4	15.0	20.5	18.1	18.9
27	6.4	2.8	4.2	12.4	10.2	11.3	12.4	10.2	11.0	19.3	16.5	18.1
28	7.1	2.5	4.2	15.0	10.2	12.1	12.1	8.5	10.2	18.1	15.4	15.8
29	7.1	3.2	4.9	15.4	10.6	12.8	14.6	10.6	12.1	16.5	13.9	15.4
30	---	---	---	12.8	9.2	10.2	15.8	12.4	13.5	16.1	14.6	15.0
31	---	---	---	9.2	7.8	8.5	---	---	---	17.3	15.0	16.1
MAX	7.1	4.6	4.9	15.4	10.6	12.8	19.3	15.4	16.9	22.1	18.5	20.1
MIN	0.0	0.0	0.0	6.4	2.8	4.9	7.8	4.9	7.1	12.8	9.5	11.0
		JUNE			JULY			AUGUST			SEPTEMBER	
1	17.7	15.4	16.1	23.3	19.7	21.3	26.0	21.7	23.3	24.6	20.9	22.5
2	18.1	15.0	16.5	25.1	20.9	22.5	25.1	22.5	23.8	23.8	20.5	22.1
3	19.3	15.4	16.9	25.1	21.7	23.3	26.0	22.1	23.8	22.1	20.1	21.3
4	17.7	15.0	16.1	26.0	22.1	23.3	26.4	22.1	24.2	23.8	19.3	20.9
5	15.8	14.3	15.0	26.9	22.5	24.2	24.2	20.9	22.5	23.8	19.7	21.7
6	17.7	14.6	15.8	26.9	22.1	24.2	21.3	18.9	20.1	21.7	20.5	20.9
7	19.3	15.0	16.5	24.6	22.1	23.3	21.7	16.9	19.3	20.9	20.1	20.5
8	20.9	16.1	18.1	25.5	20.9	22.9	21.7	16.9	19.3	20.5	18.5	19.7
9	21.3	17.7	19.3	23.8	20.9	22.9	22.9	18.1	20.1	18.5	17.3	18.1
10	21.3	18.5	19.3	24.2	21.3	22.5	24.2	19.3	21.3	18.5	16.5	17.3
11	20.1	18.1	18.9	25.5	21.3	22.5	24.2	20.1	22.1	19.7	16.5	17.3
12	18.9	17.3	18.1	25.5	22.5	24.2	22.5	19.7	20.5	20.5	16.9	18.1
13	18.9	16.5	17.3	25.5	22.5	23.8	20.1	18.9	19.3	20.9	17.7	19.3
14	20.1	17.3	18.5	25.1	22.5	23.8	20.5	17.3	18.9	20.5	17.7	19.3
15	20.9	18.1	19.7	24.2	21.3	22.5	21.7	18.1	19.3	19.7	17.3	18.9
16	20.9	18.9	19.7	24.2	19.7	22.1	22.9	19.7	20.9	---	---	---
17	23.8	18.9	20.5	22.1	19.3	20.1	22.5	18.9	20.9	19.3	18.5	18.9
18	23.8	20.1	22.1	22.5	18.9	20.1	24.2	19.7	21.3	18.5	15.8	16.5
19	22.1	20.1	21.3	22.9	20.1	21.3	24.6	20.1	22.1	15.8	13.5	14.6
20	22.5	17.7	20.1	23.8	19.7	21.3	24.6	20.9	22.5	15.8	13.1	13.9
21	21.7	16.9	19.7	24.6	20.5	22.1	23.3	21.3	22.5	16.9	13.1	14.3
22	21.7	18.9	20.5	23.3	21.7	22.5	22.9	19.3	20.9	18.5	13.5	15.0
23	20.9	19.7	20.1	25.1	20.9	22.5	23.8	19.7	21.3	18.9	14.6	16.5
24	23.8	18.9	20.1	26.0	21.7	23.3	23.3	19.7	21.7	19.3	15.0	16.9
25	22.1	19.7	20.9	24.6	21.3	23.3	23.8	20.5	22.1	20.1	16.5	17.7
26	22.5	18.9	20.1	24.2	22.1	22.9	22.5	19.7	21.7	19.7	16.9	18.5
27	21.7	17.7	20.1	23.3	22.1	22.9	24.6	20.1	21.3	18.5	16.9	17.3
28	21.3	18.1	19.7	25.1	21.3	22.9	25.5	21.3	22.9	---	---	---
29	21.7	18.1	19.7	24.6	20.5	22.9	25.1	22.1	23.3	15.4	14.3	15.0
30	23.3	18.5	20.5	23.3	21.7	22.5	25.1	21.7	23.3	15.4	13.9	14.6
31	---	---	---	25.5	21.3	22.9	25.5	22.1	23.3	---	---	---
MAX	23.8	20.1	22.1	26.9	22.5	24.2	26.4	22.5	24.2	24.6	20.9	22.5
MIN	15.8	14.3	15.0	22.1	18.9	20.1	20.1	16.9	18.9	15.4	13.1	13.9

02011460 BACK CREEK NEAR SUNRISE, VA

LOCATION.--Lat 38°14'43", long 79°46'07", NAD83, 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 mi^2.

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 NGVD of 1929 (levels by Virginia Department of Transportation). Jul. 2 to Sep. 6, 1990, nonrecording gage at present site and datum.

REMARKS.--Records good except for period with ice effect, Jan. 21 to Feb. 3, which is poor. Virginia Power gage-height transmitter at station, receiver at Back Creek Dam. Maximum discharge, 17,500 ft^3/s, from rating curve extended above 3,800 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 850 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 13	0015	2,190	4.76	1430	1,310	3.96
Nov 19	1315	*6,260	*7.15	0945	1,370	4.02
Dec 11	0215	1,310	3.96	1830	984	3.56
Feb 6	1945	1,390	4.05	1445	2,280	4.87
Apr 13	2000	2,130	4.75			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	63	122	84	e24	100	67	112	134	17	13	4.2
2	38	55	108	101	e24	243	68	137	104	20	15	3.9
3	32	49	98	156	e25	322	68	378	78	18	22	3.6
4	30	44	e88	171	26	265	69	227	69	17	16	3.3
5	28	43	78	149	26	237	65	162	206	19	16	3.0
6	24	58	73	141	488	393	60	125	200	16	18	3.1
7	21	90	65	126	670	360	58	99	146	14	14	4.1
8	19	90	58	111	264	252	57	81	105	13	12	307
9	18	78	56	100	169	195	55	71	105	11	9.6	332
10	17	67	117	82	132	163	50	64	77	13	8.3	119
11	16	61	866	67	109	147	48	60	66	18	7.3	66
12	15	362	343	71	97	137	137	57	63	41	7.5	47
13	14	1,090	205	63	91	116	1,050	50	53	28	9.9	36
14	19	350	168	57	100	99	902	50	47	21	8.8	28
15	135	203	129	56	88	88	347	46	59	17	7.1	23
16	105	144	102	44	75	107	207	46	65	15	8.6	20
17	83	110	120	45	70	162	155	87	63	14	11	61
18	69	90	126	49	67	161	123	171	53	18	7.6	434
19	58	2,570	105	45	71	273	101	221	45	19	6.2	183
20	49	963	87	36	133	230	87	153	39	15	8.4	95
21	43	363	72	e35	354	219	77	175	33	12	22	64
22	41	216	69	e34	231	191	69	274	31	11	19	49
23	37	159	93	e32	165	152	65	174	29	11	14	39
24	32	143	321	e32	142	123	60	115	28	9.9	11	32
25	27	132	318	e33	122	101	59	82	25	8.7	8.7	28
26	25	118	200	e31	108	86	806	149	26	8.2	7.3	25
27	65	106	145	e30	95	78	582	343	22	9.9	6.7	22
28	147	109	116	e29	83	71	268	917	20	11	6.4	1,020
29	123	127	99	e28	83	64	175	435	18	9.1	5.8	634
30	92	125	99	e28	---	62	136	212	17	8.7	5.8	219
31	73	---	91	e26	---	66	---	169	---	10	5.0	---
TOTAL	1,540	8,178	4,737	2,092	4,132	5,263	6,071	5,442	2,026	473.5	338.0	3,908.2
MEAN	49.7	273	153	67.5	142	170	202	176	67.5	15.3	10.9	130
MAX	147	2,570	866	171	670	393	1,050	917	206	41	22	1,020
MIN	14	43	56	26	24	62	48	46	17	8.2	5.0	3.0
CFSM	0.83	4.54	2.54	1.12	2.37	2.82	3.37	2.92	1.12	0.25	0.18	2.17
IN.	0.95	5.06	2.93	1.29	2.56	3.26	3.76	3.37	1.25	0.29	0.21	2.42

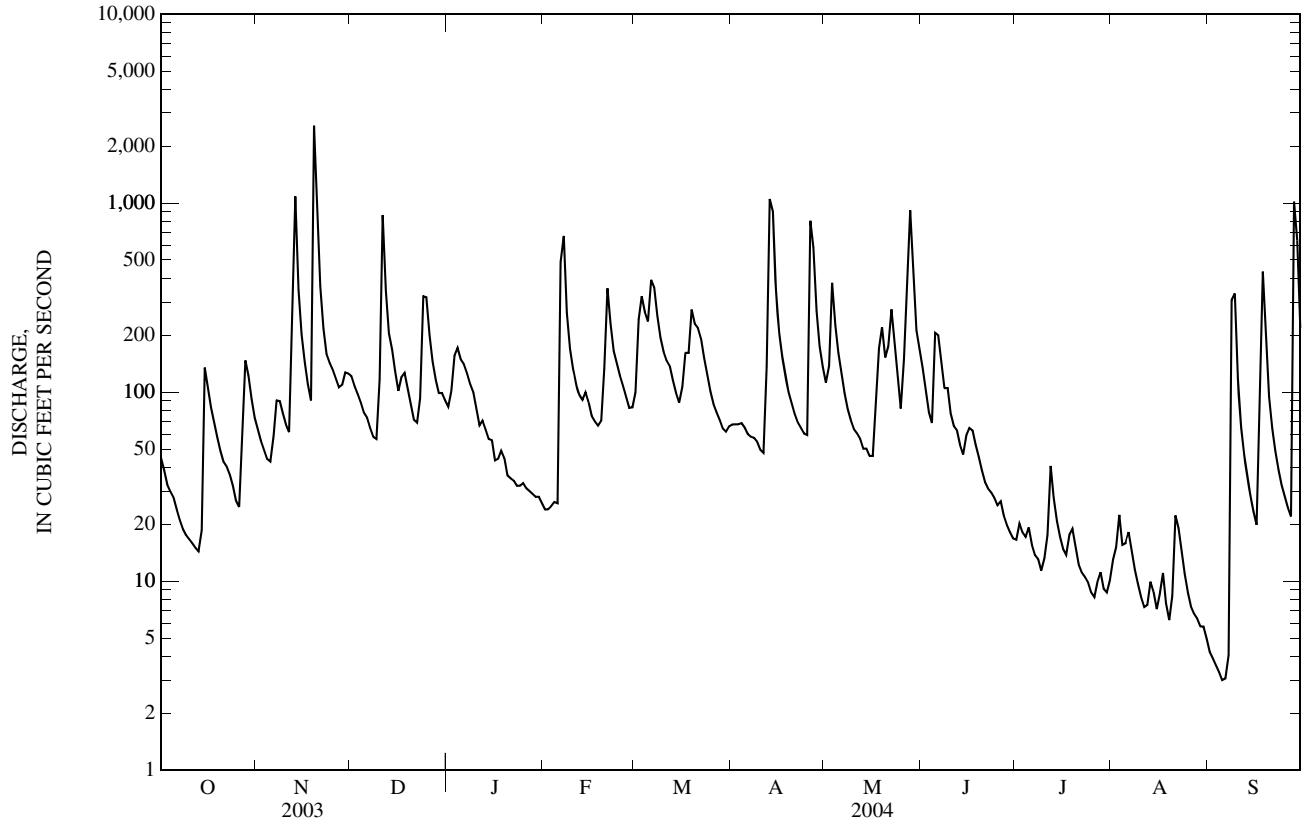
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 2004, BY WATER YEAR (WY)

MEAN	40.7	84.8	104	133	143	197	142	130	66.8	27.4	24.9	31.6
MAX	256	512	249	426	326	394	330	391	243	69.5	88.9	180
(WY)	(1977)	(1986)	(1997)	(1996)	(1994)	(1993)	(1987)	(1996)	(2003)	(1994)	(1996)	(1996)
MIN	3.46	4.03	6.23	8.49	23.6	54.5	41.9	31.8	9.42	2.47	4.41	2.48
(WY)	(1999)	(1999)	(1999)	(1981)	(2002)	(1988)	(1999)	(1991)	(1999)	(1999)	(1987)	(1983)

02011460 BACK CREEK NEAR SUNRISE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1974 - 2004	
ANNUAL TOTAL	54,894.0		44,200.7			
ANNUAL MEAN	150		121		93.8	
HIGHEST ANNUAL MEAN					155	1996
LOWEST ANNUAL MEAN					39.1	1999
HIGHEST DAILY MEAN	2,570	Nov 19	2,570	Nov 19	6,280	Nov 4, 1985
LOWEST DAILY MEAN	7.2	Aug 30	3.0	Sep 5	0.87	Aug 12, 1999
ANNUAL SEVEN-DAY MINIMUM	7.5	Aug 25	3.6	Sep 1	1.0	Aug 6, 1999
MAXIMUM PEAK FLOW			6,260	Nov 19	17,500	Nov 4, 1985
MAXIMUM PEAK STAGE			7.15	Nov 19	10.01	Nov 4, 1985
INSTANTANEOUS LOW FLOW			2.6	aSep 5	0.73	bAug 12, 1999
ANNUAL RUNOFF (CFSM)	2.50		2.01		1.56	
ANNUAL RUNOFF (INCHES)	33.98		27.36		21.20	
10 PERCENT EXCEEDS	332		246		212	
50 PERCENT EXCEEDS	90		67		44	
90 PERCENT EXCEEDS	16		11		6.0	

a Also Sept. 6, 2004.
b Also Aug. 13, 1999.
e Estimated.



02011470 BACK CREEK AT SUNRISE, VA

LOCATION.--Lat 38°11'25", long 79°48'42", NAD83, 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 mi^2.

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 NGVD of 1929 (Virginia Power bench mark). Nov. 5, 1992, to Jan. 5, 1993, nonrecording gage at present site and datum.

REMARKS.--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, 5,820 ft^3/s, from rating curve extended above 1,770 ft^3/s on basis of release from Back Creek Lake at gage height 11.99 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	73	84	81	66	27	122	67	147	135	14	18	15
2	53	60	41	89	23	267	69	149	112	15	18	16
3	39	54	66	170	24	350	78	244	101	15	15	17
4	40	40	82	197	24	455	68	278	86	15	15	17
5	33	52	94	123	73	390	68	249	127	15	17	16
6	31	95	120	29	700	512	66	225	162	15	16	16
7	33	121	109	75	867	508	65	210	101	14	16	37
8	28	118	67	143	418	338	66	171	119	14	15	273
9	33	106	91	208	217	234	65	150	137	15	15	422
10	33	99	252	193	e75	223	65	153	245	16	15	128
11	31	100	793	97	121	203	58	154	264	17	15	59
12	18	349	650	69	139	187	127	154	189	18	16	55
13	14	1,740	234	62	131	163	1,300	110	71	16	16	53
14	18	937	214	50	131	120	1,350	25	53	16	16	101
15	130	239	215	48	121	72	544	22	92	15	14	77
16	136	206	222	51	129	73	291	22	76	15	14	208
17	123	171	223	57	135	201	201	21	73	16	15	149
18	101	172	193	54	97	211	110	59	99	16	14	332
19	76	2,390	142	52	83	345	99	249	85	15	15	153
20	40	1,670	99	55	141	307	114	370	50	14	16	66
21	37	815	98	57	316	228	152	402	31	14	17	69
22	37	354	65	42	308	220	101	426	21	15	15	63
23	35	271	57	36	312	189	85	243	15	16	19	33
24	37	181	364	37	300	156	81	151	14	16	18	33
25	37	176	436	37	178	126	83	123	14	15	16	23
26	36	180	269	38	92	111	1,080	112	14	15	17	20
27	57	179	186	38	82	92	742	126	13	16	17	16
28	132	163	134	38	82	73	336	718	14	16	17	1,240
29	208	174	121	37	80	69	241	1,130	14	15	17	1,030
30	170	176	108	36	---	69	161	1,040	14	16	16	304
31	123	---	110	38	---	67	---	560	---	17	15	---
TOTAL	1,992	11,472	5,936	2,322	5,426	6,681	7,933	8,193	2,541	477	495	5,041
MEAN	64.3	382	191	74.9	187	216	264	264	84.7	15.4	16.0	168
MAX	208	2,390	793	208	867	512	1,350	1,130	264	18	19	1,240
MIN	14	40	41	29	23	67	58	21	13	14	14	15

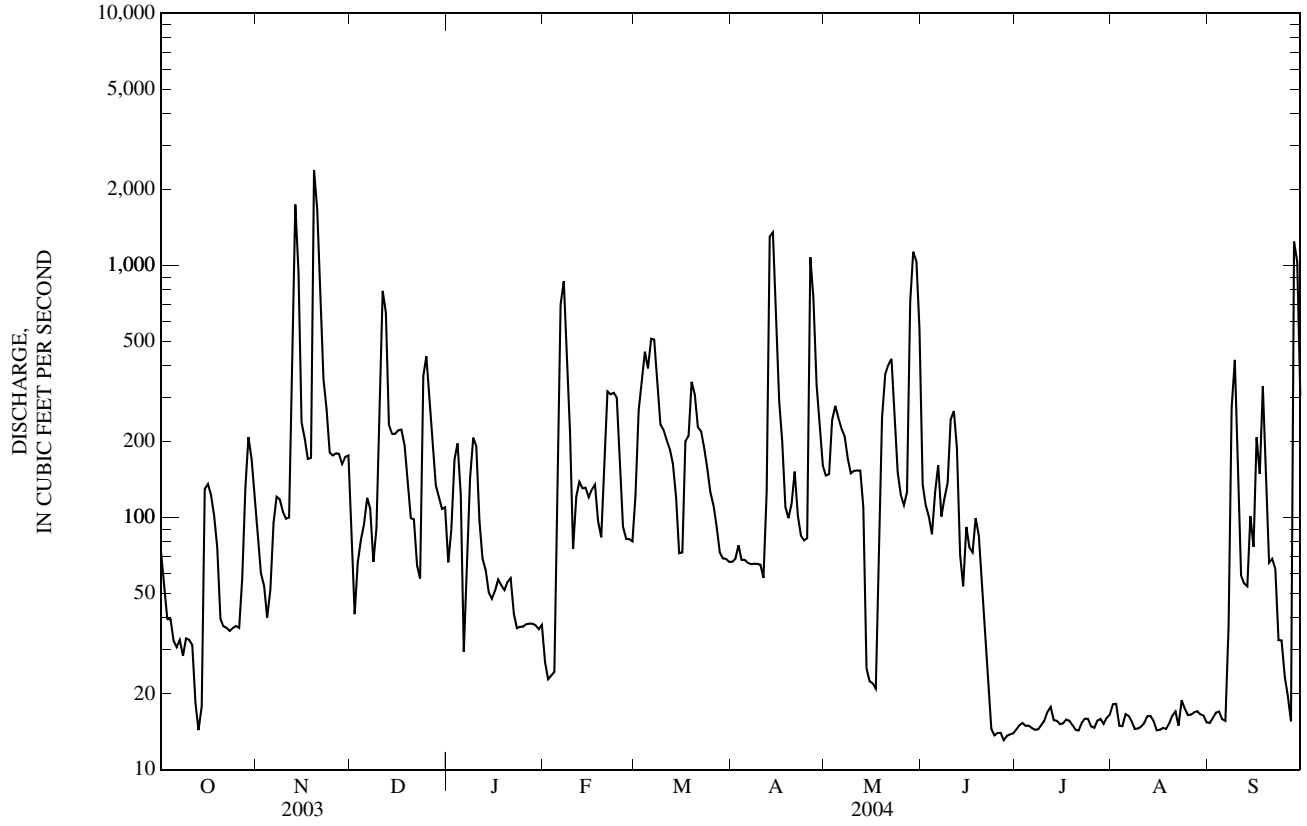
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 2004, BY WATER YEAR (WY)

MEAN	35.5	93.6	120	165	169	250	186	182	91.0	35.0	32.5	47.7
MAX	150	382	285	504	416	616	496	399	353	83.0	96.1	230
(WY)	(1990)	(2004)	(1997)	(1996)	(1994)	(1993)	(1987)	(1989)	(2003)	(1994)	(1996)	(1996)
MIN	9.31	3.83	2.51	11.4	16.5	61.4	51.1	37.5	12.3	10.0	12.1	11.5
(WY)	(1985)	(1999)	(1999)	(2002)	(2002)	(1988)	(1986)	(1991)	(1999)	(1999)	(1999)	(1985)

02011470 BACK CREEK AT SUNRISE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1985 - 2004	
ANNUAL TOTAL	76,409		58,509			
ANNUAL MEAN	209		160		117	
HIGHEST ANNUAL MEAN					199	2003
LOWEST ANNUAL MEAN					47.9	1999
HIGHEST DAILY MEAN	2,390	Nov 19	2,390	Nov 19	4,890	Jan 19, 1996
LOWEST DAILY MEAN	14	Oct 13	13	Jun 27	1.7	aDec 5, 1998
ANNUAL SEVEN-DAY MINIMUM	16	Jul 27	14	Jun 24	1.9	Nov 30, 1998
MAXIMUM PEAK FLOW			5,820	Nov 19	5,820	Nov 19, 2003
MAXIMUM PEAK STAGE			12.22	Nov 19	12.22	Nov 19, 2003
INSTANTANEOUS LOW FLOW			11	Jun 28	1.7	bDec 5, 1998
10 PERCENT EXCEEDS	459		337		263	
50 PERCENT EXCEEDS	116		82		41	
90 PERCENT EXCEEDS	18		15		14	

a Also Dec. 6, 1998.
b Also Dec. 6, 7, 1998.
e Estimated.



02011490 LITTLE BACK CREEK NEAR SUNRISE, VA

LOCATION.--Lat 38°12'52", long 79°50'15", NAD83, 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 mi^2.

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 NGVD of 1929 (Virginia Power bench mark). Nov. 5, 1992, to Jan. 5, 1993, nonrecording gage at present site and datum.

REMARKS.--Records good. Flow regulated since January 1985 by Little Back Creek Lake 1.2 mi upstream, amount unknown. Maximum discharge, 580 ft^3/s, from rating curve extended above 30 ft^3/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.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	4.9	6.0	4.7	2.4	5.4	3.9	6.0	8.9	2.5	3.9	2.3
2	4.4	4.6	5.8	5.4	2.6	9.5	3.9	6.6	7.4	2.5	4.1	2.3
3	4.0	4.4	5.4	7.0	3.0	12	4.0	12	5.7	2.3	5.6	2.3
4	3.7	4.2	4.9	8.0	2.7	e10	4.1	11	4.8	2.4	4.5	2.2
5	3.4	4.2	4.7	7.4	2.7	e8.9	4.0	8.4	6.6	2.6	3.9	2.1
6	3.3	4.8	4.4	6.8	17	14	4.0	6.7	7.6	2.5	3.5	2.2
7	2.9	7.1	4.0	6.5	26	15	3.9	5.5	6.8	2.4	3.1	2.3
8	2.6	7.1	3.8	6.0	12	10	3.8	4.7	5.5	3.8	2.9	13
9	2.5	6.3	3.8	5.5	8.1	7.6	3.6	4.3	4.5	2.6	2.9	19
10	2.5	5.6	7.1	4.7	6.3	6.4	3.4	4.3	4.1	2.0	2.7	9.1
11	2.3	5.1	28	4.1	5.7	5.9	3.4	4.3	3.6	2.4	2.5	5.5
12	2.4	22	14	3.8	5.3	5.6	7.2	4.3	3.5	3.3	2.5	4.1
13	2.6	52	9.0	3.6	5.1	5.2	39	4.0	3.2	2.6	2.4	3.4
14	3.3	15	7.4	3.5	5.4	4.6	e33	3.9	3.2	2.5	2.2	3.0
15	6.6	9.4	6.0	3.5	5.0	4.5	e16	3.7	3.5	2.4	2.2	2.8
16	5.9	7.1	5.1	3.4	4.7	5.0	9.9	5.0	3.6	2.5	2.4	2.6
17	5.3	5.9	5.9	3.2	4.3	6.1	7.1	6.3	3.7	2.4	2.3	3.4
18	4.8	5.3	6.2	3.2	4.2	6.3	6.0	e7.2	3.2	2.7	2.3	15
19	4.5	82	5.3	3.1	4.2	5.9	5.4	e14	3.1	2.5	2.3	10
20	4.3	36	4.5	3.0	6.1	5.6	5.0	12	3.0	e2.4	2.9	6.3
21	3.9	15	4.0	3.0	13	5.6	4.6	9.4	2.9	2.4	3.3	4.7
22	3.9	10	3.9	2.8	10	5.5	4.3	10	2.8	2.4	2.8	3.8
23	3.7	7.8	4.5	2.8	7.7	5.0	4.0	8.1	2.8	2.6	2.8	3.4
24	3.5	6.7	13	2.9	6.6	4.6	3.4	6.4	2.6	2.5	2.7	2.7
25	3.3	6.2	14	3.0	6.1	4.2	3.9	5.4	2.6	2.3	2.6	2.5
26	3.3	5.9	9.3	2.9	6.0	3.9	19	5.9	2.7	2.4	2.4	2.4
27	5.4	5.6	6.8	2.7	5.3	3.8	21	9.7	2.5	2.6	2.4	2.4
28	9.0	5.7	5.6	2.7	4.7	3.8	12	73	2.5	2.5	2.3	19
29	7.9	6.1	4.9	2.6	4.6	3.8	8.7	20	2.5	2.2	2.2	21
30	6.3	6.1	4.8	2.6	---	3.7	6.8	9.9	2.6	3.0	2.2	e9.8
31	5.4	---	4.8	2.6	---	3.8	---	9.0	---	3.1	2.2	---
TOTAL	131.9	368.1	216.9	127.0	196.8	201.2	258.3	301.0	122.0	79.3	89.0	184.6
MEAN	4.25	12.3	7.00	4.10	6.79	6.49	8.61	9.71	4.07	2.56	2.87	6.15
MAX	9.0	82	28	8.0	26	15	39	73	8.9	3.8	5.6	21
MIN	2.3	4.2	3.8	2.6	2.4	3.7	3.4	3.7	2.5	2.0	2.2	2.1

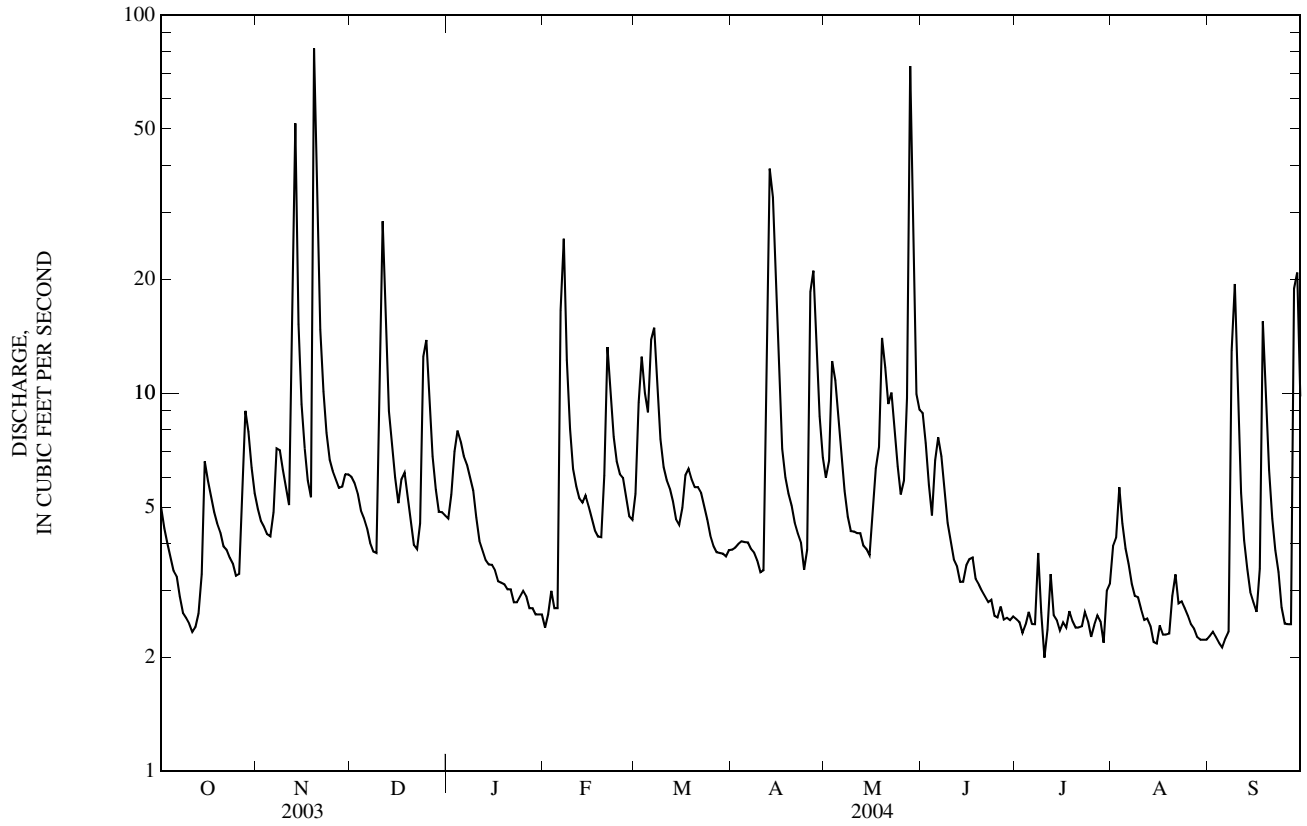
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 2004, BY WATER YEAR (WY)

MEAN	3.46	5.24	5.67	6.82	6.93	8.36	6.98	6.98	4.63	3.42	3.34	3.67
MAX	7.46	12.6	9.65	15.7	12.9	16.4	13.1	14.8	12.0	4.95	5.13	8.33
(WY)	(1990)	(1986)	(1997)	(1996)	(1994)	(1993)	(1987)	(1985)	(2003)	(1994)	(1989)	(2003)
MIN	2.00	1.94	1.99	3.07	3.20	3.91	2.78	3.09	2.08	1.99	2.22	2.28
(WY)	(2000)	(1999)	(1999)	(2002)	(2002)	(1985)	(1999)	(1999)	(1999)	(1999)	(1999)	(1985)

02011490 LITTLE BACK CREEK NEAR SUNRISE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1985 - 2004	
ANNUAL TOTAL	2,771.5		2,276.1			
ANNUAL MEAN	7.59		6.22		5.45	
HIGHEST ANNUAL MEAN					7.33	2003
LOWEST ANNUAL MEAN					3.34	1999
HIGHEST DAILY MEAN	82	Nov 19	82	Nov 19	158	Nov 4, 1985
LOWEST DAILY MEAN	2.3	Oct 11	2.0	Jul 10	0.90	Oct 13, 1984
ANNUAL SEVEN-DAY MINIMUM	2.5	Aug 26	2.2	Aug 30	1.2	Jan 24, 1985
MAXIMUM PEAK FLOW			185	Nov 19	580	Nov 4, 1985
MAXIMUM PEAK STAGE			3.31	Nov 19	4.06	Nov 4, 1985
INSTANTANEOUS LOW FLOW			1.1	Jul 9	a0.73	Oct 9, 1999
10 PERCENT EXCEEDS	14		10		9.5	
50 PERCENT EXCEEDS	5.0		4.3		3.8	
90 PERCENT EXCEEDS	2.7		2.4		2.4	

a Result of regulation.
e Estimated.



02011500 BACK CREEK NEAR MOUNTAIN GROVE, VA

LOCATION.--Lat 38°04'10", long 79°53'49", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 23, 29, and Jan. 31 to Feb. 3, which are 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. Statistics of monthly mean data and summary statistics for water years 1952-1984 (unregulated flow) are available in previous data books, water years 1991-1998. Diversion 10.5 mi upstream from station by Virginia Power for recreation lakes, net averages 0.5 ft^3/s. U.S. Army Corps of Engineers satellite water temperature and gage-height telemeter at station. Maximum discharge, 18,400 ft^3/s, from rating curve extended above 14,000 ft^3/s on basis of slope-area measurement of peak flow.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	123	138	206	137	e48	174	120	231	296	29	33	19
2	99	110	122	136	e41	370	126	228	217	38	47	19
3	78	95	141	261	e42	505	134	402	185	33	41	20
4	73	84	150	295	43	587	125	423	145	31	36	20
5	66	79	160	279	75	529	117	369	237	31	54	19
6	56	163	181	135	1,020	687	113	328	488	29	58	19
7	55	284	176	148	1,380	744	108	286	273	27	40	20
8	50	245	124	227	683	536	108	242	224	26	33	272
9	52	205	131	278	412	393	105	202	202	25	28	601
10	51	172	280	283	210	347	100	195	295	29	26	216
11	49	162	1,280	173	199	303	90	198	315	29	25	106
12	43	726	968	125	234	279	212	195	262	31	28	89
13	33	2,550	437	118	223	232	2,000	178	112	30	31	55
14	39	1,150	372	95	248	192	2,100	63	85	26	27	114
15	160	455	333	91	217	138	867	55	122	25	25	89
16	188	357	324	85	206	145	502	63	144	24	23	168
17	172	283	357	87	203	301	357	65	147	25	23	192
18	140	258	343	89	175	350	227	85	151	27	22	451
19	118	4,050	260	84	157	427	179	509	128	25	21	274
20	84	2,650	191	80	239	440	173	530	92	23	23	118
21	70	1,100	173	81	560	343	208	543	64	22	27	95
22	68	591	136	74	528	312	164	663	54	23	24	89
23	64	438	124	e61	466	277	133	427	45	24	22	58
24	60	315	454	63	431	221	123	270	40	24	27	52
25	59	286	695	55	316	185	115	188	36	22	23	42
26	58	283	455	62	205	165	1,020	165	38	21	23	37
27	109	278	340	64	169	146	1,070	201	33	23	23	29
28	234	258	240	60	156	123	534	904	30	23	23	1,270
29	300	273	210	e58	147	110	378	1,160	29	22	23	1,250
30	262	280	184	56	---	114	271	992	28	22	22	490
31	189	---	178	e54	---	116	---	726	---	28	21	---
TOTAL	3,202	18,318	9,725	3,894	9,033	9,791	11,879	11,086	4,517	817	902	6,293
MEAN	103	611	314	126	311	316	396	358	151	26.4	29.1	210
MAX	300	4,050	1,280	295	1,380	744	2,100	1,160	488	38	58	1,270
MIN	33	79	122	54	41	110	90	55	28	21	21	19

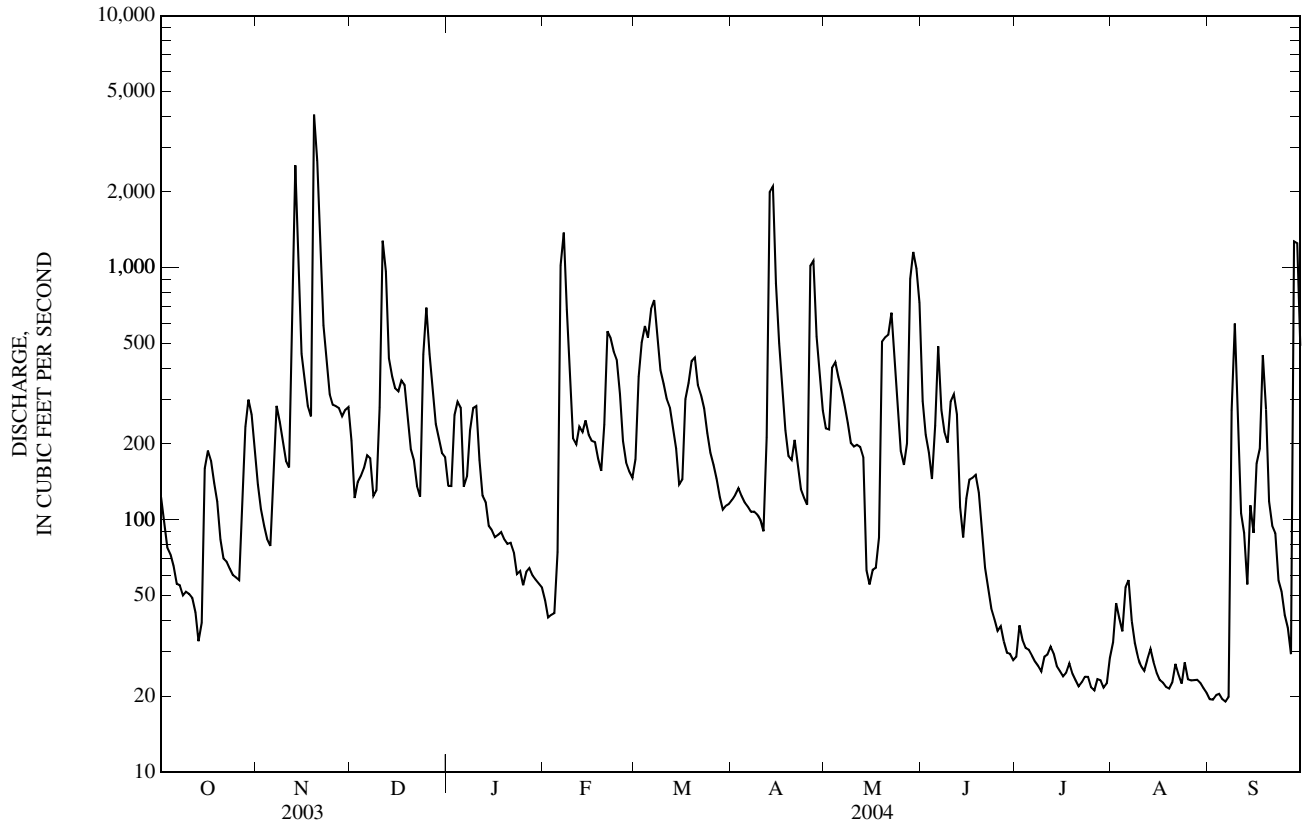
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 2004, BY WATER YEAR (WY)

MEAN	55.3	158	194	267	277	380	288	265	135	54.8	48.3	68.4
MAX	246	696	392	818	608	833	824	528	497	134	127	300
(WY)	(1990)	(1986)	(1997)	(1996)	(1998)	(1993)	(1987)	(1996)	(2003)	(2001)	(2000)	(1996)
MIN	18.9	11.4	12.6	37.0	41.2	92.8	77.6	62.9	18.2	14.0	17.9	16.5
(WY)	(1999)	(1999)	(1999)	(2002)	(2002)	(1988)	(1999)	(1991)	(1999)	(1999)	(1987)	(1985)

02011500 BACK CREEK NEAR MOUNTAIN GROVE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1985 - 2004	
ANNUAL TOTAL	117,303		89,457			
ANNUAL MEAN	321		244		182	
HIGHEST ANNUAL MEAN					302	2003
LOWEST ANNUAL MEAN					81.3	1999
HIGHEST DAILY MEAN	4,050	Nov 19	4,050	Nov 19	9,940	Jan 19, 1996
LOWEST DAILY MEAN	29	aAug 27	19	bSep 1	8.4	Nov 23, 1998
ANNUAL SEVEN-DAY MINIMUM	31	Aug 26	19	Sep 1	9.1	Nov 23, 1998
MAXIMUM PEAK FLOW			9,740	Nov 19	c18,400	Jan 19, 1996
MAXIMUM PEAK STAGE			9.79	Nov 19	c12.41	Jan 19, 1996
INSTANTANEOUS LOW FLOW			d16	Sep 5	f,g5.3	Dec 30, 1998
10 PERCENT EXCEEDS	710		515		425	
50 PERCENT EXCEEDS	178		140		77	
90 PERCENT EXCEEDS	46		25		20	

a Also Aug. 29, 2003.
b Also Sept. 2, 5, 6, 2004.
c Prior to regulation, 1951-84, maximum peak flow, 12,700 ft^3/s, Mar. 7, 1967, gage height, 10.77 ft.
d Also Sept. 6, 2004.
e Estimated.
f Prior to regulation, 1951-84, instantaneous low flow, 1.5 ft^3/s, Aug. 18, 1967.
g Result of freezeup.



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.--Interruption in record due to little or no streamflow past the temperature sensor on Oct. 14, 15 and instrument malfunction July 22, 24, 25. 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 Oct. 3, 2000. A maximum variation of 1.0°C 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 5, 24; minimum, 0.0°C, on many days during winter.

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	15.4	13.5	14.6	15.8	11.3	13.1	8.5	6.0	7.4	5.7	3.2	4.2
2	15.0	11.7	13.1	16.1	12.4	14.3	6.0	3.9	4.9	6.4	4.6	5.3
3	13.5	9.5	12.4	15.8	12.1	13.9	5.7	3.9	4.9	8.8	6.0	7.1
4	12.8	11.3	12.1	15.4	11.3	13.9	5.3	4.6	4.9	8.5	7.4	7.8
5	13.9	11.3	12.8	15.4	12.4	14.3	6.4	4.6	6.0	7.8	6.0	7.4
6	15.8	12.4	13.5	15.4	14.3	15.0	7.4	6.0	6.4	6.0	2.1	4.6
7	16.9	12.4	14.3	14.6	12.4	13.5	6.7	4.9	5.7	2.1	0.4	1.4
8	17.3	13.5	15.0	13.1	10.6	11.7	6.0	3.5	4.6	3.2	1.1	2.1
9	16.1	14.6	15.4	12.1	9.5	10.6	6.7	4.9	5.7	4.6	3.2	3.9
10	18.1	15.4	16.1	11.7	8.1	9.9	7.8	5.7	6.4	4.6	2.1	3.5
11	17.7	15.0	16.1	12.1	9.5	10.6	7.8	7.1	7.4	3.2	0.7	2.1
12	17.7	14.6	16.1	13.1	11.7	12.4	8.1	6.4	7.4	4.6	1.1	2.5
13	18.5	14.6	16.5	12.8	10.2	11.7	6.7	5.3	6.0	5.3	3.2	4.2
14	16.5	14.6	15.8	12.8	10.2	11.3	6.0	4.2	4.9	3.9	1.8	3.2
15	16.5	12.8	14.3	10.6	9.9	10.2	7.1	5.7	6.0	3.9	1.1	3.5
16	16.9	12.4	14.3	11.3	10.6	11.0	7.4	4.9	5.7	1.4	0.0	0.7
17	15.4	13.1	14.6	13.5	11.0	11.3	6.4	4.9	6.0	2.5	0.0	0.7
18	16.1	12.8	14.3	12.1	10.6	11.3	5.7	4.6	5.3	4.6	2.5	3.2
19	15.8	11.7	13.9	12.8	11.7	12.4	5.7	4.2	5.3	2.8	0.4	1.4
20	15.4	11.3	13.5	12.4	10.6	11.7	4.6	3.2	4.2	0.4	0.0	0.0
21	14.6	11.3	13.5	12.8	11.0	11.3	4.6	2.1	3.2	0.4	0.0	0.0
22	13.9	11.0	12.8	12.4	9.9	11.0	5.3	2.5	3.9	1.4	0.0	0.4
23	11.3	9.9	10.6	12.4	9.9	10.6	6.4	4.2	5.3	0.7	0.0	0.0
24	11.7	7.8	9.9	11.0	8.8	9.9	6.4	5.7	5.7	1.8	0.0	0.4
25	12.8	8.1	10.2	9.9	7.8	8.5	5.7	4.6	5.3	0.4	0.0	0.0
26	13.5	10.6	12.1	10.2	7.8	8.8	6.0	4.2	4.6	0.0	0.0	0.0
27	13.5	11.0	13.1	10.6	8.8	9.5	6.4	3.9	4.2	0.0	0.0	0.0
28	12.8	9.9	11.0	10.6	8.1	10.2	6.0	3.5	4.6	0.4	0.0	0.0
29	14.6	12.4	12.8	8.1	7.1	7.4	6.7	3.9	4.9	0.4	0.0	0.0
30	15.4	11.7	12.8	9.2	6.4	7.4	6.4	4.2	5.3	1.4	0.0	0.4
31	15.8	11.7	13.1	---	---	---	5.7	3.2	4.2	0.7	0.0	0.0
MAX	18.5	15.4	16.5	16.1	14.3	15.0	8.5	7.1	7.4	8.8	7.4	7.8
MIN	11.3	7.8	9.9	8.1	6.4	7.4	4.6	2.1	3.2	0.0	0.0	0.0

02011500 BACK CREEK NEAR MOUNTAIN GROVE, VA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
		FEBRUARY			MARCH			APRIL			MAY	
1	0.7	0.0	0.0	7.4	2.8	4.9	8.1	6.4	6.7	13.1	11.0	12.4
2	0.4	0.0	0.0	7.4	4.6	5.3	7.8	5.3	6.7	15.4	11.7	12.4
3	0.4	0.0	0.0	7.4	3.5	5.3	8.5	5.7	7.1	12.4	10.2	11.3
4	2.8	0.0	1.1	6.7	4.9	5.3	8.5	5.7	6.7	14.3	8.8	11.0
5	1.4	0.0	0.4	9.2	4.9	6.4	9.5	3.9	6.4	14.6	9.9	11.3
6	2.1	0.0	0.7	7.8	5.7	6.4	10.6	3.9	7.1	17.3	9.9	12.4
7	3.2	2.1	2.5	8.5	5.3	5.7	11.7	6.4	8.5	18.1	11.0	13.1
8	3.9	1.8	2.1	6.0	4.6	5.3	11.3	7.8	9.5	16.1	11.7	13.5
9	3.2	1.1	1.8	6.4	4.2	4.9	12.4	7.4	9.5	18.5	12.4	14.6
10	3.9	2.5	2.8	7.8	4.2	4.9	12.8	7.1	9.5	18.5	12.1	15.0
11	4.6	1.4	2.8	7.8	3.2	4.9	11.0	8.1	8.8	18.1	13.1	15.0
12	4.6	2.1	3.2	8.1	3.9	4.9	8.1	7.1	7.4	20.1	13.5	15.4
13	5.3	2.1	3.2	8.5	2.8	4.6	8.5	7.1	7.4	19.3	13.5	16.1
14	3.9	1.8	2.8	7.4	3.9	6.0	8.1	7.1	7.8	20.1	15.4	17.7
15	4.9	1.4	2.8	9.9	4.9	7.1	11.0	6.4	7.8	22.5	16.9	18.9
16	4.2	0.7	2.5	8.1	5.7	6.4	12.8	6.7	8.5	20.5	16.9	18.1
17	3.5	1.1	2.1	5.7	4.6	5.3	14.3	7.1	9.2	21.3	16.1	18.1
18	4.6	0.7	2.1	7.1	4.2	6.0	15.8	8.1	10.2	19.3	16.5	18.1
19	6.0	1.1	3.2	8.5	4.9	5.7	16.1	9.2	12.4	17.7	14.3	15.4
20	6.0	2.1	3.9	9.2	4.2	6.7	15.0	10.2	12.4	17.3	14.6	15.4
21	4.6	3.2	3.9	7.1	4.6	6.0	15.4	10.2	12.4	16.5	14.6	15.4
22	5.7	2.5	3.2	7.4	3.9	4.2	13.9	9.9	12.4	18.1	14.3	15.4
23	5.3	2.1	3.2	8.8	2.8	4.9	15.0	10.2	12.4	19.7	14.6	16.1
24	4.6	2.8	3.5	7.1	3.5	4.9	18.1	11.0	13.9	19.3	15.0	16.5
25	6.4	2.5	3.5	11.7	4.6	7.4	16.1	12.4	14.6	20.9	15.8	17.7
26	3.5	1.8	2.8	12.4	5.7	8.5	14.6	10.6	11.3	19.3	15.8	17.7
27	6.0	2.1	3.5	9.5	7.1	8.8	11.7	9.2	10.2	20.5	15.8	17.3
28	6.7	1.1	3.5	13.1	7.1	9.5	13.9	8.5	10.2	18.9	15.0	15.8
29	6.0	1.8	4.2	13.1	7.8	10.2	15.4	8.8	11.3	18.1	15.0	15.8
30	---	---	---	10.2	7.1	7.8	15.0	9.9	11.7	16.9	15.4	16.1
31	---	---	---	7.4	6.7	7.1	---	---	---	18.1	15.8	16.1
MAX	6.7	3.2	4.2	13.1	7.8	10.2	18.1	12.4	14.6	22.5	16.9	18.9
MIN	0.4	0.0	0.0	5.7	2.8	4.2	7.8	3.9	6.4	12.4	8.8	11.0
		JUNE			JULY			AUGUST			SEPTEMBER	
1	18.9	14.6	15.8	24.2	18.5	21.3	26.4	21.7	23.3	26.0	19.3	21.3
2	19.7	14.6	16.5	26.4	20.5	22.5	25.5	21.7	22.9	23.3	19.7	20.9
3	19.7	14.3	17.3	26.4	20.9	22.9	26.0	21.3	22.9	24.2	18.9	20.1
4	18.5	15.4	15.4	26.9	21.3	22.9	25.5	20.9	22.9	25.5	18.5	20.9
5	16.5	15.0	15.4	28.2	21.3	23.3	23.3	18.9	21.3	23.3	18.9	20.9
6	17.3	14.3	15.4	27.8	20.5	23.3	21.3	17.3	18.5	21.3	20.1	20.5
7	18.9	13.9	15.8	26.9	20.5	22.5	22.5	15.4	17.7	21.3	19.7	20.5
8	20.9	15.0	17.3	27.3	19.3	22.1	21.7	15.8	18.5	21.3	20.1	20.5
9	21.3	16.5	18.9	24.2	19.7	22.1	23.8	16.5	18.9	21.7	20.9	21.7
10	20.5	16.9	18.1	24.6	20.5	21.7	25.5	18.1	20.5	22.5	19.3	20.5
11	19.7	16.9	18.1	26.9	20.5	22.1	25.1	19.3	21.3	22.5	18.5	20.5
12	19.3	17.3	18.1	26.4	22.1	23.8	21.3	19.3	19.7	22.1	18.9	20.9
13	20.9	16.9	17.7	27.3	22.1	23.8	20.5	18.5	18.9	22.5	18.9	20.5
14	20.9	18.1	19.3	26.9	21.7	23.3	21.7	16.5	18.5	22.5	19.7	20.9
15	20.9	18.5	19.7	25.1	20.5	21.7	23.3	17.7	19.7	22.1	18.5	20.5
16	20.1	18.1	19.3	26.0	18.1	20.9	23.8	18.9	20.5	22.5	19.7	20.5
17	22.5	18.1	19.3	20.9	17.7	19.3	24.2	17.7	20.1	22.1	19.3	21.7
18	22.1	18.5	20.5	24.2	18.1	20.1	25.5	18.1	20.9	21.3	18.9	20.1
19	21.3	18.1	19.7	23.8	19.7	21.3	24.2	18.9	20.9	20.9	17.7	18.5
20	22.9	16.5	19.3	26.0	18.9	21.3	26.0	19.7	22.1	19.3	15.0	17.3
21	21.7	15.8	19.3	26.0	18.9	21.7	22.5	20.1	21.7	19.7	15.0	17.3
22	22.5	18.9	20.1	22.5	20.5	21.7	24.6	18.1	20.1	21.3	15.8	18.1
23	20.5	18.9	19.7	26.4	20.5	22.5	26.9	18.9	20.9	20.5	16.1	18.9
24	25.5	17.7	20.1	28.2	20.5	22.5	24.6	18.9	21.3	20.9	16.5	18.5
25	21.3	18.9	20.1	27.3	20.5	22.9	25.1	19.7	21.3	22.1	18.1	19.7
26	23.3	18.1	19.3	25.1	21.7	22.9	23.3	18.9	20.9	20.9	17.7	19.3
27	23.3	16.5	18.9	23.3	21.7	22.5	26.0	19.3	21.7	18.9	17.3	18.1
28	22.1	16.5	19.3	26.0	20.5	22.1	26.4	21.3	22.9	20.1	17.3	18.1
29	23.8	16.9	19.3	26.4	19.3	21.7	26.4	21.3	22.9	20.5	18.1	19.3
30	25.1	16.9	19.7	23.3	21.3	22.1	26.4	21.3	22.9	20.1	18.1	18.9
31	---	---	---	27.8	21.3	22.9	27.8	21.3	22.1	---	---	---
MAX	25.5	18.9	20.5	28.2	22.1	23.8	27.8	21.7	23.3	26.0	20.9	21.7
MIN	16.5	13.9	15.4	20.9	17.7	19.3	20.5	15.4	17.7	18.9	15.0	17.3

02011795 LAKE MOOMAW NEAR HOT SPRINGS, VA

LOCATION.--Lat 37°57'04", long 79°59'20", NAD83, Alleghany County, Hydrologic Unit 02080201, in control tower at Gath- right 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 mi^2.

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

GAGE.--Water-stage recorder. Datum of gage is at NGVD of 1929 (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.

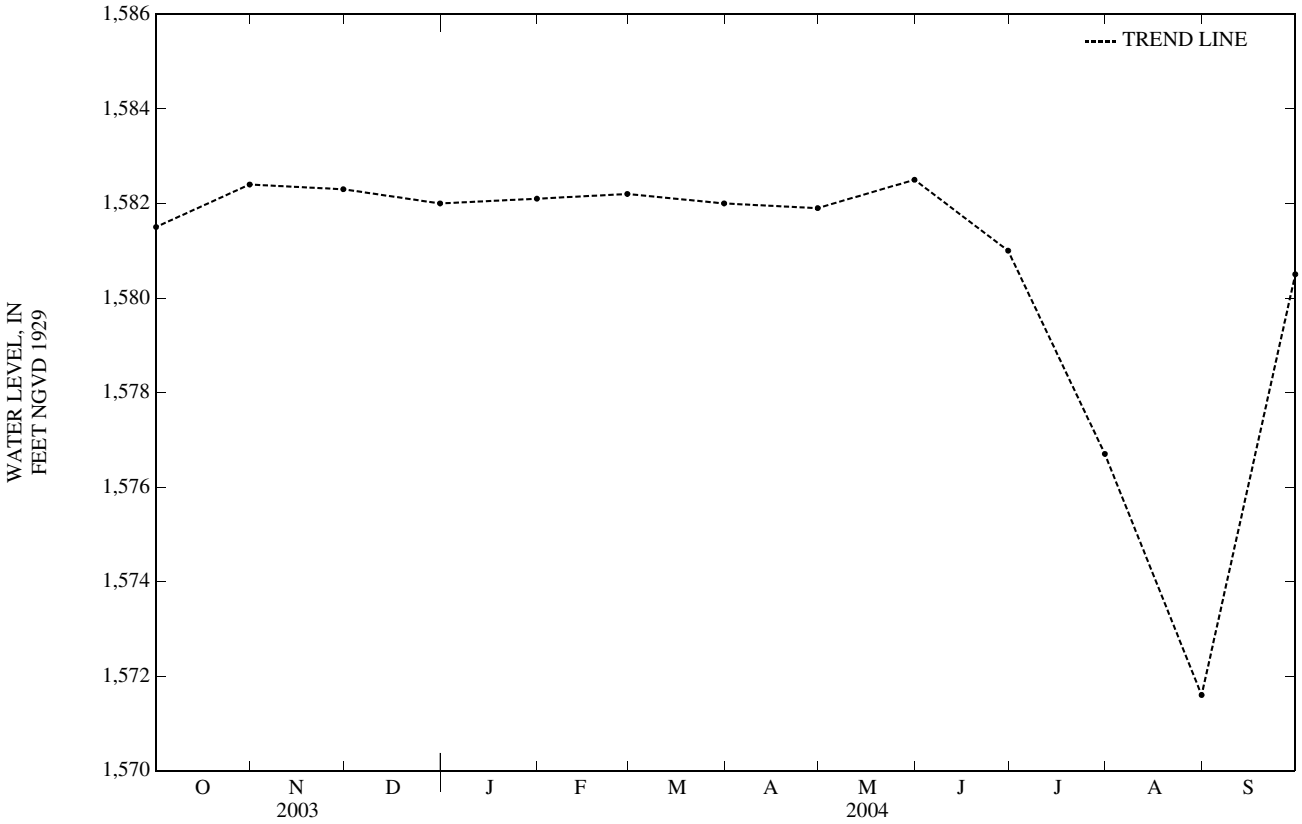
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 168,400 acre-ft, Jan. 20, 1996, elevation, 1,598.4 ft; minimum, (after first filling to minimum conservation pool), 71,900 acre-ft, Nov. 30, Dec. 1, 1991, elevation, 1,558.8 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 146,900, acre-ft, Nov. 20, elevation, 1,590.8 ft; minimum, 96,100 acre-ft, Sept. 7, 8, elevation, 1,570.4 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
	1,581.5	122,500	
	1,582.4	124,800	+2,300
November 30	1,582.3	124,500	-300
December 31	1,582.0	123,700	-800
	1,582.1	124,000	+300
February 29	1,582.2	124,200	+200
March 31	1,582.0	123,700	-500
April 30	1,581.9	123,500	-200
May 31	1,582.5	125,000	+1,500
June 30	1,581.0	121,200	-3,800
July 31	1,576.7	110,700	-10,500
August 31	1,571.6	98,800	-11,900
September 30	1,580.5	120,000	+21,200

02011795 LAKE MOOMAW NEAR HOT SPRINGS, VA—Continued



02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA

LOCATION.--Lat 37°56'54", long 79°56'57", NAD83, 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 mi^2.

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 NGVD of 1929 (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. Statistics of monthly mean data and summary statistics for water years 1974-1979 (unregulated flow) are available in previous data books, water years 1991-1998. U.S. Army Corps of Engineers satellite water-temperature and gage-height telemeter at station. Maximum discharge, 29,000 ft^3/s, from rating curve extended above 9,200 ft^3/s on basis of slope-area measurement of peak flow.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1972, reached a stage of 17.20 ft, from floodmark.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	267	364	818	416	217	439	368	436	1,130	281	288	263
2	198	364	566	416	217	629	310	518	771	281	288	255
3	188	364	406	510	217	976	270	898	380	282	286	256
4	187	364	407	565	217	1,110	270	1,120	422	281	286	257
5	187	364	555	858	188	1,110	270	736	398	282	290	257
6	187	338	652	675	169	1,110	270	619	803	281	288	256
7	187	461	653	359	1,900	1,110	268	507	839	281	286	223
8	187	453	460	374	3,120	1,120	267	421	560	281	285	162
9	187	354	312	416	1,910	1,110	352	420	560	284	285	224
10	187	315	287	542	1,100	920	421	421	568	285	287	260
11	187	315	2,240	455	771	623	421	420	571	287	289	261
12	187	316	2,780	336	494	518	421	421	571	287	289	260
13	188	2,490	1,380	315	444	518	425	421	568	285	288	260
14	189	4,760	1,050	292	441	518	2,760	330	395	285	288	261
15	190	3,230	1,050	277	437	518	4,710	267	289	285	288	260
16	190	1,040	721	243	437	519	3,660	267	288	289	290	225
17	190	656	513	217	436	607	1,790	267	287	293	291	166
18	190	656	698	217	436	662	830	268	393	292	290	224
19	190	351	628	217	435	816	829	828	372	292	290	263
20	190	3,130	513	217	435	921	509	1,140	315	292	288	259
21	190	6,110	514	217	604	920	315	1,010	285	292	288	256
22	190	5,300	513	217	882	685	315	1,060	263	292	288	256
23	190	3,750	452	217	1,000	518	316	1,140	263	291	288	256
24	190	1,920	416	217	1,010	518	316	899	263	289	286	256
25	190	703	862	217	1,010	429	318	610	263	288	286	256
26	190	538	1,120	217	1,000	368	800	462	263	289	285	256
27	190	417	1,120	217	797	368	1,850	653	263	289	287	224
28	330	551	805	217	523	368	2,490	1,010	263	289	289	169
29	469	819	615	217	439	368	1,490	2,130	263	289	289	220
30	511	819	555	217	---	368	315	2,020	270	289	289	260
31	425	---	453	217	---	368	---	1,130	---	289	288	---
TOTAL	6,918	41,612	24,114	10,304	21,286	21,132	27,946	22,849	13,139	8,892	8,923	7,261
MEAN	223	1,387	778	332	734	682	932	737	438	287	288	242
MAX	511	6,110	2,780	858	3,120	1,120	4,710	2,130	1,130	293	291	263
MIN	187	315	287	217	169	368	267	267	263	281	285	162
(†)	+1,160	-151	-403	+151	+101	-252	-101	+756	-1,916	-5,294	-5,999	+10,688
MEAN‡	261	1,382	765	337	737	674	928	761	374	116	94.3	598
CFSM‡	.76	4.01	2.22	.98	2.14	1.95	2.69	2.21	1.08	.34	.27	1.73
IN.‡	.87	4.47	2.56	1.13	2.30	2.25	3.00	2.54	1.21	.39	.32	1.92

CAL YR 2003 MEAN‡ 781 CFSM‡ 2.26 IN.‡ 30.74
WTR YR 2004 MEAN‡ 582 CFSM‡ 1.69 IN.‡ 22.97

† 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.

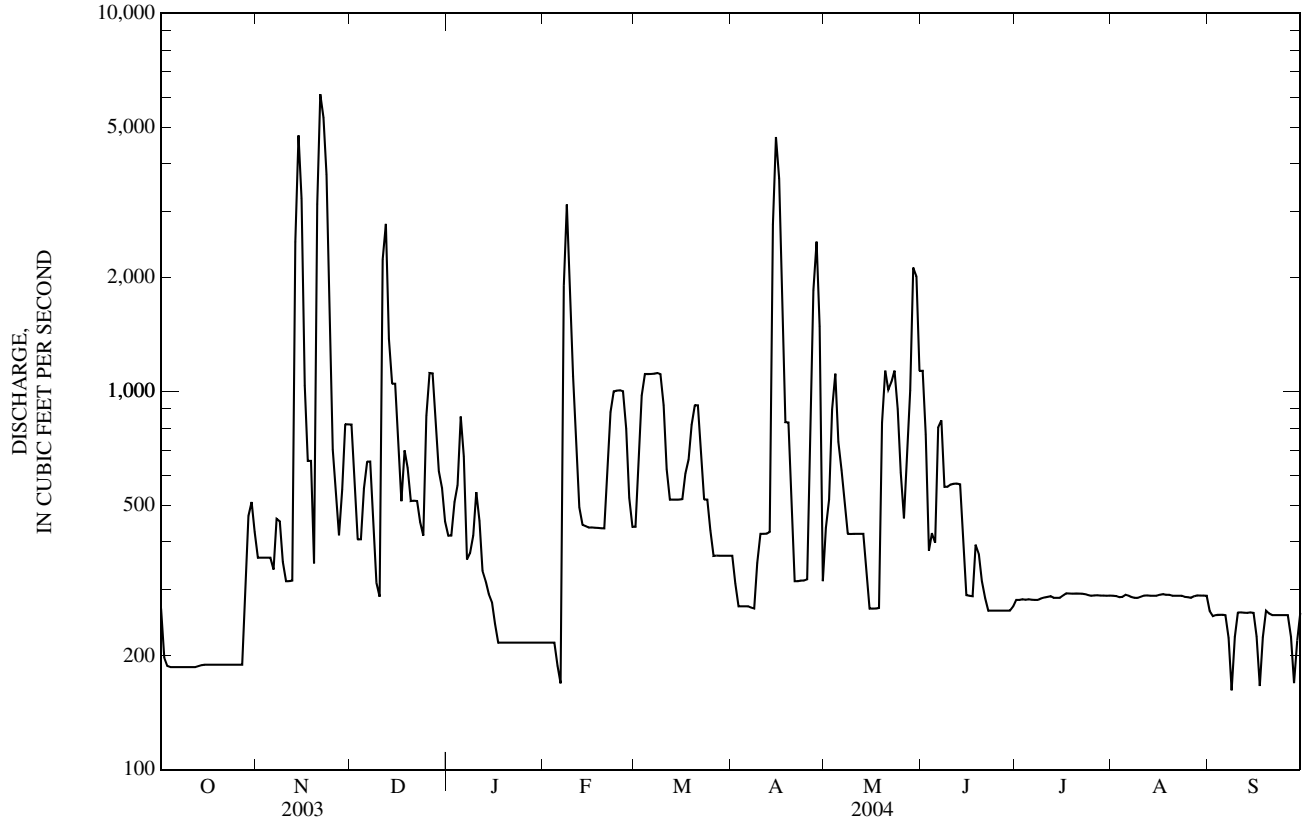
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2004, BY WATER YEAR (WY)

MEAN	224	321	298	429	608	852	729	614	445	278	278	264
MAX	829	1,387	1,061	1,555	1,466	1,881	2,052	1,477	1,286	398	644	661
(WY)	(1980)	(2004)	(1997)	(1996)	(1998)	(1993)	(1987)	(1989)	(2003)	(1995)	(1984)	(1996)
MIN	70.8	64.1	60.8	74.5	114	74.4	172	226	202	123	71.4	57.5
(WY)	(1981)	(1982)	(1982)	(1981)	(1981)	(1981)	(1981)	(1999)	(1980)	(1980)	(1981)	(1981)

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1980 - 2004	
ANNUAL TOTAL	285,516		214,376			
ANNUAL MEAN	782		586		444	
HIGHEST ANNUAL MEAN					674	2003
LOWEST ANNUAL MEAN					196	1981
HIGHEST DAILY MEAN	6,280	Feb 26	6,110	Nov 21	8,670	Nov 7, 1985
LOWEST DAILY MEAN	164	Jun 18	162	Sep 8	47	Sep 2, 1981
ANNUAL SEVEN-DAY MINIMUM	167	Jan 23	187	Oct 4	53	Aug 29, 1981
MAXIMUM PEAK FLOW			6,240	Nov 20	a10,400	Nov 7, 1985
MAXIMUM PEAK STAGE			13.90	Nov 20	a15.29	Nov 7, 1985
INSTANTANEOUS LOW FLOW			b14	Dec 10	b,c5.2	May 6, 1980
ANNUAL RUNOFF (CFSM)	2.27		1.70		1.29	
ANNUAL RUNOFF (INCHES)	30.79		23.12		17.48	
10 PERCENT EXCEEDS	1,870		1,100		892	
50 PERCENT EXCEEDS	413		337		264	
90 PERCENT EXCEEDS	188		217		150	

a Prior to regulation, 1974-79, maximum peak flow, 29,000 ft^3/s, Dec. 26, 1973, result of cofferdam failure during construction of Gathright Dam, gage height, 18.77 ft.
b Result of regulation.
c Prior to regulation, 1974-79, instantaneous low flow, 3.0 ft^3/s, July 12, 1979, result of gate closure at Gathright Dam.



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.--
WATER TEMPERATURE: October 1978 to current year.

INSTRUMENTATION.--Water-quality monitor October 1978 to September 2001. Water-temperature recorder since October 2001.

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 water tempertature within 0.5°C. Temperature at the sensor was compared with the average for the river by temperature cross section on Oct. 25, 2000. No variation of water temperature was found within the cross section. Daily records of specific conductance, pH, and dissolved oxygen were also collected from October 1978 to September 2001.

EXTREMES FOR PERIOD OF RECORD.--
WATER TEMPERATURE (water years 1979, 1981-04): Maximum recorded, 28.0°C, Aug. 1, 2, 1979; minimum recorded, 0.0°C, Feb. 16-19, 1979.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum recorded, 19.3°C, Sept. 24, 26, 28; minimum recorded, 2.8°C, Feb. 8, 9.

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	17.4	16.8	17.2	15.2	15.1	15.2	10.8	10.6	10.7	6.2	6.1	6.1
2	17.2	16.8	16.9	15.2	15.0	15.1	10.6	10.5	10.6	6.2	6.1	6.1
3	17.2	16.7	16.9	15.1	14.9	15.0	10.5	10.3	10.5	6.3	6.1	6.1
4	17.1	16.9	17.0	14.9	14.8	14.9	10.3	10.0	10.3	6.3	6.1	6.2
5	17.2	16.8	16.9	14.9	14.7	14.8	10.1	9.9	10.0	6.2	6.0	6.1
6	17.2	16.8	17.0	15.2	14.8	15.0	9.9	9.7	9.8	6.2	5.9	6.1
7	17.1	16.8	16.8	15.2	15.0	15.1	9.7	9.4	9.5	6.0	5.8	5.9
8	17.0	16.7	16.7	15.1	14.8	14.9	9.4	9.2	9.3	5.8	5.6	5.7
9	16.8	16.6	16.7	14.8	14.5	14.7	9.2	8.9	9.1	5.7	5.5	5.6
10	16.8	16.5	16.6	14.7	14.5	14.6	9.8	8.8	8.8	5.5	5.3	5.3
11	16.8	16.4	16.5	14.7	14.5	14.6	8.8	8.1	8.6	5.4	5.2	5.3
12	16.8	16.4	16.5	14.7	14.5	14.6	8.5	8.1	8.4	5.4	5.2	5.3
13	16.7	16.4	16.5	14.6	14.3	14.5	8.3	8.0	8.1	5.4	5.2	5.3
14	16.7	16.3	16.5	14.4	14.0	14.2	8.1	7.9	8.0	5.3	5.2	5.3
15	16.4	16.2	16.3	14.0	13.5	13.8	7.9	7.8	7.9	5.3	5.0	5.2
16	16.5	16.1	16.3	13.5	13.0	13.4	7.9	7.7	7.8	5.1	4.9	5.0
17	16.6	16.2	16.3	13.0	12.6	12.8	7.8	7.6	7.7	5.2	4.9	5.1
18	16.5	16.2	16.3	12.6	12.3	12.4	7.7	7.5	7.6	5.2	5.0	5.1
19	16.5	16.1	16.3	12.5	12.2	12.3	7.5	7.4	7.4	5.0	4.7	4.8
20	16.5	16.1	16.2	12.2	11.4	11.9	7.4	7.2	7.3	4.7	4.5	4.6
21	16.5	16.1	16.2	12.1	11.9	12.0	7.2	7.0	7.1	4.7	4.4	4.5
22	16.3	16.0	16.1	12.1	12.1	12.1	7.0	6.9	7.0	4.7	4.3	4.5
23	16.1	15.8	16.0	12.1	12.0	12.1	7.0	6.9	6.9	4.3	4.1	4.2
24	16.0	15.7	15.8	12.2	11.8	12.0	6.9	6.8	6.9	4.4	4.2	4.2
25	16.0	15.7	15.8	12.2	11.8	12.1	6.8	6.5	6.6	4.2	3.8	4.1
26	16.1	15.7	15.9	12.0	11.9	12.0	6.5	6.4	6.5	4.2	3.9	4.1
27	15.9	15.5	15.8	11.9	11.8	11.9	6.4	6.3	6.4	4.2	4.0	4.1
28	15.6	15.3	15.4	11.9	11.4	11.5	6.4	6.3	6.3	4.0	3.6	3.8
29	15.3	15.0	15.2	11.4	11.1	11.3	6.3	6.2	6.3	3.8	3.6	3.7
30	15.3	15.0	15.2	11.1	10.8	10.9	6.4	6.3	6.3	3.9	3.4	3.6
31	15.2	15.1	15.2	---	---	---	6.3	6.1	6.3	3.5	3.3	3.4
MAX	17.4	16.9	17.2	15.2	15.1	15.2	10.8	10.6	10.7	6.3	6.1	6.2
MIN	15.2	15.0	15.2	11.1	10.8	10.9	6.3	6.1	6.3	3.5	3.3	3.4

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
		FEBRUARY			MARCH			APRIL			MAY	
1	3.5	3.3	3.4	4.1	3.8	3.9	6.9	6.3	6.7	---	---	---
2	3.8	3.4	3.5	4.1	3.9	4.0	7.1	6.2	6.8	9.2	8.6	8.9
3	3.8	3.2	3.5	4.2	4.0	4.1	7.1	6.2	6.7	9.7	8.6	9.2
4	3.7	3.3	3.4	4.3	4.1	4.2	7.6	6.2	7.1	9.6	8.7	9.2
5	---	---	---	4.8	4.3	4.4	7.6	6.7	7.1	12.1	8.8	9.1
6	---	---	---	4.9	4.3	4.5	7.7	6.8	7.1	9.7	9.1	9.2
7	3.9	2.9	3.3	5.0	4.7	4.8	7.4	6.7	7.2	9.9	9.1	9.4
8	2.9	2.8	2.9	5.1	4.9	5.0	7.6	6.7	6.9	9.7	9.2	9.5
9	3.1	2.8	3.0	5.1	4.9	5.0	7.3	6.8	6.9	10.1	9.3	9.6
10	3.3	3.1	3.2	5.1	4.8	4.9	7.4	6.8	6.9	10.1	9.5	9.6
11	3.4	3.0	3.3	5.3	4.8	5.1	7.0	6.7	6.9	10.2	9.5	9.8
12	3.7	3.4	3.5	5.8	5.3	5.6	7.3	7.0	7.1	10.3	9.5	9.7
13	3.6	3.4	3.5	5.9	5.5	5.6	7.5	7.1	7.3	10.5	9.7	9.9
14	3.7	3.3	3.5	5.7	5.4	5.5	7.2	6.3	6.9	10.7	9.8	10.0
15	3.6	3.3	3.4	5.9	5.4	5.6	7.6	7.0	7.4	10.8	9.9	10.0
16	3.6	3.4	3.4	5.8	5.4	5.4	7.7	7.1	7.5	10.6	9.9	10.2
17	3.5	3.3	3.4	5.9	5.7	5.8	8.0	7.1	7.3	10.8	9.9	10.1
18	3.6	3.3	3.4	5.7	5.5	5.6	8.0	7.6	7.8	11.0	10.0	10.4
19	3.6	3.3	3.4	6.1	5.6	5.8	8.3	7.6	7.8	10.4	9.8	10.0
20	3.6	3.3	3.5	5.9	5.7	5.8	8.5	7.6	8.1	10.5	10.1	10.2
21	3.6	3.3	3.4	6.3	5.8	6.1	8.6	7.8	8.1	10.8	10.2	10.4
22	3.4	3.2	3.4	6.3	6.0	6.1	8.6	7.9	8.1	10.6	10.1	10.5
23	3.5	3.3	3.5	6.3	5.9	6.0	8.6	8.0	8.2	11.0	10.5	10.6
24	3.6	3.4	3.5	6.1	5.9	5.9	8.7	8.0	8.2	11.3	10.6	10.8
25	3.6	3.5	3.5	6.4	5.8	6.0	8.7	8.0	8.2	11.5	10.8	11.0
26	3.7	3.5	3.6	6.4	5.9	6.0	8.5	8.0	8.2	11.6	10.9	11.0
27	3.8	3.6	3.7	6.3	6.0	6.1	8.3	7.3	7.6	11.5	10.9	11.2
28	3.9	3.6	3.8	6.6	6.1	6.1	8.0	7.6	7.9	11.5	11.0	11.2
29	4.0	3.7	3.8	6.7	6.1	6.2	9.2	7.9	8.1	11.3	9.0	10.0
30	---	---	---	6.3	6.1	6.2	---	---	---	12.0	9.8	10.6
31	---	---	---	6.3	6.1	6.2	---	---	---	12.1	11.7	11.9
MAX	4.0	3.7	3.8	6.7	6.1	6.2	9.2	8.0	8.2	12.1	11.7	11.9
MIN	2.9	2.8	2.9	4.1	3.8	3.9	6.9	6.2	6.7	9.2	8.6	8.9
		JUNE			JULY			AUGUST			SEPTEMBER	
1	12.4	11.7	12.1	15.5	14.8	15.0	15.3	14.7	14.8	18.6	18.0	18.2
2	12.6	11.9	12.2	15.3	14.8	15.0	15.3	14.8	14.9	18.7	18.2	18.3
3	13.1	12.1	12.4	15.5	14.8	15.0	15.3	14.8	14.9	18.6	18.2	18.4
4	12.6	12.2	12.4	15.6	14.9	15.0	15.5	14.9	15.0	18.7	18.2	18.4
5	12.6	12.2	12.4	15.6	15.0	15.1	15.2	14.7	14.8	18.9	18.2	18.5
6	12.6	12.3	12.4	15.5	14.8	15.2	15.2	14.7	15.1	18.7	18.5	18.6
7	12.6	9.1	9.4	15.5	14.8	15.1	15.4	14.6	15.0	18.7	18.3	18.5
8	9.6	9.1	9.2	15.3	14.4	14.9	15.4	14.7	14.9	18.5	18.3	18.3
9	9.7	9.2	9.3	15.0	14.3	14.4	15.5	14.9	15.0	18.8	18.1	18.5
10	16.9	9.3	15.1	14.9	14.4	14.5	15.5	14.8	15.1	18.6	18.1	18.2
11	15.3	14.9	15.1	15.0	14.4	14.5	15.4	14.8	15.0	18.4	18.0	18.2
12	15.5	15.0	15.1	15.1	14.5	14.6	15.3	14.9	15.1	18.4	18.0	18.1
13	15.4	14.9	15.1	15.2	14.6	14.8	15.4	15.1	15.2	18.5	18.0	18.2
14	15.5	15.0	15.3	15.3	14.7	14.9	15.5	15.1	15.2	18.5	18.0	18.2
15	15.8	14.4	15.1	15.4	14.8	14.9	15.6	15.1	15.2	18.5	18.0	18.2
16	14.9	14.5	14.6	15.4	14.8	15.0	15.7	14.8	15.1	18.4	18.0	18.1
17	15.1	14.6	14.6	15.3	14.8	15.0	15.3	14.7	14.9	18.2	17.8	18.0
18	15.0	14.5	14.8	15.5	14.9	15.1	15.4	14.9	15.0	18.6	17.9	18.4
19	15.2	14.7	15.0	15.6	14.5	15.1	17.9	14.9	17.5	18.4	17.9	18.0
20	15.8	14.3	15.0	15.0	14.5	14.6	18.2	17.5	17.7	18.1	17.7	17.9
21	15.5	14.5	14.9	15.1	14.6	14.7	17.9	17.6	17.8	18.1	17.7	17.8
22	15.3	14.5	14.9	15.0	14.7	14.7	18.1	17.6	17.8	18.1	17.7	17.8
23	15.1	14.8	14.9	15.3	14.7	14.8	18.2	17.7	17.8	18.1	17.8	17.8
24	15.6	14.5	14.9	15.3	14.7	14.9	18.3	17.7	17.9	19.3	17.7	19.0
25	14.9	14.5	14.6	15.3	14.8	14.9	18.3	17.7	17.9	19.2	19.0	19.0
26	15.2	14.6	14.8	15.4	14.9	15.0	18.3	17.7	17.9	19.3	19.0	19.0
27	15.3	14.6	14.7	15.2	15.0	15.1	18.4	17.8	18.0	19.1	19.0	19.0
28	15.3	14.5	14.7	15.5	14.9	15.0	18.4	17.9	18.1	19.3	18.9	19.0
29	15.3	14.6	14.8	15.4	14.8	14.9	18.3	17.8	18.0	19.0	18.6	18.8
30	15.5	14.7	14.8	15.1	14.6	14.9	18.4	17.9	18.1	18.7	18.3	18.5
31	---	---	---	15.2	14.6	14.7	18.4	18.0	18.2	---	---	---
MAX	16.9	15.0	15.3	15.6	15.0	15.2	18.4	18.0	18.2	19.3	19.0	19.0
MIN	9.6	9.1	9.2	14.9	14.3	14.4	15.2	14.6	14.8	18.1	17.7	17.8

02012800 JACKSON RIVER AT FILTRATION PLANT, AT COVINGTON, VA

LOCATION.--Lat 37°48'39", long 79°59'19", NAD83, 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 mi^2.

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, 22.9°C, Aug. 28; minimum recorded, 1.2°C, Jan. 26, 31.

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	16.5	15.0	15.7	15.8	13.5	15.0	10.1	9.0	9.5	6.2	4.5	5.5
2	15.2	13.8	14.4	16.1	14.3	15.6	9.1	8.2	8.6	7.0	5.9	6.2
3	14.6	12.8	14.0	15.9	14.3	15.6	8.2	7.4	7.9	8.4	6.7	7.3
4	14.3	13.6	14.0	15.7	13.8	15.3	8.1	7.0	7.8	8.1	7.4	7.9
5	15.7	13.6	14.6	16.3	14.6	15.5	8.6	7.0	7.7	8.0	6.4	7.6
6	16.8	14.8	15.7	16.3	15.5	15.7	8.9	8.3	8.5	6.4	4.5	5.8
7	17.0	15.3	15.9	15.6	14.8	15.2	8.5	7.7	8.1	4.5	3.2	3.9
8	17.6	16.0	16.4	14.8	13.3	13.9	8.2	7.0	7.7	4.2	2.8	3.4
9	17.3	16.9	17.1	13.3	11.8	12.6	8.0	7.0	7.8	4.8	4.1	4.4
10	18.4	16.7	17.3	12.6	10.7	11.9	8.0	7.2	7.6	4.8	4.1	4.5
11	18.0	17.0	17.4	13.4	11.8	12.4	8.2	7.6	7.9	4.2	2.9	3.8
12	18.5	16.7	17.2	14.2	13.4	14.0	8.4	7.4	8.0	5.5	3.6	4.2
13	18.4	16.8	17.5	13.9	11.8	12.8	7.7	6.9	7.2	5.8	4.9	5.5
14	18.1	16.6	17.7	13.7	13.1	13.2	7.2	6.3	6.8	5.3	3.9	4.9
15	16.6	14.9	15.7	13.4	12.8	13.2	7.8	7.0	7.2	5.3	3.9	5.1
16	15.5	13.3	14.8	12.9	12.6	12.8	7.4	6.6	7.0	3.9	2.7	3.5
17	14.9	14.1	14.6	13.4	12.4	12.7	7.2	6.2	6.9	4.2	3.0	3.5
18	15.9	14.1	14.8	12.6	11.8	12.3	6.9	5.8	6.2	5.3	4.2	4.7
19	15.6	13.4	14.7	13.2	11.8	12.8	6.8	6.2	6.5	4.6	3.0	3.8
20	15.7	13.8	14.7	12.3	10.7	11.5	6.3	5.6	5.9	3.0	2.2	2.6
21	15.8	14.2	15.0	13.0	12.0	12.2	6.0	4.8	5.6	2.6	1.9	2.3
22	15.6	13.9	14.9	12.4	11.8	12.0	7.1	4.9	5.8	3.1	2.1	2.7
23	14.1	13.0	13.6	12.4	11.6	11.8	7.6	6.1	6.9	2.9	1.9	2.6
24	13.9	12.0	13.0	12.1	10.9	11.7	7.7	6.5	7.5	4.3	2.9	3.6
25	14.3	12.2	13.2	11.0	10.1	10.5	6.5	5.6	5.9	3.6	1.3	2.7
26	14.9	13.7	14.4	11.0	9.4	10.2	6.3	5.5	5.7	2.7	1.2	1.6
27	15.2	13.7	14.9	11.4	10.2	10.7	6.4	5.1	5.6	3.8	2.7	3.3
28	13.8	12.7	13.2	11.5	10.2	11.3	6.4	5.2	5.8	3.3	2.4	2.8
29	15.0	13.8	14.1	10.2	9.2	9.5	6.6	5.2	5.9	3.7	2.1	3.0
30	15.1	12.6	14.0	10.2	8.7	9.3	6.8	6.0	6.5	3.7	2.5	3.1
31	15.5	13.4	14.8	---	---	---	6.0	4.6	5.6	2.5	1.2	1.9
MAX	18.5	17.0	17.7	16.3	15.5	15.7	10.1	9.0	9.5	8.4	7.4	7.9
MIN	13.8	12.0	13.0	10.2	8.7	9.3	6.0	4.6	5.6	2.5	1.2	1.6

02012800 JACKSON RIVER AT FILTRATION PLANT, AT COVINGTON, VA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
		FEBRUARY			MARCH			APRIL			MAY	
1	3.0	1.5	2.2	7.3	4.7	6.0	8.0	7.5	7.8	13.9	12.0	12.3
2	3.3	2.3	2.9	7.5	6.4	7.0	7.9	7.2	7.7	13.5	11.2	12.0
3	4.2	2.8	3.6	7.3	5.1	6.3	9.2	7.6	8.2	12.7	10.4	11.2
4	5.2	4.1	4.5	6.8	5.8	6.3	9.2	7.8	8.3	12.7	9.7	10.8
5	4.5	2.6	3.4	8.3	5.9	6.6	9.7	6.8	8.2	13.7	10.0	11.2
6	3.4	2.6	3.1	7.7	6.8	7.3	10.2	7.2	8.9	14.4	10.5	12.7
7	5.0	3.4	4.0	8.3	6.3	7.0	11.1	9.2	10.0	15.0	11.0	13.1
8	4.3	3.3	3.5	6.8	5.8	6.3	11.1	9.8	10.7	15.0	12.3	13.7
9	4.1	3.1	3.5	6.8	5.7	6.1	11.7	9.7	10.8	15.7	12.3	13.8
10	4.7	3.8	4.0	7.5	5.7	6.3	10.8	8.2	10.2	15.8	12.4	14.6
11	4.8	3.5	4.0	7.6	4.8	6.4	10.7	8.8	8.9	15.6	12.7	14.7
12	5.1	3.8	4.5	8.0	5.7	7.1	8.8	8.1	8.2	15.7	12.7	14.5
13	5.8	4.1	4.9	8.1	5.3	7.0	9.8	8.4	8.6	15.9	12.8	15.0
14	5.1	3.8	4.5	8.3	5.8	7.4	9.7	7.8	9.1	15.8	13.1	14.4
15	5.0	3.5	4.3	9.2	6.8	8.1	9.6	7.6	8.4	17.0	14.6	15.5
16	4.9	3.4	4.6	8.9	7.0	7.2	10.2	8.1	8.6	16.2	15.0	15.6
17	4.4	3.3	4.2	7.1	6.4	6.8	10.9	8.0	8.8	16.2	14.4	15.5
18	5.1	2.9	4.2	8.0	6.1	7.2	12.7	9.1	10.5	16.9	15.0	15.8
19	5.9	3.3	4.8	8.7	6.7	7.5	12.9	9.3	11.2	16.3	13.3	15.0
20	6.4	3.9	5.4	9.2	6.0	7.4	13.1	9.6	11.4	14.5	12.2	13.2
21	6.4	5.0	5.5	8.4	6.6	7.3	13.7	11.4	12.9	14.8	12.3	13.2
22	5.8	4.2	4.8	7.5	6.0	6.6	13.5	11.5	12.6	15.4	13.1	13.9
23	5.5	3.7	4.6	8.4	4.9	6.9	13.5	11.2	12.6	15.4	12.6	13.8
24	5.3	4.3	4.7	7.9	5.8	6.9	15.0	12.1	13.5	15.5	12.5	13.8
25	5.9	4.1	4.8	10.2	6.6	8.1	14.7	12.9	14.4	16.3	13.1	14.8
26	4.8	3.9	4.4	10.9	8.0	10.0	14.4	10.3	12.2	16.1	13.7	15.3
27	6.0	4.1	5.0	10.7	8.4	9.3	10.7	8.9	10.0	16.6	14.0	15.4
28	6.3	3.5	5.0	11.5	8.5	9.6	11.1	8.6	9.4	15.2	13.5	14.2
29	6.4	3.9	5.6	11.2	8.7	10.6	11.6	9.0	9.9	15.0	11.9	13.3
30	---	---	---	10.8	7.9	8.1	13.9	10.6	11.6	13.9	11.7	12.3
31	---	---	---	8.0	7.6	7.8	---	---	---	15.7	13.7	14.5
MAX	6.4	5.0	5.6	11.5	8.7	10.6	15.0	12.9	14.4	17.0	15.0	15.8
MIN	3.0	1.5	2.2	6.8	4.7	6.0	7.9	6.8	7.7	12.7	9.7	10.8
		JUNE			JULY			AUGUST			SEPTEMBER	
1	15.8	13.6	14.5	20.4	18.7	19.9	20.9	19.3	20.3	21.4	19.8	20.8
2	16.6	13.5	14.6	21.3	19.3	20.4	20.8	19.3	19.9	21.5	20.3	20.8
3	17.6	14.0	15.9	21.0	19.4	20.6	21.2	18.9	19.9	20.9	19.3	20.1
4	17.5	14.5	15.3	20.9	19.5	20.3	21.0	19.2	20.5	21.3	19.3	20.1
5	15.5	14.2	14.7	21.7	19.5	20.3	20.7	17.9	19.0	21.2	19.6	20.6
6	16.7	14.8	15.4	21.9	19.5	21.1	19.2	17.0	17.9	20.9	20.2	20.6
7	17.2	13.8	14.8	21.2	19.1	20.1	19.0	16.8	18.2	20.4	19.6	20.1
8	15.7	12.8	14.4	21.2	18.6	19.8	19.4	17.1	18.5	20.5	19.7	20.0
9	16.2	13.0	14.9	20.4	18.9	19.9	19.9	17.5	19.0	20.1	19.1	19.6
10	16.6	13.2	14.9	20.1	18.8	19.5	20.3	18.3	19.4	20.1	18.4	19.5
11	19.2	16.3	17.4	20.5	18.5	19.4	19.8	18.6	19.3	20.6	18.7	19.9
12	18.3	16.6	17.5	20.7	19.4	20.1	19.4	17.4	18.2	20.3	18.9	19.9
13	18.6	16.4	17.3	21.2	19.0	19.8	18.6	17.2	17.4	20.7	19.4	20.2
14	18.5	16.6	17.9	20.8	19.2	20.3	18.5	17.0	17.9	20.7	19.2	19.9
15	19.9	17.9	18.8	20.3	19.1	19.9	19.2	17.5	18.2	20.0	18.6	19.5
16	19.2	17.5	18.5	20.3	18.0	19.3	20.2	18.5	19.2	19.9	19.1	19.4
17	20.5	17.6	18.6	19.8	17.4	18.0	19.6	17.7	19.1	20.2	19.4	19.7
18	20.4	18.4	19.0	20.2	17.2	17.9	20.2	18.1	19.1	19.7	18.0	18.7
19	18.6	16.9	17.9	20.3	18.7	19.9	19.9	18.4	19.5	18.4	16.3	17.7
20	19.9	16.8	18.0	20.0	18.1	19.5	20.9	19.1	20.0	17.9	16.0	17.4
21	19.6	17.0	18.7	20.4	18.4	19.7	20.8	19.7	20.1	18.4	16.5	17.6
22	20.3	18.8	19.6	20.3	18.1	18.9	20.8	18.6	19.6	19.3	17.2	18.2
23	19.4	17.9	18.1	20.4	17.7	18.6	21.5	19.5	20.3	19.8	18.0	19.2
24	21.1	17.4	18.7	21.1	18.5	19.9	21.7	19.7	20.9	19.4	17.9	18.9
25	20.6	18.0	18.7	20.8	19.0	19.9	21.6	20.0	21.1	20.7	18.8	19.4
26	20.1	17.4	18.0	20.0	19.1	19.6	21.0	19.5	20.4	20.6	19.3	20.0
27	19.7	17.4	18.6	19.5	18.3	18.9	21.8	19.8	20.6	20.0	18.8	19.1
28	19.0	17.6	18.4	20.9	18.1	19.1	22.9	20.9	21.8	18.8	17.1	18.2
29	19.6	17.5	18.4	20.3	18.3	19.9	21.9	20.8	21.5	17.6	16.1	17.0
30	20.5	18.0	19.3	20.3	18.7	19.2	21.8	20.3	21.5	18.1	16.5	17.3
31	---	---	---	20.6	18.4	19.0	22.2	20.5	21.4	---	---	---
MAX	21.1	18.8	19.6	21.9	19.5	21.1	22.9	20.9	21.8	21.5	20.3	20.8
MIN	15.5	12.8	14.4	19.5	17.2	17.9	18.5	16.8	17.4	17.6	16.0	17.0

02013000 DUNLAP CREEK NEAR COVINGTON, VA

LOCATION.--Lat 37°48'10", long 80°02'49", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to Dec. 8, 1949, nonrecording gage at same site and datum.

REMARKS.--Records good except those for period with ice effect, Jan. 29 to Feb. 2, and period of no gage-height record, Sept. 28, 29, which are 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 ft^3/s, from rating curve extended above 4,500 ft^3/s on basis of step-backwater computations and contracted-opening measurement at gage height 15.65 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 OUTSIDE PERIOD OF RECORD.--Flood in March 1913 reached a stage of 18 ft, from information by local residents.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	2000	7,300	9.73	1800	2,880	6.24
Feb 6	2100	3,190	6.56	2030	3,220	6.59
Apr 13	2100	4,970	8.25	---	*19,700	*14.04
May 31	1530	3,700	7.06			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	65	205	140	e70	159	174	169	894	42	37	22
2	83	62	181	188	e72	171	186	159	399	42	49	22
3	69	59	160	339	75	199	175	151	241	149	48	22
4	61	56	147	320	96	186	164	133	183	89	42	22
5	57	60	150	303	128	173	148	120	531	65	39	21
6	52	294	141	366	1,220	207	132	111	584	52	39	21
7	48	560	128	324	1,500	257	123	100	366	44	34	24
8	45	341	122	271	614	259	120	90	240	42	30	1,010
9	42	231	128	242	434	234	114	83	177	39	29	550
10	42	176	241	206	344	215	102	76	139	37	29	184
11	40	146	1,330	164	303	196	96	71	123	37	30	108
12	38	246	673	160	277	192	396	68	131	35	32	77
13	37	1,280	432	147	281	175	2,530	63	110	31	43	61
14	39	574	352	134	329	157	2,260	60	96	30	34	50
15	65	343	284	130	289	149	858	57	135	30	31	43
16	77	250	257	114	244	216	525	59	160	30	31	39
17	68	199	364	106	214	499	387	57	124	30	31	937
18	64	163	448	124	200	421	305	52	100	31	30	1,750
19	58	2,860	350	171	199	386	251	54	87	31	29	539
20	54	2,000	272	165	268	362	219	51	76	31	28	257
21	51	742	215	154	676	335	199	47	67	31	29	162
22	50	461	190	161	562	271	174	99	63	31	27	117
23	48	327	189	132	386	224	154	76	63	33	27	91
24	47	256	280	131	317	194	138	59	64	34	25	75
25	44	215	376	110	281	171	124	55	58	31	26	64
26	43	175	307	104	249	152	155	71	59	47	24	57
27	50	155	250	109	219	143	305	429	54	94	25	51
28	64	160	214	98	191	134	268	311	50	61	28	e5,560
29	76	212	189	e90	169	121	216	252	47	42	27	e1,820
30	77	218	181	e80	---	121	187	173	44	36	24	572
31	70	---	157	e74	---	143	---	1,930	---	38	23	---
TOTAL	1,759	12,886	8,913	5,357	10,207	6,822	11,185	5,286	5,465	1,395	980	14,328
MEAN	56.7	430	288	173	352	220	373	171	182	45.0	31.6	478
MAX	100	2,860	1,330	366	1,500	499	2,530	1,930	894	149	49	5,560
MIN	37	56	122	74	70	121	96	47	44	30	23	21
CFSM	0.35	2.62	1.75	1.05	2.15	1.34	2.27	1.04	1.11	0.27	0.19	2.91
IN.	0.40	2.92	2.02	1.22	2.32	1.55	2.54	1.20	1.24	0.32	0.22	3.25

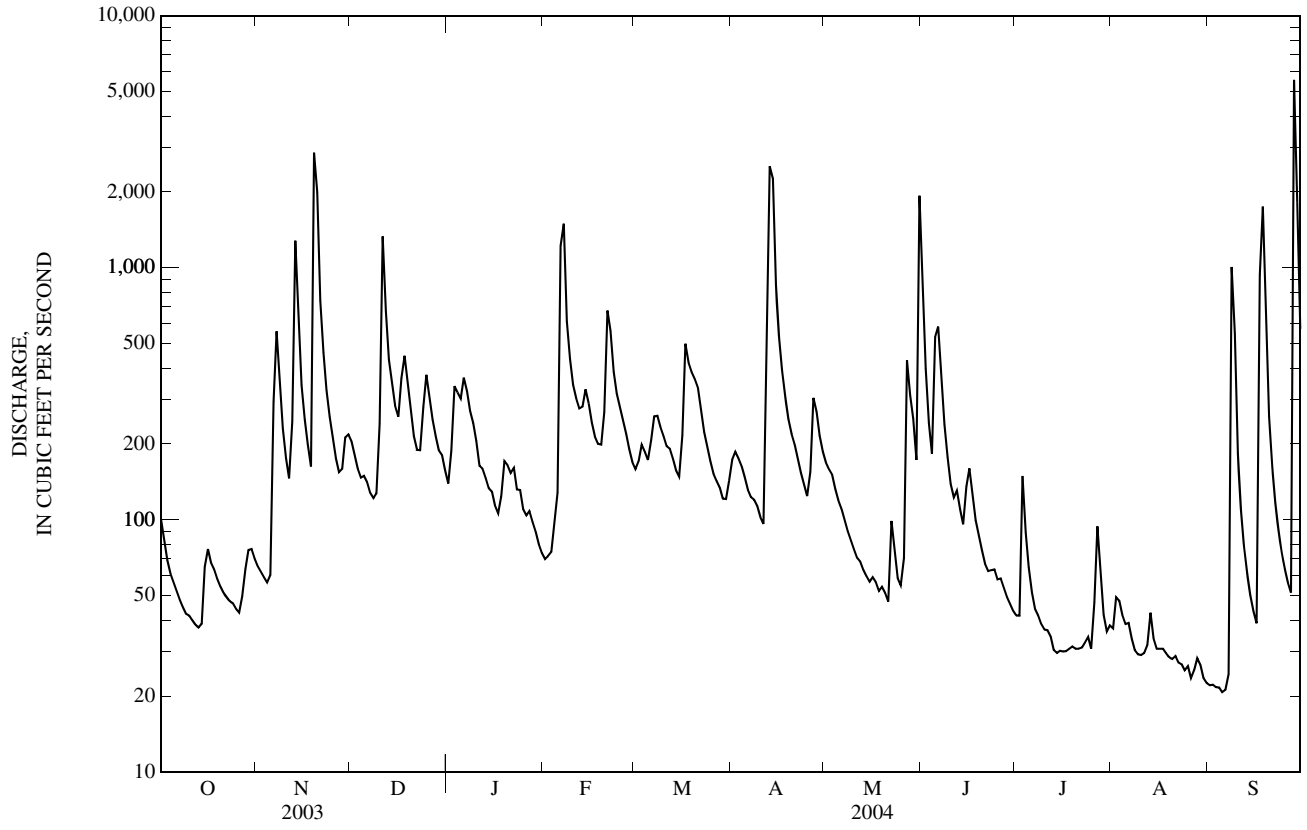
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2004, BY WATER YEAR (WY)

MEAN	64.4	110	168	240	308	394	286	220	108	50.6	55.4	45.8
MAX	431	659	694	770	821	1,053	1,071	646	584	358	514	478
(WY)	(1990)	(1986)	(1974)	(1996)	(1998)	(1993)	(1987)	(2003)	(1972)	(1972)	(1984)	(2004)
MIN	13.4	14.8	21.4	24.2	21.5	59.1	54.7	43.7	24.2	13.6	12.5	11.0
(WY)	(1942)	(2002)	(2002)	(1981)	(1934)	(1988)	(1986)	(1930)	(1999)	(1999)	(1932)	(1970)

02013000 DUNLAP CREEK NEAR COVINGTON, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1929 - 2004	
ANNUAL TOTAL	118,481		84,583			
ANNUAL MEAN	325		231		170	
HIGHEST ANNUAL MEAN					320	a1973
LOWEST ANNUAL MEAN					67.3	1941
HIGHEST DAILY MEAN	6,080	Feb 22	e5,560	Sep 28	10,400	Jan 19, 1996
LOWEST DAILY MEAN	33	bAug 28	21	cSep 5	7.0	Sep 9, 1966
ANNUAL SEVEN-DAY MINIMUM	34	Aug 27	22	Aug 31	7.6	Sep 6, 1966
MAXIMUM PEAK FLOW			19,700	Sep 28	27,400	Jun 21, 1972
MAXIMUM PEAK STAGE			d14.04	Sep 28	15.65	Jun 21, 1972
INSTANTANEOUS LOW FLOW			20	cSep 5	2.0	Jul 4, 1970
ANNUAL RUNOFF (CFSM)	1.98		1.41		1.04	
ANNUAL RUNOFF (INCHES)	26.87		19.19		14.10	
10 PERCENT EXCEEDS	653		406		370	
50 PERCENT EXCEEDS	156		131		67	
90 PERCENT EXCEEDS	40		31		18	

a Also 2003.
b Also Aug. 29, 30, 2003.
c Also Sept. 6, 2004.
d From floodmark.
e Estimated.



02013100 JACKSON RIVER BELOW DUNLAP CREEK, AT COVINGTON, VA

LOCATION.--Lat 37°47'19", long 80°00'02", NAD83, Covington City, Hydrologic Unit 02080201, on left bank in city recreation park and 0.5 mi downstream from Dunlap Creek.

DRAINAGE AREA.--614 mi^2.

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 NGVD of 1929.

REMARKS.--No estimated daily dishcarges. 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. Statistics of monthly mean data and summary statistics for water years 1975-1979 (unregulated flow) are available in previous data books, water years 1991-1998. Diversion by Westvaco plant averages 47 ft^3/s for industrial use of which approximately 42 ft^3/s is returned upstream from station. Diversion 2.0 mi upstream from station for city of Covington water supply averages less than 4.0 ft^3/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 ft^3/s, from rating curve extended above 19,000 ft^3/s. 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 ft^3/s, from floodmarks, and flood of Dec. 27, 1973, reached a stage of 22.09 ft, from floodmarks, discharge, 28,300 ft^3/s, from rating curve extended above 19,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	490	445	1,110	599	303	658	640	628	2,310	347	355	300
2	362	438	942	645	302	771	623	754	1,460	351	357	281
3	324	435	649	855	322	1,140	534	964	794	422	354	281
4	312	436	628	935	352	1,360	520	1,290	631	408	350	284
5	300	451	711	1,080	381	1,340	499	1,020	1,070	386	361	282
6	291	709	854	1,240	1,950	1,430	480	781	1,360	356	361	284
7	286	1,150	832	764	3,590	1,500	470	714	1,450	348	342	287
8	277	942	728	664	4,330	1,500	467	566	890	346	334	1,410
9	275	700	501	707	2,960	1,440	497	553	807	340	328	1,120
10	271	559	564	736	1,600	1,300	592	544	765	343	324	566
11	267	522	3,470	720	1,360	961	585	536	755	346	324	441
12	264	675	4,290	548	976	786	960	529	757	346	353	387
13	259	3,930	2,160	503	891	764	4,030	525	723	347	371	360
14	269	5,630	1,560	474	951	742	5,420	485	617	341	347	343
15	318	4,410	1,450	439	892	732	6,210	375	555	337	333	333
16	312	1,670	1,210	409	827	843	4,960	383	722	335	331	325
17	300	957	1,040	353	780	1,250	2,830	369	552	340	327	962
18	292	894	1,250	376	756	1,230	1,290	363	532	347	324	2,300
19	286	4,690	1,180	416	749	1,270	1,200	911	577	347	323	973
20	279	5,180	894	406	837	1,390	983	1,260	456	342	323	616
21	276	7,210	810	386	1,410	1,370	634	1,160	424	338	327	485
22	271	6,340	771	388	1,580	1,160	594	1,390	378	344	322	423
23	271	4,640	736	369	1,530	836	566	1,320	379	346	318	389
24	268	2,830	785	368	1,430	792	535	1,130	373	349	313	367
25	262	1,200	1,190	354	1,380	721	518	791	364	339	312	356
26	263	823	1,520	338	1,330	601	843	663	364	349	310	345
27	276	793	1,440	346	1,170	593	2,010	1,100	354	416	309	337
28	350	639	1,200	333	841	581	2,910	1,460	344	374	316	7,720
29	532	1,150	860	320	672	568	2,300	2,140	340	354	314	3,970
30	594	1,140	816	319	---	571	597	2,690	332	350	315	1,300
31	550	---	691	300	---	606	---	3,340	---	348	313	---
TOTAL	9,947	61,588	36,842	16,690	36,452	30,806	45,297	30,734	21,435	10,982	10,291	27,827
MEAN	321	2,053	1,188	538	1,257	994	1,510	991	714	354	332	928
MAX	594	7,210	4,290	1,240	4,330	1,500	6,210	3,340	2,310	422	371	7,720
MIN	259	435	501	300	302	568	467	363	332	335	309	281
(†)	+1,160	-151	-403	+151	+101	-252	-101	+756	-1,916	-5,294	-5,999	+10,688
MEAN‡	358	2,048	1,175	543	1,260	986	1,507	1,016	651	183	138	1,284
CFSM‡	.58	3.34	1.91	.88	2.05	1.61	2.45	1.65	1.06	.30	.22	2.09
IN.‡	.67	3.72	2.21	1.02	2.21	1.85	2.74	1.91	1.18	.34	.26	2.33

CAL YR 2003 MEAN‡ 1,304 CFSM‡ 2.12 IN.‡ 28.84
WTR YR 2004 MEAN‡ 922 CFSM‡ 1.50 IN.‡ 20.44

† 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.

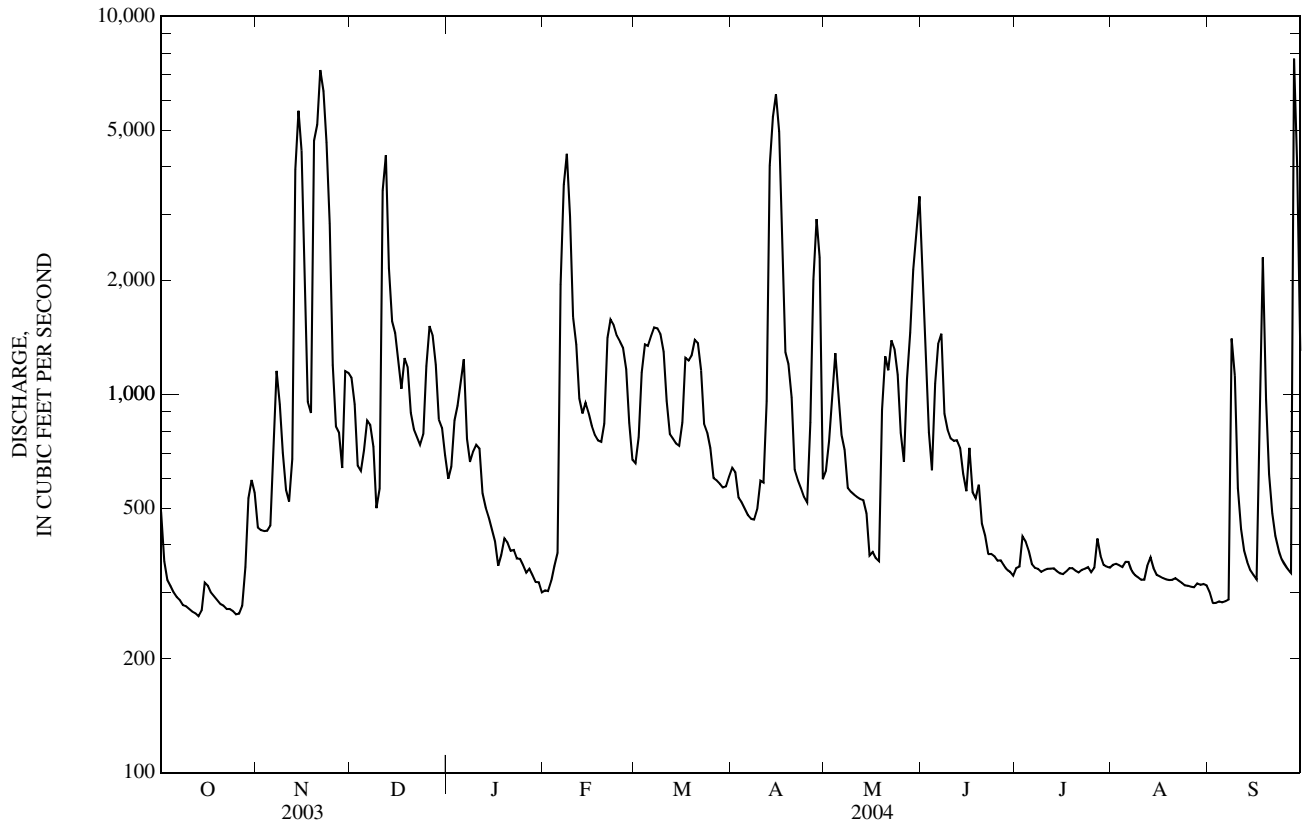
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2004, BY WATER YEAR (WY)

MEAN	330	534	553	774	1,081	1,421	1,193	973	649	369	372	388
MAX	1,302	2,363	1,685	2,644	2,702	3,189	3,540	2,223	2,148	742	1,285	938
(WY)	(1980)	(1986)	(1997)	(1996)	(1998)	(1993)	(1987)	(1989)	(2003)	(2003)	(1984)	(1989)
MIN	111	114	130	119	176	211	356	397	303	190	117	87.3
(WY)	(1981)	(1982)	(1981)	(1981)	(2002)	(1981)	(1986)	(1991)	(1980)	(1981)	(1981)	(1981)

02013100 JACKSON RIVER BELOW DUNLAP CREEK, AT COVINGTON, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1980 - 2004	
ANNUAL TOTAL	476,324		338,891			
ANNUAL MEAN	1,305		926		718	
HIGHEST ANNUAL MEAN					1,184	2003
LOWEST ANNUAL MEAN					348	1981
HIGHEST DAILY MEAN	8,820	Feb 23	7,720	Sep 28	15,100	Jan 19, 1996
LOWEST DAILY MEAN	248	Jan 28	259	Oct 13	67	aSep 3, 1981
ANNUAL SEVEN-DAY MINIMUM	252	Jan 27	269	Oct 8	71	Sep 25, 1981
MAXIMUM PEAK FLOW			18,100	Sep 28	b31,300	Nov 4, 1985
MAXIMUM PEAK STAGE			17.27	Sep 28	b23.31	Nov 4, 1985
INSTANTANEOUS LOW FLOW			225	Sep 8	c,d41	Jan 5, 1981
ANNUAL RUNOFF (CFSM)	2.13		1.51		1.17	
ANNUAL RUNOFF (INCHES)	28.86		20.53		15.88	
10 PERCENT EXCEEDS	3,300		1,520		1,560	
50 PERCENT EXCEEDS	726		570		359	
90 PERCENT EXCEEDS	302		313		212	

a Also Sept. 27-29, 1981.
b Prior to regulation, 1975-79, maximum peak flow, 23,200 ft^3/s, Apr. 5, 1977, gage height, 19.85 ft.
c Prior to regulation, 1975-79, instantaneous low flow, 80 ft^3/s, Nov. 9, 1978.
d Result of freezeup.



02014000 POTTS CREEK NEAR COVINGTON, VA

LOCATION.--Lat 37°43'44", long 80°02'32", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to Sept. 30, 1956, nonrecording gage at site 1.3 mi downstream at different datum.

REMARKS.--Records good except for period with ice effect, Jan. 29 to Feb. 2, which is fair. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 15,400 ft^3/s, from rating curve extended above 12,000 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,400 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	2230	7,140	9.75	2100	3,250	7.00
Apr 13	2300	3,150	6.91	1700	*10,700	*11.65
Sep 8	1930	4,360	7.90			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	123	61	238	181	e94	186	161	233	539	66	77	56
2	109	60	213	215	e100	187	158	220	311	62	187	42
3	95	60	195	345	130	197	154	209	221	97	197	38
4	88	59	184	306	180	197	152	186	195	85	139	37
5	82	65	189	295	158	193	147	170	483	84	109	36
6	75	313	180	330	684	216	139	158	475	73	122	35
7	69	488	168	289	1,210	232	134	145	355	62	95	39
8	65	350	156	262	612	253	132	135	266	60	79	1,690
9	62	256	151	249	440	238	130	128	214	55	68	1,540
10	62	204	220	225	369	226	122	122	179	53	60	502
11	62	174	1,120	189	335	211	115	115	157	52	54	293
12	58	185	651	188	301	201	269	119	144	52	64	207
13	56	442	460	177	296	189	1,580	114	129	54	114	163
14	58	320	401	167	313	177	1,880	113	124	68	82	135
15	86	262	331	161	287	169	898	113	120	53	66	115
16	90	225	284	145	256	212	594	125	148	48	59	101
17	73	196	379	133	231	323	454	113	227	46	57	965
18	68	170	400	170	216	301	370	106	161	47	51	2,120
19	65	3,550	328	241	212	308	311	104	146	48	48	855
20	62	2,930	276	202	262	273	274	102	126	45	46	463
21	59	996	229	177	488	262	258	96	110	43	45	315
22	58	615	212	184	473	237	227	135	100	44	47	235
23	57	449	221	164	376	209	206	103	94	59	50	188
24	57	364	319	167	330	192	193	92	96	66	44	156
25	55	322	387	147	300	177	176	89	86	49	42	134
26	54	265	318	137	263	164	231	120	95	48	39	121
27	62	233	273	143	236	156	424	216	94	420	40	110
28	70	233	242	132	213	153	354	164	81	168	41	5,590
29	70	303	219	e110	196	142	296	169	75	109	39	4,260
30	65	259	213	e110	---	138	257	139	70	92	37	1,240
31	63	---	198	e96	---	154	---	1,080	---	91	57	---
TOTAL	2,178	14,409	9,355	6,037	9,561	6,473	10,796	5,233	5,621	2,399	2,255	21,781
MEAN	70.3	480	302	195	330	209	360	169	187	77.4	72.7	726
MAX	123	3,550	1,120	345	1,210	323	1,880	1,080	539	420	197	5,590
MIN	54	59	151	96	94	138	115	89	70	43	37	35
CFSM	0.46	3.14	1.97	1.27	2.15	1.36	2.35	1.10	1.22	0.51	0.48	4.75
IN.	0.53	3.50	2.27	1.47	2.32	1.57	2.62	1.27	1.37	0.58	0.55	5.30

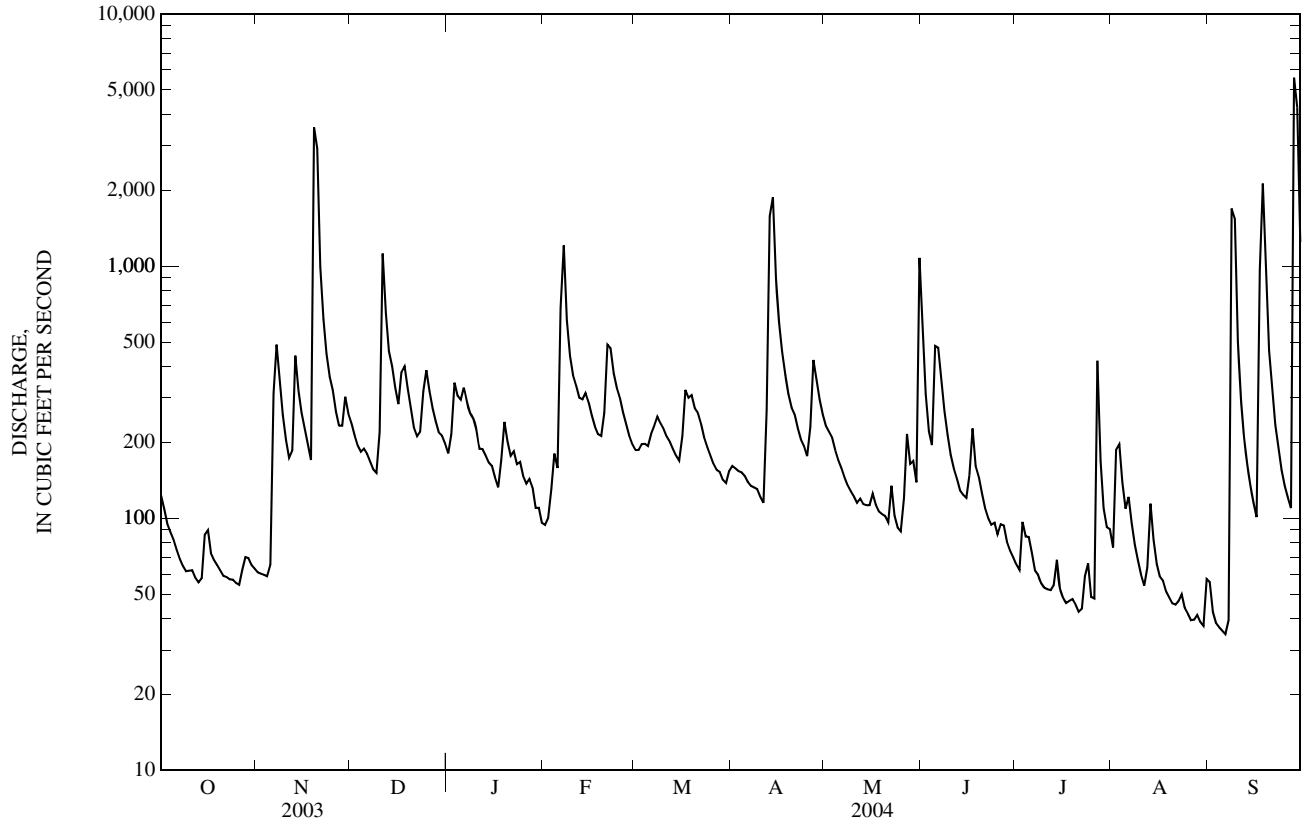
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1956, 1966 - 2004, BY WATER YEAR (WY)

MEAN	91.4	130	172	238	297	368	292	229	140	68.9	65.5	71.3
MAX	548	766	643	788	725	1,078	1,184	606	650	288	461	726
(WY)	(1990)	(1986)	(1949)	(1937)	(1998)	(1955)	(1987)	(2003)	(1972)	(1938)	(1940)	(2004)
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)

02014000 POTTS CREEK NEAR COVINGTON, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1929 - 1956 1966 - 2004	
ANNUAL TOTAL	125,184		96,098			
ANNUAL MEAN	343		263		180	
HIGHEST ANNUAL MEAN					320	1973
LOWEST ANNUAL MEAN					76.5	2002
HIGHEST DAILY MEAN	4,740	Feb 23	5,590	Sep 28	8,870	Jun 21, 1972
LOWEST DAILY MEAN	43	aSep 12	35	Sep 6	15	Dec 17, 1930
ANNUAL SEVEN-DAY MINIMUM	45	Sep 11	40	Aug 24	15	Dec 17, 1930
MAXIMUM PEAK FLOW			10,700	Sep 28	15,400	Nov 4, 1985
MAXIMUM PEAK STAGE			11.65	Sep 28	13.46	Nov 4, 1985
INSTANTANEOUS LOW FLOW			35	bSep 5	c13	Nov 29, 1930
ANNUAL RUNOFF (CFSM)	2.24		1.72		1.17	
ANNUAL RUNOFF (INCHES)	30.44		23.37		15.95	
10 PERCENT EXCEEDS	605		421		396	
50 PERCENT EXCEEDS	213		164		86	
90 PERCENT EXCEEDS	62		55		27	

a Also Sept. 13, 17, 2003.
b Also Sept. 6, 7, 2004.
c Minimum observed.
e Estimated.



02015700 BULLPASTURE RIVER AT WILLIAMSVILLE, VA

LOCATION.--Lat 38°11'43", long 79°34'13", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to July 12, 1974, at site 700 ft upstream at datum 11.84 ft higher.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Nov. 6 to Dec. 12 and Sept. 4, and periods with ice effect, Jan. 10, 11, 15, and Jan. 22 to Feb. 3, which are fair. Maximum discharge, 22,900 ft^3/s, from rating curve extended above 3,300 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Apr 13	2000	2,870	5.64	2100	*5,390	*7.20
May 28	0645	2,090	5.00	1715	3,580	6.14

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	162	111	e265	175	e60	179	153	212	214	68	162	44
2	145	107	e225	192	e63	238	136	212	177	144	140	43
3	130	103	e200	195	e73	261	126	312	150	90	84	43
4	124	99	e180	191	79	241	122	241	142	77	69	e43
5	118	98	e175	194	75	228	113	213	256	92	69	41
6	108	e460	e160	181	630	428	107	189	190	71	75	42
7	100	e350	e145	154	803	362	104	167	157	66	61	45
8	94	e250	e130	145	371	314	104	151	155	70	56	1,230
9	90	e190	e140	148	266	254	100	141	178	62	53	930
10	88	e160	e1,200	e132	232	220	93	130	161	79	51	305
11	84	e145	e1,400	e115	223	194	91	122	137	78	50	186
12	83	e200	e700	135	204	179	309	122	142	170	53	137
13	80	e1,100	408	129	203	158	1,340	122	125	88	103	113
14	96	e700	353	120	211	143	1,160	129	119	72	67	96
15	349	e430	300	e115	188	137	558	145	142	67	58	86
16	176	e340	257	97	166	192	370	280	286	63	54	79
17	147	e250	279	101	152	225	297	203	182	61	52	132
18	139	e180	269	112	144	193	250	284	148	66	50	483
19	125	e2,000	235	104	168	254	217	369	131	88	48	274
20	115	e1,400	207	87	270	222	195	240	115	68	47	180
21	109	e940	179	77	560	232	182	261	103	60	51	140
22	106	e500	176	e75	359	200	164	291	97	58	53	116
23	103	e370	244	e70	286	176	155	202	94	58	48	100
24	96	e300	517	e78	261	161	149	162	92	55	46	89
25	89	e270	435	e68	239	147	136	140	83	52	44	82
26	87	e225	326	e64	209	136	702	209	90	52	43	77
27	148	e195	272	e74	186	131	572	290	79	56	45	73
28	181	e220	239	e70	171	125	365	1,110	74	62	68	1,430
29	148	e360	218	e67	168	116	280	439	72	53	51	953
30	130	e320	222	e64	---	113	237	283	69	52	47	418
31	118	---	190	e62	---	142	---	263	---	59	47	---
TOTAL	3,868	12,373	10,246	3,591	7,020	6,301	8,887	7,634	4,160	2,257	1,945	8,010
MEAN	125	412	331	116	242	203	296	246	139	72.8	62.7	267
MAX	349	2,000	1,400	195	803	428	1,340	1,110	286	170	162	1,430
MIN	80	98	130	62	60	113	91	122	69	52	43	41
CFSM	1.13	3.75	3.00	1.05	2.20	1.85	2.69	2.24	1.26	0.66	0.57	2.43
IN.	1.31	4.18	3.47	1.21	2.37	2.13	3.01	2.58	1.41	0.76	0.66	2.71

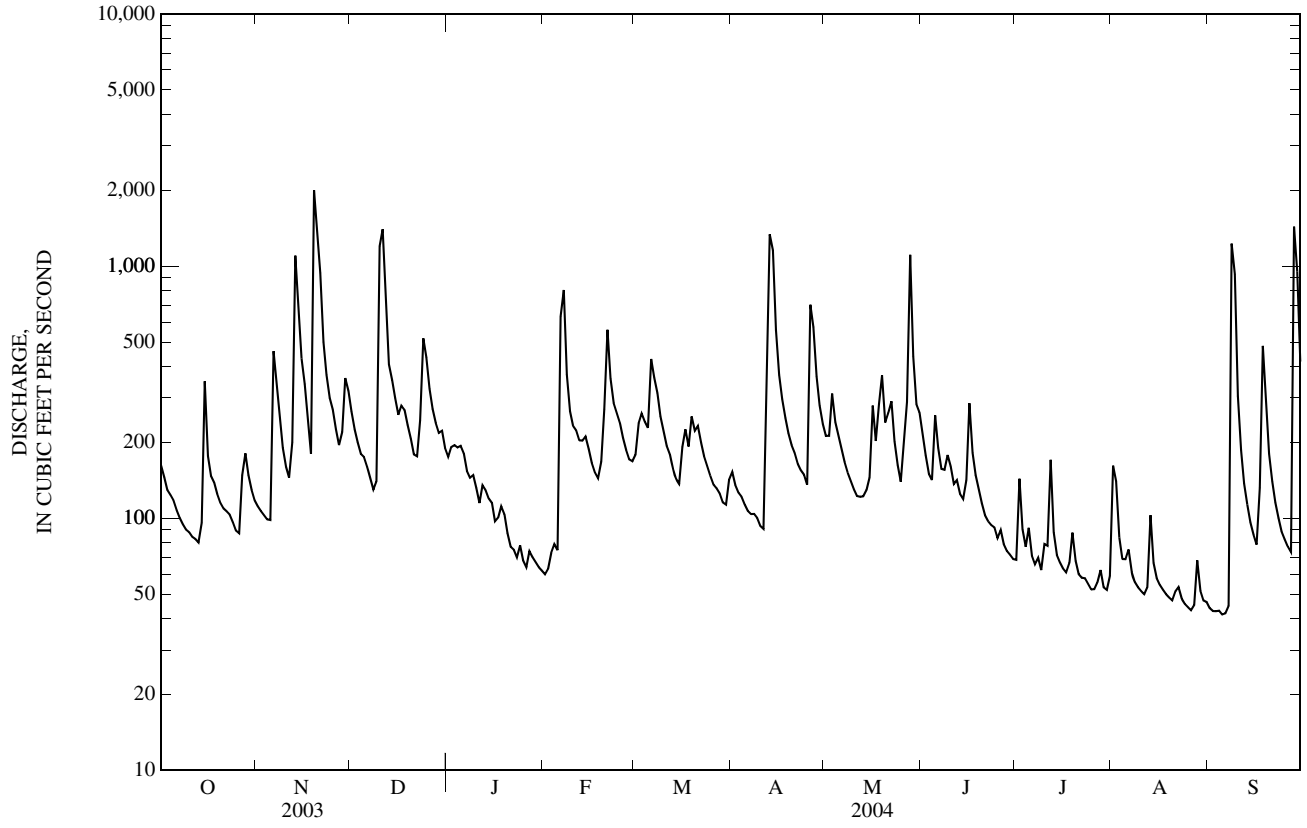
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2004, BY WATER YEAR (WY)

MEAN	83.1	126	163	188	217	305	228	195	126	67.4	65.4	78.5
MAX	295	784	543	631	498	655	663	448	491	245	272	432
(WY)	(1977)	(1986)	(1974)	(1996)	(1982)	(1993)	(1987)	(1996)	(2003)	(1972)	(1969)	(1996)
MIN	30.1	33.6	31.9	34.7	58.4	62.2	68.0	65.4	34.8	26.8	27.7	28.5
(WY)	(1989)	(2002)	(1966)	(1981)	(2002)	(1981)	(1999)	(1977)	(1999)	(1999)	(1964)	(1968)

02015700 BULLPASTURE RIVER AT WILLIAMSVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1960 - 2004	
ANNUAL TOTAL	101,122		76,292			
ANNUAL MEAN	277		208		153	
HIGHEST ANNUAL MEAN					256	2003
LOWEST ANNUAL MEAN					71.1	1999
HIGHEST DAILY MEAN	3,400	Sep 19	e2,000	Nov 19	e8,700	Nov 4, 1985
LOWEST DAILY MEAN	e46	Feb 13	41	Sep 5	22	aSep 9, 2002
ANNUAL SEVEN-DAY MINIMUM	e54	Feb 11	43	Sep 1	22	bSep 7, 2002
MAXIMUM PEAK FLOW			5,390	Sep 8	22,900	Nov 4, 1985
MAXIMUM PEAK STAGE			7.20	Sep 8	c12.79	Nov 4, 1985
INSTANTANEOUS LOW FLOW			41	dSep 3	f19	Jan 4, 1981
ANNUAL RUNOFF (CFSM)	2.52		1.89		1.39	
ANNUAL RUNOFF (INCHES)	34.20		25.80		18.93	
10 PERCENT EXCEEDS	599		363		306	
50 PERCENT EXCEEDS	184		145		82	
90 PERCENT EXCEEDS	66		59		35	

a Also Sept. 10-13, 2002.
b Also Sept. 8, 2002.
c From floodmarks.
d Also Sept. 4-6, 2004.
e Estimated.
f Result of freezeup.



02016000 COWPASTURE RIVER NEAR CLIFTON FORGE, VA

LOCATION.--Lat 37°47'30", long 79°45'34", NAD83, 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 mi^2.

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 NGVD of 1929 (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 with ice effect, Jan. 21 to Feb. 3, which is poor. Low flow affected by springs and by occasional regulation from unknown source. Maximum discharge, 40,900 ft^3/s, from rating curve extended above 13,000 ft^3/s on basis of slope-area measurements at gage heights 15.70 ft and 19.15 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 OUTSIDE PERIOD OF RECORD.--Flood in March 1913 reached a stage of 20.8 ft, from floodmarks, discharge, about 45,000 ft^3/s, from rating curve extended above 13,000 ft^3/s on basis of records for other stations in James River Basin.

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

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 13	1215	8,240	8.93	0845	8,740	9.18
Nov 20	0930	*16,600	*12.52	0215	5,830	7.59
Dec 11	1530	9,910	9.75	1245	9,980	9.78
Feb 7	0700	5,590	7.44	0530	12,700	10.98

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	612	285	946	539	e210	505	474	622	1,170	160	175	106
2	503	269	788	523	e220	510	496	587	766	189	195	102
3	425	256	658	564	e230	635	454	633	558	271	259	100
4	370	245	584	553	250	690	429	673	470	229	178	98
5	340	271	588	555	270	646	406	576	575	248	161	95
6	314	1,120	564	561	1,550	697	379	518	776	212	243	91
7	283	980	522	509	4,560	1,290	356	459	587	180	192	94
8	259	701	483	450	2,260	1,140	347	412	465	161	152	1,100
9	241	530	462	452	1,510	906	342	375	418	153	134	5,560
10	230	441	663	444	1,210	742	324	346	434	184	125	1,650
11	218	394	6,540	395	1,150	629	304	328	399	314	121	810
12	209	555	3,250	373	1,090	559	528	337	390	521	131	476
13	200	6,030	1,790	400	1,060	507	3,960	304	355	620	199	348
14	199	2,580	1,390	373	1,170	453	6,790	295	327	312	214	279
15	422	1,460	1,160	354	1,060	420	2,820	357	337	221	172	235
16	616	1,050	1,010	336	892	513	1,770	431	413	184	146	208
17	428	828	1,030	299	742	1,160	1,340	481	554	168	133	330
18	364	681	1,210	318	652	942	1,080	499	413	170	126	2,450
19	332	4,680	1,010	337	613	833	866	1,740	347	195	120	1,510
20	299	11,100	832	304	742	839	727	1,130	312	192	117	832
21	276	3,050	690	e250	1,440	770	644	1,050	275	170	115	522
22	259	1,820	600	e250	1,780	715	574	3,310	250	158	117	386
23	248	1,300	607	e240	1,320	604	509	1,270	237	154	117	313
24	239	1,020	912	e240	1,090	527	460	768	234	156	114	265
25	227	961	1,760	e240	938	476	425	557	221	140	109	233
26	214	816	1,330	e230	799	439	505	500	210	133	104	212
27	238	704	1,010	e230	684	413	1,500	859	201	136	101	196
28	305	752	827	e230	601	401	1,230	1,650	189	135	166	4,940
29	383	1,210	713	e220	540	376	906	2,100	176	132	145	8,530
30	341	1,140	662	e220	---	355	719	1,140	167	130	127	2,270
31	311	---	622	e210	---	384	---	1,620	---	126	113	---
TOTAL	9,905	47,229	35,213	11,199	30,633	20,076	31,664	25,927	12,226	6,454	4,621	34,341
MEAN	320	1,574	1,136	361	1,056	648	1,055	836	408	208	149	1,145
MAX	616	11,100	6,540	564	4,560	1,290	6,790	3,310	1,170	620	259	8,530
MIN	199	245	462	210	210	355	304	295	167	126	101	91
CFSM	0.69	3.41	2.46	0.78	2.29	1.40	2.29	1.81	0.88	0.45	0.32	2.48
IN.	0.80	3.81	2.84	0.90	2.47	1.62	2.56	2.09	0.99	0.52	0.37	2.77

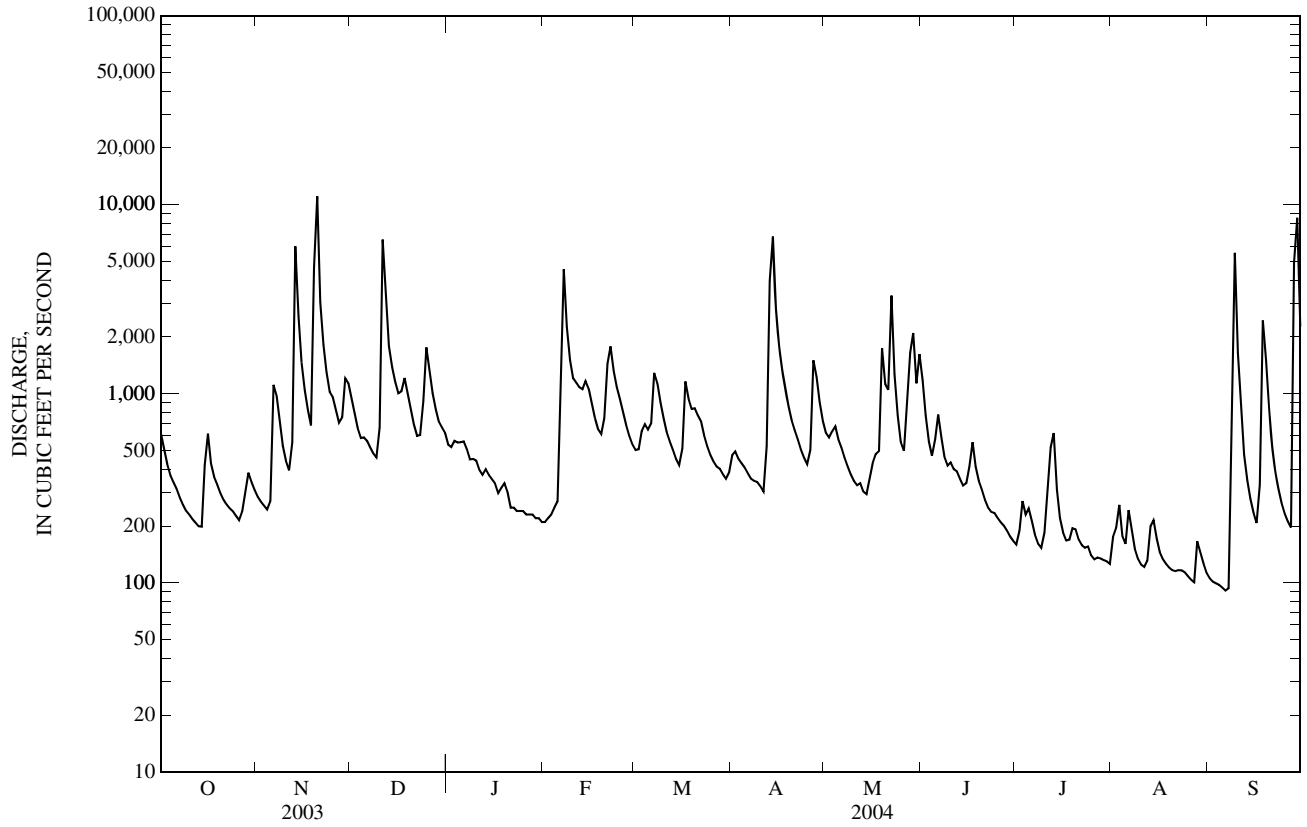
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 2004, BY WATER YEAR (WY)

MEAN	271	390	566	722	863	1,092	848	655	397	219	229	236
MAX	1,474	2,745	1,883	2,253	1,911	2,531	2,878	2,342	1,771	1,213	1,531	1,510
(WY)	(1938)	(1986)	(1974)	(1996)	(1998)	(1993)	(1987)	(1989)	(2003)	(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)

02016000 COWPASTURE RIVER NEAR CLIFTON FORGE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1926 - 2004	
ANNUAL TOTAL	377,926		269,488			
ANNUAL MEAN	1,035		736		539	
HIGHEST ANNUAL MEAN					964	2003
LOWEST ANNUAL MEAN					248	1981
HIGHEST DAILY MEAN	12,800	Feb 23	11,100	Nov 20	33,900	Nov 5, 1985
LOWEST DAILY MEAN	140	Aug 28	91	Sep 6	40	Sep 1, 1932
ANNUAL SEVEN-DAY MINIMUM	164	Aug 22	98	Sep 1	43	Oct 8, 1930
MAXIMUM PEAK FLOW			16,600	Nov 20	40,900	Nov 5, 1985
MAXIMUM PEAK STAGE			12.52	Nov 20	19.15	Nov 5, 1985
INSTANTANEOUS LOW FLOW			91	aSep 5	38	Sep 2, 1932
ANNUAL RUNOFF (CFSM)	2.25		1.60		1.17	
ANNUAL RUNOFF (INCHES)	30.50		21.75		15.88	
10 PERCENT EXCEEDS	2,160		1,330		1,170	
50 PERCENT EXCEEDS	635		436		260	
90 PERCENT EXCEEDS	191		155		86	

a Also Sept. 6, 7, 2004.
e Estimated.



02016500 JAMES RIVER AT LICK RUN, VA

LOCATION.--Lat 37°46'25", long 79°47'04", NAD83, 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 mi^2.

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 NGVD of 1929 (levels by U.S. Army Corps of Engineers). Prior to Oct. 26, 1928, nonrecording gage at same site and datum.

REMARKS.--Records good except for period with ice effect, Jan. 27-30, which is fair. 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. Statistics of monthly mean data and summary statistics for water years 1925 - 1979 (unregulated flow) are available in previous data books, water years 1991 - 1998. National Weather Service gage-height telemeter at station. Maximum discharge, 87,500 ft^3/s, from rating curve extended above 66,000 ft^3/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 November 1877 reached a stage of about 33 ft, discharge, about 120,000 ft^3/s. Flood in March 1913 reached a stage of 30.4 ft, from floodmarks, discharge, about 98,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,680	1,020	2,750	1,670	777	1,620	1,510	1,690	5,220	665	741	531
2	1,330	983	2,460	1,680	809	1,630	1,540	1,820	3,280	713	750	475
3	1,120	969	1,900	2,040	872	2,110	1,390	1,910	2,110	876	1,070	459
4	1,010	954	1,760	2,190	993	2,470	1,320	2,380	1,630	974	859	448
5	947	996	1,800	2,190	1,050	2,430	1,270	2,170	2,390	902	782	439
6	891	2,480	1,960	2,660	3,800	2,570	1,190	1,680	3,000	793	898	440
7	829	3,190	1,870	1,980	10,300	3,220	1,140	1,630	3,030	706	774	447
8	781	2,580	1,800	1,710	7,960	3,080	1,130	1,350	2,130	666	661	3,680
9	746	1,950	1,450	1,760	5,660	2,830	1,120	1,280	1,830	641	615	10,100
10	729	1,570	1,740	1,700	3,560	2,610	1,210	1,220	1,740	669	587	3,420
11	696	1,410	10,600	1,700	3,290	2,140	1,190	1,180	1,630	915	563	1,960
12	671	1,600	9,470	1,430	2,660	1,820	1,700	1,200	1,640	1,060	618	1,420
13	656	9,630	5,250	1,420	2,500	1,730	9,450	1,140	1,520	1,220	915	1,140
14	660	8,770	3,940	1,340	2,670	1,630	15,700	1,100	1,430	888	834	990
15	967	7,000	3,470	1,250	2,510	1,570	10,700	1,050	1,260	720	684	872
16	1,250	3,640	3,130	1,180	2,250	1,800	8,070	1,120	1,860	649	623	761
17	1,010	2,370	2,830	1,030	2,040	2,930	5,410	1,170	1,800	624	593	1,140
18	932	2,080	3,400	1,080	1,910	2,820	3,160	1,100	1,460	646	576	8,360
19	878	14,000	3,130	1,250	1,850	2,660	2,750	2,700	1,430	723	555	4,330
20	802	25,100	2,470	1,190	2,020	2,800	2,460	2,680	1,170	674	544	2,470
21	754	12,900	2,150	1,050	3,310	2,700	1,870	2,480	1,060	632	550	1,760
22	735	9,440	1,970	1,060	4,210	2,510	1,710	5,120	941	627	546	1,400
23	704	7,110	1,960	1,050	3,560	1,950	1,590	2,960	896	648	543	1,170
24	695	5,150	2,280	1,040	3,140	1,800	1,480	2,340	897	665	532	1,020
25	672	3,130	3,600	947	2,930	1,700	1,390	1,760	838	615	517	919
26	656	2,350	3,610	867	2,710	1,480	1,570	1,530	821	590	507	836
27	731	2,180	3,160	e880	2,500	1,410	3,720	2,710	798	1,040	501	764
28	815	1,940	2,820	e880	2,020	1,370	4,600	3,580	743	941	585	15,400
29	1,160	3,080	2,190	e820	1,700	1,310	4,050	4,430	705	726	557	23,400
30	1,220	3,000	2,100	e800	---	1,270	1,970	4,590	676	673	540	5,820
31	1,200	---	1,920	746	---	1,370	---	6,810	---	672	522	---
TOTAL	27,927	142,572	94,940	42,590	85,561	65,340	97,360	69,880	49,935	23,553	20,142	96,371
MEAN	901	4,752	3,063	1,374	2,950	2,108	3,245	2,254	1,664	760	650	3,212
MAX	1,680	25,100	10,600	2,660	10,300	3,220	15,700	6,810	5,220	1,220	1,070	23,400
MIN	656	954	1,450	746	777	1,270	1,120	1,050	676	590	501	439
(†)	+1,160	-151	-403	+151	+101	-252	-101	+756	-1,916	-5,294	-5,999	+10,688
MEAN‡	938	4,747	3,050	1,379	2,954	2,100	3,242	2,279	1,601	589	456	3,569
CFSM‡	.68	3.46	2.22	1.00	2.15	1.53	2.36	1.66	1.17	.43	.33	2.60
IN.‡	.79	3.86	2.56	1.16	2.32	1.76	2.64	1.91	1.30	.49	.38	2.90

CAL YR 2003 MEAN‡ 3,056 CFSM‡ 2.23 IN.‡ 30.22
WTR YR 2004 MEAN‡ 2,227 CFSM‡ 1.62 IN.‡ 22.08

† 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.

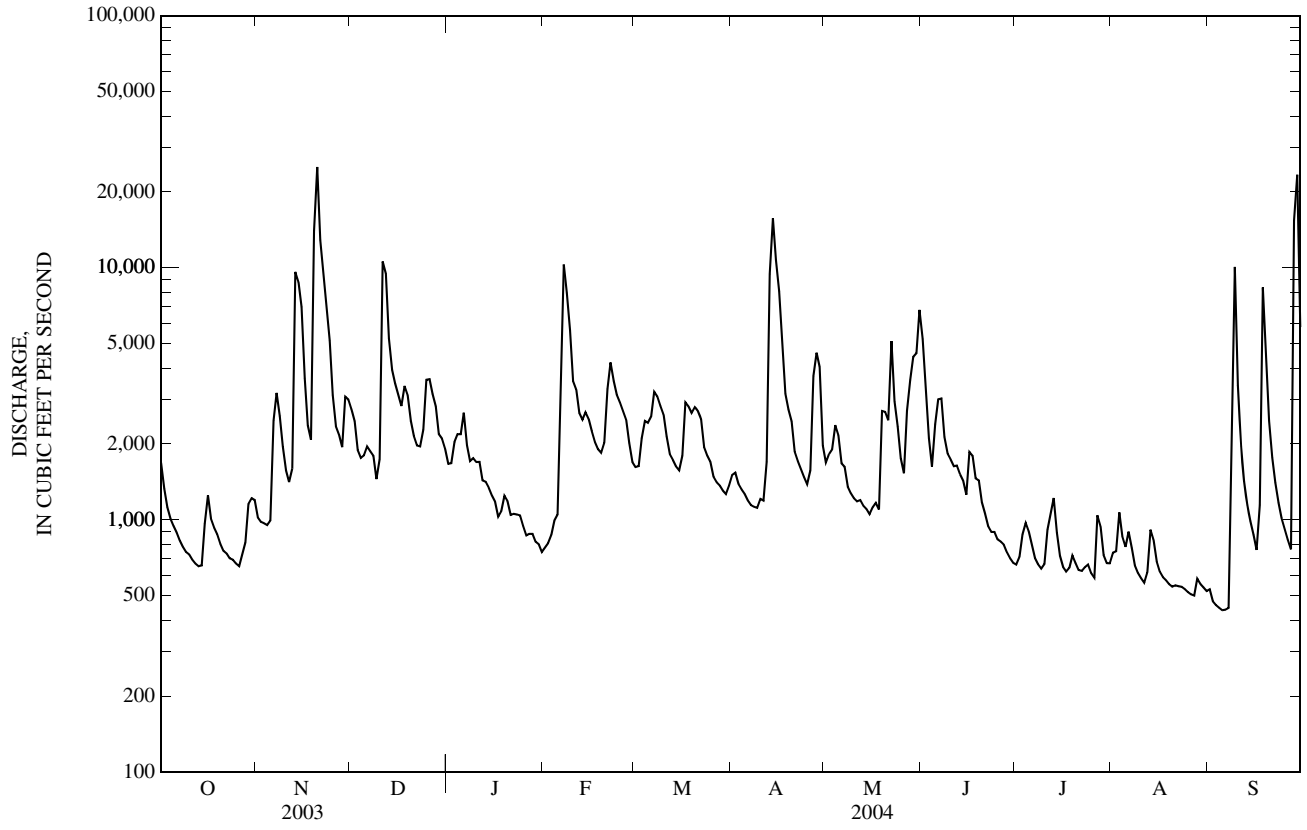
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2004, BY WATER YEAR (WY)

MEAN	770	1,391	1,510	1,977	2,559	3,336	2,873	2,242	1,485	736	706	890
MAX	3,495	7,206	4,206	5,302	6,425	8,083	9,349	5,639	5,068	1,699	2,704	3,212
(WY)	(1990)	(1986)	(1997)	(1996)	(1998)	(1993)	(1987)	(1989)	(2003)	(2003)	(1984)	(2004)
MIN	270	325	328	268	429	623	755	940	526	479	264	269
(WY)	(1981)	(2002)	(1981)	(1981)	(2002)	(1981)	(1986)	(1991)	(2002)	(1981)	(1981)	(1981)

02016500 JAMES RIVER AT LICK RUN, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1980 - 2004	
ANNUAL TOTAL	1,115,701		816,171			
ANNUAL MEAN	3,057		2,230		1,700	
HIGHEST ANNUAL MEAN					2,791	2003
LOWEST ANNUAL MEAN					789	1981
HIGHEST DAILY MEAN	30,600	Feb 23	25,100	Nov 20	67,500	Nov 5, 1985
LOWEST DAILY MEAN	538	Jan 24	439	Sep 5	180	Jan 5, 1981
ANNUAL SEVEN-DAY MINIMUM	568	Sep 12	463	Sep 1	202	Sep 28, 1981
MAXIMUM PEAK FLOW			43,700	Sep 29	a87,500	Nov 5, 1985
MAXIMUM PEAK STAGE			21.69	Sep 29	a30.22	Nov 5, 1985
INSTANTANEOUS LOW FLOW			437	bSep 5	c,d133	Jan 6, 1981
ANNUAL RUNOFF (CFSM)	2.23		1.62		1.24	
ANNUAL RUNOFF (INCHES)	30.23		22.11		16.83	
10 PERCENT EXCEEDS	7,070		3,740		3,660	
50 PERCENT EXCEEDS	1,960		1,460		840	
90 PERCENT EXCEEDS	660		654		396	

a Prior to regulation, 1925-79, maximum peak flow, 66,600 ft^3/s, Mar. 18, 1936, gage height, 27.01 ft.
b Also Sept. 6, 7, 2004.
c Prior to regulation, 1925-79, instantaneous low flow, 148 ft^3/s, Sept. 7, 1966.
d Result of freezeup.
e Estimated.



02017500 JOHNS CREEK AT NEW CASTLE, VA

LOCATION.--Lat 37°30'22", long 80°06'24", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to Jun. 7, 1937, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Oct. 5-7, Feb. 10-13, and July 11, 13-16, and periods with ice effect, Jan. 22 and Jan. 24 to Feb. 2, which are fair. Maximum discharge, 8,000 ft^3/s, from rating curve extended above 3,200 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,100 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	2030	3,830	9.85	1330	3,610	9.69
Apr 13	2200	2,490	8.75	1630	*6,810	*12.87

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	34	150	120	e66	118	136	186	220	31	19	15
2	32	33	133	142	e68	113	132	173	157	30	32	13
3	31	33	119	215	70	109	125	161	122	29	36	13
4	28	32	113	220	78	105	122	134	140	33	29	13
5	e27	39	119	226	85	102	116	117	464	28	25	13
6	e26	233	112	237	546	121	108	103	318	26	29	13
7	e25	272	101	212	864	126	103	91	240	24	23	17
8	24	180	95	193	508	149	101	82	187	22	20	1,070
9	24	138	96	185	402	145	96	76	152	22	18	447
10	25	110	221	166	e340	145	87	69	123	21	16	261
11	25	93	788	143	e330	140	84	63	102	20	15	189
12	24	86	483	133	e305	134	283	59	86	21	15	139
13	23	121	377	124	e295	124	1,360	57	76	e24	22	96
14	24	121	334	112	303	115	1,170	60	70	e21	22	65
15	40	113	278	107	272	109	666	70	65	e19	19	47
16	39	108	241	96	237	165	517	67	85	e18	17	39
17	35	99	310	89	209	272	427	96	95	17	15	575
18	32	90	306	124	192	236	359	164	78	17	15	805
19	31	1,790	259	168	187	224	304	105	72	17	14	464
20	30	1,090	218	156	225	202	263	88	63	16	14	323
21	29	615	182	150	360	193	231	75	54	15	15	250
22	28	484	165	e140	318	173	191	68	49	16	16	198
23	27	403	172	126	265	154	165	111	45	22	14	151
24	27	355	221	e110	236	138	146	97	45	19	14	108
25	26	300	242	e94	210	125	129	79	42	18	14	79
26	26	247	219	e85	184	113	233	66	61	17	13	63
27	33	204	198	e92	163	105	330	66	54	22	13	57
28	38	184	178	e84	144	98	270	68	43	21	14	4,060
29	38	191	160	e80	128	90	235	70	38	19	13	1,720
30	37	166	150	e72	---	91	206	63	34	20	14	843
31	35	---	133	e64	---	116	---	255	---	22	15	---
TOTAL	922	7,964	6,873	4,265	7,590	4,350	8,695	3,039	3,380	667	570	12,146
MEAN	29.7	265	222	138	262	140	290	98.0	113	21.5	18.4	405
MAX	40	1,790	788	237	864	272	1,360	255	464	33	36	4,060
MIN	23	32	95	64	66	90	84	57	34	15	13	13
CFSM	0.29	2.55	2.13	1.32	2.52	1.35	2.79	0.94	1.08	0.21	0.18	3.89
IN.	0.33	2.85	2.46	1.53	2.71	1.56	3.11	1.09	1.21	0.24	0.20	4.34

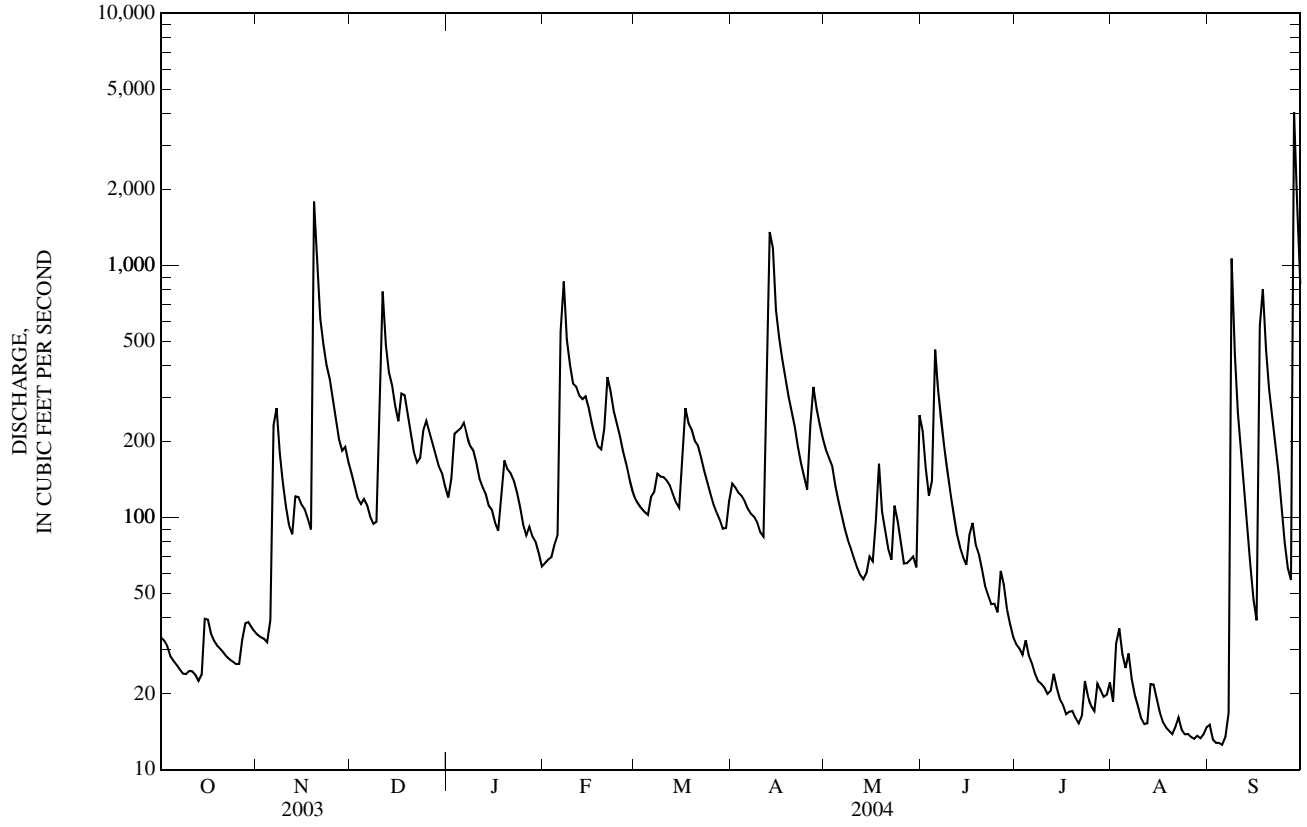
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1927 - 2004, BY WATER YEAR (WY)

MEAN	55.0	89.3	132	183	224	270	224	164	93.0	41.8	42.2	44.3
MAX	396	445	514	546	542	730	820	448	500	291	364	405
(WY)	(1930)	(1986)	(1949)	(1996)	(1998)	(1955)	(1987)	(2003)	(2003)	(1941)	(1940)	(2004)
MIN	9.81	12.3	15.7	16.2	18.0	51.9	47.8	33.5	14.3	8.90	9.04	8.99
(WY)	(1992)	(2002)	(1940)	(1956)	(1934)	(1988)	(1995)	(1930)	(2002)	(1930)	(2002)	(2002)

02017500 JOHNS CREEK AT NEW CASTLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1927 - 2004	
ANNUAL TOTAL	90,986		60,461			
ANNUAL MEAN	249		165		130	
HIGHEST ANNUAL MEAN					246	2003
LOWEST ANNUAL MEAN					51.1	2002
HIGHEST DAILY MEAN	3,380	Feb 22	4,060	Sep 28	6,040	Jun 21, 1972
LOWEST DAILY MEAN	23	aSep 12	13	bAug 26	5.2	cSep 12, 2002
ANNUAL SEVEN-DAY MINIMUM	24	Oct 8	14	dAug 23	5.6	Sep 8, 2002
MAXIMUM PEAK FLOW			6,810	Sep 28	8,000	Jan 23, 1935
MAXIMUM PEAK STAGE			12.87	Sep 28	12.87	Sep 28, 2004
INSTANTANEOUS LOW FLOW			12	fSep 5	5.1	gSep 11, 2002
ANNUAL RUNOFF (CFSM)	2.40		1.59		1.25	
ANNUAL RUNOFF (INCHES)	32.54		21.63		16.95	
10 PERCENT EXCEEDS	513		312		301	
50 PERCENT EXCEEDS	146		103		59	
90 PERCENT EXCEEDS	30		19		13	

a Also Sept. 17 and Oct. 13, 2003.
b Also Aug. 27, 29, and Sept. 2-6, 2004.
c Also Sept. 13, 2002.
d Also Aug. 24 to Sept. 1, 2004.
e Estimated.
f Also Sept. 6, 2004.
g Also Sept. 12, 2002.



02018000 CRAIG CREEK AT PARR, VA

LOCATION.--Lat 37°39'57", long 79°54'41", NAD83, 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 mi^2.

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 NGVD of 1929 (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 with ice effect, Jan. 29 to Feb. 2, which is fair. Maximum discharge, 58,500 ft^3/s, from rating curve extended above 11,000 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,200 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 20	0215	7,750	11.68	0315	9,550	12.85
Feb 7	0715	4,850	9.51	0315	*23,500	*19.87
Apr 14	0615	5,860	10.32			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	228	133	439	356	e210	352	300	459	461	141	98	44
2	197	127	406	339	e215	334	315	441	321	131	117	45
3	176	123	390	385	223	323	315	429	255	400	150	44
4	160	118	365	437	240	311	302	389	219	239	147	42
5	148	119	370	440	259	301	290	349	611	188	119	42
6	138	879	366	476	686	299	275	320	723	160	111	42
7	130	1,690	352	467	3,750	321	261	293	518	138	115	46
8	124	932	334	444	1,870	330	255	265	406	124	94	2,150
9	118	621	326	430	1,250	344	249	245	347	114	83	4,450
10	116	472	361	410	1,010	334	238	228	303	106	75	1,090
11	114	394	2,230	371	944	327	226	213	254	101	68	619
12	111	353	1,710	340	849	314	288	203	224	100	66	443
13	106	426	1,140	329	800	303	2,680	192	198	104	72	367
14	102	441	934	315	834	288	4,500	260	182	98	83	300
15	107	409	782	300	798	275	2,100	290	173	93	77	245
16	131	383	695	287	709	288	1,410	235	254	82	70	206
17	138	358	699	274	614	543	1,080	207	744	76	64	208
18	127	329	981	273	557	616	869	246	460	79	59	3,140
19	119	2,860	805	364	519	564	721	268	330	90	56	1,590
20	113	5,230	664	387	547	503	624	219	267	103	55	912
21	109	2,050	551	349	758	468	601	199	226	87	53	632
22	105	1,350	480	360	934	438	523	183	197	81	54	482
23	103	1,010	467	350	738	393	461	191	181	88	53	396
24	100	823	528	319	626	353	417	201	173	97	51	341
25	100	717	615	299	557	328	385	186	168	86	50	285
26	98	590	574	259	490	306	416	170	168	78	47	240
27	106	505	511	275	441	288	724	163	234	75	47	215
28	121	457	461	270	404	276	649	170	200	86	55	4,480
29	142	504	419	e250	378	264	566	168	173	80	45	13,300
30	141	479	399	e240	---	252	500	163	155	76	46	2,690
31	139	---	385	e230	---	264	---	200	---	78	45	---
TOTAL	3,967	24,882	19,739	10,625	22,210	10,900	22,540	7,745	9,125	3,579	2,325	39,086
MEAN	128	829	637	343	766	352	751	250	304	115	75.0	1,303
MAX	228	5,230	2,230	476	3,750	616	4,500	459	744	400	150	13,300
MIN	98	118	326	230	210	252	226	163	155	75	45	42
CFSM	0.39	2.52	1.94	1.04	2.33	1.07	2.28	0.76	0.92	0.35	0.23	3.96
IN.	0.45	2.81	2.23	1.20	2.51	1.23	2.55	0.88	1.03	0.40	0.26	4.42

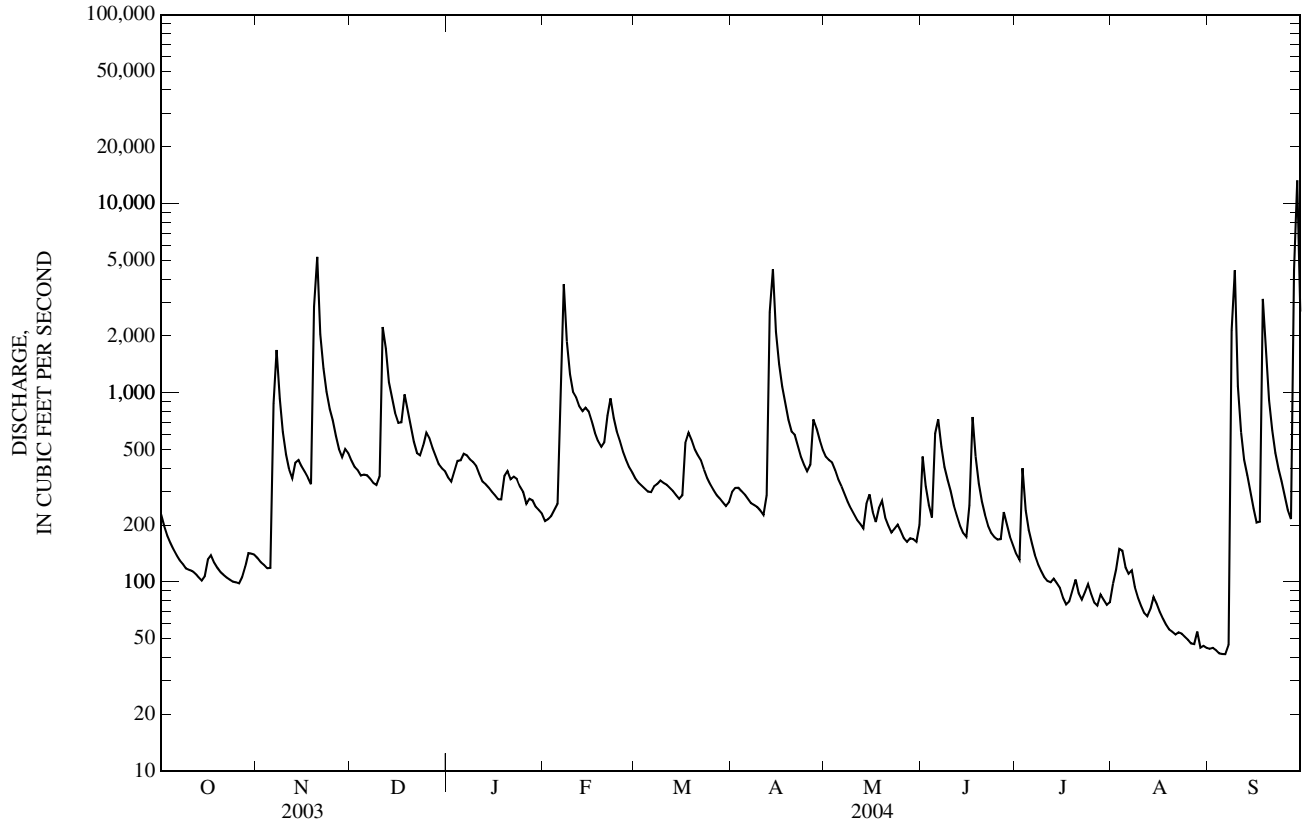
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 2004, BY WATER YEAR (WY)

MEAN	184	285	388	543	659	777	655	468	281	140	157	157
MAX	1,093	2,112	1,519	1,642	1,757	2,116	2,427	1,430	1,689	979	1,290	1,303
(WY)	(1938)	(1986)	(1949)	(1937)	(1998)	(1993)	(1987)	(2003)	(2003)	(1941)	(1940)	(2004)
MIN	34.9	41.0	48.9	51.2	55.6	141	143	93.2	51.4	33.5	33.9	34.1
(WY)	(1931)	(2002)	(1966)	(1956)	(1934)	(1988)	(1995)	(1930)	(2002)	(1966)	(2002)	(1968)

02018000 CRAIG CREEK AT PARR, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1925 - 2004	
ANNUAL TOTAL	287,449		176,723			
ANNUAL MEAN	788		483		391	
HIGHEST ANNUAL MEAN					785	2003
LOWEST ANNUAL MEAN					140	2002
HIGHEST DAILY MEAN	12,500	Feb 23	13,300	Sep 29	21,000	Nov 4, 1985
LOWEST DAILY MEAN	73	aSep 17	42	bSep 4	23	cSep 11, 2002
ANNUAL SEVEN-DAY MINIMUM	77	Sep 12	43	Aug 31	24	Sep 8, 2002
MAXIMUM PEAK FLOW			23,500	Sep 29	58,500	Nov 4, 1985
MAXIMUM PEAK STAGE			19.87	Sep 29	d24.76	Nov 4, 1985
INSTANTANEOUS LOW FLOW			41	fSep 5	g20	hDec 21, 1980
ANNUAL RUNOFF (CFSM)	2.39		1.47		1.19	
ANNUAL RUNOFF (INCHES)	32.50		19.98		16.14	
10 PERCENT EXCEEDS	1,730		826		869	
50 PERCENT EXCEEDS	434		292		182	
90 PERCENT EXCEEDS	118		82		49	

a Also Sept. 18, 2003.
b Also Sept. 5, 6, 2004.
c Also Sept. 12-14, 2002.
d From floodmarks.
e Estimated.
f Also Sept. 6, 2004.
g Result of freezeup.
h Also probably occurred Dec. 25, 1980, and Jan. 4, 1981.



02018500 CATAWBA CREEK NEAR CATAWBA, VA

LOCATION.--Lat 37°28'05", long 80°00'19", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to Aug. 1, 1953, nonrecording gage at site 80 ft downstream at same datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 10, 11, 25, 26, and Jan. 28 to Feb. 1, and periods of no gage-height record, Feb.24, May 26, 27, and Sept. 17, 18, 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. Statistics of monthly mean data and summary statistics for water years 1944-1952 (unregulated flow) are available in previous data books, water years 1991-1998. Maximum discharge, 21,200 ft^3/s, from rating curve extended above 1,700 ft^3/s on basis of slope-area measurements at gage heights 10.35 ft and 19.19 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 August 1940 reached a stage of 13.26 ft, from information by observer.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	9.1	34	31	e17	36	29	33	15	16	7.8	5.0
2	24	8.8	32	33	18	35	28	36	12	15	11	4.6
3	22	9.2	29	33	21	34	28	37	10	14	8.9	4.4
4	21	9.2	29	31	26	32	26	32	20	18	7.4	4.4
5	19	12	31	33	31	31	25	30	55	23	8.0	4.2
6	16	26	30	35	241	33	25	27	30	16	7.9	5.8
7	14	28	28	32	304	32	24	26	24	13	7.1	10
8	13	22	28	32	144	31	24	24	19	9.2	6.6	1,110
9	14	18	30	32	104	30	24	23	22	9.1	7.0	208
10	15	16	101	e29	93	29	23	22	21	8.7	6.7	85
11	14	14	267	e26	89	28	23	21	19	9.3	6.6	74
12	13	17	135	28	79	26	75	21	14	9.5	8.4	59
13	14	15	92	28	75	25	458	19	13	8.8	9.6	50
14	15	16	81	26	75	25	347	18	14	8.3	8.3	40
15	21	15	73	25	70	24	170	18	17	8.8	7.3	36
16	16	15	72	24	64	33	116	18	85	7.2	7.1	32
17	15	15	91	23	57	41	90	18	91	7.9	6.6	e182
18	14	16	88	27	52	39	73	17	51	9.3	8.4	e242
19	13	450	74	28	51	37	62	16	40	8.9	7.3	113
20	13	206	62	27	56	35	57	15	33	7.5	6.7	75
21	12	106	53	26	86	34	56	15	28	7.2	7.0	59
22	9.8	75	50	25	80	33	50	16	24	8.8	6.6	47
23	5.1	59	47	24	65	31	46	26	22	9.3	6.0	35
24	9.8	52	53	23	e57	29	42	18	21	8.1	5.1	21
25	9.6	46	54	e22	53	28	39	16	20	7.3	4.9	20
26	9.2	40	49	e21	48	27	43	e15	36	8.2	4.7	19
27	11	34	44	22	44	27	42	e15	24	8.5	4.5	19
28	10	38	40	e21	41	26	38	15	20	8.8	6.0	2,630
29	11	42	38	e19	38	25	34	14	18	8.1	6.7	486
30	10	37	37	e18	---	26	32	12	17	7.6	5.5	196
31	9.3	---	33	e16	---	30	---	16	---	7.3	6.0	---
TOTAL	433.8	1,466.3	1,905	820	2,179	952	2,149	649	835	316.7	217.7	5,876.4
MEAN	14.0	48.9	61.5	26.5	75.1	30.7	71.6	20.9	27.8	10.2	7.02	196
MAX	24	450	267	35	304	41	458	37	91	23	11	2,630
MIN	5.1	8.8	28	16	17	24	23	12	10	7.2	4.5	4.2
(†)	56.3	236	0	0	0	0	0	0	0	0	1.20	293
MEAN‡	15.8	56.7	61.5	26.5	75.1	30.7	71.6	20.9	27.8	10.2	7.06	206
CFSM‡	.46	1.65	1.79	.77	2.19	.90	2.09	.61	.81	.30	.21	6.01
IN.‡	.53	1.85	2.07	.89	2.36	1.03	2.33	.70	.90	.34	.24	6.69

CAL YR 2003 MEAN‡ 81.5 CFSM‡ 2.38 IN.‡ 32.30
WTR YR 2004 MEAN‡ 50.2 CFSM‡ 1.46 IN.‡ 19.87

† Total diversion, equivalent in cubic feet per second, per month; provided by City of Roanoke.
‡ Adjusted for diversion.

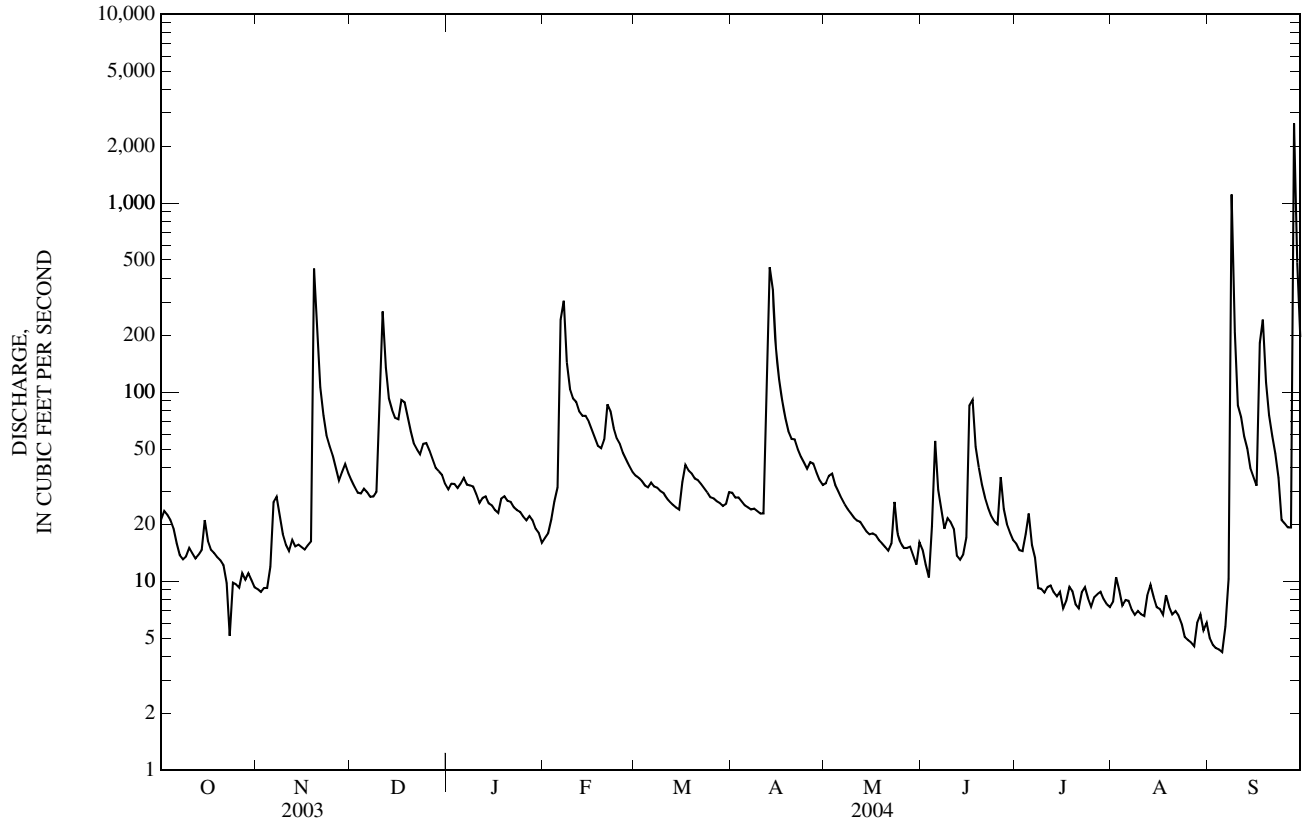
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 2004, BY WATER YEAR (WY)

MEAN	13.8	29.5	22.2	34.7	53.6	75.3	71.2	42.2	33.5	12.6	11.6	22.9
MAX	82.2	390	105	131	221	278	337	187	171	71.0	75.5	196
(WY)	(1990)	(1986)	(1997)	(1996)	(1998)	(1993)	(1987)	(2003)	(2003)	(2003)	(1985)	(2004)
MIN	3.41	2.01	3.16	3.45	2.07	4.51	3.79	4.88	2.29	2.10	1.06	1.53
(WY)	(1999)	(1982)	(1982)	(1981)	(2002)	(2002)	(2002)	(1999)	(1999)	(2002)	(2002)	(2002)

02018500 CATAWBA CREEK NEAR CATAWBA, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1975 - 2004	
ANNUAL TOTAL	28,218.0		17,799.9			
ANNUAL MEAN	77.3		48.6		35.1	
HIGHEST ANNUAL MEAN					70.2	2003
LOWEST ANNUAL MEAN					3.95	2002
HIGHEST DAILY MEAN	1,230	Feb 22	2,630	Sep 28	7,400	Nov 4, 1985
LOWEST DAILY MEAN	a4.2	Feb 9	4.2	Sep 5	0.25	Sep 13, 2002
ANNUAL SEVEN-DAY MINIMUM	4.7	bFeb 7	4.9	Aug 30	0.36	Sep 8, 2002
MAXIMUM PEAK FLOW			7,640	Sep 28	21,200	Nov 4, 1985
MAXIMUM PEAK STAGE			10.30	Sep 28	c19.19	Nov 4, 1985
INSTANTANEOUS LOW FLOW			2.1	Jan 31	0.24	dSep 12, 2002
10 PERCENT EXCEEDS	166		75		70	
50 PERCENT EXCEEDS	39		24		11	
90 PERCENT EXCEEDS	9.2		7.9		3.9	

a Result of freezup.
b Also Feb. 8, 2003.
c From high-water mark.
d Also Sept. 13, 14, 2002.
e Estimated.



02019500 JAMES RIVER AT BUCHANAN, VA

LOCATION.--Lat 37°31'50", long 79°40'44", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to July 1, 1927, nonrecording gage at same site and datum.

REMARKS.--Records good except for period with ice effect, Jan. 28-31, 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. Statistics of monthly mean data and summary statistics for water years 1898 - 1979 (unregulated flow) are available in previous data books, water years 1991 - 1998. National Weather Service gage-height telemeter at station. Maximum discharge, 179,000 ft^3/s, from rating curve extended above 110,000 ft^3/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 November 1877 reached a stage of 34.9 ft, from floodmark, discharge, about 142,000 ft^3/s, from rating curve extended above 110,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,640	1,430	3,850	2,490	1,200	2,340	2,060	2,650	7,710	980	874	682
2	2,150	1,290	3,480	2,350	1,260	2,270	2,140	2,650	4,410	972	1,020	688
3	1,850	1,260	2,920	2,600	1,380	2,500	2,070	2,710	3,020	1,170	1,180	628
4	1,580	1,230	2,550	2,980	1,490	2,990	1,950	3,030	2,400	1,420	1,180	616
5	1,470	1,240	2,550	2,990	1,660	3,050	1,870	3,010	3,110	1,250	1,050	608
6	1,370	4,130	2,630	3,390	4,100	3,110	1,780	2,500	4,490	1,170	1,040	608
7	1,280	6,940	2,650	3,120	18,300	3,640	1,710	2,270	4,130	1,040	1,080	628
8	1,200	4,930	2,530	2,640	13,200	3,800	1,670	2,050	3,280	947	943	2,240
9	1,140	3,520	2,300	2,520	9,170	3,600	1,640	1,850	2,590	902	857	19,100
10	1,110	2,750	2,580	2,500	6,360	3,350	1,650	1,760	2,380	973	809	6,640
11	1,080	2,330	13,400	2,400	5,470	2,950	1,680	1,680	2,180	996	782	3,380
12	1,030	2,160	15,400	2,190	4,720	2,550	1,930	1,740	2,110	1,090	778	2,360
13	992	8,240	8,850	2,080	4,280	2,340	11,000	1,620	1,980	1,460	1,000	1,860
14	972	10,900	6,430	1,990	4,340	2,210	24,900	1,590	1,870	1,230	1,040	1,570
15	1,090	8,970	5,430	1,890	4,300	2,110	17,000	1,690	1,810	996	964	1,350
16	1,530	5,690	4,960	1,790	3,860	2,220	12,000	1,570	2,180	891	864	1,210
17	1,460	3,620	4,460	1,670	3,440	3,320	8,430	1,650	2,780	846	812	1,380
18	1,290	2,960	5,470	1,640	3,160	3,990	5,640	1,530	2,520	854	779	9,870
19	1,200	12,100	5,100	1,880	2,980	3,670	4,350	2,510	2,030	905	762	8,240
20	1,150	34,800	4,210	1,980	3,010	3,660	3,870	3,120	1,820	895	742	4,370
21	1,090	17,700	3,540	1,820	3,800	3,580	3,330	2,820	1,550	884	750	2,990
22	1,050	13,300	3,130	1,720	6,040	3,410	2,890	4,950	1,410	841	751	2,320
23	1,010	10,100	2,980	1,750	5,200	2,900	2,620	3,760	1,290	877	735	1,920
24	984	7,590	3,210	1,690	4,500	2,530	2,420	2,920	1,270	872	729	1,640
25	967	5,200	4,530	1,640	4,110	2,370	2,230	2,340	1,220	873	706	1,430
26	947	3,850	4,970	1,480	3,780	2,170	2,310	1,940	1,230	816	686	1,290
27	1,010	3,260	4,440	1,480	3,490	2,010	4,220	2,710	1,200	815	674	1,190
28	1,100	3,000	3,980	e1,450	3,040	1,950	5,750	3,180	1,180	1,300	681	13,800
29	1,290	3,870	3,330	e1,350	2,580	1,870	5,430	4,880	1,090	992	762	48,500
30	1,510	4,290	3,000	e1,350	---	1,800	3,750	4,850	1,020	889	729	12,900
31	1,530	---	2,810	e1,250	---	1,870	---	5,980	---	863	714	---
TOTAL	40,072	192,650	141,670	64,070	134,220	86,130	144,290	83,510	71,260	31,009	26,473	156,008
MEAN	1,293	6,422	4,570	2,067	4,628	2,778	4,810	2,694	2,375	1,000	854	5,200
MAX	2,640	34,800	15,400	3,390	18,300	3,990	24,900	5,980	7,710	1,460	1,180	48,500
MIN	947	1,230	2,300	1,250	1,200	1,800	1,640	1,530	1,020	815	674	608
(†)	+1,160	-151	-403	+151	+101	-252	-101	+756	-1,916	-5,294	-5,999	+10,688
MEAN‡	1,330	6,417	4,557	2,072	4,632	2,770	4,806	2,718	2,311	830	660	5,557
CFSM‡	.64	3.09	2.20	1.00	2.23	1.33	2.32	1.31	1.11	.40	.32	2.68
IN.‡	.74	3.45	2.53	1.15	2.41	1.54	2.58	1.51	1.24	.46	.37	2.99

CAL YR 2003 MEAN‡ 4,764 CFSM‡ 2.30 IN.‡ 31.17
WTR YR 2004 MEAN‡ 3,197 CFSM‡ 1.54 IN.‡ 20.98

† 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.

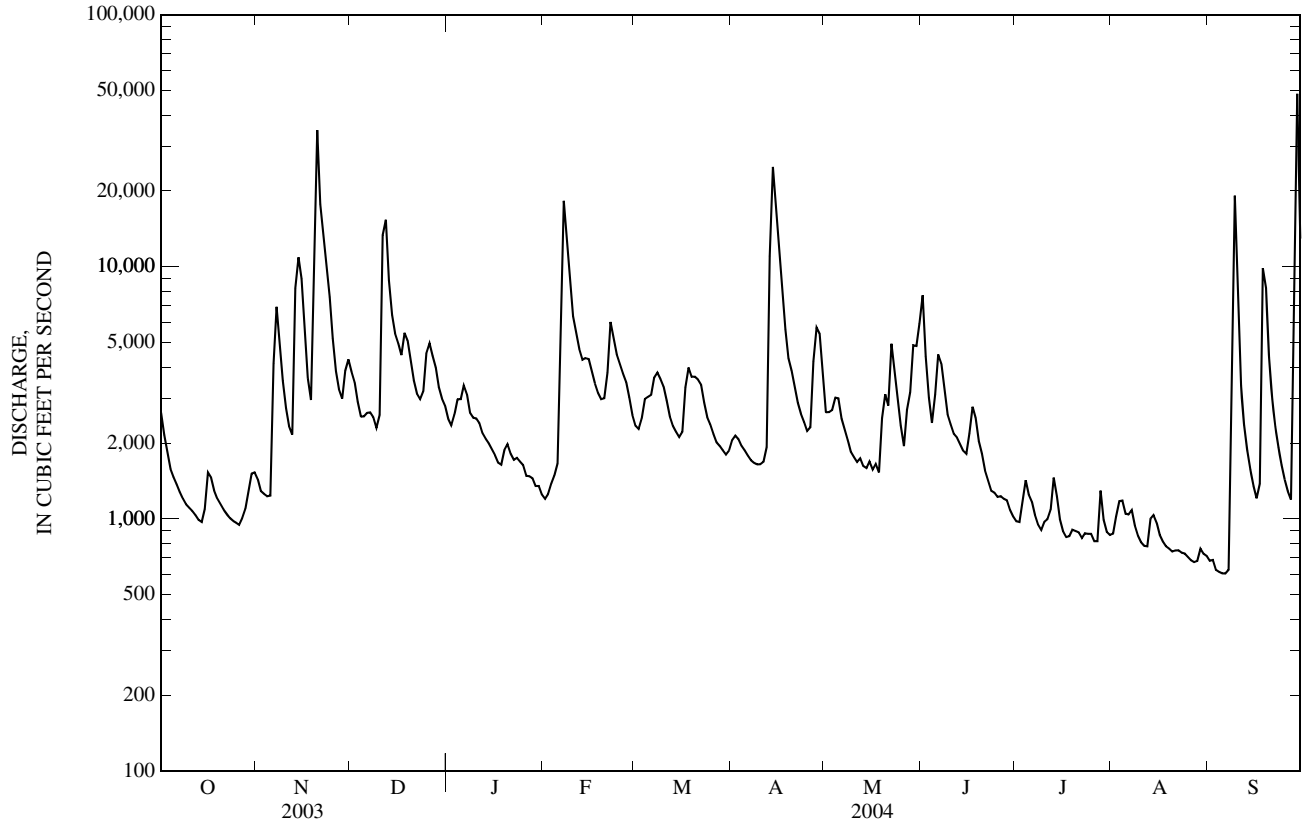
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2004, BY WATER YEAR (WY)

MEAN	1,159	2,028	2,284	3,196	3,998	4,928	4,515	3,309	2,276	1,097	1,038	1,354
MAX	5,679	10,190	6,450	10,310	11,270	12,790	16,170	8,908	8,649	2,905	3,834	5,200
(WY)	(1990)	(1986)	(1997)	(1996)	(1998)	(1993)	(1987)	(1989)	(2003)	(2003)	(1984)	(2004)
MIN	419	452	453	396	604	922	1,081	1,457	626	553	338	361
(WY)	(1981)	(2002)	(1981)	(1981)	(2002)	(1981)	(1995)	(2000)	(1999)	(1999)	(1981)	(1981)

02019500 JAMES RIVER AT BUCHANAN, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1980 - 2004	
ANNUAL TOTAL	1,739,017		1,171,362			
ANNUAL MEAN	4,764		3,200		2,589	
HIGHEST ANNUAL MEAN					4,432	2003
LOWEST ANNUAL MEAN					1,092	1981
HIGHEST DAILY MEAN	64,800	Feb 23	48,500	Sep 29	102,000	Nov 5, 1985
LOWEST DAILY MEAN	834	Jan 25	608	aSep 5	257	Oct 1, 1981
ANNUAL SEVEN-DAY MINIMUM	877	Jan 28	637	Sep 1	268	Sep 29, 1981
MAXIMUM PEAK FLOW			61,200	Sep 29	b179,000	Nov 5, 1985
MAXIMUM PEAK STAGE			25.66	Sep 29	b,c38.84	Nov 5, 1985
INSTANTANEOUS LOW FLOW			605	dSep 4	f,g230	hJan 11, 1981
ANNUAL RUNOFF (CFSM)	2.30		1.54		1.25	
ANNUAL RUNOFF (INCHES)	31.18		21.00		16.95	
10 PERCENT EXCEEDS	10,900		5,520		5,610	
50 PERCENT EXCEEDS	2,990		2,140		1,280	
90 PERCENT EXCEEDS	989		876		541	

a Also Sept. 6, 2004.
b Prior to regulation, 1898-1979, maximum peak flow, 115,000 ft^3/s, Mar. 27, 1913, gage height, 31.00 ft, from floodmarks.
c From floodmarks.
d Also Sept. 5, 6, 2004.
e Estimated.
f Prior to regulation, 1898-1979, instantaneous low flow, 202 ft^3/s, Sept. 8, 1966.
g Result of freezeup.
h Also Jan. 12, 1981.



02020500 CALFPASTURE RIVER ABOVE MILL CREEK, AT GOSHEN, VA

LOCATION.--Lat 37°59'16", long 79°29'37", NAD83, Rockbridge County, Hydrologic Unit 02080202, on left bank 20 ft upstream from bridge on State Highway 42, at Goshen and 400 ft upstream from Mill Creek.

DRAINAGE AREA.--144 mi^2.

PERIOD OF RECORD.--October 1938 to September 1996. October 1998 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,382.84 ft NGVD of 1929. Prior to Oct. 1, 1998, at datum 2.0 ft higher.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Oct. 15 to Nov. 26, Nov. 28 to Dec. 2, Dec. 5, 7, 9, and Sept. 14-20, and periods with ice effect, Jan. 9, 10, and Jan. 21 to Feb. 2, which are fair. Virginia Department of Emergency Services gage-height radio transmitter at station. Maximum discharge, 56,300 ft^3/s, from rating curve extended above 9,200 ft^3/s on basis of slope-area measurement at gage heights 12.78 ft and 20.23 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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 11	0800	3,380	7.56	0430	*13,800	*12.87
Apr 14	0130	3,180	7.38	0015	6,630	9.96

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	163	e84	e260	153	e46	139	107	155	154	22	22	13
2	135	e74	e235	145	e50	142	102	149	116	116	20	12
3	113	e67	215	141	50	177	102	159	92	81	19	12
4	99	e62	184	135	47	194	101	168	80	56	17	11
5	90	e70	e180	138	68	185	96	164	97	70	23	11
6	81	e320	e162	138	366	238	90	149	94	43	33	10
7	73	e270	e145	120	1,530	385	85	128	79	35	19	11
8	66	e190	126	118	745	341	83	110	69	31	17	969
9	60	e145	e117	e100	468	263	81	96	89	27	15	5,220
10	56	e115	252	e90	371	215	76	84	81	41	14	923
11	53	e97	2,420	99	350	180	71	75	67	73	13	416
12	49	e150	1,140	105	311	159	132	72	61	538	20	238
13	47	e1,750	656	92	300	141	1,410	68	55	265	75	158
14	48	e670	485	85	314	124	2,120	65	51	137	52	e114
15	e138	e400	367	80	287	112	923	61	61	91	40	e88
16	e180	e285	290	77	243	156	544	60	76	67	33	e72
17	e130	e220	312	70	205	295	379	158	58	55	28	e76
18	e110	e165	396	69	183	292	286	106	51	53	25	e221
19	e98	e1,200	326	67	175	276	227	117	61	81	22	e276
20	e90	e3,000	259	65	206	237	191	92	66	77	20	e178
21	e80	e900	208	e60	449	226	167	139	55	64	19	124
22	e73	e660	180	e57	533	201	144	254	48	52	21	93
23	e69	e400	191	e54	385	171	128	117	44	46	18	72
24	e65	e300	353	e60	307	149	115	94	43	41	17	58
25	e60	e280	658	e55	260	133	101	77	37	36	15	48
26	e54	e230	486	e51	221	119	119	76	35	33	14	41
27	e66	193	355	e60	192	110	205	141	32	31	13	36
28	e83	e200	278	e54	168	103	248	445	28	29	19	1,630
29	e110	e340	229	e52	149	93	209	475	25	26	15	2,800
30	e100	e310	210	e50	---	88	176	258	23	24	14	809
31	e92	---	180	e48	---	99	---	199	---	22	13	---
TOTAL	2,731	13,147	11,855	2,688	8,979	5,743	8,818	4,511	1,928	2,363	705	14,740
MEAN	88.1	438	382	86.7	310	185	294	146	64.3	76.2	22.7	491
MAX	180	3,000	2,420	153	1,530	385	2,120	475	154	538	75	5,220
MIN	47	62	117	48	46	88	71	60	23	22	13	10
CFSM	0.61	3.04	2.66	0.60	2.15	1.29	2.04	1.01	0.45	0.53	0.16	3.41
IN.	0.71	3.40	3.06	0.69	2.32	1.48	2.28	1.17	0.50	0.61	0.18	3.81

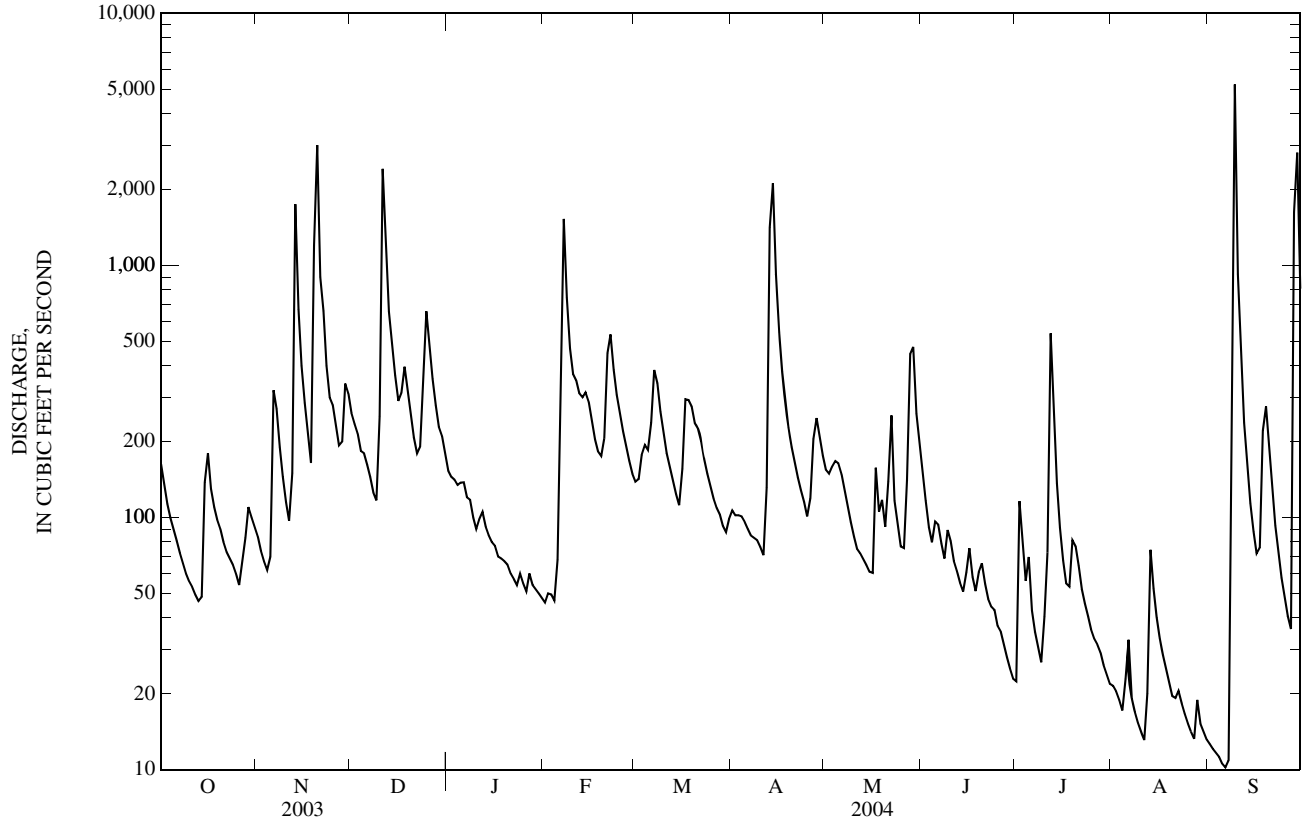
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1996, 1999 - 2004, BY WATER YEAR (WY)

MEAN	73.2	129	189	222	261	354	267	221	138	49.1	56.5	69.5
MAX	469	1,540	768	931	651	849	992	638	600	352	458	799
(WY)	(1977)	(1986)	(1974)	(1996)	(1994)	(1993)	(1987)	(1942)	(1982)	(1972)	(1940)	(1996)
MIN	3.90	5.52	8.38	7.82	22.4	50.9	47.3	29.0	10.2	3.77	2.73	2.08
(WY)	(1942)	(2002)	(1999)	(1981)	(2002)	(1981)	(1995)	(1977)	(1964)	(1966)	(1999)	(1970)

02020500 CALFPASTURE RIVER ABOVE MILL CREEK, AT GOSHEN, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1939 - 1996 1999 - 2004	
ANNUAL TOTAL	118,708		78,208			
ANNUAL MEAN	325		214		169	
HIGHEST ANNUAL MEAN					310	2003
LOWEST ANNUAL MEAN					64.1	2002
HIGHEST DAILY MEAN	3,640	Feb 23	5,220	Sep 9	21,900	Nov 5, 1985
LOWEST DAILY MEAN	26	aSep 2	10	Sep 6	b0.00	cSep 5, 1957
ANNUAL SEVEN-DAY MINIMUM	29	Sep 12	11	Sep 1	0.67	Sep 9, 2002
MAXIMUM PEAK FLOW			13,800	Sep 9	56,300	Nov 4, 1985
MAXIMUM PEAK STAGE			12.87	Sep 9	20.23	Nov 4, 1985
INSTANTANEOUS LOW FLOW			10	dSep 5	b0.00	cSep 5, 1957
ANNUAL RUNOFF (CFSM)	2.26		1.48		1.17	
ANNUAL RUNOFF (INCHES)	30.67		20.20		15.91	
10 PERCENT EXCEEDS	827		381		379	
50 PERCENT EXCEEDS	171		102		64	
90 PERCENT EXCEEDS	39		25		7.6	

a Also Sept. 17, 2003.
b Result of diversion.
c Also Sept. 6, 1957, and Sept. 28, 1959.
d Also Sept. 6, 7, 2004.
e Estimated.



02021500 MAURY RIVER AT ROCKBRIDGE BATHS, VA

LOCATION.--Lat 37°54'26", long 79°25'19", NAD83, 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 mi^2.

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 NGVD of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Records good except for period with ice effect, Jan. 22 to Feb. 1, which is poor. Since 1966, some regulation at times by Lake Merriweather on Little Calfpasture River. National Weather Service gage-height telemeter at station. Maximum discharge, 87,700 ft^3/s, from rating curve extended above 16,000 ft^3/s on basis of slope-area measurement 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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 13	0630	6,360	7.31	0215	6,400	7.36
Nov 19	2130	9,550	8.50	0630	*13,400	*9.54
Dec 11	0800	6,890	7.57	0100	10,600	8.81

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	461	160	750	448	e120	377	331	394	496	82	58	39
2	377	154	623	427	128	369	300	389	364	379	73	38
3	304	149	528	369	147	396	285	406	281	372	59	37
4	263	144	469	305	158	416	276	386	255	219	53	36
5	233	161	484	342	382	402	259	366	408	319	55	35
6	206	752	440	388	1,120	500	243	336	393	218	104	110
7	183	1,020	396	344	3,310	679	234	298	314	159	64	425
8	164	767	357	319	1,790	647	231	264	257	128	55	2,480
9	150	570	337	322	1,160	549	226	236	243	106	51	7,370
10	141	454	736	308	936	479	209	211	231	142	49	1,580
11	132	390	5,400	282	949	418	199	196	199	362	46	796
12	124	622	2,450	279	877	378	419	198	247	1,170	132	512
13	117	4,530	1,480	277	849	341	3,140	184	198	830	570	359
14	113	2,100	1,200	260	880	306	4,690	173	181	440	255	270
15	318	1,300	992	247	813	285	2,140	164	273	277	108	343
16	338	940	832	225	698	410	1,300	195	679	202	77	321
17	284	738	900	207	600	749	958	435	506	165	67	315
18	252	620	1,050	221	537	728	823	482	373	154	61	962
19	222	4,560	908	221	520	646	694	607	356	190	57	691
20	199	5,140	744	185	609	473	600	446	304	180	52	466
21	182	1,920	610	159	984	464	529	595	231	156	51	331
22	170	1,270	540	e150	1,110	483	453	1,660	190	132	54	254
23	159	1,030	573	e145	917	441	396	783	181	122	51	205
24	150	852	898	e140	780	399	353	510	179	113	47	170
25	138	767	1,340	e135	678	360	312	356	150	105	44	148
26	130	625	1,100	e125	585	327	377	308	139	98	41	132
27	154	615	892	e120	515	305	572	630	121	95	39	120
28	189	680	737	e125	454	287	594	779	107	91	48	3,860
29	182	800	630	e115	407	264	513	897	98	80	49	5,540
30	175	827	590	e120	---	250	438	593	88	69	44	1,700
31	167	---	521	e115	---	289	---	574	---	57	41	---
TOTAL	6,377	34,657	29,507	7,425	23,013	13,417	22,094	14,051	8,042	7,212	2,555	29,645
MEAN	206	1,155	952	240	794	433	736	453	268	233	82.4	988
MAX	461	5,140	5,400	448	3,310	749	4,690	1,660	679	1,170	570	7,370
MIN	113	144	337	115	120	250	199	164	88	57	39	35
CFSM	0.63	3.51	2.89	0.73	2.41	1.32	2.24	1.38	0.81	0.71	0.25	3.00
IN.	0.72	3.92	3.34	0.84	2.60	1.52	2.50	1.59	0.91	0.82	0.29	3.35

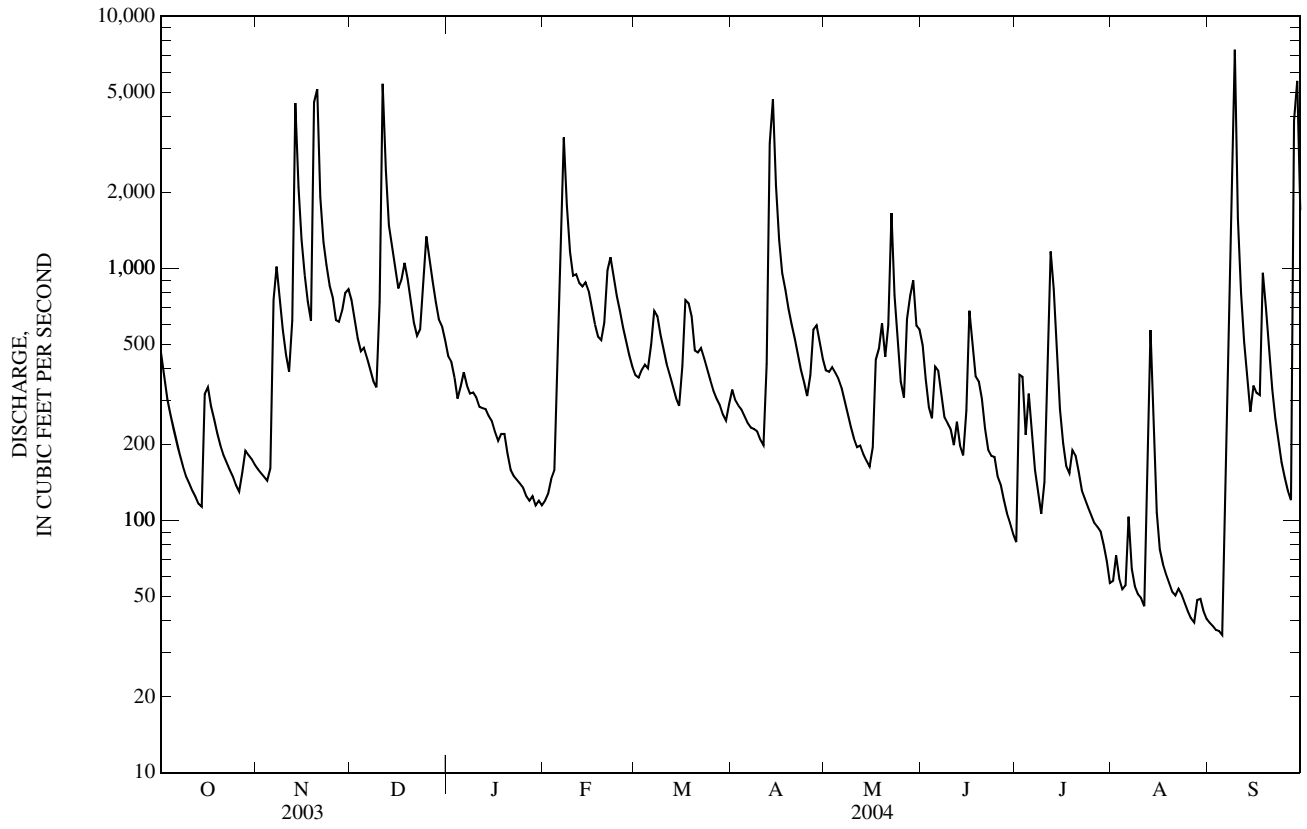
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2004, BY WATER YEAR (WY)

MEAN	187	281	407	535	614	832	626	472	280	121	134	151
MAX	1,254	2,689	1,450	1,895	1,530	2,017	2,245	1,463	1,374	807	1,016	1,388
(WY)	(1980)	(1986)	(1974)	(1998)	(1998)	(1936)	(1987)	(1989)	(1995)	(1972)	(1969)	(1996)
MIN	16.5	20.9	26.6	32.3	50.9	117	122	81.0	34.7	14.6	14.9	16.1
(WY)	(1931)	(2002)	(1966)	(1981)	(1934)	(1981)	(1995)	(1930)	(1964)	(1966)	(1964)	(1930)

02021500 MAURY RIVER AT ROCKBRIDGE BATHS, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1929 - 2004	
ANNUAL TOTAL	282,368		197,995			
ANNUAL MEAN	774		541		386	
HIGHEST ANNUAL MEAN					696	2003
LOWEST ANNUAL MEAN					132	2002
HIGHEST DAILY MEAN	8,430	Feb 23	7,370	Sep 9	41,500	Nov 5, 1985
LOWEST DAILY MEAN	55	aSep 13	35	Sep 5	7.1	Sep 10, 1966
ANNUAL SEVEN-DAY MINIMUM	65	Sep 9	39	Aug 30	8.2	Sep 7, 1966
MAXIMUM PEAK FLOW			13,400	Sep 9	87,700	Nov 5, 1985
MAXIMUM PEAK STAGE			9.54	Sep 9	b19.19	Nov 5, 1985
INSTANTANEOUS LOW FLOW			34	cSep 5	5.8	Sep 10, 1966
ANNUAL RUNOFF (CFSM)	2.35		1.64		1.17	
ANNUAL RUNOFF (INCHES)	31.93		22.39		15.92	
10 PERCENT EXCEEDS	1,800		959		900	
50 PERCENT EXCEEDS	490		324		155	
90 PERCENT EXCEEDS	95		90		30	

a Also Sept. 15, 2003.
b From floodmarks.
c Also Sept. 6, 2004.
e Estimated.



02022500 KERRS CREEK NEAR LEXINGTON, VA

LOCATION.--Lat 37°49'32", long 79°26'35", NAD83, 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 mi^2.

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 NGVD of 1929 (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 those for periods with ice effect, Jan. 10, 11, 22, 23 and Jan. 26 to Feb. 2, and periods of no gage-height record, Feb. 24, Aug. 4, 26, and Sept. 16, which are fair. Maximum discharge, 23,000 ft^3/s, from rating curve extended above 800 ft^3/s on basis of contracted-opening and slope-area measurements 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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 12	2230	696	5.70	1630	1,390	6.98
Nov 19	1200	6,240	10.68	1800	*8,420	*11.64
Dec 10	2145	2,530	8.32	1630	6,160	10.64
Feb 6	1715	967	6.26	1330	3,300	8.94

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	12	37	37	e16	32	27	33	86	23	13	9.1
2	28	12	34	38	e16	31	25	34	57	67	15	8.9
3	25	12	32	36	22	30	25	33	44	38	13	8.7
4	24	12	31	34	23	29	24	29	48	33	e13	8.5
5	22	21	34	37	25	29	23	27	117	27	16	8.4
6	21	107	31	37	363	34	23	26	67	23	16	9.1
7	20	78	29	34	254	32	23	25	52	22	13	11
8	19	44	28	33	131	31	22	24	43	20	12	812
9	18	33	29	33	96	29	22	23	38	19	12	195
10	18	29	357	e30	90	28	21	22	34	32	11	69
11	17	26	402	e27	90	27	21	22	47	28	11	41
12	17	116	145	29	76	26	110	25	49	66	54	30
13	16	204	96	28	74	25	436	21	34	25	54	24
14	18	87	86	26	72	24	294	22	33	21	22	21
15	24	59	72	26	62	24	157	21	681	19	18	19
16	17	47	66	24	54	36	102	26	324	18	15	e18
17	16	39	107	23	49	40	77	21	159	18	14	70
18	16	35	93	27	45	35	63	22	110	18	13	138
19	15	892	73	25	44	35	54	31	85	19	13	59
20	14	241	59	23	48	32	50	67	66	17	12	38
21	14	125	51	22	88	32	46	86	55	15	12	29
22	13	86	47	e21	64	30	41	121	48	15	12	24
23	13	65	48	e20	52	28	38	55	46	23	11	21
24	13	57	116	22	e47	27	35	40	41	23	11	19
25	13	48	88	20	44	26	33	32	36	16	11	18
26	13	42	66	e19	40	26	47	43	33	16	e9.9	16
27	17	38	56	e20	37	25	46	59	29	16	9.9	16
28	15	45	50	e19	34	25	39	48	27	15	9.9	1,130
29	14	46	46	e18	32	24	36	39	25	14	9.9	290
30	13	41	44	e18	---	24	34	33	24	14	9.9	122
31	13	---	39	e17	---	27	---	193	---	13	9.5	---
TOTAL	548	2,699	2,492	823	2,088	903	1,994	1,303	2,538	733	476.0	3,282.7
MEAN	17.7	90.0	80.4	26.5	72.0	29.1	66.5	42.0	84.6	23.6	15.4	109
MAX	32	892	402	38	363	40	436	193	681	67	54	1,130
MIN	13	12	28	17	16	24	21	21	24	13	9.5	8.4
CFSM	0.51	2.57	2.30	0.76	2.06	0.83	1.90	1.20	2.42	0.68	0.44	3.13
IN.	0.58	2.87	2.65	0.87	2.22	0.96	2.12	1.38	2.70	0.78	0.51	3.49

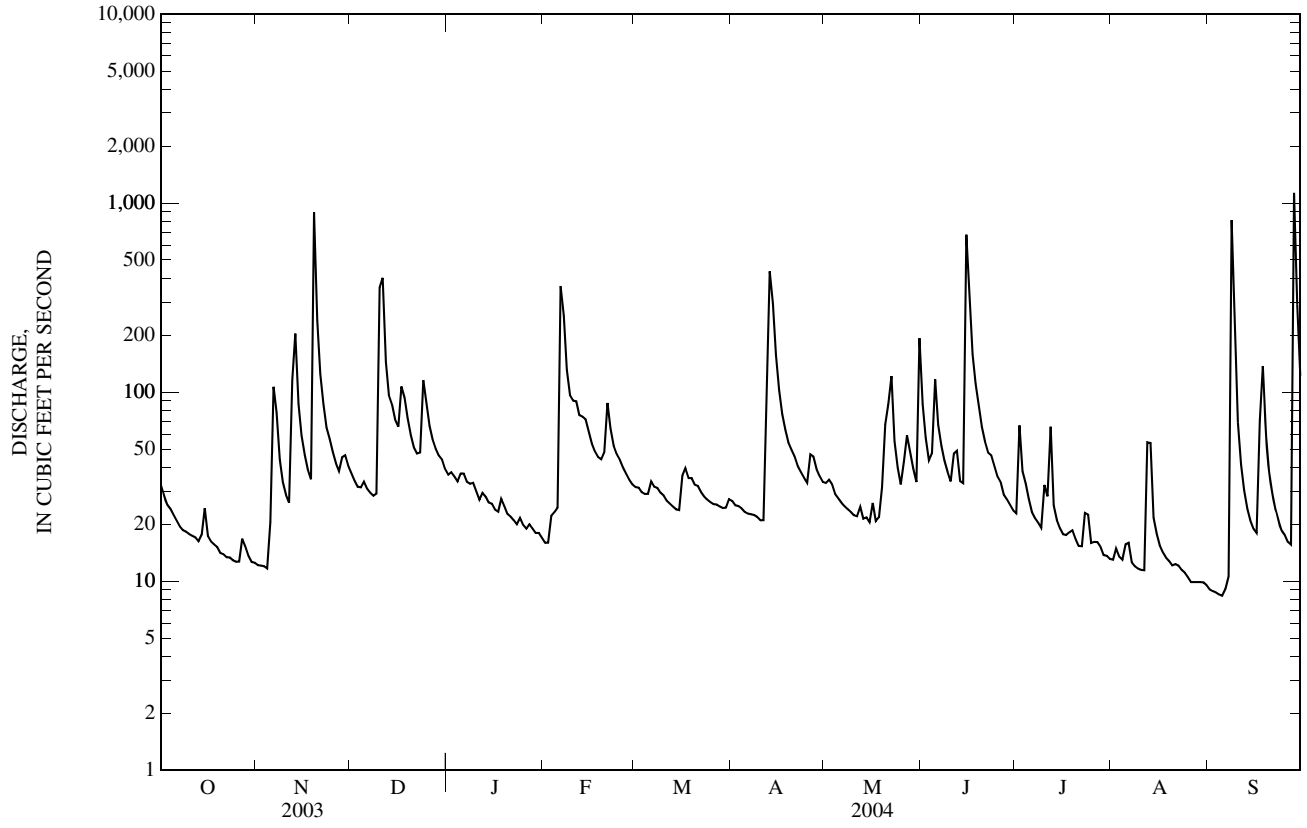
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1927 - 2004, BY WATER YEAR (WY)

MEAN	22.1	24.4	32.6	44.9	54.6	71.8	57.6	38.8	29.0	17.5	22.9	20.6
MAX	141	209	129	163	150	357	306	159	194	99.5	162	188
(WY)	(1938)	(1986)	(1949)	(1937)	(1998)	(1936)	(1987)	(1989)	(1995)	(1972)	(1969)	(1950)
MIN	5.24	6.34	5.88	5.15	5.46	11.6	10.3	12.0	6.42	5.56	4.11	4.36
(WY)	(1964)	(2002)	(1966)	(1966)	(2002)	(2002)	(1942)	(1956)	(2002)	(1966)	(2002)	(2002)

02022500 KERRS CREEK NEAR LEXINGTON, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1927 - 2004	
ANNUAL TOTAL	22,911.2		19,879.7			
ANNUAL MEAN	62.8		54.3		36.3	
HIGHEST ANNUAL MEAN					75.5	1936
LOWEST ANNUAL MEAN					10.4	2002
HIGHEST DAILY MEAN	1,330	Feb 22	1,130	Sep 28	e4,840	Mar 17, 1936
LOWEST DAILY MEAN	9.4	Feb 13	8.4	Sep 5	3.3	aOct 10, 2002
ANNUAL SEVEN-DAY MINIMUM	10	Feb 8	8.9	Aug 31	3.5	bSep 1, 2002
MAXIMUM PEAK FLOW			8,420	Jun 15	23,000	Sep 10, 1950
MAXIMUM PEAK STAGE			11.64	Jun 15	c15.44	Jun 28, 1995
INSTANTANEOUS LOW FLOW			8.2	dSep 4	f0.90	Jul 22, 1966
ANNUAL RUNOFF (CFSM)	1.79		1.55		1.04	
ANNUAL RUNOFF (INCHES)	24.35		21.13		14.09	
10 PERCENT EXCEEDS	124		90		68	
50 PERCENT EXCEEDS	31		29		17	
90 PERCENT EXCEEDS	12		13		7.4	

a Also Oct. 15, 2002.
b Also Sept. 2-8, 2002.
c From high-water mark in gage house.
d Also Sept. 5, 6, 2004.
e Estimated.
f Result of temporary dam upstream.



02024000 MAURY RIVER NEAR BUENA VISTA, VA

LOCATION.--Lat 37°45'45", long 79°23'29", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--Records good except those for periods of doubtful gage-height record, Oct. 1-8 and Aug. 13, which are fair, and period with ice effect, Jan. 22 to Feb. 1, which is poor. Since 1966, some regulation at times by Lake Merriweather on Little Calfpasture River. Maximum discharge, 105,000 ft^3/s, from rating curve extended above 17,000 ft^3/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 Mar. 18, 1936, reached a stage of about 22 ft, from information by local residents.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,200 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 13	1030	8,430	8.19	0545	9,140	8.53
Nov 19	1830	*17,100	*11.78	1815	9,410	8.66
Dec 11	1030	10,400	9.12	1045	15,000	11.02
Feb 6	2100	7,140	7.53	0230	13,400	10.39

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e1,200	418	1,440	999	e430	702	577	716	1,150	268	244	131
2	e1,000	404	1,280	959	437	681	544	728	858	771	279	127
3	e900	391	1,140	927	535	683	515	745	686	886	265	125
4	e800	379	1,050	806	610	706	499	711	694	1,300	243	124
5	e720	445	1,070	832	649	695	478	676	1,180	881	241	122
6	e650	2,430	997	896	3,200	785	456	637	1,010	683	296	125
7	e600	2,800	932	833	6,060	995	441	586	826	533	271	351
8	e540	1,890	870	774	3,470	1,010	431	534	690	457	237	2,970
9	511	1,400	832	805	2,340	894	429	494	621	400	224	9,990
10	483	1,130	1,480	771	1,830	805	410	456	583	476	216	2,630
11	461	969	8,740	687	1,840	726	398	428	550	705	214	1,290
12	440	1,140	4,600	718	1,650	669	666	536	824	1,330	230	828
13	417	6,210	2,880	715	1,560	624	4,480	451	633	1,420	e660	605
14	412	3,590	2,340	678	1,560	578	7,650	414	563	809	571	481
15	636	2,300	1,950	652	1,460	546	3,850	392	1,190	578	265	463
16	670	1,750	1,710	621	1,300	633	2,450	417	1,550	469	216	482
17	587	1,430	1,840	590	1,150	1,020	1,760	422	1,150	414	191	517
18	539	1,200	2,090	641	1,040	1,040	1,490	908	829	419	180	1,600
19	496	7,820	1,840	648	985	1,010	1,260	914	732	422	170	1,290
20	461	9,550	1,590	578	1,050	786	1,100	813	659	394	163	857
21	436	3,940	1,380	536	1,380	745	1,000	704	555	340	163	630
22	416	2,550	1,250	e520	1,680	754	885	2,750	486	303	166	500
23	399	2,050	1,230	e500	1,420	722	800	1,390	453	343	160	418
24	384	1,750	1,560	e480	1,240	668	736	904	473	397	151	360
25	367	1,610	2,210	e480	1,120	625	669	683	416	338	146	323
26	355	1,380	1,910	e470	989	584	748	613	395	319	137	296
27	437	1,240	1,610	e440	893	559	936	1,110	353	336	135	275
28	490	1,390	1,410	e450	815	537	931	1,050	323	316	135	4,450
29	481	1,580	1,270	e430	750	503	850	1,440	303	292	144	9,040
30	455	1,520	1,190	e440	---	483	764	973	284	276	142	2,970
31	432	---	1,110	e420	---	518	---	1,330	---	257	137	---
TOTAL	17,175	66,656	56,801	20,296	43,443	22,286	38,203	24,925	21,019	17,132	6,992	44,370
MEAN	554	2,222	1,832	655	1,498	719	1,273	804	701	553	226	1,479
MAX	1,200	9,550	8,740	999	6,060	1,040	7,650	2,750	1,550	1,420	660	9,990
MIN	355	379	832	420	430	483	398	392	284	257	135	122
CFSM	0.86	3.44	2.84	1.01	2.32	1.11	1.97	1.24	1.08	0.86	0.35	2.29
IN.	0.99	3.84	3.27	1.17	2.50	1.28	2.20	1.44	1.21	0.99	0.40	2.56

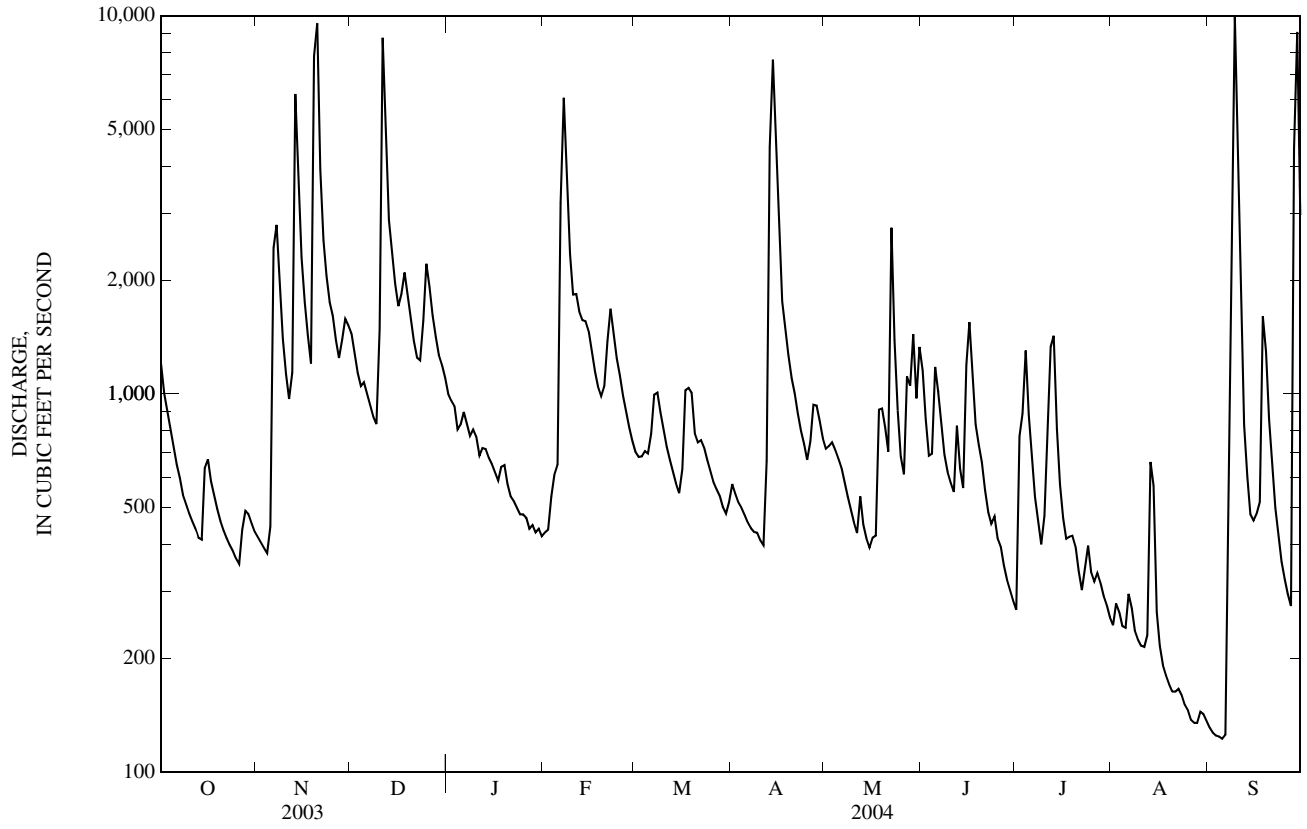
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2004, BY WATER YEAR (WY)

MEAN	354	490	701	880	1,057	1,338	1,063	818	561	282	317	326
MAX	1,997	3,400	2,430	2,891	3,140	3,187	3,672	2,373	2,647	1,351	3,060	2,087
(WY)	(1980)	(1986)	(1949)	(1998)	(1998)	(1993)	(1987)	(1989)	(1995)	(1972)	(1969)	(1996)
MIN	66.0	79.6	76.4	100	111	240	276	224	81.1	53.7	47.9	59.2
(WY)	(2002)	(2002)	(1966)	(1981)	(2002)	(1981)	(1995)	(1941)	(2002)	(1966)	(2002)	(2002)

02024000 MAURY RIVER NEAR BUENA VISTA, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1939 - 2004	
ANNUAL TOTAL	515,714		379,298			
ANNUAL MEAN	1,413		1,036		680	
HIGHEST ANNUAL MEAN					1,205	2003
LOWEST ANNUAL MEAN					210	2002
HIGHEST DAILY MEAN	12,700	Feb 23	9,990	Sep 9	56,000	Aug 20, 1969
LOWEST DAILY MEAN	170	Sep 16	122	Sep 5	22	Oct 10, 1941
ANNUAL SEVEN-DAY MINIMUM	190	Sep 10	127	Aug 31	40	Sep 8, 2002
MAXIMUM PEAK FLOW			17,100	Nov 19	105,000	Aug 20, 1969
MAXIMUM PEAK STAGE			11.78	Nov 19	31.23	Aug 20, 1969
INSTANTANEOUS LOW FLOW			118	Sep 6	a20	Oct 10, 1941
ANNUAL RUNOFF (CFSM)	2.19		1.60		1.05	
ANNUAL RUNOFF (INCHES)	29.70		21.84		14.31	
10 PERCENT EXCEEDS	2,910		1,840		1,510	
50 PERCENT EXCEEDS	1,000		682		344	
90 PERCENT EXCEEDS	250		276		105	

a Occurred during filling of small reservoir 2 mi upstream, otherwise, minimum discharge, 36 ft^3/s, Sept. 12-14, 2002.
e Estimated.



02024915 PEDLAR RIVER AT FOREST ROAD NEAR BUENA VISTA , VA

LOCATION.--Lat 37°41'51", long 79°16'42", NAD83, Amherst County, Hydrologic Unit Code 02080203, on right bank at bridge on Forest Road, 0.6 mi upstream from Lynchburg Reservoir and 5 mi southeast of Buena Vista.

DRAINAGE AREA.--27.1 mi^2.

PERIOD OF RECORD.--November 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,135 ft NGVD of 1929, from topographic map.

REMARKS.--Records good except those for periods of no gage-height record, Nov. 26 to Dec. 5 and Dec. 13-22, and period with ice effect, Jan. 22 to Feb. 2, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74	44	e88	63	e38	42	41	49	59	20	25	10
2	66	42	e80	64	e40	42	37	63	47	38	28	10
3	61	40	e74	62	77	41	36	68	39	33	26	9.8
4	57	39	e70	60	62	41	34	63	43	441	23	9.5
5	53	42	e78	64	54	40	33	61	74	185	23	9.1
6	49	193	72	61	162	52	32	58	61	118	24	11
7	46	210	67	57	206	47	32	54	52	89	20	17
8	44	140	64	56	135	46	32	50	46	72	19	162
9	42	107	63	58	103	44	31	47	42	61	18	159
10	40	89	117	55	89	43	30	43	38	63	18	80
11	39	78	312	51	79	42	31	42	38	59	17	55
12	38	95	190	56	71	42	78	69	69	83	19	43
13	36	141	e130	53	67	40	176	54	48	69	25	38
14	37	113	e120	51	64	39	188	50	44	53	21	34
15	52	97	e100	50	62	39	127	46	58	45	21	32
16	38	87	e96	47	58	57	101	43	72	40	18	30
17	35	78	e130	46	56	51	86	42	58	40	17	62
18	34	74	e110	56	54	48	76	43	52	44	16	98
19	33	313	e100	53	54	48	70	42	51	39	15	70
20	32	323	e92	47	53	45	67	60	43	38	15	54
21	31	218	e84	45	56	44	65	50	38	33	16	47
22	31	171	e79	e45	52	43	60	62	36	31	17	41
23	30	143	77	e44	50	41	58	49	36	32	15	37
24	29	134	107	e43	50	40	54	43	34	31	14	34
25	28	122	99	41	48	40	52	38	31	29	13	32
26	28	e100	87	e39	46	39	64	40	43	30	12	30
27	71	e88	80	e38	45	40	61	59	30	34	12	29
28	58	e96	75	e37	43	38	53	47	26	31	12	161
29	54	e100	71	e36	42	36	49	40	24	27	12	150
30	49	e94	69	e37	---	37	47	36	22	26	13	97
31	46	---	65	e36	---	41	---	68	---	28	12	---
TOTAL	1,361	3,611	3,046	1,551	2,016	1,328	1,901	1,579	1,354	1,962	556	1,651.4
MEAN	43.9	120	98.3	50.0	69.5	42.8	63.4	50.9	45.1	63.3	17.9	55.0
MAX	74	323	312	64	206	57	188	69	74	441	28	162
MIN	28	39	63	36	38	36	30	36	22	20	12	9.1
CFSM	1.62	4.44	3.63	1.85	2.57	1.58	2.34	1.88	1.67	2.34	0.66	2.03
IN.	1.87	4.96	4.18	2.13	2.77	1.82	2.61	2.17	1.86	2.69	0.76	2.27

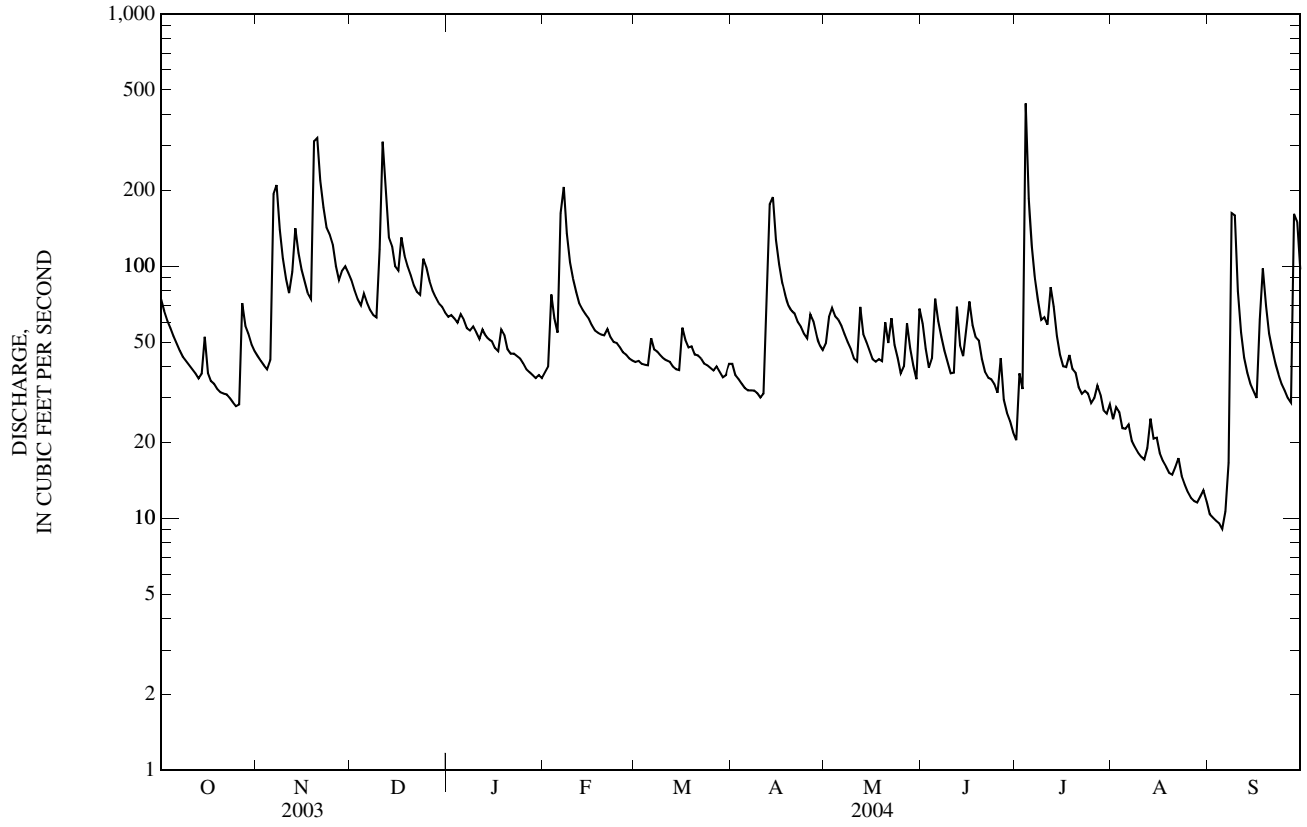
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2003 - 2004, BY WATER YEAR (WY)

MEAN	43.9	120	67.2	43.1	68.9	64.5	78.0	63.9	70.6	46.3	27.5	73.3
MAX	43.9	120	98.3	50.0	69.5	86.1	92.6	76.8	96.0	63.3	37.1	91.6
(WY)	(2004)	(2004)	(2004)	(2004)	(2004)	(2003)	(2003)	(2003)	(2003)	(2004)	(2003)	(2003)
MIN	43.9	120	36.2	36.2	68.2	42.8	63.4	50.9	45.1	29.4	17.9	55.0
(WY)	(2004)	(2004)	(2003)	(2003)	(2003)	(2004)	(2004)	(2004)	(2004)	(2003)	(2004)	(2004)

02024915 PEDLAR RIVER AT FOREST ROAD NEAR BUENA VISTA , VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2003 - 2004	
ANNUAL TOTAL	26,567		21,916.4			
ANNUAL MEAN	72.8		59.9		59.9	
HIGHEST ANNUAL MEAN					59.9	2004
LOWEST ANNUAL MEAN					59.9	2004
HIGHEST DAILY MEAN	605	Sep 19	441	Jul 4	605	Sep 19, 2003
LOWEST DAILY MEAN	13	aFeb 9	9.1	Sep 5	8.3	Nov 10, 2002
ANNUAL SEVEN-DAY MINIMUM	14	Feb 8	10	Aug 31	10	Aug 31, 2004
MAXIMUM PEAK FLOW			1,140	Jul 4	1,180	Sep 19, 2003
MAXIMUM PEAK STAGE			6.67	Jul 4	7.27	Sep 19, 2003
INSTANTANEOUS LOW FLOW			8.8	bSep 5	7.6	Nov 10, 2002
ANNUAL RUNOFF (CFSM)	2.69		2.21		2.21	
ANNUAL RUNOFF (INCHES)	36.47		30.08		30.02	
10 PERCENT EXCEEDS	134		100		100	
50 PERCENT EXCEEDS	55		47		47	
90 PERCENT EXCEEDS	18		24		24	

a Also Feb. 10 and July 28, 2003.
b Also Sept. 6, 2004.
e Estimated.



02025500 JAMES RIVER AT HOLCOMB ROCK, VA

LOCATION.--Lat 37°30'05", long 79°15'45", NAD83, 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 mi^2.

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 NGVD of 1929. January 1900 to September 1915, nonrecording 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 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. Statistics of monthly mean data and summary statistics for water years 1927 - 1979 (unregulated flow) are available in previous data books, water years 1991 - 1998. National Weather Service gage-height telemeter at station. Maximum discharge, 207,000 ft^3/s, from rating curve extended above 73,000 ft^3/s on basis of records for other stations in James 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 OUTSIDE PERIOD OF RECORD.--Flood in March 1913 reached a stage of 31.3 ft, from floodmarks, discharge, 118,000 ft^3/s, from rating curve extended as explained above.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 25,000 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 20	1215	51,600	20.72	1700	38,700	17.90
Dec 11	2245	27,100	14.99	1530	36,600	17.40
Feb 7	1445	27,500	15.09	1630	*71,900	*24.35

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4,600	2,260	6,080	4,140	1,950	3,600	2,930	4,000	10,200	1,570	1,360	1,110
2	3,860	2,100	5,510	3,850	2,040	3,490	2,990	3,980	6,240	1,740	1,860	1,080
3	3,230	2,020	4,890	3,890	2,430	3,460	2,980	4,090	4,500	2,060	1,660	1,080
4	2,950	1,980	4,230	4,160	2,740	3,940	2,820	4,100	e3,300	3,010	1,730	1,050
5	2,710	1,950	4,250	4,310	2,780	4,180	2,690	4,250	e4,450	2,590	1,610	1,040
6	2,560	5,620	4,140	e4,370	5,420	4,240	2,580	3,870	e5,800	2,190	1,580	1,030
7	2,310	12,200	4,160	e4,450	24,000	4,610	2,490	3,390	5,630	1,920	1,590	1,050
8	2,190	8,760	3,960	3,980	18,500	5,240	2,420	3,140	4,860	1,730	1,500	4,700
9	2,100	6,290	3,790	3,770	13,200	4,950	2,380	2,830	3,820	1,620	1,360	27,300
10	2,020	4,960	3,910	3,760	9,940	4,610	2,320	2,650	3,430	1,600	1,300	13,000
11	1,980	4,120	21,400	3,570	8,280	4,280	2,370	2,510	e3,180	2,070	1,280	5,930
12	1,910	3,800	22,400	3,480	7,540	3,740	3,130	2,630	e3,000	2,140	1,270	3,980
13	1,850	10,100	14,100	3,190	6,730	3,420	12,900	2,520	e2,900	3,140	1,530	3,070
14	1,800	15,200	10,500	3,110	6,530	3,260	34,000	2,370	e2,700	2,480	1,910	2,510
15	2,040	11,800	8,810	2,980	6,590	3,110	23,800	2,360	e2,800	1,920	1,650	2,140
16	2,250	9,080	7,870	2,840	6,020	3,290	16,100	2,310	e3,700	1,670	1,460	2,030
17	2,470	6,240	7,490	2,710	5,390	4,140	12,000	2,350	4,010	1,550	1,320	2,100
18	2,170	4,890	8,500	2,680	4,920	5,430	8,950	2,670	3,930	1,570	1,290	7,290
19	2,070	12,500	8,210	2,840	4,620	5,220	6,780	2,830	3,160	1,680	1,250	11,600
20	1,970	48,300	7,110	2,960	4,520	4,890	5,920	4,190	2,820	1,670	1,200	6,460
21	1,920	24,400	5,960	2,830	5,030	4,770	5,430	e4,600	2,460	1,580	1,230	4,360
22	1,840	16,600	5,260	2,640	7,520	4,570	4,610	e7,200	2,250	1,500	1,220	3,350
23	1,800	13,200	4,940	2,660	7,410	4,300	4,150	6,430	2,020	1,500	1,200	2,820
24	1,760	10,700	5,180	2,580	6,460	3,690	3,890	4,400	2,030	1,610	1,170	2,410
25	1,760	8,460	6,740	2,570	5,870	3,490	3,580	3,610	1,960	1,480	1,150	2,150
26	1,760	6,740	7,600	2,420	5,390	3,300	3,520	2,990	1,980	1,440	1,130	1,950
27	2,210	5,620	6,900	2,330	4,960	3,000	4,600	e3,350	1,830	1,470	1,100	1,840
28	2,170	5,340	6,140	2,350	4,600	2,920	6,830	e4,400	1,810	1,680	1,070	12,500
29	2,120	5,750	5,480	2,330	3,980	2,800	6,850	e5,100	1,730	1,670	1,180	62,200
30	2,320	6,500	4,820	2,210	---	2,690	5,840	5,780	1,650	1,510	1,180	22,200
31	2,290	---	4,540	2,170	---	2,720	---	e6,410	---	1,400	1,150	---
TOTAL	70,990	277,480	224,870	98,130	195,360	121,350	201,850	117,310	104,150	56,760	42,490	215,330
MEAN	2,290	9,249	7,254	3,165	6,737	3,915	6,728	3,784	3,472	1,831	1,371	7,178
MAX	4,600	48,300	22,400	4,450	24,000	5,430	34,000	7,200	10,200	3,140	1,910	62,200
MIN	1,760	1,950	3,790	2,170	1,950	2,690	2,320	2,310	1,650	1,400	1,070	1,030
(†)	+1,160	-151	-403	+151	+101	-252	-101	+756	-1,916	-5,294	-5,999	+10,688
MEAN‡	2,327	9,244	7,240	3,170	6,740	3,906	6,725	3,809	3,408	1,660	1,177	7,534
CFSM‡	0.71	2.84	2.22	0.97	2.07	1.20	2.06	1.17	1.05	0.51	0.36	2.31
IN.‡	0.82	3.17	2.56	1.12	2.23	1.38	2.30	1.35	1.17	0.59	0.42	2.58

CAL YR 2003 MEAN‡ 6711 CFSM‡ 2.06 IN.‡ 27.96
WTR YR 2004 MEAN‡ 4713 CFSM‡ 1.45 IN.‡ 19.69

† 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.

02025500 JAMES RIVER AT HOLCOMB ROCK, VA—Continued

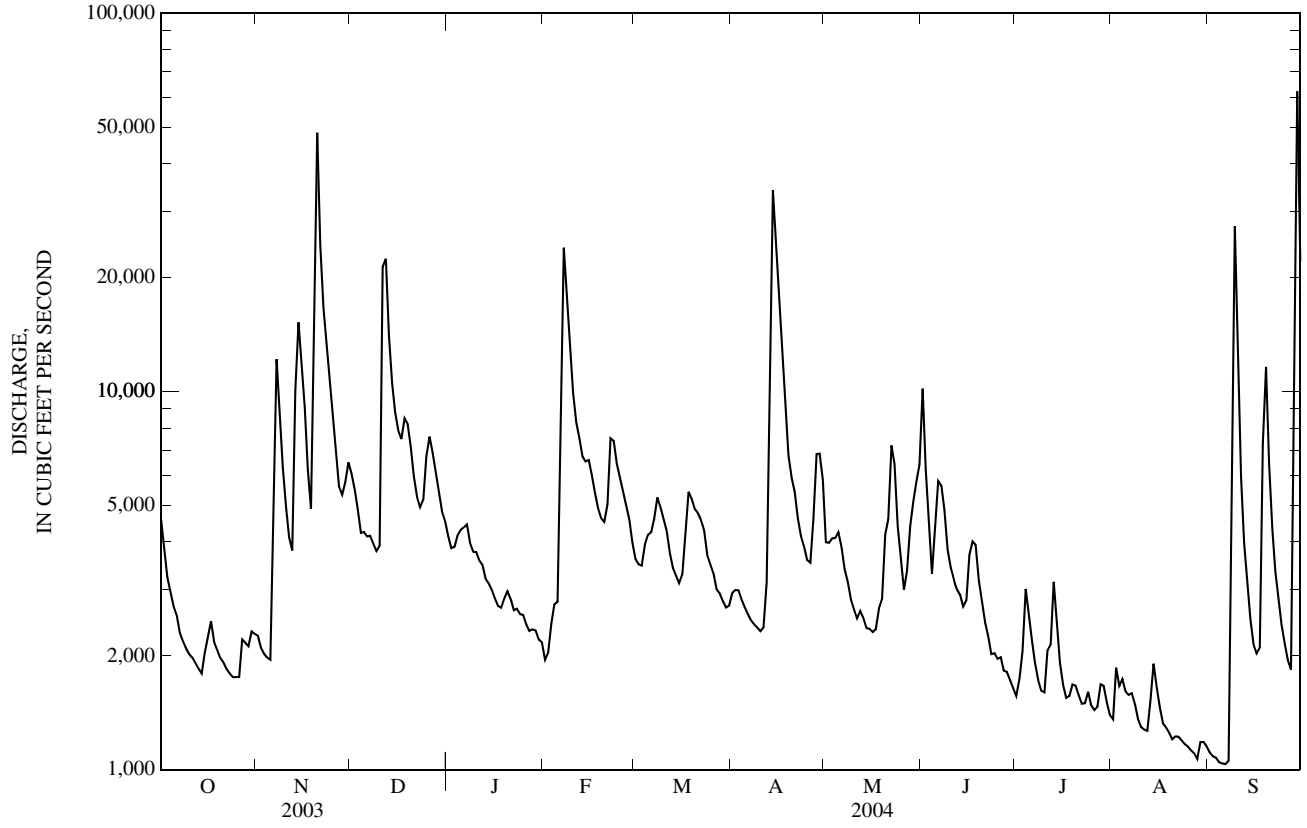
DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2004, BY WATER YEAR (WY)

MEAN	1,806	3,045	3,340	4,447	5,476	6,784	6,373	4,515	3,282	1,598	1,487	2,030
MAX	7,966	17,270	9,246	13,540	16,260	16,910	21,670	12,380	11,720	4,562	5,640	7,233
(WY)	(1980)	(1986)	(1997)	(1996)	(1998)	(1993)	(1987)	(1989)	(2003)	(1995)	(1984)	(1996)
MIN	630	635	839	730	851	1,472	1,616	1,959	796	750	581	637
(WY)	(2002)	(2002)	(2002)	(1981)	(2002)	(1981)	(1995)	(2000)	(2002)	(1999)	(2002)	(2002)

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1980 - 2004	
ANNUAL TOTAL	2,449,690		1,726,070			
ANNUAL MEAN	6,711		4,716		3,668	
HIGHEST ANNUAL MEAN					6,045	2003
LOWEST ANNUAL MEAN					1,361	2002
HIGHEST DAILY MEAN	68,100	Feb 23	62,200	Sep 29	180,000	Nov 5, 1985
LOWEST DAILY MEAN	1,180	Jan 24	1,030	Sep 6	244	Aug 28, 1981
ANNUAL SEVEN-DAY MINIMUM	1,260	Jan 28	1,060	Sep 1	401	Aug 26, 1981
MAXIMUM PEAK FLOW			71,900	Sep 29	a207,000	Nov 5, 1985
MAXIMUM PEAK STAGE			24.35	Sep 29	a,b42.15	Nov 5, 1985
INSTANTANEOUS LOW FLOW			c540	Aug 28	c,d20	Oct 29, 1987
ANNUAL RUNOFF (CFSM)	2.06		1.45		1.13	
ANNUAL RUNOFF (INCHES)	27.96		19.70		15.29	
10 PERCENT EXCEEDS	14,200		8,330		8,000	
50 PERCENT EXCEEDS	4,540		3,180		1,890	
90 PERCENT EXCEEDS	1,670		1,520		797	



02026000 JAMES RIVER AT BENT CREEK, VA

LOCATION.--Lat 37°32'11", long 78°49'46", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to Sept. 12, 1930, nonrecording gage at same site and datum.

REMARKS.--Records poor. 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. Statistics of monthly mean data and summary statistics for water years 1925 - 1979 (unregulated flow) are available in previous data books, water years 1991 - 1998. National Weather Service gage-height telemeter at station. Maximum discharge, 226,000 ft^3/s, from rating curve extended above 177,000 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 26,500 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 20	---	51,900	a14.45	2200	38,100	12.36
Dec 12	0800	26,600	10.34	2045	36,200	12.05
Feb 7	2200	27,000	10.42	2300	*71,300	*16.97

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5,640	2,870	e6,600	4,870	2,610	4,530	3,520	4,960	9,470	2,310	1,640	1,250
2	4,480	2,520	5,870	4,570	2,450	4,080	3,410	4,490	7,680	2,130	3,430	1,230
3	4,130	2,660	5,410	4,300	3,160	4,090	e3,510	4,740	5,560	2,380	2,620	1,180
4	3,700	e2,470	4,720	e4,640	4,060	4,300	e3,280	4,460	4,420	2,690	2,100	1,160
5	3,360	e2,460	4,990	e4,880	3,450	e4,820	3,280	4,880	4,940	3,740	2,170	1,120
6	2,800	3,900	5,050	5,040	4,350	4,870	e3,100	4,530	6,240	3,030	2,140	1,120
7	2,920	e13,100	4,830	5,280	20,200	5,090	2,950	4,030	6,360	2,730	1,960	1,180
8	2,810	e10,300	4,570	4,740	21,300	e5,630	2,910	3,820	5,770	2,280	1,890	1,970
9	2,680	7,690	4,370	4,320	15,000	5,680	2,850	3,430	4,680	2,150	1,750	23,500
10	2,670	6,220	4,200	4,300	11,600	5,420	2,770	3,190	4,040	2,090	1,640	18,900
11	2,700	5,220	16,300	4,150	9,190	5,150	2,710	3,010	3,950	2,170	1,560	8,000
12	2,610	4,440	23,900	4,040	8,580	4,680	3,490	2,950	3,700	2,520	1,600	5,250
13	2,560	6,100	16,300	3,930	7,680	4,150	9,550	3,120	3,650	3,370	1,990	3,950
14	2,550	15,700	11,700	3,660	7,240	3,980	30,400	2,870	3,380	3,400	2,150	3,270
15	e2,700	12,800	9,900	3,550	7,310	3,810	27,900	2,780	3,460	2,780	2,580	2,820
16	2,730	10,600	8,840	3,340	6,970	3,950	17,700	2,930	4,600	2,200	2,010	2,570
17	3,050	e7,420	8,660	3,200	6,360	4,560	13,300	2,950	4,570	2,120	1,750	3,080
18	3,010	e5,580	8,980	3,200	5,830	5,600	10,100	3,040	4,730	1,970	1,610	4,130
19	2,710	6,250	9,140	3,350	5,500	e5,900	7,610	3,380	4,350	1,870	1,570	13,400
20	2,620	e42,900	8,130	3,370	5,250	e5,650	6,580	4,180	3,810	2,060	1,530	8,260
21	2,530	31,200	6,900	3,410	5,370	5,440	6,030	4,730	3,190	2,020	1,530	5,620
22	2,460	17,600	6,120	3,160	6,790	5,220	5,410	5,080	3,170	1,790	1,690	4,320
23	2,350	14,100	5,640	3,090	8,290	5,100	4,830	8,030	2,870	1,790	1,590	3,640
24	2,120	11,300	5,590	3,040	7,350	4,510	4,390	5,390	2,670	2,100	1,440	3,060
25	2,220	9,420	6,580	3,050	6,680	4,150	4,300	4,370	2,720	1,940	1,340	2,740
26	2,160	7,120	8,020	3,240	6,290	3,970	3,940	3,700	2,930	1,800	1,390	2,540
27	2,800	6,070	7,770	3,050	5,780	e3,650	4,370	3,600	2,630	1,880	1,330	2,780
28	3,240	5,450	6,920	2,870	5,430	3,430	6,470	4,790	2,420	2,130	1,290	3,250
29	2,780	5,820	6,360	2,920	5,010	3,400	7,370	5,260	2,390	2,170	1,270	53,200
30	e2,940	6,670	5,590	2,720	---	3,190	6,800	6,520	2,320	2,080	1,780	35,800
31	2,950	---	5,190	2,620	---	3,250	---	6,670	---	1,770	1,200	---
TOTAL	90,980	285,950	243,140	115,900	215,080	141,250	214,830	131,880	126,670	71,460	55,540	224,290
MEAN	2,935	9,532	7,843	3,739	7,417	4,556	7,161	4,254	4,222	2,305	1,792	7,476
MAX	5,640	42,900	23,900	5,280	21,300	5,900	30,400	8,030	9,470	3,740	3,430	53,200
MIN	2,120	2,460	4,200	2,620	2,450	3,190	2,710	2,780	2,320	1,770	1,200	1,120
(†)	+1,160	-151	-403	+151	+101	-252	-101	+756	-1,916	-5,294	-5,999	+10,688
MEAN‡	2,972	9,527	7,830	3,744	7,420	4,548	7,158	4,279	4,158	2,134	1,598	7,833
CFSM‡	0.81	2.59	2.13	1.02	2.01	1.23	1.94	1.16	1.13	0.58	0.43	2.13
IN.‡	0.93	2.89	2.45	1.17	2.17	1.42	2.17	1.34	1.26	0.67	0.50	2.37

CAL YR	2003	MEAN‡	7,542	CFSM‡	2.05	IN.‡ 27.80
WTR YR	2004	MEAN‡	5,234	CFSM‡	1.42	IN.‡ 19.35

† 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.

02026000 JAMES RIVER AT BENT CREEK, VA—Continued

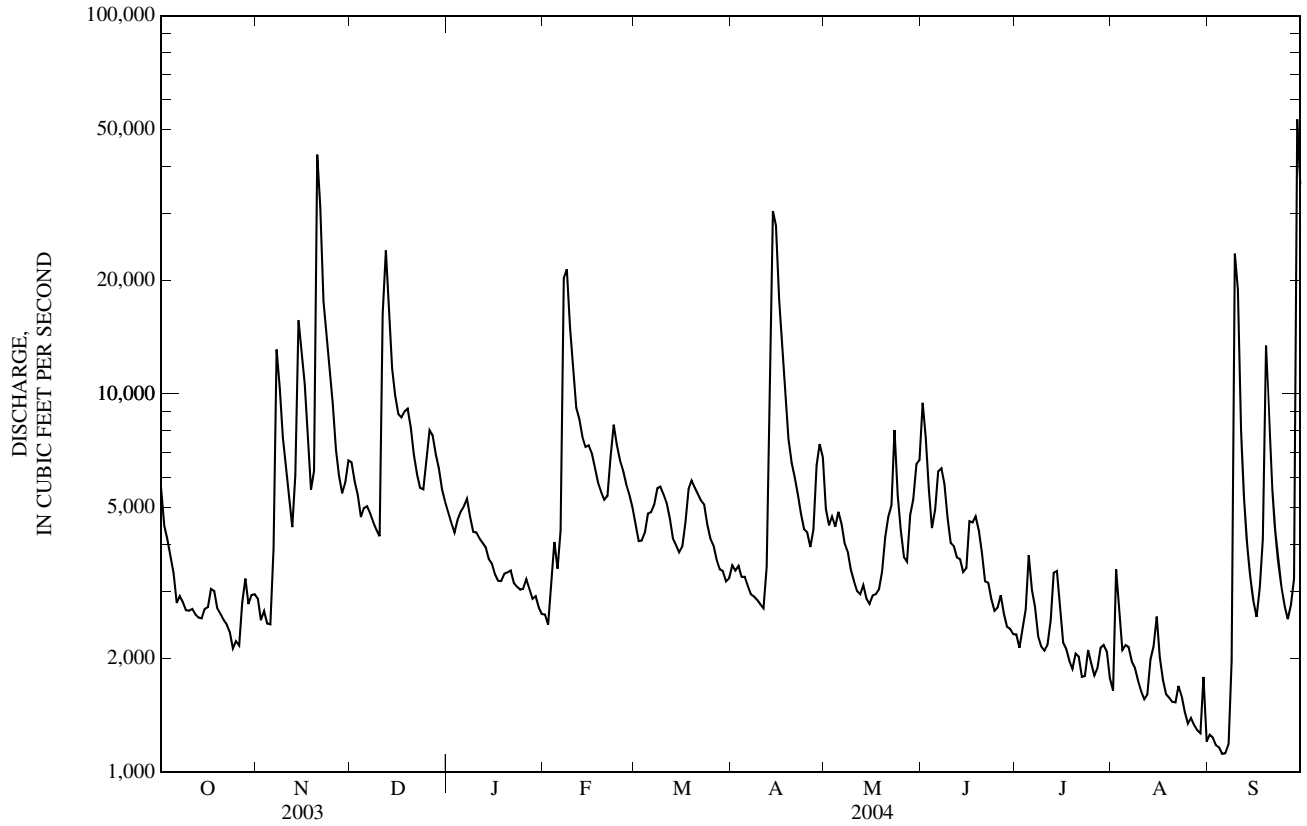
DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2004, BY WATER YEAR (WY)

MEAN	2,194	3,370	3,951	5,020	6,242	7,649	7,146	5,204	3,860	2,027	1,849	2,536
MAX	9,173	16,910	10,380	11,680	17,200	18,860	24,090	13,990	12,860	5,423	6,027	9,873
(WY)	(1980)	(1986)	(1997)	(1991)	(1998)	(1993)	(1987)	(1989)	(2003)	(2003)	(1984)	(1996)
MIN	716	750	987	858	1,125	1,626	1,842	2,286	963	904	632	727
(WY)	(2002)	(2002)	(1981)	(1981)	(2002)	(1981)	(1995)	(2000)	(2002)	(1999)	(2002)	(2002)

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1980 - 2004	
ANNUAL TOTAL	2,753,160		1,916,970			
ANNUAL MEAN	7,543		5,238		4,239	
HIGHEST ANNUAL MEAN					6,855	2003
LOWEST ANNUAL MEAN					1,562	2002
HIGHEST DAILY MEAN	73,400	Feb 23	53,200	Sep 29	142,000	Nov 5, 1985
LOWEST DAILY MEAN	1,460	Feb 3	1,120	bSep 5	c409	Sep 12, 2002
ANNUAL SEVEN-DAY MINIMUM	1,600	Jan 28	1,180	Sep 1	d460	Sep 8, 2002
MAXIMUM PEAK FLOW			71,300	Sep 29	d226,000	Nov 5, 1985
MAXIMUM PEAK STAGE			16.97	Sep 29	a,d30.76	Nov 5, 1985
INSTANTANEOUS LOW FLOW			c999	Aug 31	c,f338	Oct 17, 2001
ANNUAL RUNOFF (CFSM)	2.05		1.42		1.15	
ANNUAL RUNOFF (INCHES)	27.81		19.36		15.64	
10 PERCENT EXCEEDS	15,000		8,710		9,070	
50 PERCENT EXCEEDS	5,430		3,920		2,440	
90 PERCENT EXCEEDS	2,130		1,970		942	



02027000 TYE RIVER NEAR LOVINGSTON, VA

LOCATION.--Lat 37°42'56", long 78°58'54", NAD83, 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 Lovingston.

DRAINAGE AREA.--92.8 mi^2.

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 581.39 ft NGVD of 1929. Prior to Sept. 15, 1969, at same site and at datum 3.00 ft lower. Sept. 15, 1969 to Oct. 15, 1970, nonrecording gage at same site and different datum. Oct. 15, 1970 to Sept. 3, 2004, water-stage recorder at same site and different datum. After Sept. 3, 2004, at same site and at present datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 9-11, 26-28 and Jan. 30 to Feb. 1, and periods of doubtful or no gage-height record, Mar. 27-30, May 17 to June 4, June 21 to July 1, July 14-22, and Sept. 18-20, 25, which are fair. Maximum discharge, 80,000 ft^3/s, from rating curve extended above 7,600 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1545	*5,550	a8.02	2145	2,890	*8.28
Dec 10	2400	2,570	4.88	1645	1,880	6.97

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	243	188	372	198	e90	120	115	140	e150	e76	73	33
2	247	172	329	199	94	120	110	267	e130	108	86	30
3	226	162	295	193	228	118	111	367	e120	91	82	27
4	211	153	278	183	198	116	105	304	e135	321	59	25
5	194	153	300	194	160	117	98	262	417	194	58	23
6	177	658	270	187	580	144	96	229	275	125	62	28
7	166	859	246	167	848	139	95	202	225	112	53	59
8	153	569	224	160	565	139	94	180	197	104	47	919
9	147	424	214	e160	427	130	93	166	179	92	45	1,270
10	140	347	424	e150	328	125	92	152	220	107	43	500
11	135	299	1,560	e138	283	123	93	153	327	127	42	288
12	127	315	931	154	249	120	288	176	322	134	57	205
13	120	426	706	146	228	114	824	134	225	111	84	162
14	141	338	652	139	211	110	898	126	210	e88	61	137
15	243	299	551	137	198	109	618	120	397	e78	56	119
16	140	271	479	127	182	186	455	125	384	e69	48	107
17	125	248	563	122	172	168	365	e200	289	e65	46	201
18	122	228	513	145	166	149	304	e180	224	e85	44	e444
19	117	1,850	449	142	160	151	262	e155	192	e63	42	e289
20	111	1,620	391	119	159	142	231	e225	167	e68	39	e206
21	108	1,020	344	114	169	138	211	e175	e140	e60	39	170
22	102	769	314	118	156	131	193	e235	e120	e53	39	142
23	99	593	299	107	147	126	178	e170	e135	62	36	121
24	96	502	336	113	144	123	167	e155	e125	82	35	108
25	94	438	320	100	140	119	160	e130	e105	61	33	e98
26	97	361	293	e108	133	116	180	e140	e120	69	32	89
27	481	319	271	e112	127	e112	173	e170	e100	83	31	84
28	311	415	252	e100	123	e105	150	e130	e93	92	31	759
29	279	485	238	104	121	e102	137	e122	e85	67	50	802
30	228	417	229	e100	---	e110	132	e115	e80	73	45	444
31	205	---	210	e93	---	124	---	e185	---	63	39	---
TOTAL	5,385	14,898	12,853	4,329	6,786	3,946	7,028	5,590	5,888	2,983	1,537	7,889
MEAN	174	497	415	140	234	127	234	180	196	96.2	49.6	263
MAX	481	1,850	1,560	199	848	186	898	367	417	321	86	1,270
MIN	94	153	210	93	90	102	92	115	80	53	31	23
CFSM	1.87	5.35	4.47	1.50	2.52	1.37	2.52	1.94	2.11	1.04	0.53	2.83
IN.	2.16	5.97	5.15	1.74	2.72	1.58	2.82	2.24	2.36	1.20	0.62	3.16

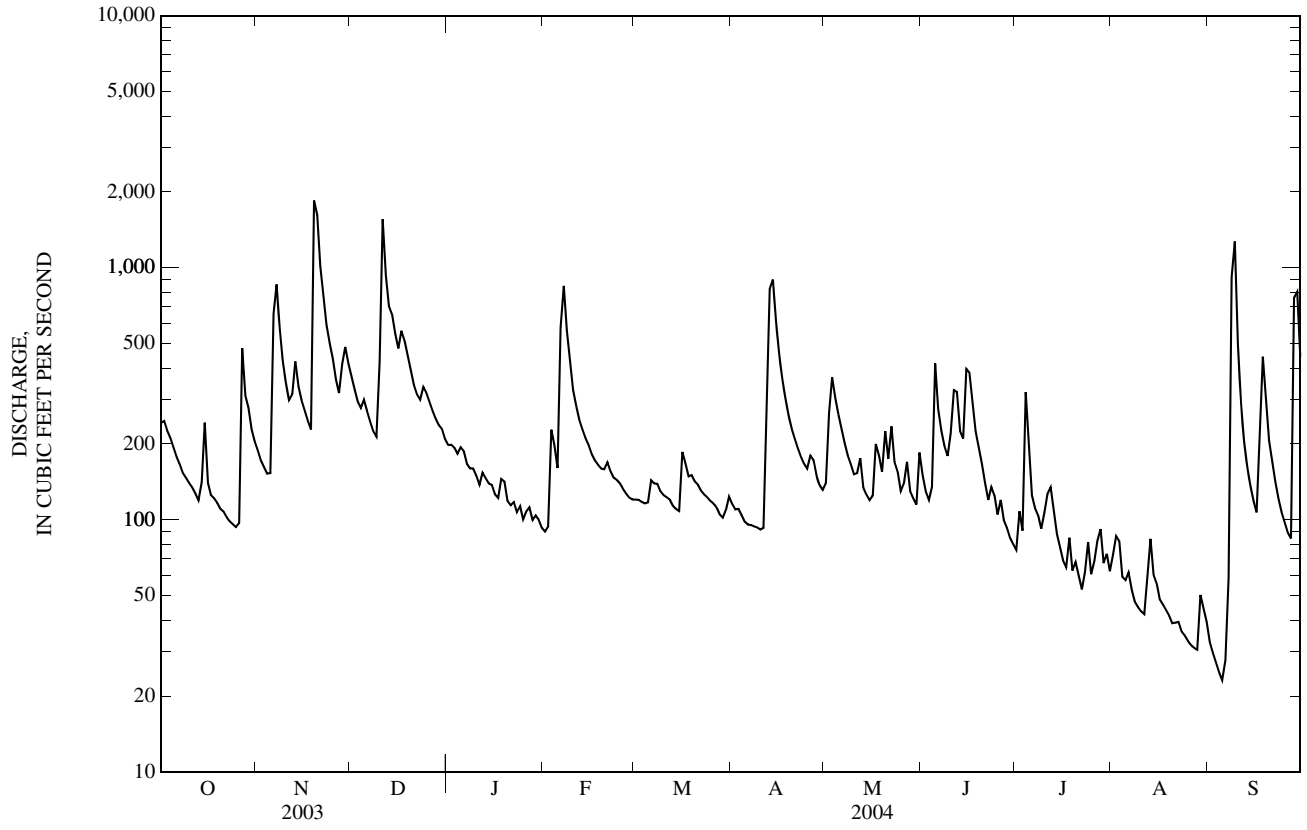
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2004, BY WATER YEAR (WY)

MEAN	102	135	170	187	215	257	236	179	137	77.5	104	102
MAX	550	765	499	568	773	568	692	492	676	382	1,541	556
(WY)	(1943)	(1986)	(1997)	(1998)	(1998)	(1993)	(1987)	(1989)	(1972)	(1972)	(1969)	(1979)
MIN	8.69	15.3	23.7	14.7	34.1	64.0	63.1	53.1	19.2	8.46	1.56	6.46
(WY)	(1942)	(1942)	(1981)	(1981)	(2002)	(1981)	(1966)	(1941)	(2002)	(2002)	(2002)	(2002)

02027000 TYE RIVER NEAR LOVINGSTON, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1939 - 2004	
ANNUAL TOTAL	116,816		79,112			
ANNUAL MEAN	320		216		158	
HIGHEST ANNUAL MEAN					280	1973
LOWEST ANNUAL MEAN					44.5	2002
HIGHEST DAILY MEAN	5,380	Sep 19	1,850	Nov 19	e32,600	Aug 20, 1969
LOWEST DAILY MEAN	52	Feb 13	23	Sep 5	e0.53	Aug 25, 2002
ANNUAL SEVEN-DAY MINIMUM	56	Jan 28	29	Aug 31	e0.61	Aug 20, 2002
MAXIMUM PEAK FLOW			5,550	Nov 19	80,000	Aug 20, 1969
MAXIMUM PEAK STAGE			8.28	Sep 8	a,b29.00	Aug 20, 1969
INSTANTANEOUS LOW FLOW			22	cSep 5	0.50	dSep 10, 1966
ANNUAL RUNOFF (CFSM)	3.45		2.33		1.70	
ANNUAL RUNOFF (INCHES)	46.83		31.71		23.17	
10 PERCENT EXCEEDS	599		426		323	
50 PERCENT EXCEEDS	238		146		101	
90 PERCENT EXCEEDS	78		62		22	

a At datum then in use.
b From floodmarks.
c Also Sept. 6, 2004.
d Also Sept. 11, 1966.
e Estimated.



02027500 PINEY RIVER AT PINEY RIVER, VA

LOCATION.--Lat 37°42'09", long 79°01'39", NAD83, 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 mi^2.

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 631.58 ft NGVD of 1929. 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. Sept. 20, 1973 to Apr. 29, 1999, at same site, at datum 2.00 ft higher.

REMARKS.--Records good except those for periods with ice effect, Jan. 9-11, 24-26 and Jan. 28 to Feb, 1, and periods of no gage-height record, Aug. 26 and Sept. 14, which are fair. Periodic dewatering of upstream quarries adds small amount of inflow at times. Maximum discharge, 38,000 ft^3/s, from rating curve extended above 6,000 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 650 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1515	*1,480	*6.29	1545	655	4.70
Dec 10	2315	750	4.93	2045	1,330	6.05

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	118	98	172	94	e46	64	58	70	71	50	49	18
2	105	89	161	92	49	63	55	116	65	71	102	17
3	93	83	150	85	94	63	54	165	61	53	86	17
4	85	77	142	82	79	62	52	164	71	202	62	16
5	78	77	147	86	70	62	49	151	227	159	59	15
6	71	196	134	82	198	70	49	135	142	131	54	19
7	66	253	124	78	257	67	49	120	129	112	47	31
8	62	229	117	76	218	71	48	108	131	97	43	462
9	60	197	112	e76	185	69	47	104	119	85	39	744
10	57	171	200	e72	163	69	46	92	114	80	36	399
11	55	151	512	e68	144	68	46	87	153	76	34	267
12	52	155	378	70	130	67	122	86	192	97	38	199
13	50	168	302	67	120	65	271	74	149	73	47	155
14	55	150	289	66	112	64	348	71	139	66	37	e125
15	70	147	251	64	104	63	283	67	200	60	36	104
16	51	139	222	62	97	91	231	63	209	55	32	91
17	49	128	220	60	93	78	195	74	178	54	29	139
18	47	118	207	69	88	75	168	90	150	61	27	305
19	46	662	194	63	84	78	147	80	134	54	26	269
20	45	715	177	58	82	76	131	100	116	50	24	213
21	45	463	160	57	84	74	119	91	101	44	24	173
22	44	349	146	58	79	72	107	101	91	42	24	142
23	43	282	137	54	76	70	98	82	85	61	23	118
24	42	243	137	e53	75	68	90	75	77	55	21	98
25	41	208	124	e50	73	66	86	68	73	43	20	86
26	41	181	118	e55	70	64	88	69	79	46	e19	76
27	159	160	115	57	69	63	81	80	63	50	19	69
28	145	177	111	e50	67	60	74	67	58	49	21	332
29	139	183	107	e51	65	58	69	63	55	42	27	391
30	120	180	103	e49	---	58	66	59	51	43	26	285
31	108	---	97	e47	---	60	---	92	---	38	20	---
TOTAL	2,242	6,429	5,566	2,051	3,071	2,098	3,327	2,864	3,483	2,199	1,151	5,375
MEAN	72.3	214	180	66.2	106	67.7	111	92.4	116	70.9	37.1	179
MAX	159	715	512	94	257	91	348	165	227	202	102	744
MIN	41	77	97	47	46	58	46	59	51	38	19	15
CFSM	1.52	4.50	3.77	1.39	2.22	1.42	2.33	1.94	2.44	1.49	0.78	3.76
IN.	1.75	5.02	4.35	1.60	2.40	1.64	2.60	2.24	2.72	1.72	0.90	4.20

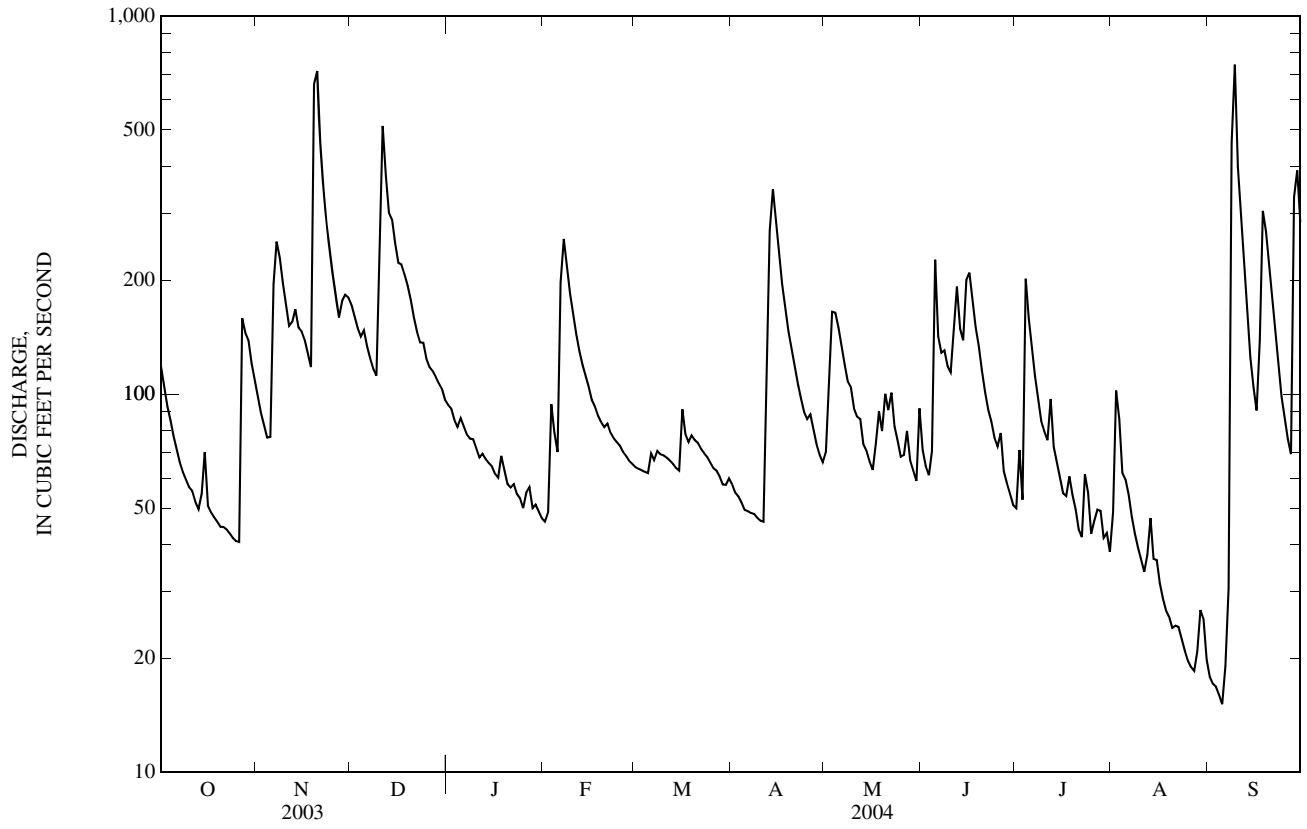
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 2004, BY WATER YEAR (WY)

MEAN	63.1	89.6	106	113	127	155	144	108	89.8	39.6	57.0	56.6
MAX	313	644	297	339	347	311	417	352	541	213	1,239	388
(WY)	(1991)	(1986)	(1997)	(1998)	(1998)	(1993)	(1987)	(1989)	(1972)	(1972)	(1969)	(1996)
MIN	4.75	7.75	10.3	7.94	26.5	37.8	38.4	35.8	14.6	8.93	2.51	3.75
(WY)	(1964)	(1999)	(1999)	(1981)	(2002)	(1981)	(1966)	(1963)	(1999)	(1999)	(2002)	(1998)

02027500 PINEY RIVER AT PINEY RIVER, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1950 - 2004	
ANNUAL TOTAL	55,635		39,856			
ANNUAL MEAN	152		109		95.5	
HIGHEST ANNUAL MEAN					188	1969
LOWEST ANNUAL MEAN					29.3	2002
HIGHEST DAILY MEAN	1,270	Sep 19	744	Sep 9	25,000	Aug 20, 1969
LOWEST DAILY MEAN	26	Jul 28	15	Sep 5	0.31	Sep 14, 2002
ANNUAL SEVEN-DAY MINIMUM	30	Jul 25	17	Aug 31	0.66	Sep 9, 2002
MAXIMUM PEAK FLOW			1,480	Nov 19	38,000	Aug 20, 1969
MAXIMUM PEAK STAGE			6.29	Nov 19	a13.80	Aug 20, 1969
INSTANTANEOUS LOW FLOW			15	bSep 4	0.29	Sep 14, 2002
ANNUAL RUNOFF (CFSM)	3.20		2.29		2.01	
ANNUAL RUNOFF (INCHES)	43.48		31.15		27.25	
10 PERCENT EXCEEDS	289		201		200	
50 PERCENT EXCEEDS	112		78		59	
90 PERCENT EXCEEDS	39		43		11	

a From floodmarks.
b Also Sept. 5, 6, 2004.
e Estimated.



02028500 ROCKFISH RIVER NEAR GREENFIELD, VA

LOCATION.--Lat 37°52'11", long 78°49'24", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to Aug. 21, 1943, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 9-12 and Jan. 23 to Feb. 1, and periods of doubtful or no gage-height record, May 3-26, July 6-10, 19-22, and Sept. 15-17, 19, 20, which are fair. Maximum discharge, 70,000 ft^3/s, from rating curve extended above 8,500 ft^3/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 ft^3/s.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1615	2,740	6.81	2030	1,540	4.91
Dec 11	0145	2,400	6.31	1630	*4,810	*9.06
Sep 8	2345	3,380	7.59			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	239	166	329	182	e90	116	120	142	108	67	61	29
2	213	154	282	179	96	116	112	248	89	114	66	26
3	193	145	249	175	190	115	106	e385	80	74	63	25
4	181	137	236	172	179	115	101	e250	95	314	52	24
5	163	169	262	176	150	115	95	e200	447	328	53	22
6	151	784	233	161	517	132	93	e180	240	e140	62	47
7	143	718	210	147	645	124	92	e160	188	e115	48	106
8	134	508	201	141	424	122	92	e140	159	e95	44	951
9	129	391	195	e140	333	114	90	e130	144	e76	41	1,470
10	123	326	422	e135	290	111	87	e128	145	e85	38	594
11	119	284	1,330	e128	256	108	91	e122	157	97	45	355
12	114	283	744	e132	227	105	405	e150	190	101	69	249
13	107	358	559	139	207	102	841	e120	145	94	88	189
14	143	271	534	128	192	100	673	e105	137	86	60	155
15	285	249	467	127	181	100	489	e100	133	71	57	e134
16	151	238	429	116	164	190	376	e95	162	63	49	e120
17	136	223	542	115	156	171	311	e102	165	61	44	e455
18	128	214	459	128	153	145	267	e130	135	83	41	585
19	119	1,020	400	115	149	150	233	e160	120	e67	38	e358
20	113	1,010	343	107	146	137	210	e145	108	e69	35	e261
21	109	684	301	105	146	134	199	e130	99	e56	35	209
22	103	522	286	109	137	127	182	e142	95	e49	38	169
23	98	418	268	e100	136	121	167	e120	100	112	34	141
24	94	369	285	e98	134	118	157	e100	98	159	30	123
25	92	330	258	e94	130	115	149	e90	86	74	28	111
26	94	282	241	e101	123	112	187	e88	87	94	28	101
27	363	253	232	e109	121	115	172	214	78	106	27	100
28	251	382	219	e97	120	113	150	128	71	109	26	1,790
29	233	448	208	e100	118	108	142	107	69	80	29	1,110
30	198	376	199	e98	---	107	136	98	65	75	55	599
31	181	---	188	e93	---	117	---	137	---	65	35	---
TOTAL	4,900	11,712	11,111	3,947	5,910	3,775	6,525	4,546	3,995	3,179	1,419	10,608
MEAN	158	390	358	127	204	122	218	147	133	103	45.8	354
MAX	363	1,020	1,330	182	645	190	841	385	447	328	88	1,790
MIN	92	137	188	93	90	100	87	88	65	49	26	22
CFSM	1.67	4.13	3.79	1.35	2.15	1.29	2.30	1.55	1.41	1.08	0.48	3.74
IN.	1.93	4.61	4.37	1.55	2.32	1.48	2.57	1.79	1.57	1.25	0.56	4.17

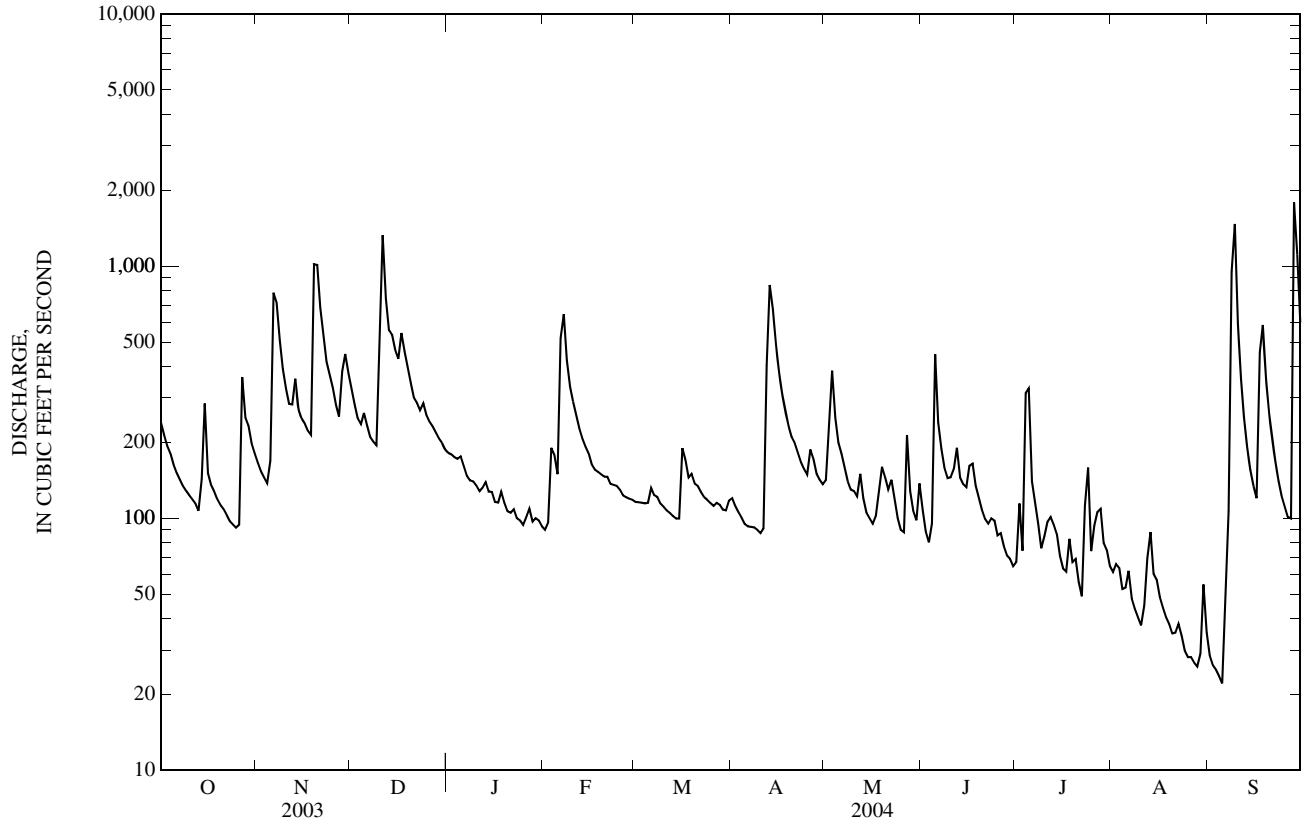
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2004, BY WATER YEAR (WY)

MEAN	92.1	125	149	166	193	240	217	159	122	72.5	84.2	93.9
MAX	394	733	445	480	723	629	698	369	696	327	1,246	506
(WY)	(1991)	(1986)	(1951)	(1996)	(1998)	(1993)	(1983)	(1990)	(1995)	(1972)	(1969)	(1979)
MIN	7.35	10.0	18.5	22.2	23.4	55.9	52.5	39.5	6.53	2.60	0.74	2.52
(WY)	(2002)	(2002)	(1966)	(2002)	(2002)	(1981)	(1981)	(2002)	(2002)	(2002)	(2002)	(2002)

02028500 ROCKFISH RIVER NEAR GREENFIELD, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1944 - 2004	
ANNUAL TOTAL	105,136		71,627			
ANNUAL MEAN	288		196		143	
HIGHEST ANNUAL MEAN					290	1973
LOWEST ANNUAL MEAN					22.5	2002
HIGHEST DAILY MEAN	3,920	Sep 19	1,790	Sep 28	e28,800	Aug 20, 1969
LOWEST DAILY MEAN	50	Feb 13	22	Sep 5	0.07	Sep 14, 2002
ANNUAL SEVEN-DAY MINIMUM	53	Feb 8	29	Aug 23	0.12	Sep 11, 2002
MAXIMUM PEAK FLOW			4,810	Sep 28	70,000	Aug 20, 1969
MAXIMUM PEAK STAGE			9.06	Sep 28	a31.20	Aug 20, 1969
INSTANTANEOUS LOW FLOW			21	Sep 5	0.07	bAug 14, 2002
ANNUAL RUNOFF (CFSM)	3.04		2.07		1.51	
ANNUAL RUNOFF (INCHES)	41.34		28.17		20.48	
10 PERCENT EXCEEDS	537		387		300	
50 PERCENT EXCEEDS	223		134		86	
90 PERCENT EXCEEDS	72		63		18	

a From floodmarks.
b Also Aug. 15, 18, 26-28 and Sept. 13-15, 2002.
e Estimated.



02029000 JAMES RIVER AT SCOTTSVILLE, VA

LOCATION.--Lat 37°47'51", long 78°29'29", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to Nov. 28, 1928, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods of partial or no gage-height record, Apr. 3-13, 15, and May 17, 18, which are fair. 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. Statistics of monthly mean data and summary statistics for water years 1925 - 1979 (unregulated flow) are available in previous data books, water years 1991 - 1998. National Weather Service gage-height telemeter at station. Maximum discharge, 301,000 ft^3/s, from rating curve extended above 120,000 ft^3/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 ft^3/s, and flood in November 1877 reached a stage of 27.9 ft, discharge, about 160,000 ft^3/s, from information by local resident. Flood in March 1913 reached a stage of 25.16 ft, from floodmarks, discharge, 121,000 ft^3/s.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 35,000 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 21	0345	56,600	18.26	0415	39,500	15.35
Apr 15	0545	42,200	15.86	0800	*74,700	*20.68

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7,470	4,000	8,760	6,490	3,350	5,640	4,530	7,300	9,090	2,390	2,020	1,260
2	6,370	3,910	7,990	6,100	3,280	5,060	4,340	5,940	10,700	2,360	2,330	1,470
3	5,550	3,420	7,500	5,860	3,700	4,920	e4,470	6,430	7,160	2,370	5,260	1,420
4	4,890	3,560	6,800	5,850	6,490	4,910	e4,150	6,360	5,900	2,980	3,040	1,390
5	4,460	3,240	6,810	6,070	5,630	5,430	e4,030	6,060	6,110	4,740	2,580	1,340
6	4,110	5,310	7,650	6,480	5,550	5,790	e3,860	6,130	7,450	4,610	2,480	1,340
7	3,520	16,600	7,060	6,400	20,200	6,010	e3,800	5,630	7,840	3,300	2,450	1,510
8	3,640	15,700	6,700	6,440	29,300	6,220	e3,650	5,030	7,120	2,750	2,250	2,110
9	3,440	11,200	6,270	5,790	20,800	6,730	e3,550	4,740	6,400	2,540	2,180	19,200
10	3,380	8,600	6,040	5,560	15,600	6,380	e3,500	4,480	5,140	2,360	1,920	30,500
11	3,250	7,250	18,200	5,410	12,300	6,050	e3,450	3,960	5,160	2,380	1,750	12,800
12	3,210	6,360	30,700	5,240	10,800	5,760	e4,580	3,750	6,140	2,860	1,790	7,820
13	3,000	6,660	23,900	5,250	9,800	5,030	e11,800	3,820	4,980	3,260	2,290	5,810
14	2,960	15,300	16,900	4,920	8,960	4,760	27,900	3,890	4,620	4,430	2,480	4,660
15	3,500	16,300	14,400	4,760	8,750	4,580	e38,300	3,550	4,460	3,750	3,030	3,930
16	3,630	13,400	12,600	4,460	8,750	4,680	24,200	3,450	6,390	2,740	2,690	3,380
17	3,380	10,400	12,000	4,420	8,110	5,700	18,200	e3,430	6,600	2,240	2,160	3,520
18	3,780	7,920	12,800	4,210	7,570	6,080	13,700	e3,750	5,840	2,280	1,930	6,580
19	3,420	7,130	12,400	4,470	7,200	7,120	10,700	3,980	5,760	2,230	1,870	10,800
20	3,190	34,900	11,300	4,410	6,770	6,830	8,760	4,330	4,760	2,100	1,800	12,100
21	3,030	45,900	9,800	4,400	6,350	6,450	7,880	5,790	4,150	2,220	1,790	8,000
22	2,940	24,900	8,530	4,310	6,890	6,230	7,340	6,020	3,810	2,010	1,880	6,160
23	2,830	19,300	7,820	4,140	9,420	6,070	6,560	8,350	3,300	1,960	2,010	4,950
24	2,700	15,500	7,460	4,050	8,850	5,730	6,010	7,420	3,320	2,330	1,790	4,390
25	2,490	12,900	7,810	3,960	7,990	5,080	5,690	5,710	3,020	2,550	1,520	3,520
26	2,660	10,400	9,230	3,910	7,420	4,900	5,470	5,000	3,190	2,040	1,530	3,390
27	3,960	8,300	9,690	4,050	6,930	4,660	5,410	4,730	3,300	2,190	1,540	3,050
28	5,760	7,610	8,880	4,100	6,450	4,400	6,470	4,990	2,800	2,380	1,500	3,880
29	4,550	7,840	8,140	3,930	6,200	4,260	8,410	5,850	2,670	2,600	1,470	36,800
30	4,210	8,230	7,470	3,820	---	4,160	8,240	7,170	2,520	2,530	1,470	57,800
31	4,140	---	6,820	3,580	---	4,000	---	7,420	---	2,330	2,080	---
TOTAL	119,420	362,040	328,430	152,840	269,410	169,620	268,950	164,460	159,700	83,810	66,880	264,880
MEAN	3,852	12,070	10,590	4,930	9,290	5,472	8,965	5,305	5,323	2,704	2,157	8,829
MAX	7,470	45,900	30,700	6,490	29,300	7,120	38,300	8,350	10,700	4,740	5,260	57,800
MIN	2,490	3,240	6,040	3,580	3,280	4,000	3,450	3,430	2,520	1,960	1,470	1,260
(†)	+1,160	-151	-403	+151	+101	-252	-101	+756	-1,916	-5,294	-5,999	+10,688
MEAN‡	3,890	12,060	10,580	4,935	9,293	5,463	8,962	5,330	5,259	2,533	1,964	9,186
CFSM‡	0.85	2.63	2.31	1.08	2.03	1.19	1.96	1.16	1.15	0.55	0.43	2.00
IN.‡	0.98	2.94	2.66	1.24	2.19	1.37	2.18	1.34	1.28	0.64	0.49	2.24

CAL YR 2003 MEAN‡ 9,802 CFSM‡ 2.14 IN.‡ 29.03
WTR YR 2004 MEAN‡ 6,582 CFSM‡ 1.44 IN.‡ 19.55

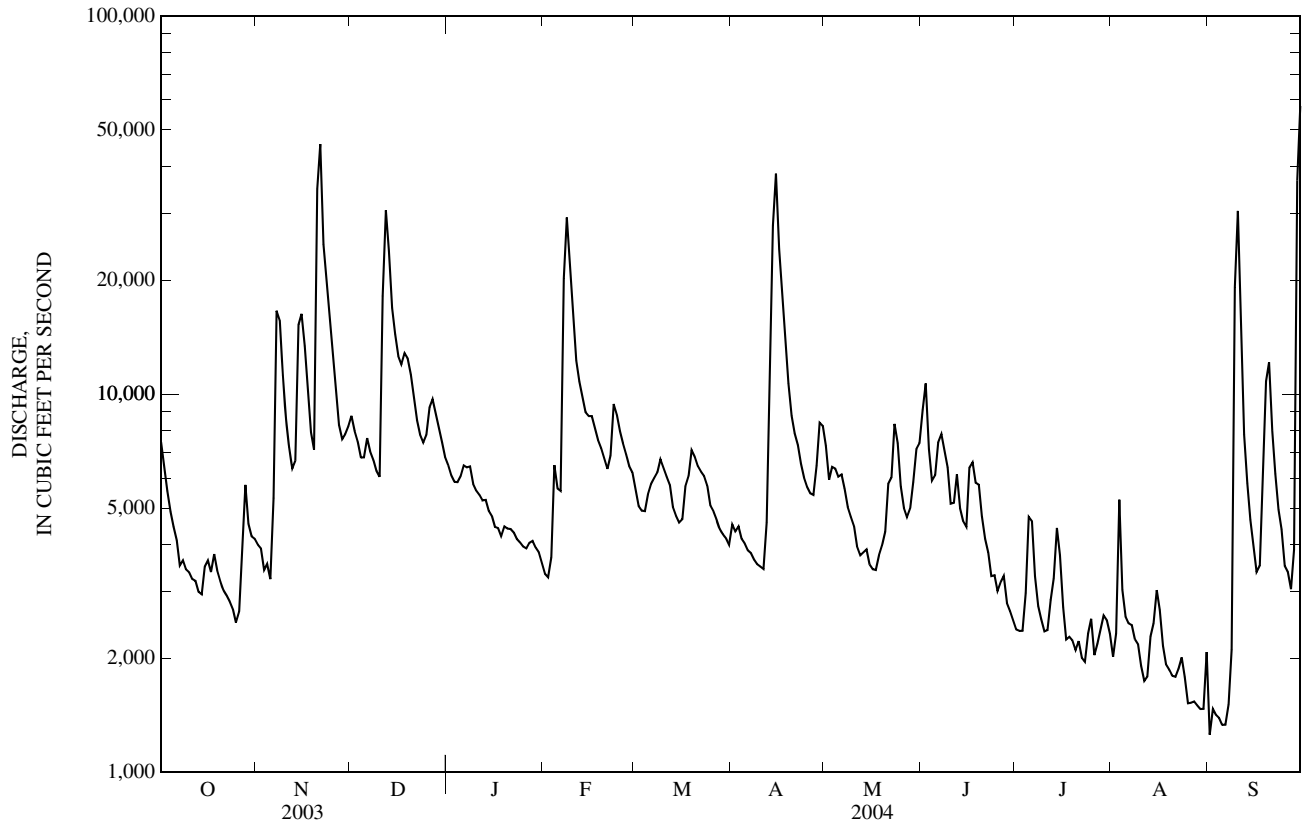
† Total change in contents, equivalent in cubic feet per second, per month, in Lake Moomaw; provided by U.S. Army Corps of Engineers.
‡ Adjusted for monthly change in contents.

02029000 JAMES RIVER AT SCOTTSVILLE, VA—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2004, BY WATER YEAR (WY)												
MEAN	2,808	4,435	5,040	6,491	7,855	9,559	9,163	6,618	4,869	2,577	2,366	3,313
MAX	11,990	25,090	13,450	18,230	22,960	23,820	28,930	18,230	16,030	6,941	7,934	13,180
(WY)	(1980)	(1986)	(1997)	(1996)	(1998)	(1993)	(1987)	(1989)	(2003)	(1995)	(1984)	(1996)
MIN	875	883	1,318	1,165	1,274	1,961	2,493	3,309	1,028	981	800	754
(WY)	(2002)	(2002)	(1981)	(1981)	(2002)	(1981)	(1995)	(2000)	(2002)	(1999)	(2002)	(2002)

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1980 - 2004	
ANNUAL TOTAL	3,577,930		2,410,440			
ANNUAL MEAN	9,803		6,586		5,406	
HIGHEST ANNUAL MEAN					8,819	2003
LOWEST ANNUAL MEAN					1,852	2002
HIGHEST DAILY MEAN	83,600	Feb 24	57,800	Sep 30	199,000	Nov 6, 1985
LOWEST DAILY MEAN	2,010	Jan 29	1,260	Sep 1	452	Sep 14, 2002
ANNUAL SEVEN-DAY MINIMUM	2,080	Jan 29	1,390	Sep 1	499	Sep 9, 2002
MAXIMUM PEAK FLOW			74,700	Sep 30	a243,000	Nov 6, 1985
MAXIMUM PEAK STAGE			20.68	Sep 30	a31.77	Nov 6, 1985
INSTANTANEOUS LOW FLOW			1,010	Sep 1	b418	cSep 13, 2002
ANNUAL RUNOFF (CFSM)	2.14		1.44		1.18	
ANNUAL RUNOFF (INCHES)	29.04		19.56		16.02	
10 PERCENT EXCEEDS	20,100		11,900		11,500	
50 PERCENT EXCEEDS	7,060		5,000		3,150	
90 PERCENT EXCEEDS	2,550		2,250		1,130	



02030000 HARDWARE RIVER BELOW BRIERY CREEK, NEAR SCOTTSVILLE, VA

LOCATION.--Lat 37°48'46", long 78°27'19", NAD83, 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 mi^2.

PERIOD OF RECORD.--October 1938 to September 1995, October 1996 to current year. 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 NGVD of 1929.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Oct. 7-9, Oct. 28 to Nov. 4, Dec. 14, 15, Feb. 24, Aug. 26, and Sept. 30, and periods with ice effect, Jan. 9-12 and Jan. 24 to Feb. 2, which are fair. Maximum discharge, 52,000 ft^3/s, from rating curve extended above 18,000 ft^3/s on basis of slope-area measurements at gage heights 23.8 ft and 31.0 ft. Several measurements of water temperature were made during the year.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 6	1930	1,590	8.80	0245	1,630	8.95
Dec 11	1100	*2,290	*11.00	0530	1,580	8.79

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	186	e160	186	163	e105	129	135	113	117	61	44	32
2	177	e140	169	164	e107	129	128	168	82	67	52	26
3	162	e135	160	161	308	128	122	243	71	53	71	26
4	160	e130	160	157	344	128	116	150	72	84	45	24
5	156	145	309	171	224	128	108	127	284	226	51	22
6	151	904	342	179	525	145	104	114	174	89	54	25
7	e148	725	281	148	991	131	107	109	119	84	41	47
8	e145	352	241	142	425	126	107	105	95	74	35	114
9	e140	256	220	e142	294	119	107	100	83	59	33	666
10	139	218	277	e135	256	118	120	96	79	49	31	166
11	133	200	1,510	e130	231	117	107	90	113	53	30	96
12	131	199	506	e138	210	118	290	106	172	53	37	78
13	127	284	357	144	198	115	846	90	108	90	55	68
14	129	204	e345	135	188	115	591	85	92	77	51	60
15	286	186	e360	134	181	117	297	81	98	55	59	56
16	150	180	347	125	169	182	221	77	96	45	46	53
17	133	182	482	121	167	206	186	80	191	41	39	70
18	128	165	451	137	167	146	169	125	124	57	36	439
19	125	473	333	140	164	137	156	157	150	51	34	169
20	120	703	282	122	160	126	145	115	94	49	32	109
21	119	333	244	118	156	124	139	96	76	43	31	87
22	117	261	231	118	146	116	132	100	70	38	34	74
23	113	228	224	117	142	112	128	96	76	38	31	64
24	109	219	233	e115	e144	111	127	81	84	46	30	58
25	106	228	229	e105	141	111	125	73	66	42	27	54
26	113	199	206	e112	136	111	132	101	68	54	e26	52
27	492	187	196	e125	135	114	142	246	61	63	26	56
28	e286	201	187	e116	132	115	122	118	55	61	26	206
29	e235	249	183	e120	130	110	114	93	54	49	25	838
30	e200	199	181	e119	---	109	110	79	50	55	39	e346
31	e175	---	168	e110	---	120	---	122	---	47	44	---
TOTAL	5,091	8,245	9,600	4,163	6,676	3,913	5,433	3,536	3,074	1,953	1,215	4,181
MEAN	164	275	310	134	230	126	181	114	102	63.0	39.2	139
MAX	492	904	1,510	179	991	206	846	246	284	226	71	838
MIN	106	130	160	105	105	109	104	73	50	38	25	22
CFSM	1.42	2.37	2.67	1.16	1.98	1.09	1.56	0.98	0.88	0.54	0.34	1.20
IN.	1.63	2.64	3.08	1.34	2.14	1.25	1.74	1.13	0.99	0.63	0.39	1.34

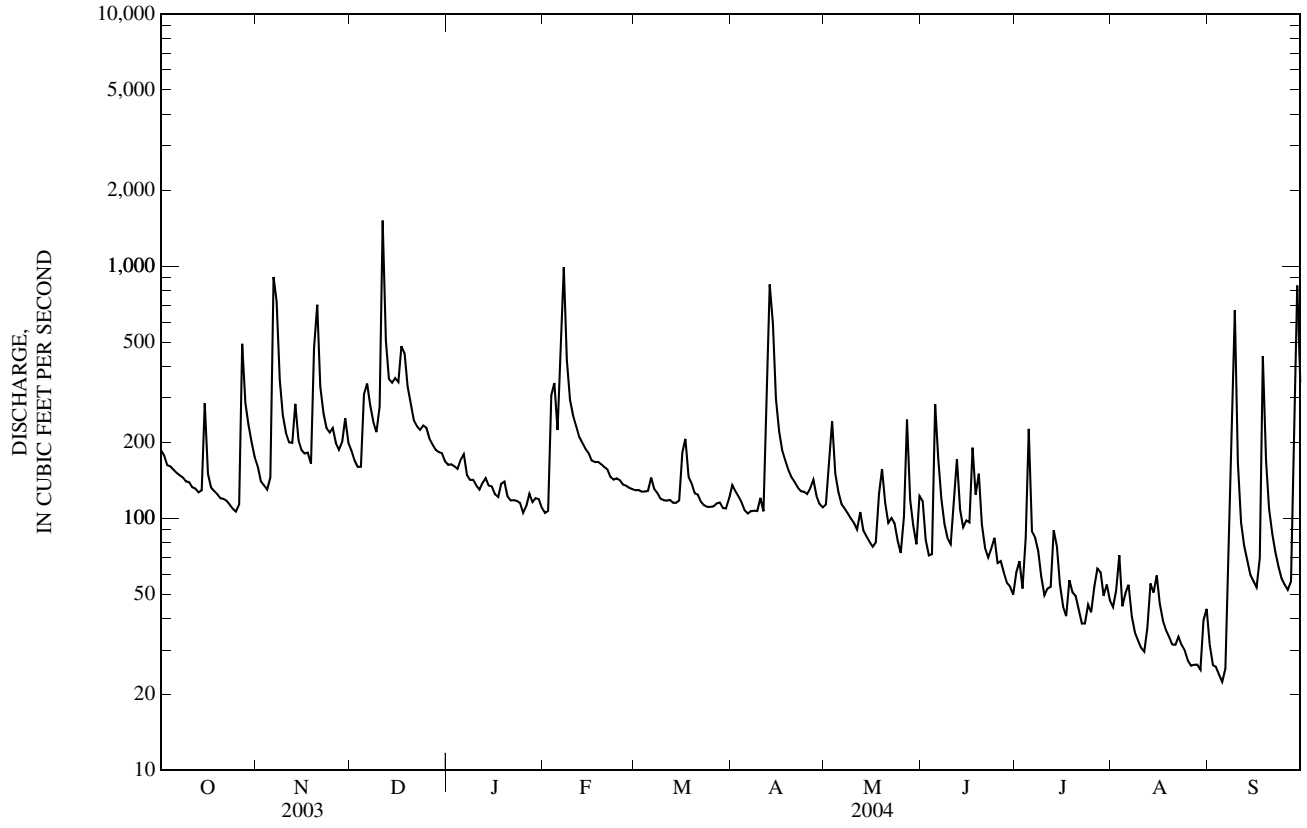
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1995, 1997 - 2004, BY WATER YEAR (WY)

MEAN	88.0	99.9	131	150	185	212	180	136	107	79.3	95.1	88.8
MAX	370	514	514	448	664	613	604	398	560	401	1,155	750
(WY)	(1977)	(1986)	(1949)	(1998)	(1998)	(1993)	(1983)	(1989)	(1972)	(2003)	(1969)	(1944)
MIN	11.3	12.0	20.5	24.1	23.3	35.1	39.5	21.9	4.27	1.69	0.46	2.66
(WY)	(2002)	(2002)	(1966)	(2002)	(2002)	(1981)	(1981)	(2002)	(2002)	(2002)	(2002)	(2002)

02030000 HARDWARE RIVER BELOW BRIERY CREEK, NEAR SCOTTSVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1939 - 1995 1997 - 2004	
ANNUAL TOTAL	101,072		57,080			
ANNUAL MEAN	277		156		129	
HIGHEST ANNUAL MEAN					249	1973
LOWEST ANNUAL MEAN					17.4	2002
HIGHEST DAILY MEAN	6,510	Sep 19	1,510	Dec 11	28,400	Aug 20, 1969
LOWEST DAILY MEAN	e46	Jan 28	22	Sep 5	0.00	Aug 27, 2002
ANNUAL SEVEN-DAY MINIMUM	e49	Jan 23	27	Aug 23	0.01	Aug 21, 2002
MAXIMUM PEAK FLOW			2,290	Dec 11	52,000	Aug 20, 1969
MAXIMUM PEAK STAGE			11.00	Dec 11	a31.00	Aug 20, 1969
INSTANTANEOUS LOW FLOW			22	bSep 5	0.00	cAug 26, 2002
ANNUAL RUNOFF (CFSM)	2.39		1.34		1.11	
ANNUAL RUNOFF (INCHES)	32.41		18.30		15.12	
10 PERCENT EXCEEDS	448		283		238	
50 PERCENT EXCEEDS	179		124		80	
90 PERCENT EXCEEDS	90		46		24	

a From floodmarks.
b Also Sept. 6, 2004
c Also part or all of each day Aug. 27, 28, 2002.
e Estimated.



02031000 MECHUMS RIVER NEAR WHITE HALL, VA

LOCATION.--Lat 38°06'09", long 78°35'34", NAD83, 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 mi^2.

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 NGVD of 1929. 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 periods of doubtful or no gage-height record, Oct. 6-10, Feb. 24, and Aug. 2, and periods with ice effect, Jan. 9-12, 22-29 and Jan. 31 to Feb. 2, which are fair. Maximum discharge, 20,000 ft^3/s, from rating curve extended above 8,000 ft^3/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 ft^3/s, from rating curve extended above 8,300 ft^3/s.

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

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1745	2,730	10.59	2330	5,260	14.41
Dec 11	0300	4,380	13.26	2215	1,380	8.37
Feb 6	2045	1,580	8.45	2045	*8,110	*17.83

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	158	103	152	128	e84	97	100	96	86	93	59	29
2	147	98	137	128	e90	97	97	142	71	121	e58	27
3	130	94	128	126	237	94	91	266	64	68	53	26
4	124	90	126	122	233	94	87	157	68	298	47	26
5	114	125	163	128	163	93	81	134	477	276	52	25
6	e110	662	163	122	676	103	79	119	198	101	64	35
7	e100	432	147	112	720	97	81	109	135	79	48	55
8	e95	254	138	109	394	95	81	100	111	68	43	888
9	e89	189	139	e110	275	90	81	94	101	58	40	1,500
10	e82	160	387	e105	233	89	78	91	90	56	38	275
11	82	144	1,870	e100	209	87	80	87	101	58	46	154
12	82	150	553	e107	183	87	269	84	131	94	53	111
13	78	261	370	110	167	84	683	79	98	258	72	91
14	84	172	356	104	154	83	516	76	89	115	53	79
15	183	153	329	104	146	83	329	73	145	76	51	71
16	100	143	292	99	133	143	238	73	148	62	44	67
17	89	135	394	97	125	140	193	76	121	57	40	300
18	84	125	355	107	122	112	165	94	102	76	38	603
19	81	855	286	105	120	115	147	127	91	65	37	239
20	78	571	240	96	117	104	136	101	76	71	34	154
21	77	341	206	94	116	103	128	91	68	56	34	118
22	74	255	192	e94	110	97	119	115	65	51	37	99
23	72	207	184	e92	106	94	110	88	66	52	33	84
24	71	186	197	e90	e106	92	105	76	73	96	31	75
25	71	181	187	e86	104	90	100	70	62	62	29	69
26	72	155	168	e82	101	89	145	70	64	78	29	64
27	227	142	158	e100	101	91	131	193	57	79	28	69
28	165	172	151	e95	99	90	108	103	52	75	28	2,500
29	142	210	145	e92	98	87	100	88	51	62	27	1,280
30	119	166	141	97	---	87	94	78	48	72	42	534
31	108	---	131	e87	---	95	---	92	---	57	35	---
TOTAL	3,288	6,931	8,585	3,228	5,522	3,002	4,752	3,242	3,109	2,890	1,323	9,647
MEAN	106	231	277	104	190	96.8	158	105	104	93.2	42.7	322
MAX	227	855	1,870	128	720	143	683	266	477	298	72	2,500
MIN	71	90	126	82	84	83	78	70	48	51	27	25
CFSM	1.11	2.42	2.90	1.09	2.00	1.02	1.66	1.10	1.09	0.98	0.45	3.37
IN.	1.28	2.70	3.35	1.26	2.15	1.17	1.85	1.26	1.21	1.13	0.52	3.76

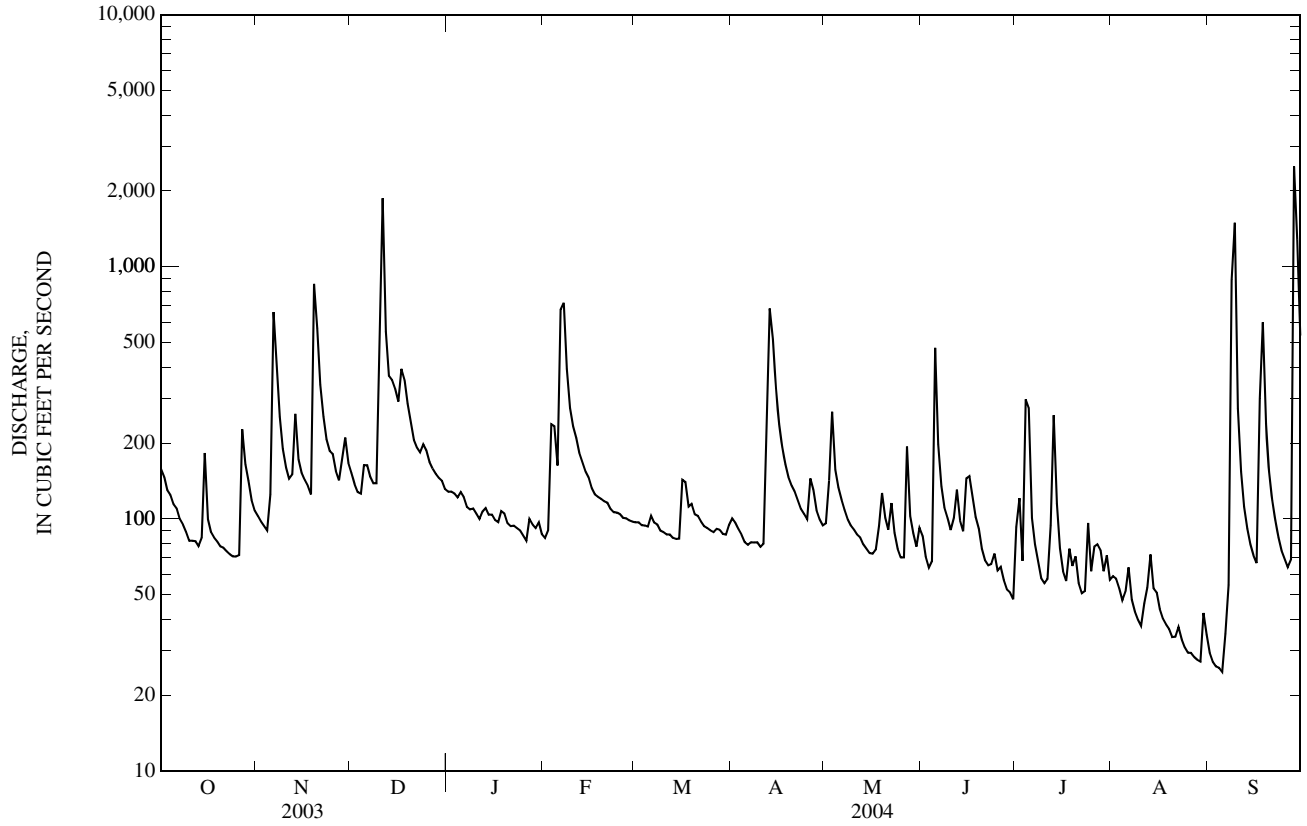
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 1951, 1979 - 2004, BY WATER YEAR (WY)

MEAN	81.0	99.6	115	123	145	161	163	118	90.2	62.0	54.8	97.9
MAX	606	636	329	425	550	473	703	289	322	192	245	422
(WY)	(1943)	(1986)	(1949)	(1996)	(1998)	(1993)	(1983)	(1989)	(1995)	(1991)	(1949)	(1987)
MIN	8.65	13.1	17.2	16.2	14.6	34.5	37.1	24.4	5.95	1.98	0.29	0.34
(WY)	(1944)	(2002)	(2002)	(2002)	(2002)	(2002)	(1981)	(2002)	(2002)	(2002)	(2002)	(2002)

02031000 MECHUMS RIVER NEAR WHITE HALL, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1943 - 1951, 1979 - 2004	
ANNUAL TOTAL	73,335		55,519			
ANNUAL MEAN	201		152		109	
HIGHEST ANNUAL MEAN					178	1996
LOWEST ANNUAL MEAN					15.0	2002
HIGHEST DAILY MEAN	4,630	Sep 19	2,500	Sep 28	10,600	aOct 15, 1942
LOWEST DAILY MEAN	e35	Jan 28	25	Sep 5	0.00	bAug 24, 2002
ANNUAL SEVEN-DAY MINIMUM	e38	Jan 24	29	Aug 31	0.00	Sep 4, 2002
MAXIMUM PEAK FLOW			8,110	Sep 28	20,000	Oct 15, 1942
MAXIMUM PEAK STAGE			17.83	Sep 28	c30.30	Oct 15, 1942
INSTANTANEOUS LOW FLOW			24	dSep 4	0.00	fAug 18, 2002
ANNUAL RUNOFF (CFSM)	2.11		1.59		1.14	
ANNUAL RUNOFF (INCHES)	28.60		21.65		15.49	
10 PERCENT EXCEEDS	355		259		197	
50 PERCENT EXCEEDS	140		100		67	
90 PERCENT EXCEEDS	56		53		18	

a Also Aug. 25-27 and Sept. 4-25, 2002.
b Many days in September 2002.
c From floodmarks, datum then in use.
d Also Sept. 5, 2004.
e Estimated.
f Also no flow part or all of each day August 23-28 and Sept. 3-26, 2002.



02032640 NORTH FORK RIVANNA RIVER NEAR EARLYSVILLE, VA

LOCATION.--Lat 38°09'48", long 78°25'29", NAD83, 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 mi^2.

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

GAGE.--Water-stage recorder. Elevation of gage is 365 ft NGVD of 1929, from topographic map.

REMARKS.--Records good except those for periods with ice effect, Jan. 9-12, 22-24 and Feb. 1, 2, and periods of doubtful or no gage-height record, Jan. 25-31, Feb. 24, July 13, 19, 20, Aug. 26, and Sept. 21, which are fair. Maximum discharge, 30,100 ft^3/s, from rating curve extended above 2,150 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 5	2230	2,580	7.72	0300	5,060	10.85
Nov 13	0030	2,090	6.98	2200	3,460	8.90
Dec 11	0315	5,080	10.87	2045	*6,030	*11.92
Feb 6	1815	2,240	7.21			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	129	138	190	160	e88	98	114	93	67	40	46	13
2	118	125	168	156	e92	98	119	211	56	40	61	11
3	105	115	152	150	341	96	112	409	49	36	47	11
4	102	108	148	147	284	95	106	237	51	109	40	10
5	97	410	203	152	187	95	99	183	479	378	49	10
6	91	949	215	145	1,120	110	95	151	219	147	59	11
7	87	503	192	130	909	109	95	129	147	110	41	22
8	84	322	194	124	503	108	95	113	112	91	33	462
9	81	239	184	e120	350	103	92	101	94	69	29	2,120
10	80	196	352	e115	292	99	87	93	94	58	27	530
11	79	174	2,420	e110	254	95	86	87	125	56	25	250
12	79	258	779	e120	218	94	281	85	155	71	28	149
13	78	904	518	123	198	89	905	79	118	e127	41	108
14	80	450	476	114	181	86	842	74	102	77	39	83
15	226	331	459	112	168	86	551	70	103	56	38	73
16	99	269	395	104	150	167	371	71	126	44	31	64
17	88	230	459	102	140	176	277	78	102	39	27	582
18	86	197	434	109	136	140	219	75	143	58	24	1,180
19	82	577	360	110	133	132	183	99	130	e48	23	533
20	79	715	304	97	130	120	161	219	88	e56	21	292
21	78	474	260	97	129	116	146	116	74	40	22	e183
22	76	358	237	e96	123	107	129	92	73	39	24	129
23	73	291	227	e94	117	101	117	77	85	109	21	99
24	70	257	261	e90	e117	97	107	66	79	154	19	82
25	68	239	300	e85	114	94	100	61	65	69	18	72
26	70	195	274	e83	107	93	152	73	66	73	e17	63
27	432	176	245	e100	104	94	134	73	55	75	16	63
28	299	211	219	e110	102	93	106	90	48	65	14	1,590
29	265	263	202	e99	99	87	93	99	46	52	14	1,300
30	197	211	190	e105	---	85	88	75	41	49	13	654
31	157	---	171	e96	---	95	---	76	---	42	15	---
TOTAL	3,735	9,885	11,188	3,555	6,886	3,258	6,062	3,555	3,192	2,477	922	10,749
MEAN	120	330	361	115	237	105	202	115	106	79.9	29.7	358
MAX	432	949	2,420	160	1,120	176	905	409	479	378	61	2,120
MIN	68	108	148	83	88	85	86	61	41	36	13	10
CFSM	1.11	3.05	3.34	1.06	2.20	0.97	1.87	1.06	0.98	0.74	0.27	3.31
IN.	1.28	3.40	3.85	1.22	2.37	1.12	2.08	1.22	1.10	0.85	0.32	3.70

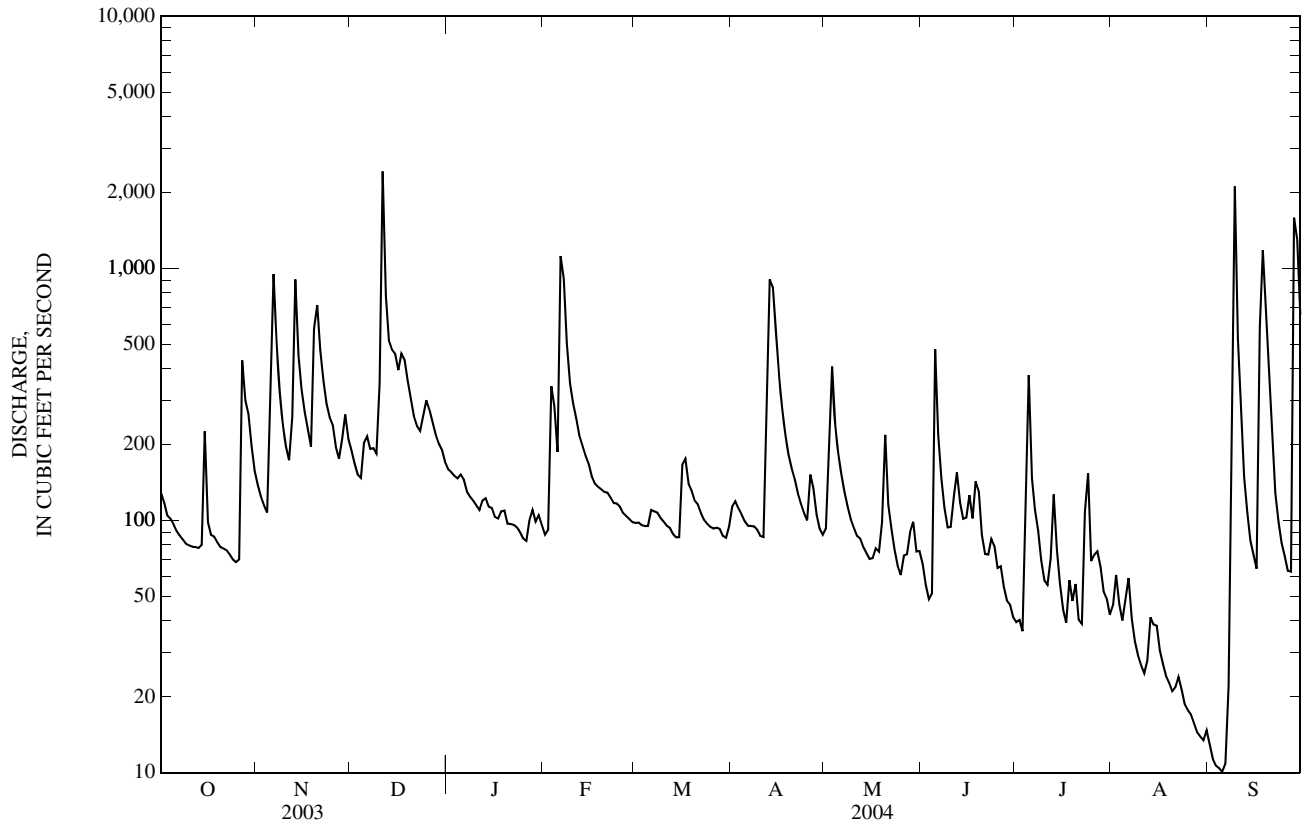
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 2004, BY WATER YEAR (WY)

MEAN	63.3	125	146	215	201	203	156	130	123	69.2	46.7	194
MAX	195	330	367	574	624	406	260	421	316	195	151	682
(WY)	(1996)	(2004)	(1997)	(1996)	(1998)	(1994)	(2003)	(1998)	(1995)	(1995)	(2003)	(1996)
MIN	12.8	16.7	27.7	28.2	26.8	74.3	60.1	47.4	11.4	9.62	1.63	1.40
(WY)	(2002)	(1999)	(1999)	(2002)	(2002)	(2002)	(1995)	(1999)	(1999)	(1999)	(2002)	(2002)

02032640 NORTH FORK RIVANNA RIVER NEAR EARLYSVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1994 - 2004	
ANNUAL TOTAL	95,849		65,464			
ANNUAL MEAN	263		179		139	
HIGHEST ANNUAL MEAN					246	1996
LOWEST ANNUAL MEAN					34.9	2002
HIGHEST DAILY MEAN	4,470	Sep 19	2,420	Dec 11	e11,000	Sep 6, 1996
LOWEST DAILY MEAN	32	Sep 12	10	aSep 4	0.28	Sep 14, 2002
ANNUAL SEVEN-DAY MINIMUM	41	Sep 6	12	Aug 31	0.40	Sep 9, 2002
MAXIMUM PEAK FLOW			6,030	Sep 28	30,100	Sep 6, 1996
MAXIMUM PEAK STAGE			11.92	Sep 28	b23.56	Sep 6, 1996
INSTANTANEOUS LOW FLOW			10	cSep 4	0.25	Sep 14, 2002
ANNUAL RUNOFF (CFSM)	2.43		1.65		1.28	
ANNUAL RUNOFF (INCHES)	32.97		22.52		17.44	
10 PERCENT EXCEEDS	506		363		284	
50 PERCENT EXCEEDS	157		105		69	
90 PERCENT EXCEEDS	56		40		13	

a Also Sept. 5, 2004.
b From floodmarks.
c Also Sept. 5, 6, 2004.
e Estimated.



02034000 RIVANNA RIVER AT PALMYRA, VA

LOCATION.--Lat 37°51'29", long 78°15'57", NAD83, 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 mi^2.

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 NGVD of 1929. 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.--Records good except those for periods with ice effect, Jan. 9, 10, 23-25, 27, 28, and periods of no gage-height record, Feb. 24 and Aug. 19-23, 26, which are fair. 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 ft^3/s, from rating curve extended above 76,000 ft^3/s on basis of contracted-opening 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.

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

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

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 6	2330	7,590	12.46	0430	9,840	15.21
Nov 20	0500	8,770	13.91	1615	12,200	17.98
Dec 11	1645	*14,400	*19.59	1230	12,600	18.39

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	678	891	1,080	886	550	598	619	611	697	424	301	177
2	687	830	995	862	586	591	647	790	527	1,050	485	146
3	642	779	948	858	956	589	598	1,600	416	485	631	130
4	617	748	920	840	1,900	575	565	1,200	365	695	317	127
5	606	661	1,290	865	1,210	573	529	972	1,410	2,190	291	124
6	581	4,840	1,610	958	2,200	615	558	858	1,450	921	396	122
7	559	4,500	1,350	808	6,950	659	496	791	883	762	330	146
8	555	1,960	1,220	757	2,870	609	426	733	705	572	263	735
9	521	1,350	1,120	e745	1,780	591	485	669	598	473	231	8,830
10	509	1,130	1,130	e720	1,450	572	481	632	546	392	213	2,620
11	500	1,030	10,700	669	1,300	557	474	597	570	388	206	1,190
12	493	949	4,710	734	1,160	555	841	569	1,270	476	279	822
13	489	2,250	2,400	774	1,070	535	4,410	560	824	1,730	364	629
14	478	1,630	2,040	727	993	520	4,680	525	644	784	363	508
15	1,100	1,280	2,250	700	936	521	2,720	520	592	480	325	442
16	794	1,130	1,920	681	873	695	1,680	487	917	358	273	396
17	617	1,070	2,330	643	814	1,060	1,300	469	983	300	228	431
18	569	976	2,610	690	788	816	1,100	516	1,070	341	216	3,990
19	547	2,170	1,810	801	776	761	966	805	1,050	372	e204	1,940
20	522	6,030	1,520	689	768	708	851	1,170	683	408	e192	1,080
21	499	2,500	1,340	625	751	676	820	815	528	319	e208	775
22	496	1,710	1,230	613	724	653	760	720	461	268	e220	599
23	482	1,400	1,180	e620	688	617	707	656	495	289	e204	470
24	472	1,260	1,220	e600	e685	600	688	537	493	491	191	439
25	464	1,330	1,300	e570	671	577	647	477	453	439	177	394
26	463	1,130	1,180	542	642	547	687	449	447	627	e159	369
27	1,610	1,030	1,110	e620	627	544	862	762	423	611	152	363
28	1,630	1,020	1,050	e640	615	555	725	829	362	474	156	1,120
29	1,270	1,410	1,010	623	602	532	640	780	354	392	150	9,330
30	1,170	1,190	980	652	---	509	613	609	310	357	150	3,170
31	936	---	928	604	---	534	---	610	---	335	207	---
TOTAL	21,556	50,184	56,481	22,116	35,935	19,044	31,575	22,318	20,526	18,203	8,082	41,614
MEAN	695	1,673	1,822	713	1,239	614	1,052	720	684	587	261	1,387
MAX	1,630	6,030	10,700	958	6,950	1,060	4,680	1,600	1,450	2,190	631	9,330
MIN	463	661	920	542	550	509	426	449	310	268	150	122
CFSM	1.05	2.52	2.74	1.07	1.87	0.93	1.59	1.08	1.03	0.88	0.39	2.09
IN.	1.21	2.81	3.16	1.24	2.01	1.07	1.77	1.25	1.15	1.02	0.45	2.33

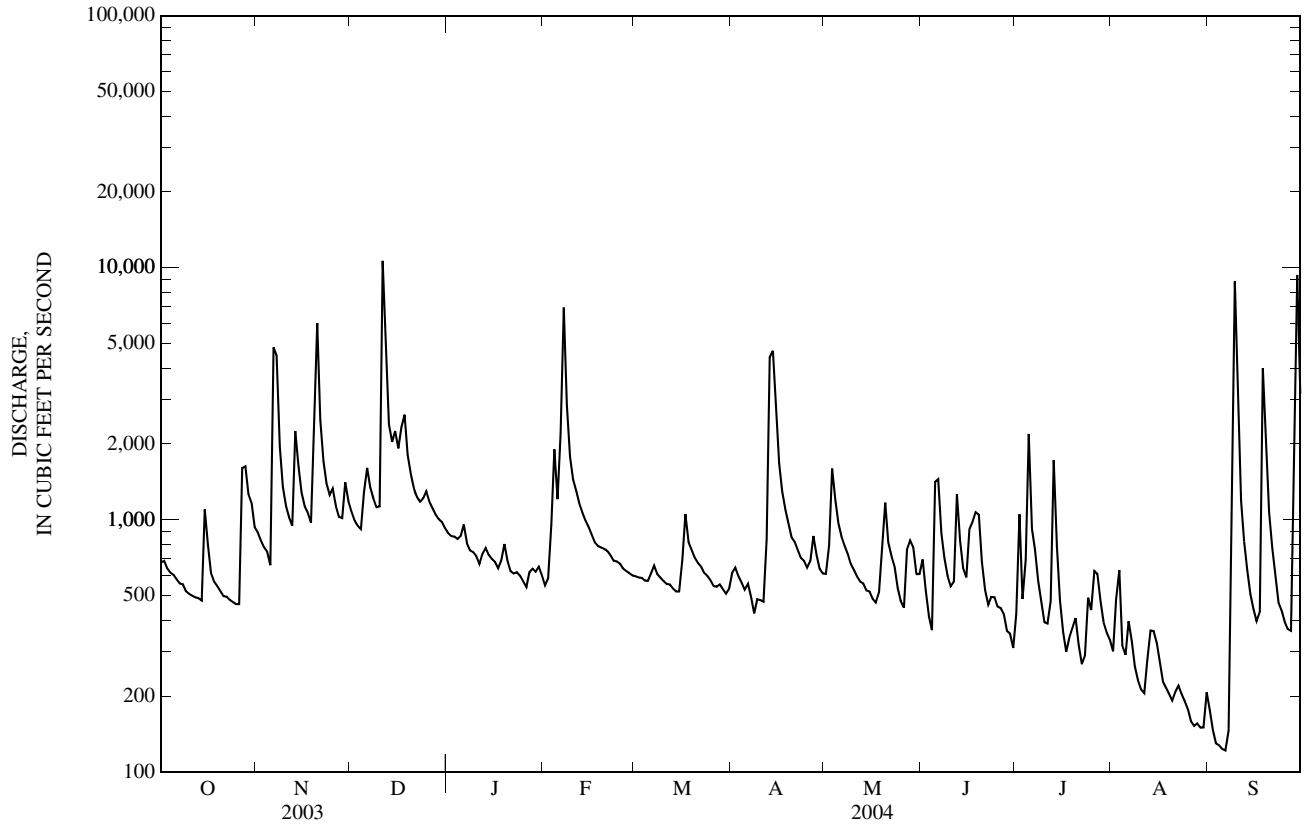
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 2004, BY WATER YEAR (WY)

MEAN	541	587	758	916	1,037	1,182	1,037	760	597	399	453	502
MAX	3,535	3,521	2,667	2,620	3,468	3,415	3,662	2,472	4,473	1,524	3,404	2,915
(WY)	(1943)	(1986)	(1949)	(1936)	(1998)	(1993)	(1937)	(1989)	(1972)	(1975)	(1969)	(1979)
MIN	46.4	64.7	88.9	104	103	225	214	204	95.9	39.0	20.2	19.1
(WY)	(1942)	(2002)	(1966)	(1966)	(2002)	(1981)	(1981)	(2002)	(1999)	(1966)	(1966)	(1954)

02034000 RIVANNA RIVER AT PALMYRA, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1935 - 2004	
ANNUAL TOTAL	551,517		347,634			
ANNUAL MEAN	1,511		950		729	
HIGHEST ANNUAL MEAN					1,401	1973
LOWEST ANNUAL MEAN					129	2002
HIGHEST DAILY MEAN	23,200	Sep 19	10,700	Dec 11	68,000	Jun 22, 1972
LOWEST DAILY MEAN	e255	Jan 24	122	Sep 6	5.2	aSep 9, 1966
ANNUAL SEVEN-DAY MINIMUM	e269	Jan 24	139	Sep 1	5.6	Sep 7, 1966
MAXIMUM PEAK FLOW			14,400	Dec 11	86,000	Aug 20, 1969
MAXIMUM PEAK STAGE			19.59	Dec 11	39.85	Aug 20, 1969
INSTANTANEOUS LOW FLOW			119	Sep 6	5.2	aSep 9, 1966
ANNUAL RUNOFF (CFSM)	2.28		1.43		1.10	
ANNUAL RUNOFF (INCHES)	30.90		19.48		14.92	
10 PERCENT EXCEEDS	2,440		1,620		1,410	
50 PERCENT EXCEEDS	1,020		652		416	
90 PERCENT EXCEEDS	377		323		105	

a Also Sept. 10, 11, 1966.
e Estimated.



02035000 JAMES RIVER AT CARTERSVILLE, VA

LOCATION.--Lat 37°40'16", long 78°05'09", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to June 4, 1927, nonrecording gage at same site and datum.

REMARKS.--Records good. Moderate diurnal fluctuation caused by powerplants upstream from station. Since 1982, low flows during summer months are augmented by releases from Lake Moomaw, station 02011795. National Weather Service gage-height telemeter at station. Maximum discharge, 362,000 ft^3/s, from rating curve extended above 160,000 ft^3/s on basis of slope-conveyance study.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 40,000 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 21	1000	59,300	18.50	1245	49,300	15.95
Dec 12	0400	49,400	15.97	1030	45,400	15.12
Feb 8	1000	42,300	14.46	1815	*73,500	*20.49

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10,800	5,980	11,500	8,690	4,980	7,280	5,810	9,270	10,100	3,060	3,060	2,350
2	9,170	5,630	10,800	8,330	4,850	6,810	6,420	7,650	12,900	4,560	3,290	1,690
3	8,090	5,230	9,840	8,110	5,040	6,460	6,030	9,000	9,490	3,420	6,580	1,800
4	7,140	4,930	9,080	7,780	10,200	6,400	6,000	9,610	7,260	3,570	5,630	1,740
5	6,560	4,900	9,970	8,140	9,840	6,610	5,570	8,070	6,880	12,400	3,780	1,710
6	6,110	9,150	13,600	8,920	9,190	7,310	5,340	8,010	10,700	8,390	4,510	1,650
7	5,210	27,200	11,800	8,660	31,400	7,780	5,220	7,320	9,780	6,240	3,630	1,700
8	4,800	24,500	10,400	8,560	40,400	7,750	4,940	6,570	9,100	4,840	3,180	2,260
9	4,730	18,100	9,270	7,950	29,300	8,270	4,880	6,100	8,100	3,770	2,810	17,200
10	4,520	13,800	8,740	7,640	22,200	8,070	4,830	5,590	6,730	3,440	2,660	41,000
11	4,480	11,100	28,600	7,270	17,700	7,690	4,760	5,300	6,000	3,130	2,400	20,400
12	4,450	9,510	45,200	7,010	14,800	7,340	5,160	4,840	8,370	3,320	2,390	11,100
13	4,330	9,990	34,000	7,190	13,500	6,760	18,000	4,770	7,820	6,040	3,560	7,750
14	4,020	14,900	25,800	7,000	12,100	6,150	32,600	4,830	6,290	6,250	3,910	6,100
15	4,740	21,400	23,600	6,560	11,400	5,960	46,600	4,610	5,870	5,430	3,940	5,180
16	5,900	17,800	20,800	6,430	11,300	6,480	33,000	4,350	9,750	4,250	4,210	4,370
17	4,800	15,000	18,900	6,000	10,600	9,010	23,800	4,240	12,400	3,300	3,370	4,060
18	4,850	11,600	21,200	5,980	9,790	8,600	18,600	4,560	8,830	3,300	2,940	10,800
19	4,830	9,910	18,500	6,470	9,210	9,240	14,800	5,360	8,290	3,200	2,600	14,500
20	4,390	31,900	16,800	6,440	8,800	9,120	11,700	6,020	7,010	3,030	2,430	18,300
21	4,240	56,200	14,500	6,050	8,500	8,420	10,300	7,080	5,670	3,050	2,280	11,400
22	4,030	33,200	12,500	6,030	8,500	8,140	9,470	7,750	4,750	2,990	2,380	8,150
23	3,910	24,500	11,300	5,850	10,500	7,710	8,510	8,520	4,580	2,610	2,610	6,420
24	3,740	20,100	10,600	5,690	11,500	7,460	7,810	10,400	4,220	2,940	2,450	5,370
25	3,480	17,200	10,900	5,630	10,300	6,790	7,200	7,290	3,990	3,670	2,210	4,710
26	3,510	14,400	11,800	5,490	9,490	6,350	6,990	6,150	4,070	3,600	e1,800	4,060
27	4,750	11,500	13,000	5,520	8,900	6,220	6,900	6,480	4,380	4,110	1,960	3,830
28	9,580	10,200	12,300	5,630	8,350	5,950	7,140	6,440	3,950	3,720	1,880	4,470
29	8,110	11,000	11,200	5,540	7,830	5,680	8,850	7,370	3,340	3,830	1,830	29,700
30	7,560	11,200	10,200	5,560	---	5,540	10,100	7,660	3,240	3,750	1,810	68,800
31	6,390	---	9,250	5,390	---	5,450	---	8,700	---	3,510	2,120	---
TOTAL	173,220	482,030	485,950	211,510	370,470	222,800	347,330	209,910	213,860	132,720	94,210	322,570
MEAN	5,588	16,070	15,680	6,823	12,770	7,187	11,580	6,771	7,129	4,281	3,039	10,750
MAX	10,800	56,200	45,200	8,920	40,400	9,240	46,600	10,400	12,900	12,400	6,580	68,800
MIN	3,480	4,900	8,740	5,390	4,850	5,450	4,760	4,240	3,240	2,610	1,800	1,650
CFSM	0.89	2.57	2.51	1.09	2.04	1.15	1.85	1.08	1.14	0.68	0.49	1.72
IN.	1.03	2.87	2.89	1.26	2.20	1.32	2.06	1.25	1.27	0.79	0.56	1.92

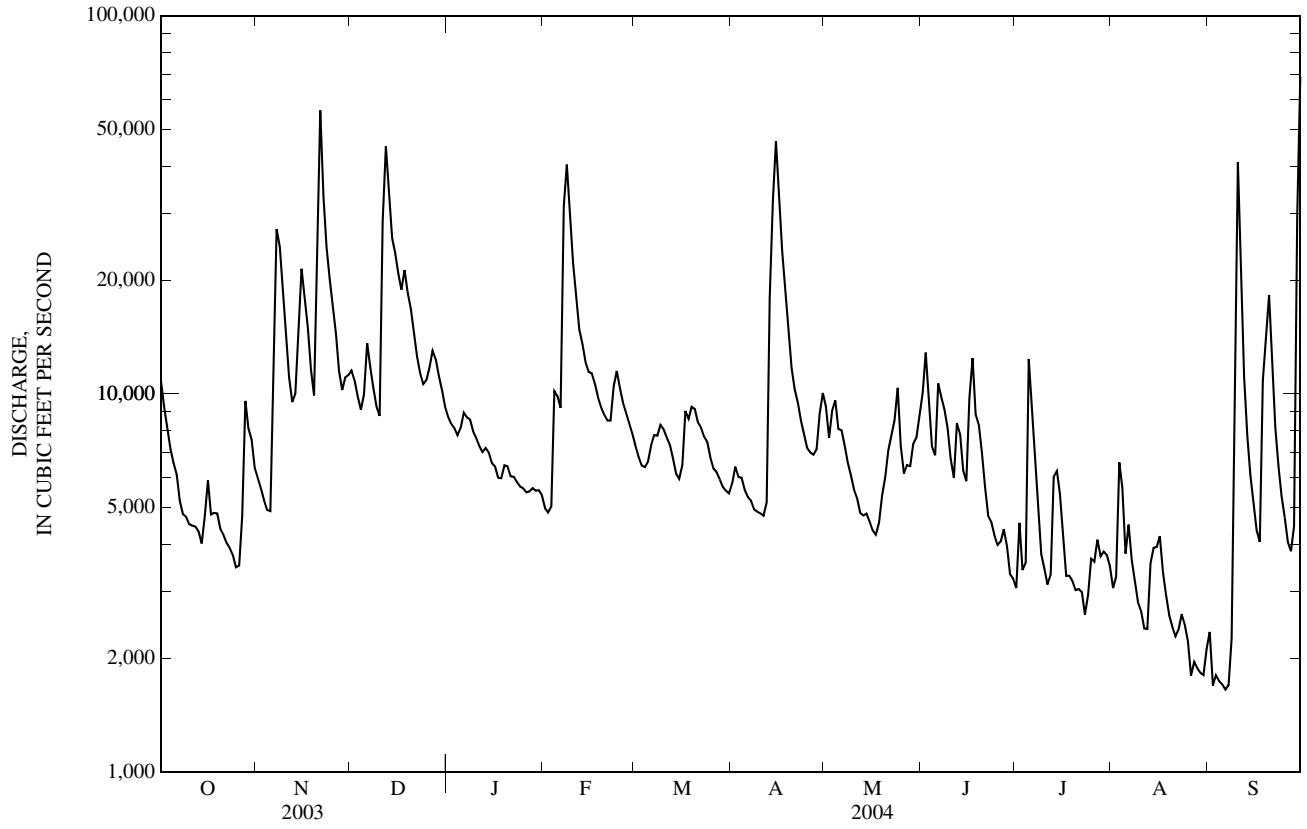
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1899 - 2004, BY WATER YEAR (WY)

MEAN	4,173	4,825	6,991	9,391	10,800	12,950	11,030	7,994	6,111	3,801	3,964	3,708
MAX	20,830	28,210	25,990	26,480	33,750	31,810	33,500	23,530	30,330	15,070	20,490	18,140
(WY)	(1907)	(1986)	(1949)	(1936)	(1998)	(1993)	(1987)	(1989)	(1972)	(1919)	(1969)	(1996)
MIN	528	924	1,054	1,353	1,528	2,646	3,286	2,710	1,162	605	652	561
(WY)	(1931)	(1931)	(1966)	(1956)	(2002)	(1981)	(1995)	(1930)	(2002)	(1966)	(1930)	(1930)

02035000 JAMES RIVER AT CARTERSVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1899 - 2004	
ANNUAL TOTAL	4,989,760		3,266,580			
ANNUAL MEAN	13,670		8,925		7,125	
HIGHEST ANNUAL MEAN					12,410	1973
LOWEST ANNUAL MEAN					2,126	2002
HIGHEST DAILY MEAN	101,000	Feb 24	68,800	Sep 30	280,000	Jun 22, 1972
LOWEST DAILY MEAN	2,430	Jan 28	1,650	Sep 6	330	Sep 14, 1966
ANNUAL SEVEN-DAY MINIMUM	2,700	Jan 25	1,790	Sep 2	386	Sep 8, 1966
MAXIMUM PEAK FLOW			73,500	Sep 30	362,000	Jun 22, 1972
MAXIMUM PEAK STAGE			20.49	Sep 30	a37.87	Jun 22, 1972
INSTANTANEOUS LOW FLOW			1,540	Sep 2	316	Sep 13, 1966
ANNUAL RUNOFF (CFSM)	2.18		1.43		1.14	
ANNUAL RUNOFF (INCHES)	29.67		19.42		15.47	
10 PERCENT EXCEEDS	27,900		17,200		15,000	
50 PERCENT EXCEEDS	9,840		6,800		4,450	
90 PERCENT EXCEEDS	3,510		3,230		1,420	

a From floodmarks.
e Estimated.



02035000 JAMES RIVER AT CARTERSVILLE, VA—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1930, 1948, 1967 to current year.

PERIOD OF CONTINUOUS (15-MINUTE INTERVAL) RECORD.--
SPECIFIC CONDUCTANCE: December 2003 to current.
WATER TEMPERATURE: December 2003 to current.
pH: December 2003 to current.
TURBIDITY: December 2003 to current.

INSTRUMENTATION.-- Water-quality monitor December 2003 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.--Water samples were collected by the U.S. Geological Survey and analyzed by either the U.S. Geological Survey (Agency Code 1028) or by the Virginia Division of Consolidated Laboratory Services (VDCLS, Agency Code 85116), using analytical methods approved by the U.S. Geological Survey. Analyses performed by VDCLS are reported to U.S. Geological Survey rounding specifications. Results of chemical analyses provided by VDCLS were quality-assured and approved by the U.S. Geological Survey.

EXTREMES FOR CURRENT YEAR.--
TURBIDITY: Maximum, 420 FNU, Sept. 30; minimum, 1.00 FNU, June 30, July 1.
pH: Maximum, 9.1 standard units, Aug. 26; minimum, 6.5 standard units, June 17.
SPECIFIC CONDUCTANCE: Maximum, 262 microsiemens/cm, Sept. 7, 8; minimum, 60 microsiemens/cm, Sept. 29.
WATER TEMPERATURE: Maximum, 30.4°C, Aug. 1; minimum, 0.0°C, Jan. 25, 26, 27, 28.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Sample type	Agency analyzing sample, code (00028)	Gage height, feet (00065)	Instantaneous discharge, cfs (00061)	Turbidity, IR LED light, det ang 90 deg, FNU (63680)	Turbidity, NTU (00076)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)
OCT												
21...	1100	Environmental	85116	2.66	4,210	--	1.7	749	9.9	101	8.3	208
NOV												
18...	1155	Blank	85116	--	--	--	.45	--	--	--	--	--
18...	1200	Environmental	85116	5.99	11,600	--	12	763	10.7	96	7.7	131
21...	1400	Environmental	85116	18.36	58,700	--	--	755	10.0	95	7.8	115
DEC												
11...	1415	Environmental	85116	12.45	33,600	--	150	746	11.6	96	7.4	102
18...	1045	Environmental	85116	9.44	22,200	--	17	751	11.4	91	7.5	118
JAN												
20...	1115	Environmental	85116	3.81	6,410	--	2.8	759	13.9	103	7.9	148
FEB												
04...	1430	Environmental	1028	6.08	11,800	--	--	--	14.1	--	7.4	167
07...	1015	Environmental	85116	12.09	32,100	--	130	748	13.2	98	7.1	110
09...	1415	Environmental	85116	11.14	28,400	--	50	766	13.5	101	7.4	118
09...	1430	Replicate	85116	11.12	28,300	--	--	--	--	--	--	--
24...	1015	Environmental	85116	5.96	11,500	--	7.4	755	12.3	101	7.9	181
MAR												
15...	1500	Environmental	1028	3.57	5,930	--	--	760	11.9	111	8.6	148
17...	1100	Environmental	85116	5.04	9,100	--	--	754	10.4	93	7.3	126
23...	1315	Environmental	85116	4.42	7,700	--	3.8	765	11.8	104	7.6	150
APR												
06...	1215	Environmental	85116	3.19	5,180	--	2.7	754	11.0	102	8.6	166
06...	1230	Replicate	85116	3.18	5,160	--	3.4	--	--	--	--	--
13...	1445	Environmental	85116	9.17	21,300	--	65	741	10.4	95	7.4	121
16...	1130	Environmental	85116	12.26	32,800	--	45	760	11.0	99	7.5	97
20...	1430	Environmental	1028	5.95	11,500	--	--	756	9.3	99	7.8	133
MAY												
18...	1230	Environmental	85116	3.03	4,880	--	3.1	763	8.8	107	8.3	180
JUN												
15...	1500	Environmental	85116	3.45	5,690	--	10	760	7.9	96	7.8	152
17...	1300	Environmental	85116	6.40	12,700	--	90	763	7.2	87	7.2	104
JUL												
06...	1200	Environmental	85116	4.49	8,260	--	32	755	6.8	88	7.5	154
20...	1355	Blank	85116	--	--	--	<.25	--	--	--	--	--
20...	1400	Environmental	85116	1.73	2,840	--	<2.8	757	7.9	103	8.3	203
AUG												
17...	1000	Environmental	85116	2.14	3,570	--	5.9	760	7.9	96	8.0	205
SEP												
10...	1030	Environmental	85116	15.12	45,400	--	90	761	7.2	84	7.5	283
22...	1245	Environmental	85116	4.55	7,990	--	30	766	9.0	99	7.3	126
22...	1300	Replicate	85116	4.54	7,970	--	30	--	--	--	--	--
29...	1500	Environmental	85116	13.11	36,400	266	170	753	8.6	95	6.9	86
30...	1115	Environmental	1028	19.91	70,000	364	--	758	8.6	93	7.4	139
30...	1500	Environmental	1028	20.31	72,400	--	--	758	8.7	93	7.4	115

02035000 JAMES RIVER AT CARTERSVILLE, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Silica, water, fltrd, mg/L (00955)	Residue fixed non-filterable, mg/L (00540)	Residue total at 105 deg. C, suspended, mg/L (00530)	Residue volatile, suspended, mg/L (00535)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Total nitrogen, water, fltrd, mg/L (00602)
OCT													
21...	16.0	15.8	7.20	<3	<3	<3	.012	.13	.129	<.002	.016	.030	.26
NOV													
18...	--	--	.100	<3	<3	<3	<.004	<.004	<.004	<.002	.002	<.001	.03
18...	15.5	10.6	8.50	12	15	3	.015	.31	.310	<.002	.026	.024	.38
21...	22.5	12.4	6.60	368	415	47	.013	.31	.306	<.002	.018	.032	.50
DEC													
11...	10.5	6.1	7.20	188	212	24	.030	.36	.364	.003	.019	.031	.62
18...	2.5	5.0	10.0	18	21	3	.007	.37	.370	<.002	.017	.025	.50
JAN													
20...	.5	2.7	8.90	<3	3	<3	.004	.28	.280	<.002	.015	.018	.39
FEB													
04...	--	2.2	--	--	--	--	--	--	--	--	--	--	--
07...	8.5	2.4	6.80	252	280	28	.047	.37	.372	.004	.020	.032	.66
09...	10.5	3.4	6.20	76	86	10	.017	.40	.401	.003	.018	.032	.65
09...	--	--	6.10	76	86	10	.017	.40	.404	.004	.017	.035	.64
24...	10.5	6.5	6.40	9	11	<3	<.004	.31	.316	.002	.025	.030	.41
MAR													
15...	18.0	12.1	--	--	--	--	--	--	--	--	--	--	--
17...	8.0	9.8	5.00	14	16	<3	.007	.10	.101	<.002	.006	.014	.23
23...	13.0	10.1	4.20	10	13	3	<.004	.09	.090	<.002	.006	.019	.20
APR													
06...	14.5	11.4	5.70	4	6	<3	.007	.22	.223	.004	.026	.036	.38
06...	--	--	5.40	5	6	<3	.008	.23	.230	.004	.026	.036	.37
13...	11.0	10.3	7.00	122	145	23	.037	.29	.290	.004	.017	.030	.57
16...	15.0	10.6	7.50	157	178	21	.023	.34	.348	.003	.014	.023	.53
20...	30.0	17.9	--	--	--	--	--	--	--	--	--	--	--
MAY													
18...	--	25.4	3.40	4	5	<3	.004	.07	.068	<.002	.014	.025	.20
JUN													
15...	29.0	25.2	8.80	14	18	4	.007	.35	.350	.002	.031	.045	.53
17...	34.0	25.2	8.90	102	118	16	.022	.29	.293	.003	.021	.046	.62
JUL													
06...	--	28.2	8.90	46	53	7	.021	.15	.149	<.002	.028	.028	.38
20...	--	--	<.100	<3	<3	<3	<.004	<.004	<.004	<.002	.003	<.001	<.004
20...	28.5	28.5	8.40	<3	3	<3	.005	.21	.209	<.002	.022	.040	.40
AUG													
17...	24.5	24.9	8.90	5	5	<3	.008	.22	.216	<.002	.022	.032	.40
SEP													
10...	31.0	23.2	6.00	246	282	36	.058	.27	.277	.006	.034	.046	.59
22...	27.0	19.9	8.60	18	23	5	.011	.29	.292	<.002	.026	.038	.53
22...	--	--	8.60	25	28	<3	.011	.29	.293	<.002	.026	.036	.55
29...	25.5	20.1	8.90	287	327	40	.015	.26	.256	<.002	.018	.036	.50
30...	26.0	18.9	--	--	--	--	--	--	--	--	--	--	--
30...	26.0	18.7	--	--	--	--	--	--	--	--	--	--	--

02035000 JAMES RIVER AT CARTERSVILLE, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Phos-phorus, suspnd sedimnt total, mg/L (00667)	Total nitro-gen, suspnd sedimnt total, mg/L (00601)	Total carbon, suspnd sedimnt total, mg/L (00694)	Inor-ganic carbon, suspnd sedimnt total, mg/L (00688)	Organic carbon, water, fltrd, mg/L (00681)	Pheo-phytin a, phyto-plank-ton, ug/L (62360)	Chloro-phyll a phyto-plank-ton, fluoro, ug/L (70953)	Suspnd. sedi-ment, sieve diametr percent <.063mm (70331)	Sus-pended sedi-ment concen-tration mg/L (80154)
OCT									
21...	.007	.03	.3	<.02	2.5	<.5	<.5	--	2
NOV									
18...	.002	.01	M	.1	<2.0	<.5	<.5	--	--
18...	.017	.09	.9	<.02	2.0	<.5	.6	--	18
21...	.265	1.4	14.9	.1	4.3	7.7	10.5	75	513
DEC									
11...	.145	.55	6.1	<.02	4.0	2.1	5.4	37	536
18...	.029	.07	.7	<.011	<2.0	<.5	1.2	--	38
JAN									
20...	.009	.04	.4	<.02	<2.0	<.5	.8	--	4
FEB									
04...	--	--	--	--	--	--	--	77	61
07...	.216	.61	6.2	<.02	4.3	<.5	4.8	78	335
09...	.106	.49	4.1	M	2.9	5.1	16.9	74	117
09...	.107	.36	3.1	<.02	3.4	3.2	20.1	70	123
24...	.021	.07	.7	<.02	<2.0	<.5	2.2	--	16
MAR									
15...	--	--	--	--	--	--	--	67	5
17...	.022	.13	.9	<.02	2.3	3.0	10.4	85	20
23...	.016	.08	.7	<.02	2.0	1.4	6.9	69	8
APR									
06...	.014	.07	.6	<.02	2.3	1.3	1.1	86	6
06...	.015	.06	.5	<.02	2.1	.7	1.2	79	7
13...	.149	.55	5.0	M	3.6	10.1	20.5	73	187
16...	.126	.69	6.8	.1	3.3	6.2	11.6	78	207
20...	--	--	--	--	--	--	--	80	28
MAY									
18...	.011	.06	.6	<.02	2.4	.5	1.6	87	4
JUN									
15...	.032	.09	.9	<.02	2.5	.5	.5	91	18
17...	.095	.40	4.2	M	3.9	1.4	1.6	92	128
JUL									
06...	.056	.18	1.9	<.02	2.9	1.5	1.2	90	58
20...	<.001	<.01	M	<.02	<2.0	<.5	<.5	--	1
20...	.007	.03	.3	<.02	3.1	<.5	.7	--	17
AUG									
17...	.011	.03	.5	<.02	3.6	<.5	.7	--	6
SEP									
10...	.323	.95	10.3	.1	4.4	9.6	2.4	74	384
22...	.039	.11	1.2	<.02	4.2	<.5	.6	--	31
22...	.037	.08	1.2	<.02	4.2	<.5	1.0	--	30
29...	.371	.96	11.1	M	4.1	3.2	4.1	73	446
30...	--	--	--	--	--	--	--	76	580
30...	--	--	--	--	--	--	--	80	520

Remark codes used in this table:
< -- Less than
M-- Presence verified, not quantified

02035000 JAMES RIVER AT CARTERSVILLE, VA—Continued

TURBIDITY, WATER, MONOCHROME NEAR INFRA-RED LED LIGHT, 780-900 NM, DETECTION ANGLE 90 +/ -2.5 DEGREES, FNU
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	---	---	---	8.80	5.10	5.66
2	---	---	---	---	---	---	---	---	---	7.40	5.10	5.60
3	---	---	---	---	---	---	---	---	---	7.50	4.20	4.85
4	---	---	---	---	---	---	---	---	---	4.70	3.40	3.90
5	---	---	---	---	---	---	---	---	---	5.00	3.30	3.90
6	---	---	---	---	---	---	---	---	---	8.70	4.30	7.10
7	---	---	---	---	---	---	---	---	---	6.50	4.20	5.50
8	---	---	---	---	---	---	---	---	---	4.60	3.50	4.00
9	---	---	---	---	---	---	---	---	---	3.90	3.20	3.50
10	---	---	---	---	---	---	---	---	---	4.60	3.00	3.40
11	---	---	---	---	---	---	---	---	---	7.30	2.80	3.20
12	---	---	---	---	---	---	293	99.9	128	6.10	2.90	3.50
13	---	---	---	---	---	---	129	59.2	80.4	6.20	3.40	3.90
14	---	---	---	---	---	---	85.1	45.4	58.8	5.70	3.10	3.70
15	---	---	---	---	---	---	60.3	25.8	33.5	4.30	3.00	3.30
16	---	---	---	---	---	---	102	19.1	24.9	3.70	2.70	3.00
17	---	---	---	---	---	---	20.7	16.3	17.6	4.70	1.80	2.80
18	---	---	---	---	---	---	78.2	18.1	29.8	3.40	1.60	2.00
19	---	---	---	---	---	---	36.8	12.6	22.1	3.80	2.50	3.10
20	---	---	---	---	---	---	27.9	11.9	15.2	4.20	2.83	3.40
21	---	---	---	---	---	---	14.8	11.3	12.5	3.10	1.90	2.40
22	---	---	---	---	---	---	13.7	9.60	11.3	2.60	1.60	2.00
23	---	---	---	---	---	---	14.7	8.50	9.40	3.50	1.50	1.80
24	---	---	---	---	---	---	11.8	7.70	8.70	4.30	1.50	1.80
25	---	---	---	---	---	---	13.0	7.70	8.40	14.0	1.30	1.60
26	---	---	---	---	---	---	11.4	8.10	9.00	13.9	1.30	1.50
27	---	---	---	---	---	---	13.5	6.90	7.95	4.50	1.30	1.60
28	---	---	---	---	---	---	12.9	6.70	7.60	18.2	1.70	2.00
29	---	---	---	---	---	---	8.60	6.20	6.60	2.40	1.50	1.90
30	---	---	---	---	---	---	8.60	6.20	6.60	2.00	1.40	1.70
31	---	---	---	---	---	---	7.80	5.20	6.20	15.0	1.40	1.70
MAX	---	---	---	---	---	---	293	99.9	128	18.2	5.10	7.10
MIN	---	---	---	---	---	---	7.80	5.20	6.20	2.00	1.30	1.50
	FEBRUARY			MARCH			APRIL			MAY		
1	14.3	1.20	1.50	---	---	---	10.5	3.20	4.00	11.8	9.06	10.1
2	---	---	---	---	---	---	8.40	4.11	5.30	9.71	6.25	8.20
3	4.29	1.50	2.35	---	---	---	7.00	3.60	4.80	42.4	8.19	11.8
4	---	---	---	---	---	---	8.80	3.00	4.50	67.9	26.0	46.1
5	48.4	12.9	30.2	---	---	---	4.90	2.50	3.30	26.0	11.4	16.3
6	125	13.8	17.6	6.00	2.50	3.50	5.20	1.90	2.60	16.1	8.53	11.4
7	228	125	192	7.20	3.80	4.80	6.30	2.40	3.20	10.4	6.85	8.05
8	160	95.0	108	9.80	3.20	4.00	6.50	1.80	2.40	17.6	7.19	8.29
9	106	59.2	71.5	6.10	2.80	3.60	3.27	1.50	2.40	62.2	5.64	6.83
10	60.3	35.2	47.0	6.70	2.60	3.30	6.10	1.70	2.90	15.0	4.36	5.25
11	35.6	21.8	27.4	4.70	2.30	3.08	19.6	1.20	2.05	6.38	3.42	4.84
12	22.9	16.4	19.6	10.7	2.50	3.90	22.4	1.60	3.00	---	---	---
13	18.0	12.7	15.0	30.9	3.80	8.40	281	19.5	130	5.70	2.90	3.60
14	15.7	11.2	12.9	32.8	3.00	6.80	238	90.5	113	7.30	3.00	3.80
15	11.8	9.50	10.6	27.5	1.10	6.20	172	108	135	10.6	3.15	4.35
16	10.5	8.40	9.30	19.4	1.40	6.10	131	80.3	116	7.30	2.50	3.30
17	9.10	7.50	8.10	21.6	9.60	14.2	80.6	40.1	56.4	16.2	2.40	4.80
18	16.0	7.00	8.00	12.4	5.50	8.30	45.4	25.6	30.4	7.70	2.60	3.35
19	9.30	6.30	7.11	12.6	5.10	6.00	27.5	17.4	21.8	68.0	2.98	5.80
20	11.0	6.20	7.11	8.10	4.30	5.60	---	---	---	56.0	15.2	41.6
21	8.20	6.30	7.10	26.4	4.50	5.70	16.1	12.8	14.8	60.4	20.6	31.0
22	9.30	5.80	7.00	21.9	3.70	5.40	16.5	11.1	12.8	51.7	18.9	25.2
23	9.80	6.50	7.30	8.30	2.60	4.00	13.2	9.73	10.9	38.8	18.3	22.4
24	---	---	---	15.7	2.80	4.10	14.3	8.98	10.3	53.4	26.6	37.4
25	7.40	4.80	5.70	19.0	2.30	3.50	10.0	6.29	8.68	69.6	6.50	20.6
26	7.00	4.40	5.25	17.1	2.50	3.85	12.7	5.72	6.84	98.4	12.2	13.9
27	5.80	4.30	4.90	11.6	3.10	4.80	9.30	5.75	7.12	32.6	17.3	24.5
28	---	---	---	13.6	3.20	4.20	8.72	6.46	7.35	54.5	18.6	28.0
29	---	---	---	21.5	2.70	3.80	13.7	7.19	11.8	26.0	13.8	20.5
30	---	---	---	9.00	2.70	3.50	14.7	10.3	12.1	26.1	16.5	19.5
31	---	---	---	5.30	2.80	3.50	---	---	---	26.1	19.3	21.5
MAX	228	125	192	32.8	9.60	14.2	281	108	135	98.4	26.6	46.1
MIN	4.29	1.20	1.50	4.70	1.10	3.08	3.27	1.20	2.05	5.70	2.40	3.30

02035000 JAMES RIVER AT CARTERSVILLE, VA—Continued

TURBIDITY, WATER, MONOCHROME NEAR INFRA-RED LED LIGHT, 780-900 NM, DETECTION ANGLE 90 +/ -2.5 DEGREES, FNU—CONTINUED

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	29.4	20.9	27.4	4.80	1.00	2.10	52.6	2.06	3.81	5.80	2.40	3.60
2	45.3	25.4	38.5	---	---	---	102	6.57	36.9	14.1	2.50	4.25
3	36.1	22.9	29.1	---	---	---	182	18.1	73.0	17.2	3.00	4.95
4	23.4	17.4	18.6	---	---	---	59.7	13.9	25.9	22.6	4.20	9.70
5	30.3	17.8	20.6	---	---	---	26.1	12.0	13.3	22.1	2.60	5.80
6	118	30.3	77.1	---	---	---	51.3	18.8	36.3	26.8	2.40	4.70
7	58.9	27.9	36.9	---	---	---	28.0	8.78	15.8	55.6	2.50	7.85
8	28.3	20.6	23.6	---	---	---	11.3	5.94	7.79	70.0	2.00	4.10
9	---	---	---	---	---	---	6.61	4.10	5.31	369	6.90	152
10	17.5	11.6	14.1	25.6	5.00	6.85	12.0	3.24	5.29	320	204	253
11	59.9	9.70	11.4	21.4	3.00	4.60	4.69	2.71	3.92	282	148	220
12	58.9	12.7	45.3	85.9	2.70	4.40	118	2.28	3.67	154	58.4	100
13	60.6	40.3	48.0	---	---	---	22.3	11.0	16.7	59.2	33.0	43.8
14	43.7	18.5	27.9	65.7	24.7	57.0	14.9	9.78	11.9	39.1	27.2	31.4
15	18.5	12.9	15.7	24.7	8.80	14.8	10.6	8.15	9.79	37.9	26.1	29.2
16	---	---	---	14.4	5.50	9.70	10.4	5.90	8.28	27.6	15.0	23.9
17	---	---	---	---	---	---	38.9	4.45	5.53	62.8	8.60	14.2
18	98.3	42.8	56.7	---	---	---	114	4.01	5.50	236	17.5	162
19	101	34.5	72.6	---	---	---	---	---	---	182	83.5	95.8
20	58.7	20.7	37.2	5.36	1.72	2.92	3.73	1.90	2.70	---	---	---
21	32.8	18.0	20.5	4.17	1.84	2.65	7.70	2.10	3.00	64.5	36.7	49.0
22	26.3	10.4	14.8	3.08	1.56	2.38	6.30	2.00	2.60	37.1	23.6	32.2
23	42.0	7.80	10.5	8.73	1.17	2.29	4.00	2.00	2.70	23.9	15.0	19.2
24	15.3	6.90	8.40	3.96	2.21	3.02	3.00	1.40	2.10	30.8	10.1	12.4
25	7.80	4.70	6.30	11.0	3.15	4.46	3.10	1.20	1.90	20.9	8.65	10.4
26	12.5	4.50	6.55	5.27	3.60	4.01	---	---	---	10.0	6.18	7.85
27	6.90	4.00	5.10	21.6	4.95	15.7	4.40	3.00	3.50	11.2	4.59	6.46
28	9.90	2.40	3.70	12.5	5.65	7.93	8.40	2.20	3.20	53.9	4.59	5.91
29	5.00	1.60	2.70	20.9	3.99	5.76	4.60	2.10	3.20	355	51.6	229
30	8.80	1.00	2.50	5.09	3.50	4.35	7.00	3.20	3.90	420	237	336
31	---	---	---	5.74	2.89	4.21	27.3	2.90	7.30	---	---	---
MAX	118	42.8	77.1	85.9	24.7	57.0	182	18.8	73.0	420	237	336
MIN	5.00	1.00	2.50	3.08	1.00	2.10	3.00	1.20	1.90	5.80	2.00	3.60

02035000 JAMES RIVER AT CARTERSVILLE, VA—Continued

PH, WATER, UNFILTERED, FIELD, STANDARD UNITS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	---	---	---	---	---	---	7.5	7.4	7.4
2	---	---	---	---	---	---	---	---	---	7.5	7.4	7.5
3	---	---	---	---	---	---	---	---	---	7.5	7.4	7.5
4	---	---	---	---	---	---	---	---	---	7.4	7.4	7.4
5	---	---	---	---	---	---	---	---	---	7.4	7.4	7.4
6	---	---	---	---	---	---	---	---	---	7.4	7.4	7.4
7	---	---	---	---	---	---	---	---	---	7.5	7.4	7.4
8	---	---	---	---	---	---	---	---	---	7.5	7.5	7.5
9	---	---	---	---	---	---	---	---	---	7.5	7.5	7.5
10	---	---	---	---	---	---	---	---	---	7.5	7.3	7.4
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	7.4	7.3	7.4
13	---	---	---	---	---	---	7.3	7.2	7.2	7.3	7.3	7.3
14	---	---	---	---	---	---	7.2	6.9	7.1	7.3	7.3	7.3
15	---	---	---	---	---	---	7.1	6.9	7.0	7.3	7.3	7.3
16	---	---	---	---	---	---	7.1	7.1	7.1	7.3	7.2	7.3
17	---	---	---	---	---	---	7.1	7.1	7.1	7.2	7.2	7.2
18	---	---	---	---	---	---	7.1	7.1	7.1	7.2	7.2	7.2
19	---	---	---	---	---	---	7.3	7.1	7.2	7.2	7.1	7.2
20	---	---	---	---	---	---	7.3	7.3	7.3	7.2	7.2	7.2
21	---	---	---	---	---	---	7.3	7.3	7.3	7.2	7.2	7.2
22	---	---	---	---	---	---	7.3	7.2	7.2	7.3	7.2	7.2
23	---	---	---	---	---	---	7.3	7.2	7.2	7.2	7.1	7.2
24	---	---	---	---	---	---	7.3	7.3	7.3	7.1	7.1	7.1
25	---	---	---	---	---	---	7.3	7.3	7.3	7.2	7.1	7.2
26	---	---	---	---	---	---	7.5	7.3	7.4	7.1	7.1	7.1
27	---	---	---	---	---	---	7.5	7.5	7.5	7.1	7.0	7.1
28	---	---	---	---	---	---	7.5	7.5	7.5	7.1	7.0	7.0
29	---	---	---	---	---	---	7.5	7.4	7.4	7.1	7.0	7.1
30	---	---	---	---	---	---	7.4	7.4	7.4	7.1	7.0	7.0
31	---	---	---	---	---	---	---	---	---	7.0	7.0	7.0
MAX	---	---	---	---	---	---	7.5	7.5	7.5	7.5	7.5	7.5
MIN	---	---	---	---	---	---	7.1	6.9	7.0	7.0	7.0	7.0
		FEBRUARY			MARCH			APRIL			MAY	
1	7.0	7.0	7.0	7.9	7.8	7.8	7.5	7.3	7.4	7.7	7.5	7.6
2	---	---	---	7.9	7.8	7.9	7.4	7.3	7.3	7.5	7.3	7.4
3	7.0	7.0	7.0	8.2	7.8	7.9	7.5	7.3	7.4	7.4	7.0	7.3
4	---	---	---	8.3	7.9	8.0	7.6	7.4	7.4	7.2	7.0	7.1
5	7.3	7.3	7.3	---	---	---	7.6	7.4	7.5	7.3	7.2	7.2
6	7.3	6.9	7.3	8.2	7.9	8.1	7.6	7.5	7.5	7.4	7.3	7.4
7	7.2	6.7	6.9	8.4	7.9	8.0	7.6	7.5	7.5	7.4	7.3	7.4
8	7.6	7.2	7.6	8.4	8.1	8.2	7.6	7.5	7.5	7.5	7.4	7.4
9	7.6	7.4	7.5	8.4	8.1	8.2	7.7	7.5	7.6	7.5	7.3	7.5
10	7.4	7.3	7.4	8.3	8.1	8.2	7.6	7.5	7.6	7.6	7.4	7.5
11	7.4	7.4	7.4	8.5	8.0	8.2	7.5	7.4	7.5	7.7	7.4	7.6
12	7.4	7.4	7.4	8.6	8.3	8.4	7.4	7.1	7.4	---	---	---
13	7.5	7.4	7.5	8.7	8.3	8.4	7.1	6.6	6.8	8.2	7.7	7.9
14	7.5	7.5	7.5	8.8	8.2	8.4	7.3	6.8	6.9	8.3	7.8	8.0
15	7.6	7.5	7.5	8.9	8.3	8.5	7.5	7.3	7.4	8.5	7.9	8.0
16	7.6	7.6	7.6	8.5	7.6	8.2	7.5	7.2	7.3	8.5	7.9	8.0
17	7.6	7.6	7.6	7.6	7.4	7.5	7.3	7.2	7.3	8.4	7.7	7.9
18	7.6	7.6	7.6	7.7	7.5	7.5	7.3	7.3	7.3	8.3	7.6	7.7
19	7.6	7.6	7.6	8.0	7.7	7.8	7.4	7.3	7.3	7.7	7.3	7.5
20	7.6	7.6	7.6	8.2	7.9	8.0	---	---	---	7.3	7.1	7.2
21	7.7	7.6	7.6	8.3	8.0	8.1	7.2	7.1	7.2	7.4	7.2	7.3
22	7.7	7.6	7.7	8.2	7.8	8.0	7.2	7.1	7.2	7.5	7.4	7.5
23	7.9	7.7	7.8	8.2	7.8	7.9	7.2	7.1	7.2	7.6	7.5	7.5
24	---	---	---	8.3	7.9	8.0	7.2	7.1	7.2	7.6	7.5	7.5
25	7.9	7.8	7.9	8.4	7.8	8.0	7.2	7.2	7.2	7.5	7.4	7.5
26	7.9	7.7	7.8	8.5	7.8	8.0	7.2	7.2	7.2	7.5	7.5	7.5
27	7.8	7.7	7.8	8.1	7.6	7.8	7.2	7.2	7.2	7.5	7.2	7.4
28	7.8	7.7	7.8	8.0	7.5	7.6	7.4	7.2	7.3	7.3	7.2	7.3
29	7.8	7.8	7.8	8.2	7.6	7.7	7.6	7.4	7.5	7.4	7.3	7.3
30	---	---	---	8.0	7.6	7.7	7.6	7.6	7.6	7.6	7.4	7.5
31	---	---	---	7.6	7.4	7.5	---	---	---	7.6	7.6	7.6
MAX	7.9	7.8	7.9	8.9	8.3	8.5	7.7	7.6	7.6	8.5	7.9	8.0
MIN	7.0	6.7	6.9	7.6	7.4	7.5	7.1	6.6	6.8	7.2	7.0	7.1

02035000 JAMES RIVER AT CARTERSVILLE, VA—Continued

PH, WATER, UNFILTERED, FIELD, STANDARD UNITS—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.7	7.3	7.5	8.7	8.2	8.4	8.2	7.7	7.8	8.3	7.6	7.8
2	7.5	7.4	7.4	---	---	---	7.7	7.0	7.3	8.3	7.7	8.0
3	7.4	7.3	7.4	---	---	---	7.3	6.9	7.0	8.5	7.9	8.1
4	7.5	7.3	7.4	---	---	---	7.4	7.0	7.2	8.5	7.9	8.1
5	7.3	7.2	7.3	---	---	---	7.4	7.2	7.4	8.5	7.9	8.2
6	7.2	6.9	7.0	---	---	---	7.2	6.9	7.0	8.3	8.0	8.1
7	7.3	7.0	7.2	---	---	---	7.5	7.1	7.4	8.2	7.9	8.0
8	7.3	7.3	7.3	---	---	---	7.9	7.5	7.7	8.1	7.6	7.8
9	---	---	---	---	---	---	8.2	7.7	7.9	7.6	6.7	6.8
10	7.4	7.3	7.4	7.9	7.6	7.7	8.4	7.8	8.0	7.5	6.7	7.4
11	7.4	7.3	7.4	8.0	7.7	7.8	8.5	7.8	8.1	7.5	7.1	7.3
12	7.3	6.9	7.0	8.0	7.6	7.7	8.3	7.7	8.0	7.1	7.1	7.1
13	7.0	6.9	7.0	---	---	---	7.7	7.3	7.3	7.2	7.1	7.2
14	7.2	6.9	7.1	7.0	6.7	6.9	7.6	7.3	7.5	7.2	7.2	7.2
15	7.2	7.2	7.2	7.2	7.0	7.2	7.5	7.4	7.4	7.3	7.2	7.2
16	---	---	---	7.6	7.2	7.4	7.8	7.5	7.7	7.3	7.3	7.3
17	---	---	---	---	---	---	7.9	7.7	7.8	7.4	7.3	7.3
18	---	---	---	---	---	---	8.1	7.6	7.8	7.3	6.8	6.9
19	7.2	6.9	7.0	---	---	---	---	---	---	7.3	6.9	7.0
20	7.3	7.1	7.2	8.3	7.8	7.9	8.6	7.9	8.1	---	---	---
21	7.4	7.3	7.4	8.2	7.8	7.9	8.4	8.0	8.1	7.6	7.4	7.6
22	7.5	7.4	7.5	8.2	7.7	7.8	8.4	7.8	8.0	7.4	7.3	7.3
23	7.8	7.5	7.7	8.1	7.6	7.7	8.5	7.9	8.1	7.4	7.3	7.4
24	7.6	7.5	7.6	7.9	7.5	7.7	8.6	7.9	8.2	7.4	7.4	7.4
25	7.8	7.6	7.7	7.6	7.5	7.6	8.7	8.0	8.3	7.5	7.4	7.5
26	7.7	7.6	7.7	7.6	7.4	7.5	---	---	---	7.6	7.4	7.5
27	7.9	7.7	7.8	7.5	7.2	7.2	8.6	7.7	8.1	7.6	7.5	7.5
28	8.2	7.8	8.0	7.6	7.2	7.4	8.5	7.8	8.0	7.5	7.2	7.5
29	8.4	7.9	8.2	7.8	7.5	7.6	8.5	7.8	8.0	7.4	6.9	7.0
30	8.5	8.0	8.3	7.9	7.6	7.7	8.1	7.8	7.8	7.6	7.3	7.5
31	---	---	---	8.1	7.6	7.8	8.2	7.6	7.8	---	---	---
MAX	8.5	8.0	8.3	8.7	8.2	8.4	8.7	8.0	8.3	8.5	8.0	8.2
MIN	7.0	6.9	7.0	7.0	6.7	6.9	7.2	6.9	7.0	7.1	6.7	6.8

02035000 JAMES RIVER AT CARTERSVILLE, VA—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	---	---	---	112	107	111
2	---	---	---	---	---	---	---	---	---	113	110	112
3	---	---	---	---	---	---	---	---	---	111	106	110
4	---	---	---	---	---	---	---	---	---	111	105	106
5	---	---	---	---	---	---	---	---	---	115	110	114
6	---	---	---	---	---	---	---	---	---	113	105	108
7	---	---	---	---	---	---	---	---	---	122	112	118
8	---	---	---	---	---	---	---	---	---	134	122	129
9	---	---	---	---	---	---	---	---	---	134	126	133
10	---	---	---	---	---	---	---	---	---	126	117	120
11	---	---	---	---	---	---	---	---	---	140	117	132
12	---	---	---	---	---	---	118	69	106	139	121	133
13	---	---	---	---	---	---	121	107	112	121	114	116
14	---	---	---	---	---	---	107	85	91	117	113	115
15	---	---	---	---	---	---	118	84	87	118	115	117
16	---	---	---	---	---	---	114	97	102	120	118	119
17	---	---	---	---	---	---	111	103	104	120	118	119
18	---	---	---	---	---	---	106	95	99	121	117	120
19	---	---	---	---	---	---	107	97	104	118	106	112
20	---	---	---	---	---	---	113	103	105	119	108	117
21	---	---	---	---	---	---	106	103	105	123	118	120
22	---	---	---	---	---	---	105	100	103	130	123	128
23	---	---	---	---	---	---	100	98	99	130	124	128
24	---	---	---	---	---	---	100	98	99	127	122	126
25	---	---	---	---	---	---	100	96	97	131	125	129
26	---	---	---	---	---	---	115	100	107	&138	&102	&127
27	---	---	---	---	---	---	128	115	123	&138	&69	&109
28	---	---	---	---	---	---	129	125	128	&134	&90	&124
29	---	---	---	---	---	---	125	115	119	134	120	125
30	---	---	---	---	---	---	115	109	111	150	134	148
31	---	---	---	---	---	---	---	---	---	149	145	146
MAX	---	---	---	---	---	---	129	125	128	150	145	148
MIN	---	---	---	---	---	---	100	69	87	111	69	106

& V Value was computed from affected unit values

	FEBRUARY			MARCH			APRIL			MAY		
1	149	138	144	116	115	116	120	114	118	174	159	168
2	---	---	---	116	114	115	114	109	111	159	115	135
3	134	119	127	114	112	112	115	113	114	115	83	108
4	---	---	---	116	111	113	125	115	121	91	82	84
5	116	103	104	---	---	---	127	124	126	100	91	96
6	113	82	108	126	120	122	128	121	125	108	100	105
7	97	74	82	127	122	124	131	121	128	120	108	112
8	160	97	137	134	127	131	134	127	130	125	119	121
9	125	89	109	142	133	138	136	128	132	127	125	126
10	89	86	87	141	137	139	134	129	131	130	125	126
11	93	89	91	138	136	137	135	130	132	132	127	129
12	104	89	98	137	127	132	132	107	129	---	---	---
13	106	104	105	127	120	121	107	66	73	130	127	130
14	111	105	106	121	118	118	134	71	77	134	129	132
15	116	110	112	119	114	117	143	96	130	140	134	139
16	120	115	118	116	103	112	96	85	86	145	139	143
17	125	119	121	103	93	95	99	86	91	148	143	145
18	121	118	120	107	102	104	104	99	102	148	143	145
19	118	114	117	126	107	118	107	104	106	146	114	136
20	114	113	114	139	126	133	---	---	---	120	101	112
21	115	113	114	142	139	141	115	112	113	152	112	125
22	117	114	115	142	131	141	118	114	117	165	151	157
23	144	117	128	131	121	123	120	117	118	183	159	163
24	---	---	---	121	120	121	122	120	121	204	171	189
25	146	130	139	121	120	120	122	120	121	176	161	167
26	132	115	124	123	119	121	124	121	123	165	150	159
27	115	111	112	123	119	120	123	110	115	150	114	135
28	115	111	113	121	116	117	129	109	117	115	103	108
29	116	113	114	117	114	116	163	129	152	125	107	112
30	---	---	---	117	115	116	172	163	166	155	124	134
31	---	---	---	120	117	119	---	---	---	167	151	160
MAX	160	138	144	142	139	141	172	163	166	204	171	189
MIN	89	74	82	103	93	95	96	66	73	91	82	84

02035000 JAMES RIVER AT CARTERSVILLE, VA—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	174	159	167	169	163	166	194	181	188	210	196	206
2	170	149	159	---	---	---	183	96	132	217	209	211
3	158	149	154	---	---	---	135	82	102	231	217	225
4	155	145	152	---	---	---	161	111	138	234	231	232
5	145	112	134	---	---	---	161	119	146	248	233	239
6	112	83	88	---	---	---	119	81	89	253	248	250
7	122	89	106	---	---	---	155	101	128	262	253	254
8	132	122	129	---	---	---	178	155	170	262	192	258
9	---	---	---	---	---	---	196	178	189	192	73	97
10	155	148	153	167	157	161	196	186	190	235	74	172
11	154	139	146	167	160	166	190	178	186	176	93	116
12	141	96	108	170	153	167	193	166	183	93	88	89
13	104	94	100	---	---	---	175	128	138	95	90	92
14	116	95	107	131	92	112	174	131	162	98	95	96
15	122	116	120	158	131	144	171	137	150	104	98	101
16	---	---	---	172	158	170	178	146	166	111	104	108
17	---	---	---	---	---	---	181	164	175	117	111	115
18	111	87	91	---	---	---	190	165	180	114	67	76
19	122	94	113	---	---	---	---	---	---	111	68	73
20	139	117	132	177	170	174	200	192	197	---	---	---
21	144	132	135	171	165	167	204	200	203	181	131	175
22	154	144	150	173	165	169	206	203	204	131	100	103
23	155	152	154	180	173	176	207	204	205	102	99	100
24	158	150	155	176	163	173	219	207	211	106	102	102
25	150	141	143	165	154	158	219	210	214	111	106	109
26	150	141	145	154	145	147	---	---	---	117	111	115
27	154	146	150	146	98	107	211	203	207	123	117	120
28	159	153	158	146	114	134	212	208	210	124	96	122
29	165	159	162	161	146	154	216	212	214	150	60	72
30	164	161	162	175	161	168	218	214	216	159	96	127
31	---	---	---	183	175	178	216	206	211	---	---	---
MAX	174	161	167	183	175	178	219	214	216	262	253	258
MIN	104	83	88	131	92	107	119	81	89	93	60	72

02035000 JAMES RIVER AT CARTERSVILLE, VA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	---	---	---	5.3	4.9	5.2
2	---	---	---	---	---	---	---	---	---	5.6	5.3	5.4
3	---	---	---	---	---	---	---	---	---	6.9	5.5	5.9
4	---	---	---	---	---	---	---	---	---	8.8	6.9	8.0
5	---	---	---	---	---	---	---	---	---	9.8	8.8	9.6
6	---	---	---	---	---	---	---	---	---	9.8	8.1	9.2
7	---	---	---	---	---	---	---	---	---	8.1	5.4	6.5
8	---	---	---	---	---	---	---	---	---	5.4	4.2	4.7
9	---	---	---	---	---	---	---	---	---	4.2	3.6	3.8
10	---	---	---	---	---	---	---	---	---	3.6	2.3	3.0
11	---	---	---	---	---	---	---	---	---	2.3	1.6	1.7
12	---	---	---	---	---	---	6.2	6.0	6.0	2.5	1.5	1.9
13	---	---	---	---	---	---	6.2	5.6	5.9	3.3	2.3	2.7
14	---	---	---	---	---	---	5.6	4.1	4.8	3.6	3.0	3.2
15	---	---	---	---	---	---	4.5	3.9	4.1	3.9	3.3	3.5
16	---	---	---	---	---	---	4.8	4.4	4.5	3.5	2.5	3.0
17	---	---	---	---	---	---	5.2	4.8	5.1	2.5	2.0	2.4
18	---	---	---	---	---	---	5.1	4.8	4.9	3.0	2.5	2.8
19	---	---	---	---	---	---	4.9	4.7	4.8	3.4	2.8	3.0
20	---	---	---	---	---	---	4.9	4.5	4.6	3.0	2.4	2.6
21	---	---	---	---	---	---	4.5	3.8	3.9	2.4	1.7	2.0
22	---	---	---	---	---	---	4.3	3.6	3.9	2.1	1.3	1.7
23	---	---	---	---	---	---	5.6	4.3	4.7	2.1	1.4	1.6
24	---	---	---	---	---	---	6.9	5.6	6.4	2.0	1.5	1.6
25	---	---	---	---	---	---	6.8	5.7	6.2	1.6	0.0	1.0
26	---	---	---	---	---	---	5.7	4.7	5.0	---	---	---
27	---	---	---	---	---	---	4.7	4.1	4.5	---	---	---
28	---	---	---	---	---	---	4.8	4.4	4.7	---	---	---
29	---	---	---	---	---	---	5.0	4.4	4.7	1.4	0.1	0.6
30	---	---	---	---	---	---	5.7	5.0	5.4	2.0	1.0	1.4
31	---	---	---	---	---	---	---	---	---	1.7	0.9	1.2
MAX	---	---	---	---	---	---	6.9	6.0	6.4	9.8	8.8	9.6
MIN	---	---	---	---	---	---	4.3	3.6	3.9	1.4	0.0	0.6
	FEBRUARY			MARCH			APRIL			MAY		
1	1.8	0.7	1.2	8.2	6.9	7.3	12.0	11.3	11.6	19.3	18.6	18.9
2	---	---	---	9.6	8.2	9.2	11.3	10.8	10.9	20.2	19.0	19.3
3	2.0	1.3	1.6	11.0	9.6	10.1	11.6	10.6	10.9	20.2	17.5	18.9
4	---	---	---	12.3	11.0	11.9	12.1	10.8	11.3	17.5	16.4	17.1
5	2.3	2.0	2.2	---	---	---	12.0	10.2	11.2	17.5	16.4	16.9
6	2.4	1.7	2.4	14.5	13.3	14.0	12.4	10.3	11.1	18.9	17.2	17.6
7	3.0	1.7	2.1	14.1	13.3	13.6	13.6	11.6	12.2	20.8	18.8	19.2
8	3.6	3.0	3.4	13.4	11.8	12.6	14.5	13.2	13.4	22.0	20.5	20.8
9	3.5	3.1	3.3	11.8	10.8	11.0	15.8	13.7	14.2	22.5	20.6	21.3
10	4.2	3.4	3.5	10.8	9.8	10.4	15.3	14.3	14.8	24.0	21.9	22.2
11	4.6	4.0	4.3	10.2	9.1	9.8	14.3	12.9	13.8	24.9	23.2	23.7
12	4.6	4.3	4.5	10.9	9.8	10.2	12.9	11.0	12.1	---	---	---
13	5.0	4.1	4.5	10.9	9.7	10.2	11.0	9.6	9.9	26.0	24.5	25.1
14	5.0	4.7	4.8	11.0	9.6	10.1	11.2	10.0	10.2	26.5	24.8	25.4
15	4.8	4.6	4.7	12.3	10.6	11.0	11.1	10.1	10.5	26.8	25.2	25.9
16	4.6	4.0	4.3	12.0	10.3	11.6	11.8	10.1	10.8	26.3	25.2	25.7
17	4.2	3.5	3.6	10.3	8.9	9.2	13.5	11.3	11.8	25.8	24.7	25.3
18	4.2	3.2	3.5	9.1	8.2	8.7	15.5	13.2	13.6	25.8	24.1	24.9
19	5.2	4.0	4.3	10.4	9.1	9.6	17.4	15.5	16.0	25.2	23.7	24.7
20	6.5	5.0	5.4	11.7	10.0	10.3	---	---	---	23.8	23.1	23.6
21	7.9	6.5	7.2	12.9	11.7	12.2	20.2	18.7	19.1	25.0	23.7	23.8
22	7.7	7.0	7.3	12.2	10.5	11.2	20.9	19.6	20.2	26.0	24.5	24.9
23	7.3	6.4	6.7	10.5	9.4	9.8	21.4	20.4	20.9	27.1	25.8	26.1
24	---	---	---	9.9	8.9	9.5	22.2	21.0	21.4	27.1	26.2	26.9
25	6.8	6.0	6.5	11.9	9.8	10.6	21.9	20.6	21.0	27.9	25.1	26.9
26	6.6	5.5	6.0	13.9	11.9	12.8	20.6	19.4	20.3	28.1	26.9	27.4
27	6.0	5.1	5.5	14.4	13.8	14.1	19.4	18.2	18.9	26.9	25.6	26.1
28	6.2	5.2	5.8	14.7	13.8	14.1	18.2	16.8	17.7	25.7	24.9	25.3
29	7.0	5.7	6.2	14.7	13.5	14.0	18.5	17.1	17.6	25.1	23.8	24.6
30	---	---	---	14.0	13.2	13.7	19.3	17.9	18.5	24.6	23.2	23.7
31	---	---	---	13.2	12.0	12.6	---	---	---	23.8	22.9	23.1
MAX	7.9	7.0	7.3	14.7	13.8	14.1	22.2	21.0	21.4	28.1	26.9	27.4
MIN	1.8	0.7	1.2	8.2	6.9	7.3	11.0	9.6	9.9	17.5	16.4	16.9

02035000 JAMES RIVER AT CARTERSVILLE, VA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	23.8	22.9	23.6	28.6	26.9	27.5	30.4	28.7	29.5	29.0	26.5	27.7
2	23.8	23.2	23.6	---	---	---	29.5	26.6	27.5	28.2	26.5	27.5
3	24.1	23.1	23.6	---	---	---	27.0	25.1	26.1	27.7	25.8	26.9
4	24.2	22.5	23.6	---	---	---	29.2	26.4	27.4	28.0	25.9	26.8
5	22.5	20.5	21.6	---	---	---	29.0	26.4	28.5	27.6	25.8	26.8
6	20.9	19.1	20.3	---	---	---	26.4	23.5	24.3	26.7	25.4	25.8
7	22.6	20.8	21.1	---	---	---	25.1	22.9	23.8	26.3	24.8	25.4
8	23.9	22.6	22.7	---	---	---	26.1	23.8	24.6	26.8	25.3	25.6
9	---	---	---	---	---	---	27.8	24.9	25.8	25.3	22.5	24.2
10	26.5	25.4	25.6	28.9	27.7	28.3	28.3	26.1	27.1	23.1	22.3	22.5
11	26.7	25.8	26.2	29.3	27.6	28.2	28.2	26.7	27.5	22.3	21.8	22.1
12	25.8	23.7	23.9	29.0	27.8	28.4	27.7	26.0	26.9	22.5	21.9	22.1
13	23.7	22.5	22.8	---	---	---	26.0	24.4	25.2	23.2	22.5	22.6
14	23.9	22.4	22.9	28.1	26.0	26.6	25.0	23.1	24.6	23.1	22.6	22.9
15	24.7	23.6	23.9	28.4	27.0	27.7	23.1	22.1	22.4	22.9	22.3	22.6
16	---	---	---	28.3	26.6	27.5	25.1	22.4	23.3	22.6	22.1	22.3
17	---	---	---	---	---	---	25.6	24.3	24.7	23.6	22.4	22.9
18	27.0	25.5	26.1	---	---	---	26.8	24.1	25.1	23.3	21.4	22.1
19	27.0	26.2	26.7	---	---	---	---	---	---	21.4	20.6	20.9
20	26.5	25.4	26.0	28.7	26.3	27.4	29.7	27.6	28.4	---	---	---
21	25.4	24.3	24.8	29.5	27.1	28.0	29.2	27.7	28.4	20.1	19.2	19.8
22	26.4	24.4	24.9	29.3	28.2	28.8	28.0	26.3	27.2	21.1	19.5	19.9
23	26.3	25.5	26.2	29.3	27.8	28.4	28.1	25.8	26.9	21.5	20.2	20.5
24	27.0	25.0	25.6	28.2	26.6	27.7	28.9	26.4	27.4	22.3	21.3	21.5
25	26.7	26.2	26.4	26.6	25.4	25.9	28.5	27.1	27.7	22.8	21.4	21.8
26	26.8	25.4	26.1	25.4	24.8	25.2	---	---	---	22.8	21.6	22.1
27	26.6	25.2	26.0	25.5	24.0	24.9	28.7	26.5	27.0	22.3	21.6	21.9
28	26.6	25.0	25.8	27.5	25.2	25.8	29.6	27.0	28.1	21.8	20.8	21.6
29	27.5	25.5	26.2	28.4	26.5	27.1	29.7	28.1	28.9	20.8	19.9	20.1
30	28.0	26.0	26.9	29.0	27.2	27.9	29.1	27.3	28.4	20.4	18.8	19.1
31	---	---	---	30.0	27.9	28.4	28.8	26.6	27.4	---	---	---
MAX	28.0	26.2	26.9	30.0	28.2	28.8	30.4	28.7	29.5	29.0	26.5	27.7
MIN	20.9	19.1	20.3	25.4	24.0	24.9	23.1	22.1	22.4	20.1	18.8	19.1

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02036500 FINE CREEK AT FINE CREEK MILLS, VA

LOCATION.--Lat 37°35'53", long 77°49'11", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to Oct. 28, 1953, nonrecording gage and crest-stage gage at site 75 ft upstream at same datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 9-12, 23-25 and Jan. 27 to Feb. 2, and period of no gage-height record, July 6, which are fair. Maximum discharge, 4,180 ft^3/s, from rating curve extended above 2,600 ft^3/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.

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

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 7	0900	263	3.07	1800	245	3.02
Dec 11	1700	*636	*3.93	1830	252	3.04
Dec 15	0415	320	3.22	1930	293	3.15

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	18	22	22	e18	15	25	15	16	9.0	13	20
2	14	16	19	23	e19	16	28	33	11	8.4	23	14
3	12	15	17	25	27	16	24	51	7.5	8.8	48	11
4	11	14	17	24	44	17	20	45	8.9	13	30	8.8
5	11	14	56	27	37	19	16	28	16	46	20	8.0
6	11	70	67	35	40	18	14	22	14	e27	19	7.9
7	11	205	42	27	191	19	13	19	11	24	15	9.2
8	11	80	31	23	133	20	13	15	9.1	33	11	29
9	11	39	27	e22	64	17	13	12	7.8	24	9.2	102
10	11	28	33	e20	45	15	12	11	7.1	17	7.9	66
11	11	23	418	e18	38	15	12	10	10	12	7.5	27
12	12	22	224	e19	32	15	30	9.9	28	16	20	18
13	12	24	92	24	29	14	116	9.3	17	26	73	14
14	12	21	161	22	27	13	107	8.7	11	22	71	12
15	21	18	242	21	25	13	58	8.1	9.5	14	70	42
16	20	17	103	19	23	46	36	7.6	17	9.9	43	55
17	15	18	117	16	20	71	28	11	135	8.0	28	87
18	14	18	125	23	21	36	23	15	108	9.9	21	173
19	12	33	69	31	21	31	21	11	45	9.7	17	119
20	11	80	48	23	21	25	18	10	27	8.2	15	44
21	12	49	37	20	20	21	16	10	16	9.1	28	25
22	12	33	32	18	18	18	15	16	11	8.6	70	18
23	11	27	29	e17	17	16	14	20	9.3	12	66	15
24	11	25	37	e16	17	15	15	13	8.3	10	33	13
25	10	26	44	e15	17	15	12	10	8.0	9.9	21	11
26	11	23	32	14	16	15	20	9.3	29	14	15	10
27	21	24	28	e18	15	15	57	26	28	24	12	10
28	28	24	26	e20	15	21	32	26	15	38	10	15
29	43	30	24	e22	15	15	19	19	11	41	8.7	25
30	38	25	24	e21	---	14	15	13	9.8	29	13	21
31	24	---	24	e19	---	15	---	15	---	18	24	---
TOTAL	479	1,059	2,267	664	1,025	631	842	528.9	661.3	559.5	862.3	1,029.9
MEAN	15.5	35.3	73.1	21.4	35.3	20.4	28.1	17.1	22.0	18.0	27.8	34.3
MAX	43	205	418	35	191	71	116	51	135	46	73	173
MIN	10	14	17	14	15	13	12	7.6	7.1	8.0	7.5	7.9
CFSM	0.70	1.60	3.31	0.97	1.60	0.92	1.27	0.77	1.00	0.82	1.26	1.55
IN.	0.81	1.78	3.82	1.12	1.73	1.06	1.42	0.89	1.11	0.94	1.45	1.73

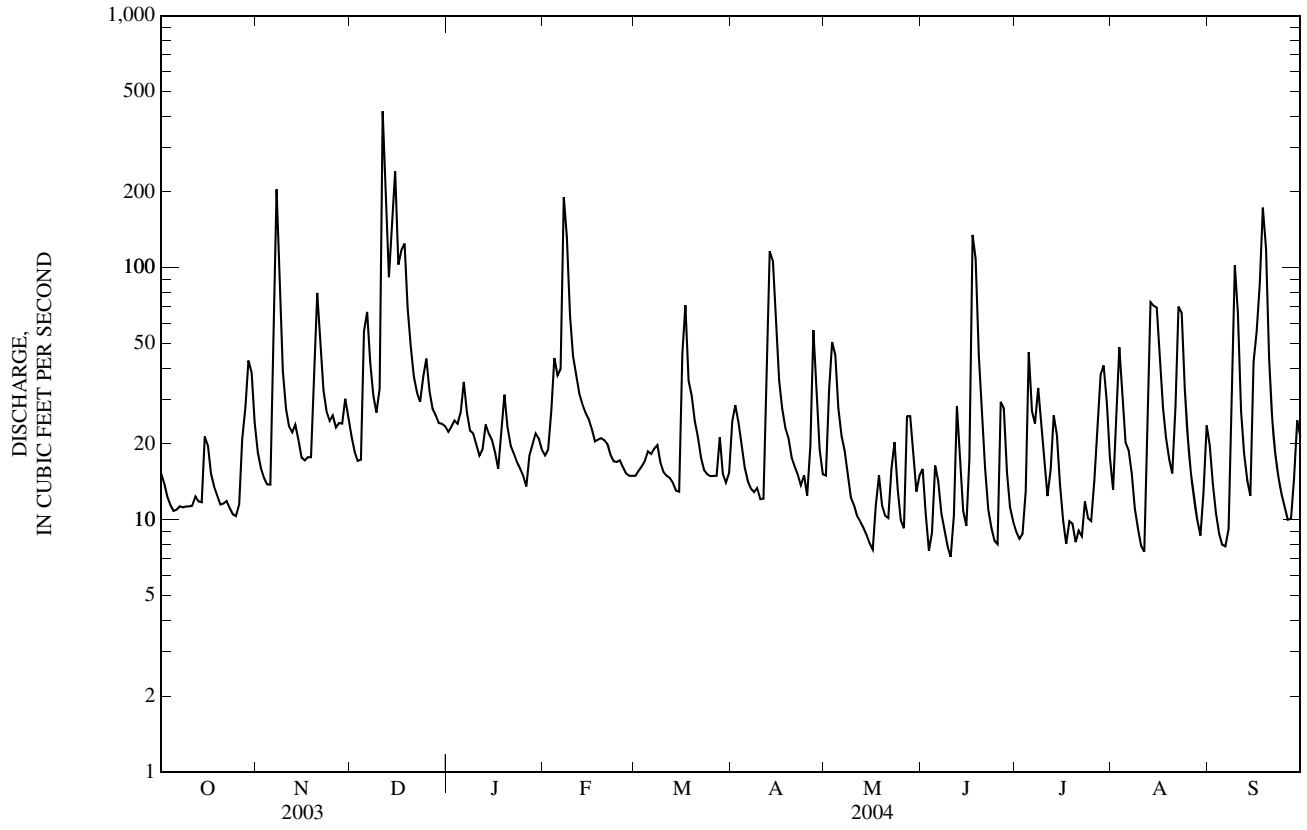
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2004, BY WATER YEAR (WY)

MEAN	13.8	17.4	22.0	26.5	31.2	34.7	29.4	20.4	11.9	8.58	11.4	10.4
MAX	119	104	73.1	92.5	92.7	99.1	84.1	54.9	60.8	43.2	83.3	93.8
(WY)	(1973)	(1986)	(2004)	(1978)	(1979)	(1994)	(1983)	(2003)	(1972)	(2003)	(1955)	(2003)
MIN	0.47	2.46	3.86	6.38	3.93	9.21	5.58	3.21	0.77	0.43	0.55	0.31
(WY)	(1969)	(2002)	(2002)	(1955)	(2002)	(2002)	(2002)	(1991)	(2002)	(2002)	(2002)	(1968)

02036500 FINE CREEK AT FINE CREEK MILLS, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1945 - 2004	
ANNUAL TOTAL	16,252.7		10,608.9			
ANNUAL MEAN	44.5		29.0		19.8	
HIGHEST ANNUAL MEAN					40.7	1973
LOWEST ANNUAL MEAN					3.67	2002
HIGHEST DAILY MEAN	e813	Sep 19	418	Dec 11	1,880	Oct 21, 1961
LOWEST DAILY MEAN	3.7	aAug 28	7.1	Jun 10	0.01	bAug 7, 2002
ANNUAL SEVEN-DAY MINIMUM	4.4	Aug 23	9.1	Jul 16	0.02	Aug 5, 2002
MAXIMUM PEAK FLOW			636	Dec 11	4,180	Oct 6, 1972
MAXIMUM PEAK STAGE			3.93	Dec 11	9.02	Oct 6, 1972
INSTANTANEOUS LOW FLOW			6.5	cJun 3	0.00	dAug 10, 2002
ANNUAL RUNOFF (CFSM)	2.01		1.31		0.894	
ANNUAL RUNOFF (INCHES)	27.36		17.86		12.14	
10 PERCENT EXCEEDS	96		52		38	
50 PERCENT EXCEEDS	22		19		11	
90 PERCENT EXCEEDS	8.8		10		2.1	

a Also Aug. 29, 2003.
b Also Aug. 8-11, 14, 2002.
c Also June 4, 10, 2004.
d Also part or all of each day Aug. 11-15, 2002.
e Estimated.



02037000 JAMES RIVER AND KANAWHA CANAL NEAR RICHMOND, VA

LOCATION.--Lat 37°33'53", long 77°34'27", NAD83, 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 NGVD of 1929. Prior to Oct. 1, 1938, at datum 3.06 ft higher.

REMARKS.--No estimated daily discharges. Records good. 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 ft^3/s, gage height, 14.5 ft, there is interchange of flow with the James River and that discharge above 2,540 ft^3/s is included in discharge for the James River near Richmond (station 02037500) has been used. Daily discharges in excess of 2,540 ft^3/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. 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.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.30	0.82	0.82	0.82	0.82	2.0	60	60	47	56	50	0.00
2	0.30	0.82	0.82	0.82	0.82	2.0	60	60	47	56	50	0.00
3	0.30	0.82	0.82	0.82	0.82	2.0	60	60	47	55	50	0.00
4	0.30	0.82	0.82	0.82	0.82	2.0	60	60	47	55	50	0.00
5	0.30	0.82	0.82	0.82	0.82	2.0	60	60	47	55	50	0.00
6	0.30	0.82	0.82	0.82	0.82	2.0	60	60	47	54	50	0.00
7	0.30	0.82	0.82	0.82	0.82	2.0	60	60	47	54	50	0.00
8	0.30	0.82	0.82	0.82	0.82	2.0	60	60	47	54	50	0.00
9	0.30	0.82	0.82	0.82	0.82	2.0	60	52	47	54	21	0.00
10	0.30	0.82	0.82	0.82	0.82	32	60	47	47	53	0.00	0.00
11	0.30	0.82	0.82	0.82	0.82	60	60	47	47	53	0.00	0.00
12	0.30	0.82	0.82	0.82	0.82	60	60	47	47	53	0.00	0.00
13	0.30	0.82	0.82	0.82	0.82	60	60	47	47	52	0.00	0.00
14	0.30	0.82	0.82	0.82	0.82	60	60	47	47	52	0.00	0.00
15	0.30	0.82	0.82	0.82	0.82	60	60	47	47	52	0.00	0.00
16	0.30	0.82	0.82	0.82	0.82	60	60	47	47	52	0.00	0.00
17	0.30	0.82	0.82	0.82	24	60	60	47	47	51	0.00	0.00
18	0.30	0.82	0.82	0.82	48	60	60	47	47	51	0.00	0.00
19	0.30	0.82	0.82	0.82	48	60	60	47	47	51	0.00	0.00
20	0.30	0.82	0.82	0.82	48	60	60	47	47	51	0.00	0.00
21	0.30	0.82	0.82	0.82	48	60	60	47	47	50	0.00	0.00
22	0.30	0.82	0.82	0.82	48	60	60	47	17	50	0.00	0.00
23	0.30	0.82	0.82	0.82	48	60	60	47	0.00	50	0.00	0.00
24	0.30	0.82	0.82	0.82	48	60	60	47	0.00	50	0.00	0.00
25	0.30	0.82	0.82	0.82	48	60	60	47	0.00	50	0.00	0.00
26	0.71	0.82	0.82	0.82	48	60	60	47	0.00	50	0.00	0.00
27	0.82	0.82	0.82	0.82	17	60	60	47	0.00	50	0.00	0.00
28	0.82	0.82	0.82	0.82	2.0	60	60	47	24	50	0.00	0.00
29	0.82	0.82	0.82	0.82	2.0	60	60	47	56	50	0.00	0.00
30	0.82	0.82	0.82	0.82	---	60	60	47	56	50	0.00	0.00
31	0.82	---	0.82	0.82	---	60	---	47	---	50	0.00	---
TOTAL	12.31	24.60	25.42	25.42	490.12	1,310.0	1,800	1,566	1,140.00	1,614	421.00	0.00
MEAN	0.40	0.82	0.82	0.82	16.9	42.3	60.0	50.5	38.0	52.1	13.6	0.00
MAX	0.82	0.82	0.82	0.82	48	60	60	60	56	56	50	0.00
MIN	0.30	0.82	0.82	0.82	0.82	2.0	60	47	0.00	50	0.00	0.00

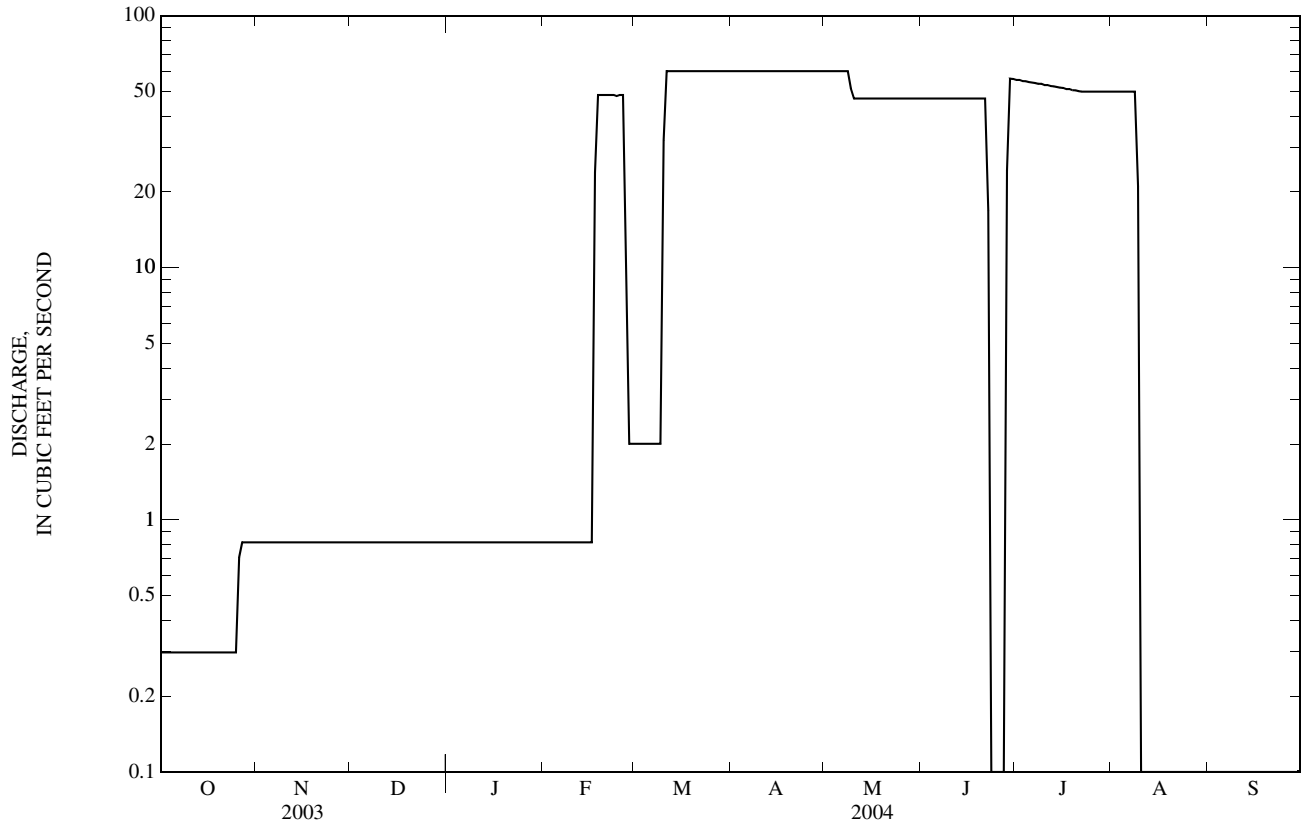
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 2004, BY WATER YEAR (WY)

MEAN	547	574	594	613	626	615	630	613	621	564	550	526
MAX	1,078	1,014	1,220	1,145	1,086	1,094	1,108	1,086	1,061	956	1,108	937
(WY)	(1949)	(1948)	(1949)	(1949)	(1979)	(1951)	(1951)	(1952)	(1951)	(1940)	(1940)	(1949)
MIN	a0.40	a0.60	a0.60	a0.60	a0.60	a0.60	a0.60	a0.60	a0.60	a0.60	a0.60	b0.00
(WY)	(2004)	(c1980)	(c1980)	(c1980)	(c1980)	(c1980)	(c1980)	(c1980)	(c1980)	(c1980)	(c1980)	(2004)

02037000 JAMES RIVER AND KANAWHA CANAL NEAR RICHMOND, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1937 - 2004	
ANNUAL TOTAL	17,421.13		8,428.87			
ANNUAL MEAN	47.7		23.0		589	
HIGHEST ANNUAL MEAN					1,023	1949
LOWEST ANNUAL MEAN					1.48	1980
HIGHEST DAILY MEAN	1,090	Feb 25	60	Mar 11	d3,860	Aug 18, 1940
LOWEST DAILY MEAN	b0.30	fSep 16	b0.00	gJun 23	h0.00	(j)
ANNUAL SEVEN-DAY MINIMUM	b0.30	kSep 16	b0.00	mAug 10	b0.00	mAug 10, 2004
MAXIMUM PEAK FLOW			(n)		(n)	
MAXIMUM PEAK STAGE			p14.13	Aug 30	q29.10	Jun 23, 1972
INSTANTANEOUS LOW FLOW			(h)		(h)	(j)
10 PERCENT EXCEEDS	99		60		980	
50 PERCENT EXCEEDS	51		0.82		780	
90 PERCENT EXCEEDS	0.30		0.00		13	

a Estimated, leakage through head gates.
b Result of headgates being closed.
c Also 1983.
d See REMARKS.
f Also Oct. 1-25, 2003.
g Also June 24-27 and Aug. 10 to Spet. 30, 2004.
h Probably no flow at times when headgates were closed.
j Many days in some years.
k Also Oct. 1-19, 2003.
m Also Aug. 11 to Sept. 24, 2004.
n Unknown.
p Backwater from unknown source.
q From floodmarks.



02037500 JAMES RIVER NEAR RICHMOND, VA

LOCATION.--Lat 37°33'48", long 77°32'49", NAD83, 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 Bosher Dam, 3.3 mi upstream from Powhite Creek, and at mile 116.6.

DRAINAGE AREA.--6,758 mi^2.

PERIOD OF RECORD.--October 1934 to current year. Gage-height records collected in vicinity of Mayós 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 NGVD of 1929.

REMARKS.--Records good except those for periods of no gage-height record, Aug. 26 and Sept. 23, which are fair. City of Richmond takes from 40 ft^3/s to 90 ft^3/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 ft^3/s, includes canal flow. Minimum daily discharge of James River and James River and Kanawha Canal combined, 214 ft^3/s, Oct. 5, 1941, caused by recharging of the pool above Bosher Dam after the canal gates were closed. Since 1982, low flows during summer months are augmented by releases from Lake Moomaw, station 02011795. 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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50,000 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 21	2100	*62,400	*14.57	2045	52,500	13.38
Dec 12	1245	53,900	13.56			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11,800	6,710	12,300	10,200	5,680	8,520	6,180	10,600	9,990	3,470	3,700	3,710
2	9,540	6,270	12,300	9,780	5,270	7,850	7,140	9,600	12,300	3,470	3,420	2,590
3	8,270	5,990	11,100	9,400	5,500	7,440	7,010	9,190	12,600	4,920	5,210	2,000
4	7,280	5,370	10,400	9,080	8,190	7,200	6,790	11,400	8,930	3,610	8,580	2,000
5	6,580	5,320	10,700	9,070	12,800	7,200	6,380	10,000	7,680	9,890	4,940	1,890
6	6,120	6,350	14,700	9,820	10,600	7,750	6,010	8,870	9,630	12,100	4,590	1,880
7	5,680	25,400	15,200	10,200	26,500	8,490	5,870	8,590	11,100	8,130	4,500	1,840
8	5,030	29,600	12,700	9,630	45,100	8,740	5,660	7,780	10,500	6,400	3,720	2,200
9	5,050	21,700	11,200	9,460	37,700	8,820	5,430	6,940	9,220	5,120	3,180	7,030
10	4,870	16,400	10,300	8,770	27,800	9,150	5,350	6,470	8,220	4,010	2,910	42,300
11	4,700	12,700	24,800	8,350	22,100	8,660	5,320	6,030	6,720	3,520	2,710	32,100
12	4,590	10,600	51,200	8,020	17,800	8,230	5,450	5,550	8,040	3,290	2,650	16,100
13	4,510	9,560	42,600	8,070	16,000	7,850	13,200	5,210	10,300	4,730	3,790	10,300
14	4,290	12,000	34,000	8,090	14,400	7,040	30,800	5,150	7,650	7,130	5,680	7,710
15	4,370	22,200	31,700	7,590	13,200	6,700	48,100	5,150	6,750	6,690	5,960	7,080
16	5,720	20,100	26,300	7,310	12,800	7,350	42,700	4,850	8,160	5,210	5,540	6,240
17	5,510	17,200	23,400	6,900	12,400	10,400	29,400	4,850	18,500	3,890	4,660	5,580
18	4,780	13,500	25,000	6,850	11,300	10,900	23,000	4,850	13,600	3,480	3,760	10,500
19	5,030	11,200	22,900	7,100	10,500	10,100	18,100	5,230	10,700	3,490	3,490	18,400
20	4,730	20,900	20,500	7,520	10,000	10,700	14,400	6,130	9,440	3,580	2,930	21,100
21	4,400	56,800	17,700	6,960	9,670	9,940	12,100	6,830	7,110	3,190	2,750	16,300
22	4,250	47,400	15,200	6,720	9,260	9,270	10,900	8,000	5,990	3,170	3,000	11,100
23	4,110	29,400	13,500	6,650	9,940	8,860	10,000	8,600	5,090	3,390	2,960	e8,410
24	3,980	23,600	12,700	6,480	12,700	8,550	8,970	10,800	4,800	2,980	2,900	6,670
25	3,850	19,700	12,400	6,320	11,800	8,050	8,230	9,400	4,540	3,350	2,600	5,870
26	3,620	17,100	12,800	6,150	10,800	7,220	7,730	7,200	4,770	4,050	e2,330	4,890
27	4,010	13,900	14,200	5,590	10,000	6,940	7,930	7,070	4,920	4,780	2,080	4,600
28	7,890	11,700	14,300	6,230	9,480	6,750	7,920	7,380	5,050	5,330	2,090	4,470
29	10,200	11,500	13,100	7,000	8,950	6,460	8,730	7,370	4,140	4,740	2,000	12,600
30	8,810	12,500	12,100	6,880	---	6,200	10,900	7,970	3,790	4,670	4,930	60,400
31	7,560	---	11,100	6,960	---	6,110	---	9,160	---	4,070	6,480	---
TOTAL	181,130	522,670	572,400	243,150	418,240	253,440	385,700	232,220	250,230	149,850	120,040	337,860
MEAN	5,843	17,420	18,460	7,844	14,420	8,175	12,860	7,491	8,341	4,834	3,872	11,260
MAX	11,800	56,800	51,200	10,200	45,100	10,900	48,100	11,400	18,500	12,100	8,580	60,400
MIN	3,620	5,320	10,300	5,590	5,270	6,110	5,320	4,850	3,790	2,980	2,000	1,840
(†)	12.3	24.6	25.4	25.4	490	1,310	1,800	1,566	1,137	1,614	421	0
MEAN‡	5,843	17,423	18,465	7,844	14,439	8,218	12,917	7,541	8,379	4,886	3,886	11,260
CFSM‡	.86	2.58	2.73	1.16	2.14	1.22	1.91	1.12	1.24	.72	.58	1.67
IN.‡	1.00	2.88	3.15	1.34	2.30	1.40	2.13	1.29	1.38	.83	.66	1.86

CAL YR 2003 MEAN‡ 14,655 CFSM‡ 2.17 IN.‡ 29.44
WTR YR 2004 MEAN‡ 10,042 CFSM‡ 1.49 IN.‡ 20.23

† Total diversion in cubic feet per second, per month, by James River and Kanawha Canal..
‡ Adjusted for diversion.

02037500 JAMES RIVER NEAR RICHMOND, VA—Continued

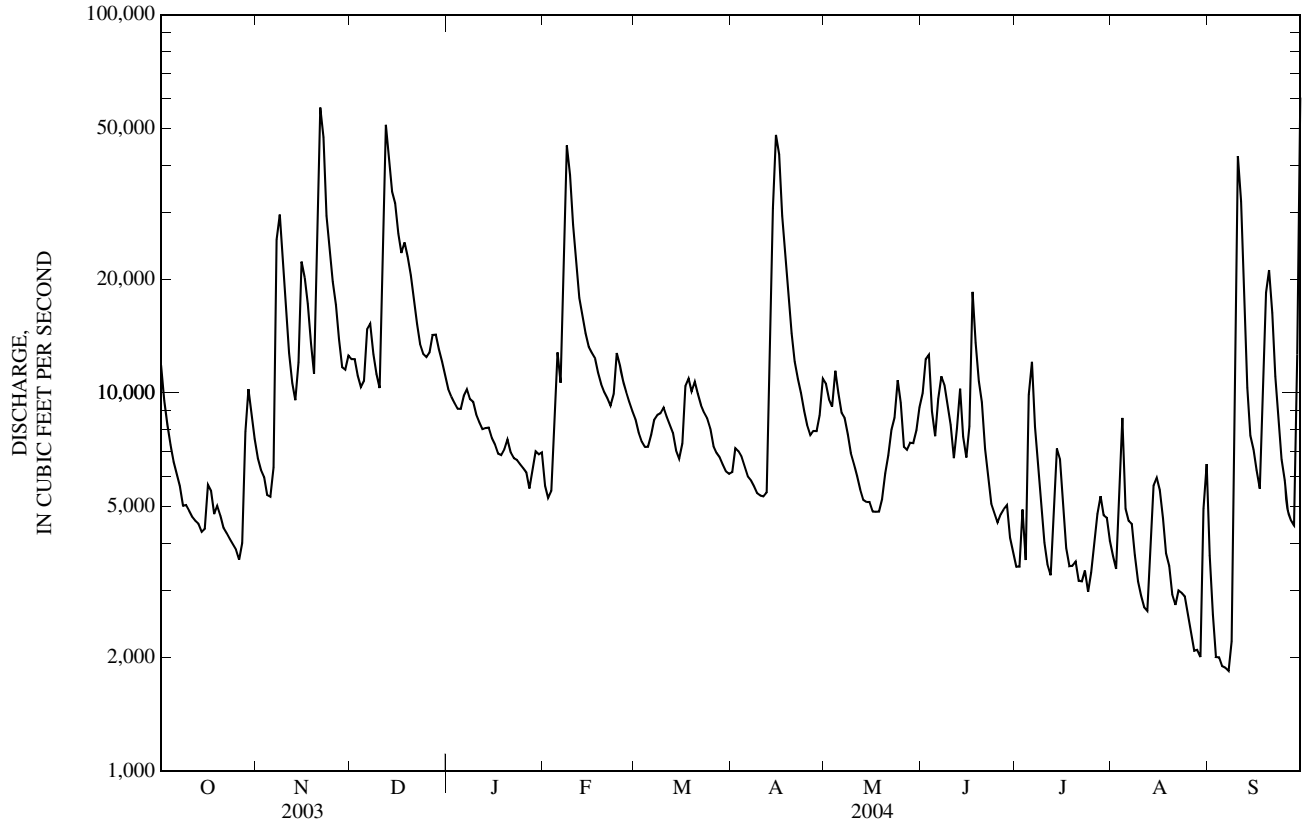
DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 2004, BY WATER YEAR (WY)

MEAN	3,963	4,829	6,857	8,960	10,800	12,680	10,910	7,873	5,709	3,240	3,605	3,503
MAX	19,090	30,480	26,480	25,300	34,960	32,740	35,900	24,280	30,910	11,300	21,710	18,390
(WY)	(1938)	(1986)	(1949)	(1937)	(1998)	(1993)	(1987)	(1989)	(1972)	(1972)	(1969)	(1996)
MIN	177	338	450	837	1,652	2,988	2,766	2,137	904	76.1	149	125
(WY)	(1942)	(1942)	(1966)	(1966)	(2002)	(1981)	(1966)	(1941)	(1964)	(1966)	(1966)	(1963)

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1937 - 2004	
ANNUAL TOTAL	5,331,490		3,666,930			
ANNUAL MEAN	14,610		10,020		6,889	
HIGHEST ANNUAL MEAN					13,540	1973
LOWEST ANNUAL MEAN					2,110	2002
HIGHEST DAILY MEAN	106,000	Feb 25	a60,400	Sep 30	b296,000	Jun 23, 1972
LOWEST DAILY MEAN	c2,500	Jan 28	1,840	Sep 7	d10	fSep 8, 1966
ANNUAL SEVEN-DAY MINIMUM	2,790	Jan 26	2,060	Sep 2	d10	gSep 8, 1966
MAXIMUM PEAK FLOW			62,400	Nov 21	b313,000	Jun 23, 1972
MAXIMUM PEAK STAGE			14.57	Nov 21	28.62	Jun 23, 1972
INSTANTANEOUS LOW FLOW			1,830	Sep 7	(h)	(j)
ANNUAL RUNOFF (CFSM)	2.16		1.48		1.02	
ANNUAL RUNOFF (INCHES)	29.35		20.18		13.85	
10 PERCENT EXCEEDS	31,100		18,400		15,000	
50 PERCENT EXCEEDS	10,500		7,740		4,120	
90 PERCENT EXCEEDS	3,820		3,620		955	



02038850 HOLIDAY CREEK NEAR ANDERSONVILLE, VA

LOCATION.--Lat 37°24'56", long 78°38'09", NAD83, 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 mi^2.

PERIOD OF RECORD.--April 1966 to current year.

REVISED RECORDS.--WDR VA-72-1: 1967-71(M), 1966-69(P), 1971(P). WDR VA-98-1: 1997.

GAGE.--Water-stage recorder. Datum of gage is 472.97 ft NGVD of 1929.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Oct. 1-15, Dec. 14, and Feb. 8-14, and period with ice effect, Jan. 31 to Feb. 2, which are fair. Maximum discharge, 9,640 ft^3/s, from rating curve extended above 4,200 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 150 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 6	1830	*278	*3.17	2130	181	2.50
Dec 10	2400	199	2.62			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e10	8.3	9.1	8.9	e8.5	8.2	8.7	7.7	6.1	3.1	3.6	2.5
2	e9.0	7.9	8.2	10	e8.0	8.5	7.9	9.0	5.1	3.0	4.7	2.3
3	e8.2	7.8	7.8	9.8	19	8.3	7.7	14	4.7	2.9	3.6	2.3
4	e7.8	7.7	8.3	9.3	17	8.2	7.2	9.3	6.3	4.5	2.8	2.2
5	e7.6	7.8	21	11	14	8.2	6.6	8.1	10	7.2	3.4	2.1
6	e7.4	101	21	11	56	10	6.5	7.5	6.7	3.6	3.3	3.6
7	e7.2	49	15	9.3	81	8.8	6.7	6.9	5.8	3.3	2.6	7.2
8	e7.0	17	11	9.0	e37	8.2	6.6	6.5	5.3	3.0	2.4	14
9	e7.6	11	9.9	9.5	e25	7.8	6.5	6.4	4.8	2.5	2.2	12
10	e9.0	9.7	30	9.1	e16	7.7	6.4	6.1	4.5	2.6	2.1	4.5
11	e9.2	9.6	71	19	e13	7.6	6.6	5.8	6.6	3.1	2.0	3.6
12	e8.5	9.1	21	9.7	e12	7.7	45	5.6	8.4	2.9	8.3	3.3
13	e7.2	9.1	14	9.8	e11	7.1	62	5.6	5.5	2.9	8.5	3.1
14	e6.3	8.0	e23	9.1	e10	7.0	34	5.5	5.2	2.8	5.5	3.0
15	e10	8.3	26	9.0	10	7.5	16	5.3	5.3	2.8	5.1	3.1
16	8.0	7.9	23	8.6	9.8	33	12	5.2	5.7	2.2	3.8	3.1
17	7.5	7.8	25	8.4	9.4	19	11	5.7	4.8	2.2	3.2	15
18	7.5	7.5	20	12	9.9	12	9.9	5.5	4.6	3.0	3.7	54
19	7.2	24	16	11	10	10	9.4	11	4.5	2.7	3.1	8.2
20	7.2	19	13	9.2	9.7	9.1	9.0	12	3.9	2.4	2.7	4.7
21	7.4	11	12	8.9	9.4	8.8	8.8	7.3	3.7	2.1	4.1	3.9
22	7.4	9.4	11	9.0	8.7	8.2	8.5	6.6	3.7	2.6	4.9	3.5
23	7.2	8.6	11	8.7	8.6	7.9	8.4	5.7	3.7	3.4	3.4	3.2
24	6.9	8.7	11	8.6	8.8	7.8	8.2	5.2	3.7	3.7	2.8	3.0
25	6.9	9.3	10	9.2	8.6	7.7	8.3	4.9	4.4	4.2	2.6	3.0
26	8.6	8.1	9.8	20	8.2	7.7	8.6	6.1	10	4.5	2.5	3.0
27	19	7.8	9.7	10	8.2	8.0	8.4	8.1	4.9	5.5	2.5	3.4
28	12	14	9.3	8.7	8.2	8.0	7.8	16	4.1	4.2	2.3	13
29	15	15	9.3	8.9	8.2	7.4	7.5	8.2	3.6	3.3	2.3	8.6
30	11	10	9.5	9.5	---	7.6	7.4	6.3	3.3	3.0	2.9	5.0
31	8.9	---	9.0	e8.8	---	8.4	---	8.0	---	2.7	3.1	---
TOTAL	269.7	439.4	504.9	313.0	463.2	291.4	367.6	231.1	158.9	101.9	110.0	203.4
MEAN	8.70	14.6	16.3	10.1	16.0	9.40	12.3	7.45	5.30	3.29	3.55	6.78
MAX	19	101	71	20	81	33	62	16	10	7.2	8.5	54
MIN	6.3	7.5	7.8	8.4	8.0	7.0	6.4	4.9	3.3	2.1	2.0	2.1
CFSM	1.02	1.72	1.91	1.18	1.87	1.10	1.44	0.87	0.62	0.39	0.42	0.79
IN.	1.18	1.92	2.20	1.37	2.02	1.27	1.60	1.01	0.69	0.44	0.48	0.89

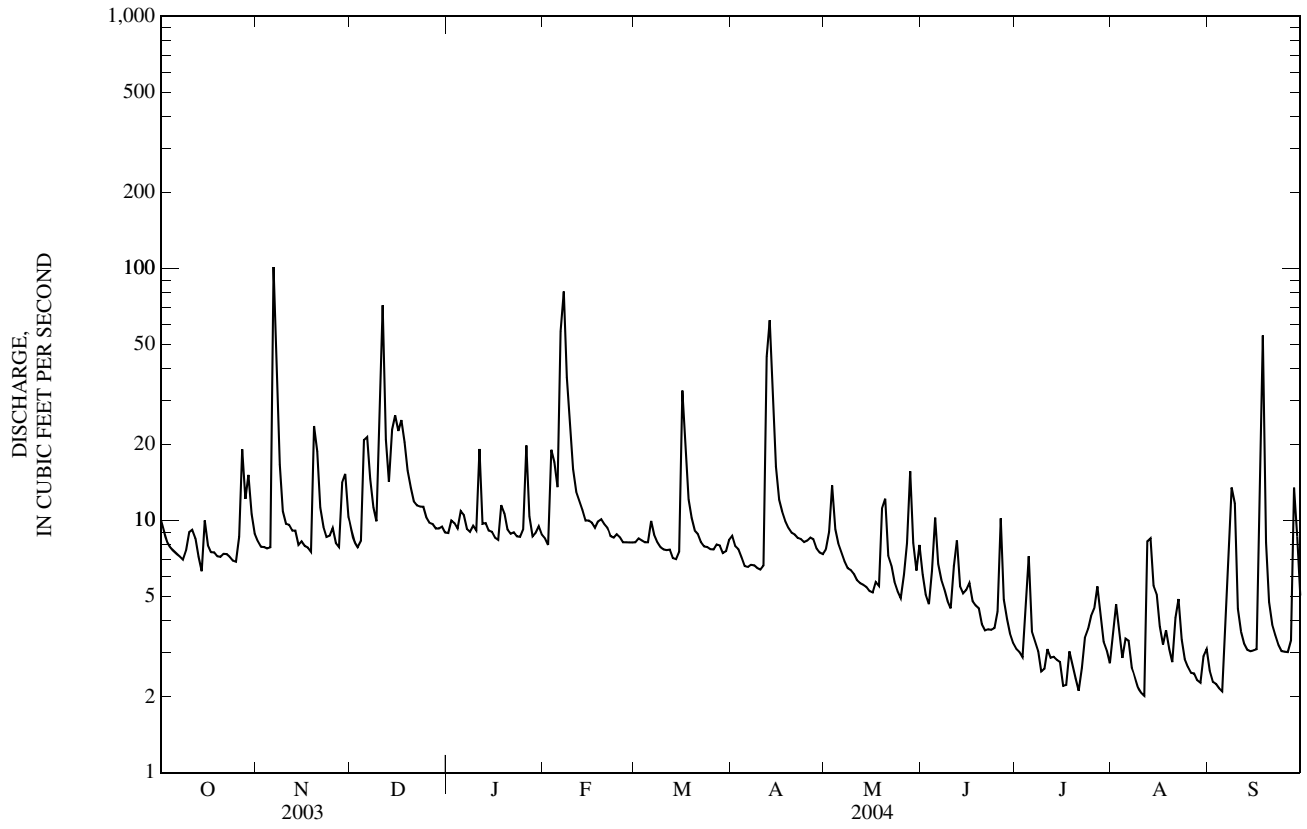
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 2004, BY WATER YEAR (WY)

MEAN	5.73	7.41	8.58	10.5	12.4	13.7	11.5	9.59	7.91	4.51	4.31	6.65
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	0.47	0.83	1.45	2.04	2.05	4.12	3.15	2.64	0.56	0.36	0.13	0.32
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(1981)	(2002)	(2002)	(2002)	(2002)	(2002)	(2001)

02038850 HOLIDAY CREEK NEAR ANDERSONVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1966 - 2004	
ANNUAL TOTAL	5,584.1		3,454.5			
ANNUAL MEAN	15.3		9.44		8.58	
HIGHEST ANNUAL MEAN					18.6	1973
LOWEST ANNUAL MEAN					1.55	2002
HIGHEST DAILY MEAN	303	Sep 19	101	Nov 6	1,740	Jun 21, 1972
LOWEST DAILY MEAN	2.7	Jan 24	2.0	Aug 11	0.03	aAug 6, 2002
ANNUAL SEVEN-DAY MINIMUM	3.0	Jan 18	2.5	Jul 16	0.03	Aug 6, 2002
MAXIMUM PEAK FLOW			278	Nov 6	9,640	Jun 21, 1972
MAXIMUM PEAK STAGE			3.17	Nov 6	14.64	Jun 21, 1972
INSTANTANEOUS LOW FLOW			1.8	bJul 17	0.02	cAug 7, 2002
ANNUAL RUNOFF (CFSM)	1.79		1.11		1.01	
ANNUAL RUNOFF (INCHES)	24.35		15.07		13.67	
10 PERCENT EXCEEDS	26		15		15	
50 PERCENT EXCEEDS	7.9		7.9		5.1	
90 PERCENT EXCEEDS	4.0		3.0		1.7	

a Also Aug. 7-25, 2002.
b Also July 22 and Aug. 11, 2004.
c Also Aug. 8, 10, 12, 23, 2002.
e Estimated.



02039000 BUFFALO CREEK NEAR HAMPDEN SYDNEY, VA

LOCATION.--Lat 37°15'26", long 78°29'11", NAD83, 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 mi^2.

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 NGVD of 1929 (levels by Virginia Department of Transportation). Prior to Aug. 19, 1953, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 10, 11, 24-29 and Jan. 31 to Feb. 1, which are fair. Maximum discharge, 9,160 ft^3/s, from rating curve extended above 1,600 ft^3/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.

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

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 7	0800	531	5.75	0800	1,010	6.78
Dec 11	1200	691	6.15	1130	*1,260	*7.20

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	73	78	71	e65	58	63	52	39	40	59	45
2	60	68	70	77	66	58	61	61	37	37	689	40
3	56	65	65	82	104	59	60	77	35	35	318	38
4	54	61	65	77	139	58	58	69	39	34	156	37
5	53	59	109	94	117	58	55	62	59	33	107	36
6	52	136	124	127	142	68	53	56	51	31	84	43
7	51	439	103	98	687	70	54	52	46	29	65	73
8	50	252	87	86	352	65	53	49	42	28	53	109
9	53	152	79	85	200	60	53	48	40	26	45	108
10	61	111	88	e78	136	58	51	46	40	25	40	66
11	68	90	486	e73	108	56	52	45	43	26	41	54
12	63	79	313	76	94	55	82	43	49	29	92	48
13	59	78	172	80	87	53	170	42	44	39	143	44
14	57	69	267	77	81	52	193	41	42	32	116	42
15	70	67	395	76	77	52	138	40	42	28	114	46
16	62	69	270	71	79	113	100	39	52	25	80	47
17	58	68	210	68	73	155	83	42	49	25	64	79
18	57	65	207	81	73	107	74	43	44	42	56	362
19	55	97	148	86	76	85	69	43	41	35	50	172
20	54	182	121	76	73	73	64	44	38	31	46	80
21	53	131	103	71	71	69	62	43	35	28	44	54
22	53	99	95	70	66	65	59	64	41	26	50	45
23	51	84	89	69	64	61	56	50	57	28	45	40
24	50	77	89	e67	64	59	56	46	49	42	41	37
25	49	77	86	e64	63	59	56	42	49	40	38	35
26	51	70	80	e63	60	58	62	40	172	41	37	34
27	69	67	78	e78	60	59	70	49	107	59	36	35
28	85	73	75	e70	62	60	60	46	64	149	35	65
29	121	107	74	e68	59	58	55	43	50	79	35	86
30	104	88	75	74	---	57	53	40	45	94	40	61
31	83	---	72	e69	---	59	---	41	---	68	53	---
TOTAL	1,930	3,153	4,373	2,402	3,398	2,077	2,175	1,498	1,541	1,284	2,872	2,061
MEAN	62.3	105	141	77.5	117	67.0	72.5	48.3	51.4	41.4	92.6	68.7
MAX	121	439	486	127	687	155	193	77	172	149	689	362
MIN	49	59	65	63	59	52	51	39	35	25	35	34
CFSM	0.89	1.51	2.02	1.11	1.68	0.96	1.04	0.69	0.74	0.59	1.33	0.99
IN.	1.03	1.68	2.33	1.28	1.81	1.11	1.16	0.80	0.82	0.69	1.53	1.10

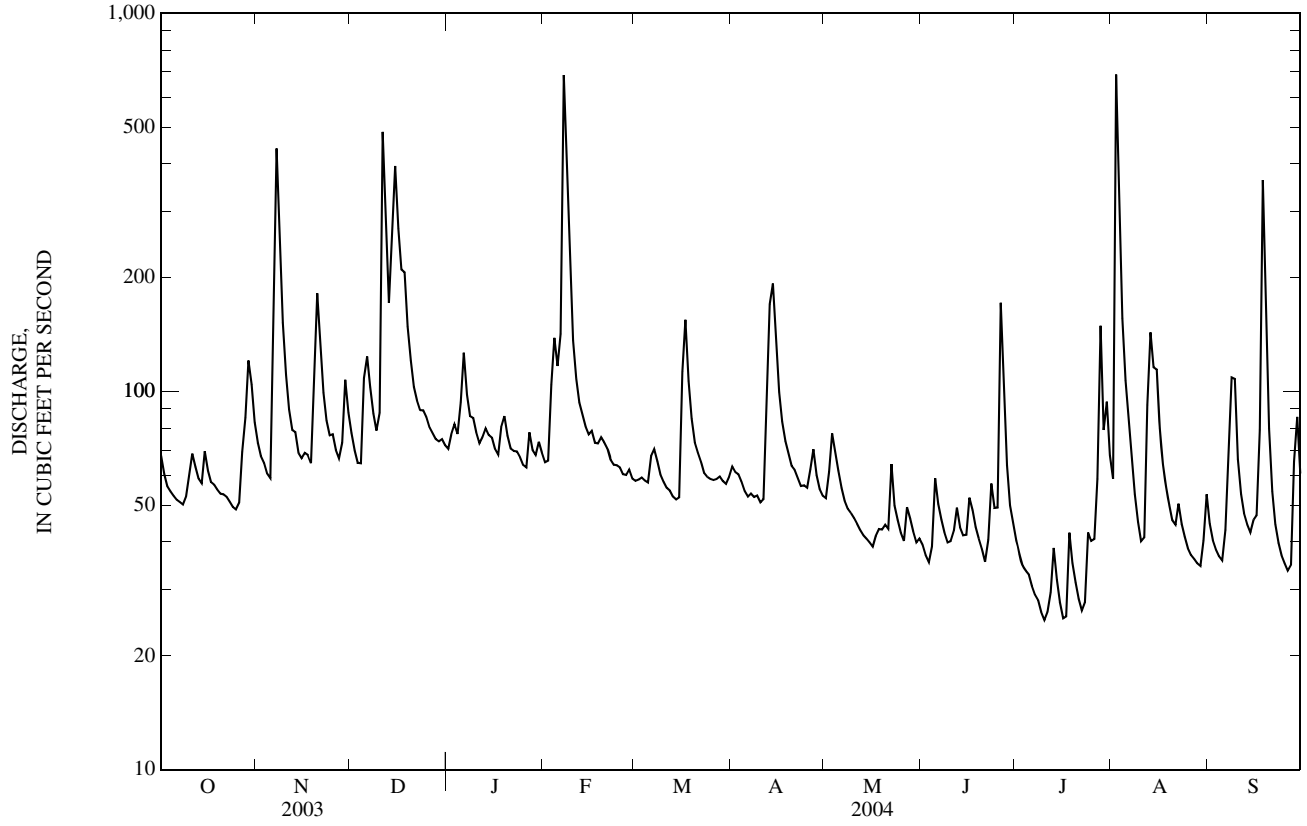
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 2004, BY WATER YEAR (WY)

MEAN	48.6	63.6	71.7	88.5	98.4	112	91.3	66.2	50.6	39.1	40.5	45.2
MAX	365	315	157	313	295	324	256	173	294	129	260	309
(WY)	(1972)	(1986)	(1997)	(1978)	(1979)	(1993)	(1983)	(1978)	(1972)	(1989)	(1955)	(2003)
MIN	9.94	14.4	18.7	25.3	29.4	37.5	25.1	23.4	8.60	5.60	2.44	6.34
(WY)	(1971)	(2002)	(1966)	(1966)	(2002)	(1981)	(2002)	(1969)	(2002)	(2002)	(2002)	(2002)

02039000 BUFFALO CREEK NEAR HAMPDEN SYDNEY, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1947 - 2004	
ANNUAL TOTAL	48,346		28,764			
ANNUAL MEAN	132		78.6		67.8	
HIGHEST ANNUAL MEAN					134	1972
LOWEST ANNUAL MEAN					21.2	2002
HIGHEST DAILY MEAN	2,700	Sep 19	689	Aug 2	4,940	Aug 18, 1955
LOWEST DAILY MEAN	e27	Jan 24	25	aJul 10	0.13	Aug 23, 2002
ANNUAL SEVEN-DAY MINIMUM	e31	bJan 22	28	Jul 6	0.22	Aug 11, 2002
MAXIMUM PEAK FLOW			1,260	Aug 2	9,160	Jun 21, 1972
MAXIMUM PEAK STAGE			7.20	Aug 2	12.38	Jun 21, 1972
INSTANTANEOUS LOW FLOW			24	cJul 16	0.09	Aug 24, 2002
ANNUAL RUNOFF (CFSM)	1.90		1.13		0.973	
ANNUAL RUNOFF (INCHES)	25.80		15.35		13.22	
10 PERCENT EXCEEDS	250		121		119	
50 PERCENT EXCEEDS	69		61		43	
90 PERCENT EXCEEDS	40		39		17	

a Also July 16, 17, 2004.
b Also Jan. 23, 2003.
c Also July 17, 2004.
e Estimated.



02039500 APPOMATTOX RIVER AT FARMVILLE, VA

LOCATION.--Lat 37°18'26", long 78°23'19", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to Nov. 29, 1928, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 10 and Jan. 28 to Feb. 1, and period of doubtful gage-height record, May 9-21, which are fair. Maximum discharge, 33,100 ft^3/s, from rating curve extended above 12,000 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,900 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 7	1545	*3,740	*14.89	2045	3,690	14.83
Dec 11	2345	3,280	14.34			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	279	264	318	264	e230	226	240	202	160	135	186	127
2	246	239	282	273	241	227	239	230	138	125	830	105
3	228	225	257	307	361	235	226	328	125	117	844	99
4	200	216	251	294	726	230	218	315	128	116	426	98
5	195	209	457	312	523	227	204	247	205	109	253	91
6	191	777	734	426	627	242	193	223	210	120	210	98
7	186	3,010	541	356	2,840	278	193	207	165	106	170	165
8	182	1,420	405	303	1,980	249	195	196	149	108	133	267
9	181	603	343	299	783	229	194	e190	140	101	113	475
10	194	419	368	e285	562	220	189	e185	142	91	102	286
11	213	346	2,250	254	454	213	187	e180	225	91	94	169
12	224	311	1,990	287	390	211	313	e175	218	114	162	135
13	203	312	715	296	360	207	1,220	e170	179	138	316	122
14	195	291	1,160	288	335	201	1,200	e167	148	114	405	114
15	258	256	1,520	275	317	203	706	e165	163	98	334	117
16	261	254	1,160	262	316	432	472	e162	213	86	247	124
17	204	256	920	245	298	827	380	e170	178	93	179	227
18	195	247	905	274	288	477	331	e180	159	145	150	966
19	190	314	654	344	305	355	302	e175	149	124	134	788
20	183	871	505	300	302	300	284	e180	137	105	121	329
21	179	560	424	263	289	279	273	e188	123	92	113	188
22	181	393	376	251	272	259	258	228	119	84	136	149
23	177	327	356	262	255	239	240	194	191	87	144	130
24	168	296	347	249	251	232	234	169	172	132	114	119
25	163	293	339	235	251	228	225	149	157	144	103	112
26	167	278	311	208	242	224	248	141	599	145	96	107
27	262	258	296	307	236	225	288	153	547	183	92	107
28	396	268	287	e285	231	231	241	165	249	370	91	165
29	422	473	280	e260	228	222	215	170	182	264	88	424
30	436	394	280	e270	---	215	206	151	151	200	100	272
31	311	---	274	e245	---	220	---	150	---	197	144	---
TOTAL	7,070	14,380	19,305	8,779	14,493	8,363	9,914	5,905	5,821	4,134	6,630	6,675
MEAN	228	479	623	283	500	270	330	190	194	133	214	222
MAX	436	3,010	2,250	426	2,840	827	1,220	328	599	370	844	966
MIN	163	209	251	208	228	201	187	141	119	84	88	91
CFSM	0.75	1.58	2.06	0.93	1.65	0.89	1.09	0.63	0.64	0.44	0.71	0.73
IN.	0.87	1.77	2.37	1.08	1.78	1.03	1.22	0.72	0.71	0.51	0.81	0.82

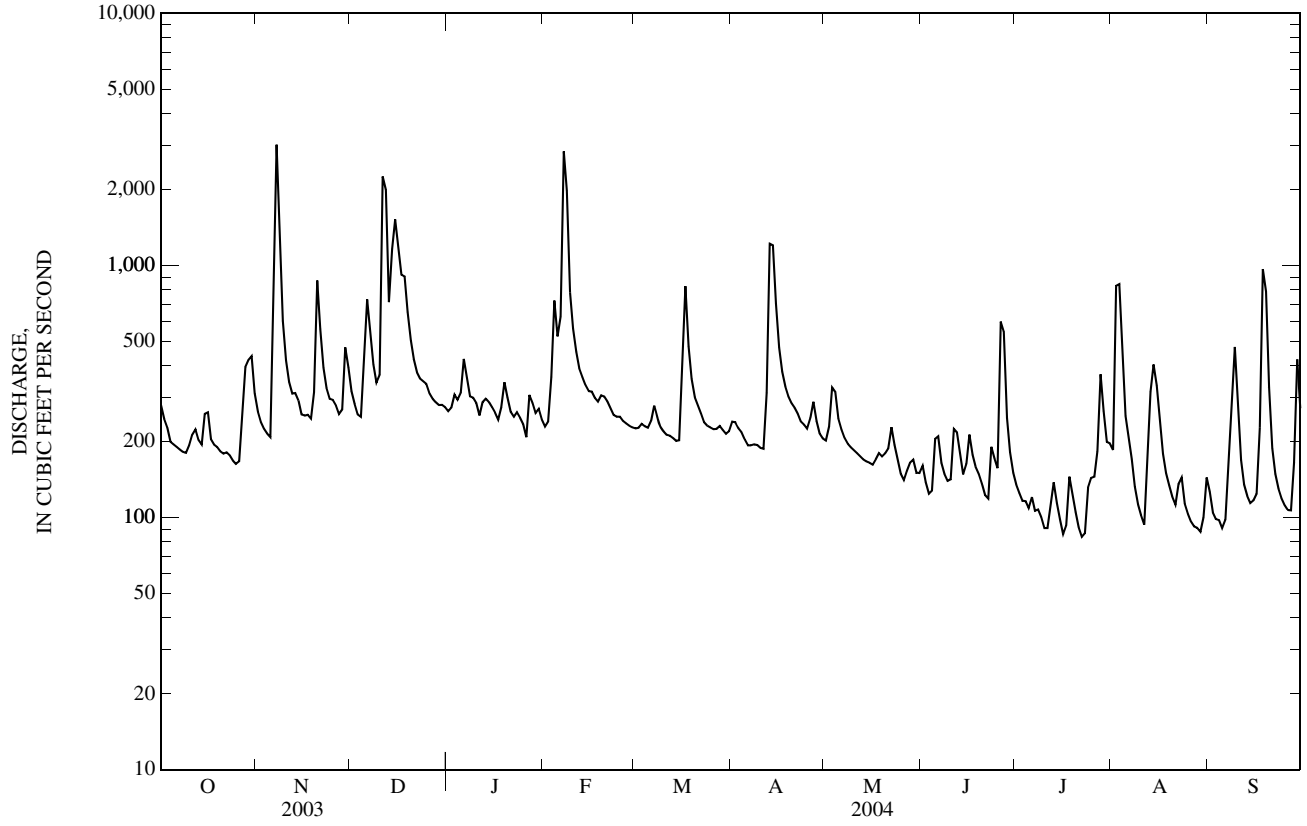
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 2004, BY WATER YEAR (WY)

MEAN	189	246	304	394	438	481	405	277	210	162	191	202
MAX	1,190	1,287	961	1,430	1,402	1,518	1,155	872	1,866	518	1,783	1,140
(WY)	(1972)	(1986)	(1997)	(1978)	(1979)	(1993)	(1983)	(1978)	(1972)	(1972)	(1940)	(1996)
MIN	30.3	45.5	61.6	96.3	97.1	126	105	95.2	27.5	18.6	11.8	16.7
(WY)	(1931)	(2002)	(1966)	(1966)	(2002)	(1981)	(2002)	(1969)	(2002)	(2002)	(2002)	(1968)

02039500 APPOMATTOX RIVER AT FARMVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1926 - 2004	
ANNUAL TOTAL	209,755		111,469			
ANNUAL MEAN	575		305		292	
HIGHEST ANNUAL MEAN					584	1972
LOWEST ANNUAL MEAN					74.0	2002
HIGHEST DAILY MEAN	7,670	Mar 21	3,010	Nov 7	28,000	Jun 22, 1972
LOWEST DAILY MEAN	e110	Jan 24	84	Jul 22	0.07	aAug 22, 2002
ANNUAL SEVEN-DAY MINIMUM	e120	Jan 22	98	Aug 24	0.09	Aug 19, 2002
MAXIMUM PEAK FLOW			3,740	Nov 7	33,100	Jun 22, 1972
MAXIMUM PEAK STAGE			14.89	Nov 7	b29.70	Jun 22, 1972
INSTANTANEOUS LOW FLOW			74	Jul 17	0.07	cAug 21, 2002
ANNUAL RUNOFF (CFSM)	1.90		1.01		0.963	
ANNUAL RUNOFF (INCHES)	25.75		13.69		13.08	
10 PERCENT EXCEEDS	1,160		476		528	
50 PERCENT EXCEEDS	274		230		166	
90 PERCENT EXCEEDS	140		117		61	

a Also Aug. 23-25, 2002.
b From floodmarks.
c Also Aug. 22-26, 2002.
e Estimated.



02040000 APPOMATTOX RIVER AT MATTOAX, VA

LOCATION.--Lat 37°25'18", long 77°51'32", NAD83, 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 mi^2.

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 NGVD of 1929. 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. 1, Nov. 9-11, Dec. 17-19, Feb. 10, 11, Apr. 15, May 22-26, May 30 to June 1, July 8-12, 15-18, and Aug. 24-26, and periods with ice effect, Jan. 27, 29, 30, which are fair. National Weather Service gage-height telemeter at station. Maximum discharge, 35,000 ft^3/s, from rating curve extended above 20,000 ft^3/s on basis of records for stations at Farmville and near Petersburg. 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.

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

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 11	1730	4,250	18.68	2000	4,170	18.40
Dec 15	0230	*4,810	*19.72	1530	4,010	18.06

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e810	703	884	783	649	531	604	518	e355	400	660	550
2	675	574	699	749	609	529	663	521	315	466	2,230	468
3	578	511	610	775	698	532	647	697	294	397	3,890	343
4	530	474	564	812	1,240	538	606	943	278	376	3,670	288
5	476	451	897	808	1,760	534	571	945	307	638	1,860	266
6	451	1,200	1,540	921	1,560	533	537	711	396	489	902	257
7	432	3,420	1,650	1,070	3,430	557	519	592	463	625	642	258
8	420	3,610	1,200	926	3,730	614	525	527	392	e570	497	491
9	406	e3,600	873	816	3,900	571	486	485	346	e420	403	1,930
10	402	e3,400	769	792	e3,700	525	449	465	324	e335	345	1,190
11	418	e1,650	3,660	746	e2,500	496	446	456	350	e305	341	776
12	440	881	3,910	693	1,340	484	549	449	701	e285	749	493
13	443	757	3,640	741	1,110	473	1,640	377	744	442	1,500	387
14	417	679	4,210	768	991	461	2,860	344	495	433	2,130	338
15	452	611	4,630	744	910	452	e2,700	329	402	e350	2,170	534
16	482	541	4,170	701	843	673	1,750	317	400	e300	1,450	521
17	485	521	e4,000	661	808	1,670	1,130	309	1,220	e275	944	1,110
18	416	514	e3,500	672	764	1,990	915	368	516	e240	695	3,260
19	386	598	e3,100	776	724	1,280	799	436	379	332	572	3,050
20	373	1,400	2,260	835	730	932	719	577	320	325	465	2,790
21	364	1,940	1,580	750	720	790	664	738	287	312	495	1,390
22	358	1,450	1,280	672	685	704	624	e660	268	291	876	716
23	352	931	1,140	647	643	636	583	e550	256	283	555	574
24	341	757	1,140	649	612	585	548	e483	276	277	e500	481
25	326	681	1,160	622	599	557	522	e420	332	319	e350	378
26	323	634	1,050	600	584	542	525	e375	463	413	e291	347
27	352	590	941	e595	566	543	605	540	1,260	468	276	326
28	480	559	873	704	548	562	636	469	1,400	880	260	339
29	838	664	834	e760	537	557	619	479	699	1,550	248	856
30	1,070	951	810	e690	---	544	596	e430	469	1,140	526	1,020
31	958	---	792	687	---	547	---	e390	---	697	1,370	---
TOTAL	15,254	35,252	58,366	23,165	37,490	20,942	25,037	15,900	14,707	14,633	31,862	25,727
MEAN	492	1,175	1,883	747	1,293	676	835	513	490	472	1,028	858
MAX	1,070	3,610	4,630	1,070	3,900	1,990	2,860	945	1,400	1,550	3,890	3,260
MIN	323	451	564	595	537	452	446	309	256	240	248	257
CFSM	0.68	1.62	2.59	1.03	1.78	0.93	1.15	0.71	0.68	0.65	1.42	1.18
IN.	0.78	1.81	2.99	1.19	1.92	1.07	1.28	0.81	0.75	0.75	1.63	1.32

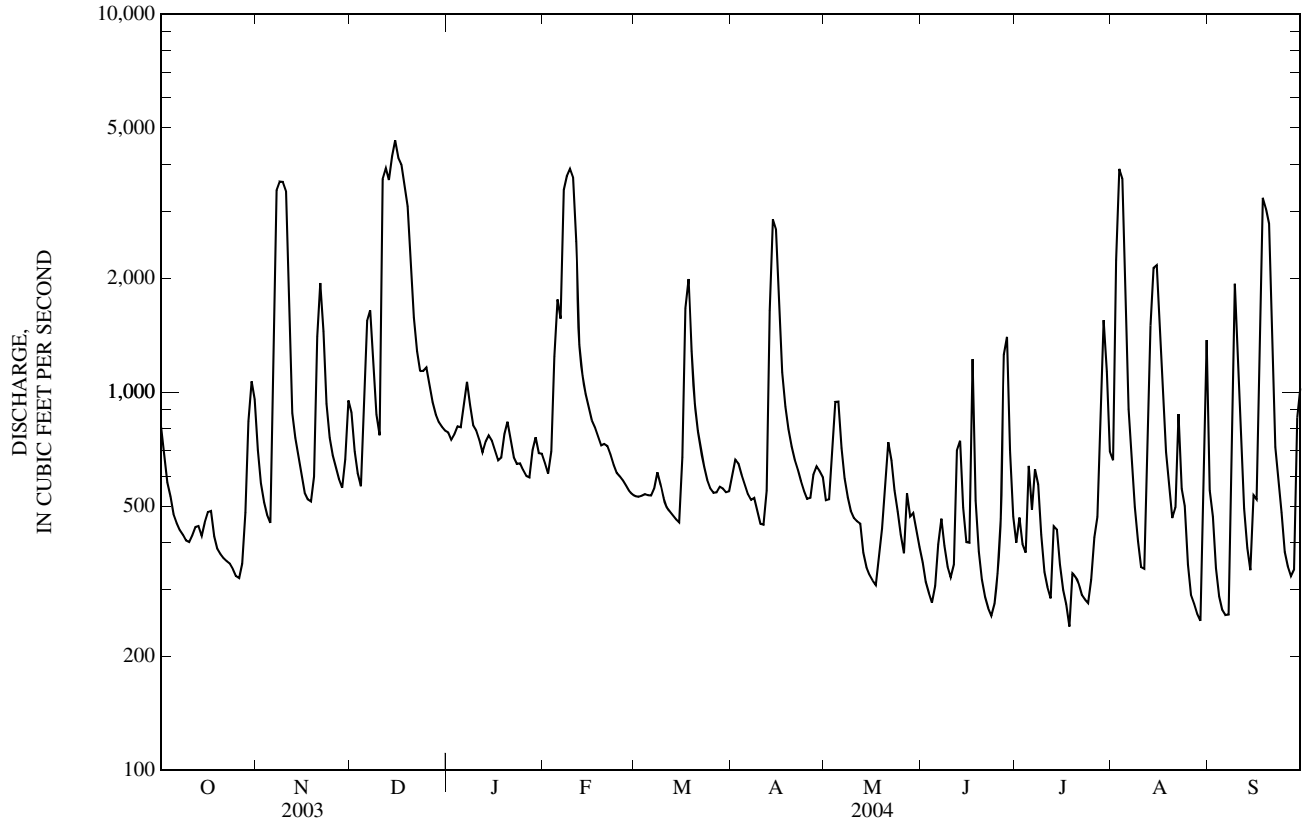
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1927 - 2004, BY WATER YEAR (WY)

MEAN	457	547	741	994	1,123	1,232	1,057	671	490	374	426	427
MAX	3,932	2,728	2,620	3,650	3,605	3,566	2,975	2,202	4,369	1,918	4,566	3,045
(WY)	(1972)	(1986)	(1994)	(1978)	(1998)	(1993)	(1983)	(2003)	(1972)	(1938)	(1940)	(2003)
MIN	32.7	79.1	123	207	200	309	246	208	50.2	25.7	15.0	30.0
(WY)	(1931)	(2002)	(1966)	(1966)	(2002)	(1981)	(2002)	(1926)	(2002)	(2002)	(2002)	(1932)

02040000 APPOMATTOX RIVER AT MATTOAX, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1927 - 2004	
ANNUAL TOTAL	555,089		318,335			
ANNUAL MEAN	1,521		870		711	
HIGHEST ANNUAL MEAN					1,553	1972
LOWEST ANNUAL MEAN					154	2002
HIGHEST DAILY MEAN	12,400	Sep 23	4,630	Dec 15	34,300	Aug 18, 1940
LOWEST DAILY MEAN	e261	Jan 25	e240	Jul 18	2.6	Aug 25, 2002
ANNUAL SEVEN-DAY MINIMUM	294	Aug 27	294	aJul 17	4.0	Aug 21, 2002
MAXIMUM PEAK FLOW			4,810	Dec 15	35,000	Aug 18, 1940
MAXIMUM PEAK STAGE			19.72	Dec 15	b35.30	Aug 18, 1940
INSTANTANEOUS LOW FLOW			(c)	(d)	2.4	fAug 25, 2002
ANNUAL RUNOFF (CFSM)	2.09		1.20		0.980	
ANNUAL RUNOFF (INCHES)	28.44		16.31		13.31	
10 PERCENT EXCEEDS	4,170		1,660		1,590	
50 PERCENT EXCEEDS	731		596		384	
90 PERCENT EXCEEDS	355		332		115	

a Also July 18, 2004.
b From floodmark in gage house.
c Not determined.
d Probably occurred July 18, 2004.
e Estimated.
f Also Aug. 26, 2002.



02041000 DEEP CREEK NEAR MANNBORO, VA

LOCATION.--Lat 37°17'00", long 77°52'11", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to Sep. 2, 1949, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Oct. 1, Oct. 16 to Dec. 8, Dec. 17-19, Aug. 26, and Sept. 4, 18-20, and periods with ice effect, Jan. 11, 12, and Jan. 23 to Feb. 2, which are fair. Maximum discharge, 15,000 ft^3/s, from rating curve extended above 3,900 ft^3/s. 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.

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

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 12	0800	2,040	8.79	1230	*11,200	*15.76
Dec 15	1530	2,470	9.29	0245	1,790	8.50
Feb 8	0230	2,200	8.98	2300	1,300	7.76
Jun 27	1730	1,260	7.70	0015	2,070	8.85
Aug 3	2100	5,700	12.04			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e122	e160	e180	164	e140	120	137	81	51	214	72	2,940
2	116	e130	e150	161	e135	120	163	97	47	310	151	703
3	110	e110	e140	169	175	121	151	199	42	136	3,040	286
4	106	e90	e125	172	249	122	131	279	59	99	3,160	e186
5	103	e87	e165	171	295	121	117	217	162	129	779	135
6	99	e260	e295	188	294	123	106	139	202	222	235	161
7	98	e630	e305	186	985	133	100	111	135	143	144	170
8	97	e680	e200	165	1,670	144	98	95	88	104	111	215
9	96	e480	174	158	649	134	98	84	70	87	88	806
10	95	e350	170	161	325	124	96	78	60	69	75	1,440
11	101	e250	601	e140	255	117	96	72	73	62	67	547
12	106	e190	1,710	e150	221	113	121	68	231	57	81	215
13	108	e165	748	159	204	109	278	63	386	54	148	156
14	105	e150	621	166	192	106	537	59	409	52	268	133
15	121	e135	1,930	159	180	104	448	55	139	47	460	146
16	127	e120	1,270	148	174	171	240	52	108	41	542	628
17	e119	e110	e560	132	166	347	175	87	121	36	260	957
18	e104	e112	e600	151	163	396	151	91	105	36	162	e1,500
19	e95	e130	e500	184	162	220	135	73	86	37	320	e1,620
20	e85	e275	354	184	160	171	124	88	66	39	225	e649
21	e80	e380	268	151	155	150	116	130	54	44	130	279
22	e77	e295	231	148	147	135	107	103	47	43	117	188
23	e73	e235	210	e140	139	124	99	82	44	62	108	157
24	e70	e175	225	e135	134	117	103	71	42	59	96	138
25	e65	e150	277	e125	134	114	103	61	43	69	80	125
26	e67	e140	280	e122	131	112	102	54	224	77	e69	115
27	e70	e130	222	e135	127	111	109	56	936	107	63	110
28	e98	e120	197	e145	124	112	109	57	753	165	58	134
29	e165	e140	184	e155	121	111	96	54	207	178	55	167
30	e225	e205	178	e150	---	107	86	50	125	143	472	177
31	e195	---	171	e145	---	110	---	49	---	94	8,100	---
TOTAL	3,298	6,584	13,241	4,819	8,006	4,419	4,532	2,855	5,115	3,015	19,736	15,183
MEAN	106	219	427	155	276	143	151	92.1	170	97.3	637	506
MAX	225	680	1,930	188	1,670	396	537	279	936	310	8,100	2,940
MIN	65	87	125	122	121	104	86	49	42	36	55	110
CFSM	0.67	1.39	2.70	0.98	1.75	0.90	0.96	0.58	1.08	0.62	4.03	3.20
IN.	0.78	1.55	3.12	1.13	1.88	1.04	1.07	0.67	1.20	0.71	4.65	3.57

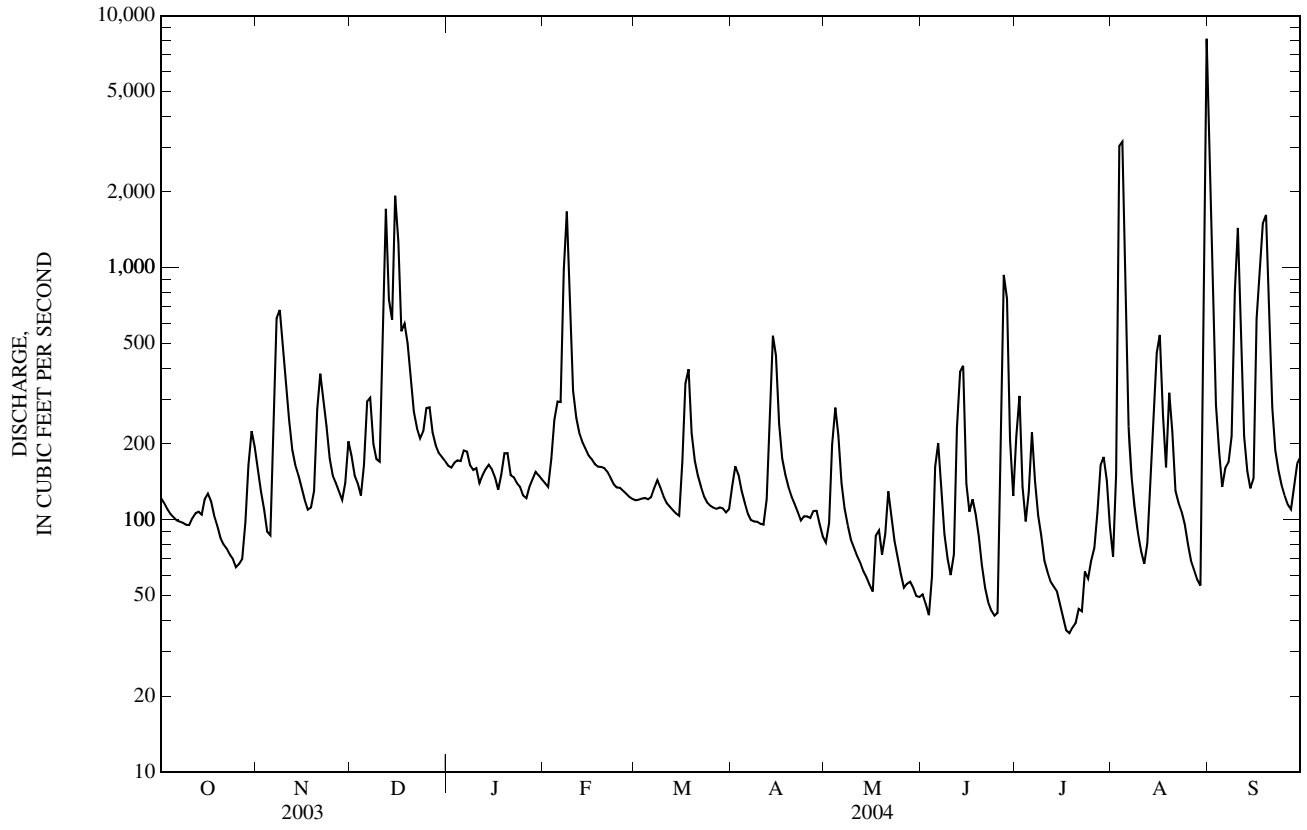
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 2004, BY WATER YEAR (WY)

MEAN	97.7	135	155	211	249	279	216	142	86.8	66.1	68.2	95.3
MAX	859	821	453	800	793	718	632	956	449	301	637	1,002
(WY)	(1973)	(1986)	(1997)	(1978)	(1979)	(1993)	(1987)	(2003)	(1972)	(1975)	(2004)	(1979)
MIN	3.55	14.6	26.4	48.5	46.5	74.8	51.2	36.4	2.71	0.52	0.52	2.19
(WY)	(1971)	(1999)	(1966)	(1966)	(2002)	(1981)	(1985)	(1985)	(2002)	(2002)	(2002)	(1968)

02041000 DEEP CREEK NEAR MANNBORO, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1947 - 2004	
ANNUAL TOTAL	137,615		90,803			
ANNUAL MEAN	377		248		149	
HIGHEST ANNUAL MEAN					352	2003
LOWEST ANNUAL MEAN					30.5	2002
HIGHEST DAILY MEAN	8,320	Sep 19	8,100	Aug 31	12,000	Oct 6, 1972
LOWEST DAILY MEAN	41	Sep 3	36	aJul 17	0.00	bAug 25, 2002
ANNUAL SEVEN-DAY MINIMUM	47	Aug 28	39	Jul 16	0.06	Aug 21, 2002
MAXIMUM PEAK FLOW			11,200	Aug 31	15,000	Oct 6, 1972
MAXIMUM PEAK STAGE			15.76	Aug 31	c24.04	Oct 6, 1972
INSTANTANEOUS LOW FLOW			35	aJul 17	0.00	dAug 24, 2002
ANNUAL RUNOFF (CFSM)	2.39		1.57		0.946	
ANNUAL RUNOFF (INCHES)	32.40		21.38		12.85	
10 PERCENT EXCEEDS	699		421		285	
50 PERCENT EXCEEDS	171		135		74	
90 PERCENT EXCEEDS	70		63		15	

a Also July 18, 2004.
b Also Aug. 26, 27, 2002.
c From floodmarks.
d Also part or all of each day Aug. 25-28, 2002.
e Estimated.



02041650 APPOMATTOX RIVER AT MATOACA, VA

LOCATION.--Lat 37°13'31", long 77°28'31", NAD83, 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 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is 68.30 ft NGVD of 1929.

REMARKS.--Records good except those for periods of no gage-height record, Jan. 11-14, 18, 19, 26-28, Aug. 26, and Sept. 27-30, 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 37.0 ft^3/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.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,580	1,680	1,550	1,310	1,200	814	1,040	776	405	1,090	1,290	15,200
2	1,490	1,360	1,460	1,270	1,150	939	1,120	826	336	884	1,980	9,530
3	1,150	1,160	1,170	1,190	1,190	835	1,140	1,350	324	821	10,600	3,420
4	943	875	1,230	1,350	1,580	841	1,170	1,570	559	512	9,270	1,600
5	719	768	1,370	1,370	2,280	925	912	1,790	765	776	9,700	1,170
6	716	899	1,990	1,480	2,810	905	651	1,170	691	1,240	6,780	1,090
7	669	2,370	2,520	1,540	5,700	817	812	1,150	793	1,260	2,390	879
8	673	4,560	2,500	1,580	7,410	935	715	1,430	593	1,380	1,390	1,060
9	630	5,110	2,040	1,480	7,440	1,150	677	841	453	1,240	784	3,650
10	652	4,890	1,750	1,400	6,780	1,080	685	607	443	843	767	5,210
11	673	4,340	3,760	e1,200	5,890	762	748	592	421	383	823	4,350
12	670	2,540	6,620	e1,100	3,890	827	917	524	1,140	370	430	2,410
13	725	1,730	7,310	e1,150	2,280	701	1,720	510	1,460	350	1,250	1,470
14	593	1,300	8,170	e1,200	1,890	701	3,550	397	1,600	601	2,960	1,150
15	960	1,190	8,830	1,250	1,650	765	4,730	426	1,390	398	5,900	1,600
16	680	1,130	8,840	997	1,350	1,060	4,110	386	972	372	7,070	2,370
17	863	983	8,720	1,260	1,170	2,080	2,630	385	1,160	360	4,610	2,310
18	785	901	7,870	e1,150	1,150	2,940	1,850	475	1,390	356	2,580	4,900
19	641	1,010	7,270	e1,200	1,660	2,910	1,510	329	958	326	1,890	7,470
20	606	1,870	6,530	1,370	1,490	2,050	1,310	755	413	285	1,600	7,280
21	616	2,750	3,920	1,400	1,410	1,670	1,180	1,110	376	286	1,260	5,200
22	335	3,030	2,480	1,280	1,260	1,360	1,040	1,260	372	256	1,160	2,510
23	509	2,360	2,040	1,190	1,180	1,200	828	1,160	363	501	1,190	1,540
24	903	1,860	1,920	1,150	1,140	861	1,000	615	343	317	1,080	1,200
25	543	1,590	2,050	1,130	1,120	1,090	560	554	375	338	661	1,070
26	590	1,360	2,040	e1,100	926	1,040	945	500	1,470	789	e475	658
27	540	1,240	1,850	e1,000	957	831	989	716	2,190	866	529	e570
28	795	1,200	1,640	e1,050	790	833	897	588	2,980	2,400	414	e630
29	1,220	1,280	1,500	1,110	1,060	840	899	425	2,490	2,850	398	e1,550
30	1,620	1,330	1,440	1,160	---	832	851	393	1,460	2,470	4,720	e2,000
31	1,830	---	1,350	1,220	---	825	---	471	---	1,790	19,800	---
TOTAL	26,919	58,666	113,730	38,637	69,803	35,419	41,186	24,081	28,685	26,710	105,751	95,047
MEAN	868	1,956	3,669	1,246	2,407	1,143	1,373	777	956	862	3,411	3,168
MAX	2,580	5,110	8,840	1,580	7,440	2,940	4,730	1,790	2,980	2,850	19,800	15,200
MIN	335	768	1,170	997	790	701	560	329	324	256	398	570
(†)	1,226	1,187	1,305	1,331	1,284	1,218	1,231	1,519	1,359	1,345	1,296	1,179

CAL YR 2003 TOTAL 1,085,379 MEAN 2,974 MAX 21,200 MIN 242 (†) 14,181
WTR YR 2004 TOTAL 664,634 MEAN 1,816 MAX 19,800 MIN 256 (†) 15,520

† Total diversion, in cubic feet per second, at Lake Chesdin, provided by Appomattox Water Authority.

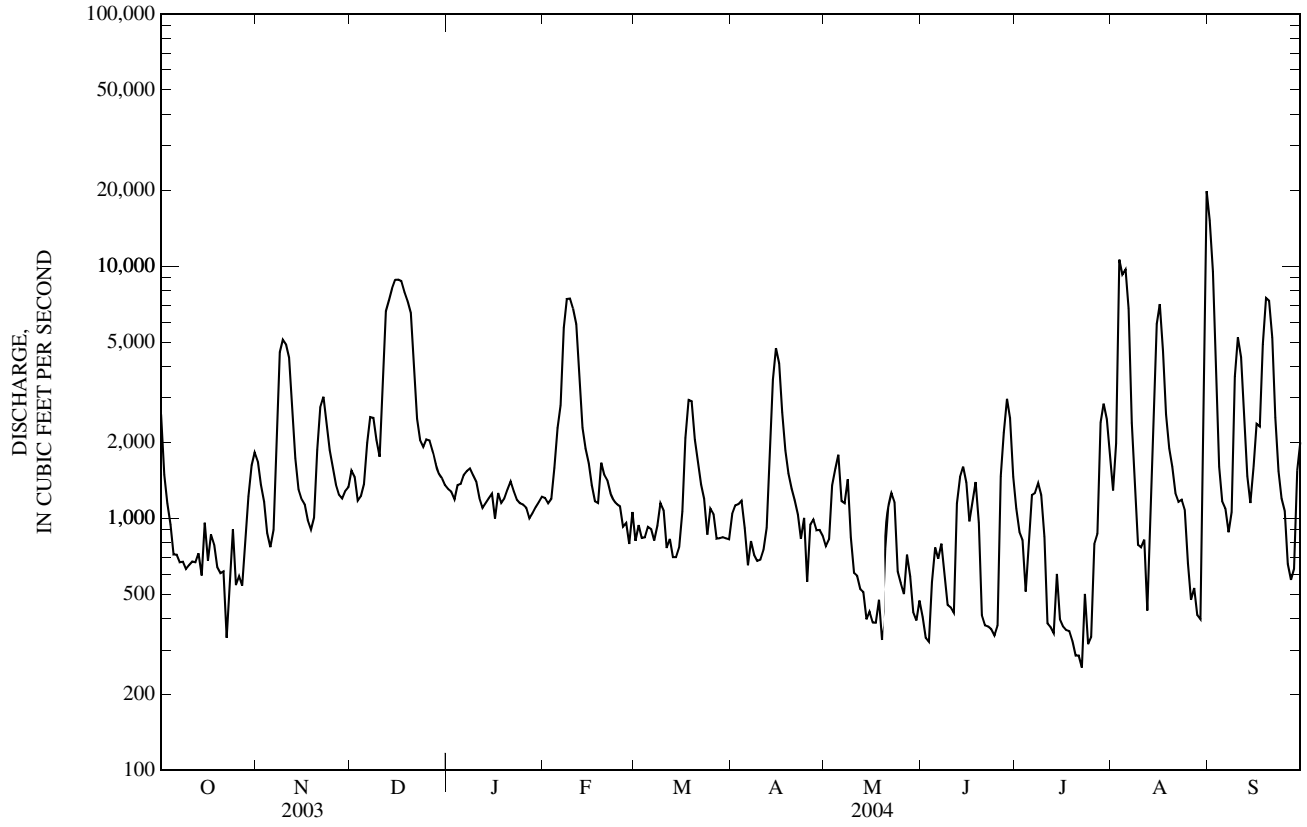
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 2004, BY WATER YEAR (WY)

MEAN	968	1,066	1,414	1,911	2,182	2,494	2,091	1,372	938	562	571	929
MAX	6,869	5,648	3,857	5,868	6,532	6,098	5,003	5,424	5,293	2,123	3,411	5,840
(WY)	(1973)	(1986)	(1997)	(1978)	(1998)	(1993)	(1983)	(2003)	(1972)	(1995)	(2004)	(2003)
MIN	52.2	50.4	157	384	347	478	498	411	91.0	41.0	26.0	33.1
(WY)	(2002)	(2002)	(2002)	(1981)	(2002)	(1981)	(1985)	(1985)	(2002)	(2002)	(2002)	(2002)

02041650 APPOMATTOX RIVER AT MATOACA, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1970 - 2004	
ANNUAL TOTAL	1,085,379		664,634			
ANNUAL MEAN	2,974		1,816		1,370	
HIGHEST ANNUAL MEAN					2,771	2003
LOWEST ANNUAL MEAN					255	2002
HIGHEST DAILY MEAN	21,200	May 26	19,800	Aug 31	39,400	Oct 7, 1972
LOWEST DAILY MEAN	a242	Aug 24	a256	Jul 22	a18	Aug 26, 2002
ANNUAL SEVEN-DAY MINIMUM	a306	Aug 28	a320	Jul 16	a19	Aug 20, 2002
MAXIMUM PEAK FLOW			21,800	Aug 31	40,800	Oct 7, 1972
MAXIMUM PEAK STAGE			13.57	Aug 31	18.39	Oct 7, 1972
INSTANTANEOUS LOW FLOW			a99	Jul 22	a17	bAug 26, 2002
ANNUAL RUNOFF (CFSM)	2.21		1.35		1.02	
ANNUAL RUNOFF (INCHES)	30.04		18.40		13.85	
10 PERCENT EXCEEDS	8,370		4,180		3,340	
50 PERCENT EXCEEDS	1,560		1,160		679	
90 PERCENT EXCEEDS	551		466		137	

a Result of regulation.
b Also Aug. 27, 2002.
e Estimated.



02041650 APPOMATTOX RIVER AT MATOACA, VA—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years l978 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1991 to September 1993.
WATER TEMPERATURE: October 1991 to September 1993.

COOPERATION.--Water samples were collected by the U.S. Geological Survey and analyzed by either the U.S. Geological Survey (Agency Code 1028) or by the Virginia Division of Consolidated Laboratory Services (VDCLS, Agency Code 85116), using analytical methods approved by the U.S. Geological Survey. Analyses performed by VDCLS are reported to U.S. Geological Survey rounding specifications. Results of chemical analyses provided by VDCLS were quality-assured and approved by the U.S. Geological Survey.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Sample type	Agency analyzing sample, code (00028)	Gage height, feet (00065)	Instantaneous discharge, cfs (00061)	Turbidity, NTU (00076)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
OCT												
21...	1415	Environmental	85116	3.07	594	3.5	749	10.1	110	8.0	77	25.2
NOV												
18...	1445	Environmental	85116	3.44	830	15	761	10.7	101	7.4	73	19.0
DEC												
12...	1255	Blank	85116	--	--	.50	--	--	--	--	--	--
12...	1300	Environmental	85116	7.86	6,800	15	760	13.1	104	7.4	79	7.5
18...	1425	Blank	85116	--	--	.45	--	--	--	--	--	--
18...	1430	Environmental	85116	8.39	7,830	30	751	13.4	105	6.8	57	7.0
JAN												
20...	1410	Blank	85116	--	--	.30	--	--	--	--	--	--
20...	1415	Environmental	85116	3.37	781	.30	758	14.4	110	7.9	78	2.0
FEB												
09...	1045	Environmental	85116	8.22	7,510	60	769	14.4	105	6.8	68	10.0
24...	1330	Environmental	85116	3.83	1,130	14	755	13.0	105	7.2	71	12.0
24...	1345	Replicate	85116	3.83	1,130	14	--	--	--	--	--	--
MAR												
23...	0945	Environmental	85116	3.92	1,210	7.6	768	11.9	106	6.9	79	9.0
APR												
06...	0845	Environmental	85116	2.98	544	3.5	756	11.2	103	7.7	81	7.0
14...	0930	Environmental	85116	5.98	3,370	8.2	745	10.6	103	7.4	85	13.0
MAY												
18...	0930	Environmental	85116	2.87	487	2.8	765	9.1	107	7.6	87	26.0
JUN												
15...	1100	Environmental	85116	4.14	1,410	5.8	763	7.8	95	7.3	91	27.5
24...	1145	Environmental	85116	2.74	425	4.9	760	8.3	105	7.6	83	35.0
24...	1200	Replicate	85116	2.78	443	4.9	--	--	--	--	--	--
29...	1100	Environmental	85116	5.34	2,570	--	761	7.8	97	7.2	83	24.0
JUL												
20...	1045	Environmental	85116	2.40	286	<2.9	757	8.4	108	7.6	74	27.5
29...	1025	Blank	85116	--	--	.15	--	--	--	--	--	--
29...	1030	Environmental	85116	5.58	282	6.5	755	7.4	93	7.1	83	26.5
AUG												
03...	1115	Environmental	85116	10.24	11,500	16	754	8.6	110	6.6	74	25.5
17...	1300	Environmental	85116	6.64	4,390	11	760	8.4	98	6.7	63	32.5
31...	1345	Environmental	85116	13.02	19,900	35	--	8.4	--	6.4	56	31.0
SEP												
22...	0930	Environmental	85116	5.37	2,600	30	766	9.2	101	6.6	59	29.0

02041650 APPOMATTOX RIVER AT MATOACA, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Temperature, water, deg C (00010)	Silica, water, fltrd, mg/L (00955)	Residue fixed non-filterable, mg/L (00540)	Residue total at 105 deg. C, suspended, mg/L (00530)	Residue volatile, suspended, mg/L (00535)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Total nitrogen, water, fltrd, mg/L (00602)	Phosphorus, suspnd sedimnt total, mg/L (00667)
OCT													
21...	18.9	16.4	<3	<3	<3	.033	.14	.144	.008	.011	.030	.53	.007
NOV													
18...	12.7	15.5	3	4	<3	.057	.16	.167	.004	.017	.035	.53	.012
DEC													
12...	--	<.100	<3	<3	<3	<.004	<.004	<.004	<.002	.004	.002	<.004	.004
12...	5.4	17.0	13	15	<3	.034	.28	.279	<.002	.007	.025	.53	.026
18...	--	<.100	<3	<3	<3	<.004	.01	.007	<.002	.004	.003	.02	.004
18...	4.6	11.0	9	12	3	.023	.28	.282	<.002	.014	.039	.58	.045
JAN													
20...	--	<.100	<3	<3	<3	<.004	<.004	<.004	<.002	.004	.004	<.004	.001
20...	3.8	17.8	4	6	<3	.009	.30	.304	<.002	.011	.021	.49	.018
FEB													
09...	2.8	11.9	26	32	6	.046	.35	.350	.004	.012	.052	.75	.029
24...	5.9	14.5	<3	<3	<3	.004	.32	.323	<.002	.006	.017	.53	.020
24...	--	14.7	4	6	<3	<.004	.32	.323	<.002	.006	.017	.51	.019
MAR													
23...	10.6	12.3	3	5	<3	.016	.23	.236	.002	.007	.024	.46	.017
APR													
06...	11.2	12.3	<3	3	<3	.008	.13	.136	.002	.008	.017	.34	.011
14...	12.9	11.2	10	13	3	.029	.08	.080	.002	<.002	.010	.26	.029
MAY													
18...	23.5	14.4	<3	3	<3	.021	.18	.186	.008	.010	.025	.51	.006
JUN													
15...	25.1	18.8	4	6	<3	.059	.16	.166	.010	.006	.040	.51	.016
24...	27.2	17.2	<3	3	<3	.010	.19	.194	.003	.023	.027	.47	.008
24...	--	17.1	<3	3	<3	.010	.19	.196	.004	.017	.033	.48	.009
29...	25.9	17.4	6	8	<3	.070	.11	.112	.004	.010	.025	.45	.011
JUL													
20...	27.8	15.9	<3	<3	<3	.005	.12	.116	<.002	.015	.034	.47	.005
29...	--	<.100	<3	<3	<3	<.004	<.004	<.004	<.002	.004	.008	<.004	.001
29...	26.9	17.5	9	12	3	.067	.06	.062	.002	.008	.019	.45	.024
AUG													
03...	27.1	15.9	14	18	4	.045	.08	.082	<.002	.008	.027	.50	<.036
17...	22.6	13.6	9	11	<3	.070	.17	.176	.003	.018	.045	.65	.024
31...	24.8	11.4	31	35	4	.058	.09	.085	<.002	.004	.021	.48	.053
SEP													
22...	20.5	11.6	10	12	3	.052	.18	.186	.004	.021	.049	.71	.031

02041650 APPOMATTOX RIVER AT MATOACA, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Total nitrogen, suspnd sedimnt total, mg/L (00601)	Total carbon, suspnd sedimnt total, mg/L (00694)	Inorganic carbon, suspnd sedimnt total, mg/L (00688)	Organic carbon, water, fltrd, mg/L (00681)	Pheophytin a, phytoplankton, ug/L (62360)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)
OCT								
21...	.01	.2	<.02	6.5	<.5	.5	--	3
NOV								
18...	.06	.6	<.02	7.1	<.5	<.5	--	9
DEC								
12...	<.01	M	<.02	<2.0	<.5	<.5	33	--
12...	.08	.7	<.02	4.2	<.5	2.2	88	13
18...	<.01	M	<.02	<2.0	<.5	<.5	--	--
18...	.22	1.4	<.02	6.1	<.5	1.2	--	18
JAN								
20...	<.01	.1	<.02	<2.0	<.5	.6	--	--
20...	.09	.7	<.02	3.0	<.5	3.1	--	7
FEB								
09...	.14	1.2	<.02	4.6	<.5	2.0	96	35
24...	.08	.7	<.02	3.4	<.5	3.7	--	11
24...	.04	.6	<.02	3.5	<.5	2.3	--	7
MAR								
23...	.07	.6	<.02	4.5	1.2	3.4	97	8
APR								
06...	.06	.5	<.02	3.6	2.3	2.4	--	3
14...	.18	1.1	<.02	3.5	1.8	7.1	94	13
MAY								
18...	.04	.4	<.02	5.1	1.4	.6	--	4
JUN								
15...	.08	.7	<.02	5.4	2.3	2.0	92	7
24...	.06	.6	<.02	4.9	<.5	.7	--	4
24...	.04	.3	<.02	5.1	<.5	<.5	--	4
29...	.18	1.9	<.02	5.7	2.7	4.3	74	11
JUL								
20...	.03	.2	<.02	6.1	.7	<.5	--	3
29...	<.01	M	<.02	<2.0	<.5	<.5	--	--
29...	.12	1.0	<.02	6.0	3.5	4.6	89	10
AUG								
03...	.24	1.5	<.02	7.7	2.9	6.6	48	33
17...	.10	.8	<.02	9.4	1.0	1.5	93	15
31...	.22	1.8	<.02	8.5	4.5	1.7	76	51
SEP								
22...	.10	1.0	<.02	9.6	<.5	.7	94	19

Remark codes used in this table:
< -- Less than
M -- Presence verified, not quantified

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02042500 CHICKAHOMINY RIVER NEAR PROVIDENCE FORGE, VA

LOCATION.--Lat 37°26'11", long 77°03'39", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Jan. 10, 11, 24, 25, 30, 31, and Sept. 1, 2, which are fair. Maximum discharge, 18,900 ft^3/s, from rating curve extended above 9,100 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	909	429	308	372	238	176	188	208	139	283	1,590	e14,700
2	690	423	299	338	231	172	212	213	136	264	2,230	e9,420
3	526	500	291	315	271	171	225	328	126	248	2,030	4,300
4	404	514	300	304	376	168	228	484	122	234	1,870	2,430
5	326	461	369	324	417	164	219	451	203	224	1,560	1,620
6	271	400	467	368	477	162	217	366	213	225	1,430	1,160
7	237	391	560	372	655	162	223	348	214	253	1,430	910
8	212	406	573	365	847	184	220	395	191	323	1,150	762
9	195	642	534	349	1,050	196	209	402	172	348	873	1,120
10	184	847	567	e335	1,150	209	191	334	162	275	626	1,210
11	175	1,040	703	e316	1,200	223	184	242	162	243	476	1,540
12	169	1,040	835	305	1,010	233	188	193	207	274	376	1,360
13	163	864	999	297	727	232	315	159	250	338	335	1,190
14	159	649	1,180	277	540	218	820	135	317	451	371	1,080
15	168	525	1,760	263	429	197	1,020	117	318	403	613	995
16	173	406	1,820	259	370	206	1,020	103	375	307	876	897
17	174	327	1,510	257	327	262	1,080	94	464	219	1,100	710
18	181	274	1,530	287	302	345	976	93	400	194	1,280	679
19	183	257	1,370	310	281	450	740	115	389	182	1,430	1,020
20	182	353	1,080	291	289	533	545	134	380	171	1,370	1,200
21	188	467	890	298	287	581	407	132	476	162	1,140	1,090
22	192	553	794	291	256	518	318	152	493	145	1,060	1,040
23	187	565	727	272	238	399	258	183	471	131	818	1,050
24	178	568	636	e263	224	315	232	183	457	136	635	957
25	167	645	556	e236	211	259	216	159	371	224	530	778
26	157	632	490	227	202	229	209	137	416	342	426	589
27	153	543	437	237	194	208	235	150	539	443	395	436
28	157	440	401	253	187	194	230	156	530	510	384	348
29	220	375	422	257	181	181	227	154	414	526	325	323
30	350	331	443	e245	---	173	218	142	296	598	313	351
31	446	---	411	e248	---	172	---	137	---	1,200	3,120	---
TOTAL	8,076	15,867	23,262	9,131	13,167	7,892	11,570	6,599	9,403	9,876	32,162	55,265
MEAN	261	529	750	295	454	255	386	213	313	319	1,037	1,842
MAX	909	1,040	1,820	372	1,200	581	1,080	484	539	1,200	3,120	14,700
MIN	153	257	291	227	181	162	184	93	122	131	313	323
CFSM	1.03	2.10	2.98	1.17	1.80	1.01	1.53	0.84	1.24	1.26	4.12	7.31
IN.	1.19	2.34	3.43	1.35	1.94	1.17	1.71	0.97	1.39	1.46	4.75	8.16

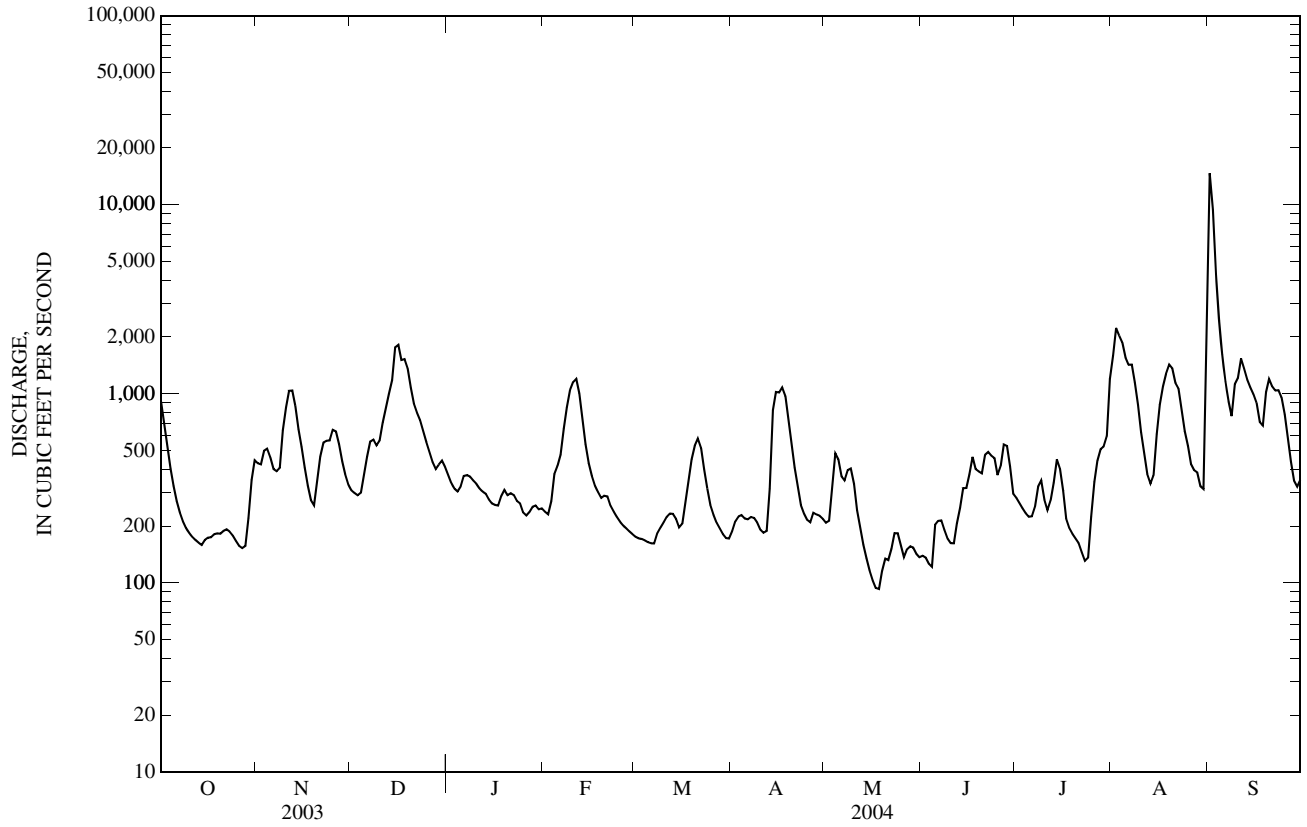
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 2004, BY WATER YEAR (WY)

MEAN	143	209	287	368	421	471	387	240	171	150	179	170
MAX	794	768	1,043	1,214	1,198	1,055	1,152	676	757	1,081	1,445	1,842
(WY)	(1980)	(1986)	(1958)	(1978)	(1998)	(1998)	(1984)	(1978)	(1972)	(1945)	(1955)	(2004)
MIN	2.99	4.67	28.0	58.7	86.9	108	102	34.9	5.85	0.56	2.92	0.17
(WY)	(2002)	(2002)	(1966)	(1955)	(2002)	(1981)	(1995)	(1985)	(2002)	(2002)	(2002)	(1997)

02042500 CHICKAHOMINY RIVER NEAR PROVIDENCE FORGE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1942 - 2004	
ANNUAL TOTAL	224,392		202,270			
ANNUAL MEAN	615		553		267	
HIGHEST ANNUAL MEAN					559	2003
LOWEST ANNUAL MEAN					67.6	2002
HIGHEST DAILY MEAN	4,180	Sep 22	e14,700	Sep 1	e14,700	Sep 1, 2004
LOWEST DAILY MEAN	98	Sep 2	93	May 18	0.05	Jul 22, 2002
ANNUAL SEVEN-DAY MINIMUM	123	Aug 28	113	May 15	0.07	Jul 17, 2002
MAXIMUM PEAK FLOW			18,900	Sep 1	18,900	Sep 1, 2004
MAXIMUM PEAK STAGE			a12.58	Sep 1	a12.58	Sep 1, 2004
INSTANTANEOUS LOW FLOW			90	May 18	0.04	Jul 22, 2002
ANNUAL RUNOFF (CFSM)	2.44		2.19		1.06	
ANNUAL RUNOFF (INCHES)	33.12		29.86		14.42	
10 PERCENT EXCEEDS	1,280		1,080		610	
50 PERCENT EXCEEDS	446		330		170	
90 PERCENT EXCEEDS	160		168		20	

a From highwater-mark in gage house.
e Estimated.



0204278995 BAPTIST RUN AT ROUTE 637 NEAR YORKTOWN, VA

LOCATION.--Lat 37°12'48," long 76°31'45", NAD83, York County, Hydrologic unit 02080107, on left bank at downstream side of culvert on State Highway 637, 1.9 mi southwest of Yorktown, and 0.7 mi upstream from Beaverdam Creek.

DRAINAGE AREA.--2.02 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 2002 to June 2004 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 55 ft NGVD of 1929, from topographic map.

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

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	3.0	2.5	3.1	2.3	2.1	3.8	2.6	1.8	---	---	---
2	3.1	2.8	2.3	3.1	2.3	2.1	2.2	2.5	1.7	---	---	---
3	2.9	2.8	2.1	3.0	4.1	2.1	2.0	3.2	1.6	---	---	---
4	2.8	2.9	2.2	2.9	3.6	2.0	1.9	2.8	4.6	---	---	---
5	2.8	3.0	11	3.0	2.9	2.0	1.8	2.5	7.0	---	---	---
6	2.6	3.7	5.2	3.0	4.9	2.1	1.7	2.3	2.7	---	---	---
7	2.5	6.6	3.6	2.7	19	2.0	1.7	2.3	2.5	---	---	---
8	2.5	3.6	2.9	2.7	6.8	2.4	1.6	2.2	2.2	---	---	---
9	2.5	2.9	2.6	2.8	5.0	2.1	1.6	2.2	2.0	---	---	---
10	2.6	2.6	2.6	2.6	4.4	2.1	1.6	2.2	1.9	---	---	---
11	2.6	2.4	9.4	2.5	4.0	2.1	3.1	2.1	1.8	---	---	---
12	2.6	2.3	4.2	2.6	3.7	2.0	4.8	2.0	3.4	---	---	---
13	2.6	2.3	3.2	2.6	3.5	1.9	21	1.9	2.0	---	---	---
14	2.7	2.2	20	2.5	3.4	1.8	9.2	2.0	1.8	---	---	---
15	5.0	2.1	14	2.5	3.2	1.8	7.6	1.8	1.7	---	---	---
16	3.2	2.0	7.1	2.4	3.0	4.1	5.3	1.8	1.7	---	---	---
17	2.6	1.9	8.0	2.3	3.2	2.7	4.5	1.8	1.7	---	---	---
18	2.7	1.8	7.0	3.9	3.4	2.2	3.9	1.7	1.6	---	---	---
19	2.5	5.1	5.5	3.6	3.0	2.1	3.5	3.4	1.6	---	---	---
20	2.4	17	4.7	2.8	2.9	2.0	3.3	3.1	1.5	---	---	---
21	2.5	5.9	4.2	2.5	2.8	2.0	3.1	2.1	1.4	---	---	---
22	2.5	4.4	4.0	2.5	2.6	1.8	3.0	10	1.4	---	---	---
23	2.5	3.6	3.9	2.5	2.5	1.8	2.9	3.1	1.4	---	---	---
24	2.4	3.4	4.5	2.4	2.5	1.7	3.2	2.4	1.4	---	---	---
25	2.4	3.1	4.0	2.3	2.5	1.7	2.8	2.2	3.9	---	---	---
26	2.4	2.9	3.7	2.4	2.3	1.7	3.0	2.3	3.2	---	---	---
27	2.5	2.8	3.5	2.5	2.2	1.7	5.1	3.5	1.9	---	---	---
28	2.7	2.8	3.4	2.6	2.2	1.7	3.3	2.2	3.0	---	---	---
29	20	2.8	3.3	2.7	2.2	1.6	2.9	2.0	2.2	---	---	---
30	5.4	2.6	3.3	2.8	---	1.6	2.7	1.9	1.8	---	---	---
31	3.5	---	3.2	2.5	---	1.7	---	1.9	---	---	---	---
TOTAL	105.2	107.3	161.1	84.3	110.4	62.7	118.1	80.0	68.4	---	---	---
MEAN	3.39	3.58	5.20	2.72	3.81	2.02	3.94	2.58	2.28	---	---	---
MAX	20	17	20	3.9	19	4.1	21	10	7.0	---	---	---
MIN	2.4	1.8	2.1	2.3	2.2	1.6	1.6	1.7	1.4	---	---	---
CFSM	1.68	1.77	2.57	1.35	1.88	1.00	1.95	1.28	1.13	---	---	---
IN.	1.94	1.98	2.97	1.55	2.03	1.15	2.17	1.47	1.26	---	---	---

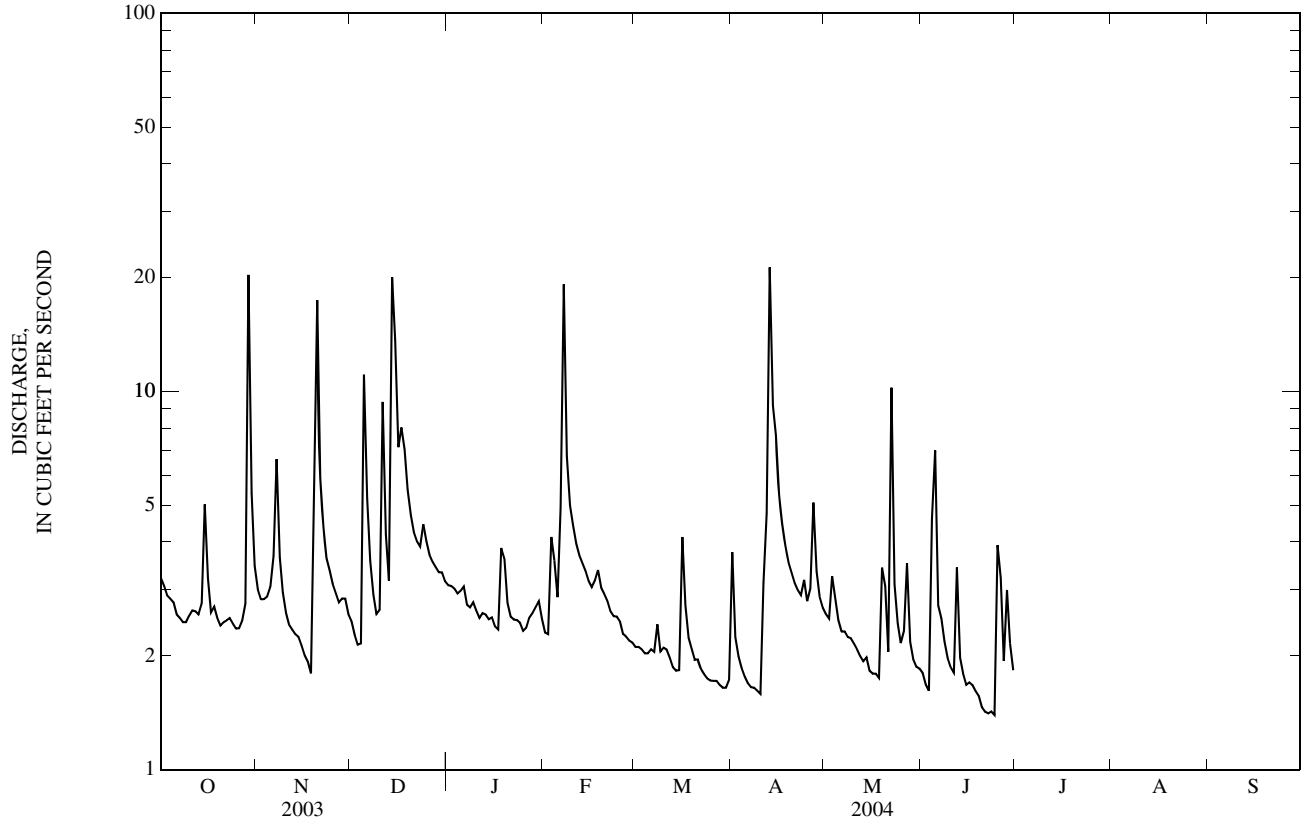
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2004, BY WATER YEAR (WY)

MEAN	3.39	3.00	3.44	1.95	3.74	2.98	5.84	3.08	2.31	2.59	5.93	7.66
MAX	3.39	3.58	5.20	2.72	3.81	3.94	7.74	3.59	2.35	2.59	5.93	7.66
(WY)	(2004)	(2004)	(2004)	(2004)	(2004)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	3.39	1.93	1.68	1.19	3.67	2.02	3.94	2.58	2.28	2.59	5.93	7.66
(WY)	(2004)	(2003)	(2003)	(2003)	(2003)	(2004)	(2004)	(2004)	(2004)	(2003)	(2003)	(2003)

0204278995 BAPTIST RUN AT ROUTE 637 NEAR YORKTOWN, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2002 - 2004	
ANNUAL TOTAL	1,543.31					
ANNUAL MEAN	4.23				3.62	
HIGHEST ANNUAL MEAN					3.91	2003
LOWEST ANNUAL MEAN					3.28	2004
HIGHEST DAILY MEAN	57	Sep 19	21	Apr 13	57	Sep 19, 2003
LOWEST DAILY MEAN	0.75	Jan 25	1.4	aJun 21	0.66	Dec 4, 2002
ANNUAL SEVEN-DAY MINIMUM	0.79	Jan 22	1.5	Jun 18	0.74	Nov 28, 2002
MAXIMUM PEAK FLOW			41	Dec 14	90	Sep 19, 2003
MAXIMUM PEAK STAGE			3.78	Dec 14	4.87	Sep 19, 2003
INSTANTANEOUS LOW FLOW			1.3	Jun 24	0.45	Jan 23, 2003
ANNUAL RUNOFF (CFSM)	2.09				1.79	
ANNUAL RUNOFF (INCHES)	28.42				24.35	
10 PERCENT EXCEEDS	7.0		4.9		5.9	
50 PERCENT EXCEEDS	3.0		2.6		2.6	
90 PERCENT EXCEEDS	1.2		1.8		1.2	

a Also June 22-24, 2004.



0204278995 BAPTIST RUN AT ROUTE 637 NEAR YORKTOWN, VA—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.-- June 2002 to October 2003 (discontinued).

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Sample type	Gage height, feet (00065)	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)
OCT												
24...	1155	Environmental	2.23	2.5	766	10.2	95	8.1	379	12.1	.12	.19

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Location in X-sect. looking upstrm, % from rt bank (00002)
OCT								
24...	.013	.048	E.001n	.008	.016	.048	2.7	50.0

Remark codes used in this table:
E -- Estimated value

Value qualifier codes used in this table:
n -- Below the LRL and above the LT-MDL

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02044500 NOTTOWAY RIVER NEAR RAWLINGS, VA

LOCATION.--Lat 36°59'01", long 77°47'59", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 11-13, 23-28, and period of no gage-height record, Aug. 4, 5, which are fair. Maximum discharge, 29,900 ft^3s, from rating curve extended above 16,000 ft^3/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 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 ft^3/s, from information by local resident.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 16	0245	3,170	8.22	1945	*18,700	*18.92
Feb 8	1100	3,340	8.51	0300	3,830	9.30
Jun 27	2000	2,520	7.17	0800	2,560	7.23
Aug 4	---	4,790	a10.34			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	251	293	330	320	297	278	329	203	116	328	277	9,870
2	240	250	284	313	272	275	343	257	103	272	242	1,680
3	226	232	260	327	337	280	299	547	92	226	1,630	542
4	214	222	249	334	647	276	272	830	196	343	e2,500	389
5	209	222	374	327	630	265	245	492	1,060	714	e1,200	321
6	202	232	567	349	526	271	227	325	673	937	453	328
7	197	419	500	356	1,750	293	223	265	285	396	325	385
8	194	647	377	310	3,090	300	222	228	191	292	249	465
9	194	368	326	306	1,370	274	222	203	156	219	208	1,420
10	196	283	315	314	694	262	218	186	135	181	184	1,860
11	214	254	1,170	e280	587	251	219	173	182	165	169	650
12	222	244	2,190	e270	512	247	259	159	721	163	165	410
13	210	241	980	e300	473	242	695	151	765	153	296	331
14	195	220	1,290	322	441	235	1,140	146	296	144	730	290
15	234	211	2,730	309	414	235	759	137	201	132	1,460	293
16	253	218	2,660	291	407	369	481	133	198	118	1,110	1,830
17	224	225	1,070	271	384	989	366	131	217	108	653	2,780
18	206	226	1,260	297	378	744	317	149	184	105	417	1,610
19	196	299	927	381	380	449	289	150	160	111	371	2,390
20	190	1,110	655	378	371	352	269	158	132	117	342	996
21	187	1,030	527	311	357	314	253	158	112	112	319	508
22	185	521	454	284	335	289	240	142	103	108	338	391
23	181	386	419	e276	316	266	226	130	110	128	351	328
24	175	335	435	e265	311	254	271	121	117	143	262	289
25	172	305	549	e255	310	246	283	113	137	139	212	264
26	175	282	479	e250	301	243	256	105	582	153	186	246
27	189	267	397	e260	293	243	270	131	2,130	183	170	240
28	220	267	364	e275	286	245	270	144	1,160	1,190	162	305
29	451	364	346	281	280	239	232	132	386	1,040	153	547
30	684	417	344	291	---	235	208	117	281	879	509	639
31	424	---	336	315	---	241	---	115	---	494	11,700	---
TOTAL	7,310	10,590	23,164	9,418	16,749	9,702	9,903	6,431	11,181	9,793	27,343	32,597
MEAN	236	353	747	304	578	313	330	207	373	316	882	1,087
MAX	684	1,110	2,730	381	3,090	989	1,140	830	2,130	1,190	11,700	9,870
MIN	172	211	249	250	272	235	208	105	92	105	153	240
CFSM	0.76	1.14	2.42	0.98	1.87	1.01	1.07	0.67	1.21	1.02	2.85	3.52
IN.	0.88	1.27	2.79	1.13	2.02	1.17	1.19	0.77	1.35	1.18	3.29	3.92

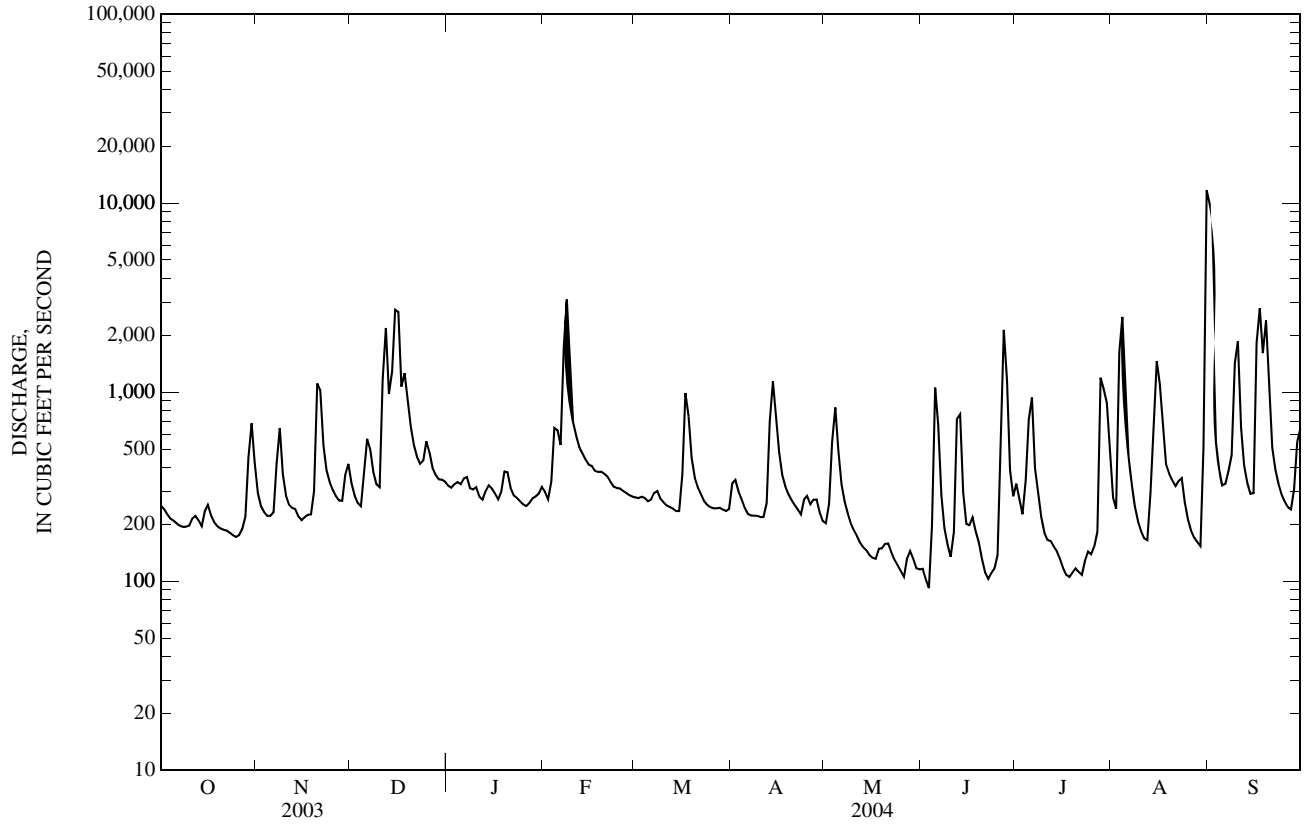
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2004, BY WATER YEAR (WY)

MEAN	219	242	296	404	487	554	467	325	223	156	146	199
MAX	2,024	1,560	893	1,289	1,248	1,350	1,201	1,972	1,359	965	882	1,436
(WY)	(1973)	(1986)	(1958)	(1978)	(1979)	(1998)	(1987)	(2003)	(1972)	(1975)	(2004)	(1979)
MIN	13.0	39.4	58.1	95.0	90.2	126	119	98.3	16.6	15.2	2.35	3.62
(WY)	(1964)	(2002)	(2002)	(1966)	(2002)	(1981)	(2002)	(1991)	(2002)	(2002)	(2002)	(1954)

02044500 NOTTOWAY RIVER NEAR RAWLINGS, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1951 - 2004	
ANNUAL TOTAL	269,630		174,181			
ANNUAL MEAN	739		476		309	
HIGHEST ANNUAL MEAN					698	2003
LOWEST ANNUAL MEAN					71.6	2002
HIGHEST DAILY MEAN	e17,000	May 27	11,700	Aug 31	27,400	Oct 6, 1972
LOWEST DAILY MEAN	123	Jan 28	92	Jun 3	0.40	Oct 14, 1954
ANNUAL SEVEN-DAY MINIMUM	134	Aug 28	111	Jul 16	0.68	Aug 9, 2002
MAXIMUM PEAK FLOW			18,700	Aug 31	29,900	Oct 6, 1972
MAXIMUM PEAK STAGE			18.92	Aug 31	23.25	Oct 6, 1972
INSTANTANEOUS LOW FLOW			85	Jun 4	0.40	bOct 14, 1954
ANNUAL RUNOFF (CFSM)	2.39		1.54		1.000	
ANNUAL RUNOFF (INCHES)	32.46		20.97		13.58	
10 PERCENT EXCEEDS	1,270		930		585	
50 PERCENT EXCEEDS	344		282		172	
90 PERCENT EXCEEDS	179		148		42	

a From high water mark in gage house.
b Also Oct. 15, 1954.
e Estimated.



02045500 NOTTOWAY RIVER NEAR STONY CREEK, VA

LOCATION.--Lat 36°54'01", long 77°23'59", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to Oct. 11, 1934, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 11, 12, 27, 28, and Feb. 1, and periods of no gage-height record, Sept. 4, 19, 20, which are fair. Diurnal fluctuation at low flow caused by Baskerville Mill, 33 mi upstream. Maximum discharge, 25,200 ft^3/s, from rating curve extended above 13,000 ft^3/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.

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

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 15	2300	4,170	15.03	2215	*9,780	*18.90
Feb 9	1730	3,650	13.72	2130	4,060	14.74
Aug 6	0330	3,770	14.03	1415	4,000	14.59
Aug 16	2300	4,880	16.05			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	499	735	633	622	e590	395	434	363	185	511	976	4,380
2	443	505	481	588	525	392	749	392	172	551	579	8,250
3	406	406	390	580	623	391	643	1,490	145	454	678	7,830
4	371	360	352	594	1,460	390	498	2,430	418	386	2,440	e2,290
5	346	333	759	601	1,500	379	404	1,730	1,950	550	3,420	746
6	327	345	1,320	598	1,240	366	337	980	2,100	1,250	2,810	606
7	312	495	1,160	614	2,420	389	296	676	1,130	1,060	811	826
8	290	886	869	588	3,220	448	281	530	602	639	563	883
9	284	940	646	536	3,570	459	277	436	429	500	424	3,060
10	282	580	573	550	2,320	396	271	380	340	360	334	3,670
11	304	441	2,610	e515	1,240	357	278	343	280	287	280	2,670
12	345	390	3,380	e475	1,040	337	346	309	678	325	259	1,150
13	345	376	3,200	522	926	314	1,250	278	1,540	271	418	754
14	310	350	2,610	578	847	293	2,560	250	1,040	230	1,740	596
15	311	308	4,030	571	773	290	2,360	233	545	203	3,780	1,380
16	414	292	4,130	527	726	384	1,500	228	399	177	4,520	2,490
17	395	308	3,920	476	694	1,050	999	358	456	148	4,250	3,000
18	334	322	2,650	486	672	1,610	777	309	475	137	2,320	3,850
19	292	372	2,230	694	686	1,040	653	266	379	131	1,400	e3,460
20	265	1,650	1,590	761	676	696	572	276	314	131	961	e3,140
21	247	2,270	1,220	650	645	548	511	308	248	156	723	1,470
22	240	1,550	1,010	531	592	482	461	279	201	133	777	906
23	235	876	906	490	525	419	422	236	184	128	828	715
24	217	648	897	475	487	379	463	203	192	173	741	577
25	197	545	996	460	483	359	612	177	220	210	542	487
26	190	470	1,040	449	469	344	545	157	914	848	429	428
27	221	415	871	e440	439	335	689	174	1,810	804	364	415
28	270	390	745	e485	422	333	694	239	2,620	1,590	323	826
29	783	462	686	507	406	326	541	239	1,280	2,640	295	1,200
30	1,470	637	663	522	---	309	428	227	664	2,090	359	1,220
31	1,210	---	655	618	---	309	---	196	---	1,910	2,490	---
TOTAL	12,155	18,657	47,222	17,103	30,216	14,519	20,851	14,692	21,910	18,983	40,834	63,275
MEAN	392	622	1,523	552	1,042	468	695	474	730	612	1,317	2,109
MAX	1,470	2,270	4,130	761	3,570	1,610	2,560	2,430	2,620	2,640	4,520	8,250
MIN	190	292	352	440	406	290	271	157	145	128	259	415
CFSM	0.68	1.07	2.63	0.95	1.80	0.81	1.20	0.82	1.26	1.06	2.28	3.64
IN.	0.78	1.20	3.03	1.10	1.94	0.93	1.34	0.94	1.41	1.22	2.62	4.07

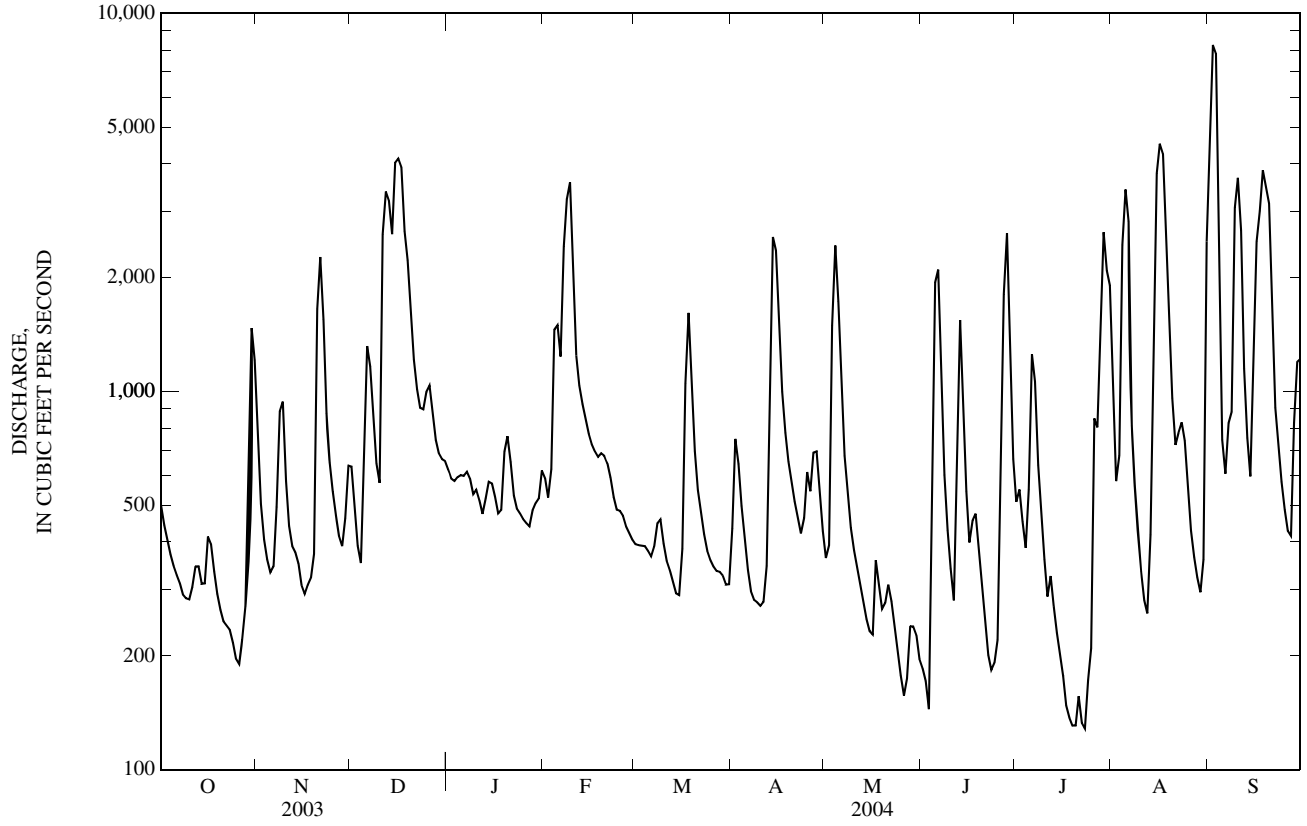
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2004, BY WATER YEAR (WY)

MEAN	305	402	526	804	930	1,030	871	553	358	352	314	355
MAX	2,666	2,800	1,783	2,578	2,355	2,827	2,261	2,389	1,612	2,423	3,057	2,802
(WY)	(1973)	(1986)	(1958)	(1936)	(1979)	(1998)	(1987)	(2003)	(1938)	(1938)	(1940)	(1999)
MIN	14.0	43.1	65.7	109	174	196	192	129	30.1	26.1	13.5	9.40
(WY)	(1931)	(1942)	(1966)	(1966)	(2002)	(1981)	(1966)	(1942)	(2002)	(2002)	(2002)	(1932)

02045500 NOTTOWAY RIVER NEAR STONY CREEK, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1931 - 2004	
ANNUAL TOTAL	480,766		320,417			
ANNUAL MEAN	1,317		875		565	
HIGHEST ANNUAL MEAN					1,241	2003
LOWEST ANNUAL MEAN					134	2002
HIGHEST DAILY MEAN	13,200	Sep 21	8,250	Sep 2	24,000	Aug 17, 1940
LOWEST DAILY MEAN	161	Aug 31	128	Jul 23	1.5	Aug 25, 2002
ANNUAL SEVEN-DAY MINIMUM	173	Aug 28	138	Jul 17	3.2	Aug 21, 2002
MAXIMUM PEAK FLOW			9,780	Sep 2	25,200	Aug 17, 1940
MAXIMUM PEAK STAGE			18.90	Sep 2	23.66	Aug 17, 1940
INSTANTANEOUS LOW FLOW			116	Jun 4	1.3	Aug 25, 2002
ANNUAL RUNOFF (CFSM)	2.27		1.51		0.976	
ANNUAL RUNOFF (INCHES)	30.89		20.59		13.25	
10 PERCENT EXCEEDS	3,300		2,300		1,190	
50 PERCENT EXCEEDS	687		518		303	
90 PERCENT EXCEEDS	283		245		60	

e Estimated.



02046000 STONY CREEK NEAR DINWIDDIE, VA

LOCATION.--Lat 37°04'02", long 77°36'09", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to June 12, 1957, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 11, 12, 26-29, and periods of no gage-height record, Feb. 18, 19, and Aug. 17, which are fair. Maximum discharge, 11,400 ft^3/s, from rating curve extended above 5,800 ft^3/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.

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

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 11	1000	1,220	8.75	1300	*5,920	*15.15
Dec 15	0430	1,430	9.28	0615	1,840	10.20
Aug 15	0445	1,730	9.96			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82	128	112	103	99	71	102	56	25	583	239	2,490
2	76	94	94	102	88	71	132	67	23	308	247	664
3	70	76	81	110	187	71	107	946	21	120	147	295
4	68	67	75	110	363	70	89	510	33	75	149	178
5	65	63	275	108	255	70	74	230	97	65	104	125
6	62	79	328	117	215	73	64	138	84	170	86	136
7	58	359	220	104	882	84	61	101	63	262	68	176
8	57	215	157	94	969	84	58	79	46	144	53	254
9	56	136	127	94	460	74	56	67	37	75	43	1,470
10	55	101	124	96	254	69	53	60	33	54	36	688
11	49	87	969	e80	204	65	58	53	31	44	32	330
12	53	80	773	e79	173	63	84	48	83	37	31	201
13	58	74	429	96	160	59	430	44	112	34	78	144
14	56	66	805	97	143	58	558	40	72	32	815	116
15	81	61	1,340	93	130	57	371	37	47	29	1,550	527
16	71	61	849	85	126	166	215	47	49	25	1,370	501
17	66	62	444	77	122	380	145	38	58	22	e1,070	263
18	64	62	377	95	e129	236	113	38	63	23	521	612
19	57	103	300	154	e139	152	96	36	50	22	225	459
20	52	500	235	130	133	112	83	98	37	19	140	309
21	51	372	190	100	118	97	78	104	30	18	106	189
22	49	222	166	87	102	83	67	62	26	20	154	137
23	46	146	152	87	91	74	62	47	23	24	163	110
24	43	116	174	84	86	69	89	39	23	36	114	94
25	42	100	184	78	84	66	81	33	24	37	80	83
26	43	87	157	e72	79	65	74	30	142	48	65	80
27	52	81	137	e75	76	64	103	32	311	63	58	93
28	55	81	123	e80	73	64	90	32	233	440	51	228
29	269	130	116	e85	72	61	71	29	119	543	47	258
30	292	133	114	103	---	60	61	27	363	756	447	168
31	195	---	110	116	---	62	---	26	---	525	4,830	---
TOTAL	2,393	3,942	9,737	2,991	6,012	2,850	3,725	3,194	2,358	4,653	13,119	11,378
MEAN	77.2	131	314	96.5	207	91.9	124	103	78.6	150	423	379
MAX	292	500	1,340	154	969	380	558	946	363	756	4,830	2,490
MIN	42	61	75	72	72	57	53	26	21	18	31	80
CFSM	0.69	1.17	2.80	0.86	1.85	0.82	1.11	0.92	0.70	1.34	3.78	3.39
IN.	0.79	1.31	3.23	0.99	2.00	0.95	1.24	1.06	0.78	1.55	4.36	3.78

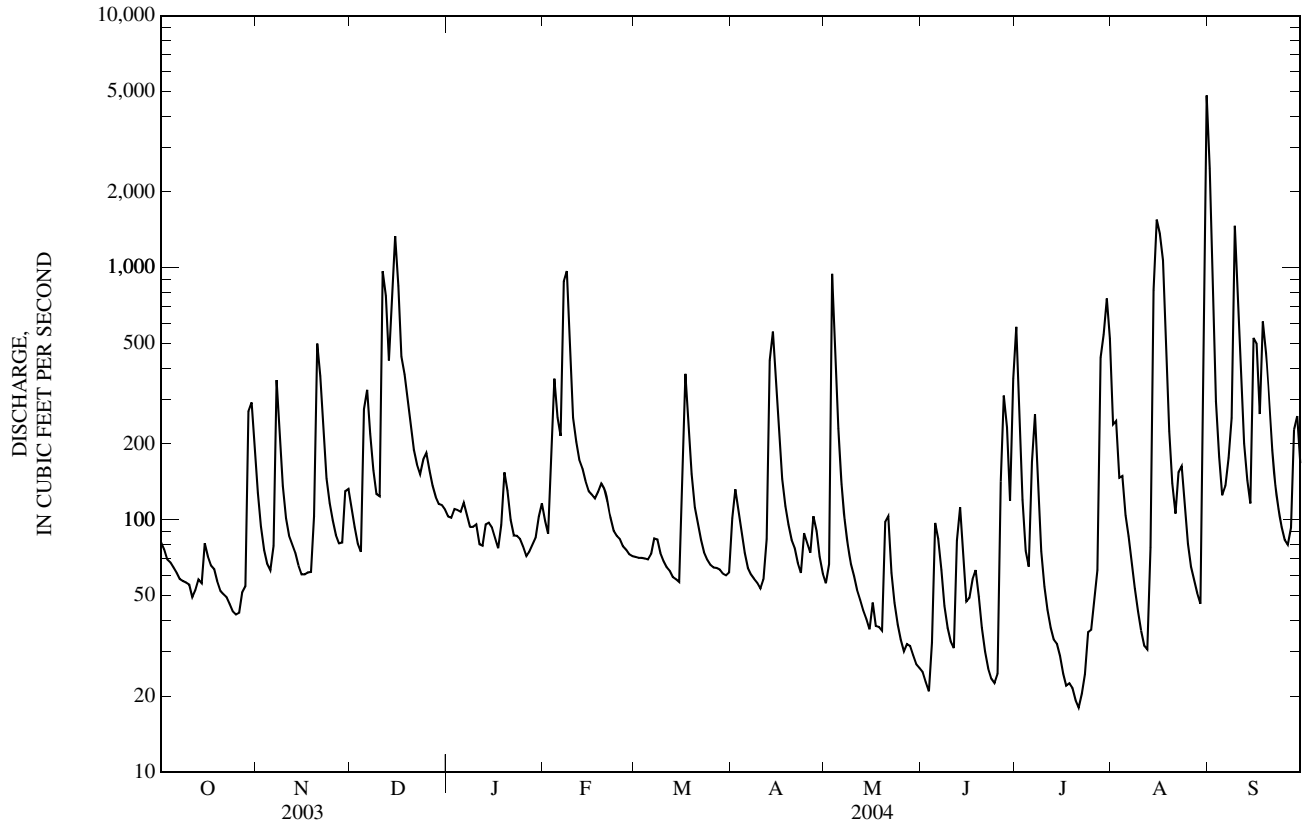
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 2004, BY WATER YEAR (WY)

MEAN	65.8	84.4	107	160	193	214	168	104	65.0	49.6	51.5	71.4
MAX	554	510	426	549	541	551	379	726	358	560	423	774
(WY)	(1973)	(1986)	(1958)	(1978)	(1979)	(1998)	(2000)	(2003)	(2003)	(1975)	(2004)	(1979)
MIN	0.12	2.99	5.68	15.5	21.3	27.7	27.0	20.9	5.36	2.02	0.97	0.18
(WY)	(1955)	(1966)	(1966)	(1966)	(2002)	(1981)	(1966)	(1991)	(2002)	(2002)	(1963)	(1954)

02046000 STONY CREEK NEAR DINWIDDIE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1947 - 2004	
ANNUAL TOTAL	106,782		66,352			
ANNUAL MEAN	293		181		111	
HIGHEST ANNUAL MEAN					266	2003
LOWEST ANNUAL MEAN					15.5	2002
HIGHEST DAILY MEAN	8,400	Sep 19	4,830	Aug 31	8,400	Sep 19, 2003
LOWEST DAILY MEAN	e31	Jan 24	18	Jul 21	0.00	aAug 13, 2002
ANNUAL SEVEN-DAY MINIMUM	33	Aug 28	21	Jul 17	0.03	Aug 11, 2002
MAXIMUM PEAK FLOW			5,920	Aug 31	11,400	Oct 6, 1972
MAXIMUM PEAK STAGE			15.15	Aug 31	b20.84	Oct 6, 1972
INSTANTANEOUS LOW FLOW			18	cJul 20	0.00	(d)
ANNUAL RUNOFF (CFSM)	2.61		1.62		0.987	
ANNUAL RUNOFF (INCHES)	35.47		22.04		13.41	
10 PERCENT EXCEEDS	612		378		244	
50 PERCENT EXCEEDS	131		86		49	
90 PERCENT EXCEEDS	49		37		5.0	

a Also Aug. 14, 15, 2002.
b From high-water mark in gage house.
c Also July 21, 2004.
d No flow part or all of each day Oct. 13, 1954 and Aug. 12-17, 2002.
e Estimated.



02047000 NOTTOWAY RIVER NEAR SEBRELL, VA

LOCATION.--Lat 36°46'14", long 77°09'58", NAD83, 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 mi^2.

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). WDR-03-1: 2000, 2002 (M).

GAGE.--Water-stage recorder. Datum of gage is 5.94 ft NGVD of 1929. 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 periods of no gage-height record, Apr. 17-19 and Aug 28 to Sept. 1, and period May 18 to June 23, which are fair. Maximum discharge, 36,000 ft^3/s, from rating curve extended above 25,000 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

REVISIONS.--The maximum discharges for the water years 2000 and 2001 have been revised back to the original published values of 12,200 ft^3/s, Sept. 8, 2000, gage height, 19.71 ft, and 6,570 ft^3/s, Apr. 5, 2001, gage height, 16.73 ft, superseding figures published in the report for 2003. Revised daily discharges for water year 2003 are given below. These figures supersede those published in the report for 2003.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	1,390	766	3,300	2,200	6,710	3,370	2,060	13,600	1,250	529	465
2	45	1,630	713	2,430	2,810	6,030	4,080	1,650	11,000	1,390	650	484
3	43	1,370	654	2,500	2,990	6,070	5,290	1,700	7,940	2,150	746	460
4	43	996	602	2,850	e2,700	6,560	5,920	2,150	5,410	2,650	861	559
5	43	765	672	3,130	e2,400	6,810	5,270	2,380	3,980	3,160	888	809
6	41	764	985	3,240	1,970	6,860	4,180	2,280	3,160	4,260	867	1,360
7	39	1,150	1,280	2,920	1,780	6,630	3,320	2,040	2,540	4,980	1,410	1,800
8	36	1,720	1,470	2,260	2,020	6,000	3,320	1,760	2,190	4,440	2,080	1,910
9	34	2,020	1,520	1,830	2,440	5,380	4,410	1,560	2,290	3,390	2,330	1,440
10	35	1,840	1,480	1,580	2,730	4,930	7,220	1,500	2,720	2,360	2,620	894
11	52	1,360	1,410	1,410	2,760	4,420	10,400	1,730	e4,200	1,620	2,750	644
12	295	1,060	1,450	1,250	2,660	3,830	13,000	2,110	e5,400	1,490	2,950	617
13	591	1,140	1,770	1,110	2,500	3,190	14,500	2,230	e5,000	1,360	3,460	1,300
14	680	1,580	2,400	1,010	2,160	2,590	14,000	2,040	4,020	1,170	4,170	1,780
15	666	2,150	3,030	948	1,850	2,180	12,300	1,540	3,200	1,010	4,110	2,080
16	625	2,490	3,580	899	1,880	1,980	10,100	1,150	2,900	938	3,200	2,170
17	497	2,540	3,980	872	2,270	1,840	7,590	964	2,830	891	2,000	1,930
18	438	2,660	4,220	858	2,710	1,710	5,240	1,080	3,000	768	1,310	1,830
19	498	3,050	3,960	835	3,100	1,630	3,830	1,830	3,590	717	1,200	4,980
20	561	3,380	2,970	802	3,360	1,650	2,990	2,530	4,030	780	1,310	9,630
21	455	3,580	2,110	841	3,420	2,150	2,560	3,240	3,890	981	1,740	13,500
22	372	3,450	1,940	863	3,490	3,020	2,430	4,460	3,740	939	1,910	22,100
23	326	2,850	1,910	864	3,890	4,320	2,280	6,680	4,050	875	1,640	26,500
24	292	2,220	1,750	783	4,520	6,610	2,040	8,300	4,310	780	1,280	24,600
25	275	1,750	2,010	723	5,300	8,550	1,780	8,620	3,770	981	969	20,000
26	257	1,420	2,860	753	6,330	9,140	1,640	8,680	2,830	1,180	751	15,000
27	237	1,180	3,660	723	7,200	8,260	1,990	8,630	1,940	998	603	11,100
28	216	1,020	4,250	666	7,390	6,180	2,370	8,120	1,280	766	501	8,400
29	212	909	4,850	668	---	4,290	2,750	7,750	1,100	615	433	6,510
30	326	826	5,100	809	---	3,360	2,610	10,300	1,230	531	389	4,960
31	707	---	4,460	1,360	---	3,070	---	13,700	---	481	400	---
TOTAL	8,984	54,260	73,812	45,087	90,830	145,950	162,780	124,764	121,140	49,901	50,057	189,812
MEAN	290	1,809	2,381	1,454	3,244	4,708	5,426	4,025	4,038	1,610	1,615	6,327
MAX	707	3,580	5,100	3,300	7,390	9,140	14,500	13,700	13,600	4,980	4,170	26,500
MIN	34	764	602	666	1,780	1,630	1,640	964	1,100	481	389	460
CFSM	0.20	1.27	1.68	1.02	2.28	3.31	3.82	2.83	2.84	1.13	1.14	4.45
IN.	0.24	1.42	1.93	1.18	2.38	3.82	4.26	3.27	3.17	1.31	1.31	4.97

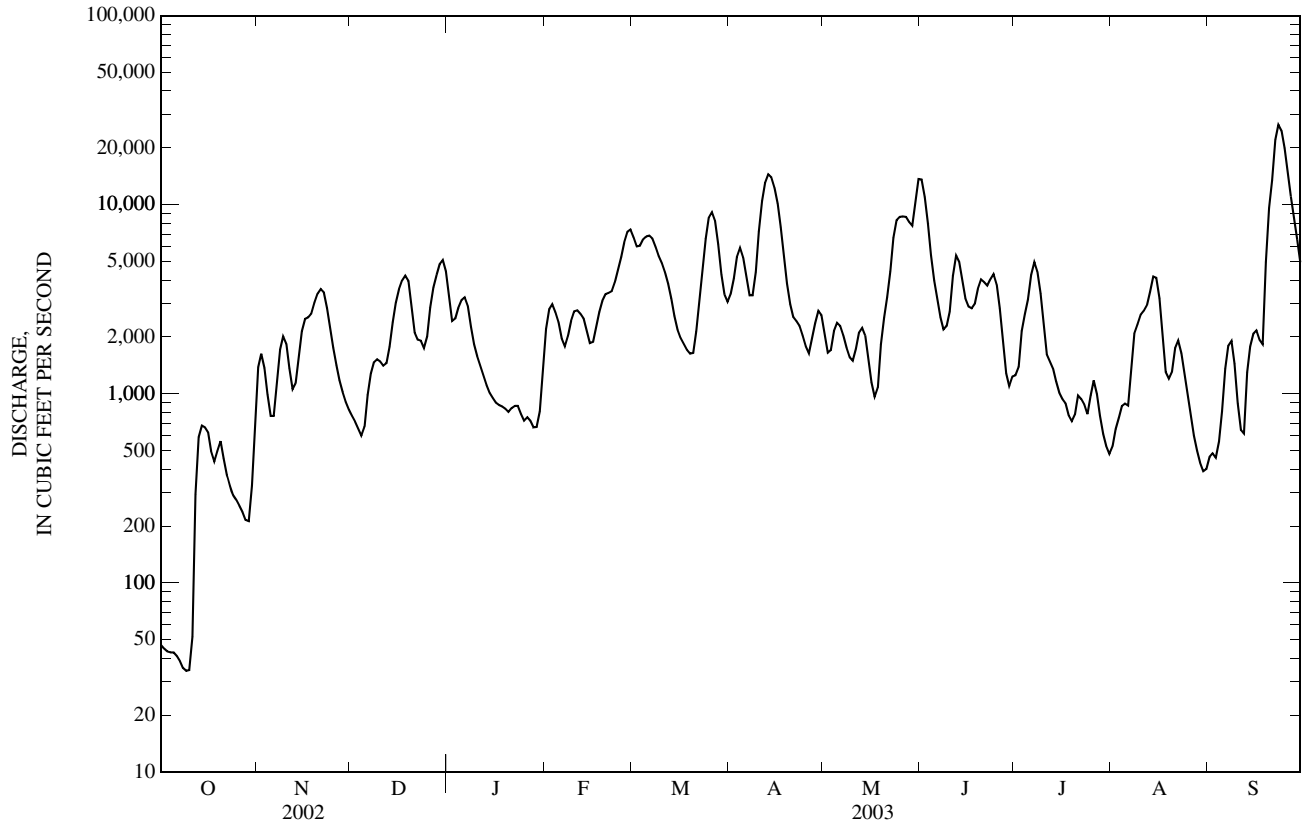
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2003, BY WATER YEAR (WY)

MEAN	656	858	1,314	2,010	2,473	2,776	2,156	1,337	816	720	627	790
MAX	4,491	4,854	4,310	6,115	6,255	6,531	5,426	5,180	4,038	5,782	2,831	9,191
(WY)	(1973)	(1986)	(1958)	(1978)	(1998)	(1998)	(2003)	(1978)	(2003)	(1975)	(1955)	(1999)
MIN	27.4	59.5	98.8	196	466	389	427	300	54.8	37.8	35.7	27.8
(WY)	(1955)	(1942)	(1966)	(1966)	(2002)	(1981)	(1966)	(1942)	(2002)	(2002)	(2002)	(1954)

02047000 NOTTOWAY RIVER NEAR SEBRELL, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1941 - 2003	
ANNUAL TOTAL	244,916		1,117,377			
ANNUAL MEAN	671		3,061		1,372	
HIGHEST ANNUAL MEAN					3,061	2003
LOWEST ANNUAL MEAN					316	2002
HIGHEST DAILY MEAN	5,100	Dec 30	26,500	Sep 23	34,500	Sep 19, 1999
LOWEST DAILY MEAN	e13	Aug 26	34	aOct 9	e13	Aug 26, 2002
ANNUAL SEVEN-DAY MINIMUM	17	Aug 9	39	Oct 4	15	Oct 8, 1954
MAXIMUM PEAK FLOW			26,900	Sep 23	36,000	(b)
MAXIMUM PEAK STAGE			24.71	Sep 23	c26.98	(b)
INSTANTANEOUS LOW FLOW			34	aOct 9	d12	Oct 23, 1941
ANNUAL RUNOFF (CFSM)	0.472		2.15		0.965	
ANNUAL RUNOFF (INCHES)	6.41		29.25		13.12	
10 PERCENT EXCEEDS	1,830		6,690		3,380	
50 PERCENT EXCEEDS	326		2,040		736	
90 PERCENT EXCEEDS	30		560		99	

a Also Oct. 10, 2002.
b Occurred Sept. 19 or 20, 1999.
c From high-water mark in gage house.
d Observed, may have gone lower Aug. 26, 2002.
e Estimated.



02047000 NOTTOWAY RIVER NEAR SEBRELL, VA—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3,770	2,380	1,280	1,720	1,370	1,130	911	1,280	388	2,470	6,530	e2,100
2	2,810	2,570	1,340	1,630	1,420	1,080	1,180	1,050	356	2,270	5,810	2,770
3	2,000	2,450	1,290	1,550	1,440	1,060	1,500	1,020	335	2,320	5,250	3,920
4	1,510	2,000	1,170	1,490	1,620	1,040	1,630	1,460	393	2,110	4,310	6,680
5	1,230	1,550	1,230	1,460	1,990	1,020	1,510	2,090	941	1,500	3,560	9,370
6	1,070	1,250	1,570	1,450	2,420	998	1,310	2,580	1,760	1,040	3,290	9,670
7	963	1,160	2,000	1,440	3,060	984	1,140	3,020	2,370	1,040	3,330	7,670
8	886	1,200	2,340	1,420	3,600	1,030	996	3,180	2,630	1,400	3,530	5,010
9	825	1,410	2,550	1,390	3,970	1,110	889	2,670	2,270	1,320	3,380	3,550
10	778	1,620	2,560	1,350	4,270	1,150	813	1,750	e1,550	1,190	2,430	3,190
11	757	1,630	2,540	1,290	4,800	1,110	771	1,150	e1,100	985	1,410	3,540
12	755	1,420	2,800	1,250	5,210	1,040	785	885	e800	769	901	4,120
13	768	1,190	3,370	1,220	4,920	977	1,080	746	868	891	766	5,210
14	774	1,020	4,480	1,210	4,140	916	1,910	645	e1,330	817	1,130	5,560
15	788	930	6,580	1,250	3,400	877	2,830	567	e1,500	711	2,280	4,870
16	784	860	7,920	1,260	2,810	964	3,650	511	1,140	564	3,800	4,090
17	818	792	8,080	1,230	2,350	1,260	e4,450	474	e860	447	5,750	3,870
18	861	758	8,300	1,210	2,120	1,660	e4,900	486	e840	421	7,560	4,590
19	829	759	8,590	1,270	2,000	2,080	e4,600	532	e810	390	8,910	6,170
20	767	999	8,240	1,410	1,940	2,330	3,620	484	e700	352	9,580	7,160
21	704	1,530	7,170	1,560	1,880	2,290	2,640	482	e600	326	8,960	7,320
22	650	2,030	5,810	1,580	1,810	1,880	1,830	572	e490	316	7,180	7,010
23	609	2,450	4,630	1,470	1,700	1,480	1,380	619	e410	351	5,140	6,270
24	582	2,870	3,820	1,360	1,560	1,230	1,160	550	363	389	3,870	4,980
25	558	3,010	3,200	1,270	1,420	1,070	1,120	471	392	383	3,040	3,660
26	534	2,710	2,780	1,190	1,340	976	1,230	417	564	556	2,280	2,470
27	516	2,110	2,540	1,150	1,280	916	1,340	e385	974	1,550	1,650	1,650
28	526	1,610	2,390	1,150	1,230	876	1,490	e380	1,640	3,220	e1,250	1,290
29	866	1,340	2,220	1,190	1,170	848	1,620	e405	2,060	5,170	e1,060	1,370
30	1,480	1,240	2,020	1,250	---	827	1,510	422	2,350	6,050	e930	1,660
31	2,000	---	1,840	1,310	---	806	---	416	---	6,700	e1,400	---
TOTAL	32,768	48,848	116,650	41,980	72,240	37,015	55,795	31,699	32,784	48,018	120,267	140,790
MEAN	1,057	1,628	3,763	1,354	2,491	1,194	1,860	1,022	1,093	1,549	3,880	4,693
MAX	3,770	3,010	8,590	1,720	5,210	2,330	4,900	3,180	2,630	6,700	9,580	9,670
MIN	516	758	1,170	1,150	1,170	806	771	380	335	316	766	1,290
CFSM	0.74	1.15	2.65	0.95	1.75	0.84	1.31	0.72	0.77	1.09	2.73	3.30
IN.	0.86	1.28	3.05	1.10	1.89	0.97	1.46	0.83	0.86	1.26	3.15	3.69

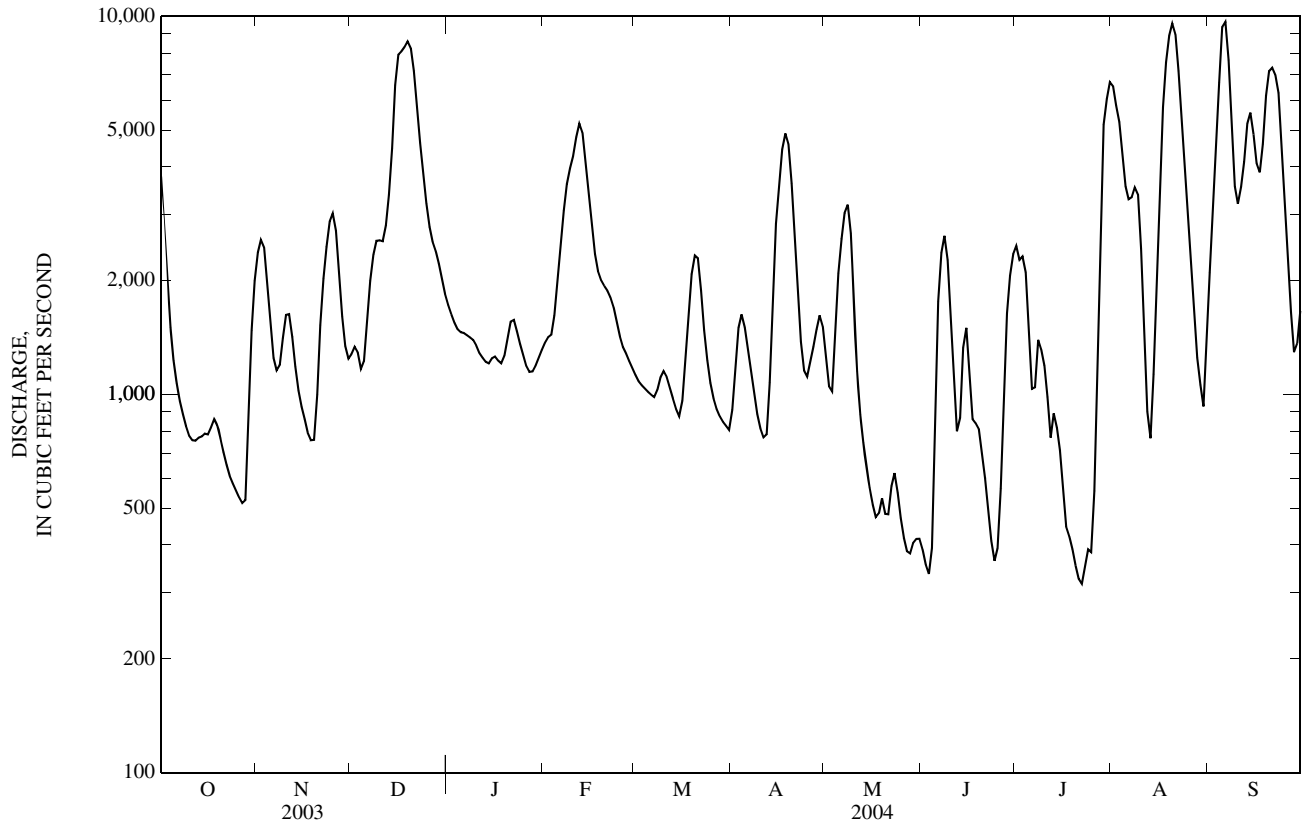
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2004, BY WATER YEAR (WY)

MEAN	662	870	1,353	1,999	2,473	2,751	2,151	1,332	820	733	678	852
MAX	4,491	4,854	4,310	6,115	6,255	6,531	5,426	5,180	4,038	5,782	3,880	9,191
(WY)	(1973)	(1986)	(1958)	(1978)	(1998)	(1998)	(2003)	(1978)	(2003)	(1975)	(2004)	(1999)
MIN	27.4	59.5	98.8	196	466	389	427	300	54.8	37.8	35.7	27.8
(WY)	(1955)	(1942)	(1966)	(1966)	(2002)	(1981)	(1966)	(1942)	(2002)	(2002)	(2002)	(1954)

02047000 NOTTOWAY RIVER NEAR SEBRELL, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1941 - 2004	
ANNUAL TOTAL	1,178,587		778,854			
ANNUAL MEAN	3,229		2,128		1,384	
HIGHEST ANNUAL MEAN					3,061	2003
LOWEST ANNUAL MEAN					316	2002
HIGHEST DAILY MEAN	26,500	Sep 23	9,670	Sep 6	34,500	Sep 19, 1999
LOWEST DAILY MEAN	389	Aug 30	316	Jul 22	e13	Aug 26, 2002
ANNUAL SEVEN-DAY MINIMUM	447	Aug 28	358	Jul 19	15	Oct 8, 1954
MAXIMUM PEAK FLOW			10,000	Sep 6	36,000	(a)
MAXIMUM PEAK STAGE			18.67	Sep 6	b26.98	(a)
INSTANTANEOUS LOW FLOW			313	Jul 23	c12	Oct 23, 1941
ANNUAL RUNOFF (CFSM)	2.27		1.50		0.974	
ANNUAL RUNOFF (INCHES)	30.85		20.39		13.23	
10 PERCENT EXCEEDS	7,290		4,910		3,410	
50 PERCENT EXCEEDS	2,150		1,410		756	
90 PERCENT EXCEEDS	763		562		100	

a Occurred Sept. 19 or 20, 1999.
b From high-water mark in gage house.
c Observed, may have gone lower Aug. 26, 2002.
e Estimated.



02047500 BLACKWATER RIVER NEAR DENDRON, VA

LOCATION.--Lat 37°01'31", long 76°52'29", NAD83, 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 mi^2.

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 NGVD of 1929 (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 doubtful gage-height record, Jan. 11, 12, 22-29, which are fair. Maximum discharge, 12,300 ft^3/s, from rating curve extended above 5,000 ft^3/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 ft^3/s, from rating curve extended above 4,900 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	718	615	424	443	270	258	192	261	64	169	1,650	1,120
2	623	485	355	379	265	240	217	286	56	254	1,520	1,610
3	538	392	312	353	295	224	254	350	48	377	1,450	1,820
4	460	367	282	337	343	204	297	435	75	372	1,700	1,950
5	378	388	350	324	394	183	293	506	966	456	1,820	1,790
6	309	424	502	314	488	178	269	412	1,440	490	1,510	1,440
7	241	522	605	302	698	178	241	347	1,140	446	1,100	1,090
8	185	543	666	290	852	191	222	376	764	433	806	815
9	151	573	683	283	989	197	205	515	501	418	508	645
10	127	494	647	271	1,070	207	186	549	337	501	321	726
11	118	425	791	e260	1,140	231	182	464	292	562	206	1,110
12	115	380	871	e250	1,200	267	210	346	405	437	142	1,160
13	110	331	1,020	245	1,120	232	339	250	364	302	120	846
14	105	283	1,250	241	1,010	205	567	180	331	251	174	644
15	115	249	1,650	235	882	205	980	135	282	397	390	634
16	113	234	2,240	226	767	268	1,630	106	203	687	722	848
17	108	240	2,250	216	672	334	1,970	89	150	832	1,090	1,200
18	101	239	2,090	242	630	370	2,010	73	119	800	1,440	1,900
19	99	239	1,920	271	565	431	1,740	59	103	622	1,800	2,320
20	97	326	1,740	285	514	454	1,390	51	85	413	1,870	2,450
21	92	427	1,510	302	480	455	1,070	48	69	244	1,680	2,230
22	85	431	1,270	e290	443	438	823	64	56	137	1,470	1,880
23	79	508	1,080	e275	407	412	632	95	49	128	1,230	1,550
24	74	496	960	e265	377	356	524	96	45	120	1,160	1,250
25	69	503	887	e255	360	311	427	85	47	141	949	977
26	68	602	732	e250	339	283	356	81	63	170	672	764
27	70	581	653	e240	319	255	340	94	75	465	423	597
28	74	557	595	e250	299	225	345	91	74	605	282	478
29	158	560	540	e255	278	194	389	77	71	764	197	392
30	300	510	490	272	---	173	295	69	115	1,120	202	322
31	493	---	465	275	---	168	---	70	---	1,650	602	---
TOTAL	6,373	12,924	29,830	8,696	17,466	8,327	18,595	6,660	8,389	14,763	29,206	36,558
MEAN	206	431	962	281	602	269	620	215	280	476	942	1,219
MAX	718	615	2,250	443	1,200	455	2,010	549	1,440	1,650	1,870	2,450
MIN	68	234	282	216	265	168	182	48	45	120	120	322
CFSM	0.70	1.47	3.27	0.95	2.05	0.91	2.11	0.73	0.95	1.62	3.20	4.14
IN.	0.81	1.64	3.77	1.10	2.21	1.05	2.35	0.84	1.06	1.87	3.70	4.63

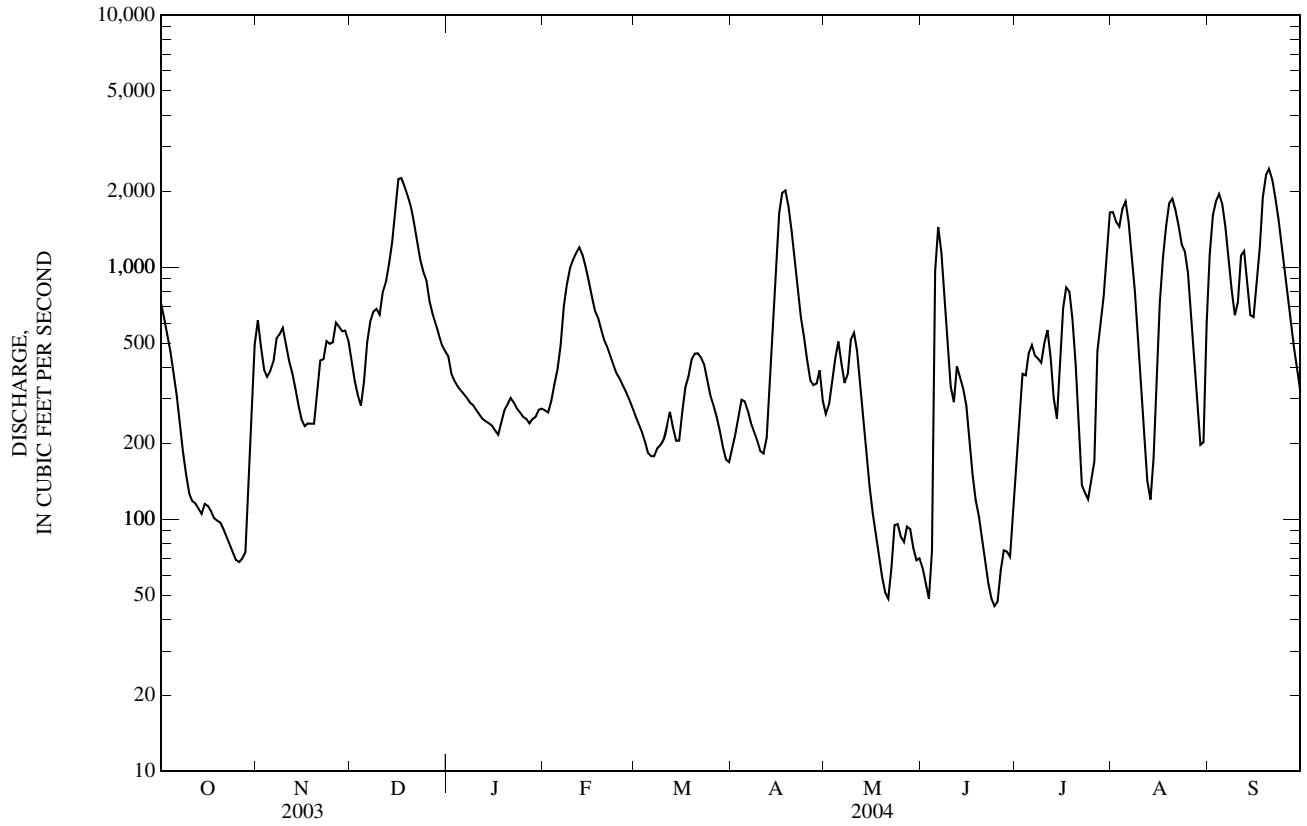
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1986, 1989 - 2004, BY WATER YEAR (WY)

MEAN	153	205	320	479	573	641	468	256	149	144	184	230
MAX	1,128	1,108	1,240	1,473	1,732	1,501	1,271	879	988	1,364	942	2,355
(WY)	(1973)	(1980)	(1958)	(1978)	(1998)	(1975)	(1989)	(1958)	(1963)	(1945)	(2004)	(1999)
MIN	0.00	0.00	2.65	21.1	70.8	79.5	87.2	25.8	0.02	0.32	0.00	0.00
(WY)	(a)	(b)	(1981)	(1981)	(1942)	(1981)	(1981)	(1991)	(1999)	(1957)	(c)	(d)

02047500 BLACKWATER RIVER NEAR DENDRON, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1942 - 1986 1989 - 2004	
ANNUAL TOTAL	262,962		197,787			
ANNUAL MEAN	720		540		316	
HIGHEST ANNUAL MEAN					663	2003
LOWEST ANNUAL MEAN					55.1	2002
HIGHEST DAILY MEAN	5,350	Sep 22	2,450	Sep 20	e11,400	Sep 18, 1999
LOWEST DAILY MEAN	57	Aug 28	45	Jun 24	0.00	(f)
ANNUAL SEVEN-DAY MINIMUM	74	Oct 22	58	Jun 21	0.00	(f)
MAXIMUM PEAK FLOW			2,490	Sep 20	12,300	Sep 17, 1999
MAXIMUM PEAK STAGE			7.02	Sep 20	g17.11	Sep 17, 1999
INSTANTANEOUS LOW FLOW			40	Jun 4	0.00	(f)
ANNUAL RUNOFF (CFSM)	2.45		1.84		1.08	
ANNUAL RUNOFF (INCHES)	33.27		25.03		14.62	
10 PERCENT EXCEEDS	1,530		1,310		792	
50 PERCENT EXCEEDS	527		362		165	
90 PERCENT EXCEEDS	114		96		1.4	

a Monthly mean flow is 0.0 ft^3/s in 1955, 1969, 1981, 1984, 1994, 1998, 1999, 2001.
b Monthly mean flow is 0.0 ft^3/s in 1955, 1981, 1999, 2001.
c Monthly mean flow is 0.0 ft^3/s in 1976, 1980, 1993.
d Monthly mean flow is 0.0 ft^3/s in 1944, 1954, 1980, 1983, 1993, 1995, 1997.
e Estimated.
f No flow at times most years.
g From floodmarks.



02049500 BLACKWATER RIVER NEAR FRANKLIN, VA

LOCATION.--Lat 36°45'46", long 76°53'54", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good. Low flow reversed by tide some years. Diversion upstream from station by city of Norfolk for municipal water supply most years. Maximum discharge, 23,000 ft^3/s, from rating curve extended above 12,800 ft^3/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 ft^3/s, from rating curve extended above 9,400 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,900	1,190	854	1,300	647	538	392	617	88	437	3,610	1,020
2	2,260	1,220	831	1,190	642	500	431	549	80	669	3,230	1,390
3	1,720	1,180	803	1,100	705	469	458	530	68	1,070	3,350	1,790
4	1,340	1,110	771	1,020	811	448	475	562	78	1,310	3,760	2,070
5	1,130	1,030	803	965	900	431	472	572	489	1,790	4,050	2,260
6	975	961	876	915	1,020	412	452	572	830	1,930	3,890	2,370
7	859	957	933	856	1,520	398	428	579	1,360	1,460	3,600	2,400
8	764	968	992	792	2,220	401	411	611	1,860	1,170	3,290	2,360
9	680	982	1,040	744	2,640	414	395	607	2,140	1,180	2,850	2,290
10	588	1,010	1,070	707	2,730	433	376	538	2,030	1,280	2,360	2,100
11	497	1,040	1,360	656	2,580	450	356	458	1,670	1,140	1,840	1,810
12	432	1,040	1,810	616	2,390	448	348	427	1,270	860	1,320	1,440
13	388	1,020	2,030	591	2,240	434	407	442	972	660	1,010	1,150
14	355	955	2,310	570	2,140	413	586	450	793	596	980	1,120
15	342	871	3,120	552	2,050	399	895	418	712	594	2,470	1,400
16	323	790	3,520	529	1,960	462	1,250	365	645	568	4,620	2,070
17	302	710	3,720	503	1,840	653	1,510	313	586	503	5,420	2,320
18	288	637	3,910	511	1,730	775	1,800	272	507	441	5,120	2,320
19	280	583	3,970	564	1,620	871	2,160	223	428	450	4,480	2,640
20	271	723	3,850	603	1,490	886	2,410	183	345	583	3,810	2,780
21	261	912	3,600	631	1,360	854	2,470	146	263	702	3,320	2,980
22	251	1,020	3,290	641	1,230	793	2,350	126	193	698	3,020	3,140
23	237	1,120	3,000	638	1,110	722	2,110	112	148	628	2,850	3,120
24	218	1,170	2,750	627	991	662	1,810	93	146	598	2,710	2,910
25	199	1,120	2,510	616	889	608	1,500	74	134	645	2,510	2,590
26	186	1,030	2,300	558	803	558	1,220	63	135	794	2,230	2,240
27	180	971	2,100	550	715	508	1,060	77	149	1,250	1,950	1,890
28	177	920	1,920	579	643	463	948	99	145	1,830	1,620	1,590
29	395	888	1,740	586	587	420	844	102	141	3,790	1,260	1,360
30	905	871	1,580	615	---	390	725	96	190	4,610	948	1,130
31	1,070	---	1,430	656	---	373	---	92	---	4,260	901	---
TOTAL	20,773	28,999	64,793	21,981	42,203	16,586	31,049	10,368	18,595	38,496	88,379	62,050
MEAN	670	967	2,090	709	1,455	535	1,035	334	620	1,242	2,851	2,068
MAX	2,900	1,220	3,970	1,300	2,730	886	2,470	617	2,140	4,610	5,420	3,140
MIN	177	583	771	503	587	373	348	63	68	437	901	1,020
(†)	0	0	0	0	0	0	0	0	0	0	0	0
MEAN‡	670	967	2,090	709	1,455	535	1,035	334	620	1,242	2,851	2,068
CFSM‡	1.09	1.57	3.39	1.15	2.36	0.87	1.68	0.54	1.00	2.01	4.62	3.35
IN.‡	1.25	1.75	3.91	1.33	2.54	1.00	1.87	0.63	1.12	2.32	5.33	3.74

CAL YR 2003 MEAN‡ 1,468 CFSM‡ 2.38 IN.‡ 32.30
WTR YR 2004 MEAN‡ 1,214 CFSM‡ 1.97 IN.‡ 26.79

† Average daily diversion, in cubic feet per second, by City of Norfolk.
‡ Adjusted for diversion.

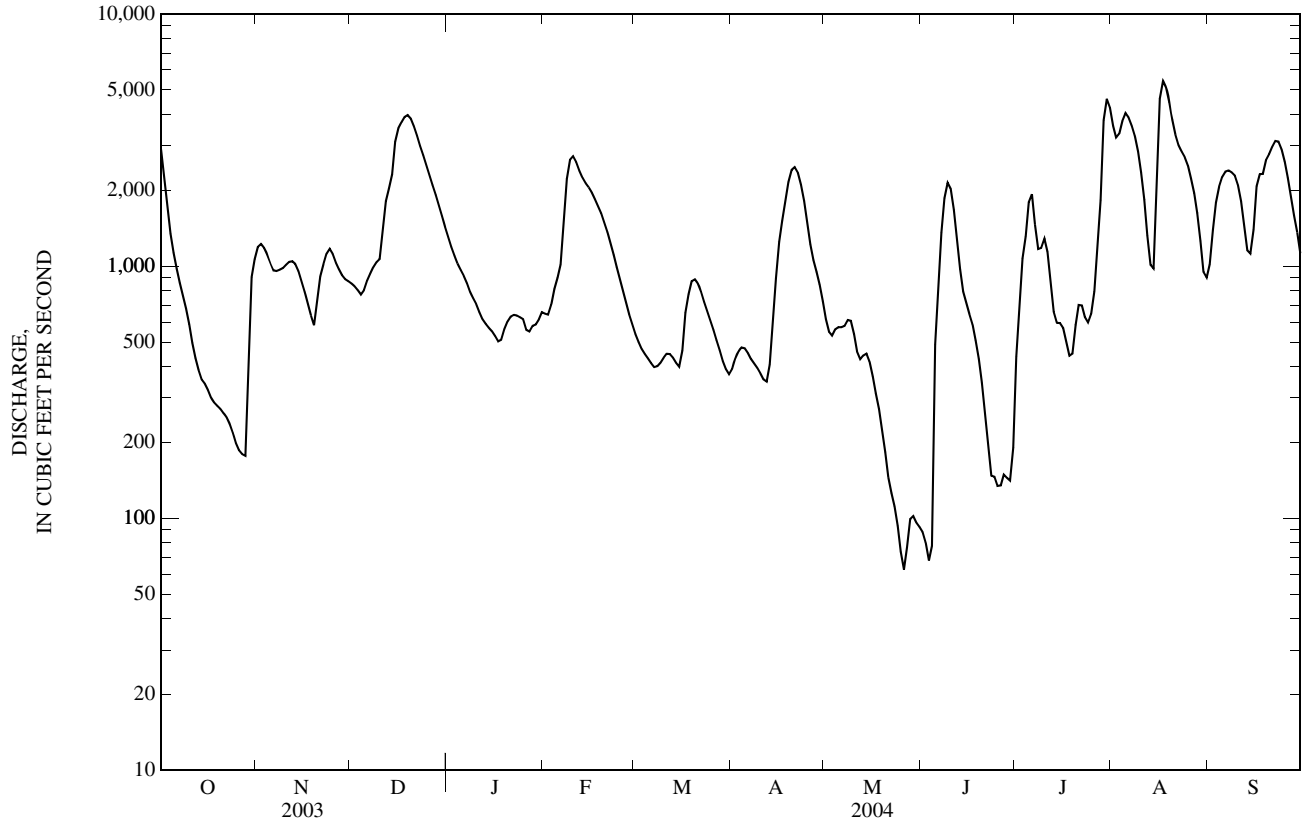
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2004, BY WATER YEAR (WY)

MEAN	304	378	642	975	1,186	1,255	944	541	364	301	404	463
MAX	1,795	1,713	2,090	2,271	3,520	2,915	2,783	1,890	1,925	2,003	2,851	5,923
(WY)	(1973)	(1980)	(2004)	(1978)	(1998)	(1989)	(1989)	(1958)	(1963)	(1945)	(2004)	(1999)
MIN	0.94	1.69	2.12	12.5	152	158	107	51.4	5.61	3.02	2.08	2.16
(WY)	(1988)	(1981)	(1981)	(1981)	(1981)	(1981)	(1995)	(1985)	(1999)	(1986)	(1995)	(1995)

02049500 BLACKWATER RIVER NEAR FRANKLIN, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1944 - 2004	
ANNUAL TOTAL	535,698		444,272			
ANNUAL MEAN	1,468		1,214		644	
HIGHEST ANNUAL MEAN					1,321	2003
LOWEST ANNUAL MEAN					133	1981
HIGHEST DAILY MEAN	7,790	Sep 21	5,420	Aug 17	e22,000	Sep 18, 1999
LOWEST DAILY MEAN	76	Aug 31	63	May 26	0.00	Jul 13, 2002
ANNUAL SEVEN-DAY MINIMUM	105	Jul 24	86	May 25	0.26	Oct 10, 1987
MAXIMUM PEAK FLOW			5,470	Aug 17	23,000	(a)
MAXIMUM PEAK STAGE			13.63	Aug 17	b26.27	(a)
INSTANTANEOUS LOW FLOW			57	Jun 4	(c)	
ANNUAL RUNOFF (CFSM)	2.38		1.97		1.04	
ANNUAL RUNOFF (INCHES)	32.30		26.79		14.19	
10 PERCENT EXCEEDS	3,000		2,740		1,640	
50 PERCENT EXCEEDS	1,070		871		386	
90 PERCENT EXCEEDS	238		272		8.5	

a Probably occurred Sept. 18, 1999.
b From floodmarks.
c Not determined, tidally affected most years during periods of extreme low flows; minimum measured flow, 2.4 ft^3/s (reverse flow), Sept. 17, 1952.



02051000 NORTH MEHERRIN RIVER NEAR LUNENBURG, VA

LOCATION.--Lat 36°59'51", long 78°20'59", NAD83, 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 mi^2.

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 NGVD of 1929 (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 with ice effect, Jan. 9-12, 22, 26-28, and period of no gage-height record, Sept. 7-10, which are fair. Maximum discharge, 14,400 ft^3/s, from rating curve extended above 2,320 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,200 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 7	0030	2,520	13.72	1730	*10,200	*26.28
Aug 3	0315	2,230	12.64	1130	3,920	18.52

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	27	41	37	45	30	34	20	13	17	19	64
2	19	25	35	39	42	31	31	91	10	15	299	38
3	17	23	32	43	170	31	29	354	8.8	46	806	29
4	17	22	32	40	117	30	27	80	27	25	72	24
5	17	21	106	45	77	30	25	46	75	32	39	21
6	16	100	80	62	318	37	24	35	27	30	36	44
7	16	135	53	43	765	40	24	28	18	16	24	e84
8	15	48	44	39	119	34	25	24	15	14	20	e70
9	16	34	40	e39	73	30	24	22	13	11	17	e200
10	16	29	62	e36	64	29	23	20	14	9.7	15	e42
11	20	27	467	e32	56	28	23	18	28	12	14	32
12	18	27	80	e37	51	28	77	17	20	11	60	26
13	16	25	56	49	50	26	241	15	14	16	65	23
14	16	22	798	43	46	25	124	15	12	11	136	21
15	34	23	254	40	44	27	90	14	11	9.1	87	1,480
16	19	25	117	36	42	186	51	13	16	7.3	43	158
17	16	25	207	34	41	106	41	18	14	6.5	29	290
18	16	24	112	52	41	58	36	27	11	10	25	566
19	15	186	72	60	41	45	32	16	10	10	22	105
20	15	137	59	44	39	39	30	15	8.3	8.1	18	56
21	15	56	50	39	38	37	27	14	6.9	6.9	17	43
22	15	44	48	e38	34	33	25	32	7.2	8.3	21	36
23	14	41	45	37	33	31	23	19	13	19	16	31
24	14	36	60	36	34	30	33	14	11	16	14	28
25	14	36	58	33	33	30	26	12	25	13	13	26
26	15	32	46	e29	31	30	26	13	555	14	12	24
27	22	31	43	e32	31	29	39	50	58	173	11	32
28	32	43	41	e34	30	30	26	20	32	401	11	134
29	139	109	40	35	30	28	22	16	24	58	10	109
30	49	49	41	43	---	27	20	13	21	32	2,970	48
31	32	---	38	51	---	30	---	14	---	21	499	---
TOTAL	715	1,462	3,257	1,257	2,535	1,225	1,278	1,105	1,118.2	1,078.9	5,440	3,884
MEAN	23.1	48.7	105	40.5	87.4	39.5	42.6	35.6	37.3	34.8	175	129
MAX	139	186	798	62	765	186	241	354	555	401	2,970	1,480
MIN	14	21	32	29	30	25	20	12	6.9	6.5	10	21
CFSM	0.41	0.88	1.89	0.73	1.57	0.71	0.77	0.64	0.67	0.63	3.16	2.33
IN.	0.48	0.98	2.18	0.84	1.70	0.82	0.86	0.74	0.75	0.72	3.64	2.60

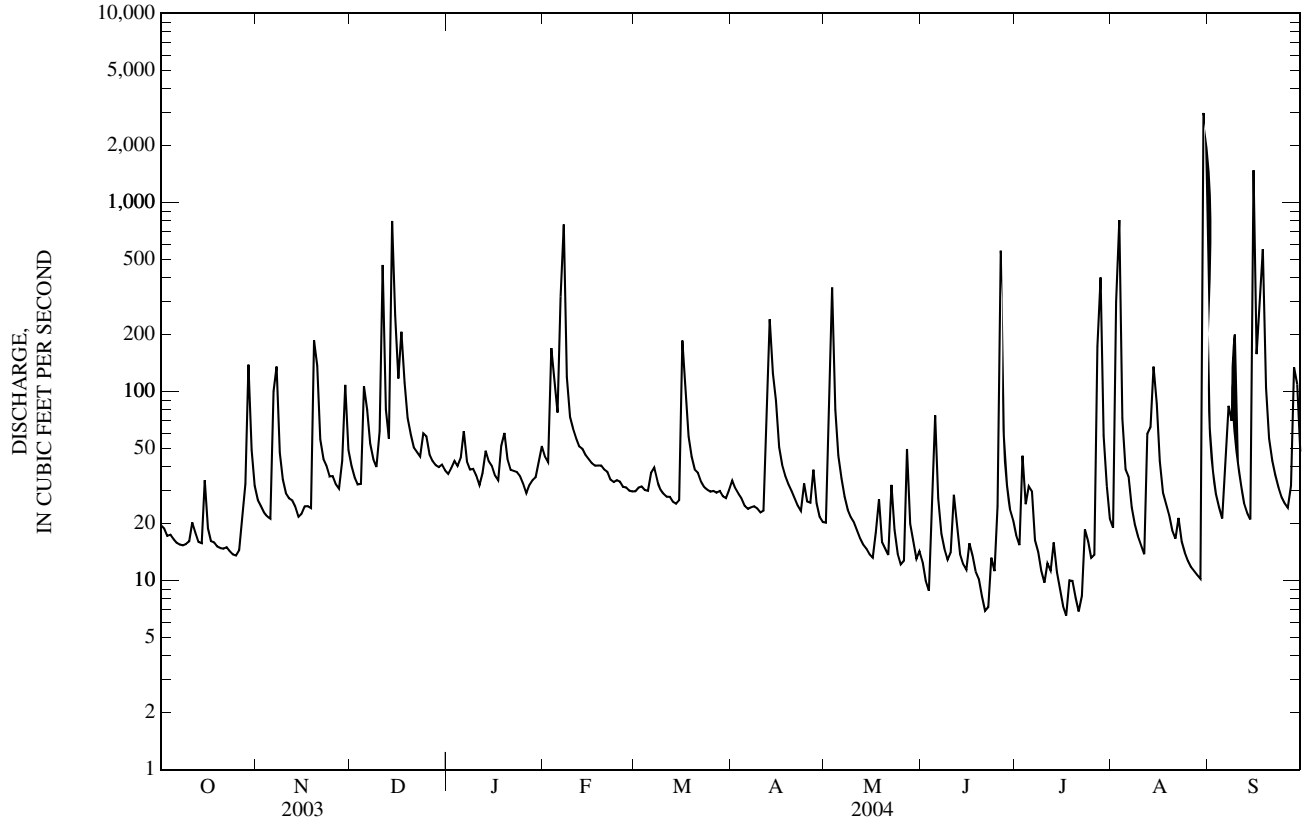
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1980, 1982 - 2004, BY WATER YEAR (WY)

MEAN	31.9	44.3	53.1	69.0	87.9	96.2	77.1	47.7	28.3	20.5	21.4	32.0
MAX	442	299	186	194	249	293	223	205	154	98.6	175	292
(WY)	(1972)	(1986)	(1949)	(1978)	(1979)	(1975)	(1978)	(2003)	(1968)	(1975)	(2004)	(1979)
MIN	0.60	1.68	3.19	10.3	10.1	32.8	15.3	11.2	2.16	2.72	0.08	0.16
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(1985)	(1995)	(1964)	(2002)	(1957)	(2002)	(1954)

02051000 NORTH MEHERRIN RIVER NEAR LUNENBURG, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1947 - 1980 1982 - 2004	
ANNUAL TOTAL	37,436.2		24,355.1			
ANNUAL MEAN	103		66.5		50.6	
HIGHEST ANNUAL MEAN					106	2003
LOWEST ANNUAL MEAN					10.0	2002
HIGHEST DAILY MEAN	2,780	Mar 20	2,970	Aug 30	6,710	Oct 23, 1971
LOWEST DAILY MEAN	7.3	Aug 30	6.5	Jul 17	0.00	(a)
ANNUAL SEVEN-DAY MINIMUM	8.4	Aug 25	8.2	Jul 16	0.00	(a)
MAXIMUM PEAK FLOW			10,200	Aug 30	14,400	Oct 23, 1971
MAXIMUM PEAK STAGE			26.28	Aug 30	28.30	Oct 23, 1971
INSTANTANEOUS LOW FLOW			5.7	Jul 22	0.00	(a)
ANNUAL RUNOFF (CFSM)	1.84		1.20		0.910	
ANNUAL RUNOFF (INCHES)	25.05		16.30		12.36	
10 PERCENT EXCEEDS	189		106		92	
50 PERCENT EXCEEDS	37		31		20	
90 PERCENT EXCEEDS	14		14		3.6	

a Many days in September and October 1954, and August 2002.
e Estimated.



02051500 MEHERRIN RIVER NEAR LAWRENCEVILLE, VA

LOCATION.--Lat 36°43'01", long 77°49'54", NAD83, Brunswick County, Hydrologic Unit 03010204, on right bank 5 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 mi^2.

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 NGVD of 1929. Prior to Nov. 17, 1931, nonrecording gage at site 50 ft upstream at same datum. Nov. 17, 1931 to May 1, 2001, water-stage recorder at above site, at same datum. May 1, 2001 to current year, water-stage recorder at present site, at same datum.

REMARKS.--Records fair. Maximum discharge, 38,000 ft^3/s, from rating curve extended above 13,000 ft^3/s on basis of velocity-area studies and records for Nottoway River near Stony Creek. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 15	---	5,710	a17.87	1015	4,950	16.39
Feb 8	1115	5,070	16.63	1930	*13,900	*28.04

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	376	451	512	477	471	374	411	271	144	322	370	11,700
2	356	381	421	454	428	380	490	316	e140	261	349	10,200
3	337	343	375	452	529	393	413	1,380	e135	236	1,250	2,040
4	320	320	352	468	1,500	378	351	1,670	e175	216	2,310	e540
5	311	307	548	464	1,220	379	318	853	2,290	292	675	e440
6	303	306	882	479	879	368	291	555	1,050	498	396	e400
7	290	378	826	574	2,520	381	281	426	467	271	309	e430
8	281	723	595	484	4,590	402	290	354	310	404	255	641
9	281	477	495	446	1,430	367	292	304	245	407	206	2,370
10	289	370	459	458	914	334	282	273	216	247	187	1,340
11	300	330	2,130	417	779	317	290	250	356	194	171	642
12	306	322	3,310	400	689	311	335	234	467	270	162	e460
13	302	319	1,120	473	639	304	962	220	290	223	420	e400
14	277	297	2,010	492	602	291	1,980	208	218	207	2,090	e370
15	312	277	e5,300	473	558	289	1,390	196	193	191	4,300	384
16	393	287	e3,900	433	551	344	1,030	216	186	141	e3,000	2,670
17	350	302	1,400	399	534	1,360	638	252	254	120	e1,150	1,160
18	278	306	2,000	423	529	1,100	500	198	324	121	1,100	2,140
19	257	354	1,330	593	542	650	426	194	214	120	1,660	2,660
20	249	2,330	937	678	560	512	380	198	160	119	540	942
21	244	1,520	760	508	524	452	353	182	e122	115	386	611
22	247	755	660	434	468	414	328	170	e110	107	585	484
23	238	570	613	424	429	381	302	162	e248	137	468	415
24	230	492	609	419	414	360	352	168	473	170	336	365
25	223	444	724	395	412	350	443	e140	313	155	277	334
26	224	404	715	330	398	341	377	e170	e1,390	648	242	300
27	242	379	589	381	381	336	421	180	e2,500	269	221	279
28	273	371	539	485	370	337	431	231	619	1,700	203	584
29	635	456	511	439	380	318	340	221	384	1,840	188	1,140
30	1,230	693	503	447	---	305	289	160	334	943	942	902
31	679	---	502	482	---	307	---	156	---	638	5,550	---
TOTAL	10,633	15,264	35,627	14,281	24,240	13,135	14,986	10,508	14,327	11,582	30,298	47,343
MEAN	343	509	1,149	461	836	424	500	339	478	374	977	1,578
MAX	1,230	2,330	5,300	678	4,590	1,360	1,980	1,670	2,500	1,840	5,550	11,700
MIN	223	277	352	330	370	289	281	140	110	107	162	279
CFSM	0.62	0.92	2.08	0.83	1.51	0.77	0.90	0.61	0.87	0.68	1.77	2.86
IN.	0.72	1.03	2.40	0.96	1.63	0.89	1.01	0.71	0.97	0.78	2.04	3.19

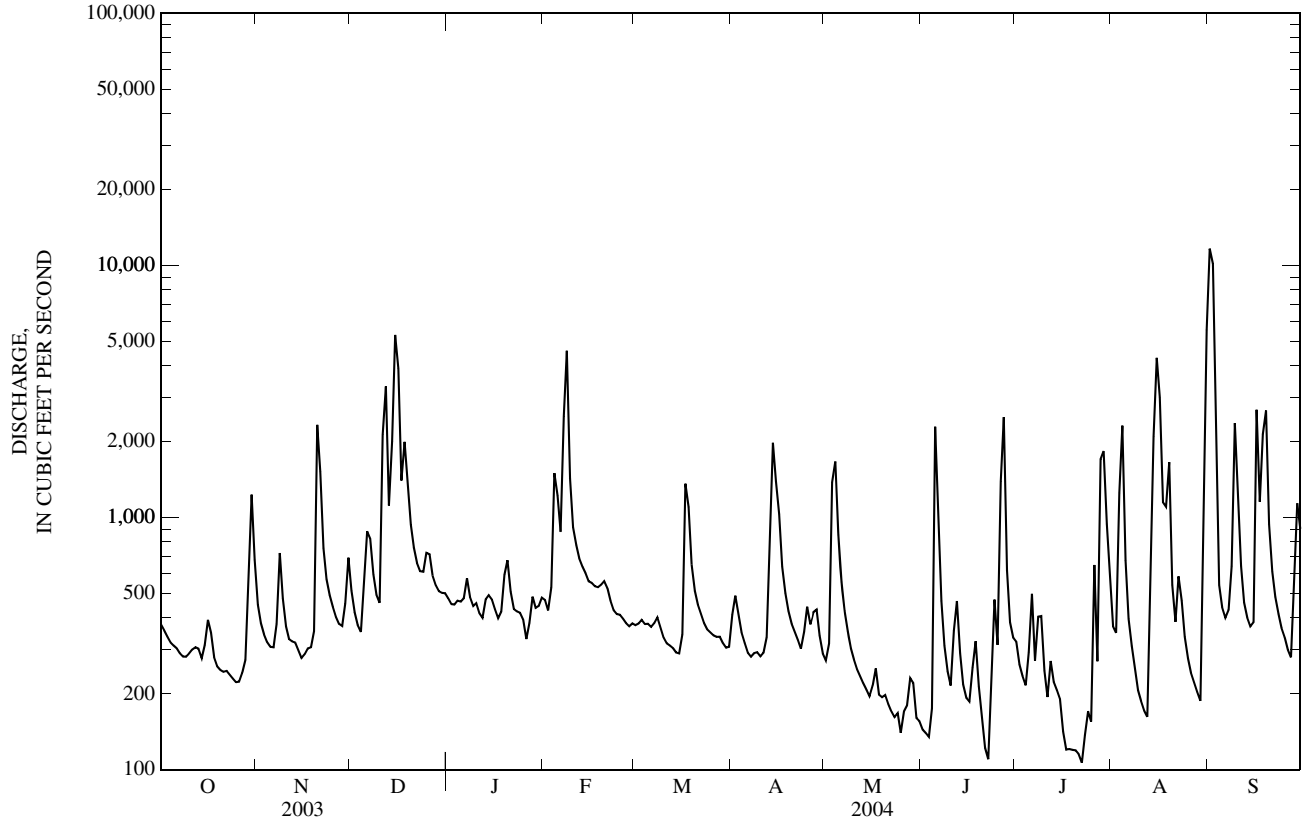
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2004, BY WATER YEAR (WY)

MEAN	299	370	472	715	826	918	758	473	333	310	300	307
MAX	2,266	2,853	1,340	2,391	1,904	2,707	2,067	2,192	1,555	2,358	4,199	2,627
(WY)	(1972)	(1986)	(1997)	(1936)	(1998)	(1998)	(1987)	(2003)	(1938)	(1945)	(1940)	(1999)
MIN	17.1	44.1	64.6	88.8	139	190	162	128	43.1	22.8	10.7	9.70
(WY)	(1931)	(1934)	(1966)	(1934)	(2002)	(1981)	(1966)	(1942)	(2002)	(2002)	(2002)	(1954)

02051500 MEHERRIN RIVER NEAR LAWRENCEVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1929 - 2004	
ANNUAL TOTAL	410,726		242,224			
ANNUAL MEAN	1,125		662		505	
HIGHEST ANNUAL MEAN					1,109	2003
LOWEST ANNUAL MEAN					111	2002
HIGHEST DAILY MEAN	14,300	May 28	11,700	Sep 1	35,300	Aug 17, 1940
LOWEST DAILY MEAN	149	Aug 30	107	Jul 22	2.2	bAug 23, 2002
ANNUAL SEVEN-DAY MINIMUM	165	Aug 25	120	Jul 17	2.6	Aug 19, 2002
MAXIMUM PEAK FLOW			13,900	Sep 1	38,000	Aug 17, 1940
MAXIMUM PEAK STAGE			28.04	Sep 1	42.00	Aug 17, 1940
INSTANTANEOUS LOW FLOW			102	cJul 22	2.0	Aug 25, 2002
ANNUAL RUNOFF (CFSM)	2.04		1.20		0.915	
ANNUAL RUNOFF (INCHES)	27.68		16.32		12.43	
10 PERCENT EXCEEDS	2,600		1,350		977	
50 PERCENT EXCEEDS	511		385		251	
90 PERCENT EXCEEDS	226		197		65	

a From floodmark.
b Also Aug. 24, 25, 2002.
c Also July 23, 2004.
e Estimated.



02052000 MEHERRIN RIVER AT EMPORIA, VA

LOCATION.--Lat 36°41'25", long 77°32'26", NAD83, 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 mi^2.

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 NGVD of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Records good except for period of no gage-height record, Aug. 18, which is fair. Prior to November 1965 and since April 1986, low and medium flow regulated by powerplant 0.8 mi upstream from station. 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 ft^3/s, from rating curve extended above 18,000 ft^3/s on basis of record for station near Lawrenceville.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	438	673	768	617	659	386	554	380	182	657	988	8,530
2	398	481	487	577	571	389	767	441	159	423	703	13,600
3	385	384	409	506	717	407	638	1,550	159	336	1,490	9,420
4	355	339	386	635	1,820	400	508	3,350	210	282	3,660	1,930
5	339	241	795	577	2,700	394	457	2,330	1,970	244	2,390	868
6	324	372	1,320	581	1,770	391	370	1,280	2,830	515	898	474
7	309	396	1,490	656	2,930	403	349	729	1,250	561	507	699
8	298	611	1,080	650	5,710	456	283	548	485	346	411	849
9	287	826	673	550	4,960	443	435	428	355	575	325	3,190
10	297	512	588	554	2,260	378	317	376	295	383	294	3,740
11	309	353	2,630	522	1,440	341	323	333	272	262	255	1,510
12	319	327	5,370	439	1,170	328	396	305	836	617	247	872
13	327	223	3,790	481	1,050	314	1,060	278	483	310	394	647
14	308	375	3,240	702	930	304	3,340	261	398	239	2,090	562
15	329	340	6,290	607	844	293	3,230	243	186	293	5,470	841
16	399	214	7,470	536	787	458	2,370	198	179	158	6,440	1,760
17	423	329	4,550	463	753	1,040	1,490	539	365	197	4,200	2,960
18	326	299	3,270	517	720	2,240	897	257	307	174	e1,720	2,290
19	275	338	3,050	742	707	1,240	712	252	295	165	3,020	4,060
20	262	2,300	1,920	955	637	800	589	264	271	157	1,370	2,280
21	253	3,840	1,320	797	773	661	529	227	174	151	737	989
22	250	1,830	1,160	574	720	552	463	215	207	149	758	706
23	238	1,000	999	520	547	474	466	201	222	157	818	582
24	220	659	958	518	508	426	423	194	657	191	556	514
25	212	458	991	480	490	405	551	160	533	205	448	467
26	215	579	1,080	382	474	398	589	205	1,090	3,270	398	440
27	237	422	968	408	435	392	665	200	2,870	2,480	347	463
28	232	415	628	547	418	391	670	265	2,040	3,060	337	625
29	842	471	822	548	397	392	544	272	679	4,530	319	998
30	1,820	706	667	603	---	364	399	217	456	3,020	639	1,270
31	1,630	---	643	686	---	379	---	192	---	1,970	5,640	---
TOTAL	12,856	20,313	59,812	17,930	37,897	16,239	24,384	16,690	20,415	26,077	47,869	68,136
MEAN	415	677	1,929	578	1,307	524	813	538	680	841	1,544	2,271
MAX	1,820	3,840	7,470	955	5,710	2,240	3,340	3,350	2,870	4,530	6,440	13,600
MIN	212	214	386	382	397	293	283	160	159	149	247	440
CFSM	0.56	0.91	2.58	0.77	1.75	0.70	1.09	0.72	0.91	1.13	2.07	3.04
IN.	0.64	1.01	2.98	0.89	1.89	0.81	1.21	0.83	1.02	1.30	2.38	3.39

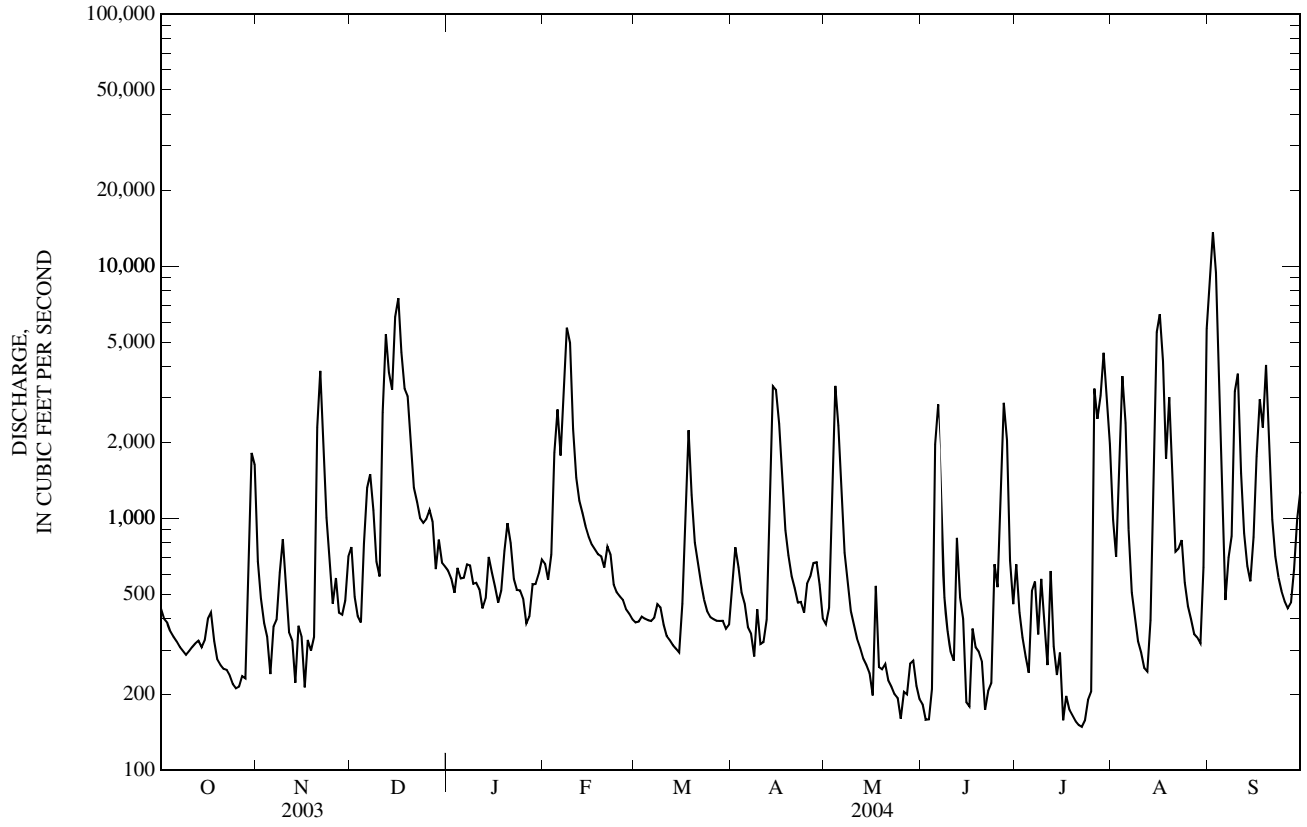
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 2004, BY WATER YEAR (WY)

MEAN	411	522	687	1,024	1,222	1,355	1,086	688	459	352	327	439
MAX	3,057	3,711	1,929	3,063	2,749	3,631	3,077	3,048	1,835	2,647	1,544	4,372
(WY)	(1973)	(1986)	(2004)	(1978)	(1998)	(1998)	(1987)	(2003)	(2003)	(1975)	(2004)	(1999)
MIN	37.7	57.0	86.2	159	225	261	221	256	28.0	30.7	19.4	18.7
(WY)	(1969)	(2002)	(2002)	(1966)	(2002)	(1981)	(1995)	(1995)	(2002)	(2002)	(2002)	(1954)

02052000 MEHERRIN RIVER AT EMPORIA, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1952 - 2004	
ANNUAL TOTAL	620,442		368,618			
ANNUAL MEAN	1,700		1,007		711	
HIGHEST ANNUAL MEAN					1,665	2003
LOWEST ANNUAL MEAN					165	2002
HIGHEST DAILY MEAN	15,600	Sep 21	13,600	Sep 2	20,700	Oct 8, 1972
LOWEST DAILY MEAN	a100	Jan 24	a149	Jul 22	a3.6	Jun 21, 2002
ANNUAL SEVEN-DAY MINIMUM	a191	Jan 23	a163	Jul 18	a6.4	Aug 11, 2002
MAXIMUM PEAK FLOW			14,600	Sep 2	21,100	Oct 8, 1972
MAXIMUM PEAK STAGE			24.43	Sep 2	27.38	Oct 8, 1972
INSTANTANEOUS LOW FLOW			a56	Jun 15	a3.2	bJun 20, 2002
ANNUAL RUNOFF (CFSM)	2.28		1.35		0.952	
ANNUAL RUNOFF (INCHES)	30.90		18.36		12.94	
10 PERCENT EXCEEDS	4,530		2,520		1,470	
50 PERCENT EXCEEDS	682		514		354	
90 PERCENT EXCEEDS	239		238		70	

a Result of regulation.
b Also June 21, 2002.
e Estimated.



02053800 SOUTH FORK ROANOKE RIVER NEAR SHAWSVILLE, VA

LOCATION.--Lat 37°08'24", long 80°15'59", NAD83, 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 mi^2.

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 NGVD of 1929. 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 those for period of doubtful gage-height record, Dec. 1, 2, and May 18, and periods with ice effect, Jan. 9-11, 21-23, 26, and Jan. 29 to Feb. 2, which are fair. Virginia Department of Emergency Services gage-height radio transmitter at station. Maximum discharge, 14,200 ft^3/s, from rating curve extended above 3,700 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 800 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1430	2,050	4.36	1330	3,480	5.88
Feb 6	1930	1,570	3.76	0115	991	2.92
Apr 13	2100	880	2.74	1030	*7,390	*8.86
Jul 10	1830	804	2.61			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	98	71	e140	106	e73	134	130	121	133	118	49	32
2	91	71	e125	116	e80	141	120	132	94	96	61	31
3	85	69	118	119	123	142	115	125	79	90	53	31
4	82	68	122	113	155	136	111	112	146	85	47	31
5	78	67	140	136	126	130	104	106	394	97	55	30
6	74	163	132	151	543	181	99	101	231	75	64	32
7	71	192	125	131	774	172	97	96	164	68	49	79
8	69	134	123	127	411	168	97	92	135	66	44	1,590
9	72	112	126	e125	294	155	97	91	124	61	42	484
10	84	99	222	e112	249	149	92	111	119	139	40	178
11	74	93	627	e106	225	135	91	89	137	127	39	106
12	70	88	371	109	200	129	173	84	120	102	53	82
13	69	88	264	108	185	121	455	81	106	87	61	69
14	73	80	233	103	180	116	710	83	102	71	46	59
15	112	79	192	101	176	113	523	78	163	64	43	52
16	79	81	176	90	168	188	358	75	342	59	41	47
17	72	82	265	90	148	217	278	105	272	58	40	432
18	71	78	275	133	144	191	227	e88	176	62	41	702
19	70	983	235	128	145	172	196	88	138	151	38	276
20	68	748	193	110	166	151	179	84	114	77	36	155
21	66	410	159	e107	268	146	168	81	98	64	51	108
22	66	292	147	e100	283	135	151	73	93	59	65	86
23	66	228	142	e96	235	123	141	78	102	71	44	73
24	63	194	170	102	208	119	133	86	108	59	39	63
25	62	175	163	94	195	113	124	81	108	54	36	57
26	63	151	145	e92	174	110	171	80	370	60	34	52
27	105	137	135	95	158	108	170	124	198	89	34	50
28	94	152	126	83	145	108	144	86	146	64	35	4,000
29	84	172	121	e83	137	103	132	75	120	55	35	1,240
30	80	151	127	e78	---	113	125	69	113	53	35	521
31	73	---	113	e75	---	140	---	199	---	50	34	---
TOTAL	2,384	5,508	5,752	3,319	6,368	4,359	5,711	2,974	4,745	2,431	1,384	10,748
MEAN	76.9	184	186	107	220	141	190	95.9	158	78.4	44.6	358
MAX	112	983	627	151	774	217	710	199	394	151	65	4,000
MIN	62	67	113	75	73	103	91	69	79	50	34	30
CFSM	0.70	1.67	1.69	0.97	2.00	1.28	1.73	0.87	1.44	0.71	0.41	3.26
IN.	0.81	1.86	1.95	1.12	2.15	1.47	1.93	1.01	1.60	0.82	0.47	3.63

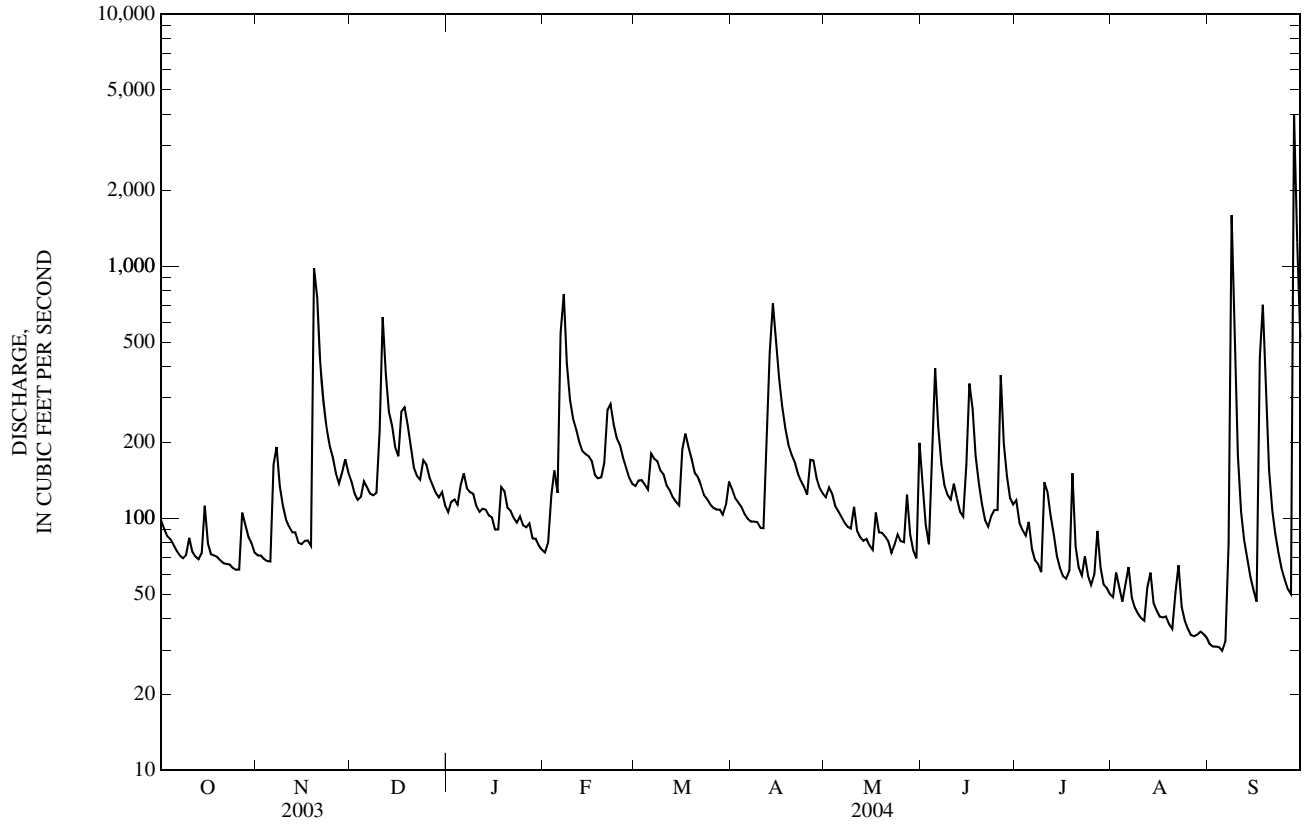
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2004, BY WATER YEAR (WY)

MEAN	69.3	89.6	97.7	130	166	203	184	134	103	61.8	53.1	70.3
MAX	294	407	232	299	523	571	750	334	483	274	174	358
(WY)	(1972)	(1986)	(1973)	(1996)	(1998)	(1993)	(1987)	(1978)	(1972)	(2003)	(1994)	(2004)
MIN	18.4	21.5	22.1	18.9	29.4	55.6	51.0	50.7	24.0	18.6	12.4	17.2
(WY)	(2002)	(2002)	(1966)	(1966)	(2002)	(1981)	(1966)	(1963)	(1999)	(2002)	(2002)	(2002)

02053800 SOUTH FORK ROANOKE RIVER NEAR SHAWSVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1961 - 2004	
ANNUAL TOTAL	72,969		55,683			
ANNUAL MEAN	200		152		113	
HIGHEST ANNUAL MEAN					205	1972
LOWEST ANNUAL MEAN					38.8	2002
HIGHEST DAILY MEAN	3,030	Feb 22	4,000	Sep 28	6,840	Jun 21, 1972
LOWEST DAILY MEAN	39	Jan 24	30	Sep 5	7.0	Aug 14, 2002
ANNUAL SEVEN-DAY MINIMUM	45	Jan 23	32	Aug 31	7.5	Aug 8, 2002
MAXIMUM PEAK FLOW			7,390	Sep 28	14,200	Jun 21, 1972
MAXIMUM PEAK STAGE			8.86	Sep 28	a11.12	Jun 21, 1972
INSTANTANEOUS LOW FLOW			29	bSep 5	6.3	Aug 12, 2002
ANNUAL RUNOFF (CFSM)	1.82		1.38		1.03	
ANNUAL RUNOFF (INCHES)	24.68		18.83		13.97	
10 PERCENT EXCEEDS	355		232		217	
50 PERCENT EXCEEDS	132		108		69	
90 PERCENT EXCEEDS	60		53		27	

a From high-water mark in gage house.
b Also Sept. 6, 2004.
e Estimated.



02054500 ROANOKE RIVER AT LAFAYETTE, VA

LOCATION.--Lat 37°14'11", long 80°12'33", NAD83, Montgomery County, Hydrologic Unit 03010101, on right bank 120 ft upstream from bridge on State Highway 626 (corrected) at Lafayette, 0.4 mi downstream from confluence of North and South Forks, and 1.1 mi upstream from Cove Hollow.

DRAINAGE AREA.--257 mi^2.

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 NGVD of 1929. Prior to July 30, 1949, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 9, 21, 22, and Feb. 1, 2, and period of no gage-height record, Aug. 23, 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 ft^3/s, from rating curve extended above 12,000 ft^3/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 12.2 ft, from information by local residents, discharge, 19,000 ft^3/s, from rating curve extended above 12,000 ft^3/s.

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

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1715	3,540	6.15	1600	5,540	7.88
Feb 6	2100	4,590	7.25	1430	*15,200	*12.45

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	171	118	240	220	e155	275	280	255	230	170	87	61
2	155	115	219	255	e160	277	259	260	168	142	98	60
3	143	113	205	288	241	276	245	252	147	136	92	59
4	137	110	207	265	378	264	234	227	235	138	84	57
5	132	110	246	321	331	256	223	212	716	145	86	56
6	124	520	245	415	1,590	313	211	203	408	120	108	57
7	120	543	245	348	2,130	313	206	192	279	112	87	80
8	117	315	248	320	950	305	204	182	220	105	82	2,530
9	118	242	258	e310	704	281	200	192	203	99	79	941
10	136	203	425	287	600	275	190	247	176	131	77	404
11	123	184	1,530	244	565	258	188	207	202	201	76	262
12	118	172	868	257	510	248	375	176	183	200	81	202
13	114	174	620	254	477	235	1,450	166	165	144	108	170
14	113	156	538	242	473	227	1,620	173	157	119	84	150
15	182	154	466	237	454	221	966	161	173	108	80	137
16	134	161	454	214	426	314	691	153	437	102	77	129
17	120	162	633	211	382	391	551	168	360	102	76	446
18	119	150	674	302	361	355	460	170	251	130	76	965
19	114	1,400	562	346	353	328	397	160	201	214	75	501
20	111	1,310	460	284	388	292	365	158	174	129	73	320
21	108	676	376	e265	552	282	363	150	151	109	86	240
22	106	473	338	e250	576	264	323	139	144	102	121	198
23	104	365	318	234	486	244	295	134	146	116	e83	173
24	104	311	347	240	434	233	277	157	171	103	73	155
25	102	283	344	219	398	226	260	148	180	96	69	144
26	102	242	309	204	359	218	336	143	524	93	66	135
27	169	219	286	222	332	214	381	234	288	125	63	130
28	174	237	265	196	306	211	319	167	215	105	65	7,420
29	145	306	251	184	284	202	283	150	180	94	65	2,300
30	134	256	259	189	---	213	266	139	157	91	64	862
31	124	---	236	160	---	270	---	281	---	88	63	---
TOTAL	3,973	9,780	12,672	7,983	15,355	8,281	12,418	5,756	7,241	3,869	2,504	19,344
MEAN	128	326	409	258	529	267	414	186	241	125	80.8	645
MAX	182	1,400	1,530	415	2,130	391	1,620	281	716	214	121	7,420
MIN	102	110	205	160	155	202	188	134	144	88	63	56
CFSM	0.50	1.27	1.59	1.00	2.06	1.04	1.61	0.72	0.94	0.49	0.31	2.51
IN.	0.58	1.42	1.83	1.16	2.22	1.20	1.80	0.83	1.05	0.56	0.36	2.80

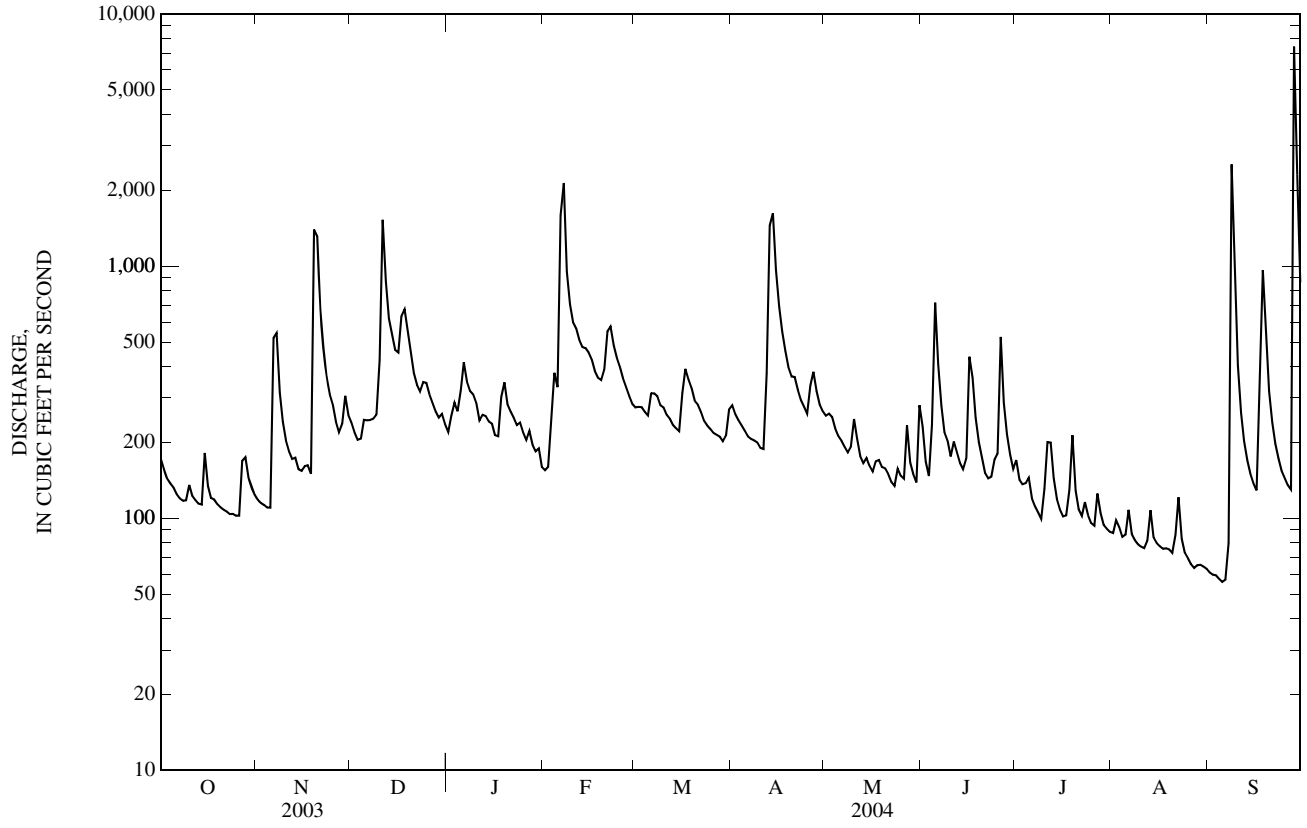
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2004, BY WATER YEAR (WY)

MEAN	131	169	224	299	394	455	413	287	193	120	111	130
MAX	603	770	913	682	1,214	1,309	1,497	716	872	590	551	645
(WY)	(1977)	(1978)	(1949)	(1947)	(1998)	(1993)	(1987)	(1978)	(2003)	(1949)	(1948)	(2004)
MIN	32.8	32.3	44.7	52.0	47.9	103	102	99.1	48.0	43.0	23.4	29.4
(WY)	(2002)	(2002)	(2002)	(1981)	(2002)	(1981)	(1966)	(1963)	(1999)	(2002)	(2002)	(1954)

02054500 ROANOKE RIVER AT LAFAYETTE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1944 - 2004	
ANNUAL TOTAL	173,665		109,176			
ANNUAL MEAN	476		298		243	
HIGHEST ANNUAL MEAN					461	2003
LOWEST ANNUAL MEAN					73.8	2002
HIGHEST DAILY MEAN	7,190	Feb 22	7,420	Sep 28	11,700	Jun 21, 1972
LOWEST DAILY MEAN	e72	Jan 24	56	Sep 5	a10	bJan 14, 1959
ANNUAL SEVEN-DAY MINIMUM	a88	Jan 23	59	Aug 31	a11	Jan 14, 1959
MAXIMUM PEAK FLOW			15,200	Sep 28	24,500	Jun 21, 1972
MAXIMUM PEAK STAGE			12.45	Sep 28	c15.60	Jun 21, 1972
INSTANTANEOUS LOW FLOW			53	dSep 5	a8.0	fJan 19, 1959
ANNUAL RUNOFF (CFSM)	1.85		1.16		0.945	
ANNUAL RUNOFF (INCHES)	25.14		15.80		12.84	
10 PERCENT EXCEEDS	884		480		495	
50 PERCENT EXCEEDS	295		212		132	
90 PERCENT EXCEEDS	114		93		49	

a Result of freezeup.
b Also Jan. 15, 18, 19, 1959.
c From high-water mark in gage house.
d Also Sept. 6, 2004.
e Estimated.
f Also Jan. 3, 2001.



02054530 ROANOKE RIVER AT GLENVAR, VA

LOCATION.--Lat 37°16'04", long 80°08'22", NAD83, 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 mi^2.

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

GAGE.--Water-stage recorder. Elevation of gage is 1,100 ft NGVD of 1929, from topographic map.

REMARKS.--Records good except those for periods with ice effect, Jan. 22 and Feb. 1, 2, and periods of no gage-height record, Mar. 1-15 and Apr. 28, 29, which are fair. About 11.1 ft^3/s is withdrawn upstream for municipal use by Roanoke County. Roanoke County gage-height transmitter at station. Maximum discharge, 19,800 ft^3/s, from rating curve extended above 10,900 ft^3/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 ft^3/s, from rating curve extended above 10,900 ft^3/s.

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

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1900	3,880	7.86	1730	7,610	10.67
Feb 6	2315	5,800	9.44	1615	*19,200	*17.43
Apr 13	2230	3,500	7.51			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	179	122	258	236	e165	e280	277	258	258	177	101	72
2	165	118	236	258	e175	e285	262	261	182	161	121	69
3	151	115	221	305	228	e288	247	263	149	145	108	68
4	142	113	219	282	383	e278	236	227	199	149	95	67
5	137	112	259	312	358	e270	222	210	914	153	95	65
6	131	462	259	425	1,620	e320	208	201	501	131	121	66
7	126	600	259	368	3,030	e325	209	189	345	119	92	91
8	122	353	261	341	1,250	e310	207	176	274	111	93	3,640
9	123	276	269	340	826	e300	197	176	240	104	88	1,390
10	136	226	359	319	660	e290	184	271	201	100	85	463
11	127	197	1,710	275	604	e275	181	217	223	239	83	279
12	121	180	976	294	535	e260	327	186	220	220	84	206
13	116	176	662	279	496	e250	1,740	170	201	167	126	167
14	115	160	566	258	490	e240	2,300	164	191	138	99	143
15	167	155	481	252	469	e235	1,310	156	174	114	91	128
16	138	161	463	228	442	285	840	148	450	98	87	116
17	122	163	606	226	393	391	622	158	391	109	84	514
18	120	152	694	292	369	362	503	162	290	157	84	1,350
19	116	1,310	574	365	360	336	420	159	236	285	83	609
20	113	1,570	476	304	384	297	378	154	207	164	78	361
21	110	730	395	289	546	285	377	146	166	127	84	253
22	106	500	360	e280	610	261	328	137	145	105	137	202
23	105	387	339	261	504	233	297	129	138	120	98	172
24	104	333	355	272	443	221	274	149	186	108	87	149
25	102	305	364	260	408	209	254	140	167	96	83	136
26	101	261	333	236	368	200	316	140	544	93	78	125
27	168	236	308	255	339	194	415	230	329	125	75	116
28	186	240	287	231	311	192	e353	178	235	111	75	10,500
29	147	323	272	211	290	184	e290	158	183	96	75	3,390
30	136	276	276	206	---	189	268	143	161	90	77	1,100
31	128	---	255	178	---	248	---	267	---	97	74	---
TOTAL	4,060	10,312	13,352	8,638	17,056	8,293	14,042	5,723	8,100	4,209	2,841	26,007
MEAN	131	344	431	279	588	268	468	185	270	136	91.6	867
MAX	186	1,570	1,710	425	3,030	391	2,300	271	914	285	137	10,500
MIN	101	112	219	178	165	184	181	129	138	90	74	65
CFSM	0.46	1.21	1.52	0.98	2.07	0.94	1.65	0.65	0.95	0.48	0.32	3.05
IN.	0.53	1.35	1.75	1.13	2.23	1.09	1.84	0.75	1.06	0.55	0.37	3.41

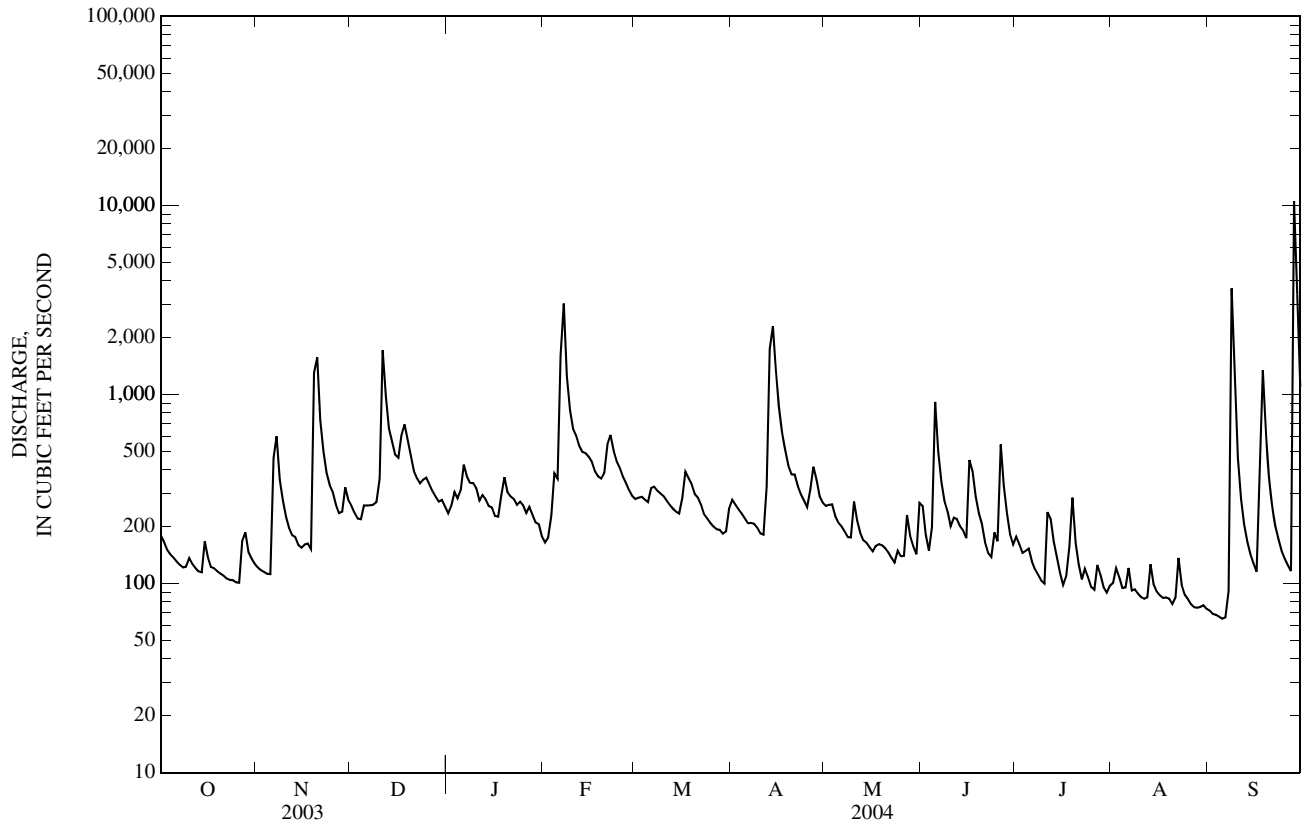
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2004, BY WATER YEAR (WY)

MEAN	81.5	147	230	361	513	525	436	317	297	158	123	198
MAX	170	355	715	784	1,400	1,667	914	658	953	646	295	867
(WY)	(1997)	(1997)	(1997)	(1996)	(1998)	(1993)	(2003)	(2003)	(2003)	(2003)	(1996)	(2004)
MIN	40.1	48.0	58.3	62.8	61.8	124	99.5	125	54.9	46.1	26.1	33.7
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(1999)	(2002)	(2002)	(2002)	(2002)

02054530 ROANOKE RIVER AT GLENVAR, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1992 - 2004	
ANNUAL TOTAL	189,944		122,633			
ANNUAL MEAN	520		335		275	
HIGHEST ANNUAL MEAN					499	2003
LOWEST ANNUAL MEAN					77.7	2002
HIGHEST DAILY MEAN	9,620	Feb 22	10,500	Sep 28	10,500	Sep 28, 2004
LOWEST DAILY MEAN	a85	Jan 24	65	Sep 5	15	Sep 13, 2002
ANNUAL SEVEN-DAY MINIMUM	e101	Jan 23	69	Aug 31	18	Sep 8, 2002
MAXIMUM PEAK FLOW			19,200	Sep 28	19,800	Apr 21, 1992
MAXIMUM PEAK STAGE			17.43	Sep 28	17.73	Apr 21, 1992
INSTANTANEOUS LOW FLOW			64	bSep 5	15	cSep 12, 2002
ANNUAL RUNOFF (CFSM)	1.83		1.18		0.969	
ANNUAL RUNOFF (INCHES)	24.88		16.06		13.16	
10 PERCENT EXCEEDS	986		503		543	
50 PERCENT EXCEEDS	308		222		123	
90 PERCENT EXCEEDS	115		98		53	

a Result of freezeup.
b Also Sept. 6, 2042.
c Also Sept. 13, 14, 2004.
e Estimated.



02055000 ROANOKE RIVER AT ROANOKE, VA

LOCATION.--Lat 37°15'30", long 79°56'19", NAD83, 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 mi^2.

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 NGVD of 1929 (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 for period of doubtful gage-height record, Feb. 14-17, which is 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 ft^3/s, from rating curve extended above 26,000 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	2045	2,770	5.08	1415	12,400	12.72
Feb 7	0230	3,840	6.21	1445	*21,500	*17.82
Apr 14	0130	3,180	5.53			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	260	158	328	305	225	348	345	392	385	226	169	83
2	238	149	307	327	240	342	332	381	266	219	223	80
3	219	145	289	362	314	349	318	366	221	184	151	76
4	207	141	284	343	440	340	306	326	474	207	116	75
5	197	139	352	363	433	335	290	304	1,200	200	151	72
6	186	485	352	477	1,210	370	275	289	709	175	155	89
7	176	1,010	351	437	3,000	413	269	274	488	149	122	130
8	168	510	341	399	1,700	381	274	259	382	140	111	5,610
9	175	380	342	404	1,250	353	261	249	343	128	106	2,270
10	181	317	534	381	1,060	338	248	326	289	138	100	807
11	187	277	1,870	344	981	324	242	294	292	262	98	610
12	170	259	1,290	344	890	310	506	272	297	279	137	539
13	160	273	885	338	841	299	2,010	260	270	253	144	411
14	168	236	758	317	e780	286	2,640	241	266	162	129	349
15	224	235	670	310	e740	276	1,650	234	240	130	110	303
16	208	234	622	299	e680	434	1,140	220	524	102	103	264
17	176	230	682	281	e620	505	875	230	541	134	100	712
18	170	220	886	332	576	471	707	236	409	198	115	1,840
19	165	1,120	739	419	562	437	592	271	329	413	98	940
20	169	1,940	607	366	584	390	533	252	286	227	95	589
21	142	998	504	345	652	369	527	221	238	166	114	436
22	138	675	451	351	787	345	458	201	187	136	154	350
23	134	508	417	327	674	311	414	198	178	142	124	300
24	135	433	425	321	606	295	387	206	228	139	104	266
25	132	392	448	320	550	282	360	207	368	119	96	241
26	130	343	414	289	471	270	413	225	716	110	89	224
27	214	314	383	309	424	263	535	308	473	134	85	220
28	250	323	360	296	392	259	447	267	343	142	99	12,900
29	197	377	342	271	364	249	389	231	262	117	94	4,880
30	177	350	341	268	---	255	361	206	220	105	111	1,680
31	164	---	327	244	---	324	---	390	---	108	90	---
TOTAL	5,617	13,171	16,901	10,489	22,046	10,523	18,104	8,336	11,424	5,344	3,693	37,346
MEAN	181	439	545	338	760	339	603	269	381	172	119	1,245
MAX	260	1,940	1,870	477	3,000	505	2,640	392	1,200	413	223	12,900
MIN	130	139	284	244	225	249	242	198	178	102	85	72
CFSM	0.46	1.11	1.38	0.86	1.92	0.86	1.53	0.68	0.96	0.44	0.30	3.15
IN.	0.53	1.24	1.59	0.99	2.08	0.99	1.70	0.79	1.08	0.50	0.35	3.52

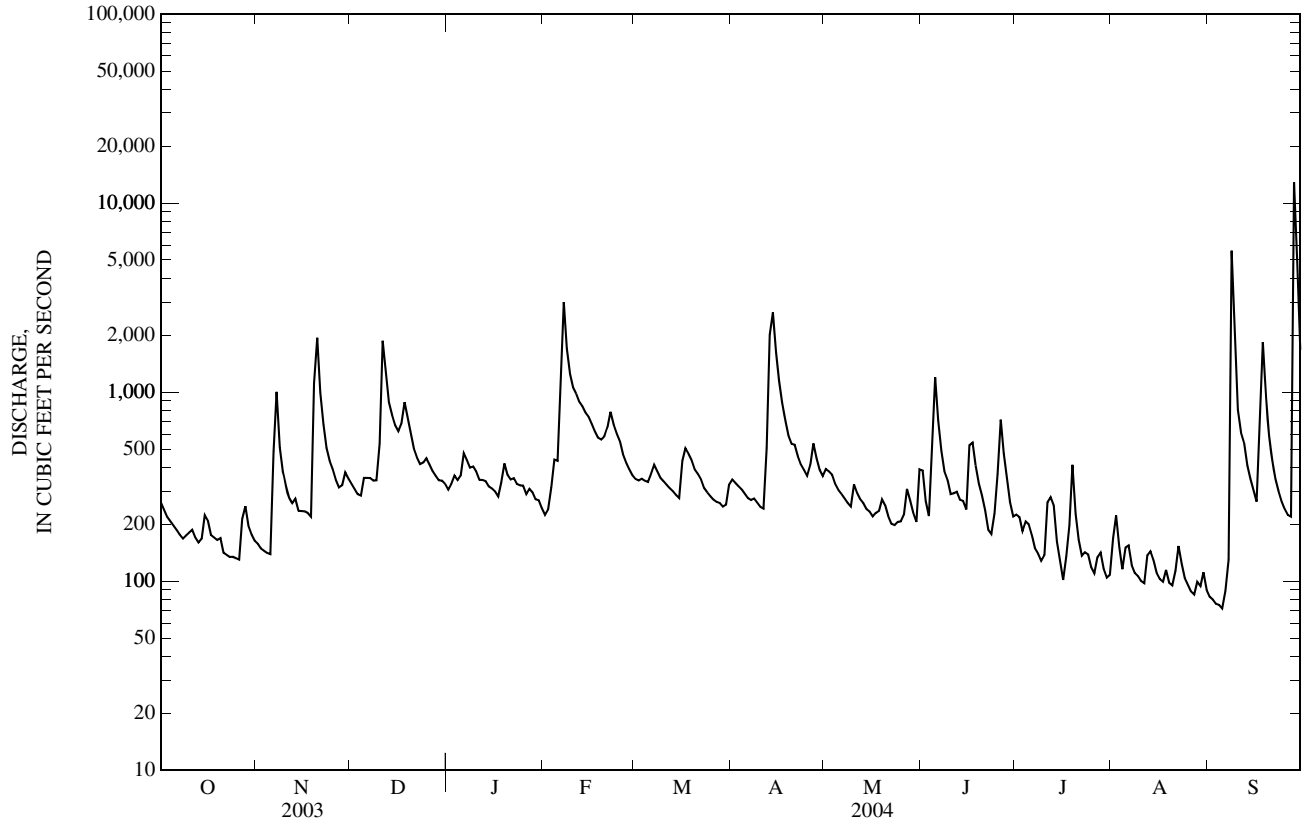
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1899 - 2004, BY WATER YEAR (WY)

MEAN	226	245	345	465	566	678	583	422	309	220	222	210
MAX	1,080	1,626	1,425	1,353	1,912	2,521	2,558	1,466	1,206	1,190	2,140	1,569
(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	73.8	45.6	39.4	42.6
(WY)	(1992)	(1932)	(1918)	(1981)	(1934)	(1981)	(1942)	(1941)	(2002)	(1930)	(2002)	(1930)

02055000 ROANOKE RIVER AT ROANOKE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1899 - 2004	
ANNUAL TOTAL	243,596		162,994			
ANNUAL MEAN	667		445		371	
HIGHEST ANNUAL MEAN					836	1901
LOWEST ANNUAL MEAN					110	2002
HIGHEST DAILY MEAN	7,770	aFeb 22	12,900	Sep 28	18,200	Aug 15, 1940
LOWEST DAILY MEAN	125	Jan 24	72	Sep 5	16	Sep 13, 2002
ANNUAL SEVEN-DAY MINIMUM	140	Oct 20	81	Aug 31	19	Sep 7, 2002
MAXIMUM PEAK FLOW			21,500	Sep 28	32,300	Nov 4, 1985
MAXIMUM PEAK STAGE			17.82	Sep 28	b23.35	Nov 4, 1985
INSTANTANEOUS LOW FLOW			67	cSep 5	d0.00	fDec 23, 1909
ANNUAL RUNOFF (CFSM)	1.69		1.13		0.940	
ANNUAL RUNOFF (INCHES)	22.94		15.35		12.78	
10 PERCENT EXCEEDS	1,300		713		745	
50 PERCENT EXCEEDS	451		300		207	
90 PERCENT EXCEEDS	163		130		73	

a Also Feb. 23, 2003.
b From floodmark.
c Also Sept. 6, 2004.
d Practically no flow; retarded by freezing.
e Estimated.
f Also Dec. 19, 1963.



02055100 TINKER CREEK NEAR DALEVILLE, VA

LOCATION.--Lat 37°25'03", long 79°56'07", NAD83, 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 mi^2.

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 NGVD of 1929 (Norfolk Southern Railway bench mark).

REMARKS.--Records good except for period with ice effect, Jan. 22, 23, which is 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 ft^3/s, from rating curve extended above 130 ft^3/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. 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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Sep 8	1415	860	6.00	0845	*2,090	*8.23

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	9.0	16	16	11	16	11	11	7.7	5.2	3.9	3.9
2	11	9.0	15	17	11	15	10	12	7.0	5.0	7.5	3.9
3	9.9	9.0	15	16	14	15	9.1	11	6.8	4.9	6.6	3.9
4	9.7	9.2	15	16	15	14	9.0	10	13	8.8	5.6	3.8
5	9.3	9.7	16	16	15	14	8.7	10	23	8.4	6.3	3.7
6	9.0	23	16	16	84	14	8.7	10	15	5.5	6.4	4.4
7	8.9	19	16	15	79	14	8.3	10	12	4.7	5.4	5.2
8	8.7	14	16	15	52	13	8.2	11	9.9	4.2	4.8	138
9	9.2	12	16	15	43	13	7.7	10	9.5	3.8	4.4	33
10	9.1	11	40	14	40	13	7.3	10	9.2	3.7	4.2	19
11	9.6	11	52	14	39	13	7.8	10	7.5	3.7	4.3	15
12	9.5	10	32	14	34	12	32	9.6	7.4	3.7	8.9	12
13	9.4	14	27	14	33	11	78	9.5	7.3	3.6	8.4	10
14	11	13	26	13	31	11	57	9.5	7.5	3.4	6.4	9.0
15	15	13	25	13	29	11	35	8.8	10	3.2	5.7	8.4
16	12	13	24	13	27	18	29	8.7	10	3.2	5.2	7.9
17	11	13	28	13	25	16	24	8.8	9.8	3.3	4.8	15
18	11	13	26	15	24	14	20	9.0	8.5	4.8	4.6	17
19	10	57	23	14	23	13	18	9.2	7.7	4.5	4.4	12
20	9.8	30	22	13	22	13	17	9.8	6.9	3.7	6.4	10
21	9.8	21	20	13	23	12	18	9.2	6.6	3.4	6.2	9.4
22	10	18	19	e13	22	12	16	9.1	6.7	4.0	5.7	8.9
23	9.8	17	19	e13	21	11	15	10	6.2	4.3	5.2	8.5
24	8.5	17	20	13	21	11	14	8.5	6.0	3.8	4.8	7.9
25	6.4	16	19	12	19	11	13	7.9	6.9	3.5	4.6	7.6
26	8.0	15	18	13	18	10	15	7.7	8.6	3.7	4.5	7.4
27	12	15	18	12	17	10	13	8.1	6.7	3.7	4.4	7.8
28	11	19	17	12	17	9.8	10	8.0	6.1	3.6	4.3	577
29	11	19	17	12	16	9.6	9.7	7.6	5.6	3.2	4.3	68
30	9.6	17	17	12	---	9.8	9.4	7.3	5.4	3.2	4.2	38
31	9.1	---	16	12	---	12	---	8.9	---	3.0	4.0	---
TOTAL	309.3	485.9	666	429	825	391.2	538.9	290.2	260.5	130.7	166.4	1,075.6
MEAN	9.98	16.2	21.5	13.8	28.4	12.6	18.0	9.36	8.68	4.22	5.37	35.9
MAX	15	57	52	17	84	18	78	12	23	8.8	8.9	577
MIN	6.4	9.0	15	12	11	9.6	7.3	7.3	5.4	3.0	3.9	3.7
CFSM	0.85	1.38	1.84	1.18	2.43	1.08	1.54	0.80	0.74	0.36	0.46	3.06
IN.	0.98	1.54	2.12	1.36	2.62	1.24	1.71	0.92	0.83	0.42	0.53	3.42

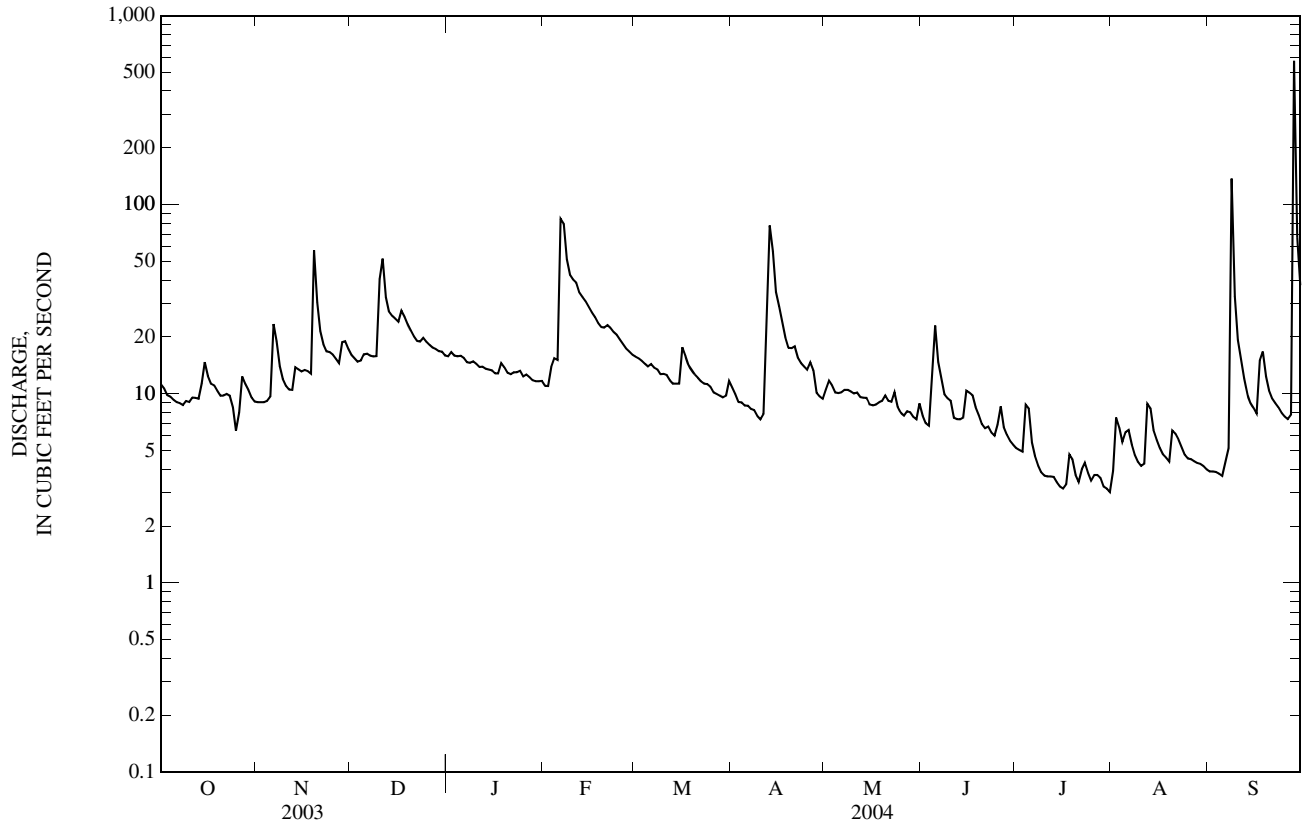
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2004, BY WATER YEAR (WY)

MEAN	7.99	10.8	10.6	13.9	18.8	21.9	19.6	13.1	9.55	6.92	6.59	7.72
MAX	34.2	118	32.6	35.9	82.6	69.3	87.9	56.2	60.5	32.7	30.5	50.4
(WY)	(1980)	(1986)	(1973)	(1996)	(1998)	(1993)	(1987)	(2003)	(2003)	(2003)	(2003)	(1979)
MIN	2.09	1.37	1.65	1.78	1.88	3.16	2.55	3.07	1.29	0.90	0.59	1.07
(WY)	(1987)	(2002)	(2002)	(1966)	(2002)	(1981)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

02055100 TINKER CREEK NEAR DALEVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1956 - 2004	
ANNUAL TOTAL	10,846.4		5,568.7			
ANNUAL MEAN	29.7		15.2		12.3	
HIGHEST ANNUAL MEAN					28.6	2003
LOWEST ANNUAL MEAN					1.96	2002
HIGHEST DAILY MEAN	396	May 18	577	Sep 28	2,560	Nov 4, 1985
LOWEST DAILY MEAN	6.4	Oct 25	3.0	Jul 31	0.41	aAug 7, 2002
ANNUAL SEVEN-DAY MINIMUM	7.3	Feb 8	3.4	Jul 25	0.42	Aug 7, 2002
MAXIMUM PEAK FLOW			2,090	Sep 28	10,400	Nov 4, 1985
MAXIMUM PEAK STAGE			8.23	Sep 28	b13.36	Nov 4, 1985
INSTANTANEOUS LOW FLOW			2.8	cJul 31	d0.20	Jan 24, 1961
ANNUAL RUNOFF (CFSM)	2.54		1.30		1.05	
ANNUAL RUNOFF (INCHES)	34.49		17.71		14.26	
10 PERCENT EXCEEDS	55		23		24	
50 PERCENT EXCEEDS	21		11		6.9	
90 PERCENT EXCEEDS	9.4		4.4		2.4	

a Also Aug. 10, 13, 14, 2002.
b From floodmarks.
c Also Aug. 1, 2004.
d Result of freezeup.
e Estimated.



02056000 ROANOKE RIVER AT NIAGARA, VA

LOCATION.--Lat 37°15'18", long 79°52'17", NAD83, 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 mi^2.

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 NGVD of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--No estimated daily discharges. Records good. Flow regulated by dam and powerplant 200 ft upstream from station. Maximum discharge, 52,300 ft^3/s, from rating curve extended above 12,000 ft^3/s on basis of slope-area measurements at gage heights 18.98 ft and 25.30 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	2215	4,780	8.80	1600	19,900	16.04
Feb 7	0145	7,230	10.52	1530	*27,600	*18.62
Apr 14	0145	5,410	9.28			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	367	255	503	437	330	500	489	561	520	345	308	134
2	330	245	473	494	360	489	466	588	381	319	596	174
3	329	243	448	516	523	495	444	556	325	284	284	170
4	306	240	440	488	653	483	427	492	782	366	216	158
5	293	238	590	540	629	473	407	457	1,730	339	340	148
6	288	874	563	634	2,250	526	391	439	889	275	309	181
7	281	1,250	550	576	4,880	572	379	415	632	249	241	244
8	276	671	527	546	2,230	522	388	394	510	238	202	9,070
9	274	523	528	551	1,520	496	371	395	462	227	215	3,120
10	280	450	1,010	533	1,240	465	353	471	413	245	199	1,010
11	300	392	2,860	488	1,130	461	347	428	411	337	194	637
12	260	374	1,800	472	1,010	428	919	405	394	390	270	487
13	265	424	1,240	481	938	417	3,090	355	365	450	266	406
14	285	344	1,100	441	903	408	4,330	363	395	273	227	355
15	366	342	1,020	441	869	389	2,400	349	378	244	207	323
16	305	351	941	423	842	713	1,570	402	668	213	194	302
17	269	321	1,030	402	743	683	1,190	371	696	255	187	942
18	260	326	1,210	485	698	620	974	360	522	305	210	2,300
19	255	1,970	1,030	563	671	602	825	393	430	621	190	1,140
20	244	2,630	865	506	675	545	744	429	378	348	187	716
21	244	1,250	736	473	781	511	767	351	348	267	224	529
22	239	885	666	484	951	472	669	316	279	259	242	442
23	230	708	620	480	823	455	612	319	291	248	217	386
24	228	649	646	440	731	421	569	340	309	234	194	349
25	225	611	642	451	686	392	522	314	586	221	183	322
26	241	538	596	404	627	387	634	332	984	211	174	304
27	386	489	553	444	579	379	726	439	592	226	170	306
28	330	513	517	409	542	375	624	379	448	250	273	16,800
29	295	574	500	394	514	363	557	334	360	215	198	7,150
30	267	537	511	386	---	376	517	309	331	197	199	2,190
31	261	---	471	362	---	483	---	583	---	185	178	---
TOTAL	8,779	19,217	25,186	14,744	29,328	14,901	26,701	12,639	15,809	8,836	7,294	50,795
MEAN	283	641	812	476	1,011	481	890	408	527	285	235	1,693
MAX	386	2,630	2,860	634	4,880	713	4,330	588	1,730	621	596	16,800
MIN	225	238	440	362	330	363	347	309	279	185	170	134
CFSM	0.55	1.25	1.59	0.93	1.98	0.94	1.74	0.80	1.03	0.56	0.46	3.31
IN.	0.64	1.40	1.83	1.07	2.13	1.08	1.94	0.92	1.15	0.64	0.53	3.69

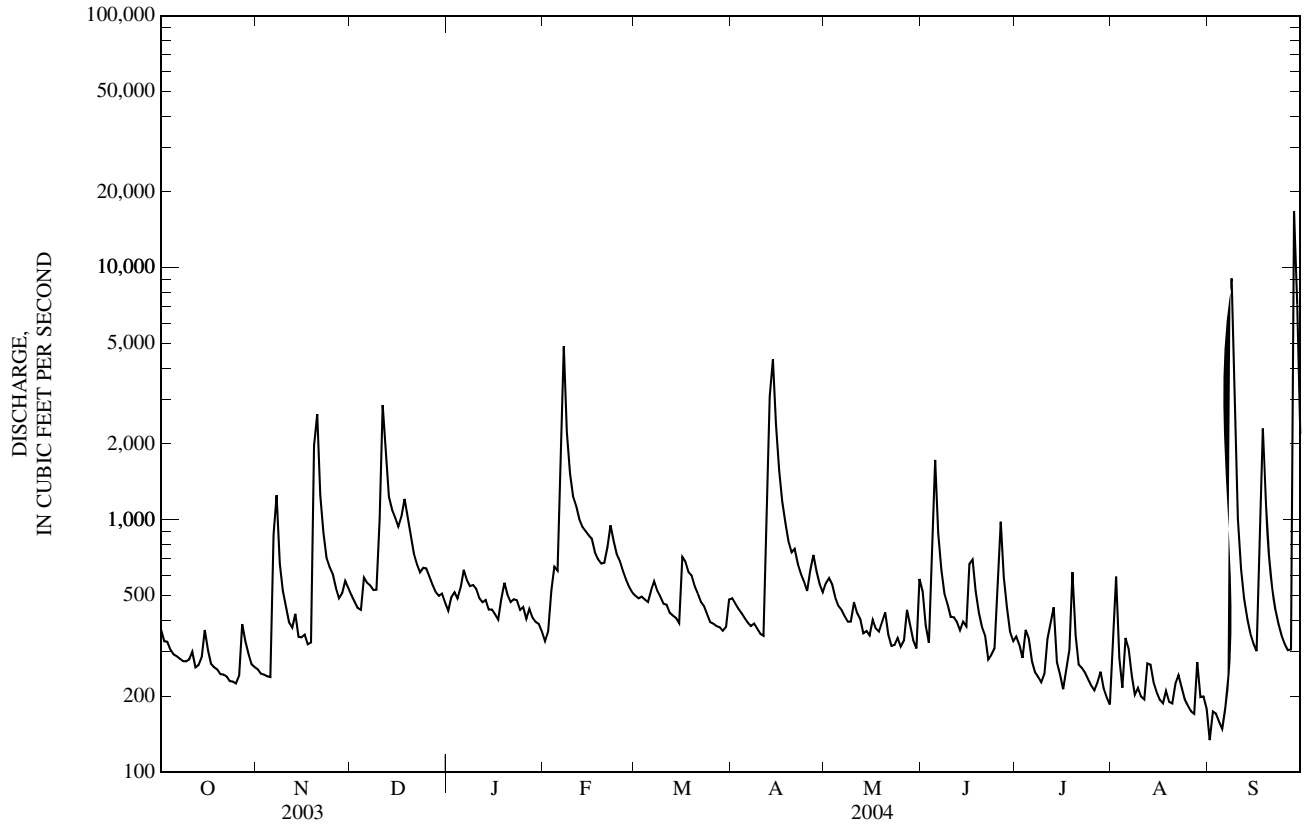
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1927 - 2004, BY WATER YEAR (WY)

MEAN	342	366	470	618	776	892	826	572	433	299	338	335
MAX	1,722	2,100	2,065	1,941	2,805	2,846	3,661	1,600	1,859	1,396	2,456	2,051
(WY)	(1938)	(1986)	(1949)	(1937)	(1998)	(1993)	(1987)	(2003)	(2003)	(1949)	(1940)	(1928)
MIN	86.0	101	115	110	117	210	157	193	135	109	92.2	84.0
(WY)	(1931)	(1942)	(1966)	(1966)	(1934)	(1981)	(1942)	(1930)	(1999)	(1930)	(1956)	(1954)

02056000 ROANOKE RIVER AT NIAGARA, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1927 - 2004	
ANNUAL TOTAL	363,717		234,229			
ANNUAL MEAN	996		640		521	
HIGHEST ANNUAL MEAN					984	1949
LOWEST ANNUAL MEAN					176	2002
HIGHEST DAILY MEAN	12,300	Feb 22	16,800	Sep 28	19,700	Nov 4, 1985
LOWEST DAILY MEAN	208	Jan 24	134	Sep 1	8.0	Oct 9, 1954
ANNUAL SEVEN-DAY MINIMUM	232	Jan 28	163	Aug 31	67	Jan 28, 1966
MAXIMUM PEAK FLOW			27,600	Sep 28	52,300	Nov 4, 1985
MAXIMUM PEAK STAGE			18.62	Sep 28	a25.30	Nov 4, 1985
INSTANTANEOUS LOW FLOW			67	Oct 16	1.0	bOct 16, 1956
ANNUAL RUNOFF (CFSM)	1.95		1.25		1.02	
ANNUAL RUNOFF (INCHES)	26.43		17.02		13.82	
10 PERCENT EXCEEDS	1,970		958		985	
50 PERCENT EXCEEDS	611		428		307	
90 PERCENT EXCEEDS	260		228		135	

a From floodmark.
b Also Oct. 20, 1956, and Nov. 25, 26, 1990.



02056650 BACK CREEK NEAR DUNDEE, VA

LOCATION.--Lat 37°13'40", long 79°52'05", NAD83, 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 mi^2.

PERIOD OF RECORD.--July 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 822.67 ft NGVD of 1929. 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 those for period with ice effect, Jan. 21 to Feb. 2, and period of no gage-height record, Aug. 28, 29, which are poor. Maximum discharge, 20,000 ft^3/s, from rating curve extended above 5,900 ft^3/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 Jun. 21, 1972, reached a stage of 17.5 ft and 20.0 ft, respectively, from information by local resident.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1445	1,400	7.16	0315	870	5.99
Dec 10	2330	794	5.82	0645	636	5.44
Feb 6	2030	825	5.89	1530	7,340	15.13
Apr 13	1830	1,010	6.29	1145	*8,550	*16.31
Apr 14	1230	738	5.69			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	33	48	55	e40	61	59	61	51	38	11	15
2	41	32	45	60	e42	62	53	88	38	35	158	15
3	39	32	43	61	68	61	51	68	34	33	93	15
4	39	32	46	59	81	60	49	60	108	36	32	15
5	38	32	68	62	66	59	47	57	363	44	30	16
6	37	106	68	64	267	67	46	54	113	32	34	18
7	36	96	68	56	311	61	46	51	76	30	24	29
8	36	60	63	58	173	59	46	48	60	31	21	2,270
9	38	49	61	58	132	57	46	48	54	24	20	383
10	46	45	189	55	117	56	44	47	50	29	19	145
11	40	43	374	54	113	54	45	45	50	31	18	91
12	37	42	175	66	104	53	163	43	46	25	20	70
13	36	40	125	54	99	50	474	65	43	23	28	57
14	36	35	117	51	95	49	519	60	46	19	21	48
15	44	37	114	51	91	49	291	46	67	15	20	42
16	36	40	107	48	89	95	187	49	91	14	19	39
17	34	39	133	47	79	91	145	47	66	13	20	136
18	34	38	124	59	76	75	122	45	53	18	19	220
19	34	439	104	60	77	70	105	44	49	23	17	118
20	33	254	89	55	79	64	95	48	41	17	16	79
21	32	137	77	e50	90	62	92	46	37	14	17	62
22	32	100	73	e52	93	58	81	41	38	13	22	52
23	31	80	71	e48	85	55	75	46	37	16	18	46
24	30	71	79	e45	80	54	71	40	41	13	16	40
25	30	64	77	43	76	52	68	40	47	12	15	38
26	31	57	70	e40	71	51	79	38	201	12	15	36
27	70	53	66	e42	68	51	75	53	69	18	14	36
28	45	58	63	e43	64	51	64	40	52	15	e15	2,760
29	38	58	61	e43	62	49	59	38	45	12	e20	590
30	35	50	62	e42	---	50	57	34	40	12	19	257
31	33	---	57	e41	---	64	---	69	---	13	17	---
TOTAL	1,165	2,252	2,917	1,622	2,888	1,850	3,354	1,559	2,106	680	828	7,738
MEAN	37.6	75.1	94.1	52.3	99.6	59.7	112	50.3	70.2	21.9	26.7	258
MAX	70	439	374	66	311	95	519	88	363	44	158	2,760
MIN	30	32	43	40	40	49	44	34	34	12	11	15
CFSM	0.66	1.32	1.66	0.92	1.75	1.05	1.97	0.89	1.24	0.39	0.47	4.54
IN.	0.76	1.47	1.91	1.06	1.89	1.21	2.20	1.02	1.38	0.45	0.54	5.07

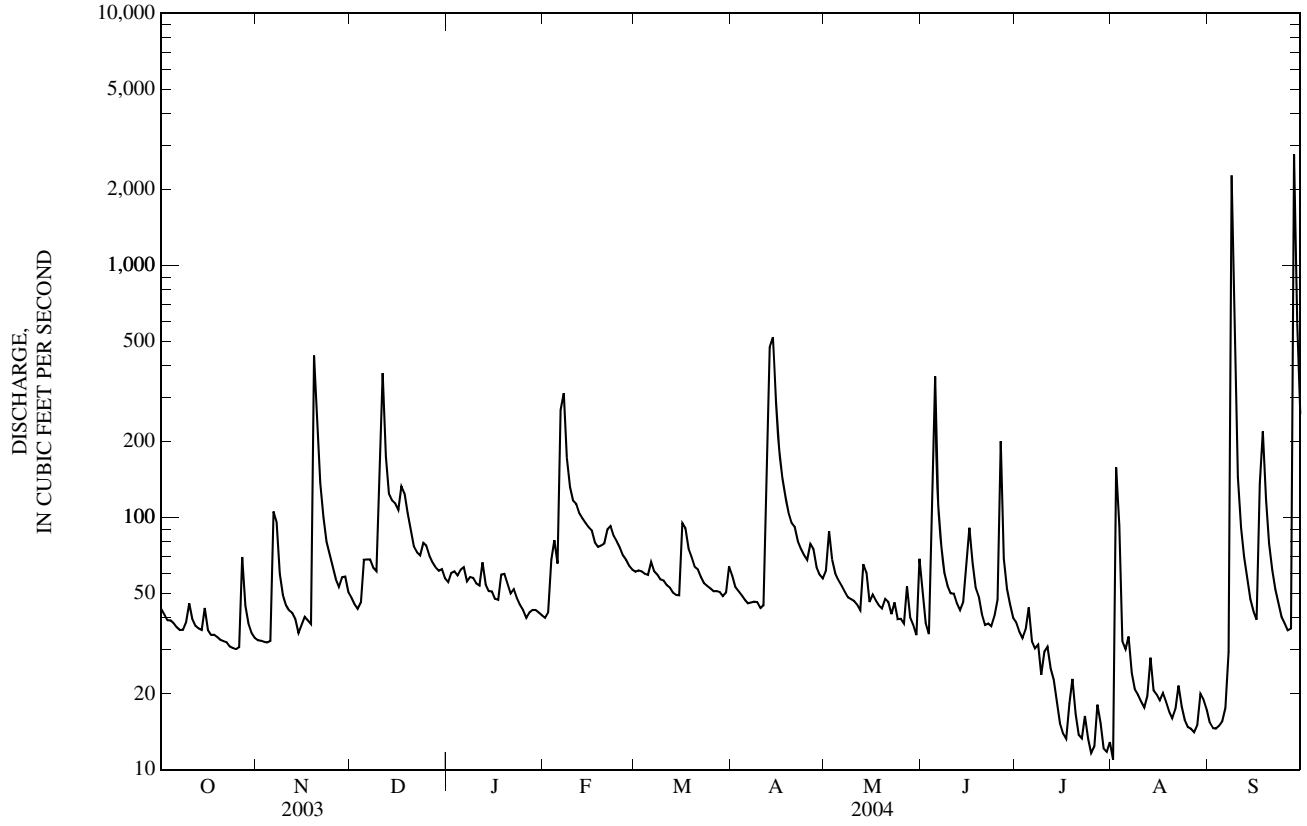
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 2004, BY WATER YEAR (WY)

MEAN	32.0	46.6	47.5	64.5	81.5	104	109	66.4	55.4	30.7	27.4	47.4
MAX	154	292	117	146	317	265	396	190	221	150	121	314
(WY)	(1977)	(1986)	(1987)	(1996)	(1998)	(1993)	(1987)	(1978)	(2003)	(2003)	(1985)	(1979)
MIN	5.61	6.58	11.4	11.6	12.6	20.5	22.4	20.8	6.16	6.96	3.47	5.03
(WY)	(1992)	(1982)	(1999)	(1981)	(2002)	(1981)	(1981)	(1981)	(2002)	(1981)	(1981)	(1998)

02056650 BACK CREEK NEAR DUNDEE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1974 - 2004	
ANNUAL TOTAL	42,285		28,959			
ANNUAL MEAN	116		79.1		59.2	
HIGHEST ANNUAL MEAN					110	2003
LOWEST ANNUAL MEAN					14.2	2002
HIGHEST DAILY MEAN	1,480	Feb 22	2,760	Sep 28	4,000	Nov 4, 1985
LOWEST DAILY MEAN	19	Jan 24	11	Aug 1	0.32	Aug 14, 2002
ANNUAL SEVEN-DAY MINIMUM	21	Jan 22	13	Jul 26	0.59	Aug 8, 2002
MAXIMUM PEAK FLOW			8,550	Sep 28	20,000	Nov 4, 1985
MAXIMUM PEAK STAGE			16.31	Sep 28	a25.10	Nov 4, 1985
INSTANTANEOUS LOW FLOW			10	bJul 31	0.24	cAug 14, 2002
ANNUAL RUNOFF (CFSM)	2.04		1.39		1.04	
ANNUAL RUNOFF (INCHES)	27.69		18.97		14.16	
10 PERCENT EXCEEDS	234		113		114	
50 PERCENT EXCEEDS	73		50		32	
90 PERCENT EXCEEDS	32		19		9.1	

a From floodmark, present site.
b Also Aug. 1, 2004.
c Also Aug. 15, 2002.
e Estimated.



02056900 BLACKWATER RIVER NEAR ROCKY MOUNT, VA

LOCATION.--Lat 37°02'43", long 79°50'39", NAD83, 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 mi^2.

PERIOD OF RECORD.--October 1976 to current year.

GAGE.--Water-stage recorder. Datum of gage is 876.45 ft NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 9-11, 21-23 and Feb. 1, 2, and periods of no gage-height record, Jan. 27-31, Aug. 26, and Sept. 6, 7, 10, 16-20, which are fair. American Electric Power gage-height transmitter at station with recorder at Roanoke. Maximum discharge, 20,800 ft^3/s, from rating curve extended above 7,000 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1845	2,560	7.88	1400	1,700	6.29
Dec 11	0030	2,100	7.06	1800	5,860	13.14
Feb 6	2215	1,660	6.22	1445	*6,930	*14.67
Apr 13	2115	1,550	5.99			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	122	99	142	140	e95	130	134	130	101	125	51	40
2	116	97	134	140	e105	131	117	219	82	99	194	38
3	111	95	130	146	194	133	113	158	76	90	140	38
4	110	94	135	140	243	127	110	142	106	89	85	38
5	107	94	214	147	176	128	104	133	279	93	68	37
6	105	161	213	158	504	152	103	127	156	81	73	e40
7	103	235	205	136	768	147	103	121	124	73	61	e130
8	102	140	176	132	348	136	103	114	108	70	53	2,500
9	105	122	167	e130	248	129	103	112	109	65	50	923
10	121	114	428	e128	216	127	100	117	100	69	48	e356
11	112	110	922	e120	208	123	102	110	131	128	47	193
12	106	109	380	135	189	121	240	104	105	84	50	149
13	100	111	280	133	180	117	835	100	100	74	74	126
14	103	99	271	128	171	116	1,100	102	99	66	58	112
15	140	103	251	125	168	116	553	96	99	61	55	103
16	108	116	254	120	173	172	354	100	200	57	51	e95
17	101	110	315	118	156	186	273	131	235	54	51	e206
18	101	105	290	137	150	148	230	103	148	59	102	e363
19	98	925	239	140	160	139	203	105	123	75	59	e206
20	96	714	211	119	178	131	185	105	109	65	50	e147
21	95	357	190	e115	174	128	177	97	97	55	48	128
22	93	259	182	e110	168	121	164	90	97	53	55	112
23	90	214	177	e105	158	118	154	115	93	57	50	101
24	90	191	183	117	154	118	148	94	116	56	45	93
25	89	181	177	114	150	117	142	97	95	52	43	88
26	91	162	164	98	144	115	155	95	394	49	e42	84
27	205	153	158	e120	140	115	176	158	170	74	42	83
28	140	165	154	e110	135	115	140	103	132	94	41	3,010
29	116	190	150	e105	132	111	132	93	115	59	50	966
30	106	152	150	e118	---	111	128	85	102	55	50	517
31	101	---	144	e102	---	135	---	95	---	56	45	---
TOTAL	3,383	5,777	7,186	3,886	5,985	4,013	6,681	3,551	4,001	2,237	1,931	11,022
MEAN	109	193	232	125	206	129	223	115	133	72.2	62.3	367
MAX	205	925	922	158	768	186	1,100	219	394	128	194	3,010
MIN	89	94	130	98	95	111	100	85	76	49	41	37
CFSM	0.95	1.67	2.02	1.09	1.79	1.13	1.94	1.00	1.16	0.63	0.54	3.19
IN.	1.09	1.87	2.32	1.26	1.94	1.30	2.16	1.15	1.29	0.72	0.62	3.57

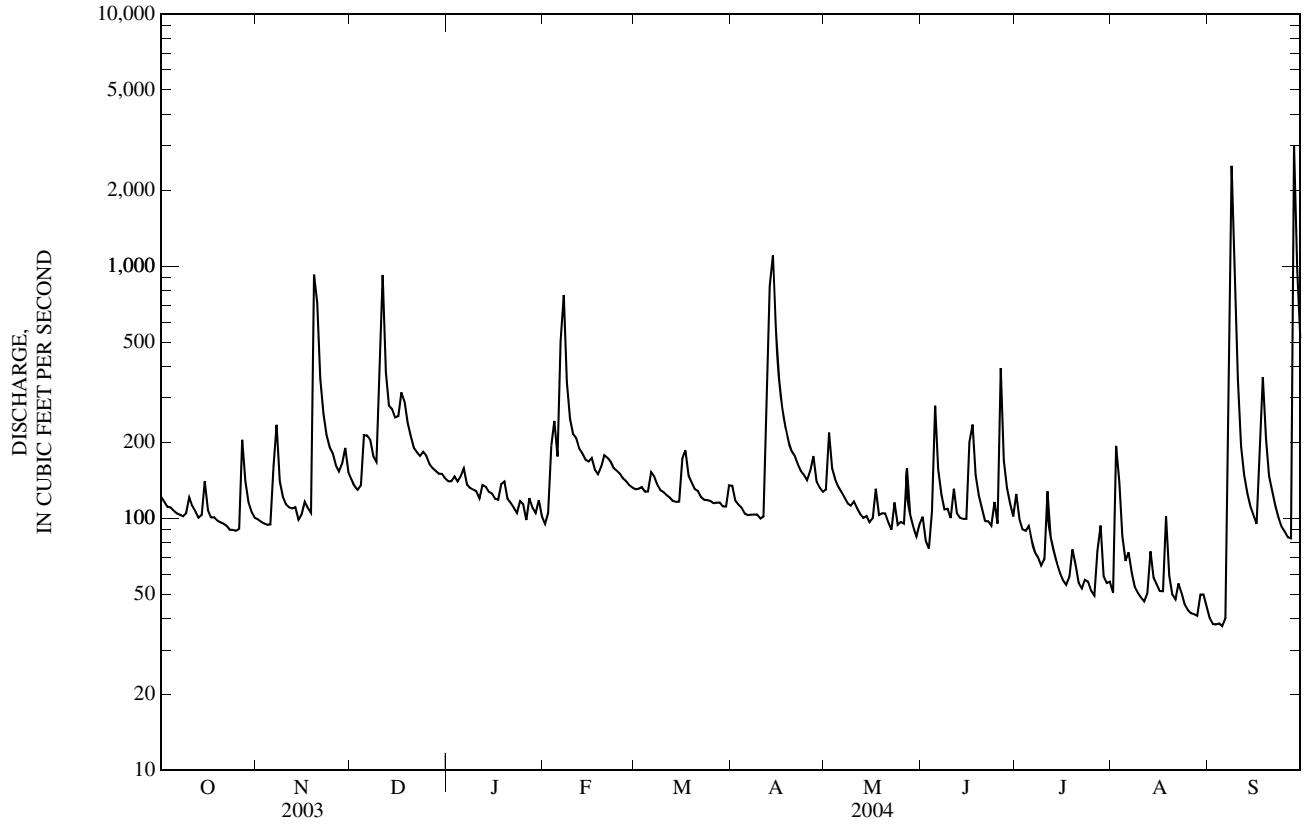
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 2004, BY WATER YEAR (WY)

MEAN	92.5	112	111	147	166	212	229	137	125	81.6	71.2	103
MAX	544	584	272	349	495	585	821	346	416	261	248	375
(WY)	(1977)	(1986)	(1997)	(1996)	(1998)	(1993)	(1987)	(1978)	(1992)	(1989)	(2003)	(1979)
MIN	17.3	21.9	34.2	42.0	39.6	60.1	56.2	53.6	17.1	24.6	12.4	23.0
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(1981)	(2002)	(1981)	(2002)	(1977)	(1981)	(1983)

02056900 BLACKWATER RIVER NEAR ROCKY MOUNT, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1977 - 2004	
ANNUAL TOTAL	79,863		59,653			
ANNUAL MEAN	219		163		132	
HIGHEST ANNUAL MEAN					234	1987
LOWEST ANNUAL MEAN					37.1	2002
HIGHEST DAILY MEAN	2,310	Feb 22	3,010	Sep 28	5,410	Nov 5, 1985
LOWEST DAILY MEAN	a49	Jan 24	37	Sep 5	3.8	Aug 14, 2002
ANNUAL SEVEN-DAY MINIMUM	e59	Jan 23	39	Aug 31	4.6	Aug 9, 2002
MAXIMUM PEAK FLOW			6,930	Sep 28	20,800	Nov 5, 1985
MAXIMUM PEAK STAGE			14.67	Sep 28	21.92	Nov 5, 1985
INSTANTANEOUS LOW FLOW			35	Sep 5	3.2	bAug 13, 2002
ANNUAL RUNOFF (CFSM)	1.90		1.42		1.15	
ANNUAL RUNOFF (INCHES)	25.83		19.30		15.59	
10 PERCENT EXCEEDS	383		232		230	
50 PERCENT EXCEEDS	161		117		84	
90 PERCENT EXCEEDS	91		57		32	

a Result of freezeup.
b Also Aug. 14, 2002.
e Estimated.



02057400 SMITH MOUNTAIN LAKE NEAR PENHOOK, VA

LOCATION.--Lat 37°02'29", long 79°31'19", NAD83, 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 mi^2.

PERIOD OF RECORD.--September 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD 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.

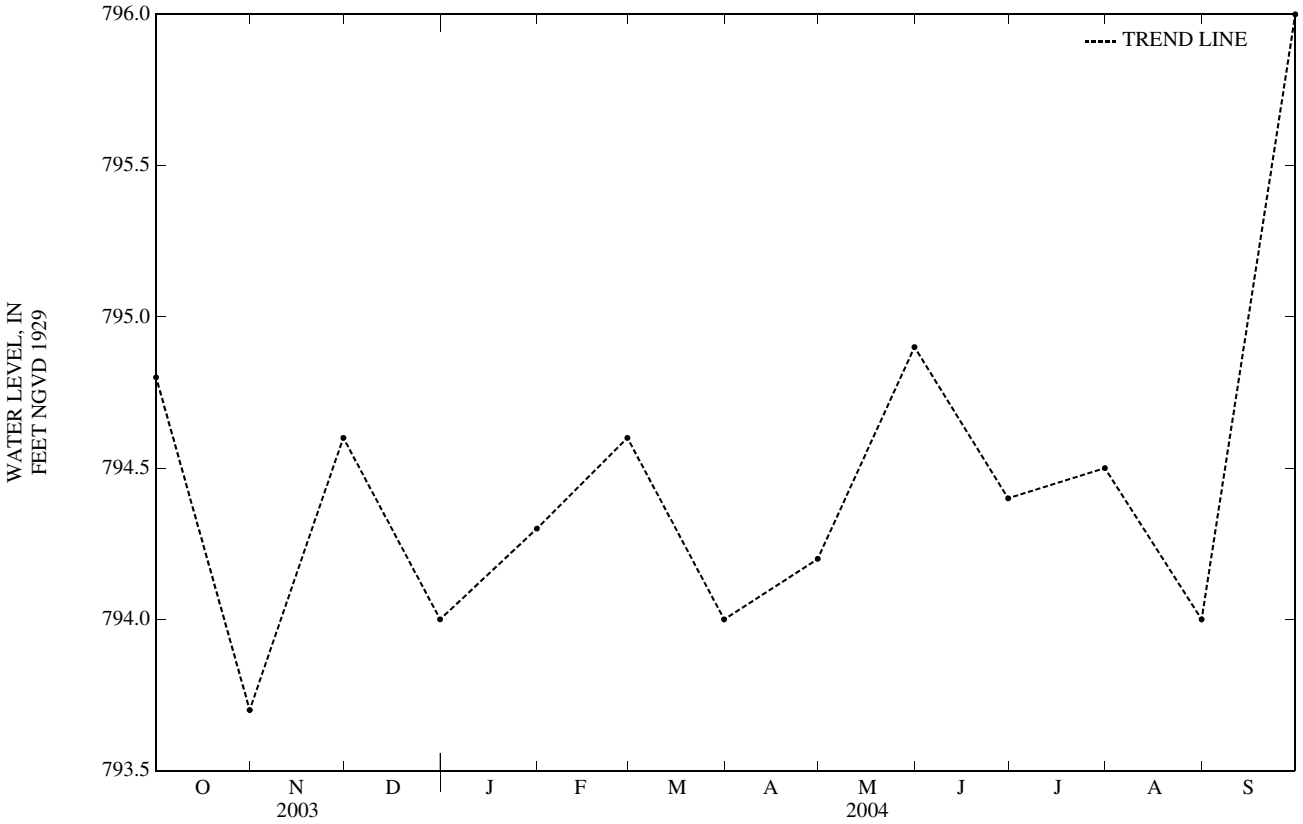
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,250,200 acre-ft, Apr. 27, 1978, elevation, 799.8 ft; minimum (after first filling to minimum power pool), 995,400 acre-ft, Jan. 23, 1970, elevation, 787.6 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,196,100 acre-ft, Sept. 29, elevation, 797.4 ft; minimum, 1,103,200 acre-ft, Feb. 20, elevation, 793.1 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
	794.8	1,137,900	
	793.7	1,115,500	-22,400
November 30	794.6	1,133,800	+18,300
December 31	794.0	1,121,600	-12,200
	794.3	1,127,700	+6,100
February 29	794.6	1,133,800	+6,100
March 31	794.0	1,121,600	-12,200
April 30	794.2	1,125,700	+4,100
May 31	794.9	1,140,000	+14,300
June 30	794.4	1,129,800	-10,200
July 31	794.5	1,131,800	+2,000
August 31	794.0	1,121,600	-10,200
September 30	796.0	1,164,500	+42,900

02057400 SMITH MOUNTAIN LAKE NEAR PENHOOK, VA—Continued



02058400 PIGG RIVER NEAR SANDY LEVEL, VA

LOCATION.--Lat 36°56'46", long 79°31'29", NAD83, 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 mi^2.

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 NGVD of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Nov. 18, 1963, nonrecording gage at same site and datum.

REMARKS.--Records good except for period with ice effect, Jan. 26 to Feb. 2, which is fair. American Electric Power gage-height transmitter at station, recorder at Roanoke. Maximum discharge, 65,600 ft^3/s, from rating curve extended above 25,500 ft^3/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.

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

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 11	0300	4,510	8.37	2145	12,900	16.32
Sep 9	0700	*13,200	*16.54			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	334	302	394	386	e345	360	409	358	295	298	241	212
2	328	297	371	397	e342	357	369	440	265	290	452	204
3	313	290	355	403	664	364	344	471	247	268	1,060	202
4	312	288	370	392	908	353	335	394	284	259	497	200
5	311	289	588	414	592	351	324	353	697	253	336	198
6	307	994	732	509	941	359	316	344	421	242	432	202
7	302	1,400	699	423	2,570	372	319	332	331	231	331	225
8	301	590	556	392	961	346	323	321	305	236	266	1,770
9	308	448	501	399	650	341	323	315	299	224	241	5,780
10	340	400	750	399	566	338	320	312	359	221	227	700
11	353	376	3,410	367	530	337	322	302	317	520	220	447
12	341	366	1,050	380	507	333	629	294	288	348	575	362
13	315	396	675	385	487	328	2,370	288	270	383	750	322
14	314	369	668	376	464	323	2,660	285	277	286	378	300
15	423	348	682	369	450	325	1,680	280	282	242	346	284
16	352	379	751	355	461	433	744	282	418	217	294	275
17	308	377	1,020	350	442	576	573	312	465	203	269	464
18	306	360	1,040	382	423	435	502	310	396	207	389	1,380
19	303	581	691	400	437	388	457	296	318	216	318	586
20	296	1,400	584	363	445	364	429	444	307	228	263	377
21	294	608	520	347	444	355	439	385	288	211	245	318
22	292	484	491	347	423	341	410	318	276	195	311	292
23	284	432	475	346	407	331	389	287	273	220	261	275
24	277	410	470	341	400	329	394	286	309	209	240	261
25	279	467	461	344	396	329	382	280	316	199	224	253
26	290	412	433	e345	384	328	387	282	844	193	217	247
27	406	385	419	e370	378	329	462	472	578	260	214	257
28	444	393	411	e385	372	330	396	368	366	376	210	6,110
29	366	508	403	e375	367	326	361	297	320	337	211	4,110
30	334	433	405	e365	---	323	348	274	293	440	241	787
31	309	---	396	e355	---	353	---	290	---	286	232	---
TOTAL	10,042	14,782	20,771	11,761	16,756	11,057	17,716	10,272	10,704	8,298	10,491	27,400
MEAN	324	493	670	379	578	357	591	331	357	268	338	913
MAX	444	1,400	3,410	509	2,570	576	2,660	472	844	520	1,060	6,110
MIN	277	288	355	341	342	323	316	274	247	193	210	198
CFSM	0.93	1.41	1.91	1.08	1.65	1.02	1.69	0.95	1.02	0.76	0.97	2.61
IN.	1.07	1.57	2.21	1.25	1.78	1.18	1.88	1.09	1.14	0.88	1.12	2.91

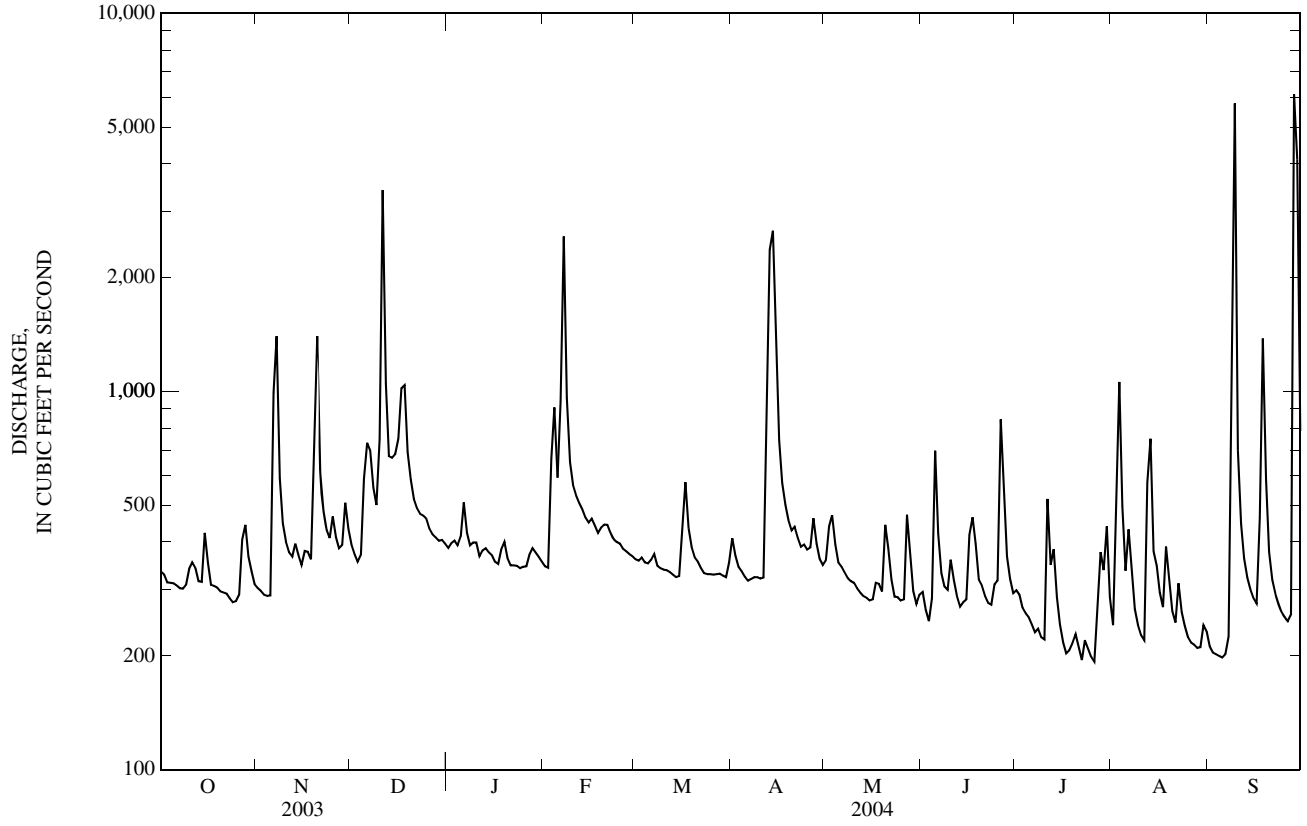
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2004, BY WATER YEAR (WY)

MEAN	284	308	354	458	495	579	535	403	336	258	242	319
MAX	1,220	995	836	1,054	1,086	1,578	2,265	989	1,200	814	867	1,864
(WY)	(1991)	(1986)	(1974)	(1978)	(1998)	(1993)	(1987)	(1978)	(1972)	(1972)	(1985)	(1987)
MIN	74.3	96.5	136	157	148	203	172	165	83.7	73.2	36.2	70.0
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(1981)	(2002)	(1981)	(2002)	(2002)	(2002)	(1968)

02058400 PIGG RIVER NEAR SANDY LEVEL, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1963 - 2004	
ANNUAL TOTAL	229,605		170,050			
ANNUAL MEAN	629		465		381	
HIGHEST ANNUAL MEAN					709	1987
LOWEST ANNUAL MEAN					133	2002
HIGHEST DAILY MEAN	6,810	Mar 20	6,110	Sep 28	34,900	Sep 8, 1987
LOWEST DAILY MEAN	160	Jan 24	193	Jul 26	17	Aug 16, 2002
ANNUAL SEVEN-DAY MINIMUM	169	Jan 21	206	Sep 1	19	Aug 11, 2002
MAXIMUM PEAK FLOW			13,200	Sep 9	65,600	Sep 8, 1987
MAXIMUM PEAK STAGE			16.54	Sep 9	a31.12	Sep 8, 1987
INSTANTANEOUS LOW FLOW			191	bJul 22	c17	Aug 16, 2002
ANNUAL RUNOFF (CFSM)	1.80		1.33		1.09	
ANNUAL RUNOFF (INCHES)	24.40		18.07		14.81	
10 PERCENT EXCEEDS	1,020		635		598	
50 PERCENT EXCEEDS	447		353		255	
90 PERCENT EXCEEDS	278		244		120	

a From floodmarks.
b Also July 26, 2004.
c Also Aug. 17, 2002.
e Estimated.



02059400 LEESVILLE LAKE NEAR LEESVILLE, VA

LOCATION.--Lat 37°05'36", long 79°24'08", NAD83, 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 mi^2.

PERIOD OF RECORD.--September 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. 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.

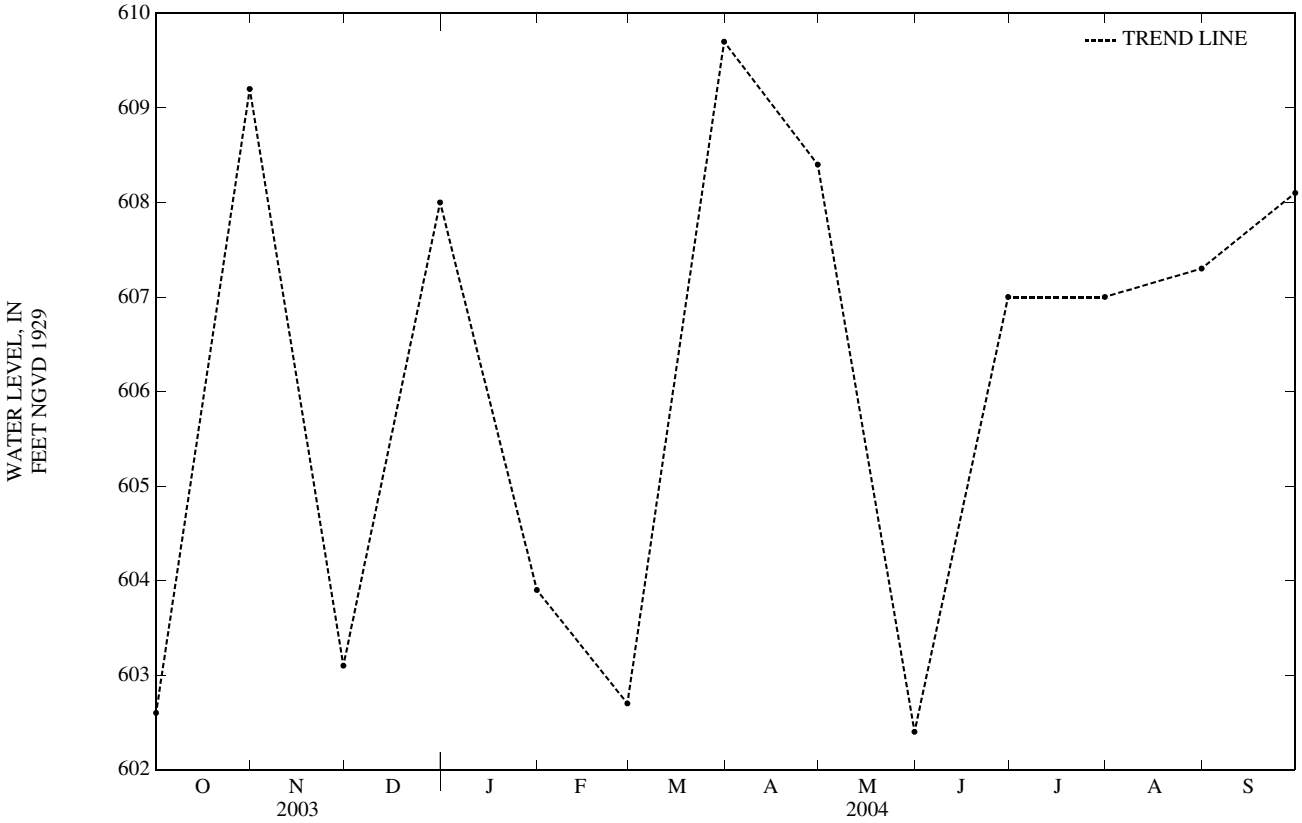
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 98,180 acre-ft, Feb. 1, 1965, elevation, 614.0 ft; minimum (after first filling to minimum power pool), 39,880 acre-ft, Mar. 19, 1963, elevation, 592.0 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 92,710 acre-ft, Oct. 23, elevation, 612.3 ft; minimum, 56,970 acre-ft, Dec. 22, elevation, 599.9 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
	602.6	64,170	
	609.2	82,950	+18,780
November 30	603.1	65,510	-17,440
December 31	608.0	79,420	+13,190
	603.9	67,650	-11,770
February 29	602.7	64,440	-3,210
March 31	609.7	84,420	+19,980
April 30	608.4	80,600	-3,820
May 31	602.4	63,630	-16,970
June 30	607.0	76,480	+12,850
July 31	607.0	76,480	0
August 31	607.3	77,360	+880
September 30	608.1	79,710	+2,350

02059400 LEESVILLE LAKE NEAR LEESVILLE, VA—Continued



02059500 GOOSE CREEK NEAR HUDDLESTON, VA

LOCATION.--Lat 37°10'24", long 79°31'13", NAD83, 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 mi^2.

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 NGVD of 1929. Mar. 15, 1925, to Aug. 4, 1928, nonrecording gage at site 1,300 ft downstream at different datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 9, 10, 22, 23, and Jan. 27 to Feb. 2, and periods of doubtful gage-height record, May 13-16 and July 8-11, 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 ft^3/s, from rating curve extended above 11,000 ft^3/s on basis of slope-area measurements at gage heights 19.25 ft, 24.1 ft, 24.89 ft, and 37.49 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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,300 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 11	0130	3,760	6.83	0515	*14,200	*15.01
Feb 6	2100	4,310	7.36	2145	2,540	5.53
Apr 13	2045	2,710	5.72	1400	8,310	10.72

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	157	141	194	192	e150	152	173	186	149	135	73	63
2	150	138	183	212	e165	151	150	213	115	93	2,260	60
3	142	136	179	213	425	151	146	201	109	164	330	60
4	140	133	183	200	489	145	141	183	122	108	174	58
5	138	132	339	213	335	147	134	171	498	103	159	58
6	135	405	347	239	1,180	174	131	167	261	90	221	59
7	134	688	317	204	1,380	164	130	159	182	83	138	69
8	132	349	256	195	576	153	131	152	152	e80	114	659
9	133	244	239	e195	394	148	130	153	138	e74	102	747
10	137	212	499	e185	333	146	126	217	132	e72	95	210
11	144	196	1,810	183	291	141	128	159	140	e100	94	140
12	138	191	618	195	248	141	451	146	122	125	102	119
13	129	256	439	192	233	138	1,320	e142	116	192	144	107
14	133	192	410	182	218	137	1,520	e138	117	109	106	99
15	200	186	417	181	208	137	957	e134	122	88	96	95
16	139	193	423	170	206	235	570	e130	131	77	88	92
17	131	195	510	173	190	256	426	152	120	73	87	115
18	128	186	488	217	183	190	342	139	109	81	91	407
19	125	581	390	221	189	175	290	131	103	81	83	196
20	126	736	327	183	183	162	257	132	98	74	78	134
21	123	431	277	177	180	161	253	139	95	70	78	111
22	122	320	257	e175	172	152	233	270	97	77	82	103
23	117	265	250	e165	165	144	217	245	96	90	77	95
24	116	246	251	175	164	142	214	149	101	75	75	88
25	113	243	241	165	162	144	196	134	98	67	70	84
26	117	213	218	157	157	143	221	130	299	69	66	82
27	481	201	215	e175	156	143	262	152	132	137	66	84
28	247	215	211	e165	153	145	201	139	105	186	65	3,140
29	186	247	205	e155	152	140	188	127	98	87	88	985
30	157	204	209	e170	---	141	183	117	105	98	75	400
31	144	---	198	e160	---	168	---	128	---	80	67	---
TOTAL	4,714	8,075	11,100	5,784	9,037	4,866	9,821	4,935	4,262	3,038	5,444	8,719
MEAN	152	269	358	187	312	157	327	159	142	98.0	176	291
MAX	481	736	1,810	239	1,380	256	1,520	270	498	192	2,260	3,140
MIN	113	132	179	155	150	137	126	117	95	67	65	58
CFSM	0.81	1.43	1.90	0.99	1.66	0.83	1.74	0.85	0.76	0.52	0.93	1.55
IN.	0.93	1.60	2.20	1.14	1.79	0.96	1.94	0.98	0.84	0.60	1.08	1.73

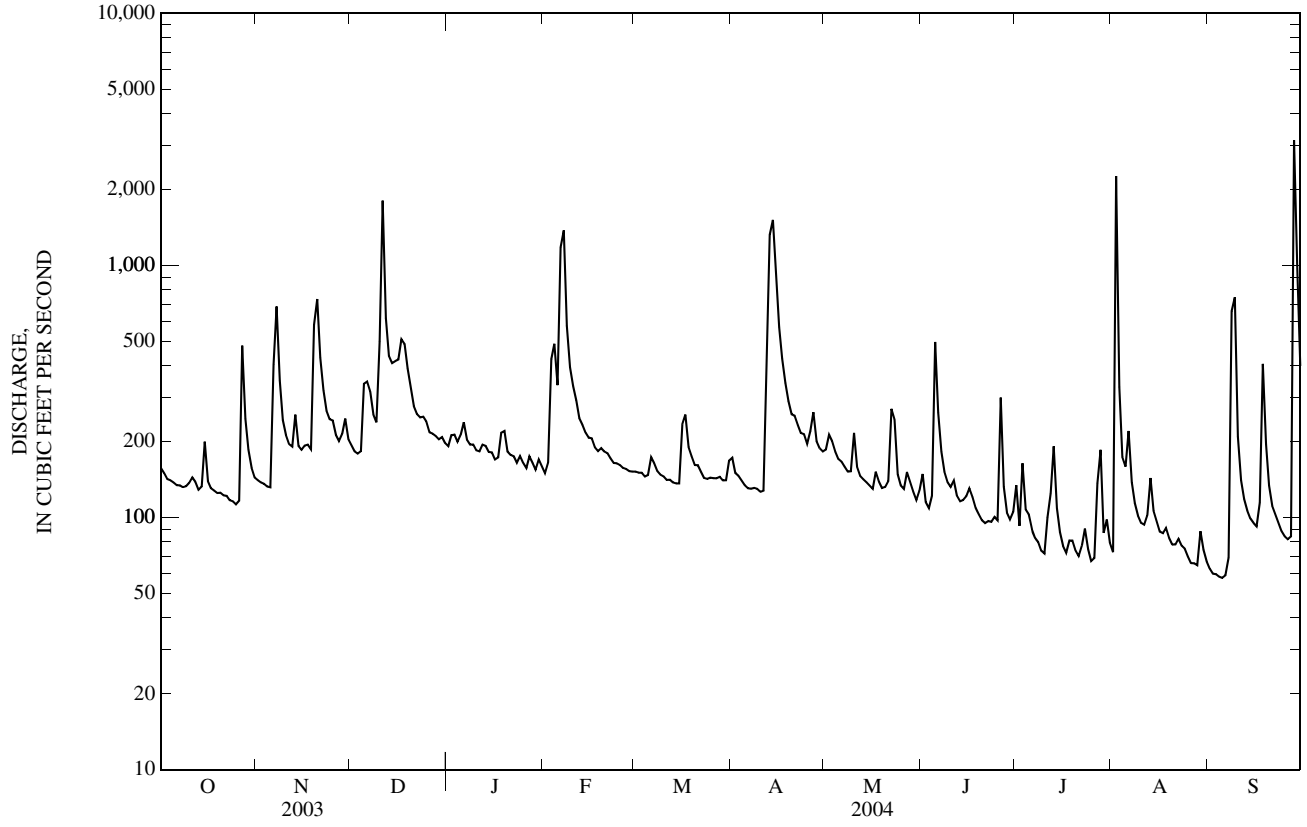
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2004, BY WATER YEAR (WY)

MEAN	128	135	171	223	248	282	261	198	157	115	133	132
MAX	719	642	616	772	821	909	1,320	780	802	466	822	1,229
(WY)	(1938)	(1986)	(1949)	(1936)	(1998)	(1975)	(1987)	(1989)	(1995)	(1949)	(1940)	(1987)
MIN	23.3	30.8	45.2	46.6	46.6	79.4	55.7	56.8	23.4	26.3	11.0	15.4
(WY)	(2002)	(2002)	(1966)	(1966)	(2002)	(2002)	(2002)	(1981)	(2002)	(1966)	(2002)	(2002)

02059500 GOOSE CREEK NEAR HUDDLESTON, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1931 - 2004	
ANNUAL TOTAL	131,621		79,795			
ANNUAL MEAN	361		218		181	
HIGHEST ANNUAL MEAN					393	1987
LOWEST ANNUAL MEAN					39.4	2002
HIGHEST DAILY MEAN	6,220	Feb 22	3,140	Sep 28	e26,000	Sep 8, 1987
LOWEST DAILY MEAN	a50	Jan 24	58	bSep 4	6.0	cAug 28, 1932
ANNUAL SEVEN-DAY MINIMUM	e60	Jan 23	61	Aug 31	7.2	Sep 8, 2002
MAXIMUM PEAK FLOW			14,200	Aug 2	53,200	Sep 8, 1987
MAXIMUM PEAK STAGE			15.01	Aug 2	d37.49	Sep 8, 1987
INSTANTANEOUS LOW FLOW			56	fSep 5	3.0	gAug 31, 1932
ANNUAL RUNOFF (CFSM)	1.92		1.16		0.965	
ANNUAL RUNOFF (INCHES)	26.04		15.79		13.12	
10 PERCENT EXCEEDS	616		361		321	
50 PERCENT EXCEEDS	204		152		110	
90 PERCENT EXCEEDS	114		84		46	

a Result of freezeup.
b Also Sept. 5, 2004.
c Also Sept. 13, 2002.
d From floodmarks.
e Estimated.
f Also Sept. 6, 2004.
g Also Jan. 30, 1934, result of freezeup.



02060500 ROANOKE (STAUNTON) RIVER AT ALTAVISTA, VA

LOCATION.--Lat 37°06'17", long 79°17'43", NAD83, 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 mi^2.

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 NGVD of 1929. 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. Statistics of monthly mean data and summary statistics for water years 1931 - 1962 (unregulated flow) are available in previous data books, water years 1991 - 1998. 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 ft^3/s, from rating curve extended above 52,000 ft^3/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. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,110	1,570	1,750	1,580	1,380	1,470	1,970	1,650	1,130	1,070	1,210	860
2	1,110	1,460	1,760	1,610	1,400	1,370	1,830	1,880	1,100	985	3,360	853
3	1,090	1,130	1,760	1,640	1,940	1,390	1,710	2,110	1,030	1,020	2,660	853
4	1,080	1,040	1,780	1,600	4,270	1,470	1,600	1,810	1,180	938	2,290	856
5	1,070	1,050	2,230	1,760	4,900	1,610	1,340	1,570	4,100	915	2,200	849
6	1,080	2,180	2,670	2,290	4,970	1,740	1,180	1,460	3,620	908	2,230	846
7	1,090	4,830	2,720	2,270	7,440	1,980	1,140	1,390	1,710	881	1,800	2,650
8	1,090	4,620	2,620	2,090	5,340	1,930	1,040	1,390	1,310	811	1,520	7,440
9	1,120	2,730	2,500	1,980	5,010	1,780	1,010	1,480	1,150	776	892	9,980
10	1,190	1,770	2,600	1,990	4,380	1,650	1,270	2,280	1,130	790	884	8,560
11	1,220	1,520	9,450	1,830	3,710	1,430	1,360	1,760	1,230	838	877	6,730
12	1,320	1,360	8,920	1,660	3,450	1,280	2,110	1,460	1,280	816	1,200	2,410
13	1,300	1,390	5,930	1,680	2,890	1,190	8,390	1,440	1,260	897	3,060	1,450
14	1,320	1,340	3,430	1,670	2,740	1,080	10,800	1,440	1,160	833	2,200	1,560
15	1,510	1,280	3,330	1,650	2,530	1,040	10,100	1,430	980	784	990	4,000
16	1,620	1,270	3,230	1,650	2,470	1,520	9,110	1,580	1,430	732	922	6,730
17	1,480	1,250	3,440	1,560	2,540	2,100	5,250	1,750	2,220	801	937	4,250
18	1,310	1,450	4,590	1,520	2,550	2,250	2,680	1,370	1,810	766	938	1,830
19	1,300	4,440	3,770	1,650	2,410	2,230	2,050	1,150	1,340	771	906	1,170
20	1,130	5,590	3,000	1,660	2,090	2,190	2,020	1,150	1,310	770	868	1,040
21	1,230	4,920	2,490	1,570	1,810	1,940	2,210	1,190	1,070	761	871	994
22	1,280	4,760	2,160	1,490	1,770	1,680	2,120	1,230	906	765	887	966
23	1,270	3,380	2,140	1,510	1,730	1,380	1,860	1,370	863	811	873	915
24	1,270	1,660	2,090	1,490	1,750	1,320	1,650	1,190	854	879	892	902
25	1,150	1,830	1,970	1,520	1,760	1,320	1,620	1,120	1,000	975	856	899
26	1,060	1,780	1,800	1,790	1,730	1,320	1,730	1,080	2,720	859	848	876
27	1,640	1,760	1,610	2,280	1,710	1,320	2,310	1,580	2,810	913	852	896
28	1,740	1,730	1,430	2,260	1,590	1,310	2,080	1,820	1,750	1,230	857	7,370
29	1,630	1,870	1,290	2,030	1,550	1,370	1,760	1,500	1,400	1,090	855	13,300
30	1,600	1,850	1,430	1,640	---	1,500	1,660	1,280	1,110	1,230	873	14,000
31	1,570	---	1,610	1,590	---	1,780	---	987	---	1,240	866	---
TOTAL	39,980	68,810	91,500	54,510	83,810	48,940	86,960	45,897	45,963	27,855	41,474	106,035
MEAN	1,290	2,294	2,952	1,758	2,890	1,579	2,899	1,481	1,532	899	1,338	3,534
MAX	1,740	5,590	9,450	2,290	7,440	2,250	10,800	2,280	4,100	1,240	3,360	14,000
MIN	1,060	1,040	1,290	1,490	1,380	1,040	1,010	987	854	732	848	846
(†)	-1,822	+433	+862	-2,859	+1,457	+3,919	+141	-1,347	+1,336	+1,008	-4,698	+22,815
MEAN‡	1,231	2,308	2,979	1,666	2,940	1,705	2,903	1,437	1,577	931	1,186	4,295
CFSM‡	.69	1.29	1.67	.93	1.64	.95	1.62	.80	.88	.52	.66	2.40
IN.‡	.79	1.44	1.92	1.07	1.77	1.10	1.81	.93	.98	.60	.76	2.68

CAL YR 2003 MEAN‡ 3,167 CFSM‡ 1.77 IN.‡ 24.04
WTR YR 2004 MEAN‡ 2,085 CFSM‡ 1.17 IN.‡ 15.83

† 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 change in contents.

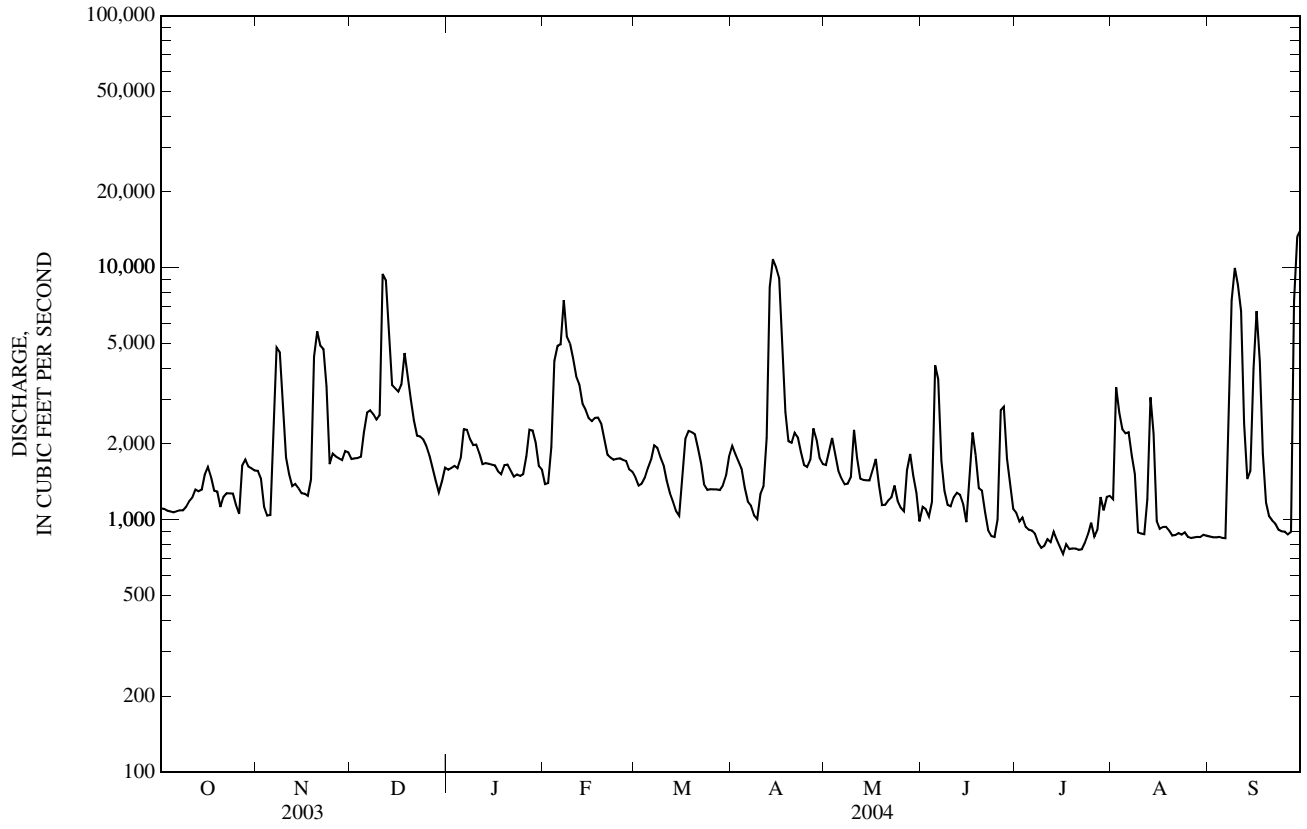
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2004, BY WATER YEAR (WY)

MEAN	1,115	1,278	1,395	2,002	2,258	2,702	2,502	1,938	1,563	1,105	1,068	1,273
MAX	4,811	6,190	3,622	4,643	7,119	7,795	10,930	4,716	5,684	3,363	3,351	5,246
(WY)	(1991)	(1986)	(1997)	(1978)	(1998)	(1993)	(1987)	(1978)	(1972)	(1972)	(2003)	(1987)
MIN	189	396	351	455	421	338	604	484	220	504	311	438
(WY)	(1964)	(1982)	(1964)	(2002)	(2002)	(1981)	(1964)	(1964)	(1964)	(1981)	(1963)	(2002)

02060500 ROANOKE (STAUNTON) RIVER AT ALTAVISTA, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1963 - 2004	
ANNUAL TOTAL	1,156,669		741,734			
ANNUAL MEAN	3,169		2,027		1,679	
HIGHEST ANNUAL MEAN					2,903	1987
LOWEST ANNUAL MEAN					583	2002
HIGHEST DAILY MEAN	18,000	Feb 23	14,000	Sep 30	46,700	Sep 8, 1987
LOWEST DAILY MEAN	826	Jan 24	732	Jul 16	39	Jul 10, 1966
ANNUAL SEVEN-DAY MINIMUM	868	Jan 22	767	Jul 16	116	Sep 2, 1965
MAXIMUM PEAK FLOW			14,400	Sep 29	a62,100	Sep 8, 1987
MAXIMUM PEAK STAGE			15.37	Sep 29	a34.45	Sep 8, 1987
INSTANTANEOUS LOW FLOW			626	Jul 16	b13	Jan 30, 1966
ANNUAL RUNOFF (CFSM)	1.77		1.13		0.939	
ANNUAL RUNOFF (INCHES)	24.05		15.42		12.75	
10 PERCENT EXCEEDS	6,240		3,500		3,330	
50 PERCENT EXCEEDS	2,140		1,520		1,000	
90 PERCENT EXCEEDS	1,090		878		295	

a Prior to regulation, 1931-62, maximum peak flow, 105,000 ft^3/s, Aug. 15, 1940, gage height, 40.08 ft, from floodmarks.
b Prior to regulation, 1931-62, instantaneous low flow, 94 ft^3/s, Jan. 31, 1934.



02061500 BIG OTTER RIVER NEAR EVINGTON, VA

LOCATION.--Lat 37°12'31", long 79°18'13", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 9-11, 21-23 and Jan. 27 to Feb. 2, and periods of doubtful or no gage-height record, July 11, 12 and Aug. 14-23, 26, which are fair. Maximum discharge, 65,600 ft^3/s, from rating curve extended above 24,000 ft^3/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 ft^3/s, from rating curve extended above 7,000 ft^3/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.

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

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 11	0430	4,190	9.13	1830	*6,990	*14.59
Feb 6	2400	4,750	10.35			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	365	317	375	371	e255	304	330	301	230	142	168	112
2	347	283	354	392	e280	308	283	370	177	137	1,220	103
3	332	271	343	400	779	313	268	382	161	324	461	100
4	316	262	345	376	860	303	264	330	172	205	245	98
5	308	259	567	388	552	302	246	300	537	191	219	95
6	279	886	635	440	1,260	353	241	287	329	166	394	95
7	260	1,230	600	364	2,290	352	243	273	242	141	220	109
8	251	588	493	348	891	318	245	258	214	136	195	743
9	251	477	448	e345	663	302	245	255	204	126	169	1,660
10	273	420	613	e330	591	293	234	263	235	119	153	496
11	290	390	2,540	e310	542	285	237	240	253	e140	152	325
12	286	388	950	375	498	282	698	228	201	e184	208	253
13	255	485	696	348	473	272	1,870	222	183	405	255	220
14	240	376	700	327	446	270	1,710	219	181	199	e195	201
15	466	347	771	324	429	270	1,020	219	189	156	e170	186
16	281	354	761	304	420	415	697	210	211	133	e155	175
17	242	354	907	300	398	508	581	212	184	121	e150	385
18	240	332	826	381	387	368	510	220	169	119	e152	613
19	232	1,180	654	428	388	340	465	207	175	125	e140	316
20	224	1,140	576	341	379	311	431	232	155	121	e135	224
21	224	642	530	e315	373	307	425	221	146	112	e130	203
22	223	537	504	e305	350	290	388	311	144	106	e135	188
23	212	477	484	e295	339	282	363	247	161	123	e124	170
24	207	452	480	307	338	277	355	212	159	158	116	158
25	203	477	469	298	337	276	343	194	150	131	111	154
26	206	409	429	266	321	273	363	200	431	117	e107	147
27	936	388	416	e345	316	279	422	240	229	143	105	145
28	603	403	403	e305	308	286	331	219	170	438	103	2,900
29	447	476	395	e285	305	268	306	207	155	249	156	1,600
30	365	397	400	e295	---	267	298	181	143	343	141	681
31	337	---	381	e292	---	312	---	197	---	205	130	---
TOTAL	9,701	14,997	19,045	10,500	15,768	9,586	14,412	7,657	6,290	5,515	6,514	12,855
MEAN	313	500	614	339	544	309	480	247	210	178	210	428
MAX	936	1,230	2,540	440	2,290	508	1,870	382	537	438	1,220	2,900
MIN	203	259	343	266	255	267	234	181	143	106	103	95
CFSM	0.98	1.56	1.92	1.06	1.70	0.97	1.50	0.77	0.66	0.56	0.66	1.34
IN.	1.13	1.74	2.21	1.22	1.83	1.11	1.68	0.89	0.73	0.64	0.76	1.49

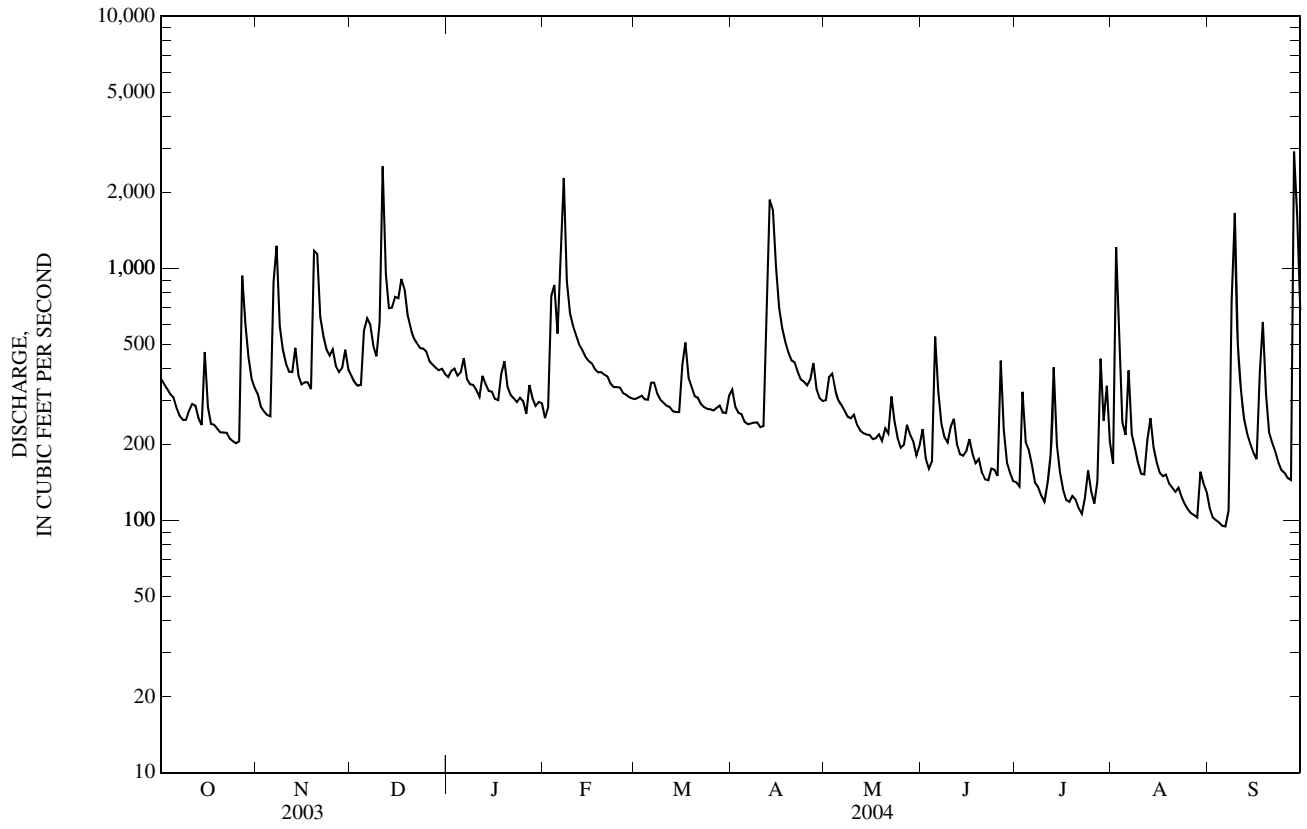
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 2004, BY WATER YEAR (WY)

MEAN	223	253	333	403	484	529	479	373	312	211	235	212
MAX	1,163	1,200	1,192	1,045	1,165	1,332	2,062	1,335	2,124	925	1,412	1,150
(WY)	(1991)	(1986)	(1949)	(1998)	(1998)	(1993)	(1987)	(1989)	(1995)	(1949)	(1940)	(1996)
MIN	31.9	41.2	68.6	95.7	97.0	148	102	106	38.0	27.9	4.96	10.8
(WY)	(2002)	(2002)	(1966)	(1966)	(2002)	(2002)	(2002)	(1981)	(2002)	(1966)	(2002)	(2002)

02061500 BIG OTTER RIVER NEAR EVINGTON, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1937 - 2004	
ANNUAL TOTAL	223,724		132,840			
ANNUAL MEAN	613		363		336	
HIGHEST ANNUAL MEAN					635	1949
LOWEST ANNUAL MEAN					67.2	2002
HIGHEST DAILY MEAN	6,910	Feb 22	2,900	Sep 28	35,700	Jun 23, 1995
LOWEST DAILY MEAN	a100	Jan 24	95	bSep 5	0.64	Sep 14, 2002
ANNUAL SEVEN-DAY MINIMUM	e121	Jan 22	102	Sep 1	1.3	Sep 9, 2002
MAXIMUM PEAK FLOW			6,990	Sep 28	65,600	Jun 23, 1995
MAXIMUM PEAK STAGE			14.59	Sep 28	29.93	Jun 23, 1995
INSTANTANEOUS LOW FLOW			92	Sep 6	0.63	cSep 13, 2002
ANNUAL RUNOFF (CFSM)	1.92		1.13		1.05	
ANNUAL RUNOFF (INCHES)	26.01		15.44		14.28	
10 PERCENT EXCEEDS	1,150		601		621	
50 PERCENT EXCEEDS	412		296		215	
90 PERCENT EXCEEDS	207		143		77	

a Result of freezeup.
b Also Sept. 6, 2004.
c Also Sept. 14, 2002.
e Estimated.



02062500 ROANOKE (STAUNTON) RIVER AT BROOKNEAL, VA

LOCATION.--Lat 37°02'29", long 78°57'01", NAD83, 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 mi^2.

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 NGVD of 1929. 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 those for periods of doubtful or no gage-height record, Mar. 16-18 and July 26 to Aug. 2, which are 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. Statistics of monthly mean data and summary statistics for water years 1924 - 1962 (unregulated flow) are available in previous data books, water years 1991 - 1998. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 130,000 ft^3/s, at present site, from gage-height relation curve, from rating curve extended above 55,000 ft^3/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.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,760	2,250	2,700	2,470	2,200	2,320	2,910	2,370	1,760	1,270	e2,000	1,190
2	1,770	2,200	2,620	2,490	2,120	2,160	2,800	2,610	1,980	1,300	e2,400	1,150
3	1,700	1,920	2,590	2,640	2,720	2,170	2,520	2,970	1,800	1,290	4,440	1,140
4	1,680	1,630	2,630	2,550	5,570	2,190	2,450	2,940	1,710	1,370	3,190	1,130
5	1,660	1,610	3,220	2,590	6,220	2,310	2,250	2,480	3,160	1,210	2,790	1,130
6	1,640	3,520	4,480	3,360	6,410	2,580	1,890	2,250	5,250	1,150	2,840	1,130
7	1,640	8,000	4,230	3,370	12,300	2,850	1,870	2,060	2,900	1,110	2,650	1,140
8	1,640	6,600	3,950	3,190	8,040	2,800	1,780	2,010	1,930	1,070	2,150	6,080
9	1,640	4,650	3,770	2,900	6,750	2,750	1,710	1,960	1,540	1,020	1,560	11,800
10	1,730	3,000	3,630	2,910	6,340	2,440	1,740	2,700	1,460	1,010	1,210	9,410
11	1,870	2,400	10,500	2,800	5,220	2,330	2,040	2,730	1,550	1,140	1,210	8,610
12	1,930	2,150	11,700	2,530	5,020	2,100	2,400	2,060	1,780	1,200	1,380	4,070
13	1,900	2,090	9,020	2,560	4,480	1,940	8,100	1,940	1,730	1,330	4,330	2,350
14	1,890	2,160	5,620	2,510	4,110	1,840	11,600	1,930	1,720	1,550	3,140	2,020
15	2,160	1,920	5,480	2,480	4,020	1,740	12,200	1,930	1,510	1,150	2,230	3,320
16	2,390	1,890	5,280	2,450	3,730	e1,900	10,900	1,970	1,530	1,070	1,400	6,700
17	2,220	1,860	5,150	2,410	3,580	e3,100	8,430	2,300	2,490	1,050	1,350	5,480
18	1,930	1,850	6,340	2,340	3,530	e3,300	4,730	2,270	2,810	1,170	1,420	4,820
19	1,860	3,810	5,940	2,600	3,500	3,190	3,470	1,660	2,000	1,130	1,330	2,310
20	1,820	8,450	4,650	2,560	3,240	3,100	3,120	1,590	1,810	1,180	1,260	1,740
21	1,590	6,510	3,900	2,460	2,880	2,950	3,170	1,690	1,750	1,200	1,220	1,590
22	1,830	6,030	3,450	2,270	2,680	2,620	3,310	2,070	1,420	1,130	1,270	1,540
23	1,800	5,500	3,240	2,320	2,590	2,280	2,950	1,980	1,470	1,260	1,260	1,480
24	1,790	2,940	3,230	2,280	2,580	2,060	2,690	1,870	1,320	1,540	1,220	1,390
25	1,750	2,780	3,060	2,290	2,620	2,050	2,580	1,730	1,320	1,530	1,220	1,360
26	1,590	2,760	2,870	2,340	2,560	2,060	2,550	1,700	2,400	e1,480	1,170	1,320
27	1,970	2,660	2,630	2,950	2,550	2,070	3,060	2,020	4,070	e1,600	1,160	1,300
28	3,270	2,700	2,410	3,120	2,440	2,090	3,260	2,660	2,930	e1,900	1,160	3,960
29	2,600	2,990	2,210	3,060	2,360	2,050	2,650	2,620	1,970	e2,200	1,160	14,700
30	2,430	2,910	2,230	2,590	---	2,190	2,400	2,060	1,550	e2,000	1,240	14,800
31	2,290	---	2,400	2,430	---	2,410	---	1,890	---	e2,200	1,230	---
TOTAL	59,740	101,740	135,130	81,820	122,360	73,940	117,530	67,020	62,620	41,810	57,590	120,160
MEAN	1,927	3,391	4,359	2,639	4,219	2,385	3,918	2,162	2,087	1,349	1,858	4,005
MAX	3,270	8,450	11,700	3,370	12,300	3,300	12,200	2,970	5,250	2,200	4,440	14,800
MIN	1,590	1,610	2,210	2,270	2,120	1,740	1,710	1,590	1,320	1,010	1,160	1,130
(†)	-1,822	+433	+862	-2,859	+1,457	+3,919	+141	-1,347	+1,336	+1,008	-4,698	+22,815
MEAN‡	1,868	3,406	4,387	2,547	4,270	2,512	3,922	2,118	2,132	1,381	1,706	4,766
CFSM‡	.77	1.41	1.82	1.05	1.77	1.04	1.62	.88	.88	.57	.71	1.97
IN.‡	.89	1.57	2.09	1.22	1.91	1.20	1.81	1.01	.99	.66	.81	2.20

CAL YR 2003 MEAN‡ 4,521 CFSM‡ 1.87 IN.‡ 25.42
WTR YR 2004 MEAN‡ 2,904 CFSM‡ 1.20 IN.‡ 16.33

† Total change in contents, equivalent in cubic feet per second, per month, in Smith Mountain and Leesville Lakes; provided by American Electric Power.
‡ Adjust ted for change in contents.

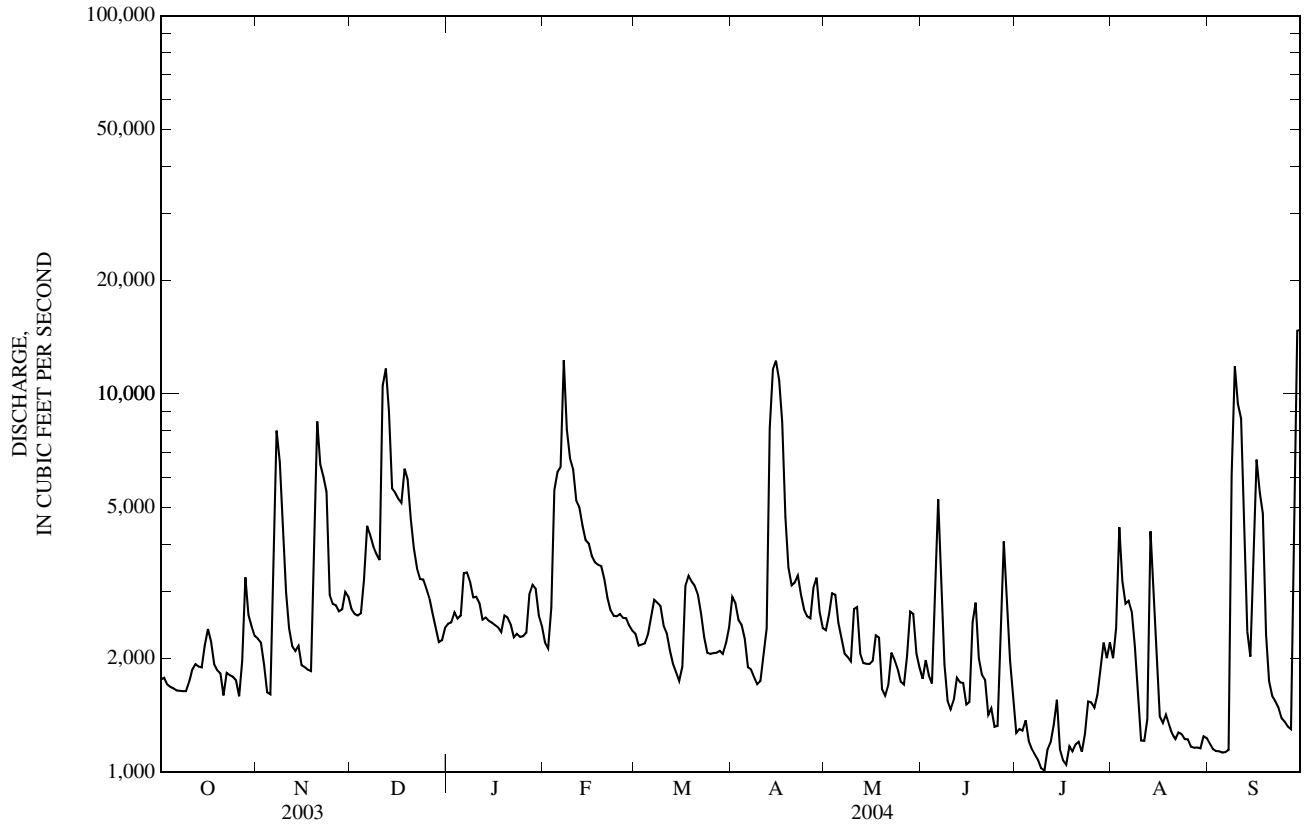
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2004, BY WATER YEAR (WY)

MEAN	1,548	1,786	2,054	2,873	3,256	3,875	3,554	2,702	2,185	1,519	1,439	1,763
MAX	6,446	8,961	5,625	7,695	9,536	11,760	14,410	7,039	7,522	4,775	4,675	8,822
(WY)	(1991)	(1986)	(1997)	(1978)	(1998)	(1993)	(1987)	(1978)	(1995)	(1972)	(1985)	(1996)
MIN	325	549	637	695	642	561	921	836	405	536	411	401
(WY)	(1964)	(2002)	(1964)	(2002)	(2002)	(1981)	(1981)	(1964)	(1964)	(2002)	(1964)	(2002)

02062500 ROANOKE (STAUNTON) RIVER AT BROOKNEAL, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1963 - 2004	
ANNUAL TOTAL	1,651,060		1,041,460			
ANNUAL MEAN	4,523		2,846		2,373	
HIGHEST ANNUAL MEAN					4,440	1973
LOWEST ANNUAL MEAN					741	2002
HIGHEST DAILY MEAN	33,300	Feb 23	14,800	Sep 30	65,600	Sep 9, 1987
LOWEST DAILY MEAN	1,060	Jan 24	1,010	Jul 10	140	Jul 25, 1966
ANNUAL SEVEN-DAY MINIMUM	1,120	Jan 23	1,100	Jul 6	203	Sep 4, 1965
MAXIMUM PEAK FLOW			15,400	Sep 29	a85,800	Sep 9, 1987
MAXIMUM PEAK STAGE			18.79	Sep 29	a39.80	Sep 9, 1987
INSTANTANEOUS LOW FLOW			948	Jul 17	b,c136	dJul 25, 1966
ANNUAL RUNOFF (CFSM)	1.87		1.18		0.983	
ANNUAL RUNOFF (INCHES)	25.43		16.04		13.35	
10 PERCENT EXCEEDS	9,580		5,170		4,640	
50 PERCENT EXCEEDS	3,080		2,300		1,400	
90 PERCENT EXCEEDS	1,580		1,260		560	

a Prior to regulation, 1924-62, maximum peak flow, 130,00 ft^3/s, Aug. 15, 1940, gage height, 46.50 ft.
b Prior to regulation, 1924-62, instantaneous low flow, probably less than 191 ft^3/s, 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.



02064000 FALLING RIVER NEAR NARUNA, VA

LOCATION.-- Lat 37°07'37", long 78°57'35", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to Jan. 15, 1935, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods of doubtful gage-height record, Oct. 7-9, Dec. 2-4, 16-19, May 17-20, and Aug. 14, and periods with ice effect, Jan. 9-11, 22, 23, 26, and Jan. 28 to Feb. 2, which are fair. Small diurnal fluctuation caused by gristmill at Spring Mills. Maximum discharge, 62,800 ft^3/s, from rating curve extended above 7,100 ft^3/s on basis of slope-area measurements at gage heights 23.9 ft, 26.5 ft, 29.2 ft, and 36.1 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 August 1940 reached a stage of 26.5 ft, from floodmarks, discharge, 22,000 ft^3/s, by slope-area measurement.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,300 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 11	0415	2,480	9.54	0015	*3,070	*10.85

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	171	129	207	159	e135	116	174	117	77	61	61	54
2	154	124	e180	200	e150	119	141	148	66	61	599	52
3	139	119	e165	213	472	124	123	202	64	60	174	50
4	137	116	e150	184	485	119	115	155	71	58	81	49
5	132	116	438	252	319	116	106	126	111	62	67	48
6	127	668	486	295	735	167	102	119	89	55	76	55
7	e123	865	324	210	1,420	155	103	114	78	51	59	65
8	e115	379	253	187	474	124	103	110	72	51	52	109
9	e117	277	223	e185	314	114	101	106	70	48	48	518
10	122	232	333	e175	268	111	97	103	65	116	45	145
11	146	209	1,390	e160	236	107	98	96	65	136	44	87
12	131	202	454	181	209	108	338	93	67	69	134	71
13	120	229	311	187	196	103	906	94	65	80	586	65
14	120	187	531	170	183	101	694	91	66	61	e155	62
15	180	178	571	166	175	103	421	86	107	50	168	60
16	129	188	e500	150	177	330	285	85	144	44	99	59
17	117	188	e400	145	160	338	234	e94	86	48	82	190
18	117	180	e420	212	162	200	207	e89	75	65	106	405
19	113	325	e345	237	180	162	188	e85	69	52	89	154
20	109	497	289	182	170	138	173	e89	64	47	72	82
21	109	306	247	165	158	134	161	92	61	43	67	68
22	109	253	231	e160	142	122	148	314	66	43	128	63
23	103	226	220	e155	135	115	139	122	73	57	77	59
24	100	196	217	151	135	113	136	93	84	128	68	55
25	99	214	206	145	133	112	134	81	89	65	64	54
26	109	186	188	e140	124	109	144	92	271	64	61	54
27	199	177	183	170	122	113	150	151	105	104	53	55
28	209	230	175	e155	117	119	124	96	77	104	53	168
29	197	346	171	e145	116	111	116	87	68	78	53	264
30	170	237	174	e160	---	109	113	66	64	132	54	112
31	141	---	164	e145	---	137	---	81	---	77	59	---
TOTAL	4,164	7,779	10,146	5,541	7,802	4,249	6,074	3,477	2,529	2,170	3,534	3,332
MEAN	134	259	327	179	269	137	202	112	84.3	70.0	114	111
MAX	209	865	1,390	295	1,420	338	906	314	271	136	599	518
MIN	99	116	150	140	116	101	97	66	61	43	44	48
CFSM	0.78	1.50	1.89	1.03	1.56	0.79	1.17	0.65	0.49	0.40	0.66	0.64
IN.	0.90	1.67	2.18	1.19	1.68	0.91	1.31	0.75	0.54	0.47	0.76	0.72

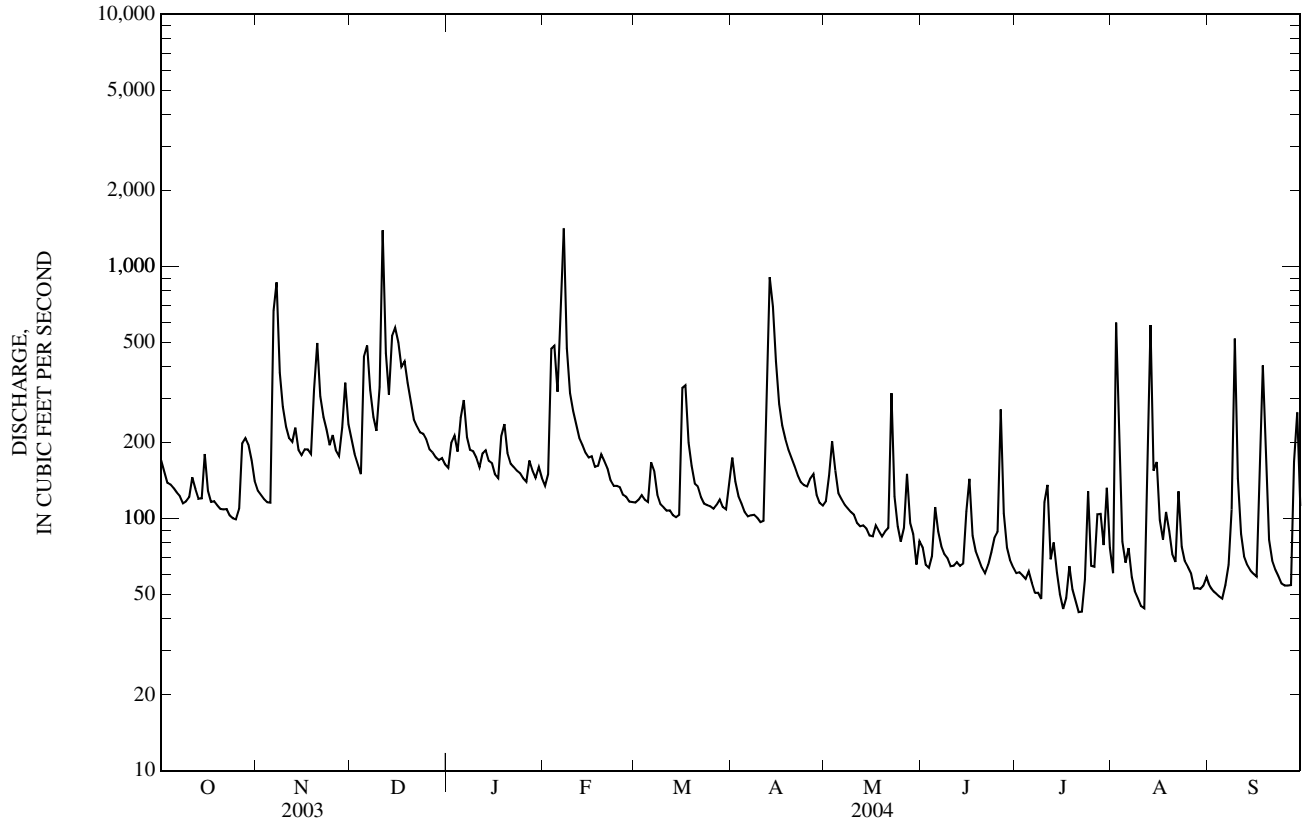
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1934, 1942 - 2004, BY WATER YEAR (WY)

MEAN	101	125	159	197	233	258	215	164	122	92.0	81.9	124
MAX	399	639	487	636	683	844	552	606	898	373	400	1,475
(WY)	(1973)	(1986)	(1997)	(1978)	(1979)	(1975)	(1987)	(1971)	(1972)	(2003)	(1985)	(1996)
MIN	18.9	28.5	44.0	47.9	53.9	62.9	60.2	50.7	18.4	12.9	8.95	10.6
(WY)	(2002)	(2002)	(1966)	(1966)	(2002)	(1981)	(1966)	(1981)	(2002)	(2002)	(2002)	(2002)

02064000 FALLING RIVER NEAR NARUNA, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1930 - 1934 1942 - 2004	
ANNUAL TOTAL	110,357		60,797			
ANNUAL MEAN	302		166		155	
HIGHEST ANNUAL MEAN					322	1996
LOWEST ANNUAL MEAN					42.6	2002
HIGHEST DAILY MEAN	5,100	Jul 3	1,420	Feb 7	e20,000	Sep 6, 1996
LOWEST DAILY MEAN	58	Aug 31	43	aJul 21	e1.0	Aug 15, 2002
ANNUAL SEVEN-DAY MINIMUM	62	Aug 27	49	Jul 16	1.4	Aug 12, 2002
MAXIMUM PEAK FLOW			3,070	Feb 7	62,800	Sep 6, 1996
MAXIMUM PEAK STAGE			10.85	Feb 7	b36.14	Sep 6, 1996
INSTANTANEOUS LOW FLOW			41	Jul 22	(c)	(d)
ANNUAL RUNOFF (CFSM)	1.75		0.960		0.899	
ANNUAL RUNOFF (INCHES)	23.73		13.07		12.21	
10 PERCENT EXCEEDS	517		312		267	
50 PERCENT EXCEEDS	169		124		93	
90 PERCENT EXCEEDS	81		60		37	

a Also July 22, 2004.
b From high-water mark on gage house.
c Not determined.
d Probably occurred Aug. 15, 2002.
e Estimated.



02065500 CUB CREEK AT PHENIX, VA

LOCATION.--Lat 37°04'46", long 78°45'49", NAD83, Charlotte County, Hydrologic Unit 03010102, on right bank 50 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 mi^2.

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 NGVD of 1929. Prior to Jul. 14, 1950, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 9-11, 22-26 and Jan. 28 to Feb. 2, which are fair. Maximum discharge, 15,200 ft^3/s, from rating curve extended above 5,400 ft^3/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 OUTSIDE PERIOD OF RECORD.--Flood of August 1940 reached a stage of 17.5 ft, from floodmarks, discharge not determined.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 7	1500	*1,360	*8.47	2000	1,340	8.41
Dec 11	2400	1,110	7.54			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	92	100	130	116	e105	107	118	78	58	52	54	50
2	92	95	121	125	e110	108	107	88	53	51	289	46
3	87	92	116	140	156	111	102	115	50	49	220	44
4	86	90	116	125	250	107	100	95	56	48	78	44
5	86	89	165	132	173	106	96	82	84	48	61	43
6	85	186	228	190	188	128	93	77	67	47	62	45
7	83	960	172	141	789	133	94	72	59	44	55	56
8	82	506	141	127	660	115	95	69	57	44	50	92
9	82	166	130	e126	206	108	94	68	55	42	48	129
10	86	136	146	e122	164	106	92	67	52	52	46	72
11	103	128	533	e112	150	103	93	64	52	98	45	54
12	92	124	675	126	140	103	135	62	53	60	48	50
13	86	131	191	131	135	100	319	62	52	93	106	49
14	83	120	241	124	129	99	344	61	51	58	70	48
15	114	115	426	121	127	100	197	59	54	49	77	49
16	95	119	324	115	129	158	128	59	96	45	62	49
17	85	118	233	112	124	237	111	66	62	43	55	58
18	85	114	230	131	124	147	102	71	58	79	54	236
19	84	158	177	148	133	127	96	63	54	59	53	190
20	82	320	155	124	130	117	92	61	50	50	49	71
21	82	209	141	116	125	115	89	60	47	46	49	59
22	83	142	136	e115	118	109	86	68	48	44	67	55
23	80	129	133	e114	114	105	84	66	69	49	54	52
24	78	124	133	e112	114	104	87	59	55	72	49	50
25	78	129	131	e105	114	103	89	56	66	56	46	49
26	80	120	124	e100	110	102	98	62	243	56	45	48
27	135	116	122	126	109	103	106	86	158	59	44	48
28	173	125	120	e115	107	106	85	66	68	69	44	77
29	152	206	119	e110	107	101	79	62	60	56	42	141
30	144	152	121	e115	---	100	78	57	56	111	48	75
31	110	---	118	e111	---	107	---	60	---	67	64	---
TOTAL	2,965	5,319	6,048	3,827	5,140	3,575	3,489	2,141	2,043	1,796	2,134	2,129
MEAN	95.6	177	195	123	177	115	116	69.1	68.1	57.9	68.8	71.0
MAX	173	960	675	190	789	237	344	115	243	111	289	236
MIN	78	89	116	100	105	99	78	56	47	42	42	43
CFSM	0.98	1.81	1.99	1.26	1.81	1.18	1.19	0.70	0.69	0.59	0.70	0.72
IN.	1.13	2.02	2.30	1.45	1.95	1.36	1.32	0.81	0.78	0.68	0.81	0.81

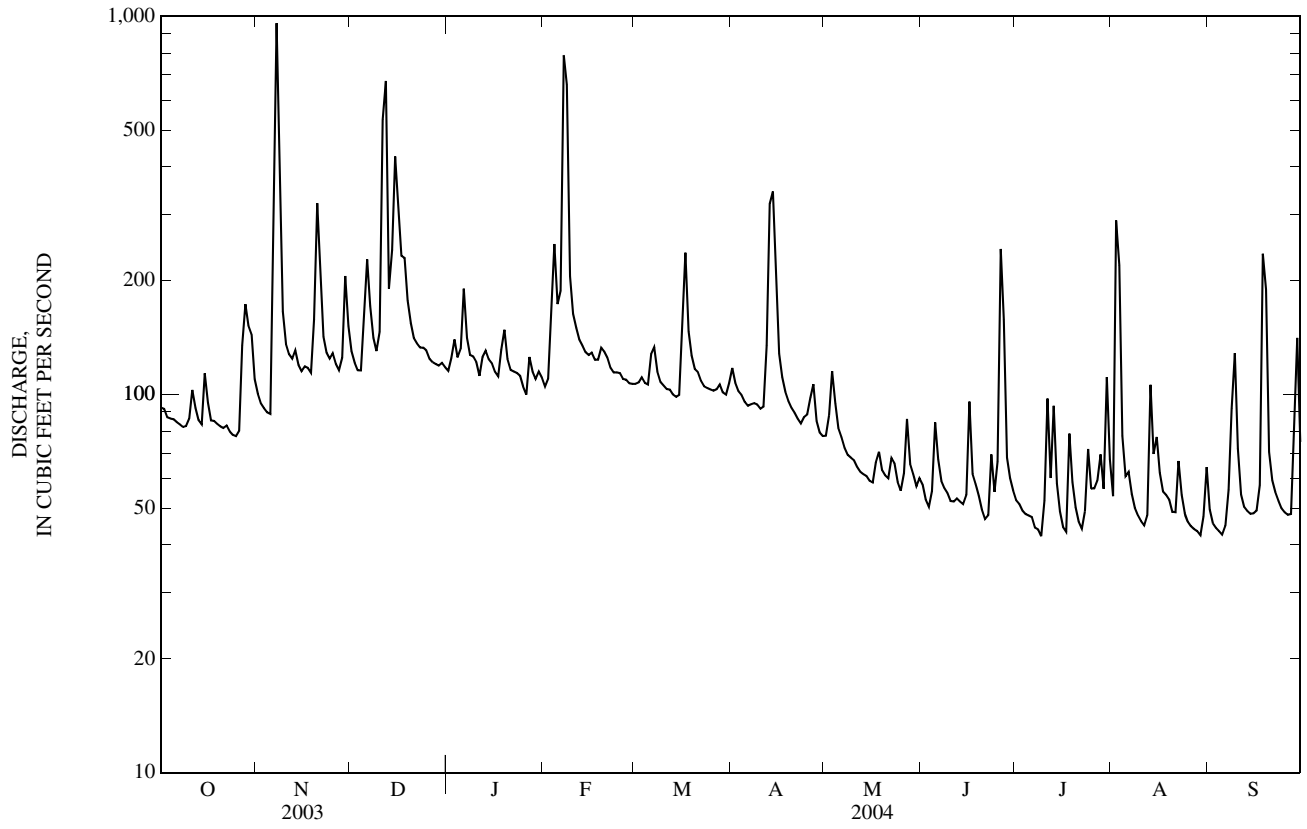
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 2004, BY WATER YEAR (WY)

MEAN	66.6	91.3	103	129	146	161	141	103	78.0	58.8	53.9	72.7
MAX	293	429	279	478	447	443	354	261	518	249	257	572
(WY)	(1972)	(1986)	(1997)	(1978)	(1979)	(1975)	(1983)	(1971)	(1972)	(2003)	(1985)	(1996)
MIN	14.0	22.6	27.9	35.1	43.2	51.7	50.4	37.8	14.6	8.21	5.29	8.03
(WY)	(1971)	(2002)	(1966)	(1966)	(2002)	(1981)	(1966)	(1981)	(2002)	(2002)	(2002)	(1968)

02065500 CUB CREEK AT PHENIX, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1947 - 2004	
ANNUAL TOTAL	74,228		40,606			
ANNUAL MEAN	203		111		100	
HIGHEST ANNUAL MEAN					189	2003
LOWEST ANNUAL MEAN					32.9	2002
HIGHEST DAILY MEAN	3,300	Sep 19	960	Nov 7	6,920	Sep 6, 1996
LOWEST DAILY MEAN	e46	Jan 24	42	aJul 9	0.00	Aug 23, 2002
ANNUAL SEVEN-DAY MINIMUM	e50	Jan 22	45	Aug 24	0.02	Aug 19, 2002
MAXIMUM PEAK FLOW			1,360	Nov 7	15,200	Sep 6, 1996
MAXIMUM PEAK STAGE			8.47	Nov 7	21.89	Sep 6, 1996
INSTANTANEOUS LOW FLOW			40	bJul 9	0.00	cAug 22, 2002
ANNUAL RUNOFF (CFSM)	2.08		1.13		1.02	
ANNUAL RUNOFF (INCHES)	28.18		15.41		13.88	
10 PERCENT EXCEEDS	328		164		172	
50 PERCENT EXCEEDS	119		96		64	
90 PERCENT EXCEEDS	78		49		26	

a Also Aug. 29, 2004.
b Also July 10, 2004.
c Also no flow part or all each day Aug. 23, 24, 2002.
e Estimated.



02066000 ROANOKE (STAUNTON) RIVER AT RANDOLPH, VA

LOCATION.--Lat 36°54'55", long 78°44'27", NAD83, 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 mi^2.

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 NGVD of 1929. 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. Statistics of monthly mean data and summary statistics for water years 1901 - 1906, 1928 - 1930, 1951 - 1962 (unregulated flow) are available in previous data books, water years 1991 - 1998. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 97,000 ft^3/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 ft^3/s, from information by U.S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,240	2,670	3,330	2,800	2,610	2,660	3,110	2,730	1,810	1,850	2,030	1,450
2	2,160	2,600	3,070	2,780	2,320	2,600	3,310	2,890	1,860	1,700	2,780	1,360
3	2,090	2,450	2,960	3,070	2,740	2,500	3,000	3,680	1,830	1,790	6,970	1,320
4	2,010	2,060	2,940	3,040	5,910	2,530	2,800	3,620	1,740	1,830	4,530	1,300
5	1,990	1,890	3,420	2,960	7,200	2,590	2,640	3,050	2,090	1,650	3,390	1,300
6	1,960	2,500	5,260	3,770	7,200	2,790	2,340	2,670	5,610	1,560	3,240	1,300
7	1,930	9,720	5,190	4,080	16,300	3,320	2,110	2,480	4,340	1,500	3,340	1,350
8	1,920	8,610	4,750	3,750	14,200	3,330	2,100	2,350	2,680	1,440	2,660	3,590
9	1,910	6,660	4,350	3,490	8,910	3,170	1,990	2,310	2,150	1,340	2,310	11,300
10	1,950	4,360	4,200	3,380	7,310	2,940	1,930	2,510	1,880	1,260	1,580	11,600
11	2,150	3,260	10,900	3,240	6,220	2,750	2,130	3,350	1,820	1,510	1,460	9,400
12	2,250	2,870	15,900	3,060	5,610	2,520	2,440	2,710	1,990	1,570	1,470	6,490
13	2,250	2,670	12,300	2,960	5,180	2,330	7,390	2,320	2,010	1,490	3,840	3,380
14	2,170	2,740	8,660	2,960	4,580	2,180	14,900	2,270	1,940	1,740	4,400	2,330
15	2,390	2,520	8,050	2,870	4,370	2,080	15,600	2,240	1,900	1,570	3,520	2,760
16	2,770	2,400	7,240	2,810	4,130	2,270	12,900	2,290	1,870	1,310	2,180	5,590
17	2,620	2,400	6,420	2,710	4,020	3,960	10,500	2,630	2,280	1,220	1,770	7,040
18	2,400	2,360	7,180	2,710	4,030	4,110	6,230	2,760	3,080	1,320	1,720	7,100
19	2,140	2,750	7,430	3,050	4,080	3,810	4,300	2,330	2,640	1,370	1,730	4,090
20	2,100	8,860	5,820	3,090	3,950	3,630	3,600	1,960	2,020	1,290	1,590	2,470
21	1,950	8,010	4,900	2,850	3,570	3,520	3,500	1,960	1,920	1,250	1,500	1,970
22	1,950	6,740	4,260	2,660	3,210	3,170	3,650	2,650	1,720	1,200	1,530	1,820
23	2,040	6,300	3,860	2,570	3,060	2,820	3,450	2,560	1,630	1,250	1,600	1,720
24	2,000	4,600	3,810	2,580	2,980	2,470	3,170	2,340	1,600	1,520	1,490	1,610
25	1,970	3,210	3,720	2,540	3,000	2,360	2,890	2,050	1,510	1,640	1,440	1,540
26	1,880	3,350	3,490	2,510	2,970	2,370	2,860	1,930	2,950	1,570	1,390	1,500
27	1,950	3,120	3,200	2,940	2,900	2,380	3,110	2,380	4,780	1,630	1,350	1,470
28	3,590	3,060	2,930	3,560	2,860	2,420	3,690	2,700	3,870	2,240	1,330	1,600
29	3,550	3,750	2,670	3,470	2,710	2,390	3,250	2,820	2,670	2,430	1,330	13,000
30	3,200	3,700	2,500	3,260	---	2,380	2,850	2,420	2,180	2,240	1,400	16,900
31	2,850	---	2,650	2,830	---	2,590	---	2,110	---	2,440	1,550	---
TOTAL	70,330	122,190	167,360	94,350	148,130	86,940	137,740	79,070	72,370	49,720	72,420	129,650
MEAN	2,269	4,073	5,399	3,044	5,108	2,805	4,591	2,551	2,412	1,604	2,336	4,322
MAX	3,590	9,720	15,900	4,080	16,300	4,110	15,600	3,680	5,610	2,440	6,970	16,900
MIN	1,880	1,890	2,500	2,510	2,320	2,080	1,930	1,930	1,510	1,200	1,330	1,300
(†)	-1,822	+433	+862	-2,859	+1,457	+3,919	+141	-1,347	+1,336	+1,008	-4,698	+22,815
MEAN‡	2,210	4,087	5,427	2,951	5,158	2,931	4,596	2,507	2,457	1,636	2,185	5,082
CFSM‡	.74	1.37	1.82	.99	1.73	.98	1.54	.84	.83	.55	.73	1.71
IN.‡	.86	1.53	2.10	1.14	1.87	1.14	1.72	.97	.92	.63	.85	1.91

CAL YR 2003 MEAN‡ 5,599 CFSM‡ 1.88 IN.‡ 25.54
WTR YR 2004 MEAN‡ 3,419 CFSM‡ 1.15 IN.‡ 15.64

† 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 change in contents.

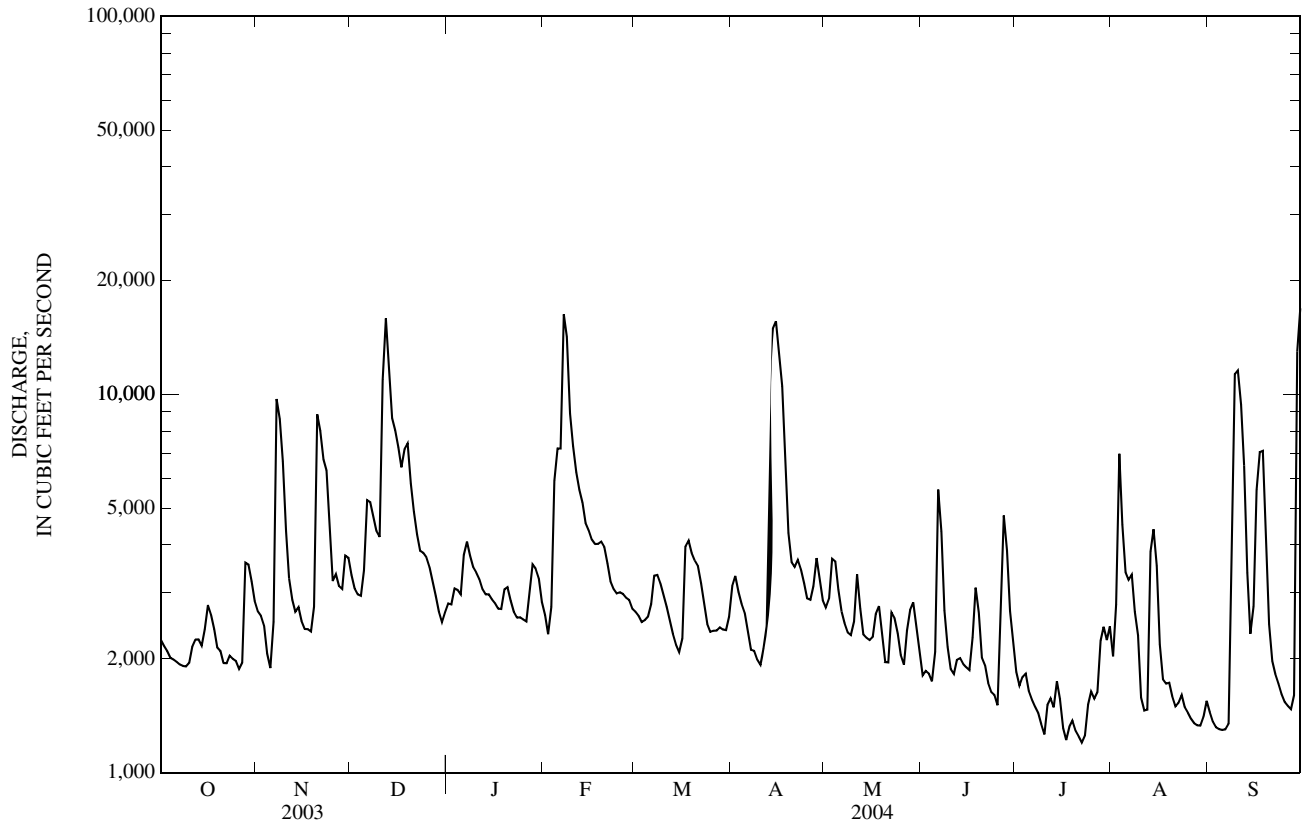
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2004, BY WATER YEAR (WY)

MEAN	1,959	2,248	2,557	3,564	4,037	4,817	4,330	3,360	2,656	1,863	1,706	2,190
MAX	7,906	11,230	6,887	9,532	12,230	13,970	17,570	10,060	10,260	5,635	5,988	11,350
(WY)	(1991)	(1986)	(1997)	(1978)	(1998)	(1975)	(1987)	(1978)	(1972)	(1972)	(1985)	(1996)
MIN	428	658	809	857	781	769	1,082	1,038	491	613	493	458
(WY)	(1964)	(2002)	(2002)	(2002)	(2002)	(1981)	(2002)	(1964)	(1964)	(2002)	(1964)	(2002)

02066000 ROANOKE (STAUNTON) RIVER AT RANDOLPH, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1963 - 2004	
ANNUAL TOTAL	2,044,310		1,230,270			
ANNUAL MEAN	5,601		3,361		2,933	
HIGHEST ANNUAL MEAN					5,152	2003
LOWEST ANNUAL MEAN					852	2002
HIGHEST DAILY MEAN	34,800	Feb 24	16,900	Sep 30	78,700	Sep 8, 1996
LOWEST DAILY MEAN	1,270	Jan 25	1,200	Jul 22	179	aSep 8, 1965
ANNUAL SEVEN-DAY MINIMUM	1,310	Jan 23	1,270	Jul 17	238	Sep 5, 1965
MAXIMUM PEAK FLOW			19,500	Feb 7	b89,300	Sep 7, 1996
MAXIMUM PEAK STAGE			22.48	Feb 7	b34.94	Sep 7, 1996
INSTANTANEOUS LOW FLOW			1,170	Jul 18	c176	dSep 8, 1965
ANNUAL RUNOFF (CFSM)	1.88		1.13		0.985	
ANNUAL RUNOFF (INCHES)	25.55		15.37		13.39	
10 PERCENT EXCEEDS	13,400		6,250		5,640	
50 PERCENT EXCEEDS	3,640		2,670		1,760	
90 PERCENT EXCEEDS	1,880		1,540		820	

a Also July 7, 1970.
b Prior to regulation, 1901-06, 1928-30, 1951-62, maximum peak flow, 97,000 ft^3/s, Dec. 31, 1901, gage height, 35.00 ft.
c Prior to regulation, 1901-06, 1928-30, 1951-62, instantaneous low flow, 256 ft^3/s, Sept. 16, 1954.
d Also Sept. 9, 1965.



02067800; 02067820 TALBOTT AND TOWNES RESERVOIRS NEAR KIBLER, VA

LOCATION.--Talbott Dam: Lat 36°40'39", long 80°23'51", NAD83, Patrick County, Hydrologic Unit 03010103, on Dan River 4.5 mi northeast of Kibler. Townes Dam: Lat 36°41'10", long 80°25'49", NAD83, Patrick County, Hydrologic Unit 03010103, on Dan River about 4 mi north of Kibler.

DRAINAGE AREA.--Talbott Dam, 20.2 mi^2; Townes Dam, 32.9 mi^2.

PERIOD OF RECORD.--February 1939 to December 1945, January 1948 to September 1960 (published in WSP 1723), and October 1960 to current year.

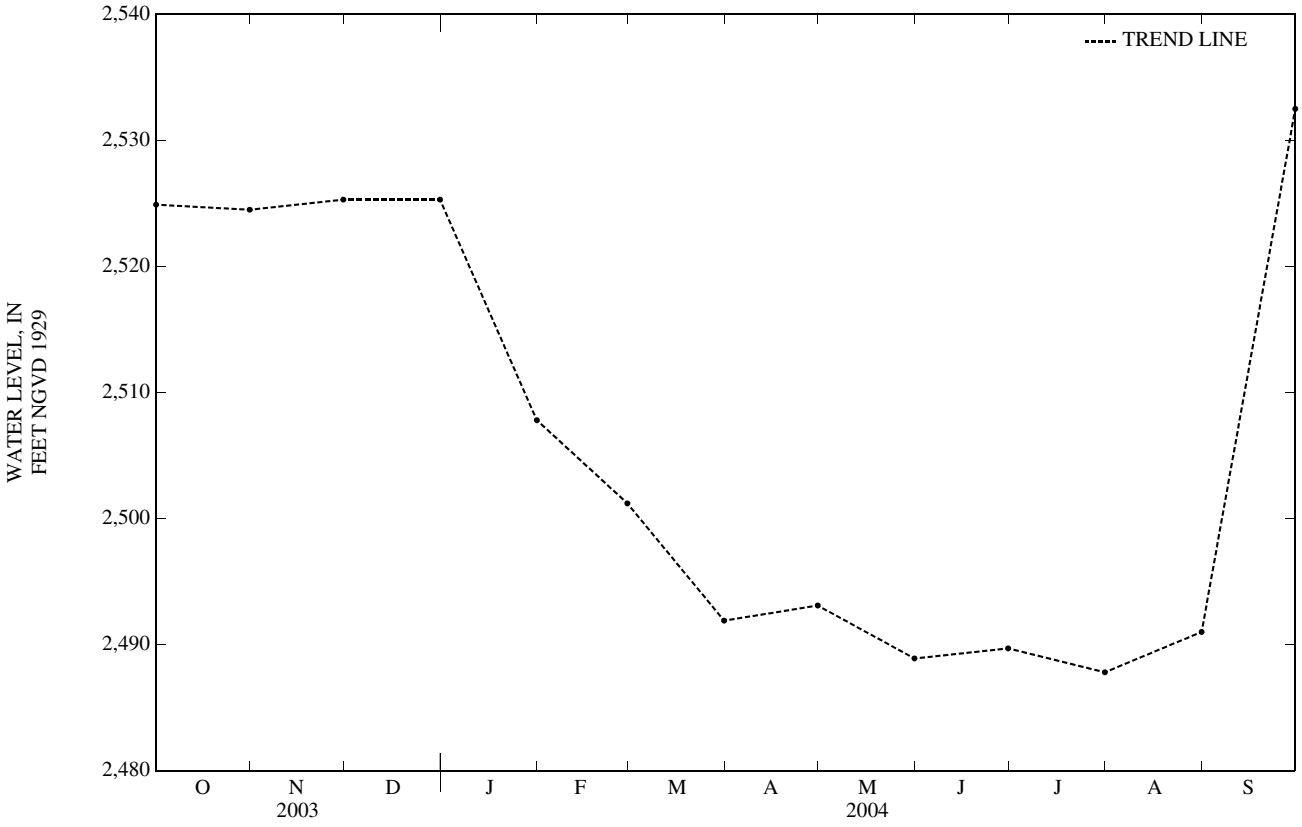
REMARKS.--The two reservoirs are operated as a unit for storage of water for Pinnacles hydroelectric plant. Total capacity of Talbott Reservoir, 8,040 acre-ft, and Townes Reservoir, 1,380 acre-ft. Storage began in Talbott Reservoir on Feb. 13, 1939, and in Townes Reservoir several months earlier.

COOPERATION.--Records provided by the City of Danville.

TALBOTT RESERVOIR, MONTHEND CONTENTS AT 2400, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
	2,524.9	6,505	
	2,524.5	6,446	-59
November 30	2,525.3	6,565	+119
December 31	2,525.3	6,565	0
	2,507.8	4,325	-2,240
February 29	2,501.2	3,636	-689
March 31	2,491.9	2,760	-876
April 30	2,493.1	2,865	+105
May 31	2,488.9	2,508	-357
June 30	2,489.7	2,571	+63
July 31	2,487.8	2,422	-149
August 31	2,491.0	2,681	+259
September 30	2,532.5	7,639	+4,958

02067800; 02067820 TALBOTT AND TOWNES RESERVOIRS NEAR KIBLER, VA—Continued

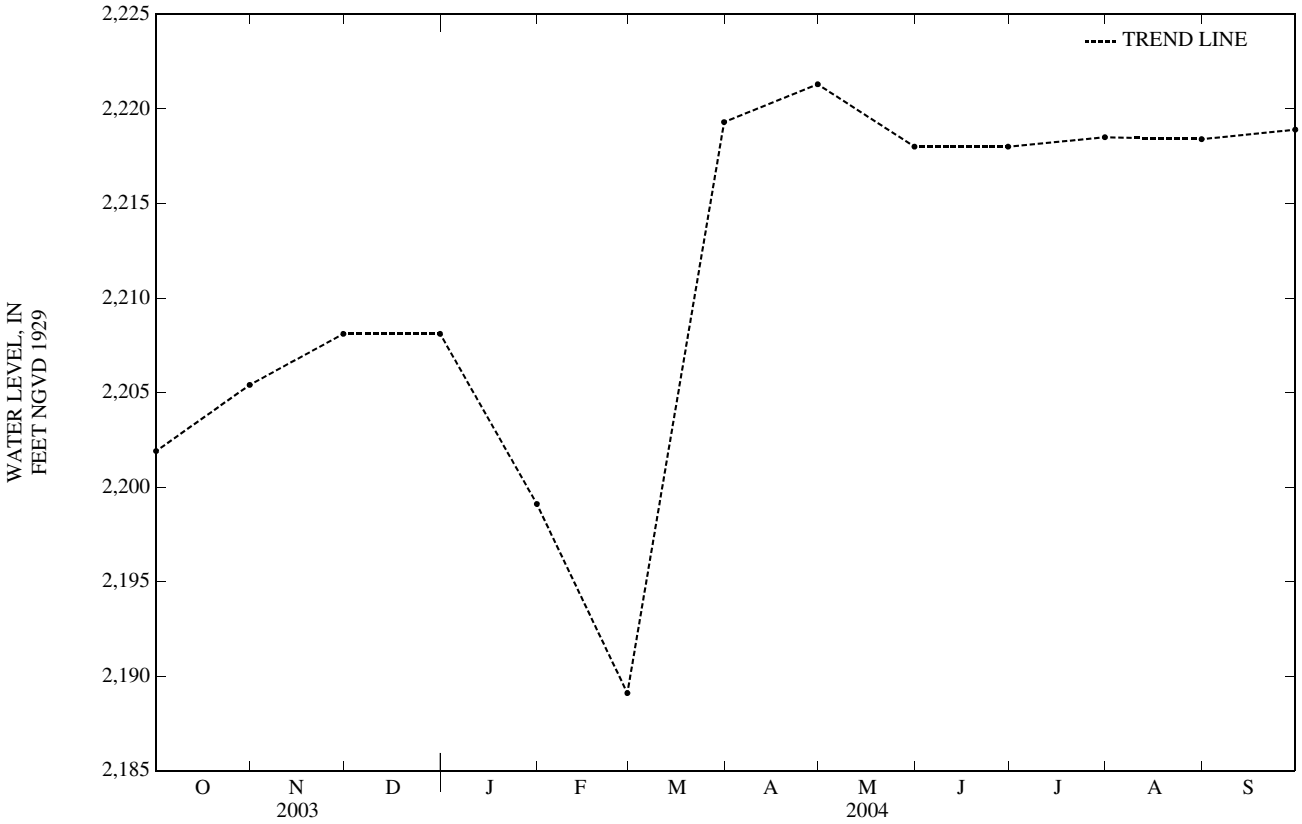


02067800; 02067820 TALBOTT AND TOWNES RESERVOIRS NEAR KIBLER, VA

TOWNES RESERVOIR, MONTHEND CONTENTS AT 2400, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
	2,201.9	792	
	2,205.4	888	+96
November 30	2,208.1	962	+74
December 31	2,208.1	962	0
	2,199.1	714	-248
February 29	2,189.1	440	-274
March 31	2,219.3	1,303	+863
April 30	2,221.3	1,372	+69
May 31	2,218.0	1,258	-114
June 30	2,218.0	1,258	0
July 31	2,218.5	1,275	+17
August 31	2,218.4	1,272	-3
September 30	2,218.9	1,289	+17

02067800; 02067820 TALBOTT AND TOWNES RESERVOIRS NEAR KIBLER, VA—Continued



02068500 DAN RIVER NEAR FRANCISCO, NC

LOCATION.--Lat 36°30'54", 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 mi^2.

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 NGVD of 1929. Prior to Nov. 15, 1929, nonrecording gage at same site and datum. Satellite telemetry at station.

REMARKS.--Records good except those for estimated daily discharges, 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. Minimum discharge for current water year also occurred Sept. 6.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1916 reached a stage of about 15 ft, from information by local residents, discharge, 16,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	165	185	264	231	247	193	152	192	136	151	190	98
2	191	183	256	217	187	190	143	203	118	149	166	95
3	e190	182	254	217	346	185	140	189	112	183	206	95
4	201	181	274	216	251	149	139	176	167	171	117	93
5	182	186	389	229	215	149	136	166	165	174	109	91
6	148	470	e461	230	571	312	134	162	133	146	107	90
7	147	333	e319	214	654	328	138	163	127	135	98	110
8	146	247	e312	210	411	318	148	162	134	133	101	1,210
9	160	226	e261	215	358	138	148	190	170	125	101	601
10	200	218	e525	210	295	137	147	180	187	143	99	261
11	195	216	609	231	284	137	148	158	149	213	110	196
12	199	213	371	230	278	137	199	149	129	299	e194	174
13	186	211	348	230	274	135	419	143	129	234	178	159
14	190	220	354	229	264	136	458	142	134	155	129	152
15	223	211	390	228	e259	138	280	142	129	137	120	159
16	188	213	386	225	e257	182	230	137	651	111	114	159
17	187	208	436	223	222	165	214	246	198	102	138	438
18	197	212	372	245	222	152	204	182	201	121	192	614
19	203	545	345	228	221	149	196	161	155	119	131	281
20	182	437	306	206	220	146	192	171	141	105	128	221
21	193	322	299	208	219	146	189	159	130	107	115	199
22	181	291	276	164	214	142	183	134	136	102	116	186
23	178	278	280	169	212	141	180	131	158	110	110	167
24	178	278	342	159	214	142	185	136	393	102	105	147
25	182	274	333	163	208	142	176	123	199	97	103	143
26	196	274	328	176	198	137	204	121	645	101	98	139
27	272	259	316	179	196	135	225	135	247	407	97	148
28	216	290	271	180	194	134	185	124	196	298	96	5,990
29	199	295	269	219	193	131	178	122	174	140	154	995
30	189	269	246	244	---	138	175	118	164	129	112	598
31	187	---	231	241	---	161	---	140	---	134	105	---
TOTAL	5,851	7,927	10,423	6,566	7,884	5,125	5,845	4,857	5,907	4,833	3,939	14,009
MEAN	189	264	336	212	272	165	195	157	197	156	127	467
MAX	272	545	609	245	654	328	458	246	651	407	206	5,990
MIN	146	181	231	159	187	131	134	118	112	97	96	90
†	+1	+3	0	-40	-17	0	+3	-8	+1	-2	+4	+84

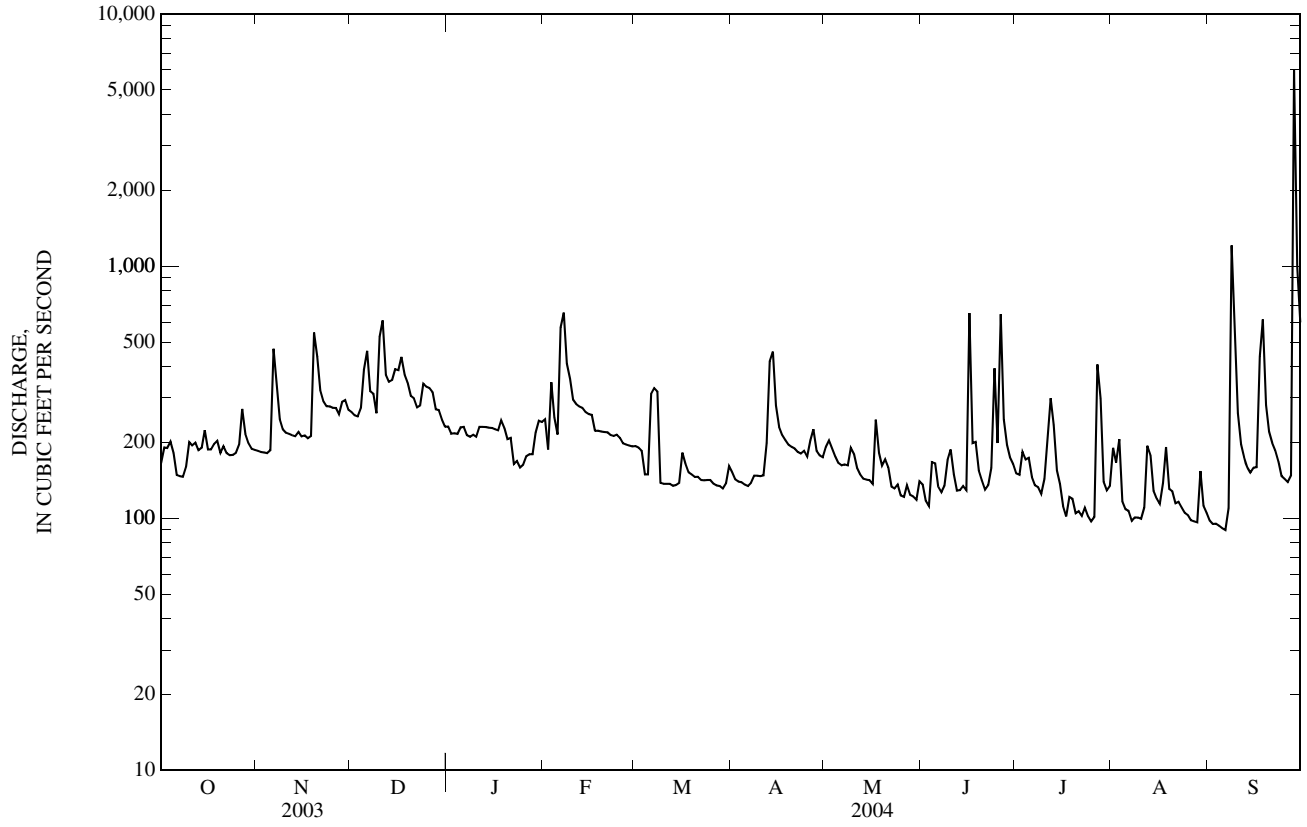
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2004,*@ BY WATER YEAR (WY)

MEAN	147	156	178	197	220	257	267	217	202	168	168	153
MAX	543	327	479	424	463	571	677	405	719	425	514	630
(WY)	(1938)	(1980)	(1997)	(1978)	(1960)	(1993)	(1980)	(1949)	(2003)	(2003)	(1940)	(1979)
MIN	49.7	61.3	77.5	76.2	94.9	94.2	119	95.3	77.9	54.8	52.5	50.4
(WY)	(1964)	(1954)	(1998)	(1956)	(1956)	(1981)	(2002)	(2000)	(2002)	(1986)	(1981)	(1968)

02068500 DAN RIVER NEAR FRANCISCO, NC—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1938 - 2004*@	
ANNUAL TOTAL	125,989		83,166			(UNADJUSTED)
ANNUAL MEAN	345		227	‡230	194	
HIGHEST ANNUAL MEAN					314	2003
LOWEST ANNUAL MEAN					93.6	2002
HIGHEST DAILY MEAN	2,000	Aug 7	5,990	Sep 28	6,830	Sep 22, 1979
LOWEST DAILY MEAN	110	Feb 1	90	Sep 6	21	Sep 4, 1999
ANNUAL SEVEN-DAY MINIMUM	119	Jan 28	95	Aug 31	28	Aug 24, 1981
MAXIMUM PEAK FLOW			13,800	Sep 28	21,200	Aug 17, 1985
MAXIMUM PEAK STAGE			14.47	Sep 28	19.50	Aug 17, 1985
INSTANTANEOUS LOW FLOW			88*	Sep 6	7.1	Sep 8, 1932
10 PERCENT EXCEEDS	580		330		320	
50 PERCENT EXCEEDS	271		186		155	
90 PERCENT EXCEEDS	160		118		80	

† Change in contents, equivalent in cubic feet per second, in Talbott and Townes Reservoirs provided by City of Danville, Virginia.
* Regulated period only (1938-2004). See REMARKS.
@ See PERIOD OF RECORD.
‡ Adjusted for change in contents.
e Estimated.



02069700 SOUTH MAYO RIVER NEAR NETTLERIDGE, VA

LOCATION.--Lat 36°34'15", long 80°07'46", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to Oct. 9, 1964, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 22, 23, 26, 29, and Jan. 31 to Feb. 1, and periods of no gage-height record, June 11-15 and Sept. 2, 3, 13-20, which are fair. Maximum discharge, 20,600 ft^3/s, from rating curve extended above 2,900 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Jun 16	0630	6,850	14.48	1045	*9,290	*16.26
Jun 26	0400	1,330	7.17			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	115	100	118	113	e90	99	107	114	78	138	78	70
2	112	99	112	113	92	100	99	127	71	113	455	e69
3	109	98	109	112	242	100	96	114	68	121	514	e68
4	110	97	117	111	165	98	94	104	191	111	166	67
5	109	99	197	122	127	98	91	100	130	108	123	66
6	107	386	168	122	338	114	90	97	90	96	109	65
7	105	235	145	109	376	103	91	94	80	91	94	77
8	105	145	132	107	203	100	90	91	124	89	87	628
9	124	122	126	109	164	96	89	101	124	84	83	359
10	123	114	280	107	148	96	88	96	101	88	79	185
11	112	110	442	103	138	94	89	89	e115	136	84	136
12	108	108	227	104	133	94	145	87	e92	101	208	117
13	106	107	182	104	127	91	395	86	e86	125	170	e104
14	109	99	199	102	121	91	533	85	e81	88	107	e98
15	147	104	201	102	119	92	287	84	e100	79	99	e95
16	109	108	190	99	124	146	196	82	1,720	75	91	e91
17	106	104	247	99	115	121	163	91	238	75	97	e142
18	105	101	214	109	115	106	145	107	334	88	181	e203
19	104	298	185	102	118	102	133	91	150	79	127	e123
20	102	249	165	98	117	98	127	110	118	83	129	e104
21	101	169	150	96	114	99	122	103	102	73	93	97
22	100	145	144	e95	109	95	116	86	100	71	101	92
23	98	133	140	e94	108	93	112	107	138	83	86	87
24	98	129	140	95	107	94	115	89	442	71	81	84
25	97	136	131	98	105	94	107	81	188	68	76	82
26	99	120	125	e95	103	94	130	79	653	69	74	80
27	159	115	122	98	102	94	134	88	240	384	72	81
28	123	133	119	95	100	94	109	80	173	164	75	3,160
29	111	147	118	e93	99	93	104	78	142	106	107	719
30	104	124	122	99	---	97	102	75	135	95	81	359
31	101	---	115	e94	---	120	---	85	---	85	74	---
TOTAL	3,418	4,234	5,182	3,199	4,119	3,106	4,299	2,901	6,404	3,237	4,001	7,708
MEAN	110	141	167	103	142	100	143	93.6	213	104	129	257
MAX	159	386	442	122	376	146	533	127	1,720	384	514	3,160
MIN	97	97	109	93	90	91	88	75	68	68	72	65
CFSM	1.30	1.67	1.98	1.22	1.68	1.18	1.69	1.11	2.52	1.23	1.53	3.04
IN.	1.50	1.86	2.28	1.41	1.81	1.37	1.89	1.28	2.82	1.42	1.76	3.39

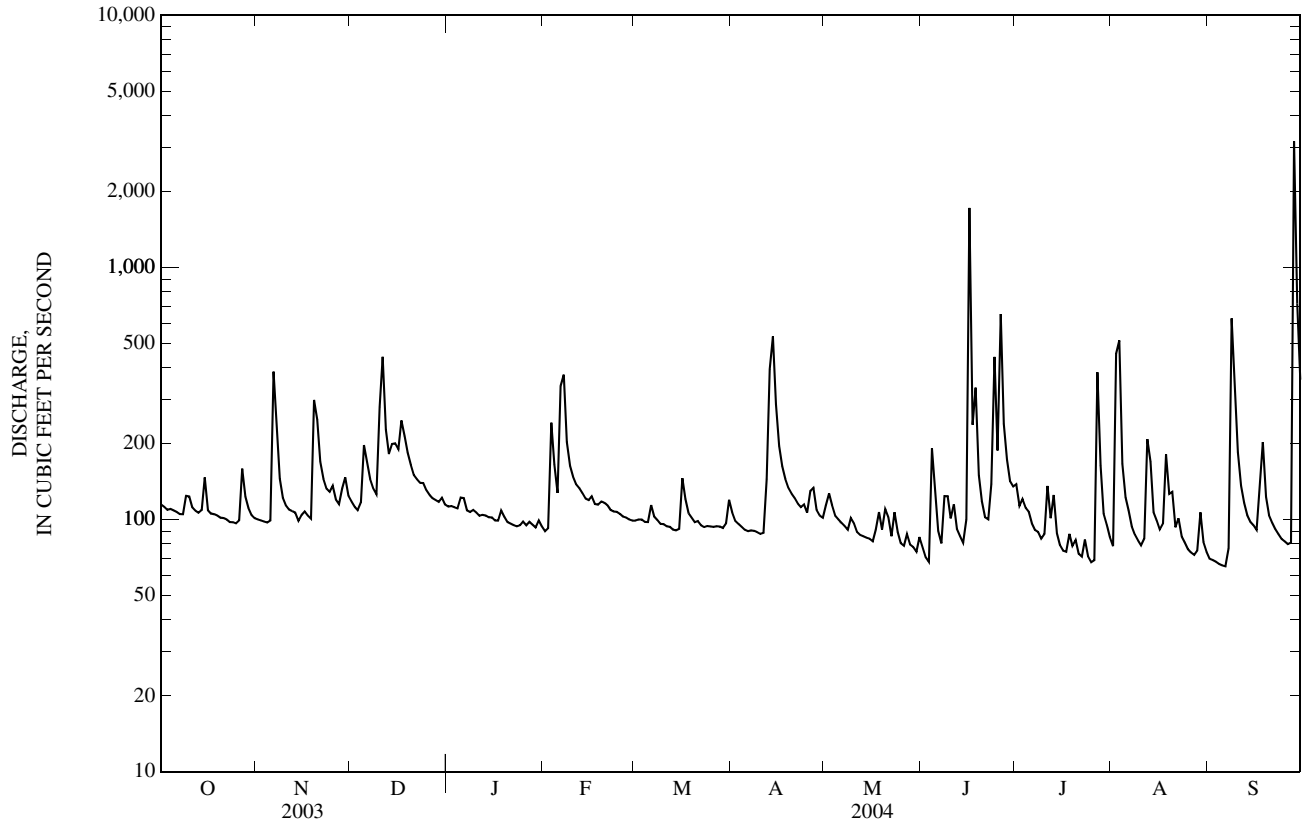
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2004, BY WATER YEAR (WY)

MEAN	95.1	102	114	135	148	179	176	143	131	106	98.2	94.5
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	30.4	30.2	43.0	48.6	50.7	65.0	64.4	56.5	28.2	25.9	17.2	30.4
(WY)	(2002)	(2002)	(2001)	(1981)	(2001)	(1981)	(2002)	(1981)	(2002)	(2002)	(2002)	(2002)

02069700 SOUTH MAYO RIVER NEAR NETTLERIDGE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1963 - 2004	
ANNUAL TOTAL	73,649		51,808			
ANNUAL MEAN	202		142		127	
HIGHEST ANNUAL MEAN					206	1990
LOWEST ANNUAL MEAN					44.9	2002
HIGHEST DAILY MEAN	1,400	Mar 20	3,160	Sep 28	6,820	Jun 21, 1972
LOWEST DAILY MEAN	e53	Jan 24	65	Sep 6	8.7	Aug 15, 2002
ANNUAL SEVEN-DAY MINIMUM	e59	Jan 22	68	Aug 31	10	Aug 9, 2002
MAXIMUM PEAK FLOW			9,290	Sep 28	20,600	Sep 22, 1979
MAXIMUM PEAK STAGE			16.26	Sep 28	22.00	Sep 22, 1979
INSTANTANEOUS LOW FLOW			63	Sep 6	8.3	Aug 15, 2002
ANNUAL RUNOFF (CFSM)	2.39		1.67		1.50	
ANNUAL RUNOFF (INCHES)	32.38		22.78		20.34	
10 PERCENT EXCEEDS	353		192		211	
50 PERCENT EXCEEDS	146		106		96	
90 PERCENT EXCEEDS	90		81		47	

e Estimated.



02070000 NORTH MAYO RIVER NEAR SPENCER, VA

LOCATION.--Lat 36°34'05", long 79°59'14", NAD83, 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 southeast of Spencer.

DRAINAGE AREA.--108 mi^2.

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 NGVD of 1929 (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 with ice effect, Jan. 10, 11, 21-23, 26-29 and Jan. 31 to Feb. 2, and periods of no gage-height record, Aug. 26 and Sept. 27, which are fair. Maximum discharge, 17,200 ft^3/s, from rating curve extended above 7,200 ft^3/s on basis of slope-area measurement at gage height 13.41 ft 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.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,400 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Jun 16	0915	2,310	6.06	1830	2,810	6.67
Jun 26	0600	1,560	5.00	1800	*3,570	*7.51
Aug 18	0830	2,250	5.98			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	130	112	124	125	e100	110	119	111	88	258	95	76
2	128	112	119	124	e105	112	105	132	76	119	112	75
3	124	110	117	124	227	113	102	124	74	110	399	76
4	125	110	123	124	213	110	100	109	135	103	131	74
5	124	110	202	129	153	110	96	105	200	97	102	72
6	122	305	211	138	323	116	96	103	105	90	99	72
7	121	307	179	121	559	113	97	100	93	85	87	85
8	119	162	155	120	228	108	97	97	96	86	82	1,410
9	124	137	143	122	176	107	96	96	176	81	79	598
10	129	130	265	e119	160	106	94	95	103	84	78	222
11	126	126	703	e112	150	105	95	93	117	159	79	146
12	122	125	251	118	144	105	204	90	92	100	118	126
13	118	124	189	118	141	103	692	90	88	129	166	115
14	119	115	203	116	135	102	758	88	89	96	103	108
15	148	120	217	115	132	104	384	86	99	85	96	104
16	122	129	224	111	134	143	216	86	1,150	80	89	100
17	118	124	313	111	128	157	174	98	187	77	135	299
18	118	120	267	118	126	122	155	94	141	90	951	291
19	116	170	202	115	130	115	144	92	115	82	171	140
20	115	221	175	109	129	109	136	107	108	83	119	114
21	114	154	160	e105	126	109	130	95	96	77	178	105
22	113	137	153	e104	122	105	124	87	96	74	162	100
23	111	129	149	e102	120	102	120	97	95	87	108	95
24	110	127	148	108	120	102	124	103	219	77	97	92
25	110	136	141	110	117	102	116	85	143	72	90	90
26	112	125	135	e106	114	102	123	83	874	72	e86	88
27	139	121	133	e114	114	103	143	95	199	295	83	e93
28	134	126	130	e109	112	103	115	86	142	229	81	2,190
29	124	151	128	e102	110	101	109	83	123	150	80	617
30	116	129	131	114	---	102	107	80	157	154	82	244
31	113	---	126	e110	---	120	---	87	---	110	80	---
TOTAL	3,764	4,304	5,916	3,573	4,648	3,421	5,171	2,977	5,476	3,491	4,418	8,017
MEAN	121	143	191	115	160	110	172	96.0	183	113	143	267
MAX	148	307	703	138	559	157	758	132	1,150	295	951	2,190
MIN	110	110	117	102	100	101	94	80	74	72	78	72
CFSM	1.12	1.33	1.77	1.07	1.48	1.02	1.60	0.89	1.69	1.04	1.32	2.47
IN.	1.30	1.48	2.04	1.23	1.60	1.18	1.78	1.03	1.89	1.20	1.52	2.76

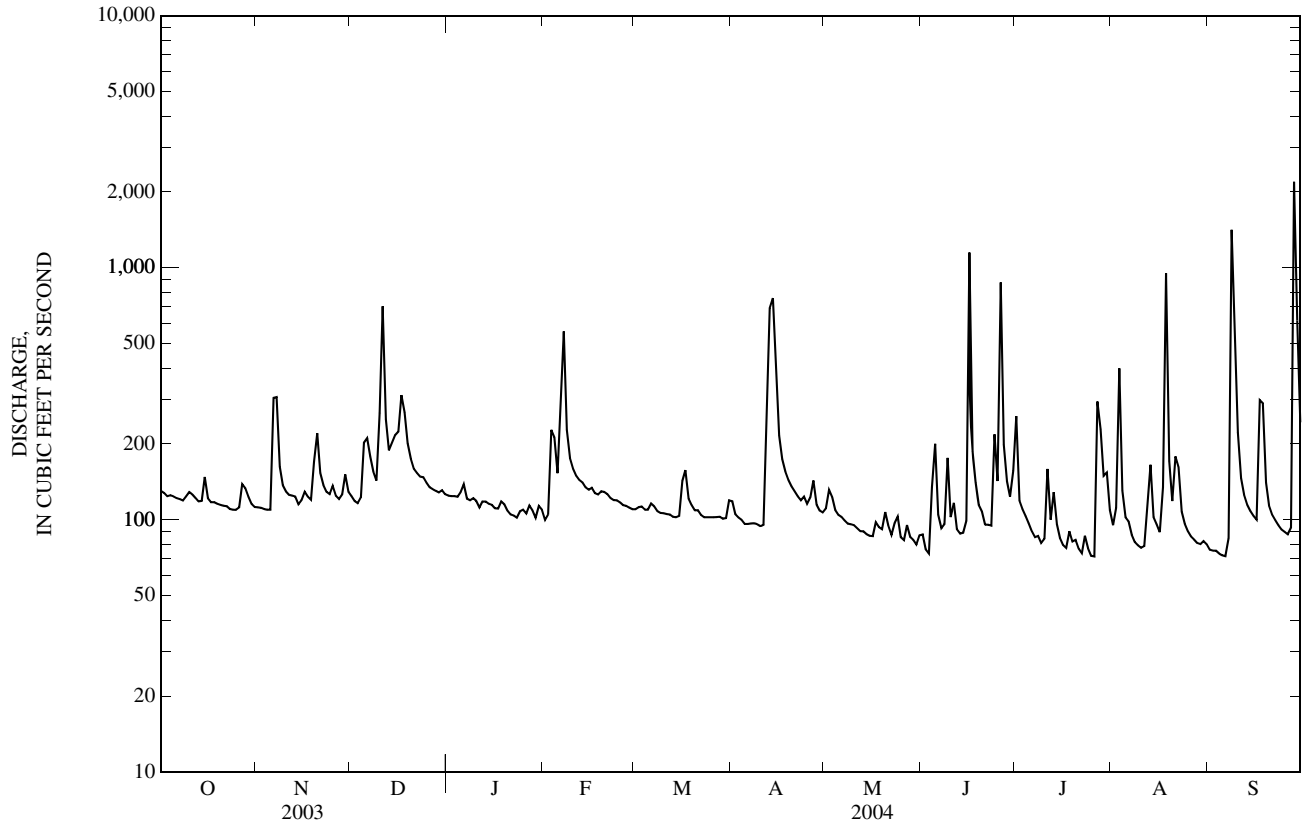
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1935, 1937 - 2004, BY WATER YEAR (WY)

MEAN	111	104	122	143	155	180	164	134	125	106	98.9	105
MAX	498	392	256	368	364	479	523	329	470	380	446	462
(WY)	(1938)	(1986)	(1997)	(1937)	(1960)	(1993)	(1987)	(1972)	(1972)	(2003)	(1985)	(1987)
MIN	25.4	30.5	43.5	40.6	49.6	85.5	56.9	55.5	21.1	21.5	12.4	25.7
(WY)	(2002)	(2002)	(1956)	(1956)	(1931)	(1981)	(2002)	(2002)	(2002)	(2002)	(2002)	(1954)

02070000 NORTH MAYO RIVER NEAR SPENCER, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1929 - 1935 1937 - 2004	
ANNUAL TOTAL	83,053		55,176			
ANNUAL MEAN	228		151		129	
HIGHEST ANNUAL MEAN					218	1987
LOWEST ANNUAL MEAN					43.5	2002
HIGHEST DAILY MEAN	3,530	Mar 20	2,190	Sep 28	7,460	Aug 18, 1985
LOWEST DAILY MEAN	e57	Jan 24	72	aJul 25	5.9	bAug 15, 2002
ANNUAL SEVEN-DAY MINIMUM	e64	Jan 22	75	Aug 31	6.4	Aug 10, 2002
MAXIMUM PEAK FLOW			3,570	Sep 28	17,200	Oct 9, 1947
MAXIMUM PEAK STAGE			7.51	Sep 28	15.80	Oct 9, 1947
INSTANTANEOUS LOW FLOW			71	aJul 25	5.6	bAug 15, 2002
ANNUAL RUNOFF (CFSM)	2.11		1.40		1.19	
ANNUAL RUNOFF (INCHES)	28.61		19.01		16.21	
10 PERCENT EXCEEDS	382		206		200	
50 PERCENT EXCEEDS	154		115		95	
90 PERCENT EXCEEDS	92		86		49	

a Also July 26 and Sept. 5, 6, 2004.
b Also Aug. 16, 2002.
e Estimated.



02071530 SMITH RIVER AT SMITH RIVER CHURCH NEAR WOOLWINE, VA

LOCATION.--Lat 36°46'42", long 80°14'57", NAD83, Patrick County, Hydrologic Unit 03010103, on left bank 10 ft downstream from bridge on State Highway 708, 1.9 mi southeast of Woolwine, and 29 mi upstream from Philpott Dam.

DRAINAGE AREA.--26.7 mi^2.

PERIOD OF RECORD.--October 1994 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,210 ft NGVD of 1929, from topographic map.

REMARKS.--Records good except those for period with ice effect, Jan. 26, 27, and period of no gage-height record, Sept. 6, 7, which are fair. Maximum discharge, 3,450 ft^3/s, from rating curve extended above 950 ft^3/s. Several observations of water temperature were made during the year.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,100 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Sep 28	0500	*3,520	*12.20			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	41	63	57	44	47	45	51	29	36	13	16
2	41	40	61	57	43	48	42	50	27	30	56	16
3	41	40	60	56	79	46	41	46	26	28	32	16
4	40	40	65	55	61	46	40	43	69	29	22	15
5	39	41	77	60	54	45	39	42	44	26	21	15
6	38	91	69	57	141	50	39	41	35	21	20	e17
7	38	65	65	54	117	47	38	39	33	22	17	e65
8	38	54	62	54	81	48	38	38	56	19	16	394
9	53	50	61	55	70	46	37	37	46	18	17	134
10	49	48	175	53	67	45	37	40	37	19	16	77
11	48	46	155	52	64	44	41	40	33	19	19	59
12	44	45	102	52	63	44	114	37	33	19	32	50
13	42	49	88	51	60	43	205	35	33	18	26	44
14	46	44	89	51	58	42	123	34	31	16	21	42
15	50	48	82	50	58	42	90	34	33	15	20	39
16	43	47	83	50	58	66	76	48	39	14	19	37
17	42	45	110	49	55	55	68	54	34	14	63	114
18	42	45	92	54	55	50	62	44	29	17	32	108
19	41	340	83	49	55	47	58	38	28	18	24	70
20	40	135	76	47	55	45	56	37	27	23	21	58
21	39	95	71	47	56	44	55	35	27	15	22	52
22	39	81	69	47	54	43	52	33	27	16	22	47
23	39	73	67	46	53	43	51	32	33	17	21	44
24	39	71	71	46	52	43	51	32	39	14	20	42
25	39	66	66	47	51	42	48	31	51	13	19	40
26	39	63	64	e46	51	41	61	32	80	15	18	38
27	77	60	63	e45	50	41	54	33	41	34	17	44
28	50	83	61	45	49	41	48	31	34	19	21	983
29	46	75	60	45	48	40	45	29	30	16	21	244
30	43	67	61	46	---	43	45	29	38	16	19	156
31	42	---	59	44	---	51	---	33	---	14	17	---
TOTAL	1,349	2,088	2,430	1,567	1,802	1,418	1,799	1,178	1,122	610	724	3,076
MEAN	43.5	69.6	78.4	50.5	62.1	45.7	60.0	38.0	37.4	19.7	23.4	103
MAX	77	340	175	60	141	66	205	54	80	36	63	983
MIN	38	40	59	44	43	40	37	29	26	13	13	15
CFSM	1.63	2.61	2.94	1.89	2.33	1.71	2.25	1.42	1.40	0.74	0.87	3.84
IN.	1.88	2.91	3.39	2.18	2.51	1.98	2.51	1.64	1.56	0.85	1.01	4.29

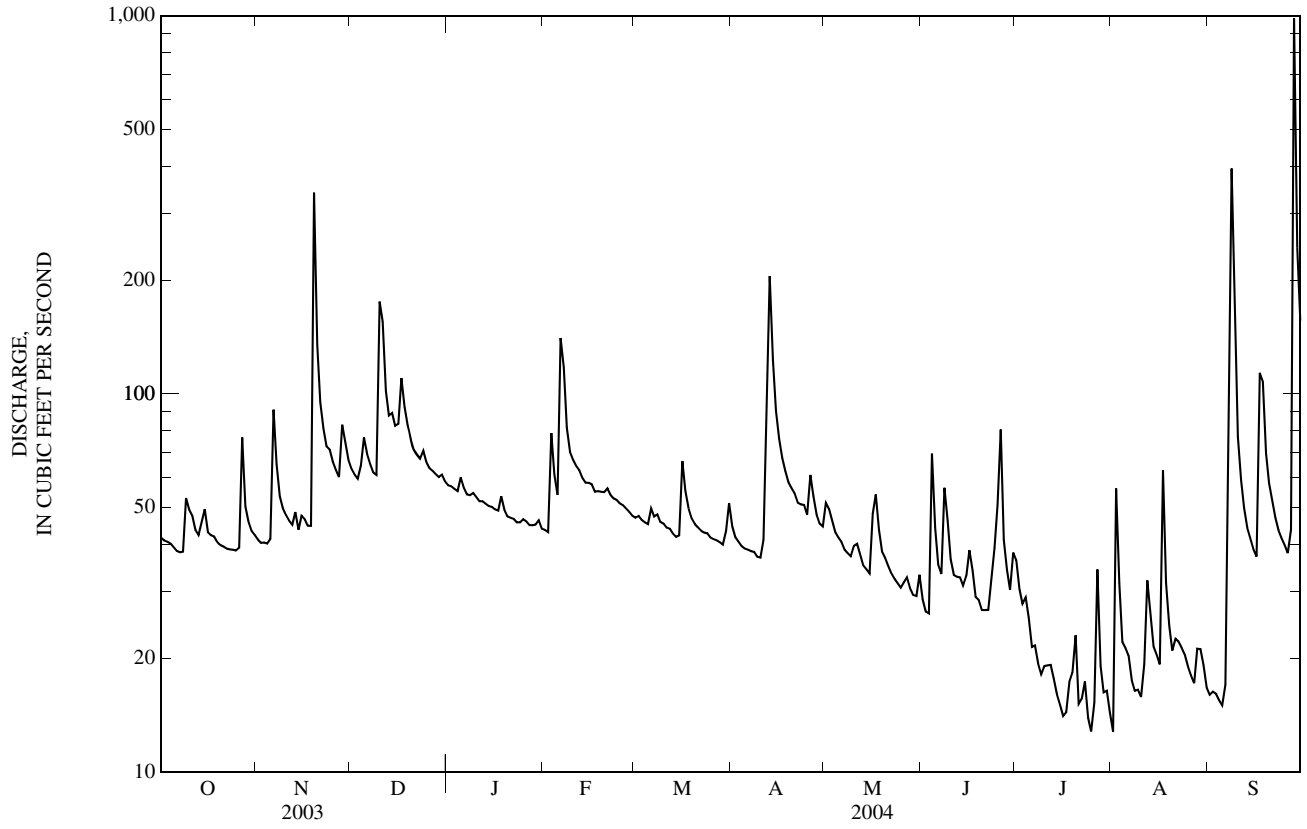
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 2004, BY WATER YEAR (WY)

MEAN	24.7	32.6	39.9	50.3	55.9	59.8	58.1	46.2	42.9	27.0	27.4	34.9
MAX	49.8	69.6	95.2	86.9	120	96.0	134	80.7	145	89.5	82.3	103
(WY)	(1997)	(2004)	(1997)	(1995)	(1998)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2004)
MIN	12.3	13.2	17.6	22.2	21.7	35.0	30.7	23.8	12.9	10.9	6.85	13.2
(WY)	(2001)	(2002)	(1998)	(2001)	(2002)	(1999)	(1999)	(2002)	(2002)	(2002)	(2002)	(1995)

02071530 SMITH RIVER AT SMITH RIVER CHURCH NEAR WOOLWINE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1995 - 2004	
ANNUAL TOTAL	30,041		19,163			
ANNUAL MEAN	82.3		52.4		41.5	
HIGHEST ANNUAL MEAN					75.5	2003
LOWEST ANNUAL MEAN					20.7	2002
HIGHEST DAILY MEAN	512	Feb 22	983	Sep 28	983	Sep 28, 2004
LOWEST DAILY MEAN	26	Jan 28	13	aJul 25	3.8	Aug 10, 2002
ANNUAL SEVEN-DAY MINIMUM	29	Feb 8	16	Jul 13	4.7	Aug 19, 2002
MAXIMUM PEAK FLOW			3,520	Sep 28	3,520	Sep 28, 2004
MAXIMUM PEAK STAGE			12.20	Sep 28	12.20	Sep 28, 2004
INSTANTANEOUS LOW FLOW			11	Aug 1	2.7	Aug 11, 2002
ANNUAL RUNOFF (CFSM)	3.08		1.96		1.56	
ANNUAL RUNOFF (INCHES)	41.85		26.70		21.13	
10 PERCENT EXCEEDS	136		76		76	
50 PERCENT EXCEEDS	69		44		30	
90 PERCENT EXCEEDS	38		19		13	

a Also Aug. 1, 2004.
e Estimated.



02071900 PHILPOTT LAKE NEAR PHILPOTT, VA

LOCATION.--Lat 36°46'52", long 80°01'39", NAD83, 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 mi^2.

PERIOD OF RECORD.--August 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929.

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.

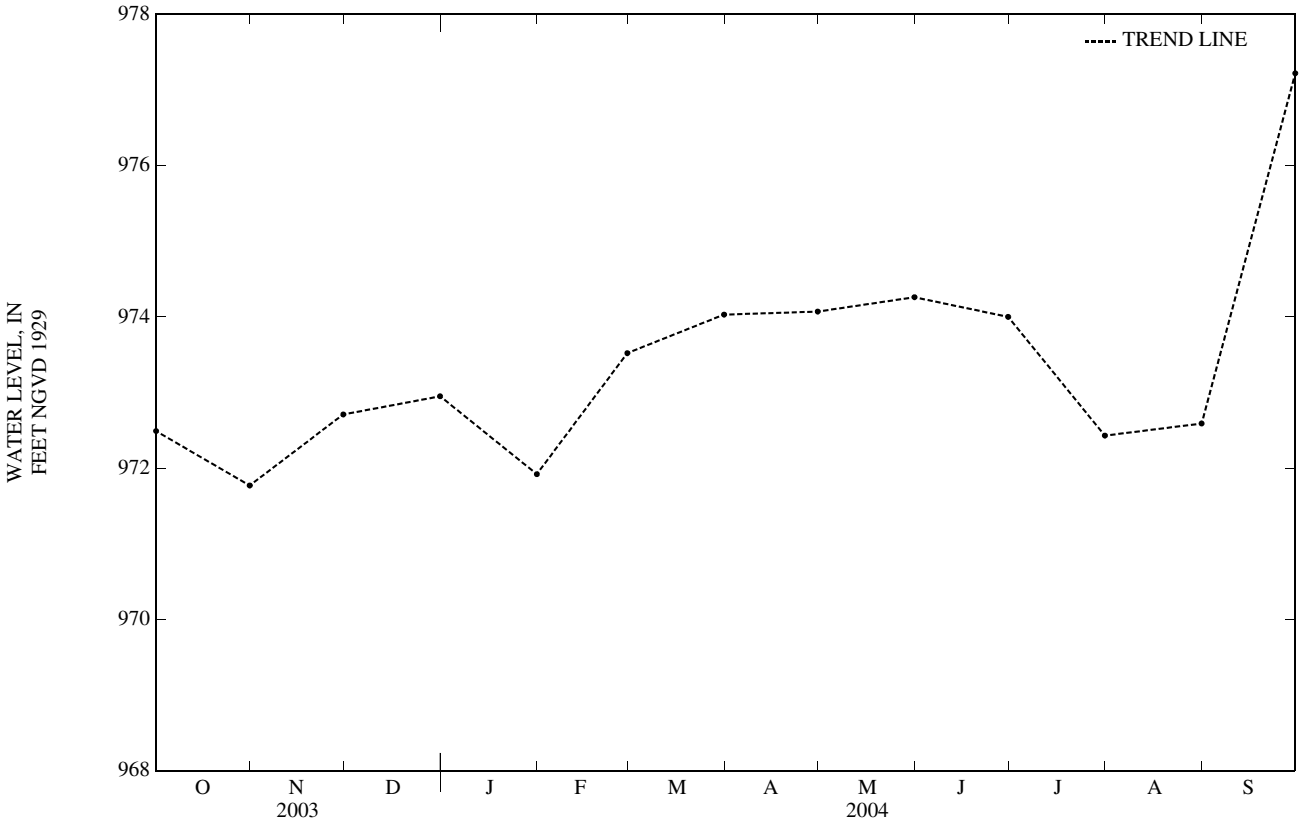
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 191,700 acre-ft, June 22, 1972, elevation, 983.06 ft; minimum (after first filling to rule curve), 64,540 acre-ft, Sept. 26, 1956, elevation, 927.59 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 177,070 acre-ft, Sept. 29, elevation 977.66 ft; minimum, 158,440 acre-ft, Oct. 3, elevation, 971.29 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
	972.49	161,840	
	971.77	159,790	-2,050
November 30	972.71	162,470	+2,680
December 31	972.95	163,160	+690
	971.92	160,220	-2,940
February 29	973.52	164,800	+4,580
March 31	974.03	166,280	+1,480
April 30	974.07	166,390	+110
May 31	974.26	166,950	+560
June 30	974.00	166,190	-760
July 31	972.43	161,670	-4,520
August 31	972.59	162,130	+460
September 30	977.22	175,740	+13,610

02071900 PHILPOTT LAKE NEAR PHILPOTT, VA—Continued



02072000 SMITH RIVER NEAR PHILPOTT, VA

LOCATION.--Lat 36°46'50", long 80°01'29", NAD83, Franklin County, Hydrologic Unit 03010103, on left bank 900 ft down-stream from Philpott Dam, l.3 mi southwest of Philpott (corrected), 11.6 mi upstream from Reed Creek, and at mile 44.1.

DRAINAGE AREA.--216 mi^2.

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 NGVD of 1929 (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. Statistics of monthly mean data and summary statistics for water years 1947 - 1950 (unregulated flow) are available in previous data books, water years 1991 - 1998. Maximum discharge, 17,000 ft^3/s, at site then in use, from rating curve extended above 9,700 ft^3/s on basis of slope-area measurements at gage heights 18.2 ft and 20.3 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	790	58	585	992	60	391	228	65	342	289	58	294
2	797	59	514	1,000	214	391	231	65	340	292	253	294
3	823	394	645	70	262	390	65	386	337	67	356	294
4	103	393	566	62	238	389	65	381	345	67	354	69
5	103	397	567	527	228	387	392	381	67	350	355	69
6	235	400	67	527	237	64	392	380	67	514	354	296
7	220	409	67	516	60	64	391	381	287	184	67	293
8	228	67	235	524	60	226	391	58	288	349	67	69
9	229	67	235	521	354	225	391	58	287	350	185	668
10	229	248	235	62	654	226	65	233	287	67	184	1,390
11	62	247	233	62	665	229	65	232	285	67	185	736
12	62	244	922	350	645	233	234	232	67	373	185	453
13	235	246	922	350	632	63	233	232	67	344	184	453
14	237	246	923	346	62	63	763	158	287	350	67	447
15	232	67	915	350	62	232	770	58	288	344	67	460
16	233	67	505	350	503	233	699	58	287	341	183	455
17	234	271	514	62	501	232	760	233	286	58	183	450
18	60	325	337	62	500	232	760	283	286	58	182	65
19	60	298	71	236	499	232	759	282	66	346	182	65
20	290	297	71	239	501	64	760	288	67	346	182	289
21	290	289	69	224	62	64	762	294	616	345	68	286
22	288	67	62	332	62	230	762	67	615	346	69	286
23	287	67	62	239	393	231	700	67	481	345	183	286
24	248	1,090	66	62	392	231	64	262	623	58	185	286
25	64	1,030	632	62	392	232	65	528	737	58	183	63
26	59	1,030	627	207	303	232	498	397	67	345	183	63
27	254	1,040	63	346	392	65	496	396	67	346	183	286
28	231	1,040	184	475	62	65	499	398	290	346	69	67
29	231	69	942	457	62	232	498	67	288	347	69	593
30	231	97	990	347	---	232	499	67	290	346	295	1,350
31	230	---	1,030	61	---	232	---	342	---	58	294	---
TOTAL	7,875	10,619	13,856	10,020	9,057	6,612	13,257	7,329	8,707	8,096	5,614	11,175
MEAN	254	354	447	323	312	213	442	236	290	261	181	372
MAX	823	1,090	1,030	1,000	665	391	770	528	737	514	356	1,390
MIN	59	58	62	61	60	63	64	58	66	58	58	63
(†)	-1,034	+1,351	+348	-1,482	+2,309	+746	+55	+282	-383	-2,279	+232	+6,862
MEAN‡	221	399	458	275	392	237	444	246	277	188	189	601
CFSM‡	1.02	1.85	2.12	1.27	1.81	1.10	2.06	1.14	1.28	.87	.88	2.78
IN.‡	1.18	2.06	2.45	1.47	1.96	1.27	2.29	1.31	1.43	1.00	1.01	3.11

CAL YR 2003 MEAN‡ 479 CFSM‡ 2.22 IN.‡ 30.11
WTR YR 2004 MEAN‡ 326 CFSM‡ 1.51 IN.‡ 20.55

† 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 change in contents.

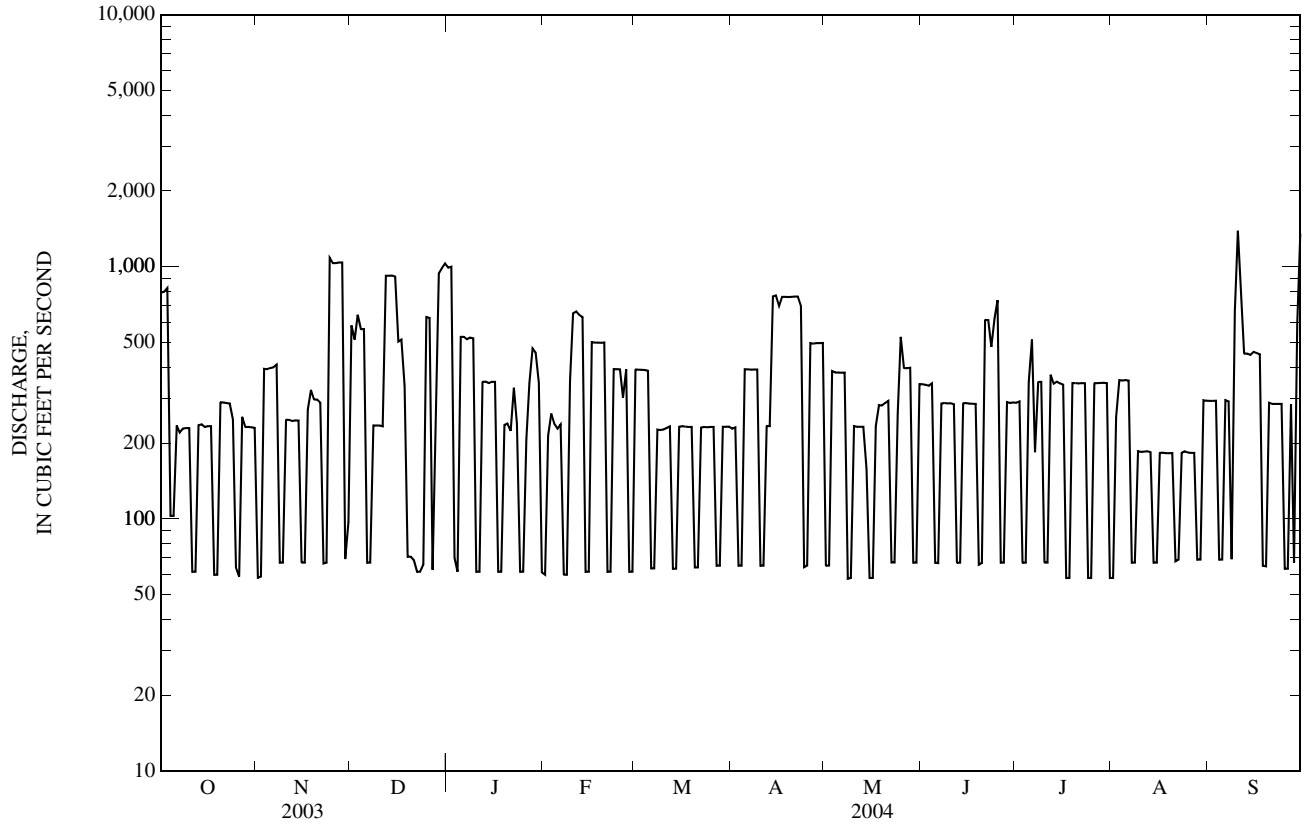
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2004, BY WATER YEAR (WY)

MEAN	228	222	243	267	265	325	378	301	284	242	256	255
MAX	755	835	586	526	718	946	1,194	796	874	646	551	724
(WY)	(1990)	(1986)	(1997)	(1991)	(1973)	(1993)	(1983)	(1978)	(2003)	(1972)	(2003)	(1979)
MIN	74.7	70.5	88.0	71.1	58.2	60.5	69.2	61.3	67.2	77.6	74.8	71.2
(WY)	(2003)	(1953)	(1996)	(1953)	(1953)	(1953)	(1969)	(1964)	(1964)	(2002)	(2002)	(2002)

02072000 SMITH RIVER NEAR PHILPOTT, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1951 - 2004	
ANNUAL TOTAL	174,133		112,217			
ANNUAL MEAN	477		307		272	
HIGHEST ANNUAL MEAN					441	1973
LOWEST ANNUAL MEAN					113	2002
HIGHEST DAILY MEAN	1,410	aJun 27	1,390	Sep 10	5,710	Apr 24, 1992
LOWEST DAILY MEAN	47	bJan 11	58	cNov 1	d20	Mar 24, 1984
ANNUAL SEVEN-DAY MINIMUM	104	Feb 15	105	Dec 18	42	Mar 2, 1953
MAXIMUM PEAK FLOW			1,480	Oct 3	f9,500	Dec 7, 1950
MAXIMUM PEAK STAGE			5.18	Oct 3	f15.00	Dec 7, 1950
INSTANTANEOUS LOW FLOW			24	gMay 5	h,j2.3	Dec 16, 1985
ANNUAL RUNOFF (CFSM)	2.21		1.42		1.26	
ANNUAL RUNOFF (INCHES)	29.99		19.33		17.10	
10 PERCENT EXCEEDS	1,320		636		647	
50 PERCENT EXCEEDS	391		258		204	
90 PERCENT EXCEEDS	65		63		46	

a Also July 6, 2003.
b Also Jan. 12, 18, 19, 25, 26, 2003.
c Also May 8, 9, 15, 16, July 17, 18, 24, 25, 31, and Aug. 1, 2004.
d Result of turbines being shut down for repair at Philpott Dam.
f Prior to regulation, 1947-50, maximum peak flow, 17,000 ft^3/s, June 29, 1949, gage height, 20.30 ft.
g Also May 6, 7, 10, 2004.
h Prior to regulation, 1947-50, instantaneous low flow, 21 ft^3/s, Aug. 15, 1950.
j Result of repair at dam but may have been less during periods of estimated record.



02072500 SMITH RIVER AT BASSETT, VA

LOCATION.--Lat 36°46'12", long 80°00'03", NAD83, 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 mi^2.

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 NGVD of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--No estimated daily discharges. 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 ft^3/s. Statistics of monthly mean data and summary statistics for water years 1940 - 1950 (unregulated flow) are available in previous data books, water years 1991 - 1998. 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 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 ft^3/s, from rating curve extended above 23,000 ft^3/s on basis of backwater studies and records for station at Martinsville.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	863	117	639	1,090	102	444	279	145	378	319	82	306
2	870	103	461	1,100	259	459	278	124	368	320	287	307
3	893	424	803	242	387	457	107	381	375	93	435	306
4	175	441	646	111	347	454	106	412	424	91	387	83
5	143	446	666	581	296	453	440	411	131	371	379	82
6	276	675	166	590	455	127	443	411	107	538	378	308
7	271	534	152	577	275	111	463	410	322	194	87	315
8	280	142	304	578	159	281	443	143	357	378	83	852
9	286	119	297	579	419	280	443	99	337	369	196	736
10	286	288	522	121	726	281	105	243	328	94	194	1,490
11	126	290	572	107	752	280	108	263	325	105	206	924
12	107	286	1,050	401	730	282	381	262	103	415	235	490
13	266	302	1,050	403	713	110	659	260	100	385	225	497
14	290	288	1,060	393	148	110	1,120	210	319	375	102	376
15	305	120	1,060	400	120	282	949	93	399	372	100	612
16	284	117	625	411	547	324	804	93	383	361	206	495
17	283	233	664	104	570	298	862	251	334	87	210	580
18	122	435	466	110	572	287	854	295	323	85	205	192
19	104	469	157	283	573	283	849	328	102	379	207	120
20	321	407	141	281	578	110	847	347	100	373	201	330
21	338	356	134	267	147	109	852	329	626	365	101	329
22	332	129	121	374	115	280	845	128	652	365	100	328
23	335	116	121	281	446	281	773	104	514	369	201	325
24	279	1,110	123	104	458	279	192	285	687	83	200	324
25	131	1,130	677	105	458	279	116	570	801	79	199	102
26	103	1,120	699	250	359	279	546	436	262	362	198	97
27	297	1,120	145	400	455	107	570	444	117	387	198	323
28	285	1,150	231	527	122	107	558	439	326	378	86	918
29	283	212	1,010	507	110	279	557	110	323	371	85	636
30	278	154	994	399	---	279	556	100	320	372	310	1,460
31	275	---	1,130	104	---	290	---	381	---	87	307	---
TOTAL	9,487	12,833	16,886	11,780	11,398	8,282	16,105	8,507	10,243	8,922	6,390	14,243
MEAN	306	428	545	380	393	267	537	274	341	288	206	475
MAX	893	1,150	1,130	1,100	752	459	1,120	570	801	538	435	1,490
MIN	103	103	121	104	102	107	105	93	100	79	82	82
(†)	-1,034	+1,351	+348	-1,482	+2,309	+746	+55	+282	-383	-2,279	+232	+6,862
MEAN‡	273	473	556	332	473	291	539	284	329	214	214	704
CFSM‡	1.05	1.83	2.15	1.28	1.83	1.12	2.08	1.10	1.27	.83	.83	2.72
IN.‡	1.22	2.04	2.48	1.48	1.97	1.30	2.32	1.26	1.42	.95	.95	3.03

CAL YR 2003 MEAN‡ 573 CFSM‡ 2.21 IN.‡ 30.34
WTR YR 2004 MEAN‡ 388 CFSM‡ 1.50 IN.‡ 20.40

† 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 change in contents.

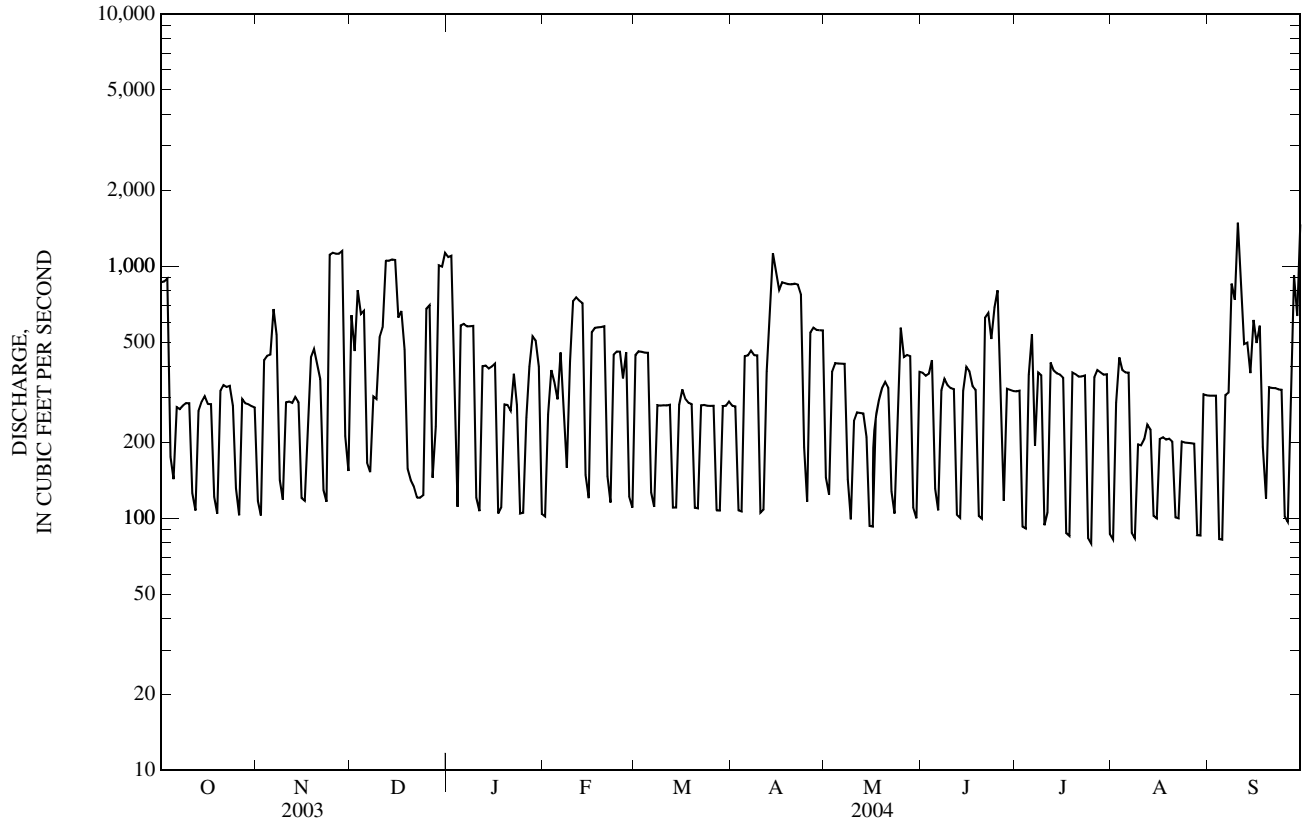
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2004, BY WATER YEAR (WY)

MEAN	269	265	294	325	334	402	455	361	336	282	295	303
MAX	944	996	724	655	846	1,197	1,474	902	1,013	759	655	912
(WY)	(1990)	(1986)	(1997)	(1991)	(1998)	(1993)	(1987)	(1978)	(2003)	(1972)	(2003)	(1979)
MIN	101	98.4	110	107	110	114	98.6	86.7	84.4	89.7	83.1	89.7
(WY)	(2003)	(1953)	(1996)	(1989)	(1989)	(1982)	(1969)	(1964)	(1964)	(2002)	(2002)	(2002)

02072500 SMITH RIVER AT BASSETT, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1951 - 2004	
ANNUAL TOTAL	208,222		135,076			
ANNUAL MEAN	570		369		327	
HIGHEST ANNUAL MEAN					523	1987
LOWEST ANNUAL MEAN					131	2002
HIGHEST DAILY MEAN	1,840	Jun 19	1,490	Sep 10	6,080	Apr 24, 1992
LOWEST DAILY MEAN	79	Jan 26	79	Jul 25	44	Aug 23, 1964
ANNUAL SEVEN-DAY MINIMUM	180	Dec 18	167	Aug 23	67	Oct 6, 1980
MAXIMUM PEAK FLOW			3,500	Sep 8	a17,700	Sep 7, 1987
MAXIMUM PEAK STAGE			6.29	Sep 8	a15.20	Sep 7, 1987
INSTANTANEOUS LOW FLOW			64	bJun 3	c19	Jul 19, 1956
ANNUAL RUNOFF (CFSM)	2.20		1.42		1.26	
ANNUAL RUNOFF (INCHES)	29.91		19.40		17.13	
10 PERCENT EXCEEDS	1,440		732		718	
50 PERCENT EXCEEDS	461		312		242	
90 PERCENT EXCEEDS	126		104		77	

a Prior to regulation, 1940-50, maximum peak flow, 26,600 ft^3/s, Aug. 14, 1940, gage height, 18.28 ft.
b Also July 7, 2004.
c Prior to regulation, 1940-50, instantaneous low flow, 58 ft^3/s, Jan. 3, 1940.



02073000 SMITH RIVER AT MARTINSVILLE, VA

LOCATION.--Lat 36°39'40", long 79°52'50", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--Records good except those for periods of no gage-height record, Mar. 15, Aug. 26, and Sept. 27, which are fair. 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. Statistics of monthly mean data and summary statistics for water years 1930-1950 (unregulated flow) are available in previous data books, water years 1991-1998. Maximum discharge, 39,000 ft^3/s, from rating curve extended above 17,000 ft^3/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.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,060	254	635	1,240	230	376	412	461	421	594	182	357
2	1,080	187	612	1,260	377	563	403	242	424	508	392	401
3	1,040	346	997	765	610	567	251	392	508	322	847	352
4	589	566	893	252	696	560	237	500	822	220	595	244
5	258	513	1,010	577	522	555	470	488	516	425	552	146
6	288	1,230	643	785	810	418	559	478	251	678	491	291
7	436	846	394	732	1,080	232	527	475	287	546	390	452
8	394	495	526	727	441	375	540	335	515	435	103	3,630
9	421	250	501	739	453	384	602	184	535	567	230	1,370
10	407	294	855	518	793	386	296	314	654	370	281	1,740
11	366	444	1,760	251	905	385	220	339	541	282	281	1,360
12	217	413	1,080	515	902	385	530	335	468	505	517	408
13	288	421	1,300	549	820	232	1,790	323	196	685	497	625
14	424	425	1,370	300	591	214	1,830	338	372	526	311	517
15	475	342	1,400	543	267	e365	1,240	182	485	534	76	628
16	433	254	1,010	789	467	496	930	112	1,230	489	238	597
17	414	348	1,080	270	695	473	1,000	337	588	343	747	1,270
18	323	487	1,020	256	693	412	944	374	542	166	900	965
19	196	726	410	411	698	399	907	462	370	385	344	216
20	264	641	363	416	699	245	925	634	203	542	335	343
21	471	571	345	396	506	226	919	601	574	485	208	437
22	429	526	322	453	248	363	903	344	894	502	239	415
23	420	268	307	481	390	240	832	516	986	502	244	409
24	417	985	330	253	572	513	573	302	941	313	393	392
25	341	1,330	587	240	570	253	206	491	1,180	143	258	259
26	189	1,280	827	368	482	403	381	587	1,880	347	e246	176
27	303	1,320	468	528	478	245	684	584	406	945	364	e306
28	394	1,340	480	548	482	220	633	511	466	742	196	2,880
29	432	617	822	648	227	328	637	464	571	607	99	822
30	380	306	1,150	635	---	372	632	213	494	640	315	1,730
31	384	---	1,290	278	---	450	---	356	---	356	442	---
TOTAL	13,533	18,025	24,787	16,723	16,704	11,635	21,013	12,274	18,320	14,704	11,313	23,738
MEAN	437	601	800	539	576	375	700	396	611	474	365	791
MAX	1,080	1,340	1,760	1,260	1,080	567	1,830	634	1,880	945	900	3,630
MIN	189	187	307	240	227	214	206	112	196	143	76	146
(†)	-1,034	+1,351	+348	-1,482	+2,309	+746	+55	+282	-383	-2,279	+232	+6,862
MEAN‡	403	646	811	492	656	399	702	405	598	401	372	1,020
CFSM‡	1.06	1.70	2.13	1.29	1.73	1.05	1.85	1.07	1.57	1.05	.98	2.68
IN.‡	1.22	1.90	2.46	1.49	1.86	1.21	2.06	1.23	1.76	1.22	1.13	2.99

CAL YR 2003 MEAN‡ 818 CFSM‡ 2.15 IN.‡ 29.24
WTR YR 2004 MEAN‡ 573 CFSM‡ 1.51 IN.‡ 20.54

† 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 change in contents.

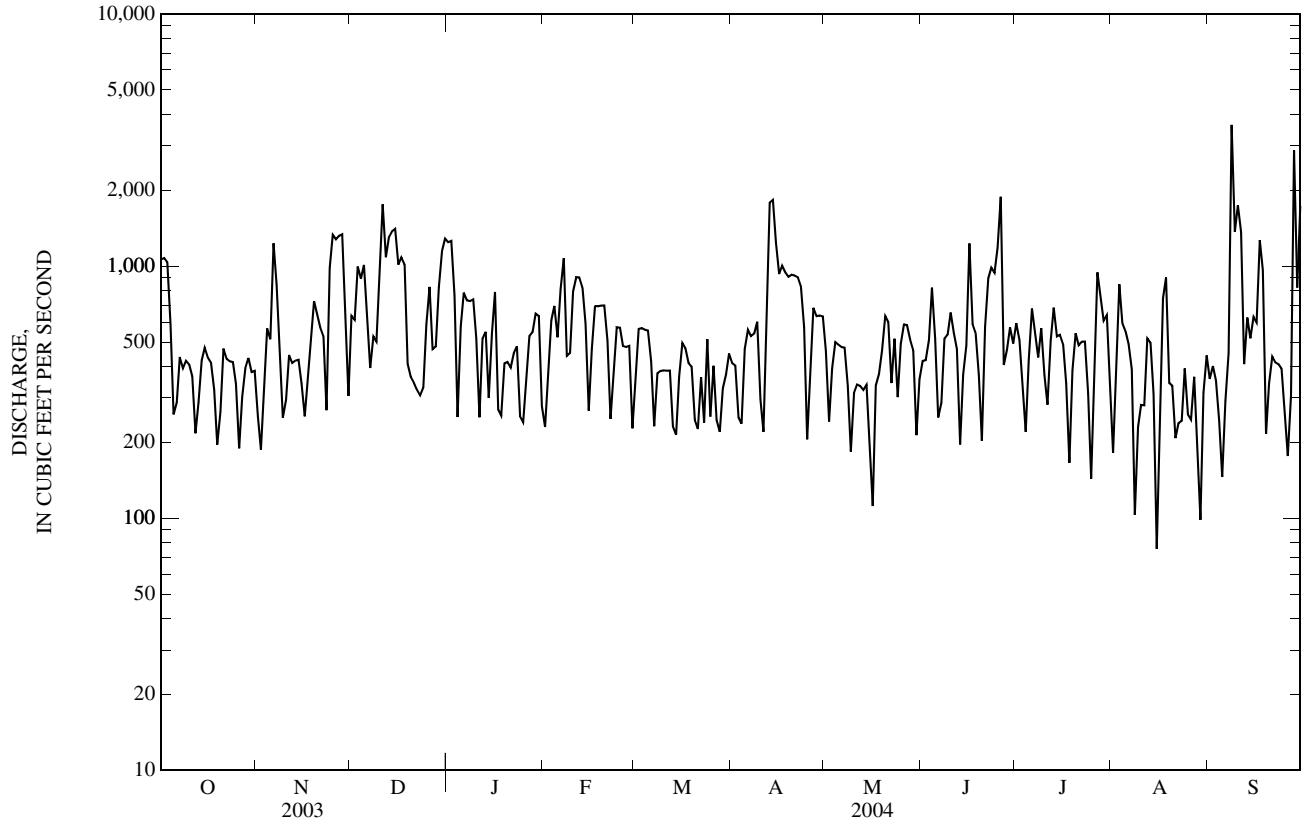
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2004, BY WATER YEAR (WY)

MEAN	383	382	429	488	513	609	638	519	489	415	409	436
MAX	1,389	1,266	988	1,000	1,212	1,735	2,206	1,138	1,467	1,174	1,032	1,624
(WY)	(1990)	(1986)	(1997)	(1991)	(1998)	(1993)	(1987)	(1978)	(1992)	(1989)	(1985)	(1987)
MIN	163	162	203	206	179	233	175	164	120	125	95.6	132
(WY)	(1952)	(1953)	(2001)	(1957)	(2002)	(1981)	(2002)	(1964)	(2002)	(2002)	(2002)	(2002)

02073000 SMITH RIVER AT MARTINSVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1951 - 2004	
ANNUAL TOTAL	297,847		202,769			
ANNUAL MEAN	816		554		475	
HIGHEST ANNUAL MEAN					817	1987
LOWEST ANNUAL MEAN					187	2002
HIGHEST DAILY MEAN	5,920	Mar 20	3,630	Sep 8	11,300	Sep 8, 1987
LOWEST DAILY MEAN	90	Feb 9	76	Aug 15	24	Oct 2, 1982
ANNUAL SEVEN-DAY MINIMUM	269	Jan 26	257	Aug 23	82	Aug 9, 2002
MAXIMUM PEAK FLOW			8,530	Sep 8	a34,600	Sep 8, 1987
MAXIMUM PEAK STAGE			8.56	Sep 8	a20.08	Sep 8, 1987
INSTANTANEOUS LOW FLOW			15	Jan 30	b3.8	Mar 19, 1955
ANNUAL RUNOFF (CFSM)	2.15		1.46		1.25	
ANNUAL RUNOFF (INCHES)	29.16		19.85		17.00	
10 PERCENT EXCEEDS	1,630		998		905	
50 PERCENT EXCEEDS	644		468		354	
90 PERCENT EXCEEDS	303		240		162	

a Prior to regulation, 1930-50, maximum peak flow, 39,000 ft^3/s, Oct. 19, 1937, gage height, 21.50 ft.
b Prior to regulation, 1930-50, instantaneous low flow, 5.0 ft^3/s, May 20, 1934.
e Estimated.



02074000 SMITH RIVER AT EDEN, NC

LOCATION.--Lat 36°31'32", long 79°45'56", 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 mi^2.

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 NGVD of 1929. Satellite telemetry at station.

REMARKS.--No estimated daily discharges. Records fair. Flow regulated since August 1950 by Philpott Lake, 40 mi upstream (usable capacity, 6,325,000,000 ft^3). Additional regulation by hydroelectric plant at Martinsville, Virginia, 18 mi upstream. Maximum discharge prior to regulation: 45,600 ft^3/s, Aug. 15, 1940, from rating curve extended above 12,000 ft^3/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 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,270	567	807	1,290	412	484	625	898	811	688	434	464
2	1,200	438	837	1,290	430	766	613	432	585	706	553	492
3	1,190	594	1,050	1,230	874	787	533	572	680	625	1,080	482
4	1,100	814	1,090	437	1,030	773	464	802	892	337	891	437
5	560	823	1,280	588	770	768	560	782	1,150	409	746	276
6	653	1,200	1,130	960	1,370	749	715	764	563	719	751	279
7	683	1,510	732	879	2,270	488	770	746	491	796	800	561
8	675	933	802	862	953	483	735	739	696	412	280	5,610
9	704	588	789	877	742	600	761	436	755	735	394	3,470
10	706	660	932	809	977	601	679	436	699	599	464	1,850
11	634	750	2,750	447	1,120	599	436	684	890	426	469	1,740
12	429	703	1,150	504	1,120	599	626	587	740	438	1,120	650
13	607	706	1,460	702	1,040	562	2,260	609	391	959	1,200	891
14	681	693	1,530	632	999	431	2,680	609	418	669	726	727
15	791	624	1,600	686	546	464	1,840	544	722	669	425	756
16	706	464	1,520	779	587	781	1,360	366	4,030	627	390	625
17	673	672	1,420	590	914	826	1,200	473	912	646	914	1,300
18	610	743	1,410	432	909	690	1,240	750	884	283	1,760	1,850
19	391	874	844	477	924	657	1,140	668	755	374	736	743
20	582	1,130	643	574	925	599	1,170	813	429	681	520	428
21	732	886	605	557	879	470	1,160	1,110	497	629	555	636
22	693	743	569	569	506	483	1,160	719	1,010	597	394	606
23	687	571	542	662	519	569	1,130	671	957	658	415	552
24	680	797	530	534	786	601	1,080	826	1,060	672	451	555
25	599	1,440	645	416	786	583	480	546	1,060	259	486	497
26	384	1,390	919	425	738	614	520	931	3,220	334	358	335
27	746	1,410	906	627	762	504	978	857	804	1,140	377	352
28	761	1,440	439	683	687	448	913	800	647	988	503	4,350
29	742	1,210	706	786	463	489	868	789	844	826	190	1,810
30	687	540	1,230	796	---	640	940	459	657	1,180	315	1,700
31	661	---	1,310	641	---	657	---	466	---	879	528	---
TOTAL	22,217	25,913	32,177	21,741	25,038	18,765	29,636	20,884	28,249	19,960	19,225	35,024
MEAN	717	864	1,038	701	863	605	988	674	942	644	620	1,167
MAX	1,270	1,510	2,750	1,290	2,270	826	2,680	1,110	4,030	1,180	1,760	5,610
MIN	384	438	439	416	412	431	436	366	391	259	190	276
CFSM	1.33	1.61	1.93	1.30	1.60	1.13	1.84	1.25	1.75	1.20	1.15	2.17
IN.	1.54	1.79	2.22	1.50	1.73	1.30	2.05	1.44	1.95	1.38	1.33	2.42
†	-33	+45	+11	-48	+80	+24	+2	+9	-13	-74	+7	+229

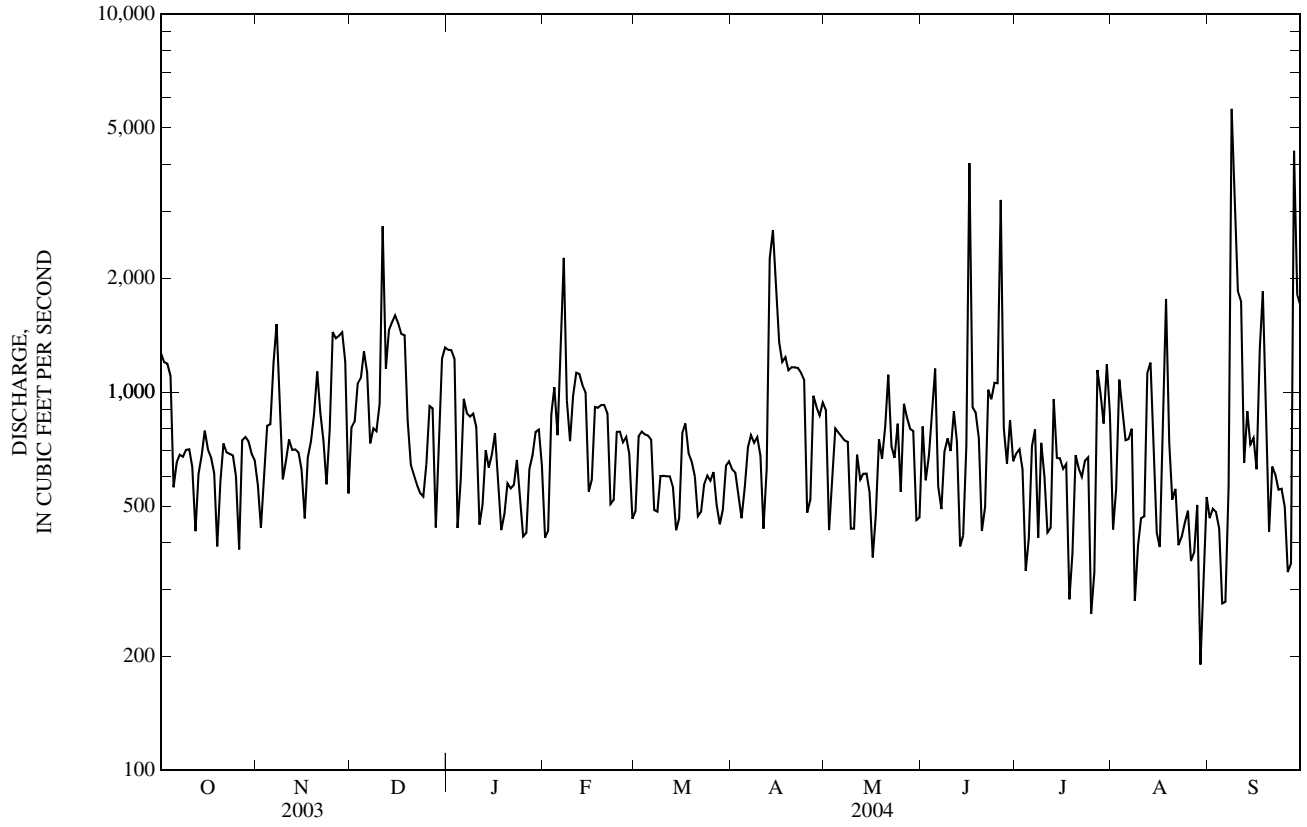
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2004,* BY WATER YEAR (WY)

MEAN	500	498	585	678	731	887	885	707	654	512	497	540
MAX	1,572	1,530	1,376	1,453	1,633	2,519	3,016	1,567	2,026	1,374	1,454	2,030
(WY)	(1990)	(1986)	(1997)	(1979)	(1998)	(1993)	(1987)	(1978)	(1972)	(1989)	(1985)	(1996)
MIN	201	211	267	291	249	331	248	266	146	151	126	165
(WY)	(1952)	(1982)	(2001)	(1989)	(2002)	(1967)	(2002)	(1964)	(2002)	(2002)	(2002)	(2002)

02074000 SMITH RIVER AT EDEN, NC—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1951 - 2004*	
ANNUAL TOTAL	397,539		298,829			
ANNUAL MEAN	1,089		816	‡838	639	(UNADJUSTED)
HIGHEST ANNUAL MEAN					1,010	1987
LOWEST ANNUAL MEAN					254	2002
HIGHEST DAILY MEAN	11,400	Mar 20	5,610	Sep 8	16,700	Jun 21, 1972
LOWEST DAILY MEAN	185	Jan 19	190	Aug 29	46	Aug 14, 1967
ANNUAL SEVEN-DAY MINIMUM	348	Jan 26	383	Aug 24	100	Aug 10, 2002
MAXIMUM PEAK FLOW			13,100	Sep 8	24,800	Jun 21, 1972
MAXIMUM PEAK STAGE			11.39	Sep 8	16.24	Jun 21, 1972
INSTANTANEOUS LOW FLOW			184	Aug 29	38	Aug 7, 1967
ANNUAL RUNOFF (CFSM)	2.02		1.52		1.19	
ANNUAL RUNOFF (INCHES)	27.49		20.66		16.13	
10 PERCENT EXCEEDS	1,860		1,230		1,170	
50 PERCENT EXCEEDS	881		698		449	
90 PERCENT EXCEEDS	442		432		220	

† Change in contents, equivalent in cubic feet per second, in Philpott Lake provided by U.S. Army Corps of Engineers.
* Regulated period only (1951-2004). See REMARKS.
‡ Adjusted for change in contents.



02074500 SANDY RIVER NEAR DANVILLE, VA

LOCATION.--Lat 36°37'10", long 79°30'15", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to June 26, 1942, at site 1,200 ft downstream at datum 5.57 ft lower.

REMARKS.--Records good except those for periods with ice effect, Jan. 10-12, 22, 23, and Jan. 26 to Feb. 1, and period of no gage-height record, Aug. 25, which are fair. Diurnal fluctuation at low flow caused by small mill upstream from station. Maximum discharge, 23,000 ft^3/s, from rating curve extended above 11,000 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 6	2230	3,150	5.88	0300	3,910	6.38
Jun 26	0830	1,910	4.86	2200	1,770	4.72
Aug 2	1030	2,110	5.06	1200	*5,770	*7.49

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	88	78	94	92	e75	86	92	89	65	82	63	66
2	86	76	89	94	82	87	85	155	61	78	748	65
3	82	76	86	96	249	90	82	118	59	75	540	62
4	82	74	93	93	233	86	81	97	97	72	154	61
5	81	74	163	103	150	84	79	87	164	69	130	60
6	80	148	186	114	701	102	78	83	88	63	232	66
7	78	187	151	93	1,140	96	78	79	74	61	106	89
8	78	108	124	89	289	85	78	76	72	60	84	600
9	81	94	114	94	186	82	78	76	79	58	75	488
10	83	89	171	e88	155	82	76	74	66	57	70	154
11	85	88	545	e82	135	82	78	75	63	65	77	109
12	82	88	203	e93	127	81	195	72	66	59	648	93
13	78	88	146	92	122	79	560	68	61	63	1,330	84
14	79	81	202	88	114	78	428	67	62	57	242	80
15	96	84	234	87	110	78	197	65	82	53	191	76
16	79	91	254	83	113	212	147	71	394	50	137	74
17	76	88	380	82	104	194	126	85	141	50	181	213
18	76	86	320	93	103	131	113	80	95	55	226	278
19	76	123	194	89	109	118	106	87	89	52	128	139
20	74	181	154	82	107	105	101	171	115	49	102	97
21	74	114	131	79	102	99	97	215	78	47	104	85
22	74	101	123	e77	97	91	92	186	74	46	124	79
23	71	95	118	e75	94	89	88	108	71	51	90	75
24	70	94	117	80	93	88	94	101	90	52	82	70
25	70	105	109	79	92	89	87	85	76	48	e73	68
26	74	93	104	e78	89	88	92	78	863	49	70	66
27	104	90	102	e86	92	91	103	87	204	258	68	73
28	106	102	99	e82	89	88	84	76	161	132	67	2,660
29	97	116	97	e77	87	85	80	72	112	85	68	647
30	96	96	100	e87	---	85	80	66	91	127	80	233
31	83	---	94	e82	---	95	---	69	---	77	72	---
TOTAL	2,539	3,008	5,097	2,709	5,239	3,026	3,755	2,918	3,813	2,200	6,362	7,010
MEAN	81.9	100	164	87.4	181	97.6	125	94.1	127	71.0	205	234
MAX	106	187	545	114	1,140	212	560	215	863	258	1,330	2,660
MIN	70	74	86	75	75	78	76	65	59	46	63	60
CFSM	0.73	0.90	1.47	0.78	1.61	0.87	1.12	0.84	1.13	0.63	1.83	2.09
IN.	0.84	1.00	1.69	0.90	1.74	1.01	1.25	0.97	1.27	0.73	2.11	2.33

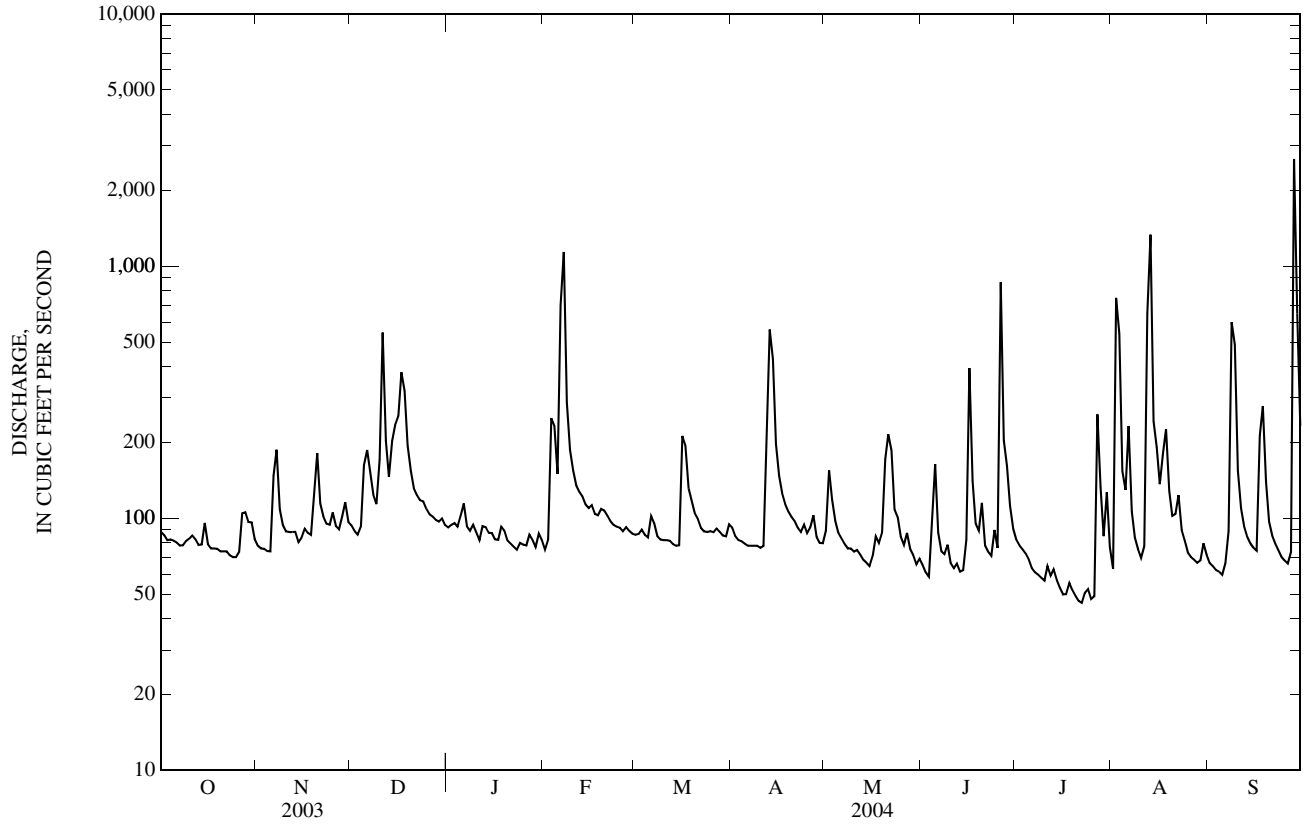
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2004, BY WATER YEAR (WY)

MEAN	81.4	83.1	106	137	147	173	147	110	90.5	74.2	83.4	88.8
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	19.2	26.5	35.2	31.5	40.2	63.9	42.5	52.8	23.0	19.0	11.6	14.2
(WY)	(2002)	(2002)	(1934)	(1934)	(1934)	(1967)	(2002)	(1986)	(2002)	(2002)	(2002)	(1930)

02074500 SANDY RIVER NEAR DANVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1930 - 2004	
ANNUAL TOTAL	66,274		47,676			
ANNUAL MEAN	182		130		110	
HIGHEST ANNUAL MEAN					191	1996
LOWEST ANNUAL MEAN					44.8	2002
HIGHEST DAILY MEAN	4,060	Mar 20	2,660	Sep 28	8,340	Sep 6, 1996
LOWEST DAILY MEAN	e55	Jan 24	46	Jul 22	6.4	aAug 23, 2002
ANNUAL SEVEN-DAY MINIMUM	e60	Jan 22	49	Jul 20	7.8	Aug 9, 2002
MAXIMUM PEAK FLOW			5,770	Sep 28	23,000	Aug 14, 1940
MAXIMUM PEAK STAGE			7.49	Sep 28	b14.80	Aug 14, 1940
INSTANTANEOUS LOW FLOW			46	Jul 22	3.0	Sep 29, 1930
ANNUAL RUNOFF (CFSM)	1.62		1.16		0.982	
ANNUAL RUNOFF (INCHES)	22.01		15.84		13.34	
10 PERCENT EXCEEDS	327		194		166	
50 PERCENT EXCEEDS	105		88		72	
90 PERCENT EXCEEDS	74		66		35	

a Also Aug. 24, 2002.
b From floodmarks, present datum.
e Estimated.



02075045 DAN RIVER AT SEWAGE TREATMENT PLANT, NEAR DANVILLE, VA

LOCATION.--Lat 36°33'46", long 79°22'11", NAD83, 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 mi^2, approximately .

PERIOD OF RECORD.--October 1995 to current year.

REVISED RECORDS.--WDR VA-01-1: 1996-2000(m).

GAGE.--Water-stage recorder. Datum of gage is 365.19 ft NGVD of 1929.

REMARKS.--Records good except those for period of doubtful gage-height record, Jan. 21 to Feb. 5, and for discharges greater than 5,000 ft^3/s, which are fair. Diurnal fluctuation caused by mills and hydroelectric generating facility at Schoolfield 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.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,380	1,920	1,760	2,450	e1,800	1,740	1,830	1,860	1,310	1,690	1,330	1,120
2	2,330	1,880	2,010	2,400	e1,600	1,770	1,730	2,140	1,430	1,870	1,810	1,040
3	2,300	1,700	1,890	2,410	e2,900	1,880	1,720	2,350	1,300	1,550	2,940	1,050
4	2,260	1,880	2,100	2,110	e4,500	1,890	1,520	2,290	1,790	1,640	3,080	1,040
5	2,000	2,020	2,650	1,770	e3,500	1,890	1,400	2,100	2,620	1,430	1,850	993
6	1,770	2,190	3,370	1,970	4,190	1,910	1,470	1,840	1,900	1,430	1,710	1,050
7	1,900	4,190	2,720	2,230	19,200	1,820	1,700	1,820	1,650	1,460	1,250	1,110
8	1,810	3,070	2,290	2,090	8,090	1,870	1,650	1,670	1,480	1,340	1,290	4,160
9	1,920	2,000	2,160	2,090	3,680	1,750	1,670	1,630	1,490	1,080	948	18,200
10	1,740	1,740	2,400	2,090	3,040	1,750	1,680	1,540	1,760	1,240	1,120	4,720
11	2,190	1,830	8,580	1,970	2,950	1,660	1,560	1,620	1,590	1,200	1,040	3,390
12	1,920	1,730	5,640	1,560	2,810	1,630	1,940	1,590	1,670	1,390	1,940	2,530
13	1,700	1,740	3,680	1,890	2,730	1,550	5,380	1,350	1,410	1,510	6,440	1,810
14	1,890	1,720	4,150	1,940	2,550	1,560	10,900	1,560	1,170	1,760	2,690	1,540
15	2,040	1,640	4,460	1,680	2,230	1,350	7,390	1,500	1,350	1,450	2,090	1,460
16	2,150	1,600	4,600	1,790	2,180	2,010	4,120	1,390	11,300	1,090	1,390	1,860
17	1,950	1,570	4,330	1,920	2,260	2,880	3,120	1,760	7,400	1,140	1,380	2,380
18	1,850	1,730	5,810	1,790	2,320	2,340	2,770	1,930	2,420	1,130	2,910	5,340
19	1,770	2,020	3,790	1,600	2,430	2,010	2,590	2,100	2,030	955	3,280	3,470
20	1,690	2,790	2,780	1,740	2,580	1,850	2,450	2,020	1,750	1,080	1,740	2,020
21	1,820	2,780	2,510	e1,760	2,500	1,680	2,430	2,160	1,470	1,180	1,510	1,660
22	1,920	2,280	2,210	e1,650	2,230	1,570	2,360	2,020	1,390	1,100	1,590	1,570
23	1,850	2,050	2,210	e1,750	1,920	1,640	2,270	1,760	1,700	1,080	1,410	1,350
24	1,820	1,790	2,090	1,770	1,820	1,660	2,190	1,660	2,160	1,410	1,140	1,390
25	1,850	2,340	2,060	e1,600	2,100	1,570	1,900	1,640	2,560	1,010	1,200	1,350
26	1,730	2,470	2,150	e1,400	2,020	1,660	1,800	1,650	4,660	679	1,110	1,240
27	2,010	2,370	2,250	e1,700	1,900	1,470	2,030	1,810	3,890	1,350	972	1,090
28	2,340	2,500	2,070	e1,800	2,020	1,580	2,230	1,650	2,180	3,010	1,070	11,100
29	2,340	2,640	1,940	e1,850	1,890	1,430	2,040	1,610	1,870	2,220	1,100	24,600
30	2,180	2,050	2,170	e1,900	---	1,550	1,930	1,490	1,570	2,240	1,020	20,300
31	2,000	---	2,420	e2,000	---	1,680	---	1,230	---	1,760	986	---
TOTAL	61,420	64,230	95,250	58,670	95,940	54,600	79,770	54,740	72,270	44,474	55,336	125,933
MEAN	1,981	2,141	3,073	1,893	3,308	1,761	2,659	1,766	2,409	1,435	1,785	4,198
MAX	2,380	4,190	8,580	2,450	19,200	2,880	10,900	2,350	11,300	3,010	6,440	24,600
MIN	1,690	1,570	1,760	1,400	1,600	1,350	1,400	1,230	1,170	679	948	993
(†)	-1,034	+1,351	+348	-1,482	+2,309	+746	+55	+282	-383	-2,279	+232	+6,862
MEAN‡	1,948	2,186	3,084	1,845	3,388	1,785	2,661	1,775	2,396	1,361	1,793	4,426
CFSM‡	.93	1.04	1.47	.88	1.64	.85	1.26	.84	1.14	.65	.85	2.10
IN.‡	1.07	1.16	1.69	1.01	1.74	.98	1.41	.97	1.27	.75	.98	2.35

CAL YR 2003 MEAN‡ 3,846 CFSM‡ 1.83 IN.‡ 24.81
WTR YR 2004 MEAN‡ 2,376 CFSM‡ 1.13 IN.‡ 15.37

† 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 change in contents.

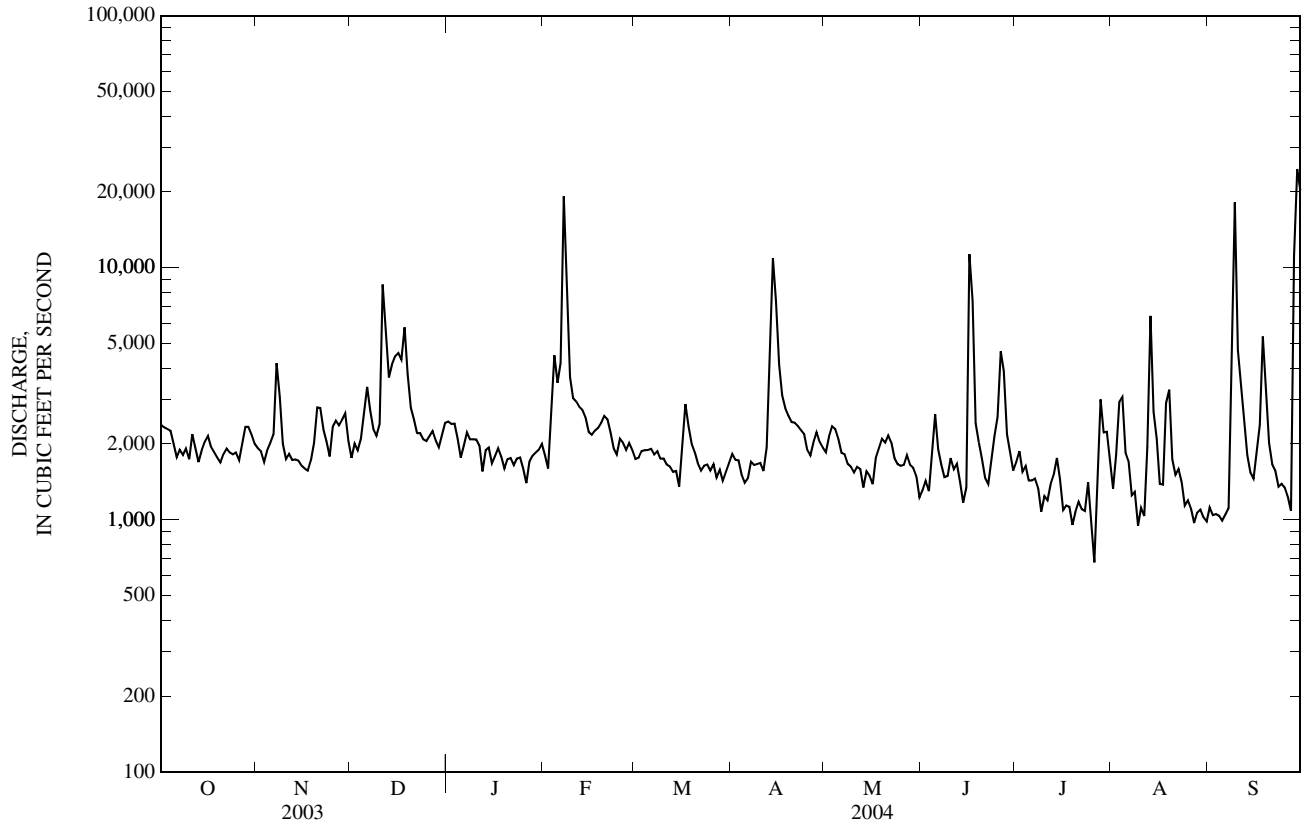
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 2004, BY WATER YEAR (WY)

MEAN	1,281	1,395	1,891	2,451	2,773	2,975	3,047	2,361	2,219	1,301	1,595	2,532
MAX	2,418	2,141	4,516	4,924	5,565	6,405	6,204	3,983	6,343	3,079	4,314	8,158
(WY)	(1997)	(2004)	(1997)	(1998)	(1998)	(2003)	(2003)	(1998)	(2003)	(2003)	(2003)	(1996)
MIN	426	523	796	1,116	864	1,412	884	1,173	466	418	236	454
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

02075045 DAN RIVER AT SEWAGE TREATMENT PLANT, NEAR DANVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1996 - 2004	
ANNUAL TOTAL	1,402,804		862,633			
ANNUAL MEAN	3,843		2,357		2,146	
HIGHEST ANNUAL MEAN					3,665	2003
LOWEST ANNUAL MEAN					731	2002
HIGHEST DAILY MEAN	37,100	Mar 21	24,600	Sep 29	41,500	Sep 7, 1996
LOWEST DAILY MEAN	682	Jan 20	679	Jul 26	a104	Aug 15, 2002
ANNUAL SEVEN-DAY MINIMUM	1,070	Jan 22	1,040	Aug 30	126	Aug 11, 2002
MAXIMUM PEAK FLOW			27,800	Sep 30	47,100	Sep 6, 1996
MAXIMUM PEAK STAGE			20.82	Sep 30	28.65	Sep 6, 1996
INSTANTANEOUS LOW FLOW			a443	Mar 15	a83	Aug 15, 2002
ANNUAL RUNOFF (CFSM)	1.83		1.12		1.02	
ANNUAL RUNOFF (INCHES)	24.79		15.24		13.85	
10 PERCENT EXCEEDS	6,580		3,170		3,700	
50 PERCENT EXCEEDS	2,670		1,860		1,480	
90 PERCENT EXCEEDS	1,560		1,280		622	

a Result of regulation.
e Estimated.



02075500 DAN RIVER AT PACES, VA

LOCATION.--Lat 36°38'32", long 79°05'22", NAD83, 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 mi^2, approximately.

PERIOD OF RECORD.--November 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 322.48 ft NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good. 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 ft^3/s, from rating curve extended above 32,000 ft^3/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 Aug. 16, 1940, reached a stage of 32.3 ft, from floodmark.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3,020	2,410	2,230	3,120	2,580	2,410	2,270	2,160	1,260	2,080	2,170	1,800
2	3,060	2,240	2,230	3,080	1,900	2,400	2,300	2,720	1,700	2,740	1,800	1,600
3	3,080	2,110	2,510	3,050	2,770	2,410	2,180	3,920	1,430	2,300	3,170	1,570
4	2,860	2,050	2,320	3,010	5,940	2,520	2,080	3,260	1,640	2,230	4,490	1,560
5	2,840	2,380	3,110	2,290	5,200	2,500	1,740	3,040	3,140	2,410	3,030	1,470
6	2,160	2,450	4,200	2,270	4,350	2,530	1,720	2,360	3,230	1,910	2,490	1,440
7	2,350	3,810	4,000	2,810	15,600	2,580	1,920	2,200	1,960	2,200	2,050	1,700
8	2,220	4,890	3,120	2,700	17,700	2,360	2,140	2,100	1,770	1,920	1,870	3,180
9	2,340	3,130	2,790	2,620	6,350	2,360	2,070	1,880	1,670	1,680	1,560	15,000
10	2,240	2,230	2,890	2,620	4,570	2,260	1,910	1,780	1,820	1,730	1,450	11,900
11	2,560	2,190	8,290	2,560	4,160	2,220	2,090	1,730	1,980	1,760	1,490	4,940
12	2,600	2,210	9,530	2,140	3,960	1,980	1,990	2,030	1,780	1,750	2,200	3,810
13	2,160	2,130	5,180	1,970	3,770	2,150	5,120	1,440	1,760	1,990	6,250	2,530
14	2,170	2,090	6,520	2,510	3,610	1,880	10,900	1,710	1,350	2,350	4,640	2,320
15	2,420	2,070	7,070	2,240	3,360	1,830	9,740	1,660	1,350	2,240	3,410	1,770
16	2,560	1,920	6,610	2,050	2,910	2,170	6,210	1,610	5,180	1,770	2,620	2,030
17	2,490	1,860	5,930	2,280	2,980	3,580	4,390	1,530	12,700	1,450	2,010	2,760
18	2,220	2,090	7,100	2,280	3,140	3,500	3,750	2,410	4,390	1,710	3,600	5,930
19	2,180	2,260	5,990	2,160	3,080	2,850	3,420	2,520	3,300	1,440	4,820	5,720
20	2,000	2,990	4,220	1,950	3,640	2,410	3,150	2,310	2,780	1,370	3,210	3,290
21	2,050	3,920	3,560	2,170	3,550	2,340	3,060	2,540	2,340	1,680	2,120	2,290
22	2,250	3,060	3,070	2,110	3,260	1,990	2,980	2,600	1,970	1,630	2,740	2,120
23	2,190	2,680	3,080	1,860	2,760	1,980	2,870	2,180	2,290	1,380	1,920	1,810
24	2,140	2,220	2,850	2,140	2,360	2,180	2,710	1,780	2,620	1,790	2,020	1,730
25	2,130	2,370	2,740	2,090	2,630	1,880	2,660	2,020	3,420	1,940	1,540	1,700
26	2,080	3,080	2,700	1,760	2,730	2,150	2,000	1,650	4,540	1,150	1,840	1,640
27	2,130	2,960	2,920	1,820	2,640	1,900	2,340	2,390	6,120	1,280	1,450	1,330
28	2,940	2,970	2,890	2,210	2,490	1,930	2,720	1,790	3,480	3,340	1,410	3,970
29	3,050	3,260	2,350	2,310	2,780	1,880	2,660	1,990	2,910	3,620	1,690	18,600
30	2,810	3,100	2,560	2,400	---	1,820	2,300	1,660	2,400	3,360	1,630	23,900
31	2,570	---	3,060	2,500	---	2,020	---	1,620	---	3,040	2,010	---
TOTAL	75,870	79,130	127,620	73,080	126,770	70,970	97,390	66,590	88,280	63,240	78,700	135,410
MEAN	2,447	2,638	4,117	2,357	4,371	2,289	3,246	2,148	2,943	2,040	2,539	4,514
MAX	3,080	4,890	9,530	3,120	17,700	3,580	10,900	3,920	12,700	3,620	6,250	23,900
MIN	2,000	1,860	2,230	1,760	1,900	1,820	1,720	1,440	1,260	1,150	1,410	1,330
(†)	-1,034	+1,351	+348	-1,482	+2,309	+746	+55	+282	-383	-2,279	+232	+6,862
MEAN‡	2,414	2,683	4,128	2,310	4,451	2,313	3,248	2,157	2,930	1,966	2,546	4,742
CFSM‡	.95	1.05	1.62	.91	1.75	.91	1.27	.85	1.15	.77	1.00	1.86
IN.‡	1.09	1.17	1.87	1.04	1.88	1.05	1.42	.98	1.28	.89	1.15	2.08

CAL YR 2003 MEAN‡ 4,867 CFSM‡ 1.91 IN.‡ 25.92
WTR YR 2004 MEAN‡ 2,978 CFSM‡ 1.17 IN.‡ 15.90

† 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 change in contents.

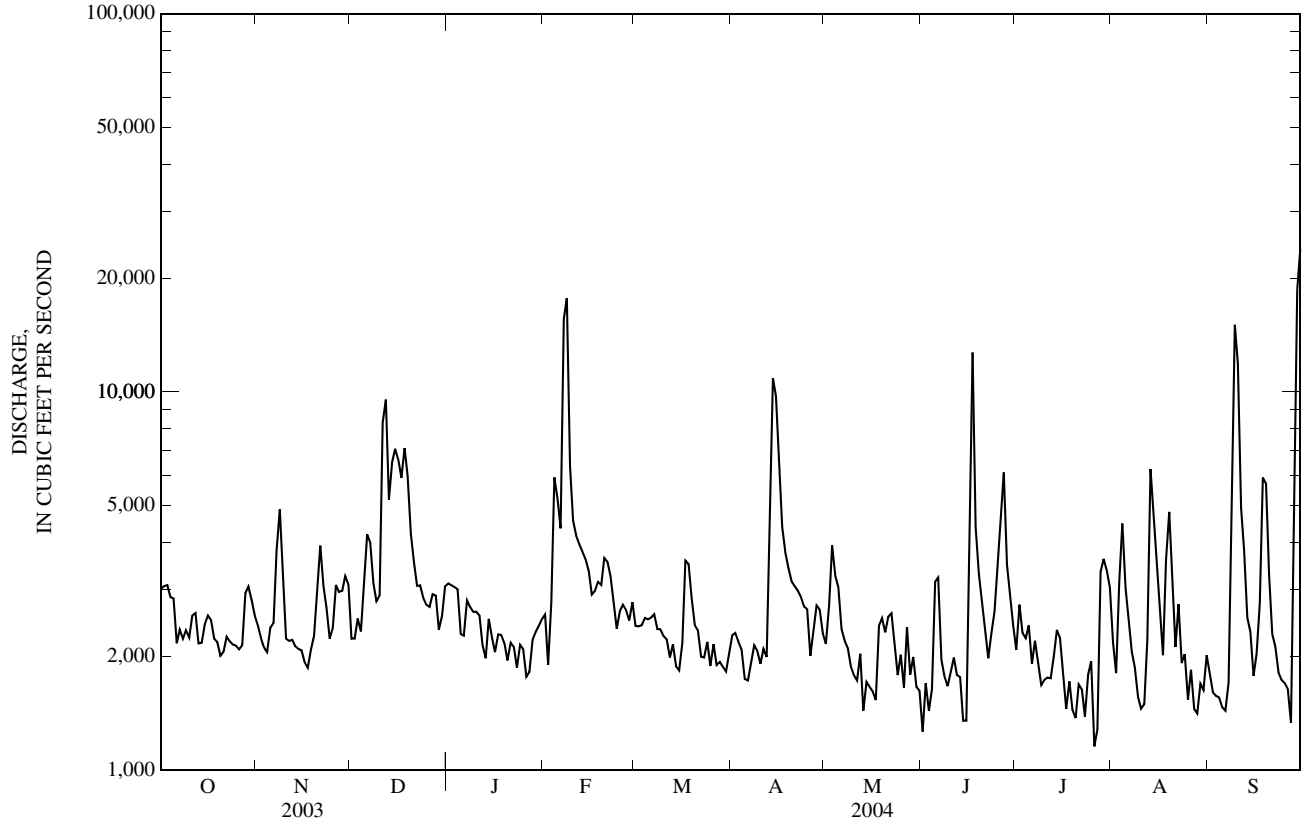
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2004, BY WATER YEAR (WY)

MEAN	1,968	2,027	2,631	3,337	3,837	4,436	3,995	2,832	2,438	1,851	1,787	1,972
MAX	7,253	6,184	5,734	8,407	9,141	11,190	11,500	6,505	8,987	5,091	5,245	10,200
(WY)	(1960)	(1958)	(1997)	(1978)	(1960)	(1975)	(1987)	(1978)	(1972)	(1975)	(2003)	(1996)
MIN	522	602	925	1,015	1,104	1,580	1,060	1,184	465	418	243	452
(WY)	(2002)	(2002)	(2002)	(1981)	(2002)	(1981)	(2002)	(1986)	(2002)	(2002)	(2002)	(1954)

02075500 DAN RIVER AT PACES, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1951 - 2004	
ANNUAL TOTAL	1,775,467		1,083,050			
ANNUAL MEAN	4,864		2,959		2,753	
HIGHEST ANNUAL MEAN					4,729	2003
LOWEST ANNUAL MEAN					872	2002
HIGHEST DAILY MEAN	42,200	Mar 22	23,900	Sep 30	63,400	Jun 23, 1972
LOWEST DAILY MEAN	967	Jan 20	1,150	Jul 26	a133	Aug 15, 2002
ANNUAL SEVEN-DAY MINIMUM	1,220	Jan 23	1,520	Jul 17	143	Aug 12, 2002
MAXIMUM PEAK FLOW			25,200	Sep 30	64,800	Jun 23, 1972
MAXIMUM PEAK STAGE			22.80	Sep 30	33.15	Jun 23, 1972
INSTANTANEOUS LOW FLOW			b972	Jul 26	a129	Aug 15, 2002
ANNUAL RUNOFF (CFSM)	1.91		1.16		1.08	
ANNUAL RUNOFF (INCHES)	25.90		15.80		14.67	
10 PERCENT EXCEEDS	9,120		4,390		4,940	
50 PERCENT EXCEEDS	3,340		2,340		1,860	
90 PERCENT EXCEEDS	2,050		1,690		878	

a Result of regulation.
b Also July 27, 2004.



02076000 DAN RIVER AT SOUTH BOSTON, VA

LOCATION.--Lat 36°41'37", long 78°54'09", NAD83, Halifax County, Hydrologic Unit 03010104, on left bank 100 ft upstream from Norfolk and Western Railroad bridge at South Boston.

DRAINAGE AREA.--2,730 mi^2.

PERIOD OF RECORD.--August 1900 to May 1907, April 1923 to September 1952, October 1952 to July 1962 (gage heights only), August 1980 to September 2000 (annual maximum only), October 2000 to current year (gage heights only).

REVISED RECORDS.--WDR VA-02-01: 2001(M,m).

GAGE.--Water-stage recorder. Datum of gage is 299.23 ft NGVD of 1929.

REMARKS.-- No gage-height record Feb. 2 to May 29. Mean daily gage heights are shown in table below. Diurnal fluctuation caused by mills and hydroelectric generating facility 36.4 mi upstream at Danville. Since August 1950, flow regulated by Philpott Lake (station 02071900) 114.8 mi upstream.

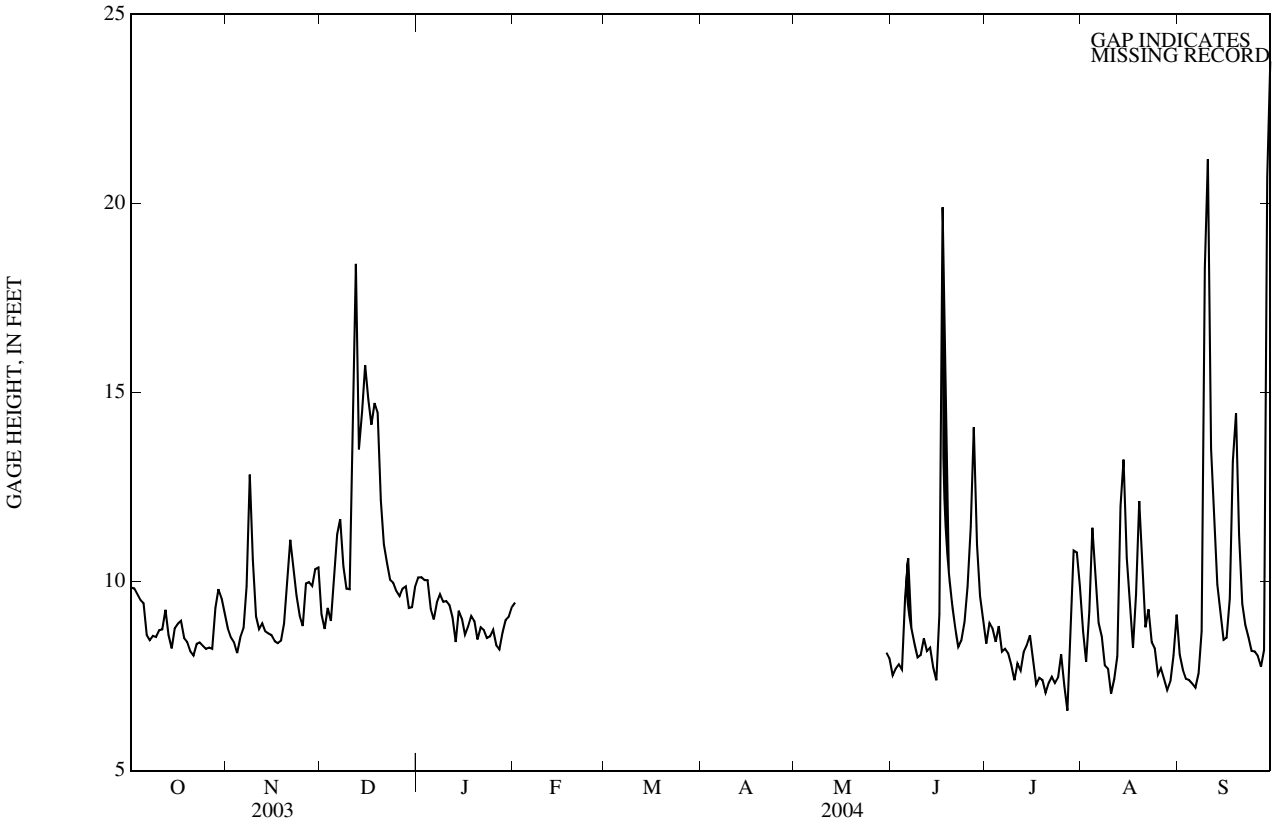
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 81,000 ft^3/s, Aug. 16, 1940, gage height, 31.8 ft.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 24.50 ft, Sept. 30, stage rising, peak occurred Oct. 1, 2004; minimum gage height, 6.38 ft, July 27.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.84	8.76	9.14	10.11	9.44	---	---	---	7.52	8.36	8.69	8.07
2	9.82	8.52	8.75	10.12	---	---	---	---	7.69	8.90	7.88	7.67
3	9.67	8.39	9.30	10.04	---	---	---	---	7.81	8.76	9.21	7.43
4	9.51	8.11	8.96	10.04	---	---	---	---	7.67	8.40	11.42	7.40
5	9.43	8.52	9.99	9.28	---	---	---	---	9.60	8.82	10.27	7.31
6	8.59	8.77	11.25	9.00	---	---	---	---	10.62	8.15	8.91	7.19
7	8.45	9.88	11.65	9.46	---	---	---	---	8.77	8.22	8.54	7.58
8	8.56	12.83	10.40	9.67	---	---	---	---	8.36	8.10	7.78	8.69
9	8.53	10.58	9.81	9.47	---	---	---	---	7.99	7.80	7.70	18.30
10	8.72	9.08	9.80	9.48	---	---	---	---	8.05	7.39	7.04	21.17
11	8.73	8.74	15.45	9.38	---	---	---	---	8.50	7.84	7.43	13.51
12	9.25	8.90	18.40	9.05	---	---	---	---	8.16	7.65	8.03	11.50
13	8.59	8.68	13.49	8.40	---	---	---	---	8.25	8.14	12.00	9.92
14	8.23	8.63	14.50	9.23	---	---	---	---	7.74	8.33	13.23	9.19
15	8.77	8.58	15.72	9.02	---	---	---	---	7.39	8.58	10.63	8.46
16	8.89	8.42	14.81	8.59	---	---	---	---	9.14	7.93	9.52	8.52
17	8.96	8.37	14.15	8.81	---	---	---	---	19.90	7.28	8.26	9.56
18	8.51	8.44	14.72	9.09	---	---	---	---	13.25	7.45	9.66	13.18
19	8.40	8.89	14.48	8.95	---	---	---	---	10.24	7.40	12.13	14.46
20	8.15	9.95	12.15	8.47	---	---	---	---	9.46	7.06	10.61	11.23
21	8.05	11.11	10.98	8.79	---	---	---	---	8.80	7.31	8.79	9.41
22	8.35	10.33	10.48	8.72	---	---	---	---	8.27	7.48	9.27	8.85
23	8.39	9.63	10.05	8.51	---	---	---	---	8.44	7.32	8.40	8.52
24	8.30	9.10	9.97	8.55	---	---	---	---	8.93	7.47	8.23	8.17
25	8.22	8.83	9.75	8.72	---	---	---	---	9.86	8.07	7.53	8.15
26	8.25	9.95	9.62	8.31	---	---	---	---	11.45	7.24	7.71	8.04
27	8.22	9.99	9.81	8.21	---	---	---	---	14.08	6.59	7.41	7.75
28	9.30	9.88	9.88	8.66	---	---	---	---	10.98	8.85	7.13	8.19
29	9.80	10.33	9.30	8.99	---	---	---	---	9.62	10.82	7.36	20.70
30	9.56	10.37	9.33	9.07	---	---	---	8.12	8.95	10.77	8.04	23.76
31	9.17	---	9.86	9.33	---	---	---	7.96	---	9.88	9.13	---
MEAN	8.81	9.35	11.48	9.08	---	---	---	---	9.52	8.14	8.97	10.73
MAX	9.84	12.83	18.40	10.12	---	---	---	---	19.90	10.82	13.23	23.76
MIN	8.05	8.11	8.75	8.21	---	---	---	---	7.39	6.59	7.04	7.19

02076000 DAN RIVER AT SOUTH BOSTON, VA—Continued



02077000 BANISTER RIVER AT HALIFAX, VA

LOCATION.--Lat 36°46'35", long 78°54'57", NAD83, 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 mi^2.

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 315.54 ft NGVD of 1929 (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, and Sept. 20, 1950 to Sept. 24, 2002, at present location and at datum 3.00 ft higher. Sept. 24, 2002 to current year, at present site and datum.

REMARKS.--No estimated daily discharges. Records fair. Flow regulated by a reservoir and hydroelectric generating facility 0.5 mi upstream from station. Maximum discharge, 50,000 ft^3/s, from rating curve extended above 13,000 ft^3/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.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	529	489	534	487	476	467	494	368	306	272	472	238
2	481	461	481	492	452	468	467	647	253	266	363	200
3	446	445	454	534	742	494	418	732	238	280	454	187
4	420	415	455	527	1,590	482	395	498	328	256	778	182
5	410	406	647	527	1,330	388	377	451	394	234	507	177
6	398	461	1,070	704	1,290	438	366	393	523	229	356	180
7	383	1,650	1,120	641	4,440	473	364	346	357	203	346	212
8	362	1,320	862	536	5,210	449	372	336	310	201	286	375
9	376	665	654	524	2,160	524	371	330	299	191	242	930
10	399	545	701	525	1,110	411	362	351	262	227	221	1,030
11	502	504	2,470	469	887	407	356	320	264	267	278	363
12	567	480	2,920	501	763	402	497	277	251	342	311	293
13	457	485	1,340	526	706	396	1,450	298	233	294	845	265
14	414	458	1,570	515	671	387	2,560	276	234	236	2,170	246
15	462	429	2,320	491	623	390	1,890	267	253	213	1,480	239
16	524	428	1,970	469	627	566	1,020	265	369	194	651	231
17	448	443	1,540	449	594	938	768	401	428	163	458	401
18	413	445	1,480	512	581	878	600	416	328	278	396	934
19	397	542	1,350	606	592	628	545	359	270	220	357	1,160
20	388	845	1,000	531	615	535	506	296	270	194	317	565
21	378	746	762	474	586	512	468	345	240	163	311	348
22	360	565	684	459	541	470	456	606	232	155	251	273
23	349	507	653	462	510	439	424	707	228	192	320	284
24	341	475	625	457	500	424	497	407	222	307	246	227
25	320	481	605	452	496	418	485	324	243	261	239	227
26	355	500	563	391	388	414	448	307	725	209	230	249
27	492	456	537	456	520	414	488	490	927	245	222	227
28	629	467	523	506	514	417	474	537	517	796	214	369
29	716	725	510	484	476	407	394	366	330	555	207	1,280
30	660	682	514	521	---	399	377	324	294	812	309	1,760
31	549	---	506	523	---	424	---	308	---	892	256	---
TOTAL	13,925	17,520	31,420	15,751	29,990	14,859	18,689	12,348	10,128	9,347	14,093	13,652
MEAN	449	584	1,014	508	1,034	479	623	398	338	302	455	455
MAX	716	1,650	2,920	704	5,210	938	2,560	732	927	892	2,170	1,760
MIN	320	406	454	391	388	387	356	265	222	155	207	177
CFSM	0.82	1.07	1.85	0.93	1.89	0.88	1.14	0.73	0.62	0.55	0.83	0.83
IN.	0.95	1.19	2.14	1.07	2.04	1.01	1.27	0.84	0.69	0.64	0.96	0.93

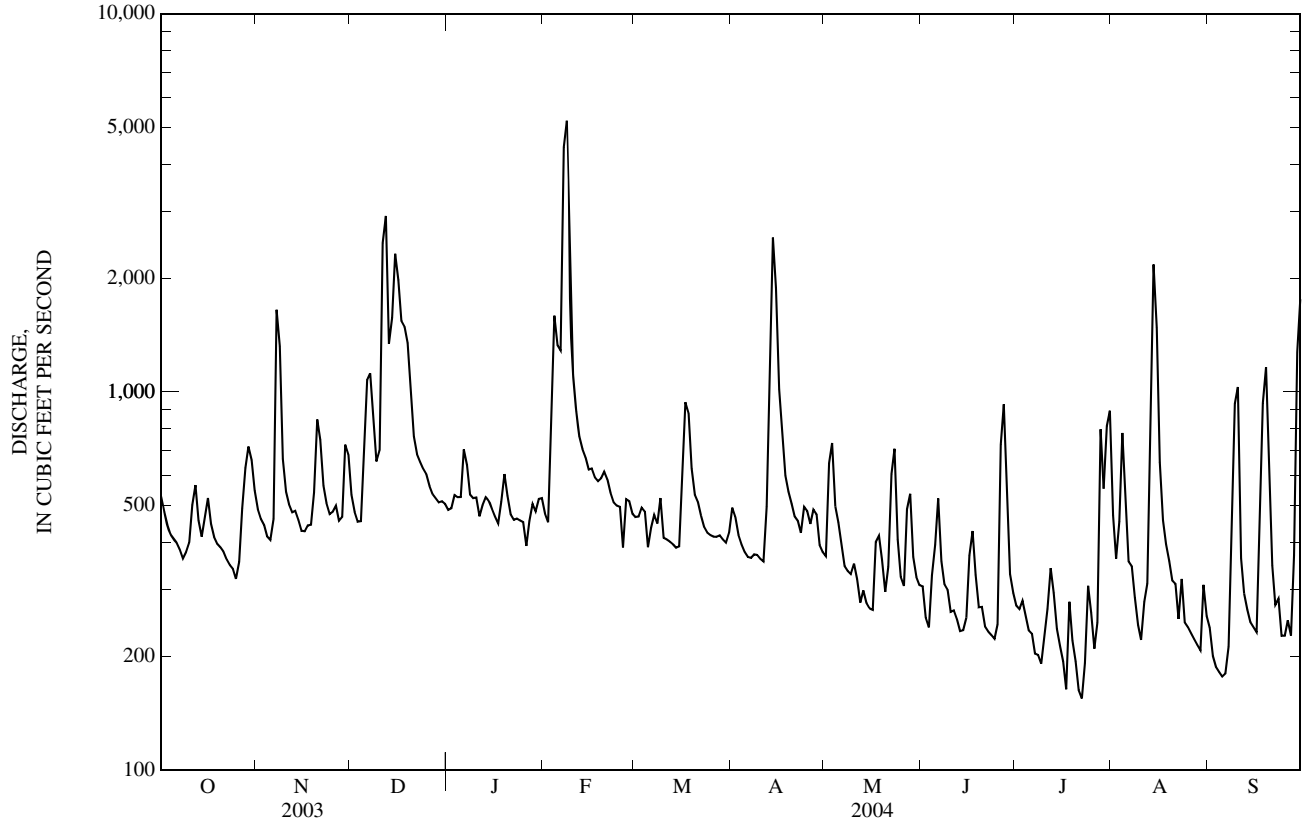
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1905 - 2004, BY WATER YEAR (WY)

MEAN	347	392	501	668	759	835	723	491	391	298	323	382
MAX	1,691	1,431	1,211	2,125	1,857	2,738	2,121	1,374	1,588	1,065	2,898	3,717
(WY)	(1938)	(1973)	(1949)	(1937)	(1979)	(1975)	(1983)	(1978)	(1972)	(1938)	(1940)	(1944)
MIN	34.9	77.4	125	170	160	270	170	178	62.4	29.6	25.2	29.4
(WY)	(1931)	(2002)	(2002)	(1981)	(2002)	(1981)	(2002)	(1981)	(2002)	(2002)	(1999)	(1954)

02077000 BANISTER RIVER AT HALIFAX, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1905 - 2004	
ANNUAL TOTAL	369,021		201,722			
ANNUAL MEAN	1,011		551		508	
HIGHEST ANNUAL MEAN					993	2003
LOWEST ANNUAL MEAN					136	2002
HIGHEST DAILY MEAN	11,700	Mar 21	5,210	Feb 8	44,700	Sep 20, 1944
LOWEST DAILY MEAN	201	Jan 24	155	Jul 22	6.0	Aug 30, 1932
ANNUAL SEVEN-DAY MINIMUM	256	Jan 22	195	Jul 17	18	Oct 8, 1930
MAXIMUM PEAK FLOW			5,980	Feb 8	50,000	Sep 20, 1944
MAXIMUM PEAK STAGE			17.61	Feb 8	a40.80	Sep 20, 1944
INSTANTANEOUS LOW FLOW			96	Jul 17	6.0	(b)
ANNUAL RUNOFF (CFSM)	1.85		1.01		0.929	
ANNUAL RUNOFF (INCHES)	25.10		13.72		12.62	
10 PERCENT EXCEEDS	2,000		888		950	
50 PERCENT EXCEEDS	545		452		303	
90 PERCENT EXCEEDS	358		237		109	

a From floodmarks, at site and datum then in use.
b Many days in August and September 1932.



02077500 HYCO RIVER NEAR DENNISTON, VA

LOCATION.--Lat 36°35'17", long 78°53'55", NAD83, 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 mi^2.

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 NGVD of 1929. July 10, 1929, to Mar. 14, 1934, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. 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. Statistics of monthly mean data and summary statistics for water years 1929 - 1934, 1951 - 1964 (unregulated flow) are available in previous data books, water years 1991 - 1998. Maximum discharge, 10,800 ft^3/s, from rating curve extended above 8,200 ft^3/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.--Floods in August 1928 and September 1945 reached stages of 26.4 ft and 25.6 ft, respectively, from floodmarks.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	99	65	75	137	137	174	114	121	57	52	95	1,410
2	97	62	70	135	130	135	103	123	54	51	76	629
3	95	61	66	134	343	135	82	176	52	52	66	477
4	93	61	67	132	392	131	76	143	109	52	62	147
5	89	60	130	202	580	130	73	127	258	51	57	58
6	75	62	136	368	645	130	71	120	87	49	55	51
7	75	113	137	334	1,530	132	69	115	70	49	53	59
8	74	80	127	136	1,610	131	76	113	64	48	51	174
9	77	71	122	131	1,490	130	115	111	61	47	50	664
10	78	68	276	132	459	128	113	109	62	47	50	445
11	104	67	1,850	127	176	126	112	107	57	47	50	408
12	98	65	1,920	127	163	124	146	105	68	47	63	386
13	84	63	963	130	166	122	701	103	59	47	58	301
14	82	59	1,140	128	154	120	1,140	102	56	48	93	154
15	97	59	1,670	126	149	118	709	101	56	54	147	161
16	88	59	1,640	123	155	132	525	97	106	49	75	157
17	81	60	1,400	122	153	153	224	66	78	46	76	182
18	79	60	1,050	129	263	135	165	60	61	47	179	477
19	77	91	717	134	538	130	155	61	56	49	76	492
20	76	225	269	125	190	125	148	64	53	47	60	169
21	75	102	183	123	147	124	143	59	52	46	55	85
22	76	84	170	123	139	121	136	59	52	45	82	47
23	74	75	162	122	136	119	132	57	52	59	62	43
24	74	71	168	121	135	118	130	55	55	67	55	41
25	73	71	174	120	133	117	129	55	53	55	52	39
26	72	68	158	122	131	116	131	55	78	103	50	37
27	75	66	151	126	137	115	148	91	63	80	49	37
28	79	67	222	124	233	96	131	64	54	70	49	41
29	134	123	210	123	463	65	125	56	53	67	48	57
30	114	85	144	135	---	63	122	59	52	967	834	43
31	70	---	141	159	---	66	---	69	---	177	3,180	---
TOTAL	2,634	2,323	15,708	4,510	11,077	3,761	6,244	2,803	2,088	2,715	6,008	7,471
MEAN	85.0	77.4	507	145	382	121	208	90.4	69.6	87.6	194	249
MAX	134	225	1,920	368	1,610	174	1,140	176	258	967	3,180	1,410
MIN	70	59	66	120	130	63	69	55	52	45	48	37
CFSM	0.29	0.27	1.75	0.50	1.32	0.42	0.72	0.31	0.24	0.30	0.67	0.86
IN.	0.34	0.30	2.02	0.58	1.43	0.48	0.80	0.36	0.27	0.35	0.77	0.96

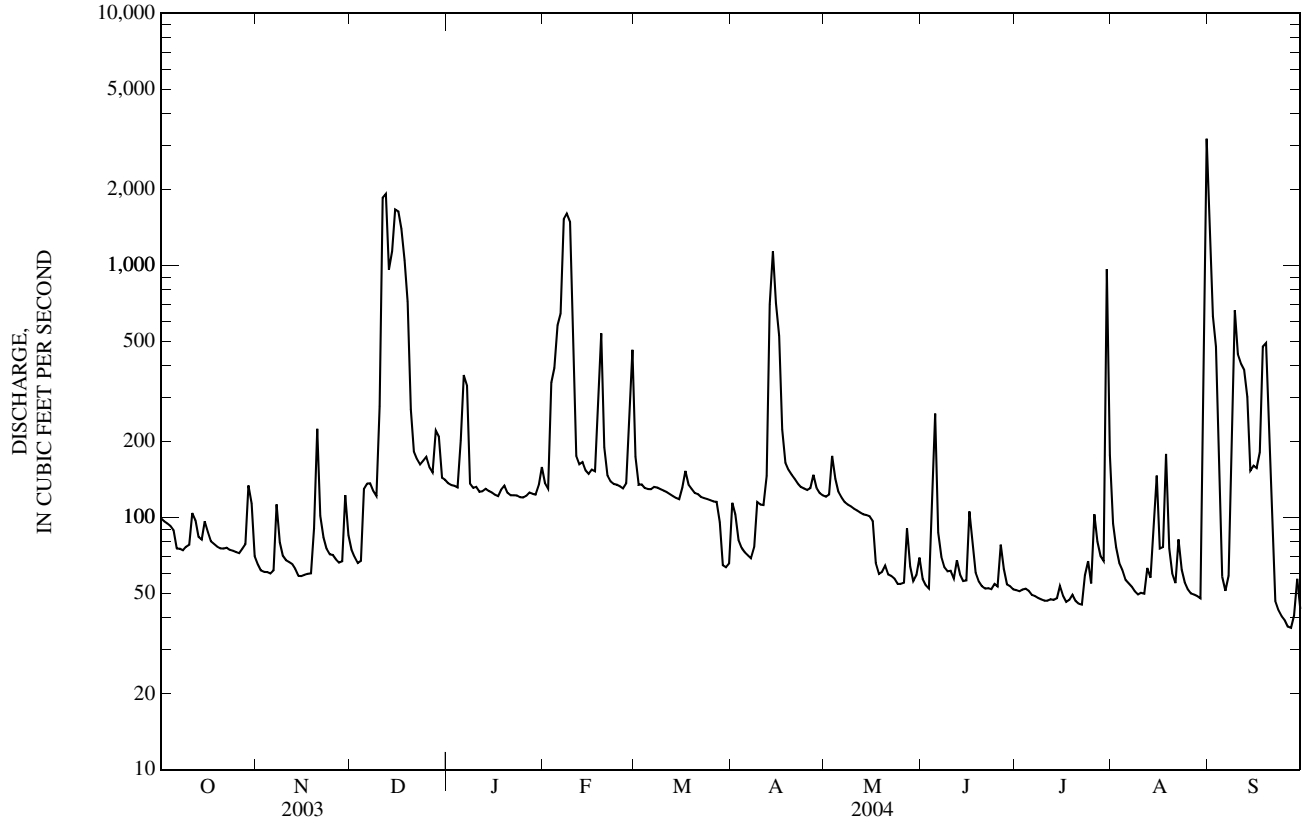
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 2004, BY WATER YEAR (WY)

MEAN	115	130	212	439	487	592	388	225	146	129	110	168
MAX	805	786	815	1,692	1,364	1,737	1,355	1,332	1,146	1,492	553	1,341
(WY)	(1972)	(1973)	(1973)	(1978)	(1998)	(2003)	(2003)	(1978)	(2003)	(1975)	(2003)	(1996)
MIN	9.04	9.36	14.0	28.5	29.2	44.6	23.6	21.7	11.3	10.9	7.49	11.1
(WY)	(1999)	(1999)	(2002)	(1966)	(2002)	(1981)	(2002)	(2002)	(2002)	(2002)	(1999)	(1998)

02077500 HYCO RIVER NEAR DENNISTON, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1965 - 2004	
ANNUAL TOTAL	251,157		67,342			
ANNUAL MEAN	688		184		261	
HIGHEST ANNUAL MEAN					776	2003
LOWEST ANNUAL MEAN					21.5	2002
HIGHEST DAILY MEAN	6,620	Mar 21	3,180	Aug 31	10,300	Jul 15, 1975
LOWEST DAILY MEAN	59	aNov 14	37	bSep 26	2.5	Aug 24, 1999
ANNUAL SEVEN-DAY MINIMUM	61	Nov 12	41	Sep 22	3.4	Aug 19, 1999
MAXIMUM PEAK FLOW			3,440	Aug 31	c10,800	Jul 15, 1975
MAXIMUM PEAK STAGE			16.50	Aug 31	c24.27	Jul 15, 1975
INSTANTANEOUS LOW FLOW			36	Sep 26	d2.1	Aug 24, 1999
ANNUAL RUNOFF (CFSM)	2.38		0.637		0.902	
ANNUAL RUNOFF (INCHES)	32.33		8.67		12.26	
10 PERCENT EXCEEDS	1,980		337		623	
50 PERCENT EXCEEDS	151		103		72	
90 PERCENT EXCEEDS	76		52		19	

a Also Nov. 15, 16, 2003.
b Also Sept. 27, 2004.
c Prior to regulation, 1929-34, 1951-64, maximum peak flow, 7,630 ft^3/s, Oct. 3, 1929, gage height, 21.88 ft.
d Prior to regulation, 1929-34, 1951-64, instantaneous low flow, 0.004 ft^3/s, Sept. 14, 1932.



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 mi^2, approximately.

PERIOD OF RECORD.--July 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929.

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.

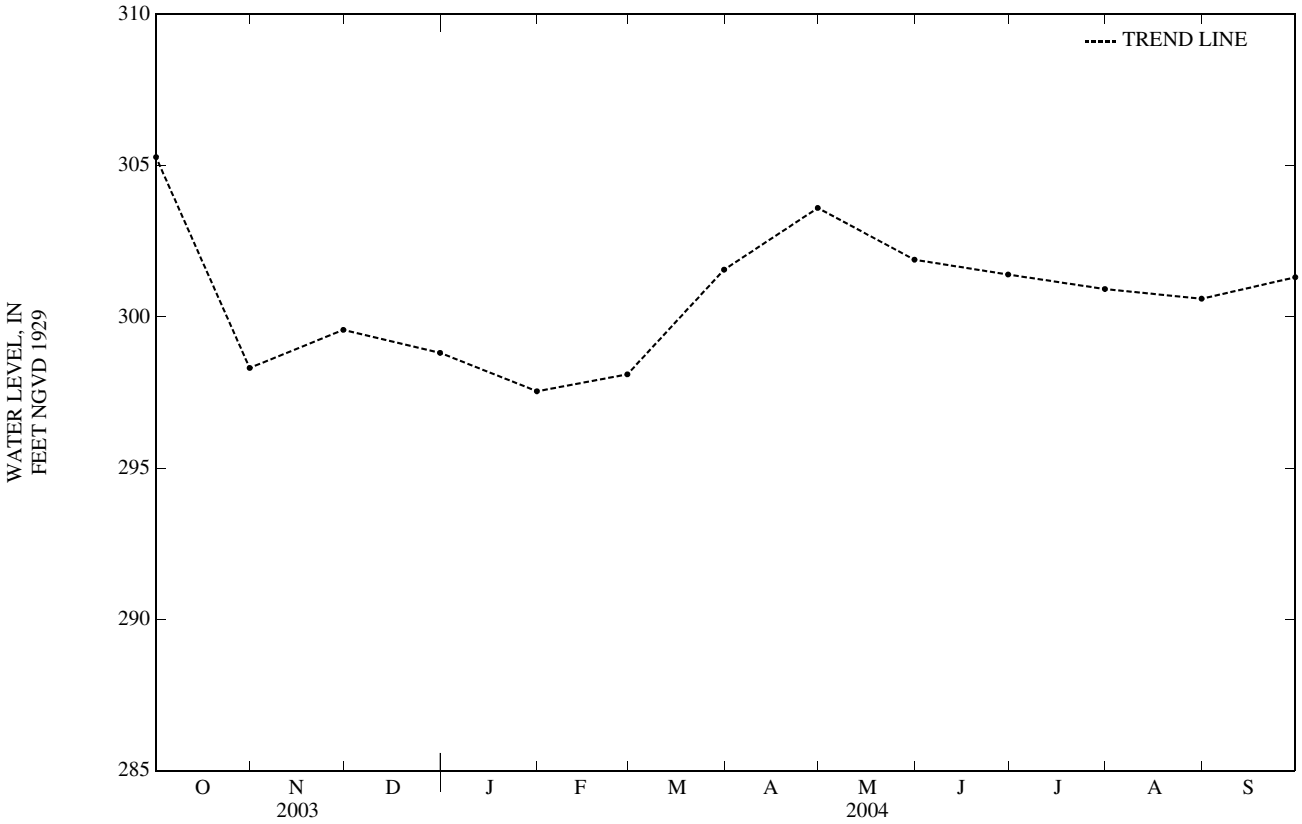
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 2,736,460 acre-ft, Apr. 29, 1987, elevation, 319.61 ft; minimum (after first filling to rule curve), 724,700 acre-ft, Feb. 3, 1956, elevation, 280.23 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,774,320 acre-ft, Apr. 18, elevation, 305.39 ft; minimum, 1,307,580 acre-ft, Jan. 17, elevation, 296.17 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
	305.28	1,768,140	
	298.31	1,406,520	-361,620
November 30	299.57	1,467,490	+60,970
December 31	298.81	1,430,420	-37,070
	297.54	1,370,260	-60,160
February 29	298.10	1,396,480	+26,220
March 31	301.56	1,568,000	+171,520
April 30	303.60	1,675,840	+107,840
May 31	301.89	1,585,020	-90,820
June 30	301.40	1,559,740	-25,280
July 31	300.92	1,535,060	-24,680
August 31	300.60	1,518,900	-16,160
September 30	301.31	1,555,100	+36,200

02079490 JOHN H. KERR RESERVOIR NEAR BOYDTON, VA—Continued



02079500 ROANOKE RIVER AT BUGGS ISLAND, VA

LOCATION.--Lat 36°36'06", long 78°17'56" NAD83, Mecklenburg County, Hydrologic 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, 6.7 mi southeast of Boydton, and at mile 178.4.

DRAINAGE AREA.--7,789 mi^2.

STAGE RECORDS

PERIOD OF RECORD.--November 1921 to August 1923 (gage heights only), April 1947 to September 1962, October 1963 to September 2000 (annual maximum only), October 2000 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is 196.72 ft NGVD of 1929. November 1921 to August 1923, at site 0.3 mi upstream at different datum. April 1947 to Sept. 30, 1952, at site 2,800 ft downstream at different datum.

REMARKS.--Partial or no gage-height record July 9-12 and Aug. 26. Mean daily gage heights are shown in table below. Since July 1950, flow regulated by John H. Kerr reservoir (station 02079490) 1,200 ft upstream.

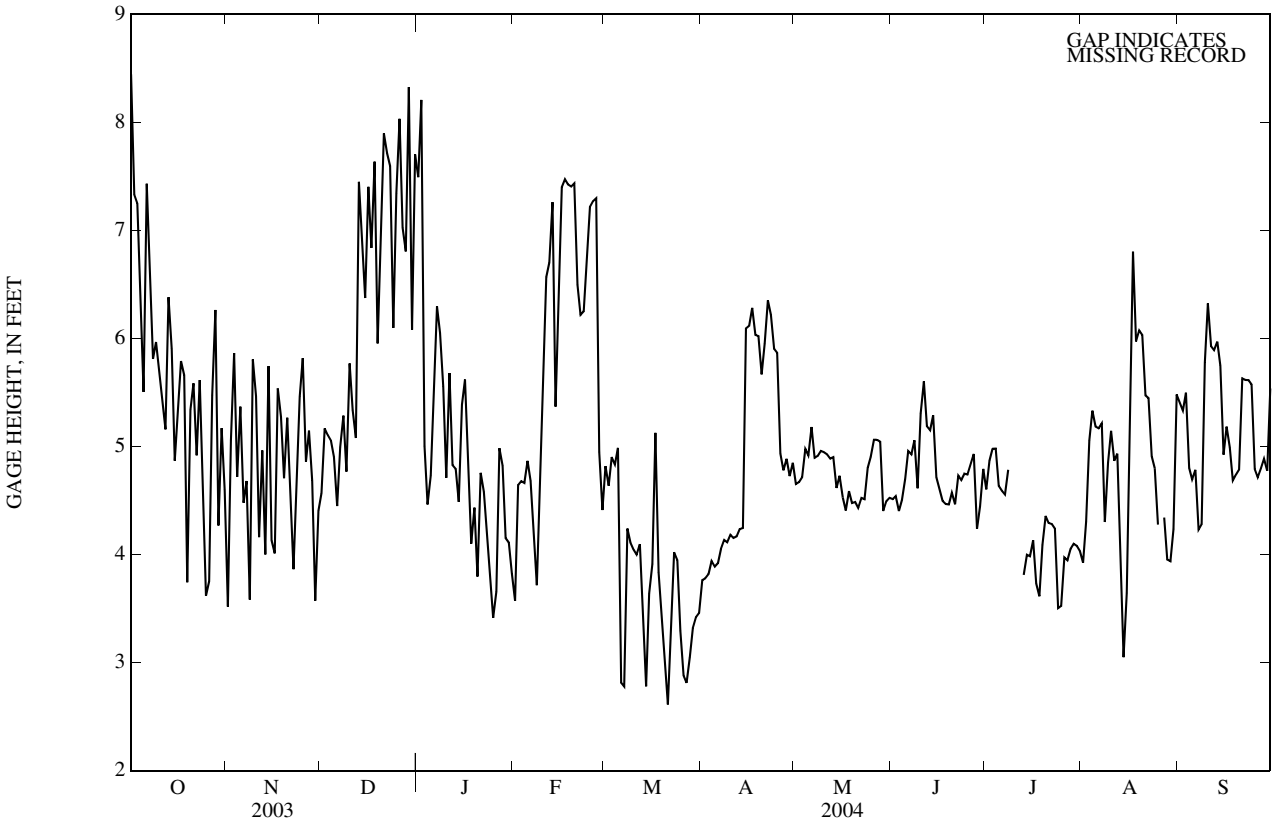
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,000 ft^3/s, Dec. 7, 1948, gage height, 14.97 ft.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 10.12 ft, Aug. 30; minimum gage height, 2.34 ft, Nov. 13.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.44	3.52	4.57	7.49	3.57	4.82	3.76	4.65	4.51	4.60	3.93	5.41
2	7.33	5.06	5.17	8.21	4.64	4.64	3.78	4.67	4.54	4.87	4.30	5.33
3	7.25	5.86	5.11	5.00	4.68	4.90	3.82	4.72	4.40	4.98	5.06	5.50
4	6.20	4.72	5.06	4.46	4.66	4.83	3.94	4.98	4.51	4.98	5.33	4.80
5	5.50	5.37	4.90	4.73	4.87	4.99	3.89	4.92	4.70	4.64	5.18	4.69
6	7.43	4.48	4.45	5.66	4.68	2.81	3.92	5.18	4.96	4.59	5.17	4.78
7	6.61	4.68	4.99	6.30	4.15	2.78	4.05	4.90	4.93	4.56	5.21	4.23
8	5.81	3.58	5.29	6.05	3.72	4.24	4.13	4.91	5.06	4.78	4.30	4.28
9	5.97	5.81	4.77	5.56	4.63	4.11	4.11	4.96	4.61	---	4.85	5.78
10	5.70	5.47	5.77	4.71	5.61	4.05	4.18	4.95	5.31	---	5.14	6.32
11	5.42	4.16	5.34	5.68	6.57	4.00	4.15	4.93	5.60	---	4.87	5.93
12	5.16	4.96	5.08	4.83	6.70	4.10	4.17	4.89	5.19	---	4.93	5.89
13	6.38	4.00	7.45	4.79	7.26	3.50	4.24	4.90	5.15	3.81	4.02	5.97
14	5.90	5.74	6.84	4.49	5.37	2.78	4.25	4.62	5.29	4.00	3.05	5.75
15	4.87	4.13	6.37	5.39	6.62	3.64	6.09	4.73	4.72	3.98	3.64	4.92
16	5.33	4.01	7.40	5.62	7.40	3.91	6.12	4.53	4.61	4.13	5.69	5.18
17	5.79	5.54	6.84	4.80	7.47	5.13	6.28	4.41	4.50	3.73	6.80	4.99
18	5.66	5.27	7.64	4.10	7.43	3.84	6.03	4.59	4.47	3.61	5.97	4.68
19	3.74	4.71	5.95	4.43	7.41	3.36	6.02	4.48	4.46	4.09	6.07	4.74
20	5.34	5.27	6.91	3.80	7.44	2.95	5.67	4.49	4.57	4.36	6.03	4.79
21	5.58	4.72	7.90	4.76	6.50	2.61	5.95	4.43	4.46	4.29	5.47	5.63
22	4.92	3.86	7.71	4.58	6.22	3.28	6.35	4.52	4.73	4.28	5.45	5.62
23	5.61	4.48	7.60	4.18	6.25	4.02	6.22	4.51	4.69	4.24	4.91	5.61
24	4.55	5.46	6.10	3.82	6.68	3.95	5.91	4.80	4.75	3.50	4.80	5.57
25	3.62	5.82	7.35	3.41	7.22	3.29	5.87	4.91	4.74	3.52	4.28	4.79
26	3.75	4.86	8.03	3.66	7.27	2.88	4.94	5.06	4.84	3.97	---	4.71
27	5.47	5.15	7.03	4.98	7.30	2.81	4.78	5.06	4.93	3.95	4.34	4.80
28	6.26	4.68	6.81	4.82	4.95	3.05	4.89	5.04	4.24	4.05	3.96	4.89
29	4.27	3.57	8.33	4.15	4.41	3.32	4.73	4.40	4.45	4.10	3.94	4.77
30	5.17	4.41	6.08	4.11	---	3.42	4.85	4.50	4.79	4.08	4.24	5.54
31	4.60	---	7.70	3.83	---	3.46	---	4.53	---	4.03	5.48	---
MEAN	5.60	4.78	6.34	4.92	5.92	3.72	4.90	4.75	4.76	---	---	5.20
MAX	8.44	5.86	8.33	8.21	7.47	5.13	6.35	5.18	5.60	---	---	6.32
MIN	3.62	3.52	4.45	3.41	3.57	2.61	3.76	4.40	4.24	---	---	4.23

02079500 ROANOKE RIVER AT BUGGS ISLAND, VA—Continued



02079500 ROANOKE RIVER AT BUGGS ISLAND, VA—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--December 2003 to current year.

PERIOD OF CONTINUOUS (15-MINUTE INTERVAL) RECORD.--
DISSOLVED OXYGEN: December 2003 to current.
pH: December 2003 to current.
SPECIFIC CONDUCTANCE: December 2003 to current.
WATER TEMPERATURE: December 2003 to current.

INSTRUMENTATION:--Water-quality monitor December 2003 to current year.

REMARKS.--Missing record due to instrument malfunction.

EXTREMES FOR CURRENT YEAR.--
DISSOLVED OXYGEN: Maximum, 14.7 mg/L, Apr. 6; minimum, 0.7 mg/L, Aug. 26, Sept. 15.
pH: Maximum, 8.2 standard units, Mar. 25, Apr. 7; minimum, 6.3 standard units, Sept. 15, 16, 17.
SPECIFIC CONDUCTANCE: Maximum, 141 microsiemens/cm, June 27; minimum, 66 microsiemens/cm, Feb. 27, 28, 29, Mar. 1.
WATER TEMPERATURE: Maximum, 26.4°C, Sept. 17; minimum, 3.2°C, Feb. 17, 18, 19.

DISSOLVED OXYGEN, WATER, UNFILTERED, MILLIGRAMS PER LITER
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	---	---	---	10.9	10.6	10.7
2	---	---	---	---	---	---	---	---	---	10.8	10.6	10.6
3	---	---	---	---	---	---	---	---	---	11.0	10.4	10.7
4	---	---	---	---	---	---	---	---	---	11.4	10.3	10.8
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	9.8	9.4	9.5	---	---	---
11	---	---	---	---	---	---	10.5	9.4	9.6	---	---	---
12	---	---	---	---	---	---	10.3	9.2	9.6	---	---	---
13	---	---	---	---	---	---	9.8	9.4	9.6	---	---	---
14	---	---	---	---	---	---	9.8	9.4	9.6	---	---	---
15	---	---	---	---	---	---	9.7	9.4	9.6	---	---	---
16	---	---	---	---	---	---	9.8	9.7	9.8	---	---	---
17	---	---	---	---	---	---	10.0	9.7	9.8	---	---	---
18	---	---	---	---	---	---	10.0	9.8	9.9	---	---	---
19	---	---	---	---	---	---	10.3	9.9	10.0	---	---	---
20	---	---	---	---	---	---	10.4	10.0	10.1	---	---	---
21	---	---	---	---	---	---	10.5	10.1	10.3	---	---	---
22	---	---	---	---	---	---	10.7	10.3	10.3	---	---	---
23	---	---	---	---	---	---	10.6	10.4	10.4	---	---	---
24	---	---	---	---	---	---	10.8	10.0	10.4	---	---	---
25	---	---	---	---	---	---	10.8	10.4	10.5	---	---	---
26	---	---	---	---	---	---	10.8	10.4	10.5	---	---	---
27	---	---	---	---	---	---	10.9	10.4	10.6	---	---	---
28	---	---	---	---	---	---	11.0	10.5	10.6	---	---	---
29	---	---	---	---	---	---	10.9	10.4	10.6	---	---	---
30	---	---	---	---	---	---	10.9	10.3	10.7	---	---	---
31	---	---	---	---	---	---	11.1	10.6	10.8	---	---	---
MAX	---	---	---	---	---	---	11.1	10.6	10.8	11.4	10.6	10.8
MIN	---	---	---	---	---	---	9.7	9.2	9.5	10.8	10.3	10.6

02079500 ROANOKE RIVER AT BUGGS ISLAND, VA—Continued

DISSOLVED OXYGEN, WATER, UNFILTERED, MILLIGRAMS PER LITER—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
		FEBRUARY			MARCH			APRIL			MAY	
1	---	---	---	12.2	11.1	11.9	13.9	12.7	13.5	11.3	7.4	9.0
2	---	---	---	12.2	11.6	12.1	14.3	13.1	13.9	11.6	6.9	8.5
3	12.0	11.4	11.6	12.5	11.5	12.1	14.3	13.0	13.7	10.7	6.5	8.8
4	12.1	11.2	11.7	12.3	11.6	12.1	14.2	12.8	13.8	---	---	---
5	12.1	11.2	11.7	12.2	11.5	12.1	14.3	13.2	13.9	---	---	---
6	12.2	11.4	11.8	12.0	11.3	11.5	14.7	13.1	13.9	---	---	---
7	12.2	11.3	11.7	11.7	11.2	11.3	14.5	13.0	14.0	---	---	---
8	12.1	11.3	11.9	12.1	11.1	11.3	14.2	12.8	13.9	---	---	---
9	12.6	11.5	11.9	12.4	9.6	10.5	14.3	13.0	14.1	---	---	---
10	12.6	11.6	11.8	12.2	9.7	10.4	14.4	12.8	13.9	---	---	---
11	12.7	11.6	11.7	---	---	---	14.1	12.7	13.7	---	---	---
12	12.1	11.6	11.7	---	---	---	14.0	12.9	13.7	---	---	---
13	11.9	11.7	11.7	12.6	11.2	11.7	14.0	12.4	13.7	---	---	---
14	11.8	11.5	11.8	11.8	11.1	11.4	14.1	12.8	13.6	---	---	---
15	12.0	11.6	11.8	12.3	11.2	11.7	14.4	12.9	14.0	9.9	9.2	9.5
16	12.2	11.7	11.8	12.0	11.1	11.3	14.2	13.4	14.0	9.7	8.9	9.2
17	12.3	11.8	11.9	11.5	10.8	11.3	13.9	11.6	13.7	9.4	8.3	8.7
18	12.3	11.9	11.9	---	---	---	13.8	11.8	13.5	8.9	8.1	8.6
19	12.3	11.9	12.0	---	---	---	13.9	12.0	13.4	9.1	8.2	8.7
20	12.4	12.0	12.1	---	---	---	---	---	---	9.2	8.1	8.7
21	13.0	11.9	12.1	---	---	---	13.7	12.0	12.8	9.1	8.1	8.6
22	12.1	11.9	12.0	---	---	---	13.1	12.0	12.7	9.1	8.1	8.5
23	12.4	11.8	12.1	---	---	---	13.4	11.7	12.7	9.0	8.1	8.5
24	12.9	11.8	12.1	---	---	---	13.1	11.0	12.4	9.2	8.2	8.5
25	12.3	11.8	11.8	---	---	---	12.3	9.8	12.1	8.8	7.9	8.3
26	12.1	11.6	11.8	14.0	13.1	13.6	12.2	10.0	11.3	9.0	7.7	8.2
27	12.0	11.4	11.6	13.9	13.1	13.4	12.3	9.7	11.3	8.9	7.7	8.1
28	11.9	11.4	11.7	14.3	13.2	13.5	12.2	10.1	11.6	8.2	7.4	7.8
29	11.9	11.1	11.7	14.2	13.1	13.6	12.0	8.8	10.4	8.4	7.3	7.9
30	---	---	---	14.2	12.9	13.5	11.5	7.9	10.1	7.9	7.2	7.6
31	---	---	---	13.7	12.7	13.4	---	---	---	8.2	7.0	7.5
MAX	13.0	12.0	12.1	14.3	13.2	13.6	14.7	13.4	14.1	11.6	9.2	9.5
MIN	11.8	11.1	11.6	11.5	9.6	10.4	11.5	7.9	10.1	7.9	6.5	7.5
		JUNE			JULY			AUGUST			SEPTEMBER	
1	8.4	7.1	7.7	4.8	4.0	4.1	---	---	---	4.3	2.6	3.3
2	8.3	7.1	7.6	4.2	3.9	3.9	---	---	---	3.9	2.7	3.3
3	8.2	7.2	7.5	4.0	3.9	3.9	---	---	---	3.2	2.3	2.8
4	8.2	7.0	7.6	3.9	3.8	3.8	---	---	---	3.7	2.0	2.9
5	7.9	6.8	7.3	3.8	3.8	3.8	---	---	---	3.6	2.2	2.7
6	7.8	6.8	7.2	3.8	3.6	3.8	---	---	---	3.2	1.0	2.2
7	7.6	6.6	7.0	3.7	3.6	3.6	---	---	---	3.7	1.5	2.5
8	7.3	6.4	6.7	4.9	3.6	4.8	---	---	---	4.3	1.4	2.8
9	7.9	6.3	6.7	---	---	---	---	---	---	5.8	2.8	4.0
10	7.7	6.4	6.7	---	---	---	---	---	---	5.0	3.6	4.4
11	7.1	6.2	6.3	---	---	---	---	---	---	4.8	2.0	3.6
12	7.1	6.0	6.3	---	---	---	---	---	---	4.7	0.9	3.1
13	6.6	5.9	6.1	---	---	---	---	---	---	5.0	1.4	3.6
14	6.4	5.7	6.0	---	---	---	---	---	---	4.2	1.0	3.2
15	6.3	5.5	6.0	---	---	---	---	---	---	3.7	0.7	2.2
16	6.1	5.3	5.8	---	---	---	---	---	---	4.3	0.8	2.0
17	6.0	5.1	5.6	---	---	---	5.0	2.8	4.1	5.7	1.6	3.3
18	6.0	5.0	5.5	---	---	---	5.0	2.2	4.3	5.5	2.6	4.0
19	5.9	5.1	5.4	---	---	---	4.9	2.0	4.1	5.2	3.4	4.2
20	5.7	4.9	5.3	---	---	---	4.7	2.6	4.3	5.3	3.9	4.7
21	5.7	4.9	5.2	---	---	---	4.4	1.8	3.5	---	---	---
22	5.5	4.8	5.2	---	---	---	3.0	1.1	2.3	5.8	4.5	4.8
23	5.3	4.7	5.0	---	---	---	2.8	0.9	2.2	5.9	4.5	4.9
24	5.1	4.5	4.8	---	---	---	3.7	1.0	2.1	5.8	4.6	5.2
25	5.0	4.5	4.7	---	---	---	3.6	1.7	2.6	5.8	4.7	5.0
26	4.9	4.4	4.6	---	---	---	---	---	---	5.5	4.0	4.6
27	4.9	4.4	4.6	---	---	---	---	---	---	5.6	3.7	4.2
28	4.9	4.2	4.6	---	---	---	3.2	1.4	2.1	5.9	3.9	5.0
29	5.1	4.4	4.6	---	---	---	2.3	1.0	1.7	5.7	4.1	4.9
30	5.9	4.3	4.5	---	---	---	3.5	1.0	1.8	5.6	3.8	4.6
31	---	---	---	---	---	---	4.3	1.9	2.8	---	---	---
MAX	8.4	7.2	7.7	4.9	4.0	4.8	5.0	2.8	4.3	5.9	4.7	5.2
MIN	4.9	4.2	4.5	3.7	3.6	3.6	2.3	0.9	1.7	3.2	0.7	2.0

02079500 ROANOKE RIVER AT BUGGS ISLAND, VA—Continued

PH, WATER, UNFILTERED, FIELD, STANDARD UNITS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	---	---	---	7.4	7.3	7.3
2	---	---	---	---	---	---	---	---	---	7.4	7.2	7.3
3	---	---	---	---	---	---	---	---	---	7.5	7.3	7.4
4	---	---	---	---	---	---	---	---	---	7.5	7.3	7.4
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	7.4	7.3	7.3	---	---	---
11	---	---	---	---	---	---	7.8	7.3	7.4	---	---	---
12	---	---	---	---	---	---	7.6	7.2	7.3	---	---	---
13	---	---	---	---	---	---	7.2	7.2	7.2	---	---	---
14	---	---	---	---	---	---	7.2	7.2	7.2	---	---	---
15	---	---	---	---	---	---	7.3	7.2	7.2	---	---	---
16	---	---	---	---	---	---	7.2	7.2	7.2	---	---	---
17	---	---	---	---	---	---	7.3	7.2	7.2	---	---	---
18	---	---	---	---	---	---	7.3	7.2	7.2	---	---	---
19	---	---	---	---	---	---	7.4	7.2	7.3	---	---	---
20	---	---	---	---	---	---	7.2	7.1	7.2	---	---	---
21	---	---	---	---	---	---	7.2	7.1	7.2	---	---	---
22	---	---	---	---	---	---	7.2	7.1	7.2	---	---	---
23	---	---	---	---	---	---	7.2	7.2	7.2	---	---	---
24	---	---	---	---	---	---	7.2	7.1	7.2	---	---	---
25	---	---	---	---	---	---	7.2	7.1	7.2	---	---	---
26	---	---	---	---	---	---	7.2	7.0	7.2	---	---	---
27	---	---	---	---	---	---	7.1	7.0	7.1	---	---	---
28	---	---	---	---	---	---	7.2	7.0	7.0	---	---	---
29	---	---	---	---	---	---	7.1	6.9	7.0	---	---	---
30	---	---	---	---	---	---	7.4	7.0	7.3	---	---	---
31	---	---	---	---	---	---	7.4	7.3	7.4	---	---	---
MAX	---	---	---	---	---	---	7.8	7.3	7.4	7.5	7.3	7.4
MIN	---	---	---	---	---	---	7.1	6.9	7.0	7.4	7.2	7.3
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	7.5	6.9	7.3	7.6	7.3	7.4	7.3	7.1	7.1
2	---	---	---	7.8	7.5	7.6	7.8	7.3	7.6	7.4	7.0	7.2
3	7.6	7.3	7.4	---	---	---	7.8	7.4	7.6	7.2	7.0	7.1
4	7.6	7.3	7.4	---	---	---	7.9	7.4	7.6	7.5	7.1	7.1
5	7.6	7.3	7.4	---	---	---	7.9	7.4	7.6	7.5	7.0	7.1
6	7.6	7.3	7.4	---	---	---	8.0	7.4	7.6	7.3	7.0	7.1
7	7.6	7.3	7.4	---	---	---	8.2	7.4	7.6	7.4	7.0	7.1
8	7.5	7.3	7.4	---	---	---	7.8	7.3	7.6	7.2	7.0	7.0
9	7.6	7.3	7.4	7.8	7.6	7.7	7.8	7.3	7.5	7.2	7.0	7.1
10	7.4	7.3	7.4	7.9	7.5	7.6	7.6	7.4	7.5	7.2	6.9	7.0
11	7.5	7.3	7.4	8.0	7.5	7.7	7.6	7.3	7.4	7.2	7.0	7.0
12	7.5	7.4	7.4	8.0	7.4	7.6	7.5	7.3	7.4	7.3	7.0	7.0
13	7.5	7.4	7.4	7.7	7.5	7.6	7.6	7.3	7.4	7.2	6.9	7.0
14	7.5	7.4	7.4	7.8	7.5	7.6	7.6	7.3	7.4	7.2	6.9	7.0
15	7.5	7.4	7.4	7.8	7.6	7.6	7.8	7.3	7.5	7.2	6.9	6.9
16	7.4	7.4	7.4	---	---	---	7.8	7.3	7.5	7.2	6.9	6.9
17	7.4	7.4	7.4	7.6	7.3	7.5	7.6	7.3	7.5	7.2	6.8	6.9
18	7.4	7.4	7.4	7.6	7.4	7.5	7.5	7.3	7.5	7.2	6.8	6.9
19	7.4	7.3	7.4	7.9	7.5	7.6	7.6	7.3	7.4	7.1	6.8	6.9
20	7.5	7.4	7.4	7.8	7.5	7.6	7.4	7.2	7.4	7.0	6.8	6.9
21	7.5	7.3	7.4	7.9	7.5	7.6	7.5	7.2	7.4	7.1	6.8	6.8
22	7.5	7.3	7.4	7.9	7.5	7.6	7.4	7.3	7.4	7.1	6.8	6.8
23	7.5	7.3	7.4	8.1	7.6	7.6	7.4	7.2	7.3	7.1	6.8	6.8
24	7.5	7.3	7.4	8.0	7.5	7.8	7.4	7.1	7.3	7.1	6.8	6.8
25	7.3	7.3	7.3	8.2	7.5	7.8	7.3	7.2	7.2	7.0	6.7	6.8
26	7.3	7.2	7.2	8.0	7.5	7.7	7.4	7.1	7.2	6.9	6.7	6.8
27	7.2	7.1	7.2	7.8	7.5	7.6	7.4	7.1	7.2	6.8	6.7	6.8
28	7.3	7.1	7.2	7.7	7.4	7.5	7.7	7.2	7.2	6.9	6.7	6.7
29	7.3	7.1	7.2	7.8	7.4	7.5	7.4	7.1	7.2	7.0	6.7	6.7
30	---	---	---	7.6	7.4	7.4	7.3	7.1	7.2	6.8	6.6	6.7
31	---	---	---	7.5	7.3	7.4	---	---	---	6.9	6.7	6.7
MAX	7.6	7.4	7.4	8.2	7.6	7.8	8.2	7.4	7.6	7.5	7.1	7.2
MIN	7.2	7.1	7.2	7.5	6.9	7.3	7.3	7.1	7.2	6.8	6.6	6.7

02079500 ROANOKE RIVER AT BUGGS ISLAND, VA—Continued

PH, WATER, UNFILTERED, FIELD, STANDARD UNITS—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.0	6.6	6.7	6.8	6.7	6.7	6.7	6.6	6.6	6.7	6.6	6.6
2	6.9	6.6	6.7	6.8	6.7	6.7	6.7	6.5	6.6	6.7	6.6	6.6
3	6.9	6.6	6.7	6.8	6.7	6.7	6.6	6.5	6.6	6.7	6.6	6.6
4	6.8	6.6	6.6	6.8	6.7	6.7	6.6	6.5	6.6	6.7	6.6	6.6
5	6.8	6.6	6.6	6.8	6.7	6.7	6.8	6.5	6.6	6.7	6.6	6.6
6	6.8	6.6	6.6	6.8	6.6	6.7	6.7	6.5	6.6	6.7	6.6	6.6
7	6.8	6.6	6.6	6.8	6.6	6.7	6.7	6.5	6.6	6.7	6.5	6.6
8	6.7	6.6	6.6	6.7	6.5	6.7	6.7	6.6	6.6	6.7	6.4	6.5
9	6.7	6.6	6.6	---	---	---	6.7	6.6	6.6	6.8	6.5	6.6
10	6.7	6.6	6.6	---	---	---	6.7	6.6	6.6	6.7	6.6	6.6
11	6.7	6.5	6.6	---	---	---	6.8	6.6	6.6	6.7	6.5	6.6
12	6.7	6.5	6.6	---	---	---	6.7	6.6	6.6	6.6	6.4	6.5
13	6.8	6.6	6.7	6.7	6.5	6.6	6.7	6.6	6.6	6.7	6.4	6.5
14	6.8	6.6	6.7	6.7	6.5	6.6	6.6	6.6	6.6	6.6	6.4	6.5
15	6.8	6.6	6.7	6.7	6.6	6.6	6.6	6.6	6.6	6.5	6.3	6.4
16	6.8	6.6	6.7	6.7	6.5	6.6	---	---	---	6.4	6.3	6.3
17	6.8	6.6	6.6	6.7	6.6	6.6	---	---	---	6.6	6.3	6.4
18	6.8	6.6	6.6	6.7	6.6	6.6	6.9	6.7	6.8	6.5	6.4	6.4
19	6.8	6.6	6.6	6.7	6.5	6.6	6.9	6.7	6.8	6.5	6.4	6.4
20	6.8	6.6	6.6	6.6	6.5	6.6	6.9	6.7	6.7	6.6	6.4	6.5
21	6.7	6.6	6.6	6.6	6.4	6.6	6.8	6.6	6.7	7.0	6.5	6.7
22	6.7	6.6	6.6	6.7	6.4	6.6	6.7	6.6	6.7	6.9	6.8	6.8
23	6.7	6.6	6.6	6.6	6.5	6.6	6.7	6.5	6.6	7.0	6.9	6.9
24	6.7	6.6	6.6	6.6	6.5	6.6	6.6	6.5	6.6	7.1	6.8	6.9
25	6.7	6.6	6.6	6.6	6.5	6.6	6.6	6.4	6.6	7.0	6.8	6.9
26	6.6	6.6	6.6	6.6	6.5	6.6	---	---	---	7.0	6.8	6.8
27	6.6	6.6	6.6	6.6	6.5	6.6	6.8	6.7	6.7	6.9	6.7	6.8
28	6.6	6.6	6.6	6.7	6.5	6.6	6.8	6.7	6.7	7.0	6.8	6.8
29	6.8	6.6	6.6	6.7	6.6	6.6	6.8	6.7	6.7	6.9	6.8	6.8
30	6.8	6.7	6.7	6.7	6.5	6.6	6.9	6.5	6.7	6.9	6.8	6.8
31	---	---	---	6.7	6.6	6.6	6.7	6.6	6.7	---	---	---
MAX	7.0	6.7	6.7	6.8	6.7	6.7	6.9	6.7	6.8	7.1	6.9	6.9
MIN	6.6	6.5	6.6	6.6	6.4	6.6	6.6	6.4	6.6	6.4	6.3	6.3

02079500 ROANOKE RIVER AT BUGGS ISLAND, VA—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	---	---	---	100	96	97
2	---	---	---	---	---	---	---	---	---	97	94	95
3	---	---	---	---	---	---	---	---	---	96	94	95
4	---	---	---	---	---	---	---	---	---	97	95	95
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	101	96	99	---	---	---
11	---	---	---	---	---	---	96	94	95	---	---	---
12	---	---	---	---	---	---	95	91	93	---	---	---
13	---	---	---	---	---	---	92	90	91	---	---	---
14	---	---	---	---	---	---	93	90	92	---	---	---
15	---	---	---	---	---	---	93	91	92	---	---	---
16	---	---	---	---	---	---	92	91	92	---	---	---
17	---	---	---	---	---	---	94	92	93	---	---	---
18	---	---	---	---	---	---	93	92	92	---	---	---
19	---	---	---	---	---	---	95	93	94	---	---	---
20	---	---	---	---	---	---	96	94	94	---	---	---
21	---	---	---	---	---	---	96	95	95	---	---	---
22	---	---	---	---	---	---	96	95	96	---	---	---
23	---	---	---	---	---	---	97	96	97	---	---	---
24	---	---	---	---	---	---	98	96	97	---	---	---
25	---	---	---	---	---	---	99	97	98	---	---	---
26	---	---	---	---	---	---	99	97	98	---	---	---
27	---	---	---	---	---	---	98	97	97	---	---	---
28	---	---	---	---	---	---	99	97	98	---	---	---
29	---	---	---	---	---	---	99	97	98	---	---	---
30	---	---	---	---	---	---	100	97	98	---	---	---
31	---	---	---	---	---	---	101	100	101	---	---	---
MAX	---	---	---	---	---	---	101	100	101	100	96	97
MIN	---	---	---	---	---	---	92	90	91	96	94	95
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	114	110	112	120	116	117
2	---	---	---	---	---	---	113	110	111	121	117	118
3	84	82	83	---	---	---	114	110	112	122	117	118
4	83	81	82	---	---	---	115	111	113	121	117	120
5	81	76	78	---	---	---	114	111	113	122	119	120
6	78	75	76	---	---	---	116	111	113	122	119	120
7	80	74	76	---	---	---	116	112	114	122	119	120
8	78	73	75	---	---	---	115	112	115	121	119	119
9	75	72	73	106	101	103	116	112	114	120	119	119
10	74	72	72	105	102	102	115	112	113	122	119	119
11	74	71	72	106	102	103	115	111	112	123	119	120
12	73	71	72	---	---	---	114	111	112	122	120	120
13	73	71	73	---	---	---	114	111	112	123	120	121
14	74	72	72	---	---	---	116	111	113	124	121	121
15	75	71	72	---	---	---	115	111	112	123	120	121
16	73	71	72	---	---	---	118	111	112	123	120	121
17	74	73	73	106	105	105	117	112	113	122	120	121
18	74	73	73	108	105	107	118	113	113	123	120	121
19	74	72	73	111	106	108	118	113	114	122	120	121
20	72	71	72	111	107	108	121	115	116	122	120	120
21	73	71	72	112	108	109	118	115	116	123	120	120
22	73	71	72	111	108	109	121	116	117	122	120	120
23	73	71	72	113	109	110	118	116	117	122	120	121
24	73	70	71	114	109	110	120	117	117	122	120	121
25	70	70	70	114	110	111	121	117	118	122	120	121
26	70	68	69	113	111	111	122	118	119	123	120	121
27	68	66	67	113	111	111	121	118	119	122	121	121
28	71	66	67	113	111	111	121	117	118	123	121	122
29	73	66	68	115	111	112	121	117	118	123	121	121
30	---	---	---	113	110	112	118	117	117	123	120	121
31	---	---	---	113	111	111	---	---	---	123	121	122
MAX	84	82	83	115	111	112	122	118	119	124	121	122
MIN	68	66	67	105	101	102	113	110	111	120	116	117

02079500 ROANOKE RIVER AT BUGGS ISLAND, VA—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	123	121	122	134	120	124	124	116	120	107	98	101
2	123	121	122	131	116	124	124	115	120	106	97	99
3	123	121	122	132	113	122	124	116	121	106	98	100
4	---	---	---	129	113	120	125	115	119	109	98	102
5	122	121	122	129	109	119	126	115	119	114	98	104
6	124	121	123	126	109	115	126	115	121	115	99	108
7	125	122	123	127	108	116	123	115	120	112	100	106
8	125	122	124	---	---	---	130	116	121	115	99	109
9	127	123	125	---	---	---	129	115	120	116	93	111
10	127	123	125	---	---	---	123	114	118	117	91	99
11	128	122	125	---	---	---	123	113	116	117	92	101
12	129	122	126	---	---	---	122	111	115	119	90	103
13	131	122	127	---	---	---	---	---	---	122	90	99
14	130	121	125	119	115	118	---	---	---	121	89	99
15	131	122	126	121	117	120	122	110	119	122	90	102
16	131	119	127	122	117	120	---	---	---	118	89	102
17	131	121	126	122	117	120	116	89	98	118	89	104
18	130	122	126	121	118	120	112	86	97	118	86	103
19	129	123	126	121	117	120	101	81	91	111	82	96
20	132	125	128	122	117	119	96	79	87	108	78	94
21	131	125	128	131	119	123	99	82	89	112	84	108
22	131	123	128	130	122	127	100	84	92	110	108	108
23	130	125	127	130	122	127	105	86	92	110	108	109
24	131	127	129	130	124	128	100	85	93	113	107	109
25	135	125	130	129	124	128	106	88	95	118	107	111
26	132	122	128	131	123	128	---	---	---	120	99	112
27	141	123	129	131	123	128	105	100	101	134	105	113
28	137	125	130	131	123	128	104	100	102	137	92	119
29	139	121	132	132	122	129	104	101	102	120	89	103
30	136	118	125	131	115	120	---	---	---	---	---	---
31	---	---	---	124	115	120	103	99	100	---	---	---
MAX	141	127	132	134	124	129	130	116	121	137	108	119
MIN	122	118	122	119	108	115	96	79	87	106	78	94

02079500 ROANOKE RIVER AT BUGGS ISLAND, VA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	---	---	---	7.2	6.8	7.1
2	---	---	---	---	---	---	---	---	---	7.2	6.8	7.0
3	---	---	---	---	---	---	---	---	---	8.6	6.9	7.2
4	---	---	---	---	---	---	---	---	---	8.7	7.0	7.7
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	10.8	10.6	10.7	---	---	---
11	---	---	---	---	---	---	11.8	10.4	10.7	---	---	---
12	---	---	---	---	---	---	11.4	10.0	10.5	---	---	---
13	---	---	---	---	---	---	10.5	10.2	10.3	---	---	---
14	---	---	---	---	---	---	10.2	9.7	9.9	---	---	---
15	---	---	---	---	---	---	9.8	9.5	9.6	---	---	---
16	---	---	---	---	---	---	9.5	9.4	9.5	---	---	---
17	---	---	---	---	---	---	9.5	8.9	9.3	---	---	---
18	---	---	---	---	---	---	9.2	8.9	9.1	---	---	---
19	---	---	---	---	---	---	9.1	8.5	8.8	---	---	---
20	---	---	---	---	---	---	8.6	8.2	8.4	---	---	---
21	---	---	---	---	---	---	8.2	7.9	8.1	---	---	---
22	---	---	---	---	---	---	7.9	7.6	7.7	---	---	---
23	---	---	---	---	---	---	7.8	7.6	7.6	---	---	---
24	---	---	---	---	---	---	8.2	7.6	7.8	---	---	---
25	---	---	---	---	---	---	7.7	7.2	7.6	---	---	---
26	---	---	---	---	---	---	7.5	7.2	7.4	---	---	---
27	---	---	---	---	---	---	7.3	7.2	7.2	---	---	---
28	---	---	---	---	---	---	7.6	6.9	7.0	---	---	---
29	---	---	---	---	---	---	7.3	6.7	7.0	---	---	---
30	---	---	---	---	---	---	7.6	6.9	7.2	---	---	---
31	---	---	---	---	---	---	7.3	7.0	7.2	---	---	---
MAX	---	---	---	---	---	---	11.8	10.6	10.7	8.7	7.0	7.7
MIN	---	---	---	---	---	---	7.3	6.7	7.0	7.2	6.8	7.0
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	7.9	4.3	5.4	11.0	8.9	9.2	13.9	12.2	13.1
2	---	---	---	7.0	5.4	5.9	10.9	9.0	9.9	15.1	12.7	13.3
3	4.3	3.5	3.6	8.6	5.7	6.0	10.9	9.6	10.1	13.6	12.5	13.1
4	5.3	3.4	3.7	9.3	5.8	6.7	12.7	9.8	10.3	15.7	12.3	13.5
5	4.4	3.4	3.7	9.7	6.2	7.9	12.5	9.7	10.3	15.5	12.6	13.2
6	4.2	3.7	3.7	10.0	7.8	9.0	12.7	9.6	10.3	---	---	---
7	5.7	3.7	3.8	10.0	7.0	7.7	13.1	10.0	10.8	15.7	12.6	13.3
8	5.4	3.4	3.9	9.0	6.6	7.5	12.3	10.4	10.8	15.0	12.5	13.2
9	4.4	3.5	3.8	9.9	7.4	7.9	12.9	10.3	10.6	15.3	13.1	13.5
10	3.9	3.8	3.8	9.4	6.9	7.4	11.6	10.3	10.6	15.5	13.1	13.8
11	3.9	3.8	3.8	9.9	6.9	7.7	11.0	10.2	10.4	15.7	13.1	13.5
12	3.9	3.7	3.8	11.0	7.4	8.1	10.4	10.1	10.2	15.7	13.1	13.5
13	3.8	3.6	3.6	10.6	7.6	8.2	11.3	10.2	10.3	16.1	13.2	13.9
14	3.8	3.7	3.7	10.7	7.7	8.8	11.2	10.1	10.7	16.6	13.2	13.9
15	3.8	3.7	3.8	9.9	8.8	9.0	13.0	10.5	10.9	16.8	13.4	13.9
16	3.7	3.4	3.6	9.0	7.9	8.8	13.4	10.6	11.3	16.2	13.3	14.0
17	3.4	3.2	3.2	8.5	7.7	8.0	12.3	11.3	11.6	16.2	13.5	14.0
18	3.2	3.2	3.2	9.2	7.7	8.6	12.4	11.4	11.8	16.4	13.5	14.1
19	3.5	3.2	3.4	11.1	8.3	8.8	13.1	11.4	12.3	16.0	13.7	14.2
20	3.9	3.5	3.7	11.0	8.3	9.5	12.5	11.4	12.1	15.7	13.3	14.1
21	4.1	3.8	3.9	12.0	8.7	9.8	13.0	11.4	12.1	16.6	13.6	14.1
22	4.4	3.7	3.9	10.0	8.5	8.9	13.0	11.5	12.5	16.7	13.5	14.3
23	4.6	4.0	4.3	11.3	8.4	9.2	13.2	11.7	12.4	16.7	13.7	14.7
24	4.6	4.1	4.3	11.7	8.6	9.6	13.0	11.6	12.1	16.5	13.7	14.8
25	4.3	4.2	4.2	12.2	9.3	9.7	12.7	11.7	12.3	16.3	13.7	14.6
26	4.2	4.2	4.2	11.9	9.3	9.7	13.9	11.9	12.6	15.7	13.6	14.6
27	4.3	4.1	4.2	11.8	9.3	9.6	14.8	12.1	12.8	16.0	13.9	14.6
28	6.4	4.1	4.4	11.0	8.9	9.3	15.7	12.0	12.9	16.8	13.9	14.8
29	7.2	4.0	4.6	12.2	8.7	9.2	14.9	11.8	12.6	16.4	14.0	14.6
30	---	---	---	9.8	8.8	9.1	14.9	12.1	12.8	15.5	13.4	14.4
31	---	---	---	9.5	8.9	9.2	---	---	---	16.9	14.4	15.4
MAX	7.2	4.2	4.6	12.2	9.3	9.8	15.7	12.1	12.9	16.9	14.4	15.4
MIN	3.2	3.2	3.2	7.0	4.3	5.4	10.4	8.9	9.2	13.6	12.2	13.1

02079500 ROANOKE RIVER AT BUGGS ISLAND, VA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN	MAX	MIN	MEDIAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	17.8	14.8	16.1	21.3	18.1	19.3	24.3	20.6	21.6	25.4	24.3	24.8
2	17.0	14.6	15.6	21.7	18.4	19.7	24.4	20.6	22.3	25.6	24.0	25.1
3	16.9	14.7	15.2	22.0	18.5	20.0	24.7	20.8	21.9	25.6	23.9	25.2
4	15.6	14.0	14.9	22.2	18.6	20.1	24.8	21.3	23.0	25.6	24.2	24.8
5	17.9	15.0	15.2	22.6	18.9	20.1	25.0	21.1	23.0	25.6	24.0	24.7
6	17.6	14.6	15.2	22.7	18.9	19.9	24.9	21.1	22.3	25.6	24.0	24.5
7	17.6	14.9	15.4	22.8	19.1	19.9	25.2	21.2	23.1	25.6	24.2	24.7
8	17.7	15.0	15.5	22.2	19.2	19.9	24.6	21.4	22.8	26.0	24.4	25.1
9	18.1	15.3	15.9	---	---	---	25.2	21.4	23.4	26.1	24.4	25.2
10	18.3	15.4	16.1	---	---	---	25.6	21.7	23.4	25.8	24.7	25.3
11	18.6	15.5	16.2	---	---	---	25.8	22.0	24.0	25.7	24.3	25.0
12	18.5	15.5	16.2	---	---	---	25.6	22.3	24.0	25.8	24.2	25.0
13	18.5	15.4	16.4	23.2	19.3	20.9	25.4	22.5	23.4	25.8	24.2	25.0
14	19.2	15.7	17.2	23.4	19.0	20.0	24.5	22.0	22.6	25.5	24.3	24.9
15	19.2	16.4	17.2	23.9	19.0	20.8	24.9	22.2	22.4	25.5	24.3	24.8
16	19.3	16.3	16.8	23.4	19.0	20.4	25.4	22.2	23.8	25.5	24.5	24.9
17	18.8	16.7	17.3	21.8	19.0	20.4	25.7	22.6	24.3	26.4	24.7	25.0
18	20.0	16.5	17.4	21.7	19.1	19.9	25.8	23.0	24.1	25.3	24.2	24.6
19	19.8	16.7	17.5	23.4	19.3	21.0	25.8	23.1	24.4	25.3	23.8	24.4
20	19.2	16.6	17.3	23.7	19.4	20.7	26.1	23.4	24.3	25.4	23.6	24.1
21	19.6	16.3	17.3	23.6	19.3	21.1	26.1	23.7	24.6	24.8	23.2	23.9
22	20.4	16.8	17.7	23.9	19.6	21.1	25.5	23.4	24.5	24.9	23.1	23.9
23	20.3	17.0	18.2	23.7	20.1	21.2	25.5	23.4	24.2	24.9	23.0	23.9
24	20.4	17.2	18.0	23.3	19.9	20.5	25.4	23.4	24.1	24.7	23.2	23.8
25	20.8	17.4	17.9	23.2	20.1	20.4	25.4	23.4	24.1	24.8	23.0	23.4
26	20.9	17.4	18.4	23.8	20.1	21.2	---	---	---	24.6	22.8	23.1
27	20.8	17.5	18.7	24.0	20.0	21.4	25.6	23.8	24.3	23.3	22.7	22.9
28	21.1	17.8	18.5	24.2	20.3	21.3	25.7	23.8	24.4	23.5	22.6	23.0
29	21.5	17.8	18.7	24.2	20.4	21.1	25.4	23.8	24.4	23.9	22.5	22.8
30	21.2	17.9	18.8	24.2	20.6	21.8	24.3	23.7	23.9	23.1	22.3	22.7
31	---	---	---	24.2	20.6	21.8	25.8	23.9	24.8	---	---	---
MAX	21.5	17.9	18.8	24.2	20.6	21.8	26.1	23.9	24.8	26.4	24.7	25.3
MIN	15.6	14.0	14.9	21.3	18.1	19.3	24.3	20.6	21.6	23.1	22.3	22.7

02079640 ALLEN CREEK NEAR BOYDTON, VA

LOCATION.--Lat 36°40'47", long 78°19'36", NAD83, Mecklenburg County, Hydrologic Unit 03010106, on right bank at upstream side of upstream bridge on U.S. Highway 58, 0.8 mi upstream from Coleman Creek, 2.3 mi downstream from Layton Creek, 3.7 mi east of Boydton, and 11.8 mi southwest of South Hill.

DRAINAGE AREA.--53.4 mi^2, approximately.

PERIOD OF RECORD.--October 1961 to September 1996, October 2000 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 216.50 ft NGVD of 1929 (levels by Virginia Department of Transportation). October 1961 to September 1996, recording gage at site 200 ft downstream, on left bank, and at same datum.

REMARKS.--Records good except those for periods of doubtful gage-height record, Oct. 6 to Nov. 5 and Nov. 9-18, and periods with ice effect, Jan. 11, 12, 25-29 , which are fair. Maximum discharge, 7,380 ft^3/s, from rating curve extended above 3,100 ft^3/s. Several measurements of water temperature were made during the year.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 850 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	2200	1,210	13.33	2000	943	11.78
Dec 11	0600	1,330	13.89	1900	1,410	14.25
Dec 14	1500	1,620	15.08	0300	*1,890	*15.94
Feb 7	0400	1,120	12.82			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	e35	28	32	42	21	51	18	8.9	15	19	72
2	17	e28	25	31	34	21	39	21	8.1	13	87	39
3	16	e23	23	30	146	23	28	202	7.5	13	187	29
4	16	e20	23	30	156	22	24	86	295	12	40	24
5	16	e18	62	30	82	21	22	41	221	77	20	22
6	e15	60	64	33	93	21	20	29	38	23	16	31
7	e15	79	41	29	577	24	20	24	23	44	13	77
8	e15	31	32	26	126	22	20	21	18	53	11	70
9	e14	e27	28	28	75	20	19	18	15	19	10	118
10	e14	e24	69	29	61	19	18	17	13	13	10	37
11	e19	e22	688	e26	52	18	18	15	12	27	11	26
12	e17	e22	119	e23	44	18	31	14	11	26	35	22
13	e16	e21	70	31	42	17	160	13	11	55	88	20
14	e15	e19	883	30	38	16	142	12	12	20	593	18
15	e32	e20	307	28	36	17	167	11	13	14	237	33
16	e20	e23	120	25	35	79	61	11	15	11	96	40
17	e16	e22	239	24	33	135	40	11	190	9.5	46	48
18	e16	e18	174	44	34	50	32	11	32	9.0	32	211
19	e15	330	97	64	38	36	28	10	18	9.1	45	63
20	e15	367	70	39	34	29	26	9.9	14	8.4	27	32
21	e14	90	56	32	32	28	23	9.5	11	7.8	39	25
22	e14	56	49	30	28	25	21	11	11	7.1	94	22
23	e14	42	45	29	26	23	19	9.5	17	16	30	21
24	e13	36	53	28	26	22	43	8.5	24	12	21	19
25	e13	31	59	e26	25	22	32	7.9	17	10	17	18
26	e15	27	44	e23	23	21	25	7.8	63	18	15	18
27	e19	25	39	e25	23	21	45	20	25	13	14	45
28	e30	26	36	e27	22	21	29	13	17	168	13	75
29	e130	49	35	e28	21	21	22	9.3	16	50	13	71
30	e67	34	35	39	---	20	20	8.3	13	53	428	29
31	e50	---	34	53	---	21	---	8.8	---	33	768	---
TOTAL	715	1,625	3,647	972	2,004	874	1,245	708.5	1,189.5	858.9	3,075	1,375
MEAN	23.1	54.2	118	31.4	69.1	28.2	41.5	22.9	39.6	27.7	99.2	45.8
MAX	130	367	883	64	577	135	167	202	295	168	768	211
MIN	13	18	23	23	21	16	18	7.8	7.5	7.1	10	18
CFSM	0.43	1.01	2.20	0.59	1.29	0.53	0.78	0.43	0.74	0.52	1.86	0.86
IN.	0.50	1.13	2.54	0.68	1.40	0.61	0.87	0.49	0.83	0.60	2.14	0.96

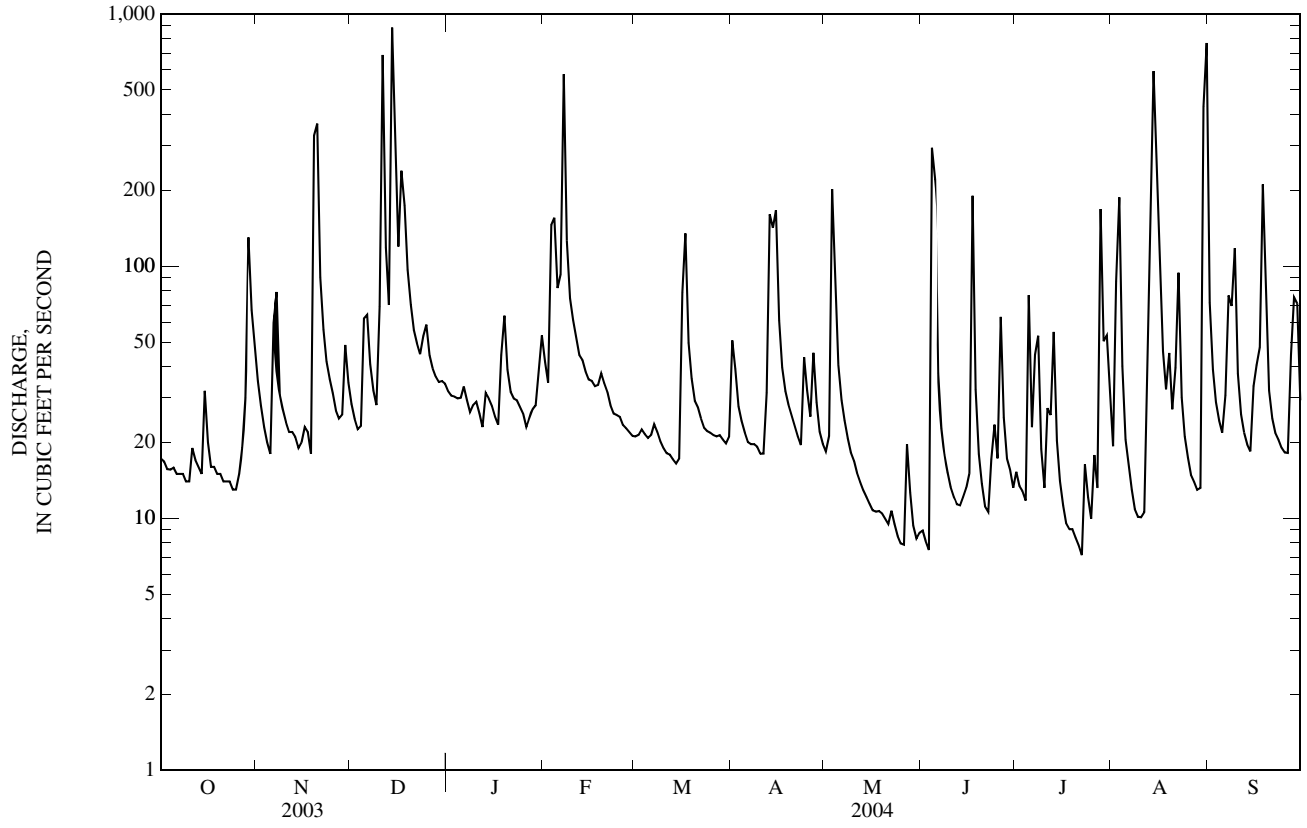
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1996, 2001 - 2004, BY WATER YEAR (WY)

MEAN	24.1	32.2	43.8	73.7	82.2	99.0	69.3	39.9	28.6	17.9	15.5	22.6
MAX	201	151	118	239	214	289	404	225	125	174	99.2	188
(WY)	(1972)	(1986)	(2004)	(1978)	(1979)	(1975)	(1987)	(2003)	(1982)	(1975)	(2004)	(1979)
MIN	0.20	1.61	2.36	7.42	11.8	15.3	10.9	10.3	0.95	0.08	0.09	0.02
(WY)	(1971)	(1966)	(1966)	(1981)	(2002)	(1981)	(1966)	(1986)	(2002)	(2002)	(2002)	(1970)

02079640 ALLEN CREEK NEAR BOYDTON, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1962 - 1996 2001 - 2004	
ANNUAL TOTAL	39,434.4		18,288.9			
ANNUAL MEAN	108		50.0		45.6	
HIGHEST ANNUAL MEAN					109	2003
LOWEST ANNUAL MEAN					9.07	2002
HIGHEST DAILY MEAN	3,500	May 26	883	Dec 14	3,700	Apr 25, 1987
LOWEST DAILY MEAN	7.5	Aug 30	7.1	Jul 22	0.00	(a)
ANNUAL SEVEN-DAY MINIMUM	8.2	Aug 24	8.8	Jul 16	0.00	(b)
MAXIMUM PEAK FLOW			1,890	Aug 31	7,380	May 26, 2003
MAXIMUM PEAK STAGE			15.94	Aug 31	23.35	May 26, 2003
INSTANTANEOUS LOW FLOW			6.7	Jul 22	0.00	(c)
ANNUAL RUNOFF (CFSM)	2.02		0.936		0.853	
ANNUAL RUNOFF (INCHES)	27.47		12.74		11.59	
10 PERCENT EXCEEDS	243		87		82	
50 PERCENT EXCEEDS	31		25		15	
90 PERCENT EXCEEDS	13		12		2.0	

a Many days August to October 1968, September, October 1970, and July, August, October 2002.
b Many days August to October 1968, September, October 1970, and July, August 2002.
c No flow part or all of many days August to October 1968, September, October 1970, and July to October 2002.
e Estimated.



03161000 SOUTH FORK NEW RIVER NEAR JEFFERSON, NC

LOCATION.--Lat 36°23'36", long 81°24'25", 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 mi^2.

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 NGVD of 1929. 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. Satellite telemetry at station.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Maximum discharge for period of record, from rating curve extended above 14,000 ft^3/s on basis of slope-area measurement of peak flow. Minimum discharge for period of record 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 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	359	269	492	441	e268	486	514	370	405	304	257	254
2	341	265	461	429	e279	514	441	385	297	327	314	300
3	328	264	436	e420	350	583	409	382	276	371	297	746
4	320	262	447	e430	e302	572	402	359	506	348	233	364
5	320	287	511	e440	e275	555	386	342	655	407	216	287
6	312	532	521	e450	685	571	370	338	384	319	219	262
7	305	576	458	e410	1,430	615	365	325	337	280	213	484
8	300	414	428	e370	730	558	362	312	375	266	198	10,500
9	337	352	419	e365	581	519	357	322	422	252	192	6,450
10	477	324	567	e350	540	504	346	319	391	243	186	1,680
11	424	310	1,320	e330	523	478	345	311	358	253	183	1,050
12	360	303	766	e320	497	460	491	357	346	279	227	805
13	334	304	621	e325	482	438	1,230	333	441	266	317	673
14	328	301	601	e315	479	423	1,230	328	436	239	242	598
15	351	281	567	e298	467	420	730	307	398	227	207	553
16	352	285	534	e294	469	475	588	294	916	214	200	511
17	315	287	623	e290	440	475	524	302	572	213	200	4,440
18	308	293	668	e320	423	428	481	343	414	227	187	4,160
19	304	6,060	554	e340	423	423	451	320	359	241	184	1,670
20	297	4,050	517	e300	447	406	430	297	348	214	173	1,150
21	292	1,180	e486	e282	566	404	418	287	386	205	178	926
22	284	836	e471	e268	637	400	398	280	785	198	182	797
23	277	681	e466	e265	547	381	384	279	484	200	182	711
24	271	622	707	e260	518	377	374	318	398	200	279	651
25	268	590	766	e280	516	373	381	296	378	415	270	608
26	278	514	586	e305	498	368	437	277	553	368	210	573
27	347	480	527	e324	498	364	591	293	450	287	195	558
28	349	567	496	e300	476	362	425	314	378	317	268	2,430
29	307	675	476	e265	487	357	384	303	345	261	340	1,510
30	285	534	487	e260	---	361	370	300	318	256	244	973
31	277	---	484	e255	---	449	---	328	---	245	216	---
TOTAL	10,007	22,698	17,463	10,301	14,833	14,099	14,614	9,921	13,111	8,442	7,009	46,674
MEAN	323	757	563	332	511	455	487	320	437	272	226	1,556
MAX	477	6,060	1,320	450	1,430	615	1,230	385	916	415	340	10,500
MIN	268	262	419	255	268	357	345	277	276	198	173	254
CFSM	1.57	3.69	2.75	1.62	2.50	2.22	2.38	1.56	2.13	1.33	1.10	7.59
IN.	1.82	4.12	3.17	1.87	2.69	2.56	2.65	1.80	2.38	1.53	1.27	8.47

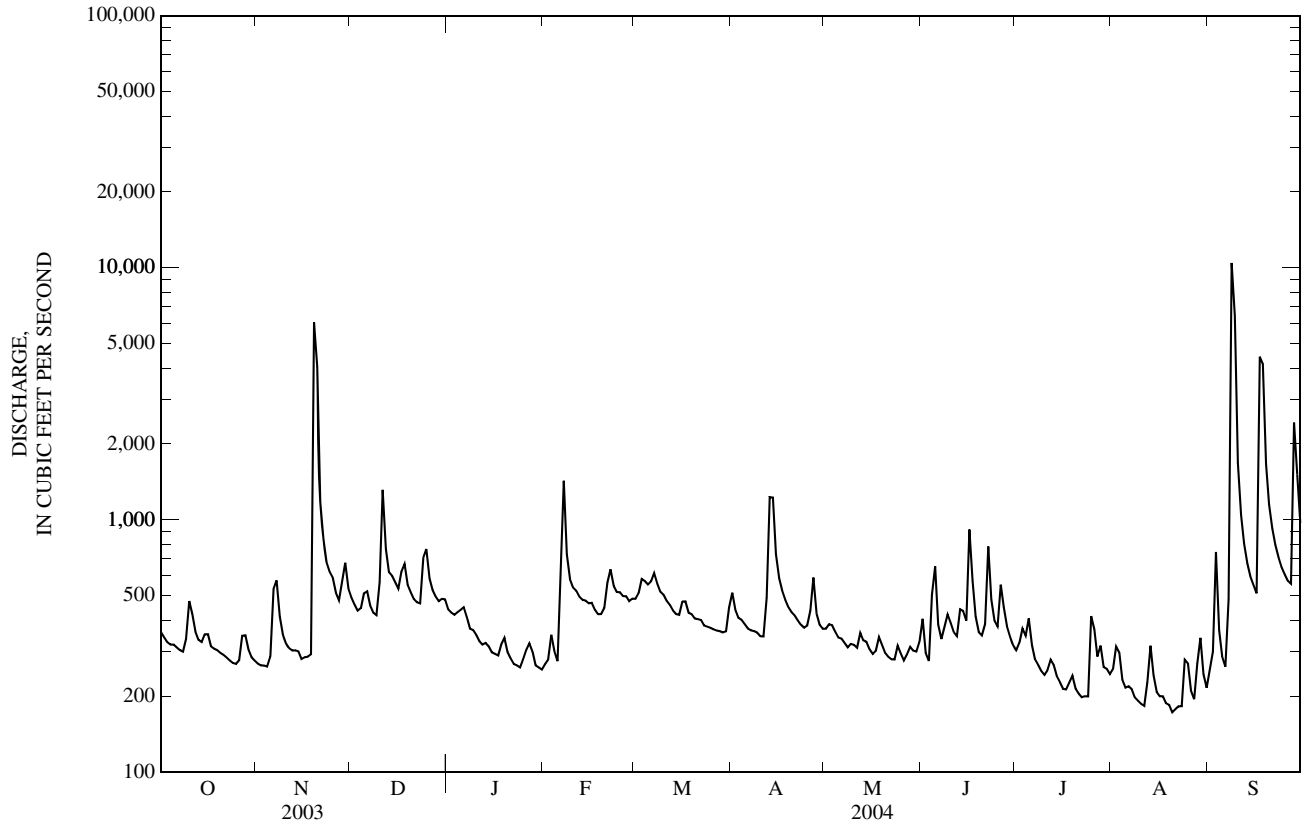
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 2004, BY WATER YEAR (WY)

MEAN	352	403	404	466	513	582	561	453	390	332	351	337
MAX	901	1,889	797	1,346	1,173	1,316	1,350	1,052	1,036	904	2,613	1,556
(WY)	(1991)	(1978)	(1958)	(1995)	(1998)	(1979)	(1983)	(1973)	(1992)	(1941)	(1940)	(2004)
MIN	111	124	146	140	188	222	236	220	158	111	93.7	99.5
(WY)	(2001)	(1932)	(1934)	(1940)	(2001)	(1988)	(1986)	(2001)	(1988)	(1930)	(1925)	(1954)

03161000 SOUTH FORK NEW RIVER NEAR JEFFERSON, NC—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1925 - 2004	
ANNUAL TOTAL	210,655		189,172			
ANNUAL MEAN	577		517		428	
HIGHEST ANNUAL MEAN					669	1949
LOWEST ANNUAL MEAN					215	2002
HIGHEST DAILY MEAN	6,060	Nov 19	10,500	Sep 8	27,700	Aug 14, 1940
LOWEST DAILY MEAN	262	Jan 26	173	Aug 20	65	Sep 9, 1925
ANNUAL SEVEN-DAY MINIMUM	270	Jan 21	184	Aug 17	72	Aug 21, 1925
MAXIMUM PEAK FLOW			14,700	Sep 8	52,800*	Aug 14, 1940
MAXIMUM PEAK STAGE			11.73	Sep 8	22.50	Aug 14, 1940
INSTANTANEOUS LOW FLOW			167	Aug 21	52*	Dec 24, 1943
ANNUAL RUNOFF (CFSM)	2.82		2.52		2.09	
ANNUAL RUNOFF (INCHES)	38.23		34.33		28.36	
10 PERCENT EXCEEDS	891		659		705	
50 PERCENT EXCEEDS	494		369		342	
90 PERCENT EXCEEDS	298		250		168	

* See REMARKS.
e Estimated.



03164000 NEW RIVER NEAR GALAX, VA

LOCATION.--Lat 36°38'50", long 80°58'44", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 29 to Feb. 3, which is poor. 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 ft^3/s, from rating curve extended above 32,000 ft^3/s on basis of computation of peak flow over dam at Fries 6 mi downstream and 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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 9,000 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	2130	*43,900	*11.00	1500	30,800	8.56
Feb 3	1100	12,400	4.64	2200	34,700	9.31
Feb 7	0600	11,500	4.39	1630	17,500	5.87
Apr 14	0230	11,000	4.26			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,280	974	2,100	2,210	e1,300	2,040	2,220	1,640	1,890	1,510	929	711
2	1,210	944	1,940	2,110	e1,350	2,110	2,130	1,650	1,680	1,420	1,380	739
3	1,140	932	1,820	2,210	e1,600	2,610	1,970	1,690	1,360	1,600	1,320	1,080
4	1,120	927	1,850	2,320	2,200	2,810	1,910	1,570	2,050	1,800	1,070	1,400
5	1,090	950	2,260	2,440	1,890	2,660	1,840	1,450	3,750	1,790	896	936
6	1,070	3,040	2,470	2,700	3,430	2,600	1,740	1,370	2,640	1,540	927	805
7	1,040	3,840	2,240	2,390	9,190	3,150	1,680	1,320	1,920	1,320	909	853
8	1,020	2,530	2,020	2,010	5,210	2,930	1,660	1,250	1,890	1,160	804	19,300
9	1,060	1,860	1,950	2,100	3,420	2,570	1,660	1,290	3,780	1,090	764	21,600
10	1,270	1,550	2,480	2,000	2,850	2,380	1,590	1,450	2,750	1,020	740	8,140
11	1,390	1,400	6,550	1,830	2,650	2,180	1,540	1,410	2,230	984	725	4,310
12	1,280	1,320	5,030	1,850	2,450	2,040	2,030	1,470	1,960	980	752	3,000
13	1,120	1,260	3,550	1,750	2,330	1,920	5,630	1,340	4,360	1,070	936	2,360
14	1,080	1,180	3,200	1,640	2,280	1,810	9,280	1,310	3,470	1,020	954	2,040
15	1,180	1,140	2,970	1,610	2,250	1,770	5,540	1,290	3,230	922	867	1,880
16	1,280	1,140	2,760	1,560	2,240	1,950	3,950	1,230	2,760	896	776	1,670
17	1,140	1,170	3,080	1,470	2,100	2,170	3,200	1,300	3,060	875	773	12,600
18	1,070	1,170	3,440	1,540	2,000	2,000	2,740	1,490	2,250	1,740	795	23,900
19	1,050	19,800	3,040	1,740	1,940	1,940	2,410	1,510	1,840	1,460	735	9,770
20	1,010	23,200	2,680	1,570	2,030	1,840	2,180	1,390	1,770	1,040	698	5,650
21	986	7,810	2,350	1,410	2,590	1,780	2,100	1,270	1,610	909	699	4,140
22	970	4,850	2,270	1,530	3,350	1,750	1,910	1,160	1,740	852	678	3,280
23	936	3,670	2,340	1,510	2,900	1,640	1,770	1,170	2,150	840	692	2,780
24	927	3,060	2,750	1,440	2,550	1,580	1,680	1,230	1,710	856	747	2,420
25	922	2,860	4,410	1,510	2,450	1,540	1,610	1,120	1,580	830	772	2,220
26	925	2,460	3,460	1,490	2,320	1,500	1,870	1,120	2,470	974	848	2,040
27	1,320	2,200	2,830	1,600	2,270	1,460	2,690	1,250	2,540	1,310	729	1,900
28	1,420	2,260	2,530	1,500	2,160	1,440	2,270	1,440	2,030	1,250	742	11,300
29	1,240	2,860	2,330	e1,450	2,070	1,420	1,870	1,230	1,750	1,080	853	10,500
30	1,090	2,450	2,290	e1,400	---	1,420	1,690	1,160	1,550	953	896	5,630
31	1,000	---	2,390	e1,400	---	1,770	---	1,370	---	1,030	785	---
TOTAL	34,636	104,807	87,380	55,290	77,370	62,780	76,360	41,940	69,770	36,121	26,191	168,954
MEAN	1,117	3,494	2,819	1,784	2,668	2,025	2,545	1,353	2,326	1,165	845	5,632
MAX	1,420	23,200	6,550	2,700	9,190	3,150	9,280	1,690	4,360	1,800	1,380	23,900
MIN	922	927	1,820	1,400	1,300	1,420	1,540	1,120	1,360	830	678	711
CFSM	0.99	3.09	2.49	1.58	2.36	1.79	2.25	1.20	2.06	1.03	0.75	4.98
IN.	1.14	3.45	2.87	1.82	2.54	2.06	2.51	1.38	2.29	1.19	0.86	5.56

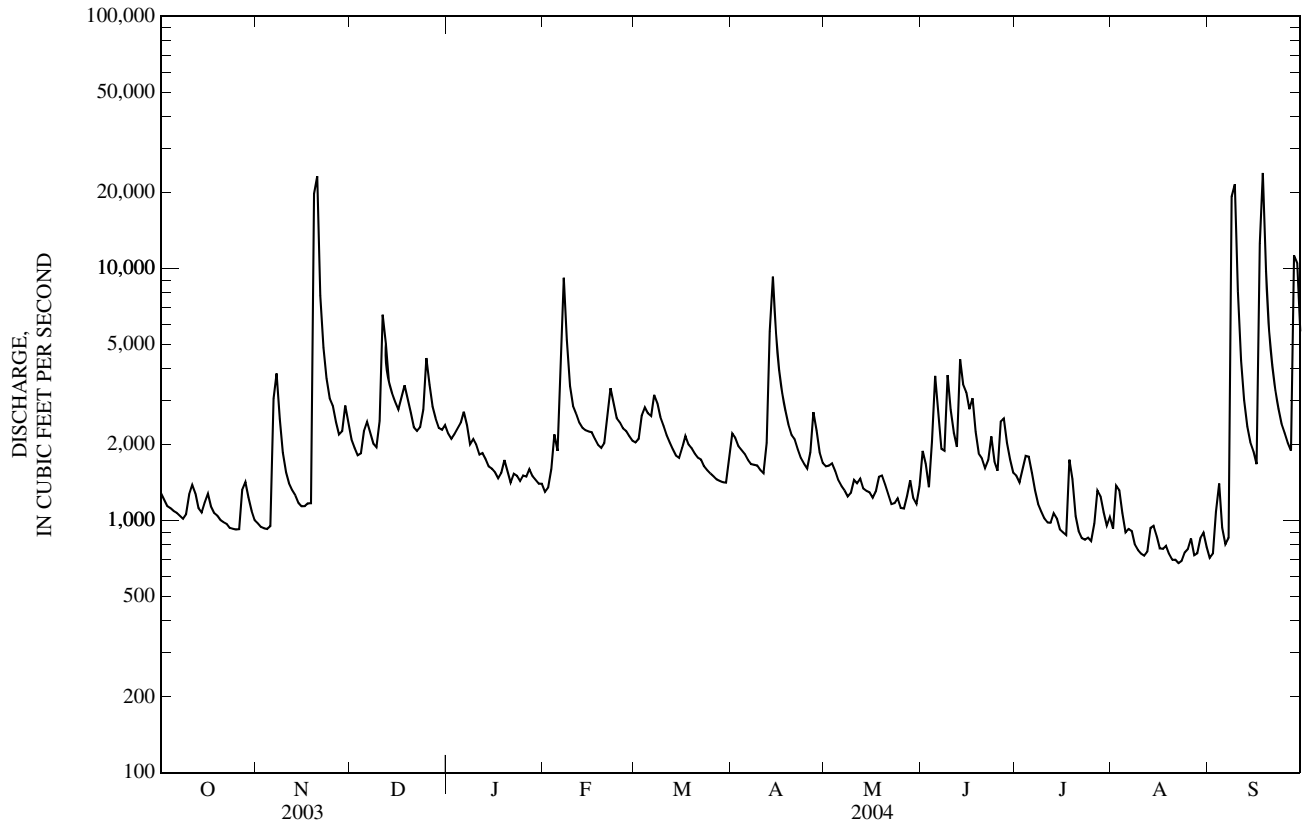
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2004, BY WATER YEAR (WY)

MEAN	1,354	1,623	1,800	2,181	2,572	2,865	2,635	2,112	1,705	1,379	1,360	1,278
MAX	3,625	7,189	4,005	5,744	5,566	5,827	6,345	4,469	5,280	4,017	8,148	5,632
(WY)	(1977)	(1978)	(1962)	(1995)	(1998)	(1993)	(1987)	(1973)	(1992)	(1949)	(1940)	(2004)
MIN	414	504	592	568	630	958	1,017	811	614	426	424	381
(WY)	(2001)	(1954)	(1956)	(1956)	(1934)	(1988)	(1942)	(1941)	(1988)	(1930)	(2002)	(1954)

03164000 NEW RIVER NEAR GALAX, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1930 - 2004	
ANNUAL TOTAL	1,001,483		841,599			
ANNUAL MEAN	2,744		2,299		1,901	
HIGHEST ANNUAL MEAN					2,807	1958
LOWEST ANNUAL MEAN					954	2002
HIGHEST DAILY MEAN	23,200	Nov 20	23,900	Sep 18	86,200	Aug 14, 1940
LOWEST DAILY MEAN	e760	aJan 24	678	Aug 22	265	Sep 19, 1954
ANNUAL SEVEN-DAY MINIMUM	831	Jan 21	717	Aug 19	304	Sep 13, 1954
MAXIMUM PEAK FLOW			43,900	Nov 19	141,000	Aug 14, 1940
MAXIMUM PEAK STAGE			11.00	Nov 19	b25.70	Aug 14, 1940
INSTANTANEOUS LOW FLOW			664	Aug 22	c193	Jan 9, 1956
ANNUAL RUNOFF (CFSM)	2.43		2.03		1.68	
ANNUAL RUNOFF (INCHES)	32.94		27.68		22.84	
10 PERCENT EXCEEDS	4,440		3,370		3,420	
50 PERCENT EXCEEDS	2,220		1,690		1,440	
90 PERCENT EXCEEDS	1,090		922		653	

a Also Jan. 25, 2003.
b From floodmark.
c Result of freezeup.
e Estimated.



03165000 CHESTNUT CREEK AT GALAX, VA

LOCATION.--Lat 36°38'45", long 80°55'09", NAD83, 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 mi^2.

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 NGVD of 1929. 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. 26 to Feb. 2, which is poor. Maximum discharge, 6,980 ft^3/s, from rating curve extended above 2,200 ft^3/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 ft^3/s, by contracted-opening measurement.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 850 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1100	*5,940	*11.91	1100	4,500	9.98
Dec 10	1945	1,070	3.67	1245	1,230	4.01
Feb 6	1730	1,200	3.94	1045	1,560	4.74

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	76	61	105	82	e54	69	64	62	51	41	49	36
2	73	59	96	85	e54	69	59	66	47	41	211	35
3	70	59	93	87	168	69	59	66	46	45	70	35
4	70	59	99	86	98	68	58	60	138	46	50	35
5	69	74	143	98	75	68	56	59	74	47	52	35
6	68	300	119	80	465	71	56	57	59	39	51	34
7	66	114	105	70	198	68	53	56	56	35	43	53
8	66	82	97	71	106	67	51	54	85	35	39	2,040
9	75	72	96	70	93	65	51	55	93	34	38	369
10	79	67	349	70	90	64	51	59	57	41	37	144
11	69	64	288	69	88	63	53	54	51	46	38	105
12	67	63	145	67	82	62	164	54	54	37	50	92
13	66	61	121	68	81	61	247	53	59	35	49	86
14	65	56	129	68	82	61	134	53	59	34	42	115
15	70	60	122	68	80	61	90	51	58	31	40	95
16	63	62	120	65	79	75	79	69	104	30	38	87
17	63	61	180	64	74	68	73	64	86	32	44	779
18	63	60	133	71	72	65	69	58	59	66	56	440
19	63	2,140	117	66	75	62	66	57	51	71	42	164
20	63	345	106	63	81	59	65	56	49	43	39	117
21	62	189	98	72	89	59	65	52	49	35	38	96
22	60	153	97	67	81	59	62	50	57	33	38	87
23	59	137	96	59	78	58	59	55	47	34	38	81
24	59	142	102	58	76	58	62	52	46	33	36	77
25	59	135	96	58	74	58	59	50	47	31	35	73
26	60	115	91	e58	72	58	86	49	83	32	35	70
27	122	111	90	e57	72	58	77	54	51	44	38	69
28	77	185	90	e56	73	58	65	50	48	37	56	967
29	70	149	91	e54	71	58	61	49	45	33	45	275
30	64	115	93	e56	---	59	59	47	41	46	40	195
31	63	---	83	e55	---	74	---	56	---	44	39	---
TOTAL	2,119	5,350	3,790	2,118	2,881	1,972	2,253	1,727	1,850	1,231	1,516	6,886
MEAN	68.4	178	122	68.3	99.3	63.6	75.1	55.7	61.7	39.7	48.9	230
MAX	122	2,140	349	98	465	75	247	69	138	71	211	2,040
MIN	59	56	83	54	54	58	51	47	41	30	35	34
CFSM	1.73	4.53	3.10	1.73	2.52	1.61	1.91	1.41	1.57	1.01	1.24	5.83
IN.	2.00	5.05	3.58	2.00	2.72	1.86	2.13	1.63	1.75	1.16	1.43	6.50

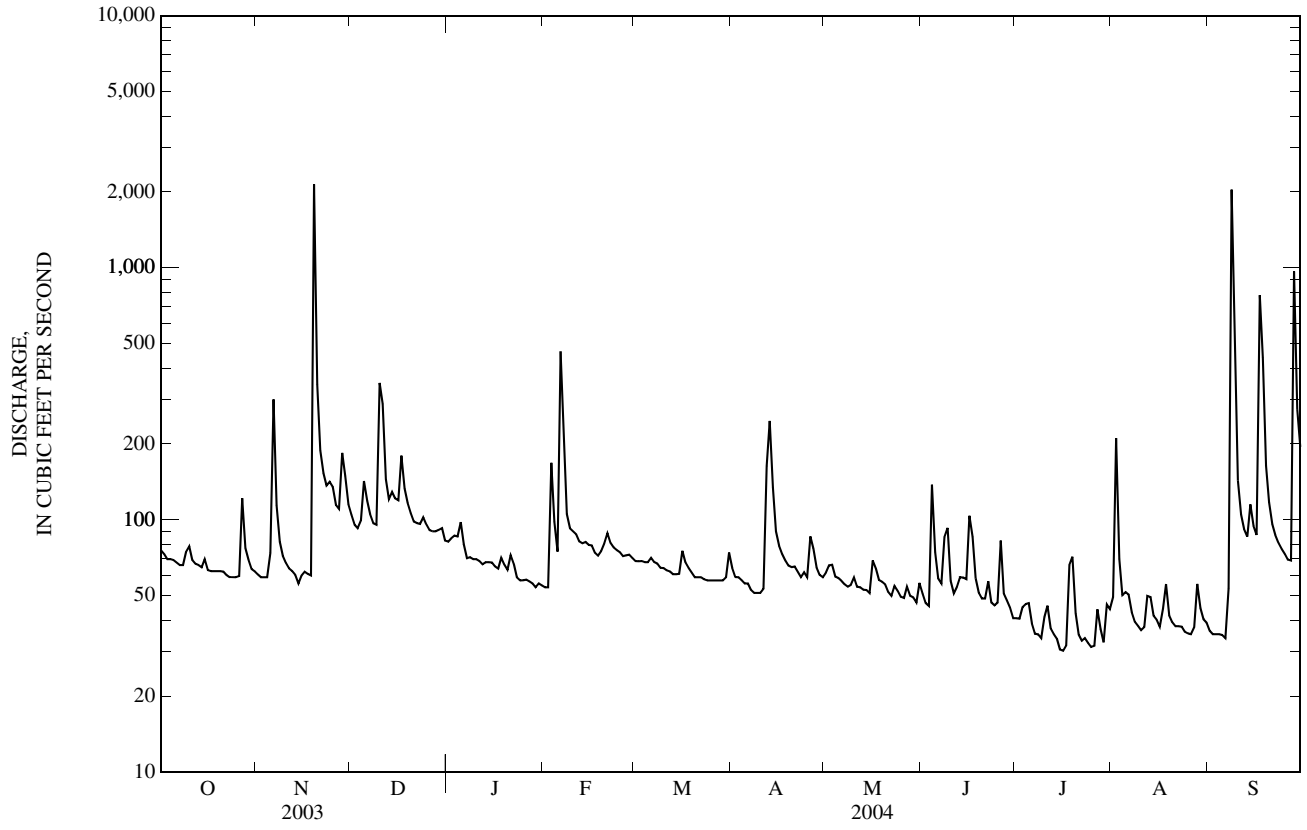
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2004, BY WATER YEAR (WY)

MEAN	57.3	63.4	64.4	69.8	81.0	92.2	89.5	74.2	66.6	51.9	49.7	56.2
MAX	197	178	122	161	166	301	233	160	172	150	156	254
(WY)	(1948)	(2004)	(2004)	(1995)	(1998)	(1993)	(1983)	(1973)	(1992)	(1989)	(1949)	(1989)
MIN	19.8	24.2	25.8	23.9	33.2	38.1	35.5	30.4	19.6	20.7	15.6	18.6
(WY)	(1964)	(2002)	(1964)	(1956)	(2001)	(1988)	(2001)	(2002)	(2002)	(1986)	(1981)	(1954)

03165000 CHESTNUT CREEK AT GALAX, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1945 - 2004	
ANNUAL TOTAL	40,639		33,693			
ANNUAL MEAN	111		92.1		67.9	
HIGHEST ANNUAL MEAN					107	1993
LOWEST ANNUAL MEAN					32.5	2002
HIGHEST DAILY MEAN	2,140	Nov 19	2,140	Nov 19	2,140	Nov 19, 2003
LOWEST DAILY MEAN	e39	Jan 25	30	Jul 16	12	aAug 26, 1981
ANNUAL SEVEN-DAY MINIMUM	42	Jan 22	34	Jul 20	13	Aug 23, 1981
MAXIMUM PEAK FLOW			5,940	Nov 19	6,980	Oct 17, 1947
MAXIMUM PEAK STAGE			11.91	Nov 19	b14.40	Oct 17, 1947
INSTANTANEOUS LOW FLOW			29	cJul 16	12	dAug 25, 1981
ANNUAL RUNOFF (CFSM)	2.83		2.34		1.72	
ANNUAL RUNOFF (INCHES)	38.37		31.81		23.43	
10 PERCENT EXCEEDS	159		121		108	
50 PERCENT EXCEEDS	85		64		51	
90 PERCENT EXCEEDS	54		39		27	

a Also Sept. 12, 13, 2002.
b From floodmark, site and datum then in use.
c Also July 17, 2004.
d Also Aug. 26-30, 1981, Nov. 22, 2000, and Sept. 11-14, 2002.
e Estimated.



03165500 NEW RIVER AT IVANHOE, VA

LOCATION.--Lat 36°50'05", long 80°57'09", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good. 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 ft^3/s, from rating curve extended above 32,000 ft^3/s on basis of flood records for other stations on New River. 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 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 13,500 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	2115	*46,600	*18.54	0130	35,700	15.83
Sep 8	1745	37,900	16.42	2115	18,500	10.77

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,620	1,290	2,630	2,710	1,800	2,520	2,530	2,070	2,060	1,640	1,300	861
2	1,520	1,260	2,470	2,600	1,880	2,470	2,530	2,080	1,940	1,660	2,140	766
3	1,510	1,220	2,360	2,650	2,340	2,800	2,320	2,090	1,640	1,830	1,890	1,140
4	1,430	1,220	2,330	2,680	2,830	3,140	2,290	2,030	2,480	1,980	1,530	1,650
5	1,410	1,260	2,740	2,860	2,540	3,020	2,220	1,850	3,800	2,120	1,260	1,260
6	1,380	2,720	2,890	3,050	3,600	2,920	2,150	1,760	3,010	1,790	1,300	1,060
7	1,340	4,080	2,820	2,900	8,980	3,300	2,070	1,700	2,300	1,580	1,240	1,030
8	1,330	2,860	2,500	2,330	5,810	3,190	2,060	1,630	2,190	1,420	1,120	18,500
9	1,350	2,280	2,460	2,500	4,160	2,980	2,050	1,600	3,410	1,330	968	23,000
10	1,590	1,860	2,890	2,540	3,160	2,780	2,010	1,880	3,110	1,290	993	9,500
11	1,650	1,790	6,440	2,330	3,100	2,600	1,940	1,710	2,530	1,230	932	4,910
12	1,630	1,680	5,460	2,320	2,970	2,520	2,530	1,750	2,230	1,310	968	3,500
13	1,430	1,610	4,050	2,290	2,570	2,360	5,010	1,770	3,530	1,290	1,230	2,770
14	1,430	1,490	3,630	2,200	2,660	2,260	8,980	1,620	3,600	1,320	1,570	2,570
15	1,440	1,460	3,410	2,140	2,670	2,220	5,830	1,620	3,270	1,140	1,220	2,410
16	1,580	1,510	3,210	2,120	2,650	2,370	4,180	1,520	3,050	1,070	1,020	2,170
17	1,450	1,510	3,480	2,000	2,510	2,600	3,480	1,680	3,270	1,110	968	7,660
18	1,370	1,570	3,850	2,100	2,380	2,380	3,070	1,750	2,620	1,690	1,150	26,700
19	1,350	19,000	3,490	2,200	2,370	2,350	2,770	1,850	2,110	1,900	1,010	11,000
20	1,300	28,600	3,160	2,090	2,420	2,290	2,640	1,740	1,910	1,350	919	6,180
21	1,270	9,510	2,790	1,820	2,850	2,170	2,460	1,570	1,890	1,230	828	4,520
22	1,290	5,540	2,650	1,900	3,670	2,200	2,320	1,400	1,750	1,090	882	3,650
23	1,240	4,140	2,820	1,980	3,370	2,020	2,170	1,650	2,420	1,050	803	3,160
24	1,210	3,520	2,870	1,900	2,990	2,020	2,080	1,620	1,950	1,070	922	2,830
25	1,200	3,270	4,190	2,040	2,900	1,990	2,020	1,510	1,880	1,020	987	2,600
26	1,220	2,950	3,820	1,810	2,770	1,930	2,190	1,440	2,380	1,130	765	2,460
27	1,630	2,680	3,250	1,940	2,700	1,900	2,950	1,440	2,810	1,610	887	2,370
28	1,830	2,630	2,970	1,900	2,600	1,870	2,730	1,720	2,330	1,520	914	10,500
29	1,560	2,790	2,810	1,960	2,490	1,870	2,320	1,500	1,920	1,380	1,070	12,500
30	1,420	2,920	2,730	1,880	---	1,880	2,100	1,430	1,740	1,290	1,190	6,850
31	1,340	---	2,820	1,990	---	2,140	---	1,650	---	1,320	1,060	---
TOTAL	44,320	120,220	99,990	69,730	89,740	75,060	86,000	52,630	75,130	43,760	35,036	180,077
MEAN	1,430	4,007	3,225	2,249	3,094	2,421	2,867	1,698	2,504	1,412	1,130	6,003
MAX	1,830	28,600	6,440	3,050	8,980	3,300	8,980	2,090	3,800	2,120	2,140	26,700
MIN	1,200	1,220	2,330	1,810	1,800	1,870	1,940	1,400	1,640	1,020	765	766
CFSM	1.07	2.99	2.41	1.68	2.31	1.81	2.14	1.27	1.87	1.05	0.84	4.48
IN.	1.23	3.34	2.78	1.94	2.49	2.08	2.39	1.46	2.09	1.21	0.97	5.00

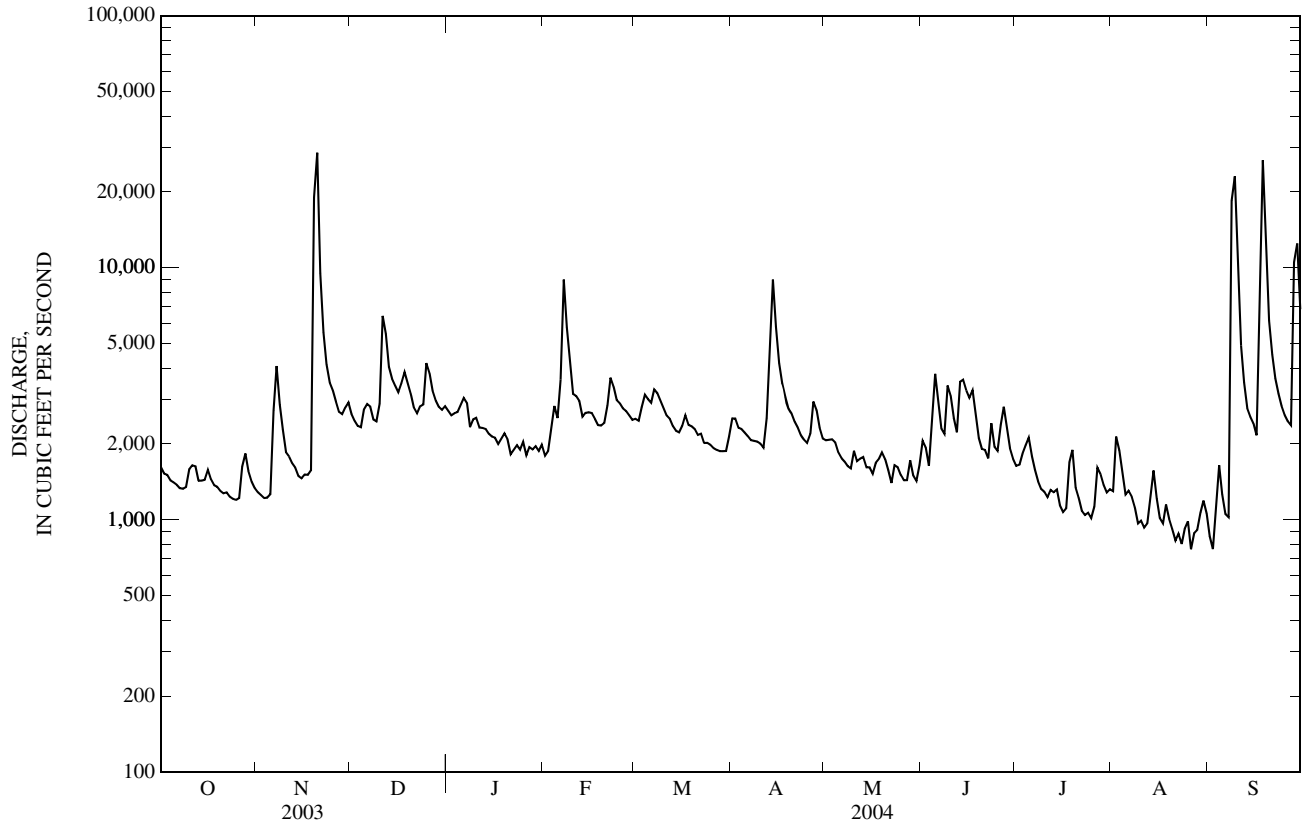
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1978, 1997 - 2004, BY WATER YEAR (WY)

MEAN	1,569	1,799	2,014	2,417	2,889	3,149	2,908	2,340	1,893	1,557	1,581	1,423
MAX	4,200	7,149	4,248	5,052	6,106	6,266	5,993	5,000	4,511	4,440	8,953	6,003
(WY)	(1930)	(1978)	(1962)	(1937)	(1998)	(1975)	(1960)	(1998)	(1976)	(1949)	(1940)	(2004)
MIN	491	578	703	678	693	1,450	1,289	991	781	485	451	433
(WY)	(1931)	(1932)	(1940)	(1940)	(1934)	(1931)	(1942)	(1941)	(2002)	(1930)	(2002)	(1954)

03165500 NEW RIVER AT IVANHOE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1930 - 1978 1997 - 2004	
ANNUAL TOTAL	1,133,740		971,693			
ANNUAL MEAN	3,106		2,655		2,119	
HIGHEST ANNUAL MEAN					3,188	1978
LOWEST ANNUAL MEAN					1,131	2002
HIGHEST DAILY MEAN	28,600	Nov 20	28,600	Nov 20	87,600	Aug 14, 1940
LOWEST DAILY MEAN	e1,000	aJan 24	765	Aug 26	184	Jul 28, 1930
ANNUAL SEVEN-DAY MINIMUM	1,090	Jan 21	868	Aug 21	297	Aug 10, 2002
MAXIMUM PEAK FLOW			46,600	Nov 19	155,000	Aug 14, 1940
MAXIMUM PEAK STAGE			18.54	Nov 19	b38.10	Aug 14, 1940
INSTANTANEOUS LOW FLOW			210	May 22	44	Oct 11, 1965
ANNUAL RUNOFF (CFSM)	2.32		1.98		1.58	
ANNUAL RUNOFF (INCHES)	31.47		26.98		21.48	
10 PERCENT EXCEEDS	4,700		3,600		3,740	
50 PERCENT EXCEEDS	2,620		2,100		1,670	
90 PERCENT EXCEEDS	1,430		1,220		728	

a Also Jan. 25, 2003.
b From floodmark.
e Estimated.



03167000 REED CREEK AT GRAHAMS FORGE, VA

LOCATION.--Lat 36°56'22", long 80°53'12", NAD83, 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 mi^2.

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 NGVD of 1929. 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 periods of no gage-height record, Oct. 2 and Sept. 29, 30, which are fair. Occasional diurnal fluctuation at low flow caused by mills upstream from station. Maximum discharge, 17,500 ft^3/s, from rating curve extended above 7,600 ft^3/s on basis of velocity-area study and slope-area measurement at gage heights 11.4 ft and 10.01 ft, respectively. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,300 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 20	0045	*8,700	*7.35	2215	2,460	4.32
Apr 14	0245	3,420	4.89			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	215	130	262	375	190	329	536	342	1,020	303	137	104
2	e200	129	246	370	211	324	476	323	436	270	271	103
3	185	127	235	524	229	343	424	321	320	257	200	101
4	173	125	242	507	248	334	381	292	436	564	147	100
5	171	141	270	487	255	322	342	270	834	406	137	98
6	166	315	264	799	751	390	307	255	539	300	147	97
7	158	349	256	650	1,730	675	282	245	385	251	148	100
8	153	252	254	516	1,080	577	268	227	308	221	137	764
9	152	211	257	459	765	496	254	217	461	199	133	673
10	155	189	390	414	650	446	236	208	483	185	126	369
11	151	176	1,480	359	596	389	230	214	477	235	122	259
12	144	173	927	344	540	359	327	201	351	225	129	211
13	143	197	672	325	518	332	1,390	190	415	200	153	183
14	144	235	587	305	564	311	2,340	190	448	188	137	168
15	155	211	514	296	560	297	1,080	191	387	170	124	166
16	158	208	486	282	533	371	739	223	342	159	118	154
17	146	204	644	264	478	485	590	233	291	170	114	529
18	143	197	767	290	445	454	497	202	275	209	114	1,490
19	141	3,000	646	316	440	402	438	191	254	159	109	669
20	139	3,820	538	297	479	353	399	187	241	145	109	431
21	134	987	454	276	715	329	374	173	209	137	131	339
22	131	705	413	277	793	309	344	177	191	132	126	287
23	129	556	397	258	636	282	324	158	212	135	119	249
24	128	468	648	259	544	266	318	150	350	133	112	223
25	127	421	939	258	499	254	294	178	351	127	111	204
26	130	369	680	247	452	242	411	208	1,440	193	110	192
27	148	335	547	249	415	233	983	274	789	182	110	181
28	148	327	475	226	378	230	580	417	511	152	123	1,310
29	146	311	427	205	350	220	438	346	408	136	143	e1,340
30	140	280	414	228	---	230	376	282	335	130	116	e655
31	135	---	411	197	---	334	---	821	---	127	108	---
TOTAL	4,688	15,148	15,742	10,859	16,044	10,918	15,978	7,906	13,499	6,400	4,121	11,749
MEAN	151	505	508	350	553	352	533	255	450	206	133	392
MAX	215	3,820	1,480	799	1,730	675	2,340	821	1,440	564	271	1,490
MIN	127	125	235	197	190	220	230	150	191	127	108	97
CFSM	0.61	2.04	2.06	1.42	2.24	1.43	2.16	1.03	1.82	0.84	0.54	1.59
IN.	0.71	2.28	2.37	1.64	2.42	1.64	2.41	1.19	2.03	0.96	0.62	1.77

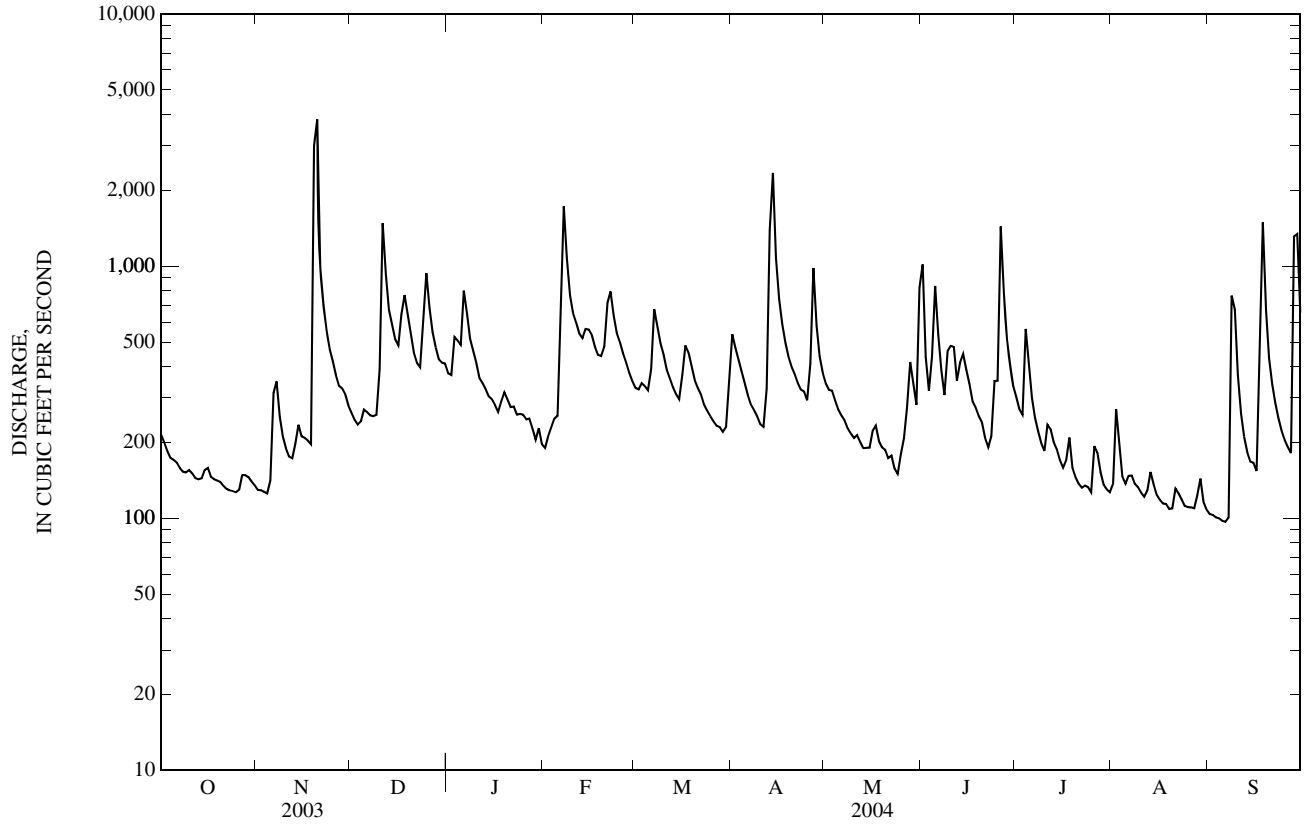
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 1916, 1927 - 2004, BY WATER YEAR (WY)

MEAN	138	165	242	348	459	504	419	322	214	164	142	120
MAX	626	606	790	911	1,411	1,406	1,374	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	100	91.4	74.6	63.5	60.5	51.4
(WY)	(1942)	(1942)	(1942)	(1942)	(1934)	(1988)	(1942)	(1941)	(1941)	(1930)	(1930)	(1941)

03167000 REED CREEK AT GRAHAMS FORGE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1909 - 1916 1927 - 2004	
ANNUAL TOTAL	169,230		133,052			
ANNUAL MEAN	464		364		269	
HIGHEST ANNUAL MEAN					444	2003
LOWEST ANNUAL MEAN					118	1941
HIGHEST DAILY MEAN	5,660	Feb 23	3,820	Nov 20	10,600	Apr 5, 1977
LOWEST DAILY MEAN	e105	Jan 25	97	Sep 6	22	Jan 30, 1934
ANNUAL SEVEN-DAY MINIMUM	125	Jan 23	100	Sep 1	33	Feb 24, 1942
MAXIMUM PEAK FLOW			8,700	Nov 20	17,500	Jul 16, 1916
MAXIMUM PEAK STAGE			7.35	Nov 20	a11.40	Jul 16, 1916
INSTANTANEOUS LOW FLOW			94	bSep 5	c5.0	Dec 22, 1909
ANNUAL RUNOFF (CFSM)	1.88		1.47		1.09	
ANNUAL RUNOFF (INCHES)	25.49		20.04		14.79	
10 PERCENT EXCEEDS	773		650		542	
50 PERCENT EXCEEDS	311		270		160	
90 PERCENT EXCEEDS	158		131		73	

a Present datum, from floodmarks.
b Also Sept. 6, 7, 2004.
c Observed, result of freezeup.
e Estimated.



03168000 NEW RIVER AT ALLISONIA, VA

LOCATION.--Lat 36°56'15", long 80°44'44", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good. 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 ft^3/s, from rating curve extended above 52,000 ft^3/s on basis of flood records for other stations on New River. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 17,500 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	2300	*70,900	*12.73	1945	51,700	10.51
Feb 6	2315	20,500	6.05	0515	45,600	9.73
Apr 14	0645	20,100	5.98	1745	42,500	9.32

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,560	1,940	3,870	3,950	2,220	3,560	3,760	3,170	3,940	2,500	1,820	1,230
2	2,370	1,870	3,570	3,800	2,430	3,590	3,750	3,180	3,110	2,480	3,200	1,140
3	2,290	1,880	3,340	3,890	3,450	3,860	3,400	3,200	2,530	2,620	2,970	1,190
4	2,260	1,810	3,310	3,960	4,530	4,400	3,320	3,060	3,900	3,230	2,120	1,820
5	2,180	1,850	3,980	4,180	3,990	4,240	3,180	2,820	6,840	3,590	1,740	1,660
6	2,110	3,830	4,200	4,990	6,960	4,240	2,980	2,700	5,020	2,750	1,750	1,360
7	2,040	6,850	4,020	4,680	18,000	4,860	2,890	2,550	3,550	2,360	1,650	1,230
8	2,010	4,580	3,610	3,890	10,800	4,850	2,840	2,450	3,270	2,020	1,550	22,500
9	2,030	3,490	3,530	3,580	7,190	4,460	2,790	2,340	4,630	1,940	1,340	32,000
10	2,340	2,870	4,120	3,760	5,500	4,100	2,740	2,580	4,850	1,820	1,320	13,500
11	2,370	2,690	12,800	3,270	5,060	3,820	2,610	2,580	3,930	1,910	1,310	6,810
12	2,400	2,530	9,850	3,360	4,830	3,540	3,480	2,550	3,330	1,880	1,390	4,570
13	2,150	2,510	6,810	3,320	4,120	3,410	9,260	2,450	4,250	1,830	1,670	3,500
14	2,080	2,390	5,880	3,160	4,270	3,220	17,200	2,310	5,480	1,830	2,000	3,200
15	2,240	2,300	5,350	3,060	4,270	3,170	10,800	2,260	4,490	1,640	1,580	3,010
16	2,240	2,400	5,020	2,960	4,240	3,320	7,240	2,220	4,860	1,530	1,430	2,680
17	2,160	2,400	5,770	2,880	3,950	3,910	5,770	2,540	4,610	1,530	1,330	8,340
18	2,090	2,370	6,840	3,020	3,700	3,600	4,890	2,450	3,800	1,970	1,630	36,900
19	2,020	29,500	5,880	3,190	3,620	3,420	4,310	2,550	3,100	2,780	1,400	15,700
20	1,950	44,900	5,080	2,970	3,770	3,280	3,940	2,470	2,830	2,010	1,270	8,700
21	1,880	14,800	4,330	2,570	4,550	3,090	3,840	2,270	2,680	1,690	1,270	6,170
22	1,880	8,830	4,000	2,580	5,970	3,070	3,540	2,090	2,430	1,500	1,320	4,820
23	1,830	6,430	4,200	2,660	5,490	2,870	3,210	2,160	2,970	1,520	1,200	4,130
24	1,800	5,310	4,470	2,710	4,770	2,750	3,140	2,480	3,090	1,480	1,250	3,650
25	1,770	5,050	6,830	2,820	4,500	2,750	3,060	2,230	2,830	1,430	1,300	3,380
26	1,790	4,420	6,240	2,500	4,280	2,620	3,310	2,050	5,300	1,460	1,270	3,180
27	2,690	3,910	5,070	2,740	4,030	2,590	5,410	2,280	5,080	2,410	1,110	3,040
28	2,860	3,950	4,530	2,590	3,870	2,570	4,590	2,680	3,820	2,210	1,260	20,200
29	2,450	4,760	4,190	2,330	3,640	2,520	3,790	2,370	3,140	1,970	1,350	21,100
30	2,180	4,390	4,080	2,520	---	2,530	3,280	2,190	2,700	1,690	1,470	10,600
31	2,040	---	4,060	2,590	---	2,950	---	2,740	---	1,750	1,430	---
TOTAL	67,060	186,810	158,830	100,480	148,000	107,160	138,320	77,970	116,360	63,330	48,700	251,310
MEAN	2,163	6,227	5,124	3,241	5,103	3,457	4,611	2,515	3,879	2,043	1,571	8,377
MAX	2,860	44,900	12,800	4,990	18,000	4,860	17,200	3,200	6,840	3,590	3,200	36,900
MIN	1,770	1,810	3,310	2,330	2,220	2,520	2,610	2,050	2,430	1,430	1,110	1,140
CFSM	0.98	2.83	2.33	1.47	2.32	1.57	2.09	1.14	1.76	0.93	0.71	3.80
IN.	1.13	3.16	2.68	1.70	2.50	1.81	2.34	1.32	1.97	1.07	0.82	4.25

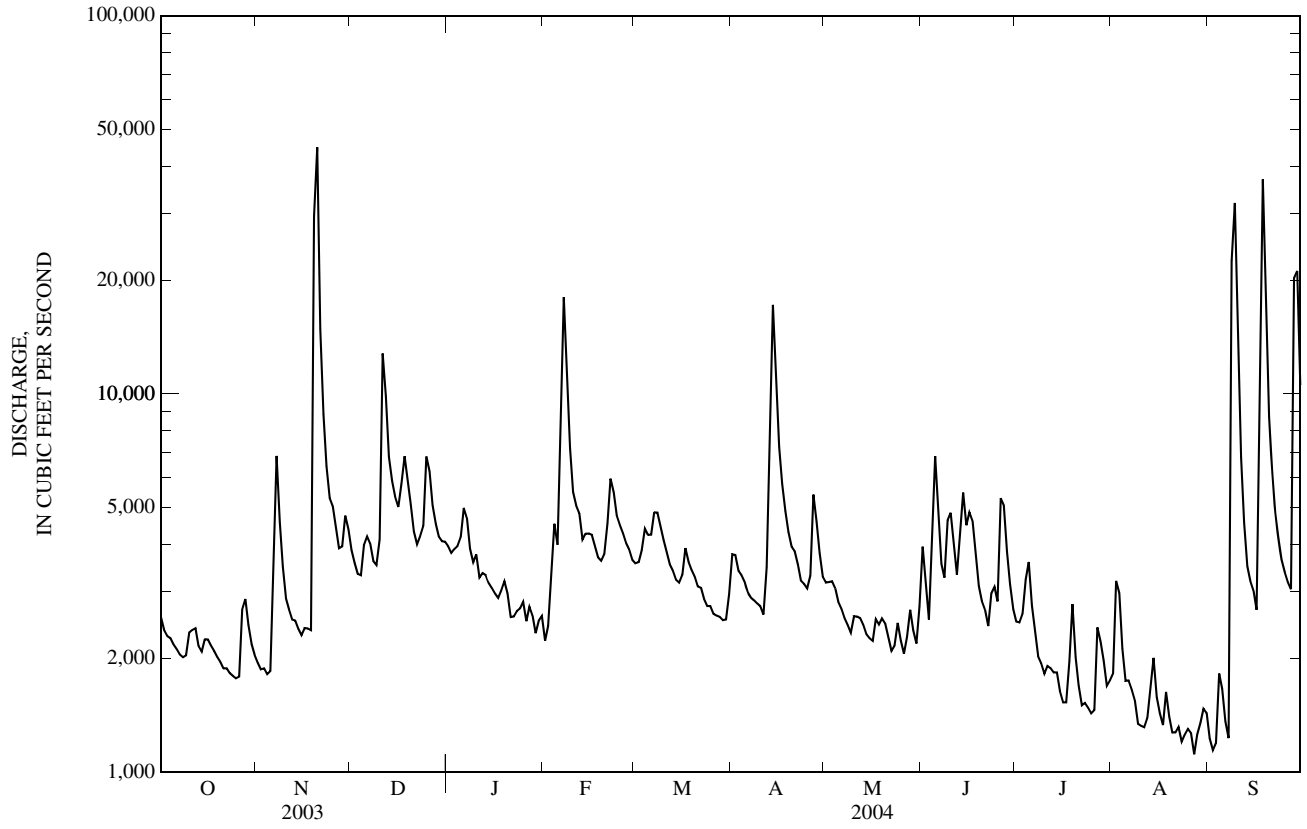
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2004, BY WATER YEAR (WY)

MEAN	2,223	2,598	2,963	3,696	4,425	4,953	4,548	3,670	2,878	2,281	2,191	2,065
MAX	6,561	9,597	6,125	8,600	9,195	10,870	11,880	7,736	8,552	6,230	11,570	8,448
(WY)	(1990)	(1978)	(1962)	(1995)	(1998)	(1993)	(1987)	(1973)	(1992)	(1949)	(1940)	(1989)
MIN	726	797	1,007	1,018	1,041	1,554	1,685	1,406	989	744	662	743
(WY)	(1931)	(2002)	(1966)	(1956)	(1934)	(1988)	(1942)	(1941)	(2002)	(1930)	(2002)	(1930)

03168000 NEW RIVER AT ALLISONIA, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1930 - 2004	
ANNUAL TOTAL	1,804,710		1,464,330			
ANNUAL MEAN	4,944		4,001		3,200	
HIGHEST ANNUAL MEAN					4,761	1978
LOWEST ANNUAL MEAN					1,496	2002
HIGHEST DAILY MEAN	44,900	Nov 20	44,900	Nov 20	95,000	Aug 14, 1940
LOWEST DAILY MEAN	e1,350	aJan 24	1,110	Aug 27	446	Sep 13, 2002
ANNUAL SEVEN-DAY MINIMUM	1,440	Jan 21	1,240	Aug 22	501	Sep 8, 2002
MAXIMUM PEAK FLOW			70,900	Nov 19	185,000	Aug 14, 1940
MAXIMUM PEAK STAGE			12.73	Nov 19	23.42	Aug 14, 1940
INSTANTANEOUS LOW FLOW			891	Aug 27	412	Sep 7, 1930
ANNUAL RUNOFF (CFSM)	2.25		1.82		1.45	
ANNUAL RUNOFF (INCHES)	30.49		24.74		19.75	
10 PERCENT EXCEEDS	8,130		5,800		5,770	
50 PERCENT EXCEEDS	3,900		3,060		2,390	
90 PERCENT EXCEEDS	2,090		1,660		1,080	

a Also Jan. 25, 2003.
e Estimated.



03169000 CLAYTOR RESERVOIR NEAR RADFORD, VA

LOCATION.--Lat 37°04'28", long 80°35'06", NAD83, 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 mi^2.

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 NGVD of 1929 (levels by Appalachian Power Company). Prior to Sept. 11, 1943, nonrecording gage at same site and datum.

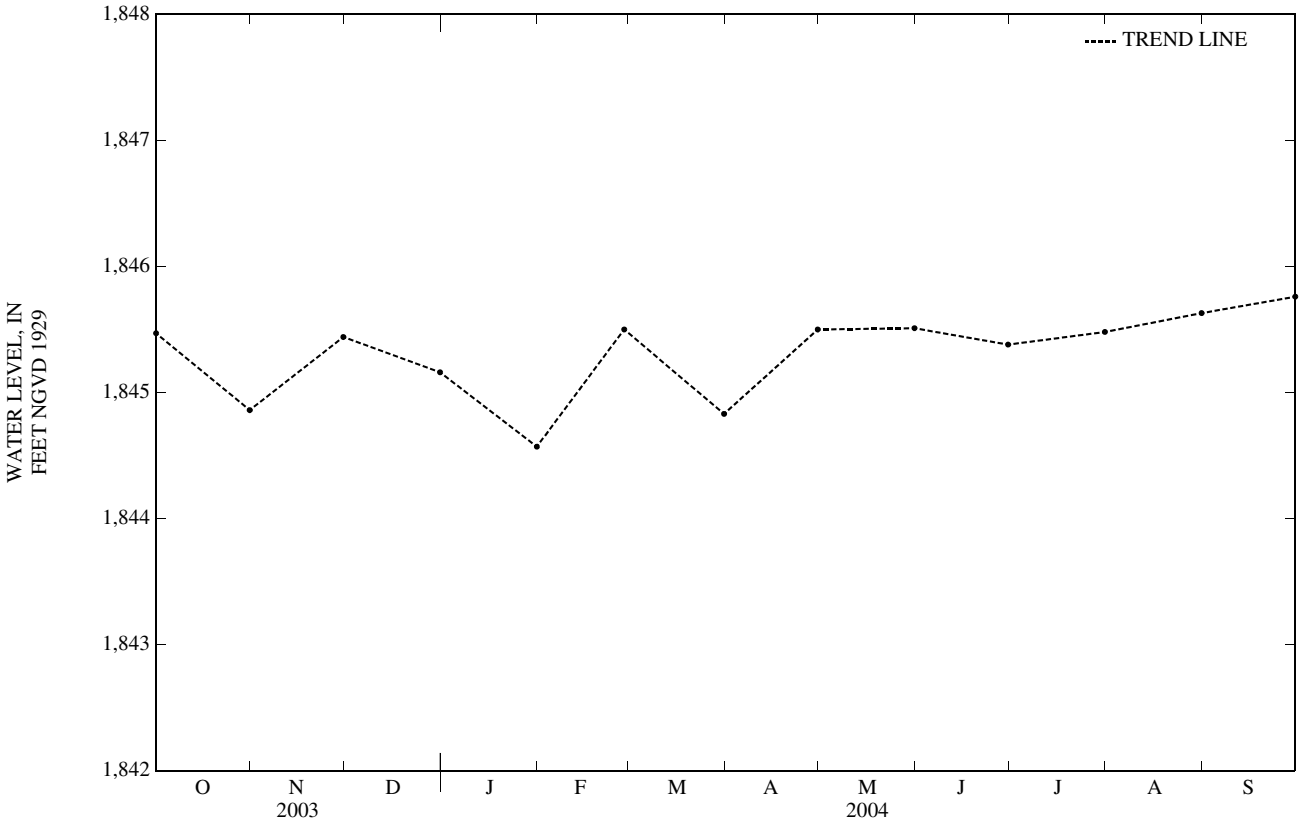
REMARKS.--Reservoir is formed by gravity overflow concrete dam. Spillway with crest at elevation 1,818.5 ft is equipped with 9 lift gates 30 ft high by 50 ft wide. Dam completed and storage began May 22, 1939; water in reservoir reached minimum pool elevation in January 1940. Total level-pool capacity 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 2003 TO SEPTEMBER 2004

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
	1,845.47	223,200	
	1,844.86	220,600	-2,600
November 30	1,845.44	223,100	+2,500
December 31	1,845.16	221,900	-1,200
	1,844.57	219,400	-2,500
February 29	1,845.50	223,400	+4,000
March 31	1,844.83	220,500	-2,900
April 30	1,845.50	223,400	+2,900
May 31	1,845.51	223,400	0
June 30	1,845.38	222,900	-500
July 31	1,845.48	223,300	+400
August 31	1,845.63	223,900	+600
September 30	1,845.76	224,500	+600

03169000 CLAYTOR RESERVOIR NEAR RADFORD, VA—Continued



03170000 LITTLE RIVER AT GRAYSONTOWN, VA

LOCATION.--Lat 37°02'15", long 80°33'24", NAD83, 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 mi^2.

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 NGVD of 1929. 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, Jan. 27 to Feb. 3, which is poor. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 22,800 ft^3/s, from rating curve extended above 16,000 ft^3/s on basis of slope-area measurements at gage heights 12.76 ft and 13.40 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	2230	8,960	7.42	2130	4,560	5.11
Feb 7	0230	3,700	4.48	1700	*19,400	*11.36

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	380	292	505	447	e230	448	525	373	434	365	212	158
2	368	271	439	450	e250	463	452	400	321	317	211	147
3	347	281	400	498	e350	486	418	421	291	309	230	146
4	336	279	411	468	942	453	398	371	435	306	199	146
5	308	272	526	504	646	443	372	345	742	313	191	145
6	293	394	557	720	1,260	522	354	332	511	289	213	146
7	299	690	493	530	2,310	594	354	316	391	258	200	171
8	285	400	455	431	1,060	513	354	306	357	252	175	2,110
9	300	363	454	522	799	469	354	298	464	241	167	1,740
10	362	339	636	470	692	448	344	344	464	237	163	461
11	319	325	1,790	386	772	440	346	380	394	257	158	320
12	293	313	1,060	479	630	419	575	323	395	287	172	277
13	286	354	831	486	591	398	1,480	314	355	273	257	258
14	280	295	771	453	601	377	1,540	321	346	246	236	236
15	330	265	682	435	582	372	921	304	390	228	213	225
16	318	294	650	393	575	475	647	282	1,660	219	202	215
17	280	294	885	371	514	651	553	377	1,100	214	187	799
18	287	284	994	488	492	544	506	433	597	221	229	1,500
19	287	3,090	798	560	496	496	468	345	436	596	199	591
20	279	2,690	666	382	586	462	437	331	385	321	186	385
21	276	1,030	549	336	809	442	443	309	335	242	185	326
22	272	790	581	433	870	428	417	287	322	226	199	304
23	271	630	556	342	688	407	393	279	320	249	194	279
24	262	557	616	394	622	392	393	362	366	242	179	264
25	259	582	687	345	603	390	381	379	341	220	172	253
26	259	491	554	251	548	390	455	400	735	209	171	246
27	407	445	508	e240	507	390	609	407	493	342	168	238
28	448	507	494	e230	477	390	471	402	364	312	169	9,330
29	322	839	476	e230	455	377	407	318	329	247	172	2,680
30	305	588	503	e250	---	386	378	301	309	228	170	925
31	295	---	490	e240	---	492	---	446	---	228	165	---
TOTAL	9,613	18,244	20,017	12,764	19,957	13,957	15,745	10,806	14,382	8,494	5,944	25,021
MEAN	310	608	646	412	688	450	525	349	479	274	192	834
MAX	448	3,090	1,790	720	2,310	651	1,540	446	1,660	596	257	9,330
MIN	259	265	400	230	230	372	344	279	291	209	158	145
CFSM	1.03	2.03	2.15	1.37	2.29	1.50	1.75	1.16	1.60	0.91	0.64	2.78
IN.	1.19	2.26	2.48	1.58	2.47	1.73	1.95	1.34	1.78	1.05	0.74	3.10

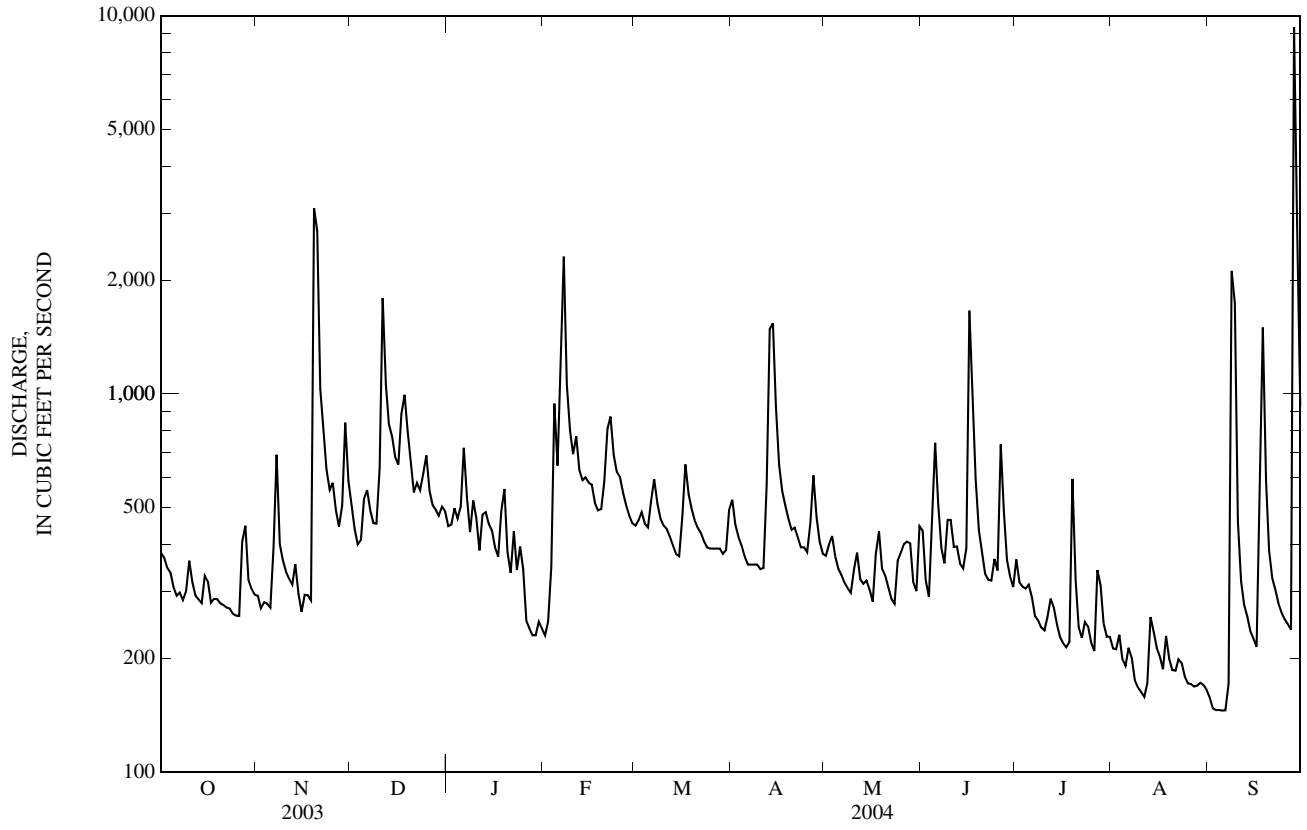
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2004, BY WATER YEAR (WY)

MEAN	288	298	331	396	475	536	502	405	336	266	252	258
MAX	1,458	916	860	1,050	1,055	1,213	1,444	810	942	945	1,584	988
(WY)	(1930)	(1986)	(1949)	(1937)	(1998)	(1993)	(1987)	(1958)	(1972)	(1949)	(1940)	(1989)
MIN	86.7	94.7	115	108	113	220	146	168	101	97.6	53.7	76.9
(WY)	(1954)	(2002)	(1966)	(1966)	(1934)	(1940)	(1942)	(1941)	(2002)	(2002)	(2002)	(1932)

03170000 LITTLE RIVER AT GRAYSONTOWN, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1929 - 2004	
ANNUAL TOTAL	208,154		174,944			
ANNUAL MEAN	570		478		361	
HIGHEST ANNUAL MEAN					631	1949
LOWEST ANNUAL MEAN					148	2002
HIGHEST DAILY MEAN	5,260	Feb 22	9,330	Sep 28	13,200	Oct 2, 1929
LOWEST DAILY MEAN	e130	aJan 24	145	Sep 5	31	bAug 14, 2002
ANNUAL SEVEN-DAY MINIMUM	142	Jan 22	150	Aug 31	32	Aug 10, 2002
MAXIMUM PEAK FLOW			19,400	Sep 28	22,800	Jun 21, 1972
MAXIMUM PEAK STAGE			11.36	Sep 28	13.40	Jun 21, 1972
INSTANTANEOUS LOW FLOW			145	cSep 2	d21	Feb 22, 1942
ANNUAL RUNOFF (CFSM)	1.90		1.59		1.20	
ANNUAL RUNOFF (INCHES)	25.81		21.69		16.36	
10 PERCENT EXCEEDS	941		691		617	
50 PERCENT EXCEEDS	457		378		266	
90 PERCENT EXCEEDS	270		215		124	

a Also Jan. 25, 2003.
b Also Aug. 15, 2002.
c Also Sept. 3-6, 2004.
d Result of freezeup.
e Estimated.



03170500 LITTLE RIVER RESERVOIR NEAR RADFORD, VA

LOCATION.--Lat 37°04'39", long 80°34'21", NAD83, 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 mi^2.

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

GAGE.--Water-stage recorder. Datum of gage is 1,770 ft NGVD of 1929, from topographic map.

REMARKS.--Records good except for period with ice effect, Jan. 28, 29, which is fair. Reservoir is operated for generating power for the city of Radford.

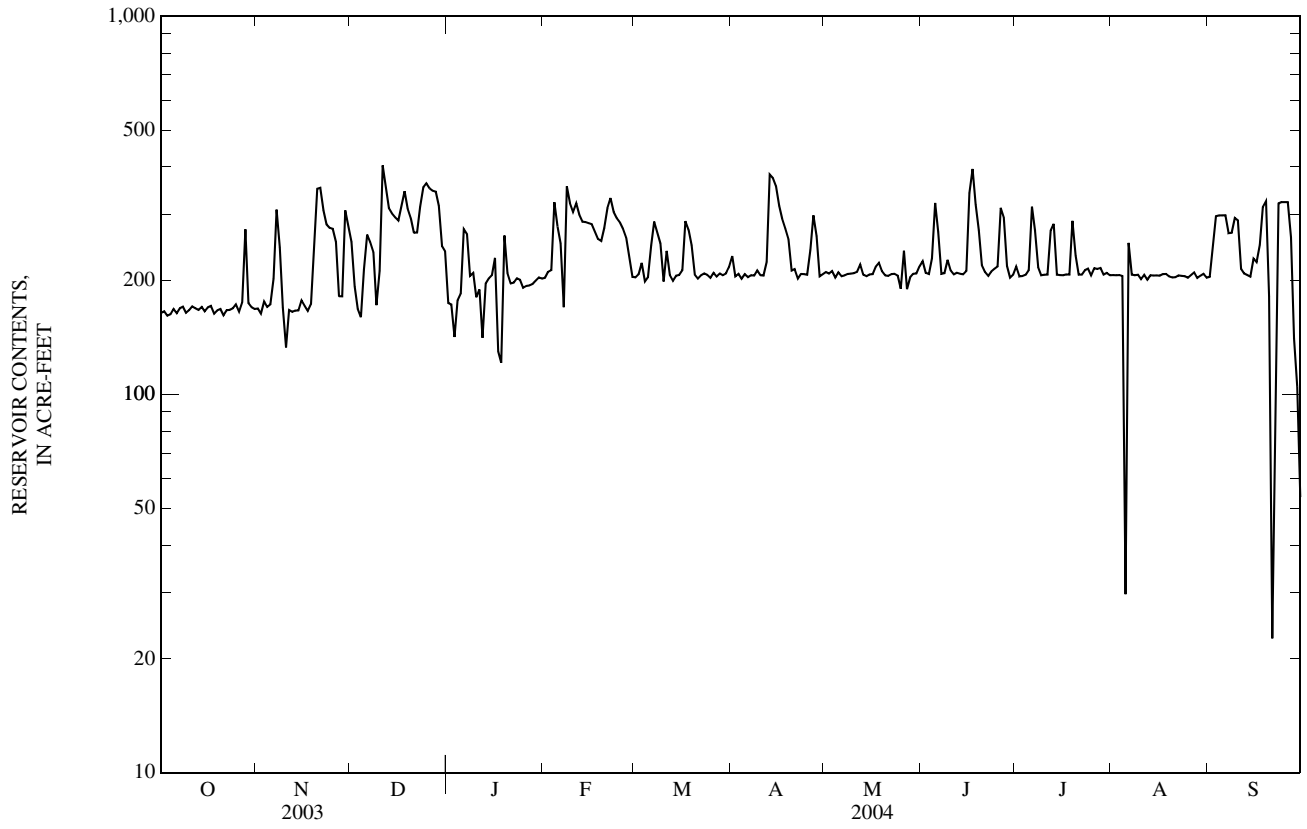
EXTREMES FOR CURRENT YEAR.--Maximum recorded contents, 502 acre-ft, Nov. 20; minimum recorded contents, 0.00 acre-ft, Nov. 10, Aug, 5, and Sept. 20-22, 27-30.

RESERVOIR STORAGE, ACRE FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	164	169	253	175	204	204	232	211	225	218	207	205
2	166	164	193	173	211	208	205	209	210	205	207	244
3	162	176	169	142	213	223	208	212	208	206	207	296
4	163	170	160	177	322	199	202	204	229	207	206	298
5	168	173	214	185	278	204	208	210	321	213	30	298
6	164	202	265	274	251	248	204	206	269	314	252	298
7	169	308	253	266	170	287	207	207	208	271	208	267
8	171	245	238	206	355	268	206	208	209	217	207	268
9	164	170	172	210	320	251	213	209	227	207	207	293
10	167	133	212	181	304	199	207	209	213	207	202	289
11	171	167	403	190	320	240	206	211	208	208	207	215
12	169	165	356	141	299	207	224	221	210	271	201	209
13	167	167	311	197	287	200	382	207	209	283	207	207
14	170	167	301	203	286	206	374	206	208	207	206	205
15	166	177	294	207	284	207	356	208	212	207	207	229
16	170	171	289	230	282	213	316	208	341	207	206	224
17	171	166	315	130	269	287	292	218	395	208	208	249
18	164	173	345	121	258	273	274	223	318	208	208	313
19	167	253	310	263	255	248	258	212	272	288	205	325
20	168	350	292	209	276	207	213	206	220	233	204	182
21	162	352	268	197	311	202	215	206	211	208	204	23
22	167	307	268	198	331	207	203	208	206	207	206	54
23	167	282	313	203	304	209	208	209	211	213	206	320
24	169	276	353	201	293	207	208	206	215	215	205	323
25	173	274	362	192	285	203	207	191	218	207	204	323
26	166	253	351	194	275	210	241	240	311	216	207	323
27	175	182	346	194	260	205	298	190	294	215	210	260
28	273	182	344	e196	232	209	262	204	219	216	203	141
29	174	307	316	e200	205	207	205	209	204	207	206	105
30	170	278	247	204	---	209	208	209	208	210	209	54
31	168	---	239	202	---	217	---	218	---	207	204	---
TOTAL	5,305	6,559	8,752	6,061	7,940	6,864	7,242	6,495	7,209	6,906	6,256	7,040
MEAN	171	219	282	196	274	221	241	210	240	223	202	235
MAX	273	352	403	274	355	287	382	240	395	314	252	325
MIN	162	133	160	121	170	199	202	190	204	205	30	23

e Estimated

03170500 LITTLE RIVER RESERVOIR NEAR RADFORD, VA—Continued



03171000 NEW RIVER AT RADFORD, VA

LOCATION.--Lat 37°08'30", long 80°34'09", NAD83, 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 mi^2.

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 NGVD of 1929. 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, Feb. 20-22, 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. Statistic of monthly mean data and summary statistics for water years 1908-1915 (unregulated flow) are available in previous data books, water years 1991-1998. 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 ft^3/s, from rating curve extended above 76,000 ft^3/s on basis of records for other stations on New River and flow over Claytor Dam, computed by Appalachian Power Company. 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 Jul. 16, 1916, reached a stage of 35.7 ft, discharge, 200,000 ft^3/s, at site and datum used by Geological Survey 1907-15, from reports of the National Weather Service.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,910	1,180	7,010	4,650	1,480	4,120	5,480	3,800	4,520	2,780	1,990	1,390
2	2,540	1,110	6,010	5,000	2,610	4,880	5,310	3,960	4,120	3,010	3,730	1,620
3	2,740	3,260	6,110	5,050	4,950	5,090	2,480	3,730	2,990	3,130	4,030	2,310
4	2,820	2,700	7,830	3,750	7,620	6,220	2,050	4,000	5,040	4,020	2,160	1,460
5	2,440	2,240	8,930	5,240	8,570	6,400	4,100	3,410	8,610	4,730	2,310	1,680
6	3,360	4,770	7,020	6,300	8,620	3,800	4,140	3,170	6,440	3,680	2,310	2,530
7	2,260	7,210	5,100	6,100	15,300	3,740	4,090	2,980	4,770	2,750	1,850	7,860
8	2,210	5,030	4,320	6,710	13,100	5,640	4,100	2,960	3,810	2,700	1,790	20,300
9	2,160	3,470	4,650	4,380	10,100	5,810	4,080	2,880	5,840	2,600	1,860	32,500
10	3,020	3,200	5,230	3,710	8,030	6,280	1,430	2,990	6,320	2,330	1,470	16,300
11	2,780	3,190	14,800	2,460	7,550	4,530	1,360	3,110	5,080	2,510	1,480	7,800
12	2,670	3,450	12,500	4,000	6,550	5,600	4,620	3,410	4,150	2,360	3,850	5,290
13	3,020	3,610	8,190	4,360	6,260	2,950	11,500	3,230	5,260	2,550	3,490	5,170
14	2,580	3,540	2,100	3,910	3,680	1,310	16,400	3,030	7,270	2,390	2,070	5,270
15	2,770	1,590	6,390	4,450	3,240	3,790	13,500	2,770	5,450	1,960	1,120	7,130
16	3,510	1,560	6,180	5,730	6,420	5,080	10,200	2,810	7,660	1,840	1,120	7,100
17	3,620	3,340	6,790	2,670	6,300	5,280	6,300	2,630	7,400	2,050	1,120	7,690
18	1,710	4,150	8,810	1,750	5,050	5,150	6,250	2,800	5,620	2,200	1,610	28,900
19	1,380	23,200	7,360	4,220	5,190	4,930	4,970	3,000	3,970	3,570	1,390	17,600
20	2,750	52,300	6,440	4,470	e5,000	3,660	4,800	3,460	3,450	2,800	1,660	12,400
21	2,680	19,000	5,820	4,220	e4,900	1,420	5,460	2,650	3,050	2,020	1,490	8,420
22	2,670	11,600	4,000	4,170	e6,600	4,990	3,930	3,280	3,090	1,790	1,430	4,960
23	2,390	7,710	3,930	3,780	8,630	4,770	4,070	3,300	3,860	1,990	1,420	4,910
24	2,470	7,610	4,100	1,510	6,080	3,440	3,880	2,100	3,880	2,020	1,660	3,850
25	1,090	6,820	5,250	2,340	6,090	3,380	3,740	3,020	4,090	1,750	1,730	3,740
26	1,130	6,110	5,190	4,020	5,730	3,270	4,230	2,830	7,340	2,110	1,220	4,330
27	3,670	5,320	5,340	3,900	5,010	1,480	6,130	2,830	7,100	2,900	1,220	5,390
28	3,740	4,600	5,000	3,790	3,230	1,680	5,280	3,350	5,280	2,600	2,080	22,700
29	3,820	5,380	4,820	3,820	3,180	3,030	4,650	2,930	4,320	2,380	2,220	30,300
30	3,160	3,430	6,310	3,780	---	3,150	4,480	2,850	3,330	2,210	1,560	14,300
31	2,770	---	5,050	1,860	---	4,900	---	3,960	---	1,940	1,310	---
TOTAL	82,840	211,680	196,580	126,100	185,070	129,770	163,010	97,230	153,110	79,670	59,750	295,200
MEAN	2,672	7,056	6,341	4,068	6,382	4,186	5,434	3,136	5,104	2,570	1,927	9,840
MAX	3,820	52,300	14,800	6,710	15,300	6,400	16,400	4,000	8,610	4,730	4,030	32,500
MIN	1,090	1,110	2,100	1,510	1,480	1,310	1,360	2,100	2,990	1,750	1,120	1,390
(†)	-1,311	+1,260	-605	-1,260	+2,017	-1,462	+1,462	0	-252	+202	+302	+302
MEAN‡	2,630	7,098	6,322	4,027	6,451	4,139	5,482	3,136	5,095	2,577	1,937	9,850
CFSM‡	.96	2.58	2.30	1.47	2.35	1.51	1.99	1.14	1.85	.94	.70	3.58
IN.‡	1.10	2.88	2.65	1.69	2.53	1.74	2.23	1.32	2.07	1.08	.81	4.00

CAL YR 2003 MEAN‡ 5,753 CFSM‡ 2.09 IN.‡ 28.43
WTR YR 2004 MEAN‡ 4,865 CFSM‡ 1.77 IN.‡ 24.10

† Total change in contents, equivalent in cubic feet per second, per month, in Claytor Reservoir; provided by American Electric Power.
‡ Adjusted for change in contents.

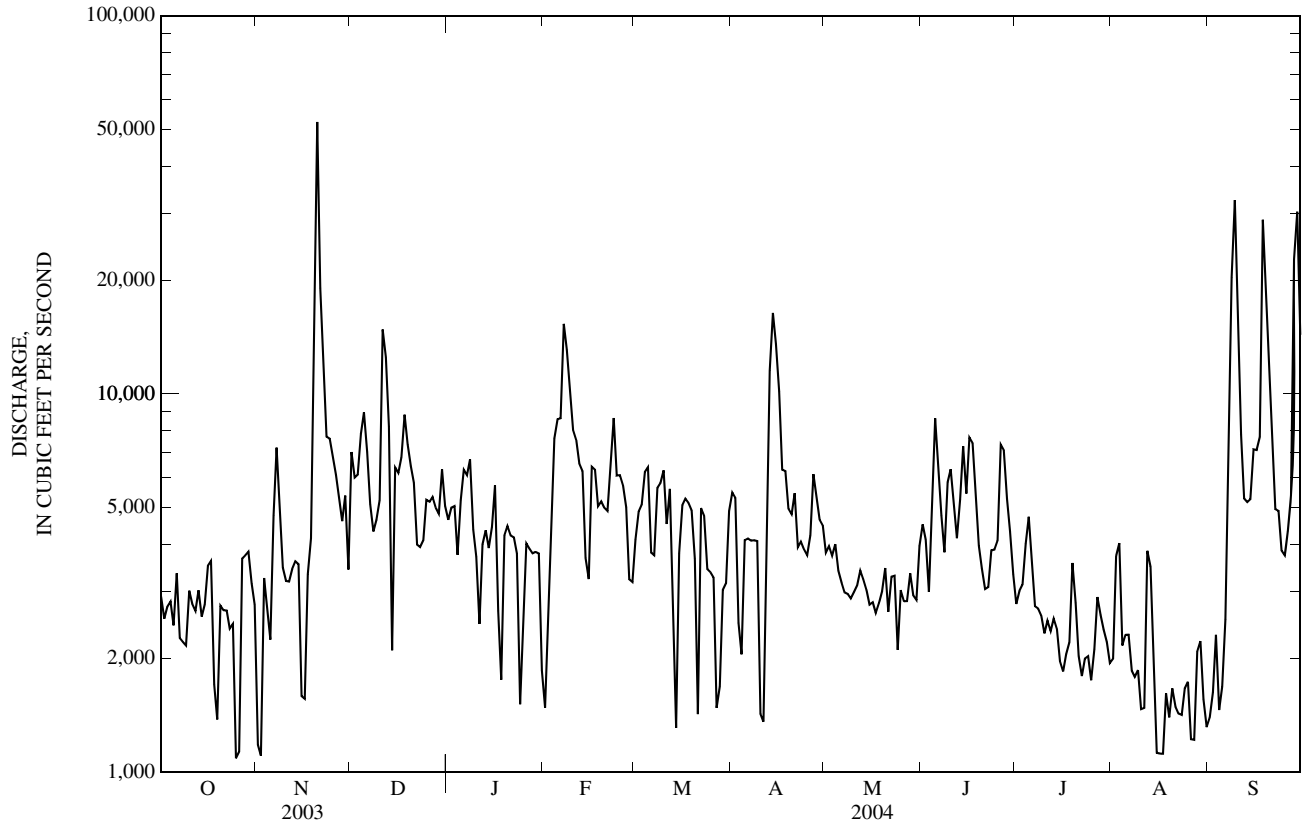
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2004, BY WATER YEAR (WY)

MEAN	2,606	3,053	3,562	4,268	5,336	5,933	5,472	4,444	3,621	2,790	2,673	2,554
MAX	7,619	10,300	7,426	9,459	10,590	13,130	14,490	8,875	9,627	7,545	14,170	9,855
(WY)	(1990)	(1978)	(1962)	(1995)	(1998)	(1993)	(1987)	(1973)	(1992)	(1949)	(1940)	(1989)
MIN	1,028	925	1,144	1,064	1,618	2,016	2,203	1,721	1,198	1,208	867	1,126
(WY)	(2002)	(2002)	(1940)	(1940)	(2002)	(1988)	(1942)	(1941)	(2002)	(1988)	(2002)	(1968)

03171000 NEW RIVER AT RADFORD, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1940 - 2004	
ANNUAL TOTAL	2,098,834		1,780,010			
ANNUAL MEAN	5,750		4,863		3,850	
HIGHEST ANNUAL MEAN					5,471	1978
LOWEST ANNUAL MEAN					1,708	2002
HIGHEST DAILY MEAN	52,300	Nov 20	52,300	Nov 20	105,000	Aug 14, 1940
LOWEST DAILY MEAN	870	Feb 9	1,090	Oct 25	627	Nov 19, 1967
ANNUAL SEVEN-DAY MINIMUM	1,690	Jan 16	1,360	Aug 15	793	Sep 8, 2002
MAXIMUM PEAK FLOW			80,000	Nov 20	a218,000	Aug 14, 1940
MAXIMUM PEAK STAGE			19.77	Nov 20	a35.96	Aug 14, 1940
INSTANTANEOUS LOW FLOW			835	bNov 16	c165	Aug 25, 1944
ANNUAL RUNOFF (CFSM)	2.09		1.77		1.40	
ANNUAL RUNOFF (INCHES)	28.41		24.10		19.04	
10 PERCENT EXCEEDS	9,700		7,670		7,250	
50 PERCENT EXCEEDS	4,610		3,840		2,920	
90 PERCENT EXCEEDS	2,460		1,720		1,160	

a Prior to regulation, 1908-15, maximum peak flow, 46,000 ft^3/s, May 21, 1909; maximum gage height, 15.00 ft, May 21, 1909 and Mar. 27, 1913, at site and datum then in use.
b Also Nov. 17, 2003.
c Prior to regulation, 1908-15, instantaneous low flow not determined.
e Estimated.



03173000 WALKER CREEK AT BANE, VA

LOCATION.--Lat 37°16'05", long 80°42'34", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to Aug. 1, 1938, nonrecording gage at same site and datum.

REMARKS.--Records good except for period with ice effect, Jan. 27, 28, which is fair. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 25,000 ft^3/s, from rating curve extended above 7,200 ft^3/s on basis of slope-area measurements at gage heights 16.50 ft and 19.28 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 OUTSIDE PERIOD OF RECORD.--Flood in September 1878 reached a stage of about 23.5 ft, discharge, 40,400 ft^3/s, from rating curve extended as explained above.

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

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	2130	*14,900	*15.46	0230	5,250	10.16
Apr 14	0030	5,470	10.32	2000	5,170	10.10
Sep 8	1830	5,150	10.08			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	304	133	308	455	226	393	617	503	954	327	210	94
2	263	130	287	476	245	386	622	459	636	291	287	83
3	233	130	269	896	243	416	565	448	465	261	305	75
4	210	127	267	847	252	415	520	399	538	263	215	72
5	196	126	292	760	256	396	468	362	1,480	283	165	70
6	182	186	288	911	571	432	415	336	983	234	181	69
7	168	363	278	817	2,060	613	379	309	688	206	176	71
8	157	296	267	690	1,290	658	357	284	520	188	142	1,910
9	150	250	271	621	882	621	335	266	914	173	124	2,210
10	152	224	378	547	724	564	305	256	826	167	113	881
11	155	208	2,410	451	642	496	287	254	675	164	106	524
12	143	197	1,420	440	577	458	380	232	601	187	103	379
13	133	194	935	418	547	425	1,940	217	634	197	107	300
14	133	191	783	391	593	389	3,560	263	706	171	112	250
15	164	179	656	383	597	368	2,040	229	683	152	104	219
16	226	185	589	365	563	427	1,280	230	1,200	139	96	199
17	181	189	800	342	503	629	943	373	871	129	90	401
18	167	188	1,060	370	468	600	748	630	623	126	87	3,680
19	160	4,520	822	546	453	544	626	482	506	126	83	1,400
20	152	4,580	666	525	535	473	544	364	429	120	81	772
21	148	1,600	542	454	984	440	491	300	363	112	86	541
22	140	996	489	440	1,130	409	442	252	320	110	98	419
23	134	737	468	384	852	368	400	233	305	124	105	342
24	131	606	824	381	719	338	370	267	354	132	92	290
25	127	541	1,350	346	658	317	343	232	316	113	100	254
26	124	453	933	286	595	296	545	267	848	105	110	228
27	133	403	726	e280	530	283	1,630	746	694	103	93	207
28	147	380	613	e270	471	274	963	748	515	119	96	2,260
29	158	368	534	263	423	261	698	647	423	117	102	2,670
30	147	334	518	272	---	262	573	486	358	104	91	1,190
31	140	---	502	220	---	331	---	581	---	101	92	---
TOTAL	5,158	19,014	20,545	14,847	18,589	13,282	23,386	11,655	19,428	5,144	3,952	22,060
MEAN	166	634	663	479	641	428	780	376	648	166	127	735
MAX	304	4,580	2,410	911	2,060	658	3,560	748	1,480	327	305	3,680
MIN	124	126	267	220	226	261	287	217	305	101	81	69
CFSM	0.55	2.08	2.17	1.57	2.10	1.40	2.56	1.23	2.12	0.54	0.42	2.41
IN.	0.63	2.32	2.51	1.81	2.27	1.62	2.85	1.42	2.37	0.63	0.48	2.69

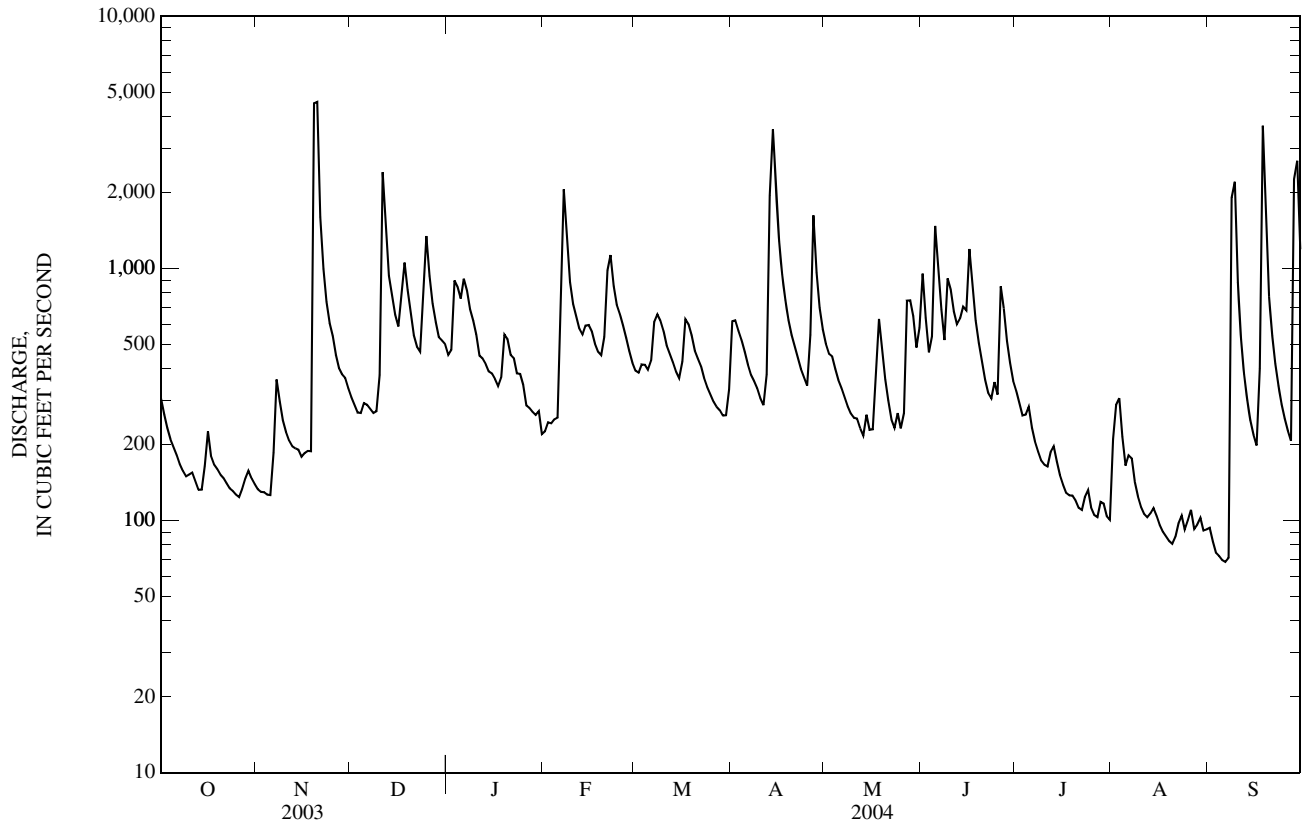
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2004, BY WATER YEAR (WY)

MEAN	125	189	314	432	593	679	545	427	247	146	132	110
MAX	721	737	941	1,191	1,577	1,800	1,806	1,096	1,125	735	759	735
(WY)	(1990)	(1980)	(1973)	(1996)	(1957)	(1955)	(1987)	(2001)	(1992)	(1938)	(1949)	(2004)
MIN	34.7	42.4	44.9	44.8	95.6	108	126	115	60.6	41.6	33.7	35.6
(WY)	(1964)	(1999)	(1956)	(1956)	(1942)	(1988)	(1986)	(1941)	(1988)	(1988)	(1988)	(1955)

03173000 WALKER CREEK AT BANE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1938 - 2004	
ANNUAL TOTAL	205,920		177,060			
ANNUAL MEAN	564		484		326	
HIGHEST ANNUAL MEAN					553	1949
LOWEST ANNUAL MEAN					135	1988
HIGHEST DAILY MEAN	6,780	Feb 23	4,580	Nov 20	14,100	Jun 5, 1992
LOWEST DAILY MEAN	116	Jul 28	69	Sep 6	24	aSep 27, 1964
ANNUAL SEVEN-DAY MINIMUM	133	Oct 30	76	Sep 1	28	Sep 22, 1964
MAXIMUM PEAK FLOW			14,900	Nov 19	25,000	Jun 5, 1992
MAXIMUM PEAK STAGE			15.46	Nov 19	19.28	Jun 5, 1992
INSTANTANEOUS LOW FLOW			69	bSep 5	c15	Dec 21, 1958
ANNUAL RUNOFF (CFSM)	1.85		1.59		1.07	
ANNUAL RUNOFF (INCHES)	25.12		21.60		14.52	
10 PERCENT EXCEEDS	1,050		881		730	
50 PERCENT EXCEEDS	346		358		160	
90 PERCENT EXCEEDS	150		116		48	

a Also Sept. 28, 1964.
b Also Sept. 6, 7, 2004.
c Result of freezeup.
e Estimated.



03175500 WOLF CREEK NEAR NARROWS, VA

LOCATION.--Lat 37°18'20", long 80°50'59", NAD83, 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 mi^2.

PERIOD OF RECORD.--July 1908 to September 1916, March 1938 to September 1995, October 1996 to current year.

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 NGVD of 1929. July 22, 1908, to Sept. 30, 1916, and Mar. 31 to Nov. 7, 1938, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 16,100 ft^3/s, from rating curve extended above 5,700 ft^3/s on basis of contracted-opening measurement at gage height 12.55 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,200 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1800	*16,100	*13.95	0430	4,720	8.84
Apr 14	0300	4,270	8.50			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	173	156	403	496	198	309	513	502	1,210	280	276	60
2	156	148	369	763	218	305	654	458	757	254	220	57
3	140	141	344	1,710	240	354	724	479	547	242	405	56
4	129	133	337	1,180	254	364	715	403	526	565	299	55
5	122	129	391	1,030	244	348	654	361	794	402	241	55
6	114	150	413	1,350	401	444	558	326	653	307	294	51
7	106	360	386	1,040	1,420	644	503	290	530	255	229	53
8	100	346	364	826	1,030	689	476	258	424	218	185	780
9	96	299	357	709	756	614	429	234	688	188	154	952
10	100	263	433	604	638	543	361	209	478	166	132	580
11	98	237	1,540	503	592	471	324	219	416	171	118	375
12	91	216	1,080	466	526	425	422	199	429	167	113	277
13	87	234	808	436	489	380	1,740	190	1,010	177	122	218
14	91	255	700	401	502	346	3,620	182	888	154	114	180
15	233	232	601	395	483	325	1,990	169	963	142	102	169
16	214	235	534	356	447	363	1,250	233	1,500	124	94	151
17	163	221	696	332	405	459	945	280	943	112	98	1,260
18	148	205	801	436	378	441	747	531	698	110	91	3,760
19	138	7,280	682	671	361	424	626	267	571	106	83	1,510
20	126	5,310	585	612	387	383	543	226	497	97	80	837
21	118	1,710	493	537	588	376	481	188	400	90	82	589
22	114	1,070	451	493	669	354	418	161	347	89	89	448
23	107	793	443	424	573	319	365	157	332	108	83	358
24	103	660	1,030	397	514	299	345	153	371	102	79	299
25	98	596	1,220	365	478	284	309	155	310	104	90	261
26	94	500	880	331	438	267	726	250	586	94	86	230
27	116	443	701	316	400	255	1,380	854	538	250	75	204
28	189	421	602	287	362	245	918	863	443	277	71	971
29	192	471	532	247	327	231	695	808	373	192	68	1,360
30	185	426	543	272	---	231	581	593	316	150	67	828
31	167	---	549	209	---	300	---	1,020	---	132	66	---
TOTAL	4,108	23,640	19,268	18,194	14,318	11,792	24,012	11,218	18,538	5,825	4,306	16,984
MEAN	133	788	622	587	494	380	800	362	618	188	139	566
MAX	233	7,280	1,540	1,710	1,420	689	3,620	1,020	1,500	565	405	3,760
MIN	87	129	337	209	198	231	309	153	310	89	66	51
CFSM	0.59	3.53	2.79	2.63	2.21	1.71	3.59	1.62	2.77	0.84	0.62	2.54
IN.	0.69	3.94	3.21	3.04	2.39	1.97	4.01	1.87	3.09	0.97	0.72	2.83

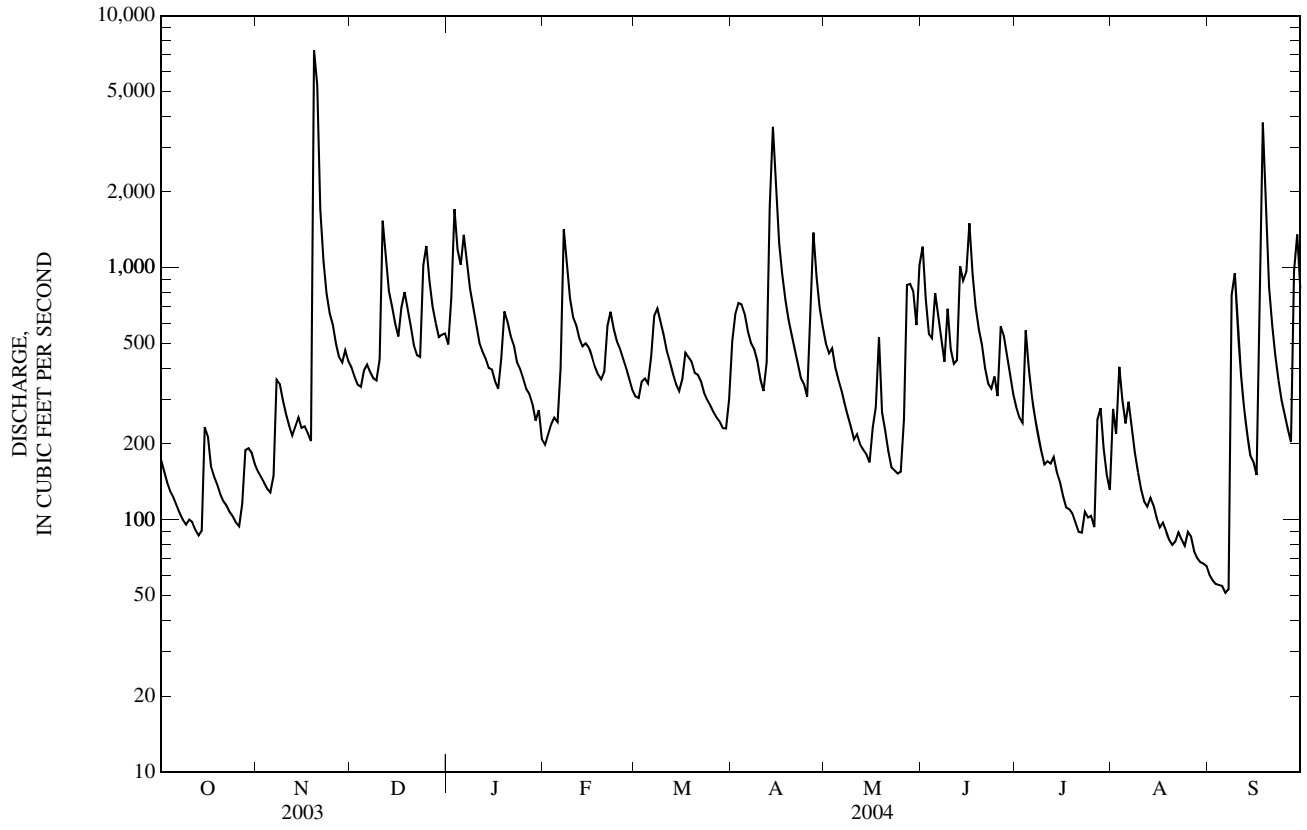
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1908 - 1916, 1938 - 1995, 1997 - 2004, BY WATER YEAR (WY)

MEAN	108	171	304	428	553	637	490	374	212	143	115	86.8
MAX	621	788	850	1,128	1,469	1,789	1,728	1,059	748	964	512	576
(WY)	(1990)	(2004)	(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)

03175500 WOLF CREEK NEAR NARROWS, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1908 - 1916, 1938 - 1995, 1997 - 2004	
ANNUAL TOTAL	178,682		172,203			
ANNUAL MEAN	490		470		300	
HIGHEST ANNUAL MEAN					475	1972
LOWEST ANNUAL MEAN					126	1988
HIGHEST DAILY MEAN	7,280	Nov 19	7,280	Nov 19	8,380	Apr 5, 1977
LOWEST DAILY MEAN	74	Jul 28	51	Sep 6	10	Sep 4, 1999
ANNUAL SEVEN-DAY MINIMUM	93	Jul 22	55	Sep 1	16	Aug 29, 1999
MAXIMUM PEAK FLOW			16,100	Nov 19	16,100	Nov 19, 2003
MAXIMUM PEAK STAGE			13.95	Nov 19	13.95	Nov 19, 2003
INSTANTANEOUS LOW FLOW			51	aSep 6	b8.8	Dec 25, 1953
ANNUAL RUNOFF (CFSM)	2.20		2.11		1.35	
ANNUAL RUNOFF (INCHES)	29.81		28.73		18.28	
10 PERCENT EXCEEDS	862		868		684	
50 PERCENT EXCEEDS	314		358		154	
90 PERCENT EXCEEDS	115		101		39	

a Also Sept. 7, 2004.
b Result of freezeup.



03176500 NEW RIVER AT GLEN LYN, VA

LOCATION.--Lat 37°22'22", long 80°51'38", NAD83, 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 mi^2.

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 NGVD of 1929. 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.--Records good except for period of no gage-height record, Jan. 9-12, which is fair. Flow regulated since 1939 by Claytor Reservoir (station 03169000) 55 mi upstream from station. Statistics of monthly mean data and summary statistics for water years 1928-1938 (unregulated flow) are available in previous data books, water years 1991-1998. Water withdrawn by American Electric Power at gage. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 226,000 ft^3/s, from rating curve extended above 89,000 ft^3/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.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4,550	3,540	5,170	6,530	2,490	4,930	7,360	6,010	8,200	4,080	2,400	1,710
2	3,660	1,970	8,410	6,880	2,520	5,880	7,420	5,270	7,240	3,570	3,570	1,810
3	3,570	1,860	6,380	8,760	3,830	6,620	7,270	5,350	5,260	3,840	4,650	2,080
4	3,610	3,940	8,460	8,380	7,630	6,890	4,380	4,920	4,770	4,280	4,100	2,780
5	3,580	3,480	9,770	7,350	9,560	8,440	3,770	4,950	12,600	5,390	2,890	1,900
6	3,290	3,400	10,300	8,820	10,600	7,550	6,200	4,240	11,100	4,820	2,990	2,160
7	4,320	8,970	6,900	9,140	21,200	5,910	5,800	4,220	8,090	4,040	2,870	3,520
8	2,690	7,750	6,090	9,330	18,500	6,650	5,620	3,970	5,820	3,280	2,400	13,800
9	2,960	5,850	5,160	e10,000	14,400	7,860	5,570	3,970	6,580	3,210	2,220	40,500
10	2,860	4,460	5,900	e6,400	10,700	8,440	5,310	3,850	8,510	3,110	2,220	21,100
11	4,030	4,450	15,200	e5,400	10,300	7,250	2,540	3,980	7,440	2,940	1,850	11,400
12	3,280	4,290	19,300	e3,900	9,300	6,120	3,190	4,100	6,140	3,180	1,820	7,580
13	3,380	4,770	12,400	5,920	8,490	7,150	13,100	4,120	6,070	2,990	5,400	5,940
14	3,660	4,740	8,440	5,700	7,760	4,290	27,400	4,110	8,380	3,020	3,030	5,350
15	3,610	4,660	5,180	5,500	5,680	2,780	21,400	3,780	8,790	2,810	2,610	6,790
16	3,510	2,740	8,870	5,950	6,310	6,130	15,100	3,690	8,750	2,420	1,680	7,600
17	4,380	2,690	8,760	6,990	8,250	6,900	11,900	3,900	10,400	2,300	1,620	8,820
18	3,030	4,410	11,100	3,990	7,710	7,510	9,360	4,220	8,820	2,580	1,570	30,000
19	3,030	22,700	10,900	4,210	6,810	7,010	7,900	4,030	6,530	2,700	2,030	27,100
20	3,030	75,800	9,060	6,350	6,560	6,760	7,190	4,270	5,410	4,050	1,890	14,200
21	3,030	31,700	7,930	6,320	6,520	5,290	7,360	4,070	4,630	2,970	2,180	12,000
22	3,030	16,200	6,250	5,910	8,180	2,970	5,900	4,270	4,130	2,440	2,120	7,890
23	3,030	12,000	5,620	5,770	10,300	6,600	5,960	4,060	4,110	2,440	1,920	5,860
24	3,250	8,880	6,390	5,060	8,960	6,240	5,530	3,460	5,110	2,460	1,910	5,400
25	3,050	9,660	9,020	2,950	8,330	4,620	5,250	3,110	4,910	2,480	2,100	4,740
26	1,820	7,980	8,210	3,790	7,910	4,520	6,110	4,130	6,780	2,300	2,230	4,680
27	1,900	7,660	7,570	5,170	7,430	4,690	10,100	5,010	9,340	3,020	1,670	5,160
28	4,660	6,940	7,460	5,180	6,650	2,460	9,570	5,220	7,590	3,660	1,610	18,600
29	4,560	6,690	6,210	4,820	4,590	2,820	7,750	5,520	5,770	2,950	2,650	48,200
30	4,610	5,980	7,390	4,840	---	4,140	6,460	4,490	4,840	2,770	2,680	20,700
31	3,820	---	7,160	5,050	---	4,590	---	6,090	---	2,550	1,930	---
TOTAL	106,790	290,160	260,960	190,360	247,470	180,010	247,770	136,380	212,110	98,650	76,810	349,370
MEAN	3,445	9,672	8,418	6,141	8,533	5,807	8,259	4,399	7,070	3,182	2,478	11,650
MAX	4,660	75,800	19,300	10,000	21,200	8,440	27,400	6,090	12,600	5,390	5,400	48,200
MIN	1,820	1,860	5,160	2,950	2,490	2,460	2,540	3,110	4,110	2,300	1,570	1,710
(†)	-1,311	+1,260	-605	-1,260	+2,017	-1,462	+1,462	0	-252	+202	+302	+302
MEAN‡	3,408	9,714	8,399	6,100	8,603	5,760	8,308	4,399	7,062	3,189	2,487	11,656
CFSM‡	.90	2.58	2.23	1.62	2.28	1.53	2.20	1.17	1.87	.85	.66	3.09
IN.‡	1.04	2.88	2.57	1.87	2.46	1.76	2.46	1.35	2.09	.98	.76	3.45

CAL YR 2003 MEAN‡ 8,049 CFSM‡ 2.14 IN.‡ 29.00
WTR YR 2004 MEAN‡ 6,551 CFSM‡ 1.74 IN.‡ 23.67

† Total change in contents, equivalent in cubic feet per second, per month, in Claytor Reservoir; provided by American Electric Power.
‡ Adjusted for change in contents.

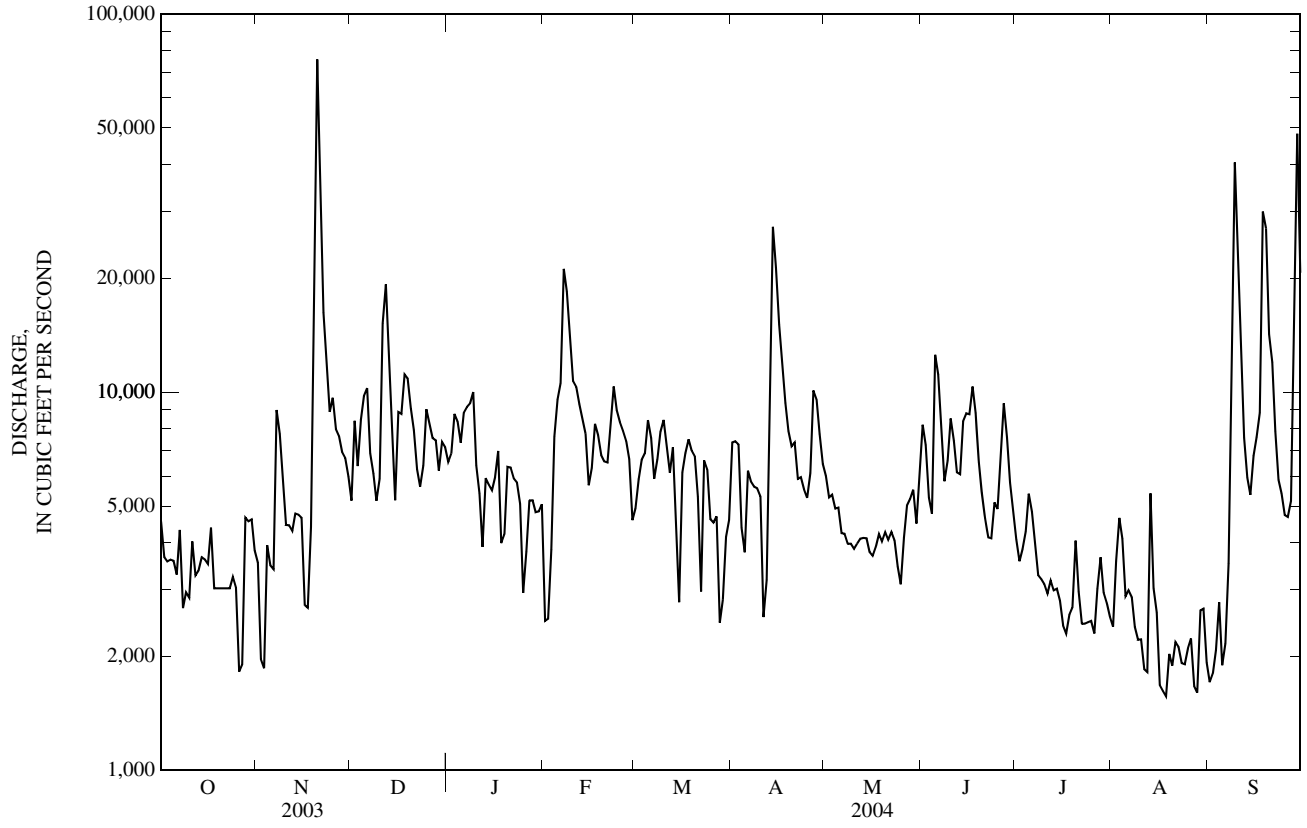
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2004, BY WATER YEAR (WY)

MEAN	3,115	3,762	4,646	5,821	7,405	8,240	7,400	5,944	4,517	3,319	3,181	2,960
MAX	9,882	12,450	10,910	13,290	15,810	18,650	20,890	11,270	12,860	9,784	16,410	11,650
(WY)	(1990)	(1978)	(1949)	(1996)	(1957)	(1993)	(1987)	(1984)	(1992)	(1949)	(1940)	(2004)
MIN	1,204	1,258	1,305	1,489	2,285	2,407	2,673	2,397	1,373	1,390	1,040	1,127
(WY)	(1989)	(1982)	(1998)	(1966)	(2002)	(1988)	(1986)	(1941)	(1999)	(1988)	(2002)	(1998)

03176500 NEW RIVER AT GLEN LYN, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1939 - 2004	
ANNUAL TOTAL	2,936,920		2,396,840			
ANNUAL MEAN	8,046		6,549		5,012	
HIGHEST ANNUAL MEAN					7,492	2003
LOWEST ANNUAL MEAN					2,511	2002
HIGHEST DAILY MEAN	75,800	Nov 20	75,800	Nov 20	126,000	Aug 15, 1940
LOWEST DAILY MEAN	1,820	Oct 26	1,570	Aug 18	a557	Aug 19, 1999
ANNUAL SEVEN-DAY MINIMUM	2,730	Oct 21	1,870	Aug 16	646	Aug 13, 1999
MAXIMUM PEAK FLOW			99,600	Nov 20	b226,000	Aug 14, 1940
MAXIMUM PEAK STAGE			17.40	Nov 20	b27.50	Aug 14, 1940
INSTANTANEOUS LOW FLOW			1,490	cAug 27	a,d449	fAug 13, 1999
ANNUAL RUNOFF (CFSM)	2.14		1.74		1.33	
ANNUAL RUNOFF (INCHES)	29.00		23.66		18.07	
10 PERCENT EXCEEDS	13,700		10,300		9,640	
50 PERCENT EXCEEDS	6,380		5,260		3,660	
90 PERCENT EXCEEDS	3,270		2,470		1,520	

a Affected by withdrawals.
b Prior to regulation, 1928-38, maximum peak flow, 99,000 ft^3/s, Oct. 3, 1929, gage height, 16.75 ft.
c Also Aug. 28, 2004.
d Prior to regulation, 1928-38, instantaneous low flow, 770 ft^3/s, Sept. 8, 1930.
e Estimated.
f Also Aug. 19, 1999.



03207800 LEVISA FORK AT BIG ROCK, VA

LOCATION.--Lat 37°21'13", long 82°11'44", NAD83, 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 mi^2.

PERIOD OF RECORD.--October 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 866.37 ft NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Maximum discharge, 56,000 ft^3/s, from rating curve extended above 7,000 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1600	*11,400	*12.56	1200	6,870	9.96
Jan 2	2000	10,300	11.95	1430	4,530	8.31
Jan 5	2030	5,390	8.95	0100	6,120	9.46
Apr 14	0130	9,560	11.56			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	86	76	578	472	374	213	691	542	1,920	292	140	81
2	83	73	460	3,960	364	223	1,510	523	1,010	290	113	68
3	76	70	395	3,400	568	230	1,640	585	674	322	385	62
4	70	66	406	1,550	651	211	1,200	498	1,030	386	176	60
5	70	82	593	2,790	622	207	868	462	2,310	323	209	58
6	67	242	731	2,970	1,680	2,150	690	420	1,270	262	227	53
7	63	343	698	1,540	2,570	1,630	597	376	833	221	155	55
8	60	242	599	1,100	1,460	1,100	537	340	621	192	129	212
9	59	180	509	893	1,030	800	478	312	518	168	116	403
10	57	150	512	721	830	655	425	287	436	154	105	221
11	55	127	917	604	697	552	398	321	395	151	105	141
12	54	126	883	554	603	497	434	509	414	214	219	110
13	54	301	697	512	539	437	3,100	389	675	190	210	93
14	79	233	633	477	490	400	5,480	341	542	162	151	85
15	261	205	566	471	460	378	2,200	290	2,420	147	124	76
16	139	220	511	425	418	469	1,420	267	1,060	134	109	71
17	99	205	708	400	383	523	1,040	248	676	124	95	693
18	87	194	832	867	361	491	826	249	566	120	87	1,120
19	77	5,180	765	1,530	342	453	698	249	494	115	82	423
20	70	2,300	627	1,050	333	412	617	270	450	109	84	255
21	66	940	516	780	327	479	570	218	374	102	100	188
22	61	600	484	653	298	446	507	205	332	100	100	152
23	59	454	569	557	277	418	469	221	345	146	84	132
24	58	440	1,070	503	272	402	498	194	320	132	73	117
25	56	441	1,130	490	263	381	434	495	618	120	90	107
26	56	393	842	497	250	358	1,020	418	1,610	121	74	100
27	108	355	669	490	247	343	1,640	1,600	828	213	68	96
28	152	509	573	473	230	331	1,010	4,100	542	205	63	533
29	115	964	507	444	220	315	741	1,890	416	156	62	595
30	101	757	547	446	---	337	615	1,040	336	296	157	312
31	87	---	495	395	---	430	---	2,810	---	177	113	---
TOTAL	2,585	16,468	20,022	32,014	17,159	16,271	32,353	20,669	24,035	5,844	4,005	6,672
MEAN	83.4	549	646	1,033	592	525	1,078	667	801	189	129	222
MAX	261	5,180	1,130	3,960	2,570	2,150	5,480	4,100	2,420	386	385	1,120
MIN	54	66	395	395	220	207	398	194	320	100	62	53
CFSM	0.28	1.85	2.17	3.48	1.99	1.77	3.63	2.24	2.70	0.63	0.43	0.75
IN.	0.32	2.06	2.51	4.01	2.15	2.04	4.05	2.59	3.01	0.73	0.50	0.84

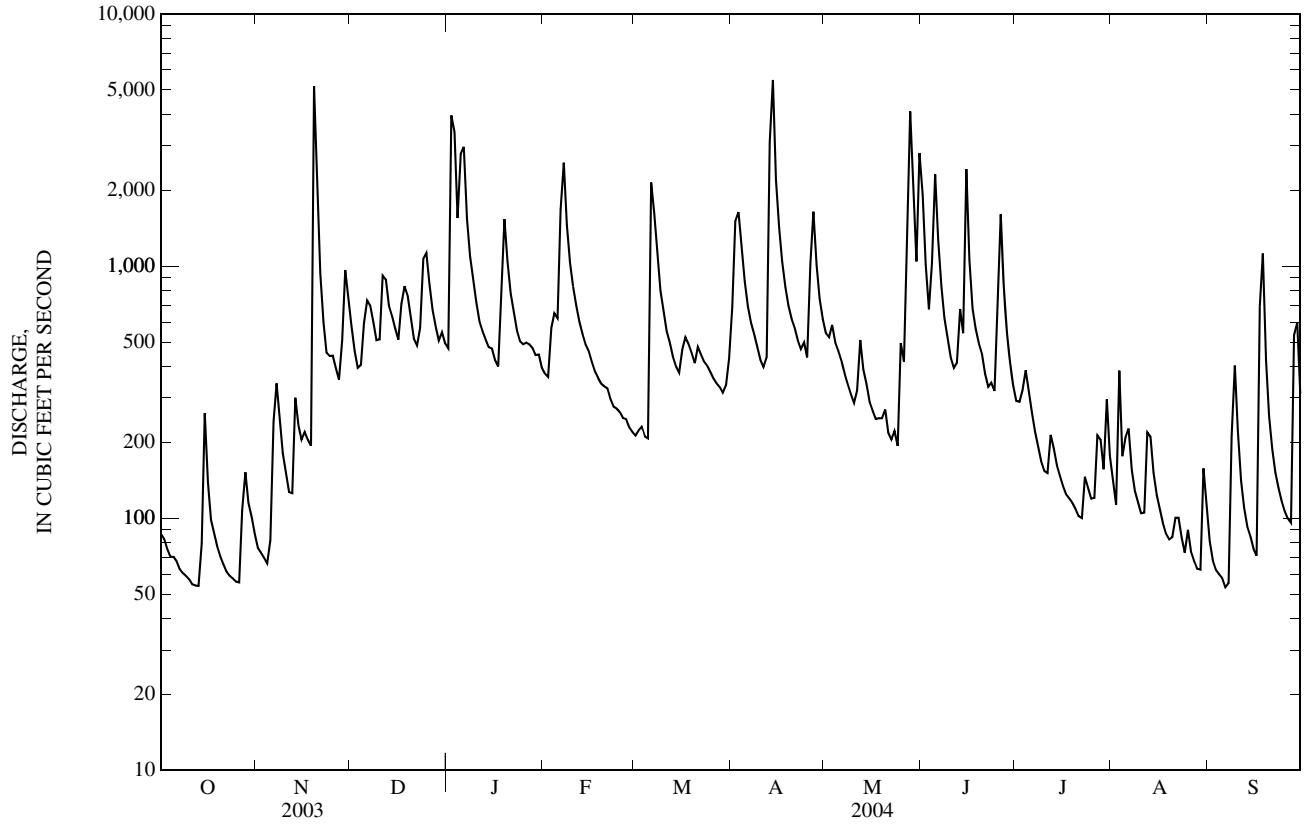
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2004, BY WATER YEAR (WY)

MEAN	121	210	354	552	681	733	709	521	298	172	131	86.7
MAX	692	911	1,201	1,596	1,644	2,107	2,355	1,323	1,135	630	422	273
(WY)	(1990)	(1978)	(1973)	(1974)	(2003)	(1975)	(1987)	(1984)	(1979)	(1979)	(2000)	(1989)
MIN	6.85	19.3	54.4	82.7	168	139	154	113	40.2	29.1	33.3	12.6
(WY)	(1970)	(1970)	(2001)	(1981)	(1968)	(1988)	(1986)	(1976)	(1970)	(1970)	(1969)	(1969)

03207800 LEVISA FORK AT BIG ROCK, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1968 - 2004	
ANNUAL TOTAL	199,292		198,097			
ANNUAL MEAN	546		541		379	
HIGHEST ANNUAL MEAN					606	1979
LOWEST ANNUAL MEAN					121	1988
HIGHEST DAILY MEAN	11,200	Feb 16	5,480	Apr 14	24,800	Apr 4, 1977
LOWEST DAILY MEAN	54	aOct 12	53	Sep 6	5.1	Oct 19, 1969
ANNUAL SEVEN-DAY MINIMUM	57	Oct 7	57	Oct 7	5.5	Oct 13, 1969
MAXIMUM PEAK FLOW			11,400	Nov 19	56,000	Apr 4, 1977
MAXIMUM PEAK STAGE			12.56	Nov 19	27.38	Apr 4, 1977
INSTANTANEOUS LOW FLOW			50	bOct 14	5.0	cOct 1, 1969
ANNUAL RUNOFF (CFSM)	1.84		1.82		1.28	
ANNUAL RUNOFF (INCHES)	24.96		24.81		17.34	
10 PERCENT EXCEEDS	975		1,060		832	
50 PERCENT EXCEEDS	354		386		184	
90 PERCENT EXCEEDS	97		78		37	

a Also Oct. 13, 2003.
b Also Sept. 6, 7, 2004.
c Also Oct. 13, 14, 17-20, 1969.



03208500 RUSSELL FORK AT HAYSI, VA

LOCATION.--Lat 37°12'25", long 82°17'45", NAD83, 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 mi^2.

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 NGVD of 1929. 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 ft^3/s, from rating curve extended above 32,000 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1230	*12,800	*11.75	1700	10,200	10.28
Jan 2	1700	10,600	10.48	1100	5,220	7.22
Jan 5	1930	6,290	7.92	1200	*12,800	11.71
Feb 6	2000	4,720	6.89	0230	6,710	8.18
Mar 6	1100	6,580	8.10	2300	5,990	7.73

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	58	504	363	265	185	448	518	2,490	404	119	69
2	59	55	366	4,800	260	197	721	510	1,120	352	106	61
3	54	54	294	3,470	575	208	1,010	598	703	350	100	59
4	52	52	306	1,480	719	197	896	516	1,150	300	99	57
5	53	52	556	3,050	644	203	687	473	1,680	265	145	56
6	51	201	649	3,210	2,410	3,950	562	413	1,040	224	174	52
7	49	289	584	1,470	3,040	2,150	495	357	698	203	112	53
8	48	161	489	964	1,550	1,250	450	312	734	178	98	216
9	45	114	397	764	1,040	895	395	279	760	154	89	485
10	43	94	460	592	812	698	345	249	516	142	83	204
11	44	84	1,250	479	667	578	322	239	520	143	117	121
12	43	84	878	435	572	514	372	219	909	206	239	99
13	42	243	614	401	505	444	4,660	196	1,180	211	230	88
14	61	185	544	372	457	398	4,210	179	976	168	144	84
15	151	158	474	379	424	372	1,890	165	3,610	140	113	73
16	84	195	418	333	376	440	1,210	154	1,560	121	100	69
17	64	186	539	308	344	445	877	155	1,110	113	91	1,960
18	61	162	606	903	321	411	691	147	1,320	116	86	2,030
19	56	5,890	592	1,600	305	379	586	160	890	110	83	662
20	53	2,250	491	986	302	347	526	182	724	101	82	357
21	50	780	387	699	297	406	488	144	556	94	80	229
22	49	466	372	565	267	367	435	130	457	99	90	166
23	44	326	454	466	244	346	401	124	480	296	78	131
24	43	310	930	409	240	336	470	114	488	133	72	118
25	43	346	1,070	384	233	318	397	706	1,640	115	68	108
26	44	303	760	398	217	298	1,350	347	3,270	139	68	101
27	72	261	579	387	219	292	1,880	2,770	1,330	324	64	99
28	114	471	481	363	206	285	1,050	3,490	791	248	66	325
29	84	1,070	413	328	191	272	735	1,660	574	153	64	348
30	72	710	439	338	---	296	595	922	455	174	72	202
31	64	---	383	283	---	372	---	6,250	---	139	80	---
TOTAL	1,851	15,610	17,279	30,979	17,702	17,849	29,154	22,678	33,731	5,915	3,212	8,682
MEAN	59.7	520	557	999	610	576	972	732	1,124	191	104	289
MAX	151	5,890	1,250	4,800	3,040	3,950	4,660	6,250	3,610	404	239	2,030
MIN	42	52	294	283	191	185	322	114	455	94	64	52
CFSM	0.21	1.82	1.95	3.49	2.13	2.01	3.40	2.56	3.93	0.67	0.36	1.01
IN.	0.24	2.03	2.25	4.03	2.30	2.32	3.79	2.95	4.39	0.77	0.42	1.13

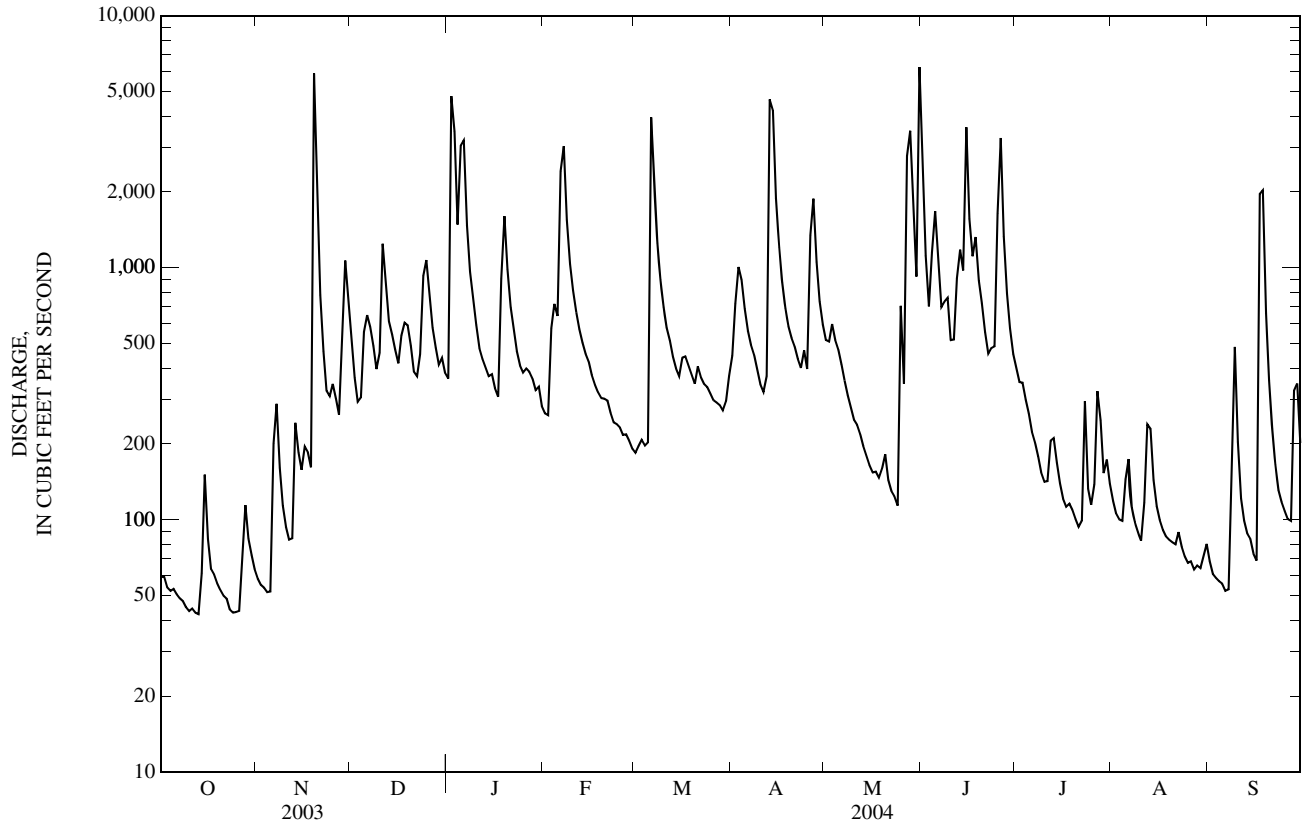
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 2004, BY WATER YEAR (WY)

MEAN	84.9	166	326	515	654	766	601	422	204	160	123	66.8
MAX	838	961	1,326	2,083	1,855	2,331	1,994	1,429	1,124	862	561	608
(WY)	(1990)	(1978)	(1927)	(1937)	(2003)	(1955)	(1977)	(1958)	(2004)	(2001)	(1966)	(1989)
MIN	0.98	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)

03208500 RUSSELL FORK AT HAYSI, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1926 - 2004	
ANNUAL TOTAL	204,595		204,642			
ANNUAL MEAN	561		559		339	
HIGHEST ANNUAL MEAN					568	1994
LOWEST ANNUAL MEAN					100	1941
HIGHEST DAILY MEAN	e15,000	Feb 16	6,250	May 31	30,600	Apr 4, 1977
LOWEST DAILY MEAN	42	Oct 13	42	Oct 13	0.20	Jun 27, 1936
ANNUAL SEVEN-DAY MINIMUM	45	Oct 7	45	Oct 7	0.56	Jun 24, 1936
MAXIMUM PEAK FLOW			12,800	aNov 19	59,000	Apr 4, 1977
MAXIMUM PEAK STAGE			11.75	Nov 19	28.24	Apr 4, 1977
INSTANTANEOUS LOW FLOW			42	bOct 12	c0.20	dJun 27, 1936
ANNUAL RUNOFF (CFSM)	1.96		1.96		1.19	
ANNUAL RUNOFF (INCHES)	26.61		26.62		16.12	
10 PERCENT EXCEEDS	1,000		1,190		742	
50 PERCENT EXCEEDS	300		327		133	
90 PERCENT EXCEEDS	63		64		16	

a Also May 31, 2004.
b Also Oct. 13, 14, 23-26, 2003.
c Observed.
d Also June 28, 1936.
e Estimated.



03208680 NORTH FORK OF POUND LAKE AT POUND, VA

LOCATION.--Lat 37°07'27", long 82°37'52", NAD83, 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 mi^2.

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 NGVD of 1929 (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.

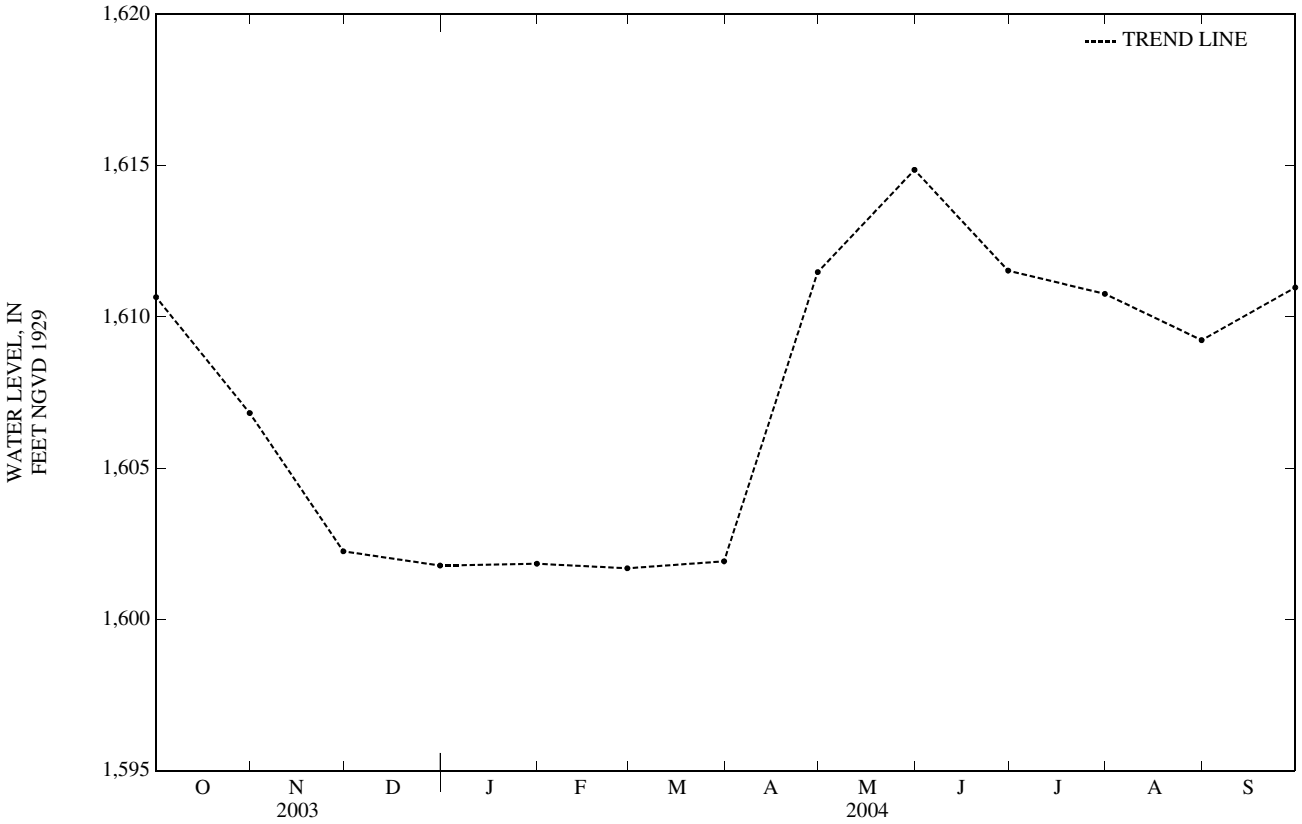
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 6,920 acre-ft, Apr. 8, 1977, elevation, 1,629.41 ft; minimum (after initial filling for regular operation), 1,660 acre-ft, Jan. 23, 1969, elevation, 1,598.62 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 4,057 acre-ft, June 1, elevation, 1,616.22 ft; minimum, 1,953 acre-ft, Feb. 5, elevation, 1,601.55 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
	1,610.65	3,130	
	1,606.82	2,586	-544
November 30	1,602.25	2,030	-556
December 31	1,601.78	1,978	-52
	1,601.84	1,984	+6
February 29	1,601.69	1,968	-16
March 31	1,601.92	1,993	+25
April 30	1,611.48	3,259	+1,266
May 31	1,614.86	3,820	+561
June 30	1,611.53	3,267	-553
July 31	1,610.76	3,147	-120
August 31	1,609.23	2,920	-227
September 30	1,610.97	3,197	+277

03208680 NORTH FORK OF POUND LAKE AT POUND, VA—Continued



03208950 CRANES NEST RIVER NEAR CLINTWOOD, VA

LOCATION.--Lat 37°07'26", long 82°26'20", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--Records good except for period of no gage-height record, Nov. 1, 2, which is fair. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Maximum discharge, 18,000 ft^3/s, from rating curve extended above 3,100 ft^3/s on basis of slope-area measurement of peak flow. 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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1130	1,580	7.94	1530	1,110	6.77
Jan 2	1530	1,840	8.55	0900	1,770	8.39
Jan 5	1630	1,090	6.74	1030	*4,190	*12.66
Feb 6	1600	1,170	6.93	1830	1,220	7.06
Mar 6	0800	2,060	9.00	1130	1,520	7.82

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	e16	95	74	77	49	83	84	458	76	31	20
2	18	e15	76	750	73	53	94	83	230	72	29	19
3	17	15	66	459	143	54	110	83	164	132	26	18
4	17	15	73	241	146	52	108	69	431	125	25	18
5	17	15	108	567	136	51	97	64	471	75	45	18
6	16	50	108	456	596	1,030	87	59	242	60	37	17
7	16	56	97	248	470	348	81	54	163	55	28	17
8	15	34	86	181	252	224	77	50	128	48	26	164
9	15	25	76	152	186	169	70	47	113	42	24	180
10	15	22	90	125	156	136	64	45	99	39	23	68
11	15	20	147	106	133	116	62	55	96	39	28	44
12	15	19	118	99	117	104	70	47	185	46	38	35
13	15	60	99	93	105	91	512	42	189	41	38	32
14	22	41	99	89	97	84	425	40	151	38	28	28
15	44	40	93	90	91	79	232	38	453	35	25	26
16	20	47	85	81	82	101	168	40	277	33	24	25
17	17	43	100	78	77	99	135	53	179	32	22	876
18	17	38	97	176	74	91	113	40	184	34	22	482
19	16	766	95	212	71	86	100	44	136	33	21	178
20	15	309	84	157	69	80	92	52	113	30	20	110
21	15	144	74	128	69	91	86	40	89	28	24	80
22	15	97	74	112	62	82	79	37	76	36	30	63
23	14	73	88	97	59	76	77	34	80	51	23	54
24	14	75	132	90	58	74	87	33	83	34	21	48
25	14	78	136	88	55	70	72	70	260	34	21	44
26	14	68	113	93	53	66	173	64	392	51	20	41
27	25	61	98	92	55	65	186	779	199	114	20	39
28	28	130	87	87	52	63	135	402	135	53	19	54
29	21	168	80	82	50	61	108	231	102	38	19	48
30	19	121	90	83	---	71	94	254	84	35	33	40
31	17	---	79	73	---	83	---	1,830	---	32	23	---
TOTAL	557	2,661	2,943	5,459	3,664	3,899	3,877	4,863	5,962	1,591	813	2,886
MEAN	18.0	88.7	94.9	176	126	126	129	157	199	51.3	26.2	96.2
MAX	44	766	147	750	596	1,030	512	1,830	471	132	45	876
MIN	14	15	66	73	50	49	62	33	76	28	19	17
CFSM	0.27	1.33	1.43	2.65	1.90	1.89	1.94	2.36	2.99	0.77	0.39	1.45
IN.	0.31	1.49	1.65	3.05	2.05	2.18	2.17	2.72	3.34	0.89	0.45	1.61

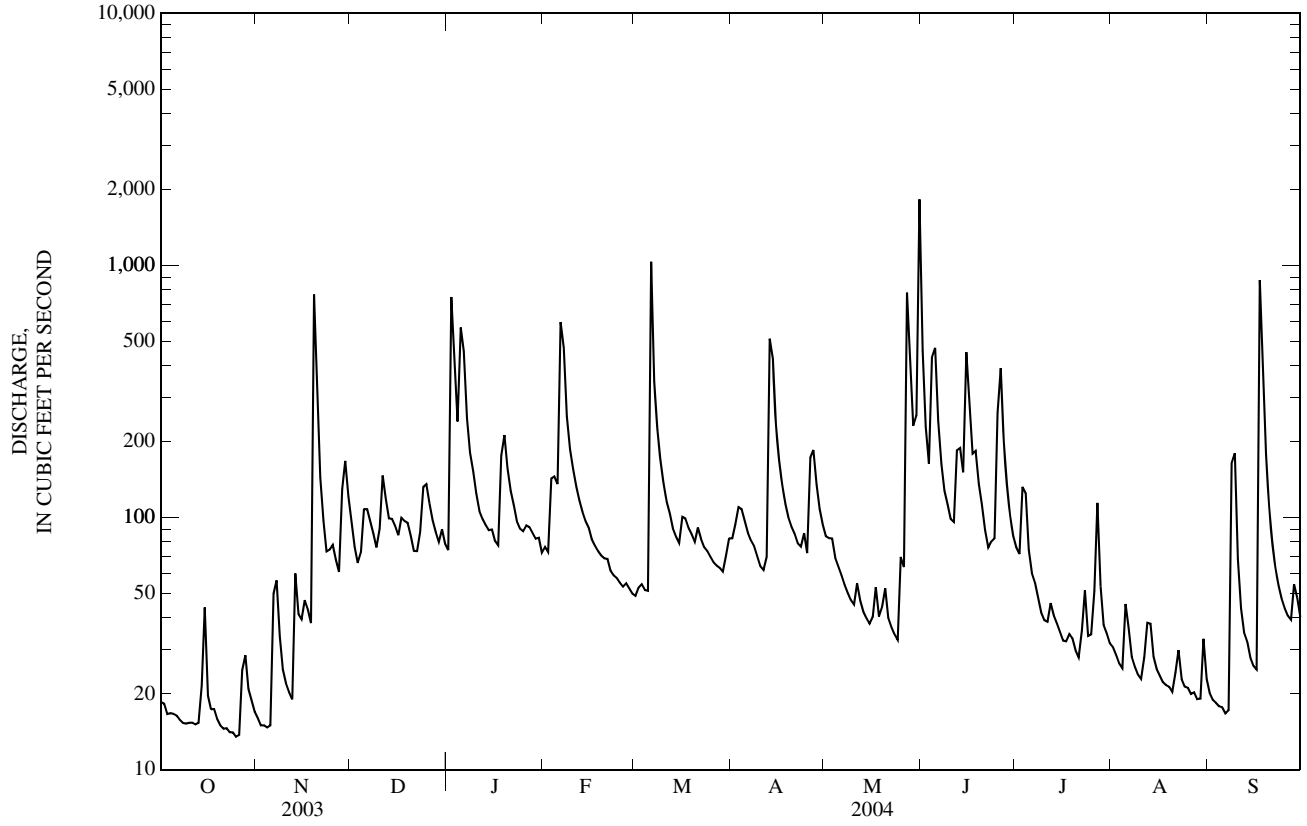
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 2004, BY WATER YEAR (WY)

MEAN	27.9	45.5	79.1	116	143	163	138	97.2	56.0	34.3	32.6	25.1
MAX	191	164	228	338	367	434	498	262	236	80.7	142	116
(WY)	(1990)	(1978)	(1992)	(1972)	(1994)	(1975)	(1977)	(1984)	(1989)	(2001)	(1966)	(1982)
MIN	1.67	6.33	4.41	5.98	36.6	37.8	28.1	21.2	7.40	5.50	6.74	3.95
(WY)	(1964)	(1966)	(1966)	(1966)	(1968)	(1988)	(1986)	(1976)	(1966)	(1970)	(1999)	(1965)

03208950 CRANES NEST RIVER NEAR CLINTWOOD, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1964 - 2004	
ANNUAL TOTAL	41,927		39,175			
ANNUAL MEAN	115		107		79.5	
HIGHEST ANNUAL MEAN					126	1994
LOWEST ANNUAL MEAN					34.7	1988
HIGHEST DAILY MEAN	2,850	Feb 16	1,830	May 31	8,000	Apr 4, 1977
LOWEST DAILY MEAN	14	aOct 23	14	aOct 23	0.70	Sep 17, 1964
ANNUAL SEVEN-DAY MINIMUM	14	Oct 20	14	Oct 20	0.93	Sep 12, 1964
MAXIMUM PEAK FLOW			4,190	May 31	18,000	Apr 4, 1977
MAXIMUM PEAK STAGE			12.66	May 31	b26.09	Apr 4, 1977
INSTANTANEOUS LOW FLOW			13	cOct 25	0.48	Sep 28, 1964
ANNUAL RUNOFF (CFSM)	1.73		1.61		1.20	
ANNUAL RUNOFF (INCHES)	23.45		21.91		16.24	
10 PERCENT EXCEEDS	188		187		169	
50 PERCENT EXCEEDS	67		73		39	
90 PERCENT EXCEEDS	19		19		8.3	

a Also Oct. 24-26, 2003.
b From floodmark.
c Also Oct. 26, 2003.
e Estimated.



03208990 JOHN W. FLANNAGAN RESERVOIR NEAR HAYSI, VA

LOCATION.--Lat 37°14'00", long 82°20'56", NAD83, 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 mi^2.

PERIOD OF RECORD.--September 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929 (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.

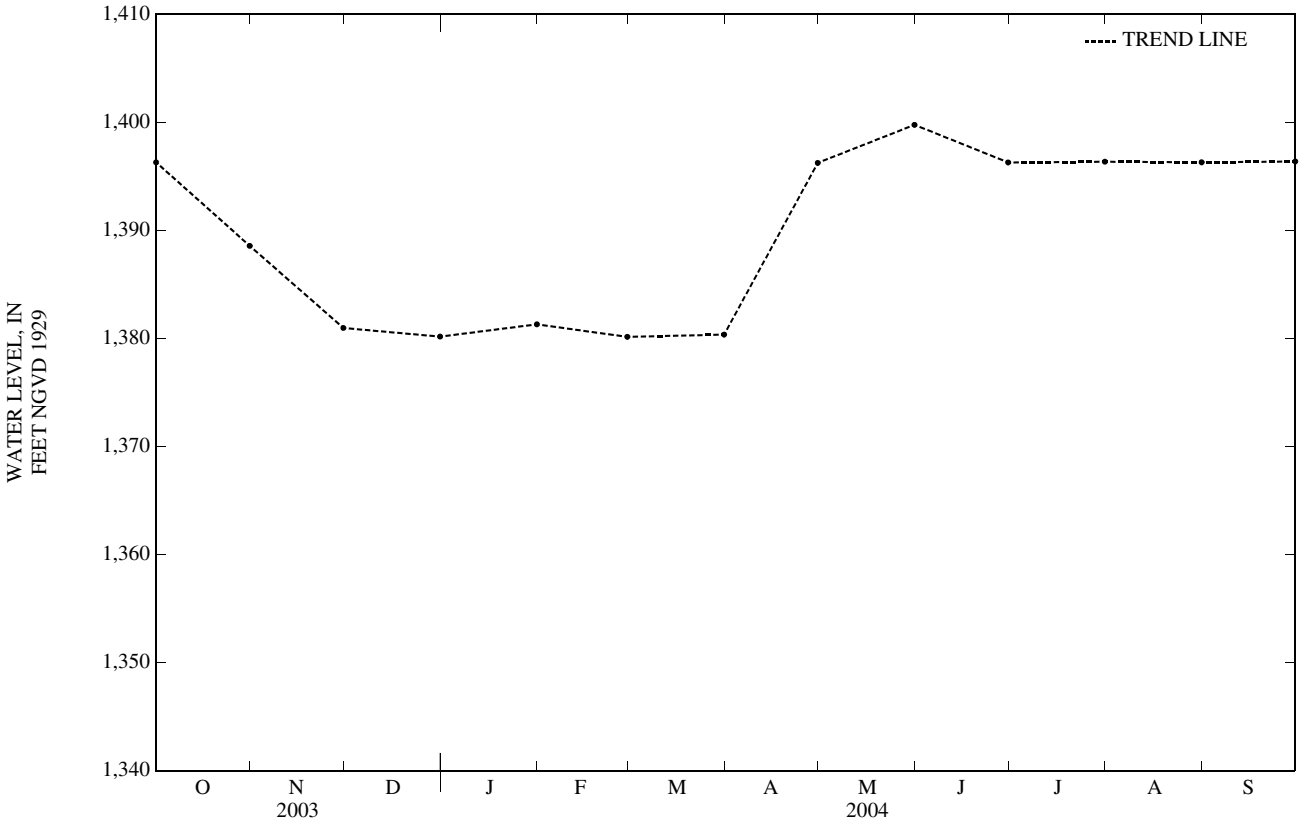
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 116,500 acre-ft, Apr. 7, 1977, elevation, 1,430.80 ft; minimum (after initial filling for regular operation), 11,800 acre-ft, Apr. 1, 1965, elevation, 1,313.42 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 74,860 acre-ft, June 1, elevation, 1,402.52 ft; minimum, 50,280 acre-ft, Dec. 19, elevation, 1,379.69 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
	1,396.30	67,430	
	1,388.57	58,983	-8,447
November 30	1,380.97	51,476	-7,507
December 31	1,380.17	50,725	-751
	1,381.31	51,792	+1067
February 29	1,380.15	50,706	-1086
March 31	1,380.36	50,897	+191
April 30	1,396.25	67,377	+16,480
May 31	1,399.77	71,540	+4163
June 30	1,396.29	67,426	-4114
July 31	1,396.36	67,498	+72
August 31	1,396.31	67,451	-47
September 30	1,396.38	67,524	+73

03208990 JOHN W. FLANNAGAN RESERVOIR NEAR HAYSI, VA—Continued



03209000 POUND RIVER BELOW FLANNAGAN DAM, NEAR HAYSI, VA

LOCATION.--Lat 37°14'13", long 82°20'36", NAD83, 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 mi^2.

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 NGVD of 1929 (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. Statistics of monthly mean data and summary statistics for water years 1926-1964 (unregulated flow) are available in previous data books, water years 1991-1998. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Maximum discharge, about 30,000 ft^3/s, from rating curve extended above 1,750 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75	163	407	271	296	152	101	327	2,580	297	75	60
2	75	163	291	339	363	153	50	327	2,920	233	75	63
3	75	234	221	1,380	448	153	50	162	1,550	373	118	69
4	267	271	222	2,020	858	153	50	160	882	459	145	70
5	262	271	341	1,790	631	153	50	215	1,460	332	145	70
6	60	271	417	1,700	992	947	50	184	995	170	145	70
7	60	271	416	1,980	1,640	2,010	50	133	410	137	145	70
8	200	269	301	1,960	1,950	2,000	50	133	351	163	145	330
9	378	268	255	1,480	1,310	1,720	50	133	354	163	91	595
10	164	268	276	702	581	1,000	50	133	355	163	61	327
11	256	267	393	521	482	523	50	176	355	163	61	208
12	291	177	570	379	408	319	51	254	357	163	61	138
13	173	259	336	360	365	319	52	137	933	163	95	88
14	204	347	244	315	291	319	53	77	775	137	115	60
15	218	347	295	268	293	171	53	88	1,220	77	115	61
16	253	347	415	268	293	276	53	89	1,150	61	115	200
17	130	269	248	268	229	421	53	245	608	61	96	963
18	252	322	558	499	199	336	53	210	477	80	69	1,700
19	258	363	353	1,110	260	249	53	355	435	170	66	1,960
20	128	1,760	171	857	204	258	202	256	376	135	60	902
21	197	2,630	206	492	166	258	360	104	244	96	60	188
22	190	678	368	400	166	395	359	104	174	67	58	95
23	191	400	247	352	269	268	274	104	253	146	58	153
24	192	392	577	279	176	268	163	127	258	206	58	153
25	383	388	675	202	151	268	228	303	531	74	58	153
26	309	413	502	21	150	202	323	243	1,730	74	62	155
27	125	428	374	254	151	153	665	1,230	1,460	302	91	157
28	169	424	254	285	151	153	692	2,020	531	217	102	161
29	317	725	289	324	152	182	455	2,250	355	122	82	175
30	220	678	333	292	---	198	327	1,230	297	81	184	123
31	161	---	327	235	---	202	---	757	---	75	133	---
TOTAL	6,233	14,063	10,882	21,603	13,625	14,179	5,070	12,266	24,376	5,160	2,944	9,517
MEAN	201	469	351	697	470	457	169	396	813	166	95.0	317
MAX	383	2,630	675	2,020	1,950	2,010	692	2,250	2,920	459	184	1,960
MIN	60	163	171	21	150	152	50	77	174	61	58	60
(†)	-4,533	-4,065	-405	+541	-556	+109	+8,947	+2,382	-2,353	-24	-138	+177
MEAN‡	54.8	333	338	714	451	461	467	473	734	166	90.5	323
CFSM‡	.25	1.51	1.53	3.23	2.04	2.09	2.11	2.14	3.32	.75	.41	1.46
IN.‡	.29	1.68	1.76	3.73	2.20	2.41	2.36	2.47	3.71	.87	.47	1.63

CAL YR 2003 MEAN‡ 431 CFSM‡ 1.95 IN.‡ 26.48
WTR YR 2004 MEAN‡ 383 CFSM‡ 1.73 IN.‡ 23.60

† 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 change in contents.

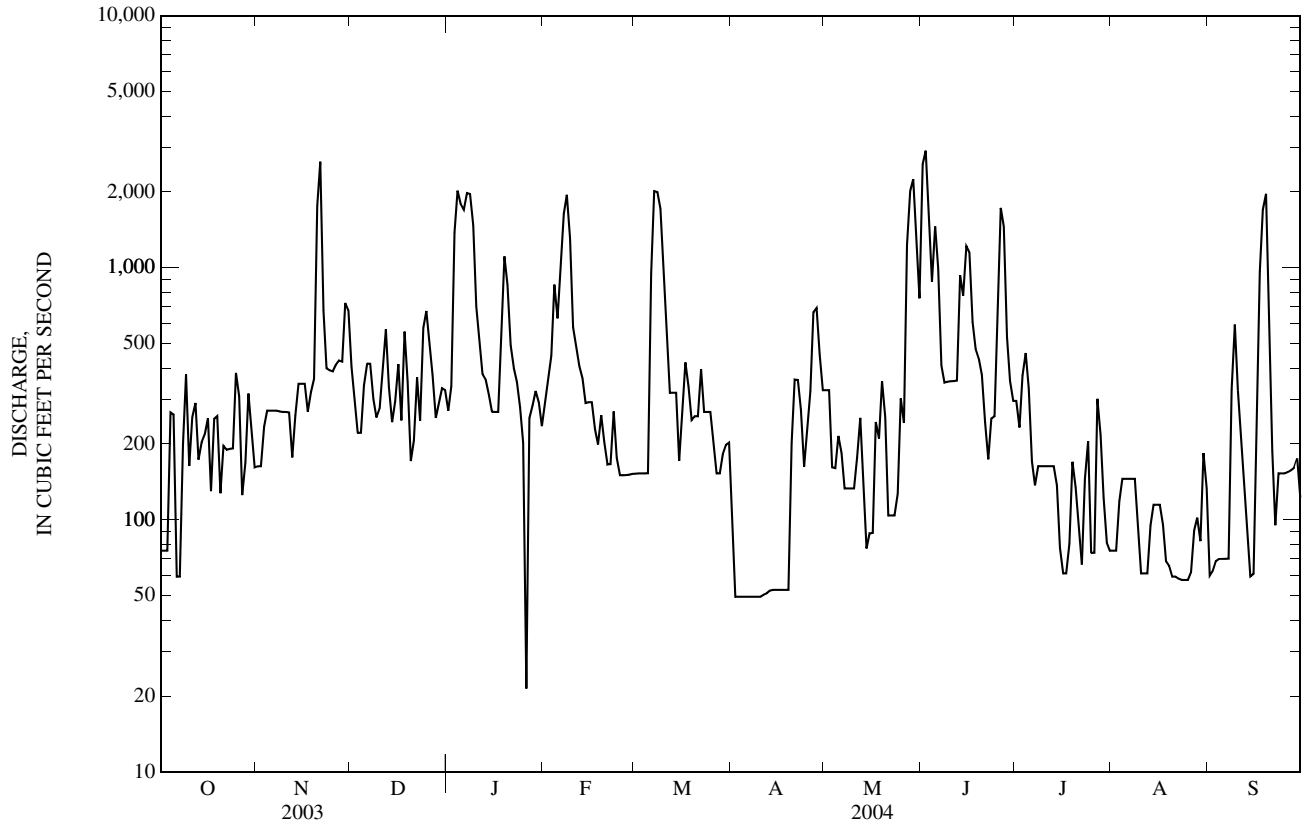
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 2004, BY WATER YEAR (WY)

MEAN	230	308	324	427	494	513	299	357	206	122	109	100
MAX	927	679	1,003	1,171	1,343	1,181	1,004	1,074	813	348	268	405
(WY)	(1990)	(1978)	(1992)	(1972)	(1994)	(1975)	(1977)	(1975)	(2004)	(2001)	(2001)	(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)

03209000 POUND RIVER BELOW FLANNAGAN DAM, NEAR HAYSI, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1965 - 2004	
ANNUAL TOTAL	146,146		139,918			
ANNUAL MEAN	400		382		290	
HIGHEST ANNUAL MEAN					481	1975
LOWEST ANNUAL MEAN					120	1966
HIGHEST DAILY MEAN	3,960	Apr 12	2,920	Jun 2	4,410	Apr 9, 1977
LOWEST DAILY MEAN	15	Apr 8	21	Jan 26	2.3	aJun 26, 1965
ANNUAL SEVEN-DAY MINIMUM	17	Feb 4	50	Apr 2	2.5	Jun 25, 1965
MAXIMUM PEAK FLOW			3,850	Nov 20	b4,540	Apr 8, 1977
MAXIMUM PEAK STAGE			7.63	Nov 20	b8.20	Apr 8, 1977
INSTANTANEOUS LOW FLOW			c16	Jan 30	d,f0.00	Sep 22, 2000
ANNUAL RUNOFF (CFSM)	1.81		1.73		1.31	
ANNUAL RUNOFF (INCHES)	24.60		23.55		17.83	
10 PERCENT EXCEEDS	868		911		647	
50 PERCENT EXCEEDS	238		252		145	
90 PERCENT EXCEEDS	56		63		46	

a Also June 27-29, 1965.
b Prior to regulation, 1926-64, maximum peak flow, 30,000 ft^3/s, Mar. 23, 1929, gage height, 16.50 ft, from floodmarks, site and datum then in use.
c Result of regulation.
d Prior to regulation, 1926-64, instantaneous low flow, less than .10 ft^3/s, on several days in September 1932.
f Practically no flow due to regulation.



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 mi^2.

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 with telemetry. Datum of gage is 631.98 ft above NGVD of 1929. 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.--Records good. Flow regulated since March 1965 by John W. Flannagan Lake (station 03208990), since August 1966 by North Fork Pound River Lake (station 03208680) and since October 1968 by Fishtrap Lake (station 03207995).

COOPERATION.--U.S. Army Corps of Engineers, Huntington District.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	500	511	2,220	1,550	1,390	924	1,210	1,910	8,720	1,380	685	395
2	483	503	2,300	8,780	1,580	984	1,420	1,870	8,370	1,580	464	366
3	416	517	1,720	11,700	1,950	958	2,180	1,960	5,580	1,620	423	435
4	444	689	1,450	9,210	2,970	851	2,000	1,590	3,880	1,660	543	428
5	632	740	1,640	9,930	3,150	915	1,600	1,560	6,420	1,530	910	334
6	616	1,110	2,110	11,100	7,830	8,130	1,320	1,410	5,590	1,200	1,020	288
7	386	1,550	2,090	8,400	9,700	6,480	1,170	1,240	3,440	982	591	347
8	365	1,130	2,190	6,290	7,610	7,330	1,070	976	2,130	956	521	1,010
9	586	1,000	2,170	4,700	5,990	6,600	1,070	1,020	2,250	846	466	2,670
10	714	909	1,710	3,140	3,840	4,050	1,200	987	1,890	668	377	1,780
11	451	701	2,280	2,450	2,980	2,610	1,150	1,020	1,700	652	347	1,100
12	602	742	2,010	2,100	2,440	1,950	1,220	1,100	e3,000	717	428	756
13	636	1,030	1,540	2,020	2,190	1,720	5,350	1,250	e3,500	720	639	609
14	560	1,340	1,280	1,860	1,880	1,630	12,900	1,040	e4,100	815	637	422
15	907	1,030	1,260	1,740	1,800	1,620	8,220	933	6,070	680	568	386
16	921	1,080	2,670	1,680	1,710	1,510	4,960	530	5,490	589	520	371
17	709	1,340	4,480	1,500	1,530	1,950	3,520	713	3,290	553	404	5,170
18	474	1,080	2,710	2,320	1,340	1,880	2,890	1,030	2,760	538	368	8,060
19	617	8,100	2,770	6,080	1,350	1,590	2,380	916	2,510	477	336	4,920
20	612	7,650	2,180	4,660	1,300	1,450	1,830	1,330	2,090	533	326	3,380
21	493	10,800	1,690	3,170	1,160	1,570	2,130	835	1,670	445	360	1,370
22	539	4,700	1,790	e2,700	1,110	1,710	2,010	594	1,280	441	373	825
23	532	2,050	1,890	e2,160	1,210	1,650	1,610	575	1,410	523	339	742
24	505	1,800	2,700	1,930	1,190	1,530	1,560	623	1,800	711	320	744
25	560	1,830	3,380	1,870	1,020	1,430	1,400	1,140	e3,100	767	316	818
26	656	1,650	2,780	1,660	940	1,330	2,580	1,710	e4,800	481	305	786
27	712	1,560	2,510	1,610	915	1,080	5,400	5,560	e3,000	725	300	1,000
28	704	1,650	2,120	1,880	871	1,050	4,140	11,600	2,290	1,140	324	1,410
29	772	2,530	2,140	1,780	842	1,140	2,790	9,080	1,940	768	356	1,950
30	847	2,680	2,110	1,710	---	1,280	2,140	7,070	1,630	608	712	1,860
31	556	---	1,860	1,450	---	1,350	---	10,700	---	767	543	---
TOTAL	18,507	64,002	67,750	123,130	73,788	70,252	84,420	73,872	105,700	26,072	14,821	44,732
MEAN	597	2,133	2,185	3,972	2,544	2,266	2,814	2,383	3,523	841	478	1,491
MAX	921	10,800	4,480	11,700	9,700	8,130	12,900	11,600	8,720	1,660	1,020	8,060
MIN	365	503	1,260	1,450	842	851	1,070	530	1,280	441	300	288

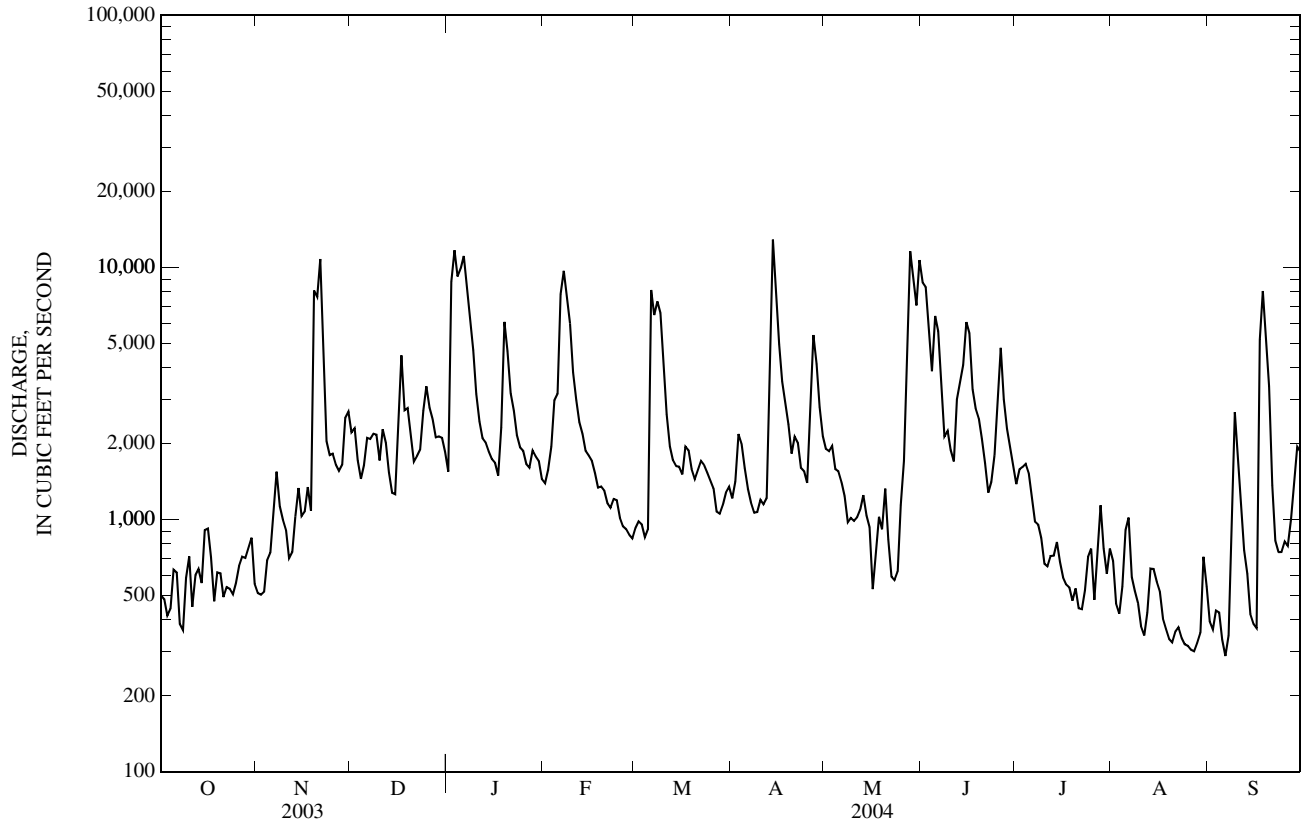
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 2004, BY WATER YEAR (WY)

MEAN	769	1,117	1,519	2,278	2,824	2,905	2,343	2,006	1,140	648	509	484
MAX	3,939	3,991	5,385	6,861	6,804	8,081	7,646	6,067	3,523	2,028	1,150	1,606
(WY)	(1990)	(1978)	(1973)	(1974)	(2003)	(1975)	(1977)	(1984)	(2004)	(2001)	(2001)	(1989)
MIN	158	312	300	278	814	529	388	349	210	200	203	168
(WY)	(1970)	(2001)	(1981)	(1981)	(1992)	(1988)	(1986)	(1976)	(1988)	(1988)	(1969)	(1969)

03209500 LEVISA FORK AT PIKEVILLE, KY—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1969 - 2004	
ANNUAL TOTAL	814,805		767,046			
ANNUAL MEAN	2,232		2,096		1,539	
HIGHEST ANNUAL MEAN					2,459	1979
LOWEST ANNUAL MEAN					522	1988
HIGHEST DAILY MEAN	30,000	Feb 16	12,900	Apr 14	69,300	Apr 5, 1977
LOWEST DAILY MEAN	351	Aug 28	288	Sep 6	66	Dec 3, 1970
ANNUAL SEVEN-DAY MINIMUM	436	Sep 15	323	Aug 23	103	Oct 10, 1968
MAXIMUM PEAK FLOW			17,600	Jan 2	85,500	Jan 30, 1957
MAXIMUM PEAK STAGE			26.88	Jan 2	52.72	Jan 30, 1957
INSTANTANEOUS LOW FLOW					66	Dec 3, 1970
10 PERCENT EXCEEDS	4,540		5,220		3,500	
50 PERCENT EXCEEDS	1,280		1,410		767	
90 PERCENT EXCEEDS	515		472		235	

e Estimated



03471500 SOUTH FORK HOLSTON RIVER AT RIVERSIDE, NEAR CHILHOWIE, VA

LOCATION.--Lat 36°45'37", long 81°37'52", NAD83, 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 mi^2.

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 NGVD of 1929. 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 ft^3/s, from rating curve extended above 3,700 ft^3/s on basis of slope-area measurement of peak flow. Minimum discharge recorded, 2 ft^3/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.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 650 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1430	*4,950	*8.08	0130	1,070	4.68
Feb 7	0515	769	4.15	0215	1,480	5.29
Apr 13	2015	1,100	4.74			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	40	97	153	70	116	143	138	170	133	66	41
2	47	39	92	153	70	154	171	131	134	123	79	39
3	46	39	88	164	92	247	176	129	118	140	68	39
4	45	39	97	185	102	236	178	115	139	207	60	38
5	45	40	152	279	96	208	166	107	236	143	64	38
6	44	68	162	411	274	260	149	101	200	119	72	37
7	43	118	150	315	656	302	136	94	154	107	60	40
8	42	98	136	245	403	270	128	88	133	98	56	151
9	42	82	126	209	272	229	119	85	144	90	53	124
10	43	72	155	178	220	198	109	81	121	85	51	90
11	42	65	377	150	188	172	108	78	110	86	50	75
12	42	61	265	139	165	160	154	76	137	98	52	66
13	42	61	205	129	149	146	609	75	128	101	58	59
14	43	56	186	119	141	134	768	79	126	89	52	56
15	51	55	159	114	139	129	478	81	120	82	49	54
16	46	55	143	105	132	155	344	78	111	79	47	52
17	44	54	188	98	121	166	265	77	99	74	46	629
18	43	52	211	108	116	170	217	84	91	73	45	963
19	42	2,400	188	111	114	157	184	80	88	106	44	360
20	42	935	161	100	120	142	164	76	85	89	42	208
21	41	418	135	97	203	134	148	71	78	76	48	146
22	41	272	126	98	227	125	132	67	75	69	50	112
23	40	205	123	92	190	113	122	65	101	67	44	94
24	40	173	325	93	171	106	113	62	113	62	48	82
25	40	151	374	92	164	99	106	61	217	58	44	76
26	41	128	267	87	156	93	193	68	736	58	42	70
27	47	115	213	85	144	90	269	104	361	77	42	66
28	46	116	181	81	129	86	216	92	242	75	41	335
29	44	113	160	77	120	83	176	86	184	65	41	378
30	42	103	168	76	---	86	153	83	149	61	43	232
31	41	---	162	71	---	106	---	150	---	59	44	---
TOTAL	1,345	6,223	5,572	4,414	5,144	4,872	6,394	2,762	4,900	2,849	1,601	4,750
MEAN	43.4	207	180	142	177	157	213	89.1	163	91.9	51.6	158
MAX	51	2,400	377	411	656	302	768	150	736	207	79	963
MIN	40	39	88	71	70	83	106	61	75	58	41	37
CFSM	0.57	2.73	2.36	1.87	2.33	2.07	2.80	1.17	2.15	1.21	0.68	2.08
IN.	0.66	3.04	2.72	2.16	2.51	2.38	3.13	1.35	2.40	1.39	0.78	2.32

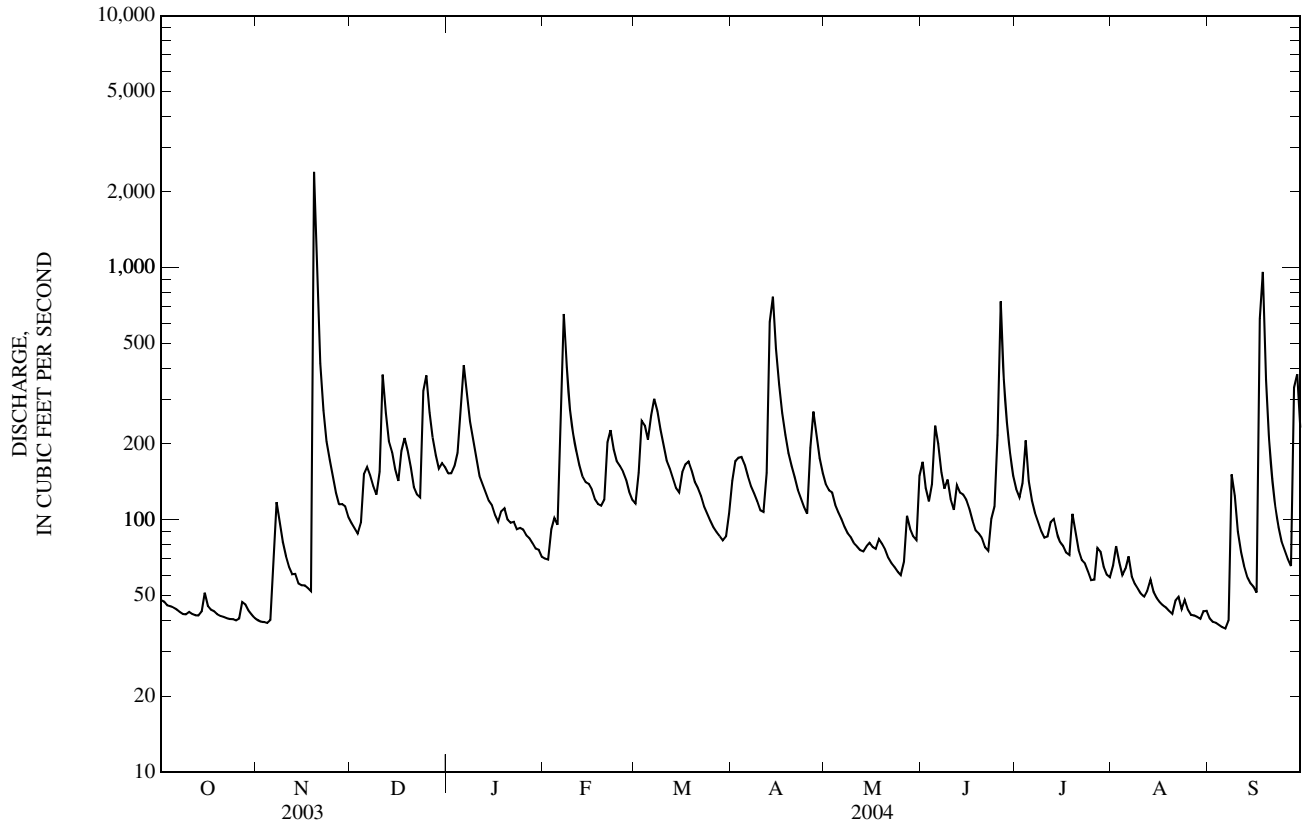
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 1932, 1942 - 2004, BY WATER YEAR (WY)

MEAN	48.2	69.8	109	149	200	206	170	136	92.5	62.5	55.9	45.9
MAX	162	409	272	353	508	512	570	278	322	213	209	254
(WY)	(1990)	(1978)	(1973)	(1996)	(1957)	(1955)	(1987)	(1945)	(1923)	(2001)	(1942)	(1989)
MIN	18.7	17.6	25.3	28.8	54.3	51.3	52.6	49.1	31.1	22.5	17.5	20.6
(WY)	(1932)	(1932)	(2001)	(1956)	(2002)	(1988)	(1986)	(1926)	(1988)	(1988)	(1988)	(1988)

03471500 SOUTH FORK HOLSTON RIVER AT RIVERSIDE, NEAR CHILHOWIE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1921 - 1932, 1942 - 2004	
ANNUAL TOTAL	59,432		50,826			
ANNUAL MEAN	163		139		112	
HIGHEST ANNUAL MEAN					162	1974
LOWEST ANNUAL MEAN					53.8	1988
HIGHEST DAILY MEAN	2,400	Nov 19	2,400	Nov 19	4,040	Nov 6, 1977
LOWEST DAILY MEAN	39	aNov 2	37	Sep 6	8.0	Jul 19, 1926
ANNUAL SEVEN-DAY MINIMUM	40	Oct 30	39	Sep 1	15	Jul 17, 1926
MAXIMUM PEAK FLOW			4,950	Nov 19	9,600	Nov 6, 1977
MAXIMUM PEAK STAGE			8.08	Nov 19	10.20	Nov 6, 1977
INSTANTANEOUS LOW FLOW			36	bNov 3	2.0	cAug 26, 1943
ANNUAL RUNOFF (CFSM)	2.14		1.82		1.47	
ANNUAL RUNOFF (INCHES)	29.05		24.85		19.92	
10 PERCENT EXCEEDS	273		236		225	
50 PERCENT EXCEEDS	117		106		70	
90 PERCENT EXCEEDS	47		43		27	

a Also Nov. 3, 4, 2003.
b Also Nov. 4, 5, 2002 and Sept. 4-7, 2004.
c Also Oct. 15, 1943, Aug. 9, 11, 1944, and Oct. 19, 1945.



03473000 SOUTH FORK HOLSTON RIVER NEAR DAMASCUS, VA

LOCATION.--Lat 36°39'06", long 81°50'38", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good. Prior to 1980, some diurnal fluctuation at low flow caused by powerplant upstream from station. Maximum discharge, 22,000 ft^3/s, from rating curve extended above 10,000 ft^3/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.

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

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1400	*14,700	*14.55	0545	3,040	6.90
Apr 13	2130	3,870	7.66	0115	5,440	8.91

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	229	178	499	666	339	466	681	620	1,630	512	251	159
2	221	177	466	664	342	597	748	607	1,000	477	262	156
3	212	173	439	706	450	922	799	655	773	551	269	172
4	208	171	541	759	476	891	840	578	755	622	232	153
5	207	182	1,190	1,440	439	794	782	526	952	535	273	148
6	197	519	1,100	2,180	1,150	1,230	690	486	811	442	357	139
7	182	707	893	1,460	2,640	1,440	644	443	666	396	265	144
8	184	528	748	1,070	1,710	1,190	621	423	638	366	237	637
9	181	421	655	889	1,150	959	581	611	765	335	216	890
10	184	363	677	744	910	823	519	511	749	316	205	544
11	181	330	1,170	628	769	705	501	487	657	317	221	380
12	175	310	1,020	581	681	649	599	440	735	433	244	304
13	177	299	820	539	615	589	2,270	435	833	424	312	263
14	188	269	829	499	567	544	3,110	471	648	387	247	235
15	274	264	762	486	553	521	2,030	424	604	337	218	220
16	207	276	691	440	544	681	1,500	471	572	299	204	203
17	192	292	867	414	498	705	1,160	651	500	280	193	1,750
18	189	276	948	505	476	715	930	666	447	287	187	3,650
19	179	8,340	869	587	477	671	782	615	431	289	176	1,380
20	176	4,280	725	526	516	602	690	554	424	279	168	782
21	172	1,890	611	489	744	582	625	466	373	252	181	553
22	171	1,180	565	479	847	534	558	413	351	241	211	431
23	167	871	559	439	750	491	514	385	374	254	180	364
24	166	735	1,520	432	687	466	481	357	483	235	249	318
25	164	639	1,690	424	643	433	458	337	744	216	301	289
26	169	547	1,160	418	602	412	1,140	363	2,470	214	210	267
27	233	497	902	416	569	395	1,490	782	1,360	505	190	252
28	257	544	760	392	518	386	1,050	687	926	401	179	647
29	213	588	675	368	485	372	811	661	715	303	173	822
30	197	522	762	381	---	382	686	605	586	268	173	577
31	185	---	718	344	---	490	---	1,710	---	252	168	---
TOTAL	6,037	26,368	25,831	20,365	21,147	20,637	28,290	17,440	22,972	11,025	6,952	16,829
MEAN	195	879	833	657	729	666	943	563	766	356	224	561
MAX	274	8,340	1,690	2,180	2,640	1,440	3,110	1,710	2,470	622	357	3,650
MIN	164	171	439	344	339	372	458	337	351	214	168	139
CFSM	0.65	2.92	2.77	2.18	2.42	2.21	3.13	1.87	2.54	1.18	0.75	1.86
IN.	0.75	3.26	3.19	2.52	2.61	2.55	3.50	2.16	2.84	1.36	0.86	2.08

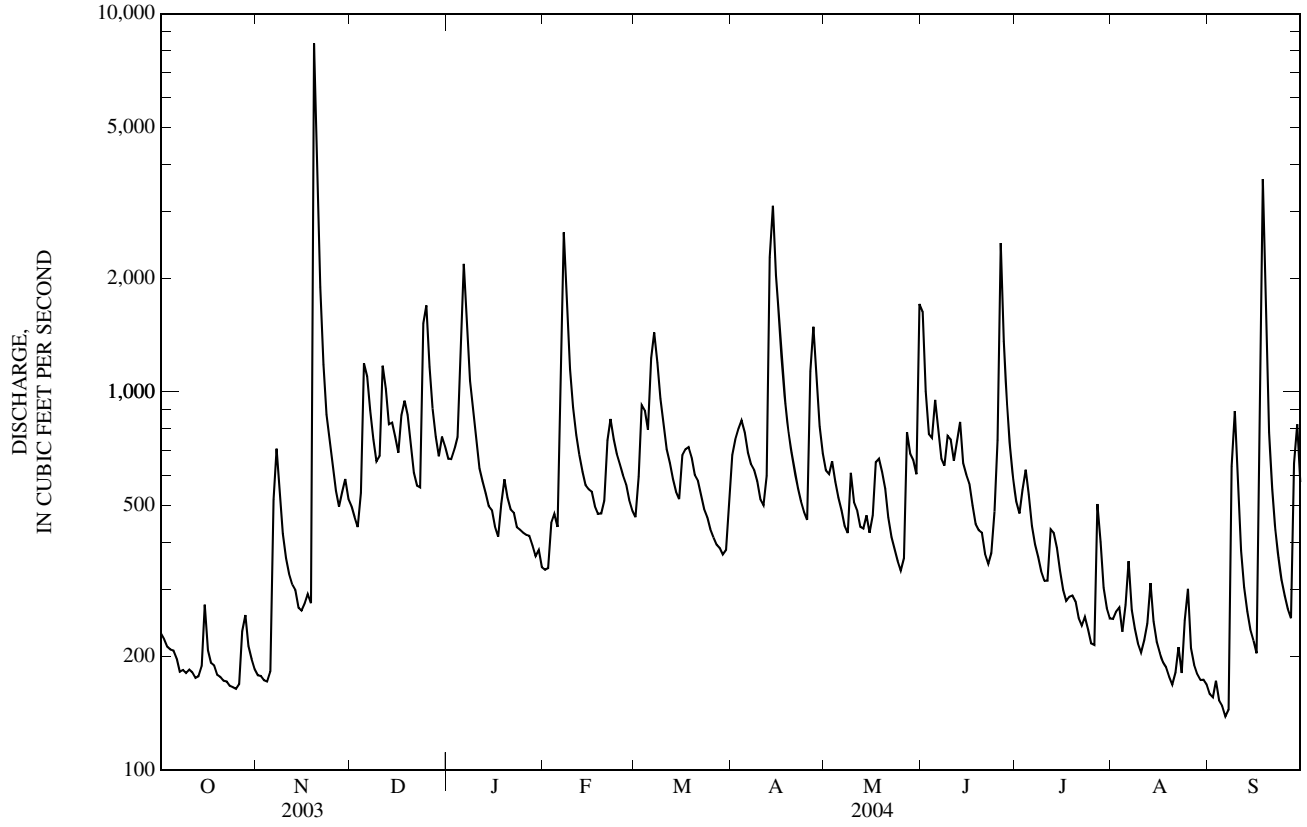
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 2004, BY WATER YEAR (WY)

MEAN	208	291	478	654	837	870	726	571	371	297	255	183
MAX	938	1,258	1,203	1,490	2,022	2,075	1,995	1,367	968	1,079	1,193	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)

03473000 SOUTH FORK HOLSTON RIVER NEAR DAMASCUS, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1932 - 2004	
ANNUAL TOTAL	262,420		223,893			
ANNUAL MEAN	719		612		477	
HIGHEST ANNUAL MEAN					712	1974
LOWEST ANNUAL MEAN					245	1988
HIGHEST DAILY MEAN	8,340	Nov 19	8,340	Nov 19	12,800	Apr 5, 1977
LOWEST DAILY MEAN	164	Oct 25	139	Sep 6	40	Dec 27, 1983
ANNUAL SEVEN-DAY MINIMUM	169	Oct 20	153	Sep 1	63	Sep 13, 1954
MAXIMUM PEAK FLOW			14,700	Nov 19	22,000	Apr 5, 1977
MAXIMUM PEAK STAGE			14.55	Nov 19	17.11	Apr 5, 1977
INSTANTANEOUS LOW FLOW			135	aSep 6	30	bOct 14, 1941
ANNUAL RUNOFF (CFSM)	2.39		2.03		1.58	
ANNUAL RUNOFF (INCHES)	32.43		27.67		21.52	
10 PERCENT EXCEEDS	1,200		1,030		988	
50 PERCENT EXCEEDS	541		499		305	
90 PERCENT EXCEEDS	220		186		110	

a Also Sept. 7, 2004.
b Also Dec. 24, 1943.



03474000 MIDDLE FORK HOLSTON RIVER AT SEVEN MILE FORD, VA

LOCATION.--Lat 36°48'26", long 81°37'19", NAD83, 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 mi^2.

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 NGVD of 1929.

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. 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 Oct. 1, 1989 to Sept. 30, 1996.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1430	*10,400	*8.31	0200	3,080	4.12
May 31	1345	2,150	3.64			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	70	55	161	220	112	133	363	226	586	204	111	51
2	67	54	194	251	111	185	378	213	298	192	251	50
3	65	52	186	300	136	255	366	207	259	189	134	49
4	64	52	196	287	149	246	319	179	358	177	97	48
5	64	53	272	668	143	253	268	162	595	158	107	47
6	62	103	300	745	452	496	227	153	369	139	112	47
7	59	159	259	464	775	507	201	140	259	129	86	49
8	56	118	235	359	438	413	185	129	200	121	78	142
9	56	95	226	314	311	330	168	120	176	114	71	170
10	58	81	255	276	262	287	152	111	170	109	67	95
11	58	75	558	243	234	247	151	108	157	108	64	76
12	55	70	401	230	216	226	237	102	274	120	82	67
13	53	95	308	216	201	202	924	97	513	153	97	61
14	57	94	286	203	199	185	1,040	96	299	122	75	62
15	80	93	258	198	195	175	663	90	240	102	66	62
16	62	97	249	183	195	273	454	108	201	92	62	59
17	56	100	402	174	186	318	348	97	170	89	60	253
18	55	98	418	206	191	282	288	93	157	89	58	550
19	53	4,800	337	217	196	243	249	97	151	137	56	236
20	52	1,230	283	197	210	209	226	94	144	94	55	145
21	51	543	243	164	259	200	209	85	127	86	61	111
22	51	355	227	160	269	180	188	81	125	84	75	94
23	50	273	226	148	240	162	178	77	367	85	60	82
24	50	236	578	147	223	152	173	74	536	84	70	75
25	50	211	555	144	208	143	157	106	662	75	62	71
26	51	183	388	136	194	135	905	126	1,720	72	57	69
27	79	167	315	132	186	130	782	305	637	113	56	66
28	82	179	276	125	168	128	422	247	397	98	56	312
29	71	185	249	120	140	122	307	180	297	78	56	295
30	63	163	258	121	---	140	256	140	239	72	54	174
31	57	---	235	115	---	247	---	1,090	---	73	53	---
TOTAL	1,857	10,069	9,334	7,463	6,799	7,204	10,784	5,133	10,683	3,558	2,449	3,668
MEAN	59.9	336	301	241	234	232	359	166	356	115	79.0	122
MAX	82	4,800	578	745	775	507	1,040	1,090	1,720	204	251	550
MIN	50	52	161	115	111	122	151	74	125	72	53	47
CFSM	0.45	2.54	2.28	1.82	1.78	1.76	2.72	1.25	2.70	0.87	0.60	0.93
IN.	0.52	2.84	2.63	2.10	1.92	2.03	3.04	1.45	3.01	1.00	0.69	1.03

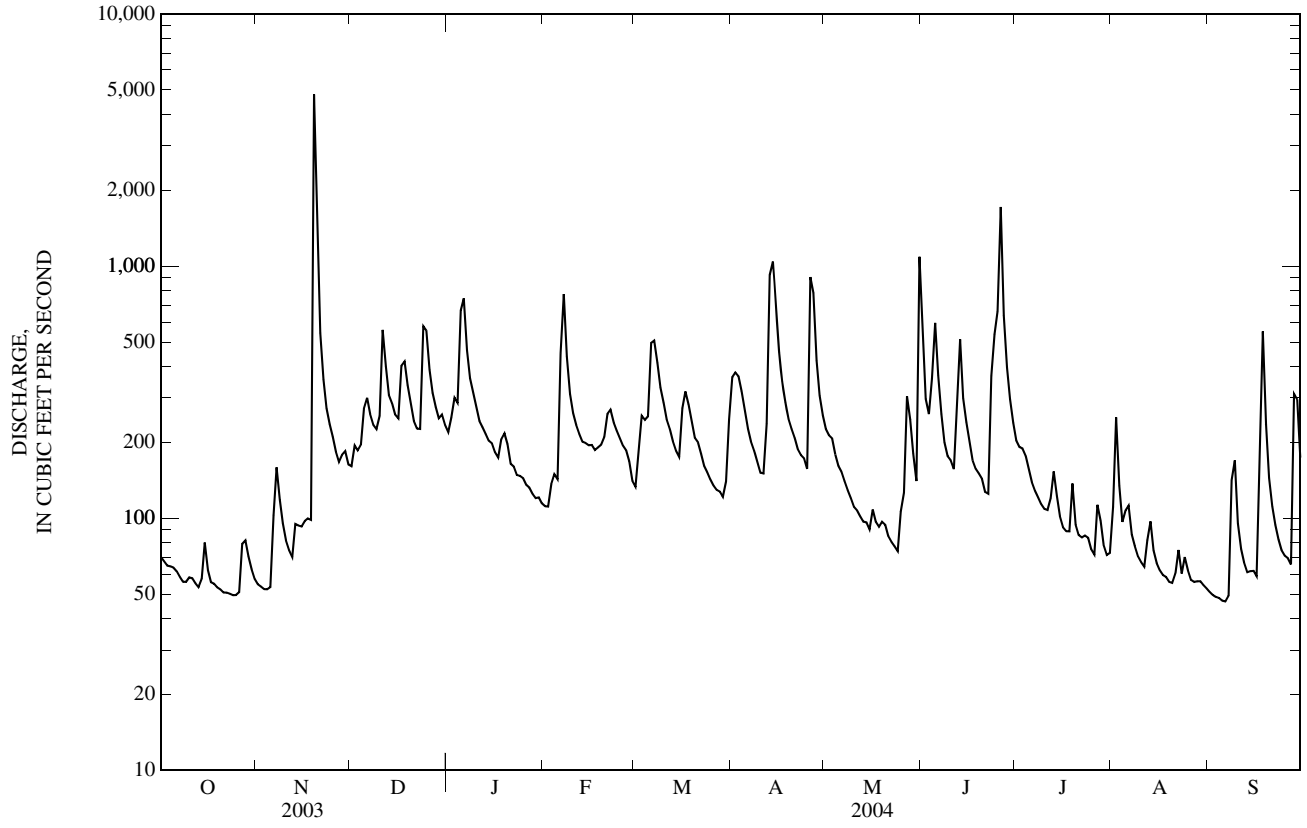
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1981, 1988 - 1989, 1997 - 2004, BY WATER YEAR (WY)

MEAN	68.6	98.1	162	224	294	305	247	200	130	95.0	79.7	66.7
MAX	298	580	534	708	870	844	630	433	356	366	221	256
(WY)	(1977)	(1978)	(1973)	(1957)	(1957)	(1955)	(1977)	(1945)	(2004)	(2001)	(2003)	(1989)
MIN	32.4	29.8	34.1	37.0	84.7	74.5	107	73.0	38.9	33.8	28.1	32.4
(WY)	(1989)	(1954)	(1956)	(1966)	(2002)	(1988)	(1963)	(1964)	(1988)	(1988)	(1988)	(1988)

03474000 MIDDLE FORK HOLSTON RIVER AT SEVEN MILE FORD, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1942 - 1981, 1988 - 1989, 1997 - 2004	
ANNUAL TOTAL	99,329		79,001			
ANNUAL MEAN	272		216		164	
HIGHEST ANNUAL MEAN					263	2003
LOWEST ANNUAL MEAN					79.2	1988
HIGHEST DAILY MEAN	4,800	Nov 19	4,800	Nov 19	5,990	Apr 4, 1977
LOWEST DAILY MEAN	50	aOct 23	47	bSep 5	20	cSep 26, 1944
ANNUAL SEVEN-DAY MINIMUM	51	Oct 20	49	Sep 1	24	Sep 3, 1960
MAXIMUM PEAK FLOW			10,400	Nov 19	14,500	Nov 6, 1977
MAXIMUM PEAK STAGE			8.31	Nov 19	10.75	Jan 29, 1957
INSTANTANEOUS LOW FLOW			44	Sep 5	9.0	Sep 26, 1944
ANNUAL RUNOFF (CFSM)	2.06		1.64		1.24	
ANNUAL RUNOFF (INCHES)	27.99		22.26		16.87	
10 PERCENT EXCEEDS	514		381		339	
50 PERCENT EXCEEDS	185		160		93	
90 PERCENT EXCEEDS	70		58		37	

a Also Oct. 24, 25, 2003.
b Also Sept. 6, 2004.
c Also Aug. 2, 1964.



03475000 MIDDLE FORK HOLSTON RIVER NEAR MEADOWVIEW, VA

LOCATION.--Lat 36°42'47", long 81°49'07", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--Records good except for period of no gage-height record, July 18, which is fair. Prior to 1954, flow regulated by powerplant 0.9 mi upstream from station. Maximum discharge, 12,500 ft^3/s, from rating curve extended above 12,000 ft^3/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 ft^3/s, and flood of Dec. 10, 1972, reached a stage of 11.0 ft, from floodmark, discharge, 8,540 ft^3/s, from information by Tennessee Valley Authority. Flood of Mar. 30, 1975, reached a stage of 10.37 ft, discharge, 7,410 ft^3/s.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	2145	*9,500	*11.71	1930	2,590	6.42
Apr 14	0200	2,430	6.21	2115	2,270	6.00
Apr 26	2345	2,280	6.02	0900	3,400	7.38

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	136	107	282	339	207	246	505	385	1,020	430	179	99
2	130	103	298	352	206	297	511	366	491	391	276	96
3	126	101	292	429	244	448	503	360	398	384	238	94
4	123	100	305	417	283	409	455	319	438	357	183	92
5	122	101	441	870	265	417	393	298	926	330	180	91
6	119	148	499	1,320	522	649	342	282	610	292	204	86
7	116	230	442	784	1,250	782	309	267	440	269	168	94
8	114	190	391	609	774	662	290	252	373	250	152	159
9	111	159	362	531	581	553	271	240	332	234	144	264
10	111	142	361	469	499	494	251	237	323	222	136	175
11	113	131	639	411	441	425	244	228	313	215	132	134
12	111	126	570	387	402	389	289	216	756	240	149	118
13	109	135	449	364	376	356	1,070	210	1,030	291	209	110
14	111	150	428	343	355	328	1,910	204	638	250	156	103
15	141	145	401	331	348	314	1,090	204	504	213	138	107
16	131	152	385	311	347	392	762	225	429	194	130	101
17	117	154	499	296	333	477	595	206	366	184	123	204
18	112	153	617	325	328	440	501	198	331	e185	120	670
19	110	3,800	519	350	339	390	435	206	311	230	116	351
20	106	3,000	441	323	358	344	395	215	298	189	113	226
21	104	856	382	292	398	328	370	188	270	171	122	179
22	102	567	353	277	428	306	341	175	259	165	136	153
23	100	439	348	266	392	280	321	169	523	170	125	138
24	99	374	621	258	366	266	317	164	1,030	161	118	127
25	97	343	805	258	346	255	291	174	882	152	129	120
26	99	301	583	247	323	241	958	223	2,580	145	113	116
27	126	277	478	241	314	234	1,390	440	1,140	204	109	112
28	154	318	422	232	299	229	685	397	750	199	107	244
29	133	359	384	221	258	221	509	309	589	160	108	424
30	120	309	388	220	---	229	426	251	488	146	104	252
31	112	---	365	214	---	334	---	1,240	---	145	102	---
TOTAL	3,615	13,470	13,750	12,287	11,582	11,735	16,729	8,848	18,838	7,168	4,519	5,239
MEAN	117	449	444	396	399	379	558	285	628	231	146	175
MAX	154	3,800	805	1,320	1,250	782	1,910	1,240	2,580	430	276	670
MIN	97	100	282	214	206	221	244	164	259	145	102	86
CFSM	0.55	2.13	2.10	1.88	1.89	1.79	2.64	1.35	2.98	1.10	0.69	0.83
IN.	0.64	2.37	2.42	2.17	2.04	2.07	2.95	1.56	3.32	1.26	0.80	0.92

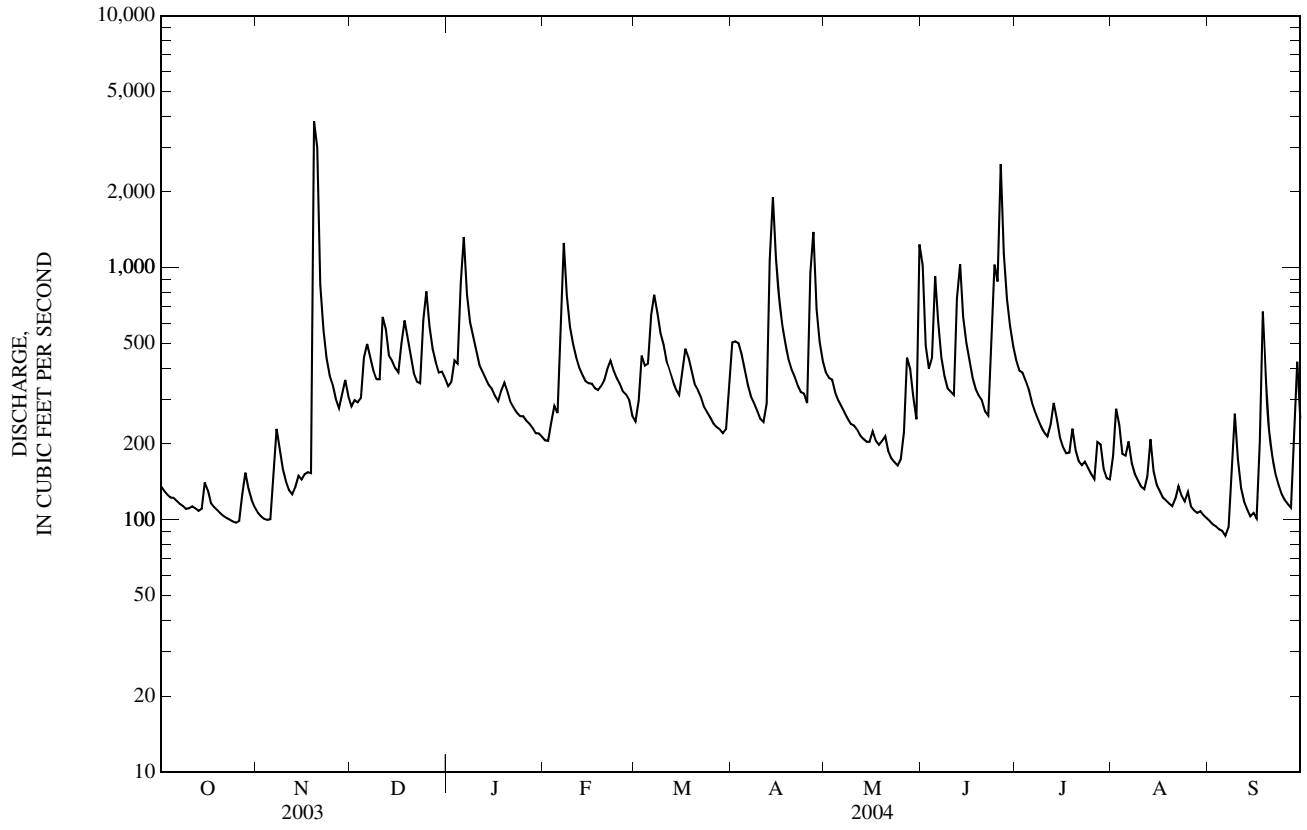
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 1953, 1976 - 2004, BY WATER YEAR (WY)

MEAN	110	138	213	338	451	450	359	294	205	160	151	101
MAX	479	739	526	731	1,050	899	1,158	677	628	491	649	357
(WY)	(1977)	(1978)	(1943)	(1996)	(1994)	(1993)	(1987)	(1990)	(2004)	(2003)	(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)

03475000 MIDDLE FORK HOLSTON RIVER NEAR MEADOWVIEW, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1932 - 1953 1976 - 2004	
ANNUAL TOTAL	152,921		127,780			
ANNUAL MEAN	419		349		247	
HIGHEST ANNUAL MEAN					410	2003
LOWEST ANNUAL MEAN					105	1941
HIGHEST DAILY MEAN	4,150	Feb 23	3,800	Nov 19	8,220	Apr 5, 1977
LOWEST DAILY MEAN	97	Oct 25	86	Sep 6	a7.0	Nov 19, 1950
ANNUAL SEVEN-DAY MINIMUM	101	Oct 20	93	Sep 1	38	Oct 25, 1952
MAXIMUM PEAK FLOW			9,500	Nov 19	12,500	Nov 7, 1977
MAXIMUM PEAK STAGE			11.71	Nov 19	13.41	Nov 7, 1977
INSTANTANEOUS LOW FLOW			84	Sep 6	a6.0	bNov 10, 1933
ANNUAL RUNOFF (CFSM)	1.99		1.65		1.17	
ANNUAL RUNOFF (INCHES)	26.96		22.53		15.90	
10 PERCENT EXCEEDS	748		599		500	
50 PERCENT EXCEEDS	292		282		149	
90 PERCENT EXCEEDS	136		112		63	

a Flow was regulated by powerplant.
b Also Dec. 4, 1936, Jan. 21, 22, Feb. 1, 1940, Jan. 8, 1942, and Oct. 15, 16, 31, 1943.
e Estimated.



03478400 BEAVER CREEK AT BRISTOL, VA

LOCATION.--Lat 36°37'54", long 82°08'01", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good. 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 ft^3/s, from rating curve extended above 390 ft^3/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.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	17	44	45	38	46	52	58	58	41	32	18
2	23	16	42	50	42	57	48	74	47	61	30	18
3	22	16	40	47	68	49	46	65	45	76	28	17
4	22	16	52	45	52	46	44	57	70	46	27	17
5	21	17	63	192	49	44	42	54	76	42	36	16
6	21	70	58	149	116	81	41	51	55	39	31	16
7	21	43	53	101	112	66	40	49	49	38	27	22
8	20	31	50	87	86	67	40	47	47	37	26	36
9	20	26	47	82	76	64	38	45	44	35	25	31
10	19	23	53	75	70	59	37	57	54	34	24	23
11	19	22	56	69	65	56	40	64	44	34	24	20
12	19	22	49	65	62	55	49	48	43	39	30	19
13	19	22	48	61	59	52	169	45	46	49	27	18
14	28	19	55	58	56	50	141	44	43	37	24	17
15	25	22	51	57	55	50	102	42	45	34	23	17
16	20	22	49	53	57	61	85	41	42	32	22	16
17	19	23	66	51	53	51	76	40	39	31	22	36
18	19	30	57	63	52	49	70	40	37	31	22	31
19	19	259	57	59	53	48	65	40	38	30	21	23
20	19	151	53	53	53	46	64	39	35	29	20	20
21	19	92	49	51	53	45	60	37	34	28	24	19
22	18	70	48	50	50	43	56	38	34	29	22	18
23	17	61	48	48	49	42	57	40	42	35	21	17
24	17	58	74	47	48	41	53	40	39	31	20	16
25	17	53	65	52	54	40	51	39	74	30	20	16
26	19	48	58	50	57	40	129	45	84	35	19	16
27	25	47	55	49	57	39	91	54	54	57	19	16
28	20	53	52	43	55	38	72	45	48	39	18	34
29	19	52	50	42	53	38	65	38	45	33	19	23
30	18	47	53	41	---	41	61	36	42	32	23	19
31	17	---	47	39	---	58	---	89	---	36	19	---
TOTAL	625	1,448	1,642	1,974	1,750	1,562	1,984	1,501	1,453	1,180	745	625
MEAN	20.2	48.3	53.0	63.7	60.3	50.4	66.1	48.4	48.4	38.1	24.0	20.8
MAX	28	259	74	192	116	81	169	89	84	76	36	36
MIN	17	16	40	39	38	38	37	36	34	28	18	16
CFSM	0.73	1.74	1.91	2.30	2.18	1.82	2.39	1.75	1.75	1.37	0.87	0.75
IN.	0.84	1.94	2.21	2.65	2.35	2.10	2.66	2.02	1.95	1.58	1.00	0.84

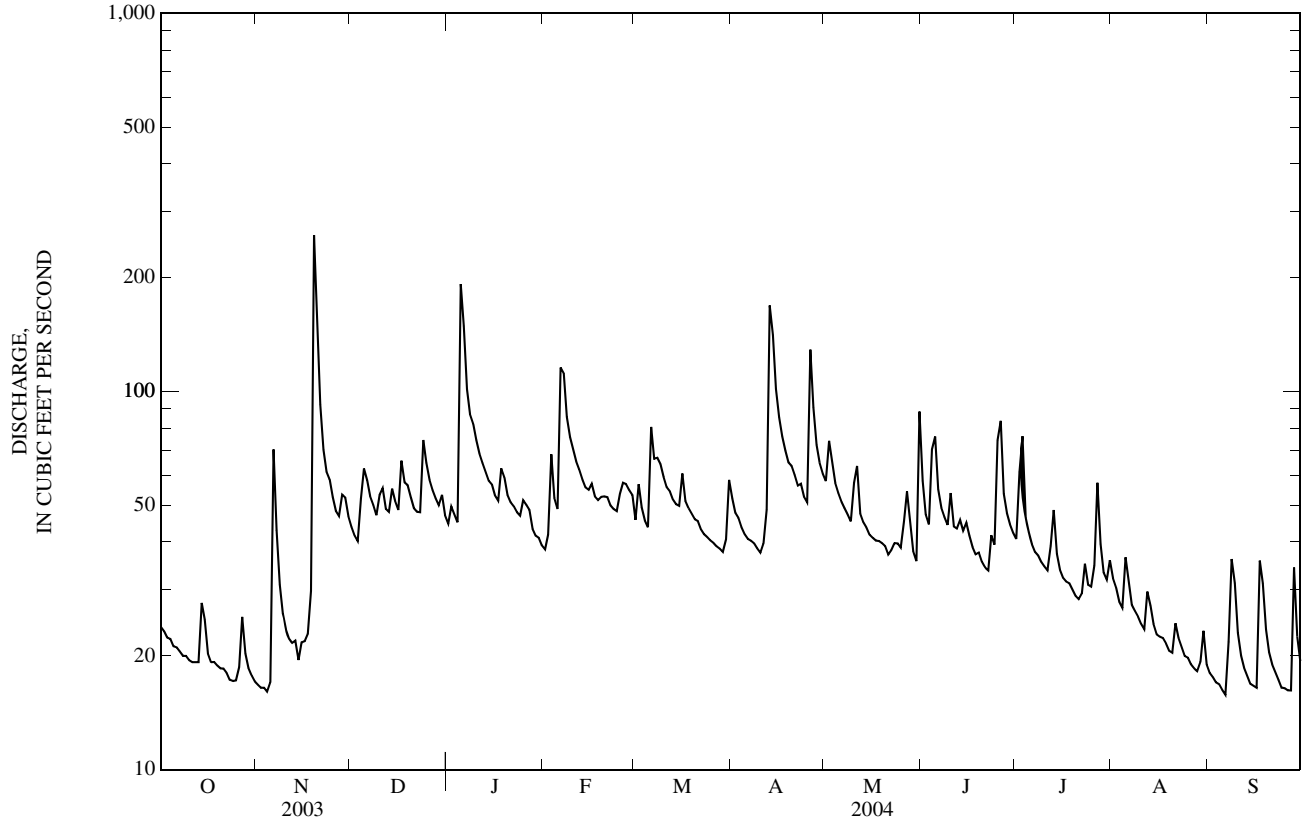
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 2004, BY WATER YEAR (WY)

MEAN	17.7	20.3	31.5	41.4	54.1	58.2	52.6	40.6	32.6	26.4	21.9	17.8
MAX	76.1	58.0	128	141	131	130	120	129	73.1	58.1	64.5	48.9
(WY)	(1973)	(1978)	(1973)	(1974)	(1994)	(1963)	(1998)	(1958)	(1972)	(2003)	(1982)	(1982)
MIN	8.08	9.62	9.13	8.92	19.5	19.7	19.3	16.9	13.0	10.2	9.96	9.23
(WY)	(1970)	(2001)	(1966)	(1966)	(1981)	(1988)	(1985)	(2000)	(1988)	(1988)	(1988)	(1969)

03478400 BEAVER CREEK AT BRISTOL, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1958 - 2004	
ANNUAL TOTAL	20,268		16,489			
ANNUAL MEAN	55.5		45.1		34.5	
HIGHEST ANNUAL MEAN					62.8	1973
LOWEST ANNUAL MEAN					16.2	1988
HIGHEST DAILY MEAN	280	Feb 22	259	Nov 19	580	Mar 12, 1963
LOWEST DAILY MEAN	16	aNov 2	16	bNov 2	7.1	cDec 9, 2000
ANNUAL SEVEN-DAY MINIMUM	17	Oct 30	17	Oct 30	7.2	Dec 7, 2000
MAXIMUM PEAK FLOW			377	Nov 19	1,600	Oct 2, 1977
MAXIMUM PEAK STAGE			6.08	Nov 19	9.94	Oct 2, 1977
INSTANTANEOUS LOW FLOW			15	dNov 18	3.4	Dec 30, 1963
ANNUAL RUNOFF (CFSM)	2.00		1.63		1.24	
ANNUAL RUNOFF (INCHES)	27.22		22.14		16.91	
10 PERCENT EXCEEDS	97		67		63	
50 PERCENT EXCEEDS	47		43		26	
90 PERCENT EXCEEDS	22		19		12	

a Also Nov. 3, 4, 2003.
b Also Nov. 3, 4, 2003 and Sept. 5, 6, 16, 24-27, 2004.
c Also Dec. 10, 11, 2000.
d Also Aug. 19 and Sept. 6, 2004.



03488000 NORTH FORK HOLSTON RIVER NEAR SALTVILLE, VA

LOCATION.--Lat 36°53'48", long 81°44'46", NAD83, 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 mi^2.

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 NGVD of 1929. 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.--No estimated daily discharges. Records good. 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.

REVISIONS.--The maximum discharge for the water year 2002 has been revised to 16,000 ft^3/s, Mar. 18, 2002, gage height, 14.83 ft, superseding the figure published in the report for 2002.

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

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1730	*17,100	*15.46	1900	5,190	7.45
Apr 14	0300	5,310	7.56	0600	3,020	5.35
Apr 26	2300	3,090	5.43	0515	3,040	5.37

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	99	111	419	394	160	215	440	409	1,990	333	215	71
2	96	105	364	516	179	229	587	369	901	289	200	68
3	89	100	326	1,120	189	318	682	367	651	298	224	67
4	84	98	318	858	260	319	661	315	707	299	154	66
5	83	96	450	1,280	246	308	557	286	1,280	290	134	64
6	81	188	610	1,990	708	756	471	265	842	245	152	61
7	77	431	544	1,040	1,800	1,080	419	240	575	216	133	61
8	74	319	466	713	1,000	840	405	222	430	196	113	113
9	72	246	418	569	659	661	369	203	434	177	104	443
10	72	201	418	465	519	545	319	191	383	165	97	294
11	75	172	973	367	454	457	287	180	335	174	90	191
12	74	158	871	340	415	407	363	172	490	184	175	143
13	72	271	648	313	374	359	2,430	167	1,830	205	226	119
14	79	326	584	286	334	323	3,860	161	855	182	159	105
15	156	282	521	275	307	302	1,740	153	716	164	126	101
16	152	276	494	249	301	346	1,020	147	755	146	136	93
17	108	256	719	227	278	415	714	150	554	133	121	193
18	98	242	895	291	261	406	550	143	473	129	108	1,570
19	92	8,170	697	430	259	378	460	140	444	124	98	690
20	86	4,180	556	392	269	338	390	137	424	116	91	383
21	81	1,320	447	337	329	325	353	132	360	110	94	271
22	77	819	394	313	407	304	312	125	335	106	117	213
23	75	607	389	280	371	269	283	121	571	112	101	180
24	74	514	940	263	335	250	275	121	1,160	110	114	155
25	73	458	1,190	252	311	238	248	289	909	108	126	139
26	72	382	785	233	287	224	1,260	312	2,450	101	100	128
27	101	342	605	224	272	214	1,980	883	1,140	171	88	120
28	161	390	509	206	247	209	931	853	698	216	84	230
29	158	524	445	178	227	200	627	684	506	157	83	527
30	139	460	446	198	---	198	485	455	392	126	78	340
31	122	---	434	165	---	280	---	2,800	---	132	75	---
TOTAL	2,952	22,044	17,875	14,764	11,758	11,713	23,478	11,192	23,590	5,514	3,916	7,199
MEAN	95.2	735	577	476	405	378	783	361	786	178	126	240
MAX	161	8,170	1,190	1,990	1,800	1,080	3,860	2,800	2,450	333	226	1,570
MIN	72	96	318	165	160	198	248	121	335	101	75	61
CFSM	0.43	3.31	2.60	2.15	1.83	1.70	3.53	1.63	3.54	0.80	0.57	1.08
IN.	0.49	3.69	3.00	2.47	1.97	1.96	3.93	1.88	3.95	0.92	0.66	1.21

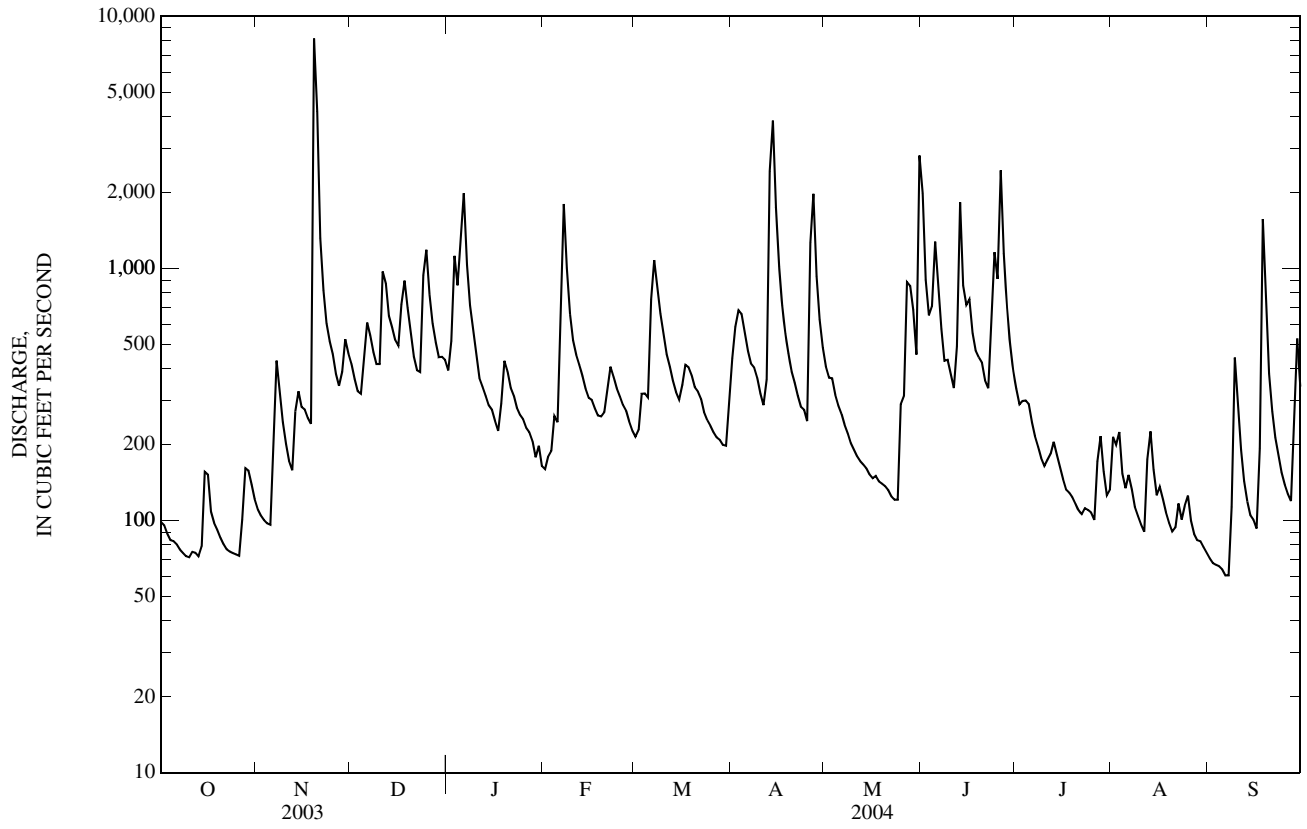
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1907 - 2004, BY WATER YEAR (WY)

MEAN	111	173	325	461	568	597	450	365	231	135	121	88.6
MAX	916	1,077	1,178	1,317	1,500	1,735	1,311	858	1,036	704	584	474
(WY)	(1977)	(1978)	(1927)	(1957)	(1957)	(1955)	(1987)	(1990)	(1907)	(2001)	(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)

03488000 NORTH FORK HOLSTON RIVER NEAR SALTVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1907 - 2004	
ANNUAL TOTAL	166,001		155,995			
ANNUAL MEAN	455		426		300	
HIGHEST ANNUAL MEAN					457	1973
LOWEST ANNUAL MEAN					135	1988
HIGHEST DAILY MEAN	8,170	Nov 19	8,170	Nov 19	12,700	Mar 18, 2002
LOWEST DAILY MEAN	72	aOct 9	61	bSep 6	2.0	Oct 15, 1947
ANNUAL SEVEN-DAY MINIMUM	74	Oct 7	65	Sep 1	21	Sep 8, 1952
MAXIMUM PEAK FLOW			17,100	Nov 19	17,100	Nov 19, 2003
MAXIMUM PEAK STAGE			15.46	Nov 19	15.46	Nov 19, 2003
INSTANTANEOUS LOW FLOW			50	Feb 1	c1.0	dOct 15, 1947
ANNUAL RUNOFF (CFSM)	2.05		1.92		1.35	
ANNUAL RUNOFF (INCHES)	27.82		26.14		18.36	
10 PERCENT EXCEEDS	861		845		648	
50 PERCENT EXCEEDS	279		284		156	
90 PERCENT EXCEEDS	105		95		40	

a Also Oct. 10, 13, 26, 2003.
b Also Sept. 7, 2004.
c Flow retarded by mine cave-in.
d Also Oct. 16, 1947.



03524000 CLINCH RIVER AT CLEVELAND, VA

LOCATION.--Lat 36°56'41", long 82°09'17", NAD83, 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 mi^2.

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 NGVD of 1929. Prior to Nov. 1, 1931, nonrecording gage on highway bridge 500 ft downstream at datum 1.0 ft lower.

REMARKS.--No estimated daily discharges. Records good. Maximum discharge, 34,500 ft^3/s, from rating curve extended above 26,000 ft^3/s on basis of contracted-opening measurement at gage height 24.40 ft. Several measurements of water temperature made during the year. Water-quality records for some prior periods have been collected at this location.

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

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 20	0315	*16,500	*17.85	1215	6,780	10.06
Jan 3	0745	6,200	9.48	1800	5,070	8.30
Jan 5	2330	7,670	10.93	1645	10,900	13.80
Feb 7	0715	5,770	9.04	2400	6,120	9.40
Apr 14	0300	10,000	13.08	1000	5,450	8.71

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	163	177	1,090	871	480	443	1,230	1,010	6,670	863	441	232
2	162	164	902	1,810	494	448	1,920	961	2,960	766	523	216
3	156	156	766	5,330	1,340	510	2,590	1,430	2,080	749	1,020	207
4	150	150	753	3,010	1,480	508	2,180	1,200	2,580	720	643	199
5	146	147	1,270	4,110	1,180	488	1,650	1,010	4,780	772	487	192
6	141	278	1,500	6,230	2,200	1,910	1,280	875	2,850	670	553	182
7	138	683	1,310	3,450	5,220	2,680	1,050	765	1,870	571	484	181
8	136	595	1,100	2,270	3,410	1,880	923	673	1,650	516	398	269
9	133	419	943	1,740	2,200	1,490	824	610	1,430	471	347	677
10	129	331	1,010	1,400	1,660	1,220	725	561	1,130	435	317	666
11	128	285	2,470	1,130	1,350	1,000	661	540	1,130	462	319	464
12	125	266	2,230	985	1,130	866	721	513	1,320	508	654	365
13	125	599	1,600	890	986	759	4,470	467	2,270	542	665	313
14	137	623	1,390	816	870	671	8,740	451	1,990	537	588	276
15	260	466	1,350	781	804	619	5,130	408	4,760	481	452	252
16	306	479	1,210	711	766	639	3,230	384	4,680	408	442	237
17	239	472	1,450	641	709	693	2,200	391	3,250	371	527	721
18	189	423	1,830	843	656	637	1,630	362	2,740	362	432	3,710
19	169	7,880	1,590	1,890	647	586	1,300	382	1,990	345	378	2,310
20	156	11,400	1,300	1,530	681	544	1,100	426	1,710	326	358	1,200
21	147	3,610	1,060	1,180	754	554	995	354	1,360	306	327	829
22	140	2,000	912	999	724	544	866	342	1,130	295	332	642
23	135	1,350	933	872	660	500	780	396	1,510	346	315	533
24	133	1,060	1,670	775	624	473	749	322	2,050	333	289	465
25	131	946	2,610	727	590	456	676	3,760	1,460	294	285	409
26	131	781	1,860	706	553	436	1,510	1,780	3,190	293	278	372
27	157	671	1,400	692	528	423	3,840	3,610	2,290	537	251	344
28	219	857	1,150	659	499	411	2,310	4,150	1,560	771	238	1,100
29	245	1,640	979	591	468	397	1,530	3,750	1,210	534	251	2,270
30	216	1,360	987	570	---	408	1,200	1,940	995	477	282	1,210
31	192	---	993	529	---	615	---	7,330	---	497	269	---
TOTAL	5,134	40,268	41,618	48,738	33,663	23,808	58,010	41,153	70,595	15,558	13,145	21,043
MEAN	166	1,342	1,343	1,572	1,161	768	1,934	1,328	2,353	502	424	701
MAX	306	11,400	2,610	6,230	5,220	2,680	8,740	7,330	6,670	863	1,020	3,710
MIN	125	147	753	529	468	397	661	322	995	293	238	181
CFSM	0.31	2.54	2.54	2.98	2.20	1.45	3.66	2.51	4.46	0.95	0.80	1.33
IN.	0.36	2.84	2.93	3.43	2.37	1.68	4.09	2.90	4.97	1.10	0.93	1.48

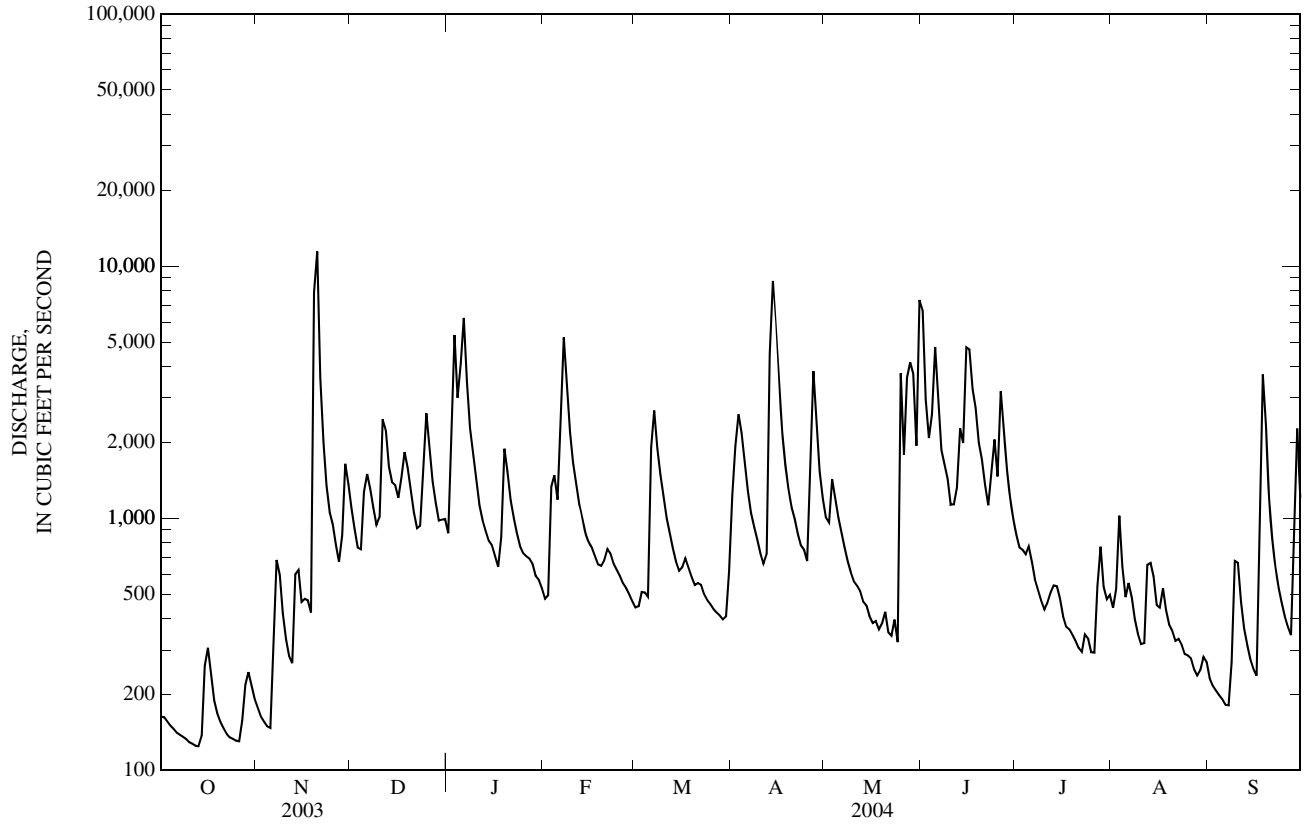
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 2004, BY WATER YEAR (WY)

MEAN	255	407	764	1,120	1,364	1,414	1,033	794	507	347	325	214
MAX	1,389	2,011	3,043	2,817	3,360	4,572	3,414	2,254	2,353	1,292	1,640	1,003
(WY)	(1977)	(1978)	(1927)	(1937)	(1957)	(1955)	(1987)	(1958)	(2004)	(2001)	(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)

03524000 CLINCH RIVER AT CLEVELAND, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1921 - 2004	
ANNUAL TOTAL	369,929		412,733			
ANNUAL MEAN	1,014		1,128		709	
HIGHEST ANNUAL MEAN					1,128	2004
LOWEST ANNUAL MEAN					287	1988
HIGHEST DAILY MEAN	12,000	Feb 16	11,400	Nov 20	27,800	Apr 5, 1977
LOWEST DAILY MEAN	125	aOct 12	125	aOct 12	37	bSep 13, 1964
ANNUAL SEVEN-DAY MINIMUM	130	Oct 8	130	Oct 8	40	Sep 13, 1964
MAXIMUM PEAK FLOW			16,500	Nov 20	34,500	Apr 5, 1977
MAXIMUM PEAK STAGE			17.85	Nov 20	26.40	Apr 5, 1977
INSTANTANEOUS LOW FLOW			123	cOct 12	35	Sep 28, 1964
ANNUAL RUNOFF (CFSM)	1.92		2.14		1.34	
ANNUAL RUNOFF (INCHES)	26.06		29.08		18.24	
10 PERCENT EXCEEDS	1,870		2,310		1,570	
50 PERCENT EXCEEDS	621		679		374	
90 PERCENT EXCEEDS	197		216		98	

a Also Oct. 13, 2003
b Also Sept. 28, 1964.
c Also Oct. 13, 14, 2003.



03527000 CLINCH RIVER AT SPEERS FERRY, VA

LOCATION.--Lat 36°38'55", long 82°45'02", NAD83, Scott County, Hydrologic Unit 06010205, on right bank 200 ft downstream from bridge on U.S. Highway 58, 0.5 mi downstream from Copper Creek, 0.8 mi northwest of Speers Ferry, 1.8 mi south of Clinchport, and at mile 211.0.

DRAINAGE AREA.--1,126 mi^2.

PERIOD OF RECORD.--October 1920 to September 1976, October 1976 to September 1978 (annual maximum only), October 1978 to September 1981, October 1981 to September 1995 (annual maximum only), October 2001 to September 2002.

REVISED RECORDS.--WSP 823: Drainage area. WSP 1276: 1925(M), 1927, 1928-31(M), 1932, 1935(M). WSP 1306: 1922(M).

GAGE.--Water-stage recorder. Datum of gage is 1,196.52 ft NGVD of 1929. Prior to Nov. 23, 1926, nonrecording gage at site 400 ft upstream at datum 1.50 ft higher. Nov. 23, 1926 to Nov. 6, 1931, nonrecording gage.

REMARKS.--No estimated daily discharges. Records good. Maximum discharge, 89,000 ft^3/s, from rating curve extended above 45,000 ft^3/s on basis of slope-area measurement of peak flow. Prior to May 1951, diurnal fluctuation at low flow caused by mills upstream from station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in February 1862 reached a stage of 33 ft, present site and datum, from reports of the Tennessee Valley Authority. Flood of Feb. 28, 1902 reached a stage of 26.6 ft, at site 400 ft upstream and at datum about 1 ft higher, from records of the National Weather Service.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 10,000 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 20	0630	*19,500	*18.72	1015	15,000	15.61
Jan 6	1045	13,500	14.42	0615	17,100	17.14
Feb 7	1145	10,100	11.71	1500	12,400	13.59

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	336	344	2,450	1,810	1,210	1,040	2,010	2,120	15,100	1,570	824	442
2	316	321	1,970	1,920	1,130	1,070	2,480	1,930	6,950	1,380	753	360
3	304	302	1,640	6,130	2,270	1,220	3,220	2,210	4,740	1,300	747	319
4	290	284	1,580	6,130	3,590	1,240	3,380	2,320	4,880	1,240	1,250	298
5	281	280	2,590	6,110	3,000	1,200	2,830	1,980	10,900	1,170	871	285
6	273	813	3,330	12,400	4,520	5,240	2,320	1,760	7,150	1,160	718	271
7	260	1,370	3,070	7,850	9,640	7,170	1,970	1,560	4,510	1,020	748	269
8	251	1,360	2,540	4,660	7,480	4,660	1,760	1,380	3,190	881	654	537
9	245	1,030	2,140	3,630	4,650	3,520	1,590	1,220	3,150	785	552	2,040
10	238	773	2,030	2,960	3,580	2,860	1,430	1,110	2,520	725	497	1,630
11	232	633	3,680	2,390	2,920	2,360	1,310	1,090	2,300	722	462	1,120
12	225	555	4,230	2,030	2,450	2,030	1,320	1,080	2,200	730	493	775
13	221	722	3,390	1,840	2,140	1,800	4,880	966	3,240	791	904	616
14	230	1,110	2,820	1,690	1,900	1,610	14,300	882	3,510	858	886	522
15	341	1,060	2,700	1,590	1,750	1,470	10,200	838	4,780	808	765	453
16	430	972	2,490	1,480	1,680	1,660	6,100	789	6,580	717	609	406
17	472	1,030	2,530	1,360	1,580	1,960	4,290	817	5,350	621	559	1,720
18	419	1,010	3,140	1,550	1,490	1,840	3,330	787	4,170	587	652	5,550
19	340	8,550	3,160	2,990	1,540	1,670	2,630	726	3,420	574	560	5,000
20	305	18,900	2,680	3,340	1,630	1,500	2,240	846	2,750	540	492	2,790
21	285	10,300	2,220	2,610	1,800	1,420	2,000	850	2,370	493	497	1,780
22	265	4,110	1,910	2,160	1,790	1,360	1,810	710	1,960	464	494	1,280
23	250	2,750	1,790	1,890	1,640	1,270	1,640	657	1,780	490	489	1,000
24	237	2,140	2,320	1,680	1,520	1,170	1,580	709	2,910	946	443	836
25	228	1,990	3,990	1,590	1,420	1,100	1,450	631	2,580	618	404	725
26	230	1,770	3,760	1,690	1,320	1,040	2,050	4,470	3,890	580	377	641
27	271	1,520	2,940	1,650	1,260	996	5,350	3,610	4,230	978	381	584
28	341	1,750	2,410	1,640	1,180	966	4,780	6,540	3,010	1,460	374	627
29	399	3,430	2,070	1,540	1,100	930	3,310	5,570	2,290	1,310	343	2,120
30	412	3,210	1,940	1,430	---	954	2,550	3,750	1,860	915	421	2,360
31	390	---	1,940	1,340	---	1,290	---	9,400	---	812	554	---
TOTAL	9,317	74,389	81,450	93,080	73,180	59,616	100,110	63,308	128,270	27,245	18,773	37,356
MEAN	301	2,480	2,627	3,003	2,523	1,923	3,337	2,042	4,276	879	606	1,245
MAX	472	18,900	4,230	12,400	9,640	7,170	14,300	9,400	15,100	1,570	1,250	5,550
MIN	221	280	1,580	1,340	1,100	930	1,310	631	1,780	464	343	269
CFSM	0.27	2.20	2.33	2.67	2.24	1.71	2.96	1.81	3.80	0.78	0.54	1.11
IN.	0.31	2.46	2.69	3.08	2.42	1.97	3.31	2.09	4.24	0.90	0.62	1.23

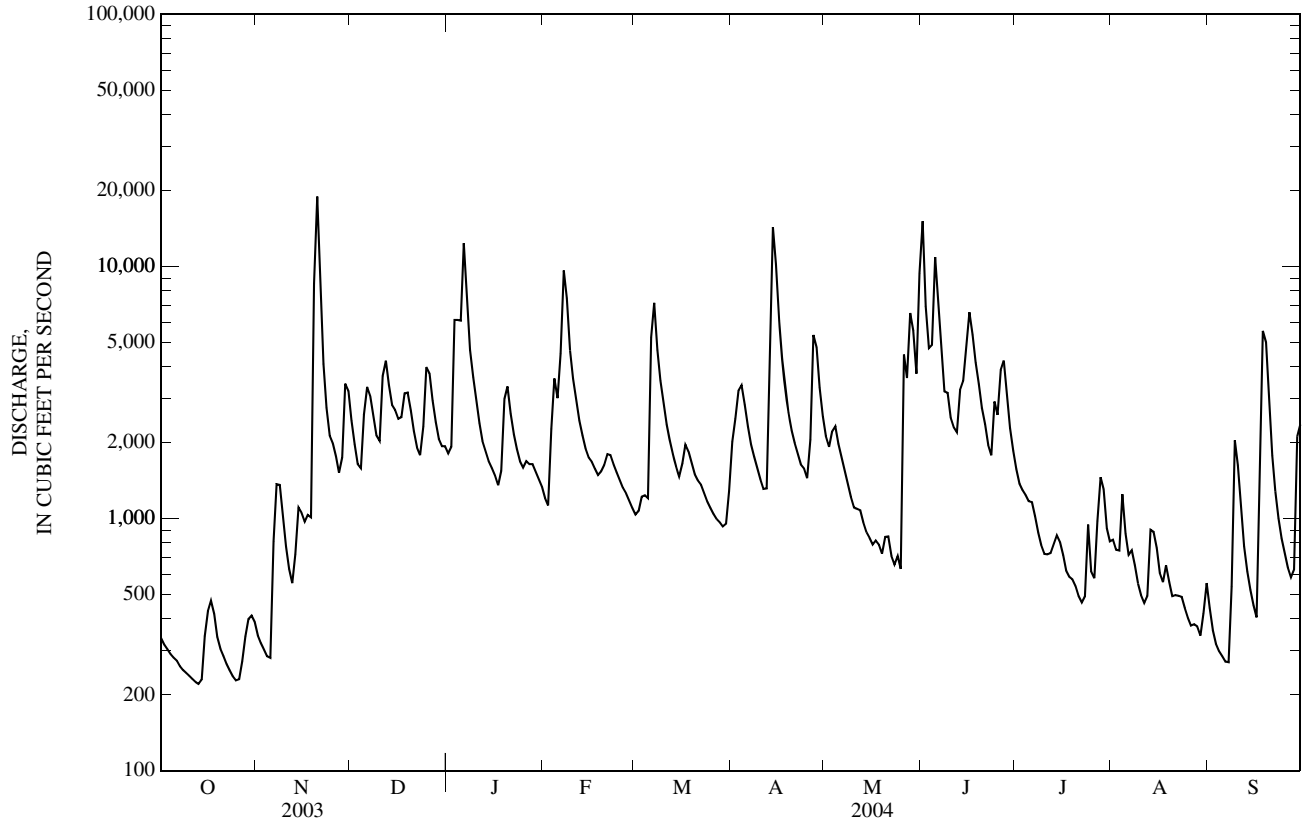
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 1976, 1979 - 1981, 2002 - 2004, BY WATER YEAR (WY)

MEAN	488	879	1,805	2,650	3,119	3,276	2,347	1,758	1,037	811	715	424
MAX	1,988	2,905	7,243	7,105	6,942	9,084	4,640	5,053	4,276	2,509	3,624	1,984
(WY)	(1972)	(1930)	(1927)	(1937)	(1957)	(1963)	(1935)	(1958)	(2004)	(1938)	(1942)	(1928)
MIN	93.6	116	157	203	486	1,067	551	408	219	183	132	110
(WY)	(1931)	(1940)	(1940)	(1940)	(1941)	(1931)	(1942)	(1941)	(1941)	(1930)	(1925)	(1955)

03527000 CLINCH RIVER AT SPEERS FERRY, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1921 - 1976, 1979 - 1981, 2002 - 2004	
ANNUAL TOTAL	793,137		766,094			
ANNUAL MEAN	2,173		2,093		1,602	
HIGHEST ANNUAL MEAN					2,534	1927
LOWEST ANNUAL MEAN					668	1941
HIGHEST DAILY MEAN	25,100	Feb 16	18,900	Nov 20	43,600	Mar 18, 2002
LOWEST DAILY MEAN	221	Oct 13	221	Oct 13	77	aOct 7, 1930
ANNUAL SEVEN-DAY MINIMUM	235	Oct 8	235	Oct 8	81	Oct 7, 1930
MAXIMUM PEAK FLOW			19,500	Nov 20	89,000	Apr 5, 1977
MAXIMUM PEAK STAGE			18.72	Nov 20	b36.69	Apr 5, 1977
INSTANTANEOUS LOW FLOW			216	cOct 13	42	dSep 29, 1939
ANNUAL RUNOFF (CFSM)	1.93		1.86		1.42	
ANNUAL RUNOFF (INCHES)	26.20		25.31		19.33	
10 PERCENT EXCEEDS	4,060		4,510		3,600	
50 PERCENT EXCEEDS	1,410		1,510		869	
90 PERCENT EXCEEDS	386		355		190	

a Also Oct. 8, 14, 15, 22, 1930.
b From floodmarks.
c Also Oct. 14, 2003.
d Also Oct. 23, 1939.



03528000 CLINCH RIVER ABOVE TAZEWELL, 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 mi^2.

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 NGVD of 1929. 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 ft^3/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 14,000 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 20	2230	*22,300	*12.59	0000	17,200	10.77
Jan 6	2200	16,000	10.33	1800	19,000	11.44

Minimum discharge, 312 ft^3/s, Oct. 26, 27.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	500	481	3,350	2,300	1,680	1,410	1,990	2,650	16,700	1,850	928	595
2	454	437	2,660	2,180	1,540	1,420	2,760	2,350	13,000	1,710	902	501
3	423	409	2,200	3,530	2,470	1,630	3,150	2,290	5,900	1,830	821	426
4	407	389	2,000	7,990	4,260	1,690	3,770	2,560	5,220	1,570	864	382
5	396	376	2,720	7,320	4,200	1,670	3,520	2,400	8,910	1,410	1,250	358
6	384	938	3,790	13,400	5,980	6,170	2,950	2,090	10,700	1,330	921	341
7	374	1,860	3,900	13,100	11,900	11,500	2,500	1,870	5,910	1,270	785	343
8	360	1,680	3,360	7,120	11,500	7,640	2,190	1,660	4,020	1,130	800	458
9	346	1,490	2,800	4,900	7,230	5,170	1,980	1,490	3,140	991	718	968
10	341	1,140	2,650	3,900	4,970	4,130	1,790	1,360	3,090	897	627	1,950
11	336	902	3,710	3,190	3,950	3,400	1,650	1,450	2,530	843	564	1,480
12	325	775	5,090	2,670	3,300	2,900	1,610	1,340	2,360	859	535	1,070
13	320	777	4,470	2,360	2,840	2,530	2,920	1,240	2,550	883	556	802
14	323	938	3,610	2,160	2,500	2,220	13,000	1,130	3,550	916	912	662
15	338	1,270	3,270	2,000	2,280	2,020	15,200	1,040	4,000	926	886	575
16	403	1,220	3,070	1,870	2,200	2,310	8,990	990	6,910	875	782	517
17	513	1,210	3,130	1,740	2,140	2,910	5,690	1,180	6,480	793	649	1,110
18	557	1,280	3,490	1,960	2,070	2,780	4,210	1,040	4,770	724	598	4,220
19	515	4,940	3,840	3,180	2,250	2,480	3,380	941	4,020	678	678	5,760
20	441	19,000	3,470	4,160	2,350	2,190	2,850	874	3,170	656	603	3,910
21	397	19,200	2,930	3,630	2,530	2,080	2,510	978	2,670	619	566	2,300
22	375	7,150	2,500	2,940	2,530	1,950	2,270	940	2,320	575	598	1,610
23	351	3,900	2,230	2,510	2,320	1,820	2,070	812	2,140	550	562	1,240
24	336	2,900	2,410	2,210	2,120	1,690	1,990	763	2,200	589	549	1,020
25	325	2,540	3,700	2,070	1,950	1,570	1,840	800	3,260	954	505	875
26	316	2,330	4,710	2,310	1,810	1,480	1,940	2,230	3,240	745	469	773
27	344	2,050	3,830	2,280	1,700	1,400	4,030	3,500	4,740	792	438	697
28	397	1,910	3,100	2,210	1,600	1,340	6,240	5,490	3,780	1,130	434	670
29	435	3,030	2,640	2,120	1,500	1,290	4,350	5,870	2,780	1,480	428	706
30	482	4,100	2,480	1,980	---	1,410	3,230	5,120	2,210	1,260	408	2,380
31	497	---	2,370	1,830	---	1,620	---	5,770	---	991	501	---
TOTAL	12,311	90,622	99,480	117,120	99,670	85,820	116,570	64,218	146,270	31,826	20,837	38,699
MEAN	397	3,021	3,209	3,778	3,437	2,768	3,886	2,072	4,876	1,027	672	1,290
MAX	557	19,200	5,090	13,400	11,900	11,500	15,200	5,870	16,700	1,850	1,250	5,760
MIN	316	376	2,000	1,740	1,500	1,290	1,610	763	2,140	550	408	341
MED	384	1,390	3,130	2,360	2,350	2,020	2,890	1,450	3,670	916	603	788
CFSM	0.27	2.05	2.18	2.56	2.33	1.88	2.64	1.41	3.31	0.70	0.46	0.88
IN.	0.31	2.29	2.51	2.96	2.52	2.17	2.94	1.62	3.69	0.80	0.53	0.98

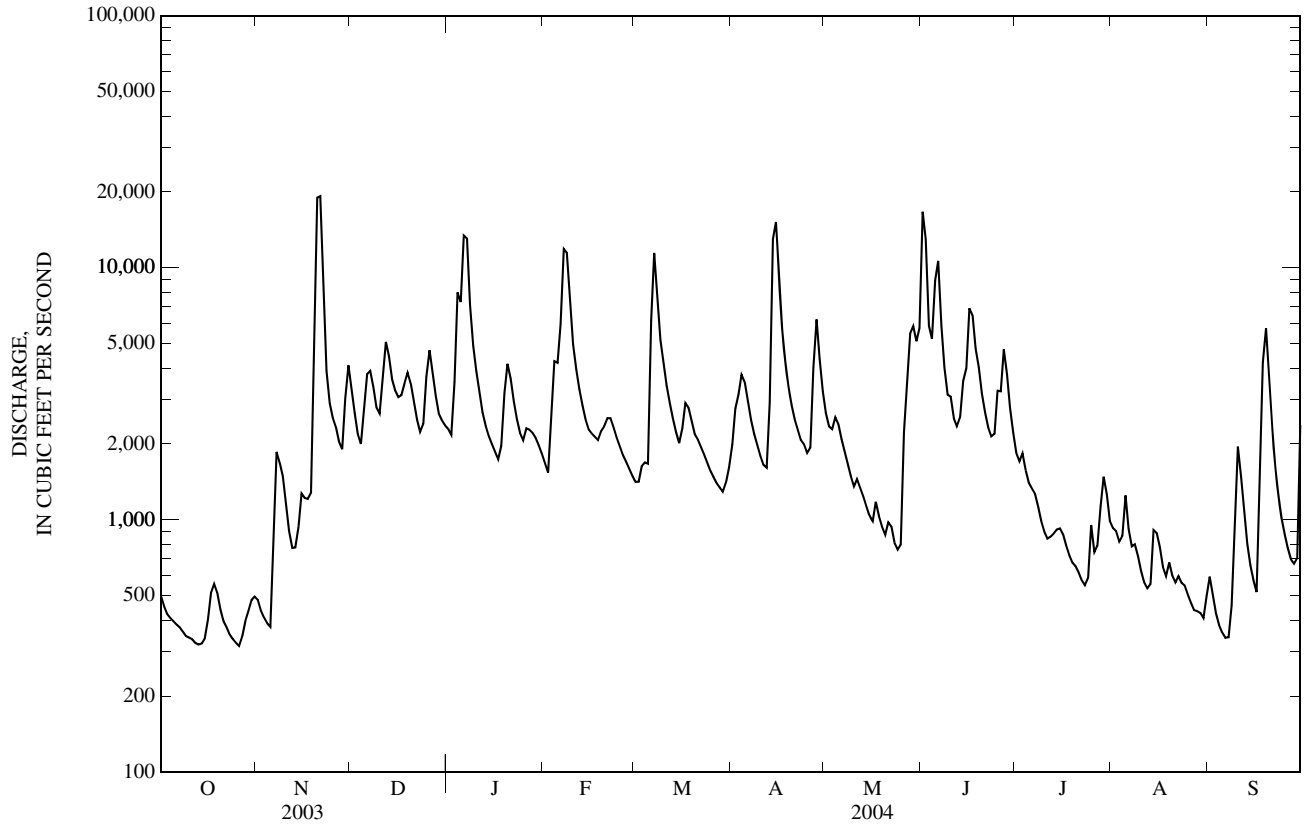
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 2004, BY WATER YEAR (WY)

MEAN	637	1,118	2,307	3,404	4,113	4,235	3,116	2,278	1,337	981	869	535
MAX	2,871	4,794	9,107	9,500	9,426	11,950	8,860	6,382	4,876	3,251	4,411	2,939
(WY)	(1990)	(1978)	(1927)	(1937)	(1957)	(1963)	(1977)	(1929)	(2004)	(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)

03528000 CLINCH RIVER ABOVE TAZEWELL, TN—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1919 - 2004	
ANNUAL TOTAL	1,057,572		923,443			
ANNUAL MEAN	2,897		2,523		2,068	
HIGHEST ANNUAL MEAN					3,269	1927
LOWEST ANNUAL MEAN					850	1941
HIGHEST DAILY MEAN	37,400	Feb 17	19,200	Nov 21	83,300	Apr 5, 1977
LOWEST DAILY MEAN	316	Oct 26	316	Oct 26	108	Sep 11, 1925
ANNUAL SEVEN-DAY MINIMUM	333	Oct 9	333	Oct 9	116	Sep 17, 1955
MAXIMUM PEAK FLOW			22,300	Nov 20	98,100	Apr 5, 1977
MAXIMUM PEAK STAGE			12.59	Nov 20	a29.32	Apr 5, 1977
INSTANTANEOUS LOW FLOW			b312	Oct 26	108	Sep 11, 1925
ANNUAL RUNOFF (CFSM)	1.97		1.71		1.40	
ANNUAL RUNOFF (INCHES)	26.69		23.31		19.07	
10 PERCENT EXCEEDS	5,290		5,010		4,640	
50 PERCENT EXCEEDS	1,870		1,940		1,110	
90 PERCENT EXCEEDS	492		440		265	

a From floodmarks.
b Also occurred on Oct. 27.



03529500 POWELL RIVER AT BIG STONE GAP, VA

LOCATION.--Lat 36°52'08", long 82°46'32", NAD83, Wise County, Hydrologic Unit 06010206, on right bank 10 ft upstream from bridge on U.S. Highway 23 at Big Stone Gap, 1 mi upstream from South Fork Powell River, 2.5 mi downstream from Pigeon Creek, and at mile 179.2.

DRAINAGE AREA.--112 mi^2.

PERIOD OF RECORD.--October 1944 to September 1959, October 1959 to September 1977 (annual maximum only), October 1978 to September 1981, October 1981 to July 1994 (annual maximum only), October 2001 to September 2002.

REVISED RECORDS.--WSP 1053: Drainage area. WSP 1276: 1948. WSP 1436: 1949(M), 1950(P), 1951-53(M), 1955(P).

GAGE.--Water-stage recorder. Datum of gage is 1,459.07 ft NGVD of 1929. Prior to Apr. 27, 1948, staff gage.

REMARKS.--Records good except those for periods of partial gage-height record, Sept. 18, 29, which are fair. Maximum discharge, 24,000 ft^3/s, from rating curve extended above 1,900 ft^3/s on basis of slope-area measurements at gage heights 9.67 ft, 10.39 ft, and 16.50 ft.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft^3/s and maximum (*):

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 19	1200	1,710	4.73	0700	2,700	5.73
Jan 5	1645	1,640	4.65	0615	*7,150	*8.98
Feb 6	1445	2,260	5.31	1815	2,210	5.26
Mar 6	0700	3,350	6.31	2100	1,790	4.82

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	40	210	187	138	116	164	193	1,290	163	85	39
2	40	41	177	580	141	132	181	201	738	175	79	37
3	37	41	159	696	347	130	215	191	712	203	73	36
4	38	38	176	453	326	124	221	166	1,360	167	69	36
5	38	44	206	1,020	294	124	200	155	1,340	148	99	35
6	37	106	213	971	1,320	1,920	184	147	725	149	87	34
7	35	109	199	544	1,160	824	172	136	501	139	74	41
8	35	77	181	399	607	494	163	127	490	117	69	731
9	38	62	168	337	449	382	152	122	427	106	68	648
10	38	55	217	278	377	326	143	234	370	101	61	281
11	37	51	325	239	325	281	142	494	319	157	70	177
12	39	53	270	225	292	251	165	227	333	178	82	141
13	39	101	226	220	264	227	537	170	390	131	73	128
14	55	71	234	188	245	210	571	145	315	125	62	116
15	87	80	220	181	230	200	387	125	293	108	58	104
16	56	92	208	162	209	284	309	130	282	97	54	97
17	46	89	241	153	198	270	264	145	270	99	52	1,030
18	45	84	226	275	187	248	235	119	259	98	52	e1,100
19	43	1,100	217	348	177	228	213	191	229	89	49	400
20	41	667	197	283	170	212	197	233	206	83	48	266
21	40	314	175	238	168	223	186	163	182	78	72	206
22	39	223	169	212	156	197	174	135	171	102	76	169
23	36	182	178	186	148	185	179	119	174	99	58	143
24	35	198	415	174	142	177	181	108	165	99	51	127
25	33	196	369	180	135	168	161	125	404	99	49	118
26	34	175	287	184	132	158	316	230	501	124	45	112
27	70	159	242	187	130	154	345	1,570	311	170	46	106
28	66	254	215	177	125	149	271	801	245	118	49	130
29	56	317	197	167	120	141	230	513	208	98	46	e120
30	49	252	224	163	---	170	205	463	181	88	45	98
31	43	---	201	148	---	172	---	3,580	---	89	43	---
TOTAL	1,368	5,271	6,942	9,755	8,712	8,877	7,063	11,458	13,391	3,797	1,944	6,806
MEAN	44.1	176	224	315	300	286	235	370	446	122	62.7	227
MAX	87	1,100	415	1,020	1,320	1,920	571	3,580	1,360	203	99	1,100
MIN	33	38	159	148	120	116	142	108	165	78	43	34
CFSM	0.39	1.57	2.00	2.81	2.68	2.56	2.10	3.30	3.99	1.09	0.56	2.03
IN.	0.45	1.75	2.31	3.24	2.89	2.95	2.35	3.81	4.45	1.26	0.65	2.26

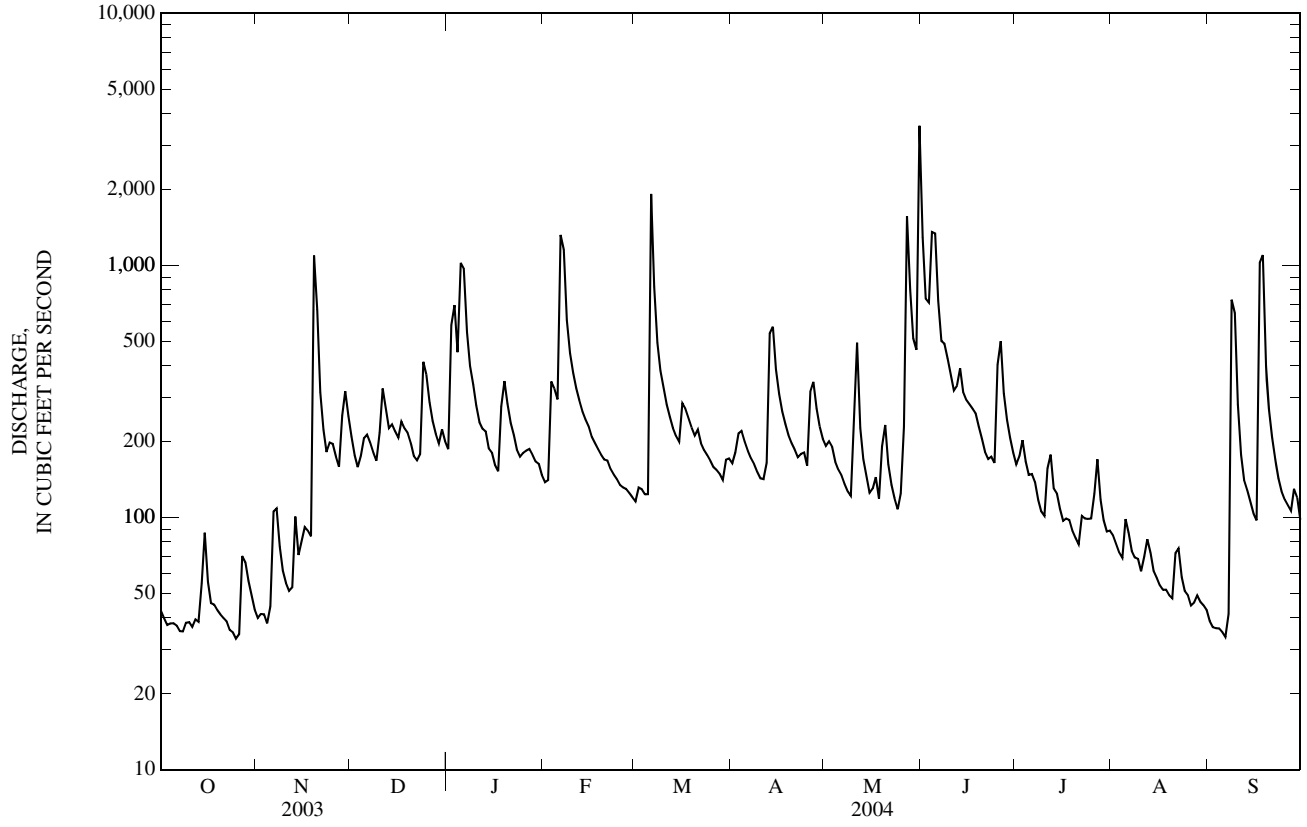
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1959, 1979 - 1981, 2002 - 2004, BY WATER YEAR (WY)

MEAN	35.5	101	229	362	440	406	312	241	137	78.8	70.7	47.3
MAX	136	290	622	745	982	1,054	621	486	446	152	283	227
(WY)	(1950)	(1980)	(1952)	(1950)	(1948)	(1955)	(1956)	(1958)	(2004)	(1958)	(1947)	(2004)
MIN	7.25	9.47	26.4	27.5	65.5	188	137	62.7	25.8	22.4	14.0	9.27
(WY)	(1954)	(1954)	(1954)	(1981)	(1954)	(1957)	(1954)	(1957)	(1948)	(1948)	(1948)	(1955)

03529500 POWELL RIVER AT BIG STONE GAP, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1945 - 1959, 1979 - 1981, 2002 - 2004	
ANNUAL TOTAL	89,193		85,384			
ANNUAL MEAN	244		233		204	
HIGHEST ANNUAL MEAN					299	1979
LOWEST ANNUAL MEAN					101	1954
HIGHEST DAILY MEAN	5,300	Feb 16	3,580	May 31	7,860	Feb 13, 1948
LOWEST DAILY MEAN	33	Oct 25	33	Oct 25	5.0	aSep 16, 1955
ANNUAL SEVEN-DAY MINIMUM	37	Oct 3	37	Oct 3	5.7	Sep 13, 1955
MAXIMUM PEAK FLOW			7,150	May 31	24,000	Apr 5, 1977
MAXIMUM PEAK STAGE			8.98	May 31	16.50	Apr 5, 1977
INSTANTANEOUS LOW FLOW			32	bOct 24	4.0	cSep 16, 1955
ANNUAL RUNOFF (CFSM)	2.18		2.08		1.82	
ANNUAL RUNOFF (INCHES)	29.62		28.36		24.74	
10 PERCENT EXCEEDS	465		434		445	
50 PERCENT EXCEEDS	142		170		103	
90 PERCENT EXCEEDS	43		45		20	

a Also Sept. 17, 18, 1955.
b Also Oct. 25, 26, 2003 and Sept. 6, 7, 2004.
c Also Sept. 17, 19, 1955.
e Estimated.



03531500 POWELL RIVER NEAR JONESVILLE, VA

LOCATION.--Lat 36°39'43", long 83°05'42", NAD83, 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 mi^2.

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 NGVD of 1929.

REMARKS.--No estimated daily disharges. Records good. Maximum discharge, 57,000 ft^3/s, from rating curve extended above 20,000 ft^3/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.

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

	Time	Discharge (ft^3/s)	Gage height (ft)	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 6	2330	6,280	12.14	1900	*10,300	*17.97
Mar 6	1645	7,890	14.54			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	106	98	596	485	389	253	473	463	4,410	321	182	84
2	99	91	460	924	372	264	471	428	2,020	312	161	80
3	94	86	381	2,380	1,190	310	514	467	1,770	355	139	75
4	86	86	376	1,710	1,480	290	535	390	2,310	328	128	73
5	82	86	718	2,400	1,090	286	504	350	3,450	291	135	74
6	83	267	859	3,680	3,020	4,780	444	327	2,080	270	193	72
7	80	593	757	2,060	4,330	3,360	413	302	1,380	264	156	70
8	78	366	608	1,390	2,260	1,920	392	276	976	243	133	414
9	76	253	499	1,060	1,560	1,320	365	251	1,050	218	122	1,570
10	75	193	525	835	1,160	985	332	239	799	218	117	651
11	77	161	1,310	650	930	786	315	822	743	212	113	338
12	75	145	1,050	565	779	667	332	622	632	306	116	237
13	73	240	768	534	667	562	1,300	401	663	283	134	197
14	77	284	697	468	577	490	2,570	329	613	228	123	175
15	165	225	736	434	532	452	1,530	287	857	208	109	155
16	194	332	638	398	483	693	1,010	252	867	179	103	142
17	121	389	797	365	436	951	776	288	770	164	97	1,090
18	100	351	849	666	407	796	627	258	910	205	94	2,470
19	93	2,960	763	1,490	396	680	534	251	621	182	93	1,130
20	89	2,980	637	1,100	383	571	472	381	514	158	89	618
21	85	1,360	514	820	384	556	432	334	425	147	100	437
22	80	770	451	663	366	505	392	264	376	135	133	349
23	77	529	433	558	337	443	386	230	356	165	135	293
24	76	464	1,100	482	324	407	445	202	372	166	109	247
25	75	634	1,560	463	310	383	378	212	347	153	99	221
26	73	531	1,050	595	295	360	526	260	1,120	153	93	202
27	86	447	778	552	290	340	1,210	1,940	755	223	90	188
28	162	471	619	573	280	332	877	2,090	541	251	85	199
29	156	1,040	520	521	264	316	647	1,520	440	186	92	226
30	126	807	554	499	---	357	526	916	372	160	98	194
31	110	---	551	448	---	472	---	6,100	---	155	91	---
TOTAL	3,029	17,239	22,154	29,768	25,291	24,887	19,728	21,452	32,539	6,839	3,662	12,271
MEAN	97.7	575	715	960	872	803	658	692	1,085	221	118	409
MAX	194	2,980	1,560	3,680	4,330	4,780	2,570	6,100	4,410	355	193	2,470
MIN	73	86	376	365	264	253	315	202	347	135	85	70
CFSM	0.31	1.80	2.24	3.01	2.73	2.52	2.06	2.17	3.40	0.69	0.37	1.28
IN.	0.35	2.01	2.58	3.47	2.95	2.90	2.30	2.50	3.79	0.80	0.43	1.43

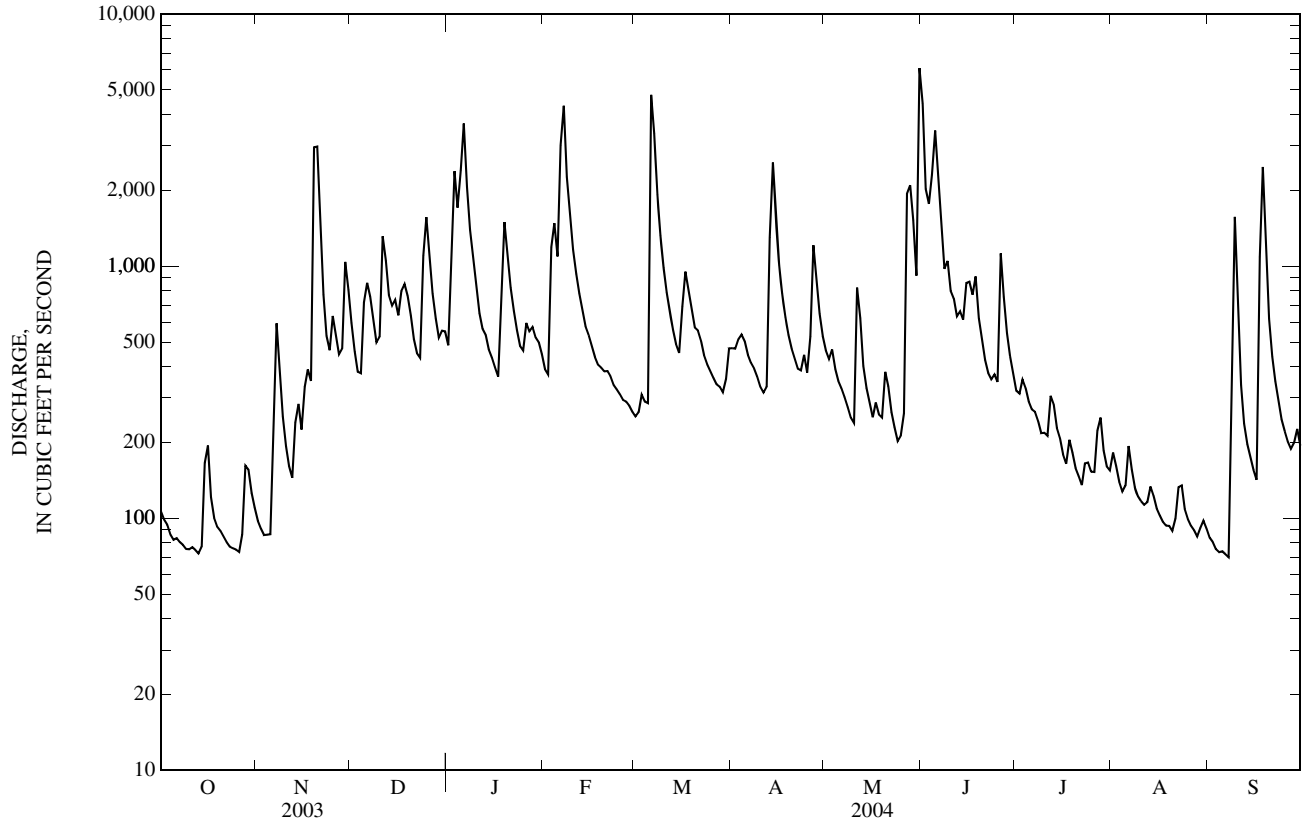
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 2004, BY WATER YEAR (WY)

MEAN	148	312	642	924	1,074	1,124	823	579	334	237	196	121
MAX	1,086	1,405	2,026	2,765	2,666	3,423	2,542	1,436	1,601	825	1,187	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)

03531500 POWELL RIVER NEAR JONESVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1932 - 2004	
ANNUAL TOTAL	296,527		218,859			
ANNUAL MEAN	812		598		540	
HIGHEST ANNUAL MEAN					943	1974
LOWEST ANNUAL MEAN					218	1941
HIGHEST DAILY MEAN	19,300	Feb 16	6,100	May 31	35,000	Apr 5, 1977
LOWEST DAILY MEAN	73	aOct 13	70	Sep 7	18	Oct 3, 1933
ANNUAL SEVEN-DAY MINIMUM	76	Oct 8	75	Sep 1	18	Sep 11, 1954
MAXIMUM PEAK FLOW			10,300	May 31	57,000	Apr 5, 1977
MAXIMUM PEAK STAGE			17.97	May 31	b44.32	Apr 5, 1977
INSTANTANEOUS LOW FLOW			67	Sep 7	17	cSep 19, 1954
ANNUAL RUNOFF (CFSM)	2.55		1.87		1.69	
ANNUAL RUNOFF (INCHES)	34.58		25.52		23.02	
10 PERCENT EXCEEDS	1,760		1,300		1,220	
50 PERCENT EXCEEDS	432		383		254	
90 PERCENT EXCEEDS	95		93		54	

a Also Oct. 26, 2003.
b From floodmark.
c 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 2004

Station name and number	Location and drainage area	Period of record (water years)	Water year 2004 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
POTOMAC RIVER BASIN								
Chub Run near Stanley, VA (01629945)	Lat 38°34'31", long 78°27'31", NAD83, 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 NGVD of 1929. Drainage area is 3.16 mi^2.	1959-69a, 1970-04	12-10-03	4.08	422	9-6-96	>10.08	*
Crooked Run near Mt. Jackson, VA (01632970)	Lat 38°45'44", long 78°41'05", NAD83, Shenandoah County, Hydrologic Unit 02070006, on right upstream wingwall of culvert on State Highway 263, 0.4 mi upstream from mouth, and 2.3 mi west of Mt. Jackson. Datum of gage is 962.84 ft NGVD of 1929. Drainage area is 6.49 mi^2.	1972-04	9-28-04	5.95	476	1-19-96	11.34	b1,640
Pughs Run near Woodstock, VA (01633650)	Lat 38°55'48", long 78°32'42", NAD83, Shenandoah County, Hydrologic Unit 02070006, on left upstream 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 NGVD of 1929. Drainage area is 3.66 mi^2.	1971-04	12-10-03	4.93	120	9- 6-96	13.39	1,100
GREAT WICOMICO RIVER BASIN								
Bush Mill Stream near Heathsville, VA (01661800)	Lat 37°52'36", long 76°29'41", NAD83, Northumberland County, Hydrologic Unit 02080102, on right bank 12 ft upstream from bridge on State Highway 601, 2.2 mi northwest of Howland, and 3.0 mi southwest of Heathsville. Datum of gage is 22.22 ft NGVD of 1929. Drainage area is 6.82 mi^2.	1964-69‡, 1970-86‡, 1987-04	11-6-03	5.78	152	9-16-99	11.50	1,390

* Discharge not determined.
‡ Operated as a continuous-record gaging station.
> Greater than.
a Records provided by U.S. Department of Agriculture, Soil Conservation Service.
b All previously published maximum discharges have been revised.

Maximum discharge at crest-stage partial-record stations during water year 2004--Continued

Station name and number	Location and drainage area	Period of record (water years)	Water year 2003 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
RAPPAHANNOCK RIVER BASIN								
Pony Mountain Branch near Culpeper, VA (01665050)	Lat 38°27'04", long 77°57'23", NAD83, 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 NGVD of 1929, from topographic map. Drainage area is 0.30 mi^2.	1958-69a, 1970-04	9-29-04	7.22	407	9-29-04	7.22	407
Farmers Hall Creek near Champlain, VA (01668300)	Lat 38°00'05", long 76°58'39", NAD83, Essex County, Hydrologic Unit 02080104, on left upstream 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 NGVD of 1929. Drainage area is 2.18 mi^2.	1966-04	8-30-04	6.85	157	8-20-69	19.2	b611
YORK RIVER BASIN								
Pamunkey Creek at Lahore, VA (01670180)	Lat 38°11'33", long 77°58'08", NAD83, 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 NGVD of 1929, from topographic map. Drainage area is 40.5 mi^2.	1989-91‡, 1992-04	12-11-03	9.10	1,580	6-27-95	17.20	6,900
Contrary Creek near Mineral, VA (01670300)	Lat 38°03'53", long 77°52'44", NAD83, 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 NGVD of 1929, from topographic map. Drainage area is 5.53 mi^2.	1976-86‡, 1987-04	9-28-04	2.67	171	11-28-93	6.94	7,050
Waldrop Creek near Louisa, VA (01671650)	Lat 38°00'09", long 78°04'21", NAD83, Louisa County, Hydrologic Unit 02080106 on left upstream 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 NGVD of 1929. Drainage area is 2.85 mi^2.	1969-04	12-11-03	6.04	305	8-20-69	21.00	b2,420
Reedy Creek near Dawn, VA (01674200)	Lat 37°52'56", long 77°21'34", NAD83, 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, 1972-04	12-14-03	4.20	126	8-20-69	7.28	2,500

‡ Operated as a continuous-record gaging station.
a Records provided by U.S. Department of Agriculture, Soil Conservation Service.
b All previously published maximum discharges have been revised.

Maximum discharge at crest-stage partial-record stations during water year 2004--Continued

Station name and number	Location and drainage area	Period of record (water years)	Water year 2003 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
JAMES RIVER BASIN								
Jackson River at Falling Spring, VA (02012500)	Lat 37°52'36", long 79°58'38", NAD83, 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‡, 1987-04	11-20-03	9.96	7,240	3-17-36 c1913	14.74 20	24,700 d50,000
Cowpasture River near Head Waters, VA (02015600)	Lat 38°19'30", long 79°26'13", NAD83, Highland County, Hydrologic Unit 02080201, on left downstream 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 NGVD of 1929. Drainage area is 11.3 mi^2.	1949-94, 1996-04	9-28-04	7.15	1,660	9-19-03	8.74	e5,860
Craig Creek tributary near New Castle, VA (02017700)	Lat 37°33'21", long 79°59'51", NAD83, Craig County, Hydrologic Unit 02080201, on right upstream 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.	1968-04	9-28-04	7.45	336	11-4-85	13.45	1,100
Renick Run near Buchanan, VA (02020100)	Lat 37°35'27", long 79°38'03", NAD83, Botetourt County, Hydrologic Unit 02080201, on left upstream wingwall of culvert on Frontage Road F054 of Interstate Highway 81 between Exits 168 and 169, 2.2 mi upstream from mouth, and 4.8 mi northeast of Buchanan. Datum of gage is 1,261.85 ft NGVD of 1929. Drainage area is 2.06 mi^2.	1967-04	11-19-03	4.60	288	9-19-03	10.94	1,460
Buffalo River tributary near Amherst, VA (02027700)	Lat 37°33'45", long 78°57'35", NAD83, 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 NGVD of 1929. Drainage area is 0.46 mi^2.	1966-04	9-8-04	3.39	32	9-6-96	7.33	196

‡ Operated as a continuous-record gaging station.
c Maximum known historical peak outside period of record.
d Approximate.
e All previously published maximum discharges since 1997 have been revised.

Maximum discharge at crest-stage partial-record stations during water year 2004--Continued

Station name and number	Location and drainage area	Period of record (water years)	Water year 2003 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
			JAMES RIVER BASIN--Continued					
Stockton Creek near Afton, VA (02030800)	Lat 38°01'48", long 78°48'29", NAD83, Albemarle County, Hydrologic Unit 02080204, on left upstream 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 NGVD of 1929. Drainage area is 2.80 mi^2.	1967-04	9-29-04	5.59	269	6-21-72	9.68	b684
Muddy Run near Stanardsville, VA (02032300)	Lat 38°14'05", long 78°37'01", NAD83, 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.	1967-04	9-28-04	7.26	66	5-13-78	8.33	92
Moores Creek near Charlottesville, VA (02033300)	Lat 38°00'26", long 78°34'24", NAD83, Albemarle County, Hydrologic Unit 02080204, on right downstream 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 Charlottesville. Datum of gage is 505.40 ft NGVD of 1929. Drainage area is 3.52 mi^2.	1967-04	9-28-04	14.76	222	6-2-79	18.74	*
Falling Creek near Midlothian, VA (02037800)	Lat 37°27'16"long 77°35'19", NAD83, Chesterfield County, Hydrologic Unit 02080206, on downstream of bridge on State Highway 653, 2.2 mi upstream from Horners Run and 4 mi southeast of Midlothian. Elevation of gage is 170 ft NGVD of 1929, from topographic map. Drainage area is 18.1mi^2.	1951-93, 2001-04	8-30-04	29.61	6,410	8-30-04	29.61	6,410
		Revised:	7-29-01	25.12	1,040			
			3-18-02	25.37	1,140			
			9-18-03	27.49	2,530			
Falling Creek near Chesterfield, VA (02038000)	Lat 37°26'38"long 77°31'20", NAD83, 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. Datum of gage is 126.39 ft NGVD of 1929. Drainage area is 32.8 mi^2.	1955-94‡, 1996-04	8-30-04	18.50	17,800	8-30-04	18.50	17,800

* Discharge not determined.
‡ Operated as a continuous-record gaging station.
b All previously published maximum discharges have been revised.

Maximum discharge at crest-stage partial-record stations during water year 2004--Continued

Station name and number	Location and drainage area	Period of record (water years)	Water year 2003 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
			JAMES RIVER BASIN--Continued					
Holiday Creek near Toga, VA (02038840)	Lat 37°25'59", long 78°41'11", NAD83, Buckingham County Hydrologic Unit 02080207, on left bank 40 ft downstream from State Forest Road 2307 (old Richmond Road), 1.8 mi upstream from confluence of North Holiday Creek, and 5.2 mi south-southwest of Toga. Datum of gage is 614.40 ft NGVD of 1929. Drainage area is 1.68 mi^2.	1971-04	9-17-04	1.44	48	6-21-72	6.72	2,820
Flat Creek near Amelia, VA (02040500)	Lat 37°23'28", long 78°03'44", NAD83, 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, 1972-04	8-02-04	8.32	1,460	4-16-87	f12.38	f5,260
Bailey Branch tributary at Spring Grove, VA (02042250)	Lat 37°10'30", long 76°59'12", NAD83, Surry County, Hydrologic Unit 02080206, on right upstream wingwall of culvert on State Highway 10, 1.0 mi northwest of Spring Grove. Datum of gage is 61.39 ft NGVD of 1929. Drainage area is 0.71 mi^2.	1967-04	12-14-03	4.50	100	9-16-99	8.12	474
Jordans Branch at Richmond, VA (02042400)	Lat 37°35'11", long 77°29'54", NAD83, Henrico County, Hydrologic Unit 02080206, on left downstream wall of bridge on U.S. Highway 250 (Broad Street), at Richmond, and 2.0 mi upstream from mouth. Drainage area is 2.53 mi^2.	1965-04	8-30-04	13.96	3,370	8-30-04	13.96	3,370
			CHOWAN RIVER BASIN					
Falls Creek tributary near Victoria, VA (02044200)	Lat 37°02'05", long 78°10'25", NAD83, Lunenburg County, Hydrologic Unit 03010201, at upstream end of culvert on State Highway 49, 3.6 mi northeast of Victoria. Datum of gage is 409.21 ft above sea level. Drainage area is 0.34 mi^2.	1962-04	8-30-04	8.03	276	6-21-72	9.15	343
Blackwater River tributary near Holland, VA (02050050)	Lat 36°38'45", long 76°51'28", NAD83, Suffolk City, Hydrologic Unit 03010202, on left upstream 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 NGVD of 1929. Drainage area is 2.76 mi^2.	1967-04	8-14-04	10.03	694	9-16-99	10.78	b784

b All previously published maximum discharges have been revised.
f From rating then in use.

Maximum discharge at crest-stage partial-record stations during water year 2004--Continued

Station name and number	Location and drainage area	Period of record (water years)	Water year 2003 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
ROANOKE RIVER BASIN								
Powells Creek near Turbeville, VA (02075350)	Lat 36°34'51", long 79°11'19", NAD83, Halifax County, Hydrologic Unit 03010104, at culvert on U.S. Highway 58, 0.8 mi upstream 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 NGVD of 1929. Drainage area is 0.28 mi^2.	1958-69a, 1970-04	2-6-04	4.35	49	7-11-65	7.86	384
Bearskin Creek near Chatham, VA (02076200)	Lat 36°50'31", long 79°29'04", NAD83, Pittsylvania County, Hydrologic Unit 03010105, on left upstream wingwall of culvert on State Highway 57, 4.5 mi west of Chatham, and 6 mi upstream from mouth. Elevation of gage is 630 ft above sea level, from topographic map. Drainage area is 4.06 mi^2.	1967-04	9-28-04	8.13	826	6-29-95	19.90	2,850
Blacks Creek near Mt. Airy, VA (02076700)	Lat 36°56'41", long 79°09'55", NAD83, Pittsylvania County, Hydroogic 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. Elevation of gage is 420 ft NGVD of 1929, from topographic map. Drainage area is 3.44 mi^2.	1966-04	2-6-04	4.93	312	9-8-87	g19.5	2,200
KANAWHA RIVER BASIN								
Mira Fork tributary near Dugspur, VA (03167300)	Lat 36°50'16", long 80°34'43", NAD83, Carroll County, Hydrologic Unit 05050001, on left upstream 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 NGVD of 1929. Drainage area is 0.62 mi^2.	1967-04	11-19-03	5.54	157	4-21-92	7.20	257
Thorne Springs Branch near Dublin, VA (03168750)	Lat 37°05'30", long 80°44'33", NAD83, 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 upstream from mouth. Elevation of gage is 1,975 ft above sea level, from topographic map. Drainage area is 4.77 mi^2.	1957-69a, 1970-04	11-19-03	1.13	18.3	5-28-73	8.01	2,200

a Records provided by U.S. Department of Agriculture, Soil Conservation Service.
g From high-water marks.

Maximum discharge at crest-stage partial-record stations during water year 2004--Continued

Station name and number	Location and drainage area	Period of record (water years)	Water year 2003 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
BIG SANDY RIVER BASIN								
Russell Fork at Council, VA (03208040)	Lat 37°04'41", long 82°03'55", NAD83, 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‡, 1984-04	5-31-04	4.92	774	7-29-01	8.17	1,870
North Fork Pound River at Pound, VA (03208700)	Lat 37°07'32", long 82°37'36", NAD83, 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‡, 1988-04	11-19-03	51.49	341	3-12-63	61.58	4,480
Pound River above Indian Creek, at Pound, VA (03208800)	Lat 37°07'26", long 82°36'29", NAD83, Wise County, Hydrologic Unit 05070202, on left bank at Pound, 1,600 ft downstream 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 NGVD of 1929. Drainage area is 36.7 mi^2.	1966-78‡, 1979-04	11-19-03	11.90	1,620	5-18-75	19.44	3,460
Pound River near Georges Fork, VA (03208900)	Lat 37°09'51", long 82°31'30", NAD83, Dickenson County, Hydrologic Unit 05070202, on right bank 50 ft upstream from bridge on State Highway 624, 150 ft upstream from Camp Creek, and 2.6 mi northwest of Georges Fork. Datum of gage is 1,470.39 ft NGVD of 1929. Drainage area is 82.5 mi^2.	1964-82‡, 1983-04	11-19-03	8.52	2,660	5-18-75	14.91	10,900
Russell Fork at Bartlick, VA (03209200)	Lat 37°14'45", long 82°19'25", NAD83, Dickenson County, Hydrologic Unit 05070202, on left bank at Bartlick just upstream from bridge on State Highway 611, 0.2 mi downstream from Pound River, and 1.1 mi upstream from Fall Branch. Datum of gage is 1,165.00 ft NGVD of 1929. Drainage area is 526 mi^2.	1963-82‡, 1983-04	11-19-03	17.16	13,500	5-2-02	27.55	50,000

‡ Operated as a continuous-record gaging station.

Maximum discharge at crest-stage partial-record stations during water year 2004--Continued

Station name and number	Location and drainage area	Period of record (water years)	Water year 2003 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
BIG SANDY RIVER BASIN--Continued								
Knox Creek at Kelsa, VA (03213590)	Lat 37°27'02", long 82°03'33", NAD83, 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‡, 1982-04	11-19-03	9.07	3,440	5-2-02	23.14	16,100
TENNESSEE RIVER BASIN								
Middle Fork Holston River at Groseclose, VA (03473500)	Lat 36°53'19", long 81°20'50", NAD83, Smyth County, Hydrologic Unit 06010102, on left bank 10 ft downstream from culvert on State Highway 679 at Groseclose, 0.2 mi upstream from Rocky Spring Branch, 10 mi northeast of Marion, and at mile 54.7. Datum of gage is 2,442.86 ft NGVD of 1929. Drainage area is 7.39mi^2.	1948-57‡, 1958-87, 1988-89‡, 1990-95, 2001-04	11-19-03	4.58	261	7-6-53	7.42	813
Cedar Creek near Meadowview, VA (03475600)	Lat 36°44'50", long 81°51'19", NAD83, Washington County, Hydrologic Unit 06010102, on left downstream wingwall of culvert 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 NGVD of 1929. Drainage area is 3.38 mi^2.	1967-04	6-26-04	11.96	*	8-4-03	11.80	*
Lick Creek near Chatham Hill, VA (03487800)	Lat 36°57'44", long 81°28'21", NAD83, 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 NGVD of 1929. Drainage area is 25.5 mi^2.	1966-68‡, 1969-04	11-19-03	8.08	2,660	11-7-77 11-19-03	8.09 8.08	2,660 2,660
Brumley Creek at Brumley Gap, VA (03488450)	Lat 36°47'30", long 82°01'09", NAD83, Washington County, Hydrologic 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‡, 1982-04	11-19-03	6.42	1,400	3-18-02	6.72	1,570

* Discharge not determined.
‡ Operated as a continuous-record gaging station.

Maximum discharge at crest-stage partial-record stations during water year 2004--Continued

Station name and number	Location and drainage area	Period of record (water years)	Water year 2003 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
TENNESSEE RIVER BASIN--Continued								
Cove Creek near Shelleys, VA (03489800)	Lat 36°39'13", long 82°21'16", NAD83, Scott County, Hydrologic Unit 06010101, on right downstream 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.	1951-04	11-19-03	6.08	946	3-12-63	8.40	2,500
North Fork Holston River near Gate City, VA (03490000)	Lat 36°36'31", long 82°34'05", NAD83, 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 NGVD of 1929. Drainage area is 672 mi^2.	1932-81‡, 1982-04h	11-20-03	15.07	25,500	c1862 4-5-77	h22.5 19.79	h54,000 41,000
Clinch River at Richlands, VA (03521500)	Lat 37°05'10", long 81°46'51", NAD83, 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 NGVD of 1929. Drainage area	1946-89‡, 1990-04	5-31-04	10.32	3,820	c6-22-1901 1-29-57	h21.3 19.30	h11,500 9,640
Big Cedar Creek near Lebanon, VA (03523000)	Lat 36°54'29", long 82°02'19", NAD83, (formerly published as Cedar Creek near lebanon) Russell County,Hydrologic Unit 06010205, on right bank 200 ft upstream from bridge on U.S Highway 19 (business), 0.2 mi upstream from Roaring Spring Creek, 1.3 mi downstream from Little Cedar Creek, and 2.3 mi east of Lebanon. Datum of gage is 1,895.76 ft NGVD of 1929. Drainage area is 51.5mi^2.	1953-59‡, 1960-77, 1991-94, 2001-04	11-19-03	5.28	3,540	3-18-02	6.93	d6,570
Guest River at Coeburn, VA (03524500)	Lat 36°55'45", long 82°27'23", NAD83, 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 NGVD of 1929. Drainage area is 87.3 mi^2.	1950-59‡, 1960-78, 1979-81‡, 1982-04	11-19-03	8.62	2,290	4-5-77	20.95	18,000

‡ Operated as a continuous-record gaging station.
c Maximum known historical peak outside period of record.
d Approximate.
h Records provided by Tennessee Valley Authority.

Maximum discharge at crest-stage partial-record stations during water year 2004--Continued

Station name and number	Location and drainage area	Period of record (water years)	Water year 2003 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
TENNESSEE RIVER BASIN--Continued								
Stony Creek at Ka, VA (03524900)	Lat 36°48'57", long 82°37'02", NAD83, Scott County, Hydrologic Unit 06010205, at Ka, on left bank 300 ft upstream from bridge on State Highway 619, 600 ft downstream from Straight Fork, and 4.2 mi upstream from mouth. Elevation of gage is 1,510 ft NGVD of 1929, from topographic map. Drainage area is 30.9 mi^2.	1981‡, 1982-04	5-31-04	6.56	1,990	7-29-01	13.11	11,300
Copper Creek near Gate City, VA (03526000)	Lat 36°40'26", long 82°33'57", NAD83, Scott County, Hydrologic Unit 06010205, on right bank on upstream end of old bridge pier, 50 ft upstream from bridge on State Highway 619, 0.2 mi upstream from Plank Camp Creek, 1.1 mi downstream from Obeys Creek, and 2.6 mi northeast of Gate City. Datum of gage is 1,301.95 ft above sea level. Drainage area is 106 mi^2.	1948-72‡, 1973-95, 1996-98‡, 1999-04	11-19-03	9.64	2,980	4-5-77	13.57	7,660
North Fork Powell River at Pennington Gap VA (03530500)	Lat 36°46'26", long 83°01'59", NAD83, Lee County, Hydrologic Unit 06010206, near right bank on downstream side of abandoned highway bridge 75 fteast of U.S. Highway 421, 0.8 mi north of Pennington Gap, 1.3 mi downstream from Straight Creek, and at mile 4.7. Datum of gage is 1,363.02 ft above sea level. Drainage area is 71.4 mi^2.	1945-51‡ 1952-77, 1979-81‡, 1982-93, 1994-95‡, 2001-04	3-6-04	7.55	3,520	4-5-77	16.14	17,000

‡ Operated as a continuous-record gaging station.

FOOTNOTES FOR CREST-STAGE PARTIAL-RECORD STATIONS: 2004 water year

* Discharge not determined.
‡ Operated as a continuous-record gaging station.
> Greater than.
a Records provided by U.S. Department of Agriculture, Soil Conservation Service.
b All previously published maximum discharges have been revised.
c Maximum known historical peak outside period of record.
d Approximate.
e All previously published maximum discharges since 1997 have been revised.
f From rating then in use.
g From high-water marks.
h Records provided by Tennessee Valley Authority.

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 2004

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
NASSAWADOX CREEK BASIN						
01484800 Guy Creek [a]	Nassawadox Creek	Lat 37°30'08", long 75°52'21", NAD83, Northampton County, at bridge on State Highway 606, 1.9 mi northwest of Nassawadox, and 2.1 mi upstream from mouth.	1.72	1963-96‡	11-24-03	1.55
					12-10-03	1.74
					12-23-03	2.36
					1-6-04	2.22
					1-21-04	1.90
					2-2-04	1.41
					2-17-04	1.79
					3-1-04	1.25
					3-16-04	2.03
					3-30-04	.834
					4-13-04	10.8
					4-27-04	2.85
					5-11-04	.302
					5-25-04	.115
					6-8-04	.632
					6-22-04	.075
					7-6-04	.372
					7-20-04	.371
					8-20-04	5.08
					9-1-04	2.42
					9-14-04	.842
					9-28-04	.827
01484855 North Branch Onancock Creek [a]	Onancock Creek	Lat 37°42'56", long 75°44'09", NAD83, Accomack County, at culvert on Pine Street, at Onancock, and 0.76 mi upstream from State Highway 658.	-	-	11-24-03	1.15
					12-10-03	1.37
					12-23-03	1.87
					1-6-04	2.51
					1-21-04	1.56
					2-2-04	1.02
					2-17-04	1.06
					3-1-04	.787
					3-16-04	1.26
					3-30-04	.620
					4-13-04	5.34
					4-27-04	3.06
					5-11-04	.726
					5-25-04	.360
					6-8-04	.320
					6-22-04	.653
					7-6-04	.233
					7-20-04	.235
					8-20-04	2.49
					9-1-04	1.64
					9-14-04	.571
					9-28-04	.784
POTOMAC RIVER BASIN						
01614805 Opequon Creek	Potomac River	Lat 39°09'26", long 78°14'48", NAD83, Frederick County, at Route 622 at Opequon.	2.47	1950 2001-03	4-1-04	2.84
					9-22-04	2.17
01614820 Opequon Creek	Potomac River	Lat 39°07'48", long 78°13'32", NAD83,Frederick County, at old Route 628 near Opequon.	10.6	1952-54, 1963 2001-03	4-1-04	11.9
					9-23-04	10.1
390634078121301 Springdale Spring	Potomac River	Lat 39°06'34", long 78°12'13", NAD83, Frederick County, 40 ft below spring near Bartonville.	-	-	8-24-04	0.13
01615515 Old Town Spring	Town Run	Lat 39°11'16", long 78°10'35", NAD83, Frederick County, at Winchester at weir.	-	2001-03	4-1-04	0.60
					9-24-04	0.60

‡ Operated as a continuous-record gaging station.
a Provided by the Virginia Department of Environmental Quality - Water Division.

Discharge measurements made at special study and miscellaneous sites during water year 2004--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
POTOMAC RIVER BASIN--Continued						
01615518 Town Run tributary from Shawnee Spring	Town Run	Lat 39°10'20", long 78°09'45", NAD83, Frederick County, 30 ft above confluence with Town Run, at Winchester.	-	2001-03	4-1-04 9-24-04	1.39 1.39
01616075 Fay Spring	Redbud Run	Lat 39°12'18", long 78°07'50", NAD83, Frederick County, near Winchester at weir below springbox.	-	2001-03	4-1-04 9-29-04	1.69 3.38
391416078064501 O.L. Payne Spring	Hot Run	Lat 39°14'16", long 78°06'45", NAD83, Frederick County, at springhouse near Stephenson.	-	-	8-24-04	0.10
391620078051301 Branson Spring	Turkey Run	Lat 39°16'20", long 78°05'13", NAD83, Frederick County, near Clear Brook.	-	-	8-25-04 9-29-04	1.80 4.02
01616300 Opequon Creek[a]	Potomac River	Lat 39°15'53", long 78°01'58", NAD83, Clarke-Frederick Counties, at State Highway 667 ford, at Virginia-West Virginia line, 1.9 mi northeast of Brucetown, and 23.6 mi upstream from mouth.	141	2002-03	10-7-03 3-2-04	88.2 159
01620836 Mossy Creek [b]	North River	Lat 38°20'29", long 79°05'01", NAD83, Augusta County, at bridge on State Highway 731, 0.2 mi southeast of Mt. Solon.	-	1941, 1950-54, 2002-03	10-9-03	1.89
01620837 Big Spring [a]	Mossy Creek	Lat 38°20'29", long 79°05'07", NAD83, Augusta County, at bridge on State Highway 731, at Mt. Solon, and 0.2 mi upstream from mouth.	-	2002-03	10-9-03 1-6-04	12.1 15.6
01620850 Mossy Creek [a]	North River	Lat 38°23'13", long 79°00'51", NAD83, Rockingham County,at State Highway 727, 0.35 mi upstream from mouth, and 1.5 mi southeast of Spring Creek.	-	2002-03	10-9-03 1-6-04	32.3 33.6
01621320 Long Glade Creek [a]	North River	Lat 38°17'43", long 78°02'43", NAD83, Augusta County, at culvert on State Highway 613, 2.4 mi southeast of Moscow.	-	2002-03	11-17-03	2.61
01621340 Long Glade Creek [a]	North River	Lat 38°22'38", long 78°58'58", NAD83, Rockingham County, at bridge on State Highway 42, 0.9 mi upstream from mouth, at Bridgewater.	-	2002-03	11-17-03	8.32
01624155 Moffett Creek [a]	Middle River	Lat 38°15'43", long 79°06'04", NAD83, Augusta County, at bridge on State Highway 835, 0.15 mi upstream from Elk Run, and 2.4 mi south of Parnassus.	-	2002-03	10-9-03 1-6-04	4.67 6.97
01624175 Elk Run [a]	Moffett Creek	Lat 38°15'45", long 79°06'21", NAD83, Augusta County, at bridge on State Highway 835, 0.2 mi upstream from mouth, and 2.3 mi south of Parnassus.	-	2002-03	10-9-03 1-6-04	5.34 4.92

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 2004--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
POTOMAC RIVER BASIN--Continued						
01624550 Lewis Creek [a]	Middle River	Lat 38°10'58", long 78°58'32", NAD83, Augusta County, at bridge on State Highway 612, 0.6 mi upstream from mouth, and 2.2 mi southeast of Verona.	-	2002-03	10-9-03	26.6
01624960 Polecat Draft [a]	Middle River	Lat 38°13'42", long 78°53'01", NAD83, Augusta County, at bridge on State Highway 608, 0.1 mi upstream from mouth, and 1.2 mi northeast of Piedmont.	-	2002-03	10-9-03	3.00
01629935 Little Hawksbill Creek [a]	Hawksbill Creek	Lat 38°34'09", long 78°28'12", NAD83, Page County, at bridge on State Highway 626, 800 ft upstream from Beaver Run, and 1.6 mi east of Stanley.	-	2002-03	10-8-03	5.39
01629945 Chub Run	Hawksbill Creek	Lat 38°34'31", long 78°27'31", NAD83, Page County, at culvert on State Highway 689, 2.2 mi east of Stanley, and 3.1 mi upstream of mouth.	3.16	1994, 1998-99, 2003 - Revised	9-19-03 9-23-03	1,100 68.6
0162994750 Hawksbill Creek [a]	South Fork Shenandoah River	Lat 38°37'40", long 78°28'06", NAD83, Page County, at bridge on State Highway 629, 2.6 mi south of Luray.	-	2002-03	10-8-03	18.4
01629980 East Hawksbill Creek [a]	Hawksbill Creek	Lat 38°38'55", long 78°27'13", NAD83, Page County, 0.3 mi downstream from State Highway 642, 0.8 mi upstream from mouth, and 1.2 mi southeast of Luray.	-	2002-03	10-8-03	18.6
01630540 Hawksbill Creek [a]	South Fork Shenandoah River	Lat 38°42'29", long 78°27'23", NAD83, Page County, at bridge on State Highway 648, 0.96 mi upstream of mouth, and 3.0 mi north of Luray.	68.9	1963, 1969, 1978-79, 1982, 2002-03	10-8-03	67.4
01630544 Pass Run [a]	Hawksbill Creek	Lat 38°42'30", long 78°27'22", NAD83, Page County, near bridge on State Highway 648, at mouth, at Springfield, and 3.1 mi north of Luray.	-	1963, 2002-03	10-8-03	20.6
01632825 Fridley Run [a]	Mountain Run	Lat 38°29'37", long 78°42'09", NAD83, Rockingham County, at Fridley Gapin George Washington National Forest, 0.02 mi upstream from mouth, and 4.8 mi southeast of Lacey Spring.	-	2003	10-27-03 11-17-03 12-29-03 1-12-04 2-9-04 3-22-04 4-12-04 6-7-04	2.89 2.92 3.82 1.63 2.45 2.53 1.98 1.55
01632833 Mountain Run [a]	Smith Creek	Lat 38°29'58", long 78°44'22", NAD83, Rockingham County, at bridge on State Highway 620, 0.93 mi upstream from mouth, and 3.3 mi southeast of Lacey Spring.	-	2003	10-27-03 11-17-03 12-29-03 1-12-04 2-9-04 3-22-04 4-12-04 6-7-04	6.06 5.94 8.06 4.20 8.40 7.00 9.91 2.99
01632970 Crooked Run	Mill Creek	Lat 38°45'44", long 78°41'05", NAD83, Shenandoah County, at State Highway 263, 0.4 mi upstream from mouth, and 2.3 mi west of Mt. Jackson.	6.49	1994, 1996, 1998, 2001	9-28-04	476

a Provided by the Virginia Department of Environmental Quality - Water Division.

Discharge measurements made at special study and miscellaneous sites during water year 2004--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
POTOMAC RIVER BASIN--Continued						
Fawcett Run	Cedar Creek	Lat 38°05'09", long 78°19'13", NAD83, Frederick County, at State Highway 622 at Marlboro.	-	1963	9-22-04	3.30
Fawcett Run	Cedar Creek	Lat 39°05'01", long 78°19'18", NAD83, Frederick County, 20 ft above confluence with Marlboro Spring at Marlboro.	-	-	3-26-03	6.64
01635005 Fawcett Run	Cedar Creek	Lat 39°04'58", long 78°19'21", NAD83, Frederick County, below Marlboro Spring at Marlboro.	7.24	2001-03	4-1-04 9-22-04 12-18-02	8.04 11.1 6.52
01635008 Fawcett Run	Cedar Creek	Lat 39°04'44", long 78°19'36", NAD83, Frederick County, above mouth at Marlboro.	7.38	2001-03	4-1-04 9-22-04	7.93 10.8
390350078175201 Buffalo Marsh Spring	Buffalo Marsh Run	Lat 39°03'50", long 78°17'52", NAD83, Frederick County, 100 ft below spring and above confluence with Buffalo Marsh Run.	-	-	8-20-04 9-21-04	2.04 2.50
01635070 Vaucluse Spring	Meadow Brook	Lat 39°03'45", long 78°15'37", NAD83, Frederick County, near Middletown.	-	2001-03	4-2-04 9-23-04	4.11 3.98
01643715 Cromwells Run [a]	Goose Creek	Lat 38°58'20", long 77°47'26", NAD83, Fauquier County, at culvert on U.S. Highway 50, 0.4 mi upstream from Rocky Creek, and 3.0 mi west of Middleburg.	-	2002-03	10-7-03	18.7
01643720 Rocky Creek [a]	Cromwells Run	Lat 38°58'25", long 77°47'42", NAD83, Fauquier County, at culvert on U.S. Highway 50, 0.4 mi upstream from mouth, and 3.0 mi west of Middleburg. southeast of Leesburg.	-	2002-03	10-7-03	1.53
RAPPAHANNOCK RIVER BASIN						
01661839 Jordan River[a]	Rappahannock River	Lat 38°45'45", long 78°02'04", NAD83, Rappahannock County, at bridge on State Highway 637, 0.5 mi upstream from mouth, and 3.5 mi east of Flint Hill.	-	1952-54	8-9-04 9-14-04	4.15 19.7
01661840 Rappahannock River[b]	Chesapeake Bay	Lat 38°45'32", long 78°01'41", NAD83, Rappahannock and Fauquier Counties, at Bridge on State Highway 647, 0.1 mi downstream from Jordan River, and 0.4 mi east of Flint Hill.	65.9	1950-54, 1963, 1976-77, 1981-84	8-9-04 9-14-04	8.92 26.4
01661995 Carter Run [a]	Rappahannock River	Lat 38°41'57", long 77°54'25", NAD83, Fauquier County, at bridge on State Highway 688, 0.25 mi upstream from mouth, and 4.2 mi north of Jeffersonton.	-	1951-54, 2002-03	10-10-03 6-3-04	40.9 25.1
01662000 Rappahannock River [b]	Chesapeake Bay	Lat 38°41'05", long 77°54'14", NAD83, Fauquier County, at bridge on U.S. Highway 211, 0.9 mi downstream from Carter Run, and 6.2 mi southwest of Warrenton.	195	1942-86‡	8-9-04	41.0

‡ 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 measurements made at special study and miscellaneous sites during water year 2004--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
RAPPAHANNOCK RIVER BASIN--Continued						
01662065 Great Run [a]	Rappahannock River	Lat 38°38'34", long 77°51'34", NAD83, Fauquier County, at bridge on State Highway 687, 1.7 mi upstream from mouth, and 1.7 mi south of Turnbull.	-	1963, 2002-03	10-10-03 6-3-04	10.9 8.33
01662225 Hughes River [a]	Hazel River	Lat 38°31'20", long 78°10'17", NAD83, Rappahannock County, at bridge on State Highway 644, 0.2 mi upstream from mouth, and 2.5 mi southwest of Boston.	-	-	8-9-04 9-14-04	5.41 24.6
01662235 Hazel River [a]	Rappahannock River	Lat 38°20'29", long 79°05'01", NAD83, Culpeper County, at bridge on U.S. Highway 522, 0.6 mi upstream from Devils Run, and 1.0 mi southeast of Boston.	-	1963	8-9-04 9-14-04	18.8 107
01662270 Hazel River [a]	Rappahannock River	Lat 38°35'53", long 78°03'42", NAD83, Culpeper County, at bridge on State Highway 729, 2.4 mi southeast of Castleton.	-	1963, 1976	8-9-04 9-14-04	33.2 127
01662410 Thornton River [a]	Hazel River	Lat 38°38'48", long 78°12'23", NAD83, Rappahannock County, at Fletcher Mill, and 1.3 mi southeast of Sperryville.	-	-	8-12-04 9-14-04 9-14-04	3.40 35.9 72.8
01663750 Muddy Run [a]	Hazel River	Lat 38°32'34", long 78°02'34", NAD83, Culpeper County, at bridge on State Highway 729, 0.75 mi upstream from Apperson Creek, and 2.4 mi northeast of Norman.	-	2002-03	10-10-03 12-1-03 1-5-04	4.97 8.14 9.19
01663830 Muddy Run [a]	Hazel River	Lat 38°33'43", long 77°55'29", NAD83, Culpeper County, at bridge on State Highway 625, 0.9 mi upstream from mouth, and 3.1 mi southeast of Rixeyville.	-	2002-03	10-10-03 12-1-03 1-5-04	17.5 35.7 30.1
01665285 Rapidan River [a]	Rappahannock River	Lat 38°22'12", long 78°21'52", NAD83, Madison County, at bridge on State Highway 662, 0.45 mi upstream from Garth Run, and 1.30 mi northwest of Wolftown.	-	-	8-11-04	11.5
01665545 Marsh Run [a]	Rapidan River	Lat 38°14'00", long 78°16'31", NAD83, Orange County, at bridge on State Highway 644, 0.35 mi upstream from Beaver Run, and 3.2 mi northeast of Eheart.	-	-	8-11-04 9-13-04	2.81 2.56
01665557 Rapidan River [a]	Rappahannock River	Lat 38°13'53", long 78°13'12", NAD83, Orange County, at bridge on State Highway 231, at Liberty Mills, and 1.8 mi north of Somerset.	-	1963	8-12-04 9-13-04	53.1 182
01665577 Blue Run [a]	Rapidan River	Lat 38°13'24", long 78°12'52", NAD83, Orange County, at bridge on State Highway 20, 0.2 mi downstream from Hen and Bacon Run, and 1.2 mi north of Somerset.	-	-	9-13-04	4.64
01665580 Blue Run [a]	Rapidan River	Lat 38°14'15", long 78°11'56", NAD83, Orange County, at bridge on State Highway 641, 0.8 mi upstream from mouth, and 2.3 mi northeast of Somerset.	-	1989-92	8-11-04 9-13-04	3.41 4.92

a Provided by the Virginia Department of Environmental Quality - Water Division.

Discharge measurements made at special study and miscellaneous sites during water year 2004--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
RAPPAHANNOCK RIVER BASIN--Continued						
01665630 Rapidan River [a]	Rappahannock River	Lat 38°16'48", long 78°08'24", NAD83, Orange County, at bridge on U.S. Highway 15 at Madison Mills.	-	1941	8-12-04 9-16-04	65.5 204
01665650 Unnamed tributary [a]	Rapidan River	Lat 38°16'44", long 78°07'15", NAD83, Orange County, at bridge on State Highway 634, 0.12 mi upstream from mouth, and 1.1 mi east of Madison Mills.	-	-	8-11-04 9-16-04	.967 .799
0166828230 Occupacia Creek [a]	Rappahannock River	Lat 38°02'39", long 77°00'20", NAD83, Essex County, at bridge on U.S. Highway 17, at Occupacia, 1.0 mi south of Chance, and 10.47 mi upstream of mouth	-	2003	12-1-03 12-30-03 2-10-04 2-13-04 3-12-04 3-30-04 4-6-04 5-17-04 5-28-04 6-1-04 7-29-04	38.4 41.3 67.6 45.4 30.7 25.2 35.1 16.8 16.4 35.7 103
01668300 Farmers Hall Creek	Rappahannock River	Lat 38°00'05", long 76°58'39", NAD83, Essex County, at culvert on upstream side of U.S. Highway 17, 1.2 mi southeast of Champlain.	2.18	1969, 1991, 1996-98	8-16-04 8-30-04	23.0 158
01668700 Mount Landing Creek [a]	Rappahannock River	Lat 37°57'44", long 76°56'10", NAD83, Essex County, at bridge on State Highway 716, 1.7 mi north of Mount Landing, and 4.5 mi upstream from mouth.	-	2002-03	12-1-03 12-30-03 2-10-04 2-13-04	24.8 32.7 52.1 37.8
YORK RIVER BASIN						
01670250 Plentiful Creek [a]	Lake Anna	Lat 38°09'35", long 77°51'33", NAD83, Spotsylvania County, at bridge on State Highway 653, 0.5 mi northeast of Belmont.	-	-	7-9-04 7-16-04 8-25-04 9-13-04 9-22-04	4.29 2.18 2.52 2.85 2.80
01670435 Northeast Creek [a]	Lake Anna	Lat 38°02'36", long 77°41'35", NAD83, Spotsylvania County, at bridge on State Highway 622, 3.0 mi west of Partlow near Lake Anna Dam.	-	1981	7-9-04 7-16-04 7-28-04 8-10-04 8-25-04 9-13-04 9-22-04	10.2 5.40 126 7.20 4.21 6.77 9.43
01671210 South Anna River [a]	Pamunkey River	Lat 38°05'31", long 78°11'24", NAD83, Hanover County, at bridge on State HIghway 603, 1.5 mi north of Boswells Tavern.	-	1976, 1981	7-16-04 7-28-04 8-10-04	1.67 4.32 1.49
01671650 Waldrop Creek	South Anna River	Lat 38°00'09", long 78°04'21", NAD83, Louisa County, at culvert on State Highway 632, 2.3 mi upstream from mouth, and 4.2 mi southwest of Louisa.	2.85	1969-71, 1994, 1997	9-28-04	110
01672865 South Anna River [b]	Pamunkey River	Lat 37°48'00", long 77°25'27", NAD83, Hanover County, at bridge on State Highway 738, 1.0 mi upstream from mouth, and 4.0 mi northeast of Ashland.	-	1980, 1983	11-24-03 2-20-04 2-26-04 6-9-04 7-21-04 8-10-04	642 455 389 170 171 209

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 2004--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
YORK RIVER BASIN--Continued						
001674160 Polecat Creek [a]	Mattaponi River	Lat 37°58'09", long 77°32'19", NAD83, Caroline County, 150 ft downstream from culvert on State Highway 601, 0.7 mi northeast of Cedar Fork, and 2.1 mi west of Golansville.	1.15	1994-03	10-8-03 12-3-03 2-10-04 4-14-04 6-7-04 7-29-04	.185 .198 2.21 11.1 .232 .209
01674172 Polecat Creek [a]	Mattaponi River	Lat 37°58'13", long 77°29'12", NAD83, Caroline County, 150 ft upstream from bridge on State Highway 652, 0.5 mi upstream fromStevens Mill Run, and 1.1 mi southeast of Golansville.	10.8	1994-03	10-8-03 12-3-03 2-10-04 4-14-04 6-7-04 7-29-04	3.48 8.55 22.8 70.1 3.53 8.44
01674174 Stevens Mill Run [a]	Polecat Creek	Lat 37°59'20", long 77°29'49", NAD83, Caroline County, 100 ft downstream from bridge on State Highway 601, 0.6 mi north of Golansville, 0.8 mi downstream from Lake Caroline, and 1.6 mi upstream from mouth.	9.50	1994-03	10-8-03 12-3-03 2-10-04 4-14-04 6-7-04 7-29-04	1.41 54.1 35.8 84.8 3.28 11.1
01674180 Polecat Creek [a]	Mattaponi River	Lat 37°57'20", long 77°22'07", NAD83, 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	1994-03	10-8-03 12-3-03 2-10-04 4-14-04 6-7-04 7-29-04	12.8 35.8 131 350 30.8 152
01674200 Reedy Creek	Mattaponi River	Lat 37°52'56", long 77°21'34", NAD83, 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, 1996-99	8-31-04 8-31-04	102 75.3
JAMES RIVER BASIN						
02012500 Jackson River	James River	Lat 37°52'36", long 79°58'38", NAD83, Allegheny County, at Smith Bridge, 0.8 mi south of Falling Spring and 1.6 mi downstream from Falling Spring.	411	1925-84‡ 1985-03	10-03-02 10-23-03	165 221
02015600 Cowpasture River	James RIver	Lat 37°19'30", long 79°26'13", NAD83, Highland County, at bridge on U.S. Highway 250, 3 mi upstream from Shaw Fork, and 1.2 mi west of Head Waters.	11.3	1995-99, 2001	9-28-04	1,660
02028930 Totier Creek [a]	James River	Lat 37°47'37", long 78°31'13", NAD83, Albemarle County, above Rock Castle Creek, 600 ft upstream from bridge on State Highway 726, and 1.5 mi southwest of Scottsville.	-	-	7-20-04 8-23-04 9-20-04	3.27 1.08 3.15
02028940 Unnamed tributary [a]	Rock Castle Creek	Lat 37°47'36", long 78°31'17", NAD83, Albemarle County, at mouth, upstream from bridge on State Highway 726, and 1.5 mi southwest of Scottsville.	-	-	7-20-04 8-23-04	.413 .252
02028960 Rock Castle Creek [a]	Totier Creek	Lat 37°47'36", long 78°31'15", NAD83, Albemarle County, at mouth, upstream form bridge on State Highway 726, and 1.5 mi southwest of Scottsville.	-	-	7-20-04 8-23-04 9-20-04	2.15 1.47 2.37

‡ Operated as a continuous-record gaging station.
a Provided by the Virginia Department of Environmental Quality - Water Division.

Discharge measurements made at special study and miscellaneous sites during water year 2004--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
		JAMES RIVER BASIN--Continued				
02029050 Little Georgia Creek [a]	James River	Lat 37°45'05", long 78°28'00", NAD83, Buckingham County, at bridge on State Highway 679, 0.96 mi upstream from mouth, and 3.6 mi south of Scottsville.	-	-	7-20-04 8-23-04 9-20-04	1.21 1.62 1.98
02030030 Hardware River [a]	James River	Lat 37°44'29", long 78°24'25", NAD83, Fluvanna County, at bridge on State Highway 646, 0.36 mi upstream from mouth, at Hardware.	-	-	7-20-04 8-23-04 9-20-04	66.5 47.8 112
02030800 Stockton Creek	Mechums River	Lat 37°01'48", long 78°48'29", NAD83, Albemarle County, at culvert on State Highway 6, 1.7 mi east of Afton.	2.80	1969-71, 1991, 1997	9-29-04	269
02037800 Falling Creek	James River	Lat 37°27'16", long 77°35'19", NAD83, Chesterfield County, at bridge on State Highway 653, 2.2, mi upstream from Horners Run, and 4 mi southeast of Midlothian.	18.1	1953, 1973, 1975, 2003	10-7-03 12-11-03 8-30-04	6.82 471 6,980
02038000 Falling Creek	James River	Lat 37°26'38", long 77°31'20", NAD83, Chesterfield County, at 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.	32.8	1955-94‡ 1995	8-30-04	16,900
02038731 Fourmile Creek [a]	James River	Lat 37°25'58", long 77°19'32", NAD83, Henrico County, at bridge on State Highway 5, 0.9 mi downstream from Deerlick Branch, 3.6 upstream from mouth, and 4.4 mi southeast of Richmond Heights.	-	2003	10-3-03 11-24-03	3.85 10.6
0203873175 Fourmile Creek [a]	James River	Lat 37°25'21", long 77°18'31", NAD83, Henrico County, at bridge on Kingsland Road, 200 ft downstream from Griggs Pond, and 5.0 mi southeast of Richmond Heights.	-	2002-03	10-3-03 11-24-03	4.50 13.4
02038880 Vaughans Creek [b]	Appomattox River	Lat 37°21'09", long 78°35'56", NAD83, Appomattox County, at bridge on State Highway 626, 3.3 mi northeast of Hixburg, and 3.9 mi upstream from mouth.	23.2	1980-81‡, 2003	11-10-03	24.7
02038892 Horesepen Creek [a]	Appomattox River	Lat 37°20'39", long 78°29'27", NAD83, Buckingham County, at bridge on State Highway 683, 0.4 mi upstream from mouth, and 3.3 mi south of Sheppards.	-	2003	11-10-03 1-14-04 3-4-04 3-23-04	4.68 3.76 3.89 3.77
02038945 Spring Creek [a]	Buffalo Creek	Lat 37°13'08", long 78°35'25", NAD83, Prince Edward County, at bridge on State Highway 659, 1.0 mi upstream from Mud Creek, and 1.5 mi northeast of Darlington Heights.	-	2003	11-10-03 12-2-03 1-15-04 2-11-04	26.1 17.0 16.9 25.7
02038955 Mud Creek [a]	Spring Creek	Lat 37°13'48", long 78°35'52", NAD83, Prince Edward County, at bridge on State Highway 659, 1.5 mi upstream from mouth, and 2.0 mi north of Darlington Heights.	-	2003	11-10-03 12-2-03 1-15-04 2-11-04	10.0 8.10 8.25 10.0

‡ 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 measurements made at special study and miscellaneous sites during water year 2004--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
		JAMES RIVER BASIN--Continued				
02038970 Spring Creek [a]	Buffalo Creek	Lat 37°13'58", long 78°31'13", NAD83, Prince Edward County, at bridge on State Highway 700, 1.46 mi upstream from mouth, and 3.3 mi west of Hampden Sydney.	-	2003	11-10-03 12-2-03 1-15-04 2-11-04	42.1 34.0 36.0 49.2
02039525 Bush River [a]	Sandy River	Lat 37°08'50", long 78°24'23", NAD83, Prince Edward County, at bridge on State Highway 630, 500 ft downstream from Goodes Branch, and 6.0 mi south of Worsham.	-	1963, 2003	11-12-03 12-2-03 1-15-04 2-18-04 3-4-04	15.6 17.2 16.1 16.2 12.6
02039550 Bush River [a]	Sandy River	Lat 37°16'42", long 78°21'05", NAD83, Prince Edward County, at bridge on U.S. Highway 460, 2.8 mi upstream from mouth, and 3.1 mi west of Rice.	-	1944, 1952-54, 1963, 1990, 2003	12-2-03 3-4-04 3-25-04 4-7-04	49.2 38.2 39.1 30.0
02039580 Tanyard Branch [a]	Briery Creek	Lat 37°14'27", long 78°25'13", NAD83, Prince Edward County, at culvert on State highway 646, at Farmville Lake spillway, and 2.0 mi east of Hampden Sydney.	-	2003	11-12-03 12-2-03 1-15-04 3-4-04 4-7-04	1.80 1.43 2.15 1.05 .812
02039600 Briery Creek [a]	Bush River	Lat 37°16'50", long 78°21'50", NAD83, Prince Edward County, at bridge on U.S. Highway 460, 1.0 mi upstream from mouth, and 4.1 mi west of Rice.	41.5	1951-54, 1963, 1981-85, 2003	12-2-03 3-4-04 3-25-04 4-7-04	31.4 9.20 26.9 15.1
02039680 Little Sandy Creek [a]	Sandy River	Lat 37°12'31", long 78°19'13", NAD83, Prince Edward County, at bridge on State Highway 612, 2.4 mi upstream from mouth, and 3.6 mi southwest of Moran.	-	1963, 2003	11-12-03 12-2-03 1-14-04 2-17-04 3-4-04	5.85 5.36 5.87 5.75 4.80
02039760 Saylers Creek [a]	Appomattox River	Lat 37°19'36", long 78°15'32", NAD83, Prince Edward County, upstream from bridge on State Highway 619, upstream from Little Saylers Creek, 1.3 mi upstream from mouth, and 4.1 mi northeast of Rice.	-	2003	11-12-03 1-14-04 2-18-04 3-3-04 4-7-04	11.5 10.5 11.2 8.34 6.65
02039780 Little Saylers Creek [a]	Saylers Creek	Lat 37°19'36", long 78°15'33", NAD83, Prince Edward County, 50 ft upstream from bridge on State Highway 619, 50 ft upstream from mouth, and 4.1 mi northeast of Rice.	-	2003	11-12-03 1-14-04 2-18-04 3-3-04 4-7-04	14.7 13.6 13.4 10.2 8.17
02039781 Saylers Creek [a]	Appomattox River	Lat 37°19'37", long 78°15'34", NAD83, Prince Edward County, at bridge on State Highway 619, downstream from Little Saylers Creek, and 4.1 mi northeast of Rice.	-	1963, 2003	11-12-03 1-14-04 2-18-04 3-3-04 4-7-04	26.2 24.1 24.6 18.5 14.8
02039817 Dawsons Creek [a]	Appomattox River	Lat 37°22'48", long 78°13'20", NAD83, Cumberland County, at culverts on State Highway 619, 0.44 mi upstream from mouth, and 1.8 mi southeast of Angola.	-	2003	1-14-04 2-18-04 3-3-04	3.90 3.82 2.99
02039825 Sandy Creek [a]	Appomattox River	Lat 37°22'41", long 78°12'30", NAD83, Cumberland County, at bridge on State Highway 650, 2.08 mi upstream from mouth, and 2.3 mi southeast of Angola.	-	1963, 2003	1-14-04 2-18-04 3-3-04	5.00 4.46 3.23

a Provided by the Virginia Department of Environmental Quality - Water Division.

Discharge measurements made at special study and miscellaneous sites during water year 2004--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
JAMES RIVER BASIN--Continued						
02039850 Horsepen Creek [a]	Big Guinea Creek	Lat 37°25'03", long 78°16'48", NAD83, Cumberland County, at culverts on State Highway 660, 0.42 mi upstream from mouth, and 2.4 mi northwest of Angola.	-	2003	1-8-04 2-18-04 3-3-04 3-26-04	2.59 2.41 2.33 2.29
02039865 Big Guinea Creek [a]	Appomattox River	Lat 37°26'33", long 78°12'25", NAD83, Cumberland County, at bridge on State highway 600, 0.4 mi downstream from Tear Wallet Creek, 1.4 mi upstream from mouth, and at Stony Point Mills.	-	1963, 2003	1-8-04 2-18-04 3-3-04 3-26-04	23.4 25.9 21.0 21.2
02040590 Nibbs Creek [a]	Flat Creek	Lat 37°22'03", long 77°59'32", NAD83, 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.	17.8	1996-01, 2003	10-2-03 11-25-03	9.02 11.8
02040610 Nibbs Creek [a]	Flat Creek	Lat 37°23'54", long 77°57'18", NAD83, Amelia County, at bridge on State Highway 636, 1.5 mi upstream from mouth, and 2.5 mi northwest of Winterham.	-	2003	10-2-03 11-25-03 1-8-04 2-19-04 3-25-04 4-23-04	15.2 21.1 20.6 18.5 14.6 13.1
02040685 Flat Creek [a]	Appomattox River	Lat 37°23'59", long 77°54'27", NAD83, Amelia County, at bridge on State Highway 632, 0.15 mi downstream from Barkhouse Branch, and 0.7 mi north of Chula.	-	2003	10-2-03 11-25-03 1-8-04 2-19-04 3-25-04 4-23-04	83.7 118 125 110 86.5 76.8
02040965 West Creek [a]	Deep Creek	Lat 37°15'21", long 77°58'54", NAD83, Amelia County, at bridge on State Highway 614, 0.6 mi north of Denaro, and 4.96 mi upstream from mouth.	-	2003	10-2-03 11-25-03 1-8-04 2-19-04 4-23-04	27.9 37.9 35.9 34.7 30.7
2041125 Long Branch [a]	Winticomack Creek	Lat 37°12'59", long 77°47'27", NAD83, Amelia County, at culvert on State Highway 600, 1.3 mi west of Ammon, and 1.9 mi upstream from mouth.	-	2002-03	2-19-04	1.98
002041130 Winticomack Creek [a]	Appomattox River	Lat 37°15'14", long 77°49'19", NAD83, Amelia County at bridge on State Highway 622, 1.2 mi upstream from mouth, and 4.6 mi east of Mannboro.	-	2002-03	2-19-04	22.1
02042272 Unnamed Tributary [a] (No. 13)	Chickahominy River	Lat 37°41'46", long 77°32'55", NAD83, Hanover County, at culvert on private road, 0.84 mi upstream from mouth, and 2.8 mi northwest of Glen Allen.	-	2003	10-3-03	2.15
CHOWAN RIVER BASIN						
02043975 Nottoway River [a]	Chowan River	Lat 37°06'58", long 78°14'06", NAD83, Lunenburg County, at bridge on State Highway 625, 5.0 mi east of Green Bay, and 155.06 mi upstream from mouth.	-	-	10-14-03 11-13-03 2-4-04 2-25-04 3-24-04 4-22-04 6-2-04 6-23-04	4.33 8.30 29.1 8.08 7.42 6.47 2.26 5.93

a Provided by the Virginia Department of Environmental Quality - Water Division.

Discharge measurements made at special study and miscellaneous sites during water year 2004--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
CHOWAN RIVER BASIN--Continued						
02044225 Big Hounds Creek [a]	Nottoway River	Lat 36°59'47", long 78°07'35", NAD83, Lunenburg County, at bridge on State Highway 653, 2.4 mi north of Kenbridge, and 3.73 mi upstream from mouth.	-	2003	10-14-03	7.09
					11-13-03	7.07
					2-4-04	20.7
					2-25-04	10.2
					3-24-04	9.04
					4-22-04	7.70
					6-2-04	3.57
					6-23-04	6.53
02044290 Little Nottoway River [a]	Nottoway River	Lat 37°03'48", long 78°03'01", NAD83, Nottoway County, at bridge on State Highway 626, 2.9 mi southwest of Blackstone, and 4.68 mi upstream from mouth.	-	2003	10-14-03	30.7
					11-13-03	41.6
					2-4-04	102
					2-25-04	48.1
					3-24-04	40.6
					4-22-04	37.2
					6-2-04	15.6
					6-23-04	25.6
02044405 Hurricane Branch [a]	Nottoway River	Lat 37°03'39", long 77°58'47", NAD83, Nottoway County, at bridge on State Highway 643 1.6 mi southeast of Blackstone.	5.61	2000-03	12-8-03	3.58
					2-12-04	5.61
02044410 Unnamed tributary [a]	Hurricane Branch	Lat 37°02'28", long 7757'18", NAD83, Nottoway County, at Fort Picket sewage treatment plant, 1.0 mi upstream from mouth, and 3.5 mi southeast of Blackstone.	-	2000-03	12-8-03	2.12
					2-12-04	3.05
020445500 Beaver Pond Creek [a]	Nottoway River	Lat 36°59'08", long 77°48'01", NAD83, Dinwiddie County, at bridge on State Highway 612, 0.12 mi upstream from mouth, and 2.7 mi northwest of Rawlings.	-	1952-54, 2003	10-14-03	5.21
					11-13-03	5.64
					12-9-03	9.35
					2-4-04	18.8
					2-19-04	12.3
					2-25-04	6.72
					3-23-04	7.37
					3-24-04	7.49
					4-22-04	6.22
					6-2-04	2.56
					6-23-04	2.91
02050050 Blackwater River tributary	Blackwater River	Lat 36°48'45", long 77°51'28", NAD83, Suffolk City, at culvert on State Highway 272, 4.9 mi southwest of Holland, 3.0 mi upstream from mouth.	2.76	1968-70, 1996-99	8-14-04	700
02051625 Roses Creek [a]	Great Creek	Lat 36°48'44", long 77°52'56", NAD83, Brunswick County, at bridge on State Highway 646, 3.5 mi south of Alberta, and 6.7 mi upstream from mouth.	-	2002-03	10-15-03	3.70
02051715 Roses Creek [a]	Great Creek	Lat 36°44'57", long 77°50'15", NAD83, Brunswick County, at bridge on U.S. Highway 58, 0.4 mi upstream from mouth, and 0.7 mi southeast of Lawrenceville.	-	2002-03	10-15-03	18.8
ROANOKE RIVER BASIN						
02054190 Wilson Creek [a]	North Fork Roanoke River	Lat 37°11'23", long 80°21'30", NAD83, Montgomery County, at bridge on State Highway 603 at Ellett, 400 ft downstream from Cedar Run, and 0.4 mi upstream from mouth.	-	2002-03	10-22-03	4.29

a Provided by the Virginia Department of Environmental Quality - Water Division.

Discharge measurements made at special study and miscellaneous sites during water year 2004--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
ROANOKE RIVER BASIN--Continued						
02054195 North Fork Roanoke RIver [a]	Roanoke River	Lat 37°11'12", long 80°21'09", NAD83, Montgomery County, at bridge on State Highway 603, at intersection with State Highway 641, 400 ft downstream from Wilson Creek, and 0.85 mi southeast of Ellett.	-	1968	7-14-04 8-19-04 9-23-04	19.7 10.6 18.8
02055370 Carvin Creek [a]	Tinker Creek	Lat 37°19'16", long 79°56'03", NAD83, Roanoke City, at culverts on State Highway 115, at Roanoke City - Roanoke County boundary, and 0.28 mi upstream from mouth.	-	2003	12-3-03 2-10-04	10.8 56.7
02055515 Lick Run [a]	Tinker Creek	Lat 37°16'20", long 79°56'07", NAD83 Roanoke City, along Norfolk Avenue, 300 ft downstream from U.S. Highway 220, and 1.0 upstream from mouth.	5.00	1994-00, 2002-03	12-3-03	7.71
0205551610 Tinker Creek [a]	Roanoke River	Lat 37°16'43", long 79°57'15", NAD83, Roanoke City, at bridge on Wise Avenue, 0.2 mi upstream from Glade Creek, and 1.0 mi west of Vinton.	-	2002-03	12-3-03 2-10-04	60.0 156
0205551810 Laymantown Creek [a]	Glade Creek	Lat 37°20'23", long 79°51'08", NAD83, Botetourt County, at bridge on U.S. Highway 460, 0.37 mi upstream from mouth, and 1.4 mi north of Bonsack.	-	2003	12-3-03 2-10-04	3.43 7.59
02055520 Glade Creek [a]	Tinker Creek	Lat 37°16'45", long 79°54'26", NAD83, Roanoke County, at bridge on Walnut Avenue, at Vinton, and 0.2 mi upstream from mouth.	32.9	1968, 2002-03	12-3-03 2-10-04	22.7 50.5
02056700 Beaverdam Creek [b]	Roanoke River	Lat 37°13'29", long 79°45'22", NAD83, Bedford County, at brdige on State Highway 757, 1.1 mi downstream from West Fork, and 3.0 mi east of Hardy.	24.8	1981-84	7-8-04 7-29-04 8-26-04 9-21-04	10.4 8.62 6.60 18.0
02057620 Story Creek [a]	Pigg River	Lat 36°55'35", long 80°00'35", NAD83, Franklin County, at Ferrum sewage treatment, 600 ft downstream from bridge on State Highway 864, and 0.7 mi north of Ferrum.	2.4	1993-97	7-29-04	1.51
02057650 Pigg River [a]	Roanoke River	Lat 36°59'02", long 79°52'52", NAD83, Franklin County, upstream from Ronile Inc. discharge, 0.4 mi downstream from bridge on Business Route 220, and 0.9 mi south of Rocky Mount.	68.8	1993-95, 1997, 1999	7-8-04 7-29-04 8-26-04 9-21-04	41.6 43.3 38.8 59.1
02063460 Falling River [a]	Roanoke River	Lat 37°15'45", long 78°54'01", NAD83, Appomattox County, at bridge on State Highway 650, 1.6 mi northeast of Spring Mills, and 25.34 mi upstream from mouth.	-	2003	1-7-04 2-11-04 2-24-04 3-10-04	37.6 49.7 35.4 30.3

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 2004--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
ROANOKE RIVER BASIN--Continued						
02063770 South Fork Falling River [a]	Falling River	Lat 37°12'10", long 78°57'45", NAD83, Campbell County, at bridge on State Highway 648, 0.66 mi upstream from mouth, and 3.8 mi southwest of Spring Mills.	-	1953, 2003	1-7-04 2-11-04 2-24-04 3-10-04	39.0 57.1 38.6 33.5
02065260 Turnip Creek [a]	Roanoke River	Lat 37°00'53", long 78°51'04", NAD83, Charlotte County, at bridge on State Highway 619, 2.3 mi southwest of Aspem, and 2.55 mi upstream from mouth.	-	2003	10-16-03 1-7-04 2-5-04 2-17-04 2-24-04 3-10-04 3-23-04 4-26-04 5-18-04 6-21-04	17.0 31.6 42.7 27.4 24.8 21.7 21.9 24.2 17.1 8.31
02066455 Ash Camp Creek [a]	Roanoke Creek	Lat 37°01'58", long 78°33'50", NAD83, Charlotte County, at culvert on State Highway 654, 1.1 mi southwest of Eureka, and 2.6 mi upstream from mouth.	-	1978, 2002-03	10-16-03 1-7-04 3-4-04	3.20 5.32 4.09
02066520 Twittys Creek [a]	Roanoke Creek	Lat 36°59'23", long 78°36'12", NAD83, Charlotte County, at Drakes Branch sewage treatment plant discharge, at Drakes Branch, 0.25 mi downstream from bridge on State Highway 47.	22.7	1981, 1995, 1997-98, 2002-03	10-16-03	9.04
02066525 Twittys Creek [a]	Roanoke Creek	Lat 36°55'43", long 78°39'41", NAD83, Charlotte County, at bridge on State Highway 637, at Saxe, and 0.3 mi upstream from mouth.	-	2002-03	10-16-03	14.0
02067020 Buffalo Creek [a]	Roanoke River	Lat 36°48'04", long 78°38'33", NAD83, Charlotte County, at bridge on State Highway 608, 0.2 mi downstream from Bruce Spring Branch, 1.85 mi upstream from mouth, and 2.0 mi northwest of Red Oak.	-	2003	10-16-03 2-5-04 2-17-04 2-24-04 3-10-04 3-23-04 4-26-04 5-18-04 6-22-04	2.36 6.88 3.79 3.25 2.39 2.84 3.12 2.77 1.37
02075690 Unnamed Tributary [a]	Birch Creek	Lat 37°41'44", long 79°04'13", NAD83, Halifax County, at bridge on State Highway 683, 0.94 mi upstream from mouth, and 3.2 mi northeast of Elmo.	-	2003	10-15-03	6.26
02075700 Birch Creek [a]	Dan River	Lat 36°40'20", long 79°03'39", NAD83, Halifax County, at bridge on State Highway 659, 0.9 mi upstream from mouth, and 2.8 mi northwest of Paces.	-	2002-03	10-15-03	65.8
02079666 Flat Creek [a]	Roanoke River	Lat 36°42'04", long 78°07'55", NAD83, Mecklenburg County, above new STP discharge, 0.3 mi upstream from State Highway 642, and 1.7 mi south of South Hill.	-	2002-03	10-15-03	1.05
0207966605 Flat Creek [a]	Roanoke River	Lat 36°41'48", long 78°07'54", NAD83, Mecklenburg County, downstream side of STP discharge, at bridge on State Highway 642, and 2.0 mi south of South Hill.	-	1977, 2002-03	10-15-03	2.67

a Provided by the Virginia Department of Environmental Quality - Water Division.

Discharge measurements made at special study and miscellaneous sites during water year 2004--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
ROANOKE RIVER BASIN--Continued						
0207966625 Flat Creek [a]	Roanoke River	Lat 36°37'56", long 78°10'16", NAD83, Mecklenburg County,at bridge on State highway 630, 2.0 mi southeast of Smiths Crossroads, and 2.3 mi upstream from mouth.	-	1977, 2002-03	10-15-03	12.5
KANAWHA RIVER BASIN						
03171215 Stroubles Creek [a]	New River	Lat 37°11'58", long 80°27'00", NAD83, Montgomery County, at bridge on State Highway 657, 2.3 mi east of Prices Fork, and 6.69 mi upstream from mouth.	-	2002-03	10-22-03	3.29
03171220 Stroubles Creek [a]	New River	Lat 37°11'02", long 80°30'03", NAD83, Montgomery County, at bridge on State Highway 705, 0.35 mi upstream from Slate Branch, 2.41 mi upstream from mouth, and 5.0 mi northeast of Radford.	-	2002-03	10-22-03	3.41
03171405 Back Creek [a]	New River	Lat 37°12'10", long 80°36'41", NAD83, Pulaski County, at bridge on State Highway 600, at Parrott, and 0.3 mi downstream from Neck Creek.	-	2002-03	10-22-03	12.4
03174680 Hunting Camp Creek [a]	Wolf Creek	Lat 37°09'25", long 81°08'54", NAD83, Bland County, at GIV Inc. discharge, 0.3 mi north of Bastian, and 1.1 mi upstream from mouth.	29.8	1995, 1997-00, 2003	10-22-03 12-10-03 3-15-04 4-19-04	5.73 45.6 28.8 48.7
03177575 Bluestone River [a]	New River	Lat 37°12'49", long 81°21'42", NAD83, Tazewell County, at culverts on State Highway 665, at Shannandale, and 2.4 mi northeast of Springville.	-	-	4-1-04 4-20-04 5-4-04 6-15-0 8-2-04 8-17-04 9-1-04	17.9 28.8 20.0 14.6 13.3 17.6 7.53
03177620 Bluestone River [a]	New River	Lat 37°14'22", long 81°16'41", NAD83, Tazewell County, near intersection of Parkview and Mountainview Drives in Bluefield, 0.35 mi downstream from Water Treatment Plant.	-	-	4-1-04 4-20-04 5-4-04 8-17-04	35.6 54.2 35.2 24.2
03177680 Wrights Valley Creek [a]	Bluestone River	Lat 37°14'58", long 81°17'16", NAD83, Tazewell County, at mouth, 900 ft downstream from Mill Street in Bluefield.	-	-	4-1-04 4-20-04 5-4-04 8-17-04	27.7 13.8 13.1 11.3
03177695 Beaverpond Creek [a]	Bluestone River	Lat 37°15'18", long 81°16'33", NAD83, Tazewell County, at mouth, along State Highway 102 at Bluefield.	-	-	4-1-04 4-20-04 5-4-04 8-17-04	22.6 12.6 9.76 4.36

a Provided by the Virginia Department of Environmental Quality - Water Division.

Discharge measurements made at special study and miscellaneous sites during water year 2004--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
KANAWHA RIVER BASIN--Continued						
03177710 Bluestone River [b]	New River	Lat 37°16'17", long 81°18'17", NAD83, Tazewell County, at bridge on State Highway 717, 0.3 mi upstream from Brush Fork, and 0.4 mi southeast of Falls Mills.	44.2	1981-95‡, 2002-03	10-21-03 3-15-04 3-31-04 4-1-04 4-20-04 5-4-04 6-14-04 7-12-04 8-16-04 9-1-04	20.2 54.3 87.2 109 94.5 69.9 148 39.0 56.8 21.3
03177715 Brush Fork [a]	Bluestone River	Lat 37°16'33", long 81°18'20", NAD83, Tazewell County, at bridge on State Highway 717, at mouth, and at Falls Mills.	-	-	4-1-04 4-20-04 5-4-04 8-17-04	36.2 9.82 8.33 4.50
03177725 Mud Fork [a]	Bluestone River	Lat 37°16'31", long 81°18'41", NAD83, Tazewell County, at bridge on State Highway 102, at mouth, and at Falls Mills.	-	-	4-1-04 4-20-04 5-4-04 6-15-04 7-12-04 8-2-04 8-17-04 9-1-04	137 20.0 30.3 42.6 5.46 14.5 9.30 .718
03177733 Bluestone River [a]	New River	Lat 37°17'24", long 81°18'44", NAD83, Tazewell County, at ford, 500 ft downstream from railroad bridge at Yards,1,000 ft east of State Highway 102, and 0.3 mi upstream from Va.-W.Va. line.	-	-	4-1-04 4-20-04 5-4-04 8-17-04	325 139 125 71.1
03177750 Laurel Fork [a]	Bluestone River	Lat 37°18'27", long 81°20'02", NAD83, Tazewell County, above Pocahontas sewage treatment plant, 0.4 mi northeast of Pocahontas, and 1.5 mi upstream from mouth.	14.6	1993-94	7-12-04 8-2-04 8-16-04	1.18 .852 3.49
BIG SANDY RIVER BASIN						
03208300 Russell Prater Creek [a]	Russell Fork	Lat 37°12'30", long 82°17'10", NAD83, Dickenson County, along O'Quinn Street, at Haysi, 500 ft east of State Highways 80 and 83, and 0.52 mi upstream from mouth.	-	1978	7-13-04 8-3-04 8-17-04 9-2-04	18.8 6.87 4.65 2.31
03208900 Pound River	Russell Fork	Lat 37°09'51", long 82°31'30", NAD83, Dickenson County, 50 ft upstream from State Highway 624, 150 ft upstream from Camp Creek, and 2.6 mi northwest of Georges Fork.	82.5	1964-02	9-18-04	657
0321357550 Knox Creek [a]	Tug Fork	Lat 37°25'39", long 82°01'27", NAD83, Buchanan County, along State Highway 643, 0.6 mi northwest of Hurley, and 0.8 mi upstream from Guess Fork.	41.6	1991-92	7-13-04 8-3-04 8-18-04 9-2-04	6.72 5.87 2.92 4.05
0321358775 Paw Paw Creek [a]	Knox Creek	Lat 37°26'49", long 82°03'29", NAD83, Buchanan County, at bridge on State Highway 697, at mouth, and 0.7 mi northeast of Kelsa.	18.2	-	7-13-04 8-3-04 8-18-04 9-2-04	10.9 3.38 1.76 1.40

‡ 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 measurements made at special study and miscellaneous sites during water year 2004--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
BIG SANDY RIVER BASIN--Continued						
03213590 Knox Creek [b]	Tug Fork	Lat 37°27'02", long 82°03'33", NAD83, Buchanan County, at bridge on State Highway 697, 0.3 mi downstream from Paw Paw Creek, 0.8 mi northeast of Kelsa, and 10.0 mi upstream from mouth.	84.3	1980-81‡	7-13-04 8-3-04 8-18-04 9-2-04	23.5 14.1 7.12 9.25
TENNESSEE RIVER BASIN						
03474700 Hutton Creek [b]	Middle Fork Holston River	Lat 36°47'03", long 81°44'04", NAD83, Washington County, at bridge on U.S. Highway 11, 3.2 mi west of Chilhowie.	8.32	1969, 1972 1990, 1992, 2000, 2002-03	10-20-03	1.78
03474705 Unnamed tributary [a] (No. 2)	Hutton Creek	Lat 36°47'02", long 81°44'03", NAD83, Washington County, 200 ft downstream from bridge on U.S. Highway 11, on left bank, and 3.3 mi west of Chilhowie.	-	2002-03	10-20-03	1.99
03474720 Hutton Creek[b]	Middle Fork Holston River	Lat 36°46'22", long 81°43'48", NAD83, Washington County, at old Huff Airport road, 0.26 mi upstream from mouth, and 2.3 mi southwest of Chilhowie.	11.0	1987-89, 2000, 2002-03	10-20-03	6.24
03474800 Hall Creek [b]	Byers Creek	Lat 36°45'49", long 81°48'14", NAD83, Washington County, at bridge on U.S. Highway 11, 1.4 mi west of Old Glade Spring.	7.9	1969, 1972 1990, 1992, 2000, 2002-03	10-20-03	5.42
03474860 Tattle Branch [a]	Hall Creek	Lat 36°44'40", long 81°47'47", NAD83, Washington County, at bridge on State Highway 736, 600 ft upstream from mouth, and 2.0 mi south of Old Glade Spring.	-	2000, 2002-03	10-20-03	1.08
03474905 Byers Creek [a]	Middle Fork Holston River	Lat 36°44'16", long 81°47'50", NAD83, Washington County, at private bridge along State Highway 736, 0.2 mi upstream from mouth, and 2.5 mi southwest of Old Glade Spring.	-	2000, 2002-03	10-20-03	9.51
03475602 Cedar Creek [b]	Middle Fork Holston River	Lat 36°42'53", long 81°49'50", NAD83, Washington County, at bridge on State Highway 706, at mouth, and 2.6 mi south of Cedarville.	-	1987-89, 2000, 2002-03	10-20-03	4.83
03487800 Lick Creek	North Fork Holston River	Lat 36°57'44", long 81°28'20", NAD83, 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, 1998-99 2003	9-22-04 9-23-04	13.0 9.69
03524300 Guest River [a]	Clinch River	Lat 36°58'35", long 82°37'16", NAD83, Wise County, at bridge on State Highway 625, 1.5 mi southwest of Stephens.	-	1978, 2002-03	10-21-03 12-9-03	3.43 12.7

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 2004--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
TENNESSEE RIVER BASIN--Continued						
0352430750 Sepulcher Creek [a]	Rocky Fork	Lat 36°58'58", long 82°36'52", NAD83, Wise County, at confluence with Rocky Fork, just west of State Highway 625, and 1.0 mi southwest of Stephens.	-	2002-03	10-21-03 12-9-03	.376 1.67
03524308 Rocky Fork [a]	Guest River	Lat 36°58'49", long 82°36'51", NAD83, Wise County, at bridge on State Highway 625, 1,000 ft downstream from Sepulcher Creek, and 1.1 mi southwest of Stephens.	-	2002-03	10-21-03 12-9-03	.935 8.18
0352445 Toms Creek [b]	Guest River	Lat 36°56'33", long 82°28'09", NAD83, Wise County, at confluence with Little Toms Creek, 500 ft downstream from bridge on U.S. Highway 58 at Coeburn.	10.5	1952, 1955, 2002-03	10-21-03 12-10-03	1.95 12.6
03524449 Little Toms Creek [a]	Toms Creek	Lat 36°56'32", long 82°28'08", NAD83, Wise County, at confluence with Toms Creek, at Coeburn.	5.52	2002-03	10-21-03 12-10-03	.638 5.24
03524520 Crab Orchard Branch [a]	Guest River	Lat 36°54'52", long 82°26'06", NAD83, Wise County, 0.2 mi downstream from Boydton Road, 0.2 mi upstream from mouth, and 2.7 mi southeast of Coeburn.	-	2002-03	10-21-03 12-9-03	.191 2.52
03525300 Stock Creek [a]	Clinch River	Lat 36°43'06", long 82°45'01", NAD83, Scott County, at bridge on State Highway 650, 2.0 mi north of Natural Tunnel, 3.1 mi north of Clinchport, and 4.56 mi above mouth.	-	1976	7-14-04 8-4-04 9-2-04	5.02 2.47 2.29
03529420 Callahan Creek [a]	Powell River	Lat 36°55'03", long 82°47'29", NAD83, Wise County, at Interstate R/R discharge, 0.6 mi southeast of Andover, 0.6 mi downstream from Preacher Creek, and 1.0 mi upstream from mouth.	27.4	1995-99	7-13-04 8-4-04 8-18-04 9-2-04	18.0 11.8 8.34 6.36
03530465 Straight Creek [a]	North Fork Powell River	Lat 36°47'54", long 83°03'28", NAD83, Lee County, at bridge on State Highway 795, 0.2 mi downstream from Big Branch, and 0.3 mi south of Saint Charles.	12.2	1993-95, 1997	7-13-04 8-4-04 8-18-04 9-2-04	5.63 3.92 3.29 3.08
03530495 Stone Creek [b]	Straight Creek	Lat 36°46'36", long 83°03'23", NAD83, Lee County, at bridge on U.S. Highway 421, above mouth, and at Stone Creek.	8.19	1979-80	8-18-04 9-3-04	1.92 1.06
03530550 N.F. Powell River [a]	Powell River	Lat 36°45'27", long 83°00'38", NAD83, Lee County, at Pennington Gap sewage treatment plant discharge, 0.1 mi upstream from Dry Branch, 0.3 mi downstream from U.S. Highway Alternate 58, and 0.8 mi east of Pennington Gap.	84.5	1994-95, 1997	7-13-04 8-4-04 8-18-04 9-3-04	34.1 20.4 14.0 13.5

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.

POTOMAC RIVER BASIN

01645495 POTOMAC RIVER NEAR GREAT FALLS, VA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Sample type	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Sampling method, code (82398)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
OCT												
07...	0930	Environmental	1028	80020	E10,200	30	768	13.1	126	7.7	304	16.0
NOV												
06...	1030	Environmental	1028	80020	E15,000	30	765	7.5	77	6.9	189	19.0
DEC												
03...	1045	Environmental	1028	80020	E18,000	30	768	14.5	115	8.0	246	2.0
JAN												
08...	0915	Environmental	1028	80020	E19,500	30	769	12.2	97	7.8	275	-2.5
FEB												
02...	1200	Environmental	1028	80020	E7,880	30	775	17.4	117	7.8	383	4.0
MAR												
04...	0930	Environmental	1028	80020	E26,300	30	766	E11.7	--	7.8	255	11.0
AUG												
03...	1500	Environmental	1028	80020	E15,000	30	767	5.8	74	7.6	321	28.0
SEP												
07...	1400	Environmental	1028	80020	1,890	50	761	7.9	95	8.0	408	26.5

Date	Temperature, water, deg C (00010)	Organic carbon, water, fltrd, mg/L (00681)	E coli, modif. m-TEC, water, col/ 100 mL (90902)	1-Methylnaphthalene, water, fltrd, ug/L (62054)	1-Naphthol, water, fltrd 0.7u GF ug/L (49295)	2,4,5-T surrog, water, fltrd, percent recovry (99958)	2,4-D methyl ester, water, fltrd, ug/L (50470)	2,4-D water, fltrd, ug/L (39732)	2,4-DB water, fltrd 0.7u GF ug/L (38746)	2,6-Diethylaniline water fltrd 0.7u GF ug/L (82660)	2,6-Dimethylnaphthalene, water, fltrd, ug/L (62055)	2-[(2-Et-6-Me-Ph)--amino]propan-1-ol, ug/L (61615)	2-[(2-Ethyl-6methylphenyl)amino]2oxoESA ug/L (62850)
OCT													
07...	14.0	2.5	--	<.5	<.09	47.1	<.009	E.01	<.02	<.006	<.5	<.1	.03
NOV													
06...	17.2	6.3	4,800	<.5	M	85.6	<.021	.51	<.02	<.006	<.5	<.1	<.02
DEC													
03...	5.6	2.3	100	<.5	<.09	104	<.009	E.02	<.02	<.006	<.5	<.1	.03
JAN													
08...	5.8	2.6	E62	<.5	<.09	93.2	<.009	<.02	<.02	<.006	<.5	<.1	<.02
FEB													
02...	.1	1.6	<2	<.5	<.09	75.2	<.009	<.02	<.02	<.006	<.5	<.1	.02
MAR													
04...	9.3	2.1	23	<.5	<.09	92.3	<.009	<.02	<.02	<.006	<.5	--	.04
AUG													
03...	28.3	--	--	<.5	<.09	97.6	<.009	.09	<.02	<.006	<.5	--	<.02
SEP													
07...	24.3	--	--	<.5	<.09	69.9	<.009	<.02	<.02	<.006	<.5	--	<.02

Date	2Chloro-2,6'-'diethyl acetanilide wat flt ug/L (61618)	CIAT, water, fltrd, ug/L (04040)	CEAT, water, fltrd, ug/L (04038)	2-Ethyl-6-methylaniline water, fltrd, ug/L (61620)	OIET, water, fltrd, ug/L (50355)	2-Methylnaphthalene, water, fltrd, ug/L (62056)	3,4-Dichloroaniline water fltrd, ug/L (61625)	3-beta-Coprostanol, water, fltrd, ug/L (62057)	3-Hydroxy carbofuran, wat flt 0.7u GF ug/L (49308)	3-Ketocarbofuran, water, fltrd, ug/L (50295)	3-Methyl-1H-indole, water, fltrd, ug/L (62058)	3-tert-Butyl-4-hydroxyanisole wat flt ug/L (62059)	4Chloro2methylphenol, water, fltrd, ug/L (61633)
OCT													
07...	<.005	E.078	E.01	<.004	E.022	<.5	E.004	<2	<.006	<1.50	<1	<5	<.006
NOV													
06...	<.005	E.015	<.04	<.004	<.036	<.5	<.004	E1	<.006	<1.50	<1	<5	<.006
DEC													
03...	<.005	E.018	E.01	<.004	<.008	<.5	<.004	<2	<.006	<1.50	<1	<5	<.006
JAN													
08...	<.005	E.046	E.01	<.004	E.014	<.5	<.004	M	<.006	<1.50	<1	<5	<.006
FEB													
02...	<.005	E.068	E.03	<.004	<.010	<.5	<.004	<2	<.006	<1.50	<1	<5	<.006
MAR													
04...	<.005	E.032	E.01	<.004	E.013	<.5	<.004	<2	<.006	<1.50	<1	<5	<.006
AUG													
03...	<.005	E.065	E.03	<.004	E.092	<.5	.006	M	<.006	<.01	<1	<5	<.006
SEP													
07...	<.005	E.064	E.01	<.004	E.031	<.5	<.004	<2	<.006	<.01	<1	<5	<.006

Agency collecting sample: 1028 - U.S. Geological Survey
Agency analyzing sample: 80020 - USGS-National Water Quality Lab, Denver, CO
Sampling method: 30 - Single vertical
50 - Point sample

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	4-Cumylphenol, water, fltrd, ug/L (62060)	4-Octylphenol, water, fltrd, ug/L (62061)	4-Nonylphenol, water, fltrd, ug/L (62085)	4-tert-Octylphenol, water, fltrd, ug/L (62062)	5-Methyl-1H-benzotriazole, wat flt ug/L (62063)	9,10-Anthraquinone water, fltrd, ug/L (62066)	Acetochlor ESA, water, fltrd 0.7u GF ug/L (61029)	Acetochlor OA, water, fltrd 0.7u GF ug/L (61030)	Acetochlor SAA, water, fltrd, ug/L (62847)	Acetochlor, water, fltrd, ug/L (49260)	Acetophenone water, fltrd, ug/L (62064)	AHTN, water, fltrd, ug/L (62065)	Acifluorfen, water, fltrd 0.7u GF ug/L (49315)
OCT													
07...	<1	<1	<5	<1	<2	<.5	<.02	<.02	<.02	<.006	<.5	<.5	<.007
NOV													
06...	<1	<1	E1	<1	<2	E.1	<.02	<.02	<.02	<.006	<.5	M	<.007
DEC													
03...	<1	<1	<5	<1	<2	<.5	<.02	<.02	<.02	<.006	<.5	M	<.007
JAN													
08...	<1	<1	<5	<1	<2	<.5	<.02	<.02	<.02	<.006	<.5	M	<.007
FEB													
02...	<1	<1	<5	<1	<2	<.5	<.02	<.02	<.02	<.006	<.5	E.1	<.007
MAR													
04...	<1	<1	<5	<1	<2	<.5	.06	<.02	<.02	<.006	<.5	E.1	<.007
AUG													
03...	<1	<1	<5	<1	<2	<.5	<.02	.02	<.02	.009	<.5	M	<.007
SEP													
07...	<1	<1	<5	<1	<2	<.5	<.02	<.02	<.02	<.006	<.5	<.5	<.007

Date	Alachlor ESA SA, water, fltrd, ug/L (62849)	Alachlor ESA, water, fltrd 0.7u GF ug/L (50009)	Alachlor OA, water, fltrd 0.7u GF ug/L (61031)	Alachlor SAA, water, fltrd, ug/L (62848)	Alachlor, water, fltrd, ug/L (46342)	Aldicarb sulfone water, fltrd 0.7u GF ug/L (49313)	Aldicarb sulfoxide, wat flt 0.7u GF ug/L (49314)	Aldicarb, water, fltrd 0.7u GF ug/L (49312)	alpha-HCH-d6, surrog, Sch2003 wat flt percent recovry (99995)	Anthracene, water, fltrd, ug/L (34221)	Atrazine, water, fltrd, ug/L (39632)	Azinphosmethyl oxon, water, fltrd, ug/L (61635)	Azinphosmethyl, water, fltrd 0.7u GF ug/L (82686)
OCT													
07...	<.02	.06	<.02	<.02	<.005	<.02	<.008	<.04	83.2	<.5	.065	<.02	<.050
NOV													
06...	<.02	.05	<.02	<.02	<.005	<.02	<.008	<.04	87.2	<.5	.042	<.02	<.050
DEC													
03...	<.02	<.02	<.02	<.02	<.005	<.02	<.008	<.04	83.5	<.5	.044	<.02	<.050
JAN													
08...	<.02	.02	<.02	<.02	<.005	<.02	<.008	<.04	87.7	<.5	.040	<.02	<.050
FEB													
02...	<.02	.03	<.02	<.02	<.005	<.02	<.008	<.04	87.5	<.5	.045	<.02	<.050
MAR													
04...	<.02	.07	<.02	<.02	<.005	<.02	<.008	<.04	88.0	<.5	.024	<.02	<.050
AUG													
03...	<.02	<.02	<.02	<.02	<.005	<.02	<.008	<.04	80.2	<.5	.127	<.07	<.050
SEP													
07...	<.02	.03	<.02	<.02	<.005	<.02	<.008	<.04	88.4	<.5	.058	<.07	<.050

Date	Barban, surrog, Sched. 2060/9060, wat flt pct rcv (90640)	Bendiocarb, water, fltrd, ug/L (50299)	Benfluralin, water, fltrd 0.7u GF ug/L (82673)	Benomyl water, fltrd, ug/L (50300)	Bensulfuron, water, fltrd, ug/L (61693)	Bentazon, water, fltrd 0.7u GF ug/L (38711)	Benzo[a]pyrene, water, fltrd, ug/L (34248)	Benzophenone water, fltrd, ug/L (62067)	beta-Sitosterol, water, fltrd, ug/L (62068)	beta-Stigmastanol, water, fltrd, ug/L (62086)	Bisphenol A, water, fltrd, ug/L (62069)	Bisphenol A-d3 sur Sch 2033 & 8033, wat flt pct rcv (99583)	Bromacil, water, fltrd, ug/L (04029)
OCT													
07...	59.8	<.03	<.010	<.004	<.02	<.01	<.5	<.5	<2	<2	<1	42.7	<.03
NOV													
06...	77.4	<.03	<.010	<.004	<.02	<.01	<.5	<.5	M	M	M	100	<.03
DEC													
03...	83.2	<.03	<.010	<.004	<.02	<.01	<.5	<.5	<2	<2	<1	30.0	<.03
JAN													
08...	66.5	<.03	<.010	<.004	<.02	<.01	<.5	E.1	<2	<2	<1	10.5	<.03
FEB													
02...	99.5	<.03	<.010	<.004	<.02	<.01	<.5	E.1	<2	<2	<1	.0	<.03
MAR													
04...	72.6	<.03	<.010	<.004	<.02	<.01	<.5	<.5	<2	<2	<1	65.2	<.03
AUG													
03...	76.9	<.03	<.010	<.004	<.02	<.01	<.5	<.5	<2	<2	<1	123	<.03
SEP													
07...	87.6	<.03	<.010	<.004	<.02	<.01	<.5	<.5	<2	<2	<1	70.5	<.03

POTOMAC RIVER BASIN

01645495 POTOMAC RIVER NEAR GREAT FALLS, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Bromoxynil, water, fltrd 0.7u GF ug/L (49311)	Caffeine, water, fltrd, ug/L (50305)	Caffeine-13C, surrog, wat flt percent recovry (99959)	Caffeine-13C sur Sch 2033 & 8033, wat flt pct rcv (99584)	Camphor water, fltrd, ug/L (62070)	Carbaryl, water, fltrd 0.7u GF ug/L (49310)	Carbaryl, water, fltrd 0.7u GF ug/L (82680)	Carbazole, water, fltrd, ug/L (62071)	Carbofuran, water, fltrd 0.7u GF ug/L (49309)	Chlorambenmethyl ester, water, fltrd, ug/L (61188)	Chlorimuron, water, fltrd, ug/L (50306)	Chlorodiaminos-triazine, wat flt ug/L (04039)	Chlorothalonil, water, fltrd 0.7u GF ug/L (49306)
OCT													
07...	<.02	<.5	E37.4	72.7	<.5	<.03	<.041	<.5	<.006	<.02	<.010	<.01	<.04
NOV													
06...	<.02	E.1	80.2	109	<.5	E.01	E.025	M	<.006	<.02	<.010	E.01	<.04
DEC													
03...	<.02	<.5	75.9	123	<.5	M	E.008	<.5	<.006	<.02	<.010	<.01	<.04
JAN													
08...	<.02	M	74.2	81.8	<.5	<.03	<.041	<.5	<.006	<.02	<.010	E.01	<.04
FEB													
02...	<.02	E.1	E102	109	<.5	<.03	<.041	<.5	<.006	<.02	<.010	E.02	<.04
MAR													
04...	<.02	E.1	83.8	109	<.5	<.03	<.041	<.5	<.006	<.02	<.035	E.01	<.04
AUG													
03...	<.02	<.022	102	82.8	<.5	E.01	E.021	<.5	<.006	<.02	<.010	E.02	<.04
SEP													
07...	<.02	<.010	92.9	84.7	<.5	<.03	<.041	<.5	<.006	<.02	<.010	E.02	<.04

Date	Chlorpyrifos oxon, water, fltrd, ug/L (61636)	Chlorpyrifos water, fltrd, ug/L (38933)	Cholesterol, water, fltrd, ug/L (62072)	cis-Permethrin water fltrd 0.7u GF ug/L (82687)	Clopyralid, water, fltrd 0.7u GF ug/L (49305)	Cotinine, water, fltrd, ug/L (62005)	Cycloate, water, fltrd, ug/L (04031)	Cyfluthrin, water, fltrd, ug/L (61585)	Cypermethrin water, fltrd, ug/L (61586)	Dacthal monoacid, water, fltrd 0.7u GF ug/L (49304)	DCPA, water fltrd 0.7u GF ug/L (82682)	DecaFbiphenl sur Sch 2033 & 8033, wat flt pct rcv (99585)	DEET, water, fltrd, ug/L (62082)
OCT													
07...	<.06	<.005	<2	<.006	<.01	<1.00	<.01	<.008	<.009	<.01	<.003	63.6	<.5
NOV													
06...	<.06	E.001	E1	<.006	<.01	<1.00	<.01	<.008	<.009	<.01	<.003	86.4	E.1
DEC													
03...	<.06	<.005	<2	<.006	<.01	<1.00	<.01	<.008	<.009	<.01	<.003	90.9	E.1
JAN													
08...	<.06	<.005	M	<.006	<.01	<1.00	<.01	<.008	<.009	<.01	<.003	54.5	E.1
FEB													
02...	<.06	<.005	<2	<.006	<.01	<1.00	<.01	<.008	<.009	<.01	<.003	63.6	E.1
MAR													
04...	<.06	<.005	<2	<.006	<.01	<1.00	<.01	<.008	<.009	<.01	<.003	69.6	E.1
AUG													
03...	<.06	<.005	M	<.006	<.01	<1.00	<.01	<.008	<.009	<.01	<.003	60.3	E.1
SEP													
07...	<.06	<.005	<2	<.006	<.01	<1.00	<.01	<.008	<.009	<.01	<.003	38.4	E.1

Date	Desulfinyl fipronil, water, fltrd, ug/L (62170)	Diazinon oxon, water, fltrd, ug/L (61638)	Diazinon, water, fltrd, ug/L (39572)	Diazinon-d10 surrog, Sch2003 wat flt percent recovry (99994)	Dicamba water fltrd 0.7u GF ug/L (38442)	Dichlorprop, water, fltrd 0.7u GF ug/L (49302)	Dicrotophos, water fltrd, ug/L (38454)	Dieldrin, water, fltrd, ug/L (39381)	Diethoxynonylphenol, water, fltrd, ug/L (62083)	Diethoxyoctylphenol, water, fltrd ug/L (61705)	Dimethenamid ESA, water, fltrd, ug/L (61951)	Dimethenamid OA, water, fltrd, ug/L (62482)	Dimethenamid water, fltrd, ug/L (61588)
OCT													
07...	<.012	<.01	<.005	97.3	<.01	<.01	<.08	<.009	<5	<1	<.02	<.02	<.02
NOV													
06...	<.012	<.01	<.008	104	<.01	<.01	<.08	<.009	E3	M	<.02	<.02	<.02
DEC													
03...	<.012	<.01	E.004	94.6	<.01	<.01	<.08	<.009	<5	M	<.02	<.02	<.02
JAN													
08...	<.012	<.01	<.005	96.5	<.01	<.01	<.08	<.009	<5	<1	<.02	<.02	<.02
FEB													
02...	<.012	<.01	<.005	95.5	<.01	<.01	<.08	<.009	<5	<1	<.02	<.02	<.02
MAR													
04...	<.012	<.01	<.005	93.7	<.01	<.01	<.08	<.009	<5	<1	<.02	<.02	<.02
AUG													
03...	E.007	<.01	<.008	97.0	<.01	<.01	<.08	<.009	<5	<1	<.02	<.02	<.02
SEP													
07...	<.012	<.01	<.005	98.3	<.01	<.01	<.08	<.009	<5	<1	<.02	<.02	<.02

01645495 POTOMAC RIVER NEAR GREAT FALLS, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Dimethoate, water, fltrd 0.7u GF ug/L (82662)	Dinoseb water, fltrd 0.7u GF ug/L (49301)	Diphenamid, water, fltrd, ug/L (04033)	Diuron, water, fltrd 0.7u GF ug/L (49300)	D-Limonene, water, fltrd, ug/L (62073)	Equilenin, water, fltrd, ug/L (62074)	Ethion monoxon water, fltrd, ug/L (61644)	Ethion, water, fltrd, ug/L (82346)	Ethoxyoctylphenol, water, fltrd ug/L (61706)	Fenamiphos sulfone water, fltrd, ug/L (61645)	Fenamiphos sulfoxide, water, fltrd, ug/L (61646)	Fenamiphos, water, fltrd, ug/L (61591)	Fenuron water, fltrd 0.7u GF ug/L (49297)
OCT													
07...	<.006	<.01	<.03	<.01	<.5	<5	<.03	<.004	<1	<.008	<.03	<.03	<.03
NOV													
06...	<.006	<.01	<.03	<.01	<.5	<5	<.03	<.004	M	<.008	<.03	<.03	<.03
DEC													
03...	<.006	<.01	<.03	<.01	<.5	<5	<.03	<.004	M	<.008	<.03	<.03	<.03
JAN													
08...	<.006	<.01	<.03	<.01	<.5	<5	<.03	<.004	<1	<.008	<.03	<.03	<.03
FEB													
02...	<.006	<.01	<.03	<.01	<.5	<5	<.03	<.004	<1	<.008	<.03	<.03	<.03
MAR													
04...	<.006	<.01	<.03	<.01	<.5	<5	<.03	<.004	<1	<.008	<.03	<.03	<.03
AUG													
03...	<.006	<.01	<.03	.04	<.5	--	<.0020	<.004	<1	<.049	<.04	<.03	<.03
SEP													
07...	<.006	<.01	<.03	<.01	<.5	--	<.0020	<.004	<1	<.049	<.04	<.03	<.03

Date	Desulfinyl-fipronil amide, wat flt ug/L (62169)	Fipronil sulfide water, fltrd, ug/L (62167)	Fipronil sulfone water, fltrd, ug/L (62168)	Fipronil, water, fltrd, ug/L (62166)	Flufenacet ESA, water, fltrd, ug/L (61952)	Flufenacet OA, water, fltrd, ug/L (62483)	Flufenacet, water, fltrd, ug/L (62481)	Flumetsulam, water, fltrd, ug/L (61694)	Fluometuron water fltrd 0.7u GF ug/L (38811)	Fluoranthene water, fltrd, ug/L (34377)	Fluoranthene-d10, sur Sch 20/8033 wat flt pct rcv (99586)	Fonofos oxon, water, fltrd, ug/L (61649)	Fonofos water, fltrd, ug/L (04095)
OCT													
07...	<.029	<.013	<.024	<.016	<.02	<.02	<.02	<.01	<.03	<.5	118	<.002	<.003
NOV													
06...	<.029	<.013	<.024	E.005	<.02	<.02	<.02	<.01	<.03	M	109	<.002	<.003
DEC													
03...	<.029	<.013	<.024	<.016	<.02	<.02	<.02	<.01	<.03	<.5	127	<.002	<.003
JAN													
08...	<.029	<.013	<.024	<.016	<.02	<.02	<.02	<.01	<.03	<.5	81.8	<.002	<.003
FEB													
02...	<.029	<.013	<.024	<.016	<.02	<.02	<.02	<.01	<.03	<.5	100	<.002	<.003
MAR													
04...	<.029	<.013	<.024	<.016	<.02	<.02	<.02	<.01	<.03	<.5	95.7	<.002	<.003
AUG													
03...	<.029	<.013	E.006	E.004	<.02	<.02	<.02	<.01	<.03	M	80.2	<.003	<.003
SEP													
07...	<.029	<.013	<.024	<.016	<.02	<.02	<.02	<.01	<.03	<.5	78.9	<.003	<.003

Date	HHCB, water, fltrd, ug/L (62075)	Hexazinone, water, fltrd, ug/L (04025)	Imazaquin, water, fltrd, ug/L (50356)	Imazethapyr, water, fltrd, ug/L (50407)	Imidacloprid water, fltrd, ug/L (61695)	Indole, water, fltrd, ug/L (62076)	Iprodione, water, fltrd, ug/L (61593)	Isoborneol, water, fltrd, ug/L (62077)	Isobutyl alcohol -d6, surrog, wat unf pct rcv (62835)	Isofenphos, water, fltrd, ug/L (61594)	Isophorone water, fltrd, ug/L (34409)	Isopropylbenzene water, fltrd, ug/L (62078)	Isoquinoline, water, fltrd, ug/L (62079)
OCT													
07...	<.5	<.013	<.02	<.02	<.007	<.5	<1	<.5	112	<.003	<.5	<.5	<.5
NOV													
06...	E.1	<.013	<.02	<.02	<.007	<.5	<1	<.5	119	<.003	M	<.5	<.5
DEC													
03...	<.5	<.013	<.02	<.02	<.007	<.5	<1	<.5	134	<.003	<.5	<.5	<.5
JAN													
08...	M	<.013	<.02	<.02	<.007	<.5	<1	<.5	121	<.003	<.5	<.5	<.5
FEB													
02...	E.1	<.013	<.02	<.02	<.007	<.5	<1	<.5	105	<.003	<.5	<.5	<.5
MAR													
04...	<.5	<.013	<.02	<.02	<.007	M	<1	<.5	129	<.003	<.5	<.5	<.5
AUG													
03...	<.5	<.013	<.02	<.02	<.007	<.5	<.387	<.5	--	<.003	<.5	<.5	<.5
SEP													
07...	<.5	<.013	<.02	<.02	<.007	<.5	<.387	<.5	--	<.003	<.5	<.5	<.5

POTOMAC RIVER BASIN

01645495 POTOMAC RIVER NEAR GREAT FALLS, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Linuron water fltrd 0.7u GF ug/L (38478)	Mala-oxon, water, fltrd, ug/L (61652)	Mala-thion, water, fltrd, ug/L (39532)	MCPA, water, fltrd 0.7u GF ug/L (38482)	MCPB, water, fltrd 0.7u GF ug/L (38487)	Menthol water, fltrd, ug/L (62080)	Meta-laxyl, water, fltrd, ug/L (50359)	Meta-laxyl, water, fltrd, ug/L (61596)	Methi-althion water, fltrd, ug/L (61598)	Methio-carb, water, fltrd 0.7u GF ug/L (38501)	Meth-omyl, water, fltrd 0.7u GF ug/L (49296)	Methyl acetate water unfltrd ug/L (77032)	Methyl para-oxon, water, fltrd, ug/L (61664)
OCT													
07...	<.01	<.008	<.027	<.02	<.01	<.5	<.02	<.005	<.006	<.008	<.004	<.4	<.03
NOV													
06...	<.01	<.008	<.027	.07	<.01	<.5	<.02	E.004	<.006	<.008	<.004	<.4	<.03
DEC													
03...	<.01	<.008	<.027	<.02	<.01	<.5	<.02	<.005	<.006	<.008	<.004	<.4	<.03
JAN													
08...	<.01	<.008	<.027	<.02	<.01	<.5	<.02	<.005	<.006	<.008	<.004	<.4	<.03
FEB													
02...	<.01	<.008	<.027	<.02	<.01	<.5	<.02	<.005	<.006	<.008	<.004	<.4	<.03
MAR													
04...	<.01	<.008	<.027	<.02	<.01	<.5	<.02	<.005	<.006	<.008	<.004	<.4	<.03
AUG													
03...	<.01	<.030	<.027	<.02	<.01	<.5	E.01	.011	<.006	<.008	<.004	--	<.03
SEP													
07...	<.01	<.030	<.027	<.02	<.01	<.5	<.02	<.005	<.006	<.008	<.004	--	<.03

Date	Methyl para-thion, water, fltrd 0.7u GF ug/L (82667)	Methyl salicy-late, water, fltrd, ug/L (62081)	Metola-chlor ESA, water, fltrd 0.7u GF ug/L (61043)	Metola-chlor OA, water, fltrd 0.7u GF ug/L (61044)	Metola-chlor, water, fltrd, ug/L (39415)	Metri-buzin, water, fltrd, ug/L (82630)	Metsul-furon, water, fltrd, ug/L (61697)	Myclo-butanil water, fltrd, ug/L (61599)	N-(4-Chloro-phenyl) -N-' methyl-urea, ug/L (61692)	Naphth-alene, water, fltrd, ug/L (34443)	Neburon water, fltrd 0.7u GF ug/L (49294)	Nico-sul-furon, water, fltrd, ug/L (50364)	Norflur azon, water, fltrd 0.7u GF ug/L (49293)
OCT													
07...	<.015	<.5	.77	.10	.020	<.006	<.03	<.008	<.02	<.5	<.01	<.01	<.02
NOV													
06...	<.015	E.1	.53	.09	E.012	<.006	<.03	<.008	<.02	<.5	<.01	<.01	<.02
DEC													
03...	<.015	<.5	.59	.08	E.010	<.006	<.03	<.008	<.02	<.5	<.01	<.01	M
JAN													
08...	<.015	<.5	.31	.06	.014	<.006	<.03	<.008	<.02	<.5	<.01	<.01	<.02
FEB													
02...	<.015	<.5	.38	.05	.016	<.006	<.03	<.008	<.02	<.5	<.01	<.01	<.02
MAR													
04...	<.015	<.5	.17	.06	E.010	<.006	<.03	<.008	<.02	<.5	<.01	<.01	<.02
AUG													
03...	<.015	<.5	.42	.16	.068	<.006	<.03	<.008	<.02	<.5	<.01	<.01	<.02
SEP													
07...	<.015	<.5	.30	.05	E.012	<.006	<.03	<.008	<.02	<.5	<.01	<.01	<.02

Date	Ory-zalin, water, fltrd 0.7u GF ug/L (49292)	Oxamyl, water, fltrd 0.7u GF ug/L (38866)	p-Cresol, water, fltrd, ug/L (62084)	Pendi-meth-alin, water, fltrd 0.7u GF ug/L (82683)	Penta-chloro-phenol, water, fltrd, ug/L (34459)	Phenan-threne, water, fltrd, ug/L (34462)	Phenol, water, fltrd, ug/L (34466)	Phorate oxon, water, fltrd, ug/L (61666)	Phorate water fltrd 0.7u GF ug/L (82664)	Phosmet oxon, water, fltrd, ug/L (61668)	Phosmet water, fltrd, ug/L (61601)	Pic-loram, water, fltrd 0.7u GF ug/L (49291)	Prome-ton, water, fltrd, ug/L (04037)
OCT													
07...	<.02	<.01	<1	<.022	<2	<.5	<.5	<.10	<.011	<.06	<.008	<.02	.01
NOV													
06...	<.02	<.01	<1	<.022	<2	M	<.5	<.10	<.011	--	--	<.02	.01
DEC													
03...	<.02	<.01	<1	<.022	<2	<.5	<.5	<.10	<.011	--	--	<.02	.01
JAN													
08...	<.02	<.01	<1	<.022	<2	<.5	<.5	<.10	<.011	<.06	<.008	<.02	<.01
FEB													
02...	.07	<.01	<1	<.022	<2	<.5	<.5	<.10	<.011	<.06	<.008	<.02	M
MAR													
04...	<.02	<.01	<1	<.022	<2	<.5	<.5	<.10	<.011	<.06	<.008	<.02	M
AUG													
03...	<.02	<.01	<1	<.022	<2	M	E.3	<.10	<.011	<.05	<.008	<.02	.03
SEP													
07...	<.02	<.01	<1	<.022	<2	<.5	<.6	<.10	<.011	<.05	<.008	<.02	.01

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Prometryn, water, fltrd, ug/L (04036)	Propyzamide, water, fltrd 0.7u GF ug/L (82676)	Propachlor ESA, water, fltrd 0.7u GF ug/L (62766)	Propachlor OA, water, fltrd 0.7u GF ug/L (62767)	Propham water fltrd 0.7u GF ug/L (49236)	Propiconazole, water, fltrd, ug/L (50471)	Propoxur, water, fltrd 0.7u GF ug/L (38538)	Pyrene, water, fltrd, ug/L (34470)	Siduron water, fltrd, ug/L (38548)	Simazine, water, fltrd, ug/L (04035)	Sulfometruron, water, fltrd, ug/L (50337)	Tebuthiuron water fltrd 0.7u GF ug/L (82670)	Terbacil, water, fltrd, ug/L (04032)
OCT													
07...	<.005	<.004	<.05	<.02	<.010	<.02	<.008	<.5	<.02	.015	<.009	<.02	<.010
NOV													
06...	<.005	<.004	<.05	<.02	<.010	<.02	<.008	M	<.02	.009	<.009	<.02	<.010
DEC													
03...	<.005	<.004	<.05	<.02	<.010	<.02	<.008	<.5	<.02	.012	<.009	<.02	<.010
JAN													
08...	<.005	<.004	<.05	<.02	<.010	<.02	<.008	<.5	<.02	.011	<.009	<.02	<.010
FEB													
02...	<.005	<.004	<.05	<.02	<.010	<.02	<.008	<.5	<.02	.010	<.009	<.02	<.010
MAR													
04...	<.005	<.004	<.05	<.02	<.010	<.02	<.008	<.5	<.02	.014	<.009	<.02	<.010
AUG													
03...	<.005	<.004	<.05	<.02	<.010	<.02	<.008	<.5	<.02	.049	<.009	<.02	<.010
SEP													
07...	<.005	<.004	<.05	<.02	<.010	<.02	<.008	<.5	<.02	.019	<.009	E.01	<.010

Date	Terbufos oxon sulfone water, fltrd, ug/L (61674)	Terbufos, water, fltrd 0.7u GF ug/L (82675)	Terbuthylazine, water, fltrd, ug/L (04022)	tert-Amyl alcohol water unfltrd ug/L (77073)	tert-Butyl-alcohol water unfltrd ug/L (77035)	Tetrachloroethene, water, fltrd, ug/L (34476)	Tribromomethane water, fltrd, ug/L (34288)	Tributyl phosphate, water, fltrd, ug/L (62089)	Triclopyr, water, fltrd 0.7u GF ug/L (49235)	Triclosan, water, fltrd, ug/L (62090)	Triethyl citrate water, fltrd, ug/L (62091)	Trifluralin, water, fltrd 0.7u GF ug/L (82661)	Triphenyl phosphate, water, fltrd, ug/L (62092)
OCT													
07...	<.07	<.02	<.01	<.4	<1.00	<.5	<.5	<.5	E.02	<1	<.5	<.009	<.5
NOV													
06...	<.07	<.02	<.01	<.4	<1.00	<.5	M	<.5	<.02	M	<.5	<.009	E.1
DEC													
03...	<.07	<.02	<.01	<.4	<1.00	<.5	<.5	<.5	<.02	<1	<.5	<.009	<.5
JAN													
08...	<.07	<.02	<.01	<.4	<1.00	<.5	M	E.1	<.02	<1	<.5	<.009	<.5
FEB													
02...	<.07	<.02	<.01	<.4	<1.00	<.5	M	E.1	<.02	<1	E.1	<.009	M
MAR													
04...	<.07	<.02	<.01	<.4	<1.00	<.5	<.5	<.5	<.02	<1	<.5	<.009	<.5
AUG													
03...	<.07	<.02	<.01	--	--	<.5	<.5	<.5	<.06	<1	<.5	<.009	<.5
SEP													
07...	<.07	<.02	<.01	--	--	<.5	<.5	<.5	<.02	<1	<.5	<.009	<.5

Date	Tris(2-butoxyethyl) phosphate, wat flt ug/L (62093)	Tris(2-chloroethyl) phosphate, wat flt ug/L (62087)	Tris(dichloro-i-Pr) phosphate, wat flt ug/L (62088)	1,1,1,2-Tetrachloroethane, water, unfltrd ug/L (77562)	1,1,1-Trichloroethane, water, unfltrd ug/L (34506)	1,1,2,2-Tetrachloroethane, water, unfltrd ug/L (34516)	CFC-113 water unfltrd ug/L (77652)	1,1,2-Trichloroethane, water, unfltrd ug/L (34511)	1,1-Dichloroethane, water unfltrd ug/L (34496)	1,1-Dichloroethene, water, unfltrd ug/L (34501)	1,1-Dichloropropene water unfltrd ug/L (77168)	1,2,3,4 Tetramethylbenzene water unfltrd ug/L (49999)	1,2,3,5 Tetramethylbenzene water unfltrd ug/L (50000)
OCT													
07...	<.5	<.5	<.5	<.03	<.03	<.16	<.04	<.06	<.04	<.02	<.03	<.1	<.1
NOV													
06...	E.2	E.1	M	<.03	<.03	<.16	<.04	<.06	<.04	<.02	<.03	<.1	<.1
DEC													
03...	<.5	<.5	<.5	<.03	<.03	<.16	<.04	<.06	<.04	<.02	<.03	<.1	<.1
JAN													
08...	<.5	M	<.5	<.03	<.03	<.16	<.04	<.06	<.04	<.02	<.03	<.1	<.1
FEB													
02...	E.2	E.1	E.1	<.03	<.03	<.16	<.04	<.06	<.04	<.02	<.03	<.1	<.1
MAR													
04...	<.5	<.5	<.5	<.03	<.03	<.16	<.04	<.06	<.04	<.02	<.03	<.1	<.1
AUG													
03...	<.5	E.1	<.5	<.03	<.03	<.16	<.04	<.06	<.04	<.02	<.03	<.1	<.1
SEP													
07...	<.5	<.5	<.5	<.03	<.03	<.16	<.04	<.06	<.04	<.02	<.03	<.1	<.1

POTOMAC RIVER BASIN

01645495 POTOMAC RIVER NEAR GREAT FALLS, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	1,2,3-Trichlorobenzene water unfltrd ug/L (77613)	1,2,3-Trichloropropane water unfltrd ug/L (77443)	1,2,3-Trimethylbenzene water unfltrd ug/L (77221)	1,2,4-Trichlorobenzene water unfltrd ug/L (34551)	1,2,4-Trimethylbenzene water unfltrd ug/L (77222)	Dibromochloropropane water unfltrd ug/L (82625)	1,2-Dibromoethane, water, unfltrd ug/L (77651)	1,2-Dichlorobenzene water unfltrd ug/L (34536)	1,2-Dichloroethane, water, unfltrd ug/L (32103)	1,2-Dichloroethane-d4, sur Sch2090 wat unf pct rcv (99832)	1,2-Dichloropropane water unfltrd ug/L (34541)	1,3,5-Trimethylbenzene water unfltrd ug/L (77226)	1,3-Dichlorobenzene water unfltrd ug/L (34566)
OCT 07...	<.3	<.18	<.1	<.1	<.06	<.5	<.04	<.05	<.1	105	<.03	<.04	<.03
NOV 06...	<.3	<.18	<.1	<.1	<.06	<.5	<.04	<.05	<.1	104	<.03	<.04	<.03
DEC 03...	<.3	<.18	<.1	<.1	<.06	<.5	<.04	<.05	<.1	144	<.03	<.04	<.03
JAN 08...	<.3	<.18	<.1	<.1	<.06	<.5	<.04	<.05	<.1	110	<.03	<.04	<.03
FEB 02...	<.3	<.18	<.1	<.1	<.06	<.5	<.04	<.05	<.1	142	<.03	<.04	<.03
MAR 04...	<.3	<.18	<.1	<.1	<.06	<.5	<.04	<.05	<.1	111	<.03	<.04	<.03
AUG 03...	<.3	<.18	<.1	<.1	<.06	<.5	<.04	<.05	<.1	118	<.03	<.04	<.03
SEP 07...	<.3	<.18	<.1	<.1	<.06	<.5	<.04	<.05	<.1	112	<.03	<.04	<.03

Date	1,3-Dichloropropane water unfltrd ug/L (77173)	1,4-Dichlorobenzene water unfltrd ug/L (34571)	14Bromofluorobenzene surrog. VOC Sch wat unf pct rcv (99834)	2,2-Dichloropropane water unfltrd ug/L (77170)	2-Chlorotoluene water unfltrd ug/L (77275)	2-Ethyltoluene water unfltrd ug/L (77220)	3-Chloropropene water unfltrd ug/L (78109)	4-Chlorotoluene water unfltrd ug/L (77277)	4-Isopropyltoluene water unfltrd ug/L (77356)	Acetone water unfltrd ug/L (81552)	Acrylonitrile water unfltrd ug/L (34215)	Benzene water unfltrd ug/L (34030)	Bromobenzene water unfltrd ug/L (81555)
OCT 07...	<.1	<.03	84.8	<.05	<.04	<.06	<.50	<.05	<.08	<6	<1	<.02	<.03
NOV 06...	<.1	<.03	89.6	<.05	<.04	<.06	<.50	<.05	<.08	<6	<1	<.02	<.03
DEC 03...	<.1	<.03	85.5	<.05	<.04	<.06	<.50	<.05	<.08	<6	<1	<.02	<.03
JAN 08...	<.1	<.03	85.9	<.05	<.04	<.06	<.50	<.05	<.08	<6	<1	<.02	<.03
FEB 02...	<.1	<.03	88.7	<.05	<.04	<.06	<.50	<.05	<.08	<6	<1	<.02	<.03
MAR 04...	<.1	<.03	91.9	<.05	<.04	<.06	<.50	<.05	<.08	<6	<1	E.01	<.03
AUG 03...	<.1	<.03	100	<.05	<.04	<.06	<.50	<.05	<.08	<6	<1	<.02	<.03
SEP 07...	<.1	<.03	103	<.05	<.04	<.06	<.50	<.05	<.08	<6	<1	<.02	<.03

Date	Bromochloromethane water unfltrd ug/L (77297)	Bromodichloromethane water unfltrd ug/L (32101)	Bromoethene, water, unfltrd ug/L (50002)	Bromomethane water unfltrd ug/L (34413)	Carbon disulfide water unfltrd ug/L (77041)	Chlorobenzene water unfltrd ug/L (34301)	Chloroethane, water, unfltrd ug/L (34311)	Chloromethane water unfltrd ug/L (34418)	cis-1,2-Dichloroethene, water, unfltrd ug/L (77093)	cis-1,3-Dichloropropene water unfltrd ug/L (34704)	Dibromochloromethane water unfltrd ug/L (32105)	Dibromomethane water unfltrd ug/L (30217)	Dichlorodifluoromethane wat unf ug/L (34668)
OCT 07...	<.12	<.03	<.1	<.3	<.04	<.03	<.1	<.2	<.02	<.05	<.1	<.05	<.18
NOV 06...	<.12	E.03	<.1	<.3	<.04	<.03	<.1	<.2	<.02	<.05	<.1	<.05	<.18
DEC 03...	<.12	<.03	<.1	<.3	<.04	<.03	<.1	<.2	<.02	<.05	<.1	<.05	<.18
JAN 08...	<.12	<.03	<.1	<.3	<.04	<.03	<.1	<.2	<.02	<.05	<.1	<.05	<.18
FEB 02...	<.12	E.03	<.1	<.3	<.04	<.03	<.1	<.2	<.02	<.05	<.1	<.05	<.18
MAR 04...	<.12	<.03	<.1	<.3	<.04	<.03	<.1	<.2	<.02	<.05	<.1	<.05	<.18
AUG 03...	<.12	<.03	<.1	<.3	<.04	<.03	<.1	<.2	<.02	<.05	<.1	<.05	<.18
SEP 07...	<.12	<.03	<.1	<.3	<.04	<.03	<.1	<.2	<.02	<.05	<.1	<.05	<.18

POTOMAC RIVER BASIN

01645495 POTOMAC RIVER NEAR GREAT FALLS, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Dichloromethane water unfltrd ug/L (34423)	Diethyl ether, water, unfltrd ug/L (81576)	Diisopropyl ether, water, unfltrd ug/L (81577)	Ethyl methacrylate, water, unfltrd ug/L (73570)	Ethyl methyl ketone, water, unfltrd ug/L (81595)	Ethylbenzene water unfltrd ug/L (34371)	Hexachlorobutadiene, water, unfltrd ug/L (39702)	Hexachloroethane, water, unfltrd ug/L (34396)	Iodomethane water unfltrd ug/L (77424)	Isobutyl methyl ketone, water, unfltrd ug/L (78133)	Isopropylbenzene water unfltrd ug/L (77223)	Methyl acrylonitrile water unfltrd ug/L (81593)	Methyl acrylate, water, unfltrd ug/L (49991)
OCT													
07...	<.1	<.1	<.10	<.2	<4.0	<.03	<.1	<.1	<.35	<.4	<.04	<.8	<2.0
NOV													
06...	<.1	<.1	<.10	<.2	<4.0	<.03	<.1	<.1	<.35	<.4	<.04	<.8	<2.0
DEC													
03...	<.1	<.1	<.10	<.2	<4.0	<.03	<.1	<.1	<.35	<.4	<.04	<.8	<2.0
JAN													
08...	<.1	<.1	<.10	<.2	<4.0	<.03	<.1	<.1	<.35	<.4	<.04	<.8	<2.0
FEB													
02...	<.1	<.1	<.10	<.2	<4.0	<.03	<.1	<.1	<.35	<.4	<.04	<.8	<2.0
MAR													
04...	M	<.1	<.10	<.2	<4.0	<.03	<.1	<.1	<.35	<.4	<.04	<.8	<2.0
AUG													
03...	<.1	<.1	<.10	<.2	<4.0	<.03	<.1	<.1	<.35	<.4	<.04	<.8	<2.0
SEP													
07...	<.1	<.1	<.10	<.2	<4.0	<.03	<.1	<.1	<.35	<.4	<.04	<.8	<2.0

Date	Methyl methacrylate, water, unfltrd ug/L (81597)	Methyl tert-pentyl ether, water, unfltrd ug/L (50005)	meta- + para-Xylene, water, unfltrd ug/L (85795)	Naphthalene, water, unfltrd ug/L (34696)	Methyl n-butyl ketone, water, unfltrd ug/L (77103)	n-Butyl benzene water unfltrd ug/L (77342)	n-propylbenzene water unfltrd ug/L (77224)	o-Xylene, water, unfltrd ug/L (77135)	sec-Butylbenzene water unfltrd ug/L (77350)	Styrene water unfltrd ug/L (77128)	t-Butyl ethyl ether, water, unfltrd ug/L (50004)	Methyl t-butyl ether, water, unfltrd ug/L (78032)	tert-Butylbenzene water unfltrd ug/L (77353)
OCT													
07...	<.3	<.08	<.06	<.5	<.7	<.1	<.04	<.04	<.06	<.04	<.05	E.1	<.06
NOV													
06...	<.3	<.08	<.06	<.5	<.7	<.1	<.04	<.04	<.06	<.04	<.05	E.1	<.06
DEC													
03...	<.3	<.08	<.06	<.5	<.7	<.1	<.04	<.04	<.06	<.04	<.05	<.2	<.06
JAN													
08...	<.3	<.08	<.06	<.5	<.7	<.1	<.04	<.04	<.06	<.04	<.05	<.2	<.06
FEB													
02...	<.3	<.08	<.06	<.5	<.7	<.1	<.04	<.04	<.06	<.04	<.05	<.2	<.06
MAR													
04...	<.3	<.08	E.02	<.5	<.7	<.1	<.04	<.04	<.06	<.04	<.05	E.1	<.06
AUG													
03...	<.3	<.08	<.06	<.5	<.7	<.1	<.04	<.04	<.06	<.04	<.05	.2	<.06
SEP													
07...	<.3	<.08	<.06	<.5	<.7	<.1	<.04	<.04	<.06	<.04	<.05	.3	<.06

Date	Tetrachloroethene, water, unfltrd ug/L (34475)	Tetrachloromethane water unfltrd ug/L (32102)	Tetrahydrofuran, water, unfltrd ug/L (81607)	Toluene water unfltrd ug/L (34010)	Toluene-d8, surrog, Sch2090 wat unf percent recovry (99833)	trans-1,2-Dichloroethene, water, unfltrd ug/L (34546)	trans-1,3-Dichloropropene water unfltrd ug/L (34699)	trans-1,4-Dichloro-2-butene, wat unf ug/L (73547)	Tribromomethane water unfltrd ug/L (32104)	Trichloroethene, water, unfltrd ug/L (39180)	Trichlorofluoromethane water unfltrd ug/L (34488)	Trichloromethane water unfltrd ug/L (32106)	Vinyl chloride, water, unfltrd ug/L (39175)
OCT													
07...	<.06	<.06	<2	E.08	102	<.03	<.09	<.7	<.10	<.04	<.16	E.05	<.1
NOV													
06...	<.06	<.06	<2	E.03	98.2	<.03	<.09	<.7	<.10	<.04	<.16	.13	<.1
DEC													
03...	<.06	<.06	<2	E.02	102	<.03	<.09	<.7	<.10	<.04	<.16	E.06	<.1
JAN													
08...	<.06	<.06	<2	E.02	94.2	<.03	<.09	<.7	<.10	<.04	<.16	E.04	<.1
FEB													
02...	<.06	<.06	<2	E.02	104	<.03	<.09	<.7	<.10	<.04	<.16	E.09	<.1
MAR													
04...	<.06	<.06	<2	E.04	96.0	<.03	<.09	<.7	<.10	<.04	<.16	E.05	<.1
AUG													
03...	<.06	<.06	<2	E.03	102	<.03	<.09	<.7	<.10	<.04	<.16	E.08	<.1
SEP													
07...	<.06	<.06	<2	<.05	102	<.03	<.09	<.7	<.10	<.04	<.16	E.07	<.1

POTOMAC RIVER BASIN

01645495 POTOMAC RIVER NEAR GREAT FALLS, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Di-chlor-vos, water fltrd, ug/L (38775)	Sampler type, code (84164)
OCT		
07...	<.01	3060
NOV		
06...	E.01	3060
DEC		
03...	<.01	3060
JAN		
08...	M	3060
FEB		
02...	<.01	3060
MAR		
04...	<.01	3060
AUG		
03...	<.01	3060
SEP		
07...	<.01	3060

Sampler type: 3060 - Weighted-bottle sampler

Remark codes used in this table:
< -- Less than
E -- Estimated value
M-- Presence verified, not quantified

AND MISCELLANEOUS SITES

LOWER POTOMAC RIVER BASIN

MISCELLANEOUS STATION ANALYSES

Date	Time	Sample type	Trans-parency water unfltrd secchi disc feet (49701)	Turbdty white light, det ang 90+/-30 degrees NTU (63675)	Baro-metric pres-sure, mm Hg (00025)	Dis-solved oxygen, mg/L (00300)	Dis-solved oxygen, percent of sat-uration (00301)	pH, water, unfltrd field, std units (00400)	Specif. conduc-tance, wat unf uS/cm 25 degC (00095)	Temper-ature, air, deg C (00020)	Temper-ature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)
01660440 UPPER NORTH BRANCH LUNGA RES NR GARRISONVILLE, VA (LAT 38 32 37N LONG 077 28 53W)												
SEP 2004 14...	1030	Environmental	2.7	8.00	755	8.4	102	6.4	33	25.0	25.2	1.82
01660450 LOWER NORTH BRANCH LUNGA RES NR GARRISONVILLE, VA (LAT 38 31 49N LONG 077 27 51W)												
SEP 2004 14...	1100	Environmental	3.9	6.00	755	9.5	116	6.4	33	25.0	25.3	1.85
01660470 UPPER SOUTH BRANCH LUNGA RES NR GARRISONVILLE, VA (LAT 38 31 49N LONG 077 29 13W)												
SEP 2004 14...	0900	Blank	--	--	--	--	--	--	--	--	--	.08
14...	0935	Environmental	2.4	13.0	755	7.8	95	6.4	32	25.0	25.1	1.86
01660480 LOWER SOUTH BRANCH LUNGA RES NR GARRISONVILLE, VA (LAT 38 31 34N LONG 077 28 07W)												
SEP 2004 15...	0915	Environmental	4.2	8.00	754	--	--	6.1	33	23.5	24.1	1.88
01660489 LUNGA RES AT WATER INTAKE NEAR GARRISONVILLE, VA (LAT 38 31 23N LONG 077 27 47W)												
SEP 2004 15...	1000	Environmental	4.3	7.00	754	--	--	6.3	33	23.5	24.0	1.86
01660490 LUNGA RESERVOIR AT SPILLWAY NEAR GARRISONVILLE, VA (LAT 38 31 22N LONG 077 27 49W)												
SEP 2004 15...	0945	Environmental	4.2	7.00	754	--	--	6.3	33	23.5	24.1	1.82

MISCELLANEOUS STATION ANALYSES—CONTINUED

Date	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)	Sodium, water, fltrd, mg/L (00930)	Alka-linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Bromide water, fltrd, mg/L (71870)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)
01660440 UPPER NORTH BRANCH LUNGA RES NR GARRISONVILLE, VA (LAT 38 32 37N LONG 077 28 53W)													
SEP 2004 14...	1.03	1.08oc	2.29	7	.02	2.50	.08	9.26	2.62	39	<.010	<.016	E.001n
01660450 LOWER NORTH BRANCH LUNGA RES NR GARRISONVILLE, VA (LAT 38 31 49N LONG 077 27 51W)													
SEP 2004 14...	1.05	1.01oc	2.47	8	.02	2.55	.09	8.57	2.59	34	E.005n	<.016	E.001n
01660470 UPPER SOUTH BRANCH LUNGA RES NR GARRISONVILLE, VA (LAT 38 31 49N LONG 077 29 13W)													
SEP 2004 14...	<.008	.013	.28	--	<.01	<.01	.02	.56	.01	<10	<.010	<.016	<.002
14...	1.05	1.07oc	2.36	8	.02	2.54	.08	8.72	1.83	45	<.010	<.016	E.001n
01660480 LOWER SOUTH BRANCH LUNGA RES NR GARRISONVILLE, VA (LAT 38 31 34N LONG 077 28 07W)													
SEP 2004 15...	1.06	1.03oc	2.37	7	.02	2.55	.08	8.49	2.25	42	<.010	<.016	E.001n
01660489 LUNGA RES AT WATER INTAKE NEAR GARRISONVILLE, VA (LAT 38 31 23N LONG 077 27 47W)													
SEP 2004 15...	1.06	1.02oc	2.47	6	.02	2.57	.09	8.50	2.21	36	<.010	<.016	E.001n
01660490 LUNGA RESERVOIR AT SPILLWAY NEAR GARRISONVILLE, VA (LAT 38 31 22N LONG 077 27 49W)													
SEP 2004 15...	1.04	1.06oc	2.30	7	.02	2.55	.08	8.43	2.83	38	<.010	<.016	E.001n

MISCELLANEOUS STATION ANALYSES—CONTINUED

Date	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Phos-phorus, water, fltrd, mg/L (00666)	Phos-phorus, water, unfltrd mg/L (00665)	Total nitro-gen, wat flt by anal ysis, mg/L (62854)	Total nitro-gen, wat unf by anal ysis, mg/L (62855)	Organic carbon, water, fltrd, mg/L (00681)	Organic carbon, water, unfltrd mg/L (00680)	Pheo-phytin a, phyto-plank-ton, ug/L (62360)	E coli, m-TEC MF, water, col/ 100 mL (31633)	Chloro-phyll a phyto-plank-ton, fluoro, ug/L (70953)	Chloro-phyll, tot, wt 650-700 nm, in-situ ug/L (62361)	Oil and grease, water, unfltrd freon extract mg/L (00556)
01660440 UPPER NORTH BRANCH LUNGA RES NR GARRISONVILLE, VA (LAT 38 32 37N LONG 077 28 53W)												
SEP 2004 14...	<.006	.008	.03oc	.27	.35	4.5+c	6.8	3.7	E6k	11.6	6.90	<7+c
01660450 LOWER NORTH BRANCH LUNGA RES NR GARRISONVILLE, VA (LAT 38 31 49N LONG 077 27 51W)												
SEP 2004 14...	<.006	.006	.02oc	.25	.31	4.9+c	6.5	2.2	E8k	6.5	4.50	<7+c
01660470 UPPER SOUTH BRANCH LUNGA RES NR GARRISONVILLE, VA (LAT 38 31 49N LONG 077 29 13W)												
SEP 2004 14...	<.006	<.004	<.004	<.03	<.03	E.3+nc	<.4	<.2	--	<.2	--	<7+c
14...	<.006	E.004n	.010	.26	.29	5.1+c	7.5	6.2	E12k	8.4	6.50	<7+c
01660480 LOWER SOUTH BRANCH LUNGA RES NR GARRISONVILLE, VA (LAT 38 31 34N LONG 077 28 07W)												
SEP 2004 15...	<.006	E.003n	.02oc	.23	.24	4.8+c	6.3	4.0	E8k	5.8	--	<7+c
01660489 LUNGA RES AT WATER INTAKE NEAR GARRISONVILLE, VA (LAT 38 31 23N LONG 077 27 47W)												
SEP 2004 15...	<.006	.005	.02oc	.24	.30	4.7+c	6.5	5.0	E11k	7.1	--	<7+c
01660490 LUNGA RESERVOIR AT SPILLWAY NEAR GARRISONVILLE, VA (LAT 38 31 22N LONG 077 27 49W)												
SEP 2004 15...	<.006	.005	E.004n	.24	.24	4.6+c	5.7	3.5	E15k	5.4	--	<7+c

Remark codes used in this table:
< -- Less than
E -- Estimated value

Value qualifier codes used in this table:
+ -- Improper preservation
c -- See laboratory comment
k -- Counts outside acceptable range
n -- Below the LRL and above the LT-MDL
o -- Result determined by alternate method

MISCELLANEOUS STATION ANALYSES

Date	Time	Sample type	Turbidity, NTU (00076)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Calcium bed sedimnt recoverable, mg/kg (00917)	Magnesium, bed sedimnt recoverable, mg/kg (00924)
0204278255 SANDY BAY BELOW POWHATAN CREEK NEAR SURRY, VA (LAT 37 13 03N LONG 076 46 56W)												
OCT 2003												
07...	1330	Environmental	49	767	9.1	101	7.9	149	24.5	20.3	--	--
07...	1330	Bed material	--	--	--	--	--	--	--	--	4,100	4,100
0204278540 STORM DRAIN TO THE HARDWOOD WETLAND NEAR SURRY, VA (LAT 37 12 39N LONG 076 46 32W)												
OCT 2003												
07...	1500	Bed material	--	--	--	--	--	--	--	--	1,200	850
0204278545 BACK RIVER NEAR WETLAND OUTFALL NEAR SURRY, VA (LAT 37 12 42N LONG 076 46 27W)												
OCT 2003												
07...	1230	Environmental	59	--	9.0	100	7.8	176	25.5	19.9	--	--
07...	1230	Bed material	--	--	--	--	--	--	--	--	4,000	1,100
0204278555 THE THOROFARE AT JAMESTOWN ISLAND NEAR SURRY, VA (LAT 37 12 45N LONG 076 45 23W)												
OCT 2003												
07...	1130	Environmental	50	768	8.8	97	7.9	149	24.0	19.8	--	--
07...	1130	Bed material	--	--	--	--	--	--	--	--	3,900	6,200
0204278560 STORM DRAIN TO PITCH AND TAR SWAMP NEAR SURRY, VA (LAT 37 12 37N LONG 076 46 34W)												
OCT 2003												
07...	1515	Bed material	--	--	--	--	--	--	--	--	3,000	1,800

MISCELLANEOUS STATION ANALYSES—CONTINUED

Date	Potassium, bed sedimnt recoverable, mg/kg (00938)	Sodium, bed sedimnt recoverable, mg/kg (00934)	Phosphorus, bed sedimnt total, mg/kg (00668)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Aluminum, bed sedimnt recoverable, ug/g (01108)	Antimony, bed sed <62.5um wet svd fld,tot ug/g (34795)	Arsenic bed sed <62.5um wet svd field, total, ug/g (34800)	Barium, bed sed <62.5um wet svd field, total, ug/g (34805)	Beryllium, bed sed <62.5um wet svd fld,tot ug/g (34810)	Bismuth bed sed <177um wet svd field, total, ug/g (34816)	Cadmium bed sed <62.5um wet svd field, total, ug/g (34825)	Cerium, bed sed <62.5um wet svd field, total, ug/g (34835)	Chromium, bed sed <62.5um wet svd fld,tot ug/g (34840)
0204278255 SANDY BAY BELOW POWHATAN CREEK NEAR SURRY, VA (LAT 37 13 03N LONG 076 46 56W)													
OCT 2003													
07...	--	--	--	10.0	--	--	--	--	--	--	--	--	--
07...	14,000	4,300	940	--	54,000	.55	8.2	440	1.9	.240	.380	68	53
0204278540 STORM DRAIN TO THE HARDWOOD WETLAND NEAR SURRY, VA (LAT 37 12 39N LONG 076 46 32W)													
OCT 2003													
07...	5,900	1,400	220	--	14,000	.20	2.0	180	.440	.030	.040	16	14
0204278545 BACK RIVER NEAR WETLAND OUTFALL NEAR SURRY, VA (LAT 37 12 42N LONG 076 46 27W)													
OCT 2003													
07...	--	--	--	9.3	--	--	--	--	--	--	--	--	--
07...	9,800	2,800	160	--	18,000	.20	1.0	320	.550	.040	.040	22	14
0204278555 THE THOROFARE AT JAMESTOWN ISLAND NEAR SURRY, VA (LAT 37 12 45N LONG 076 45 23W)													
OCT 2003													
07...	--	--	--	6.5	--	--	--	--	--	--	--	--	--
07...	16,000	4,300	1,200	--	76,000	.66	9.9	480	2.7	.340	.410	94	74
0204278560 STORM DRAIN TO PITCH AND TAR SWAMP NEAR SURRY, VA (LAT 37 12 37N LONG 076 46 34W)													
OCT 2003													
07...	8,600	2,800	490	--	24,000	.56	3.0	250	.790	.100	.190	29	24

MISCELLANEOUS STATION ANALYSES—CONTINUED

Date	Cobalt, bed sed <62.5um wet svd field, total, ug/g (34845)	Copper, bed sed <62.5um wet svd field, total, ug/g (34850)	Gallium bed sed <62.5um wet svd field, total, ug/g (34860)	Iron, bed sedimnt total, ug/g (01170)	Lantha-num, bed sed <62.5um wet svd fld,tot ug/g (34885)	Lead, bed sed <62.5um wet svd field, total, ug/g (34890)	Lithium bed sed <62.5um wet svd field, total, ug/g (34895)	Mangan-ese, bed sed <62.5um wet svd fld,tot ug/g (34905)	Molyb-denum, bed sed <62.5um wet svd fld,tot ug/g (34915)	Nickel, bed sed <62.5um wet svd field, total, ug/g (34925)	Niobium bed sed <62.5um wet svd field, total, ug/g (34930)	Scand-ium, bed sed <62.5um wet svd fld,tot ug/g (34945)	Silver, bed sed <62.5um wet svd field, total, ug/g (34955)
0204278255 SANDY BAY BELOW POWHATAN CREEK NEAR SURRY, VA (LAT 37 13 03N LONG 076 46 56W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	12	30	14	35,000	33	29	34	830	1.2	21	19	11	M
0204278540 STORM DRAIN TO THE HARDWOOD WETLAND NEAR SURRY, VA (LAT 37 12 39N LONG 076 46 32W)													
OCT 2003													
07...	2.5	5.8	3.4	7,700	8.3	20	6.5	130	.7	4	12	2.4	M
0204278545 BACK RIVER NEAR WETLAND OUTFALL NEAR SURRY, VA (LAT 37 12 42N LONG 076 46 27W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	2.6	8.6	3.7	10,000	13	14	6.2	290	.6	4	20	3.2	M
0204278555 THE THOROFARE AT JAMESTOWN ISLAND NEAR SURRY, VA (LAT 37 12 45N LONG 076 45 23W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	17	38	20	47,000	46	37	53	940	1.6	32	24	15	M
0204278560 STORM DRAIN TO PITCH AND TAR SWAMP NEAR SURRY, VA (LAT 37 12 37N LONG 076 46 34W)													
OCT 2003													
07...	3.8	13	5.8	12,000	16	140	12	160	1.2	10	12	4.2	M

MISCELLANEOUS STATION ANALYSES—CONTINUED

Date	Stront-ium, bed sed <62.5um wet svd fld,tot ug/g (34965)	Tant-alum, bed sed <62.5um wet svd fld,tot ug/g (34975)	Thall-ium, bed sed <62.5um dry svd total, ug/g (04064)	Thorium bed sed <62.5um wet svd field, total, ug/g (34980)	Titan-ium, bed sedimnt total, ug/g (01153)	Vanad-ium, bed sed <62.5um wet svd fld,tot ug/g (35005)	Yttrium bed sed <62.5um wet svd field, total, ug/g (35010)	Zinc, bed sed <62.5um wet svd field, total, ug/g (35020)	1,2,4-Tri-chloro-benzene bed sed <2 mm ug/kg (49438)	1,2-Di-chloro-benzene bed sed <2 mm wsv nat ug/kg (49439)	1,2-Di-methyl-naphth-alene, bed sed <2 mm, ug/kg (49403)	1,3-Di-chloro-benzene bed sed <2 mm wsv nat ug/kg (49441)	1,4-Di-chloro-benzene bed sed <2 mm wsv nat ug/kg (49442)
0204278255 SANDY BAY BELOW POWHATAN CREEK NEAR SURRY, VA (LAT 37 13 03N LONG 076 46 56W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	86	1.7	.530	7.1	5,200	84	30	110	<100	<100	<100	<100	<100
0204278540 STORM DRAIN TO THE HARDWOOD WETLAND NEAR SURRY, VA (LAT 37 12 39N LONG 076 46 32W)													
OCT 2003													
07...	30	.7	.200	2.3	3,100	26	5.0	24	<50	<50	<50	<50	<50
0204278545 BACK RIVER NEAR WETLAND OUTFALL NEAR SURRY, VA (LAT 37 12 42N LONG 076 46 27W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	65	1.5	.200	3.4	6,000	24	6.6	26	<50	<50	<50	<50	<50
0204278555 THE THOROFARE AT JAMESTOWN ISLAND NEAR SURRY, VA (LAT 37 12 45N LONG 076 45 23W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	92	1.9	.700	10	6,300	120	41	160	<100	<100	<100	<100	<100
0204278560 STORM DRAIN TO PITCH AND TAR SWAMP NEAR SURRY, VA (LAT 37 12 37N LONG 076 46 34W)													
OCT 2003													
07...	53	.8	.300	3.6	3,600	58	12	81	<100	<100	<100	<100	<100

AND MISCELLANEOUS SITES—Continued

MISCELLANEOUS STATION ANALYSES—CONTINUED

Date	1,6-Dimethylnaphthalene, bed sed <2 mm, ug/kg (49404)	1Methyl-9H-fluorene, bed sed <2 mm, ug/kg (49398)	1-Methylphenanthrene, bed sed <2 mm, ug/kg (49410)	1-Methylpyrene, bed sed <2 mm, wsv nat ug/kg (49388)	2,2-Biquinoline, bed sed <2 mm, wsv nat ug/kg (49391)	236Trimethylnaphthalene, bed sed <2 mm, ug/kg (49405)	2,4,6-Trichlorophenol, bed sed <2 mm, ug/kg (49415)	2,4,6-Trimethylphenol, bed sed <2 mm, ug/kg (49416)	2,4-Dichlorophenol, bed sed <2 mm, wsv nat ug/kg (49417)	2,4-Dinitrophenol, bed sed <2 mm, wsv nat ug/kg (49418)	2,4-Dinitrotoluene bed sed <2 mm wsv nat ug/kg (49395)	2,6-Dimethylnaphthalene, bed sed <2 mm, ug/kg (49406)	2,6-Dinitrotoluene bed sed <2 mm wsv nat ug/kg (49396)
0204278255 SANDY BAY BELOW POWHATAN CREEK NEAR SURRY, VA (LAT 37 13 03N LONG 076 46 56W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	<100	<100	E14	E16	<100	<100	--m	--m	--m	--m	<100	E70	<100
0204278540 STORM DRAIN TO THE HARDWOOD WETLAND NEAR SURRY, VA (LAT 37 12 39N LONG 076 46 32W)													
OCT 2003													
07...	E15	<50	<50	<50	<50	<50	--m	--m	--m	--m	<50	E18	<50
0204278545 BACK RIVER NEAR WETLAND OUTFALL NEAR SURRY, VA (LAT 37 12 42N LONG 076 46 27W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	<50	<50	<50	E10	<50	<50	--m	--m	--m	--m	<50	E27	<50
0204278555 THE THOROFARE AT JAMESTOWN ISLAND NEAR SURRY, VA (LAT 37 12 45N LONG 076 45 23W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	E30	<100	E17	E18	<100	E25	--m	--m	--m	--m	<100	120	<100
0204278560 STORM DRAIN TO PITCH AND TAR SWAMP NEAR SURRY, VA (LAT 37 12 37N LONG 076 46 34W)													
OCT 2003													
07...	<100	<100	E21	E21	<100	<100	--m	--m	--m	--m	<100	E45	<100

MISCELLANEOUS STATION ANALYSES—CONTINUED

Date	2-Chloronaphthalene, bed sed <2 mm, ug/kg (49407)	2-Chlorophenol, bed sed <2 mm, wsv nat ug/kg (49467)	2-Ethylnaphthalene bed sed <2 mm wsv nat ug/kg (49948)	2Fluorobiphenyl, surrog, bed sed <2 mm, pct rcv (49279)	2Methyl 4,6-dinitrophenol, bed sed <2 mm, ug/kg (49419)	2-Methylanthracene, bed sed <2 mm, ug/kg (49435)	2-Nitrophenol, bed sed <2 mm, wsv nat ug/kg (49420)	3,5-Dimethylphenol, bed sed <2 mm, wsv nat ug/kg (49421)	3-Nitrophenol, bed sed <2 mm, wsv nat ug/kg (49423)	4Bromophenyl phenyl ether, bed sed <2 mm, ug/kg (49454)	4Chloro 3methyl phenol, bed sed <2 mm, wsv nat ug/kg (49422)	4Chlorophenyl phenyl ether, bed sed <2 mm, ug/kg (49455)	Cyclopentaphenanthrene, bed sed <2 mm, ug/kg (49411)
0204278255 SANDY BAY BELOW POWHATAN CREEK NEAR SURRY, VA (LAT 37 13 03N LONG 076 46 56W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	<100	<100	<100	62	--m	E12	--m	<100	--m	<100	<100	<100	E25
0204278540 STORM DRAIN TO THE HARDWOOD WETLAND NEAR SURRY, VA (LAT 37 12 39N LONG 076 46 32W)													
OCT 2003													
07...	<50	<50	<50	73	--m	<50	--m	<50	--m	<50	<50	<50	<50
0204278545 BACK RIVER NEAR WETLAND OUTFALL NEAR SURRY, VA (LAT 37 12 42N LONG 076 46 27W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	<50	<50	<50	63	--m	E9	--m	E11	--m	<50	<50	<50	E25
0204278555 THE THOROFARE AT JAMESTOWN ISLAND NEAR SURRY, VA (LAT 37 12 45N LONG 076 45 23W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	<100	<100	<100	63	--m	E15	--m	<100	--m	<100	<100	<100	E31
0204278560 STORM DRAIN TO PITCH AND TAR SWAMP NEAR SURRY, VA (LAT 37 12 37N LONG 076 46 34W)													
OCT 2003													
07...	<100	<100	<100	68	--m	<100	--m	<100	--m	<100	<100	<100	E30

MISCELLANEOUS STATION ANALYSES—CONTINUED

Date	9,10-Anthraquinone bed sed <2 mm wsv nat ug/kg (49437)	9H-Fluorene, bed sed <2 mm, wsv nat ug/kg (49399)	Acenaphthene, bed sed <2 mm, wsv nat ug/kg (49429)	Acenaphthylene, bed sed <2 mm, wsv nat ug/kg (49428)	Acridine, bed sed <2 mm, wsv nat field, ug/kg (49430)	Anthracene, bed sed <2 mm, wsv nat field, ug/kg (49434)	Azobenzene bed sed <2 mm wsv nat field, ug/kg (49443)	Benzo[a]anthracene, bed sed <2 mm, ug/kg (49436)	Benzo[a]pyrene, bed sed <2 mm, wsv nat ug/kg (49389)	Benzo[b]fluoranthene bed sed <2 mm ug/kg (49458)	Benzo[c]cinnoline, bed sed <2 mm, ug/kg (49468)	Benzo[ghi]perylene, bed sed <2 mm, ug/kg (49408)	Benzo[k]fluoranthene bed sed <2 mm ug/kg (49397)
0204278255 SANDY BAY BELOW POWHATAN CREEK NEAR SURRY, VA (LAT 37 13 03N LONG 076 46 56W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	E48	E16	E13	E32	<100	E32	<100	E64	E32	E84	<100	E40	E38
0204278540 STORM DRAIN TO THE HARDWOOD WETLAND NEAR SURRY, VA (LAT 37 12 39N LONG 076 46 32W)													
OCT 2003													
07...	<50	<50	<50	E14	<50	E14	<50	E24	E10	E43	<50	E29	E20
0204278545 BACK RIVER NEAR WETLAND OUTFALL NEAR SURRY, VA (LAT 37 12 42N LONG 076 46 27W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	<50	E18	E20	<50	<50	E32	<50	90	72	95	<50	54	62
0204278555 THE THOROFARE AT JAMESTOWN ISLAND NEAR SURRY, VA (LAT 37 12 45N LONG 076 45 23W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	<100	E19	<100	E35	<100	E40	<100	E68	E36	E88	<100	E47	E40
0204278560 STORM DRAIN TO PITCH AND TAR SWAMP NEAR SURRY, VA (LAT 37 12 37N LONG 076 46 34W)													
OCT 2003													
07...	E95	E17	E16	<100	<100	E36	<100	110	E65	220	<100	200	120

MISCELLANEOUS STATION ANALYSES—CONTINUED

Date	Benzyl n-butyl phthalate, bed sed <2 mm, ug/kg (49427)	Bis(2-chloroethoxy) methane bed sed <2 mm ug/kg (49401)	Bis(2-chloroethyl) ether, bed sed <2 mm, ug/kg (49456)	Bis(2-chloroi-Pr) ether, bed sed <2 mm, ug/kg (49457)	Bis(2Ethexyl) phthalate, bed sed <2 mm, ug/kg (49426)	C8-Alkylphenol, bed sed <2 mm, wsv nat ug/kg (49424)	Carbazole, bed sed <2 mm, wsv nat field, ug/kg (49449)	Chrysene, bed sed <2 mm, wsv nat field, ug/kg (49450)	Dibenzo-[a,h]-anthracene, bed sed <2 mm, ug/kg (49461)	Dibenzothiophene, bed sed <2 mm, ug/kg (49452)	Diethyl phthalate, bed sed <2 mm, wsv nat ug/kg (49383)	Dimethyl phthalate, bed sed <2 mm, ug/kg (49384)	Dibutyl phthalate, bed sed <2 mm, wsv nat ug/kg (49381)
0204278255 SANDY BAY BELOW POWHATAN CREEK NEAR SURRY, VA (LAT 37 13 03N LONG 076 46 56W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	<100	<100	<100	--m	V100	<100	<100	E37	<100	<100	<100	<100	<100
0204278540 STORM DRAIN TO THE HARDWOOD WETLAND NEAR SURRY, VA (LAT 37 12 39N LONG 076 46 32W)													
OCT 2003													
07...	<50	<50	<50	--m	V83	--m	<50	E18	<50	<50	<50	<50	<50
0204278545 BACK RIVER NEAR WETLAND OUTFALL NEAR SURRY, VA (LAT 37 12 42N LONG 076 46 27W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	E34	<50	<50	--m	E50	<50	<50	59	E20	<50	E15	<50	V52
0204278555 THE THOROFARE AT JAMESTOWN ISLAND NEAR SURRY, VA (LAT 37 12 45N LONG 076 45 23W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	<100	<100	<100	--m	<100	<100	<100	E39	<100	<100	<100	<100	<100
0204278560 STORM DRAIN TO PITCH AND TAR SWAMP NEAR SURRY, VA (LAT 37 12 37N LONG 076 46 34W)													
OCT 2003													
07...	E90	<100	<100	--m	1,400	--m	E39	E3	<100	<100	<100	<100	V110

AND MISCELLANEOUS SITES—Continued

MISCELLANEOUS STATION ANALYSES—CONTINUED

Date	Dioctyl phthal-ate, bed sed <2 mm, wsv nat ug/kg (49382)	Fluor-anthene bed sed <2 mm wsv nat field, ug/kg (49466)	Hexa-chloro-benzene bed sed <2 mm, wsv nat ug/kg (49343)	Hexa-chloro-buta-diene, bed sed <2 mm, ug/kg (49448)	HexaCl-cyclo-penta-diene, bed sed <2 mm, ug/kg (49489)	Hexa-chloro-ethane, bed sed <2 mm, wsv nat ug/kg (49453)	Indeno-[1,2,-3-cd]-pyrene, bed sed <2 mm ug/kg (49390)	Iso-phorone bed sed <2 mm, wsv nat field, ug/kg (49400)	Iso-quino-line, bed sed <2 mm, wsv nat ug/kg (49394)	Naphth-alene, bed sed <2 mm wsv nat ug/kg (49402)	Nitro-benzene bed sed <2 mm wsv nat field, ug/kg (49444)	Nitro-benzene -d5, surrog, bed sed <2 mm, pct rcv (49280)	N-Nitro -sodi-n -propyl amine, bed sed <2 mm, ug/kg (49431)
0204278255 SANDY BAY BELOW POWHATAN CREEK NEAR SURRY, VA (LAT 37 13 03N LONG 076 46 56W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	<100	E92	<100	--m	--m	--m	E61	<100	<100	<100	<100	52	<100
0204278540 STORM DRAIN TO THE HARDWOOD WETLAND NEAR SURRY, VA (LAT 37 12 39N LONG 076 46 32W)													
OCT 2003													
07...	<50	E40	<50	--m	--m	--m	<50	<50	<50	<50	<50	73	<50
0204278545 BACK RIVER NEAR WETLAND OUTFALL NEAR SURRY, VA (LAT 37 12 42N LONG 076 46 27W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	<50	160	<50	--m	--m	--m	72	<50	<50	<50	<50	51	<50
0204278555 THE THOROFARE AT JAMESTOWN ISLAND NEAR SURRY, VA (LAT 37 12 45N LONG 076 45 23W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	<100	110	<100	--m	--m	--m	E67	<100	<100	<100	<100	55	<100
0204278560 STORM DRAIN TO PITCH AND TAR SWAMP NEAR SURRY, VA (LAT 37 12 37N LONG 076 46 34W)													
OCT 2003													
07...	<100	230	<100	--m	--m	--m	120	<100	<100	<100	<100	96	<100

MISCELLANEOUS STATION ANALYSES—CONTINUED

Date	N-Nitro -sodi-phenyl-amine, bed sed <2 mm, ug/kg (49433)	p-Cresol, bed sed <2 mm, wsv nat field, ug/kg (49451)	Penta-chloro-anisole bed sed <2 mm wsv nat ug/kg (49460)	Penta-chloro-nitro-benzene bed sed <2 mm ug/kg (49446)	Penta-chloro-phenol, bed sed <2 mm, wsv nat ug/kg (49425)	Phenan-threne, bed sed <2 mm, wsv nat field, ug/kg (49409)	Phenan-thri-dine, bed sed <2 mm, wsv nat ug/kg (49393)	Phenol, bed sed <2 mm, wsv nat field, ug/kg (49413)	Pyrene, bed sed <2 mm, wsv nat field, ug/kg (49387)	Quino-line, bed sed <2 mm, wsv nat field, ug/kg (49392)	Ter-phenyl-d14, surrog, bed sed <2 mm, pct rcv (49278)	Uranium bed sed <62.5um wet svd field, total, ug/g (35000)	Suspnd. sedi-ment, sieve diametr percent <.063mm (70331)
0204278255 SANDY BAY BELOW POWHATAN CREEK NEAR SURRY, VA (LAT 37 13 03N LONG 076 46 56W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	93
07...	<100	--u	<100	<100	--m	E33	<100	--u	E77	<100	73	2.8	--
0204278540 STORM DRAIN TO THE HARDWOOD WETLAND NEAR SURRY, VA (LAT 37 12 39N LONG 076 46 32W)													
OCT 2003													
07...	<50	--u	<50	<50	--m	E14	<50	--u	E30	<50	73	.99	--
0204278545 BACK RIVER NEAR WETLAND OUTFALL NEAR SURRY, VA (LAT 37 12 42N LONG 076 46 27W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	96
07...	<50	--u	<50	<50	--m	E18	<50	--u	110	<50	72	1.0	--
0204278555 THE THOROFARE AT JAMESTOWN ISLAND NEAR SURRY, VA (LAT 37 12 45N LONG 076 45 23W)													
OCT 2003													
07...	--	--	--	--	--	--	--	--	--	--	--	--	94
07...	<100	--u	<100	<100	--m	E46	<100	--u	E98	<100	73	3.7	--
0204278560 STORM DRAIN TO PITCH AND TAR SWAMP NEAR SURRY, VA (LAT 37 12 37N LONG 076 46 34W)													
OCT 2003													
07...	E38	--u	<100	<100	--m	E92	E42	--u	190	<100	67	1.7	--

MISCELLANEOUS STATION ANALYSES—CONTINUED

Date	Suspended sediment concentration mg/L (80154)	Sample weight, Schedule 2502, grams (99854)
0204278255 SANDY BAY BELOW POWHATAN CREEK NEAR SURRY, VA (LAT 37 13 03N LONG 076 46 56W)		
OCT 2003		
07...	78	--
07...	--	14.9
0204278540 STORM DRAIN TO THE HARDWOOD WETLAND NEAR SURRY, VA (LAT 37 12 39N LONG 076 46 32W)		
OCT 2003		
07...	--	24.6
0204278545 BACK RIVER NEAR WETLAND OUTFALL NEAR SURRY, VA (LAT 37 12 42N LONG 076 46 27W)		
OCT 2003		
07...	49	--
07...	--	22.6
0204278555 THE THOROFARE AT JAMESTOWN ISLAND NEAR SURRY, VA (LAT 37 12 45N LONG 076 45 23W)		
OCT 2003		
07...	38	--
07...	--	13.5
0204278560 STORM DRAIN TO PITCH AND TAR SWAMP NEAR SURRY, VA (LAT 37 12 37N LONG 076 46 34W)		
OCT 2003		
07...	--	13.8

Remark codes used in this table:
< -- Less than
E -- Estimated value
M -- Presence verified, not quantified
V -- Contamination

Null value qualifier codes used in this table:
m -- Results sent by separate memo
u -- Unable to determine-matrix interference

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Conversion Factors

Multiply	By	To obtain
	Length	
inch (in.)	2.54×10^{1}	millimeter (mm)
	2.54×10^{-2}	meter (m)
foot (ft)	3.048×10^{-1}	meter (m)
mile (mi)	1.609×10^{0}	kilometer (km)
	Area	
acre	4.047×10^{3}	square meter (m^2)
	4.047×10^{-1}	square hectometer (hm^2)
	4.047×10^{-3}	square kilometer (km^2)
square mile (mi^2)	2.590×10^{0}	square kilometer (km^2)
	Volume	
gallon (gal)	3.785×10^{0}	liter (L)
	3.785×10^{-3}	cubic meter (m^3)
	3.785×10^{0}	cubic decimeter (dm^3)
million gallons (Mgal)	3.785×10^{3}	cubic meter (m^3)
	3.785×10^{-3}	cubic hectometer (hm^3)
cubic foot (ft^3)	2.832×10^{-2}	cubic meter (m^3)
	2.832×10^{1}	cubic decimeter (dm^3)
cubic-foot-per-second day [(ft^3/s) d]	2.447×10^{3}	cubic meter (m^3)
	2.447×10^{-3}	cubic hectometer (hm^3)
acre-foot (acre-ft)	1.233×10^{3}	cubic meter (m^3)
	1.233×10^{-3}	cubic hectometer (hm^3)
	1.233×10^{-6}	cubic kilometer (km^3)
	Flow	
cubic foot per second (ft^3/s)	2.832×10^{1}	liter per second (L/s)
	2.832×10^{-2}	cubic meter per second (m^3/s)
	2.832×10^{1}	cubic decimeter per second (dm^3/s)
gallon per minute (gal/min)	6.309×10^{-2}	liter per second (L/s)
	6.309×10^{-5}	cubic meter per second (m^3/s)
	6.309×10^{-2}	cubic decimeter per second (dm^3/s)
million gallons per day (Mgal/d)	4.381×10^{-2}	cubic meter per second (m^3/s)
	4.381×10^{1}	cubic decimeter per second (dm^3/s)
	Mass	
ton (short)	9.072×10^{-1}	megagram (Mg) or metric ton

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows:

°F = (1.8 x °C) + 32