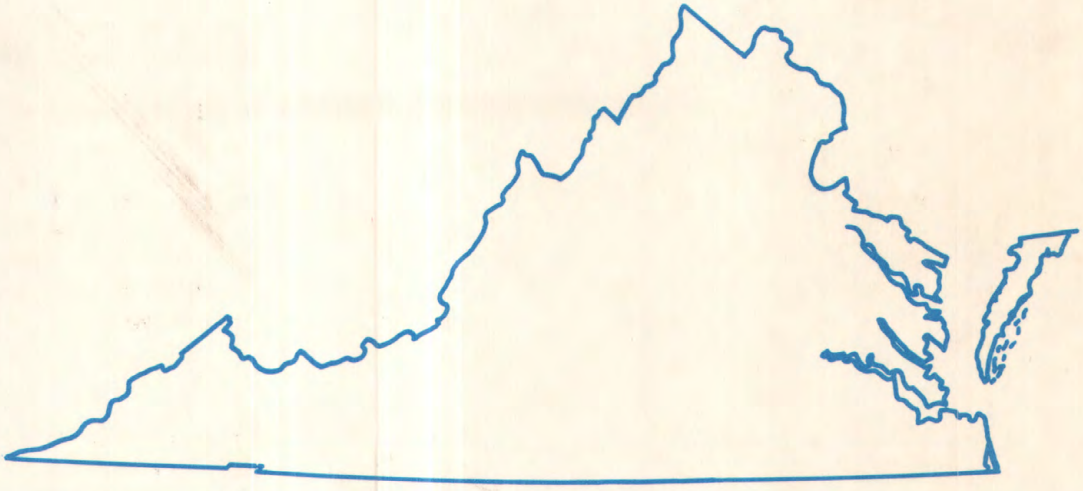
Water Resources Data
Virginia
Water Year 1988



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT VA-88-1
Prepared in cooperation with the State of Virginia
and with other agencies

October 1, 1978

FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI).

Multiply inch-pound units	By	To obtain SI units
	Length	
inches (in)	2.54×10^{1}	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^{0}	kilometers (km)
	Area	
acres	4.047×10^{3}	square meters (m^2)
	4.047×10^{-1}	square hectometers (hm^2)
	4.047×10^{-3}	square kilometers (km^2)
square miles (mi^2)	2.590×10^{0}	square kilometers (km^2)
	Volume	
gallons (gal)	3.785×10^{0}	liters (L)
	3.785×10^{0}	cubic decimeters (dm^3)
	3.785×10^{-3}	cubic meters (m^3)
million gallons	3.785×10^{3}	cubic meters (m^3)
	3.785×10^{-3}	cubic hectometers (hm^3)
cubic feet (ft^3)	2.832×10^{1}	cubic decimeters (dm^3)
	2.832×10^{-2}	cubic meters (m^3)
cfs-days	2.447×10^{3}	cubic meters (m^3)
	2.447×10^{-3}	cubic hectometers (hm^3)
acre-feet (acre-ft)	1.233×10^{3}	cubic meters (m^3)
	1.233×10^{-3}	cubic hectometers (hm^3)
	1.233×10^{-6}	cubic kilometers (km^3)
	Flow	
cubic feet per second (ft^3/s)	2.832×10^{1}	liters per second (L/s)
	2.832×10^{1}	cubic decimeters per second (dm^3/s)
	2.832×10^{-2}	cubic meters per second (m^3/s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm^3/s)
	6.309×10^{-5}	cubic meters per second (m^3/s)
million gallons per day	4.381×10^{1}	cubic decimeters per second (dm^3/s)
	4.381×10^{-2}	cubic meters per second (m^3/s)
	Mass	
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons

Water Resources Data
Virginia
Water Year 1988

by Byron J. Prugh, Jr., Fred J. Easton, and Dennis D. Lynch

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT VA-88-1
Prepared in cooperation with the State of Virginia
and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

MANUEL LUJAN, JR., Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

For information on the water program in Virginia write to

Office Chief, Water Resources Division
U.S. Geological Survey
3600 West Broad Street, Room 606
Richmond, Virginia 23230

or

Virginia Water Control Board
Suite 210, 1936 Arlington Blvd.
Charlottesville, Virginia 22903

1989

PREFACE

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 surface- and ground-water data-collection networks in each State, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and quality of water provide the hydrologic information needed by State, local, and Federal agencies, and the private sector for developing and managing our Nation's land and water resources.

This report is the culmination of a concerted effort by dedicated personnel of the U.S. Geological Survey and the Virginia Water Control Board 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 responsiblity for assuring that the information contained herein is accurate, complete, and adheres to Geological Survey policy and established guidelines, the following offices contributed significantly to the preparation and completion of this report:

U.S. Geological Survey, Richmond, VA
U.S. Geological Survey, Marion, VA
U.S. Geological Survey, Charlottesville, VA
Virginia Water Control Board, Charlottesville, VA

This report was prepared in cooperation with the State of Virginia and with other agencies under the general supervision of Herbert J. Freiberger, Chief of the Mid-Atlantic District, and Gary S. Anderson, Chief, Virginia Office.

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO. USGS/WRD/HD-89/255	2.	3. Recipient's Accession No.

4. Title and Subtitle

Water Resources Data - Virginia - Water Year 1988

5. Report Date
April 14, 1989

6.

7. Author(s)
Byron J. Prugh, Jr., Fred J. Easton, and Dennis D. Lynch

8. Performing Organization Rept. No.
USGS-WDR-VA-88-1

9. Performing Organization Name and Address

U.S. Geological Survey, Water Resources Division
3600 West Broad Street, Room 606
Richmond, Virginia 23230

10. Project/Task/Work Unit No.

11. Contract(C) or Grant(G) No.
(C)
(G)

12. Sponsoring Organization Name and Address

U.S. Geological Survey, Water Resources Division
3600 West Broad Street, Room 606
Richmond, Virginia 23230

13. Type of Report & Period Covered
Annual - Oct. 1, 1987 to Sept. 30, 1988

14.

15. Supplementary Notes

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

16. Abstract (Limit: 200 words)

Water-resources data for the 1988 water year for Virginia consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of ground-water wells. This volume contains records for water discharge at 170 gaging stations, stage only at 1 gaging station, stage and contents at 10 lakes and reservoirs, water quality at 38 gaging stations and 72 wells, and water levels at 207 observation wells. Also included are data for 92 crest-stage partial-record stations. Locations of these sites are shown on figures 7, 8, 9, and 10. Miscellaneous hydrologic data were collected at 47 measuring sites and 23 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.

17. Document Analysis a. Descriptors

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

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report)	21. No. of Pages
No restriction on distribution. This report may be purchased: National Technical Information Service Springfield, VA 22161	UNCLASSIFIED	461
	20. Security Class (This Page) UNCLASSIFIED	22. Price

(See ANSI-Z39.18) *See Instructions on Reverse*

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

CONTENTS

	Page
Preface	iii
List of gaging stations, in downstream order, for which records are published	vii
List of ground-water wells, by county or independent city, for which records are published	xi
Introduction	1
Cooperation	2
Records collected by the State of Virginia	2
Summary of hydrologic conditions	2
Streamflow	2
Ground-water levels	8
Chemical quality of streamflow	8
Special networks and programs	11
Explanation of the records	11
Station identification numbers	12
Downstream order system	12
Latitude-longitude system	12
Records of stage and water discharge	13
Data collection and computation	13
Data presentation	14
Identifying estimated daily discharge	16
Accuracy of the records	16
Other records available	17
Records of surface-water quality	17
Classification of records	17
Arrangement of records	17
On-site measurements and sample collection	17
Water temperature	18
Sediment	18
Laboratory measurements	18
Data presentation	18
Remark codes	19
Records of ground-water levels	20
Data collection and computation	20
Data presentation	20
Records of ground-water quality	21
Data collection and computation	21
Data presentation	21
Access to WATSTORE data	21
Definition of terms	22
Publications on Techniques of Water-Resources Investigations	30
Selected U.S. Geological Survey reports on water resources in Virginia	33
Discontinued gaging stations	34
Discontinued water-quality stations	41
Station records, surface water	54
Discharge at partial-record stations and miscellaneous sites	314
Crest-stage partial-record stations	314
Special study and miscellaneous sites	327
Analyses of samples collected at partial-record, special study, and miscellaneous sites	334
Station records, ground water	348
Ground-water levels	348
Quality of ground water	428
Index	439

ILLUSTRATIONS

		Page
Figure 1.	Annual mean discharge at selected gaging stations	4
2.	Discharge during 1988 water year compared with median discharge for period 1951-80 for four representative streamflow gaging stations	6
3.	Monthly departure of actual streamflow from median streamflow	8
4.	Monthly ground-water levels at key observation wells	9
5.	Annual median concentration of total phosphorus for period 1974-88 in James River at Cartersville, Va	10
6.	System for numbering wells and miscellaneous sites	12
7.	Map of Virginia showing location of surface-water and water-quality data-collection stations	44-45
8.	Map of Virginia showing location of surface-water partial-record stations	46-47
9.	Map of Virginia showing location of ground-water observation wells	48-49
10.	Map of southeastern Virginia showing location of ground-water observation wells	50-51

TABLES

New record low annual mean flows established during the 1988 water year	3
Annual mean flow during 1988 water year for seven representative gaging stations	5
Publications on techniques of water-resources investigations	30-32
Selected U.S. Geological Survey reports on water resources in Virginia	33
Discontinued gaging stations	34-40
Discontinued water-quality stations	41-43

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

Page

NORTH ATLANTIC SLOPE BASINS
NASSAWADOX CREEK BASIN
Nassawadox Creek:
01484800 Guy Creek (head of Holly Grove Cove) near Nassawadox (d)..... 54
POTOMAC RIVER BASIN
Potomac River:
Back Creek:
01615000 Opequon Creek near Berryville (d)..... 55
01616000 Abrams Creek near Winchester (d)..... 56
01620500 North River (head of Shenandoah River) near Stokesville (d)..... 57
01622000 North River near Burketown (d)..... 58
Middle River:
01624800 Christians Creek near Fishersville (d)..... 59
01625000 Middle River near Grottoes (d)..... 60
01626000 South River near Waynesboro (d)..... 61
01626850 South River near Dooms (d)..... 62
01627500 South River at Harriston (d)..... 63
South Fork Shenandoah River:
Madison Run:
01628060 White Oak Run near Grottoes (d)..... 64
01628500 South Fork Shenandoah River (continuation of North River) near Lynnwood (d)..... 65
01629500 South Fork Shenandoah River near Luray (d)..... 66
01631000 South Fork Shenandoah River at Front Royal (d)..... 67
01632000 North Fork Shenandoah River at Cootes Store (d)..... 68
01632082 Linville Creek at Broadway (d)..... 69
01632900 Smith Creek near New Market (d)..... 70
01633000 North Fork Shenandoah River at Mount Jackson (d)..... 71
01634000 North Fork Shenandoah River near Strasburg (d)..... 72
01634500 Cedar Creek near Winchester (d)..... 73
01635500 Passage Creek near Buckton (d)..... 74
01636500 Shenandoah River at Millville, WV (d,c,m,s)..... 75
01638480 Catoctin Creek at Taylorstown (d)..... 78
01638500 Potomac River at Point of Rocks, MD (d,t,s)..... 79
01643700 Goose Creek near Middleburg (d)..... 82
01644000 Goose Creek near Leesburg (d)..... 83
01646000 Difficult Run near Great Falls (d)..... 84
01646500 Potomac River near Washington, DC (d)..... 85
01646580 Potomac River at Chain Bridge at Washington, DC (c,m,s)..... 86
01653000 Cameron Run at Alexandria (d)..... 89
01654000 Accotink Creek near Annandale (d)..... 90
01658500 South Fork Quantico Creek near Independent Hill (d)..... 91
01660400 Aquia Creek near Garrisonville (d)..... 92
RAPPAHANNOCK RIVER BASIN
Hazel River:
Thornton River:
01662800 Battle Run near Laurel Mills (d)..... 93
01663500 Hazel River at Rixeyville (d)..... 94
01664000 Rappahannock River at Remington (d,s)..... 95
01665000 Mountain Run near Culpeper (d)..... 98
01665500 Rapidan River near Ruckersville (d)..... 99
01666500 Robinson River near Locust Dale (d)..... 100
01667500 Rapidan River near Culpeper (d)..... 101
01668000 Rappahannock River near Fredericksburg (d,c,m,s)..... 102
01668500 Cat Point Creek near Montross (d)..... 105
01669000 Piscataway Creek near Tappahannock (d)..... 106
PIANKATANK RIVER BASIN
01669520 Dragon Swamp (head of Piankatank River) at Mascot (d)..... 107
WARE RIVER BASIN
01670000 Beaverdam Swamp (head of Ware River) near Ark (d)..... 108
YORK RIVER BASIN
01670400 North Anna River (head of York River) near Partlow (d)..... 110
01671020 North Anna River at Hart Corner near Doswell (d)..... 111
01671100 Little River near Doswell (d)..... 112
01672500 South Anna River near Ashland (d)..... 113
01673000 Pamunkey River (continuation of North Anna River) near Hanover (d,c,m,s)..... 114
01673550 Totopotomoy Creek near Studley (d)..... 117
01673800 Po River (head of Mattaponi River) near Spotsylvania (d)..... 118

Page

NORTH ATLANTIC SLOPE BASINS--Continued
YORK RIVER BASIN--Continued
Pamunkey River--Continued
01674000 Mattaponi River near Bowling Green (d)..... 119
01674500 Mattaponi River near Beulahville (c,m,s)..... 120
York River:
01677000 Ware Creek near Toano (d,c)..... 122
SOUTH ATLANTIC SLOPE BASINS
JAMES RIVER BASIN
02011400 Jackson River (head of James River) near Bacova (d,t)..... 124
01011460 Back Creek near Sunrise (d,t)..... 127
02011470 Back Creek at Sunrise (d,t)..... 130
02011490 Little Back Creek near Sunrise (d,t)..... 133
02011500 Back Creek near Mountain Grove (d,t)..... 136
02011795 Lake Moomaw near Hot Springs (e)..... 139
02011800 Jackson River below Gathright Dam, near Hot Springs (d,c,t)..... 140
02012800 Jackson River at Filtration Plant, at Covington (t)..... 149
02013000 Dunlap Creek near Covington (d)..... 151
02013100 Jackson River below Dunlap Creek, at Covington (d)..... 152
02014000 Potts Creek near Covington (d)..... 153
Cowpasture River:
02015700 Bullpasture River at Williamsville (d)..... 154
02016000 Cowpasture River near Clifton Forge (d)..... 155
02016500 James River at Lick Run (d)..... 156
Craig Creek:
02017500 Johns Creek at New Castle (d)..... 157
02018000 Craig Creek at Parr (d)..... 158
02018500 Catawba Creek near Catawba (d)..... 159
02019500 James River at Buchanan (d)..... 160
02020500 Calfpasture River (head of Maury River) above Mill Creek, at Goshen (d)... 161
02021500 Maury River at Rockbridge Baths (d)..... 162
02022500 Kerrs Creek near Lexington (d)..... 163
02024000 Maury River near Buena Vista (d)..... 164
02025500 James River at Holcombs Rock (d)..... 165
02026000 James River at Bent Creek (d)..... 166
02027000 Tye River near Lovingston (d)..... 167
02027500 Piney River at Piney River (d)..... 168
02027800 Buffalo River near Tye River (d)..... 169
02028500 Rockfish River near Greenfield (d)..... 170
02029000 James River at Scottsville (d)..... 171
02030000 Hardware River below Briery Run, near Scottsville (d)..... 172
02030500 Slate River near Arvonia (d)..... 173
South Fork Rivanna River:
02031000 Mechums River near White Hall (d)..... 174
02032250 Moormans River near Free Union (d)..... 175
02032400 Buck Mountain Creek near Free Union (d)..... 176
02032515 South Fork Rivanna River near Charlottesville (d)..... 177
02032680 North Fork Rivanna River near Proffit (d)..... 178
02034000 Rivanna River at Palmyra (d)..... 179
02035000 James River at Cartersville (d,c,m,s)..... 180
02036500 Fine Creek at Fine Creek Mills (d)..... 183
02037000 James River & Kanawha Canal near Richmond (d)..... 184
02037500 James River near Richmond (d)..... 185
02038000 Falling Creek near Chesterfield (d)..... 186
Appomattox River:
02038850 Holiday Creek near Andersonville (d,c,m,s)..... 187
02039000 Buffalo Creek near Hampden Sydney (d)..... 190
02039500 Appomattox River at Farmville (d)..... 191
02040000 Appomattox River at Mattoax (d)..... 192
02041000 Deep Creek near Mannboro (d)..... 193
02041650 Appomattox River at Matoaca (d,c,m,s)..... 194
02042500 Chickahominy River near Providence Forge (d,c)..... 197
02042720 Chickahominy River above Walkers Dam, at Walkers (c)..... 200
02042726 Diascund Creek at Rt. 628, near New Kent (c)..... 202
02042734 Diascund Creek Reservoir off Timber Swamp, near Walkers (c)..... 203
02042736 Beaverdam Creek at Rt. 632, near Barhamsville (c)..... 204
02042742 Wahrani Swamp at Rt. 632, near Barhamsville (c)..... 205
02042746 Diascund Creek Reservoir off pump station, near Walkers (c)..... 206
0204275430 Little Creek Reservoir (north central) near Norge (c)..... 207
0204275470 Little Creek Reservoir (south central) near Norge (c)..... 209
GREAT DISMAL SWAMP BASIN
02043500 Cypress Swamp at Cypress Chapel (d)..... 211
02043600 Lake Drummond in Great Dismal Swamp (e)..... 212

Page

SOUTH ATLANTIC SLOPE BASINS--Continued
CHOWAN RIVER BASIN
02044500 Nottoway River near Rawlings (d) ... 213
02045500 Nottoway River near Stony Creek (d) ... 214
02046000 Stony Creek near Dinwiddie (d) ... 215
02047000 Nottoway River near Sebrell (d,c,m,s) ... 216
02048000 Blackwater River at Zuni (d) ... 219
02049500 Blackwater River near Franklin (d,c,m,s) ... 221
Chowan River:
02051000 North Meherrin River near Lunenburg (d) ... 224
02051500 Meherrin River near Lawrenceville (d) ... 225
02052000 Meherrin River at Emporia (d,c,m,s) ... 226
02052500 Fountains Creek near Brink (d) ... 229
ROANOKE RIVER BASIN
02053800 South Fork Roanoke River near Shawsville (d) ... 230
02054500 Roanoke River at Lafayette (d) ... 231
02055000 Roanoke River at Roanoke (d) ... 232
02055100 Tinker Creek near Daleville (d) ... 233
02056000 Roanoke River at Niagara (d) ... 234
02056650 Back Creek near Dundee (d) ... 235
02056900 Blackwater River near Rocky Mount (d) ... 236
02057400 Smith Mountain Lake near Penhook (e) ... 237
02058400 Pigg River near Sandy Level (d) ... 238
02059400 Leesville Lake near Leesville (e) ... 239
02059500 Goose Creek near Huddleston (d) ... 240
02060500 Roanoke (Staunton) River at Altavista (d) ... 241
02061500 Big Otter River near Evington (d) ... 242
02062500 Roanoke (Staunton) River at Brookneal (d) ... 243
02064000 Falling River near Naruna (d) ... 244
02065500 Cub Creek at Phenix (d) ... 245
02066000 Roanoke (Staunton) River at Randolph (d) ... 246
Dan River:
02067800,02067820 Talbott and Townes Reservoirs near Kibler (e) ... 247
02069700 South Mayo River near Nettleridge (d) ... 248
02070000 North Mayo River near Spencer (d) ... 249
Smith River:
02071900 Philpott Lake near Philpott (e) ... 250
02072000 Smith River near Philpott (d) ... 251
02072500 Smith River at Bassett (d) ... 252
02073000 Smith River at Martinsville (d) ... 253
02074000 Smith River at Eden, NC (d) ... 254
02074500 Sandy River near Danville (d) ... 255
02075000 Dan River at Danville (d) ... 256
02075500 Dan River at Paces (d,c,m,s) ... 257
Banister River:
02076500 Georges Creek near Gretna (d) ... 260
02077000 Banister River at Halifax (d) ... 261
02077500 Hyco River near Denniston (d) ... 262
02079000 Roanoke (Staunton) River at Clarksville (c) ... 263
02079490 John H. Kerr Reservoir near Boydton (e) ... 264
02079640 Allen Creek near Boydton (d) ... 265
02079785 Lake Gaston (Roanoke River) near Elams, NC (cms) ... 266
0207987950 Lake Gaston (Little River Channel) near Henrico, NC (cms) ... 267
02079880 Pea Hill Creek at Rt.. 665, near Gasburg (cms) ... 271
02079882 Pea Hill Creek near Bowens Corner (cms) ... 273
0207988450 Pea Hill Creek above North Carolina stateline, near Gasburg (cms) ... 274
OHIO RIVER BASIN
Ohio River:
KANAWHA RIVER BASIN
03151000 South Fork New River (head of Kanawha River) near Jefferson, NC (d) ... 278
03164000 New River near Galax (d) ... 279
03165000 Chestnut Creek at Galax (d) ... 280
Reed Creek:
03166800 Glade Creek at Grahams Forge (d) ... 281
03167000 Reed Creek at Grahams Forge (d) ... 282
03167500 Big Reed Island Creek near Allisonia (d) ... 283
03168000 New River at Allisonia (d) ... 284
03169000 Claytor Reservoir near Radford (e) ... 285
03170000 Little River at Graysonton (d) ... 286
03171000 New River at Radford (d) ... 287
03173000 Walker Creek at Bane (d) ... 288
03175500 Wolf Creek near Narrows (d) ... 289
03176500 New River at Glen Lyn (d,c,t,m,s) ... 290
03177710 Bluestone River at Falls Mills (d) ... 294

Page

SOUTH ATLANTIC SLOPE BASINS--Continued
BIG SANDY RIVER BASIN
03207800 Levisa Fork at Big Rock (d)..... 295
03208000 Levisa Fork below Fishtrap Dam, near Millard, KY (d)..... 296
03208500 Russell Fork at Haysi (d)..... 297
03208680 North Fork Pound River Lake at Pound (e)..... 298
03208950 Cranes Nest River near Clintwood (d)..... 299
03208990 John W. Flannagan Reservoir near Haysi (e)..... 300
03209000 Pound River below Flannagan Dam, near Haysi (d)..... 301
03209300 Russell Fork at Elkhorn City, KY (d)..... 302
TENNESSEE RIVER BASIN
French Broad River (head of Tennessee River):
03471500 South Fork Holston River at Riverside, near Chilhowie (d)..... 303
03473000 South Fork Holston River near Damascus (d)..... 304
03473500 Middle Fork Holston River at Groseclose (d)..... 305
03474000 Middle Fork Holston River at Seven Mile Ford (d)..... 306
03475000 Middle Fork Holston River near Meadowview (d)..... 307
03478400 Beaver Creek at Bristol (d)..... 308
03488000 North Fork Holston River near Saltville (d)..... 309
Tennessee River:
03521500 Clinch River at Richlands (d)..... 310
03524000 Clinch River at Cleveland (d)..... 311
03528000 Clinch River above Tazewell, TN (d)..... 312
03531500 Powell River near Jonesville (d)..... 313
Discharge at partial-record stations and miscellaneous sites..... 314
Crest-stage partial-record stations..... 314
Special study and miscellaneous sites..... 327
Analyses of samples collected at partial-record, special study, and miscellaneous sites..... 334

GROUND-WATER WELLS, BY COUNTY OR INDEPENDENT CITY,
FOR WHICH RECORDS ARE PUBLISHED

[SOW refers to the STATE OBSERVATION WELL numbering system
as designated by the Virginia Water Control Board]

	Page
ACCOMACK COUNTY	
Well 67M 2	348
ALBEMARLE COUNTY	
Well 43N 1 SOW 028	348
APPOMATTOX COUNTY	
Well 40G 1 SOW 012	349
Well 41H 2	349
ARLINGTON COUNTY	
Well 53V 1	349
Well 54V 3	350
BUCHANAN COUNTY	
Well 14E 40	350
BUCKINGHAM COUNTY	
Well 41H 1	351
Well 41H 3	351
Well 41H 4	352
CHARLES CITY COUNTY	
Well 54G 11 SOW 066	352
Well 54G 13 SOW 067	353
CHESAPEAKE (INDEPENDENT CITY)	
Well 59C 29 SOW 163A	353
Well 59C 30 SOW 163B	353
Well 59C 31 SOW 163C	354
Well 60B 3 SOW 090A	354
Well 60B 4 SOW 090B	354
CLARKE COUNTY	
Well 46W175	355
COLONIAL HEIGHTS (INDEPENDENT CITY)	
Well 51G 1	356
FAIRFAX COUNTY	
Well 52U 4	357
Well 52V 2	357
FRANKLIN (INDEPENDENT CITY)	
Well 55B 22	357
Well 55B 66	358
Well 55B 67	358
Well 55B 68 SOW 145E	358
HALIFAX COUNTY	
Well 39C 1 SOW 011	359
HENRICO COUNTY	
Well 51J 13	359
Well 52J 1	360
Well 52J 34	360
Well 52J 35	361
HOPEWELL (INDEPENDENT CITY)	
Well 52G 1	361
Well 52G 15 SOW 142A	361
Well 52G 16 SOW 142B	362
ISLE OF WIGHT COUNTY	
Well 55B 16	362
Well 55B 25	362
Well 55B 36	363
Well 55B 43	363
Well 55B 45 SOW 033	363
Well 55B 60	364
Well 55B 62 SOW 096B	364
Well 56B 5	364
Well 56C 1	365
Well 57C 8	365
Well 57C 25 SOW 149A	365
Well 57C 26 SOW 149B	366
Well 57C 28 SOW 149D	366
Well 57D 21 SOW 143A	366
Well 57D 22 SOW 143B	367
Well 57D 23 SOW 143C	367
Well 57E 10 SOW 144B	367
Well 57E 14 SOW 144A	368
Well 57E 15 SOW 144C	368

GROUND-WATER WELLS, BY COUNTY OR INDEPENDENT CITY,
FOR WHICH RECORDS ARE PUBLISHED

Page

JAMES CITY COUNTY
Well 55H 20 ... 368
Well 56F 1 SOW 018 ... 369
Well 56G 57 ... 369
Well 56H 25 ... 369
Well 56H 26 ... 370
Well 56H 27 ... 371
Well 56H 28 ... 371
Well 56H 29 ... 372
Well 56H 30 ... 372
KING AND QUEEN COUNTY
Well 56J 11 SOW 073 ... 373
Well 57J 3 SOW 074 ... 373
KING WILLIAM COUNTY
Well 56J 2 ... 373
Well 56J 18 ... 374
LANCASTER COUNTY
Well 59K 1 SOW 015 ... 374
LOUDOUN COUNTY
Well 49Y 1 SOW 022 ... 374
Well 50W 4C ... 375
LOUISA COUNTY
Well 45N 1 ... 375
Well 45N 4 ... 376
Well 46N 1 SOW 056 ... 376
MIDDLESEX COUNTY
Well 58K 1 SOW 031 ... 377
MONTGOMERY COUNTY
Well 27F 2 SOW 019 ... 377
NELSON COUNTY
Well 39K 1 SOW 006 ... 378
NEW KENT COUNTY
Well 55H 1 SOW 017 ... 378
NEWPORT NEWS (INDEPENDENT CITY)
Well 58F 1 SOW 002 ... 378
Well 58F 50 ... 379
Well 58F 51 ... 379
Well 58F 52 ... 380
Well 58F 53 ... 380
Well 58F 54 ... 381
Well 58F 55 ... 381
NORFOLK (INDEPENDENT CITY)
Well 61C 1 ... 382
Well 61C 2 ... 382
Well 61C 3 ... 382
ORANGE COUNTY
Well 45P 1 SOW 030 ... 383
PRINCE GEORGE COUNTY
WELL 52F 1 SOW 038 ... 383
PRINCE WILLIAM COUNTY
Well 49U 1 ... 383
Well 49V 1 ... 384
Well 51S 7 ... 384
PULASKI COUNTY
Well 25E 2 SOW 059 ... 385
ROANOKE (INDEPENDENT CITY)
Well 31G 1 SOW 008 ... 385
ROCKBRIDGE COUNTY
Well 35K 1 SOW 063 ... 386
ROCKINGHAM COUNTY
Well 41Q 1 ... 386
SOUTHAMPTON COUNTY
Well 51B 3 ... 387
Well 52A 1 ... 387
Well 52B 9 SOW 178B ... 388
Well 52B 10 SOW 178C ... 388
Well 52B 11 SOW 178D ... 389
Well 52B 12 SOW 178E ... 389
Well 52B 13 SOW 178F ... 390
Well 53B 1 ... 390
Well 54A 1 ... 390
Well 54B 1 SOW 046 ... 391

Page

SOUTHAMPTON COUNTY--Continued
Well 54B 5 391
Well 54B 12 391
Well 54B 18 392
Well 54B 20 392
Well 54B 24 SOW 034 392
Well 54B 25 393
Well 54B 26 393
Well 54C 1 393
Well 55A 3 SOW 086 394
Well 55B 40 394
Well 55B 49 394
Well 55B 51 395
Well 55C 3 395
Well 55C 10 395
Well 55D 5 396
SUFFOLK (INDEPENDENT CITY)
Well 56A 1 SOW 047 396
Well 56A 9 SOW 076A 396
Well 56A 10 SOW 097A 397
Well 56A 11 SOW 089 397
Well 56A 12 SOW 088B 397
Well 56A 13 SOW 076B 398
Well 56A 14 SOW 076C 398
Well 56B 7 398
Well 57A 6 SOW 085 399
Well 57B 1 399
Well 57B 8 399
Well 57B 9 400
Well 57C 12 400
Well 57C 21 SOW 099A 400
Well 57C 22 SOW 099B 401
Well 57C 23 SOW 099C 401
Well 57C 24 SOW 099D 401
Well 58A 1 SOW 036 402
Well 58A 2 SOW 042 402
Well 58A 75 SOW 170 402
Well 58A 77 SOW 180A 403
Well 58A 78 SOW 180B 403
Well 58A 79 SOW 180C 403
Well 58A 80 SOW 180D 404
Well 58A 81 SOW 180E 404
Well 58A 82 SOW 180F 404
Well 58A 83 SOW 180G 405
Well 58A 84 SOW 180H 405
Well 58B 13 406
Well 58B235 406
Well 58B268 SOW 169A 407
Well 58B269 SOW 169B 407
Well 58B270 SOW 169C 407
Well 58B271 SOW 169D 408
Well 58B272 SOW 169E 408
Well 58B273 SOW 169F 408
Well 58C 2 409
Well 58C 8 409
Well 58C 52 409
Well 58C 53 SOW 162B 410
Well 58C 56 SOW 162D 410
Well 58C 57 SOW 141A 410
Well 58C 58 SOW 141B 411
Well 58C 59 SOW 141C 411
Well 58C 61 SOW 159A 411
Well 58C 62 SOW 159B 412
Well 58C 63 SOW 159C 412
SURRY COUNTY
Well 56E 1 412
Well 56F 2 SOW 039 413
Well 57E 11 SOW 094A 413
Well 57E 12 SOW 094B 413
Well 57E 13 SOW 094C 414
Well 57F 16 SOW 087A 414
Well 57F 24 SOW 087B 414

GROUND-WATER WELLS, BY COUNTY OR INDEPENDENT CITY,
FOR WHICH RECORDS ARE PUBLISHED

Page

SUSSEX COUNTY
Well 53D 3 SOW 048 ... 415
Well 53D 6 SOW 179A ... 415
Well 53D 7 SOW 179B ... 415
Well 53D 8 SOW 179C ... 416
Well 53D 9 SOW 179D ... 416
Well 53D 10 SOW 179E ... 416
Well 53D 11 SOW 179F ... 417
Well 53D 12 SOW 179G ... 417
Well 53E 5 SOW 045 ... 418
VIRGINIA BEACH (INDEPENDENT CITY)
Well 61C 27 SOW 174A ... 418
Well 61C 28 SOW 174B ... 419
Well 61C 29 SOW 175 ... 419
Well 61D 6 SOW 124 ... 419
Well 62A 2 SOW 097A ... 420
Well 62A 3 SOW 097B ... 420
Well 62B 1 SOW 098A ... 420
Well 62B 2 SOW 098B ... 421
Well 62C 3 SOW 092B ... 421
Well 62C 4 SOW 083 ... 421
Well 62C 5 SOW 093 ... 422
Well 62C 6 SOW 125 ... 422
Well 62C 7 SOW 126 ... 422
Well 62C 9 SOW 172A ... 423
Well 62C 10 SOW 172B ... 423
Well 63C 2 SOW 100B ... 423
Well 63C 3 SOW 100C ... 424
Well 63C 4 SOW 173A ... 424
Well 63C 5 SOW 173B ... 424
WESTMORELAND COUNTY
Well 55P 5 ... 425
Well 55P 9 ... 425
Well 56N 1 SOW 016 ... 426
YORK COUNTY
Well 57G 2 ... 426
Well 57G 17 SOW 068 ... 427
Well 57G 19 SOW 069 ... 427
Quality of ground water ... 428

WATER RESOURCES DATA - VIRGINIA, 1988

INTRODUCTION

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

This report series includes records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of ground-water wells. This volume contains records for water discharge at 170 gaging stations; stage only at 1 gaging station; stage and contents at 10 lakes and reservoirs; water quality at 38 gaging stations and 72 wells; and water levels at 207 observation wells. Also included are data for 92 crest-stage partial-record stations. Locations of these sites are shown on figures 7, 8, 9, and 10. Miscellaneous hydrologic data were collected at 47 measuring sites and 23 water-quality sampling sites not involved in the systematic data-collection program. The data in this report represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in Virginia.

This series of annual reports for Virginia began with the 1961 water year with a report that contained only data relating to the quantities of surface water. For the 1964 water year, a similar report was introduced that contained only data relating to water quality. Beginning with the 1975 water year, the report format was changed to present, in one volume, data on quantities of surface water, quality of surface and ground water, and ground-water levels.

Prior to 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," and water levels for the 1935 through 1974 water years were published under the title "Ground-Water Levels in the United States." The above mentioned Water-Supply Papers may be consulted in the libraries of the principal cities of the United States and may be purchased from U.S. Geological Survey, Books and Open-File Reports, Federal Center, Bldg. 41, Box 25425, Denver, CO 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-88-1." For archiving and general distribution, the reports for 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the Office Chief at the address given on the back of the title page or by telephone (804) 771-2427.

COOPERATION

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

Virginia Water Control Board, Richard N. Burton, executive director.
Virginia Department of Transportation, Oscar K. Mabry, deputy commissioner.
Accomack County, Harold L. Johnston, county administrator.
Henrico County, Pat Brady, director of public utilities.
James City County, Wayland Bass, director, Department of Public Works.
Northampton County, R. Keith Bull, county administrator.
York County, J. M. Richardson, county administrator.
City of Alexandria, Vola Lawson, city manager.
City of Newport News, C. C. Crowder, director, Department of Public Utilities.
City of Roanoke, Kit B. Kiser, director, Utilities and Operations.
City of Virginia Beach, Thomas M. Leahy, III, P.E., water resources engineer.
City of Williamsburg, Frank Force, city manager.
Mount Rogers Planning District Commission, Thomas G. Taylor, executive director.
Northern Virginia Planning District Commission, G. Mark Gibb, executive director.
Southeastern Virginia Planning District Commission, Arthur L. Collins, executive director.
James City Service Authority, Chris Dawson, environmental engineer.
Southeastern Public Service Authority, Durwood S. Curling, executive director.
University of Virginia, Dr. James N. Galloway.

Assistance with funds or services was given by the U.S. Army Corps of Engineers in collecting records for 59 gaging stations and 4 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 5 gaging stations, the records for which are published herein. Assistance was also provided by the Water Quality Office, Environmental Protection Agency. Agencies that aided in collecting records are the Appalachian Power Company, Virginia Power, City of Danville, City of Radford, and Dan River, Inc.

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 79 gaging stations and 121 index wells operated by the Virginia Water Control Board. These records are published as provided and are acknowledged in the "COOPERATION" paragraph of each individual station. The Virginia Water Control Board is under the direction of Richard N. Burton, executive director. Published material for the gaging-station records and the ground-water wells is supplied, respectively, through the Division of Water Resources Planning and Management, William L. Woodfin, Jr., deputy executive director of operations.

SUMMARY OF HYDROLOGIC CONDITIONS

The 1988 water year in Virginia was characterized by a trend of below-average streamflows broken by episodes of above-average flows in November, December, and May. Fourteen streamgages in the Tennessee, the New, and the upper James River basins established new record low annual flows in 1988. The historical record at some of these sites exceeds 60 years.

New record low annual mean flows established during the 1988 water year

Gaging Station	Basin	Annual mean flow for 1988 in cubic feet per second	Previous record: Flow in cubic feet per second	Previous record: Year	Length of record, in years
S.F. Holston River near Chilhowie, Va.	Tennessee	53.8	67.0	1926	57
S.F. Holston River near Damascus, Va.	Tennessee	245	251	1941	57
Beaver Creek at Bristol, Va.	Tennessee	16.2	18.1	1969	31
N.F. Holston River near Saltville, Va.	Tennessee	135	140	1941	69
Clinch River at Richlands, Va.	Tennessee	72.1	109	1969	43
Clinch River at Cleveland, Va.	Tennessee	287	304	1941	68
New River near Galax, Va.	New	1,120	1,142	1934	59
Glade Creek at Grahams Forge, Va.	New	0.17	0.35	1986	12
New River at Allisonia, Va.	New	1,706	1,846	1934	59
New River at Radford, Va.	New	2,151	2,392	1954	57
Walker Creek at Bane, Va.	New	136	183	1981, 1985	50
Wolf Creek near Narrows, Va.	New	134	157	1941	58
New River at Glen Lyn, Va.	New	2,626	3,078	1981	61
Potts Creek near Covington, Va.	James	77.2	79.1	1941	51

Figure 1 compares the annual mean discharge for the 1988 water year with annual discharges for the period of record at four streamflow-gaging stations representative of selected areas of the State.

In addition to new record annual lows, new monthly lows were established in March, June, July, August, and September at a number of sites. Three new record monthly high flows were recorded in May.

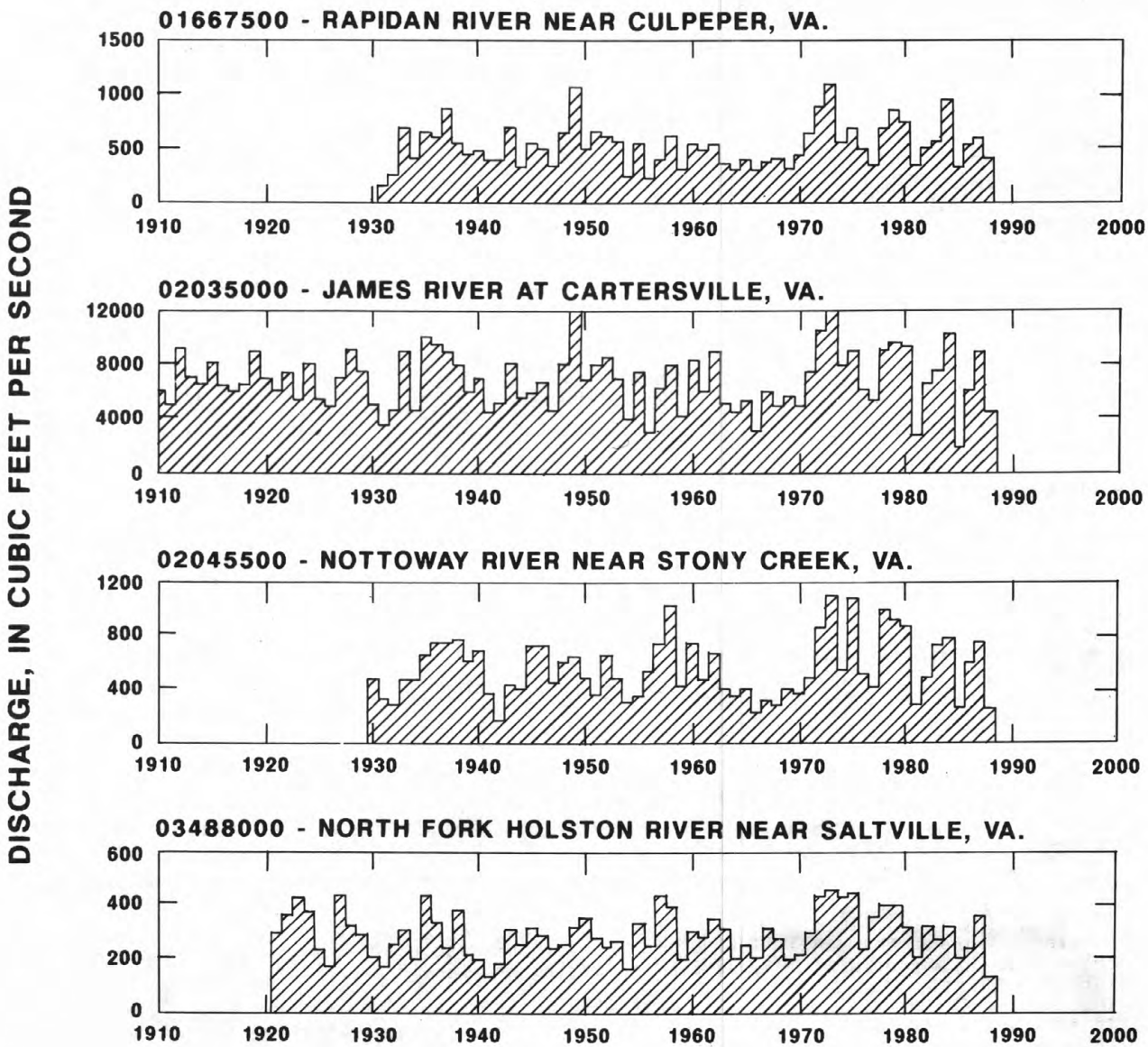


Figure 1. -- Annual mean discharge at selected gaging stations.

The southeastern, southern, and southwestern parts of the State were strongly affected by low flows throughout the entire water year.

Annual mean flow during 1988 water year for seven representative gaging stations

Gaging Station	Part of State	Annual mean flow for 1988 in cubic feet per second	Percentage of median annual flow	Length of record in years
S.F. Shenandoah River at Front Royal, Va.	Northwestern	1,100	69	65
Rappahannock River near Fredericksburg, Va.	Northeastern	1,235	75	80
Slate River near Arvonia, Va.	Central	151	67	62
James River at Buchanan, Va.	Western	1,475	59	90
N.F. Holston River near Saltville, Va.	Southwestern	*135	45	69
Dan River at Danville, Va.	Southern	1,474	64	54
Nottoway River near Stony Creek, Va.	Southeastern	288	51	59

* New record; previous record of 140 cubic feet per second established in 1941.

Figure 2 shows the monthly flows at four representative gaging stations during the 1988 water year and highlights the differences between streamflows in northern Virginia with those in the southern and southwestern parts of the State. Only two streams -- Potomac River tributaries in the extreme northwestern corner of the State -- had average annual flows in excess of the long-term median. Streamflows statewide were 17 percent below normal for the year. This was in sharp contrast to 1987 when flows averaged 43 percent above normal.

The 1988 water year began with streamflows receding from large flood peaks observed in the early part of September 1987. Statewide flows averaged 15 percent below normal in October. In the Tennessee River basin, streams were the lowest for October in more than 15 years, while in the Tidewater area, the Blackwater River was the lowest for the month since the major drought in 1981. In contrast, flows in the Shenandoah and Big Sandy River basins were above average.

Streamflows increased statewide in November and averaged 4 percent above the long-term median for the month. Flow in the Tennessee and Blackwater River basins remained below normal, but flows in most of the streams in the Shenandoah Valley and the Piedmont were above average. Several streams along the eastern flanks of the Blue Ridge had flows in the upper 25 percent of historical flows for the month.

Streamflow trends remained essentially unchanged through December and again averaged 4 percent above normal for the month.

In January, flows increased but remained below average in all but the Shenandoah and Rappahannock River basins. The greatest departure from normal continued to be in the Tennessee and Blackwater River basins. Although two-thirds of the State had flows below median, the weighted average of flows was only 3 percent below normal because of heavy runoff in the Shenandoah River basin. Annual peaks on streams in the upper James and lower Roanoke River basins occurred during the month.

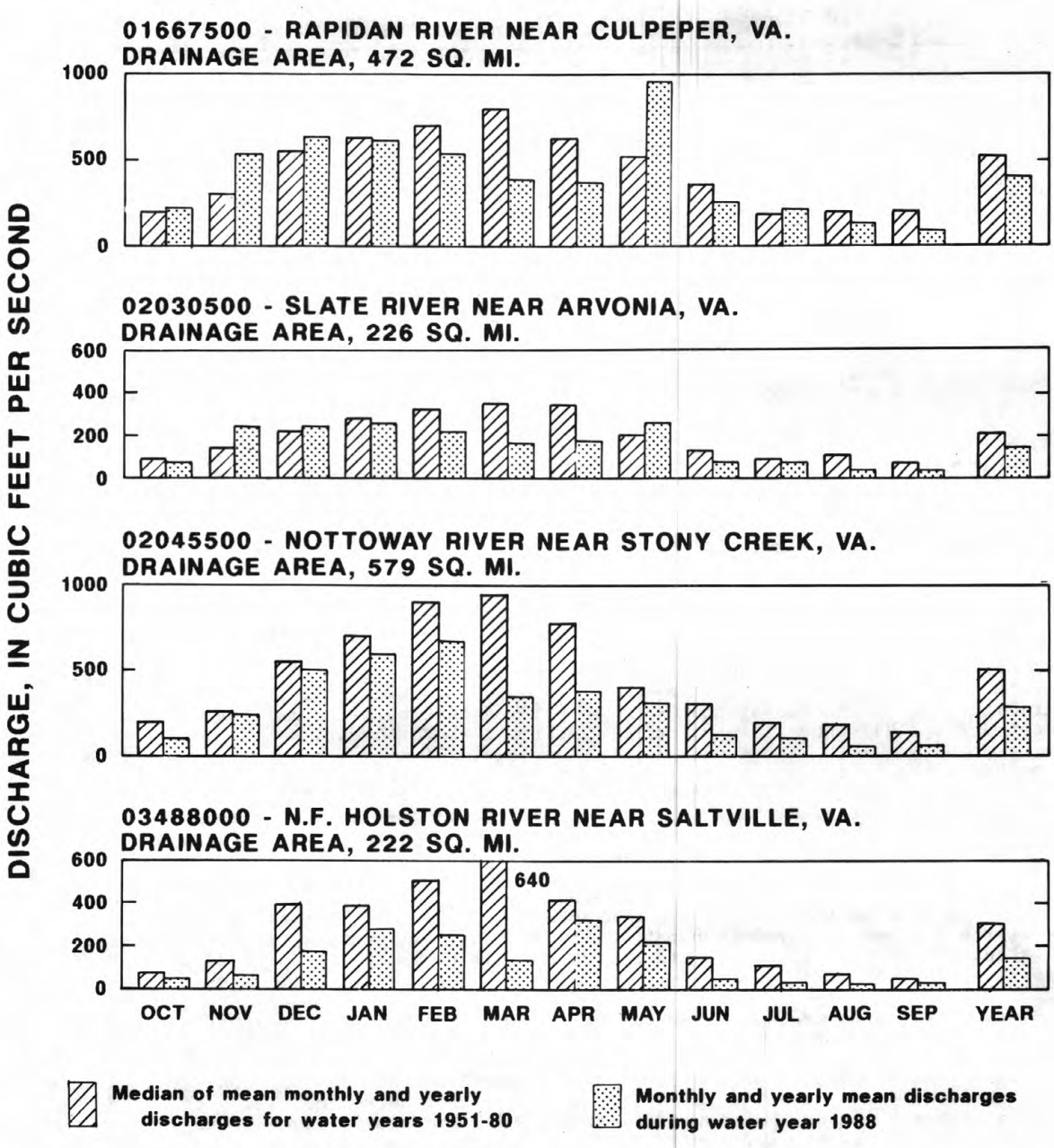


Figure 2. -- Discharge during 1988 water year compared with median discharge for period 1951-80 for four representative streamflow gaging stations.

Streamflows declined unseasonably in February, the strongest declines were observed in the western and southwestern parts of the State. A new record low for the month was established on Glade Creek in the New River basin. Flows were the lowest since 1963 along the mainstem New River. The statewide average of streamflows was 31 percent below normal for the month. Despite the overall low flows, annual peaks for many streams in the Tennessee River basin and on the coastal plain were recorded during the month.

The unseasonal downward trend in streamflows continued into March. All 170 streamflow gages in the State had below-normal monthly flows and 19 gages in the Tennessee, the New, and the upper James River basins established new record lows for the month. In the James River basin, flows were the lowest for March since 1931 and the second lowest since continuous record keeping began in 1898. The statewide average of streamflows was 61 percent below normal for the month. In the Tennessee River basin, flows were especially low and extended a 10-month long trend of below-average conditions.

Streamflows increased in April but continued well below normal for that time of year. Streams on the coastal plain showed the least departure from normal while those west of the Blue Ridge exhibited the most. Average flows increased from the previous month to only 36 percent below normal. No new record lows were established.

Changes in streamflow trends were mixed in May; flow in about two-thirds of the streams, mostly in the northern and eastern portion of the State, increased from the previous month. The trend for below-normal conditions persisted in the Tennessee, the New, and the lower Roanoke River basins. The flow in the New River at Allisonia was the third lowest on record for May and the lowest for the month since 1941. Strong contrasts were observed elsewhere. Many streams in the Shenandoah and the lower James River basins recorded their annual maximums during the month. New monthly high flows were established on the Rappahannock River at Remington (previous record set in 1978), on Goose Creek near Leesburg (previous record set in 1946), and at the North Fork Shenandoah River near Strasburg (previous record set in 1942). The statewide average for streamflows was 40 percent above normal for May and the largest positive monthly departure from normal recorded for 1988.

Streamflows declined in June and averaged 29 percent below normal for the month. The greatest departure from normal continued to be in the Tennessee and the New River basins where 12 streamflow gages recorded new record lows for the month. In contrast, some streams adjacent to the Chesapeake Bay had flows above average.

Streamflows continued to decline in most streams during July. Below-normal conditions persisted in the Tennessee and the New River basins where eight new record lows were established. Despite the low flows, several streams on the central and southern Piedmont recorded annual peak flows during the month. Statewide flows averaged 25 percent below normal for July.

Flows continued to decline across most of the State in August, and most streams observed their lowest daily flows for the year during the month. Eleven gages in the Tennessee and the New River basins set new record lows. Widespread rains near the end of the month caused most streams east of the Blue Ridge to rise slightly but no significant peaks occurred. Flows averaged 40 percent below normal for August, the greatest departure from normal since March.

Flows increased in about half the State's streams in September but still averaged 16 percent below normal for the month. In the Big Sandy River basin, flow in the Russell Fork at Haysi was above normal for the first time since July 1987. Streamflows in the Tennessee and New River basins, although still below average, rose sharply from the previous month. Two gages in the New River basin recorded new record lows for the month. The lowest daily flows of the year were recorded on many streams in the Chowan River and the Dismal Swamp basins. At monthend, the general trend in streamflows across the State was downward.

For the year, the greatest departure below normal streamflows was recorded in the Tennessee River basin in the southwestern part of the State. From that area, flows tended to approach normal conditions northward and eastward across the State. Flows of streams on the Eastern Shore and those tributary to the Potomac River were nearly normal during the year. The below-normal trend in streamflows which characterized much of the water year continued at yearend (figure 3).

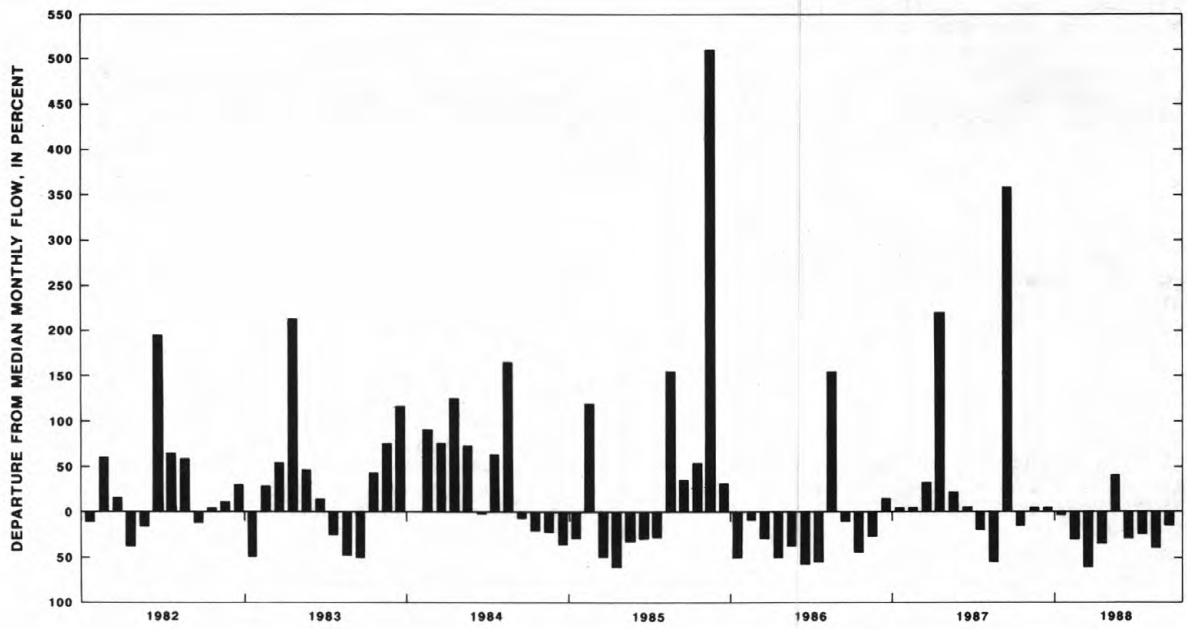
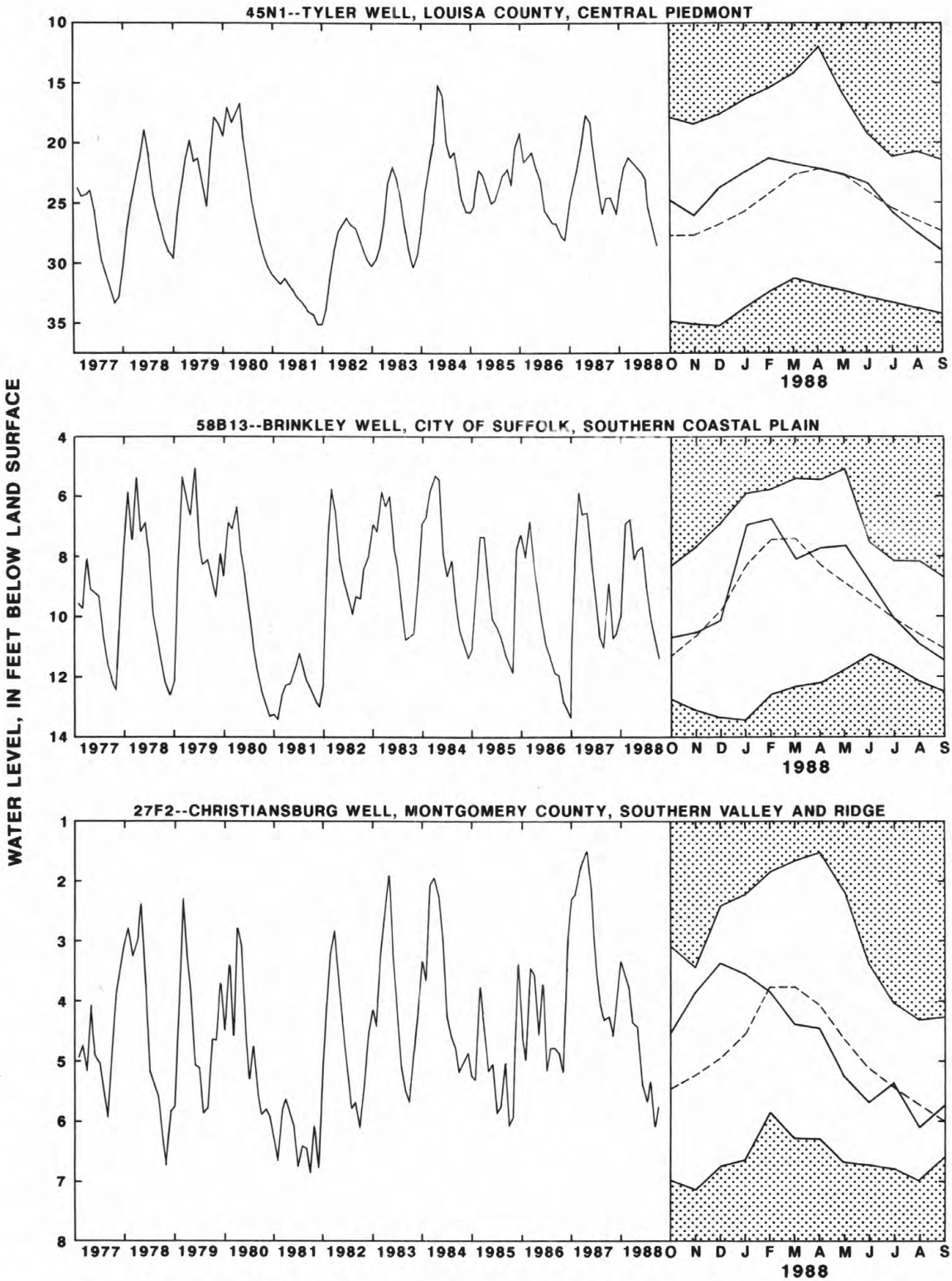


Figure 3. -- Monthly departure of actual streamflow from median streamflow.

Ground-water levels in the shallow water-table aquifers began the year above normal across most of the State. The exception was in a 150-mile-wide band stretching from Halifax County along the North Carolina stateline northeastward to Westmoreland County on the Potomac River. This pattern continued with slight modifications until March when levels declined to near or below normal across most of the State. Levels continued below normal west of the Blue Ridge and over most of the central Piedmont through June while observation wells near the North Carolina stateline showed a slightly above-normal trend.

During July and August, water levels were below normal across the State, except for a small area near Leesburg. Levels rose above normal in the southwestern part of the State in September but remained below normal elsewhere. The overall trend for the year was from above-normal ground-water levels early in the year to below-normal conditions as the year progressed (figure 4). This downward trend continued at yearend.

The median concentration of total phosphorous as P at the 10 National Stream-Quality Accounting Network (NASQAN) stations in Virginia was 0.05 mg/L (milligrams per liter) in water year 1988. The median concentration of dissolved orthophosphorus was 0.02 mg/L. Median concentrations of total phosphorus and dissolved orthophosphorus were highest at the James River at Cartersville, 0.24 and 0.16 mg/L, respectively. The high total phosphorus concentration in the



UNSHADED AREA: Range between highest and lowest recorded monthly water levels, prior to the indicated year.

SOLID LINE: Near monthend water level for the indicated year.

DASHED LINE: Average of the recorded monthly water levels, prior to the indicated year.

Figure 4. -- Monthly ground-water levels at key observation wells.

James River appears to be at least partly related to recent changes in point-source discharges and/or agricultural activities in the basin. As seen in figure 5, and verified with a flow-adjusted seasonal Kendall test, total phosphorus concentration has increased about fourfold since 1974. This upward trend may have important consequences on the future quality of the tidal James River and parts of the Chesapeake Bay.

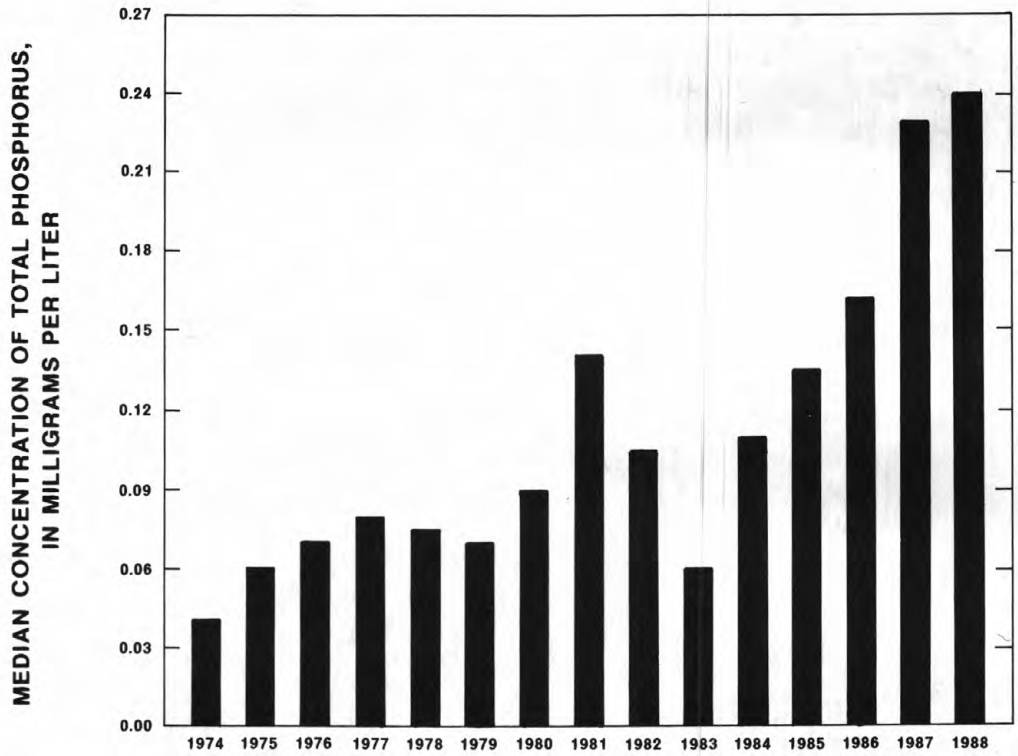


Figure 5. -- Annual median concentration of total phosphorus for period 1974-88 in James River at Cartersville, Virginia.

The median concentration of total nitrogen as N at the 10 NASQAN stations was 0.6 mg/L in water year 1988. The highest median concentration, 1.5 mg/L, was found in the New River at Glen Lyn. The lowest median concentration, 0.35 mg/L, was found in the Meherrin River at Emporia. The median concentration of dissolved nitrate as N at Glen Lyn was 0.9 mg/L, accounting for nearly 70 percent of the total nitrogen.

Dissolved oxygen averaged 85 percent of saturation at the 10 NASQAN stations with a mean concentration of 9.5 mg/L in water year 1988. Of the 53 dissolved-oxygen measurements made at the NASQAN stations during the year, only two values less than 5.0 mg/L were recorded. On August 25, a dissolved-oxygen concentration of 4.6 mg/L was recorded in the Blackwater River near Franklin, and, on August 19, a concentration of 4.1 mg/L was recorded in the Meherrin River at Emporia.

The concentrations of trace metals, including arsenic, barium, cadmium, chromium, lead, mercury, silver, and selenium, in all samples collected from the 10 NASQAN stations, were well below the U.S. Environmental Protection Agency maximum contaminant levels for drinking water. For many constituents, concentrations were less than one-tenth of the criterion. However, relatively high concentrations of dissolved iron and dissolved manganese were found at two of the stations. A dissolved-iron concentration in excess of 2,100 ug/L (micrograms per liter) was measured on August 19 in the Appomattox River at Matoaca. Dissolved-manganese concentrations in excess of 200 ug/L were measured on August 19 in the Meherrin River at Emporia and the Appomattox River at Matoaca. Although these concentrations of iron and manganese in water do not pose a risk to human health, they produce an objectionable taste and may stain laundered clothing.

The median concentration of fecal coliform and fecal streptococcal bacteria at the 10 NASQAN stations was 31 and 39 col/100 mL (colonies per 100 milliliters), respectively. The highest median concentration for fecal coliform bacteria was 71 col/100 mL at the station on the Nottoway River at Sebrell, whereas the highest median concentration of fecal streptococcal bacteria, 291 col/100 mL, was found at the New River at Glen Lyn station. On May 20, during a high peak flow on the Rappahannock River near Fredericksburg, the concentration of fecal coliform bacteria was 6,300 col/100 mL, and the concentration of fecal streptococcal bacteria was 5,800 col/100 mL. The lowest median concentration of fecal coliform bacteria, 14 col/100 mL, was found at the station of the Appomattox River at Matoaca, whereas the lowest median concentration of fecal streptococcal bacteria during the 1988 water year, 11 col/100 mL, was found in the James River at Cartersville.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Bench-Mark Network is a network of 57 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

National Stream-Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in natural or regional water-quality planning and management. The 500 or so sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objectives of NASQAN are (1) to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting such that the data may be used for, (2) description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (3) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics, and (4) providing a nationally consistent data base useful for water-quality assessment and hydrologic research.

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

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

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

EXPLANATION OF THE RECORDS

The surface-water, quality-of-water, and ground-water records published in this report are for the 1988 water year that began October 1, 1987, and ended September 30, 1988. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, stage and content data for lakes and reservoirs, water-quality data for surface and ground water, and ground-water-level data. The locations of the stations and wells where the data were collected are shown in figures 7, 8, 9, and 10. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

Each data station, whether streamsite or well, in this report is assigned a unique identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indefinitely. The systems used by the U.S. Geological Survey to assign identification numbers for surface-water stations and for ground-water well sites differ, but both are based on geographic location. The "downstream order" system is used for regular surface-water stations and the "latitude-longitude" system is used for wells and, in Virginia, for surface-water stations where only miscellaneous measurements are made.

Downstream Order System

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a mainstream station are listed before that station. A station on a tributary that enters between two mainstream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary with respect to the stream to which it is immediately tributary is indicated by an 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 wells and miscellaneous surface-water 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 wells or other sites within a 1-second grid. This site-identification number, once assigned, is a pure number and has no locational significance. In the rare instance where the initial determination of latitude and longitude are found to be in error, the station will retain its initial identification number; however, its true latitude and longitude will be listed in the LOCATION paragraph of the station description.

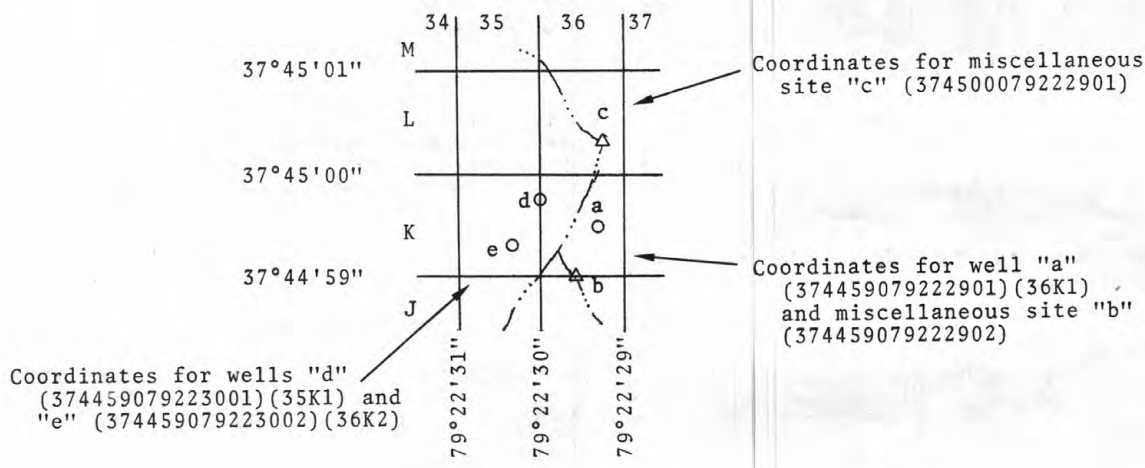


Figure 6. System for numbering wells and miscellaneous sites

A second well-numbering system used in Virginia utilizes 7 1/2-minute quadrangles within the State. The quadrangles are numbered from west to east, and lettered from south to north, omitting the letters "I" and "O." The designation for each quadrangle is determined by the method "Read Right, Up." Wells are numbered serially within each quadrangle. This local well number is shown immediately after the primary well number.

Well records furnished by the State of Virginia also include the well number that is based on an indexing system used by the Virginia Water Control Board.

Records of Stage and Water Discharge

Records of stage and water discharge may be complete or partial. Complete records of discharge are those obtained using a continuous stage-recording device through which either instantaneous or mean daily discharges may be computed for any time, or any period of time, during the period of record. Complete records of lake or reservoir content, similarly, are those for which stage or content may be computed or estimated with reasonable accuracy for any time, or period of time. They may be obtained using a continuous stage-recording device, but need not be. Because daily mean discharges and end-of-day contents commonly are published for such stations, they are referred to as "daily stations."

By contrast, partial records are obtained through discrete measurements without using a continuous stage-recording device, and pertain only to a few flow characteristics, or perhaps only one. The nature of the partial record is indicated by table titles such as "Crest-stage partial records," or "Low-flow partial records." Records of miscellaneous discharge measurements or of measurements from special studies, such as low-flow seepage studies, may be considered as partial records, but they are presented separately in this report. Location of all complete-record and crest-stage partial-record stations for which data are given in this report are shown in figures 7 and 8.

Data Collection and Computation

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

Continuous records of stage are obtained with analog recorders that trace continuous graphs of stage or with digital recorders that punch stage values on paper tapes at selected time intervals. Measurements of discharge are made with current meters using methods adopted by the Geological Survey as a result of experience accumulated since 1880. These methods are described in standard textbooks, in Water-Supply Paper 2175, and in U.S. Geological Survey Techniques of Water-Resources Investigations, Book 3, Chapter A6.

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

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

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

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

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

Data Presentation

The records published for each gaging station consist of two parts, the manuscript or station description and the data table for the current water year. The manuscript provides, under various headings, descriptive information, such as station location; period of record; average discharge; historical extremes; record accuracy; and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments to follow clarify information presented under the various headings of the station description.

LOCATION.--Information on locations is obtained from the most accurate maps available. The location of the gage with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given. River mileages, given for only a few stations, were determined by methods given in "River Mileage Measurement," Bulletin 14, Revision of October 1968, prepared by the Water Resources Council or were provided by the U.S. Army Corps of Engineers.

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

PERIOD OF RECORD.--This indicates the period for which there are published records 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 records from it can reasonably be considered equivalent with records from the present station.

REVISED RECORDS.--Published records, because of new information, occasionally are found to be incorrect, and revisions are printed in later reports. Listed under this heading are all the reports in which revisions have been published for the station and the water years to which the revisions apply. If a revision did not include daily, monthly, or annual figures of discharge, that fact is noted after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the most recently revised figure was first published is given.

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

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

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

AVERAGE DISCHARGE.--The discharge value given is the arithmetic mean of the water-year mean discharges. It is computed only for stations having at least 5 water years of complete record, and only water years of complete record are included in the computation. It is not computed for stations where diversions, storage, or other water-use practices cause the value to be meaningless. If water developments significantly altering flow at a station are put into use after the station has been in operation for a period of years, a new average is computed as soon as 5 water years of record have accumulated following the development. The median of yearly mean discharges also is given under this heading for stations having 10 or more water years of record if the median differs from the average given by more than 10 percent.

EXTREMES FOR PERIOD OF RECORD.--Extremes may include maximum and minimum stages and maximum and minimum discharges or content. Unless otherwise qualified, the maximum discharge or content is the instantaneous maximum corresponding to the highest stage that occurred. The highest stage may have been obtained from a graphic or digital recorder, a crest-stage gage, or by direct observation of a nonrecording gage. If the maximum stage did not occur on the same day as the maximum discharge or content, it is given separately. Similarly, the minimum is the instantaneous minimum discharge, unless otherwise qualified, and was determined and is reported in the same manner as the maximum.

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

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

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

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

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

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

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

Identifying Estimated Daily Discharge

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

Accuracy of the Records

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

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

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

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

Other Records Available

Information used in the preparation of the records in this publication, such as discharge-measurement notes, gage-height records, temperature measurements, and rating tables is on file in the Virginia Office of the Mid-Atlantic District. Also, most of the daily mean discharges are in computer-readable form and have been analyzed statistically. Information on the availability of the unpublished information or on the results of statistical analyses of the published records may be obtained from the offices whose addresses are given on the back of the title page of this report.

Records of Surface-Water Quality

Records of surface-water quality ordinarily are obtained at or near stream-gaging stations because interpretation of records of surface-water quality nearly always requires corresponding discharge data. Records of surface-water quality in this report may involve a variety of types of data and measurement frequencies.

Classification of Records

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

A careful distinction needs to be made between "continuing records" , as used in this report, and "continuous recordings," which refers to a continuous graph or a series of discrete values punched at short intervals on a paper tape. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are obtained only monthly or less frequently. Locations of stations for which records on the quality of surface water appear in this report are shown in figure 7.

Arrangement of Records

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

On-site Measurements and Sample Collection

In obtaining water-quality data, a major concern needs to be assuring that the data obtained represent the in situ quality of the water. To assure this, certain measurements, such as water temperature, pH, and dissolved oxygen, need to be made onsite when the samples are taken. To assure that measurements made in the laboratory also represent the in situ water, carefully prescribed procedures need to be followed in collecting the samples, in treating the samples to prevent changes in quality pending analysis, and in shipping the samples to the laboratory. Procedures for onsite measurements and for collecting, treating, and shipping samples are given in publications on "Techniques of Water-Resources Investigations," Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4. All of these references are listed under "PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS" which appears at the end of the introductory text. Detailed information on collecting, treating, and shipping samples may be obtained from the Virginia Office of the Mid-Atlantic District.

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

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

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

Water Temperature

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

At stations where recording instruments are used, either mean temperatures or maximum and minimum temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are on file in the Virginia Office of the Mid-Atlantic District.

Sediment

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

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided-day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided-day method. For periods when no samples were collected, daily discharges of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

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

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

Laboratory Measurements

Sediment samples, samples for biochemical-oxygen demand (BOD), samples for indicator bacteria, and daily samples for specific conductance are analyzed locally. All other samples are analyzed in the Geological Survey laboratory in Arvada, Colorado. Methods used in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chap. C1. Methods used by the Geological Survey laboratory are given in TWRI, Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4.

Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available,

instrumentation, general remarks, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and so forth, obtained at a frequency less than daily, are presented first. Tables of "daily values" of specific conductance, pH, water temperature, dissolved oxygen, and suspended sediment then follow in sequence.

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

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

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

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

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

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

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

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

REVISIONS.--If errors in published water-quality records are discovered after publication, appropriate updates are made to the Water-Quality File in the U.S. Geological Survey's computerized data system, WATSTORE, and subsequently by monthly transfer of update transactions to the U.S. Environmental Protection Agency's STORET system. Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of U.S. Geological Survey water-quality data are encouraged to obtain all required data from the appropriate computer file to insure the most recent updates.

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

Remark Codes

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

PRINTED OUTPUT	REMARK
E	Estimated value
>	Actual value is known to be greater than the value shown
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)
L	Biological organism count less than 0.5 percent (organism may be observed rather than counted)
D	Biological organism count equal to or greater than 15 percent (dominant)
&	Biological organism estimated as dominant

Records of Ground-Water Levels

Only water-level data from a national network of observation wells are given in this report. These data are intended to provide a sampling and historical record of water-level changes in the Nation's most important aquifers. Locations of the observation wells in this network in Virginia are shown in figures 9 and 10.

Data Collection and Computation

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

Tables of water-level data are presented by counties arranged in alphabetical order. The prime identification number for a given well is the 15-digit number that appears in the upper left corner of the table. The secondary identification number is the local well number, an alphanumeric number, derived from the 7 1/2-minute topographic map quadrangles within the State. (See page 12 for a more detailed explanation.)

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

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

Data Presentation

Each well record consists of two parts, the station description and the data table of water levels observed during the water year. The description of the well is presented first through use of descriptive headings preceding the tabular data. The comments to follow clarify information presented under the various headings.

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

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

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

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

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

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

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

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

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

Records of Ground-Water Quality

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

Data Collection and Computation

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

Most methods for collecting and analyzing water samples are described in the "U.S. Geological Survey Techniques of Water-Resources Investigations" manuals listed at the end of the introductory text. The values reported in this report represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. All samples were obtained by trained personnel. The wells sampled were pumped long enough to assure that the water collected came directly from the aquifer and had not stood for a long time in the well casing where it would have been exposed to the atmosphere and to the material, possibly metal, comprising the casings.

Data Presentation

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

ACCESS TO WATSTORE DATA

The National WATer Data STOrage and REtrieval System (WATSTORE) was established for handling water data collected through the activities of the U.S. Geological Survey and to provide for more effective and efficient means of releasing the data to the public. The system is operated and maintained on the central computer facilities of the Survey at its National Center in Reston, Virginia.

WATSTORE can provide a variety of useful products ranging from simple data tables to complex statistical analyses. A minimal fee, plus the actual computer cost incurred in producing a desired product, is charged to the requester. Information about the availability of specific types of data, the acquisition of data or products, and user charges can be obtained locally from the offices whose addresses are given on the back of the title page.

General inquiries about WATSTORE may be directed to:

Chief Hydrologist
U.S. Geological Survey
437 National Center
Reston, Virginia 22092

DEFINITION OF TERMS

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

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

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

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

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

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Artesian means confined and is used to describe a well in which the water level stands above the top of the aquifer tapped by the well. A flowing artesian well is one in which the water level is above the land surface.

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

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C. In the laboratory these bacteria are defined as all the organisms that produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35°C 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 mL of sample.

Fecal coliform bacteria are bacteria that are present in the intestine or feces of warm-blooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms that produce blue colonies within 24 hours when incubated at 44.5°C 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.

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

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

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

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

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

Dry mass refers to the mass of residue present after drying in an oven at 105°C for zooplankton and periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry-mass values are expressed in the same units as ash mass.

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

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

Bottom material: See Bed material.

Cells/volume refers to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually milliliters (mL) or liters (L).

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

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

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

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

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

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

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

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

Cubic-foot-per-second day 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, approximately 1.9835 acre-feet, about 646,000 gallons, or 2,445 cubic meters.

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

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

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

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

Dissolved-solids concentration of water is determined either analytically by the "residue-on-evaporation" method, or mathematically by totaling the concentrations of individual constituents reported in a comprehensive chemical analysis. During the analytical determination of dissolved solids, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. Therefore, in the mathematical calculation of dissolved-solids concentration, the bicarbonate value, in milligrams per liter, is multiplied by 0.492 to reflect the change.

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

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

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

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

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

Hydrologic Bench-Mark Network is a network of 57 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

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

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

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

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

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

Micrograms per gram (ug/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 liter (UG/L, ug/L) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

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

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

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in natural or regional water-quality planning and management. The 500 or so sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objectives of NASQAN are (1) to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting such that the data may be used for, (2) description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (3) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics, and (4) providing a nationally consistent data base useful for water-quality assessment and hydrologic research.

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

Organism is any living entity.

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

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

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

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

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

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

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

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

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

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

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

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

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

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

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

Blue-green algae are a group of phytoplankton organisms having a blue pigment, in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water.

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

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

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

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

Milligrams of carbon per area or volume per unit time [mg C/(m^2.time)] for periphyton and macrophytes and [mg C/(m^3.time)] for phytoplankton are units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon 14). The carbon 14 method is of greater sensitivity than the oxygen light and dark bottle method and is preferred for use in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

Milligrams of oxygen per area or volume per unit time [mg $O_2/(m^2.time)$] for periphyton and macrophytes and [mg $O_2/(m^3.time)$] for phytoplankton are the units for expressing primary productivity. They define production and respiration rates as estimated from changes in the measured dissolved-oxygen concentration. The oxygen light and dark bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period.

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

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

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

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

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material, such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

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

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

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

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

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

Suspended-sediment discharge (tons/day) is the rate at which dry mass of sediment passes a section of a stream or is the quantity of sediment, as measured by dry mass or volume, that passes a section in a given time. It is calculated in units of tons per day as follows: concentration (mg/L) x discharge (ft^3/s) x 0.0027.

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

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

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

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

Sodium-adsorption-ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions within soil and is an index of sodium or alkali hazard to the soil. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in microsiemens per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in microsiemens). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

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

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

Substrate is the physical surface upon which an organism lives.

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

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

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

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

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

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45 um membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

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

Suspended, total is the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45 um membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total."

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

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

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

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

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration of the constituent, in milligrams per liter, by 0.00136.

Tons per day (T/DAY) is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour period.

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

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

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

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

Water year in Geological Survey reports dealing with surface-water supply is the 12-month period October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1988, is called the "1988 water year."

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

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

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

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

The U.S. Geological Survey publishes a series of manuals describing procedures for planning and conducting specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) pertains to surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises.

The reports listed below are for sale by the U.S. Geological Survey, Books and Open-File Reports Section, Federal Center, Box 25425, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be sent by check or money order payable to the U.S. Geological Survey. Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations."

1-D1. Water temperature--influential factors, field measurement, and data presentation, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.

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

2-D1. Application of surface geophysics to ground-water investigations, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages.

2-E1. Application of borehole geophysics to water-resources investigations, by W. S. Keys and L. M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages.

3-A1. General field and office procedures for indirect discharge measurements, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages.

3-A2. Measurement of peak discharge by the slope-area method, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages.

3-A3. Measurement of peak discharge at culverts by indirect methods, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages.

3-A4. Measurement of peak discharge at width contractions by indirect methods, by H. J. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages.

3-A5. Measurement of peak discharge at dams by indirect methods, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages.

3-A6. General procedure for gaging streams, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.

3-A7. Stage measurements at gaging stations, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3. Chapter A7. 1968. 28 pages.

3-A8. Discharge measurements at gaging stations, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages.

3-A9. Measurement of time of travel and dispersion in streams by dye tracing, by E. F. Hubbard, F. A. Kilpatrick, L. A. Martens, and J. F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1982. 44 pages.

3-A10. Discharge ratings at gaging stations, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A10. 1984. 59 pages.

3-A11. Measurement of discharge by moving-boat method, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages.

3-A12. Fluorometric procedures for dye tracing, by J. F. Wilson, Jr., E. D. Cobb, and F. A. Kilpatrick: USGS--TWRI Book 3, Chapter A12. 1986. 41 pages.

3-A13. Computation of continuous records of streamflow, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A13. 1983. 53 pages.

3-A14. Use of flumes in measuring discharge, by F. A. Kilpatrick and V. R. Schneider: USGS--TWRI Book 3, Chapter A14. 1983. 46 pages.

3-A15. Computation of water-surface profiles in open channels, by Jacob Davidian: USGS--TWRI Book 3, Chapter A15. 1984. 48 pages.

3-A16. Measurement of discharge using tracers, by F. A. Kilpatrick and E. D. Cobb: USGS--TWRI Book 3, Chapter A16. 1985. 52 pages.

3-A17. Acoustic velocity meter systems, by Antonius Laenen: USGS--TWRI Book 3, Chapter A17. 1985. 38 pages.

3-B1. Aquifer-test design, observation, and data analysis, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages.

3-B2. Introduction to ground-water hydraulics, a programed test for self-instruction, by G. D. Bennett: USGS--TWRI Book 3, Chapter B2. 1976. 172 pages.

3-B3. Type curves for selected problems of flow to wells in confined aquifers, by J. E. Reed: USGS--TWRI Book 3, Chapter B3. 1980. 106 pages.

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

3-B6. The principle of superposition and its application in ground-water hydraulics, by T. E. Reilly, O. L. Franke, and G. D. Bennett: USGS--TWRI Book 3, Chapter B6. 1987. 28 pages.

3-C1. Fluvial sediment concepts, by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages.

3-C2. Field methods for measurement of fluvial sediment, by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 pages.

3-C3. Computation of fluvial-sediment discharge, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages.

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

4-A2. Frequency curves, by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages.

4-B1. Low-flow investigations, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 pages.

4-B2. Storage analyses for water supply, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages.

4-B3. Regional analyses of streamflow characteristics, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages.

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

5-A1. Methods for determination of inorganic substances in water and fluvial sediments, by M. W. Skougstad and others, editors: USGS--TWRI Book 5, Chapter A1. 1979. 626 pages.

5-A2. Determination of minor elements in water by emission spectroscopy, by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages.

5-A3. Methods for analysis of organic substances in water, by D. F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 pages.

5-A4. Methods for collection and analysis of aquatic biological and microbiological samples, edited by P. E. Greeson, T. A. Ehlke, G. A. Irwin, B. W. Lium, and K. V. Slack: USGS--TWRI Book 5, Chapter A4. 1977. 332 pages.

5-A5. Methods for determination of radioactive substances in water and fluvial sediments, by L. L. Thatcher, V. J. Janzer, and K. W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 pages.

5-A6. Quality assurance practices for the chemical and biological analyses of water and fluvial sediments, by L. C. Friedman and D. E. Erdmann: USGS--TWRI Book 5, Chapter A6. 1982. 181 pages.

5-C1. Laboratory theory and methods for sediment analysis, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages.

6-A1. A modular three-dimensional finite-difference ground-water flow model, by M. G. McDonald and A. W. Harbaugh: USGS--TWRI Book 6, Chapter A1. 1988. 586 pages.

7-C1. Finite difference model for aquifer simulation in two dimensions with results of numerical experiments, by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages.

7-C2. Computer model of two-dimensional solute transport and dispersion in ground water, by L. F. Konikow and J. D. Bredehoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 pages.

7-C3. A model for simulation of flow in singular and interconnected channels, by R. W. Schaffrannek, R. A. Baltzer, and D. E. Goldberg: USGS--TWRI Book 7, Chapter C3. 1981. 110 pages.

8-A1. Methods of measuring water levels in deep wells, by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages.

8-A2. Installation and service manual for U.S. Geological Survey manometers, by J. D. Craig: USGS--TWRI Book 8, Chapter A2. 1983. 57 pages.

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

SELECTED U.S. GEOLOGICAL SURVEY REPORTS ON WATER RESOURCES IN VIRGINIA

Listed below is a selection of reports on water resources in Virginia which are available through the Virginia Office of the Mid-Atlantic District at the U.S. Geological Survey, WRD, 3600 West Broad Street, Room 606, Richmond, Virginia 23230.

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

Availability and quality of ground water in the Piedmont Province of Virginia, by J. D. Powell and J. M. Abe: U.S. Geological Survey Water-Resources Investigations Report 85-4235. 1985. 33 pages.

Effects of fracturing on well yields in the coalfield areas of Wise and Dickenson Counties, southwestern Virginia, by W. G. Wright: U.S. Geological Survey Water-Resources Investigations Report 85-4061. 1985. 21 pages.

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

Ground-water availability along the Blue Ridge Parkway, Virginia, by H. T. Hopkins: U.S. Geological Survey Water-Resources Investigations Report 84-4168. 1984. 154 pages.

Guide to obtaining U.S. Geological Survey information, by K. Dodd, H. K. Fuller, and P. F. Clarke: U.S. Geological Survey Circular 900. 1985. 35 pages.

Hydrogeology and analysis of the ground-water flow system in the coastal plain of southeastern Virginia, by P. A. Hamilton and J. D. Larson: U.S. Geological Survey Water-Resources Investigations Report 87-4240. 1988. 175 pages.

Hydrologic conditions and trends in Shenandoah National Park, Virginia, 1983-84, by D. D. Lynch: U.S. Geological Survey Water-Resources Investigations Report 87-4131. 1987. 115 pages.

Hydrology and effects of mining in the upper Russell Fork basin, Buchanan and Dickenson Counties, Virginia, by J. D. Larson and J. D. Powell: U.S. Geological Survey Water-Resources Investigations Report 85-4238. 1986. 63 pages.

Hydrology of Area 16, Eastern Coal Province, Virginia and Tennessee, by P. W. Hufschmidt and others: U.S. Geological Survey Water-Resources Investigations Report 81-204. 1981. 67 pages.

Low flow of streams in Fairfax County, Virginia, by E. H. Mohler, Jr., and G. F. Hagan: U.S. Geological Survey Open-File Report 81-63. 1981. 30 pages.

Quality of ground water in southern Buchanan County, Virginia, by S. M. Rogers and J. D. Powell: U.S. Geological Survey Water-Resources Investigations 82-4022. 1983. 36 pages.

Relation between ground-water quality and mineralogy in the coal-producing Norton Formation of Buchanan County, Virginia, by J. D. Powell and J. D. Larson: U.S. Geological Survey Water-Supply Paper 2274. 1985. 30 pages.

Selected hydrologic data for the Powell River basin in Wise County, Virginia, by J. D. Larson: U.S. Geological Survey Open-File Report 85-186. 1985. 22 pages.

Selected publications on the water resources of Virginia, by N. R. Carrington: U.S. Geological Survey Open-File Report 86-418. 1986. 34 pages.

Sensitivity of stream basins in Shenandoah National Park to acid deposition, by D. D. Lynch and N. B. Dise: U.S. Geological Survey Water-Resources Investigations Report 85-4115. 1985. 61 pages.

Water-level hydrographs for observation wells in Virginia, by S. Farrington, N. R. Carrington, and W. V. Daniels: U.S. Geological Survey Open-File Report 84-134. 1984. 167 pages.

DISCONTINUED GAGING STATIONS

The following continuous-record streamflow stations in Virginia have been discontinued or converted to partial-record stations. Daily streamflow records were collected and published for the period of record shown for each station.

Discontinued gaging stations

STATION NUMBER	STATION NAME	DRAINAGE AREA (mi^2)	PERIOD OF RECORD
	POTOMAC RIVER BASIN		
01613900*	Hogue Creek near Hayfield, VA	15.0	1960-86
01615500	Abrams Creek at Winchester, VA	5.6	1946-49
01621000	Dry River at Rawley Springs, VA	72.6	1946-48
01621500	Cooks Creek at Mt. Crawford, VA	42	1905-06
01622500	Castle Spring near Churchville, VA	-	1949-56
01623000	Bell Creek at St. Pauls Chapel, near Staunton, VA	.61	1948-55
01623500	Bell Creek near Staunton, VA	3.8	1948-55
01624000	Bell Creek at Franks Mill, near Staunton, VA	9.6	1948-56
01624300	Middle River near Verona, VA	178	1967-86
01624500	Lewis Creek near Staunton, VA	18	1905-06
01625500	North River at Port Republic, VA	804	1895-99
01625900	Back Creek near Lyndhurst, VA	40.9	1974-77
01626500	South River at Waynesboro, VA	133	1905-06, 1928-52
01628000	South River at Port Republic, VA	248	1895-99
01629000	Elk Run at Elkton, VA	17	1901-06
01630000	Hawksbill Creek near Luray, VA	52	1905-06
01630500	Yagers Spring near Luray, VA	-	1949-56
01632500	Plains Mill Spring near New Market, VA	-	1949-56
01633500	Stony Creek at Columbia Furnace, VA	79.4	1947-56
01635000	Marlboro Spring at Marlboro, VA	-	1949-56
01636000	North Fork Shenandoah River near Riverton, VA	1,040	1899-1906
01636210	Happy Creek at Front Royal, VA	14.0	1948-77
01643610	Big Spring near Leesburg, VA	.03	1968-69
01644290	Stave Run at Reston, VA	.05	1966-71, 1973
01644291	Stave Run near Reston, VA	.08	1971-82
01644295	Smilax Branch at Reston, VA	.32	1967-78
01645784*	Snakeden Branch at Reston, VA	.79	1973-78
01652500*	Fourmile Run at Alexandria, VA	14.4	1951-69, 1974-75, 1979-82
01654500	Long Branch near Annandale, VA	3.71	1947-57

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

Discontinued gaging stations

STATION NUMBER	STATION NAME	DRAINAGE AREA (mi^2)	PERIOD OF RECORD
	POTOMAC RIVER BASIN--Continued		
01655000	Accotink Creek near Accotink Station, VA	37.0	1949-57
01655500*	Cedar Run near Warrenton, VA	12.3	1950-86
01656000*	Cedar Run near Catlett, VA	93.4	1950-86
01656500	Broad Run at Buckland, VA	50.5	1950-86
01656650	Broad Run near Bristow, VA	89.6	1974-86
01656700	Occoquan River near Manassas, VA	343	1968-81
01656725	Bull Run near Catharpin, VA	25.8	1969-86
01656960	Cub Run near Bull Run, VA	49.9	1972-86
01657000	Bull Run near Manassas, VA	147	1950-81
01657020*	Bull Run near Manassas Park, VA	148	1984-87
01657415	Bull Run near Clifton, VA	185	1972-84
01657500	Occoquan River (Creek) near Occoquan, VA	570	1913-16, 1920-23, 1937-56
01657655	Hooes Run near Occoquan, VA	4.18	1974-82
01658480	Quantico Creek near Dumfries, VA	6.90	1983-85
01658550	South Fork Quantico Creek near Joplin, VA	9.62	1983-85
01658650	South Fork Quantico Creek near Dumfries, VA	16.6	1983-85
01659000	North Branch Chopawamsic Creek near Independent Hill, VA	5.79	1951-57
01659500	Middle Fork Chopawamsic Creek near Garrisonville, VA	4.51	1951-57, 1960-67
01660000	South Branch Chopawamsic Creek near Garrisonville, VA	2.56	1951-57
01660500	Beaverdam Run near Garrisonville, VA	12.7	1951-57
	GREAT WICOMICO RIVER BASIN		
01661800	Bush Mill Stream near Heathsville, VA	6.82	1964-86
	RAPPAHANNOCK RIVER BASIN		
01662000*	Rappahannock River near Warrenton, VA	195	1942-86
01662500	Rush River at Washington, VA	14.7	1953-77
01663000	Thornton River near Laurel Mills, VA	142	1943-56
01664500	Rappahannock River at Kellys Ford, VA	641	1924-52
01666000	Robinson River at Locust Dale, VA	148	1942
01667000	Rapidan River at Rapidan, VA	446	1924-31
01668800*	Hoskins Creek near Tappahannock, VA	15.4	1964-86

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

Discontinued gaging stations

STATION NUMBER	STATION NAME	DRAINAGE AREA (mi^2)	PERIOD OF RECORD
	PIANKATANK RIVER BASIN		
01669500	Dragon Swamp near Church View, VA	84.9	1943-81
	YORK RIVER BASIN		
01670300*	Contrary Creek near Mineral, VA	5.53	1975-86
01670500	North Anna River near Hewlett, VA	424	1926-28
01671000	North Anna River near Doswell, VA	441	1928-86
01671500	Bunch Creek near Boswells Tavern, VA	4.37	1948-79
01672000	South Anna River at Vontay, VA	332	1926-30
01673500	Totopotomoy Creek near Atlee, VA	5.89	1948-77
01674500	Mattaponi River near Beulahville, VA	601	1941-87
	JAMES RIVER BASIN		
02010000	Bolar Spring at Bolar, VA	-	1949-56
02010500	Muddy Run Spring near Warm Springs, VA	-	1946-56
02011000	Warm Spring at Warm Springs, VA	-	1928-44
02011480	Back Creek on Rt. 600, near Mountain Grove, VA	131	1951-84
02012000	Falling Spring Creek near Falling Spring, VA	11.5	1947-52
02012500*	Jackson River at Falling Spring, VA	411	1925-83
02012900	Jackson River at Covington, VA	440	1907-08
02014500	Smith Creek above Old Dam, near Clifton Forge, VA	12.4	1947-56
02015000	Smith Creek near Clifton Forge, VA	12.5	1944-47
02015500	Stuart Spring near McDowell, VA	-	1949-56
02017000	Meadow Creek at New Castle, VA	13.8	1929-52
02019000	Catawba Creek near Fincastle, VA	104	1928-37
02020000	Karnes Spring near Buchanan, VA	-	1949-56
02021000	Calfpasture River at Goshen, VA	190	1925-38
02022000	Big Spring at Kerrs Creek, VA	-	1949-56
02023000	Maury River near Lexington, VA	487	1925-60
02023500	South River near Riverside, VA	111	1949-62
02024300	Buffalo Creek near Glasgow, VA	123	1962-64
02024500	Maury River at Glasgow, VA	831	1895-1906
02025000	Pedlar River near Pedlar Mills, VA	91	1942-56
02026500	Tye River at Roseland, VA	68	1927-38
02028000	Tye River near Norwood, VA	360	1940-60
02029500	Hardware River near Scottsville, VA	104	1925-39

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

Discontinued gaging stations

STATION NUMBER	STATION NAME	DRAINAGE AREA (mi^2)	PERIOD OF RECORD
	JAMES RIVER BASIN--Continued		
02031000	Mechums River near Ivy, VA	97	1942-51
02031500	North Fork Moormans River near White Hall, VA	11.4	1951-63, 1982-84
02032000	Moormans River near White Hall, VA	18	1943-46
02032500	South Fork Rivanna River near Earlysville, VA	216	1951-66
02033000	Rivanna River near Charlottesville, VA	473	1925
02033500	Rivanna River below Moores Creek, near Charlottesville, VA	507	1925-34
02034500*	Willis River at Lakeside Village, VA	247	1926-86
02035500	Lickinghole Creek near Goochland, VA	70	1944-46
02036000	Beaverdam Creek at State Farm, VA	42	1944-47
02038500	Falling Creek near Drewrys Bluff, VA	54	1942-56, 1957-64
02040500*	Flat Creek near Amelia, VA	73	1946-48
02041500	Appomattox River near Petersburg, VA	1,335	1926-66
02042000	Swift Creek near Chester, VA	143	1943-49
	CHOWAN RIVER BASIN		
02044000*	Nottoway River near Burkeville, VA	38	1946-86
02045000	Nottoway River near McKenney, VA	362	1946-50
02045200	Waqua Creek near Alberta, VA	15.0	1966-67
02046500	Anderson Branch at Sussex, VA	5.4	1948-56
02047500*	Blackwater River near Dendron, VA	285	1941-86
02048500	Seacock Creek at Unity, VA	102	1942-49
02049000	Blackwater River near Burdette, VA	576	1941-44
02050500	North Meherrin River near Keysville, VA	9.2	1948-61
02051600*	Great Creek near Cochran, VA	30.9	1958-86
02053000	Fontaine Creek near Emporia, VA	96	1943-53
	ROANOKE RIVER BASIN		
02054000	Big Springs at Elliston, VA	-	1949-56
02055500	Tinker Creek at Roanoke, VA	70	1907-08
02056500	Back Creek near Roanoke, VA	43	1907-08
02057000	Blackwater River near Union Hall, VA	208	1924-63
02057500	Roanoke River near Toshes, VA	1,020	1925-63
02058000	Snow Creek at Sago, VA	60	1934-44

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

Discontinued gaging stations

STATION NUMBER	STATION NAME	DRAINAGE AREA (mi^2)	PERIOD OF RECORD
	ROANOKE RIVER BASIN--Continued		
02058500	Pigg River near Toshes, VA	394	1930-63
02059000	Roanoke River near Gretna, VA	1,430	1925-30
02060000	Goose Creek at Huddleston, VA	218	1929-31
02061000	Big Otter River near Bedford, VA	116	1943-60
02062000	Big Otter River near Altavista, VA	372	1929-37
02063000	Caldwells Creek near Appomattox, VA	5.1	1954-60
02063500	Falling River at Spring Mills, VA	52.2	1954-60
02064500	Little Falling River at Hat Creek, VA	43	1929-35
02065000	Falling River near Brookneal, VA	228	1935-41
02065200	Roanoke River at Clarkton, VA	2,691	1963-76
02066500	Roanoke Creek at Saxe, VA	135	1946-72
02067000	Roanoke River near Clover, VA	3,230	1929-52
02067500	Roanoke River above Dan River, at Clarksville, VA	-	1895-98
02073500	Leatherwood Creek near Old Liberty, VA	68	1925-34
02076000*	Dan River at South Boston, VA	2,730	1900-07, 1922-52
02078000	Hyco River near Omega, VA	413	1934-50
02078500	Dan River at Clarksville, VA	-	1895-98
02079000	Roanoke River at Clarksville, VA	7,320	1934-52
02079500*	Roanoke River at Buggs Island, VA	7,780	1947-62
	KANAWHA RIVER BASIN		
03163000	New River near Baywood, VA	1,000	1928-30
03164500	New River near Grayson, VA	1,160	1908-12
03165500	New River at Ivanhoe, VA	1,340	1927, 1929-78
03166000	Cripple Creek near Ivanhoe, VA	148	1930-34
03166500	Neff-Litz Spring near Rural Retreat, VA	-	1947-56
03168500	Peak Creek at Pulaski, VA	58.3 60.9	1927-33, 1951-57
03169500	Little River near Copper Valley, VA	239	1908-16
03171500	New River at Eggleston, VA	2,941	1914-76
03172000	Wabash Spring near Poplar Hill, VA	-	1949-51
03173500	Francis Spring near Bane, VA	-	1951-56
03174500	Wolf Creek near Burkes Garden, VA	36	1927-28

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

Discontinued gaging stations

STATION NUMBER	STATION NAME	DRAINAGE AREA (mi^2)	PERIOD OF RECORD
	KANAWHA RIVER BASIN--Continued		
03175000	West Fork Cove Creek near Bluefield, VA	5.5	1929-32
03177700	Bluestone River at Bluefield, VA	39.8	1965-80
	BIG SANDY RIVER BASIN		
03207500	Levisa Fork near Grundy, VA	235	1941-74, 1986
03208040*	Russell Fork at Council, VA	10.2	1981-83
03208100*	Russell Fork near Birchleaf, VA	87.4	1981-83
03208700*	North Fork Pound River at Pound, VA	18.5	1961-87
03208800*	Pound River above Indian Creek, at Pound, VA	36.7	1965-78
03208850*	Pound River below Bold Camp Creek, at Pound, VA	61.2	1965-78
03208900*	Pound River near Georges Fork, VA	82.5	1963-82
03209200*	Russell Fork at Bartlick, VA	526	1962-81
03213577	Kersaw Branch near Hurley, VA	.60	1980-82
03213590*	Knox Creek at Kelsa, VA	84.3	1980-81
03471000	Steve Keesling Spring at Sugar Grove, VA	-	1947-56
	TENNESSEE RIVER BASIN		
03472000	South Fork Holston River near Chilhowie, VA	89.5	1907-09
03472500*	Beaverdam Creek at Damascus, VA	56.0	1947-59
03474500	Middle Fork Holston River at Chilhowie, VA	155	1907-09, 1920-31
03475500	Cedarville Spring at Cedarville, VA	-	1949-52
03477500	Beaver Creek near Wallace, VA	13.7	1945-57
03478000	Percy Preston Spring near Wallace, VA	-	1949-56
03487800*	Lick Creek near Chatham Hill, VA	25.5	1966-68
03488100	North Fork Holston River near Plasterco, VA	259	1963-66
03488445	Brumley Creek near Hansonville, VA	4.29	1979-81
03488450*	Brumley Creek at Brumley Gap, VA	21.1	1979-81
03488500	North Fork Holston River at Holston, VA	402	1951-59
03489500	North Fork Holston River near Mendota, VA	493	1920-31
03489850	Cove Creek near Hilton, VA	17.6	1966-68

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

Discontinued gaging stations

STATION NUMBER	STATION NAME	DRAINAGE AREA (mi^2)	PERIOD OF RECORD
	TENNESSEE RIVER BASIN--Continued		
03489870*	Big Moccasin Creek at Collinwood, near Hansonville, VA	41.9	1966-68
03489900	Big Moccasin Creek near Gate City, VA	79.6	1952-59, 1966-68
03490000*	North Fork Holston River near Gate City, VA	672	1931-81
03520500	Taylor Springs at Cedar Bluff, VA	-	1952-53
03521000	Clinch River at Cedar Bluff, VA	125	1944-46
03522000	Little River at Wardell, VA	103	1949-52
03522500	Will Brooks Spring at Wardell, VA	-	1949-52
03523000	Cedar Creek near Lebanon, VA	51.5	1952-59
03523500	Thompson Creek near Coulwood, VA	14.0	1942-48
03524500*	Guest River at Coeburn, VA	87.3	1949-59, 1979-81
03524900*	Stony Creek at Ka, VA	30.9	1980-81
03525000	Stony Creek at Fort Blackmore, VA	41.4	1949-52
03525500	Clinch River at Clinchport, VA	986	1907-09
03526000*	Copper Creek near Gate City, VA	106	1947-72
03526500	Quillen Springs near Gate City, VA	-	1954-56
03527000*	Clinch River at Speers Ferry, VA	1,126	1920-76, 1979-81
03527500	North Fork Clinch River at Duffield, VA	23.1	1952-59
03529500*	Powell River at Big Stone Gap, VA	112	1944-59, 1979-81
03530000	South Fork Powell River at Big Stone Gap, VA	40	1944-47, 1951-77
03530500*	North Fork Powell River at Pennington Gap, VA	70	1944-51, 1979-81
03531000	Powell River near Pennington Gap, VA	290	1920-31

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

DISCONTINUED WATER-QUALITY STATIONS

The following water-quality stations have been discontinued in Virginia. Continuous-daily records of water temperature, specific conductance, sediment, and monthly or periodic sampling of chemical quality were collected for the period of record shown for each station.

Discontinued water-quality stations

STATION NUMBER	STATION NAME	DRAINAGE AREA (mi^2)	TYPE OF RECORD	PERIOD OF RECORD
	POTOMAC RIVER BASIN			
01627500	South River at Harriston, VA	212	SC	1949
01629500	South Fork Shenandoah River near Luray, VA	1,377	SC	1949
01631000	South Fork Shenandoah River at Front Royal, VA	1,642	T, SC	1953-56, 1968-77,1980
			SED	1953-56
			C	1949,1953-56, 1968-86
01634000	North Fork Shenandoah River near Strasburg, VA	768	T, SC	1949,1956, 1969-71
			SED	1956
			C	1930,1949, 1952,1956, 1970-86
01644000	Goose Creek near Leesburg, VA	332	T, SC	1969-71
01644291	Stave Run near Reston, VA	.08	SED	1971-74
01644295	Smilax Branch at Reston, VA	.32	SED	1971-75
01645784	Snakeden Branch at Reston, VA	.79	SED	1973-78
01656100	Cedar Run near Aden, VA	155	SED	1974
01656725	Bull Run near Catharpin, VA	25.8	SED	1974
01656960	Cub Run near Bull Run, VA	49.9	SED	1972-74
01657415	Bull Run near Clifton, VA	185	SED	1973-74
01658620	South Fork Quantico Creek near Triangle, VA	15.7	T, SC	1973
	RAPPAHANNOCK RIVER BASIN			
01661900	Carter Run near Marshall, VA	19.5	SED	1977-78
01663500	Hazel River at Rixeyville, VA	287	T	1951-55
			SC	1953-55
			SED	1952-55
01667500	Rapidan River near Culpeper, VA	472	T	1946,1951-56
			SC	1953-56
			SED	1951-56
01668000*	Rappahannock River near Fredericksburg, VA	1,596	T, SC	1956,1968-74
01668020	Rappahannock River at VEPCO Dam, at Fredericksburg, VA	-	T, SC	1971-72
	YORK RIVER BASIN			
01670600	North Anna River below Lake Anna, near Hewlett, VA	-	T, SC	1972-73
01671500	Bunch Creek near Boswells Tavern, VA	4.37	T	1954-56
01673000*	Pamunkey River near Hanover, VA	1,081	T	1946,1968-76
			SC	1968-76
01674000	Mattaponi River near Bowling Green, VA	257	T	1946

TYPE OF RECORD: C (chemical quality); SED (sediment); SC (specific conductance); T (temperature).
* Presently active periodic sampling station.

Discontinued water-quality stations

STATION NUMBER	STATION NAME	DRAINAGE AREA (mi^2)	TYPE OF RECORD	PERIOD OF RECORD
	YORK RIVER BASIN--Continued			
01674500*	Mattaponi River near Beulahville, VA	601	T	1946
	JAMES RIVER BASIN			
02012500	Jackson River at Falling Spring, VA	411	T, SC	1968-86
			C	1930,1948, 1968-86
02019500	James River at Buchanan, VA	2,075	T, SC	1951-56, 1968-86
			C	1930,1940, 1951-56, 1968-86
02026000	James River at Bent Creek, VA	3,683	T	1948
02029000	James River at Scottsville, VA	4,584	T, SC	1951-56,1987
			SED	1951-56
02035000*	James River at Cartersville, VA	6,257	T, SC	1968-76, 1971,1981
			SED	1981
02037000	James River and Kanawha Canal, near Richmond, VA	-	C, T, SC	1972-73
02037500	James River near Richmond, VA	6,758	T, SC	1948-51, 1953-56
02038830	Fishpond Creek near Hixsburg, VA	14.0	SC	1981
02038850	Vaughans Creek near Hixsburg, VA	23.2	SC	1981
02042720	Chickahominy River above Walkers Dam, near Walkers, VA	301	SC	1984-87
	CHOWAN RIVER BASIN			
02044000	Nottoway River near Burkeville, VA	38.7	T	1947
02047000*	Nottoway River near Sebrell, VA	1,421	T	1947
02048000	Blackwater River at Zuni, VA	456	T	1947
02051000	North Meherrin River near Lunenburg, VA	55.6	T	1947
02052000*	Meherrin River at Emporia, VA	747	T, SC	1968-80
	ROANOKE RIVER BASIN			
02054500	Roanoke River at Lafayette, VA	257	T, SC	1951
02060500	Roanoke River at Altavista, VA	1,789	T	1951,1953-56, 1968-86
			SC	1953-56, 1968-86
			SED	1953-56
			C	1951,1953-56, 1968-86
02066000	Roanoke River at Randolph, VA	2,977	T, SC	1951-56, 1968-62
			SED	1954-81
			C	1930,1951-86

TYPE OF RECORD: C (chemical quality); SED (sediment); SC (specific conductance); T (temperature).
* Presently active periodic sampling station.

Discontinued water-quality stations

STATION NUMBER	STATION NAME	DRAINAGE AREA (mi^2)	TYPE OF RECORD	PERIOD OF RECORD
	ROANOKE RIVER BASIN--Continued			
02075500*	Dan River at Paces, VA	2,550	T, SC	1954-56
02076000	Dan River at South Boston, VA	2,730	T SC	1952 1951-52
	KANAWHA RIVER BASIN			
03164000	New River near Galax, VA	1,131	T, SC C	1950,1968-83 1931,1950, 1952,1968-86
03170000	New River at Radford, VA	2,748	T, SC	1950,1956
03171500	New River at Eggleston, VA	2,941	T, SC	1953-55
	BIG SANDY RIVER BASIN			
03207500	Levisa Fork near Grundy, VA	235	T, SC SED	1950 1986
03207800	Levisa Fork at Big Rock, VA	297	T, SC SED	1970-81 1970-81
03208034	Grissom Creek near Council, VA	2.82	T,SC,C,SED	1982-83
03208036	Barton Fork near Council, VA	10.2	T,SC,C,SED	1981-83
03208040	Russell Fork at Council, VA	1.23	T,SC C	1981-83 1982-83
03208100	Russell Fork near Birchleaf, VA	87.4	T,SC,C	1982-83
	TENNESSEE RIVER BASIN			
03473000	South Fork Holston River near Damascus, VA	301	T SC C	1950,1968-73 1950 1950,1952, 1968-86
03474500	Middle Fork Holston River at Chilhowie, VA	155	T	1962
03488445	Brumley Creek near Hansonville, VA	4.29	T	1980-81
03488450	Brumley Creek at Brumley Gap, VA	21.1	T	1979-81
03488500	North Fork Holston River at Holston, VA	402	T, SC	1952-56
03490000	North Fork Holston River near Gate City, VA	672	T SC SED	1950-51, 1968-78 1950-51 1935-38, 1963-65
03527000	Clinch River at Speers Ferry, VA	1,126	T SC SED	1950,1965-67 1950 1935-38, 1963-65
03529500	Powell River at Big Stone Gap, VA	112	T, SC	1950
03531500	Powell River near Jonesville, VA	319	T	1964-67

TYPE OF RECORD: C (chemical quality); SED (sediment); SC (specific conductance): T (temperature).
* Presently active periodic sampling station.

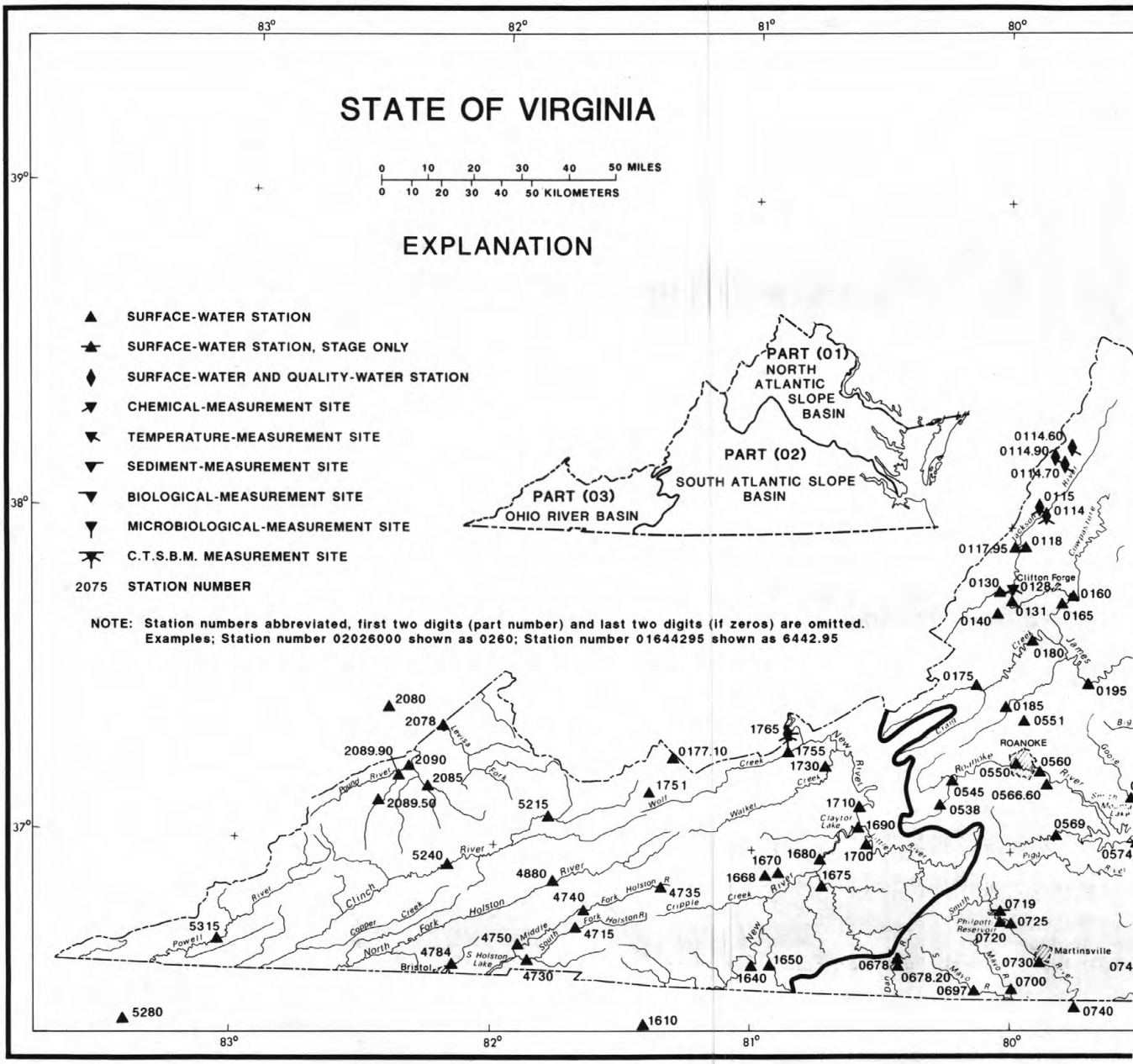
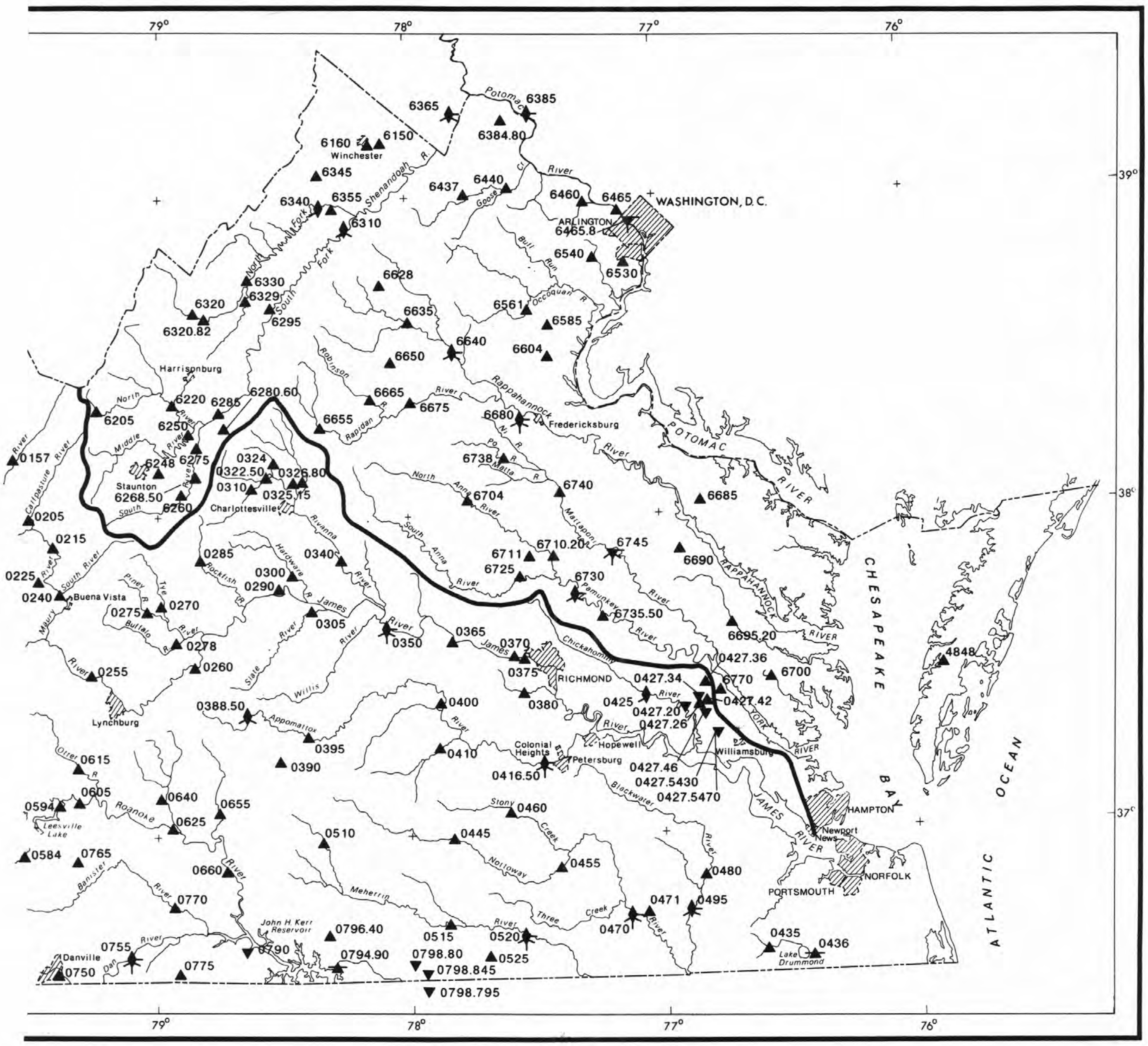


Figure 7. -- Location of surface-water and water-quality data-collection stations.


79°
78°
77°
76°
39°
38°
37°
WASHINGTON, D.C.
ARLINGTON
Winchester
Harrisonburg
Staunton
Charlottesville
Buena Vista
Lynchburg
Fredericksburg
RICHMOND
Hopewell
Colonial Heights
Petersburg
Williamsburg
HAMPTON
Newport News
NORFOLK
PORTSMOUTH
Danville
Leesville Lake
John H. Kerr Reservoir
Lake Drummond
Potomac
River
Shenandoah
North Fork
South Fork
Goose Cr.
Bull Run
Occoquan R.
Robinson
Rapidan
Rappahannock
POTOMAC RIVER
RAPPAHANNOCK RIVER
Po R.
Matta R.
North Anna River
South Anna River
Mattaponi
Pamunkey
YORK RIVER
CHESAPEAKE BAY
ATLANTIC OCEAN
JAMES RIVER
James R.
Chickahominy
Rivanna
Hardware
Rockfish
Tye
Piney R.
Buffalo R.
Maury
Calfpasture River
Middle River
North River
South River
Slate River
Willis
Appomattox
Roanoke
Otter R.
Banister
Dan River
Stony Creek
Nottoway
Meherrin
Three Creek
Blackwater River
6365
6385
6384.80
6160
6150
6345
6340
6355
6310
6437
6440
6460
6465
6465.8
6540
6530
6628
6330
6329
6320
6320.82
6295
6635
6561
6585
6640
6604
6650
6280.60
6220
6285
6205
6250
6665
6675
6655
6680
0157
6248
6275
6268.50
6260
0324
0322.50
0326.80
0310
0325.15
6738
6704
6740
6685
0205
0215
0285
0340
6711
6710.20
6745
6690
0225
0300
0290
6725
6730
0240
0275
0270
0305
0350
0365
6735.50
6695.20
0278
0370
0427.36
0255
0260
0375
0427.34
6770
6700
4848
0425
0427.20
0427.42
0388.50
0400
0380
0427.26
0395
0410
0615
0390
0416.50
0427.46
0427.5430
0427.5470
0605
0594
0640
0655
0625
0460
0510
0445
0584
0765
0455
0480
0660
0770
0471
0495
0470
0796.40
0515
0520
0435
0436
0755
0790
0794.90
0798.80
0525
0750
0775
0798.845
0798.795

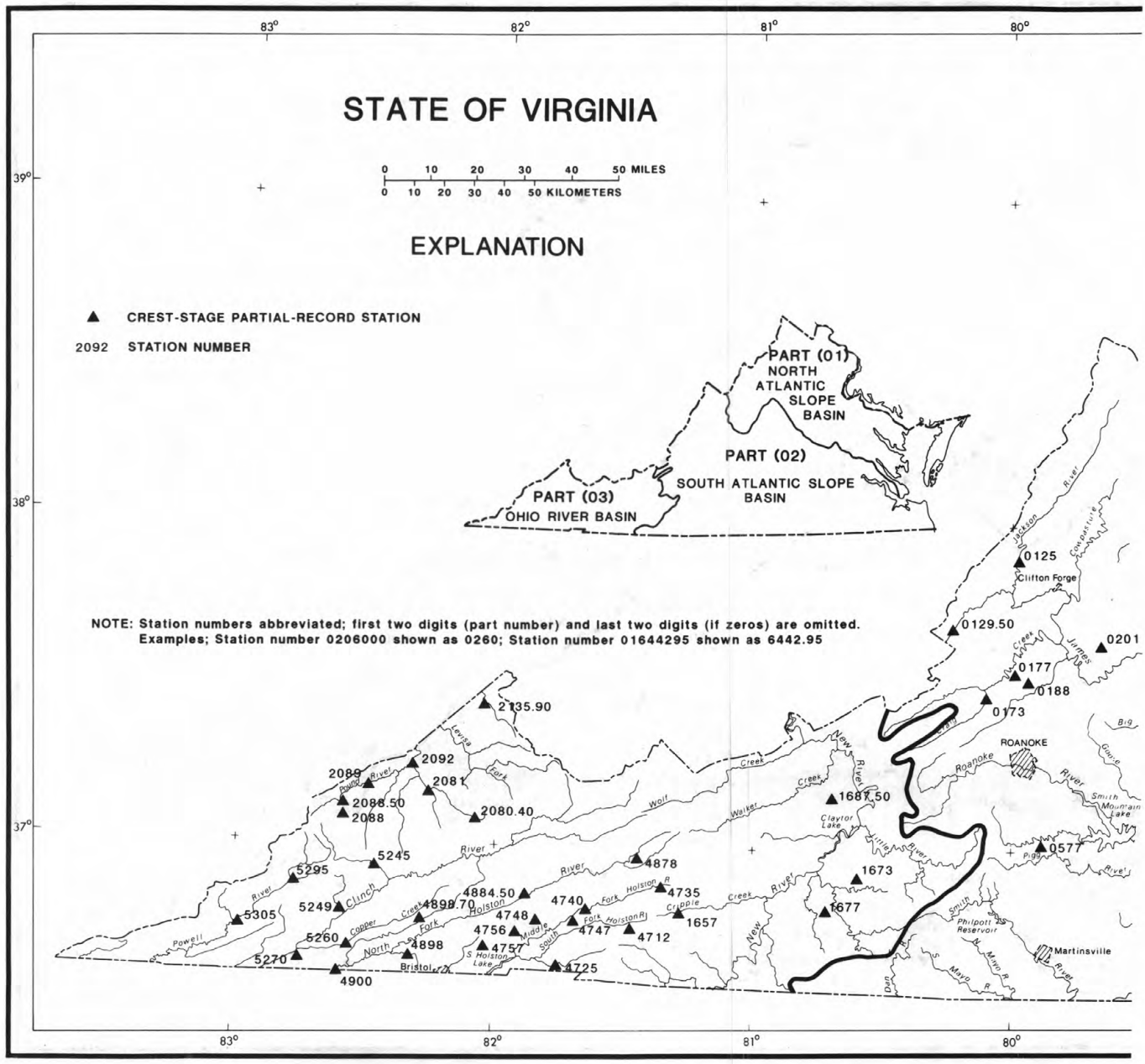
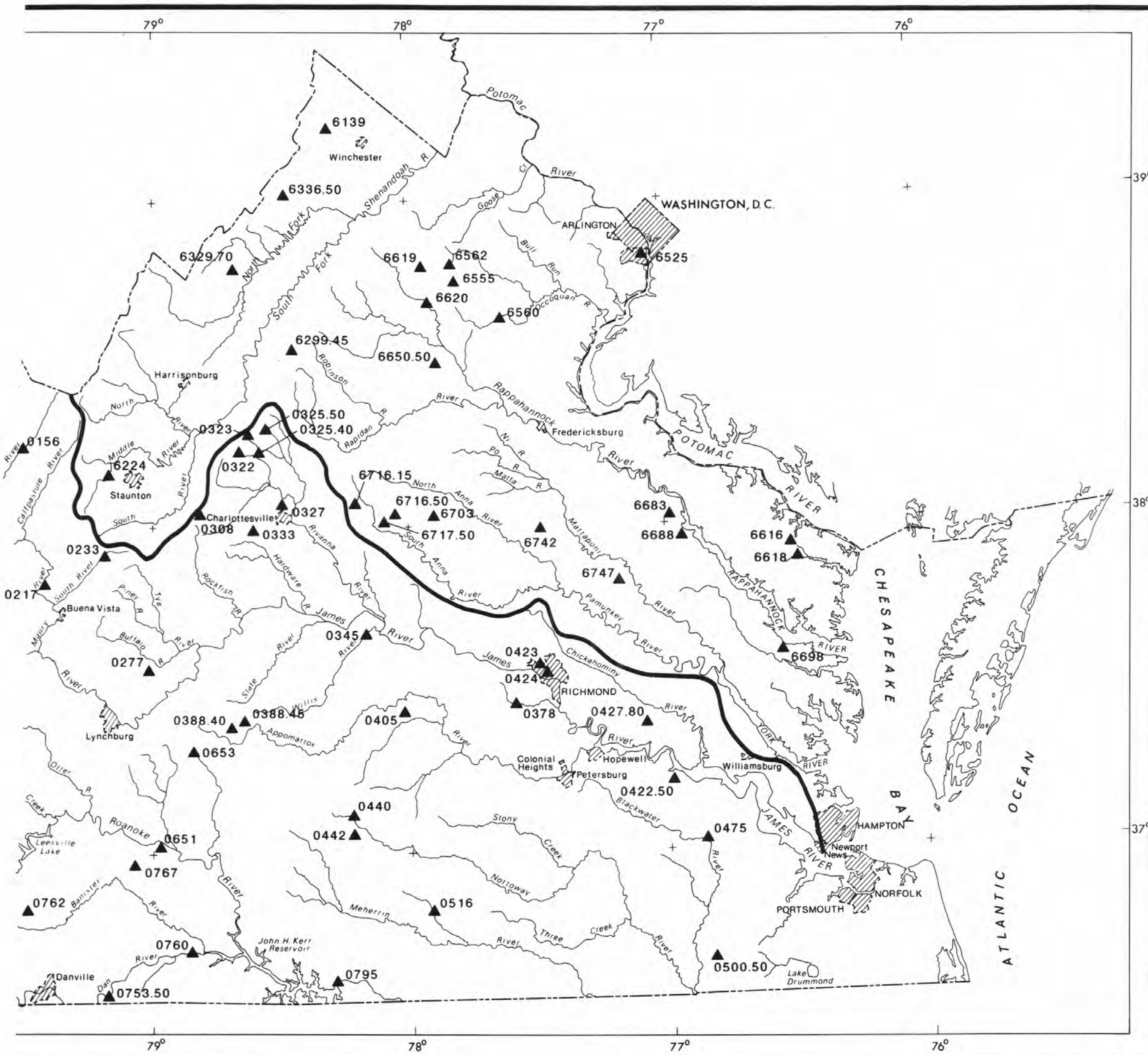


Figure 8. -- Location of surface-water partial-record stations.


79°
78°
77°
76°
39°
38°
37°
Potomac
River
WASHINGTON, D.C.
ARLINGTON
6525
6139
Winchester
6336.50
Shenandoah
R.
Goose
C.
Bull
Run
Occoquan
R.
6329.70
North
Fork
South
6619
6562
6555
6620
6560
6299.45
6650.50
Harrisonburg
Robinson
R.
Rapidan
River
Rappahannock
Fredericksburg
0325.50
0325.40
0323
0322
North
Middle
River
0156
6224
Staunton
Calfpasture
River
South
6716.15
6716.50
6703
6717.50
North
Anna
South
Anna
River
0327
Charlottesville
0308
0333
Rivanna
6742
6683
6688
Mattaponi
POTOMAC
RIVER
6616
6618
RAPPAHANNOCK
RIVER
6747
0233
0217
South River
Buena Vista
Piney
R.
Tye
Buffalo
R.
River
Rockfish
R.
Hardware
R.
James
River
0345
Slate
River
0277
Lynchburg
Pamunkey
River
6698
CHESAPEAKE
BAY
0423
James
Chickahominy
0424
RICHMOND
0378
0427.80
River
Willis
0388.40
0388.45
Appomattox
0405
River
0653
Colonial
Heights
Hopewell
Petersburg
0422.50
Williamsburg
YORK
RIVER
HAMPTON
Otter
R.
Creek
Roanoke
0651
Leesville
Lake
0767
0762
Banister
River
0440
0442
Stony
Creek
Nottoway
0475
Blackwater
River
JAMES
RIVER
Newport
News
NORFOLK
PORTSMOUTH
ATLANTIC
OCEAN
0516
Meherrin
River
Three
Creek
0760
River
John H. Kerr
Reservoir
0795
Danville
Dan
0753.50
0500.50
Lake
Drummond

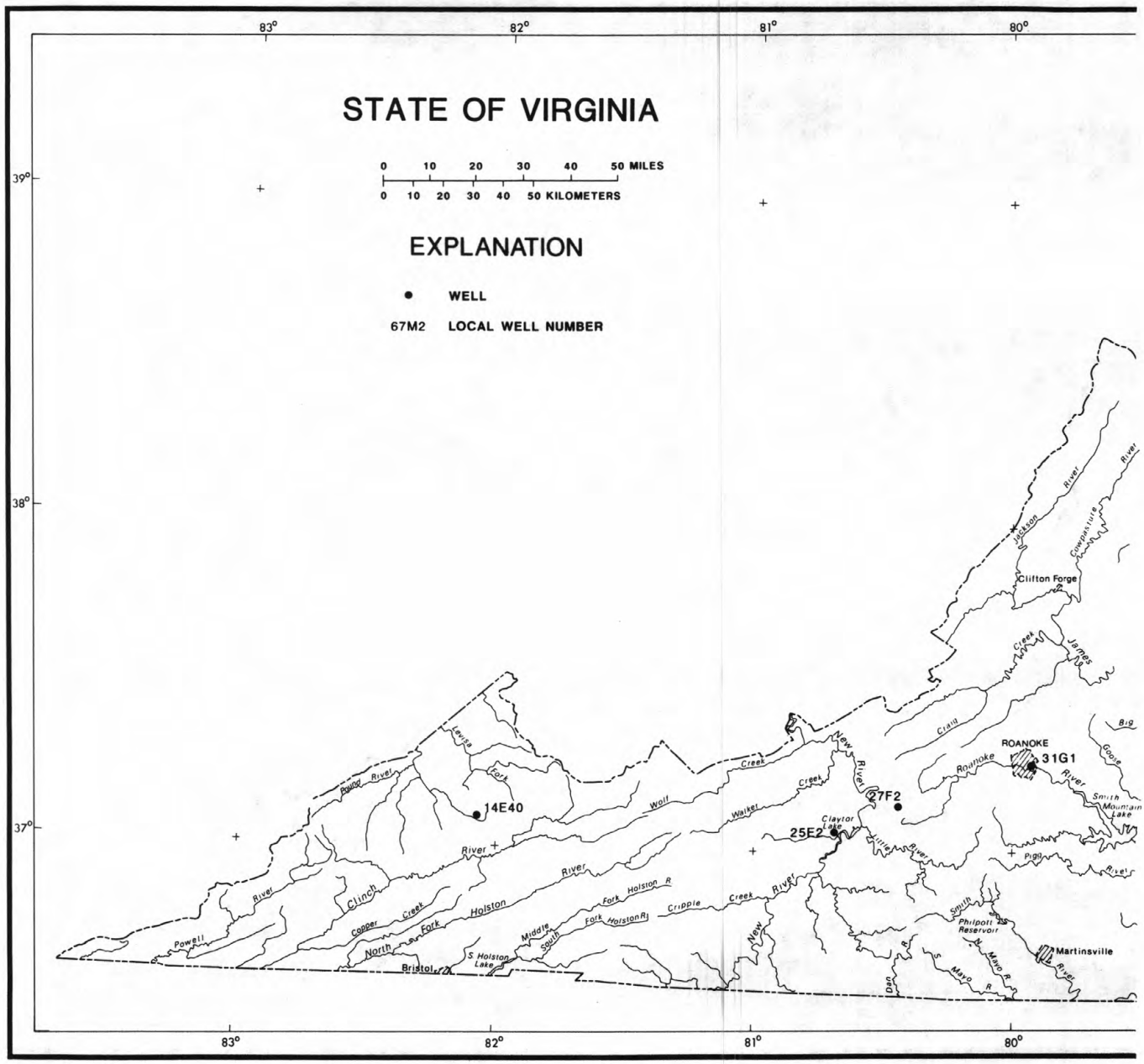
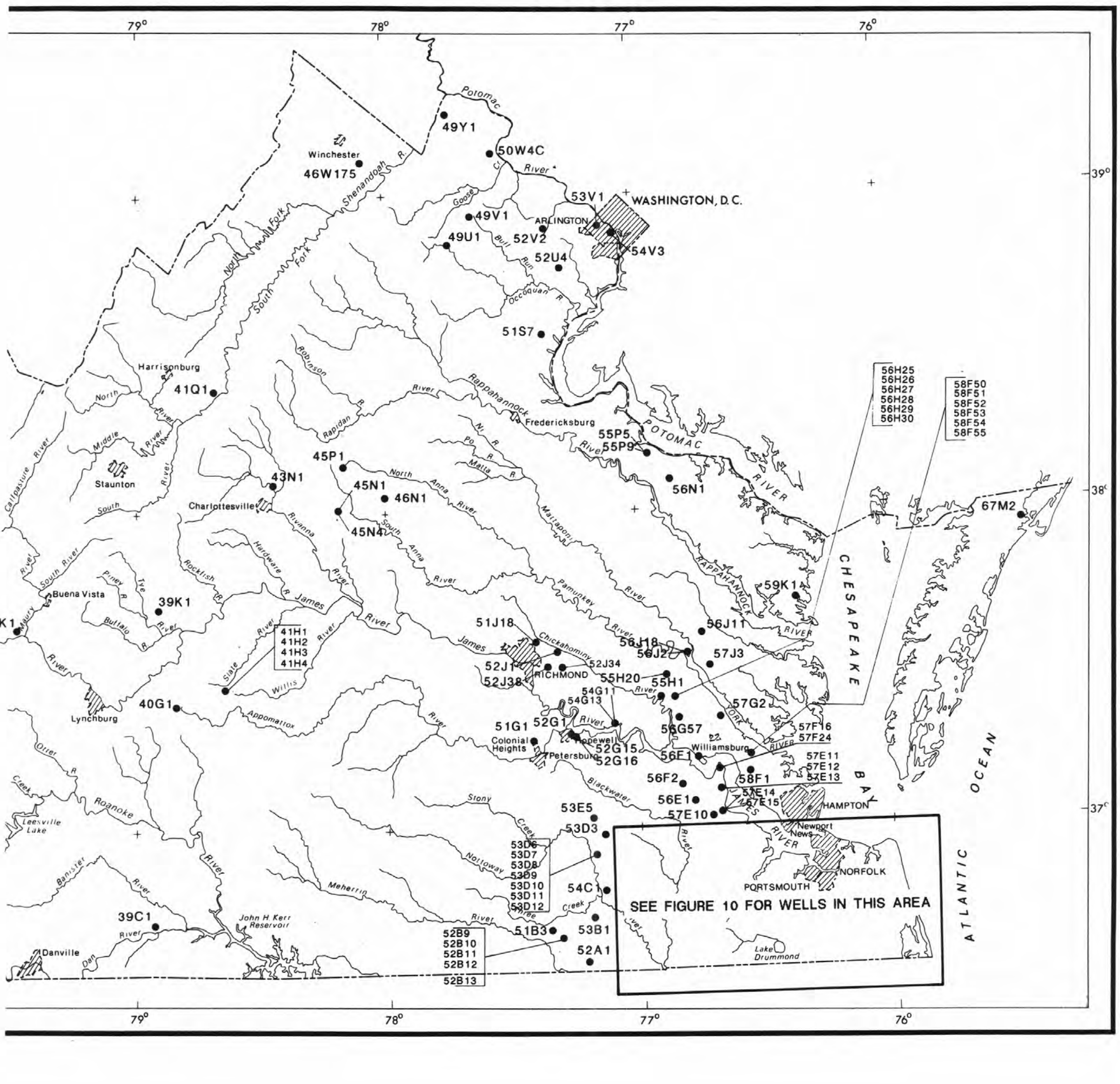


Figure 9. -- Location of ground-water observation wells.



79°
78°
77°
76°
39°
38°
37°
Potomac
River
49Y1
50W4C
Winchester
46W175
Shenandoah
R.
North
Fork
South
Fork
53V1
WASHINGTON, D.C.
ARLINGTON
49V1
49U1
52V2
52U4
54V3
Goose
Bull
Run
Occoquan
R.
51S7
Harrisonburg
41Q1
North
River
Middle
River
Staunton
South
Calfpasture
River
Robinson
R.
Rapidan
River
Rappahannock
Fredericksburg
55P5
55P9
POTOMAC
RIVER
56N1
45P1
43N1
45N1
46N1
45N4
Charlottesville
North
Anna
River
Po
R.
Matta
R.
Mattaponi
South
Anna
River
Rivanna
River
Hardware
R.
Rockfish
R.
Buena Vista
Maury
Piney
R.
Tye
River
39K1
35K1
Buffalo
R.
James
River
Slate
River
41H1
41H2
41H3
41H4
Willis
River
Appomattox
Lynchburg
40G1
51J18
Chickahominy
52J1
52J38
RICHMOND
52J34
55H20
55H1
54G11
54G13
51G1
52G1
Colonial Heights
Hopewell
Petersburg
52G15
52G16
Pamunkey
River
56J18
56J27
56J11
57J3
RAPPAHANNOCK
RIVER
59K1
YORK
57G2
56G57
56E1
Williamsburg
58F1
57F16
57F24
57E11
57E12
57E13
57E14
57E15
HAMPTON
56F2
56E1
57E10
JAMES
RIVER
Newport
News
NORFOLK
PORTSMOUTH
56H25
56H26
56H27
56H28
56H29
56H30
58F50
58F51
58F52
58F53
58F54
58F55
67M2
CHESAPEAKE
BAY
ATLANTIC
OCEAN
Blackwater
Stony
Creek
Nottoway
53E5
53D3
53D6
53D7
53D8
53D9
53D10
53D11
53D12
54C1
Three
Creek
Meherrin
River
53B1
51B3
52A1
52B9
52B10
52B11
52B12
52B13
SEE FIGURE 10 FOR WELLS IN THIS AREA
Lake
Drummond
Otter
R.
Roanoke
River
Leesville
Lake
Banister
River
Dan
River
John H. Kerr
Reservoir
39C1
Danville

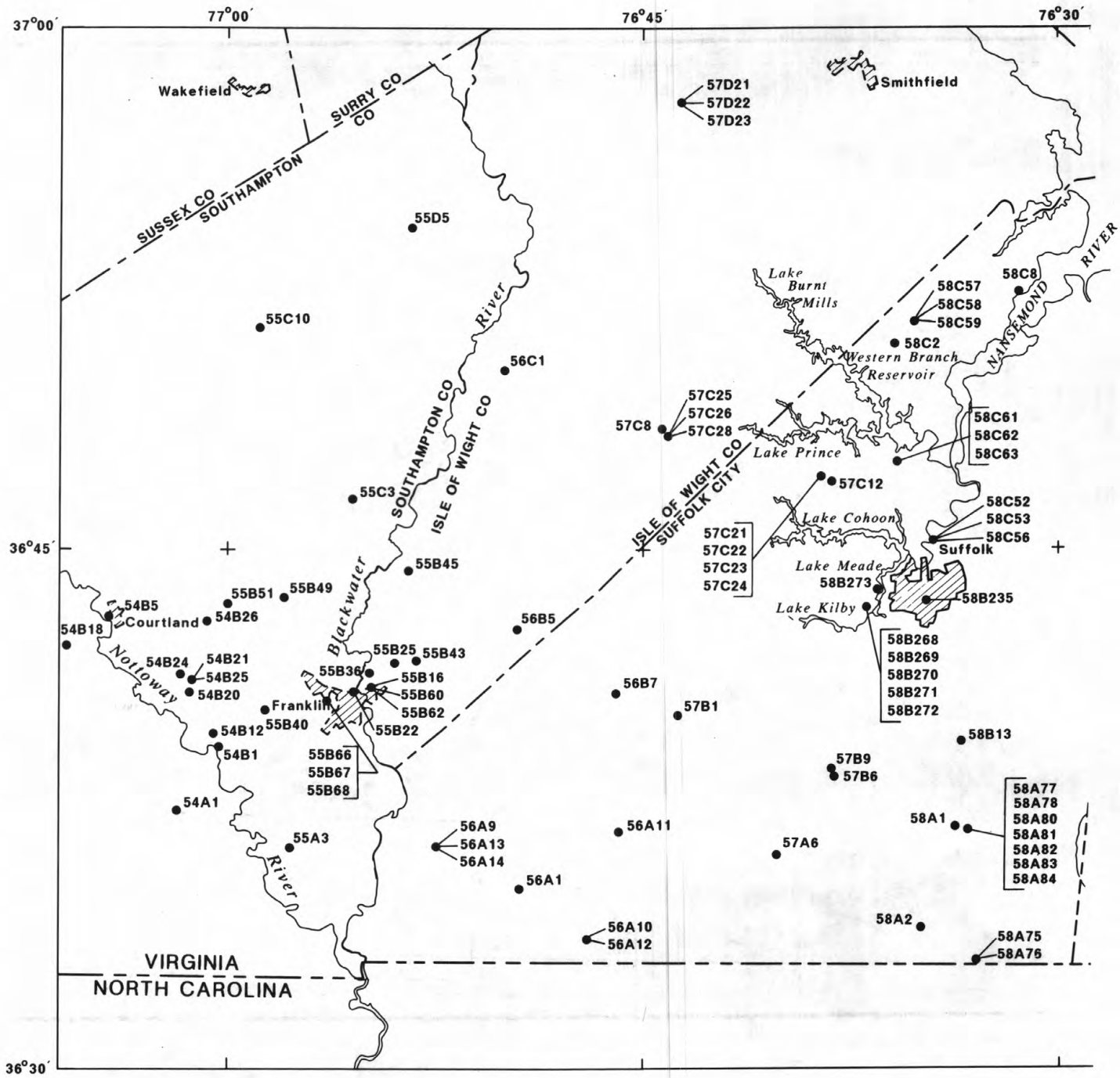
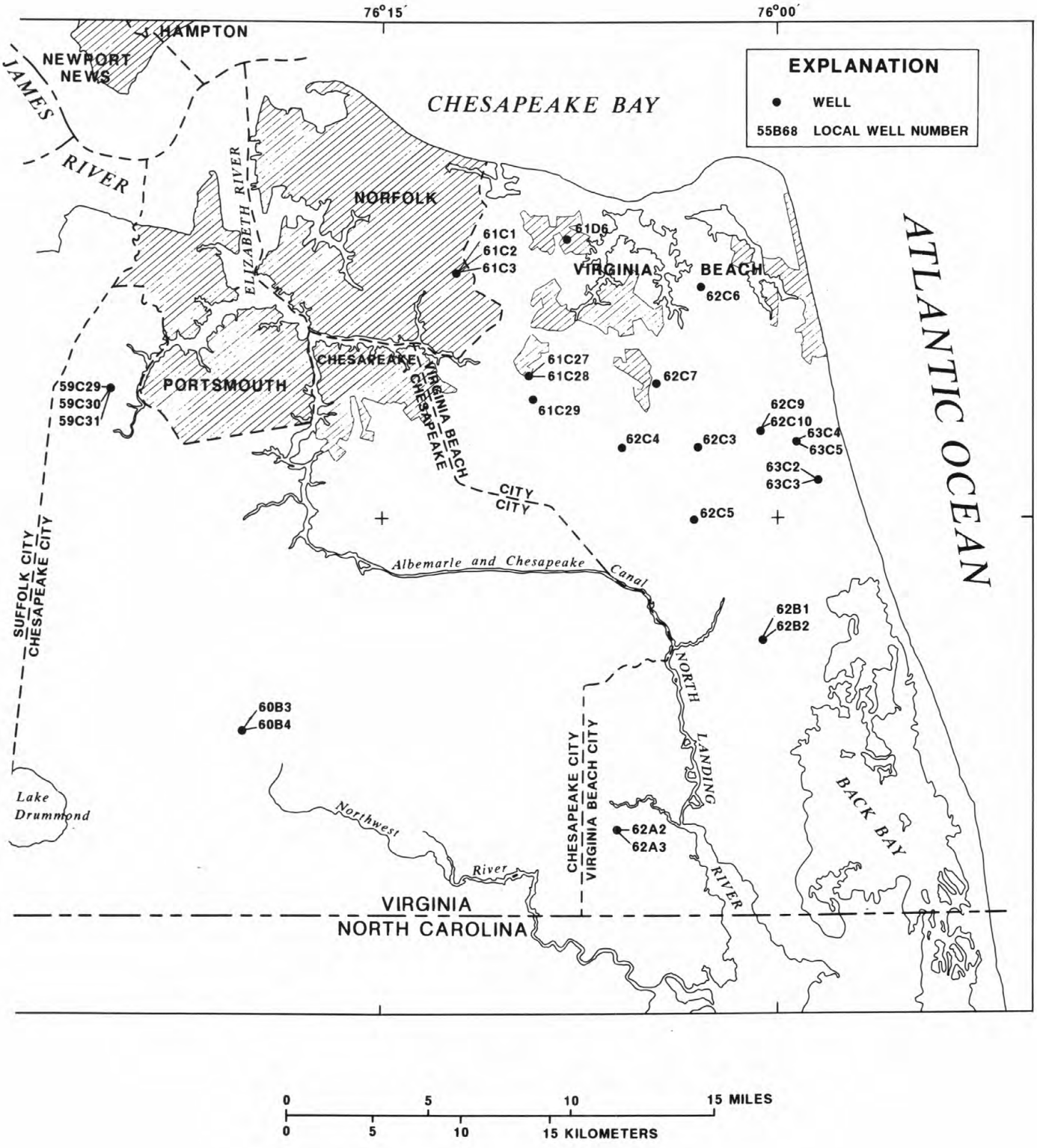


Figure 10.-- Location of ground-water observation wells in southeastern Virginia.


76°15'
76°00'
HAMPTON
NEWPORT NEWS
JAMES RIVER
CHESAPEAKE BAY
ELIZABETH RIVER
NORFOLK
PORTSMOUTH
CHESAPEAKE
VIRGINIA BEACH
ATLANTIC OCEAN
EXPLANATION
WELL
55B68 LOCAL WELL NUMBER
61C1
61C2
61C3
61D6
62C6
61C27
61C28
61C29
62C7
59C29
59C30
59C31
62C9
62C10
63C4
63C5
62C4
62C3
63C2
63C3
62C5
SUFFOLK CITY
CHESAPEAKE CITY
VIRGINIA BEACH CITY
CHESAPEAKE CITY
Albemarle and Chesapeake Canal
62B1
62B2
NORTH LANDING
BACK BAY
60B3
60B4
Lake Drummond
Northwest River
CHESAPEAKE CITY
VIRGINIA BEACH CITY
62A2
62A3
RIVER
VIRGINIA
NORTH CAROLINA
0 5 10 15 MILES
0 5 10 15 KILOMETERS

THIS IS A BLANK PAGE

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

PRINTED OUTPUT	REMARK
E	Estimated value
>	Actual value is known to be greater than the value shown.
<	Actual value is known to be less than the the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)
L	Biological organism count less than 0.5 percent (organism may be observed rather than counted)
D	Biological organism count equal to or greater than 15 percent (dominant)
&	Biological organism estimated as dominant

01484800 GUY CREEK NEAR NASSAWADOX, VA

LOCATION.--Lat 37°30'08", long 75°52'22", Northampton County, Hydrologic Unit 02080109, on left bank 25 ft upstream from bridge on State Highway 606, 1.9 mi northwest of Nassawadox, and 2.1 mi upstream from mouth.

DRAINAGE AREA.--1.72 mi^2.

PERIOD OF RECORD.--November 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 11.67 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records poor. Some diversion into pond for irrigation upstream from station, amount unknown. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--24 years (water years 1965-88), 1.32 ft^3/s, 10.42 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 78 ft^3/s, July 31, 1979, gage height, 5.28 ft; no flow at times in 1964, 1966, 1981, 1983-85, and 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6.7 ft^3/s, Apr. 7, gage height, 2.07 ft; minimum daily, 0.01 ft^3/s, Aug. 17, 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.25	e.12	e1.0	e.80	.88	1.1	.53	.40	e.50	.19	.62	e.20
2	e.23	e.09	e.40	e.78	.85	.98	.36	.25	e.70	.10	.28	e.13
3	e.22	e.08	e.22	e1.4	2.4	.98	.28	.22	e1.2	.07	e.17	e.09
4	e.24	e.07	e.25	e2.6	3.0	1.1	.54	.39	e.90	.10	e.13	.28
5	e.50	e.06	e.35	1.0	2.7	.92	2.7	1.7	e.56	.07	e.11	1.2
6	e.30	e.06	e.27	e.35	2.2	.92	1.9	1.6	e.48	.06	e.08	.30
7	e.27	.05	e.24	.29	1.8	3.0	5.3	1.2	e.42	.05	e.06	e.16
8	e.60	.05	e.22	2.3	1.7	2.1	6.1	.72	e.38	.07	e.05	e.09
9	e.50	.05	e.20	1.8	1.5	1.9	2.6	e.75	e.35	.20	e.04	e.19
10	e.28	.10	e.82	1.3	1.5	2.1	1.9	e.64	e.45	.19	e.06	.98
11	e.19	e.50	e1.6	1.0	1.9	1.7	1.5	e.80	e.37	e.10	e.08	.34
12	e.12	e1.4	e2.0	.90	4.7	1.6	1.2	e.70	e.32	e.09	e.07	.28
13	e.08	e1.0	e1.0	1.0	2.1	1.6	1.3	e.60	e.27	e.08	e.05	e.20
14	e.06	e.75	e.50	1.0	1.8	1.7	1.2	e.54	e.25	e.08	e.04	e.16
15	e.04	e.60	e1.3	.85	1.6	1.4	1.1	e.50	e.22	e.06	e.03	e.13
16	e.03	e.50	e1.0	.70	1.8	1.2	.91	e.60	e.15	e.05	e.02	e.12
17	e.03	e.45	e.80	.69	1.7	1.0	.78	e.90	e.14	e.04	e.01	e.11
18	e.03	e.40	e.60	2.1	1.6	.99	.72	e.85	.25	.11	e.01	e.10
19	e.03	e.40	e.54	1.7	1.5	1.7	.80	e.70	.26	.10	.16	e.10
20	e.02	e.45	e.52	2.8	1.6	1.6	1.4	e.55	.18	.07	.56	e.09
21	e.02	e.45	e.50	2.2	1.5	1.2	1.2	e.50	e.17	.12	e.25	e.09
22	e.02	e.37	e.45	1.9	1.4	.94	.99	e2.0	e.16	e.25	e.14	e.09
23	e.02	e.32	e.55	1.7	1.4	.81	.89	e1.7	e.14	e.40	e.18	e.09
24	e.02	e.30	e.45	1.5	1.3	.79	.89	e1.2	e.13	e.64	.28	e.10
25	e.02	e.30	e.68	1.6	1.3	.70	.74	e1.4	e.12	e.35	e.17	e.18
26	e.06	e.30	e.70	1.8	1.2	1.1	.48	e.88	.46	e.42	e.13	.31
27	e.38	e.55	e.80	1.3	1.2	2.5	.19	e.70	.39	e.70	e.09	e.37
28	e.35	e.80	e.95	1.2	1.2	1.9	.85	e.64	.26	e1.2	e.08	e.35
29	e.24	e1.9	e1.1	1.1	1.1	1.6	.56	e.88	.23	e.27	e.07	e.23
30	e.18	e2.3	e1.0	1.1	---	1.1	.57	e.70	.21	.11	.80	e.18
31	e.15	---	e.85	1.0	---	.78	---	e.60	---	.52	.29	---
TOTAL	5.48	14.77	21.86	41.76	50.43	43.01	40.48	25.81	10.62	6.86	5.11	7.24
MEAN	.18	.49	.71	1.35	1.74	1.39	1.35	.83	.35	.22	.16	.24
MAX	.60	2.3	2.0	2.8	4.7	3.0	6.1	2.0	1.2	1.2	.80	1.2
MIN	.02	.05	.20	.29	.85	.70	.19	.22	.12	.04	.01	.09
CFSM	.10	.29	.41	.78	1.01	.81	.78	.48	.21	.13	.10	.14
IN.	.12	.32	.47	.90	1.09	.93	.88	.56	.23	.15	.11	.16

CAL YR 1987 TOTAL 446.92 MEAN 1.22 MAX 14 MIN .01 CFSM .71 IN. 9.67
WTR YR 1988 TOTAL 273.43 MEAN .75 MAX 6.1 MIN .01 CFSM .43 IN. 5.91

e Estimated.

01615000 OPEQUON CREEK NEAR BERRYVILLE, VA

LOCATION.--Lat 39°10'40", long 78°04'20", Frederick County, Hydrologic Unit 02070004, on left bank between the bridges on State Highway 7, 0.2 mi upstream from Abrams Creek, and 5.0 mi west of Berryville.

DRAINAGE AREA.--57.4 mi².

PERIOD OF RECORD.--October 1943 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 above National Geodetic Vertical Datum of 1929. Prior to July 26, 1949, nonrecording gage at same site and datum.

REMARKS.--Records good except for period with ice effect, Jan. 5-18, which is fair. Some diurnal fluctuation caused by mills and sewage treatment plant upstream from station. Most of water discharged from the treatment plant was diverted from another drainage basin for municipal supply. 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 Water Control Board.

AVERAGE DISCHARGE.--45 years, 42.9 ft³/s, 10.15 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,600 ft³/s, May 18, 1988, gage height, 13.49 ft, from rating curve extended above 4,800 ft³/s; minimum daily, 0.20 ft³/s, Sept. 12, 13, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1942 reached a stage of 18.4 ft, discharge not determined, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 850 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1830	1,110	5.77	May 18	1900	*12,600	*13.49
Jan. 20	0930	1,060	5.64	May 20	2300	1,720	7.13
May 6	1100	1,470	6.58	May 24	0730	918	5.28

Minimum discharge, 5.5 ft³/s, Nov. 6-7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	9.7	95	36	66	16	14	9.7	33	10	14	14
2	11	9.2	56	30	75	15	13	9.5	32	10	13	13
3	10	9.0	39	24	205	16	13	9.1	32	9.8	13	12
4	9.3	7.0	34	23	109	55	14	9.0	31	9.7	13	18
5	8.8	6.3	28	e20	67	156	13	145	29	9.2	12	26
6	9.1	5.6	24	e17	44	64	13	1130	26	9.1	18	16
7	11	5.6	21	e15	40	42	63	282	25	8.9	17	13
8	9.3	5.8	20	e15	35	31	151	110	24	8.6	14	12
9	8.3	6.3	19	e15	30	26	84	60	24	8.6	13	12
10	8.2	22	19	e15	27	25	43	43	25	8.4	12	12
11	9.0	60	18	e15	26	19	30	34	21	9.0	12	11
12	11	34	17	e16	29	17	24	31	20	10	12	11
13	14	45	17	e17	26	17	20	24	19	9.4	11	11
14	7.7	32	16	e16	28	15	18	20	18	8.7	11	11
15	7.7	22	76	e14	21	14	16	18	17	8.4	11	11
16	7.2	17	65	e16	27	13	15	18	18	7.9	11	11
17	7.0	16	36	e18	22	12	14	171	18	7.4	11	11
18	7.3	20	26	e21	22	12	15	2610	16	8.6	12	11
19	14	17	23	37	23	12	18	902	15	12	22	11
20	13	15	38	550	31	12	14	575	15	14	35	12
21	15	14	41	184	28	12	13	484	14	23	31	13
22	12	12	31	100	21	11	12	153	13	15	17	11
23	12	12	27	67	21	11	12	133	13	14	15	11
24	11	12	22	50	20	11	13	439	13	13	19	11
25	10	12	22	53	18	12	12	425	12	12	16	14
26	9.3	12	150	70	17	23	11	175	12	57	13	14
27	12	12	99	48	17	23	11	100	11	58	13	12
28	37	20	66	41	17	16	11	70	11	23	12	11
29	16	478	95	38	16	14	10	54	11	17	27	11
30	12	250	51	34	---	14	10	44	10	15	25	11
31	11	---	38	58	---	14	---	37	---	14	16	---
TOTAL	354.2	1198.5	1329	1673	1128	750	720	8324.3	578	448.7	491	378
MEAN	11.4	39.9	42.9	54.0	38.9	24.2	24.0	269	19.3	14.5	15.8	12.6
MAX	37	478	150	550	205	156	151	2610	33	58	35	26
MIN	7.0	5.6	16	14	16	11	10	9.0	10	7.4	11	11
(*)	---	---	---	---	---	---	---	---	---	6.78	7.11	6.15

CAL YR 1987 TOTAL 19826.1 MEAN 54.3 MAX 1310 MIN 5.0
WTR YR 1988 TOTAL 17372.7 MEAN 47.5 MAX 2610 MIN 5.6

* Discharge from sewage treatment plant, equivalent in cubic feet per second; provided by the Frederick-Winchester Service Authority.
e Estimated.

01616000 ABRAMS CREEK NEAR WINCHESTER, VA

LOCATION.--Lat 39°10'40", long 78°05'10", Frederick County, Hydrologic Unit 02070004, on right bank 1,000 ft upstream from bridge on State Highway 659, 0.9 mi upstream from mouth, and 4.4 mi east of Winchester.

DRAINAGE AREA.--16.5 mi².

PERIOD OF RECORD.--July 1949 to September 1960, June 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 526.46 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 5-18, which is fair. Slight diurnal fluctuation caused by sewage disposal plant upstream from station at Winchester. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--20 years, 22.0 ft³/s, 18.11 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,220 ft³/s, May 18, 1988, gage height, 6.14 ft; maximum gage height, 6.16 ft, Dec. 4, 1950; minimum discharge, 3.5 ft³/s, Oct. 8, 1954.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1400	331	3.02	May 18	1630	*1,220	*6.14
Jan. 20	0400	319	2.97	May 24	0400	280	2.81
May 5	1700	347	3.08	July 26	1730	237	2.63
May 6	0530	435	3.42				

Minimum discharge, 5.2 ft³/s, Sept. 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	15	38	24	28	18	15	14	30	17	11	11
2	19	16	31	23	39	18	15	14	32	18	10	11
3	19	16	28	22	51	18	15	14	32	17	10	11
4	17	16	28	23	37	49	15	15	29	17	10	26
5	17	16	24	e19	30	39	15	112	27	16	10	13
6	18	17	22	e16	26	28	16	252	26	16	36	11
7	19	19	22	e14	23	24	49	67	25	17	16	10
8	18	18	22	e14	24	21	46	38	25	16	14	10
9	18	18	21	e14	23	20	28	31	33	15	11	10
10	17	52	21	e14	22	20	22	31	25	14	11	9.2
11	17	33	21	e14	22	18	20	27	23	14	11	9.0
12	17	27	20	e15	25	17	19	24	22	18	11	9.4
13	17	26	19	e16	21	17	18	22	21	16	11	9.8
14	17	22	20	e15	19	18	18	21	21	15	10	9.4
15	18	18	43	e13	22	18	19	19	21	15	9.7	9.1
16	18	18	28	e13	22	19	18	29	22	15	9.1	8.9
17	17	19	24	e14	21	19	17	38	22	14	9.2	8.7
18	16	22	22	e20	21	19	23	295	21	20	16	7.6
19	17	18	22	26	22	18	17	141	20	14	38	7.2
20	21	18	33	138	23	17	15	98	20	20	36	14
21	21	17	25	47	20	18	15	66	20	15	17	9.4
22	19	16	24	36	20	18	15	49	19	11	15	9.2
23	19	16	23	30	20	18	16	44	19	11	18	9.4
24	18	17	22	25	20	17	16	112	19	12	20	14
25	18	17	22	32	19	17	16	103	18	10	13	15
26	20	15	45	31	19	26	15	55	18	30	12	10
27	43	20	32	26	18	17	20	43	18	16	12	10
28	26	23	33	24	17	16	15	37	18	13	12	10
29	19	125	34	23	18	16	15	34	17	12	35	10
30	18	56	28	23	---	16	14	31	18	14	15	10
31	17	---	26	27	---	16	---	30	---	12	13	---
TOTAL	594	746	823	791	692	630	577	1906	681	480	482.0	322.3
MEAN	19.2	24.9	26.5	25.5	23.9	20.3	19.2	61.5	22.7	15.5	15.5	10.7
MAX	43	125	45	138	51	49	49	295	33	30	38	26
MIN	16	15	19	13	17	16	14	14	17	10	9.1	7.2
CFSM	1.16	1.51	1.61	1.55	1.45	1.23	1.17	3.73	1.38	.94	.94	.65
IN.	1.34	1.68	1.86	1.78	1.56	1.42	1.30	4.30	1.54	1.08	1.09	.73

CAL YR 1987 TOTAL 10364 MEAN 28.4 MAX 313 MIN 13 CFSM 1.72 IN. 23.37
WTR YR 1988 TOTAL 8724.3 MEAN 23.8 MAX 295 MIN 7.2 CFSM 1.44 IN. 19.67

e Estimated.

01620500 NORTH RIVER NEAR STOKESVILLE, VA

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

DRAINAGE AREA.--17.2 mi².

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

REVISED RECORDS.--WSP 1903: 1960. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,054.57 ft above National Geodetic Vertical Datum of 1929. Prior to June 10, 1958, at site 575 ft downstream at datum 6.0 ft lower.

REMARKS.--Records fair except those for period of doubtful or no gage-height record, Apr. 7 to Sept. 30, and period with ice effect, Jan. 16, which are poor. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--42 years, 25.8 ft³/s, 20.37 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,100 ft³/s, June 17, 1949, gage height, 10.9 ft, from floodmarks, site and datum then in use, from rating curve extended above 900 ft³/s on basis of computation of peak flow over dam; maximum gage height, 19.8 ft, Nov. 5, 1985, from floodmarks (backwater from Elkhorn Lake); minimum discharge, 0.10 ft³/s, Sept. 15, 16, 19-22, 1962, Sept. 7-13, 1966.

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

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 7	0015	*315	*4.83	No other peak equal to or greater than base discharge.			

Minimum daily discharge, 0.55 ft³/s, July 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.6	1.7	79	38	18	9.3	13	e11	e8.0	e1.4	e1.0	1.1
2	4.6	1.8	52	32	19	8.7	13	e9.5	e7.7	e1.3	e1.1	.86
3	4.1	1.8	38	28	23	8.4	13	e8.8	e9.9	e1.3	e1.1	.94
4	3.9	1.8	30	26	29	8.7	14	e8.4	e8.8	e1.2	1.2	1.2
5	3.7	1.8	26	24	34	8.7	14	e11	e7.4	e1.1	1.1	e1.5
6	3.1	1.9	21	21	35	8.2	13	e91	e6.5	e.98	1.2	e1.4
7	2.7	1.9	18	18	33	7.7	e17	e236	e5.9	e.80	1.3	1.4
8	2.8	1.8	16	17	30	7.6	e25	e114	e5.9	e.70	1.2	1.3
9	2.7	1.7	15	16	27	7.5	e35	e64	e6.2	e.66	1.2	1.4
10	2.9	2.0	13	15	24	7.7	e33	e44	e5.9	e.65	1.1	1.4
11	2.5	2.4	12	16	21	8.0	e30	e32	e5.4	e.65	1.1	1.3
12	2.0	2.7	12	11	20	7.9	e25	e26	e5.4	e.82	e1.3	1.3
13	1.9	4.4	11	10	23	8.3	e22	e21	e5.1	e.73	e1.3	e1.3
14	2.0	5.6	9.7	9.5	27	8.2	e19	e19	e5.0	e.67	1.2	e1.2
15	2.0	7.4	18	8.8	15	8.1	e17	e18	e4.3	e.66	1.2	e1.2
16	1.9	8.5	36	e11	16	7.9	e15	e20	e4.1	e.55	1.1	e1.2
17	1.9	9.2	38	7.8	14	7.7	e13	e21	e3.6	e.73	.92	e1.2
18	1.9	15	34	8.9	13	7.7	e12	e53	e3.7	e.90	.90	e1.3
19	1.8	22	30	10	12	7.5	e12	e124	e3.5	e.80	.95	e1.3
20	1.9	23	29	79	13	7.5	e11	e112	e3.4	e.73	.96	e1.2
21	2.0	20	26	104	13	7.4	e9.5	e72	e3.3	.75	1.1	e1.2
22	1.7	16	24	72	12	7.1	e9.1	e49	e2.9	.82	e1.2	e1.2
23	1.7	14	23	55	12	6.5	e8.4	e48	e2.6	.92	1.0	e1.2
24	1.7	12	21	44	12	6.1	e20	e30	e2.4	.99	.80	e1.5
25	1.7	10	20	37	11	5.9	e25	e25	e2.2	.97	.77	e2.2
26	1.6	9.4	27	32	11	6.8	e22	e20	e2.1	1.1	.84	e1.8
27	1.7	9.2	35	26	11	8.8	e18	e16	e1.9	e1.2	.94	e1.6
28	1.9	11	47	23	10	10	e17	e14	e1.7	e1.2	1.0	e1.5
29	2.0	76	60	20	9.8	12	e14	e12	e1.6	e1.1	e1.5	e1.4
30	1.7	145	53	19	---	13	e13	e11	e1.5	e1.0	e1.4	e1.4
31	1.7	---	45	18	---	13	---	e9.1	---	e.98	1.3	---
TOTAL	74.3	441.0	918.7	857.0	547.8	257.9	522.0	1349.8	137.9	28.36	34.28	40.00
MEAN	2.40	14.7	29.6	27.6	18.9	8.32	17.4	43.5	4.60	.91	1.11	1.33
MAX	4.6	145	79	104	35	13	35	236	9.9	1.4	1.5	2.2
MIN	1.6	1.7	9.7	7.8	9.8	5.9	8.4	8.4	1.5	.55	.77	.86
CFSM	.14	.85	1.72	1.61	1.10	.48	1.01	2.53	.27	.05	.06	.08
IN.	.16	.95	1.99	1.85	1.18	.56	1.13	2.92	.30	.06	.07	.09

CAL YR 1987 TOTAL 12686.95 MEAN 34.8 MAX 1750 MIN .14 CFSM 2.02 IN. 27.44
WTR YR 1988 TOTAL 5209.04 MEAN 14.2 MAX 236 MIN .55 CFSM .83 IN. 11.27

e Estimated.

01622000 NORTH RIVER NEAR BURKETOWN, VA

LOCATION.--Lat 38°20'25", long 78°54'50", Rockingham County, Hydrologic Unit 02070005, on right bank 0.8 mi downstream from Pleasant Run, 2.8 mi northeast of Burketown, and 8.5 mi upstream from Middle River.
DRAINAGE AREA.--379 mi².
PERIOD OF RECORD.--October 1925 to October 1972, May 1975 to current year. Monthly discharge only for some periods, published in WSP 1302.
REVISED RECORDS.--WSP 1171: 1936(M). WSP 1302: 1928-29(M), 1932-34(M), 1937-38(M). WSP 2103: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 1,103.49 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 12, 1938, nonrecording gage at site 3.0 mi downstream at different datum.
REMARKS.--Records good except for period of no gage-height record, July 23 to Aug. 10, which is fair. At a point 26.8 mi upstream from station, there is an aqueduct tunnel diversion of about 2.8 ft³/s from Staunton Dam Reservoir by city of Staunton for industrial and municipal use. Some diurnal fluctuation caused by discharge from sewage treatment plant about 0.9 mi upstream from station. Several measurements of water temperature were made during the year.
COOPERATION.--Records were provided by the Virginia Water Control Board.
AVERAGE DISCHARGE.--60 years, 370 ft³/s, 13.26 in/yr.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 65,000 ft³/s, Nov. 5, 1985, gage height, 35.85 ft, from high-water mark, from rating curve extended above 16,000 ft³/s on basis of slope-area measurements at gage heights 32.4 ft and 36.3 ft, and contracted-opening measurements at gage heights 35.85 ft and 36.3 ft; maximum gage height, 36.3 ft, June 18, 1949; minimum discharge, 16 ft³/s, Nov. 23, 1965, result of temporary dam upstream.
EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1852, that of June 18, 1949.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 6	2030	*3,080	*7.13	No other peak equal to or greater than base discharge.			

Minimum discharge, 26 ft³/s, July 9, gage height, 1.64 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	206	96	1130	619	339	173	142	142	252	73	e56	53
2	195	97	854	532	333	170	145	140	238	68	e54	52
3	188	92	633	464	367	163	150	134	264	66	e52	50
4	178	87	492	423	397	173	160	133	235	70	e51	79
5	175	85	398	377	430	172	160	167	217	61	e50	72
6	172	85	342	333	444	161	158	1480	196	56	e51	59
7	172	82	299	312	427	161	206	2520	179	53	e53	53
8	161	83	264	305	418	157	202	1790	176	49	e50	54
9	151	85	244	286	389	160	219	1290	175	43	e48	54
10	145	127	235	268	365	159	263	979	176	50	e46	52
11	138	123	240	260	344	153	283	738	174	74	48	53
12	137	109	217	254	330	156	278	555	166	94	47	51
13	131	105	202	230	299	155	267	433	147	86	45	50
14	126	97	192	220	276	155	250	367	133	77	49	50
15	128	93	297	204	277	150	233	340	131	67	49	48
16	123	92	384	195	273	150	218	350	129	56	42	48
17	120	102	428	194	250	144	208	404	129	58	44	52
18	116	123	418	216	239	142	199	619	146	64	42	54
19	117	111	392	210	230	141	188	1090	121	74	43	51
20	114	112	389	981	236	138	177	1270	120	83	67	51
21	118	111	373	1140	225	139	166	1470	112	66	65	50
22	109	124	355	991	215	130	159	1380	105	74	55	49
23	105	132	344	836	211	131	156	1100	102	e68	53	48
24	106	125	323	703	204	123	173	905	111	e67	59	82
25	102	121	314	622	203	123	152	763	99	e66	55	143
26	106	128	379	551	194	148	161	595	96	e80	53	78
27	104	139	454	459	191	137	167	488	92	e73	46	64
28	132	160	643	407	187	128	163	416	87	e66	53	62
29	107	345	921	371	183	126	150	367	78	e63	133	59
30	102	1240	801	351	---	129	149	323	74	e60	72	59
31	97	---	700	344	---	139	---	281	---	e58	56	---
TOTAL	4181	4611	13657	13658	8476	4586	5702	23029	4460	2063	1687	1780
MEAN	135	154	441	441	292	148	190	743	149	66.5	54.4	59.3
MAX	206	1240	1130	1140	444	173	283	2520	264	94	133	143
MIN	97	82	192	194	183	123	142	133	74	43	42	48
CFSM	.36	.41	1.16	1.16	.77	.39	.50	1.96	.39	.18	.14	.16
IN.	.41	.45	1.34	1.34	.83	.45	.56	2.26	.44	.20	.17	.17

CAL YR 1987 TOTAL 166493 MEAN 456 MAX 9080 MIN 41 CFSM 1.20 IN. 16.34
WTR YR 1988 TOTAL 87890 MEAN 240 MAX 2520 MIN 42 CFSM .63 IN. 8.63

e Estimated.

01624800 CHRISTIANS CREEK NEAR FISHERSVILLE, VA

LOCATION.--Lat 38°07'42", long 78°59'41", Augusta County, Hydrologic Unit 02070005, on right bank at upstream side of bridge on State Highway 794, 2.2 mi northwest of Fishersville, and 12 mi (corrected) upstream from mouth.

DRAINAGE AREA.--70.1 mi².

PERIOD OF RECORD.--October 1967 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,230 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except for period of no gage-height record, Jan. 7-17, which is fair. Some diurnal fluctuation caused by discharge of about 1.1 ft³/s from sewage treatment plant just upstream from station. Most of the water discharged from the treatment plant was diverted from another drainage basin for municipal supply. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--21 years, 71.0 ft³/s, 13.75 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,520 ft³/s, Nov. 4, 1985, gage height, 13.58 ft, from rating curve extended above 2,400 ft³/s; minimum, 3.8 ft³/s, Jan. 11, 1977, result of freezeup.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	0830	*742	*4.41	No peak equal to or greater than base discharge.			

Minimum discharge, 12 ft³/s, July 8, 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	31	64	63	58	38	31	24	31	16	19	18
2	43	31	53	57	59	37	31	24	30	16	18	17
3	42	31	47	54	73	37	30	24	43	16	18	16
4	41	30	45	53	76	39	31	25	34	16	21	20
5	40	30	41	46	71	40	29	28	30	16	18	20
6	40	28	39	e37	62	36	30	53	28	15	18	17
7	40	28	38	e36	58	36	49	41	27	15	18	17
8	38	28	37	e35	56	35	40	31	26	14	17	16
9	36	28	37	e35	55	35	35	29	27	14	16	16
10	36	51	37	e34	53	36	32	28	28	16	16	16
11	36	50	66	e33	52	34	31	29	25	16	20	16
12	37	39	49	e34	54	33	31	27	24	40	20	18
13	36	39	43	e35	47	36	32	25	24	29	16	17
14	35	36	42	e33	47	34	30	25	23	21	16	15
15	35	33	75	e30	48	33	29	25	22	19	16	15
16	34	31	68	e29	56	32	27	25	22	17	16	14
17	34	33	56	e38	48	32	27	26	22	17	15	15
18	33	36	50	63	47	32	27	134	22	17	15	16
19	33	31	48	53	47	32	28	102	21	27	17	15
20	33	30	48	325	49	31	27	74	24	46	23	15
21	34	28	45	124	45	31	26	57	21	55	21	15
22	33	27	43	90	43	31	27	46	21	57	17	14
23	33	28	42	77	43	30	28	40	19	30	17	14
24	33	28	40	69	42	30	29	55	19	26	19	16
25	32	27	40	70	41	30	26	66	19	23	17	24
26	32	27	53	66	40	40	26	52	19	33	16	19
27	36	32	58	58	40	41	25	43	18	26	15	16
28	41	43	107	e55	39	35	25	39	18	24	18	16
29	34	148	103	54	39	33	25	36	17	21	60	16
30	32	91	75	55	---	32	24	34	17	20	27	16
31	31	---	67	59	---	31	---	32	---	19	20	---
TOTAL	1118	1153	1656	1900	1488	1062	888	1299	721	737	600	495
MEAN	36.1	38.4	53.4	61.3	51.3	34.3	29.6	41.9	24.0	23.8	19.4	16.5
MAX	45	148	107	325	76	41	49	134	43	57	60	24
MIN	31	27	37	29	39	30	24	24	17	14	15	14
CFSM	.51	.55	.76	.87	.73	.49	.42	.60	.34	.34	.28	.24
IN.	.59	.61	.88	1.01	.79	.56	.47	.69	.38	.39	.32	.26

CAL YR 1987 TOTAL 34198 MEAN 93.7 MAX 2000 MIN 19 CFSM 1.34 IN. 18.15
WTR YR 1988 TOTAL 13117 MEAN 35.8 MAX 325 MIN 14 CFSM .51 IN. 6.96

e Estimated.

01625000 MIDDLE RIVER NEAR GROTTOES, VA

LOCATION.--Lat 38°15'42", long 78°51'44", Augusta County, Hydrologic Unit 02070005, on left bank at upstream side of bridge on State Highway 769 at Mount Meridian, 1.8 mi upstream from mouth, and 2.0 mi west of Grottoes.
DRAINAGE AREA.--375 mi².
PERIOD OF RECORD.--April 1927 to current year. Records for February 1925 to September 1926, published in WSP 601 and 621, are unreliable and should not be used.
REVISED RECORDS.--WSP 1051: 1928-29, 1930(M), 1932, 1935-37, 1938(M), 1940. WSP 1171: 1933. WSP 1302: 1928-29(M), 1931-34(M). WSP 2103: Drainage area. See also PERIOD OF RECORD.
GAGE.--Water-stage recorder. Datum of gage is 1,061.51 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 1, 1938, nonrecording gage at same site and datum.
REMARKS.--Records good except for period with ice effect, Jan. 8-17, which is fair. Most of water discharged from sewage treatment plants was diverted from another drainage basin for industrial and municipal supply. Small diurnal fluctuation at low flow caused by mills upstream from station. 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 Water Control Board.
AVERAGE DISCHARGE.--61 years, 312 ft³/s, 11.30 in/yr.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,500 ft³/s, Nov. 5, 1985, gage height, 33.09 ft, from rating curve extended above 15,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 19 ft³/s, Jan. 12, 1981, result of freezeup.
EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1877, that of Nov. 5, 1985.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	2400	*1,510	*7.19	No peak equal to or greater than base discharge.			

Minimum discharge, 51 ft³/s, Aug. 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	216	116	524	485	312	190	156	119	159	74	87	96
2	201	115	390	421	303	185	154	117	152	72	87	81
3	192	115	307	362	365	184	153	117	188	68	83	77
4	186	114	266	330	375	187	151	118	182	70	103	83
5	179	112	238	299	384	193	152	132	159	69	99	105
6	172	109	210	234	365	183	149	210	146	66	96	92
7	174	105	192	197	331	176	206	587	136	64	114	82
8	170	104	181	e190	329	172	221	472	128	64	110	77
9	161	106	175	e190	311	170	186	328	124	64	87	77
10	156	124	171	e180	295	171	173	267	130	64	81	74
11	153	253	258	e175	281	166	166	231	127	79	79	75
12	156	186	249	e175	280	162	164	204	117	128	79	75
13	161	156	209	e180	263	163	167	181	114	172	80	72
14	147	147	192	e170	235	165	162	166	109	111	72	75
15	145	133	314	e160	241	161	155	157	105	89	70	68
16	141	124	465	e155	271	157	148	154	103	77	69	66
17	139	120	442	e180	257	155	143	169	100	74	68	66
18	136	163	365	264	239	152	144	307	98	74	64	70
19	135	138	309	320	236	154	146	713	99	103	71	73
20	132	126	288	1010	249	151	145	737	95	137	121	73
21	132	120	272	1210	241	150	139	526	103	122	110	71
22	129	113	244	757	222	148	136	463	92	293	89	70
23	126	111	228	569	219	146	139	391	91	159	76	67
24	124	113	213	470	218	144	144	368	87	133	81	65
25	123	109	201	425	211	141	138	341	83	119	76	87
26	121	105	246	425	203	176	132	317	84	127	73	121
27	128	112	394	e324	202	199	128	251	80	131	67	92
28	164	155	648	e296	201	177	125	219	79	120	66	80
29	141	417	1130	e291	197	164	123	198	76	104	208	73
30	127	732	788	288	---	159	121	182	76	95	182	72
31	120	---	566	310	---	157	---	173	---	90	111	---
TOTAL	4687	4753	10675	11042	7836	5158	4566	8915	3422	3212	2859	2355
MEAN	151	158	344	356	270	166	152	288	114	104	92.2	78.5
MAX	216	732	1130	1210	384	199	221	737	188	293	208	121
MIN	120	104	171	155	197	141	121	117	76	64	64	65
CFSM	.40	.42	.92	.95	.72	.44	.41	.77	.30	.28	.25	.21
IN.	.46	.47	1.06	1.10	.78	.51	.45	.88	.34	.32	.28	.23

CAL YR 1987 TOTAL 159302 MEAN 436 MAX 10800 MIN 82 CFSM 1.16 IN. 15.80
WTR YR 1988 TOTAL 69480 MEAN 190 MAX 1210 MIN 64 CFSM .51 IN. 6.89

e Estimated.

01626000 SOUTH RIVER NEAR WAYNESBORO, VA

LOCATION.--Lat 38°03'27", long 78°54'30", Waynesboro City, Hydrologic Unit 02070005, on right bank 80 ft downstream from bridge on State Highway 664, 1.3 mi southwest of Waynesboro post office, and 2.4 mi downstream from Back Creek.
DRAINAGE AREA.--127 mi², of which 41 mi² are above flood-detention structures.
PERIOD OF RECORD.--October 1952 to current year.
REVISED RECORDS.--WSP 2103: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 1,296.20 ft above National Geodetic Vertical Datum of 1929.
REMARKS.--Records good. At a point 13.8 mi upstream from station, there is a diversion of about 2.3 ft³/s from Coles Run Reservoir, capacity 80,000,000 gal., by Augusta County Service Authority for industrial and municipal use. Flow from 41 mi² upstream from station slightly regulated by flood-detention reservoirs (sixteen of which were built by Soil Conservation Service between 1954 and 1961). 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 Water Control Board.
AVERAGE DISCHARGE.--36 years, 142 ft³/s, 15.18 in/yr.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,500 ft³/s, Nov. 4, 1985, gage height, 15.30 ft, from rating curve extended above 4,200 ft³/s on basis of contracted-opening measurement at gage height 13.95 ft; minimum, 7.0 ft³/s, July 18, 1966; minimum daily, 17 ft³/s, Aug. 8, 1966.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1942 reached a stage of 14.3 ft, from floodmarks, discharge, 14,500 ft³/s.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 18	1500	*1,310	*5.58	No other peak equal to or greater than base discharge.			

Minimum daily discharge, 28 ft³/s, Sept. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	43	369	133	128	89	110	74	132	34	41	34
2	64	43	261	125	126	87	106	72	123	34	40	32
3	61	44	208	117	137	87	100	75	146	34	39	31
4	58	44	181	114	145	88	102	78	131	34	39	34
5	57	44	155	105	149	91	96	85	114	33	37	45
6	55	43	134	92	141	84	93	154	103	32	37	36
7	55	43	121	90	133	82	125	285	98	31	37	33
8	54	42	111	e90	135	79	153	223	86	30	36	31
9	52	42	105	e89	131	79	182	181	81	30	35	29
10	50	62	105	88	126	80	166	158	86	32	35	30
11	50	87	193	84	121	77	148	141	78	32	35	29
12	51	65	175	85	126	75	139	134	73	42	35	29
13	50	60	154	87	115	77	142	120	68	50	33	29
14	48	60	139	84	107	75	128	109	64	40	33	30
15	48	60	164	77	112	74	119	100	61	36	34	29
16	48	56	175	76	128	72	112	95	58	35	34	28
17	47	63	159	78	117	71	105	161	56	34	32	29
18	47	127	146	106	111	70	104	846	55	33	31	29
19	45	118	138	113	110	70	103	775	54	34	33	29
20	44	102	135	297	118	69	96	574	51	46	40	29
21	43	87	128	331	112	68	91	424	49	42	36	29
22	43	77	117	258	105	67	92	353	47	53	32	29
23	41	69	111	216	104	66	92	297	44	52	31	29
24	41	63	103	188	105	65	94	272	42	49	31	29
25	41	60	101	180	100	64	89	320	41	45	31	33
26	44	59	112	173	97	102	84	307	40	55	29	33
27	47	66	121	e137	97	196	82	258	38	53	29	31
28	53	92	130	e132	95	161	80	222	37	49	29	29
29	48	692	157	127	92	141	78	193	36	45	67	29
30	46	627	141	124	---	128	76	167	35	42	55	29
31	44	---	135	130	---	118	---	148	---	41	38	---
TOTAL	1543	3140	4684	4126	3423	2752	3287	7401	2127	1232	1124	925
MEAN	49.8	105	151	133	118	88.8	110	239	70.9	39.7	36.3	30.8
MAX	68	692	369	331	149	196	182	846	146	55	67	45
MIN	41	42	101	76	92	64	76	72	35	30	29	28
CFSM	.39	.82	1.19	1.05	.93	.70	.86	1.88	.56	.31	.29	.24
IN.	.45	.92	1.37	1.21	1.00	.81	.96	2.17	.62	.36	.33	.27

CAL YR 1987 TOTAL 79155 MEAN 217 MAX 4400 MIN 36 CFSM 1.71 IN. 23.19
WTR YR 1988 TOTAL 35764 MEAN 97.7 MAX 846 MIN 28 CFSM .77 IN. 10.48

e Estimated.

01626850 SOUTH RIVER NEAR DOOMS, VA

LOCATION.--Lat 38°05'19", long 78°52'38", Augusta County, Hydrologic Unit 02070005, on left bank at downstream side of Hopeman Parkway Road bridge, 1.1 mi downstream from Steele Run, and 1.6 mi southwest of Dooms.

DRAINAGE AREA.--149 mi².

PERIOD OF RECORD.--April 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,247.04 ft above National Geodetic Vertical Datum of 1929 (Norfolk and Western Railway bench mark). Prior to Sept. 18, 1980, nonrecording gage at site 30 ft upstream at same datum.

REMARKS.--Records good except those for periods of no gage-height record, Jan. 6-13, 28, and Feb. 7, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--14 years, 204 ft³/s, 18.59 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,100 ft³/s, Nov. 4, 1985, gage height, 14.03 ft, from flood-marks, from rating curve extended above 8,100 ft³/s; minimum, 42 ft³/s, Aug. 29, 30, 1981, gage height, 2.17 ft.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1600	1,500	6.40	May 18	1600	*1,990	*7.34

Minimum discharge, 53 ft³/s, Aug. 16, 28, Sept. 16, 22, 23, 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	101	70	453	165	156	111	134	93	151	60	63	63
2	97	70	325	156	154	108	128	91	140	59	62	60
3	92	69	256	147	165	108	122	91	172	59	63	59
4	90	70	221	145	178	112	124	98	150	60	68	74
5	87	70	190	135	181	113	117	113	132	60	61	71
6	86	69	167	e125	172	106	119	196	120	58	60	66
7	85	68	151	e120	e162	103	155	312	112	57	60	60
8	82	69	140	e115	165	101	181	272	104	57	60	58
9	77	68	134	e112	158	100	210	217	100	63	59	58
10	76	108	143	e110	153	102	198	191	103	100	58	58
11	74	124	244	e108	147	99	177	166	100	65	58	58
12	78	104	217	e110	153	97	163	155	96	82	57	57
13	75	95	190	e112	140	100	165	143	93	81	58	56
14	74	94	171	112	131	96	151	128	90	70	57	57
15	74	93	205	105	140	94	141	119	85	65	63	56
16	75	87	214	105	155	94	132	114	79	63	57	56
17	74	95	195	106	142	92	126	154	76	62	57	56
18	73	149	180	133	135	92	124	1190	76	61	57	56
19	73	144	171	145	135	92	122	1010	76	65	67	56
20	73	130	167	368	144	91	116	706	75	73	76	56
21	72	119	158	401	137	90	110	498	72	86	63	56
22	72	108	147	316	130	89	110	408	71	78	59	55
23	72	101	141	265	129	88	113	343	71	96	60	55
24	71	96	132	229	127	87	113	335	68	77	59	60
25	71	92	128	223	124	86	107	384	67	70	58	65
26	72	89	143	210	120	130	103	355	68	101	57	60
27	86	104	150	172	119	222	101	298	66	81	56	57
28	79	143	168	e162	117	191	99	255	64	73	57	56
29	75	993	195	154	114	166	97	219	63	70	129	56
30	72	798	178	151	---	152	95	192	61	66	87	56
31	71	---	168	158	---	142	---	169	---	64	69	---
TOTAL	2429	4489	5842	5175	4183	3454	3953	9015	2801	2182	1975	1767
MEAN	78.4	150	188	167	144	111	132	291	93.4	70.4	63.7	58.9
MAX	101	993	453	401	181	222	210	1190	172	101	129	74
MIN	71	68	128	105	114	86	95	91	61	57	56	55
CFSM	.53	1.00	1.26	1.12	.97	.75	.88	1.95	.63	.47	.43	.40
IN.	.61	1.12	1.46	1.29	1.04	.86	.99	2.25	.70	.54	.49	.44

CAL YR 1987 TOTAL 96753 MEAN 265 MAX 5390 MIN 52 CFSM 1.78 IN. 24.16
WTR YR 1988 TOTAL 47265 MEAN 129 MAX 1190 MIN 55 CFSM .87 IN. 11.80

e Estimated.

01627500 SOUTH RIVER AT HARRISTON, VA

LOCATION.--Lat 38°13'07", long 78°50'13", Augusta County, Hydrologic Unit 02070005, on left bank 100 ft downstream from bridge on State Highway 778, 0.3 mi northwest of Harriston, 0.6 mi downstream from Paine Run, and 7.2 mi upstream from confluence with North River.

DRAINAGE AREA.--212 mi².

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

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

GAGE.--Water-stage recorder. Datum of gage is 1,129.87 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 1, 1938, nonrecording gage at same site and datum.

REMARKS.--Records good. 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 Water Control Board.

AVERAGE DISCHARGE.--46 years, 256 ft³/s, 16.40 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,100 ft³/s, Nov. 4, 1985, gage height, 15.47 ft, from rating curve extended above 10,000 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 17.2 ft, Oct. 15, 1942; minimum discharge, 17 ft³/s, Nov. 14, 1941.

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

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1930	1,610	5.95	May 18	2230	*2,300	*6.86

Minimum daily discharge, 62 ft³/s, Sept. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	134	95	564	216	221	165	188	131	206	71	86	78
2	128	94	394	206	220	162	182	129	194	71	84	73
3	124	93	310	193	233	160	175	127	222	70	83	70
4	120	93	271	188	244	163	175	137	207	70	96	90
5	116	92	236	179	250	168	169	157	185	68	83	90
6	115	91	210	158	244	158	163	301	167	67	80	83
7	114	90	191	157	232	154	209	483	152	65	79	74
8	112	90	178	e157	237	150	231	374	147	63	78	70
9	109	91	170	e155	230	148	251	302	140	63	76	68
10	107	125	166	e146	223	151	255	267	141	92	73	68
11	106	156	271	e143	215	147	235	241	139	117	74	67
12	108	134	267	e141	222	142	221	219	130	110	72	67
13	106	122	236	149	211	146	221	211	124	113	72	66
14	104	120	217	142	196	144	208	191	119	95	71	65
15	102	119	244	136	200	140	197	179	113	84	70	66
16	100	116	263	132	219	138	187	170	105	79	79	63
17	100	116	245	136	209	136	179	166	100	77	69	66
18	100	157	228	158	198	133	174	1060	99	76	68	66
19	98	176	217	176	196	135	174	1490	97	77	72	65
20	99	160	211	352	205	133	167	974	97	90	108	65
21	100	147	202	463	201	131	158	661	93	106	89	65
22	98	134	189	375	191	130	156	512	89	123	75	62
23	97	126	180	325	189	126	159	419	88	114	72	63
24	98	121	171	292	187	125	163	398	86	116	78	65
25	96	117	164	282	182	124	154	426	81	97	71	86
26	97	114	177	278	180	153	147	411	84	133	69	74
27	106	126	189	244	176	248	143	353	80	135	68	69
28	120	146	209	233	174	240	141	310	77	108	69	66
29	105	873	253	221	170	219	139	275	76	100	144	65
30	98	1020	237	217	---	207	136	249	74	92	127	63
31	97	---	223	222	---	197	---	225	---	88	91	---
TOTAL	3314	5254	7283	6572	6055	4873	5457	11548	3712	2830	2526	2098
MEAN	107	175	235	212	209	157	182	373	124	91.3	81.5	69.9
MAX	134	1020	564	463	250	248	255	1490	222	135	144	90
MIN	96	90	164	132	170	124	136	127	74	63	68	62
CFSM	.50	.83	1.11	1.00	.98	.74	.86	1.76	.58	.43	.38	.33
IN.	.58	.92	1.28	1.15	1.06	.86	.96	2.03	.65	.50	.44	.37

CAL YR 1987 TOTAL 117466 MEAN 322 MAX 7100 MIN 65 CFSM 1.52 IN. 20.61
WTR YR 1988 TOTAL 61522 MEAN 168 MAX 1490 MIN 62 CFSM .79 IN. 10.80

e Estimated.

01628060 WHITE OAK RUN NEAR GROTTOES, VA

LOCATION.--Lat 38°15'01", long 78°44'57", Rockingham County, Hydrologic Unit 02070005, Shenandoah National Park, on left bank 700 ft upstream from Madison Run, 0.2 mi south of Madison Run Forest Trail, 1.4 mi upstream from southwest boundary of Shenandoah National Park, and 4.3 mi southeast of Grottoes.

DRAINAGE AREA.--1.94 mi^2.

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

REVISED RECORDS.--WDR VA-85-1: 1983-84(P).

GAGE.--Water-stage recorder. Elevation of gage is 1,480 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--9 years, 2.40 ft^3/s, 16.80 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 515 ft^3/s, Nov. 4, 1985, gage height, 6.17 ft, from floodmarks; no flow many days in 1980-88.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 30 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov. 29	1445	44	2.35	May 18	2145	*140	*3.38
May 6	1630	67	2.62	May 20	0045	53	2.46

No flow many days in July, August, and September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.13	.04	8.7	3.3	.94	.46	2.1	.31	1.3	.01	e.01	.00
2	.12	.03	5.2	2.6	.95	.42	1.9	.27	1.2	.00	e.01	.00
3	.11	.02	3.1	2.0	1.1	.40	1.7	.25	1.5	.00	e.01	.00
4	.10	.02	2.5	1.9	1.7	.42	1.6	.24	.99	.00	.00	.03
5	.08	.02	1.8	1.5	2.6	.45	1.5	.90	.77	.00	.00	.32
6	.07	.02	1.3	1.1	3.4	.36	1.4	44	.61	.00	.00	.19
7	.08	.02	.88	.95	3.4	.33	2.6	34	.51	.00	.00	.02
8	.07	.02	.68	.85	3.1	.32	3.9	16	.43	.00	.00	.00
9	.06	.02	.60	.80	2.6	.30	5.5	9.2	.39	.00	.00	.00
10	.05	.04	.57	.66	2.2	.32	5.5	6.1	.42	.00	.00	.00
11	.05	.17	.92	.51	1.8	.33	5.0	4.3	.32	.00	.00	.00
12	.05	.20	.92	.42	1.7	.31	4.2	3.2	.26	.01	.00	.00
13	.05	.18	.86	.42	1.5	.35	3.5	2.6	.21	.02	.00	.00
14	.05	.18	.73	.40	1.1	.37	2.8	2.1	.16	.01	.00	.00
15	.04	.31	1.4	.32	.97	.37	2.4	1.8	.13	.01	.00	.00
16	.04	.32	2.5	.29	1.1	.36	1.9	1.5	.11	.00	.00	.00
17	.03	.28	2.7	.27	.82	.34	1.5	1.5	.15	.00	.00	.00
18	.03	.27	2.6	.34	.74	.33	1.5	57	.19	.00	.00	.00
19	.02	.27	2.4	.37	.70	.33	1.4	70	.15	.00	.00	.00
20	.03	.27	2.2	4.7	.85	.35	1.1	37	.12	.01	.00	.00
21	.02	.27	1.8	6.3	.83	.37	.91	21	.09	.02	.00	.00
22	.03	.26	1.4	5.1	.74	.32	.80	15	.07	.12	.00	.00
23	.03	.24	1.1	4.1	.74	.28	.68	9.5	.06	.05	.00	.00
24	.03	.24	.85	3.2	.71	.26	.66	7.7	.05	.04	.00	.00
25	.02	.24	.74	2.7	.65	.24	.57	6.0	.04	.05	.00	.00
26	.02	.24	.86	2.4	.60	.60	.47	4.7	.03	.06	.00	.00
27	.04	.28	.92	1.8	.58	1.8	.43	3.9	.03	.07	.00	.00
28	.10	.53	2.0	1.4	.56	2.3	.40	3.2	.02	.05	.00	.00
29	.11	23	5.2	1.2	.50	2.5	.37	2.7	.01	.03	.05	.00
30	.08	19	4.5	1.1	---	2.6	.33	2.2	.01	.01	.43	.00
31	.06	---	3.9	1.0	---	2.3	---	1.7	---	e.01	.11	---
TOTAL	1.80	47.00	65.83	54.00	39.18	20.79	58.62	369.87	10.33	0.58	0.62	0.56
MEAN	.058	1.57	2.12	1.74	1.35	.67	1.95	11.9	.34	.019	.020	.019
MAX	.13	23	8.7	6.3	3.4	2.6	5.5	70	1.5	.12	.43	.32
MIN	.02	.02	.57	.27	.50	.24	.33	.24	.01	.00	.00	.00
CFSM	.03	.81	1.09	.90	.70	.35	1.01	6.15	.18	.01	.01	.01
IN.	.03	.90	1.26	1.04	.75	.40	1.12	7.09	.20	.01	.01	.01

CAL YR 1987 TOTAL 1008.19 MEAN 2.76 MAX 97 MIN .00 CFSM 1.42 IN. 19.33
WTR YR 1988 TOTAL 669.18 MEAN 1.83 MAX 70 MIN .00 CFSM .94 IN. 12.83

e Estimated.

01628500 SOUTH FORK SHENANDOAH RIVER NEAR LYNNWOOD, VA

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

DRAINAGE AREA.--1,084 mi².

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

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

GAGE.--Water-stage recorder. Datum of gage is 1,013.17 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 7-14, which is fair. Diurnal fluctuation at low flow prior to 1960 caused by mill at Lynnwood. National Weather Service rain gage and gage-height telemeters 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.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--58 years, 1,004 ft³/s, 12.58 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 95,100 ft³/s, Nov. 5, 1985, gage height, 29.46 ft, from floodmarks, from rating curve extended above 22,000 ft³/s on basis of computations of flow over dam at gage heights 23.60 ft and 27.2 ft; minimum, 32 ft³/s, Sept. 20, 1932, gage height, 1.63 ft; minimum daily, 93 ft³/s, Sept. 21, 29, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1870, that of Nov. 5, 1985.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 19	0230	*5,050	*7.41	No peak equal to or greater than base discharge.			

Minimum discharge, 183 ft³/s, Sept. 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	592	355	2550	1440	909	558	505	408	704	242	285	284
2	562	351	1830	1260	883	540	499	399	679	242	275	255
3	540	347	1380	1100	1010	536	494	392	738	234	262	240
4	533	343	1120	1010	1050	543	496	394	763	234	278	264
5	505	337	942	925	1110	564	499	441	673	234	312	331
6	498	329	821	791	1090	532	488	1450	629	225	274	288
7	491	328	739	e750	e1000	515	594	4140	505	215	308	261
8	477	325	677	e730	e980	504	684	3090	468	212	324	234
9	464	325	641	e700	974	499	668	2170	448	211	274	227
10	450	365	620	e680	920	504	695	1670	459	220	247	228
11	444	596	768	e650	870	490	694	1310	442	291	237	223
12	444	491	794	e660	853	481	674	1040	420	356	232	218
13	450	443	708	e665	806	482	667	860	404	442	237	214
14	424	426	658	e640	736	484	634	744	388	368	223	213
15	412	410	818	600	740	472	598	684	370	301	222	204
16	408	393	1150	572	793	462	563	653	351	278	227	198
17	404	387	1160	570	758	456	537	712	352	261	202	195
18	398	473	1070	667	709	449	522	1940	363	265	199	204
19	393	494	971	761	691	449	519	4270	343	308	201	203
20	386	465	933	2460	719	445	497	3570	335	391	309	211
21	381	445	901	3260	700	442	475	3190	333	413	372	207
22	374	429	832	2410	660	435	460	2870	315	622	284	196
23	363	432	801	1930	645	425	460	2250	302	465	251	191
24	363	426	759	1610	637	424	480	1970	308	461	255	191
25	363	416	728	1420	619	416	454	1750	287	396	254	305
26	359	411	823	1380	604	471	444	1530	287	404	238	338
27	374	430	1040	1120	590	615	442	1230	280	470	225	259
28	451	500	1520	997	588	591	438	1050	269	400	220	229
29	405	1350	2680	934	577	541	425	931	260	356	450	214
30	376	3360	2060	888	---	520	413	859	255	326	597	202
31	361	---	1640	905	---	513	---	804	---	302	355	---
TOTAL	13445	16182	34134	34485	23221	15358	16018	48771	12730	10145	8629	7027
MEAN	434	539	1101	1112	801	495	534	1573	424	327	278	234
MAX	592	3360	2680	3260	1110	615	695	4270	763	622	597	338
MIN	359	325	620	570	577	416	413	392	255	211	199	191
CFSM	.40	.50	1.02	1.03	.74	.46	.49	1.45	.39	.30	.26	.22
IN.	.46	.56	1.17	1.18	.80	.53	.55	1.67	.44	.35	.30	.24

CAL YR 1987 TOTAL 492605 MEAN 1350 MAX 29800 MIN 243 CFSM 1.25 IN. 16.90
WTR YR 1988 TOTAL 240145 MEAN 656 MAX 4270 MIN 191 CFSM .61 IN. 8.24

e Estimated.

01629500 SOUTH FORK SHENANDOAH RIVER NEAR LURAY, VA

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

DRAINAGE AREA.--1,377 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 721.76 ft above National Geodetic Vertical Datum of 1929. April 1925 to September 1930, nonrecording gage at same site and datum.

REMARKS.--Records good except for period with ice effect, Jan. 6-16, which is fair. Diurnal fluctuation at low and medium flow caused by powerplant 10 mi upstream from station. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--27 years, 1,321 ft³/s, 13.03 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 110,000 ft³/s, Nov. 5, 1985, gage height, 26.72 ft; minimum, 70 ft³/s, Sept. 27, 1941, gage height, 2.15 ft; minimum daily, 135 ft³/s, Sept. 16, 1925, Sept. 28, 1930.

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

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 19	1030	*7,870	*7.69	No peak equal to or greater than base discharge.			

Minimum discharge, 236 ft³/s, Sept. 22; minimum daily, 265 ft³/s, Aug. 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	777	468	4090	2030	1250	797	758	581	1010	381	368	407
2	736	458	2880	1820	1260	777	746	560	920	345	368	361
3	659	456	2180	1610	1380	761	735	578	935	357	339	343
4	650	451	1770	1470	1500	771	736	568	979	352	332	354
5	651	452	1500	1370	1550	808	729	664	919	348	324	364
6	627	446	1300	e1100	1540	797	720	3130	778	350	364	393
7	589	432	1130	e1000	1460	764	919	6240	744	335	341	378
8	606	433	1060	e990	1410	743	1150	4970	687	318	336	352
9	552	442	989	e980	1390	735	1210	3440	680	312	347	336
10	561	466	908	e960	1310	727	1130	2590	629	319	325	332
11	551	562	943	e910	1240	729	1100	2070	638	337	311	332
12	535	764	1150	e920	1200	714	1040	1670	600	385	291	326
13	540	622	1070	e930	1160	699	982	1370	605	431	294	319
14	529	566	982	e930	1070	699	942	1180	569	528	296	308
15	511	568	1040	e880	1030	696	886	1050	552	441	296	312
16	507	562	1450	e820	1080	680	824	949	520	372	306	306
17	499	556	1610	792	1090	668	795	1020	526	395	265	307
18	496	568	1550	832	1030	665	754	1470	512	310	271	308
19	492	660	1420	967	962	636	738	6810	518	348	293	305
20	488	657	1340	1790	988	648	725	5590	508	381	301	307
21	481	604	1300	4370	1000	645	696	4990	500	430	335	300
22	475	576	1230	3380	954	639	665	4660	484	528	401	307
23	459	564	1150	2660	911	637	652	3610	459	645	358	305
24	458	565	1100	2210	901	617	660	3180	447	507	328	305
25	457	558	1080	1950	878	599	667	2700	421	500	320	343
26	461	543	1080	1870	860	663	643	2400	423	466	321	363
27	468	552	1300	1630	828	882	606	1960	422	402	309	417
28	524	588	1630	1410	824	987	617	1650	408	476	317	384
29	573	1510	3050	1320	811	878	609	1440	401	434	367	313
30	510	4910	3060	1230	---	826	595	1260	383	409	481	316
31	481	---	2350	1220	---	788	---	1130	---	384	595	---
TOTAL	16903	21559	48692	46351	32867	22675	24029	75480	18177	12526	10500	10103
MEAN	545	719	1571	1495	1133	731	801	2435	606	404	339	337
MAX	777	4910	4090	4370	1550	987	1210	6810	1010	645	595	417
MIN	457	432	908	792	811	599	595	560	383	310	265	300
CFSM	.40	.52	1.14	1.09	.82	.53	.58	1.77	.44	.29	.25	.24
IN.	.46	.58	1.32	1.25	.89	.61	.65	2.04	.49	.34	.28	.27

CAL YR 1987 TOTAL 641639 MEAN 1758 MAX 39800 MIN 328 CFSM 1.28 IN. 17.33
WTR YR 1988 TOTAL 339862 MEAN 929 MAX 6810 MIN 265 CFSM .67 IN. 9.18

e Estimated.

01631000 SOUTH FORK SHENANDOAH RIVER AT FRONT ROYAL, VA

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

DRAINAGE AREA.--1,642 mi².

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

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

GAGE.--Water-stage recorder. Datum of gage is 469.38 ft above National Geodetic Vertical Datum 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. 6-17, which is fair. Large diurnal fluctuation at low and medium flow caused by powerplants upstream from station prior to 1954; occasional large diurnal fluctuation thereafter. National Weather Service gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--65 years, 1,597 ft³/s, 13.21 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 130,000 ft³/s, Oct. 16, 1942, gage height, 34.8 ft, from floodmark in gage well, from rating curve extended above 92,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 59 ft³/s, Jan. 30, 1934, gage height, 0.56 ft; minimum daily, 103 ft³/s, Sept. 30, 1930.

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

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 7	2045	*7,850	*6.18	No peak equal to or greater than base discharge.			

Minimum discharge, 248 ft³/s, Aug. 31; minimum daily, 302 ft³/s, Sept. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	849	544	5430	2520	1380	956	988	682	1300	459	433	838
2	888	534	4010	2160	1420	915	965	679	1220	443	423	523
3	790	532	2980	1890	1620	941	942	656	1140	408	415	481
4	752	526	2280	1680	1780	921	927	678	1120	412	413	440
5	720	517	1810	1480	1810	1110	920	796	1140	409	386	486
6	675	517	1490	e1390	1800	1050	914	3530	1090	401	426	452
7	716	502	1370	e1340	1710	1030	1330	7510	933	396	449	450
8	647	495	1060	e1300	1620	974	1900	6580	912	397	441	493
9	656	496	1090	e1260	1550	961	1980	4650	875	366	407	425
10	585	556	1030	e1200	1540	953	1760	3470	876	355	414	392
11	654	606	964	e1160	1430	913	1530	2760	838	360	416	360
12	630	639	1000	e1120	1390	919	1490	2230	770	401	392	352
13	551	850	1160	e1080	1360	920	1290	1880	755	390	369	354
14	592	751	1080	e1120	1230	888	1240	1570	742	432	362	353
15	599	660	1070	e1100	1220	885	1190	1330	714	520	362	344
16	571	685	1200	e1030	1240	880	1050	1280	676	509	370	302
17	572	688	1550	e921	1150	850	1020	1220	682	381	358	347
18	564	701	1700	976	1230	827	992	1520	638	364	376	355
19	563	711	1560	1070	1170	828	954	4010	629	382	382	360
20	582	755	1460	1490	1130	815	872	6250	626	365	395	362
21	597	779	1380	3400	1140	806	886	5630	615	399	387	364
22	548	704	1330	4300	1130	809	815	4960	597	390	369	361
23	531	686	1260	3360	1120	803	816	4680	582	481	452	370
24	531	678	1190	2770	1040	810	796	4760	554	619	466	385
25	519	670	1130	2360	1030	794	780	3600	537	549	392	424
26	512	667	1200	2160	1010	814	782	2940	501	536	380	471
27	534	676	1240	2040	998	940	759	2560	489	557	389	458
28	599	703	1470	2020	960	1160	735	2120	499	452	417	576
29	578	1230	2290	2010	958	1270	710	1840	488	476	432	488
30	625	4350	3730	1680	---	1100	715	1580	465	477	677	419
31	584	---	3090	1370	---	1050	---	1380	---	451	333	---
TOTAL	19314	23408	54604	54757	38166	28892	32048	89331	23003	13537	12683	12785
MEAN	623	780	1761	1766	1316	932	1068	2882	767	437	409	426
MAX	888	4350	5430	4300	1810	1270	1980	7510	1300	619	677	838
MIN	512	495	964	921	958	794	710	656	465	355	333	302
CFSM	.38	.48	1.07	1.08	.80	.57	.65	1.75	.47	.27	.25	.26
IN.	.44	.53	1.24	1.24	.86	.65	.73	2.02	.52	.31	.29	.29

CAL YR 1987 TOTAL 711049 MEAN 1948 MAX 43700 MIN 350 CFSM 1.19 IN. 16.11
WTR YR 1988 TOTAL 402528 MEAN 1100 MAX 7510 MIN 302 CFSM .67 IN. 9.12

e Estimated.

01632000 NORTH FORK SHENANDOAH RIVER AT COOTES STORE, VA

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

DRAINAGE AREA.--210 mi².

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

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

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

REMARKS.--Records good except those for periods of doubtful gage-height record, Oct. 12, 14-20, Oct. 31 to Nov. 2, Nov. 4, Aug. 19-28, and Sept. 16-24, 29, 30, and periods with ice effect, Jan. 7-11, 15-18, which are fair. 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.

AVERAGE DISCHARGE.--63 years, 193 ft³/s, 12.48 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,000 ft³/s, Oct. 15, 1942, gage height, 25.3 ft, from flood-mark, from rating curve extended above 9,000 ft³/s on basis of contracted-opening measurement of peak flow; minimum, 0.20 ft³/s, Aug. 28, 29, Sept. 4, 1957, Sept. 7-10, 1966; minimum gage height, 1.74 ft, Sept. 7-10, 1966.

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

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 6	1400	*7,580	*10.94	May 19	0415	3,620	7.58

Minimum discharge, 0.73 ft³/s, Aug. 15, Sept. 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	e12	557	267	162	46	67	45	110	9.9	4.4	2.1
2	29	e12	334	216	196	45	68	43	98	9.1	3.9	2.1
3	26	11	232	179	416	44	67	41	118	8.3	3.5	1.7
4	23	e10	185	160	473	54	68	42	98	7.4	3.2	2.3
5	21	10	150	139	392	114	66	363	78	6.6	2.8	1.7
6	19	9.4	126	118	304	117	65	5430	62	5.8	2.7	1.5
7	18	9.2	107	e110	241	125	174	2780	53	4.9	3.1	1.4
8	16	9.1	93	e103	223	122	317	1160	46	4.4	2.1	1.2
9	15	9.0	82	e99	188	118	360	622	45	4.1	2.2	.95
10	14	16	75	e92	164	118	317	430	46	3.7	2.0	.98
11	13	30	72	e86	145	111	262	317	39	3.7	1.9	.97
12	e12	31	66	102	135	100	220	241	34	3.8	1.8	1.1
13	13	35	60	85	114	96	187	196	30	4.3	1.6	1.2
14	e11	37	55	62	98	92	159	168	27	3.9	1.6	1.2
15	e11	43	97	e57	104	87	143	157	25	3.2	1.6	1.2
16	e11	40	146	e52	98	79	125	174	23	2.9	1.4	e1.2
17	e11	39	151	e50	85	71	111	166	23	2.8	1.5	e1.3
18	e10	63	145	e49	77	65	104	711	25	2.6	2.1	e1.3
19	e10	61	136	67	73	63	105	2620	22	4.3	e1.8	e1.2
20	e10	56	148	1190	77	61	94	1350	25	6.3	e1.7	e1.2
21	13	51	172	857	73	59	80	1280	23	4.0	e1.6	e1.1
22	12	49	178	547	61	54	73	923	21	4.8	e1.5	e1.1
23	11	47	171	389	62	50	68	946	20	4.7	e1.5	e1.1
24	11	43	152	298	58	47	66	1270	18	5.4	e1.7	e1.4
25	10	40	139	251	54	45	62	805	17	4.8	e1.6	2.8
26	9.9	37	172	217	51	56	57	577	15	5.8	e1.4	1.8
27	11	42	230	168	51	66	53	396	15	6.0	e1.3	1.5
28	15	61	350	151	50	63	52	289	13	6.0	e1.2	1.3
29	14	761	602	139	48	61	50	218	12	5.8	3.6	e1.3
30	13	1140	438	129	---	63	48	169	10	5.3	2.4	e1.2
31	e13	---	329	141	---	66	---	136	---	4.7	2.2	---
TOTAL	460.9	2813.7	5950	6570	4273	2358	3688	24065	1191	159.3	66.9	42.40
MEAN	14.9	93.8	192	212	147	76.1	123	776	39.7	5.14	2.16	1.41
MAX	35	1140	602	1190	473	125	360	5430	118	9.9	4.4	2.8
MIN	9.9	9.0	55	49	48	44	48	41	10	2.6	1.2	.95
CFSM	.07	.45	.91	1.01	.70	.36	.59	3.70	.19	.02	.01	.01
IN.	.08	.50	1.05	1.16	.76	.42	.65	4.26	.21	.03	.01	.01

CAL YR 1987 TOTAL 90091.48 MEAN 247 MAX 7410 MIN .89 CFSM 1.18 IN. 15.96
WTR YR 1988 TOTAL 51638.20 MEAN 141 MAX 5430 MIN .95 CFSM .67 IN. 9.15

e Estimated.

01632082 LINVILLE CREEK AT BROADWAY, VA

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

DRAINAGE AREA.--45.5 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 1,029.90 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for period of no gage-height record, Jan. 7, 8, which is fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,160 ft³/s, Nov. 4, 1985, gage height, 6.22 ft; minimum, 2.8 ft³/s, Sept. 13, 14, 17, 1986.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1530	297	2.56	May 18	2400	385	2.80
Jan. 20	0615	*421	*2.89				

Minimum daily discharge, 5.1 ft³/s, Sept. 22, 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	14	68	60	45	20	18	11	46	7.4	7.9	6.4
2	31	14	56	54	55	19	18	10	43	7.2	7.1	6.0
3	30	13	50	50	77	20	17	10	40	7.4	6.6	5.9
4	27	13	46	48	68	23	18	11	35	7.4	6.6	9.5
5	26	13	40	42	60	22	17	19	33	7.5	6.7	9.1
6	26	12	37	e40	53	21	17	70	31	7.4	6.9	7.4
7	25	12	34	e37	49	20	26	46	28	7.6	7.7	6.8
8	23	13	32	e36	47	19	21	30	26	7.8	6.9	6.5
9	21	13	30	34	44	19	19	26	26	7.7	6.7	6.4
10	20	21	29	e33	41	19	18	23	22	7.4	6.2	6.6
11	20	21	31	e32	39	18	18	22	20	8.0	6.6	6.3
12	20	17	28	34	39	18	18	20	19	8.9	6.9	6.2
13	18	18	25	29	35	18	18	19	18	9.8	7.3	6.1
14	17	18	25	26	35	17	17	19	17	8.8	7.4	6.9
15	17	16	53	24	33	17	16	21	16	7.9	7.2	5.6
16	17	15	53	24	33	17	15	21	16	6.9	6.3	5.7
17	16	17	46	24	30	17	15	26	16	7.0	6.4	5.8
18	16	24	41	42	29	16	15	83	17	7.6	6.3	6.0
19	16	20	39	33	30	16	15	162	17	8.9	6.4	5.6
20	16	18	39	214	30	16	15	79	15	9.1	7.7	5.7
21	17	16	36	89	27	16	14	73	14	9.3	8.2	5.6
22	14	14	34	72	26	16	14	65	13	10	7.5	5.1
23	14	14	33	63	25	16	14	59	12	11	7.0	5.1
24	13	13	30	57	25	16	14	67	12	11	8.1	6.2
25	13	13	30	56	23	16	13	79	11	9.1	6.8	13
26	14	12	43	51	22	20	13	65	10	10	6.2	11
27	16	17	47	47	22	19	12	58	8.9	10	5.7	8.1
28	19	20	94	43	21	18	12	54	8.8	10	5.6	6.7
29	15	109	99	40	20	17	11	52	8.2	9.5	12	6.4
30	14	92	74	40	---	17	11	48	7.6	8.9	8.0	6.5
31	14	---	66	43	---	17	---	47	---	7.8	6.6	---
TOTAL	599	642	1388	1517	1083	560	479	1395	606.5	264.3	219.5	204.2
MEAN	19.3	21.4	44.8	48.9	37.3	18.1	16.0	45.0	20.2	8.53	7.08	6.81
MAX	34	109	99	214	77	23	26	162	46	11	12	13
MIN	13	12	25	24	20	16	11	10	7.6	6.9	5.6	5.1
CFSM	.42	.47	.98	1.08	.82	.40	.35	.99	.44	.19	.16	.15
IN.	.49	.52	1.13	1.24	.89	.46	.39	1.14	.50	.22	.18	.17

CAL YR 1987 TOTAL 16575.6 MEAN 45.4 MAX 752 MIN 7.1 CFSM 1.00 IN. 13.55
WTR YR 1988 TOTAL 8957.5 MEAN 24.5 MAX 214 MIN 5.1 CFSM .54 IN. 7.32

e Estimated.

01632900 SMITH CREEK NEAR NEW MARKET, VA

LOCATION.--Lat 38°41'36", long 78°38'35", Shenandoah County, Hydrologic Unit 02070006, on left bank 25 ft upstream from bridge on State Highway 616, 3.6 mi north of New Market, and 4.4 mi upstream from mouth.

DRAINAGE AREA.--93.2 mi².

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

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 881.50 ft above National Geodetic Vertical Datum 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. 6-12, 14-16, 28, 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 Water Control Board.

AVERAGE DISCHARGE.--28 years, 73.0 ft³/s, 10.64 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,600 ft³/s, Oct. 6, 1972, gage height, 16.38 ft, from rating curve extended above 2,300 ft³/s on basis of contracted-opening measurement of peak flow; minimum, 4.5 ft³/s, Feb. 9, 1981, result of freezeup.

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

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 6	1600	1,080	6.41	May 19	0800	*2,910	*10.06
May 17	1730	978	6.06	May 24	0730	651	4.97

Minimum discharge, 10 ft³/s, Sept. 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	31	111	96	76	49	37	29	87	31	20	15
2	40	30	87	86	90	47	37	28	86	30	19	14
3	40	30	75	79	151	47	36	28	93	31	16	13
4	39	30	70	76	123	55	37	29	82	30	17	17
5	38	29	64	70	105	67	35	60	75	28	16	20
6	37	28	59	e66	91	56	36	739	69	27	17	16
7	37	28	56	e62	82	52	95	389	65	27	22	14
8	37	29	53	e60	80	50	88	187	61	26	18	14
9	36	28	51	e58	76	49	80	135	65	26	15	13
10	36	34	50	e58	73	49	68	111	67	26	15	13
11	36	42	53	e60	70	47	60	95	58	27	15	13
12	35	34	51	e61	71	46	56	84	54	27	15	12
13	34	34	48	63	66	46	52	73	52	28	15	12
14	34	40	46	e56	62	44	49	67	50	27	14	13
15	34	38	72	e53	62	44	46	64	47	26	13	12
16	33	34	87	e50	69	42	44	60	46	24	13	11
17	33	32	72	53	63	41	41	256	47	22	13	12
18	32	35	65	58	60	40	41	503	47	21	14	13
19	32	34	61	55	61	41	42	1640	44	22	18	13
20	32	32	63	258	67	39	39	445	44	28	19	12
21	36	30	60	173	62	39	37	355	42	25	20	12
22	32	28	57	121	57	38	35	253	39	26	17	12
23	31	28	55	103	56	38	35	192	36	24	16	11
24	31	27	53	91	56	37	35	419	35	26	17	13
25	30	26	52	88	54	36	34	302	35	24	15	28
26	30	25	74	88	53	45	32	204	34	26	14	25
27	32	28	84	76	53	49	31	163	33	27	14	18
28	42	32	119	e74	52	44	31	138	32	26	13	15
29	35	158	191	69	50	41	31	120	32	23	23	14
30	32	210	125	70	---	39	30	106	32	22	24	14
31	31	---	104	76	---	39	---	95	---	21	18	---
TOTAL	1080	1244	2268	2507	2091	1396	1350	7369	1589	804	515	434
MEAN	34.8	41.5	73.2	80.9	72.1	45.0	45.0	238	53.0	25.9	16.6	14.5
MAX	43	210	191	258	151	67	95	1640	93	31	24	28
MIN	30	25	46	50	50	36	30	28	32	21	13	11
CFSM	.37	.44	.78	.87	.77	.48	.48	2.55	.57	.28	.18	.16
IN.	.43	.50	.91	1.00	.83	.56	.54	2.94	.63	.32	.21	.17

CAL YR 1987 TOTAL 31849 MEAN 87.3 MAX 2770 MIN 15 CFSM .94 IN. 12.71
WTR YR 1988 TOTAL 22647 MEAN 61.9 MAX 1640 MIN 11 CFSM .66 IN. 9.04

e Estimated.

01633000 NORTH FORK SHENANDOAH RIVER AT MOUNT JACKSON, VA

LOCATION.--Lat 38°44'43", long 78°38'21", Shenandoah County, Hydrologic Unit 02070006, on right bank at upstream side of bridge on State Highway 698 at Mount Jackson and 0.4 mi downstream from Mill Creek.
DRAINAGE AREA.--506 mi².
PERIOD OF RECORD.--October 1943 to current year.
REVISED RECORDS.--WSP 1382: 1945, 1948-50(M), 1951-53(P), 1954(M). WSP 2103: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 838.55 ft above National Geodetic Vertical Datum 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. 6-12, 28-30, which are fair. Some diversion during low flow by irrigation at points 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 Water Control Board.
AVERAGE DISCHARGE.--45 years, 389 ft³/s, 10.44 in/yr.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,800 ft³/s, Nov. 5, 1985, gage height, 17.79 ft, from rating curve extended above 19,000 ft³/s on basis of peak runoff for stations at Cootes Store and near Strasburg; maximum gage height, 18.10 ft, Oct. 6, 1972; minimum discharge observed, 7.0 ft³/s, Sept. 3, 1966, gage height, 1.97 ft.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1942 reached a stage of 20.2 ft, from floodmarks, discharge, about 80,000 ft³/s, from rating curve extended above 18,000 ft³/s on basis of peak runoff for flood in October 1942 for stations at Cootes Store and near Strasburg.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 5,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 6	1800	*12,500	*12.74	May 19	0830	8,120	10.59

Minimum discharge, 19 ft³/s, Aug. 17, 18, 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	167	88	1050	596	380	175	165	116	356	73	45	37
2	149	87	673	506	426	170	164	112	331	72	43	33
3	141	84	497	431	803	168	162	108	360	72	38	32
4	131	84	411	389	889	188	164	110	324	71	35	44
5	123	83	346	348	785	284	160	164	285	63	36	54
6	120	78	296	e300	638	285	160	7830	254	60	35	47
7	116	78	259	e280	531	278	337	5100	229	57	44	39
8	113	80	233	e270	506	272	517	1880	210	55	41	36
9	106	81	215	e260	449	263	565	1090	206	53	36	35
10	102	96	203	e250	406	260	519	777	218	53	32	36
11	101	151	204	e240	370	247	442	611	190	57	31	39
12	97	136	192	e260	355	234	377	492	174	62	30	34
13	93	133	178	244	318	226	331	404	162	61	27	35
14	90	147	167	212	277	217	290	350	152	58	27	34
15	90	147	221	190	295	210	264	319	143	57	26	32
16	88	142	356	179	291	200	238	323	135	52	25	30
17	86	131	344	185	267	189	217	538	137	49	21	30
18	84	156	321	199	251	180	205	1250	145	52	21	33
19	83	172	301	210	243	175	205	5990	134	55	33	33
20	82	160	310	1860	256	170	192	2460	134	57	39	33
21	93	148	332	1660	244	166	175	2220	127	64	42	29
22	83	138	340	1060	224	160	160	1760	116	57	38	28
23	79	134	335	788	217	153	154	1300	107	55	33	28
24	77	128	310	639	213	147	150	2560	105	59	33	33
25	76	122	288	561	203	141	145	1740	96	59	30	61
26	79	116	341	522	195	162	136	1270	91	57	29	73
27	85	122	460	407	191	185	131	916	85	63	25	54
28	114	153	573	e343	188	175	128	711	81	62	27	42
29	104	634	1180	e331	182	166	125	579	79	56	51	39
30	92	2090	892	e330	---	161	120	482	77	51	63	38
31	88	---	696	351	---	164	---	410	---	48	45	---
TOTAL	3132	6099	12524	14401	10593	6171	7098	43972	5243	1820	1081	1147
MEAN	101	203	404	465	365	199	237	1418	175	58.7	34.9	38.2
MAX	167	2090	1180	1860	889	285	565	7830	360	73	63	73
MIN	76	78	167	179	182	141	120	108	77	48	21	28
CFSM	.20	.40	.80	.92	.72	.39	.47	2.80	.35	.12	.07	.08
IN.	.23	.45	.92	1.06	.78	.45	.52	3.23	.39	.13	.08	.08

CAL YR 1987 TOTAL 182022 MEAN 499 MAX 15800 MIN 37 CFSM .99 IN. 13.38
WTR YR 1988 TOTAL 113281 MEAN 310 MAX 7830 MIN 21 CFSM .61 IN. 8.33

e Estimated.

01634000 NORTH FORK SHENANDOAH RIVER NEAR STRASBURG, VA

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

DRAINAGE AREA.--768 mi².

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

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

GAGE.--Water-stage recorder. Datum of gage is 494.03 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 21, 1930, nonrecording gage at same site and datum.

REMARKS.--Records good except for period with ice effect, Jan. 7-19, which is fair. Large diurnal fluctuation at low and medium flow from unknown cause. 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.

AVERAGE DISCHARGE.--63 years, 586 ft³/s, 10.36 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 100,000 ft³/s, Oct. 16, 1942, gage height, 31.2 ft, from high-water mark in well, from rating curve extended above 46,000 ft³/s; minimum, 6.0 ft³/s, Feb. 9, 1934, gage height, 1.52 ft; minimum daily, 35 ft³/s, Oct. 15, 1985, Sept. 14, 18, 1986.

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

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 7	0945	*11,200	*13.03	May 19	2245	8,060	10.64

Minimum discharge, 52 ft³/s, Aug. 21, 22; minimum daily, 61 ft³/s, Aug. 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	278	164	1920	879	519	284	249	245	638	138	113	136
2	266	178	1190	768	577	280	240	207	593	138	110	130
3	275	179	857	669	817	249	256	180	543	149	108	126
4	237	164	681	592	1180	280	249	201	565	141	109	140
5	216	172	586	541	1140	367	244	223	523	144	108	146
6	238	174	515	505	982	460	251	1530	463	139	102	127
7	211	176	461	e485	814	446	618	8840	413	124	95	115
8	197	163	398	e465	705	412	1000	3710	370	123	85	117
9	199	169	378	e450	683	405	961	2030	344	121	76	115
10	193	201	357	e430	618	393	881	1380	357	116	99	111
11	185	219	345	e410	571	381	776	1090	342	123	122	100
12	185	211	307	e387	538	367	671	880	320	139	114	105
13	185	285	348	e395	507	351	594	720	298	138	79	106
14	174	277	289	e345	483	341	531	620	284	133	93	101
15	170	244	330	e325	433	325	482	556	266	118	84	93
16	171	285	371	e312	436	309	440	519	244	112	85	99
17	169	250	506	e310	428	297	401	1080	234	110	101	96
18	168	278	497	e312	404	288	381	1230	242	107	100	98
19	167	257	470	e410	383	281	366	4300	243	109	118	94
20	167	321	476	884	372	273	350	5000	232	84	111	109
21	166	305	476	2680	376	271	339	3000	230	153	61	133
22	164	270	502	1700	370	252	326	2700	220	124	63	139
23	166	283	501	1240	346	214	261	2060	203	112	100	127
24	176	249	490	989	331	255	260	2990	193	117	121	122
25	126	253	471	850	317	215	289	3140	196	120	135	110
26	179	246	511	779	310	276	262	2350	182	130	112	86
27	166	254	542	694	297	317	240	1690	175	144	109	74
28	190	258	678	605	292	337	226	1310	145	137	97	98
29	192	389	960	551	288	297	241	1050	167	146	81	123
30	191	1240	1390	506	---	281	247	873	145	124	124	87
31	196	---	1060	503	---	267	---	736	---	118	134	---
TOTAL	5963	8114	18863	20971	15517	9771	12632	56440	9370	3931	3149	3363
MEAN	192	270	608	676	535	315	421	1821	312	127	102	112
MAX	278	1240	1920	2680	1180	460	1000	8840	638	153	135	146
MIN	126	163	289	310	288	214	226	180	145	84	61	74
CFSM	.25	.35	.79	.88	.70	.41	.55	2.37	.41	.17	.13	.15
IN.	.29	.39	.91	1.02	.75	.47	.61	2.73	.45	.19	.15	.16

CAL YR 1987 TOTAL 249006 MEAN 682 MAX 14400 MIN 83 CFSM .89 IN. 12.06
WTR YR 1988 TOTAL 168084 MEAN 459 MAX 8840 MIN 61 CFSM .60 IN. 8.14

e Estimated.

01634500 CEDAR CREEK NEAR WINCHESTER, VA

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

DRAINAGE AREA.--103 mi².

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

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 647.09 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 6-19, 28, 29, and Feb. 8, 14, 15, and period of no gage-height record, June 23 to Aug. 3, 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 Water Control Board.

AVERAGE DISCHARGE.--51 years, 94.8 ft³/s, 12.50 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,000 ft³/s, Oct. 15, 1942, gage height, 27.0 ft, from flood-marks, from rating curve extended above 15,000 ft³/s; minimum, 1.8 ft³/s, Feb. 19, 1941, Dec. 7, 1958, result of freezeups; minimum daily, 2.8 ft³/s, Sept. 7, 1964, Sept. 3, 4, 7, 8, 1966; minimum gage height, 1.04 ft, Feb. 19, 1941.

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

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1830	1,310	5.25	May 6	1430	*4,180	*10.24
Jan. 20	0700	2,370	7.22	May 18	1730	2,130	6.81
Apr. 7	0230	2,170	6.88	May 24	2300	1,230	5.08

Minimum discharge, 5.6 ft³/s, Aug. 17, 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	18	215	98	113	40	43	46	96	e14	e12	17
2	26	17	154	86	120	39	43	43	94	e13	e11	14
3	28	17	118	76	213	40	42	42	89	e13	e9.9	12
4	26	16	106	75	184	76	42	42	83	e13	9.2	24
5	22	15	90	64	151	169	40	138	68	e12	11	38
6	21	12	77	e62	115	111	51	2890	59	e12	23	24
7	23	13	68	e62	110	96	1110	1160	52	e11	46	19
8	20	15	64	e58	e106	83	571	475	46	e11	18	16
9	17	16	61	e55	103	79	367	305	52	e11	12	14
10	17	39	59	e52	88	77	259	249	54	e11	10	14
11	17	82	56	e50	81	68	204	207	42	e11	9.5	12
12	16	49	53	e50	82	63	168	167	37	e12	9.3	11
13	14	51	48	e52	65	64	142	140	34	e12	8.8	11
14	13	57	44	e50	e64	60	121	120	31	e11	8.9	11
15	13	63	95	e48	e60	56	109	109	28	e11	8.4	8.9
16	13	56	108	e46	71	51	96	101	27	e10	7.1	7.8
17	14	54	83	e45	62	49	88	141	26	e10	6.3	8.6
18	13	73	72	e50	59	46	87	738	27	e11	6.5	11
19	13	62	68	e58	58	46	95	617	24	e15	26	9.9
20	13	58	104	882	67	45	78	366	23	e12	41	10
21	15	52	107	324	61	43	72	300	21	e15	37	12
22	15	45	94	214	51	40	65	233	18	e12	20	7.8
23	14	41	88	169	54	39	63	265	e17	e9.3	15	6.8
24	15	39	79	138	50	38	66	639	e17	e9.5	23	8.0
25	15	36	78	130	47	36	59	887	e17	e12	19	18
26	16	33	116	123	43	55	55	456	e16	e23	14	20
27	20	35	129	101	46	62	53	295	e16	e14	13	13
28	54	42	121	e91	44	51	59	224	e15	e11	12	11
29	31	490	142	e85	42	46	54	179	e15	e9.6	27	9.7
30	23	408	116	94	---	44	49	141	e15	e9.2	39	8.6
31	19	---	102	104	---	44	---	114	---	e10	23	---
TOTAL	607	2004	2915	3592	2410	1856	4351	11829	1159	370.6	535.9	408.1
MEAN	19.6	66.8	94.0	116	83.1	59.9	145	382	38.6	12.0	17.3	13.6
MAX	54	490	215	882	213	169	1110	2890	96	23	46	38
MIN	13	12	44	45	42	36	40	42	15	9.2	6.3	6.8
CFSM	.19	.65	.91	1.12	.81	.58	1.41	3.70	.38	.12	.17	.13
IN.	.22	.72	1.05	1.30	.87	.67	1.57	4.27	.42	.13	.19	.15

CAL YR 1987 TOTAL 44247.8 MEAN 121 MAX 3230 MIN 6.1 CFSM 1.18 IN. 15.98
WTR YR 1988 TOTAL 32037.6 MEAN 87.5 MAX 2890 MIN 6.3 CFSM .85 IN. 11.57

e Estimated.

01635500 PASSAGE CREEK NEAR BUCKTON, VA

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

DRAINAGE AREA.--87.8 mi².

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

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 525.14 ft above National Geodetic Vertical Datum 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 those for periods of no gage-height record, Jan. 6-19, 27-30, and Feb. 7-10, 14, 15, which are 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 is a diversion from Strasburg Reservoir, capacity, 54.6 acre-ft, by town of Strasburg for municipal water supply. 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 Water Control Board.

AVERAGE DISCHARGE.--56 years, 68.8 ft³/s, 10.64 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,000 ft³/s, Oct. 15, 1942, gage height, 15.5 ft, from high-water mark in well, from rating curve extended above 5,200 ft³/s; minimum observed, 0.1 ft³/s, Aug. 5, 1932.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 6	2130	*1,860	*7.35	May 24	1330	1,400	6.66
May 18	2000	1,250	6.43				

Minimum discharge, 1.3 ft³/s, Aug. 17-18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	12	124	86	84	30	28	31	67	4.6	3.7	5.5
2	12	11	87	71	96	29	28	29	61	4.3	3.5	4.3
3	11	11	66	58	250	28	28	28	68	4.2	3.1	3.5
4	10	11	58	56	178	43	28	29	55	4.0	2.8	5.5
5	8.8	11	51	49	134	151	27	66	44	4.3	2.6	13
6	7.3	9.5	43	e42	e95	94	28	1170	37	5.3	2.6	10
7	7.6	9.2	38	e39	e90	75	396	951	34	3.9	2.6	6.3
8	8.3	9.6	35	e33	e90	62	404	352	29	3.5	2.3	4.7
9	7.8	9.3	34	e29	e80	57	275	229	26	3.2	2.8	4.2
10	8.1	13	32	e27	e72	55	185	176	32	3.4	2.8	3.9
11	7.8	34	32	e27	63	49	144	144	25	3.8	2.4	3.6
12	7.9	32	31	e27	63	45	121	120	21	13	2.1	3.4
13	8.2	34	28	e30	56	45	106	100	19	13	1.9	3.3
14	12	41	26	e29	e54	42	91	85	17	8.1	1.7	3.1
15	9.1	43	47	e26	e52	40	81	76	15	5.5	1.6	2.7
16	7.2	38	80	e27	56	37	71	82	14	4.7	1.5	2.4
17	7.5	33	54	e29	48	35	63	257	12	4.0	1.3	2.4
18	7.6	51	43	e31	43	33	63	777	18	3.1	1.3	2.6
19	7.3	52	39	e40	42	34	70	634	15	3.0	1.9	2.8
20	7.5	40	45	410	48	33	56	368	13	4.1	8.7	2.9
21	13	35	52	223	44	31	50	367	11	6.0	8.5	3.1
22	18	29	46	138	37	29	46	274	10	5.1	6.7	2.6
23	12	26	42	111	39	28	44	239	9.1	4.3	4.9	2.4
24	9.4	25	39	93	37	27	44	1040	8.7	4.3	4.2	2.5
25	7.3	23	37	90	35	26	39	741	8.3	5.0	3.5	3.3
26	7.2	22	77	95	32	31	36	383	7.1	10	3.3	7.4
27	9.2	23	112	e68	34	39	36	250	5.6	12	3.0	9.1
28	25	28	112	e65	33	32	36	182	6.3	10	3.0	5.0
29	24	142	212	e64	31	29	34	138	8.6	6.8	4.3	2.6
30	17	249	124	e62	---	29	32	108	4.9	5.4	8.4	2.8
31	14	---	95	84	---	29	---	86	---	4.7	8.9	---
TOTAL	334.1	1106.6	1941	2259	2016	1347	2690	9512	701.6	176.6	111.9	130.9
MEAN	10.8	36.9	62.6	72.9	69.5	43.5	89.7	307	23.4	5.70	3.61	4.36
MAX	25	249	212	410	250	151	404	1170	68	13	8.9	13
MIN	7.2	9.2	26	26	31	26	27	28	4.9	3.0	1.3	2.4
CFSM	.12	.42	.71	.83	.79	.49	1.02	3.49	.27	.06	.04	.05
IN.	.14	.47	.82	.96	.85	.57	1.14	4.03	.30	.07	.05	.06

CAL YR 1987 TOTAL 28485.80 MEAN 78.0 MAX 1830 MIN .80 CFSM .89 IN. 12.07
WTR YR 1988 TOTAL 22326.7 MEAN 61.0 MAX 1170 MIN 1.3 CFSM .69 IN. 9.46

e Estimated.

01636500 SHENANDOAH RIVER AT MILLVILLE, WV
(National stream-quality accounting network station)

LOCATION.--Lat 39°16'55", long 77°47'22", Jefferson County, Hydrologic Unit 02070007, on left bank 0.4 mi downstream from Cattail Run, 1.0 mi upstream from Millville, 5.0 mi upstream from Harpers Ferry, and at mile 5.0.
DRAINAGE AREA.--3,040 mi².

WATER-DISCHARGE RECORDS

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, 1901-2, 1905, 1907-8, 1932(M), 1935(M).
GAGE.--Water-stage recorder. Datum of gage is 293.00 ft above National Geodetic Vertical Datum of 1929. Apr. 15, 1895, to Mar. 31, 1909, nonrecording gage at site 0.8 mi downstream at datum 0.32 ft higher.
REMARKS.--No estimated daily discharges. Records good. Regulation by hydroelectric plants, particularly that of Potomac Light and Power Company, 0.5 mi upstream from station. U.S. Army Corps of Engineers satellite telemeter and National Weather Service gage-height telemeter at station.
AVERAGE DISCHARGE.--73 years (water years 1896-1908, 1929-88), 2,693 ft³/s, 12.03 in/yr.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 230,000 ft³/s, Oct. 16, 1942, gage height, 32.4 ft, from floodmarks; minimum, about 59 ft³/s, Oct. 4, 1930, gage height, 0.39 ft; minimum daily, 194 ft³/s, July 24, 1930.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1870 reached practically same stage as flood of Mar. 18, 1936, 26.36 ft, discharge, 151,000 ft³/s.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 15,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 7	1845	*22,900	*10.42	May 20	1145	17,800	9.17

Minimum discharge, 261 ft³/s, Aug. 13, gage height, 0.98 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1410	912	7660	4120	2420	1510	1570	1210	2980	771	620	653
2	1310	831	6660	3550	2480	1480	1480	1190	2720	749	661	664
3	1330	793	4870	3140	3100	1410	1370	1150	2560	733	618	695
4	1240	785	3790	2780	3780	1520	1400	1070	2390	725	575	633
5	1180	775	3080	2510	3950	1770	1400	1160	2290	665	553	671
6	1060	737	2640	2230	3690	2250	1370	4200	2220	652	556	635
7	1130	729	2310	1910	3350	2070	1780	18700	2060	642	587	615
8	1080	740	2110	1480	3070	1940	4330	16800	1850	623	602	565
9	1010	732	1680	1540	2890	1800	4770	10100	1760	627	591	559
10	975	783	1740	1840	2730	1750	4150	7110	1720	647	560	574
11	980	924	1660	1830	2630	1690	3530	5610	1670	540	523	544
12	908	1070	1570	1650	2480	1610	3050	4650	1560	578	571	515
13	951	1070	1530	1700	2330	1590	2760	3890	1450	558	509	480
14	938	1350	1690	2060	2210	1550	2490	3270	1390	657	471	501
15	793	1290	1660	1840	2070	1480	2240	2760	1330	644	514	467
16	750	1150	1720	1690	2110	1460	2150	2480	1300	697	406	469
17	840	1190	2000	1660	2080	1430	1930	2440	1290	789	410	447
18	840	1160	2320	1850	1960	1380	1850	3940	1230	650	525	449
19	834	1210	2420	1810	2000	1340	1840	8850	1140	678	411	502
20	832	1160	2300	2240	1940	1330	1810	15200	1170	753	508	439
21	858	1210	2260	5510	1870	1310	1550	12400	1130	1570	614	557
22	871	1250	2180	7300	1830	1250	1570	9940	1060	767	687	447
23	820	1120	2080	5900	1810	1260	1500	9220	1080	766	508	508
24	810	1070	2090	4770	1790	1180	1460	12600	967	753	435	412
25	793	1050	1990	4120	1670	1160	1340	13100	875	887	569	525
26	763	1030	1850	3780	1640	1270	1370	9580	927	890	580	577
27	762	1000	2220	3420	1580	1340	1210	7130	796	999	532	544
28	886	1050	2330	3060	1580	1540	1470	5680	805	1010	497	516
29	969	1640	2830	2670	1500	1720	1100	4690	814	834	514	517
30	917	4450	4250	2400	---	1800	1220	4000	788	795	573	591
31	908	---	4980	2370	---	1640	---	3470	---	797	580	---
TOTAL	29748	34261	84470	88730	68540	47830	61060	207590	45322	23446	16860	16271
MEAN	960	1142	2725	2862	2363	1543	2035	6696	1511	756	544	542
MAX	1410	4450	7660	7300	3950	2250	4770	18700	2980	1570	687	695
MIN	750	729	1530	1480	1500	1160	1100	1070	788	540	406	412
CFSM	.32	.38	.90	.94	.78	.51	.67	2.20	.50	.25	.18	.18
IN.	.36	.42	1.03	1.09	.84	.59	.75	2.54	.55	.29	.21	.20

CAL YR 1987 TOTAL 1134085 MEAN 3107 MAX 61100 MIN 449 CFSM 1.02 IN. 13.88
WTR YR 1988 TOTAL 724128 MEAN 1978 MAX 18700 MIN 406 CFSM .65 IN. 8.86

01636500 SHENANDOAH RIVER AT MILLVILLE, WV--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960-63, 1965, 1969-71, 1979 to current year.

INSTRUMENTATION.--Water-quality monitor October 1980 to September 1983.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1980 to September 1983 (discontinued).
WATER TEMPERATURES: October 1980 to September 1983 (discontinued).

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water years 1981-82): Maximum, 778 microsiemens, Dec. 29, 1980; minimum, 212 microsiemens, Jan. 17, 1982.
WATER TEMPERATURE: Maximum, 30.0°C, July 20, 21, 1981; minimum, 0.0°C on many days during winter periods.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TEMPER-ATURE AIR (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
NOV											
09...	0840	742	447	8.5	13.5	18.0	760	1.5	10.3	99	7
JAN											
05...	0900	2590	320	8.2	0.0	-8.0	768	26	14.0	95	9
FEB											
29...	0935	1500	383	8.7	5.0	5.0	757	1.3	14.1	111	K6
MAY											
05...	1015	1120	368	7.9	16.0	18.0	752	0.80	8.2	84	40
JUL											
05...	0905	659	497	8.1	25.5	27.0	765	4.3	6.7	82	200
SEP											
01...	0900	659	408	7.6	23.0	21.0	765	18	6.2	72	130

DATE	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
NOV											
09...	150	52	16	44	3.0	164	172	14	94	22	0.10
JAN											
05...	17	35	7.9	14	2.0	--	--	--	39	7.8	0.20
FEB											
29...	K8	46	11	24	1.8	128	137	10	58	13	0.20
MAY											
05...	140	40	11	22	2.6	122	149	--	51	13	0.10
JUL											
05...	980	47	15	36	2.8	146	177	--	73	18	0.30
SEP											
01...	1000	39	16	46	2.6	118	144	--	100	23	0.20

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)
NOV											
09...	0.29	326	334	--	<0.010	0.920	0.020	0.010	0.40	0.030	0.030
JAN											
05...	6.4	176	173	--	<0.010	1.40	0.040	0.040	0.40	0.070	0.060
FEB											
29...	0.73	244	239	--	<0.010	1.40	<0.010	<0.010	0.20	0.020	0.020
MAY											
05...	1.4	219	217	0.710	0.010	0.720	0.040	0.070	0.40	0.030	0.060
JUL											
05...	8.3	297	291	0.740	0.010	0.750	0.050	0.040	0.50	0.080	0.050
SEP											
01...	7.6	320	311	--	<0.010	0.550	0.070	0.090	0.70	0.150	0.080

K: Results based on colony count outside the accepted range (non-ideal colony).

01636500 SHENANDOAH RIVER AT MILLVILLE, WV--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)
NOV											
09...	0.020	<10	1	36	<0.5	<1	1	<3	1	12	<5
JAN											
05...	0.030	--	--	--	--	--	--	--	--	--	--
FEB											
29...	0.010	<10	<1	35	<0.5	<1	<1	<3	1	12	<5
MAY											
05...	0.060	<10	1	34	<0.5	<1	<1	<3	<1	24	<5
JUL											
05...	0.040	--	--	--	--	--	--	--	--	--	--
SEP											
01...	0.070	<10	2	46	<0.5	<1	<1	<3	1	22	<5

DATE	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)
NOV										
09...	6	6	0.2	<10	2	<1	<1.0	170	<6	11
JAN										
05...	--	--	--	--	--	--	--	--	--	--
FEB										
29...	10	5	<0.1	<10	<1	<1	<1.0	140	<6	16
MAY										
05...	9	8	<0.1	<10	<1	<1	1.0	140	<6	16
JUL										
05...	--	--	--	--	--	--	--	--	--	--
SEP										
01...	10	11	<0.1	<10	<1	<1	<1.0	190	<6	6

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV					
09...	0840	742	7	14	88
JAN					
05...	0900	2590	8	56	89
FEB					
29...	0935	1500	5	20	68
MAY					
05...	1015	1120	6	18	94
JUL					
05...	0905	659	14	25	93
SEP					
01...	0900	659	33	59	96

01638480 CATOCTIN CREEK AT TAYLORSTOWN, VA

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

DRAINAGE AREA.--89.6 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 247.37 ft above National Geodetic Vertical Datum 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 with ice effect, Jan. 5-12, 28, 29, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--17 years, 105 ft³/s, 15.91 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,800 ft³/s, June 22, 1972, gage height, 23.83 ft, from flood-marks, site and datum then in use, from rating curve extended above 7,400 ft³/s on basis of contracted-opening measurement of peak flow; minimum daily, 0.20 ft³/s, Sept. 23, 1986.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1530	2,620	8.64	May 21	0015	2,630	8.65
Jan. 20	0915	1,610	6.93	May 24	0515	3,850	10.66
May 18	2130	*5,370	*12.98				

Minimum discharge, 5.5 ft³/s, Aug. 17, Sept. 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	21	264	100	192	71	66	53	148	21	15	12
2	22	21	194	88	209	72	68	49	143	21	13	9.3
3	22	20	152	71	303	68	60	46	136	20	13	8.4
4	24	20	140	71	211	108	59	47	124	20	12	38
5	20	20	110	e52	172	240	54	126	108	20	11	60
6	19	16	94	e48	124	130	52	842	91	18	11	23
7	27	15	79	e47	121	111	452	417	83	17	13	13
8	27	15	72	e46	112	98	470	240	76	15	14	11
9	21	16	67	e44	103	94	296	184	80	15	11	9.0
10	19	56	65	e43	95	92	222	160	81	15	9.4	8.3
11	20	153	61	e42	90	81	181	142	69	16	9.2	7.7
12	19	73	56	e42	115	77	159	121	62	28	8.5	7.0
13	19	79	51	44	87	76	143	104	57	28	8.3	7.1
14	19	61	45	40	88	71	125	91	53	19	7.7	7.0
15	19	48	181	36	84	66	107	85	50	15	7.7	6.6
16	18	43	170	34	140	61	95	105	48	13	7.7	6.1
17	17	40	92	33	99	59	90	142	54	12	5.9	6.3
18	17	66	73	101	89	57	91	1610	52	13	6.1	6.9
19	17	48	67	86	93	59	112	1010	46	29	7.9	7.0
20	18	42	103	969	164	56	85	724	43	104	26	8.5
21	37	37	101	275	123	54	75	1120	40	194	40	21
22	30	32	74	179	95	50	67	409	36	55	17	15
23	22	30	69	141	96	49	65	620	34	63	12	9.4
24	19	30	61	118	92	49	69	2140	32	77	20	7.9
25	18	31	61	122	82	48	63	784	30	35	17	14
26	19	28	141	135	79	153	57	461	29	25	12	19
27	35	28	116	e92	78	141	58	351	27	57	9.5	13
28	188	44	103	e84	76	94	80	286	26	62	8.4	10
29	56	1260	213	94	72	81	63	237	24	29	18	8.4
30	33	608	125	80	---	74	58	199	22	20	29	7.8
31	26	---	102	108	---	70	---	173	---	16	18	---
TOTAL	895	3001	3302	3465	3484	2610	3642	13078	1904	1092	418.3	387.7
MEAN	28.9	100	107	112	120	84.2	121	422	63.5	35.2	13.5	12.9
MAX	188	1260	264	969	303	240	470	2140	148	194	40	60
MIN	17	15	45	33	72	48	52	46	22	12	5.9	6.1
CFSM	.32	1.12	1.19	1.25	1.34	.94	1.35	4.71	.71	.39	.15	.14
IN.	.37	1.25	1.37	1.44	1.45	1.08	1.51	5.43	.79	.45	.17	.16

CAL YR 1987 TOTAL 46076.6 MEAN 126 MAX 3190 MIN 5.8 CFSM 1.41 IN. 19.13
WTR YR 1988 TOTAL 37279.0 MEAN 102 MAX 2140 MIN 5.9 CFSM 1.14 IN. 15.48

e Estimated.

01638500 POTOMAC RIVER AT POINT OF ROCKS, MD

LOCATION.--Lat 39°16'25", long 77°32'35", Frederick County, Hydrologic Unit 02070008, on left bank at downstream side of bridge on U.S. Highway 15 at Point of Rocks, 0.3 mi downstream from Catoctin Creek (Virginia), 6 mi upstream from Monocacy River, and at mile 159.5.
DRAINAGE AREA.--9,651 mi².

WATER-DISCHARGE RECORDS

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, which are fair. Low flow affected slightly from 1913 to July 1981 by Stony River Reservoir, since December 1950 by Savage River Reservoir, 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.
AVERAGE DISCHARGE.--93 years, 9,395 ft³/s, 13.22 in/yr.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 480,000 ft³/s, Mar. 19, 1936, gage height, 41.03 ft, from rating curve extended above 300,000 ft³/s on the basis of adjustment of figure of peak flow at station near Washington for inflow and storage, and slope-area measurement of peak flow; minimum discharge, 530 ft³/s, Sept. 11, 12, 1966, gage height, 0.27 ft.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 2, 1889, reached a stage of 40.2 ft, from floodmarks, discharge, about 460,000 ft³/s from rating curve extended as explained above.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 35,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Apr. 9	0300	38,900	9.03	May 20	1400	*96,100	*17.01
May 8	0130	92,200	16.53	May 25	1130	48,100	10.48

Minimum discharge, 1,210 ft³/s, Aug. 14, 17, gage height, 0.69 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3360	2610	22000	13800	8650	5700	5710	4410	11100	2360	1880	3390
2	3210	2450	21800	12000	9470	5510	5490	4330	9940	2120	1980	2660
3	3290	2350	16400	10900	11700	5330	5310	4290	9050	2060	1920	2410
4	3520	2260	12200	9860	14000	5460	5080	4390	8470	2020	1720	2260
5	3300	2150	9870	e9000	16400	6760	5070	4820	8060	2010	1620	2390
6	3120	2000	8400	e7030	17300	12300	4970	8540	7790	1980	1580	3720
7	2970	2000	7310	e5260	14900	13400	6220	54900	7160	1930	1740	4670
8	2890	1960	6580	e4760	13400	11700	21200	78300	6480	1880	1740	3740
9	2780	1940	5660	e4650	12600	10200	37000	46600	6120	1830	1710	2990
10	2700	2140	5290	e4600	11500	9200	28700	32100	6210	1860	1760	2580
11	2660	2680	5060	e4550	9900	8540	21000	23300	6360	1800	1630	2260
12	2500	2870	4830	e4500	9230	8030	16400	17500	6280	1850	1530	2100
13	2420	3210	4880	e4450	8610	7420	13700	14700	5480	1990	1590	1910
14	2370	3690	5060	e4450	8010	6890	11700	12100	5050	2010	1340	1810
15	2320	4350	5300	e4400	7080	6590	10400	10700	4610	1890	1420	1820
16	2060	4850	5240	e4500	7450	6280	9310	9970	4350	1820	1430	1680
17	2140	5350	5740	e4600	7280	5980	8400	10300	4150	1900	1230	1720
18	2120	5330	6250	4790	7010	5690	7640	16000	4010	1880	1280	1780
19	2140	5180	6960	5030	6910	5420	7220	58500	3970	2050	1350	1760
20	2080	5400	6900	10300	6950	5090	6920	93400	3740	2150	1400	2300
21	2820	4840	7100	e28600	7330	5130	6510	84000	3520	3800	1720	2840
22	2430	4590	9420	31400	7960	4860	6050	63000	3390	2500	1740	2660
23	2080	4300	10100	27300	8020	4700	5670	43100	3320	3110	2070	2190
24	2020	3970	9350	20600	7590	4550	5460	41600	3390	2700	2530	1560
25	1970	3780	8420	16300	7200	4470	5220	45900	3320	2600	2370	1750
26	1930	3570	8210	14300	6740	4830	5170	36500	3200	2660	3610	1870
27	1970	3460	9400	12700	6370	4880	5010	27900	2890	2630	3150	1930
28	2650	3480	11000	10900	6150	5510	4980	22000	2760	2650	2300	2070
29	2650	7260	11900	9180	5950	6180	4730	17800	2820	2340	2120	2350
30	2720	10600	13200	8500	---	6410	4420	14800	2660	2040	2150	2370
31	2710	---	15800	8500	---	6050	---	12700	---	2240	2450	---
TOTAL	79900	114620	285630	321710	271660	209060	290660	918450	159650	68660	58060	71540
MEAN	2577	3821	9214	10380	9368	6744	9689	29630	5322	2215	1873	2385
MAX	3520	10600	22000	31400	17300	13400	37000	93400	11100	3800	3610	4670
MIN	1930	1940	4830	4400	5950	4470	4420	4290	2660	1800	1230	1560
CFSM	.27	.40	.95	1.08	.97	.70	1.00	3.07	.55	.23	.19	.25
IN.	.31	.44	1.10	1.24	1.05	.81	1.12	3.54	.62	.26	.22	.28

CAL YR 1987 TOTAL 3518580 MEAN 9640 MAX 136000 MIN 1290 CFSM 1.00 IN. 13.56
WTR YR 1988 TOTAL 2849600 MEAN 7786 MAX 93400 MIN 1230 CFSM .81 IN. 10.98

e Estimated.

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1961 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1960 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1960 to current year.

REMARKS.--Water temperatures are measured daily in field by local observer at time of sampling.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum daily, 33.5°C, Aug. 24, 1964, July 19, 1977; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATION: Maximum daily mean, 2,690 mg/L, Nov. 7, 1985; minimum daily mean, 1 mg/L on many days most years.
SEDIMENT LOAD: Maximum daily, 1,930,000 tons, Nov. 7, 1985; minimum daily, 2.0 tons on many days during 1964, 1966-69.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum daily, 32.0°C, July 17, Aug. 13-15; minimum daily, 0.0°C, Jan. 6, 9, 10, 19-21, 29.
SEDIMENT CONCENTRATION: Maximum daily mean, 673 mg/L, May 20; minimum daily mean, 1 mg/L, Nov. 3.
SEDIMENT LOAD: Maximum daily, 170,000 tons, May 20; minimum daily, 6.3 tons, Nov. 3.

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .008 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .031 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM
MAY												
08...	1340	77600	706	148000	30	43	59	75	80	85	90	95

WATER TEMPERATURE, DEGREES CENTIGRADE, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18.0	12.0	---	3.0	5.0	4.0	14.0	15.0	21.0	---	---	25.0
2	---	---	7.0	2.0	4.0	9.0	14.0	15.0	21.0	---	---	25.0
3	16.0	12.0	6.0	2.0	3.0	9.0	15.0	13.0	20.0	---	30.0	25.0
4	15.0	---	---	3.0	4.0	4.0	8.0	14.0	14.0	24.0	30.0	23.0
5	17.0	13.0	5.0	1.0	5.0	5.0	15.0	15.0	20.0	26.0	30.0	23.0
6	15.0	8.0	5.0	.0	6.0	7.0	16.0	14.0	20.0	25.0	30.0	22.0
7	16.0	9.0	5.0	---	4.0	7.0	13.0	14.0	24.0	30.0	30.0	19.0
8	14.0	12.0	4.0	---	2.0	---	13.0	13.0	19.0	29.0	30.0	20.0
9	12.0	11.0	6.0	.0	1.0	7.0	11.0	15.0	20.0	31.0	31.0	---
10	15.0	11.0	5.0	.0	3.0	---	12.0	15.0	17.0	30.0	28.0	23.0
11	15.0	9.0	6.0	---	3.0	9.0	---	15.0	---	28.0	31.0	24.0
12	14.0	6.0	7.0	---	5.0	9.0	---	18.0	23.0	27.0	30.0	22.0
13	13.0	8.0	7.0	1.0	3.0	---	10.0	18.0	21.0	26.0	32.0	26.0
14	13.0	8.0	5.0	---	---	7.0	11.0	18.0	22.0	30.0	32.0	23.0
15	12.0	10.0	7.0	---	2.0	6.0	11.0	20.0	24.0	30.0	32.0	23.0
16	15.0	7.0	7.0	---	---	10.0	11.0	18.0	25.0	28.0	30.0	20.0
17	14.0	9.0	5.0	1.0	2.0	5.0	12.0	20.0	25.0	32.0	30.0	20.0
18	15.0	10.0	4.0	1.0	---	8.0	12.0	20.0	26.0	29.0	29.0	22.0
19	14.0	---	4.0	.0	3.0	6.0	12.0	17.0	26.0	29.0	25.0	26.0
20	14.0	8.0	5.0	.0	5.0	6.0	10.0	15.0	25.0	28.0	24.0	23.0
21	13.0	6.0	5.0	---	3.0	5.0	14.0	16.0	30.0	27.0	25.0	22.0
22	---	5.0	4.0	.0	4.0	6.0	15.0	16.0	28.0	26.0	---	20.0
23	11.0	---	5.0	2.0	5.0	7.0	13.0	16.0	27.0	---	24.0	24.0
24	13.0	7.0	4.0	4.0	4.0	---	13.0	17.0	27.0	27.0	26.0	21.0
25	---	7.0	5.0	---	3.0	14.0	14.0	17.0	27.0	---	26.0	18.0
26	12.0	8.0	5.0	---	4.0	12.0	13.0	17.0	---	26.0	26.0	18.0
27	10.0	7.0	---	1.0	2.0	11.0	14.0	18.0	23.0	---	25.0	21.0
28	---	7.0	4.0	2.0	---	10.0	16.0	16.0	23.0	---	25.0	22.0
29	9.0	7.0	5.0	.0	4.0	11.0	12.0	21.0	25.0	---	25.0	18.0
30	---	7.0	4.0	1.0	---	12.0	15.0	20.0	24.0	---	25.0	18.0
31	11.0	---	3.0	2.0	---	13.0	---	---	---	---	---	---

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

SEDIMENT, SUSPENDED CONCENTRATION (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	9	82	2	14	120	7360	10	373	11	257	9	139
2	8	69	2	13	75	4410	9	292	11	281	14	208
3	9	80	1	6.3	41	1820	12	353	12	379	7	101
4	9	86	2	12	27	889	21	559	15	567	8	118
5	9	80	2	12	15	400	21	510	19	841	7	128
6	8	67	4	22	12	272	18	342	29	1350	27	897
7	6	48	4	22	10	197	14	199	22	885	30	1090
8	5	39	3	16	12	213	10	129	16	579	30	948
9	4	30	3	16	14	214	6	75	12	408	21	578
10	5	36	2	12	10	143	5	62	10	310	17	422
11	7	50	2	14	7	96	5	61	9	241	15	346
12	13	88	2	15	14	183	4	49	15	374	21	455
13	9	59	2	17	21	277	4	48	21	488	29	581
14	5	32	2	20	17	232	4	48	19	411	22	409
15	3	19	4	47	10	143	3	36	14	268	8	142
16	3	17	5	65	6	85	3	36	13	261	7	119
17	4	23	4	58	5	77	2	25	12	236	8	129
18	6	34	3	43	5	84	4	52	14	265	20	307
19	5	29	4	56	5	94	11	149	16	299	17	249
20	3	17	4	58	5	93	198	5780	13	244	10	137
21	2	15	3	39	6	115	462	37500	10	198	5	69
22	2	13	2	25	8	203	410	34800	9	193	6	79
23	2	11	3	35	10	273	200	14700	9	195	8	102
24	3	16	3	32	11	278	62	3450	8	164	11	135
25	3	16	3	31	12	273	47	2070	6	117	10	121
26	3	16	3	29	11	244	31	1200	6	109	11	143
27	8	43	4	37	11	279	15	514	5	86	22	290
28	12	86	5	47	11	327	12	353	5	83	23	342
29	9	64	36	968	16	514	12	297	5	80	22	367
30	5	37	41	1270	13	463	13	298	---	---	30	519
31	4	29	---	---	15	640	12	275	---	---	28	457
TOTAL	---	1331	---	3051.3	---	20891	---	104635	---	10169	---	10127
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	25	385	17	202	31	929	11	70	15	76	14	128
2	23	341	19	222	29	778	11	63	14	75	10	72
3	23	330	20	232	28	684	11	61	13	67	7	46
4	23	315	20	237	23	526	11	60	17	79	9	55
5	20	274	21	273	18	392	11	60	26	114	13	84
6	17	228	37	853	17	358	9	48	33	141	22	221
7	34	571	602	117000	17	329	12	63	29	136	20	252
8	131	9380	631	139000	15	262	9	46	24	113	16	162
9	269	26900	230	28900	19	314	7	35	19	88	13	105
10	134	10400	120	10400	17	285	6	30	16	76	11	77
11	78	4420	80	5030	17	292	8	39	15	66	9	55
12	46	2040	44	2080	14	237	10	50	14	58	10	57
13	33	1220	33	1310	13	192	16	86	11	47	12	62
14	25	790	25	817	11	150	18	98	8	29	10	49
15	20	562	22	636	11	137	22	112	7	27	16	79
16	16	402	20	538	14	164	11	54	8	31	15	68
17	17	386	20	556	20	224	8	41	6	20	13	60
18	18	371	72	4150	15	162	9	46	7	24	8	38
19	14	273	638	116000	14	150	10	55	14	51	8	38
20	10	187	673	170000	12	121	12	70	21	79	21	130
21	10	176	464	105000	11	105	37	380	17	79	20	153
22	11	180	259	45200	10	92	14	94	15	70	12	86
23	10	153	138	16100	12	108	13	109	14	78	8	47
24	7	103	174	19500	15	137	14	102	13	89	8	34
25	6	85	208	25800	15	134	20	140	12	77	7	33
26	6	84	162	16000	14	121	24	172	23	224	8	40
27	8	108	115	8660	13	101	23	163	16	136	5	26
28	10	134	78	4630	15	112	22	157	10	62	5	28
29	12	153	50	2400	14	107	20	126	13	74	7	44
30	14	167	42	1680	11	79	29	160	29	168	16	102
31	---	---	36	1230	---	---	17	103	14	93	---	---
TOTAL	---	61118	---	844636	---	7782	---	2893	---	2547	---	2431

TOTAL LOAD FOR YEAR: 1071611.3 TONS.

01643700 GOOSE CREEK NEAR MIDDLEBURG, VA

LOCATION.--Lat 38°59'11", long 77°47'49", 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 mi².

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

REVISED RECORDS.--WSP 2103: Drainage area.

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

REMARKS.--Records good except for period with ice effect, Jan. 5-16, 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.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--21 years, 132 ft³/s, 14.57 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,200 ft³/s, June 22, 1972, gage height, 27.46 ft, from flood-marks, from rating curve extended above 2,900 ft³/s on basis of slope-area measurements at gage heights 14.44 ft and 27.46 ft; no flow Sept. 21-26, 1985, Sept. 29 to Oct. 3, 1986.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,350 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1800	1,890	7.97	May 24	0100	2,220	8.82
May 6	1130	1,800	7.73	May 24	2230	1,640	7.31
May 18	2100	*2,240	*8.88				

Minimum discharge, 1.1 ft³/s, Sept. 17, 19-20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	21	341	88	165	69	96	55	184	21	12	4.6
2	15	20	219	78	202	66	91	52	182	20	15	3.3
3	13	19	155	66	333	67	86	51	180	19	13	2.6
4	16	18	134	66	296	97	84	53	159	17	8.9	4.4
5	14	18	104	e57	224	169	76	154	137	15	7.0	22
6	13	15	85	e45	172	107	73	1430	115	13	6.8	11
7	23	14	71	e44	171	103	257	944	103	12	10	5.6
8	22	15	66	e44	150	95	264	575	95	10	8.3	3.9
9	15	15	62	e44	136	93	241	408	109	9.2	5.7	2.8
10	13	33	60	e44	118	93	204	333	114	8.6	4.6	2.2
11	13	111	61	e45	110	84	174	296	89	7.7	3.9	2.2
12	13	57	55	e47	134	79	151	224	78	8.6	3.6	1.9
13	12	60	48	e50	111	79	136	181	70	14	3.2	1.7
14	11	59	43	e43	118	74	120	155	64	10	3.0	1.6
15	11	58	133	e40	97	70	110	141	59	7.6	2.7	1.5
16	13	50	124	e40	122	66	99	131	57	6.0	2.2	1.4
17	11	45	85	50	97	63	94	253	122	4.6	2.0	1.3
18	12	48	72	94	91	61	94	820	73	3.8	1.9	1.3
19	12	40	67	94	93	62	106	706	58	34	2.0	1.2
20	12	34	85	590	133	60	85	638	54	93	5.5	1.3
21	21	31	79	267	105	57	78	626	50	89	17	1.5
22	24	27	66	206	87	54	71	445	43	34	9.5	2.3
23	16	26	63	176	93	53	69	636	43	51	5.2	2.0
24	14	26	57	146	89	53	70	1480	43	54	4.4	2.2
25	13	25	58	157	81	53	63	982	38	31	4.0	2.9
26	12	24	103	173	78	266	59	638	35	18	3.4	4.9
27	19	25	91	141	80	198	59	484	32	36	2.7	4.5
28	131	55	90	127	78	134	92	387	28	130	2.2	3.0
29	45	871	128	113	73	118	65	317	26	34	2.4	2.2
30	29	659	88	108	---	109	59	258	24	21	11	1.8
31	24	---	90	125	---	100	---	217	---	15	8.6	---
TOTAL	634	2519	2983	3408	3837	2852	3326	14070	2464	847.1	191.7	105.1
MEAN	20.5	84.0	96.2	110	132	92.0	111	454	82.1	27.3	6.18	3.50
MAX	131	871	341	590	333	266	264	1480	184	130	17	22
MIN	11	14	43	40	73	53	59	51	24	3.8	1.9	1.2
CFSM	.17	.68	.78	.89	1.08	.75	.90	3.69	.67	.22	.05	.03
IN.	.19	.76	.90	1.03	1.16	.86	1.01	4.26	.75	.26	.06	.03

CAL YR 1987 TOTAL 41995.40 MEAN 115 MAX 1770 MIN .31 CFSM .94 IN. 12.70
WTR YR 1988 TOTAL 37236.9 MEAN 102 MAX 1480 MIN 1.2 CFSM .83 IN. 11.26

e Estimated.

01644000 GOOSE CREEK NEAR LEESBURG, VA

LOCATION.--Lat 39°01'10", long 77°34'40", Loudoun County, Hydrologic Unit 02070008, on left bank 400 ft upstream from bridge on State Highway 621 at Evergreen Mills, 1.4 mi downstream from Little River, 6.7 mi south of Leesburg, and 10.9 mi upstream from mouth.
DRAINAGE AREA.--332 mi².
PERIOD OF RECORD.--July 1909 to April 1911, September 1911 to December 1912, January 1930 to current year.
REVISED RECORDS.--WSP 851: 1935-37. WSP 951: 1933(M), 1937. WSP 1302: 1934-35(M). WSP 2103: Drainage area. WDR VA-72-1: 1937(M), 1943(M), 1951(M), 1956(M). WDR VA-79-1: 1978.
GAGE.--Water-stage recorder. Datum of gage is 248.93 ft above National Geodetic Vertical Datum 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, nonrecording 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. 7-10, 27-30, and Feb. 7, 8, and period of backwater from beaver dam, Aug. 30 to Sept. 30, 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 Water Control Board.
AVERAGE DISCHARGE.--60 years (water years 1910, 1912, 1931-88), 315 ft³/s, 12.88 in/yr.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 78,100 ft³/s, June 22, 1972, gage height, 30.59 ft, from high-water mark in gage house, from rating curve extended above 11,000 ft³/s on basis of slope-area measurement of peak flow; minimum daily, 0.40 ft³/s, Sept. 27-30, 1941.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May or June 1889 reached a stage of about 29 ft, discharge, about 45,000 ft³/s, site and datum in use 1930-38, from information by local residents.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	2130	*5,970	*9.37	May 24	0900	5,160	8.32
May 18	1730	4,210	6.93	July 23	1600	4,870	7.92

Minimum daily discharge, 8.0 ft³/s, Sept. 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	69	915	324	467	197	289	164	461	57	53	29
2	42	59	624	289	519	187	274	153	428	56	45	e22
3	38	56	469	244	902	185	254	144	446	52	43	e18
4	51	50	412	242	712	242	247	146	406	50	37	28
5	47	43	339	184	612	539	226	415	351	48	32	83
6	40	37	281	141	462	357	208	3110	299	43	41	58
7	56	39	241	e140	e410	320	1140	2030	263	40	92	34
8	93	37	220	e140	e400	289	1220	1190	240	36	48	20
9	77	43	207	e140	389	276	897	842	257	34	35	15
10	62	77	200	e150	333	276	689	698	294	33	28	e14
11	59	285	197	150	308	245	575	680	233	32	24	e14
12	76	213	189	148	371	226	496	541	202	37	23	e13
13	65	174	168	156	311	223	450	453	182	41	22	e12
14	45	164	149	148	351	211	395	395	166	42	17	e10
15	39	145	357	127	288	198	363	364	152	36	15	e9.2
16	34	128	496	119	365	184	327	340	146	29	14	e8.8
17	33	134	319	125	312	174	298	605	236	23	13	e8.5
18	34	213	261	217	279	167	294	2020	209	19	13	e8.2
19	37	155	236	299	281	169	340	2070	152	19	16	e8.0
20	40	123	270	1910	413	165	277	1520	134	329	31	e8.2
21	70	105	291	862	358	156	245	1960	126	978	69	e9.0
22	87	89	238	585	277	145	217	1180	111	184	53	e13
23	85	80	223	476	282	141	206	1280	98	1150	36	e11
24	57	78	203	408	277	141	211	3790	94	402	31	e12
25	45	77	200	410	246	142	190	2690	88	148	29	e15
26	39	74	330	499	229	774	174	1630	82	83	24	e21
27	49	77	366	e370	228	782	179	1190	77	68	17	e19
28	414	162	336	e330	228	482	286	941	70	789	16	e15
29	292	2760	491	e300	210	394	214	768	66	180	22	e12
30	126	2290	374	e300	---	347	180	633	61	90	e45	e11
31	87	---	312	327	---	314	---	537	---	66	e42	---
TOTAL	2363	8036	9914	10260	10820	8648	11361	34479	6130	5194	1026	558.9
MEAN	76.2	268	320	331	373	279	379	1112	204	168	33.1	18.6
MAX	414	2760	915	1910	902	782	1220	3790	461	1150	92	83
MIN	33	37	149	119	210	141	174	144	61	19	13	8.0
CFSM	.23	.81	.96	1.00	1.12	.84	1.14	3.35	.62	.50	.10	.06
IN.	.26	.90	1.11	1.15	1.21	.97	1.27	3.86	.69	.58	.11	.06

CAL YR 1987 TOTAL 113469.3 MEAN 311 MAX 4440 MIN 1.2 CFSM .94 IN. 12.71
WTR YR 1988 TOTAL 108789.9 MEAN 297 MAX 3790 MIN 8.0 CFSM .90 IN. 12.19

e Estimated.

01646000 DIFFICULT RUN NEAR GREAT FALLS, VA

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

DRAINAGE AREA.--57.9 mi².

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

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

GAGE.--Water-stage recorder. Datum of gage is 151.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 4-6, 8-11, 27, 28, and Feb. 7, 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 Water Control Board.

AVERAGE DISCHARGE.--54 years, 59.3 ft³/s, 13.91 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,200 ft³/s, June 22, 1972, gage height, 21.40 ft, from flood-marks, from rating curve extended above 1,600 ft³/s on basis of contracted-opening measurement at gage height 13.18 ft and slope-area measurement at gage height 21.40 ft; minimum, 0.05 ft³/s, Sept. 9, 10, 1966, gage height, 1.65 ft.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1930	1,040	7.40	May 24	0130	1,590	8.60
May 19	0300	*4,310	*11.75				

Minimum discharge, 5.4 ft³/s, Sept. 16, 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	18	75	41	54	39	43	33	35	12	14	11
2	13	17	50	37	87	39	41	33	39	12	13	9.9
3	51	18	40	34	133	39	40	32	38	11	13	8.9
4	43	17	46	e34	106	111	40	34	35	11	12	55
5	18	17	41	e33	75	118	38	156	33	11	12	38
6	16	17	34	e32	53	54	37	642	31	9.8	27	14
7	55	15	31	30	e42	47	297	134	30	9.3	37	11
8	20	15	30	e30	44	43	166	70	28	8.7	14	9.1
9	17	15	31	e30	44	42	86	55	37	11	11	8.4
10	16	92	31	e30	42	43	64	62	38	19	10	8.6
11	17	99	48	e30	44	38	57	128	29	12	9.8	8.2
12	17	73	35	31	260	38	50	55	27	19	8.7	7.3
13	16	66	30	32	77	44	47	46	26	14	9.1	7.3
14	15	52	28	31	57	36	44	41	25	11	8.6	7.2
15	15	39	129	29	51	35	42	38	24	9.5	9.3	6.4
16	16	31	75	29	97	34	40	45	23	7.9	23	5.8
17	16	30	43	30	57	32	40	100	35	6.8	9.1	5.9
18	16	105	36	82	52	32	42	290	24	15	8.5	9.5
19	15	41	33	72	62	34	46	1190	22	56	8.8	7.6
20	15	33	56	564	113	33	39	154	22	132	68	18
21	18	29	43	118	62	32	38	92	20	93	31	13
22	16	25	35	70	51	32	35	64	19	42	13	8.0
23	15	25	34	56	50	32	35	260	18	49	11	6.2
24	15	24	32	48	49	33	39	550	17	57	16	6.7
25	14	26	34	60	44	33	34	142	16	21	21	53
26	13	25	98	79	43	327	33	75	16	113	11	22
27	80	33	55	e46	43	230	39	56	16	175	9.0	11
28	130	102	63	e43	42	72	79	49	14	30	7.2	8.2
29	28	568	119	42	41	55	39	44	14	22	66	7.4
30	21	307	53	41	---	49	36	40	13	18	31	7.5
31	19	---	42	52	---	45	---	38	---	16	14	---
TOTAL	793	1974	1530	1916	1975	1871	1706	4748	764	1034.0	556.1	400.1
MEAN	25.6	65.8	49.4	61.8	68.1	60.4	56.9	153	25.5	33.4	17.9	13.3
MAX	130	568	129	564	260	327	297	1190	39	175	68	55
MIN	13	15	28	29	41	32	33	32	13	6.8	7.2	5.8
CFSM	.44	1.14	.85	1.07	1.18	1.04	.98	2.65	.44	.58	.31	.23
IN.	.51	1.27	.98	1.23	1.27	1.20	1.10	3.05	.49	.66	.36	.26

CAL YR 1987 TOTAL 19380.3 MEAN 53.1 MAX 576 MIN 2.8 CFSM .92 IN. 12.45
WTR YR 1988 TOTAL 19267.2 MEAN 52.6 MAX 1190 MIN 5.8 CFSM .91 IN. 12.38

e Estimated.

01646500 POTOMAC RIVER NEAR WASHINGTON, DC

LOCATION.--Lat 38°56'58", long 77°07'40", Montgomery County, Md., 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, Va., and at mile 117.4.
DRAINAGE AREA.--11,560 mi².
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, 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, and since July 1981, by Jennings Randolph Lake. Gage-height telemeter at station.
AVERAGE DISCHARGE.--58 years, 11,510 ft³/s, 13.52 in/yr, adjusted for diversions.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 484,000 ft³/s, Mar. 19, 1936, gage height, 28.1 ft, site then in use; minimum daily discharge observed at gaging station, 121 ft³/s, Sept. 9, 1966, does not include diversion of 489 ft³/s for municipal use; minimum daily discharge (adjusted), 601 ft³/s, Sept. 10, 1966, include diversion of 449 ft³/s for municipal use.
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 equal to or greater than base discharge of 45,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 21	2230	58,100	7.10	May 19	0515	92,100	8.56
Apr. 9	1345	47,500	6.57	May 20	0615	*129,000	*9.83
May 8	0745	108,000	9.15	May 25	1700	63,300	7.55

Minimum daily discharge, 742 ft /s, Aug. 19, does not include diversion for municipal use; minimum daily (adjusted) discharge, 1,430 ft /s, Aug. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3290	2850	34800	16900	10800	e6800	6880	5310	14300	2240	1830	1970
2	3050	2680	30600	14800	12800	6630	6520	5190	12500	2040	1590	2800
3	3240	2530	22900	13200	17300	6440	6210	5020	11300	1720	1510	2370
4	3400	2390	17000	11900	18400	6530	6050	4950	10400	1630	1500	2320
5	3320	2270	13500	e10500	20200	9310	5840	5590	9760	1510	1250	2610
6	3170	2140	11200	e9800	21500	12600	5610	13600	9010	1510	1180	2560
7	3260	2010	9530	e7000	18500	16400	7750	41100	8590	1410	1610	3570
8	2950	1910	8300	e5000	16300	14900	15200	100000	7790	1330	1440	4270
9	2800	1810	7420	e4900	15200	13100	44000	64300	7370	1270	1320	3450
10	2750	2120	6510	e4900	14300	11600	38500	41600	7220	1390	1250	2730
11	2650	3380	6250	e4800	12700	10700	27800	30900	7220	1340	1240	2340
12	2540	4160	5850	e4800	e12000	9850	21200	22800	7260	1700	1140	1960
13	2460	4330	5510	e4700	e11000	9150	17500	18500	6730	1540	1030	1800
14	2330	4310	5440	e4600	9920	8450	14800	15600	5840	1550	1020	1620
15	2270	4680	6520	e4580	9040	7910	13000	13100	5350	1510	882	1460
16	2200	4960	7880	e4700	9210	7320	11400	12300	4910	1400	1030	1440
17	1990	5360	7650	4860	10000	7020	10400	12900	4840	1230	889	1390
18	1990	6860	7340	5310	9330	6720	9420	22000	4610	1460	767	1380
19	1880	6430	7520	6230	8710	6400	8900	88600	4370	1660	742	1450
20	1940	6480	8210	16600	9750	5930	8400	125000	4200	1970	1340	1480
21	2080	5870	8420	39900	12000	5650	7870	114000	3910	5080	1460	2180
22	2590	5140	9380	51700	10700	5640	7240	88700	3600	5020	1420	2480
23	2440	4740	11400	35700	10300	5290	6780	58300	3190	3110	1390	2390
24	2070	4380	11200	26000	9880	5220	6340	59600	3100	7740	1680	1940
25	1920	4030	10300	20400	9270	4870	6220	61000	3150	3530	2370	1950
26	1770	3830	10100	18000	8580	7490	6020	51400	3010	3150	2300	1580
27	2060	3720	10700	15600	8040	9920	5950	37600	2950	3260	3090	1660
28	2980	4090	12300	13700	7580	7540	6390	28900	2620	2840	2830	1670
29	3430	9530	14300	11600	e7100	7350	6410	23300	2450	3110	2380	1730
30	3610	35800	14700	10300	---	7590	5880	19400	2340	2380	2140	1950
31	3110	---	16200	9970	---	7450	---	16400	---	1980	1990	---
TOTAL	81540	154790	358930	412950	350410	257770	350480	1206960	183890	72610	47610	64500
MEAN	2630	5160	11580	13320	12080	8315	11680	38930	6130	2342	1536	2150
MAX	3610	35800	34800	51700	21500	16400	44000	125000	14300	7740	3090	4270
MIN	1770	1810	5440	4580	7100	4870	5610	4950	2340	1230	742	1380
(*)	590	576	545	552	544	551	567	562	702	736	713	629
MEAN‡	3220	5736	12130	13870	12620	8866	12250	39490	6832	3078	2249	2779
CFSM‡	.28	.50	1.05	1.20	1.09	.77	1.06	3.42	.59	.27	.19	.24
IN‡	.32	.55	1.21	1.38	1.18	.88	1.18	3.94	.66	.31	.22	.27

CAL YR 1987 TOTAL 4185394 MEAN 11470 MAX 153000 MIN 757 MEAN‡ 12070 CFSM‡ 1.04 IN‡ 14.18
WTR YR 1988 TOTAL 3542440 MEAN 9679 MAX 125000 MIN 742 MEAN‡ 10290 CFSM‡ .89 IN‡ 12.12

* 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.
E Estimated.

01646580 POTOMAC RIVER AT CHAIN BRIDGE AT WASHINGTON, DC
(National stream-quality accounting network station)

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

DRAINAGE AREA.--11,570 mi².

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

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: June 1978 to September 1981 (discontinued).
pH: June 1978 to September 1981 (discontinued).
WATER TEMPERATURE: June 1978 to September 1981 (discontinued).
DISSOLVED OXYGEN: June 1978 to September 1981 (discontinued).
SUSPENDED-SEDIMENT DISCHARGE: October 1978 to September 1981 (discontinued).

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

REMARKS.--High flows are sampled from the George Mason Memorial Bridge (14th Street) located 6 mi downstream from Chain Bridge.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water years 1979, 1981): Maximum, 598 microsiemens, Sept. 12, 1981; minimum, 116 microsiemens, Jan. 25, 1979.
pH (water years 1979, 1981): Maximum, 9.3 units, Mar. 29, 1981; minimum, 6.7 units, June 2, 1981.
WATER TEMPERATURE (water years 1979, 1981): Maximum, 31.0°C, July 23, 24, 1978; minimum, 0.0°C on many days during winter periods.
DISSOLVED OXYGEN (water years 1979, 1981): Maximum, 16.4 mg/L, on many days in 1979; minimum, 5.6 mg/L, June 2, 1981.
SEDIMENT CONCENTRATION: Maximum daily mean, 812 mg/L, Sept. 6, 1979; minimum daily mean, 1 mg/L on many days during winter periods.
SEDIMENT LOAD: Maximum daily, 281,000 tons, Feb. 27, 1979; minimum daily, 3.2 tons, Jan. 5, 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TEMPER-ATURE AIR (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV												
10...	1045	2000	400	8.2	12.0	8.0	768	1.8	11.0	101	63	380
10...	1050	2000	395	8.3	12.0	8.0	768	--	11.0	101	--	--
JAN												
07...	1040	6960	266	7.6	0.0	-4.5	784	2.9	14.5	96	--	--
MAR												
01...	1100	8200	308	7.8	6.0	9.0	771	3.2	13.5	107	K7	E6
01...	1105	8200	305	8.0	6.0	9.0	771	--	13.5	107	--	--
MAY												
03...	1100	4400	303	8.1	16.0	16.0	768	1.7	9.5	96	K19	340
03...	1105	4400	303	8.2	16.0	16.0	768	--	9.5	96	--	--
JUL												
08...	1005	1420	395	7.9	29.0	31.0	767	--	7.5	97	--	--
08...	1010	1420	395	8.0	29.0	31.0	767	3.7	7.5	97	K440	1900
SEP												
07...	1045	3500	400	7.8	23.0	23.0	769	--	8.4	97	--	--
07...	1050	3500	400	7.9	23.0	23.0	769	4.0	8.4	97	--	--

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WAT WH TOT FET FIELD MG/L AS CACO3	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
NOV											
10...	49	12	23	3.1	--	129	157	70	21	0.40	0.20
10...	--	--	--	--	126	--	--	--	--	--	0.30
JAN											
07...	29	6.4	9.9	2.4	68	67	83	34	12	0.20	6.3
MAR											
01...	36	8.2	12	1.9	--	80	--	37	13	0.20	4.0
01...	--	--	--	--	82	--	--	--	--	--	3.8
MAY											
03...	35	7.9	12	2.0	--	83	101	40	14	0.20	0.83
03...	--	--	--	--	80	--	--	--	--	--	1.0
JUL											
08...	--	--	--	--	114	--	--	--	--	--	4.3
08...	43	12	18	2.8	--	108	132	56	19	0.30	4.4
SEP											
07...	--	--	--	--	95	--	--	--	--	--	6.0
07...	42	11	23	2.8	--	94	115	61	23	0.10	6.0

K: Results based on colony count outside the accepted range (non-ideal colony).

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)
NOV											
10...	6	13	0.2	<10	3	<1	<1.0	210	<6	<3	--
10...	--	--	--	--	--	--	--	--	--	--	4.8
JAN											
07...	--	--	--	--	--	--	--	--	--	--	2.9
MAR											
01...	10	20	<0.1	<10	2	<1	<1.0	150	<6	39	1.9
01...	--	--	--	--	--	--	--	--	--	--	2.1
MAY											
03...	9	10	<0.1	<10	2	<1	1.0	160	<6	5	3.6
03...	--	--	--	--	--	--	--	--	--	--	3.7
JUL											
08...	--	--	--	--	--	--	--	--	--	--	4.0
08...	--	--	--	--	--	--	--	--	--	--	--
SEP											
07...	--	--	--	--	--	--	--	--	--	--	5.8
07...	7	11	0.3	<10	1	<1	<1.0	220	<6	30	4.0

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV					
10...	1045	2000	11	59	84
10...	1050	2000	7	38	--
JAN					
07...	1040	6960	14	263	67
MAR					
01...	1100	8200	10	221	88
01...	1105	8200	48	1060	61
MAY					
03...	1100	4400	10	119	97
03...	1105	4400	8	95	--
JUL					
08...	1005	1420	28	107	--
08...	1010	1420	30	115	47
SEP					
07...	1045	3500	21	198	--
07...	1050	3500	10	94	84

RADIOCHEMICAL ANALYSES

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	GROSS ALPHA, DIS-SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	RADIUM 226, DIS-SOLVED, RADON METHOD (PCI/L)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90)	GROSS BETA, DIS-SOLVED (PCI/L AS SR/YT-90)	URANIUM NATURAL DIS-SOLVED (UG/L AS U)
MAR										
01...	1100	8200	<0.4	<0.4	2.0	<0.4	0.04	<0.4	1.5	0.24

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)
NOV											
10...	254	260	--	<0.010	0.800	0.030	0.010	0.70	--	0.030	0.010
10...	--	--	0.837	0.003	0.840	--	0.030	0.30	<0.20	0.030	0.020
JAN											
07...	157	149	1.68	0.020	1.70	0.110	0.130	0.90	0.90	0.050	0.032
MAR											
01...	168	169	1.78	0.020	1.80	0.010	0.010	<0.20	--	0.030	0.010
01...	--	--	1.78	0.016	1.80	--	0.010	<0.20	--	0.030	0.020
MAY											
03...	167	166	0.920	0.010	0.930	0.010	0.020	0.30	--	0.030	0.020
03...	--	--	0.909	0.011	0.920	--	0.020	0.30	0.30	0.040	0.020
JUL											
08...	--	--	--	0.014	<0.100	--	0.040	0.60	0.60	0.040	0.010
08...	237	229	0.850	0.010	0.860	0.040	0.020	0.60	--	0.050	0.010
SEP											
07...	--	--	4.49	0.011	4.50	--	0.010	0.50	0.30	0.070	0.050
07...	232	233	--	<0.010	1.20	<0.010	0.020	0.50	--	0.060	0.050

DATE	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)
NOV											
10...	<0.010	10	<1	38	<0.5	<1	<1	<3	2	13	<5
10...	0.010	20	--	--	--	--	--	--	--	--	--
JAN											
07...	0.031	<10	--	--	--	--	--	--	--	--	--
MAR											
01...	<0.010	<10	<1	33	<0.5	<1	<1	<3	2	19	<5
01...	<0.010	10	--	--	--	--	--	--	--	--	--
MAY											
03...	<0.010	<10	<1	35	<0.5	<1	<1	<3	1	24	<5
03...	<0.010	<10	--	--	--	--	--	--	--	--	--
JUL											
08...	<0.010	<10	--	--	--	--	--	--	--	--	--
08...	<0.010	--	--	--	--	--	--	--	--	--	--
SEP											
07...	<0.010	10	--	--	--	--	--	--	--	--	--
07...	0.040	<10	<1	45	<0.5	<1	<1	<3	1	10	<5

01653000 CAMERON RUN AT ALEXANDRIA, VA

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

DRAINAGE AREA.--33.7 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 31.07 ft above National Geodetic Vertical Datum 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 of doubtful gage-height record, Nov. 8, 9, July 3-18, Aug. 3-15, 17-19, 26-28, and Sept. 3, 12-20, 22-24, 29, 30, and periods with ice effect, Jan. 6-12, 14-16, which are poor. Some regulation by Lake Barcroft, formerly Alexandria Reservoir, on Holmes Run 3.6 mi upstream, usable capacity, 2,092 acre-ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--26 years (water year 1956-78, 1980, 1987-88), 36.2 ft^3/s, 14.59 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,900 ft^3/s, June 22, 1972, gage height, 18.14 ft, from rating curve extended above 2,500 ft^3/s on basis of culvert computations of peak flow for main channel and bypass channels; minimum, 1.1 ft^3/s, Aug. 15, 1957, Sept. 22-25, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,980 ft^3/s, May 18; minimum daily, 1.9 ft^3/s, Sept. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.1	5.0	28	16	22	14	16	15	10	3.8	5.4	6.8
2	5.1	4.7	19	12	95	14	14	14	14	3.8	4.6	4.6
3	71	4.2	16	11	92	13	14	16	11	e3.6	e4.0	e3.0
4	24	4.5	30	24	77	105	14	15	10	e3.5	e3.7	91
5	11	3.9	19	20	32	39	13	161	9.3	e3.4	e3.3	22
6	13	3.3	13	e16	28	21	13	328	8.5	e3.3	e5.0	12
7	64	3.0	10	e12	30	18	258	53	7.7	e3.1	e5.2	8.0
8	14	e2.8	9.0	e14	21	17	75	28	11	e2.9	e3.6	6.0
9	9.3	e2.7	7.8	e16	17	15	32	28	105	e2.7	e3.3	5.6
10	7.2	141	19	e13	18	15	25	28	21	e3.0	e3.0	11
11	6.5	73	94	e12	77	14	22	29	13	e3.6	e2.7	5.6
12	6.3	119	17	e11	192	14	20	19	11	e8.0	e2.5	e4.0
13	5.7	67	12	13	39	21	18	17	13	e4.0	e2.3	e4.6
14	5.6	51	11	e11	45	15	20	16	8.9	e3.6	e2.2	e3.8
15	5.2	29	164	e10	35	13	19	15	7.6	e3.0	e50	e2.7
16	5.7	18	33	e9.6	73	12	16	52	7.4	e2.3	15	e1.9
17	5.2	28	18	9.8	27	11	14	128	23	e3.6	e3.6	e6.0
18	5.1	74	14	79	22	11	18	315	16	e4.5	e2.7	e7.0
19	4.7	14	11	38	54	11	19	137	12	9.6	e15	e4.2
20	4.7	12	43	577	45	11	15	35	9.5	74	58	e6.4
21	4.5	9.3	17	57	24	10	15	27	8.2	130	19	7.9
22	5.6	8.1	14	33	20	10	14	22	7.9	59	9.7	e4.2
23	4.3	7.2	14	27	20	10	13	21	6.9	27	6.2	e3.0
24	4.2	6.6	11	24	19	10	16	45	6.1	20	6.9	e6.0
25	4.1	6.1	17	44	16	12	13	39	5.2	12	5.1	52
26	3.5	5.7	50	57	16	309	12	20	5.2	46	e3.3	16
27	279	7.9	19	31	15	90	89	16	4.9	34	e2.7	11
28	77	98	78	25	15	28	60	15	4.6	13	e2.1	7.3
29	17	520	67	20	15	22	22	13	4.2	10	181	e4.6
30	8.9	94	22	21	---	18	17	11	4.2	7.7	23	e4.0
31	6.2	---	17	23	---	19	---	11	---	6.9	10	---
TOTAL	694.7	1423.0	913.8	1286.4	1201	942	926	1689	386.3	514.9	464.1	332.2
MEAN	22.4	47.4	29.5	41.5	41.4	30.4	30.9	54.5	12.9	16.6	15.0	11.1
MAX	279	520	164	577	192	309	258	328	105	130	181	91
MIN	3.5	2.7	7.8	9.6	15	10	12	11	4.2	2.3	2.1	1.9
CFSM	.66	1.41	.87	1.23	1.23	.90	.92	1.62	.38	.49	.44	.33
IN.	.77	1.57	1.01	1.42	1.33	1.04	1.02	1.86	.43	.57	.51	.37

CAL YR 1987 TOTAL 12651.7 MEAN 34.7 MAX 745 MIN 2.2 CFSM 1.03 IN. 13.97
WTR YR 1988 TOTAL 10773.4 MEAN 29.4 MAX 577 MIN 1.9 CFSM .87 IN. 11.89

e Estimated.

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA

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

DRAINAGE AREA.--23.5 mi².

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

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

GAGE.--Water-stage recorder. Datum of gage is 191.24 ft above National Geodetic Vertical Datum 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. 8-11, 13, 14, 27, 28, and Feb. 7, 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 Water Control Board.

AVERAGE DISCHARGE.--41 years, 27.4 ft³/s, 15.83 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s, June 22, 1972, gage height, 15.96 ft, from high-water mark in gage house, from rating curve extended above 6,600 ft³/s on basis of contracted-opening and flow-over-road measurement of peak flow; minimum, 0.02 ft³/s, Oct. 9-13, 1986.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 19	0130	*1,520	*8.08	No other peak equal to or greater than base discharge.			

Minimum discharge, 0.25 ft³/s, Sept. 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.2	3.2	20	12	19	9.7	12	9.0	7.3	2.1	1.8	.77
2	2.2	3.4	15	11	56	9.6	12	8.5	15	2.1	1.8	.58
3	67	2.9	12	9.8	57	9.8	11	8.2	8.6	2.0	1.7	.60
4	13	2.8	28	17	55	82	12	9.2	7.6	1.9	1.7	43
5	3.6	3.2	15	13	22	29	11	169	6.9	1.7	1.4	8.2
6	7.3	2.4	10	9.4	14	14	11	306	6.4	1.7	1.4	1.5
7	65	3.5	9.3	8.4	e13	13	192	37	6.2	1.6	4.4	.76
8	5.4	3.1	9.2	e8.3	12	11	53	18	12	1.3	1.4	.61
9	3.7	3.0	9.4	e8.2	11	11	23	17	26	1.3	.89	.58
10	3.4	105	12	e8.2	11	12	17	29	10	3.2	.84	1.1
11	3.0	38	56	e8.5	33	10	15	31	5.9	2.0	.72	.65
12	3.0	64	13	8.9	158	11	14	13	5.2	3.8	.72	.49
13	3.0	40	10	e9.0	21	16	13	12	4.8	3.2	.67	.47
14	2.9	33	9.2	e8.0	19	10	12	11	4.4	1.7	.54	.58
15	2.8	18	99	7.8	16	10	14	9.8	4.1	1.2	28	.46
16	2.9	11	24	7.9	48	9.2	11	57	4.2	1.1	14	.44
17	3.0	15	13	9.0	16	9.0	11	55	30	.77	1.6	.39
18	2.9	65	10	63	14	9.1	15	159	5.0	7.7	.82	2.3
19	2.8	12	9.6	26	37	9.7	15	183	4.2	42	6.2	1.3
20	3.1	9.7	36	408	40	9.7	10	47	3.7	67	51	1.4
21	6.3	8.6	13	36	16	9.1	10	20	3.6	28	8.9	5.5
22	4.8	7.9	10	21	13	8.4	8.9	16	3.5	30	2.0	1.7
23	3.9	8.3	11	16	13	9.4	10	28	3.4	57	1.4	.71
24	4.8	8.5	8.8	13	13	8.9	13	59	3.3	12	4.7	18
25	7.7	8.0	13	32	11	8.6	8.8	34	3.0	3.3	3.8	56
26	12	7.7	55	38	11	261	8.9	14	3.3	90	1.8	6.3
27	181	22	16	e13	11	71	37	13	3.0	38	.76	1.9
28	43	71	47	e12	11	20	33	11	2.5	6.9	.49	1.2
29	6.7	448	50	11	10	16	11	9.7	2.5	3.6	100	.94
30	4.5	58	16	13	---	14	9.9	8.5	2.1	2.9	9.8	.83
31	3.5	---	12	20	---	13	---	8.0	---	2.2	1.6	---
TOTAL	482.4	1086.2	671.5	886.4	781	744.2	634.5	1409.9	207.7	423.27	256.85	159.26
MEAN	15.6	36.2	21.7	28.6	26.9	24.0	21.1	45.5	6.92	13.7	8.29	5.31
MAX	181	448	99	408	158	261	192	306	30	90	100	56
MIN	2.2	2.4	8.8	7.8	10	8.4	8.8	8.0	2.1	.77	.49	.39
CFSM	.66	1.54	.92	1.22	1.15	1.02	.90	1.94	.29	.58	.35	.23
IN.	.76	1.72	1.06	1.40	1.24	1.18	1.00	2.23	.33	.67	.41	.25

CAL YR 1987 TOTAL 9306.97 MEAN 25.5 MAX 448 MIN .62 CFSM 1.09 IN. 14.73
WTR YR 1988 TOTAL 7743.18 MEAN 21.2 MAX 448 MIN .39 CFSM .90 IN. 12.26

e Estimated.

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA

LOCATION.--Lat 38°35'14", long 77°25'44", Prince William County, Hydrologic Unit 02070011, on left bank at upstream side of bridge on State Highway 619, 3.4 mi south of Independent Hill, 5.6 mi west of Dumfries, and 6.5 mi upstream from mouth.

DRAINAGE AREA.--7.64 mi².

PERIOD OF RECORD.--May 1951 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 238.88 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for June to September, which are fair. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--37 years, 6.80 ft³/s, 12.09 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,940 ft³/s, June 21, 1972, gage height, 11.35 ft; no flow at times in 1954, 1957, 1962-66, 1983, 1985, 1987, and 1988.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	0800	*347	*6.38	No other peak equal to or greater than base discharge.			

No flow part or all of each day July 17-19, Aug. 4-7, 9-19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	1.0	9.4	4.8	6.6	3.5	4.6	2.4	1.5	.13	.12	.06
2	2.1	.90	5.5	4.1	11	3.3	4.3	2.2	1.6	.09	.09	.06
3	3.4	.79	4.0	3.6	28	3.3	4.0	2.1	2.1	.08	.05	.06
4	5.1	.79	3.5	3.9	16	4.8	4.3	2.2	2.1	.08	.02	.11
5	4.3	.77	3.0	3.6	11	8.5	3.9	21	1.8	.08	.00	.09
6	4.0	.62	2.5	2.8	6.7	5.1	3.6	78	1.5	.05	.00	.10
7	6.8	.52	2.2	2.4	4.8	4.3	20	21	1.7	.06	.00	.11
8	4.0	.57	2.1	2.9	4.8	3.8	17	8.0	1.5	.03	.03	.13
9	3.0	.58	2.1	3.1	4.7	3.8	10	5.1	1.8	.09	.00	.14
10	2.9	4.2	2.5	2.9	4.5	4.3	6.6	4.7	2.6	.17	.00	.18
11	2.8	9.9	19	2.8	5.1	3.5	5.4	4.1	2.3	.23	.00	.14
12	3.0	6.5	7.6	2.9	46	3.2	4.6	3.2	1.8	.39	.00	.14
13	3.0	7.5	4.6	3.0	12	3.7	4.2	2.5	1.5	.42	.00	.17
14	3.1	13	3.4	2.9	7.1	4.1	3.8	2.2	1.5	.34	.00	.18
15	3.1	14	19	2.6	6.9	3.1	3.6	1.9	1.2	.20	.00	.18
16	3.1	7.9	13	2.5	14	2.8	3.3	2.4	1.2	.11	.00	.18
17	3.2	5.8	6.2	2.8	7.6	2.6	2.9	9.6	1.6	.04	.00	.19
18	3.1	18	4.5	13	6.2	2.5	3.2	55	1.3	.00	.00	.22
19	3.1	6.2	3.7	16	6.9	2.8	3.8	41	1.2	.06	.03	.22
20	3.2	4.1	4.5	148	14	2.6	3.2	12	1.1	.23	.13	.23
21	4.1	2.9	4.7	27	7.8	2.6	2.9	8.8	.97	.42	.14	.21
22	4.8	2.2	3.7	12	5.5	2.6	2.6	5.9	.72	.44	.10	.19
23	5.3	2.0	3.4	7.6	5.4	2.7	2.5	4.1	.62	.47	.09	.19
24	5.4	1.8	2.9	5.8	5.4	2.5	3.1	3.3	1.4	.44	.11	.19
25	6.0	1.7	3.3	5.8	4.6	2.6	2.5	3.0	1.1	.37	.11	.16
26	6.2	1.7	5.9	7.8	4.3	32	2.2	2.6	.93	.44	.09	.11
27	16	1.7	6.0	4.9	4.1	47	2.5	2.1	.70	.48	.07	.09
28	14	5.7	8.7	4.0	4.1	11	8.0	2.0	.37	.43	.07	.09
29	3.1	73	16	3.6	3.7	7.2	3.8	1.5	.18	.36	.39	.09
30	1.6	32	7.1	4.3	---	6.0	2.9	1.5	.16	.30	.18	.09
31	1.3	---	5.1	7.3	---	5.2	---	1.6	---	.22	.10	---
TOTAL	136.2	228.34	189.1	320.7	268.8	197.0	149.3	317.0	40.05	7.25	1.92	4.30
MEAN	4.39	7.61	6.10	10.3	9.27	6.35	4.98	10.2	1.33	.23	.062	.14
MAX	16	73	19	148	46	47	20	78	2.6	.48	.39	.23
MIN	1.3	.52	2.1	2.4	3.7	2.5	2.2	1.5	.16	.00	.00	.06
CFSM	.58	1.00	.80	1.35	1.21	.83	.65	1.34	.17	.03	.01	.02
IN.	.66	1.11	.92	1.56	1.31	.96	.73	1.54	.20	.04	.01	.02

CAL YR 1987 TOTAL 2313.36 MEAN 6.34 MAX 121 MIN .00 CFSM .83 IN. 11.26
WTR YR 1988 TOTAL 1859.96 MEAN 5.08 MAX 148 MIN .00 CFSM .67 IN. 9.06

01660400 AQUIA CREEK NEAR GARRISONVILLE, VA

LOCATION.--Lat 38°29'25", long 77°26'02", 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 mi².

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

GAGE.--Water-stage recorder. Elevation of gage is 120 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for period of backwater from beaver dam, Oct. 1-17, periods with ice effect, Jan. 5, 15-17, 28, and Feb. 7, and periods of no gage-height record, Jan. 6-14 and Feb. 8-11, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--17 years, 35.8 ft³/s, 13.93 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,600 ft³/s, June 22, 1972, gage height, 16.32 ft, from rating curve extended above 1,600 ft³/s on basis of contracted-opening measurement of peak flow; no flow part or all of each day Sept. 15-17, 1980, Aug. 24-27, 1983, Aug. 13-19, Sept. 21-24, 1988.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	0430	*956	*4.50	May 18	1830	713	3.95

No flow part or all of each day Aug. 13-19, Sept. 21-24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	4.3	57	32	38	24	27	18	12	1.4	.82	.97
2	1.8	4.8	39	28	54	23	26	16	11	1.1	.77	.66
3	3.5	4.9	29	25	138	23	25	16	16	.90	.81	.57
4	7.1	4.3	26	26	84	25	26	15	15	.72	.51	.82
5	5.3	5.8	23	e26	64	43	25	82	13	.63	.41	1.2
6	4.8	4.7	21	e22	44	31	22	251	12	.52	.35	.72
7	9.6	4.3	20	e19	e38	27	87	105	10	.49	.39	.92
8	6.5	5.6	19	e20	e33	24	78	50	7.9	.59	.32	.39
9	4.4	9.1	19	e22	e30	23	56	36	8.2	.76	.25	.28
10	4.2	21	22	e20	e29	26	39	32	9.5	.83	.25	.28
11	3.8	54	113	e19	e29	23	32	27	9.5	.78	.23	.30
12	e4.0	44	53	e18	173	22	28	23	8.3	1.1	.14	.28
13	e4.6	42	35	e17	74	21	27	20	7.0	1.1	.03	.25
14	e3.6	45	29	e17	50	21	25	18	6.5	.96	.00	.21
15	e3.2	45	80	e16	41	21	23	17	5.7	.74	.00	.15
16	e3.1	37	69	e15	67	20	21	18	4.8	.58	.04	.18
17	e3.1	30	41	e17	47	19	21	67	4.4	.43	.04	.18
18	e3.1	56	31	78	40	19	21	345	4.1	.34	.03	.12
19	e3.0	36	27	105	39	19	26	193	3.8	12	2.0	.10
20	e3.0	24	26	634	65	19	23	70	3.8	10	3.5	.05
21	e3.1	19	27	150	46	18	20	50	3.5	13	2.7	.04
22	e3.2	16	25	72	36	19	20	38	3.4	26	.94	.00
23	e3.5	15	24	51	35	19	18	31	3.8	5.8	1.4	.02
24	e3.7	14	23	41	34	19	18	26	3.8	2.9	1.0	.03
25	3.8	13	22	39	31	18	17	34	2.8	2.2	.58	.23
26	4.0	12	28	48	29	86	16	28	2.5	1.8	.40	.10
27	77	12	32	40	28	193	16	21	2.7	1.5	.36	.13
28	57	38	61	e36	27	59	26	18	2.2	1.6	.42	.13
29	14	232	90	32	26	41	24	16	2.0	1.3	7.5	.10
30	7.0	160	48	31	---	34	19	14	1.6	1.1	2.9	.08
31	4.8	---	36	38	---	30	---	13	---	.86	.75	---
TOTAL	265.5	1012.8	1195	1754	1469	1009	852	1708	200.8	94.03	29.84	9.49
MEAN	8.56	33.8	38.5	56.6	50.7	32.5	28.4	55.1	6.69	3.03	.96	.32
MAX	77	232	113	634	173	193	87	345	16	26	7.5	1.2
MIN	1.8	4.3	19	15	26	18	16	13	1.6	.34	.00	.00
CFSM	.25	.97	1.10	1.62	1.45	.93	.81	1.58	.19	.09	.03	.01
IN.	.28	1.08	1.27	1.87	1.57	1.08	.91	1.82	.21	.10	.03	.01

CAL YR 1987 TOTAL 10551.98 MEAN 28.9 MAX 546 MIN .25 CFSM .83 IN. 11.25
WTR YR 1988 TOTAL 9599.46 MEAN 26.2 MAX 634 MIN .00 CFSM .75 IN. 10.23

e Estimated.

01662800 BATTLE RUN NEAR LAUREL MILLS, VA

LOCATION.--Lat 38°39'20", long 78°04'27", Rappahannock County, Hydrologic Unit 02080103, on left bank just upstream from bridge on State Highway 729, 0.8 mi upstream from mouth, and 1.0 mi northeast of Laurel Mills.

DRAINAGE AREA.--27.6 mi².

PERIOD OF RECORD.--April 1958 to current year.

REVISED RECORDS.--WSP 2103: Drainage area. WDR VA-72-1: 1971. WDR VA-74-1: 1972.

GAGE.--Water-stage recorder. Datum of gage is 374.62 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. 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 Water Control Board.

AVERAGE DISCHARGE.--30 years, 26.2 ft³/s, 12.89 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,120 ft³/s, Oct. 9, 1976, gage height, 13.90 ft, from floodmark, from rating curve extended above 2,500 ft³/s on basis of velocity-area study; no flow many days in September 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 310 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1400	1,020	7.40	May 20	0400	*4,340	*12.02
May 6	0830	426	5.36	May 23	2200	373	5.13
May 18	1600	338	4.98				

Minimum discharge, 0.47 ft³/s, Aug. 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	7.4	68	31	31	18	28	12	27	5.5	3.2	1.8
2	11	7.2	48	27	38	17	26	12	29	5.4	2.8	1.5
3	11	7.0	38	24	53	19	25	12	32	5.1	2.6	1.4
4	10	7.5	33	25	49	23	23	12	26	4.8	2.4	5.0
5	9.4	7.1	27	e22	43	24	21	67	23	4.6	2.2	4.3
6	10	6.4	24	e18	38	20	22	261	21	4.2	2.3	2.1
7	17	6.4	21	17	e34	19	41	120	19	3.8	2.7	1.5
8	10	6.7	20	20	33	18	31	71	17	3.4	2.1	1.1
9	9.1	6.7	20	19	30	19	26	55	20	4.3	1.6	1.1
10	9.0	15	19	18	28	18	24	48	20	5.8	1.5	1.4
11	8.7	17	24	17	27	17	22	43	16	7.0	1.4	1.4
12	8.6	13	19	17	33	16	22	36	15	10	1.3	.95
13	7.8	14	17	17	34	17	21	31	13	6.1	1.1	.97
14	7.6	12	16	16	e29	16	20	27	12	4.6	.95	1.0
15	7.4	11	56	15	24	15	19	25	11	3.9	.80	.89
16	7.3	10	45	14	30	15	18	43	11	3.3	.71	.86
17	7.0	11	35	15	24	15	17	54	14	2.9	1.2	1.5
18	6.8	12	30	28	24	15	19	107	12	3.8	.57	1.1
19	6.5	10	27	22	25	15	19	82	11	9.1	8.9	1.1
20	6.5	10	29	123	30	14	17	737	11	5.5	4.7	1.6
21	6.7	9.0	25	60	24	14	16	133	10	4.6	4.1	1.4
22	6.0	8.4	23	47	23	14	15	83	9.0	11	2.2	.89
23	5.8	9.0	22	40	23	14	15	101	12	16	1.8	.91
24	5.7	8.8	20	35	22	14	15	138	11	11	2.0	1.6
25	6.2	8.4	21	40	20	14	14	92	8.5	9.7	1.7	7.0
26	6.7	8.6	28	40	20	86	13	65	8.4	6.0	1.4	4.5
27	17	11	24	e34	20	71	14	51	7.3	5.1	1.1	2.6
28	21	23	36	e30	19	48	15	44	6.8	5.1	1.1	2.2
29	10	334	46	e28	18	40	13	38	6.6	4.3	5.9	2.7
30	8.6	131	36	27	---	35	13	34	6.0	3.7	5.1	2.9
31	7.8	---	33	30	---	31	---	30	---	3.5	2.3	---
TOTAL	283.2	748.6	930	916	846	731	604	2664	445.6	183.1	73.73	59.27
MEAN	9.14	25.0	30.0	29.5	29.2	23.6	20.1	85.9	14.9	5.91	2.38	1.98
MAX	21	334	68	123	53	86	41	737	32	16	8.9	7.0
MIN	5.7	6.4	16	14	18	14	13	12	6.0	2.9	.57	.86
CFSM	.33	.90	1.09	1.07	1.06	.85	.73	3.11	.54	.21	.09	.07
IN.	.38	1.01	1.25	1.23	1.14	.99	.81	3.59	.60	.25	.10	.08

CAL YR 1987 TOTAL 9914.7 MEAN 27.2 MAX 334 MIN 1.0 CFSM .98 IN. 13.36
WTR YR 1988 TOTAL 8484.50 MEAN 23.2 MAX 737 MIN .57 CFSM .84 IN. 11.44

e Estimated.

01663500 HAZEL RIVER AT RIXEYVILLE, VA

LOCATION.--Lat 38°35'30", long 77°57'55", Culpeper County, Hydrologic Unit 02080103, on right bank at downstream side of bridge on State Highway 229, 0.4 mi upstream from Waterford Run, 1.1 mi northeast of Rixeyville, 2.8 mi downstream from Thornton River, and 9.1 mi upstream from mouth.

DRAINAGE AREA.--287 mi².

PERIOD OF RECORD.--August 1942 to current year.

REVISED RECORDS.--WSP 971: 1942. WSP 1622: 1957-58. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 288.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 7-17, 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.

AVERAGE DISCHARGE.--46 years, 340 ft³/s, 16.09 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 60,000 ft³/s, Oct. 15, 1942, gage height, 31.8 ft, from rating curve extended above 27,000 ft³/s; minimum, 1.1 ft³/s, Sept. 10-13, 1966; minimum gage height, 1.58 ft, Aug. 18, 19, 1988.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 26, 1937, reached a stage of 28.4 ft, from floodmarks, discharge, 43,500 ft³/s, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,300 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	2100	*7,550	*15.59	May 20	1200	7,280	15.39
May 6	1800	4,900	12.91				

Minimum discharge, 2.2 ft³/s, Aug. 18-19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	148	102	1030	349	353	223	318	177	310	55	28	39
2	121	99	691	320	354	216	302	171	292	49	24	27
3	116	97	522	290	545	217	288	165	407	46	21	20
4	121	97	450	288	499	229	284	168	347	43	18	30
5	109	95	382	267	473	305	264	457	289	39	15	99
6	106	87	334	220	409	260	250	3360	253	36	23	62
7	152	83	297	e225	363	244	565	2570	234	32	74	39
8	131	84	277	e220	403	232	537	1370	213	26	55	29
9	106	87	262	e235	349	228	489	960	230	23	36	23
10	101	113	253	e230	326	233	437	768	268	37	26	21
11	101	239	308	e225	311	216	396	667	214	38	21	21
12	100	184	276	e220	354	208	362	548	190	78	17	20
13	96	174	240	e215	314	209	342	466	174	66	15	17
14	91	169	220	e225	284	205	315	411	160	46	12	14
15	90	165	461	e220	304	196	300	375	149	35	9.4	12
16	91	158	552	e225	347	189	279	544	139	27	6.7	9.5
17	90	149	412	e235	309	185	268	1000	137	20	4.5	7.9
18	89	169	352	276	289	180	261	973	144	15	2.7	7.7
19	89	168	324	319	286	185	280	1590	133	65	19	9.9
20	88	151	329	1060	341	181	252	3250	129	229	54	11
21	89	142	318	731	310	180	236	1580	125	79	56	14
22	85	130	285	534	271	180	221	1130	107	89	43	14
23	83	125	272	448	280	174	216	863	100	119	28	11
24	84	125	253	391	270	173	226	1000	112	123	21	9.8
25	84	123	250	390	252	171	204	783	93	145	18	32
26	81	120	288	443	242	549	195	653	88	92	15	103
27	92	124	300	337	245	855	192	547	82	66	11	58
28	259	221	347	356	240	533	215	483	70	56	7.0	36
29	163	3120	571	345	229	430	198	435	65	53	13	27
30	124	2380	416	334	---	376	187	388	64	42	109	22
31	109	---	363	320	---	343	---	348	---	33	66	---
TOTAL	3389	9280	11635	10493	9552	8305	8879	28200	5318	1902	868.3	845.8
MEAN	109	309	375	338	329	268	296	910	177	61.4	28.0	28.2
MAX	259	3120	1030	1060	545	855	565	3360	407	229	109	103
MIN	81	83	220	215	229	171	187	165	64	15	2.7	7.7
CFSM	.38	1.08	1.31	1.18	1.15	.93	1.03	3.17	.62	.21	.10	.10
IN.	.44	1.20	1.51	1.36	1.24	1.08	1.15	3.66	.69	.25	.11	.11

CAL YR 1987 TOTAL 124332.5 MEAN 341 MAX 5140 MIN 1.9 CFSM 1.19 IN. 16.12
WTR YR 1988 TOTAL 98667.1 MEAN 270 MAX 3360 MIN 2.7 CFSM .94 IN. 12.79

e Estimated.

01664000 RAPPAHANNOCK RIVER AT REMINGTON, VA

LOCATION.--Lat 38°31'50", long 77°48'50", Fauquier County, Hydrologic Unit 02080103, on left bank 80 ft upstream from bridge on alternate U.S. Highway 29, at Remington, 0.3 mi upstream from Tinpot Run, 0.4 mi downstream from Ruffans Run, and 2.5 mi downstream from Hazel River.

DRAINAGE AREA.--620 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1942 to current year.

REVISED RECORDS.--WSP 1171: 1944. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 252.53 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 21, 1951, nonrecording gage at bridge 80 ft downstream at same datum.

REMARKS.--Records good except for period with ice effect, Jan. 7-14, which is fair. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--46 years, 675 ft³/s, 14.78 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 90,000 ft³/s, Oct. 16, 1942, gage height, 30.0 ft, from flood-marks, from rating curve extended above 43,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 2.8 ft³/s, Sept. 13, 1966, gage height, 2.31 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum flood since at least 1828, that of Oct. 16, 1942.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 30	0545	*11,700	*15.25	May 20	1745	7,910	12.88
May 7	0115	8,830	13.57				

Minimum discharge, 22 ft³/s, Aug. 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	273	204	2330	732	800	426	672	334	662	129	72	70
2	232	192	1540	667	860	413	632	320	595	118	64	49
3	213	186	1190	574	1500	408	599	307	783	112	59	40
4	224	185	1020	557	1300	433	583	305	748	107	53	40
5	219	186	869	536	1200	645	548	812	588	100	49	102
6	204	176	740	393	969	568	510	6070	495	94	47	102
7	235	164	644	e390	758	499	944	6150	434	89	86	68
8	282	161	581	e385	874	467	1110	2720	393	83	79	49
9	219	164	542	e475	754	451	1020	1870	409	76	70	40
10	194	203	519	e470	681	459	878	1530	517	74	53	36
11	192	581	760	e465	634	429	793	1380	426	87	44	34
12	192	451	658	e455	764	406	728	1170	365	110	39	34
13	185	391	526	e450	724	409	680	984	341	161	36	32
14	174	412	463	e485	530	405	617	862	315	110	33	31
15	168	376	963	435	626	385	577	777	295	90	31	28
16	167	341	1350	385	769	368	531	778	280	76	28	26
17	169	318	949	417	703	357	496	2290	278	65	25	25
18	166	386	769	612	612	354	484	1720	324	58	23	25
19	166	366	684	830	597	359	525	3110	284	105	32	25
20	163	313	682	2940	767	356	487	4710	260	412	71	27
21	161	286	693	1970	706	349	440	3580	255	170	91	27
22	159	261	590	1280	579	346	410	2320	233	140	83	30
23	161	245	544	1050	559	341	396	1760	205	163	60	32
24	157	241	503	882	547	338	411	3510	248	230	45	25
25	155	237	486	841	506	339	385	2270	224	219	38	31
26	154	234	575	1030	478	868	356	1690	185	169	34	98
27	158	241	678	717	471	1950	349	1350	173	170	32	103
28	400	415	757	692	465	1200	402	1180	157	163	28	63
29	464	4520	1270	709	442	942	408	1020	146	135	32	46
30	272	7510	941	705	---	812	357	875	139	103	77	40
31	222	---	768	695	---	735	---	763	---	83	115	---
TOTAL	6500	19946	25584	23224	21175	16817	17328	58517	10757	4001	1629	1378
MEAN	210	665	825	749	730	542	578	1888	359	129	52.5	45.9
MAX	464	7510	2330	2940	1500	1950	1110	6150	783	412	115	103
MIN	154	161	463	385	442	338	349	305	139	58	23	25
CFSM	.34	1.07	1.33	1.21	1.18	.87	.93	3.04	.58	.21	.08	.07
IN.	.39	1.20	1.54	1.39	1.27	1.01	1.04	3.51	.65	.24	.10	.08

CAL YR 1987 TOTAL 254580 MEAN 697 MAX 11000 MIN 15 CFSM 1.12 IN. 15.27
WTR YR 1988 TOTAL 206856 MEAN 565 MAX 7510 MIN 23 CFSM .91 IN. 12.41

e Estimated.

01664000 RAPPAHANNOCK RIVER AT REMINGTON, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1951 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1951 to September 1956, October 1965 to October 1986.
WATER TEMPERATURE: May 1951 to September 1956, October 1965 to September 1976, October 1977 to October 1986.
SUSPENDED-SEDIMENT DISCHARGE: April 1951 to current year.

REMARKS.--Daily sediment records based on fragmentary concentration and transport curves due to unreliable observer sampling.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 150 microsiemens, Sept. 3, 1974; minimum daily, 24 microsiemens, July 6, 1975.
WATER TEMPERATURE: Maximum, 33.0°C, July 6, 1986; minimum, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATION: Maximum daily mean, 1,910 mg/L, Mar. 15, 1986; minimum daily mean, 1 mg/L on many days during each year.
SEDIMENT LOAD: Maximum daily, 55,600 tons, Sept. 26, 1975; minimum daily, 0.03 ton, Sept. 9, 11, 1983, Oct. 9-12, 1986.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATION: Maximum daily mean, 1,320 mg/L, May 7; minimum daily mean, 1 mg/L on many days during August.
SEDIMENT LOAD: Maximum daily, 24,600 tons, May 7; minimum daily, 0.06 ton, Aug. 18.

SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	7	5.2	5	2.8	85	535	18	36	18	39	7	8.1
2	6	3.8	4	2.1	50	208	16	29	22	51	6	6.7
3	5	2.9	4	2.0	35	112	13	20	43	174	6	6.6
4	5	3.0	4	2.0	28	77	12	18	33	116	7	8.2
5	5	3.0	4	2.0	23	54	11	16	30	97	12	21
6	5	2.8	4	1.9	18	36	7	7.4	22	58	8	12
7	6	3.8	3	1.3	15	26	7	7.4	15	31	7	9.4
8	7	5.3	3	1.3	13	20	7	7.3	19	45	6	7.6
9	5	3.0	3	1.3	12	18	9	12	15	31	6	7.3
10	4	2.1	5	2.9	11	15	9	11	13	24	6	7.4
11	4	2.1	18	25	19	39	9	11	12	21	6	6.9
12	4	2.1	14	17	15	27	9	11	16	33	5	5.5
13	4	2.0	12	13	11	16	9	11	15	29	5	5.5
14	4	1.9	12	13	9	11	10	13	9	13	5	5.5
15	4	1.8	11	11	27	70	8	9.4	12	20	4	4.2
16	4	1.8	10	9.2	42	153	7	7.3	16	33	3	3.0
17	4	1.8	8	6.9	26	67	8	9.0	14	27	3	2.9
18	4	1.8	12	13	19	39	14	23	11	18	3	2.9
19	4	1.8	11	11	16	30	21	47	11	18	3	2.9
20	3	1.3	9	7.6	16	29	125	1140	16	33	3	2.9
21	3	1.3	8	6.2	16	30	62	330	14	27	3	2.8
22	3	1.3	7	4.9	13	21	35	121	10	16	3	2.8
23	3	1.3	6	4.0	12	18	26	74	10	15	3	2.8
24	3	1.3	6	3.9	11	15	20	48	10	15	3	2.7
25	3	1.3	6	3.8	10	13	19	43	9	12	3	2.7
26	3	1.2	6	3.8	13	20	25	70	8	10	65	279
27	3	1.3	6	3.9	16	29	15	29	8	10	173	917
28	16	24	13	16	18	37	15	28	8	10	88	285
29	15	19	261	5500	48	165	15	29	7	8.4	63	160
30	7	5.1	471	12000	25	64	15	29	---	---	57	125
31	5	3.0	---	---	19	39	15	28	---	---	50	99
TOTAL	---	113.4	---	17692.8	---	2033	---	2274.8	---	1034.4	---	2015.3

01664000 RAPPAHANNOCK RIVER AT REMINGTON, VA--Continued

SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	39	71	15	14	60	107	6	2.1	3	.58	34	6.4
2	35	60	13	11	51	82	6	1.9	2	.35	21	2.8
3	33	53	13	11	75	159	5	1.5	2	.32	16	1.7
4	32	50	13	11	71	143	5	1.4	2	.29	16	1.7
5	30	44	93	416	51	81	4	1.1	2	.26	58	16
6	26	36	1250	23000	40	53	4	1.0	1	.13	58	16
7	63	161	1320	24600	33	39	4	.96	3	.70	33	6.1
8	80	240	410	3130	29	31	3	.67	3	.64	21	2.8
9	70	193	240	1210	31	34	3	.62	3	.57	16	1.7
10	56	133	190	785	41	57	3	.60	2	.29	14	1.4
11	49	105	160	596	33	38	4	.94	1	.12	13	1.2
12	43	85	130	411	26	26	5	1.5	1	.11	13	1.2
13	39	72	100	266	24	22	11	4.8	1	.10	12	1.0
14	34	57	86	200	22	19	6	1.8	1	.09	11	.92
15	31	48	74	155	20	16	5	1.2	1	.08	9	.68
16	28	40	87	183	18	14	4	.82	1	.08	9	.63
17	25	33	322	2080	18	14	3	.53	1	.07	8	.54
18	25	33	221	1170	23	20	2	.31	1	.06	8	.54
19	28	40	501	4510	19	15	4	1.1	4	.35	8	.54
20	25	33	891	14700	17	12	29	32	13	2.5	9	.66
21	21	25	608	6080	16	11	8	3.7	19	4.7	9	.66
22	19	21	330	2070	14	8.8	7	2.6	17	3.8	10	.81
23	18	19	230	1090	12	6.6	8	3.5	11	1.8	12	1.0
24	19	21	589	6090	16	11	13	8.1	7	.85	8	.54
25	18	19	320	1960	13	7.9	12	7.1	6	.62	11	.92
26	16	15	210	958	10	5.0	8	3.7	5	.46	52	14
27	16	15	160	583	9	4.2	8	3.7	4	.35	58	16
28	19	21	130	414	8	3.4	8	3.5	4	.30	29	4.9
29	20	22	110	303	7	2.8	6	2.2	4	.35	19	2.4
30	16	15	87	206	7	2.6	4	1.1	39	8.1	16	1.7
31	---	---	72	148	---	---	3	.67	68	21	---	---
TOTAL	---	1780	---	97361	---	1045.3	---	96.72	---	50.02	---	107.44

TOTAL LOAD FOR YEAR: 125604.18 TONS.

01665000 MOUNTAIN RUN NEAR CULPEPER, VA

LOCATION.--Lat 38°28'50", long 78°03'10", Culpeper County, Hydrologic Unit 02080103, on left bank 30 ft upstream from bridge on State Highway 641, 2.4 mi upstream from Bond Branch, and 3.0 mi west of Culpeper.

DRAINAGE AREA.--15.9 mi², of which 10.9 mi² are above flood-detention structures.

PERIOD OF RECORD.--September 1949 to current year.

REVISED RECORDS.--WSP 1332: 1950-51. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 389.46 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for period of doubtful gage-height record, Feb. 22 to Mar. 3, and period of backwater from beaver dam, Aug. 6 to Sept. 22, which are fair. Some regulation since 1959 by two reservoirs, combined flood storage, 2,240 acre-ft; 531 acre-ft additional storage used for low-water regulation for municipal supply for town of Culpeper. 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 Water Control Board.

AVERAGE DISCHARGE.--39 years, 16.6 ft³/s, 14.18 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,440 ft³/s, Aug. 18, 1955, from rating curve extended above 910 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 11.20 ft, Dec. 4, 1950; minimum discharge, 0.09 ft³/s, Sept. 30, Oct. 1, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 300 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1030	*510	*5.85	No other peak equal to or greater than base discharge.			

Minimum discharge, 1.2 ft³/s, Aug. 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.5	5.7	112	18	20	e12	13	7.2	8.9	2.1	3.9	3.6
2	5.1	5.5	63	16	23	e12	12	6.9	9.7	2.0	3.4	3.1
3	6.2	5.4	23	15	35	e11	12	6.6	15	2.1	3.1	3.1
4	6.7	5.4	20	15	28	14	12	6.9	12	2.0	3.6	6.2
5	6.3	5.4	17	14	24	17	11	30	9.8	2.0	4.0	8.1
6	6.7	4.9	15	12	19	14	11	96	8.4	1.9	6.2	5.0
7	7.2	4.7	14	12	17	13	23	48	7.4	1.8	8.2	3.9
8	5.9	4.5	13	14	16	12	19	24	6.9	1.7	5.2	3.2
9	5.0	5.5	13	13	16	12	16	17	7.5	2.7	4.0	2.8
10	5.0	16	13	13	16	13	13	14	8.3	4.6	3.4	3.7
11	4.9	20	23	e12	15	12	12	13	7.0	5.8	3.2	3.5
12	5.1	17	17	12	21	11	12	12	6.1	15	2.8	3.2
13	4.8	16	14	12	19	11	11	9.9	5.6	5.8	2.5	3.0
14	4.5	16	13	12	16	11	11	8.9	5.1	3.7	2.2	2.9
15	4.5	13	32	11	16	11	11	8.6	4.8	2.7	2.1	2.4
16	4.5	11	28	11	22	10	9.9	46	4.5	2.2	1.8	2.3
17	4.6	11	20	11	19	9.8	9.6	82	4.2	1.8	1.5	2.4
18	5.1	13	17	24	17	9.9	9.9	148	4.1	1.8	1.4	2.9
19	4.6	11	16	22	18	10	11	180	3.9	16	2.3	2.8
20	4.5	9.7	17	114	21	9.9	10	105	4.3	22	3.5	2.5
21	4.8	8.8	16	51	18	10	9.5	90	5.9	12	3.4	2.5
22	4.4	7.9	14	30	e15	11	8.9	42	4.5	15	2.4	2.1
23	4.7	8.0	14	23	e15	10	9.1	27	4.2	15	2.9	2.0
24	4.8	8.1	13	20	e14	10	11	28	4.1	25	3.9	2.4
25	4.8	8.1	13	21	e14	10	10	24	3.4	32	2.8	3.3
26	4.8	8.0	16	23	e13	39	9.5	19	3.1	22	2.6	2.7
27	7.9	10	15	18	e13	43	8.7	15	2.7	15	2.8	2.4
28	11	18	28	16	e13	24	9.3	13	2.4	10	3.4	2.4
29	7.0	231	36	16	e13	19	8.3	12	2.5	7.1	7.7	2.4
30	6.1	211	23	16	---	15	7.7	11	2.4	5.3	6.4	2.5
31	5.8	---	19	19	---	14	---	9.7	---	4.3	3.8	---
TOTAL	172.8	719.6	707	636	526	440.6	341.4	1160.7	178.7	262.4	110.4	95.3
MEAN	5.57	24.0	22.8	20.5	18.1	14.2	11.4	37.4	5.96	8.46	3.56	3.18
MAX	11	231	112	114	35	43	23	180	15	32	8.2	8.1
MIN	4.4	4.5	13	11	13	9.8	7.7	6.6	2.4	1.7	1.4	2.0
CFSM	.35	1.51	1.43	1.29	1.14	.89	.72	2.35	.37	.53	.22	.20
IN.	.40	1.68	1.65	1.49	1.23	1.03	.80	2.72	.42	.61	.26	.22

CAL YR 1987 TOTAL 7086.1 MEAN 19.4 MAX 343 MIN 1.2 CFSM 1.22 IN. 16.58
WTR YR 1988 TOTAL 5350.9 MEAN 14.6 MAX 231 MIN 1.4 CFSM .92 IN. 12.52

e Estimated.

01665500 RAPIDAN RIVER NEAR RUCKERSVILLE, VA

LOCATION.--Lat 38°16'50", long 78°20'25", Madison County, Hydrologic Unit 02080103, on left bank 250 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 mi².

PERIOD OF RECORD.--September 1942 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 above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 6-12, which is 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 has averaged less than 0.25 ft³/s. Several measurements of water temperature were made during the year. Water quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--46 years, 148 ft³/s, 17.63 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,700 ft³/s, Oct. 15, 1942, gage height, 20.8 ft, from floodmark in gage house, from rating curve extended above 12,000 ft³/s on basis of slope-area measurement at gage height 17.78 ft; minimum daily, 0.90 ft³/s, Sept. 12, 1966.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1600	1,720	4.95	May 21	0030	1,410	4.49
May 6	1600	*1,760	*5.01				

Minimum daily discharge, 7.5 ft³/s, Aug. 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	70	55	375	125	118	81	147	69	125	24	18	14
2	68	54	258	115	117	79	139	67	123	24	16	11
3	67	54	208	108	139	79	132	66	163	23	15	10
4	67	55	184	108	139	84	129	67	124	22	15	43
5	63	55	159	103	138	93	122	257	108	21	15	44
6	64	54	141	e74	131	80	119	1280	97	20	17	23
7	75	54	128	e77	154	78	166	964	90	17	20	18
8	65	55	119	e73	132	75	153	559	85	16	16	15
9	61	55	112	e84	122	75	142	393	85	15	13	13
10	59	77	108	e87	118	76	138	305	87	20	11	14
11	57	102	125	e98	115	72	136	247	77	19	11	13
12	59	84	110	e96	126	70	132	209	72	33	10	12
13	57	81	101	102	115	72	129	186	67	33	9.9	12
14	56	78	98	95	123	70	124	168	63	32	9.4	13
15	55	78	138	84	105	68	119	154	60	25	9.0	12
16	55	74	142	84	122	65	110	144	58	19	11	12
17	54	73	125	92	108	64	105	176	56	16	9.3	12
18	53	97	117	159	105	64	104	240	54	18	7.5	13
19	53	92	112	117	106	65	103	284	53	37	11	13
20	55	88	115	349	119	64	95	361	51	43	20	18
21	55	83	109	221	108	66	89	633	47	30	24	24
22	56	80	104	181	103	64	85	464	41	109	15	14
23	57	78	99	159	104	64	84	344	43	72	12	13
24	58	76	94	144	101	64	92	341	39	80	12	13
25	59	73	94	159	95	63	81	389	36	43	11	18
26	59	70	103	165	91	320	80	278	35	30	9.6	21
27	73	76	101	144	91	358	78	223	33	30	8.7	15
28	92	94	149	127	88	221	77	198	30	28	8.2	12
29	67	710	179	118	84	189	73	176	27	23	49	11
30	58	654	141	115	---	172	72	156	26	21	33	10
31	56	---	129	116	---	158	---	139	---	19	19	---
TOTAL	1903	3409	4277	3879	3317	3213	3355	9537	2055	962	465.6	486
MEAN	61.4	114	138	125	114	104	112	308	68.5	31.0	15.0	16.2
MAX	92	710	375	349	154	358	166	1280	163	109	49	44
MIN	53	54	94	73	84	63	72	66	26	15	7.5	10
CFSM	.54	1.00	1.21	1.10	1.00	.91	.98	2.70	.60	.27	.13	.14
IN.	.62	1.11	1.40	1.27	1.08	1.05	1.09	3.11	.67	.31	.15	.16

CAL YR 1987 TOTAL 57800.3 MEAN 158 MAX 3830 MIN 4.9 CFSM 1.39 IN. 18.86
WTR YR 1988 TOTAL 36858.6 MEAN 101 MAX 1280 MIN 7.5 CFSM .88 IN. 12.03

e Estimated.

01666500 ROBINSON RIVER NEAR LOCUST DALE, VA

LOCATION.--Lat 38°19'30", long 78°05'45", Madison County, Hydrologic Unit 02080103, on right bank 100 ft upstream from bridge on State Highway 614, 1.1 mi upstream from Great Run, 1.7 mi upstream from mouth, 2.0 mi southeast of Locust Dale, and 3.4 mi downstream from Crooked Run.

DRAINAGE AREA.--179 mi².

PERIOD OF RECORD.--July 1943 to current year. Prior to October 1965, published as Robertson River near Locust Dale.

REVISED RECORDS.--WSP 1171: 1948(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 283.70 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 6-18, 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.

AVERAGE DISCHARGE.--45 years, 220 ft³/s, 16.69 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,500 ft³/s, June 22, 1972, gage height, 20.92 ft, from rating curve extended above 9,100 ft³/s on basis of records for other stations in Rappahannock River basin; minimum, 1.2 ft³/s, Sept. 7, 13, 1954; minimum daily, 1.8 ft³/s, Sept. 13, 27, 1954.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 15, 1942, reached a stage of 23.9 ft, from floodmarks, discharge, about 44,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,700 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1930	*6,020	*14.40	May 6	1630	2,110	8.58

Minimum daily discharge, 28 ft³/s, July 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	111	82	674	226	225	153	211	118	162	43	61	47
2	101	80	459	207	228	150	200	115	157	40	57	42
3	101	80	355	191	322	150	192	113	221	39	53	38
4	101	80	304	192	297	157	189	115	181	38	51	68
5	93	81	249	181	272	179	176	347	157	36	51	138
6	92	77	216	e165	239	160	169	1510	141	34	51	68
7	118	77	194	e140	222	155	401	1160	127	32	77	52
8	96	79	183	e145	216	150	346	674	119	29	53	46
9	87	78	175	e140	206	150	307	487	123	28	46	43
10	86	107	172	e148	198	153	275	397	132	36	43	44
11	85	171	252	e160	191	142	252	343	113	33	41	43
12	87	130	196	e170	226	140	232	292	104	88	40	40
13	83	135	172	e165	200	145	218	247	98	56	38	38
14	79	128	160	e175	183	140	202	219	92	54	36	38
15	78	117	299	e162	184	138	193	202	87	43	39	34
16	77	111	327	e155	236	134	180	196	83	37	142	32
17	76	110	252	e250	202	132	172	347	79	32	51	32
18	76	129	219	e365	191	130	168	458	81	29	42	35
19	77	125	205	460	191	134	168	679	77	142	54	36
20	75	117	207	938	222	131	158	555	76	319	98	35
21	75	110	197	495	201	131	151	886	73	88	111	47
22	72	103	182	359	182	132	143	585	67	184	62	36
23	74	102	176	300	183	130	142	437	65	400	51	33
24	74	101	167	256	179	130	154	415	60	185	52	32
25	76	99	167	262	169	130	137	433	56	350	47	41
26	73	98	183	295	164	372	133	348	57	145	41	48
27	82	104	184	227	165	584	130	285	55	119	38	39
28	157	148	304	226	163	360	142	250	50	97	37	35
29	98	3010	423	201	157	293	128	221	48	83	126	33
30	89	1490	273	194	---	255	123	197	46	71	117	33
31	85	---	236	215	---	230	---	179	---	65	60	---
TOTAL	2734	7459	7762	7765	6014	5670	5792	12810	2987	2975	1866	1326
MEAN	88.2	249	250	250	207	183	193	413	99.6	96.0	60.2	44.2
MAX	157	3010	674	938	322	584	401	1510	221	400	142	138
MIN	72	77	160	140	157	130	123	113	46	28	36	32
CFSM	.49	1.39	1.40	1.40	1.16	1.02	1.08	2.31	.56	.54	.34	.25
IN.	.57	1.55	1.61	1.61	1.25	1.18	1.20	2.66	.62	.62	.39	.28

CAL YR 1987 TOTAL 89642 MEAN 246 MAX 5070 MIN 12 CFSM 1.37 IN. 18.63
WTR YR 1988 TOTAL 65160 MEAN 178 MAX 3010 MIN 28 CFSM .99 IN. 13.54

e Estimated.

01667500 RAPIDAN RIVER NEAR CULPEPER, VA

LOCATION.--Lat 38°21'01", long 77°58'31", Culpeper County, Hydrologic Unit 02080103, on left bank 0.7 mi upstream from Cedar Run and bridge on U.S. Highway 522, 8.5 mi south of Culpeper, and at mile 29.6.

DRAINAGE AREA.--472 mi².

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

REVISED RECORDS.--WSP 741: 1931. WSP 801: 1934(M), 1936(M). WSP 1081: 1943-46. WSP 1171: 1932(M), 1933-35. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 241.36 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 6-17, which is fair. Diurnal fluctuation at low flow caused by mill at Rapidan. 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.

AVERAGE DISCHARGE.--58 years, 526 ft³/s, 15.13 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 58,100 ft³/s, Oct. 16, 1942, gage height, 30.3 ft, from floodmark, from rating curve extended above 43,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 2.1 ft³/s, Oct. 4, 5, 11, 1954; minimum daily, 2.2 ft³/s, Oct. 4, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1915	*9,020	*12.79	No other peak equal to or greater than base discharge.			

Minimum discharge, 28 ft³/s, Aug. 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	328	183	1550	553	584	347	507	265	447	96	111	106
2	281	178	1100	505	580	337	481	257	419	89	104	87
3	274	177	875	454	904	335	458	252	603	86	94	78
4	279	174	768	453	799	349	459	255	530	80	91	84
5	251	176	655	431	737	408	436	562	432	77	87	234
6	241	169	565	e318	631	364	409	2740	384	71	84	177
7	284	163	505	e320	539	341	696	2730	347	57	112	113
8	264	166	468	e315	543	325	637	1610	326	57	106	96
9	225	170	436	e340	530	319	537	1190	329	56	88	87
10	216	210	430	e360	500	327	471	987	354	73	77	84
11	215	443	795	e415	478	309	435	865	318	58	71	87
12	215	351	591	e400	568	298	406	744	285	110	68	83
13	211	352	477	e430	530	302	393	636	269	113	65	77
14	194	337	424	e400	430	297	364	569	254	105	62	69
15	190	296	706	e370	466	291	347	528	240	88	61	71
16	186	270	845	e335	589	284	325	505	229	71	193	65
17	184	257	643	e495	517	276	308	681	219	56	86	64
18	182	277	547	948	470	272	302	989	212	53	64	65
19	178	307	503	1190	462	278	309	1450	256	180	67	70
20	173	279	495	2170	543	275	294	1200	249	715	112	69
21	170	260	484	1350	498	269	277	1870	205	286	183	71
22	163	242	437	947	439	273	263	1640	189	531	128	83
23	161	230	413	793	429	266	260	1160	165	834	79	67
24	162	232	388	679	426	264	286	1050	162	425	82	60
25	163	225	382	661	397	263	267	1100	142	766	75	79
26	157	224	417	801	381	590	248	1060	138	330	67	93
27	170	235	446	611	377	1400	262	805	173	336	57	82
28	343	343	636	556	373	890	302	698	129	224	56	71
29	254	4550	1120	566	359	711	284	614	114	179	90	62
30	206	4260	723	512	---	614	273	549	106	143	355	58
31	189	---	595	571	---	555	---	496	---	125	157	---
TOTAL	6709	15736	19419	19249	15079	12429	11296	30057	8225	6470	3132	2592
MEAN	216	525	626	621	520	401	377	970	274	209	101	86.4
MAX	343	4550	1550	2170	904	1400	696	2740	603	834	355	234
MIN	157	163	382	315	359	263	248	252	106	53	56	58
CFSM	.46	1.11	1.33	1.32	1.10	.85	.80	2.05	.58	.44	.21	.18
IN.	.53	1.24	1.53	1.52	1.19	.98	.89	2.37	.65	.51	.25	.20

CAL YR 1987 TOTAL 223251 MEAN 612 MAX 12200 MIN 12 CFSM 1.30 IN. 17.60
WTR YR 1988 TOTAL 150393 MEAN 411 MAX 4550 MIN 53 CFSM .87 IN. 11.85

e Estimated.

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA
(National stream-quality accounting network station)

LOCATION.--Lat 38°19'20", long 77°31'05", Spotsylvania County, Hydrologic Unit 02080104, on right bank 1.6 mi upstream from dam of Virginia Power, 2.2 mi downstream from Motts Run, and 3.8 mi upstream from Fredericksburg.
DRAINAGE AREA.--1,596 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1907 to current year. Monthly discharge only for some periods, published in WSP 1302.
REVISED RECORDS.--WSP 801: 1924(M). WSP 951: 1937(M). WSP 1302: 1907-12, 1913(M), 1916(M), 1918(M), 1920-21(M). WSP 2103: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 55.18 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 15, 1922, nonrecording gage, and Jan. 15, 1922, to Aug. 2, 1966, water-stage recorder at same site at datum 1.00 ft higher.
REMARKS.--Records good except those for periods of doubtful or no gage-height record, Oct. 1-13 and July 25 to Aug. 16, which are fair.
AVERAGE DISCHARGE.--81 years, 1,654 ft³/s, 14.07 in/yr.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 140,000 ft³/s, Oct. 16, 1942, gage height, 26.9 ft, present datum, from floodmarks, from rating curve extended above 76,000 ft³/s on basis of flow-over-dam and slope-area measurements at gage heights 26.1 ft and 26.9 ft, present datum; minimum, 5 ft³/s, Oct. 11, 12, 1930.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1889 was probably several feet lower than that of Oct. 16, 1942.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 16,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 30	1000	*30,400	*11.09	No other peak equal to or greater than base discharge.			

Minimum discharge, 116 ft³/s, Aug. 17, Sept. 22-23; minimum gage height, 1.30 ft, Sept. 22-23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e690	458	6760	1440	1640	846	1200	685	1270	290	e250	342
2	e630	431	3600	1340	1610	818	1120	654	1180	274	e220	250
3	e555	416	2460	1190	4070	804	1070	628	1240	257	e195	197
4	e560	410	1910	1100	2990	816	1040	615	1540	244	e180	182
5	e535	408	1640	1100	2700	1040	1040	809	1280	233	e170	170
6	e520	401	1380	924	1980	1160	967	9600	1110	222	e150	241
7	e610	380	1190	971	1530	953	1500	12900	996	211	e210	344
8	e645	361	1080	1040	1350	875	2460	5930	916	197	e240	255
9	e560	363	1010	1130	1400	829	2090	3690	892	182	e200	205
10	e500	428	980	1280	1290	835	1650	2800	982	178	e170	189
11	e475	1010	2240	1110	1230	827	1410	2440	1010	244	e155	170
12	e465	1240	2270	1020	1890	771	1280	2110	867	206	e142	159
13	e445	1050	1420	984	2010	754	1180	1750	794	232	e135	160
14	421	1270	1130	1140	1340	758	1110	1530	739	368	e130	155
15	400	1160	1430	1020	1200	730	1040	1390	686	287	e125	145
16	388	931	3610	911	1610	699	983	1350	626	254	e122	130
17	385	777	2220	844	1720	678	917	6940	589	216	160	128
18	389	1160	1590	1130	1340	660	882	4360	575	190	182	124
19	383	1060	1330	2730	1240	653	897	6910	594	174	150	121
20	378	789	1230	10800	1650	662	925	5270	578	355	138	120
21	369	664	1280	7890	1620	654	853	7500	577	1020	161	121
22	358	585	1190	3420	1270	647	805	5120	511	582	270	117
23	350	519	1070	2360	1110	643	771	3820	479	809	254	117
24	348	498	997	1880	1120	631	773	4240	442	897	215	135
25	345	489	939	1640	1060	630	795	4270	460	e1000	161	138
26	343	480	1010	2130	973	736	739	3340	442	e700	153	142
27	437	486	1270	1850	936	4980	700	2470	387	e660	137	152
28	666	776	1410	1320	928	2900	724	2040	395	e520	128	258
29	966	8010	4220	1280	892	1870	809	1800	359	e410	146	211
30	664	25600	2390	1250	---	1520	737	1570	315	e350	157	176
31	513	---	1650	1460	---	1330	---	1400	---	e300	354	---
TOTAL	15293	52610	57906	59684	45699	32709	32467	109931	22831	12062	5560	5354
MEAN	493	1754	1868	1925	1576	1055	1082	3546	761	389	179	178
MAX	966	25600	6760	10800	4070	4980	2460	12900	1540	1020	354	344
MIN	343	361	939	844	892	630	700	615	315	174	122	117
CFSM	.31	1.10	1.17	1.21	.99	.66	.68	2.22	.48	.24	.11	.11
IN.	.36	1.23	1.35	1.39	1.07	.76	.76	2.56	.53	.28	.13	.12

CAL YR 1987 TOTAL 576369 MEAN 1579 MAX 30100 MIN 69 CFSM .99 IN. 13.43
WTR YR 1988 TOTAL 452106 MEAN 1235 MAX 25600 MIN 117 CFSM .77 IN. 10.54

e Estimated.

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1929-30, 1956, 1967-74, 1978 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1955 to September 1956, April 1968 to August 1974.
WATER TEMPERATURE: October 1955 to September 1956, April 1968 to August 1974.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV											
20...	1130	783	101	7.00	10.0	746	4.3	10.6	96	110	K68
JAN											
12...	1115	1080	103	6.90	0.5	776	3.3	--	--	K13	K17
FEB											
23...	1000	1090	97	7.20	5.0	762	6.3	11.1	87	K9	K5
MAY											
20...	1030	3980	70	7.10	18.0	753	110	8.9	95	K6300	5800
JUN											
22...	0900	508	88	6.90	27.0	763	1.0	6.4	80	27	34
AUG											
16...	0900	123	73	6.90	29.5	760	0.70	6.7	89	16	13

DATE	HARD-NESS TOTAL (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
NOV											
20...	36	8.8	3.3	4.6	3.1	25	15	11	0.20	11	81
JAN											
12...	28	6.9	2.5	4.0	1.4	20	9.6	6.0	0.20	14	52
FEB											
23...	27	6.7	2.5	3.9	1.6	19	10	5.7	0.20	12	59
MAY											
20...	24	5.9	2.2	3.0	1.8	17	12	1.2	0.20	10	56
JUN											
22...	23	5.4	2.4	4.2	1.7	22	6.4	3.4	0.10	4.3	38
AUG											
16...	25	5.4	2.7	5.3	2.8	26	6.1	5.7	0.10	8.6	56

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)
NOV											
20...	75	<0.010	0.510	0.010	0.020	0.60	0.040	<0.010	0.020	130	<1
JAN											
12...	61	0.010	0.920	0.030	0.030	0.20	0.020	0.020	<0.010	--	--
FEB											
23...	58	<0.010	0.830	0.030	0.030	0.30	0.040	0.040	0.030	50	<1
MAY											
20...	49	<0.010	0.560	0.040	0.040	0.50	0.050	<0.010	0.050	100	<1
JUN											
22...	42	<0.010	0.180	0.020	0.060	0.40	0.020	0.020	0.010	--	--
AUG											
16...	53	<0.010	<0.100	<0.010	0.040	0.20	0.060	0.050	0.010	40	1

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)
NOV											
20...	25	<0.5	<1	<1	<3	1	300	<5	<4	9	<0.1
JAN											
12...	--	--	--	--	--	--	--	--	--	--	--
FEB											
23...	19	<0.5	<1	<1	<3	<1	120	<5	<4	9	<0.1
MAY											
20...	17	<0.5	<1	<1	<3	7	150	<5	<4	4	<0.1
JUN											
22...	--	--	--	--	--	--	--	--	--	--	--
AUG											
16...	11	<0.5	<1	<1	<3	3	140	<5	<4	30	0.6

DATE	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV										
20...	<10	<1	<1	<1.0	44	<6	21	--	8	84
JAN										
12...	--	--	--	--	--	--	--	--	4	72
FEB										
23...	<10	1	<1	<1.0	33	<6	10	--	11	--
MAY										
20...	<10	2	<1	1.0	30	<6	7	--	103	99
JUN										
22...	--	--	--	--	--	--	--	--	2	95
AUG										
16...	<10	<1	<1	1.0	41	<6	3	3.7	4	85

01668500 CAT POINT CREEK NEAR MONTROSS, VA

LOCATION.--Lat 38°02'23", long 76°49'38", Richmond County, Hydrologic Unit 02080104, on right bank 200 ft upstream from bridge on State Highway 637, 1.7 mi west of Farmers Fork, 3.8 mi south of Montross, and 11.4 mi upstream from mouth.

DRAINAGE AREA.--45.6 mi².

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

REVISED RECORDS.--WSP 1382: 1944(M), 1945, 1946-51(M), 1952(P), 1953-54(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3.04 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 19, 1953, nonrecording gage near right bank at downstream side of highway bridge at same datum.

REMARKS.--Records good except those for periods of no gage-height record, Jan. 7-13, 28-30, 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 Water Control Board.

AVERAGE DISCHARGE.--45 years, 44.3 ft³/s, 13.19 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,820 ft³/s, Aug. 20, 1969, gage height, 10.45 ft, from rating curve extended above 1,400 ft³/s; no flow at times in 1943, 1957, 1959-60, 1966, and 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in September 1935 exceeded 9.3 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 21	0600	264	5.50	May 19	1800	369	5.78
Feb. 12	2400	*390	*5.83				

Minimum discharge, 1.1 ft³/s, Aug. 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.8	9.4	43	26	45	40	46	31	23	13	13	3.1
2	5.0	9.3	32	24	47	38	44	30	25	8.6	8.5	2.8
3	5.4	9.2	27	23	108	38	42	29	34	6.2	5.9	2.6
4	7.0	9.2	26	27	106	39	52	29	34	4.5	4.5	2.8
5	6.8	9.2	25	28	81	43	94	47	30	3.5	3.4	3.3
6	6.6	9.3	23	27	63	41	91	99	26	3.2	3.0	3.6
7	8.4	9.4	23	e24	58	39	74	85	21	2.9	2.7	3.2
8	8.0	9.5	22	e23	54	36	120	56	18	2.6	2.4	2.8
9	7.7	9.4	22	e23	49	37	119	43	16	2.6	2.3	2.8
10	7.4	13	24	e24	46	54	84	39	17	2.6	2.1	5.2
11	7.0	38	53	e24	47	51	69	37	14	2.4	2.3	5.7
12	6.9	76	60	e23	264	44	59	38	13	2.4	2.4	5.2
13	6.8	46	42	e23	265	42	54	35	11	2.6	2.1	4.4
14	6.8	31	31	23	139	41	51	32	9.3	2.4	1.8	3.9
15	6.8	25	43	23	94	39	49	29	8.1	2.2	1.6	3.2
16	6.7	21	54	24	82	36	46	27	6.7	2.0	1.5	2.9
17	6.7	19	41	24	73	35	44	36	25	1.9	1.3	2.8
18	7.1	18	31	34	64	34	43	145	40	12	1.2	2.6
19	7.2	16	27	45	58	35	47	295	29	24	1.7	2.5
20	7.2	16	26	176	63	34	55	188	41	26	4.0	2.4
21	7.2	15	25	222	57	33	52	96	23	36	8.4	2.3
22	7.0	14	23	116	51	33	44	72	19	27	13	2.3
23	7.1	14	23	76	48	33	40	59	14	35	11	2.3
24	7.1	13	22	60	50	33	39	48	11	170	7.9	2.4
25	7.2	13	22	58	48	33	35	48	8.2	98	5.0	4.1
26	7.2	13	24	72	46	67	33	51	21	42	3.3	6.5
27	7.7	14	25	68	43	134	33	45	71	33	2.6	5.4
28	9.1	17	29	e58	43	100	34	39	45	29	2.2	4.7
29	9.2	35	37	e47	41	68	32	33	29	23	2.3	4.3
30	9.5	56	32	e48	---	56	31	30	18	17	2.5	4.5
31	9.6	---	28	48	---	50	---	26	---	14	3.0	---
TOTAL	225.2	606.9	965	1541	2233	1436	1656	1897	700.3	651.6	128.9	106.6
MEAN	7.26	20.2	31.1	49.7	77.0	46.3	55.2	61.2	23.3	21.0	4.16	3.55
MAX	9.6	76	60	222	265	134	120	295	71	170	13	6.5
MIN	5.0	9.2	22	23	41	33	31	26	6.7	1.9	1.2	2.3
CFSM	.16	.44	.68	1.09	1.69	1.02	1.21	1.34	.51	.46	.09	.08
IN.	.18	.50	.79	1.26	1.82	1.17	1.35	1.55	.57	.53	.11	.09

CAL YR 1987 TOTAL 13363.99 MEAN 36.6 MAX 243 MIN .68 CFSM .80 IN. 10.90
WTR YR 1988 TOTAL 12147.5 MEAN 33.2 MAX 295 MIN 1.2 CFSM .73 IN. 9.91

e Estimated.

01669000 PISCATAWAY CREEK NEAR TAPPAHANNOCK, VA

LOCATION.--Lat 37°52'37", long 76°54'03", Essex County, Hydrologic Unit 02080104, on right bank at upstream side of bridge on State Highway 691, 0.6 mi south of Hensley Fork, 2.3 mi downstream from Sturgeon Swamp, and 4.2 mi southwest of Tappahannock.

DRAINAGE AREA.--28.0 mi².

PERIOD OF RECORD.--July 1951 to current year.

REVISED RECORDS.--WSP 2103: Drainage area. WDR VA-79-1: 1970-76(P), 1978(P).

GAGE.--Water-stage recorder. Datum of gage is 2.50 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for periods of backwater from debris, Oct. 1-12 and Oct. 17 to Nov. 9, and periods with ice effect, Jan. 6-8, 28, 29, 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 Water Control Board.

AVERAGE DISCHARGE.--37 years, 31.6 ft³/s, 15.33 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,380 ft³/s, Aug. 20, 1969, gage height, 7.52 ft, from rating curve extended above 1,400 ft³/s; minimum, 0.01 ft³/s, Oct. 2, 1954; minimum gage height, 0.07 ft, July 24, 25, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Feb. 12	1830	*132	*3.11	No peak equal to or greater than base discharge.			

Minimum discharge, 1.3 ft³/s, July 18, 20, 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e4.4	e7.2	29	16	21	21	25	19	9.4	4.6	8.4	3.8
2	e4.4	e7.1	19	15	23	20	24	18	10	3.9	13	3.5
3	e4.7	e7.0	15	14	57	19	24	18	16	3.5	11	3.0
4	e5.8	e6.9	15	17	55	20	51	18	19	2.5	8.0	2.9
5	e5.6	e6.9	16	20	42	21	75	29	18	2.4	5.9	3.0
6	e5.4	e6.8	17	e16	32	21	48	59	13	2.1	4.6	2.9
7	e11	e6.8	14	e13	26	19	41	47	11	2.0	4.0	3.3
8	e13	e6.7	13	e13	24	18	48	32	9.1	1.8	4.6	3.3
9	e11	e6.6	12	14	23	19	45	24	8.2	1.8	7.4	3.4
10	e8.0	12	14	15	23	33	36	22	7.6	1.6	5.5	5.9
11	e6.1	35	41	14	25	33	31	23	7.6	1.5	5.8	10
12	e5.4	40	47	13	102	24	30	21	7.3	1.5	6.5	9.3
13	9.3	28	28	14	82	21	32	19	6.5	1.4	9.2	6.6
14	6.2	22	20	15	50	22	31	17	5.4	1.4	7.0	5.2
15	4.3	18	25	13	43	21	28	16	4.4	1.5	4.7	3.8
16	4.1	15	35	12	42	18	26	17	3.4	1.6	3.4	2.7
17	e4.1	13	27	12	38	17	24	23	7.0	1.5	2.7	2.2
18	e3.9	11	19	26	32	16	23	46	36	1.5	2.0	2.1
19	e3.8	10	16	40	30	18	30	46	24	1.5	2.8	2.1
20	e3.7	10	15	71	34	18	41	31	26	1.4	4.1	2.0
21	e3.7	11	14	73	33	17	33	24	24	1.4	5.0	1.9
22	e3.7	8.3	14	44	28	16	26	23	15	2.2	5.4	1.8
23	e3.6	8.2	13	32	25	16	24	23	9.7	10	4.6	1.7
24	e3.6	8.2	13	26	27	16	23	19	7.1	38	4.1	1.7
25	e3.6	8.3	13	26	26	16	21	18	5.7	34	3.1	1.7
26	e3.6	8.5	15	34	24	34	21	17	7.2	16	2.7	1.6
27	e4.8	9.5	17	30	23	76	19	17	9.5	12	2.3	1.6
28	e8.0	16	19	e23	23	48	20	15	8.3	72	2.0	2.3
29	e8.8	35	26	e20	23	34	21	14	7.3	52	2.2	3.1
30	e9.0	42	23	21	---	29	20	12	6.2	22	2.4	2.9
31	e7.7	---	18	22	---	27	---	11	---	13	3.5	---
TOTAL	184.3	431.0	622	734	1036	748	941	738	348.9	313.6	157.9	101.3
MEAN	5.95	14.4	20.1	23.7	35.7	24.1	31.4	23.8	11.6	10.1	5.09	3.38
MAX	13	42	47	73	102	76	75	59	36	72	13	10
MIN	3.6	6.6	12	12	21	16	19	11	3.4	1.4	2.0	1.6
CFSM	.21	.51	.72	.85	1.28	.86	1.12	.85	.42	.36	.18	.12
IN.	.24	.57	.83	.98	1.38	.99	1.25	.98	.46	.42	.21	.13

CAL YR 1987 TOTAL 9367.7 MEAN 25.7 MAX 165 MIN 1.3 CFSM .92 IN. 12.45
WTR YR 1988 TOTAL 6356.0 MEAN 17.4 MAX 102 MIN 1.4 CFSM .62 IN. 8.44

e Estimated.

01669520 DRAGON SWAMP AT MASCOT, VA

LOCATION.--Lat 37°38'01", long 76°41'48", King and Queen County, Hydrologic Unit 02080102, on right bank at upstream side of bridge on State Highway 603, 0.8 mi east of Mascot, 2.1 mi downstream from Church Swamp, and 3.3 mi west of Warner.

DRAINAGE AREA.--108 mi².

PERIOD OF RECORD.--August 1981 to current year.

GAGE.--Water-stage recorder. Datum of gage is 21.60 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for period of backwater from beaver dam, July 7-27, which is fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--7 years, 106 ft³/s, 13.33 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,530 ft³/s, Apr. 17, 1983, gage height, 8.85 ft, from rating curve extended above 1,400 ft³/s; minimum, 0.18 ft³/s, July 18-20, 1986.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 600 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Feb. 14	2100	*482	*6.10	No peak equal to or greater than base discharge.			

Minimum daily discharge, 3.4 ft³/s, Aug. 13, 14, 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	16	101	72	89	80	98	61	47	6.1	36	5.6
2	15	16	103	71	85	75	86	58	41	5.7	31	5.3
3	18	17	108	70	130	71	76	55	47	5.1	25	5.5
4	29	17	110	83	156	70	84	50	46	4.8	22	5.5
5	27	17	100	83	172	67	165	84	42	4.6	18	8.4
6	26	19	88	e72	188	64	139	201	38	4.1	14	7.2
7	32	18	76	59	187	62	125	189	33	e4.0	14	5.9
8	31	16	65	48	155	59	135	170	29	e3.9	13	5.2
9	29	17	58	47	132	63	132	153	24	e3.7	9.1	5.6
10	27	22	56	46	116	97	126	144	23	e3.6	7.8	22
11	25	36	86	42	111	100	116	131	20	e3.5	12	21
12	24	46	102	41	270	92	109	126	18	e3.5	11	21
13	22	61	101	42	371	92	108	109	16	e3.4	8.4	22
14	21	75	97	42	443	96	103	91	14	e3.4	7.5	20
15	19	82	121	40	436	90	96	76	13	e3.5	7.1	16
16	18	78	139	37	338	80	89	68	11	e3.5	6.3	13
17	16	71	127	37	246	72	80	87	11	e3.5	5.5	10
18	16	68	109	66	189	67	74	77	11	e4.0	5.0	9.0
19	15	64	102	90	159	68	77	73	12	e4.0	8.2	7.9
20	15	57	90	144	155	64	82	81	11	e3.5	28	7.0
21	16	51	79	200	145	59	78	124	9.9	e3.4	26	6.2
22	16	46	72	241	126	55	72	159	8.7	e4.1	20	5.8
23	16	44	68	238	115	51	68	154	7.7	e8.2	16	5.0
24	15	43	58	204	112	50	68	141	7.0	e17	19	4.9
25	14	42	57	170	108	50	67	127	6.4	e15	17	4.8
26	14	40	60	146	100	58	65	116	6.8	e13	13	4.8
27	15	40	60	e117	92	89	61	99	9.7	e12	11	4.5
28	17	47	66	e105	88	104	67	86	8.3	18	8.4	4.4
29	16	70	79	e100	84	108	63	75	7.2	27	7.5	5.0
30	16	98	82	94	---	114	63	64	6.4	34	7.1	5.1
31	16	---	75	93	---	111	---	55	---	37	6.2	---
TOTAL	611	1334	2695	2940	5098	2378	2772	3284	585.1	270.1	440.1	273.6
MEAN	19.7	44.5	86.9	94.8	176	76.7	92.4	106	19.5	8.71	14.2	9.12
MAX	32	98	139	241	443	114	165	201	47	37	36	22
MIN	14	16	56	37	84	50	61	50	6.4	3.4	5.0	4.4
CFSM	.18	.41	.80	.88	1.63	.71	.86	.98	.18	.08	.13	.08
IN.	.21	.46	.93	1.01	1.76	.82	.95	1.13	.20	.09	.15	.09

CAL YR 1987 TOTAL 43717.15 MEAN 120 MAX 593 MIN .95 CFSM 1.11 IN. 15.06
WTR YR 1988 TOTAL 22680.9 MEAN 62.0 MAX 443 MIN 3.4 CFSM .57 IN. 7.81

e Estimated.

01670000 BEAVERDAM SWAMP NEAR ARK, VA

LOCATION.--Lat 37°28'14", long 76°33'48", Gloucester County, Hydrologic Unit 02080102, on right bank 300 ft downstream from bridge on State Highway 606, 1.4 mi upstream from Beech Swamp, 2.3 mi north of Ark, and 4.3 mi northwest of Gloucester.

DRAINAGE AREA.--6.63 mi².

PERIOD OF RECORD.--October 1949 to January 1989 (discontinued).

REVISED RECORDS.--WSP 1502: 1950, 1951-52(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 36.43 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair for period October 1987 to September 1988. Records good for period October 1988 to January 1989. 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 Water Control Board.

AVERAGE DISCHARGE.--39 years, 7.06 ft³/s, 14.46 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 570 ft³/s, Sept. 12, 1960, gage height, 5.88 ft, from rating curve extended above 130 ft³/s; no flow July 30 to Aug. 2, 1953, Aug. 18, Sept. 4, Sept. 29 to Oct. 2, 1981.

EXTREMES FOR CURRENT PERIOD OCTOBER 1987 TO SEPTEMBER 1988.--Peak discharges equal to or greater than base discharge of 65 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Feb. 12	1200	*53	*3.38	No peak equal to or greater than base discharge.			

October 1987 to September 1988: Minimum daily discharge, 0.17 ft³/s, July 17, 18.

October 1988 to January 1989: Maximum discharge during period, 54 ft³/s, Nov. 1, gage height, 3.43 ft; minimum daily, 0.90 ft³/s, Oct. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	2.3	3.2	2.7	2.7	3.8	4.0	4.4	1.9	.65	2.2	1.2
2	1.0	2.2	2.5	2.5	2.7	3.7	3.8	2.5	1.8	.58	2.4	.80
3	1.3	2.2	2.3	2.6	5.1	3.6	3.7	2.1	3.6	.48	2.2	.95
4	1.6	2.3	2.4	4.2	5.2	3.6	5.4	2.1	4.6	.43	1.5	1.2
5	1.4	2.4	2.5	4.4	4.5	3.7	6.2	4.3	3.3	.41	1.1	3.0
6	1.2	2.5	2.2	3.5	3.6	3.5	5.2	7.3	2.5	.37	.85	2.7
7	1.4	2.5	2.2	3.0	3.0	3.4	5.1	5.4	1.9	.33	4.5	1.8
8	1.3	2.5	2.9	3.0	3.0	3.3	5.7	3.7	1.6	.26	8.7	2.0
9	1.2	2.3	2.7	3.0	3.0	3.4	5.0	3.2	1.5	.26	4.1	2.1
10	1.1	2.6	2.9	3.3	3.0	4.2	4.4	3.2	1.6	.26	2.3	4.5
11	1.0	3.7	4.1	3.2	4.3	4.1	4.3	4.6	1.6	.22	1.4	3.3
12	1.1	4.2	4.0	2.9	49	3.6	3.7	4.6	1.4	.22	.85	2.4
13	1.1	3.5	3.3	2.9	15	3.3	4.2	3.8	1.3	.22	.65	1.8
14	1.2	2.9	2.9	3.0	9.1	3.2	4.3	3.4	1.0	.22	.52	1.3
15	1.2	2.5	3.1	2.7	7.0	3.0	3.8	3.2	1.1	.20	.45	1.4
16	1.2	2.3	3.7	2.4	6.5	2.9	3.7	3.2	.90	.20	.37	1.4
17	1.2	2.0	3.1	2.5	6.0	2.8	3.4	7.3	.75	.17	.35	1.3
18	1.2	1.9	2.7	4.4	5.4	2.8	3.3	5.2	.75	.17	.26	1.2
19	1.2	1.9	2.6	4.4	5.2	3.0	3.8	3.8	.85	.24	.22	1.2
20	1.3	1.8	2.6	5.4	5.7	3.1	4.4	3.2	.90	.29	2.2	1.2
21	1.4	1.7	2.5	5.2	5.1	3.0	3.7	3.0	.90	.31	3.4	1.1
22	1.5	1.7	2.5	3.7	4.5	3.0	3.0	5.4	.75	.35	2.2	1.0
23	1.5	1.7	2.5	3.2	4.3	3.0	2.8	5.0	.75	1.1	1.3	1.0
24	1.6	1.7	2.5	3.0	4.4	2.8	e2.6	3.5	.65	5.4	2.0	1.2
25	1.6	1.7	2.7	3.3	4.5	3.0	e2.5	3.0	.60	3.0	2.6	1.3
26	1.7	1.7	3.0	4.0	4.3	3.2	2.6	2.8	.58	1.9	1.7	1.2
27	1.9	2.2	3.0	3.5	4.1	7.0	2.7	2.6	1.0	1.5	1.0	1.1
28	2.9	3.2	3.0	3.2	4.1	6.0	2.9	2.5	1.1	2.3	.60	1.2
29	2.9	4.6	3.5	3.1	3.8	4.6	3.0	3.3	1.0	2.1	.52	1.2
30	2.6	4.5	3.0	3.0	---	4.2	3.0	3.1	.80	1.6	.90	1.2
31	2.4	---	2.8	2.9	---	4.0	---	2.4	---	1.3	1.3	---
TOTAL	46.2	75.2	88.9	104.1	188.1	111.8	116.2	117.1	42.98	27.04	54.64	48.25
MEAN	1.49	2.51	2.87	3.36	6.49	3.61	3.87	3.78	1.43	.87	1.76	1.61
MAX	2.9	4.6	4.1	5.4	49	7.0	6.2	7.3	4.6	5.4	8.7	4.5
MIN	1.0	1.7	2.2	2.4	2.7	2.8	2.5	2.1	.58	.17	.22	.80
CFSM	.22	.38	.43	.51	.98	.54	.58	.57	.22	.13	.27	.24
IN.	.26	.42	.50	.58	1.06	.63	.65	.66	.24	.15	.31	.27

CAL YR 1987 TOTAL 2404.99 MEAN 6.59 MAX 82 MIN .55 CFSM .99 IN. 13.49
WTR YR 1988 TOTAL 1020.51 MEAN 2.79 MAX 49 MIN .17 CFSM .42 IN. 5.73

e Estimated.

01670000 BEAVERDAM SWAMP NEAR ARK, VA--Continued

DISCHARGE, CUBIC FEET PER SECOND, OCTOBER 1988 TO JANUARY 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	32	6.8	4.0	---	---	---	---	---	---	---	---
2	.90	39	4.1	4.3	---	---	---	---	---	---	---	---
3	3.3	18	3.7	4.1	---	---	---	---	---	---	---	---
4	8.3	5.7	3.5	3.6	---	---	---	---	---	---	---	---
5	6.2	5.2	3.3	3.4	---	---	---	---	---	---	---	---
6	3.4	5.2	3.3	3.6	---	---	---	---	---	---	---	---
7	2.5	5.0	3.3	4.1	---	---	---	---	---	---	---	---
8	2.0	4.2	3.3	4.2	---	---	---	---	---	---	---	---
9	1.8	3.7	3.5	3.4	---	---	---	---	---	---	---	---
10	1.6	3.5	4.3	3.3	---	---	---	---	---	---	---	---
11	1.5	3.5	4.6	3.1	---	---	---	---	---	---	---	---
12	1.5	3.6	4.2	3.2	---	---	---	---	---	---	---	---
13	1.4	4.2	3.7	4.0	---	---	---	---	---	---	---	---
14	1.4	4.0	3.5	4.1	---	---	---	---	---	---	---	---
15	1.7	3.6	3.7	3.3	---	---	---	---	---	---	---	---
16	1.4	3.2	3.8	3.2	---	---	---	---	---	---	---	---
17	1.2	3.6	3.5	2.9	---	---	---	---	---	---	---	---
18	1.2	4.4	3.4	e2.5	---	---	---	---	---	---	---	---
19	1.3	4.2	3.6	---	---	---	---	---	---	---	---	---
20	1.2	3.7	3.7	---	---	---	---	---	---	---	---	---
21	4.3	3.4	3.8	---	---	---	---	---	---	---	---	---
22	18	3.4	4.1	---	---	---	---	---	---	---	---	---
23	13	3.3	3.8	---	---	---	---	---	---	---	---	---
24	11	3.1	3.7	---	---	---	---	---	---	---	---	---
25	4.2	2.9	3.6	---	---	---	---	---	---	---	---	---
26	4.0	2.7	3.4	---	---	---	---	---	---	---	---	---
27	3.6	2.9	3.3	---	---	---	---	---	---	---	---	---
28	3.5	13	3.3	---	---	---	---	---	---	---	---	---
29	3.6	20	3.5	---	---	---	---	---	---	---	---	---
30	3.7	11	3.4	---	---	---	---	---	---	---	---	---
31	3.8	---	3.6	---	---	---	---	---	---	---	---	---
TOTAL	117.50	225.2	116.3	---	---	---	---	---	---	---	---	---
MEAN	3.79	7.51	3.75	---	---	---	---	---	---	---	---	---
MAX	18	39	6.8	---	---	---	---	---	---	---	---	---
MIN	.90	2.7	3.3	---	---	---	---	---	---	---	---	---
CFSM	.57	1.13	.57	---	---	---	---	---	---	---	---	---
IN.	.66	1.26	.65	---	---	---	---	---	---	---	---	---

CAL YR 1988 TOTAL 1269.21 MEAN 3.47 MAX 49 MIN .17 CFSM .52 IN. 7.12

e Estimated.

01670400 NORTH ANNA RIVER NEAR PARTLOW, VA

LOCATION.--Lat 38°00'46", long 77°42'06", Spotsylvania County, Hydrologic Unit 02080106, on left downstream side of bridge on State Highway 601, 1.1 mi upstream from Northeast Creek, and 3.8 mi southwest of Partlow.

DRAINAGE AREA.--344 mi².

PERIOD OF RECORD.--October 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is 168.25 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since January 1972 by Lake Anna, capacity, 373,000 acre-ft, 0.5 mi upstream. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--10 years, 292 ft³/s, 11.53 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,700 ft³/s, Feb. 26, 1979, gage height, 25.30 ft, from rating curve extended above 7,200 ft³/s; minimum, 25 ft³/s, Aug. 1, 1988.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 22, 1972, reached a stage of 36.32 ft, from floodmark.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,810 ft³/s, Nov. 30, gage height, 14.35 ft; minimum, 25 ft³/s, Aug. 1; minimum daily, 38 ft³/s, Aug. 26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	67	2390	371	193	193	191	65	185	57	114	61
2	58	62	1810	369	272	193	190	59	145	56	56	60
3	60	64	288	171	1650	193	190	59	69	55	46	58
4	58	66	328	370	663	193	407	59	58	55	45	59
5	56	71	255	311	461	193	230	186	46	59	44	59
6	66	75	193	199	209	193	212	1360	46	58	49	56
7	52	75	193	107	193	186	545	306	46	57	54	54
8	51	76	190	448	355	186	489	188	46	56	51	53
9	50	72	192	205	518	197	250	190	46	65	49	61
10	50	283	280	196	339	444	191	176	105	76	49	46
11	50	562	1880	196	352	193	190	185	112	59	48	45
12	51	560	1090	196	920	171	190	185	51	57	54	45
13	51	237	193	196	799	180	191	221	53	59	56	45
14	50	334	193	196	202	191	190	185	53	63	55	45
15	50	290	1170	196	284	191	191	185	62	63	55	45
16	51	289	672	313	442	113	131	151	55	60	89	45
17	50	305	193	364	320	60	89	71	56	62	121	46
18	51	339	192	452	225	60	154	299	55	63	125	45
19	57	332	193	1380	362	62	189	368	58	68	122	53
20	60	335	193	2470	544	76	190	219	60	71	126	56
21	61	303	412	2460	304	167	191	310	60	69	116	55
22	69	89	317	1880	197	62	190	1830	139	62	118	55
23	56	47	151	565	248	62	190	521	69	59	112	55
24	55	48	187	207	282	123	140	240	61	60	118	63
25	56	48	317	501	193	61	76	489	60	57	94	69
26	59	77	333	547	193	257	67	221	65	56	38	66
27	69	251	333	541	193	1700	72	557	58	64	46	65
28	72	337	354	226	192	233	139	200	58	132	56	63
29	72	2140	379	69	186	193	82	170	59	202	60	63
30	79	4180	386	157	---	212	74	53	59	204	50	60
31	70	---	372	191	---	219	---	59	---	204	53	---
TOTAL	1797	12014	15629	16050	11291	6757	5821	9367	2095	2388	2269	1651
MEAN	58.0	400	504	518	389	218	194	302	69.8	77.0	73.2	55.0
MAX	79	4180	2390	2470	1650	1700	545	1830	185	204	126	69
MIN	50	47	151	69	186	60	67	53	46	55	38	45
CFSM	.17	1.16	1.47	1.51	1.13	.63	.56	.88	.20	.22	.21	.16
IN.	.19	1.30	1.69	1.74	1.22	.73	.63	1.01	.23	.26	.25	.18

CAL YR 1987 TOTAL 134836 MEAN 369 MAX 6460 MIN 40 CFSM 1.07 IN. 14.58
WTR YR 1988 TOTAL 87129 MEAN 238 MAX 4180 MIN 38 CFSM .69 IN. 9.42

01671020 NORTH ANNA RIVER AT HART CORNER, NEAR DOSWELL, VA

LOCATION.--Lat 37°51'00", long 77°25'41", Hanover County, Hydrologic Unit 02080106, on right bank at downstream side of bridge on State Highway 30, 0.3 mi west of Hart Corner, 2.1 mi east of Doswell, and 5.4 mi upstream from confluence with South Anna River.

DRAINAGE AREA.--463 mi^2.

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

GAGE.--Water-stage recorder. Elevation of gage is 43 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. 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. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--9 years, 382 ft^3/s, 11.20 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,100 ft^3/s, Mar. 30, 1984, gage height, 21.28 ft; minimum, 39 ft^3/s, Aug. 28, 1988.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1969 reached a stage of 28.02 ft, from floodmark, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,490 ft^3/s, Nov. 30, gage height, 15.92 ft; minimum, 39 ft^3/s, Aug. 28; minimum daily, 42 ft^3/s, Aug. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	86	108	3960	450	306	252	300	123	146	79	224	65
2	74	98	2150	439	314	254	285	118	261	76	132	67
3	71	90	1250	376	1280	254	279	107	262	74	68	64
4	75	88	362	300	1510	255	293	107	183	71	53	64
5	77	89	456	439	751	261	502	135	155	70	53	67
6	74	90	320	320	529	268	307	867	135	77	51	63
7	97	89	278	243	334	260	489	1130	119	73	50	59
8	80	90	271	230	319	245	712	511	106	72	55	54
9	77	93	261	450	550	245	616	308	100	70	53	54
10	71	114	266	257	534	362	350	289	101	120	51	69
11	67	570	1330	249	398	421	314	289	158	122	53	54
12	66	716	2000	245	688	264	296	275	168	82	53	49
13	66	606	596	245	1490	227	300	283	102	76	51	49
14	65	396	331	251	467	248	289	262	100	74	57	48
15	63	452	506	245	280	246	283	245	94	78	54	47
16	62	410	1540	248	540	242	275	261	96	74	53	46
17	61	391	444	389	476	148	207	560	90	69	70	46
18	60	426	330	461	403	112	159	793	86	68	119	47
19	61	450	300	863	349	111	255	662	85	80	119	48
20	63	433	288	2730	563	110	314	544	87	158	123	49
21	71	415	290	3660	583	136	297	322	93	102	129	57
22	71	348	532	2710	320	191	279	1810	91	162	119	59
23	75	155	301	1700	293	105	269	1900	175	170	113	59
24	75	105	219	437	394	105	268	630	108	111	113	57
25	61	101	269	450	296	164	197	576	93	87	115	63
26	66	97	393	714	271	138	141	501	88	75	105	74
27	69	133	405	656	268	1400	128	455	99	72	46	69
28	241	375	417	576	268	1090	132	508	87	101	42	68
29	264	870	501	245	260	372	197	293	84	184	157	66
30	175	3650	509	182	---	318	138	250	82	243	129	65
31	134	---	474	285	---	329	---	144	---	231	71	---
TOTAL	2718	12048	21549	21045	15034	9133	8871	15258	3634	3201	2681	1746
MEAN	87.7	402	695	679	518	295	296	492	121	103	86.5	58.2
MAX	264	3650	3960	3660	1510	1400	712	1900	262	243	224	74
MIN	60	88	219	182	260	105	128	107	82	68	42	46
(*)	2.6	2.5	2.3	2.2	2.2	2.4	2.2	2.4	3.1	3.4	3.5	3.0
MEAN‡	90.3	404	697	681	520	297	298	494	124	106	90.0	61.2
CFSM‡	.20	.87	1.51	1.47	1.12	.64	.64	1.07	.27	.23	.19	.13
IN.‡	.22	.97	1.74	1.70	1.21	.74	.72	1.23	.30	.26	.22	.15

CAL YR 1987	TOTAL	177547	MEAN	486	MAX	7720	MIN	45	MEAN‡	489	CFSM‡	1.06	IN.‡	14.34
WTR YR 1988	TOTAL	116918	MEAN	319	MAX	3960	MIN	42	MEAN‡	322	CFSM‡	.70	IN.‡	9.47

* Average diversion, equivalent in cubic feet per second; provided by Hanover County Department of Public Utilities.
‡ Adjusted for diversion.

01671100 LITTLE RIVER NEAR DOSWELL, VA

LOCATION.--Lat 37°52'21", long 77°30'48", Hanover County, Hydrologic Unit 02080106, on left bank at downstream side of bridge on State Highway 685, 0.8 mi southwest of Verdon, 2.9 mi west of Doswell, and 9.6 mi upstream from mouth.

DRAINAGE AREA.--107 mi².

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 132.30 ft above National Geodetic Vertical Datum of 1929 (levels by La Prade Bros., Engineers).

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Nov. 10 to Jan. 13, Feb. 24 to Mar. 4, June 10-13, July 3, and Sept. 18-20, and periods with ice effect, Jan. 27-29 and Feb. 9, 10, which are fair. Frequent quarry dewatering by the General Crushed Stone Company upstream from gage adds about 0.5 ft³/s at times. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--27 years, 98.8 ft³/s, 12.54 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s, Aug. 21, 1969, gage height, 11.09 ft, from rating curve extended above 7,600 ft³/s on basis of contracted-opening measurement of peak flow; minimum, 0.10 ft³/s, Sept. 25, 26, 1968.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 21	1330	1,100	5.06	May 23	1200	*1,110	*5.07

Minimum discharge, 1.7 ft³/s, Aug. 24-25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	71	e370	e130	104	e76	98	51	61	17	35	16
2	14	51	e250	e100	107	e71	91	49	59	15	28	15
3	20	42	e150	e84	316	e68	86	46	80	e13	23	13
4	24	36	e110	e86	433	e66	87	45	88	11	18	13
5	20	31	e90	e90	290	73	117	58	87	10	15	13
6	17	27	e80	e70	212	74	136	156	74	9.4	12	11
7	20	24	e76	e62	158	74	178	163	62	8.8	11	7.8
8	23	22	e72	e64	137	72	219	117	52	15	9.1	7.2
9	23	21	e70	e66	e122	70	204	90	45	15	7.2	7.2
10	26	e35	e90	e63	e112	80	154	73	e40	25	6.6	7.5
11	25	e180	e290	e64	109	86	121	69	e35	21	6.3	7.3
12	22	e200	e400	e62	178	86	107	64	e33	14	5.8	7.1
13	20	e110	e200	e61	290	82	101	59	e32	13	5.4	6.6
14	17	e140	e130	62	229	76	97	54	29	10	4.7	6.0
15	15	e130	e150	64	174	71	92	49	28	7.7	4.3	5.9
16	14	e120	e270	63	156	68	84	51	27	6.9	3.5	5.4
17	13	e90	e250	62	155	65	76	280	24	6.8	2.8	5.3
18	11	e68	e160	84	145	63	72	561	23	6.2	3.1	e5.1
19	9.4	e130	e120	150	131	62	73	334	22	9.1	3.1	e4.9
20	9.2	e110	e96	459	128	62	93	183	22	21	3.1	e4.7
21	8.3	e80	e93	1040	128	62	98	143	19	37	3.2	4.6
22	7.0	e62	e90	667	122	61	93	763	18	44	3.3	4.6
23	8.3	e48	e85	269	111	59	82	1050	17	78	2.6	4.5
24	8.8	e42	e81	175	e100	59	74	571	17	111	1.7	4.3
25	9.7	e39	e78	143	e97	59	67	279	17	68	1.9	4.3
26	9.5	e38	e90	188	e93	75	62	183	19	43	3.3	4.4
27	12	e40	e110	e156	e88	266	58	130	24	33	2.6	4.3
28	56	e76	e130	e130	e85	358	56	110	23	31	1.9	4.2
29	247	e250	e250	e116	e81	208	54	96	22	55	33	4.1
30	180	e415	e200	105	---	132	52	83	19	59	17	4.1
31	100	---	e160	104	---	110	---	70	---	51	11	---
TOTAL	1000.2	2728	4791	5039	4591	2894	2982	6030	1118	864.9	288.5	212.4
MEAN	32.3	90.9	155	163	158	93.4	99.4	195	37.3	27.9	9.31	7.08
MAX	247	415	400	1040	433	358	219	1050	88	111	35	16
MIN	7.0	21	70	61	81	59	52	45	17	6.2	1.7	4.1
CFSM	.30	.85	1.44	1.52	1.48	.87	.93	1.82	.35	.26	.09	.07
IN.	.35	.95	1.67	1.75	1.60	1.01	1.04	2.10	.39	.30	.10	.07

CAL YR 1987 TOTAL 41539.9 MEAN 114 MAX 1970 MIN 1.6 CFSM 1.06 IN. 14.44
WTR YR 1988 TOTAL 32539.0 MEAN 88.9 MAX 1050 MIN 1.7 CFSM .83 IN. 11.31

e Estimated.

01672500 SOUTH ANNA RIVER NEAR ASHLAND, VA

LOCATION.--Lat 37°47'48", long 77°32'57", Hanover County, Hydrologic Unit 02080106, on right bank at downstream side of bridge on State Highway 54, 4.5 mi northwest of Ashland, and 7.6 mi upstream from Newfound River.

DRAINAGE AREA.--394 mi².

PERIOD OF RECORD.--October 1930 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 above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Dec. 2 to Jan. 14, Apr. 20, 21, June 24-28, and July 2-22, 25, 26, which are fair. Since 1966, diversion 150 ft upstream from station for town of Ashland water supply has averaged less than 0.6 ft³/s. Capacity of the diversion pickup is about 1.5 ft³/s. Small diurnal fluctuation at low flow in some years caused by gristmills 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.

AVERAGE DISCHARGE.--58 years, 366 ft³/s, 12.61 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,100 ft³/s, Aug. 23, 1969, gage height, 24.99 ft; minimum, 0.10 ft³/s, Sept. 12, 1966, caused by diversion upstream from station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 15, 1928, reached a stage of about 24 ft, discharge, about 14,500 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,200 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 2	Unknown	2,780	a9.79	May 21	2300	*2,790	*9.80
Jan. 22	2000	2,390	8.92				

a From high-water mark.

Minimum discharge, 11 ft³/s, Aug. 28, gage height, 1.16 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	97	114	1980	e365	391	239	309	169	209	77	65	68
2	102	99	e2450	e320	421	229	280	168	189	e64	75	61
3	85	95	e1200	e298	1090	226	258	167	211	e60	61	52
4	82	89	e720	e305	1240	227	276	169	241	e55	43	45
5	85	85	e390	e325	842	247	314	190	255	e51	35	39
6	97	83	e325	e300	673	250	414	365	213	e49	33	34
7	94	82	e295	e255	487	247	402	761	181	e48	40	34
8	106	82	e280	e225	394	226	515	537	156	e47	31	31
9	108	77	e272	e250	359	221	500	358	135	e46	32	28
10	95	115	e335	e273	339	302	408	280	131	e52	30	31
11	81	412	e600	e280	321	304	332	272	131	e66	24	30
12	70	691	e1300	e270	595	266	296	236	119	e54	21	28
13	69	481	e800	e265	821	243	303	229	116	e50	21	28
14	65	433	e560	e260	606	231	299	207	105	e44	20	28
15	64	414	e520	254	447	218	287	181	97	e46	18	26
16	66	336	e900	232	449	203	262	174	90	e43	21	23
17	65	261	e800	221	492	192	243	251	87	e40	19	21
18	65	246	e460	331	444	185	228	577	85	e37	18	21
19	61	273	e385	616	375	188	244	303	84	e42	17	20
20	60	263	e360	1720	389	189	e380	319	82	e68	18	21
21	60	217	e335	2310	417	184	e330	675	81	e54	18	20
22	56	184	e420	2350	368	177	306	2000	88	e70	17	20
23	55	161	e360	1400	318	174	270	2020	83	83	16	21
24	56	148	e300	623	302	175	251	1630	e76	117	17	21
25	55	142	e275	511	290	176	236	654	e70	e90	17	21
26	54	138	e310	603	276	244	202	615	e66	e109	15	19
27	64	167	e345	550	264	837	183	630	e64	156	15	18
28	310	262	e380	427	258	1360	186	414	e76	154	13	18
29	322	548	e440	352	250	692	187	322	139	155	185	19
30	209	1580	e450	341	---	454	178	272	101	127	124	20
31	143	---	e425	337	---	360	---	234	---	86	68	---
TOTAL	3001	8278	18972	17169	13918	9466	8879	15379	3761	2240	1147	866
MEAN	96.8	276	612	554	480	305	296	496	125	72.3	37.0	28.9
MAX	322	1580	2450	2350	1240	1360	515	2020	255	156	185	68
MIN	54	77	272	221	250	174	178	167	64	37	13	18
CFSM	.25	.70	1.55	1.41	1.22	.78	.75	1.26	.32	.18	.09	.07
IN.	.28	.78	1.79	1.62	1.31	.89	.84	1.45	.36	.21	.11	.08

CAL YR 1987 TOTAL 163686 MEAN 448 MAX 4820 MIN 16 CFSM 1.14 IN. 15.45
WTR YR 1988 TOTAL 103076 MEAN 282 MAX 2450 MIN 13 CFSM .71 IN. 9.73

e Estimated.

01673000 PAMUNKEY RIVER NEAR HANOVER, VA
(National stream-quality accounting network station)

LOCATION.--Lat 37°46'03", long 77°19'57", Hanover County, Hydrologic Unit 02080106, on right bank 100 ft downstream from bridge on State Highway 614, 0.3 mi upstream from Mechumps Creek, 2.0 mi east of Hanover, and 7.0 mi upstream from Millpond Creek.

DRAINAGE AREA.--1,081 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1941 to current year. Monthly discharge only for some periods, published in WSP 1302.

REVISED RECORDS.--WSP 1302: 1944(M). WSP 1382: 1949. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 14.72 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 15, 1976, nonrecording gage at same site and datum.

REMARKS.--Records good except those for period with ice effect, Jan. 9-12, and periods of no gage-height record, Feb. 5 to Mar. 17 and Mar. 31 to May 3, which are fair. Some regulation since January 1972 by Lake Anna, capacity, 373,000 acre-ft, and occasional diurnal fluctuation at low flow caused by mill upstream from station. Unknown amount of diversion for irrigation upstream from gage.

AVERAGE DISCHARGE.--47 years, 1,002 ft³/s, 12.59 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,300 ft³/s, Aug. 23, 1969, gage height, 31.12 ft, from flood-marks, from rating curve extended above 22,000 ft³/s; minimum, 12 ft³/s, Sept. 12, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1928 reached a stage of 32.6 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,010 ft³/s, Jan. 22, gage height, 19.26 ft; minimum, 66 ft³/s, Aug. 29, gage height, 2.27 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	217	395	4650	1080	957	e660	e850	e440	514	191	411	161
2	199	314	5650	989	1020	e650	e760	e405	530	162	347	151
3	195	273	5800	932	2150	e640	e730	e379	663	148	212	148
4	185	248	3860	770	3910	e620	e790	364	632	132	148	135
5	191	232	1390	949	e3150	e640	e1050	406	606	125	117	131
6	194	221	981	921	e2130	e660	e920	935	543	122	105	120
7	218	214	774	686	e1600	e680	e1150	2520	465	120	95	107
8	231	215	692	536	e1100	e635	e1680	1740	398	116	109	112
9	221	212	652	e640	e1130	e620	e1510	1110	352	112	116	92
10	219	232	640	e700	e1200	e760	e1300	809	333	92	101	103
11	198	652	1470	e720	e1050	e900	e1000	787	313	169	76	119
12	180	1610	3790	e710	e1650	e790	e810	724	416	148	86	100
13	166	1670	3950	683	e2950	e680	e780	660	324	119	79	92
14	157	1180	1860	670	e2400	e635	e770	665	279	94	75	89
15	154	1100	1210	655	e1120	e600	e800	597	247	93	76	86
16	145	1010	2440	669	e1330	e570	e710	572	231	97	71	82
17	148	889	2440	750	e1300	e561	e640	1010	220	90	70	80
18	148	823	1470	933	e1180	510	e600	2560	208	85	92	79
19	144	877	1070	1490	e1050	505	e635	2180	210	89	128	78
20	141	882	918	3270	e1190	505	e850	1500	200	152	134	80
21	140	822	845	5040	e1300	488	e780	1180	178	221	144	82
22	143	732	960	6620	e1000	581	e720	3110	182	244	142	86
23	140	583	953	6810	e870	507	e670	4770	215	407	133	84
24	146	383	718	4790	e920	463	e635	5190	254	463	136	86
25	146	341	677	1970	e800	502	e585	3500	200	400	132	95
26	135	326	809	1790	e735	567	e540	2110	187	281	127	102
27	143	327	915	1800	e700	1630	e455	1460	210	293	115	106
28	210	584	963	1550	e685	3550	e445	1450	198	470	73	101
29	791	1060	1120	1100	e670	2430	e505	1000	185	408	78	97
30	794	3050	1250	837	---	1300	e475	792	236	513	574	94
31	554	---	1260	874	---	e1000	---	645	---	478	274	---
TOTAL	6993	21457	56177	51934	41247	25839	24145	45570	9729	6634	4576	3078
MEAN	226	715	1812	1675	1422	834	805	1470	324	214	148	103
MAX	794	3050	5800	6810	3910	3550	1680	5190	663	513	574	161
MIN	135	212	640	536	670	463	445	364	178	85	70	78
CFSM	.21	.66	1.68	1.55	1.32	.77	.74	1.36	.30	.20	.14	.09
IN.	.24	.74	1.93	1.79	1.42	.89	.83	1.57	.33	.23	.16	.11

CAL YR 1987 TOTAL 427441 MEAN 1171 MAX 10900 MIN 60 CFSM 1.08 IN. 14.71
WTR YR 1988 TOTAL 297379 MEAN 813 MAX 6810 MIN 70 CFSM .75 IN. 10.23

e Estimated.

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.
WATER TEMPERATURE: October 1945 to September 1946, April 1968 to January 1976.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV											
23...	1430	513	91	6.60	5.5	760	1.8	11.2	89	25	K15
JAN											
22...	1045	6670	55	6.30	3.5	750	32	12.2	93	290	1700
MAR											
17...	1230	630	90	6.20	6.5	761	3.4	11.8	96	K10	K7
MAY											
03...	1300	341	100	6.70	15.5	757	1.7	8.8	89	K13	K7
JUN											
21...	1400	147	122	7.20	27.0	751	1.3	7.6	97	17	K13
AUG											
24...	1300	119	143	7.80	25.5	748	1.6	8.3	103	26	53

DATE	HARD-NESS TOTAL (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
NOV											
23...	22	5.0	2.3	9.6	2.5	16	20	5.4	0.10	12	73
JAN											
22...	14	3.0	1.7	3.8	2.1	8.0	12	4.6	0.10	8.7	53
MAR											
17...	22	5.0	2.2	7.6	1.9	18	16	5.1	0.10	9.9	60
MAY											
03...	26	6.0	2.6	9.5	1.7	24	18	5.3	0.10	9.8	72
JUN											
21...	31	7.4	3.0	12	2.2	30	22	5.6	0.20	9.1	81
AUG											
24...	31	7.5	2.9	16	2.8	27	31	6.3	0.10	9.1	91

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)
NOV											
23...	67	<0.010	<0.100	0.020	0.020	0.40	0.040	0.010	<0.010	30	1
JAN											
22...	42	0.010	0.230	0.050	0.060	0.60	0.080	0.090	0.070	--	--
MAR											
17...	60	<0.010	0.210	0.040	0.020	0.40	0.100	0.110	0.100	30	<1
MAY											
03...	69	<0.010	0.170	0.030	0.030	0.30	0.050	0.040	0.030	20	<1
JUN											
21...	80	<0.010	0.130	0.020	<0.010	0.20	0.040	0.040	0.020	--	--
AUG											
24...	94	<0.010	0.310	<0.010	<0.010	0.40	0.090	0.090	0.080	<10	<1

01673000 PAMUNKEY RIVER NEAR HANOVER, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
NOV 23...	22	<0.5	<1	<1	<3	3	310	<5	<4	57
JAN 22...	--	--	--	--	--	--	--	--	--	--
MAR 17...	21	<0.5	<1	1	<3	4	250	<5	<4	27
MAY 03...	29	<0.5	--	<1	<3	3	290	<5	5	37
JUN 21...	--	--	--	--	--	--	--	--	--	--
AUG 24...	17	<0.5	<1	<1	<3	5	170	<5	<4	120

DATE	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	SEDI-MENT, SUS-PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 23...	<0.1	<10	3	<1	<1.0	32	<6	14	5	92
JAN 22...	--	--	--	--	--	--	--	--	52	66
MAR 17...	<0.1	<10	<1	<1	1.0	33	<6	12	5	81
MAY 03...	<0.1	<10	1	<1	1.0	43	<6	13	4	87
JUN 21...	--	--	--	--	--	--	--	--	3	67
AUG 24...	<0.1	<10	<1	<1	<1.0	45	<6	6	3	93

01673550 TOTOPOTOMOY CREEK NEAR STUDLEY, VA

LOCATION.--Lat 37°39'44", long 77°15'29", Hanover County, Hydrologic Unit 02080106, on right bank at downstream side of bridge on State Highway 606, 2.0 mi southeast of Studley, 2.4 mi downstream from Hawes millrace, and 4.1 mi upstream from mouth.

DRAINAGE AREA.--26.2 mi².

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 38.36 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for periods of no gage-height record, Nov. 10, 11, Jan. 7, 8, 11, 12, May 5-7, and June 3, 4, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--11 years, 28.8 ft³/s, 14.93 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 802 ft³/s, Aug. 19, 1985, gage height, 8.22 ft; maximum gage height, 8.77 ft, Feb. 25, 1979; minimum daily discharge, 0.35 ft³/s, Oct. 1-7, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 160 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 17	2230	236	5.96	May 22	2000	*263	*6.17
May 20	1730	179	5.41				

Minimum discharge, 2.6 ft³/s, Sept. 24, 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	6.9	25	13	19	18	19	16	14	6.2	15	3.9
2	7.1	7.2	17	12	21	18	18	14	13	5.7	10	3.4
3	7.2	7.2	14	12	52	18	18	14	e23	5.3	7.7	3.0
4	6.9	8.2	15	15	60	18	25	15	e28	5.0	6.2	3.4
5	6.1	7.8	16	e16	40	18	45	e21	20	4.7	5.3	3.9
6	6.1	7.1	15	e14	31	18	30	e35	16	4.3	4.8	3.2
7	10	7.1	13	e13	25	17	32	e29	14	4.3	5.0	3.0
8	9.6	6.9	12	e12	23	17	42	21	11	4.0	4.9	2.9
9	9.3	7.3	12	e12	22	18	36	18	10	4.0	7.8	3.6
10	6.9	e13	15	e13	21	28	28	16	11	4.1	6.3	11
11	5.8	e29	62	e14	24	26	23	17	11	3.9	5.0	9.7
12	5.6	34	60	e13	98	21	22	16	9.7	4.1	4.3	8.5
13	5.3	27	26	13	69	20	26	15	8.8	5.0	3.8	5.3
14	5.2	21	18	14	40	20	24	14	7.8	4.9	3.5	4.0
15	4.9	17	22	13	34	19	21	13	7.4	5.1	3.3	3.4
16	4.8	15	26	12	34	17	19	14	6.6	4.5	3.1	3.1
17	4.7	13	21	13	32	17	18	54	11	4.2	2.9	3.0
18	4.6	12	17	23	28	16	18	113	36	4.0	2.8	3.2
19	4.7	11	15	30	26	18	23	45	34	4.0	2.8	3.3
20	4.7	11	14	55	28	17	30	53	26	3.9	8.7	3.2
21	4.8	9.9	14	68	25	16	25	52	12	3.8	8.2	3.0
22	4.6	9.1	13	38	23	16	20	184	9.9	16	8.6	2.8
23	4.8	9.0	13	28	21	16	18	181	8.0	48	5.4	2.9
24	5.1	9.1	12	24	22	16	18	56	7.4	91	4.4	2.7
25	5.1	9.0	13	24	21	16	17	38	6.9	49	3.6	2.8
26	5.1	9.2	15	29	20	25	16	31	10	28	3.0	2.9
27	6.3	11	15	e25	20	54	16	25	14	25	2.8	2.8
28	9.8	16	16	e22	20	40	19	21	12	18	2.8	2.8
29	9.9	27	18	e20	19	27	18	19	9.2	14	4.4	2.8
30	9.7	38	15	20	---	22	16	17	7.5	11	4.3	2.8
31	7.6	---	14	20	---	20	---	15	---	12	3.8	---
TOTAL	199.3	416.0	593	650	918	647	700	1192	415.2	407.0	164.5	116.3
MEAN	6.43	13.9	19.1	21.0	31.7	20.9	23.3	38.5	13.8	13.1	5.31	3.88
MAX	10	38	62	68	98	54	45	184	36	91	15	11
MIN	4.6	6.9	12	12	19	16	16	13	6.6	3.8	2.8	2.7
CFSM	.25	.53	.73	.80	1.21	.80	.89	1.47	.53	.50	.20	.15
IN.	.28	.59	.84	.92	1.30	.92	.99	1.69	.59	.58	.23	.17

CAL YR 1987 TOTAL 10486.4 MEAN 28.7 MAX 534 MIN 4.2 CFSM 1.10 IN. 14.89
WTR YR 1988 TOTAL 6418.3 MEAN 17.5 MAX 184 MIN 2.7 CFSM .67 IN. 9.11

e Estimated.

01673800 PO RIVER NEAR SPOTSYLVANIA, VA

LOCATION.--Lat 38°10'17", long 77°35'42", Spotsylvania County, Hydrologic Unit 02080105, on right bank at upstream side of bridge on State Highway 208, 1.6 mi north of Snell, 2.0 mi south of Spotsylvania, 4.8 mi downstream from Gladys Run, and 4.9 mi upstream from U.S. Highway 1.

DRAINAGE AREA.--77.4 mi².

PERIOD OF RECORD.--October 1962 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 183.76 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 30, 1964, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 6, 7, 10, 11, 14-16, 28-30, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--26 years, 74.8 ft³/s, 13.12 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,900 ft³/s, June 22, 1972, gage height, 19.03 ft, from rating curve extended above 3,400 ft³/s; minimum daily, 0.05 ft³/s, Oct. 11, 12, 1986.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 900 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 30	2130	1,000	7.78	Jan. 21	1030	*1,360	*8.83

Minimum discharge, 0.29 ft³/s, Sept. 17-18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.1	14	398	76	94	53	57	30	22	3.6	7.0	8.6
2	3.2	12	107	66	89	50	54	29	20	3.0	4.6	6.1
3	3.5	10	73	57	269	49	52	27	28	2.5	3.4	3.7
4	5.5	9.6	59	59	257	52	56	27	37	2.1	3.0	5.2
5	6.9	9.3	52	62	164	73	106	85	33	1.9	2.2	6.6
6	8.7	9.0	43	e48	115	73	83	468	25	1.7	10	4.6
7	13	9.1	37	e42	87	60	153	314	19	1.4	26	2.4
8	10	8.8	35	44	77	54	188	128	16	1.2	14	1.3
9	9.1	8.8	34	51	73	52	146	82	13	1.3	9.5	.99
10	7.6	21	36	e46	70	57	99	77	12	1.3	6.5	1.6
11	6.2	146	209	e44	68	57	76	64	12	1.0	4.7	1.9
12	5.9	111	240	45	241	50	65	52	13	1.0	3.3	2.0
13	6.1	81	101	47	245	48	59	43	11	1.5	2.3	1.4
14	5.6	96	71	e48	125	48	54	38	9.3	2.3	1.6	1.2
15	5.1	97	114	e45	102	44	50	34	8.0	1.8	1.1	.87
16	5.1	78	232	e41	119	41	47	35	6.5	1.4	1.0	.43
17	5.2	55	123	42	119	39	43	149	5.9	.90	.76	.31
18	5.2	75	82	92	91	37	42	250	5.5	1.2	.43	.31
19	4.9	97	66	252	83	38	47	178	8.0	1.5	.38	3.4
20	5.0	55	61	589	106	38	60	110	6.4	3.1	1.0	6.0
21	5.2	40	62	1110	106	37	53	94	6.2	4.6	1.7	4.7
22	5.4	31	56	273	80	36	44	119	6.3	7.7	1.5	4.2
23	6.2	27	50	138	70	35	40	91	5.9	49	.81	3.1
24	6.6	25	46	109	75	36	39	62	6.4	26	.61	2.7
25	6.6	24	44	93	75	36	36	61	4.9	12	.37	9.7
26	5.9	23	54	107	65	59	33	89	4.8	11	.35	6.6
27	37	24	79	92	62	300	31	60	6.5	102	.35	4.1
28	154	55	90	e70	60	170	31	44	6.4	172	.33	3.0
29	69	241	245	e63	56	93	37	36	6.8	28	14	2.1
30	30	751	146	e63	---	73	34	30	5.2	16	15	1.6
31	19	---	90	86	---	64	---	25	---	11	9.3	---
TOTAL	470.8	2243.6	3135	4000	3243	1952	1915	2931	370.0	475.00	147.09	100.71
MEAN	15.2	74.8	101	129	112	63.0	63.8	94.5	12.3	15.3	4.74	3.36
MAX	154	751	398	1110	269	300	188	468	37	172	26	9.7
MIN	3.2	8.8	34	41	56	35	31	25	4.8	.90	.33	.31
CFSM	.20	.97	1.31	1.67	1.44	.81	.82	1.22	.16	.20	.06	.04
IN.	.23	1.08	1.51	1.92	1.56	.94	.92	1.41	.18	.23	.07	.05

CAL YR 1987 TOTAL 26823.47 MEAN 73.5 MAX 1740 MIN .26 CFSM .95 IN. 12.89
WTR YR 1988 TOTAL 20983.20 MEAN 57.3 MAX 1110 MIN .31 CFSM .74 IN. 10.08

e Estimated.

01674000 MATTAPONI RIVER NEAR BOWLING GREEN, VA

LOCATION.--Lat 38°03'42", long 77°23'10", Caroline County, Hydrologic Unit 02080105, on right bank 0.1 mi upstream from bridge on State Highway 605, 2.2 mi northwest of Bowling Green, 2.4 mi upstream from South River, and 7.1 mi downstream from confluence of Matta and Poni Rivers.

DRAINAGE AREA.--257 mi².

PERIOD OF RECORD.--September 1942 to current year.

REVISED RECORDS.--WSP 1382: 1943, 1945(M), 1948(M), 1949, 1953(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 85.14 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 17, 1978, gage located on left bank at same datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 6-12, 14-17, and period of no gage-height record, Jan. 28-31, which are fair. Some diurnal fluctuation from gristmill upstream on Po River. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--46 years, 237 ft³/s, 12.52 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,400 ft³/s, June 23, 1972, gage height, 18.95 ft, from high-water mark in well, from rating curve extended above 8,100 ft³/s; no flow at times in September and October 1954 and September 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1928 reached a stage of 19.5 ft based on relative difference in stage between this flood and flood of Oct. 17, 1942, at Milford 4 mi downstream, discharge, 15,000 ft³/s, from rating curve extended above 8,100 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 22	1200	*2,460	*10.38	No other peak equal to or greater than base discharge.			

Minimum discharge, 1.9 ft³/s, July 11; minimum gage height, 1.26 ft, Sept. 22-23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	91	633	391	285	188	244	105	101	13	44	42
2	18	65	1020	298	297	178	209	106	82	11	30	27
3	15	52	745	252	403	172	187	103	97	8.6	23	18
4	19	45	369	232	555	174	182	96	117	7.5	17	14
5	21	41	254	235	783	192	191	110	116	6.6	13	16
6	18	36	206	e210	723	213	215	256	101	6.1	11	17
7	22	33	179	e207	528	209	282	472	80	4.7	55	13
8	31	32	157	e238	378	187	409	747	62	3.5	65	9.7
9	34	32	143	e223	317	176	525	635	52	2.8	51	7.5
10	30	42	140	e211	289	189	516	372	49	2.7	28	7.4
11	26	139	251	e204	268	202	387	267	46	2.3	18	7.4
12	25	265	421	e194	346	188	285	220	39	3.1	14	7.2
13	20	312	573	189	524	174	234	181	34	4.1	11	6.0
14	18	278	546	e186	736	165	205	153	31	3.5	8.7	5.5
15	17	267	372	e178	661	158	185	132	27	2.6	7.3	5.0
16	16	259	426	e163	493	149	169	131	24	2.6	5.7	4.4
17	14	226	524	e166	432	142	157	373	21	2.7	4.7	3.7
18	15	199	545	217	408	136	148	468	20	2.6	4.4	3.4
19	13	201	382	332	352	134	150	574	21	2.8	4.1	3.0
20	13	215	288	600	332	131	181	717	22	3.8	4.6	2.9
21	14	178	256	1390	346	129	192	611	21	8.4	5.3	2.8
22	12	135	231	2400	335	128	175	504	19	101	5.7	2.5
23	12	114	211	1710	294	128	155	491	16	134	5.3	3.4
24	12	99	191	928	264	127	143	420	15	90	5.1	3.8
25	13	91	180	600	250	125	134	299	13	68	4.7	4.3
26	13	85	184	508	238	147	125	240	13	40	4.3	4.5
27	16	84	207	469	221	353	117	229	19	28	3.7	7.7
28	91	129	236	e510	212	553	113	204	23	88	3.2	8.4
29	287	242	319	e455	200	722	109	168	19	283	12	6.7
30	273	429	405	e350	---	485	110	141	15	195	56	5.0
31	152	---	481	e275	---	306	---	119	---	74	68	---
TOTAL	1301	4416	11075	14521	11470	6660	6434	9644	1315	1206.0	592.8	269.2
MEAN	42.0	147	357	468	396	215	214	311	43.8	38.9	19.1	8.97
MAX	287	429	1020	2400	783	722	525	747	117	283	68	42
MIN	12	32	140	163	200	125	109	96	13	2.3	3.2	2.5
CFSM	.16	.57	1.39	1.82	1.54	.84	.83	1.21	.17	.15	.07	.03
IN.	.19	.64	1.60	2.10	1.66	.96	.93	1.40	.19	.17	.09	.04

CAL YR 1987 TOTAL 85805.3 MEAN 235 MAX 2300 MIN 1.9 CFSM .91 IN. 12.42
WTR YR 1988 TOTAL 68904.0 MEAN 188 MAX 2400 MIN 2.3 CFSM .73 IN. 9.97

e Estimated.

01674500 MATTAPONI RIVER NEAR BEULAHVILLE, VA

WATER-QUALITY RECORDS

LOCATION.--Lat 37°53'16", long 77°09'48", King and Queen County, Hydrologic Unit 02080105, on left bank 0.4 mi upstream from bridge on State Highway 628, 2.4 mi north of Beulahville, and 2.7 mi downstream from Maracossic Creek.

DRAINAGE AREA.--601 mi².

PERIOD OF RECORD.--Water years 1968, 1969, 1979 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV											
23...	1130	271	56	6.20	4.0	762	3.3	11.8	90	23	35
JAN											
21...	1100	1200	60	6.10	0.0	750	11	13.0	90	96	1300
MAR											
16...	1130	415	50	6.10	6.5	756	--	10.6	87	15	K14
23...	1200	345	48	6.20	6.0	767	2.5	12.1	97	15	K5
MAY											
03...	1000	270	54	6.50	14.0	757	2.8	9.0	88	20	K9
JUN											
21...	0900	155	47	6.40	24.0	752	6.0	6.5	78	140	690
AUG											
24...	0900	35	48	6.80	22.5	750	3.6	6.7	79	19	100

DATE	HARD-NESS TOTAL (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
NOV											
23...	14	2.9	1.6	4.6	2.3	7.0	15	7.0	0.10	11	53
JAN											
21...	13	2.8	1.4	5.0	1.6	5.0	14	8.9	0.10	8.9	52
MAR											
16...	--	--	--	--	--	--	--	--	--	--	--
23...	12	2.6	1.4	4.0	1.2	8.0	10	5.6	0.10	5.6	39
MAY											
03...	14	2.8	1.6	3.9	1.0	11	12	5.5	0.10	5.8	44
JUN											
21...	13	2.7	1.5	2.8	1.2	10	10	4.8	0.10	5.3	36
AUG											
24...	19	2.8	2.9	3.3	1.6	11	11	5.4	0.10	9.1	43

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)
NOV											
23...	50	<0.010	0.130	0.030	0.030	0.40	0.040	0.020	0.020	90	1
JAN											
21...	47	0.010	0.250	0.080	0.060	0.30	0.070	0.030	0.020	--	--
MAR											
16...	--	--	--	--	--	--	--	--	--	--	--
23...	37	<0.010	0.150	<0.010	<0.010	0.40	0.030	0.010	0.010	40	<1
MAY											
03...	41	<0.010	0.130	0.020	0.020	0.40	0.040	0.020	0.010	50	<1
JUN											
21...	35	<0.010	0.170	0.030	0.050	0.40	0.050	0.030	0.020	--	--
AUG											
24...	44	<0.010	0.110	0.010	<0.010	0.30	0.050	0.040	0.020	20	1

01674500 MATTAPONI RIVER NEAR BEULAHVILLE, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
NOV										
23...	28	<0.5	<1	<1	<3	5	660	<5	<4	47
JAN										
21...	--	--	--	--	--	--	--	--	--	--
MAR										
16...	--	--	--	--	--	--	--	--	--	--
23...	21	<0.5	<1	1	<3	2	400	<5	<4	50
MAY										
03...	25	<0.5	<1	<1	<3	1	900	<5	5	56
JUN										
21...	--	--	--	--	--	--	--	--	--	--
AUG										
24...	17	<0.5	<1	<1	<3	<1	170	<5	<4	120

DATE	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	SEDI-MENT, SUS-PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV										
23...	<0.1	<10	8	<1	<1.0	21	<6	9	5	94
JAN										
21...	--	--	--	--	--	--	--	--	28	77
MAR										
16...	--	--	--	--	--	--	--	--	5	84
23...	<0.1	<10	<1	<1	<1.0	19	<6	11	8	91
MAY										
03...	<0.1	<10	<1	<1	1.0	23	<6	16	5	97
JUN										
21...	--	--	--	--	--	--	--	--	14	82
AUG										
24...	<0.1	<10	2	<1	1.0	46	<6	25	2	89

01677000 WARE CREEK NEAR TOANO, VA

LOCATION.--Lat 37°26'17", long 76°47'12", New Kent County, Hydrologic Unit 02080107, on left bank at upstream side of bridge on State Highway 600, 0.8 mi upstream from France Swamp, and 4.9 mi north of Toano.

DRAINAGE AREA.--6.29 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1979 to October 1981, March 1982 to current year.

REVISED RECORDS.--WDR VA-83-1: 1981.

GAGE.--Water-stage recorder. Elevation of gage is 10 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for periods of doubtful gage-height record, May 20, 21 and June 10-21, which are fair.

AVERAGE DISCHARGE.--8 years, 6.25 ft³/s, 13.49 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 260 ft³/s, Sept. 27, 1985, gage height, 2.60 ft, from flood-mark, from rating curve extended above 120 ft³/s; no flow at times September 1980 and July to September 1981.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 52 ft³/s, May 22, gage height, 1.43 ft; minimum, 0.10 ft³/s, Aug. 17-19, gage height, 0.56 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.3	3.9	8.1	4.7	4.6	3.7	3.3	2.6	3.6	.96	.95	1.9
2	4.3	3.9	5.7	4.8	4.9	3.6	3.3	2.5	3.3	.80	.87	1.6
3	4.4	3.9	5.0	5.2	16	3.6	3.1	2.6	4.6	.65	.61	1.1
4	8.3	3.9	5.3	11	14	3.8	4.9	2.9	8.7	.49	.52	2.1
5	5.8	3.9	6.1	7.6	10	3.9	8.5	9.9	6.9	.45	.72	6.7
6	3.9	3.8	5.4	5.1	6.9	3.6	5.5	19	4.2	.45	1.0	5.3
7	5.6	3.6	4.9	3.9	4.8	4.0	4.9	8.7	3.3	.48	2.3	2.7
8	5.0	3.8	4.9	4.3	4.2	3.7	5.9	5.0	2.8	.56	2.2	1.5
9	3.7	3.8	4.9	4.8	4.5	4.7	5.1	3.6	2.3	.46	1.6	1.5
10	3.2	5.3	5.3	4.7	4.5	9.7	3.8	3.3	e2.4	.45	1.7	13
11	3.0	12	11	4.3	6.4	6.2	3.2	4.3	e2.4	.40	5.1	7.9
12	2.9	12	9.2	4.1	30	4.0	3.4	7.8	e2.1	.38	4.4	3.3
13	2.7	8.7	6.1	4.5	15	4.4	7.0	5.1	e1.8	.70	2.0	1.9
14	2.5	6.8	5.0	4.8	7.9	4.9	5.4	3.6	e1.6	.93	1.1	1.4
15	2.6	5.8	8.9	4.0	6.4	4.0	4.0	3.0	e1.5	.80	.64	1.0
16	2.8	5.4	10	3.5	6.3	3.4	3.2	2.9	e1.3	.58	.32	.79
17	2.8	5.0	6.1	3.9	5.5	3.0	3.0	3.6	e1.2	.46	.17	.76
18	3.0	4.9	4.8	9.0	5.0	3.0	3.0	3.5	e1.7	.49	.10	.84
19	3.0	4.9	4.4	8.3	5.0	4.7	3.3	2.9	e2.9	.59	.12	1.0
20	3.0	4.8	4.3	11	5.5	4.4	5.3	e2.5	e2.5	.66	5.1	1.2
21	3.0	4.4	4.5	10	4.9	3.6	4.2	e2.2	e1.8	.77	7.1	1.1
22	3.0	4.2	4.5	6.3	4.1	3.2	3.4	35	1.7	.90	3.7	1.1
23	3.0	4.2	4.8	5.1	3.9	3.0	3.3	13	1.5	1.5	2.2	.95
24	3.0	4.4	4.6	4.3	4.7	3.1	3.3	6.4	1.1	2.4	3.5	.95
25	3.0	4.5	6.1	4.9	4.6	3.1	2.9	4.7	.93	2.3	3.7	1.2
26	3.0	4.5	7.2	6.6	4.1	4.6	2.7	4.5	1.3	1.6	2.4	1.6
27	3.4	5.7	6.0	4.8	3.9	13	2.7	4.2	3.2	1.6	1.6	1.7
28	4.9	9.2	7.0	3.9	3.9	6.9	3.0	3.6	2.6	3.3	1.0	1.8
29	4.9	15	8.9	3.6	3.9	4.3	2.9	3.6	1.7	2.7	.85	1.8
30	4.2	13	5.9	3.8	---	3.7	2.8	3.6	1.3	1.4	1.5	2.0
31	3.9	---	4.6	4.3	---	3.4	---	3.6	---	.86	2.0	---
TOTAL	118.1	179.2	189.5	171.1	205.4	138.2	120.3	183.7	78.23	31.07	61.07	71.69
MEAN	3.81	5.97	6.11	5.52	7.08	4.46	4.01	5.93	2.61	1.00	1.97	2.39
MAX	8.3	15	11	11	30	13	8.5	35	8.7	3.3	7.1	13
MIN	2.5	3.6	4.3	3.5	3.9	3.0	2.7	2.2	.93	.38	.10	.76
CFSM	.61	.95	.97	.88	1.13	.71	.64	.94	.41	.16	.31	.38
IN.	.70	1.06	1.12	1.01	1.21	.82	.71	1.09	.46	.18	.36	.42

CAL YR 1987 TOTAL 2593.8 MEAN 7.11 MAX 43 MIN 2.0 CFSM 1.13 IN. 15.34
WTR YR 1988 TOTAL 1547.56 MEAN 4.23 MAX 35 MIN .10 CFSM .67 IN. 9.15

e Estimated.

01677000 WARE CREEK NEAR TOANO, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1979-81, October 1985 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	ALKA-LINITY LAB (MG/L AS CACO3)
DEC									
16...	0830	11	110	7.20	8.0	758	13.2	112	30
JAN									
15...	1200	3.9	111	6.90	4.0	--	--	--	32
MAR									
03...	0850	4.2	99	7.30	9.0	770	11.8	101	27
MAY									
06...	1100	20	132	6.80	18.0	757	6.8	72	40
AUG									
09...	0900	2.0	145	8.70	29.0	769	3.4	44	49
SEP									
02...	1030	1.5	120	8.10	24.5	760	6.8	82	43

DATE	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	CARBON, ORGANIC TOTAL (MG/L AS C)
DEC									
16...	<0.010	0.100	0.070	0.30	<0.010	<0.010	420	40	5.7
JAN									
15...	0.020	0.320	0.130	0.40	0.030	<0.010	300	40	4.8
MAR									
03...	<0.010	<0.100	0.010	0.30	0.030	<0.010	380	<10	5.5
MAY									
06...	<0.010	<0.100	0.050	0.50	0.030	0.030	220	30	6.5
AUG									
09...	<0.010	<0.100	0.090	1.6	<0.010	<0.010	110	70	11
SEP									
02...	<0.010	<0.100	0.010	1.3	0.070	<0.010	80	<10	11

JAMES RIVER BASIN

02011400 JACKSON RIVER NEAR BACOVA, VA

LOCATION.--Lat 38°02'32", long 79°52'54", Bath County, Hydrologic Unit 02080201, on left bank 0.1 mi downstream from ford, 1.8 mi upstream from Back Creek, and 2.2 mi southwest of Bacova.

DRAINAGE AREA.--158 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,639.20 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 5-17, which is fair. U.S. Army Corps of Engineers gage-height transmitter at station, receiver at Gathright Dam.

AVERAGE DISCHARGE.--14 years, 167 ft³/s, 14.35 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,000 ft³/s, Nov. 4, 1985, gage height, 22.25 ft, from flood-mark, from rating curve extended above 1,300 ft³/s on basis of slope-area measurements at gage heights 8.88 ft, 11.40 ft, 13.88 ft, and 22.25 ft; minimum, 15 ft³/s, part of each day Aug. 17-19, Sept. 16, 17, 23, 1988; minimum gage height, 2.42 ft, Aug. 18, 19, 1988.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1972, reached a stage of 11.40 ft, discharge, 4,800 ft³/s, and flood of Dec. 26, 1973, reached a stage of 13.88 ft, discharge, 7,560 ft³/s, from rating curve extended as explained above.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	0915	*1,960	*8.05	No other peak equal to or greater than base discharge.			

Minimum discharge, 15 ft³/s, part of each day Aug. 17-19, Sept. 16, 17, 23; minimum gage height, 2.42 ft, Aug. 18, 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	31	235	260	116	72	62	67	65	25	22	19
2	45	30	174	216	121	69	62	63	63	24	22	17
3	44	30	136	183	153	68	60	61	73	24	21	17
4	42	30	117	167	187	71	74	62	68	24	22	26
5	40	29	99	e130	204	81	77	136	61	23	22	39
6	39	28	85	e110	171	75	76	729	55	22	22	30
7	40	28	76	e90	153	72	122	640	51	22	26	23
8	39	28	70	e85	153	70	126	417	48	22	23	20
9	37	29	66	e80	133	70	115	312	49	24	20	19
10	36	44	64	e76	123	76	106	270	54	26	19	19
11	35	73	63	e72	112	73	100	225	48	34	18	18
12	35	59	61	e70	110	70	94	187	43	58	18	17
13	34	49	57	e80	100	77	91	160	40	40	18	17
14	33	47	55	e85	90	77	83	143	38	34	17	17
15	32	44	199	e75	99	74	78	139	37	28	17	17
16	32	42	295	e70	125	70	72	267	36	25	17	16
17	32	46	220	e100	105	67	69	212	36	23	17	17
18	31	83	172	182	97	66	70	224	37	28	16	19
19	31	81	146	222	96	68	80	240	35	39	16	18
20	31	68	141	1190	114	66	71	203	38	46	21	17
21	33	64	137	642	112	65	65	178	38	33	28	17
22	32	56	122	417	99	62	67	160	33	32	23	16
23	31	50	115	314	99	58	70	143	31	31	20	16
24	31	48	103	253	96	57	79	128	30	30	24	32
25	31	48	108	222	88	56	84	128	29	27	24	86
26	30	44	283	194	82	62	80	112	28	32	20	78
27	31	45	300	155	81	70	77	97	27	35	18	42
28	36	54	364	141	79	65	75	88	26	34	17	30
29	36	248	469	125	75	62	75	82	25	28	25	25
30	33	370	392	116	---	61	72	76	26	25	25	23
31	32	---	295	115	---	61	---	70	---	24	21	---
TOTAL	1098	1926	5219	6237	3373	2111	2432	6019	1268	922	639	767
MEAN	35.4	64.2	168	201	116	68.1	81.1	194	42.3	29.7	20.6	25.6
MAX	54	370	469	1190	204	81	126	729	73	58	28	86
MIN	30	28	55	70	75	56	60	61	25	22	16	16
CFSM	.22	.41	1.07	1.27	.74	.43	.51	1.23	.27	.19	.13	.16
IN.	.26	.45	1.23	1.47	.79	.50	.57	1.42	.30	.22	.15	.18

CAL YR 1987 TOTAL 67602 MEAN 185 MAX 4020 MIN 20 CFSM 1.17 IN. 15.92
WTR YR 1988 TOTAL 32011 MEAN 87.5 MAX 1190 MIN 16 CFSM .55 IN. 7.54

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 the record was due to malfunction of the instrument. Some record in prior years fragmentary due to instrument malfunction.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum recorded (water years 1978-81, 1983-88), 31.0°C, July 16, 1988; minimum recorded (water years 1978-81, 1984-88), 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum recorded, 31.0°C, July 16; minimum, 0.0°C on several days during winter period.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	16.0	13.5	15.0	12.5	8.5	10.5	7.5	6.0	7.0	6.0	4.0	5.0
2	15.5	11.5	14.0	13.0	9.5	11.5	6.0	4.0	5.0	4.5	2.5	4.0
3	15.0	11.5	13.0	13.5	10.5	12.0	4.0	3.0	3.5	2.5	1.5	2.0
4	12.5	10.0	11.5	13.5	10.0	12.0	4.5	3.5	4.0	3.0	1.5	2.5
5	13.5	9.0	11.5	12.5	9.5	11.0	3.5	2.5	3.0	1.5	.0	.5
6	12.5	10.5	11.5	9.5	6.5	7.5	4.0	2.0	3.0	.0	.0	.0
7	12.0	10.5	11.0	7.5	5.0	6.5	3.0	1.5	2.5	.0	.0	.0
8	11.0	9.5	10.5	9.5	6.5	8.0	4.5	2.5	3.5	.0	.0	.0
9	11.5	8.0	10.0	10.0	7.0	8.5	7.5	4.5	6.0	.0	.0	.0
10	13.5	9.0	11.5	9.5	7.5	8.5	7.0	6.5	7.0	.0	.0	.0
11	14.0	11.0	12.5	7.5	4.0	5.5	7.0	5.5	6.5	.0	.0	.0
12	12.5	10.5	12.0	5.0	2.5	4.0	6.5	5.5	6.0	.0	.0	.0
13	12.0	8.5	10.0	5.5	2.5	4.5	5.5	4.5	5.0	.0	.0	.0
14	11.5	7.0	9.5	6.0	3.5	4.5	5.0	4.0	4.5	.0	.0	.0
15	11.5	7.0	9.5	6.0	3.0	4.5	5.5	4.5	4.5	.0	.0	.0
16	12.0	7.5	10.0	7.5	4.0	5.5	4.5	2.5	3.5	.0	.0	.0
17	12.5	8.5	10.5	10.0	7.5	9.0	3.5	2.0	2.5	.5	.0	.0
18	13.5	9.0	11.5	10.5	8.5	9.5	3.5	1.5	2.5	1.0	.5	1.0
19	13.0	9.0	11.5	9.0	7.0	8.0	4.5	2.0	3.5	1.0	1.0	1.0
20	14.0	11.5	13.0	8.0	4.5	7.0	7.5	4.5	6.0	6.0	1.0	4.0
21	13.5	10.0	12.0	4.5	1.5	3.0	7.5	5.5	6.5	6.5	5.5	6.0
22	11.0	7.5	9.0	2.5	.5	1.5	5.5	4.0	4.5	6.5	5.0	6.0
23	10.5	6.5	8.5	3.5	.5	2.0	5.5	3.5	4.5	5.5	4.0	5.0
24	12.0	8.0	10.0	7.0	3.5	5.5	6.0	3.0	4.5	5.5	3.5	4.5
25	12.0	10.0	11.0	8.0	5.5	7.0	8.0	5.5	6.5	5.5	4.5	5.0
26	10.5	7.0	9.0	8.0	6.5	7.5	9.0	8.0	8.5	4.0	1.0	2.5
27	9.0	7.5	8.0	8.0	7.5	8.0	8.5	7.5	8.0	1.5	1.0	1.0
28	8.5	6.5	7.5	8.0	7.5	7.5	7.5	6.5	7.0	1.5	1.0	1.0
29	8.0	5.0	6.5	9.5	8.0	8.5	6.5	3.5	5.5	2.5	1.0	1.5
30	10.0	7.0	8.5	9.0	7.5	8.5	3.5	2.0	3.0	5.0	1.5	3.0
31	11.5	8.0	10.0	---	---	---	4.0	2.0	3.0	7.0	3.5	5.5
MONTH	16.0	5.0	10.5	13.5	.5	7.0	9.0	1.5	5.0	7.0	.0	2.0

02011400 JACKSON RIVER NEAR BACOVA, VA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	9.5	6.5	8.0	6.5	2.5	4.5	16.0	13.0	14.5	17.5	10.5	14.0
2	9.5	8.0	9.0	6.0	2.5	4.5	17.0	14.5	15.5	15.5	12.0	14.0
3	9.5	8.0	9.0	6.0	5.0	5.5	16.0	14.0	15.0	16.0	13.0	14.5
4	8.0	5.5	7.0	7.0	5.5	6.0	18.0	14.5	16.0	15.0	14.0	14.5
5	5.5	2.5	4.0	9.0	5.5	7.0	19.0	13.0	16.0	15.0	12.5	14.0
6	2.0	1.0	1.0	9.0	4.5	7.0	16.5	13.5	15.0	13.0	11.5	12.0
7	2.0	1.0	1.0	10.0	5.5	8.0	13.5	10.5	12.0	15.5	11.0	13.5
8	2.5	1.0	1.5	10.5	6.0	8.5	13.0	10.0	11.0	17.0	13.0	15.0
9	4.0	1.0	2.5	9.0	7.5	8.5	14.5	9.0	11.5	16.0	15.0	15.5
10	6.0	2.5	4.0	11.5	8.0	9.5	15.5	9.0	12.5	18.0	14.5	16.0
11	6.0	2.5	4.5	10.5	5.5	8.0	16.0	10.0	13.0	17.0	15.0	15.5
12	5.5	3.0	4.5	10.0	6.5	8.5	14.0	9.5	11.0	20.0	13.0	16.0
13	2.5	.5	1.5	10.0	8.0	9.5	14.5	8.5	11.5	21.5	15.0	18.0
14	2.0	.5	1.0	8.0	4.5	6.0	13.5	9.0	11.5	20.5	15.5	18.5
15	3.0	.5	1.5	4.5	2.5	3.5	15.5	10.0	12.5	22.0	16.5	19.0
16	5.0	2.5	3.5	3.5	1.5	2.5	14.5	9.5	12.0	19.0	16.5	17.5
17	6.0	2.0	4.0	6.5	2.0	4.0	15.0	9.0	12.0	19.0	16.5	18.0
18	5.0	3.0	4.0	4.5	3.5	4.0	13.0	11.0	11.5	17.0	15.0	16.0
19	5.0	4.5	5.0	6.5	3.5	5.0	13.0	9.0	10.5	16.5	14.0	15.5
20	6.5	5.0	5.5	7.5	4.0	5.5	14.0	8.0	11.0	18.0	14.5	16.0
21	5.5	3.0	4.0	7.5	4.5	6.0	16.5	11.0	13.5	19.0	15.0	17.0
22	5.0	.5	3.0	9.5	4.0	7.0	14.0	12.5	13.0	22.0	16.0	18.5
23	4.0	2.5	3.5	11.5	5.5	8.5	16.5	11.5	13.5	24.0	18.0	21.0
24	4.5	3.0	3.5	14.0	8.5	11.0	17.0	13.5	15.0	22.5	19.5	21.0
25	3.0	1.5	2.5	14.0	10.0	12.5	15.0	10.5	13.0	22.0	16.5	19.5
26	4.0	.5	2.0	16.0	12.5	14.0	17.0	10.5	14.0	---	---	---
27	3.5	1.5	2.5	13.0	10.5	12.0	15.5	12.5	14.5	---	---	---
28	6.0	2.0	3.5	13.5	8.0	11.0	13.5	10.5	12.0	---	---	---
29	6.5	2.5	4.5	15.0	9.0	12.0	14.0	9.0	11.5	---	---	---
30	---	---	---	15.0	10.5	13.0	15.0	10.0	12.5	---	---	---
31	---	---	---	15.0	12.5	13.5	---	---	---	---	---	---
MONTH	9.5	.5	4.0	16.0	1.5	8.0	19.0	8.0	13.0	24.0	10.5	16.5
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	24.0	16.5	19.5	28.5	22.5	25.0	23.5	18.5	20.5
2	---	---	---	24.0	16.5	20.0	29.5	23.5	26.0	22.5	18.0	19.5
3	---	---	---	24.5	17.5	21.0	28.5	24.5	26.5	23.0	18.0	20.0
4	---	---	---	25.0	19.0	22.0	27.0	24.5	25.5	22.0	20.5	21.0
5	---	---	---	25.0	19.5	22.5	29.0	23.5	25.5	20.5	19.0	19.5
6	---	---	---	---	---	---	27.5	23.5	25.0	19.0	16.5	18.0
7	---	---	---	---	---	---	29.0	23.5	25.5	20.0	14.5	17.0
8	---	---	---	---	---	---	28.5	22.5	25.0	20.5	15.0	17.0
9	---	---	---	---	---	---	29.0	23.0	25.5	18.5	17.0	17.5
10	---	---	---	---	---	---	29.0	23.0	25.5	22.0	17.5	19.0
11	---	---	---	---	---	---	29.5	24.0	26.0	22.5	18.0	20.0
12	---	---	---	---	---	---	29.0	23.5	26.0	22.0	18.5	20.0
13	---	---	---	---	---	---	28.5	24.0	26.0	24.0	20.0	21.5
14	---	---	---	27.0	22.5	24.5	30.0	24.0	26.5	25.0	20.5	22.0
15	---	---	---	30.0	23.5	26.0	30.0	24.0	26.5	22.5	17.5	19.5
16	25.5	21.0	23.5	31.0	23.5	27.0	29.5	23.5	26.0	20.0	17.0	18.5
17	23.0	20.5	21.5	29.5	25.0	27.0	29.0	22.5	25.5	18.5	17.5	18.0
18	25.0	19.5	22.0	28.5	24.5	25.5	29.0	23.5	26.0	22.0	17.5	19.5
19	26.5	21.5	23.5	28.0	23.5	25.5	27.0	24.0	25.0	20.5	19.0	20.0
20	26.5	22.0	24.0	28.5	23.5	25.5	24.0	23.0	23.5	21.5	19.5	20.5
21	27.5	22.0	25.0	26.0	23.5	24.5	26.5	22.0	23.5	22.0	17.5	19.5
22	28.5	22.5	25.5	27.0	22.0	24.5	25.0	20.0	22.5	22.0	17.0	19.0
23	27.5	23.0	25.5	24.5	22.5	23.5	22.0	20.5	21.5	22.0	17.5	19.5
24	25.0	23.0	24.0	25.5	21.5	23.0	25.5	20.0	22.0	20.5	18.0	19.5
25	29.0	22.5	25.0	27.5	21.5	24.0	24.5	20.0	22.0	18.0	16.5	17.5
26	27.5	23.5	25.0	25.5	22.5	24.0	26.0	19.5	22.0	19.0	16.0	17.5
27	25.0	19.5	22.0	24.0	22.0	22.5	26.0	20.0	22.5	19.0	15.5	17.5
28	25.0	18.0	21.5	26.0	21.0	23.5	25.0	21.0	23.0	19.0	16.0	17.5
29	21.5	19.5	20.5	28.0	22.0	24.5	24.0	21.5	22.5	17.0	16.0	17.0
30	24.5	18.0	20.5	28.5	23.0	25.5	22.0	20.5	21.5	19.5	16.0	17.5
31	---	---	---	27.5	23.0	24.5	23.0	19.5	21.0	---	---	---
MONTH	29.0	18.0	23.5	31.0	16.5	24.0	30.0	19.5	24.5	25.0	14.5	19.0
YEAR	31.0	.0	12.5									

02011460 BACK CREEK NEAR SUNRISE, VA

LOCATION.--Lat 38°14'43", long 79°46'08", Bath County, Hydrologic Unit 02080201, on right bank 900 ft upstream from bridge on State Highway 600, 0.8 mi upstream from Gap Run, and 4.8 mi northeast of Sunrise.

DRAINAGE AREA.--60.1 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,200.02 ft above National Geodetic Vertical Datum of 1929 (levels by Virginia Department of Transportation).

REMARKS.--Records good except those for periods with ice effect, Jan. 4-12, 15, 16, 28, 29, and Feb. 14, which are fair. Virginia Power gage-height transmitter at station, receiver at Back Creek Dam.

AVERAGE DISCHARGE.--14 years, 90.8 ft³/s, 20.52 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,500 ft³/s, Nov. 4, 1985, gage height, 10.01 ft, from rating curve extended above 3,800 ft³/s; minimum, 1.5 ft³/s, Sept. 13, 14, 1980; minimum gage height, 0.07 ft, July 21, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 850 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	0740	*1,270	*4.26	No other peak equal to or greater than base discharge.			

Minimum discharge, 2.9 ft³/s, Aug. 19, gage height, 0.63 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	6.6	160	142	54	35	49	56	28	5.0	5.0	7.1
2	13	6.3	114	142	59	32	45	54	26	4.8	4.5	5.8
3	12	6.3	85	128	88	33	43	52	32	4.5	4.2	5.0
4	12	6.0	72	e90	117	37	51	52	28	4.5	4.4	17
5	10	5.9	58	e60	122	65	48	104	23	4.3	4.2	37
6	9.2	5.7	46	e50	111	68	49	472	21	4.2	5.2	20
7	9.8	5.5	37	e45	116	67	66	324	19	4.1	6.1	13
8	10	5.5	36	e40	92	59	72	196	17	4.0	4.6	9.7
9	9.5	5.5	37	e37	78	57	70	149	18	4.2	4.0	7.9
10	9.1	17	46	e35	68	62	67	129	21	4.5	3.8	6.8
11	8.6	76	52	e33	58	61	63	107	17	4.8	3.6	5.9
12	8.4	54	51	e32	55	59	57	90	14	12	3.6	5.3
13	8.1	39	43	36	47	70	52	80	12	14	4.3	5.2
14	7.8	33	38	36	e42	75	47	73	11	12	4.1	5.0
15	7.8	28	293	e35	46	76	43	69	10	8.5	3.6	4.3
16	7.5	24	293	e32	59	68	38	71	9.4	6.9	3.6	4.0
17	7.2	26	170	29	50	61	35	70	9.0	6.1	3.3	4.2
18	7.2	105	122	69	49	55	37	121	9.1	5.3	3.2	4.5
19	6.9	95	98	86	49	53	47	119	8.8	6.2	3.1	4.4
20	6.7	73	102	806	66	50	40	106	9.0	7.5	8.0	4.4
21	6.6	58	119	357	72	46	40	93	8.4	7.1	12	4.3
22	6.6	41	111	209	72	41	43	97	7.7	8.3	7.7	4.0
23	6.6	34	95	154	68	41	45	91	7.2	8.1	6.6	4.2
24	6.6	39	79	124	60	42	111	79	6.7	7.5	10	7.0
25	6.5	46	76	107	52	44	106	72	6.6	6.6	8.2	57
26	6.0	45	205	90	50	53	90	57	6.3	8.8	6.3	60
27	6.1	48	221	78	46	60	77	48	5.6	9.2	5.3	33
28	7.2	70	257	e66	42	60	69	43	5.4	8.8	4.6	23
29	7.6	459	346	e60	39	56	64	39	5.1	7.4	7.7	18
30	7.2	303	205	55	---	53	59	34	5.2	6.4	12	16
31	6.9	---	153	53	---	50	---	31	---	5.5	9.1	---
TOTAL	259.7	1766.3	3820	3316	1927	1689	1723	3178	406.5	211.1	175.9	403.0
MEAN	8.38	58.9	123	107	66.4	54.5	57.4	103	13.5	6.81	5.67	13.4
MAX	15	459	346	806	122	76	111	472	32	14	12	60
MIN	6.0	5.5	36	29	39	32	35	31	5.1	4.0	3.1	4.0
CFSM	.14	.98	2.05	1.78	1.11	.91	.96	1.71	.23	.11	.09	.22
IN.	.16	1.09	2.36	2.05	1.19	1.05	1.07	1.97	.25	.13	.11	.25

CAL YR 1987 TOTAL 31515.9 MEAN 86.3 MAX 1500 MIN 2.9 CFSM 1.44 IN. 19.51
WTR YR 1988 TOTAL 18875.5 MEAN 51.6 MAX 806 MIN 3.1 CFSM .86 IN. 11.68

e Estimated.

02011460 BACK CREEK NEAR SUNRISE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1984 to current year.

INSTRUMENTATION.--Water-temperature recorder since October 1984.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 27.0°C, July 22, 1987, July 15-17, 1988; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 27.0°C, July 15-17; minimum, 0.0°C on several days during winter period.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	15.0	12.0	13.5	12.5	8.0	10.0	7.0	5.0	6.0	5.5	3.0	4.5
2	15.5	11.0	12.5	13.0	9.0	11.0	5.5	3.5	4.5	3.5	1.5	2.5
3	13.5	10.5	12.0	13.5	10.0	11.5	4.5	3.0	4.0	2.5	1.0	2.0
4	13.5	9.0	11.0	12.5	9.0	11.0	4.5	3.0	4.0	3.0	.0	2.0
5	14.0	8.5	11.0	11.5	8.0	10.0	3.5	2.0	3.0	.0	.0	.0
6	12.0	10.0	11.0	8.0	6.0	7.0	4.0	1.5	2.5	.0	.0	.0
7	12.0	10.0	11.0	8.0	5.0	6.5	4.5	1.5	3.0	.0	.0	.0
8	11.5	9.0	10.0	10.0	6.5	8.0	5.5	3.0	4.5	.0	.0	.0
9	12.0	7.0	9.5	9.0	7.0	8.0	7.5	4.5	6.5	.0	.0	.0
10	13.0	9.0	11.0	9.0	6.5	8.0	7.5	5.5	6.5	.0	.0	.0
11	12.5	10.5	11.5	6.5	4.0	5.0	6.5	4.5	5.5	.0	.0	.0
12	12.0	9.5	11.0	6.0	3.0	4.5	6.5	4.5	5.5	.0	.0	.0
13	11.5	7.0	9.0	7.0	3.5	5.0	5.0	3.0	4.0	1.0	.0	.5
14	11.5	6.5	9.0	7.5	4.5	5.5	4.5	3.0	4.0	.0	.0	.0
15	12.0	6.5	9.0	7.5	4.0	5.5	6.0	4.0	5.0	.0	.0	.0
16	12.5	7.5	9.5	8.0	5.0	6.5	4.0	2.5	3.5	.0	.0	.0
17	13.0	8.0	10.5	10.0	8.0	9.0	3.5	2.5	3.0	1.0	.0	.5
18	13.5	9.0	11.0	10.0	7.5	9.0	3.5	1.5	2.5	3.0	.5	2.0
19	13.0	8.5	10.5	8.5	6.5	7.5	5.0	2.5	4.0	2.5	1.5	2.0
20	13.5	10.5	12.0	7.5	4.5	6.5	7.0	4.5	6.0	5.5	1.0	3.5
21	12.0	8.5	10.5	4.0	1.5	3.0	5.5	3.0	4.5	4.5	3.5	4.0
22	10.5	6.5	8.5	4.0	1.0	2.0	4.0	2.5	3.5	4.0	3.0	3.5
23	10.5	6.0	8.0	5.0	1.5	3.5	5.0	3.0	4.0	3.5	2.0	2.5
24	12.0	7.5	9.5	7.5	4.5	6.0	5.0	2.5	4.0	4.0	1.0	2.5
25	12.0	8.5	10.5	8.5	6.0	7.0	7.5	5.0	6.5	3.5	2.5	3.0
26	10.5	6.5	8.5	8.5	6.0	7.5	7.5	6.5	7.0	2.0	.5	.5
27	8.5	7.0	8.0	8.0	7.5	8.0	7.0	6.5	6.5	.5	.5	.5
28	9.0	6.5	7.5	8.0	7.0	7.5	6.5	5.5	6.0	1.5	.5	.5
29	7.5	5.0	6.0	9.0	7.5	8.5	5.5	2.5	4.0	2.0	.5	1.0
30	10.5	6.5	8.5	8.5	6.5	7.5	4.0	2.0	3.0	4.0	.5	2.0
31	12.0	7.5	9.5	---	---	---	4.5	2.0	3.5	5.0	1.0	3.0
MONTH	15.5	5.0	10.0	13.5	1.0	7.0	7.5	1.5	4.5	5.5	.0	1.5

02011460 BACK CREEK NEAR SUNRISE, VA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	7.0	4.0	5.5	6.0	.5	3.0	12.5	9.0	10.5	14.5	7.0	10.5
2	7.0	5.0	6.0	5.0	1.0	3.0	13.0	9.5	11.0	11.0	8.0	10.0
3	6.0	5.0	5.5	5.0	3.0	4.0	11.5	10.0	11.0	11.5	8.5	10.0
4	5.5	2.5	4.5	6.0	3.5	4.5	15.0	10.5	12.0	10.5	9.5	10.0
5	3.0	.5	2.0	7.5	3.0	5.0	15.5	9.0	12.0	10.5	9.0	10.0
6	.5	.5	.5	7.0	2.0	4.5	12.0	9.5	11.0	9.5	8.0	9.0
7	.5	.5	.5	8.5	3.5	5.5	10.0	8.0	9.0	14.0	8.0	10.5
8	2.5	.5	1.0	8.5	3.5	5.5	11.5	8.0	9.0	14.5	8.5	11.5
9	3.0	.5	1.5	6.5	4.5	5.5	12.0	6.5	8.5	12.5	10.0	11.5
10	4.5	.5	2.0	9.0	5.0	6.5	13.0	6.5	9.5	14.5	10.5	12.0
11	4.0	1.0	2.5	8.5	3.0	5.5	12.5	6.5	9.5	13.5	9.5	11.5
12	3.0	.5	2.5	7.5	3.5	5.5	9.5	7.0	8.0	16.0	8.5	12.0
13	1.0	.5	.5	8.0	4.5	6.5	12.5	6.0	8.5	16.5	10.5	13.5
14	1.0	.5	.5	4.5	2.0	3.0	10.5	6.0	8.5	15.5	11.0	13.5
15	2.0	.5	1.5	3.0	.5	1.5	13.5	7.0	9.5	16.0	12.0	14.0
16	4.5	1.0	2.5	4.0	.0	1.5	12.0	6.0	8.5	17.0	12.5	14.5
17	5.0	.5	2.5	6.0	1.0	3.0	14.0	6.0	9.5	16.5	13.0	14.5
18	3.0	1.5	2.5	3.0	2.0	2.5	10.5	8.5	9.5	14.0	12.0	12.5
19	3.5	2.5	3.0	5.0	2.0	3.0	12.0	7.0	8.5	13.5	11.0	12.0
20	5.0	3.0	4.0	6.5	1.5	3.5	12.0	5.5	8.5	14.0	11.0	12.5
21	3.5	.5	2.0	7.5	2.5	4.0	14.0	8.5	10.5	14.5	11.0	12.5
22	4.5	.5	2.0	8.0	1.5	4.5	11.0	9.0	10.0	16.5	11.5	14.0
23	3.0	1.5	2.0	9.5	3.0	6.0	14.5	8.5	11.0	18.0	12.5	15.0
24	3.0	.5	2.0	11.0	5.5	8.0	12.0	9.0	10.5	17.5	13.5	15.5
25	2.0	.5	1.0	11.0	6.0	8.5	11.5	6.5	9.0	17.5	13.0	15.0
26	3.5	.5	1.5	12.5	8.5	10.0	13.0	7.0	10.0	17.5	10.0	13.5
27	4.0	.5	2.0	10.0	6.5	8.0	12.0	8.5	10.5	18.5	11.0	14.5
28	5.5	1.0	2.5	10.5	4.0	7.0	9.5	7.5	8.0	18.0	12.5	15.5
29	5.5	1.0	3.0	12.0	5.5	8.5	11.0	6.5	8.0	20.0	13.5	16.5
30	---	---	---	11.0	6.5	9.0	12.0	7.5	9.5	20.5	14.0	17.0
31	---	---	---	11.0	8.0	9.5	---	---	---	21.5	15.0	18.0
MONTH	7.0	.5	2.5	12.5	.0	5.5	15.5	5.5	9.5	21.5	7.0	13.0
		JUNE			JULY			AUGUST			SEPTEMBER	
1	21.5	15.0	18.0	21.0	14.0	17.0	25.5	19.5	22.0	20.5	16.0	18.0
2	17.5	15.0	16.5	22.0	13.5	17.5	25.5	20.0	22.5	21.0	15.0	17.5
3	15.5	13.0	14.5	20.5	15.0	18.0	26.0	21.0	23.0	21.0	15.5	18.0
4	15.5	11.5	13.5	23.0	16.0	19.0	24.5	21.5	23.0	20.5	18.5	19.0
5	18.5	10.5	14.0	23.5	17.0	20.0	25.0	20.5	22.5	19.0	17.0	18.0
6	21.5	13.5	17.0	23.0	17.0	20.0	23.5	20.5	22.0	18.0	15.0	16.5
7	23.0	16.0	19.0	24.5	17.5	21.0	26.0	20.5	22.5	18.5	12.5	15.5
8	23.0	16.0	19.0	24.0	18.5	21.0	25.5	19.0	22.0	19.0	12.5	15.5
9	18.0	14.0	16.5	22.5	18.5	20.5	25.0	19.5	22.0	17.0	14.5	16.0
10	17.0	12.0	14.0	22.5	18.5	20.5	25.5	19.5	22.0	20.0	16.0	17.5
11	19.5	12.0	15.0	23.5	18.5	20.5	25.5	20.5	22.5	19.5	15.5	17.0
12	20.5	12.5	16.0	21.5	19.5	20.5	25.5	20.5	23.0	18.5	15.5	17.0
13	22.5	14.0	17.5	22.5	19.5	21.0	25.5	20.5	23.0	21.0	17.5	19.0
14	23.5	16.0	19.0	25.0	19.5	22.0	26.5	20.5	23.0	22.5	17.5	19.5
15	23.5	17.0	20.0	27.0	20.5	23.0	26.5	20.5	23.0	20.5	15.0	17.5
16	22.5	17.0	19.5	27.0	20.0	23.5	26.0	20.0	23.0	18.0	14.5	16.5
17	20.0	17.5	18.5	27.0	21.5	24.0	26.5	19.5	22.5	16.5	15.5	16.0
18	22.5	16.5	19.0	24.5	21.0	22.5	26.5	20.5	23.0	20.5	16.0	18.0
19	23.0	18.0	20.0	24.5	20.5	22.0	23.0	20.5	22.0	18.0	16.5	17.5
20	24.0	18.0	20.5	26.0	21.0	23.0	21.5	20.5	21.0	20.0	17.0	18.5
21	25.0	18.0	21.5	22.5	21.0	21.5	24.5	19.5	21.5	19.5	15.5	17.5
22	25.5	19.0	21.5	24.0	20.0	21.5	22.0	17.5	19.5	20.5	15.0	17.5
23	24.5	19.0	21.5	22.0	20.0	21.0	20.0	18.5	19.0	20.5	15.5	18.0
24	23.5	19.5	21.0	24.5	19.0	21.0	22.5	18.5	20.0	18.5	16.5	17.5
25	26.0	19.5	22.0	23.0	18.5	21.0	22.0	17.0	19.5	17.0	15.5	16.5
26	24.5	20.0	22.0	23.0	19.5	21.0	22.0	16.5	19.5	17.5	14.0	15.5
27	22.5	16.5	19.0	22.0	19.5	20.5	23.0	17.5	20.0	18.0	13.5	15.5
28	22.5	15.0	18.5	24.0	19.0	21.0	21.5	18.0	20.0	18.5	14.0	15.5
29	19.5	17.0	18.0	24.0	18.5	21.5	21.5	19.0	20.0	16.5	14.5	15.5
30	22.0	15.0	18.0	25.0	19.5	22.0	20.0	18.5	19.0	19.0	15.0	16.5
31	---	---	---	24.5	20.0	22.0	21.0	17.5	19.0	---	---	---
MONTH	26.0	10.5	18.5	27.0	13.5	21.0	26.5	16.5	21.5	22.5	12.5	17.0
YEAR	27.0	.0	11.0									

02011470 BACK CREEK AT SUNRISE, VA

LOCATION.--Lat 38°11'25", long 79°48'43", Bath County, Hydrologic Unit 02080201, on left bank 75 ft upstream from bridge on State Highway 600 at Sunrise, 180 ft upstream from Beaver Run, 0.5 mi downstream from Back Creek Dam, and 7.6 mi northeast of Mountain Grove.

DRAINAGE AREA.--76.1 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Water-stage recorder. Concrete control since Oct. 24, 1984. Datum of gage is 1,968.52 ft above National Geodetic Vertical Datum of 1929 (Virginia Power bench mark).

REMARKS.--No estimated daily discharges. Records good. Flow regulated since October 1984 by Back Creek Lake 0.5 mi upstream, amount unknown. Virginia Power gage-height transmitter at station, receiver at Back Creek Dam.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,100 ft³/s, Nov. 5, 1985, gage height, 11.37 ft, from rating curve extended above 960 ft³/s on basis of release from Back Creek Lake at peak flow; minimum daily, 5.2 ft³/s, Nov. 3, 1984.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,680 ft³/s, Jan. 20, gage height, 6.93 ft, from rating curve extended as explained above; minimum, 8.4 ft³/s, Nov. 6, 7, gage height, 3.89 ft; minimum daily, 8.7 ft³/s, Oct. 29 to Nov. 3, Nov. 5-9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	8.7	314	103	38	31	51	60	34	15	15	14
2	22	8.7	20	144	57	27	49	58	22	15	15	14
3	21	8.7	73	177	104	22	48	62	22	15	15	14
4	20	8.8	86	180	168	33	48	63	21	15	15	16
5	21	8.7	90	173	126	75	71	98	20	15	15	15
6	22	8.7	82	83	139	87	74	784	21	15	15	14
7	23	8.7	82	67	147	86	79	669	22	15	15	14
8	19	8.7	22	69	116	86	94	297	22	15	15	14
9	13	8.7	34	70	110	90	98	291	22	15	15	14
10	13	11	17	67	108	86	106	222	22	15	15	14
11	13	12	16	36	104	47	71	109	21	15	14	14
12	13	10	15	28	69	52	56	108	17	15	15	14
13	14	9.8	14	28	26	72	59	109	14	15	14	14
14	15	9.5	15	27	26	69	59	84	14	15	14	14
15	13	9.3	751	29	44	71	43	61	14	15	14	13
16	13	9.1	484	29	69	72	36	60	14	15	14	13
17	14	10	166	27	47	71	35	81	15	15	14	14
18	9.3	13	67	28	48	72	43	147	15	27	14	14
19	9.3	11	67	67	54	72	69	179	15	19	14	14
20	9.4	11	120	1370	108	48	71	173	15	16	15	14
21	9.2	13	124	339	101	46	48	126	15	15	14	14
22	9.0	22	141	475	69	39	49	101	15	15	14	14
23	9.0	27	141	238	67	39	50	90	15	15	15	14
24	9.0	27	141	176	67	24	48	91	15	15	15	17
25	9.0	26	136	128	96	40	86	90	15	15	14	19
26	9.1	40	185	118	94	65	115	79	15	15	14	16
27	10	75	564	116	32	68	131	54	15	15	14	15
28	8.8	90	545	74	21	69	103	42	15	15	14	14
29	8.7	605	607	81	20	83	80	41	15	15	15	14
30	8.7	640	504	82	---	95	63	40	15	15	14	14
31	8.7	---	102	40	---	67	---	40	---	15	14	---
TOTAL	419.2	1759.1	5725	4669	2275	1904	2033	4509	532	482	449	432
MEAN	13.5	58.6	185	151	78.4	61.4	67.8	145	17.7	15.5	14.5	14.4
MAX	23	640	751	1370	168	95	131	784	34	27	15	19
MIN	8.7	8.7	14	27	20	22	35	40	14	15	14	13

CAL YR 1987 TOTAL 45327.3 MEAN 124 MAX 2240 MIN 8.7
WTR YR 1988 TOTAL 25188.3 MEAN 68.8 MAX 1370 MIN 8.7

02011470 BACK CREEK AT SUNRISE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1984 to current year.

INSTRUMENTATION.--Water-temperature recorder since October 1984.

REMARKS.--Interruption in the record was due to malfunction of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum recorded, 27.5°C, Aug. 10, 1985; minimum, 0.0°C, Jan. 20, 21, 1985.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum recorded, 24.5°C, July 4, 5, but may have been higher during instrument malfunction July 7 to Aug. 23; minimum, 1.5°C, Jan. 11.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	20.5	17.5	18.5	18.5	13.5	15.0	11.5	9.0	10.0	6.0	5.5	6.0
2	20.5	17.5	18.5	18.0	13.5	15.0	10.0	8.5	9.0	6.0	5.5	5.5
3	18.0	16.5	17.5	18.0	14.0	15.5	10.5	10.0	10.0	5.5	5.5	5.5
4	19.0	16.0	17.0	17.5	13.5	15.0	10.0	10.0	10.0	5.5	5.0	5.5
5	19.5	15.5	17.0	16.0	11.5	14.0	10.0	9.5	9.5	5.0	4.5	5.0
6	18.0	16.5	17.0	15.0	11.0	12.5	10.0	8.5	9.5	5.0	4.0	4.5
7	18.0	16.5	17.0	14.5	11.0	12.5	10.0	9.0	9.5	4.0	4.0	4.0
8	17.0	14.0	16.0	15.5	12.5	13.5	10.5	9.0	9.5	4.5	4.0	4.0
9	18.5	13.5	15.5	14.5	12.0	13.5	10.5	9.5	9.5	4.5	3.5	4.0
10	19.5	14.5	16.5	13.5	10.5	12.0	10.0	9.0	9.5	4.5	3.5	3.5
11	18.0	15.0	16.0	11.5	9.5	10.5	10.5	8.5	9.0	4.5	1.5	3.0
12	16.5	13.5	15.0	13.0	8.5	10.5	10.5	8.5	9.0	4.5	2.5	3.0
13	18.5	13.0	15.0	13.5	9.5	11.0	10.0	7.5	8.5	4.5	2.5	3.5
14	18.5	13.5	15.5	13.5	10.0	11.0	9.0	7.5	8.0	4.5	2.5	3.0
15	19.0	13.0	15.0	14.5	10.0	11.5	9.0	8.5	9.0	4.5	2.5	3.0
16	19.0	13.5	15.5	13.0	10.0	11.5	8.5	8.0	8.5	5.0	2.5	3.5
17	19.0	13.5	15.5	13.0	12.0	12.5	8.0	7.0	7.5	4.5	3.0	3.5
18	19.0	14.0	16.0	12.5	9.5	11.0	8.0	7.0	7.5	5.5	3.5	4.0
19	18.5	13.5	15.5	12.5	9.5	10.5	8.0	7.0	7.5	4.0	3.5	4.0
20	17.5	15.0	16.0	11.0	8.0	9.5	8.0	7.0	7.5	5.0	4.0	4.0
21	16.5	13.0	15.0	11.0	7.0	8.5	7.5	7.0	7.5	4.5	4.0	4.0
22	17.5	12.5	14.0	12.5	9.0	10.5	7.5	7.0	7.5	4.0	4.0	4.0
23	17.0	12.5	14.5	12.5	10.5	11.5	7.5	7.0	7.5	4.0	4.0	4.0
24	18.0	13.5	15.5	13.0	11.5	12.0	7.5	7.0	7.0	4.0	3.5	4.0
25	17.5	13.0	15.0	12.5	11.5	12.0	7.5	6.5	7.0	4.0	3.5	4.0
26	17.5	12.5	14.5	12.5	11.5	12.0	7.0	7.0	7.0	4.0	3.0	3.5
27	15.0	13.0	14.0	11.5	11.0	11.5	7.0	7.0	7.0	3.5	3.0	3.0
28	16.0	12.5	13.5	12.0	11.5	11.5	7.0	7.0	7.0	4.0	2.5	3.0
29	15.5	12.0	13.5	11.5	11.5	11.5	7.0	6.5	7.0	4.0	2.5	3.5
30	17.0	13.0	14.5	11.5	11.0	11.5	6.5	5.5	6.5	4.0	3.0	3.5
31	18.0	13.5	15.0	---	---	---	6.0	5.5	5.5	5.0	3.0	4.0
MONTH	20.5	12.0	15.5	18.5	7.0	12.0	11.5	5.5	8.0	6.0	1.5	4.0

02011470 BACK CREEK AT SUNRISE, VA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	5.5	4.0	4.5	5.5	2.5	4.0	8.0	6.5	7.5	11.5	8.5	9.5
2	5.0	4.5	4.5	6.0	3.0	4.5	8.5	7.0	7.5	10.5	8.5	9.5
3	4.5	4.0	4.5	6.0	4.0	5.0	8.0	7.0	7.5	10.5	9.5	10.0
4	4.5	4.0	4.0	6.5	4.0	5.0	9.5	7.0	8.0	10.0	9.5	10.0
5	4.5	3.0	4.0	5.0	3.5	4.5	9.0	7.0	7.5	10.0	9.5	10.0
6	4.0	3.0	3.5	5.5	3.5	4.5	8.0	7.0	7.5	10.0	9.5	9.5
7	4.0	3.0	3.5	5.5	4.0	4.5	7.5	7.0	7.0	11.0	9.5	10.0
8	4.0	3.0	3.5	5.5	4.0	5.0	8.0	6.5	7.0	10.5	10.0	10.0
9	4.0	3.0	3.5	5.0	4.5	4.5	8.5	6.5	7.0	10.5	10.0	10.5
10	4.0	3.0	3.5	6.0	4.5	5.0	8.5	6.5	7.5	11.5	10.5	10.5
11	4.0	3.5	3.5	6.5	4.0	5.0	9.5	7.0	8.0	11.5	10.5	11.0
12	4.5	2.5	3.5	6.5	4.5	5.5	7.5	6.5	7.0	12.5	10.5	11.5
13	4.0	2.0	2.5	6.0	5.0	5.5	9.0	6.5	7.5	12.5	11.0	11.5
14	5.0	2.0	3.0	5.5	4.5	5.0	9.0	6.5	7.5	13.0	11.0	12.0
15	3.5	3.0	3.5	5.0	4.5	4.5	10.5	7.0	8.0	14.0	11.5	12.5
16	4.0	3.0	3.5	5.5	4.0	4.5	10.0	6.5	8.0	13.5	11.5	12.5
17	5.0	3.0	3.5	6.0	4.5	5.0	10.5	6.5	8.5	13.5	12.0	12.5
18	4.5	3.0	4.0	5.0	4.5	4.5	8.5	7.5	8.0	12.5	12.0	12.5
19	4.5	3.5	4.0	6.0	4.5	5.0	9.5	7.5	8.0	13.0	12.0	12.5
20	4.0	3.5	4.0	7.0	4.5	5.0	9.5	7.0	8.0	13.0	12.0	12.5
21	4.5	3.0	3.5	7.0	4.5	5.0	10.5	8.0	9.0	13.5	12.0	13.0
22	5.0	3.0	4.0	10.5	3.5	6.0	9.5	8.0	8.5	14.0	12.5	13.0
23	4.0	3.5	3.5	11.0	4.5	7.0	10.5	8.0	9.0	15.0	13.0	13.5
24	4.0	3.0	3.5	9.5	5.5	7.5	10.0	8.0	9.0	14.5	13.0	13.5
25	3.5	3.0	3.5	8.0	6.0	6.5	9.5	8.0	8.5	15.0	13.0	14.0
26	4.0	3.0	3.5	7.5	6.0	6.5	10.0	8.0	9.0	15.0	13.0	13.5
27	5.0	3.0	3.5	7.5	5.5	6.0	10.0	8.5	9.0	16.0	13.0	14.0
28	7.0	2.5	4.5	7.5	5.5	6.0	9.5	8.5	9.0	16.0	13.0	14.0
29	7.0	2.5	4.5	7.5	5.5	6.5	10.5	8.5	9.0	16.5	13.0	14.5
30	---	---	---	7.0	6.0	6.5	10.5	8.5	9.5	16.5	13.5	14.5
31	---	---	---	8.0	6.0	7.0	---	---	---	16.5	13.5	15.0
MONTH	7.0	2.0	3.5	11.0	2.5	5.5	10.5	6.5	8.0	16.5	8.5	12.0
		JUNE			JULY			AUGUST			SEPTEMBER	
1	17.5	14.0	15.0	23.0	17.0	19.5	---	---	---	23.0	19.0	20.5
2	15.5	14.0	14.5	23.5	17.0	19.5	---	---	---	23.5	19.0	21.0
3	15.5	13.0	14.0	23.0	17.5	20.0	---	---	---	23.0	19.5	21.0
4	15.5	13.0	14.0	24.5	18.5	21.0	---	---	---	21.5	20.0	20.5
5	18.0	12.5	14.5	24.5	18.5	21.0	---	---	---	21.5	19.5	20.0
6	18.5	13.0	15.5	22.5	18.0	20.0	---	---	---	21.5	19.0	20.0
7	18.5	14.0	16.0	---	---	---	---	---	---	22.5	18.5	20.5
8	18.5	14.0	16.0	---	---	---	---	---	---	22.5	18.5	20.5
9	15.0	13.5	14.5	---	---	---	---	---	---	20.5	19.0	19.5
10	16.5	13.0	14.5	---	---	---	---	---	---	22.5	19.0	20.5
11	18.0	13.0	15.0	---	---	---	---	---	---	22.0	19.0	20.0
12	19.0	13.0	15.5	---	---	---	---	---	---	21.0	19.0	19.5
13	20.0	13.0	16.0	---	---	---	---	---	---	22.5	19.5	20.5
14	21.5	13.5	17.0	---	---	---	---	---	---	23.0	19.0	20.5
15	21.5	15.0	17.5	---	---	---	---	---	---	23.0	18.5	20.5
16	20.5	15.5	17.5	---	---	---	---	---	---	21.0	18.5	19.5
17	19.0	15.5	17.0	---	---	---	---	---	---	20.0	19.0	19.5
18	21.5	15.5	17.5	---	---	---	---	---	---	23.5	19.0	20.5
19	21.0	16.5	18.0	---	---	---	---	---	---	20.5	19.0	19.5
20	21.5	17.0	18.5	---	---	---	---	---	---	21.0	19.5	20.0
21	22.0	16.5	19.0	---	---	---	---	---	---	22.5	19.0	20.0
22	22.5	17.0	19.5	---	---	---	---	---	---	22.5	19.0	20.0
23	22.5	17.5	19.5	---	---	---	---	---	---	22.5	19.0	20.0
24	21.5	17.5	19.0	---	---	---	23.5	20.0	21.5	20.0	18.5	19.5
25	23.5	18.0	20.0	---	---	---	23.0	20.0	21.0	19.5	18.0	18.5
26	23.0	18.0	20.0	---	---	---	24.0	20.0	21.0	20.5	17.5	19.0
27	22.0	17.0	19.0	---	---	---	24.0	20.0	21.5	21.5	18.0	19.5
28	23.0	17.0	19.5	---	---	---	23.5	20.0	21.0	21.5	18.5	19.5
29	20.0	18.0	19.0	---	---	---	23.0	20.5	21.0	21.0	18.5	19.0
30	23.0	17.5	19.5	---	---	---	22.0	20.0	20.5	21.5	18.5	19.5
31	---	---	---	---	---	---	22.5	19.5	20.5	---	---	---
MONTH	23.5	12.5	17.0	24.5	17.0	20.0	24.0	19.5	21.0	23.5	17.5	20.0
YEAR	24.5	1.5	11.0									

02011490 LITTLE BACK CREEK NEAR SUNRISE, VA

LOCATION.--Lat 38°12'52", long 79°50'16", Bath County, Hydrologic Unit 02080201, in George Washington National Forest, on right bank 600 ft downstream from Long Spring Run, 1.2 mi downstream from Little Back Creek Dam, and 8.5 mi northeast of Mountain Grove.

DRAINAGE AREA.--4.91 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Water-stage recorder. Concrete control with rectangular weir plate. Datum of gage is 2,638.48 ft above National Geodetic Vertical Datum of 1929 (Virginia Power bench mark).

REMARKS.--Records good except for period with ice effect, Jan. 5-18, which is fair. Flow regulated since January 1985 by Little Back Creek Lake 1.2 mi upstream, amount unknown.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 580 ft³/s, Nov. 4, 1985, gage height, 4.06 ft, from rating curve extended above 30 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.89 ft³/s, Oct. 12, 13, 1984, gage height, 0.66 ft; minimum daily, 0.90 ft³/s, Oct. 13, 1984.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 38 ft³/s, May 6, gage height, 2.52 ft, from rating curve extended as explained above; minimum, 2.1 ft³/s, Oct. 31, gage height, 0.79 ft; minimum daily, 2.3 ft³/s, Oct. 31.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	2.5	9.2	7.3	4.0	3.7	4.2	4.3	3.4	2.8	2.7	3.4
2	2.9	2.6	6.4	7.0	4.7	3.7	4.0	4.5	3.3	2.7	2.8	3.1
3	2.8	2.7	5.2	6.7	5.9	3.7	4.2	4.5	3.5	2.6	2.9	2.9
4	3.0	2.6	4.7	6.3	7.0	3.7	4.5	4.6	3.3	2.6	2.9	3.9
5	3.0	2.5	4.2	e5.0	7.5	3.9	4.4	8.9	3.3	2.6	2.9	4.0
6	3.1	2.4	3.8	e4.0	7.0	3.9	4.4	33	3.3	2.8	2.9	3.5
7	3.0	2.4	3.8	e3.5	6.9	4.0	5.1	19	3.3	2.7	2.9	3.3
8	2.8	2.4	3.8	e3.3	6.6	4.0	5.6	11	3.1	2.7	2.9	3.1
9	2.7	2.6	3.8	e3.1	5.8	4.2	5.5	8.2	3.1	2.8	2.8	3.2
10	2.7	4.1	4.0	e3.0	4.5	4.3	5.2	6.9	3.0	2.8	2.8	3.1
11	2.7	5.5	4.1	e2.9	4.2	4.2	5.0	5.8	2.9	2.9	2.8	2.9
12	2.9	4.3	4.1	e2.8	4.0	4.1	4.8	5.2	2.9	3.2	2.9	3.0
13	2.9	3.9	4.0	e3.1	3.9	4.4	4.5	4.8	3.0	3.1	2.8	3.2
14	2.7	3.6	4.1	e3.2	3.9	4.5	4.1	4.5	3.0	3.1	2.6	3.1
15	2.7	3.4	15	e3.0	4.0	4.4	4.0	4.3	2.9	2.9	2.6	2.9
16	2.6	3.4	18	e2.8	4.3	4.1	4.0	4.3	2.9	2.8	2.7	2.9
17	2.6	4.1	10	e2.9	4.1	3.9	3.9	4.1	2.9	2.6	2.8	3.0
18	2.7	7.4	7.1	e4.0	3.9	3.8	4.3	4.3	2.9	2.9	2.8	3.0
19	2.8	6.5	5.8	5.2	4.0	3.8	4.4	4.3	2.8	3.4	2.8	3.0
20	2.9	5.3	5.7	26	4.6	3.7	4.1	4.2	2.8	3.5	3.1	3.0
21	2.8	4.4	6.4	18	4.8	3.7	4.0	4.2	2.8	3.1	3.1	2.9
22	2.7	3.8	6.4	11	4.8	3.6	4.3	4.2	2.7	2.9	3.1	2.9
23	2.6	3.6	5.8	7.9	4.6	3.5	4.2	4.2	2.7	2.9	3.2	2.9
24	2.4	3.5	5.1	6.4	4.4	3.6	4.3	4.1	2.7	2.8	3.5	3.5
25	2.5	3.4	5.5	5.7	4.2	3.8	4.5	3.9	2.8	2.8	3.2	5.3
26	2.6	3.4	16	5.1	4.0	4.2	4.6	3.7	2.8	2.9	2.9	4.6
27	2.7	3.7	16	5.0	3.9	4.4	4.6	3.5	2.7	3.0	2.8	3.6
28	2.7	3.8	15	5.0	3.7	4.4	4.5	3.4	2.8	3.1	2.8	3.3
29	2.6	17	18	4.8	3.7	4.3	4.4	3.4	2.8	2.8	3.5	3.1
30	2.6	16	11	4.3	---	4.3	4.3	3.4	2.8	2.8	3.4	3.0
31	2.3	---	8.3	3.8	---	4.2	---	3.4	---	2.7	3.1	---
TOTAL	85.0	136.8	240.3	182.1	138.9	124.0	133.9	192.1	89.2	89.3	91.0	98.6
MEAN	2.74	4.56	7.75	5.87	4.79	4.00	4.46	6.20	2.97	2.88	2.94	3.29
MAX	3.1	17	18	26	7.5	4.5	5.6	33	3.5	3.5	3.5	5.3
MIN	2.3	2.4	3.8	2.8	3.7	3.5	3.9	3.4	2.7	2.6	2.6	2.9

CAL YR 1987 TOTAL 1865.7 MEAN 5.11 MAX 55 MIN 2.0
WTR YR 1988 TOTAL 1601.2 MEAN 4.37 MAX 33 MIN 2.3

e Estimated.

02011490 LITTLE BACK CREEK NEAR SUNRISE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1984 to current year.

INSTRUMENTATION.--Water-temperature recorder since October 1984.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 25.0°C, July 18, 1986, July 24, 1987, Aug. 17, 1988; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 25.0°C, Aug. 17; minimum, 0.0°C, Jan. 6, 7.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	15.0	14.5	15.0	11.5	10.0	11.0	7.0	6.0	7.0	4.5	3.5	4.0
2	15.0	14.0	14.5	12.0	11.0	11.5	6.0	5.0	6.0	3.5	3.0	3.0
3	14.5	13.0	14.0	12.5	11.5	12.0	5.5	5.0	5.0	3.0	2.5	3.0
4	13.5	12.5	13.0	12.5	11.5	12.0	5.0	4.5	5.0	3.0	2.0	3.0
5	13.5	12.0	13.0	12.0	10.0	11.5	4.5	3.5	4.0	2.0	.5	1.0
6	13.5	13.0	13.0	10.0	9.0	9.5	4.0	3.0	3.5	.5	.0	.0
7	12.5	12.0	12.5	10.0	9.0	9.5	4.0	3.0	3.5	.5	.0	.0
8	12.0	11.0	11.5	10.0	9.0	9.5	4.5	4.0	4.0	1.0	.5	1.0
9	12.0	10.5	11.5	10.0	9.5	9.5	6.0	4.5	5.0	1.5	1.0	1.0
10	12.5	11.5	12.0	10.0	8.0	9.5	6.5	5.5	6.0	1.0	.5	1.0
11	12.5	12.0	12.0	8.0	6.5	7.5	5.5	5.0	5.5	1.5	1.0	1.0
12	12.0	11.0	11.5	7.0	6.0	6.5	5.5	5.0	5.0	2.0	1.0	1.5
13	11.5	10.5	11.0	7.0	6.0	6.5	5.0	4.5	4.5	2.0	1.5	2.0
14	12.0	10.5	11.0	7.5	6.5	7.0	5.0	4.0	4.5	2.0	1.5	1.5
15	12.0	10.5	11.0	8.0	6.5	7.0	5.5	4.5	5.0	2.0	1.5	1.5
16	12.5	10.5	11.5	8.0	7.0	7.5	5.0	4.0	4.5	2.5	1.5	2.0
17	12.0	11.0	11.5	9.0	8.0	8.5	4.0	3.5	3.5	2.5	2.0	2.5
18	12.5	11.0	12.0	8.5	8.0	8.5	3.5	3.0	3.0	3.0	2.5	2.5
19	12.5	11.5	12.0	8.0	7.5	8.0	4.0	3.0	3.5	3.0	2.5	3.0
20	13.0	12.5	12.5	8.0	6.0	7.0	5.0	4.0	4.5	4.5	2.0	3.5
21	12.5	10.5	11.5	6.0	5.0	5.5	5.0	4.0	4.5	4.5	4.0	4.5
22	11.0	10.0	10.5	5.0	4.5	5.0	4.5	4.0	4.5	4.0	3.5	3.5
23	11.5	10.0	10.5	5.5	4.5	5.0	4.5	4.0	4.0	3.5	3.0	3.0
24	11.5	10.5	11.0	7.0	6.0	6.5	5.0	4.0	4.5	3.5	2.5	3.0
25	11.5	10.5	11.0	7.5	6.5	7.0	6.5	5.0	5.5	3.5	3.0	3.0
26	11.5	10.0	10.5	8.5	7.0	7.5	6.5	6.5	6.5	3.0	1.5	2.0
27	11.0	10.0	10.5	8.5	7.0	8.0	7.0	6.5	6.5	1.5	1.0	1.5
28	10.0	9.0	10.0	7.0	7.0	7.0	7.0	6.0	6.5	2.5	1.5	2.0
29	9.5	9.0	9.0	8.0	7.0	7.5	6.0	4.0	5.0	2.5	1.5	2.0
30	10.0	9.0	9.5	8.0	7.0	7.5	4.0	3.5	4.0	3.0	2.0	2.5
31	11.0	9.5	10.5	---	---	---	4.0	3.5	4.0	4.0	2.5	3.0
MONTH	15.0	9.0	11.5	12.5	4.5	8.0	7.0	3.0	5.0	4.5	.0	2.0

02011490 LITTLE BACK CREEK NEAR SUNRISE, VA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	5.0	3.5	4.0	4.0	2.5	3.5	11.0	10.0	10.5	12.0	9.0	10.0
2	5.0	4.5	5.0	4.5	3.0	3.5	11.5	10.5	11.0	11.0	9.5	10.5
3	5.0	4.5	5.0	5.0	4.0	4.5	11.0	11.0	11.0	11.0	10.0	10.5
4	4.5	3.5	4.5	5.0	4.5	5.0	12.5	11.0	11.5	11.0	10.5	10.5
5	3.5	2.5	3.0	6.0	4.0	5.0	13.5	10.5	12.0	10.5	9.0	10.0
6	2.5	1.5	1.5	6.0	4.0	5.0	12.5	11.0	12.0	9.5	9.0	9.0
7	1.5	.5	1.0	7.0	5.0	6.0	11.0	9.5	10.0	11.5	8.5	10.0
8	2.5	1.5	2.0	7.0	5.5	6.5	10.0	8.5	9.5	12.5	9.5	11.0
9	3.0	2.0	2.5	7.0	6.5	6.5	9.5	8.0	8.5	12.0	11.0	11.5
10	3.5	2.5	3.0	7.0	6.0	6.5	10.5	8.0	9.0	12.5	11.0	11.5
11	4.0	3.0	3.5	7.0	5.0	6.0	11.5	8.5	10.0	12.5	11.0	11.5
12	3.5	2.5	3.0	7.5	6.0	7.0	10.0	8.5	9.0	13.5	10.5	12.0
13	2.5	2.0	2.5	7.0	6.0	6.5	11.0	8.0	9.0	14.0	12.0	13.0
14	3.0	2.0	2.5	6.0	4.5	5.5	10.0	8.0	9.0	14.5	12.5	13.5
15	3.0	2.5	3.0	4.5	4.0	4.5	11.0	8.5	9.5	15.5	13.5	14.5
16	3.0	2.5	3.0	4.5	3.5	4.0	10.5	8.5	9.5	15.5	14.5	15.0
17	4.0	2.5	3.0	5.0	3.5	4.0	11.0	8.5	9.5	16.0	14.5	15.5
18	4.0	3.0	3.5	4.0	3.5	4.0	10.0	9.0	9.5	15.0	14.0	14.5
19	3.5	3.5	3.5	4.5	3.5	4.0	10.5	8.5	9.0	14.0	13.5	13.5
20	4.0	3.5	4.0	5.0	3.5	4.0	10.5	8.0	9.0	13.5	13.0	13.5
21	3.5	2.5	3.0	5.0	3.5	4.0	11.5	9.0	10.0	14.0	13.0	13.5
22	3.5	2.0	3.0	5.5	3.5	4.5	10.5	9.5	10.0	15.0	13.0	14.0
23	3.5	3.0	3.0	7.0	4.5	5.5	12.0	9.5	10.5	16.0	14.5	15.5
24	3.5	2.5	3.0	8.0	6.5	7.0	11.5	9.5	10.5	16.0	15.0	15.5
25	3.0	2.0	2.5	9.0	7.5	8.0	11.5	9.0	10.0	15.5	14.0	15.0
26	3.0	1.5	2.0	10.0	8.5	9.0	12.5	9.5	11.0	15.0	13.0	14.0
27	3.0	2.0	2.5	9.0	7.5	8.0	12.0	10.5	11.0	16.5	13.5	15.0
28	3.5	2.0	2.5	9.0	6.5	8.0	10.5	9.0	10.0	17.0	15.0	16.0
29	4.0	2.0	3.0	10.0	7.5	8.5	10.0	9.0	9.5	17.5	15.0	16.0
30	---	---	---	10.0	8.5	9.5	11.0	8.5	9.5	18.0	16.0	17.0
31	---	---	---	10.5	9.5	10.0	---	---	---	19.0	16.5	17.5
MONTH	5.0	.5	3.0	10.5	2.5	6.0	13.5	8.0	10.0	19.0	8.5	13.0
		JUNE			JULY			AUGUST			SEPTEMBER	
1	18.5	16.5	18.0	19.5	18.0	18.5	22.5	21.0	22.0	20.5	19.5	20.0
2	18.0	16.5	17.5	20.0	18.0	19.0	23.5	21.5	22.5	20.5	19.0	19.5
3	16.5	15.0	16.0	20.5	18.5	19.5	24.5	22.5	23.5	20.5	19.0	19.5
4	15.5	14.5	15.0	22.0	19.0	20.5	23.5	22.5	23.0	20.5	19.5	20.0
5	16.5	14.0	15.0	22.0	19.5	21.0	23.5	22.0	22.5	19.0	18.5	19.0
6	18.0	15.0	16.5	22.0	20.0	21.0	23.0	22.0	22.5	18.5	17.5	18.0
7	18.5	16.5	17.5	22.5	20.0	21.0	23.0	21.5	22.5	18.5	17.0	17.5
8	19.5	17.5	18.5	23.0	21.0	22.0	23.0	21.5	22.5	19.0	17.0	17.5
9	19.0	16.5	17.5	23.0	21.0	22.0	23.5	21.5	22.5	18.0	17.5	18.0
10	16.5	15.5	16.0	22.5	21.0	21.5	23.5	22.0	23.0	19.0	17.5	18.0
11	17.0	15.0	16.0	22.0	21.0	21.5	23.5	22.5	23.0	19.0	17.5	18.0
12	18.0	15.5	16.5	21.5	21.0	21.5	23.5	22.0	23.0	18.5	18.0	18.5
13	19.0	16.5	17.5	21.5	20.5	21.0	24.0	22.5	23.0	19.5	18.0	19.0
14	20.0	17.5	19.0	22.0	20.5	21.0	24.0	22.5	23.5	20.0	19.0	19.5
15	20.5	18.5	19.5	24.5	21.0	22.5	24.5	23.0	23.5	19.5	18.0	18.5
16	20.5	19.0	20.0	24.0	21.5	23.0	24.0	22.5	23.5	18.5	18.0	18.5
17	20.0	19.0	19.5	24.0	22.5	23.0	25.0	22.5	23.5	18.0	18.0	18.0
18	20.0	18.0	19.0	23.5	22.5	23.0	24.5	23.0	24.0	19.5	17.5	18.5
19	20.0	19.0	19.5	22.5	22.0	22.5	23.5	23.0	23.5	19.0	18.5	18.5
20	21.5	19.0	20.0	23.0	21.5	22.5	23.0	22.0	22.5	19.0	18.5	18.5
21	22.0	19.5	20.5	23.0	21.5	22.0	23.0	21.5	22.5	19.0	17.5	18.0
22	22.5	20.0	21.5	22.5	21.0	21.5	22.5	21.0	22.0	19.0	17.5	18.5
23	22.5	21.0	21.5	22.0	21.0	21.5	21.5	21.0	21.5	19.0	18.0	18.5
24	22.0	20.5	21.5	22.0	20.5	21.0	21.5	20.5	21.0	19.0	18.0	18.5
25	22.5	20.5	21.5	22.0	20.5	21.0	21.5	20.0	21.0	17.5	17.0	17.5
26	22.5	21.0	22.0	22.0	20.5	21.5	21.5	20.0	21.0	18.0	16.5	17.0
27	21.0	19.5	20.5	21.0	20.5	21.0	22.0	20.0	21.0	18.0	16.5	17.0
28	21.0	19.0	20.0	22.0	20.0	21.0	21.5	21.0	21.0	18.0	16.5	17.0
29	20.0	19.5	20.0	22.5	20.5	21.5	21.0	20.5	21.0	17.5	17.0	17.0
30	20.0	18.5	19.0	22.5	21.0	22.0	20.5	20.0	20.5	18.0	16.5	17.0
31	---	---	---	22.0	21.0	21.5	20.5	19.5	20.0	---	---	---
MONTH	22.5	14.0	18.5	24.5	18.0	21.5	25.0	19.5	22.5	20.5	16.5	18.5
YEAR	25.0	.0	11.5									

02011500 BACK CREEK NEAR MOUNTAIN GROVE, VA

LOCATION.--Lat 38°04'10", long 79°53'50", Bath County, Hydrologic Unit 02080201, on left bank 0.3 mi downstream from Cummings Run, 0.8 mi downstream from bridge on State Highway 39, and 2.1 mi south of Mountain Grove.

DRAINAGE AREA.--134 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1951 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,701.45 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. 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. U.S. Army Corps of Engineers gage-height transmitter at station, receiver at Gathright Dam.

AVERAGE DISCHARGE.--37 years, 182 ft³/s, 18.44 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,200 ft³/s, Nov. 4, 1985, gage height, 11.24 ft, from rating curve extended above 4,000 ft³/s on basis of slope-area measurements at gage heights 7.39 ft, 9.05 ft, and 9.35 ft; minimum, 1.5 ft³/s, Aug. 18, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,340 ft³/s, Jan. 20, gage height, 6.04 ft; minimum daily, 16 ft³/s, Aug. 15, 17, 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	20	501	218	81	61	86	93	60	24	21	18
2	36	20	117	224	94	65	82	89	44	23	21	17
3	37	20	129	253	147	55	81	92	45	23	19	18
4	35	21	140	248	244	56	87	91	43	23	20	25
5	32	18	134	237	258	95	100	142	40	23	20	23
6	31	19	124	163	229	114	113	1050	38	23	20	20
7	32	20	115	116	243	113	128	956	38	23	20	20
8	31	20	78	114	223	114	153	494	38	23	19	20
9	22	20	69	109	193	119	156	426	41	24	18	20
10	21	41	62	107	169	123	165	369	39	24	18	20
11	21	68	54	103	150	91	137	205	38	25	18	19
12	20	58	53	97	128	84	107	186	36	30	17	18
13	20	45	50	80	77	105	105	176	29	29	17	18
14	22	39	49	72	75	108	100	153	28	28	17	18
15	21	36	781	75	71	106	88	128	28	26	16	17
16	20	33	710	81	126	106	71	111	27	26	17	17
17	20	37	369	77	99	102	68	126	28	26	16	19
18	22	99	173	65	98	102	71	188	30	39	16	19
19	20	95	147	101	98	101	97	247	30	46	17	18
20	20	76	173	1770	156	87	100	249	31	28	19	18
21	20	64	180	752	165	76	82	198	29	28	19	18
22	20	64	189	605	137	66	81	161	29	28	17	18
23	20	69	191	425	126	76	82	141	28	27	17	18
24	20	67	184	288	118	53	85	135	27	25	20	34
25	19	63	192	228	133	59	110	131	27	24	17	56
26	19	68	490	193	138	89	146	117	26	25	17	48
27	21	94	720	181	92	103	169	94	26	25	17	35
28	20	116	845	140	65	102	151	71	24	25	17	31
29	20	690	929	123	60	111	123	67	24	24	23	28
30	20	788	707	123	---	125	101	63	24	23	21	27
31	20	---	296	94	---	111	---	61	---	22	19	---
TOTAL	739	2888	8951	7462	3993	2878	3225	6810	995	812	570	695
MEAN	23.8	96.3	289	241	138	92.8	107	220	33.2	26.2	18.4	23.2
MAX	37	788	929	1770	258	125	169	1050	60	46	23	56
MIN	19	18	49	65	60	53	68	61	24	22	16	17

CAL YR 1987 TOTAL 72857 MEAN 200 MAX 3500 MIN 14
WTR YR 1988 TOTAL 40018 MEAN 109 MAX 1770 MIN 16

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.--Interruptions in the record were due to malfunctions of the instrument. Some record in prior years fragmentary due to instrument malfunction.

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, 33.5°C, Aug. 14; minimum, 0.5°C on several days during winter period.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	18.5	14.5	16.0	15.5	9.5	12.5	11.5	8.0	10.0	7.5	5.5	7.0
2	18.5	12.0	15.0	16.5	10.5	13.5	7.5	5.5	7.0	6.5	4.5	5.5
3	16.5	13.0	15.0	17.0	11.5	14.0	7.0	4.5	6.0	5.5	4.0	5.0
4	16.0	11.0	13.5	16.5	11.0	13.5	8.0	6.5	7.5	6.5	4.0	5.5
5	17.0	10.0	13.0	15.0	9.5	12.0	6.5	5.5	6.0	4.0	2.0	3.0
6	15.0	12.0	13.5	11.0	6.5	8.5	8.0	5.5	6.5	2.5	1.0	1.5
7	14.0	12.5	13.5	9.0	5.5	7.5	8.0	5.0	6.5	1.0	.5	1.0
8	13.5	11.0	12.5	12.5	8.0	10.0	9.0	6.0	7.5	3.5	1.0	2.0
9	15.0	9.0	12.0	11.5	8.5	10.0	11.0	7.0	9.0	4.0	1.5	3.0
10	17.0	11.0	13.5	11.0	8.5	10.0	10.0	8.5	9.5	2.5	.5	1.5
11	15.5	12.5	14.0	8.0	6.0	7.0	9.0	6.0	7.5	2.5	.5	1.5
12	14.0	11.5	13.0	9.0	5.0	6.5	8.5	6.5	7.5	2.0	.5	1.5
13	14.5	8.0	11.0	9.5	4.5	7.0	7.5	5.5	6.5	4.5	1.5	3.0
14	14.0	7.5	10.5	9.5	5.5	7.0	6.5	5.0	6.0	2.0	1.0	1.5
15	---	---	---	10.0	5.0	7.0	9.5	6.0	8.0	2.0	1.0	1.5
16	---	---	---	10.0	5.5	8.0	7.5	7.0	7.5	2.5	1.0	1.5
17	---	---	---	13.0	10.0	11.5	7.0	5.0	6.5	3.5	1.0	2.0
18	---	---	---	12.5	9.0	11.0	6.5	4.5	5.5	7.0	3.5	5.0
19	---	---	---	11.0	7.5	9.5	8.0	5.0	6.5	4.5	4.0	4.5
20	---	---	---	9.0	5.5	8.0	11.5	7.5	9.0	7.0	4.0	5.5
21	---	---	---	5.5	3.0	4.5	9.5	6.5	8.0	6.5	5.0	5.5
22	---	---	---	6.0	2.0	4.0	7.5	5.0	6.5	5.5	5.0	5.0
23	---	---	---	8.0	3.0	5.5	9.0	6.5	7.5	5.5	4.0	5.0
24	---	---	---	12.0	8.0	9.5	9.0	5.5	7.5	7.0	3.0	4.5
25	---	---	---	12.0	8.5	10.0	10.5	8.5	9.5	5.0	4.0	4.5
26	---	---	---	11.5	8.5	10.0	9.5	8.5	9.5	3.5	1.0	2.0
27	---	---	---	11.0	10.0	11.0	9.0	8.5	9.0	3.5	.5	2.0
28	---	---	---	11.0	10.0	10.5	9.0	8.0	8.5	4.0	1.0	2.5
29	10.0	6.0	8.0	12.5	10.5	11.5	8.0	6.0	7.0	5.5	1.0	3.0
30	14.0	8.0	10.5	11.5	10.5	11.0	8.0	5.0	6.0	7.0	2.5	4.5
31	15.5	9.0	12.0	---	---	---	7.0	4.0	6.0	7.5	3.0	5.5
MONTH	18.5	6.0	12.5	17.0	2.0	9.5	11.5	4.0	7.5	7.5	.5	3.5

02011500 BACK CREEK NEAR MOUNTAIN GROVE, VA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	9.5	5.5	7.5	8.0	1.5	4.5	14.5	10.5	12.5	19.0	8.0	13.0
2	8.5	6.5	7.5	7.0	2.0	4.5	15.0	11.5	13.0	15.5	9.0	12.5
3	7.5	6.0	6.5	7.5	4.5	6.0	14.0	11.0	12.5	16.0	10.5	13.5
4	6.5	4.0	5.5	8.0	5.0	6.5	17.5	11.5	14.0	14.0	12.0	13.0
5	5.5	2.5	4.0	10.0	4.5	7.0	18.5	9.0	14.0	12.5	11.0	12.0
6	3.5	.5	1.5	10.5	3.0	6.5	14.0	9.5	12.0	12.0	10.0	11.0
7	5.0	.5	2.0	11.0	4.0	7.5	11.0	9.0	10.0	16.0	10.0	12.5
8	6.0	2.0	4.0	11.0	4.0	7.5	14.0	9.0	10.5	18.0	9.5	13.0
9	5.5	1.5	3.5	8.5	5.0	7.0	14.5	7.0	10.5	14.0	11.0	12.5
10	7.0	3.0	4.5	11.5	6.5	8.5	16.5	6.5	11.0	16.5	11.0	13.0
11	6.5	2.5	4.5	11.0	3.0	7.0	17.0	7.0	11.5	15.5	10.5	12.5
12	5.5	2.0	4.0	10.0	4.5	7.5	12.5	8.5	9.5	19.5	9.0	14.0
13	2.5	1.0	1.5	9.5	6.0	8.0	16.5	7.5	11.0	19.5	11.0	15.0
14	3.5	.5	2.0	6.0	3.5	5.0	14.0	7.0	10.5	18.5	11.0	15.0
15	4.0	2.0	3.0	5.0	2.0	3.5	16.0	8.0	12.0	18.5	12.5	16.0
16	6.0	3.0	4.5	5.5	2.0	3.5	15.0	7.5	11.0	19.0	14.0	16.0
17	7.0	1.5	4.0	9.0	3.5	5.5	17.0	6.5	11.5	17.5	13.5	15.5
18	5.5	2.5	4.0	5.5	4.0	4.5	12.0	9.5	10.5	15.0	13.0	13.5
19	5.0	4.0	4.5	7.5	4.0	5.5	14.0	7.5	10.0	15.5	12.5	13.5
20	6.5	4.5	5.5	9.5	4.0	6.0	15.0	6.0	10.5	16.0	12.0	14.0
21	5.5	2.0	3.5	9.5	4.5	6.0	17.5	9.5	13.0	16.5	12.0	14.0
22	7.0	1.0	3.5	11.5	3.0	6.5	13.5	10.5	12.0	20.0	12.5	16.0
23	5.0	3.0	4.0	13.5	4.5	8.5	18.0	10.0	13.0	21.0	13.5	17.0
24	5.0	3.0	3.5	15.0	7.5	11.0	14.5	11.5	13.5	18.5	14.0	16.5
25	4.0	2.0	3.0	15.0	8.0	12.0	15.0	7.0	11.0	19.5	13.5	16.0
26	6.5	1.0	3.5	16.0	10.5	13.0	18.0	8.0	12.5	20.0	9.5	14.5
27	5.0	1.5	3.5	12.5	7.5	10.0	16.0	9.0	12.5	21.5	11.0	16.0
28	8.0	2.5	4.5	14.0	4.5	9.0	11.5	8.5	10.0	20.5	13.5	17.5
29	8.0	2.0	4.5	15.5	6.0	10.5	14.0	8.0	11.0	23.5	14.5	19.0
30	---	---	---	13.0	7.0	10.5	16.0	9.5	12.5	23.5	15.0	19.0
31	---	---	---	12.5	8.5	11.0	---	---	---	24.5	16.5	20.0
MONTH	9.5	.5	4.0	16.0	1.5	7.5	18.5	6.0	11.5	24.5	8.0	14.5
		JUNE			JULY			AUGUST			SEPTEMBER	
1	24.5	16.5	20.0	---	---	---	30.5	22.5	26.0	26.0	18.5	21.5
2	20.0	17.0	18.5	---	---	---	31.5	23.0	27.0	25.0	17.5	20.5
3	19.0	15.0	16.5	---	---	---	31.5	24.5	27.5	26.0	17.5	21.5
4	19.0	12.5	15.5	---	---	---	29.0	25.0	26.5	24.0	21.5	22.5
5	23.0	11.5	16.5	---	---	---	32.5	23.5	27.0	22.0	19.0	20.5
6	25.5	14.5	19.5	---	---	---	28.5	24.0	26.0	20.5	17.5	19.0
7	27.0	17.5	21.5	---	---	---	31.5	23.5	26.5	23.5	14.5	18.0
8	26.0	17.0	21.5	---	---	---	31.5	21.5	26.0	24.0	14.5	18.5
9	21.0	15.0	18.0	---	---	---	32.0	22.0	26.5	19.0	17.0	18.5
10	19.0	12.5	15.5	---	---	---	32.0	22.0	26.5	25.0	18.0	21.0
11	23.0	12.0	16.5	---	---	---	30.5	23.5	27.0	25.5	18.0	21.5
12	24.0	13.5	18.5	26.5	23.0	24.5	31.5	23.5	27.0	23.5	18.5	21.0
13	26.0	15.0	20.5	27.0	22.5	24.5	31.0	24.0	27.5	26.0	20.5	22.5
14	28.5	17.5	22.5	30.0	22.5	25.5	33.5	24.0	28.0	28.0	21.0	23.5
15	---	---	---	33.0	23.5	27.5	33.0	23.5	28.0	26.5	16.5	20.5
16	---	---	---	32.5	23.0	27.5	32.5	23.0	27.0	21.0	17.0	19.0
17	---	---	---	33.0	25.0	28.0	32.5	22.5	27.0	19.0	18.0	18.5
18	---	---	---	30.0	24.5	26.5	32.0	23.5	27.5	25.5	18.0	21.0
19	---	---	---	28.5	22.5	25.5	28.5	24.0	26.5	21.5	20.0	21.0
20	---	---	---	31.0	23.5	26.5	25.5	23.5	24.0	24.0	20.0	21.5
21	---	---	---	26.5	23.5	24.5	30.0	22.5	25.0	26.5	17.5	21.5
22	---	---	---	28.5	22.0	25.0	28.0	19.5	23.5	26.0	17.0	20.5
23	---	---	---	25.0	22.5	23.5	23.5	20.5	22.0	24.5	17.0	20.5
24	---	---	---	27.5	20.5	24.0	28.0	20.5	23.5	22.0	19.0	20.5
25	---	---	---	29.0	21.0	24.5	29.5	20.0	23.5	19.5	17.5	18.5
26	---	---	---	27.5	22.5	24.5	28.5	19.0	23.5	22.0	16.0	18.5
27	---	---	---	25.5	22.0	23.5	29.5	19.5	24.0	21.5	15.5	18.5
28	---	---	---	29.0	21.5	24.5	27.5	21.0	24.0	22.0	16.5	19.0
29	---	---	---	30.5	21.5	25.5	25.0	22.0	23.5	19.0	16.5	17.5
30	---	---	---	30.0	23.0	26.0	22.5	21.0	22.0	22.5	17.0	19.0
31	---	---	---	29.5	22.5	25.5	26.5	19.5	22.0	---	---	---
MONTH	28.5	11.5	18.5	33.0	20.5	25.5	33.5	19.0	25.5	28.0	14.5	20.0
YEAR	33.5	.5	13.0									

02011795 LAKE MOOMAW NEAR HOT SPRINGS, VA

LOCATION.--Lat 37°57'04", long 79°59'21", Alleghany County, Hydrologic Unit 02080201, in control tower at Gathright Dam on Jackson River, 0.9 mi upstream from Cedar Creek, 7.6 mi southwest of Hot Springs, and 19 mi upstream from Covington.

DRAINAGE AREA.--344 mi².

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

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum 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.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 160,300 acre-ft, Apr. 18, 1987, elevation, 1,595.6 ft; minimum, (after first filling to minimum conservation pool), 80,300 acre-ft, Sept. 30, 1988, elevation, 1,563.0 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 131,200 acre-ft, Jan. 21, elevation, 1,584.9 ft; minimum, 80,300 acre-ft, Sept. 30, elevation, 1,563.0 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,571.3	98,100	-
Oct. 31	1,569.0	93,000	-5,100
Nov. 30	1,571.5	98,600	+5,600
Dec. 31	1,582.0	123,700	+25,100
CAL YR 1987	-	-	+5,700
Jan. 31	1,581.9	123,500	-200
Feb. 29	1,581.9	123,500	0
Mar. 31	1,582.1	124,000	+500
Apr. 30	1,581.9	123,500	-500
May 31	1,581.5	122,500	-1,000
June 30	1,577.3	112,100	-10,400
July 31	1,572.5	100,800	-11,300
Aug. 31	1,566.9	88,400	-12,400
Sept. 30	1,563.0	80,300	-8,100
WTR YR 1988	-	-	-17,800

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA

LOCATION.--Lat 37°56'54", long 79°56'58", Alleghany County, Hydrologic Unit 02080201, on right bank 0.4 mi upstream from Cedar Creek, 0.5 mi downstream from Gathright Dam and Moomaw Lake, and 7.3 mi southwest of Hot Springs.

DRAINAGE AREA.--345 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1973 to current year.

REVISED RECORDS.--WDR VA-81-1: 1980.

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft above National Geodetic Vertical Datum 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 Moomaw Lake (station 02011795) 0.5 mi upstream; since October 1984 by Back Creek Lake 28.5 mi upstream, amount unknown; and since January 1985 by Little Back Creek Lake 31.6 mi upstream, amount unknown. U.S. Army Corps of Engineers water-quality and gage-height transmitters at station, receiver at Gathright Dam.

AVERAGE DISCHARGE.--15 years, 445 ft³/s, 17.52 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,000 ft³/s, Dec. 26, 1973, result of cofferdam failure during construction of Gathright Dam, gage height, 18.77 ft, from rating curve extended above 9,200 ft³/s on basis of slope-area measurement of peak flow; minimum, 3.0 ft³/s, July 12, 1979, result of gate closure at Gathright Dam, gage height, 7.78 ft; minimum daily, 47 ft³/s, Sept. 2, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1972, reached a stage of 17.20 ft, from floodmark.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,870 ft³/s, Jan. 21, gage height, 13.32 ft; minimum, 8.7 ft³/s, Oct. 21, gage height, 7.85 ft; minimum daily, 150 ft³/s, Nov. 1-9, 11-15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	175	150	153	521	432	222	180	266	266	281	275	233
2	175	150	153	521	371	181	180	234	271	282	275	233
3	175	150	153	521	286	169	181	214	271	282	275	233
4	175	150	153	521	364	169	272	255	271	282	275	233
5	175	150	153	521	580	169	250	324	271	282	275	233
6	175	150	153	450	458	169	238	667	270	282	275	233
7	175	150	153	289	328	169	396	1600	269	282	275	232
8	175	150	153	227	430	224	392	2020	270	281	274	231
9	175	150	153	227	510	262	332	1250	271	282	272	230
10	175	151	153	227	448	263	332	926	271	282	271	230
11	175	150	153	227	370	262	332	561	271	283	271	230
12	175	150	153	227	370	262	332	409	271	282	273	230
13	177	150	153	227	305	262	300	342	271	282	275	230
14	178	150	153	227	199	262	242	332	271	281	269	230
15	178	150	153	201	158	213	222	332	271	282	268	230
16	177	151	153	183	158	169	221	398	271	283	271	230
17	176	153	153	183	158	169	197	478	271	286	271	230
18	175	153	153	183	317	169	180	480	271	286	271	230
19	176	153	153	261	376	169	180	594	271	286	272	230
20	177	153	153	516	328	226	180	589	271	286	274	230
21	155	153	153	2960	328	264	180	541	271	286	272	230
22	178	153	153	3270	291	266	180	472	271	284	271	230
23	178	153	153	1060	261	216	181	438	271	284	272	230
24	178	153	153	669	261	180	181	446	268	282	271	230
25	178	153	153	547	261	180	181	385	271	282	271	230
26	178	153	155	543	261	180	233	251	271	282	271	230
27	178	153	156	342	261	180	368	250	271	282	271	230
28	178	153	157	261	261	180	366	250	271	282	271	230
29	177	153	158	261	261	180	291	250	271	282	271	230
30	175	153	158	294	---	180	266	250	275	282	271	205
31	165	---	342	388	---	180	---	254	---	279	256	---
TOTAL	5432	4544	4951	17055	9392	6346	7566	16058	8122	8762	8425	6896
MEAN	175	151	160	550	324	205	252	518	271	283	272	230
MAX	178	153	342	3270	580	266	396	2020	275	286	275	233
MIN	155	150	153	183	158	169	180	214	266	279	256	205
(*)	-83	+94	+408	-3	.00	+8	-8	-16	-175	-184	-202	-136
MEAN‡	92.2	245	568	547	324	213	244	502	95.7	98.6	69.8	93.9
CFSM‡	.27	.71	1.65	1.59	.94	.62	.71	1.46	.28	.29	.20	.27
IN.‡	.31	.79	1.90	1.83	1.01	.71	.79	1.68	.31	.33	.23	.30

CAL YR 1987	TOTAL	175935	MEAN	482	MAX	7630	MIN	150	MEAN‡	490	CFSM‡	1.42	IN.‡	19.29
YTR YR 1988	TOTAL	103549	MEAN	283	MAX	3270	MIN	150	MEAN‡	258	CFSM‡	.75	IN.‡	10.18

* Change in contents, equivalent in cubic feet per second, in Moomaw Lake; provided by U.S. Army Corps of Engineers.
‡ Adjusted for change in contents.

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1979 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1978 to current year.
pH: October 1978 to current year.
WATER TEMPERATURE: October 1978 to current year.
DISSOLVED OXYGEN: October 1978 to current year.

INSTRUMENTATION.--Water-quality monitor since October 1978.

REMARKS.--Interruptions in the record were due to malfunctions of the instruments. The intake tower at Gathright Dam permits selective withdrawal of water from one or more reservoir depths. Some record in prior years fragmentary due to instrument malfunction.

EXTREMES FOR PERIOD OF RECORD.--
SPECIFIC CONDUCTANCE (water years 1979, 1981-88): Maximum recorded, 249 microsiemens, Nov. 5, 1985; minimum recorded, 78 microsiemens, May 14, 1979.
pH (water years 1979, 1981-88): Maximum recorded, 8.60 units, Jan. 29, 1982, Jan. 13, 1983; minimum recorded, 6.90 units, Aug. 14-17, 1984, Nov. 5-7, 1985.
WATER TEMPERATURE (water years 1979, 1981-88): Maximum recorded, 28.0°C, Aug. 1, 2, 1979; minimum recorded, 0.0°C, Feb. 16-19, 1979.
DISSOLVED OXYGEN (water years 1979, 1981, 1984-88): Maximum recorded, 19.5 mg/L, Jan. 16, 1979; minimum recorded, 5.7 mg/L, Aug. 1, 3, 1987.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 248 microsiemens, Nov. 30; minimum, 114 microsiemens, May 7.
pH: Maximum recorded, 8.35 units, May 28, but may have been higher during instrument malfunction May 13-25; minimum, 7.12 units, Sept. 14.
WATER TEMPERATURE: Maximum, 24.5°C, Aug. 18; minimum, 3.5°C on many days during winter period.
DISSOLVED OXYGEN: Maximum recorded, 17.7 mg/L, Jan. 22; minimum, 7.2 mg/L, June 26.

SPECIFIC CONDUCTANCE, (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	160	157	159	157	147	149	146	134	139	153	150	151
2	160	157	159	155	144	149	136	132	135	153	149	150
3	163	158	160	149	146	147	143	131	137	152	149	150
4	161	158	160	151	148	149	141	138	140	158	148	149
5	162	158	159	156	149	152	141	131	135	154	147	150
6	160	159	159	155	149	152	139	137	138	150	148	149
7	160	158	159	173	147	150	139	136	138	153	150	152
8	160	157	158	154	146	149	139	137	138	153	151	152
9	157	151	155	150	147	148	138	130	135	154	152	153
10	157	151	154	153	145	149	141	133	136	166	150	157
11	161	152	157	146	142	144	141	134	137	175	152	157
12	167	157	160	145	141	143	144	136	138	156	153	155
13	159	156	158	142	139	141	146	138	144	157	151	153
14	163	157	159	141	138	140	149	137	143	156	148	152
15	180	157	162	142	137	140	164	139	148	151	149	150
16	176	153	155	---	---	---	170	139	152	150	147	149
17	155	153	154	140	136	138	154	151	153	152	148	150
18	156	155	155	141	135	138	155	152	154	151	140	148
19	158	156	157	148	139	141	154	151	152	157	140	144
20	157	156	157	145	140	143	152	150	151	146	141	143
21	172	155	157	143	138	140	167	150	153	156	136	144
22	160	154	156	141	139	140	232	150	177	155	143	150
23	158	155	157	143	136	141	236	165	180	146	137	140
24	156	154	155	139	137	138	167	163	165	158	137	145
25	157	154	156	140	137	138	165	159	161	170	144	155
26	157	155	156	140	138	139	161	157	159	159	141	148
27	156	147	152	144	136	139	177	158	171	157	141	147
28	150	146	148	137	135	136	178	171	174	144	138	141
29	148	145	147	162	132	139	176	172	174	151	140	145
30	148	146	147	248	131	144	176	160	170	147	138	140
31	149	147	148	---	---	---	160	151	157	142	136	139
MONTH	180	145	156	248	131	143	236	130	151	175	136	149

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA--Continued

SPECIFIC CONDUCTANCE, (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	140	136	137	142	133	135	139	135	137	132	129	131
2	153	136	142	140	135	137	140	133	136	132	129	130
3	144	140	142	146	136	139	139	135	137	132	127	131
4	144	140	143	147	137	140	141	135	138	135	128	130
5	143	139	140	136	133	135	146	136	141	132	127	129
6	146	143	144	135	133	134	145	138	142	130	123	126
7	144	137	142	137	134	135	142	135	137	127	114	122
8	141	133	135	140	135	137	144	138	141	119	116	117
9	135	131	134	140	135	137	146	142	144	126	116	121
10	134	129	132	143	132	139	146	139	142	131	124	127
11	134	132	133	144	133	136	144	138	142	150	126	131
12	134	132	133	137	133	135	148	140	144	132	128	130
13	134	132	133	136	133	135	156	139	145	137	128	131
14	140	132	135	137	134	135	160	150	153	134	132	133
15	138	135	137	148	134	138	152	144	148	137	131	133
16	139	136	137	142	136	139	149	143	147	138	132	136
17	142	138	140	144	139	141	148	141	146	137	132	134
18	140	134	137	147	137	141	148	141	144	138	134	136
19	147	133	135	138	133	136	146	141	143	140	135	136
20	135	132	133	144	132	135	146	139	143	139	134	137
21	138	133	135	134	131	132	144	137	141	144	135	138
22	135	132	134	134	127	131	144	140	141	145	137	140
23	150	133	141	144	125	130	151	139	146	146	127	133
24	149	130	140	137	126	132	147	142	144	132	127	129
25	137	131	134	131	127	129	158	140	143	134	120	129
26	133	129	130	133	128	130	144	135	138	142	126	133
27	132	129	131	134	129	131	136	133	135	138	133	136
28	133	131	132	135	129	131	135	133	134	137	133	135
29	136	131	133	138	129	133	142	133	135	138	133	135
30	---	---	---	137	133	134	135	131	133	140	135	137
31	---	---	---	139	134	137	---	---	---	138	134	136
MONTH	153	129	136	148	125	135	160	131	141	150	114	132
		JUNE			JULY			AUGUST			SEPTEMBER	
1	142	136	139	148	143	145	149	144	147	146	142	143
2	137	132	134	148	143	145	151	144	150	153	141	148
3	135	129	134	148	144	146	155	146	149	176	148	153
4	135	133	134	150	146	148	152	148	150	154	146	148
5	138	131	135	150	144	147	155	150	152	158	149	154
6	143	135	138	150	144	147	176	150	155	155	152	154
7	141	136	139	153	146	149	164	153	157	156	152	154
8	141	134	138	150	147	149	156	151	153	163	153	157
9	139	133	137	155	147	150	156	149	152	179	158	168
10	141	136	139	159	146	150	156	151	153	173	151	166
11	143	134	137	156	146	151	155	145	149	152	148	150
12	140	137	138	152	146	149	153	147	151	154	148	151
13	144	140	141	154	148	152	168	153	161	166	151	154
14	146	133	138	154	150	153	161	153	157	169	161	165
15	136	132	134	154	148	151	158	156	157	173	155	161
16	149	133	138	158	153	156	158	153	155	161	156	158
17	142	135	139	157	151	153	158	154	156	160	153	156
18	142	134	137	167	153	157	170	154	159	160	153	157
19	137	134	135	157	150	155	175	163	167	160	156	159
20	139	134	137	155	146	151	165	155	159	171	159	163
21	140	135	138	154	149	151	162	150	156	168	165	167
22	141	136	139	159	147	151	153	149	151	167	164	166
23	145	138	141	157	152	155	160	148	150	170	165	167
24	147	136	141	155	146	151	153	148	151	170	163	166
25	143	137	140	152	145	149	162	151	156	168	166	167
26	147	139	143	145	140	143	156	151	153	169	167	168
27	149	142	144	156	140	143	157	149	152	180	168	172
28	148	142	144	150	142	146	156	147	150	179	176	178
29	146	142	143	152	143	148	153	145	150	180	178	179
30	147	140	144	149	146	148	149	145	147	183	180	181
31	---	---	---	150	145	148	149	142	146	---	---	---
MONTH	149	129	139	167	140	150	176	142	153	183	141	161
YEAR	248	114	146									

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	7.85	7.73	7.78	7.59	7.51	7.54	7.47	7.42	7.44	7.36	7.33	7.34
2	7.83	7.69	7.75	7.62	7.52	7.56	7.47	7.41	7.43	7.36	7.33	7.35
3	7.84	7.70	7.75	7.62	7.53	7.57	7.48	7.39	7.42	7.37	7.33	7.35
4	7.82	7.70	7.74	7.67	7.55	7.60	7.45	7.39	7.42	7.37	7.33	7.34
5	7.78	7.67	7.72	7.73	7.57	7.64	7.43	7.39	7.41	7.37	7.34	7.35
6	7.81	7.67	7.72	7.70	7.63	7.67	7.42	7.36	7.39	7.64	7.36	7.52
7	7.79	7.62	7.71	7.70	7.55	7.62	7.43	7.35	7.38	7.68	7.61	7.64
8	7.77	7.61	7.68	7.68	7.58	7.61	7.41	7.36	7.37	7.69	7.63	7.65
9	7.67	7.56	7.61	7.68	7.57	7.61	7.42	7.37	7.39	7.70	7.64	7.66
10	7.67	7.54	7.60	7.64	7.52	7.57	7.43	7.38	7.40	7.68	7.64	7.66
11	7.68	7.52	7.59	7.59	7.50	7.53	7.44	7.39	7.41	7.68	7.64	7.65
12	7.65	7.56	7.60	7.60	7.52	7.56	7.47	7.39	7.42	7.71	7.63	7.67
13	7.65	7.57	7.60	7.57	7.50	7.53	7.47	7.42	7.44	7.77	7.66	7.72
14	7.63	7.54	7.59	7.58	7.50	7.53	7.46	7.41	7.44	7.80	7.76	7.78
15	7.66	7.55	7.59	7.56	7.47	7.51	7.46	7.40	7.43	7.83	7.76	7.79
16	7.64	7.54	7.58	---	---	---	7.54	7.41	7.47	7.82	7.78	7.80
17	7.63	7.53	7.58	7.52	7.43	7.46	7.54	7.46	7.51	7.87	7.78	7.82
18	7.62	7.53	7.57	7.55	7.41	7.47	7.54	7.48	7.51	7.89	7.73	7.82
19	7.65	7.52	7.58	7.52	7.45	7.48	7.56	7.47	7.51	7.76	7.68	7.72
20	7.67	7.52	7.58	7.56	7.44	7.50	7.54	7.48	7.51	7.71	7.62	7.67
21	7.67	7.58	7.62	7.55	7.46	7.51	7.57	7.48	7.51	7.63	7.50	7.57
22	7.65	7.58	7.61	7.54	7.43	7.49	7.55	7.46	7.49	7.63	7.53	7.58
23	7.63	7.55	7.59	7.50	7.45	7.47	7.51	7.45	7.47	7.65	7.61	7.62
24	7.62	7.53	7.57	7.52	7.45	7.47	7.49	7.44	7.46	7.65	7.60	7.62
25	7.61	7.51	7.56	7.54	7.45	7.48	7.47	7.38	7.43	7.62	7.60	7.61
26	7.60	7.52	7.56	7.51	7.43	7.47	7.43	7.38	7.40	7.67	7.61	7.64
27	7.59	7.53	7.55	7.47	7.37	7.43	7.45	7.38	7.40	7.67	7.59	7.64
28	7.60	7.51	7.55	7.43	7.37	7.39	7.43	7.37	7.39	7.69	7.65	7.67
29	7.60	7.50	7.54	7.46	7.40	7.42	7.46	7.38	7.41	7.69	7.66	7.67
30	7.60	7.52	7.55	7.50	7.40	7.44	7.43	7.38	7.40	7.68	7.64	7.66
31	7.59	7.52	7.55	---	---	---	7.44	7.34	7.37	7.67	7.64	7.65
MONTH	7.85	7.50	7.62	7.73	7.37	7.52	7.57	7.34	7.43	7.89	7.33	7.62
		FEBRUARY			MARCH			APRIL			MAY	
1	7.67	7.63	7.65	7.78	7.69	7.73	7.93	7.71	7.82	7.87	7.70	7.78
2	7.67	7.63	7.64	7.80	7.67	7.73	7.96	7.74	7.84	7.83	7.75	7.79
3	7.67	7.62	7.64	7.78	7.66	7.70	7.95	7.73	7.82	7.89	7.67	7.79
4	7.73	7.64	7.67	7.85	7.65	7.71	7.96	7.70	7.83	8.00	7.68	7.82
5	7.71	7.67	7.69	7.78	7.65	7.70	7.96	7.76	7.86	7.98	7.67	7.81
6	7.70	7.67	7.68	7.81	7.65	7.72	7.91	7.77	7.83	7.75	7.67	7.71
7	7.72	7.68	7.70	7.78	7.66	7.71	7.89	7.73	7.82	7.76	7.43	7.62
8	7.72	7.68	7.69	7.77	7.66	7.71	7.95	7.81	7.88	7.57	7.44	7.51
9	7.69	7.67	7.68	7.78	7.66	7.70	7.97	7.85	7.90	7.74	7.42	7.60
10	7.70	7.66	7.68	7.77	7.67	7.71	7.91	7.80	7.85	7.80	7.68	7.75
11	7.70	7.65	7.68	7.79	7.67	7.72	7.94	7.78	7.86	7.88	7.74	7.81
12	7.72	7.65	7.68	7.80	7.68	7.74	7.90	7.77	7.84	7.87	7.81	7.84
13	7.74	7.69	7.72	7.82	7.69	7.74	7.95	7.68	7.82	---	---	---
14	7.75	7.69	7.72	7.83	7.70	7.75	7.80	7.65	7.73	---	---	---
15	7.75	7.68	7.71	7.86	7.69	7.75	7.89	7.64	7.76	---	---	---
16	7.77	7.69	7.71	7.83	7.46	7.69	7.92	7.73	7.82	---	---	---
17	7.76	7.68	7.72	7.56	7.37	7.46	7.87	7.70	7.80	---	---	---
18	7.75	7.68	7.70	7.58	7.42	7.49	7.82	7.67	7.75	---	---	---
19	7.72	7.68	7.69	7.66	7.47	7.55	7.92	7.74	7.83	---	---	---
20	7.76	7.68	7.72	7.62	7.49	7.54	7.95	7.76	7.86	---	---	---
21	7.76	7.71	7.73	7.63	7.50	7.54	8.01	7.74	7.89	---	---	---
22	7.77	7.72	7.74	7.65	7.49	7.55	7.97	7.84	7.89	---	---	---
23	7.78	7.71	7.73	7.77	7.53	7.67	7.99	7.83	7.90	---	---	---
24	7.78	7.71	7.74	7.69	7.44	7.56	8.05	7.82	7.95	---	---	---
25	7.79	7.71	7.74	7.81	7.43	7.64	8.00	7.87	7.95	---	---	---
26	7.78	7.71	7.74	7.80	7.53	7.68	8.02	7.84	7.95	8.33	7.68	7.97
27	7.80	7.71	7.75	7.82	7.63	7.71	7.98	7.70	7.84	8.34	8.16	8.27
28	7.79	7.70	7.74	7.78	7.61	7.69	7.82	7.67	7.75	8.35	8.16	8.26
29	7.76	7.69	7.72	7.82	7.65	7.73	7.90	7.71	7.78	8.32	8.16	8.24
30	---	---	---	7.86	7.71	7.78	7.81	7.70	7.75	8.34	8.14	8.24
31	---	---	---	7.90	7.71	7.80	---	---	---	8.31	8.14	8.22
MONTH	7.80	7.62	7.70	7.90	7.37	7.67	8.05	7.64	7.84	8.35	7.42	7.89

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	8.32	8.07	8.20	8.05	7.87	7.96	8.00	7.80	7.89	7.80	7.66	7.72
2	8.27	8.05	8.16	8.05	7.85	7.96	7.96	7.75	7.85	7.80	7.65	7.72
3	8.21	7.99	8.10	8.06	7.88	7.97	7.96	7.77	7.86	8.18	7.66	7.89
4	8.19	7.98	8.07	8.07	7.91	7.98	7.94	7.79	7.85	8.22	8.03	8.10
5	8.20	7.92	8.07	8.04	7.89	7.97	7.91	7.76	7.84	8.10	7.91	8.01
6	8.19	7.91	8.06	8.05	7.88	7.96	7.93	7.77	7.85	8.04	7.87	7.95
7	8.22	7.92	8.09	8.13	7.86	8.00	7.93	7.76	7.85	8.07	7.82	7.93
8	8.22	7.96	8.09	8.15	7.95	8.04	7.93	7.75	7.84	8.04	7.82	7.91
9	8.12	7.98	8.05	8.13	7.95	8.02	7.92	7.75	7.84	8.04	7.85	7.93
10	8.08	7.92	8.00	8.12	7.92	8.00	7.92	7.75	7.83	8.11	7.83	7.94
11	8.13	7.90	8.01	8.09	7.91	7.99	7.91	7.76	7.83	8.04	7.80	7.89
12	8.10	7.93	8.02	8.06	7.91	7.97	7.92	7.75	7.83	7.92	7.75	7.87
13	8.12	7.95	8.04	8.07	7.89	7.97	7.91	7.75	7.83	8.01	7.70	7.82
14	8.16	7.98	8.07	8.09	7.90	7.99	7.91	7.74	7.83	7.81	7.12	7.56
15	8.17	8.00	8.09	8.12	7.90	8.00	7.91	7.75	7.83	7.78	7.13	7.54
16	8.17	7.99	8.08	8.12	7.90	8.01	7.89	7.75	7.81	7.92	7.62	7.73
17	8.13	7.96	8.04	8.11	7.90	8.00	7.89	7.73	7.80	7.86	7.67	7.75
18	8.14	7.95	8.04	8.10	7.92	7.98	7.89	7.74	7.80	7.89	7.69	7.81
19	8.13	7.96	8.04	8.07	7.89	7.98	7.89	7.73	7.80	7.92	7.80	7.85
20	8.12	7.96	8.05	8.06	7.88	7.98	7.84	7.72	7.77	7.95	7.74	7.85
21	8.14	7.93	8.02	8.03	7.91	7.96	7.86	7.73	7.79	7.96	7.73	7.82
22	8.14	7.93	8.03	8.08	7.90	7.98	7.86	7.71	7.78	7.98	7.73	7.86
23	8.13	7.93	8.03	8.03	7.90	7.95	7.86	7.72	7.77	7.87	7.74	7.80
24	8.12	7.95	8.03	8.09	7.90	7.99	7.85	7.73	7.78	7.93	7.73	7.80
25	8.17	7.96	8.06	8.08	7.90	7.99	7.85	7.72	7.78	7.89	7.75	7.79
26	8.16	7.97	8.06	8.06	7.92	7.98	7.86	7.72	7.79	8.19	7.82	8.01
27	8.13	7.93	8.03	8.04	7.89	7.95	7.86	7.73	7.78	8.05	7.89	7.99
28	8.11	7.89	8.00	8.04	7.90	7.96	7.85	7.71	7.77	7.95	7.79	7.87
29	8.07	7.88	7.96	8.05	7.89	7.97	7.82	7.70	7.76	8.00	7.82	7.88
30	8.09	7.86	7.97	8.06	7.88	7.96	7.80	7.68	7.72	7.99	7.78	7.86
31	---	---	---	8.02	7.89	7.95	7.81	7.67	7.73	---	---	---
MONTH	8.32	7.86	8.05	8.15	7.85	7.98	8.00	7.67	7.81	8.22	7.12	7.85
YEAR	8.35	7.12	7.74									

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	18.0	17.5	17.5	12.0	12.0	12.0	9.5	9.0	9.0	6.5	6.5	6.5
2	17.5	17.0	17.5	12.5	12.0	12.0	9.0	8.5	9.0	6.5	6.5	6.5
3	17.5	17.0	17.0	12.5	12.0	12.0	9.0	8.5	9.0	6.5	6.5	6.5
4	16.5	16.0	16.5	12.5	12.0	12.0	8.5	8.5	8.5	6.5	6.0	6.0
5	16.5	16.0	16.0	12.5	12.0	12.5	8.5	8.5	8.5	6.0	6.0	6.0
6	16.0	16.0	16.0	12.0	11.5	12.0	8.5	8.0	8.5	6.0	5.5	5.5
7	16.0	15.5	15.5	12.0	11.5	11.5	8.5	8.0	8.5	6.0	5.5	5.5
8	15.5	15.0	15.5	12.0	11.5	11.5	8.5	8.0	8.5	5.5	5.5	5.5
9	15.0	14.5	15.0	12.0	11.5	12.0	8.5	8.5	8.5	5.5	5.5	5.5
10	15.0	14.5	14.5	11.5	11.5	11.5	8.5	8.5	8.5	5.5	5.0	5.5
11	15.0	14.5	14.5	11.5	11.0	11.0	8.5	8.0	8.0	5.5	5.0	5.5
12	14.5	14.0	14.5	11.0	10.5	11.0	8.5	8.0	8.0	5.5	5.0	5.0
13	14.5	14.0	14.0	11.0	10.5	11.0	8.0	8.0	8.0	5.0	5.0	5.0
14	14.5	14.0	14.0	11.0	10.5	10.5	8.0	8.0	8.0	5.0	5.0	5.0
15	14.0	13.5	14.0	10.5	10.5	10.5	8.0	8.0	8.0	5.0	5.0	5.0
16	14.0	13.5	13.5	---	---	---	8.0	7.5	7.5	5.0	4.5	5.0
17	14.0	13.5	13.5	10.5	10.5	10.5	7.5	7.5	7.5	5.0	5.0	5.0
18	14.0	13.5	13.5	10.5	10.5	10.5	7.5	7.5	7.5	5.0	5.0	5.0
19	14.0	13.5	13.5	10.5	10.5	10.5	7.5	7.5	7.5	5.0	4.5	4.5
20	14.0	13.5	13.5	10.5	10.0	10.0	7.5	7.5	7.5	5.0	4.5	4.5
21	13.5	13.0	13.5	10.0	9.5	9.5	7.5	7.5	7.5	4.5	4.0	4.5
22	13.5	13.0	13.0	9.5	9.5	9.5	7.5	7.5	7.5	4.0	4.0	4.0
23	13.0	13.0	13.0	9.5	9.5	9.5	7.5	7.0	7.5	4.0	4.0	4.0
24	13.0	13.0	13.0	9.5	9.5	9.5	7.5	7.0	7.5	4.0	4.0	4.0
25	13.0	13.0	13.0	10.0	9.5	9.5	7.5	7.0	7.5	4.0	4.0	4.0
26	13.0	12.5	13.0	9.5	9.5	9.5	7.5	7.0	7.0	4.0	3.5	4.0
27	12.5	12.5	12.5	9.5	9.0	9.5	7.5	7.0	7.0	4.0	3.5	4.0
28	12.5	12.0	12.5	9.5	9.0	9.5	7.0	7.0	7.0	4.0	3.5	4.0
29	12.5	12.0	12.0	9.5	9.0	9.5	7.0	6.5	7.0	4.0	4.0	4.0
30	12.5	12.0	12.0	9.5	9.0	9.5	7.0	6.5	7.0	4.0	4.0	4.0
31	12.5	12.0	12.0	---	---	---	7.0	6.5	6.5	4.0	4.0	4.0
MONTH	18.0	12.0	14.0	12.5	9.0	10.5	9.5	6.5	8.0	6.5	3.5	5.0
		FEBRUARY			MARCH			APRIL			MAY	
1	4.0	4.0	4.0	4.0	3.5	4.0	7.0	6.0	6.5	10.0	9.0	9.5
2	4.0	4.0	4.0	4.5	3.5	4.0	7.0	6.5	6.5	10.0	9.5	9.5
3	4.0	4.0	4.0	4.5	4.0	4.0	7.0	6.5	6.5	10.0	9.0	9.5
4	4.5	4.0	4.0	4.5	4.0	4.0	8.0	6.0	7.0	9.5	9.0	9.5
5	4.0	3.5	4.0	4.5	4.0	4.0	8.0	6.5	7.5	10.0	9.5	9.5
6	4.0	3.5	3.5	4.5	4.0	4.5	7.5	6.5	7.0	9.5	9.0	9.5
7	3.5	3.5	3.5	5.0	4.0	4.5	8.0	6.5	7.0	9.5	6.0	8.0
8	4.0	3.5	3.5	4.5	4.5	4.5	8.5	7.5	8.0	6.5	6.0	6.0
9	4.0	3.5	3.5	4.5	4.5	4.5	8.5	8.0	8.5	9.5	6.0	8.0
10	4.0	3.5	3.5	5.0	4.5	4.5	8.0	7.5	8.0	10.0	9.0	9.5
11	4.0	3.5	4.0	5.0	4.5	4.5	8.5	6.5	8.0	10.5	9.5	10.0
12	4.0	3.5	4.0	5.0	4.5	5.0	8.5	6.5	7.5	10.0	9.5	10.0
13	3.5	3.5	3.5	5.5	5.0	5.0	9.0	7.5	8.5	10.5	9.5	10.0
14	4.0	3.5	3.5	5.5	5.0	5.0	8.5	7.5	8.0	10.5	9.5	10.0
15	4.0	3.5	4.0	5.5	5.0	5.0	9.5	7.5	8.5	10.5	10.0	10.0
16	4.0	3.5	4.0	5.5	5.0	5.0	9.5	8.0	9.0	10.5	10.0	10.0
17	4.0	3.5	4.0	5.5	5.0	5.0	9.0	7.5	8.5	10.5	10.0	10.5
18	4.0	3.5	3.5	5.5	5.0	5.0	8.5	7.5	8.0	10.5	10.0	10.5
19	3.5	3.5	3.5	5.5	5.0	5.0	9.0	8.0	8.5	10.5	10.0	10.5
20	4.0	3.5	3.5	5.5	5.0	5.0	9.5	8.0	9.0	11.0	10.5	10.5
21	3.5	3.5	3.5	5.5	5.0	5.0	10.0	7.5	9.0	11.0	10.5	10.5
22	4.0	3.5	3.5	5.5	5.0	5.0	9.0	8.5	9.0	11.0	10.5	10.5
23	4.0	3.5	3.5	6.0	5.0	5.5	9.5	8.5	9.0	10.5	6.0	8.0
24	3.5	3.5	3.5	6.0	5.5	5.5	10.0	8.5	9.0	6.5	6.0	6.5
25	3.5	3.5	3.5	6.5	5.5	6.0	9.5	8.5	9.0	10.0	6.5	7.5
26	4.0	3.5	3.5	6.5	5.5	6.0	9.5	8.5	9.0	16.5	9.5	12.5
27	4.0	3.5	3.5	6.5	5.5	6.0	9.5	9.0	9.0	17.0	16.0	16.5
28	4.0	3.5	3.5	6.5	6.0	6.0	9.5	9.0	9.5	17.0	16.0	16.5
29	4.0	3.5	3.5	7.0	6.0	6.5	10.0	9.0	9.5	17.5	16.5	16.5
30	---	---	---	6.5	6.0	6.5	10.0	9.5	9.5	17.5	16.5	17.0
31	---	---	---	6.5	6.0	6.5	---	---	---	18.0	17.0	17.5
MONTH	4.5	3.5	3.5	7.0	3.5	5.0	10.0	6.0	8.5	18.0	6.0	10.5

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	19.5	17.0	18.0	22.0	20.5	21.5	22.5	21.5	22.0	20.5	19.5	20.0
2	18.5	17.0	17.5	21.5	20.0	21.0	22.5	21.5	22.0	20.0	19.5	20.0
3	18.5	15.5	17.5	21.5	20.0	20.5	22.5	21.5	22.0	20.0	19.0	19.5
4	18.5	17.5	18.0	21.0	20.0	20.5	22.5	21.5	22.0	19.5	19.0	19.5
5	19.0	17.5	18.5	21.5	20.0	21.0	23.0	21.5	22.5	20.0	19.0	19.5
6	19.0	16.5	18.0	21.5	20.5	21.0	23.0	22.0	22.5	19.5	19.0	19.0
7	19.5	17.0	18.5	22.0	21.0	21.5	23.0	22.0	22.5	19.5	18.5	19.0
8	19.0	18.0	18.5	22.0	21.0	21.5	23.5	22.5	23.0	19.5	18.5	19.0
9	19.0	18.0	18.5	22.0	21.0	21.5	23.5	22.5	23.0	19.0	18.5	18.5
10	19.0	18.0	18.5	22.5	21.5	22.0	23.5	22.5	23.0	19.0	18.5	18.5
11	19.0	18.0	18.5	22.5	21.5	22.0	23.5	22.0	23.0	19.0	18.5	19.0
12	19.0	18.0	18.5	22.0	22.0	22.0	23.5	22.0	23.0	19.0	18.5	19.0
13	19.0	18.0	18.5	22.5	21.5	22.0	23.5	22.5	23.0	19.5	18.5	19.0
14	19.0	18.0	18.5	23.0	21.5	22.0	24.0	22.5	23.0	19.5	18.5	19.0
15	19.5	18.5	19.0	23.0	22.0	22.5	24.0	22.5	23.5	19.5	19.0	19.0
16	19.5	18.5	19.0	23.5	22.5	23.0	24.0	23.0	23.5	19.5	18.5	19.0
17	19.5	19.0	19.0	24.0	23.0	23.5	24.0	23.0	23.5	18.5	18.5	18.5
18	20.0	19.0	19.5	24.0	23.0	23.5	24.5	23.0	24.0	19.0	18.5	18.5
19	20.0	19.0	19.5	24.0	23.0	23.5	24.0	23.0	23.5	19.0	18.5	18.5
20	20.5	19.0	20.0	24.0	23.0	23.5	23.0	22.5	23.0	19.0	18.5	18.5
21	21.0	19.5	20.5	23.5	23.0	23.0	23.5	22.5	23.0	19.0	18.5	19.0
22	21.5	20.0	20.5	23.5	23.0	23.5	23.0	22.0	23.0	19.0	18.5	19.0
23	22.0	20.0	21.0	23.5	23.0	23.5	22.5	21.5	22.5	19.5	18.5	19.0
24	22.0	20.0	21.0	23.5	23.0	23.0	22.5	21.5	22.0	19.0	18.5	19.0
25	21.5	20.0	21.0	23.5	23.0	23.5	22.5	22.0	22.0	19.0	18.5	18.5
26	23.0	20.5	21.5	23.5	20.5	22.0	22.5	22.0	22.0	19.0	18.5	18.5
27	22.5	21.0	21.5	21.5	20.5	21.0	22.5	21.5	22.0	18.5	18.0	18.5
28	22.0	21.0	21.5	22.0	21.0	21.5	22.0	21.5	22.0	18.5	18.0	18.5
29	21.5	21.0	21.5	22.0	21.0	21.5	22.0	21.5	22.0	18.0	18.0	18.0
30	22.0	20.0	21.5	22.0	21.0	21.5	22.0	21.0	21.5	18.0	18.0	18.0
31	---	---	---	22.0	21.5	21.5	21.5	19.5	20.5	---	---	---
MONTH	23.0	15.5	19.5	24.0	20.0	22.0	24.5	19.5	22.5	20.5	18.0	19.0
YEAR	24.5	3.5	12.5									

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA--Continued

OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	8.2	7.8	8.0	10.1	9.7	9.9	10.3	9.9	10.1	11.5	11.3	11.4
2	8.3	7.8	8.0	10.2	9.8	9.9	10.6	10.1	10.3	11.7	11.5	11.6
3	8.3	8.0	8.1	10.2	9.8	10.0	10.6	10.2	10.4	11.7	11.4	11.6
4	8.5	8.1	8.3	10.2	9.6	9.9	10.7	10.2	10.5	11.6	11.4	11.5
5	8.7	8.2	8.4	10.2	9.8	9.9	10.9	10.6	10.7	11.9	11.6	11.8
6	8.5	8.3	8.4	10.3	10.0	10.1	10.9	10.7	10.8	12.1	11.8	11.9
7	8.7	8.3	8.5	10.5	10.1	10.3	11.1	10.8	10.9	12.0	11.6	11.8
8	8.8	8.4	8.5	10.6	10.0	10.2	11.1	10.7	10.9	11.8	11.5	11.6
9	8.9	8.4	8.7	10.5	9.9	10.1	11.0	10.7	10.8	12.0	11.6	11.8
10	9.1	8.7	8.9	10.1	9.9	10.0	10.9	10.6	10.8	12.1	11.9	12.0
11	9.2	8.8	9.0	10.3	9.9	10.0	10.9	10.6	10.7	12.3	12.0	12.1
12	9.4	8.9	9.1	10.2	9.9	10.0	10.7	10.5	10.6	12.4	12.1	12.2
13	9.5	9.1	9.3	10.2	9.8	10.0	10.9	10.5	10.7	12.4	12.0	12.3
14	9.8	9.3	9.5	10.2	9.8	10.0	11.1	10.7	10.8	12.7	12.4	12.6
15	9.7	9.3	9.5	10.2	9.9	10.1	10.9	10.6	10.7	12.7	12.4	12.5
16	9.8	9.5	9.6	---	---	---	10.9	10.2	10.6	12.8	12.4	12.6
17	9.8	9.5	9.6	9.9	9.5	9.7	10.5	10.3	10.4	12.9	12.5	12.6
18	9.9	9.6	9.7	10.0	9.7	9.8	10.6	10.3	10.4	12.8	12.4	12.6
19	10.0	9.6	9.8	10.1	9.6	9.8	10.5	10.2	10.4	13.2	12.7	12.9
20	10.1	9.7	9.8	9.9	9.6	9.8	10.4	10.1	10.2	13.4	12.8	13.0
21	10.0	9.7	9.9	10.2	9.8	10.0	10.6	10.2	10.4	17.2	13.4	15.0
22	10.3	9.9	10.0	10.3	9.9	10.0	10.6	10.3	10.4	17.7	14.0	16.2
23	10.5	9.9	10.2	10.3	10.0	10.1	10.7	10.4	10.6	14.2	14.0	14.1
24	10.4	9.9	10.2	10.4	10.0	10.2	10.8	10.4	10.6	14.2	13.4	13.8
25	10.2	9.8	10.0	10.3	10.0	10.1	10.7	10.4	10.5	13.7	13.5	13.6
26	10.2	9.9	10.1	10.4	10.0	10.2	10.8	10.5	10.6	14.0	13.7	13.9
27	10.2	9.2	9.8	10.3	10.0	10.1	10.9	10.7	10.8	14.1	13.6	13.8
28	9.6	9.2	9.4	10.3	10.0	10.1	10.9	10.6	10.7	13.7	13.5	13.6
29	9.8	9.4	9.6	10.2	9.9	10.1	11.0	10.7	10.8	13.7	13.3	13.5
30	9.9	9.5	9.6	10.3	9.9	10.0	11.2	10.9	11.0	13.6	13.2	13.4
31	10.0	9.6	9.7	---	---	---	11.5	11.0	11.2	13.8	13.4	13.5
MONTH	10.5	7.8	9.3	10.6	9.5	10.0	11.5	9.9	10.6	17.7	11.3	12.8
		FEBRUARY			MARCH			APRIL			MAY	
1	13.7	13.3	13.5	13.0	12.5	12.7	11.3	10.9	11.1	11.0	10.6	10.8
2	13.6	13.1	13.4	12.9	12.3	12.6	11.4	11.1	11.2	10.8	10.5	10.6
3	13.5	13.1	13.3	12.7	12.2	12.5	11.4	11.1	11.2	10.7	10.5	10.6
4	13.6	13.0	13.3	12.6	12.2	12.4	11.5	11.0	11.2	10.6	10.0	10.3
5	13.8	13.6	13.7	12.8	12.3	12.5	11.4	10.9	11.2	10.2	10.0	10.0
6	13.9	13.4	13.6	12.8	12.2	12.5	11.3	11.0	11.2	10.6	10.0	10.3
7	13.6	13.2	13.4	12.7	12.3	12.4	11.5	11.1	11.3	11.9	10.6	11.2
8	13.6	13.3	13.4	12.8	12.3	12.5	11.4	11.1	11.3	12.0	11.6	11.8
9	13.6	13.3	13.5	12.6	12.1	12.4	11.4	11.2	11.3	11.7	10.7	11.1
10	13.6	13.2	13.4	12.5	12.1	12.3	11.5	11.3	11.4	10.8	10.7	10.7
11	13.4	13.0	13.2	12.7	12.2	12.4	11.7	11.4	11.5	10.8	10.3	10.6
12	13.2	12.8	13.0	12.5	12.0	12.3	11.8	11.4	11.6	10.7	10.5	10.6
13	13.3	13.1	13.1	12.4	12.1	12.2	12.0	11.4	11.6	10.6	10.4	10.5
14	13.3	12.5	12.9	12.4	12.1	12.2	11.7	11.3	11.5	10.6	10.5	10.6
15	12.7	12.3	12.5	12.4	12.0	12.2	11.6	11.2	11.4	10.6	10.5	10.5
16	12.9	12.2	12.7	12.5	12.0	12.2	11.4	11.1	11.2	10.7	10.6	10.6
17	13.0	12.6	12.7	12.5	12.0	12.2	11.4	11.0	11.2	10.8	10.6	10.7
18	13.3	12.6	12.9	12.4	11.9	12.1	11.3	10.9	11.1	10.8	10.7	10.7
19	13.0	12.5	12.8	12.3	11.8	12.0	11.3	10.8	11.1	11.0	10.8	10.9
20	12.7	12.5	12.6	12.4	11.8	12.1	11.2	10.9	11.1	10.9	10.7	10.8
21	13.0	12.7	12.9	12.5	12.1	12.2	11.1	10.8	11.0	10.9	10.7	10.8
22	13.1	12.5	12.7	12.5	11.1	11.9	11.3	10.8	11.0	10.9	10.8	10.8
23	12.7	12.5	12.6	11.2	10.6	10.9	11.2	10.8	11.0	11.6	10.8	11.3
24	13.2	12.6	12.9	11.1	10.6	10.8	11.1	10.7	10.9	11.6	11.5	11.5
25	13.2	12.9	13.0	11.1	10.5	10.8	11.2	10.8	11.0	11.6	10.0	11.0
26	13.2	12.7	12.9	11.1	10.6	10.8	11.2	10.9	11.0	10.2	8.8	9.6
27	12.9	12.8	12.8	11.1	10.7	10.8	11.2	10.9	11.0	9.0	8.7	8.8
28	13.1	12.7	12.9	11.3	10.8	11.0	11.1	10.9	11.0	8.8	8.6	8.7
29	13.0	12.6	12.8	11.3	10.8	11.0	11.0	10.7	10.9	8.8	8.5	8.7
30	---	---	---	11.3	10.9	11.0	10.9	10.7	10.8	8.7	8.4	8.6
31	---	---	---	11.4	10.9	11.1	---	---	---	8.7	8.2	8.5
MONTH	13.9	12.2	13.1	13.0	10.5	11.9	12.0	10.7	11.2	12.0	8.2	10.4

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA--Continued

OXYGEN, DISSOLVED (MG/L), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	8.6	7.8	8.3	8.0	7.5	7.7	8.8	8.2	8.5	8.0	7.7	7.8
2	8.4	7.8	8.2	8.0	7.6	7.9	8.8	8.5	8.7	8.0	7.7	7.8
3	8.7	7.9	8.1	8.2	7.8	8.0	8.7	8.4	8.6	7.9	7.6	7.7
4	8.3	7.8	8.0	8.3	7.9	8.1	8.7	8.3	8.5	7.8	7.5	7.6
5	8.3	7.8	8.1	8.4	8.0	8.2	8.6	8.3	8.4	7.8	7.5	7.6
6	8.5	7.8	8.1	8.4	8.1	8.2	8.5	8.1	8.3	7.9	7.5	7.7
7	8.3	7.6	8.0	---	---	---	8.4	8.0	8.2	7.9	7.5	7.7
8	8.1	7.8	8.0	---	---	---	8.4	8.0	8.2	7.9	7.6	7.7
9	7.9	7.8	7.8	---	---	---	8.4	8.0	8.2	7.9	7.6	7.7
10	8.1	7.8	8.0	8.3	7.9	8.1	8.3	8.0	8.1	8.0	7.6	7.8
11	8.2	7.8	8.0	8.2	7.9	8.0	8.3	7.9	8.1	8.0	7.6	7.7
12	8.3	7.8	8.1	8.2	7.8	7.9	8.3	8.0	8.1	8.0	7.6	7.7
13	8.2	8.0	8.1	8.1	7.8	8.0	8.2	7.8	8.0	7.8	7.4	7.6
14	8.2	7.9	8.0	8.2	7.5	7.9	8.1	7.8	7.9	7.8	7.4	7.6
15	8.2	7.9	8.0	8.1	7.7	7.9	8.1	7.5	7.8	7.8	7.5	7.6
16	8.1	7.8	7.9	8.1	7.6	7.8	8.0	7.5	7.8	7.9	7.6	7.7
17	8.1	7.8	7.9	7.9	7.4	7.7	7.9	7.4	7.7	7.8	7.6	7.7
18	8.1	7.7	7.9	7.9	7.6	7.7	7.9	7.3	7.6	8.0	7.7	7.8
19	8.1	7.8	7.9	7.9	7.6	7.7	7.9	7.5	7.7	8.0	7.7	7.8
20	8.0	7.7	7.8	8.0	7.7	7.8	7.9	7.5	7.7	8.0	7.6	7.8
21	8.1	7.6	7.9	8.0	7.7	7.8	8.0	7.5	7.7	7.9	7.5	7.7
22	7.9	7.6	7.8	8.1	7.7	7.9	8.0	7.6	7.8	8.0	7.6	7.8
23	7.8	7.4	7.7	8.0	7.7	7.8	8.0	7.7	7.8	7.9	7.6	7.7
24	7.9	7.5	7.8	8.2	7.8	8.0	8.0	7.6	7.7	7.8	7.6	7.7
25	8.0	7.6	7.8	8.4	8.0	8.1	7.9	7.4	7.6	7.9	7.6	7.7
26	7.8	7.2	7.5	8.5	8.0	8.2	7.8	7.4	7.5	8.0	7.7	7.8
27	7.9	7.4	7.7	8.6	8.2	8.4	7.7	7.4	7.5	8.1	7.7	7.9
28	7.9	7.5	7.7	8.6	8.3	8.4	7.7	7.4	7.5	8.0	7.7	7.8
29	7 8	7.5	7.6	8.6	8.3	8.4	7.6	7.4	7.5	8.1	7.7	7.9
30	7.9	7.5	7.7	8.6	8.3	8.5	7.7	7.4	7.5	8.2	7.7	7.9
31	---	---	---	8.6	8.2	8.4	7.8	7.4	7.6	---	---	---
MONTH	8.7	7.2	7.9	8.6	7.4	8.0	8.8	7.3	7.9	8.2	7.4	7.7
YEAR	17.7	7.2	10.1									

02012800 JACKSON RIVER AT FILTRATION PLANT, AT COVINGTON, VA

LOCATION.--Lat 37°48'39", long 79°59'19", Covington City, Hydrologic Unit 02080201, on left bank 250 ft upstream from Dry Run and 1.7 mi upstream from Dunlap Creek and bridge on U.S. Highway 60.

DRAINAGE AREA.--439 mi².

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: June 1978 to current year.

INSTRUMENTATION.--Water-temperature recorder since June 1978.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Some record in prior years fragmentary due to instrument malfunction.

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, 29.0°C, July 17; minimum recorded, 0.0°C, Jan. 8, 11.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	19.0	15.5	17.5	13.5	10.0	12.0	9.0	7.5	8.5	7.0	5.5	6.5
2	---	---	---	13.5	10.0	12.0	7.0	6.0	7.0	6.5	5.0	5.5
3	---	---	---	13.5	11.0	12.5	5.5	5.0	5.5	5.0	4.0	4.5
4	16.0	12.5	14.0	13.5	11.5	12.5	7.0	5.5	6.0	5.5	4.5	5.0
5	16.0	12.5	14.0	12.5	10.0	11.5	6.0	5.0	5.5	4.5	2.5	3.5
6	---	---	---	10.0	8.0	9.0	6.0	4.0	5.0	2.5	2.0	2.5
7	---	---	---	8.5	6.5	8.0	6.5	5.0	5.5	2.0	.5	1.5
8	15.0	12.5	13.5	10.5	8.5	9.5	7.0	5.5	6.0	2.0	.0	1.0
9	14.0	11.5	12.5	11.0	10.0	10.5	9.0	7.0	8.0	2.5	2.0	2.0
10	15.5	12.5	14.0	---	---	---	9.5	9.0	9.0	2.0	.5	1.5
11	16.0	14.0	15.0	---	---	---	9.0	7.5	8.0	1.5	.0	1.0
12	---	---	---	---	---	---	8.5	7.0	7.5	2.0	.5	1.0
13	---	---	---	---	---	---	7.0	6.5	7.0	4.0	2.0	3.0
14	---	---	---	---	---	---	7.0	6.0	6.5	2.5	1.5	2.0
15	---	---	---	---	---	---	7.0	6.5	7.0	2.0	1.0	1.5
16	---	---	---	---	---	---	6.5	4.5	5.5	2.0	1.0	1.5
17	---	---	---	---	---	---	5.0	4.0	4.5	---	---	---
18	---	---	---	12.5	10.5	11.5	5.0	4.0	4.5	---	---	---
19	---	---	---	10.5	9.0	9.5	6.5	4.0	5.0	---	---	---
20	---	---	---	9.5	7.0	8.5	9.0	6.5	8.0	---	---	---
21	---	---	---	7.0	4.0	5.5	9.0	7.0	8.5	---	---	---
22	---	---	---	5.5	3.5	4.5	7.0	5.5	6.5	---	---	---
23	---	---	---	7.0	4.0	5.5	7.0	5.5	6.5	---	---	---
24	---	---	---	10.0	7.0	8.5	7.0	5.5	6.5	---	---	---
25	---	---	---	11.0	9.0	10.0	8.5	6.5	8.0	---	---	---
26	---	---	---	10.0	9.0	9.5	9.5	9.0	9.0	---	---	---
27	---	---	---	9.5	9.0	9.5	9.0	8.5	9.0	---	---	---
28	---	---	---	9.5	9.0	9.0	8.5	7.5	8.0	---	---	---
29	---	---	---	10.0	9.0	9.5	7.0	5.5	6.5	---	---	---
30	---	---	---	10.0	9.0	9.5	5.0	3.5	4.5	---	---	---
31	---	---	---	---	---	---	5.5	3.5	4.5	---	---	---
MONTH	19.0	11.5	14.5	13.5	3.5	9.5	9.5	3.5	6.5	7.0	.0	2.5

02012800 JACKSON RIVER AT FILTRATION PLANT, AT COVINGTON, VA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	---	---	---	5.5	3.5	4.5	12.0	10.5	11.0	14.0	10.5	12.5
2	---	---	---	5.5	3.5	4.5	13.0	10.0	11.5	13.5	12.0	13.0
3	---	---	---	6.0	5.0	5.0	12.5	11.0	12.0	15.0	12.0	13.0
4	---	---	---	6.5	5.0	5.5	14.0	11.0	12.0	13.0	11.5	12.5
5	---	---	---	8.0	5.5	6.5	13.0	9.5	11.5	11.5	11.0	11.0
6	---	---	---	8.5	5.5	6.5	12.0	10.0	11.5	11.5	10.0	10.5
7	---	---	---	9.0	5.5	7.5	10.0	7.5	9.0	13.0	7.5	10.0
8	---	---	---	9.5	6.5	8.0	10.5	7.5	9.0	9.5	6.5	8.0
9	---	---	---	8.0	6.0	7.0	11.5	8.5	10.0	10.5	7.0	8.0
10	---	---	---	9.0	6.5	7.5	12.5	9.0	11.0	13.0	9.5	11.0
11	---	---	---	7.5	5.5	7.0	12.0	9.5	11.0	12.5	9.5	10.5
12	---	---	---	7.5	6.5	7.0	12.0	7.0	9.5	14.5	10.0	12.5
13	---	---	---	9.0	5.0	7.5	12.0	7.0	9.5	14.5	12.0	13.5
14	---	---	---	---	---	---	12.0	9.5	11.0	14.5	12.5	14.0
15	---	---	---	---	---	---	14.0	10.5	12.0	16.0	13.0	14.5
16	---	---	---	---	---	---	13.0	9.5	11.5	15.0	13.5	14.5
17	---	---	---	---	---	---	14.0	9.0	11.5	14.5	11.5	13.0
18	---	---	---	---	---	---	12.0	9.5	11.5	13.0	11.5	12.0
19	---	---	---	---	---	---	12.0	8.5	9.5	13.0	11.0	12.0
20	---	---	---	---	---	---	13.0	8.5	10.5	14.0	11.0	12.5
21	---	---	---	---	---	---	16.0	11.0	13.0	14.5	11.5	13.0
22	---	---	---	---	---	---	13.5	11.5	12.5	16.0	12.0	14.0
23	---	---	---	9.0	6.5	8.0	14.0	10.5	12.0	16.0	13.0	15.0
24	---	---	---	11.5	9.0	10.0	16.0	12.5	13.5	15.0	10.5	12.0
25	---	---	---	11.5	9.5	10.5	12.5	9.5	11.5	12.5	9.0	11.0
26	4.0	2.0	3.0	13.5	10.5	11.5	15.0	10.5	12.5	14.5	9.5	12.0
27	3.5	3.0	3.5	12.0	9.0	10.5	13.5	12.0	12.5	18.5	13.0	15.5
28	5.5	3.0	4.5	11.5	7.5	9.5	11.5	8.5	9.5	20.5	17.0	18.5
29	5.5	3.0	4.5	13.0	8.5	10.5	12.0	9.0	10.0	21.0	17.5	19.0
30	---	---	---	12.5	10.0	11.5	13.5	10.5	12.0	21.5	18.0	20.0
31	---	---	---	12.5	10.5	11.5	---	---	---	22.5	19.0	21.0
MONTH	5.5	2.0	4.0	13.5	3.5	8.0	16.0	7.0	11.0	22.5	6.5	13.0
		JUNE			JULY			AUGUST			SEPTEMBER	
1	22.5	19.0	21.0	24.0	19.5	21.5	27.0	23.0	25.0	24.0	20.0	21.5
2	21.0	19.5	20.5	24.0	19.0	21.5	27.5	24.5	26.0	23.0	19.5	21.0
3	19.5	16.0	17.5	23.0	20.5	21.5	28.0	26.0	27.0	22.5	19.5	21.0
4	18.0	15.5	17.0	25.5	21.0	23.0	27.0	25.0	26.0	22.0	20.5	21.0
5	20.5	15.5	18.0	26.0	20.0	23.5	27.5	24.0	25.5	21.0	19.0	20.0
6	23.0	17.5	20.5	26.0	21.5	23.5	27.0	25.5	26.5	19.5	18.0	19.0
7	24.5	20.0	22.0	26.5	22.5	24.5	27.0	24.5	26.0	19.0	16.5	17.5
8	24.0	20.0	22.0	26.0	23.5	25.0	27.0	24.0	26.0	20.5	17.0	18.5
9	22.0	17.0	19.5	25.5	23.5	24.0	27.5	24.5	26.0	19.0	17.5	18.5
10	18.5	16.0	17.0	25.5	22.5	24.0	27.5	24.5	26.0	21.5	17.5	19.5
11	21.0	16.0	18.0	26.5	23.0	24.5	27.0	25.0	26.0	23.0	19.5	21.0
12	21.5	17.5	19.5	24.5	23.0	23.5	27.0	24.0	25.5	21.0	19.5	20.5
13	23.0	18.5	21.0	24.0	22.5	23.5	27.5	25.5	26.5	24.0	20.0	21.5
14	24.0	19.0	22.0	26.5	22.5	24.5	28.0	25.0	26.5	24.5	20.5	22.0
15	24.5	21.0	23.0	27.5	24.0	26.0	27.5	25.5	26.5	21.5	18.5	20.0
16	24.5	21.5	23.0	28.5	25.0	26.5	28.0	25.0	26.5	19.5	18.0	19.0
17	22.5	20.5	21.5	29.0	26.5	27.5	28.0	24.5	26.5	18.5	17.0	17.5
18	24.0	19.0	21.5	27.5	25.0	26.0	28.0	25.5	26.5	21.0	17.5	19.0
19	25.5	16.5	23.5	27.0	24.0	25.5	27.0	25.5	26.0	20.5	19.5	20.0
20	25.0	22.0	23.0	27.5	23.5	26.0	25.5	23.0	24.0	21.0	19.5	20.5
21	26.0	21.5	23.5	26.5	23.5	25.0	26.5	22.0	24.0	22.0	18.5	20.0
22	27.0	23.0	25.0	27.0	23.0	24.5	24.5	22.5	24.0	22.0	18.0	19.5
23	26.0	23.5	25.0	26.0	23.5	24.5	24.0	22.0	23.0	21.0	18.5	19.5
24	24.5	23.0	24.0	26.5	22.5	24.5	26.0	21.5	23.5	20.5	18.5	19.5
25	26.5	22.0	24.0	27.0	24.0	25.5	25.5	22.0	24.0	18.0	17.0	17.5
26	26.5	24.0	25.0	26.0	24.5	25.0	25.5	21.5	23.5	20.0	17.0	18.5
27	25.5	21.0	23.0	25.0	22.5	23.5	26.0	22.5	24.5	19.5	17.5	18.0
28	25.0	20.5	22.5	25.5	21.5	23.5	24.5	23.5	24.0	19.0	17.0	17.5
29	23.0	20.0	22.0	27.0	23.5	25.0	24.5	22.5	23.5	18.0	17.0	17.5
30	25.0	19.5	22.0	27.0	24.5	25.5	23.0	21.0	22.0	19.5	16.5	18.0
31	---	---	---	25.5	23.5	24.5	23.0	20.5	21.5	---	---	---
MONTH	27.0	15.5	21.5	29.0	19.0	24.5	28.0	20.5	25.0	24.5	16.5	19.5
YEAR	29.0	.0	15.0									

02013000 DUNLAP CREEK NEAR COVINGTON, VA

LOCATION.--Lat 37°48'10", long 80°02'50", Alleghany County, Hydrologic Unit 02080201, on right bank 20 ft downstream from bridge on U.S. Highway 60, 2.2 mi downstream from Ogle Creek, and 3.0 mi west of Covington.

DRAINAGE AREA.--164 mi².

PERIOD OF RECORD.--October 1928 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 972: 1929-30, 1932-34, 1942. WSP 1303: 1929-35(M), 1937-38(M), 1941-48(M). WSP 2104: Drainage area. WDR VA-74-1: 1969(M), 1972, 1973(P).

GAGE.--Water-stage recorder. Datum of gage is 1,294.70 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 8, 1949, nonrecording gage at same site and datum.

REMARKS.--Records good except for period with ice effect, Jan. 7-13, which is fair. Occasional diurnal fluctuation caused by dam 7.9 mi upstream from station. U.S. Army Corps of Engineers gage-height transmitter at station, receiver at Gathright Dam. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--60 years, 167 ft³/s, 13.83 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,400 ft³/s, June 21, 1972, gage height, 15.65 ft, from rating curve extended above 4,500 ft³/s on basis of step-backwater computations and contracted-opening measurement at gage height 15.65 ft; minimum, 2.0 ft³/s, July 4, 1970; minimum daily, 7.0 ft³/s, Sept. 9, 1966; minimum gage height, 0.69 ft, June 6, July 14, 1969.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1913 reached a stage of 18 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	0930	*2,040	*5.37	No other peak equal to or greater than base discharge.			

Minimum discharge, 4.3 ft³/s, Sept. 9, gage height, 1.08 ft; minimum daily, 12 ft³/s, Aug. 16-18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	25	144	144	82	56	50	86	45	16	20	18
2	32	25	99	120	82	53	52	78	41	15	18	17
3	28	24	78	110	103	52	52	72	55	14	17	16
4	27	25	69	105	249	54	54	71	58	14	17	26
5	28	24	61	90	439	60	54	76	46	14	17	33
6	25	23	54	81	303	59	54	498	40	13	16	28
7	22	23	49	e60	224	60	66	622	37	13	16	23
8	22	24	46	e54	194	60	91	358	34	13	16	21
9	21	24	44	e50	159	61	93	257	35	14	15	17
10	20	52	43	e48	137	64	89	222	38	14	14	19
11	21	104	43	e45	119	63	85	193	36	14	14	18
12	24	71	43	e43	110	60	82	165	33	17	15	17
13	23	54	41	e50	94	66	83	143	30	19	14	17
14	22	46	40	55	89	69	78	129	28	18	14	17
15	22	40	69	46	90	71	73	116	27	16	13	15
16	22	37	110	44	91	70	69	106	24	15	12	17
17	22	38	100	45	82	67	66	107	23	14	12	16
18	21	66	83	66	77	64	65	135	22	16	12	17
19	21	73	72	203	77	64	73	237	21	22	13	17
20	21	61	65	1490	81	64	71	319	21	20	19	17
21	22	54	59	698	82	62	68	252	20	19	18	16
22	22	46	54	382	74	58	79	200	19	22	15	14
23	23	41	51	263	73	53	166	161	18	25	15	14
24	23	38	47	200	73	52	201	132	17	25	21	26
25	23	36	53	168	67	52	190	114	17	24	17	92
26	23	35	210	145	61	54	166	95	17	22	15	80
27	25	35	302	121	63	57	143	79	16	26	14	50
28	27	36	298	100	63	54	124	69	15	34	15	36
29	26	310	469	95	59	51	111	63	15	27	22	30
30	26	267	277	88	---	51	96	56	16	24	21	25
31	25	---	185	84	---	50	---	50	---	21	20	---
TOTAL	741	1757	3358	5293	3497	1831	2744	5261	864	580	497	769
MEAN	23.9	58.6	108	171	121	59.1	91.5	170	28.8	18.7	16.0	25.6
MAX	32	310	469	1490	439	71	201	622	58	34	22	92
MIN	20	23	40	43	59	50	50	50	15	13	12	14
CFSM	.15	.36	.66	1.04	.74	.36	.56	1.03	.18	.11	.10	.16
IN.	.17	.40	.76	1.20	.79	.42	.62	1.19	.20	.13	.11	.17

CAL YR 1987 TOTAL 85894 MEAN 235 MAX 5540 MIN 15 CFSM 1.43 IN. 19.48
WTR YR 1988 TOTAL 27192 MEAN 74.3 MAX 1490 MIN 12 CFSM .45 IN. 6.17

e Estimated.

02013100 JACKSON RIVER BELOW DUNLAP CREEK, AT COVINGTON, VA

LOCATION.--Lat 37°47'19", long 80°00'03", Covington City, Hydrologic Unit 02080201, on left bank in city recreation park and 0.5 mi downstream from Dunlap Creek.

DRAINAGE AREA.--614 mi².

PERIOD OF RECORD.--October 1974 to current year.

REVISED RECORDS.--WDR VA-76-1: 1975(M).

GAGE.--Water-stage recorder. Datum of gage is 1,206.53 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Small diurnal fluctuation at low flow caused by Westvaco plant 0.8 mi upstream and occasionally by dam on Dunlap Creek 12.7 mi upstream. Flow regulated since December 1979 by Moomaw Lake (station 02011795) 19.9 mi upstream; since October 1984 by Back Creek Lake 47.9 mi upstream, amount unknown; and since January 1985 by Little Back Creek Lake 51.0 mi upstream, amount unknown. Diversion by Westvaco plant averages 47 ft³/s for industrial use of which approximately 42 ft³/s is returned upstream from station. Diversion 2.0 mi upstream from station for city of Covington water supply averages less than 4.0 ft³/s. U.S. Army Corps of Engineers gage-height transmitter at station, receiver at Gathright Dam. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--14 years, 715 ft³/s, 15.81 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,300 ft³/s, Nov. 4, 1985, gage height, 23.31 ft, from rating curve extended above 19,000 ft³/s; minimum, 41 ft³/s, Jan. 5, 1981, gage height, 4.38 ft, result of freezeup; minimum daily, 67 ft³/s, Sept. 3, 27-29, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1972, reached a stage of 24.36 ft, discharge, 34,000 ft³/s, from floodmarks, and flood of Dec. 27, 1973, reached a stage of 22.09 ft, from floodmarks, discharge, 28,300 ft³/s, from rating curve extended above 19,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,160 ft³/s, Jan. 21, gage height, 9.37 ft; minimum, 139 ft³/s, Oct. 22, gage height, 4.52 ft; minimum daily, 218 ft³/s, Nov. 5, 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	228	229	411	773	552	355	304	360	298	305	288	263
2	227	222	333	728	528	302	301	340	302	308	288	263
3	226	225	292	700	461	280	296	297	340	308	285	260
4	225	231	276	687	593	286	330	299	327	307	288	305
5	224	218	260	662	1120	296	404	409	309	306	288	295
6	226	218	247	593	948	296	317	1110	299	304	289	276
7	229	221	235	438	625	297	463	2140	291	301	289	267
8	224	220	230	334	643	316	593	2520	290	299	288	266
9	223	221	225	337	735	395	482	1720	302	306	285	262
10	219	236	226	312	683	399	469	1210	306	306	286	258
11	221	340	224	305	536	399	459	921	298	314	288	256
12	232	309	223	304	525	397	451	660	292	341	290	259
13	227	260	220	306	477	408	438	527	289	318	285	256
14	228	253	219	297	356	412	364	490	283	306	285	262
15	228	239	258	283	292	400	321	477	278	300	289	251
16	222	230	328	250	300	318	311	492	300	296	292	251
17	224	241	311	262	290	310	298	611	314	294	292	262
18	226	309	281	292	343	306	267	666	314	318	288	262
19	227	307	264	499	527	309	274	867	311	335	306	262
20	229	281	257	2390	454	325	266	1010	313	326	330	251
21	232	266	247	3050	458	399	258	861	309	310	311	246
22	221	250	244	4250	436	393	271	758	309	304	294	246
23	238	239	240	1460	391	372	349	634	304	323	301	246
24	242	230	234	1140	389	299	443	613	306	325	302	285
25	245	226	249	771	382	300	418	590	308	312	290	411
26	244	225	450	820	373	312	398	384	308	308	295	375
27	245	227	627	587	376	313	477	349	309	317	294	296
28	253	230	615	409	376	314	546	335	302	322	300	279
29	248	582	972	397	374	308	436	325	301	307	335	272
30	242	619	635	401	---	308	375	311	302	312	316	263
31	246	---	542	472	---	306	---	302	---	300	304	---
TOTAL	7171	8104	10375	24509	14543	10430	11379	22588	9114	9638	9161	8206
MEAN	231	270	335	791	501	336	379	729	304	311	296	274
MAX	253	619	972	4250	1120	412	593	2520	340	341	335	411
MIN	219	218	219	250	290	280	258	297	278	294	285	246
(*)	-83	+94	+408	-3	.00	+8	-8	-16	-175	-184	-202	-136
MEAN‡	148	364	743	788	501	344	371	713	129	127	93.5	138
CFSM‡	.24	.59	1.21	1.28	.82	.56	.60	1.16	.21	.21	.15	.22
IN.‡	.28	.66	1.39	1.48	.88	.65	.67	1.34	.23	.24	.18	.25

CAL YR 1987	TOTAL	303911	MEAN	833	MAX	8390	MIN	218	MEAN‡	841	CFSM‡	1.37	IN.‡	18.59
WTR YR 1988	TOTAL	145218	MEAN	397	MAX	4250	MIN	218	MEAN‡	372	CFSM‡	.61	IN.‡	8.24

* Change in contents, equivalent in cubic feet per second, in Moomaw Lake; provided by U.S. Army Corps of Engineers.
‡ Adjusted for change in contents.

02014000 POTTS CREEK NEAR COVINGTON, VA

LOCATION.--Lat 37°43'44", long 80°02'33", Alleghany County, Hydrologic Unit 02080201, on left bank at downstream side of bridge on State Highway 18, 0.8 mi downstream from Blue Spring Creek, and 5.2 mi southwest of Covington.

DRAINAGE AREA.--153 mi².

PERIOD OF RECORD.--October 1928 to September 1956, October 1965 to current year.

REVISED RECORDS.--WSP 1723: 1935, 1936(M), 1940(M), 1942(M), 1948-49(M), 1951-52(M), 1954(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,273.93 ft above National Geodetic Vertical Datum 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. 6-10, 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.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--51 years, 179 ft³/s, 15.89 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,400 ft³/s, Nov. 4, 1985, gage height, 13.46 ft, from rating curve extended above 12,000 ft³/s; minimum observed, 13 ft³/s, Nov. 29, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,400 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 6	1900	*761	*5.13	No peak equal to or greater than base discharge.			

Minimum discharge, 19 ft³/s, Aug. 17, 18, 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	30	132	122	92	66	91	115	68	24	32	36
2	28	30	103	112	92	63	92	105	63	23	30	30
3	28	29	86	104	122	62	87	98	80	22	27	27
4	28	29	77	100	271	66	89	95	90	22	27	46
5	28	28	70	84	387	71	93	103	71	22	25	55
6	29	27	62	e60	280	72	90	367	62	22	25	47
7	30	25	56	e58	214	68	111	497	56	21	26	37
8	29	26	53	e59	198	66	124	340	51	21	24	32
9	29	25	51	e62	164	66	122	266	53	22	24	30
10	29	58	51	e63	145	68	119	248	60	22	23	30
11	29	89	54	63	130	68	116	214	57	22	24	28
12	32	60	52	60	122	66	113	183	50	31	26	27
13	32	45	49	60	108	73	118	162	45	38	27	26
14	31	41	49	60	89	88	111	147	42	37	23	25
15	31	37	56	54	112	86	105	135	39	29	21	24
16	30	35	63	50	106	86	100	127	37	25	21	23
17	29	41	65	51	96	82	96	121	36	23	20	24
18	28	74	60	81	90	79	96	147	36	24	20	26
19	29	73	59	163	86	78	107	172	36	39	24	28
20	28	58	58	436	87	78	106	201	36	43	35	29
21	29	50	56	411	87	76	103	181	33	52	32	26
22	30	44	54	275	79	71	121	164	31	70	33	24
23	29	39	53	214	79	67	199	148	30	59	29	24
24	32	38	50	176	78	64	268	140	28	72	36	40
25	29	36	54	157	76	63	256	130	28	53	34	95
26	30	34	100	143	68	74	217	114	27	43	27	88
27	31	34	134	109	73	101	186	101	26	48	24	67
28	35	38	147	101	71	101	162	93	25	68	25	52
29	34	166	190	101	68	94	144	87	24	65	44	44
30	34	208	165	101	---	93	127	80	25	46	42	38
31	34	---	136	96	---	92	---	73	---	37	41	---
TOTAL	933	1547	2445	3786	3670	2348	3869	5154	1345	1145	871	1128
MEAN	30.1	51.6	78.9	122	127	75.7	129	166	44.8	36.9	28.1	37.6
MAX	35	208	190	436	387	101	268	497	90	72	44	95
MIN	28	25	49	50	68	62	87	73	24	21	20	23
CFSM	.20	.34	.52	.80	.83	.50	.84	1.09	.29	.24	.18	.25
IN.	.23	.38	.59	.92	.89	.57	.94	1.25	.33	.28	.21	.27

CAL YR 1987 TOTAL 84939 MEAN 233 MAX 5030 MIN 20 CFSM 1.52 IN. 20.65
WTR YR 1988 TOTAL 28241 MEAN 77.2 MAX 497 MIN 20 CFSM .50 IN. 6.87

e Estimated.

02015700 BULLPASTURE RIVER AT WILLIAMSVILLE, VA

LOCATION.--Lat 38°11'43", long 79°34'14", Bath County, Hydrologic Unit 02080201, on left bank 15 ft downstream from bridge on State Highway 614 at Williamsville and 0.62 mi upstream from mouth.

DRAINAGE AREA.--110 mi².

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

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,610.14 ft above National Geodetic Vertical Datum of 1929. Prior to July 12, 1974, at site 700 ft upstream at datum 11.84 ft higher.

REMARKS.--Records good except for period with ice effect, Jan. 6-11, which is fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--28 years, 147 ft³/s, 18.15 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,900 ft³/s, Nov. 4, 1985, gage height, 14.39 ft, from flood-marks, from rating curve extended above 3,300 ft³/s on basis of slope-area measurement of peak flow; minimum, 19 ft³/s, Jan. 4, 1981, result of freezeup; minimum daily, 23 ft³/s, Sept. 8, 9, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	0630	*2,380	*4.91	No other peak equal to or greater than base discharge.			

Minimum discharge, 24 ft³/s, Aug. 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63	36	299	236	130	69	62	72	70	33	31	28
2	53	36	203	185	140	68	62	68	69	33	31	28
3	50	36	150	152	203	66	62	66	84	32	30	27
4	48	36	135	145	215	69	80	68	84	32	31	59
5	44	36	112	112	212	86	80	240	69	31	32	63
6	44	35	98	e84	158	75	74	716	64	31	33	38
7	45	33	87	e77	135	70	121	570	60	31	41	33
8	44	34	82	e79	140	68	123	353	57	31	33	30
9	42	34	79	e80	128	66	117	254	57	31	30	30
10	41	62	75	e80	119	72	108	222	64	30	30	30
11	40	102	74	e79	108	70	102	185	57	35	30	30
12	40	68	72	79	106	66	97	155	53	41	31	30
13	38	63	69	84	93	69	91	135	50	41	31	30
14	38	62	64	72	87	70	82	123	48	36	30	30
15	38	57	519	68	98	68	79	154	47	34	30	29
16	37	54	366	64	119	63	74	229	45	33	30	28
17	37	57	232	69	97	63	69	258	45	33	29	28
18	36	164	170	160	93	62	70	322	45	32	28	30
19	36	119	148	138	91	63	84	274	45	33	25	30
20	36	100	155	1450	108	63	72	229	44	38	29	30
21	37	87	142	660	102	62	68	191	43	33	36	30
22	37	74	126	415	87	57	66	185	41	35	28	29
23	36	68	119	304	93	56	69	158	37	34	27	29
24	36	64	106	229	87	56	118	140	36	34	35	40
25	36	62	108	200	82	56	98	138	37	33	31	104
26	35	57	345	173	77	60	91	119	35	33	28	83
27	36	64	299	130	79	72	87	102	34	47	27	47
28	44	98	606	117	77	64	84	95	34	43	27	38
29	41	713	648	112	72	62	82	89	33	35	32	35
30	38	546	371	115	---	62	77	82	34	33	36	33
31	37	---	274	123	---	62	---	75	---	32	30	---
TOTAL	1263	3057	6333	6071	3336	2035	2549	6067	1521	1063	952	1129
MEAN	40.7	102	204	196	115	65.6	85.0	196	50.7	34.3	30.7	37.6
MAX	63	713	648	1450	215	86	123	716	84	47	41	104
MIN	35	33	64	64	72	56	62	66	33	30	25	27
CFSM	.37	.93	1.86	1.78	1.05	.60	.77	1.78	.46	.31	.28	.34
IN.	.43	1.03	2.14	2.05	1.13	.69	.86	2.05	.51	.36	.32	.38

CAL YR 1987 TOTAL 68273 MEAN 187 MAX 2520 MIN 31 CFSM 1.70 IN. 23.09
WTR YR 1988 TOTAL 35376 MEAN 96.7 MAX 1450 MIN 25 CFSM .88 IN. 11.96

e Estimated.

02016000 COWPASTURE RIVER NEAR CLIFTON FORGE, VA

LOCATION.--Lat 37°47'30", long 79°45'35", Alleghany County, Hydrologic Unit 02080201, on left bank 100 ft downstream from bridge on State Highway 633, 2.5 mi upstream from confluence with Jackson River, and 4.0 mi southeast of Clifton Forge.
DRAINAGE AREA.--461 mi².
PERIOD OF RECORD.--March 1925 to current year. Records for May 1907 to August 1908, published in WSP 242, are unreliable and should not be used.
REVISED RECORDS.--WSP 952: 1925-41. WSP 2104: Drainage area. See also PERIOD OF RECORD.
GAGE.--Water-stage recorder. Datum of gage is 1,006.93 ft above National Geodetic Vertical Datum 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. 8-17, which is fair. Low flow affected by springs and by occasional regulation from unknown source. 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 Water Control Board.
AVERAGE DISCHARGE.--63 years, 527 ft³/s, 15.52 in/yr.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,900 ft³/s, Nov. 5, 1985, gage height, 19.15 ft, from rating curve extended above 13,000 ft³/s on basis of slope-area measurements at gage heights 15.70 ft and 19.15 ft; minimum, 38 ft³/s, Sept. 2, 1932; minimum daily, 40 ft³/s, Sept. 1, 1932; minimum gage height, 1.43 ft, Jan. 31, 1981, result of freezeup.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1913 reached a stage of 20.8 ft, from floodmarks, discharge, about 45,000 ft³/s, from rating curve extended above 13,000 ft³/s on basis of records for other stations in James River basin.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 5,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	2000	*6,620	*8.07	No other peak equal to or greater than base discharge.			

Minimum discharge, 65 ft³/s, Aug. 18-19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	157	100	1120	809	396	242	281	210	224	84	103	111
2	166	97	740	663	412	231	269	197	207	82	93	93
3	148	96	546	538	478	224	257	189	237	81	88	86
4	137	95	444	466	762	229	260	188	246	81	89	250
5	131	95	382	417	1010	246	275	225	229	78	86	292
6	128	91	326	301	838	251	285	1270	199	77	87	224
7	133	89	282	239	629	236	321	2300	180	76	97	156
8	131	89	251	e230	593	227	465	1440	169	76	91	121
9	124	89	230	e225	537	225	506	980	165	83	91	107
10	116	155	221	e220	479	229	463	777	169	84	84	102
11	113	269	235	e220	425	234	414	651	166	78	79	96
12	120	277	223	e225	398	229	377	542	152	140	76	90
13	116	213	210	e250	367	250	352	457	141	147	77	87
14	109	197	197	e230	308	258	319	402	134	120	74	85
15	106	184	247	e220	312	257	291	369	128	107	77	80
16	105	175	1070	e215	371	246	266	918	122	92	73	76
17	104	170	833	e210	379	235	244	713	120	85	69	77
18	102	204	600	264	342	226	238	845	123	227	67	80
19	101	349	479	522	328	223	242	1480	120	264	68	81
20	99	341	423	3680	336	222	248	1130	116	296	101	85
21	101	296	410	3300	363	216	223	842	111	693	101	83
22	99	255	370	1700	336	209	222	668	106	538	90	77
23	97	219	334	1170	312	200	224	654	102	403	92	75
24	94	198	311	900	322	191	241	589	98	295	103	99
25	95	183	300	749	301	188	262	484	96	187	94	191
26	94	173	362	676	277	229	263	445	94	163	89	263
27	98	168	1030	539	266	314	251	376	91	142	83	260
28	109	172	1100	455	266	339	241	328	88	166	80	176
29	111	594	2680	425	257	329	232	297	86	145	214	138
30	110	1870	1620	394	---	311	224	270	86	121	188	122
31	105	---	1050	390	---	294	---	246	---	109	133	---
TOTAL	3559	7503	18626	20842	12400	7540	8756	20482	4305	5320	2937	3863
MEAN	115	250	601	672	428	243	292	661	143	172	94.7	129
MAX	166	1870	2680	3680	1010	339	506	2300	246	693	214	292
MIN	94	89	197	210	257	188	222	188	86	76	67	75
CFSM	.25	.54	1.30	1.46	.93	.53	.63	1.43	.31	.37	.21	.28
IN.	.29	.61	1.50	1.68	1.00	.61	.71	1.65	.35	.43	.24	.31

CAL YR 1987 TOTAL 250145 MEAN 685 MAX 14300 MIN 71 CFSM 1.49 IN. 20.19
WTR YR 1988 TOTAL 116133 MEAN 317 MAX 3680 MIN 67 CFSM .69 IN. 9.37

e Estimated.

02016500 JAMES RIVER AT LICK RUN, VA

LOCATION.--Lat 37°46'25", long 79°47'05", Botetourt County, Hydrologic Unit 02080201, on right bank at community of Lick Run, 1,000 ft downstream from bridge on U.S. Highway 220, 0.9 mi downstream from confluence of Cowpasture and Jackson Rivers, 1.8 mi south of Iron Gate, and at mile 342.3.
DRAINAGE AREA.--1,373 mi².
PERIOD OF RECORD.--April 1925 to current year.
REVISED RECORDS.--WSP 852: 1936-37. WSP 972: 1927, 1930(M), 1932(M), 1935-36. WSP 1303: 1927-28(M). WSP 2104: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 978.30 ft above National Geodetic Vertical Datum 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. Flow regulated since December 1979 by Moomaw Lake (station 02011795) 43.7 mi upstream from station; since October 1984 by Back Creek Lake 71.7 mi upstream; and since January 1985 by Little Back Creek Lake 74.8 mi upstream, amount unknown. National Weather Service gage-height telemeter at station. 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 Water Control Board.
AVERAGE DISCHARGE.--63 years, 1,610 ft³/s, 15.92 in/yr, unadjusted.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 87,500 ft³/s, Nov. 5, 1985, gage height, 30.22 ft, from rating curve extended above 66,000 ft³/s; minimum, 133 ft³/s, Jan. 6, 1981, result of freezeup; minimum daily, 156 ft³/s, Oct. 12, 1930.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1877 reached a stage of about 33 ft, discharge, about 120,000 ft³/s. Flood in March 1913 reached a stage of 30.4 ft, from floodmarks, discharge, about 98,000 ft³/s.
EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,670 ft³/s, Jan. 21, gage height, 7.95 ft; minimum, 330 ft³/s, Oct. 22, gage height, 1.73 ft; minimum daily, 358 ft³/s, Nov. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	488	407	2070	1910	1130	748	789	828	696	432	493	457
2	470	385	1410	1700	1150	675	767	786	679	437	467	414
3	455	383	1100	1490	1170	627	742	713	817	433	454	399
4	440	384	944	1380	1630	635	751	690	807	432	461	696
5	432	374	844	1290	2840	669	884	864	738	432	454	769
6	433	365	752	1060	2570	672	808	2560	669	429	445	607
7	447	358	682	e820	1680	651	935	5820	631	426	452	510
8	439	359	628	e788	1590	636	1310	5310	604	424	439	453
9	427	361	600	e810	1580	706	1230	3740	608	434	437	427
10	421	527	586	769	1470	743	1170	2630	633	445	428	430
11	418	839	608	708	1250	744	1110	2240	613	435	422	414
12	448	767	588	681	1160	738	1070	1570	584	570	422	407
13	437	604	562	721	1100	792	1050	1310	562	565	422	402
14	424	566	545	671	892	808	956	1180	543	514	415	396
15	423	533	633	642	846	816	864	1120	530	478	411	383
16	419	509	1540	576	899	731	810	1630	516	451	405	379
17	415	515	1350	592	887	680	771	1530	511	438	394	388
18	416	683	1080	693	818	661	724	1770	516	576	392	393
19	415	879	926	1190	1000	659	734	2790	511	712	399	397
20	416	827	859	5810	988	654	738	2670	502	756	499	403
21	417	726	828	7130	996	715	696	2150	498	1200	485	401
22	389	649	772	7350	955	726	715	1810	478	1070	443	383
23	409	589	728	3560	882	702	852	1800	467	924	449	380
24	408	552	687	2790	882	624	1040	1640	459	821	502	449
25	413	522	694	1850	846	595	1110	1390	457	658	458	761
26	406	505	858	1900	805	682	1040	1160	455	600	439	834
27	421	502	2030	1450	786	852	1030	979	443	578	424	718
28	451	510	2120	1110	790	888	1120	894	438	617	429	572
29	438	1340	4530	1050	769	861	979	839	433	602	702	503
30	430	3450	3060	1010	---	832	884	783	435	545	604	471
31	423	---	2030	1030	---	808	---	732	---	526	519	---
TOTAL	13288	19970	36644	54531	34361	22330	27679	55928	16833	17960	14165	14596
MEAN	429	666	1182	1759	1185	720	923	1804	561	579	457	487
MAX	488	3450	4530	7350	2840	888	1310	5820	817	1200	702	834
MIN	389	358	545	576	769	595	696	690	433	424	392	379
(*)	-83	+94	+408	-3	0	+8	-8	-16	-175	-184	-202	-136
MEAN‡	346	760	1590	1756	1185	728	915	1788	386	395	255	351
CFSM‡	.25	.55	1.16	1.28	.86	.53	.67	1.30	.28	.29	.19	.26
IN.‡	.29	.62	1.34	1.47	.93	.61	.74	1.50	.31	.33	.21	.29

CAL YR 1987	TOTAL	757017	MEAN	2074	MAX	32500	MIN	358	MEAN‡	2082	CFSM‡	1.52	IN.‡	20.59
WTR YR 1988	TOTAL	328285	MEAN	897	MAX	7350	MIN	358	MEAN‡	872	CFSM‡	.64	IN.‡	8.65

* Change in contents, equivalent in cubic feet per second, in Moomaw Lake; provided by U.S. Army Corps of Engineers.
‡ Adjusted for change in contents.
e Estimated.

02017500 JOHNS CREEK AT NEW CASTLE, VA

LOCATION.--Lat 37°30'22", long 80°06'25", Craig County, Hydrologic Unit 02080201, on right bank 20 ft downstream from bridge on State Highway 615 at New Castle and 1,700 ft upstream from mouth.

DRAINAGE AREA.--104 mi².

PERIOD OF RECORD.--April 1926 to current year.

REVISED RECORDS.--WSP 972: 1935-36(M), 1940(M). WSP 1203: 1928, 1935. WSP 1303: 1927(M), 1928, 1929-34(M), 1935. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,254.30 ft above National Geodetic Vertical Datum of 1929. Prior to June 7, 1937, nonrecording gage at same site and datum.

REMARKS.--Records good except for period with ice effect, Jan. 5-12, 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.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--62 years, 127 ft³/s, 16.58 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,000 ft³/s, Jan. 23, 1935, from rating curve extended above 3,200 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 12.48 ft, June 21, 1972; minimum discharge, 6.0 ft³/s, Dec. 5, 1946, result of freezeup; minimum daily, 6.6 ft³/s, Oct. 1, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,100 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	1500	*760	*6.09		No peak equal to or greater than base discharge.		

Minimum discharge, 8.2 ft³/s, July 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	15	169	141	81	47	65	126	34	13	23	15
2	14	15	136	119	81	44	63	109	31	12	19	14
3	15	15	107	103	110	43	60	94	56	12	17	13
4	14	15	89	94	220	45	171	85	81	11	16	17
5	14	15	71	e76	282	50	200	91	69	11	16	19
6	15	14	58	e72	232	49	177	206	56	11	16	17
7	15	14	49	e70	202	46	193	242	46	11	16	15
8	15	14	43	e71	177	44	177	204	38	11	15	14
9	14	14	40	e70	157	42	161	182	37	11	14	14
10	14	58	39	e65	138	46	148	169	44	11	13	14
11	14	77	42	e58	121	45	136	150	37	11	16	14
12	16	43	40	e56	111	43	128	132	32	12	18	13
13	17	34	37	54	96	54	143	117	28	15	13	13
14	15	30	37	53	e80	60	131	107	25	13	12	13
15	15	26	42	44	84	61	123	117	23	12	12	12
16	15	24	49	e43	93	59	114	100	21	11	11	12
17	15	28	47	43	80	56	105	91	21	10	10	14
18	14	56	46	76	72	53	105	103	20	20	10	17
19	14	59	44	184	70	54	116	105	21	47	11	16
20	14	52	43	497	74	52	117	125	20	19	13	14
21	14	45	41	396	71	49	117	115	19	45	16	14
22	13	38	39	292	64	47	167	109	17	58	12	13
23	14	33	38	236	63	43	209	98	17	41	11	13
24	14	31	35	193	63	41	379	90	16	63	15	29
25	14	29	59	173	58	40	336	94	15	37	14	83
26	14	28	129	154	54	48	291	77	15	34	11	99
27	16	30	139	130	54	67	247	65	14	34	11	56
28	19	41	185	e120	52	74	208	56	13	84	11	34
29	17	274	235	e100	50	71	176	50	13	65	23	27
30	16	228	191	e90	---	69	147	44	13	43	19	20
31	16	---	161	84	---	68	---	39	---	32	18	---
TOTAL	461	1395	2480	3957	3090	1610	4910	3492	892	820	452	678
MEAN	14.9	46.5	80.0	128	107	51.9	164	113	29.7	26.5	14.6	22.6
MAX	19	274	235	497	282	74	379	242	81	84	23	99
MIN	13	14	35	43	50	40	60	39	13	10	10	12
CFSM	.14	.45	.77	1.23	1.02	.50	1.57	1.08	.29	.25	.14	.22
IN.	.16	.50	.89	1.42	1.11	.58	1.76	1.25	.32	.29	.16	.24

CAL YR 1987 TOTAL 62297.5 MEAN 171 MAX 3240 MIN 9.6 CFSM 1.64 IN. 22.28
WTR YR 1988 TOTAL 24237 MEAN 66.2 MAX 497 MIN 10 CFSM .64 IN. 8.67

e Estimated.

02018000 CRAIG CREEK AT PARR, VA

LOCATION.--Lat 37°39'57", long 79°54'42", Botetourt County, Hydrologic Unit 02080201, on right bank 12 ft upstream from Chesapeake and Ohio Railway bridge, 700 ft downstream from Stony Run, 0.2 mi northeast of Horton, 0.4 mi northwest of Parr, and 12 mi upstream from mouth.

DRAINAGE AREA.--329 mi².

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

REVISED RECORDS.--WSP 852: 1937. WSP 892: 1935-36. WSP 1303: 1929-30(M), 1932-35(M), 1937-38(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 992.50 ft above National Geodetic Vertical Datum 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. 6-13, 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.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--63 years, 385 ft³/s, 15.89 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 58,500 ft³/s, Nov. 4, 1985, gage height, 24.76 ft, from high-water mark in gage house, from rating curve extended above 11,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 20 ft³/s, probably occurred Dec. 21, 25, 1980, or Jan. 4, 1981, gage height, 3.20 ft, result of freezeup; minimum daily, 25 ft³/s, Sept. 4, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,200 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 21	0030	*1,840	*6.84	No peak equal to or greater than base discharge.			

Minimum discharge, 39 ft³/s, July 10-11, 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	60	615	437	228	155	152	321	121	45	75	83
2	54	60	443	373	223	151	151	284	111	44	65	67
3	52	59	340	316	244	144	150	254	121	43	56	57
4	51	58	278	280	373	144	183	234	160	42	52	67
5	51	58	234	251	738	148	409	239	168	42	51	82
6	52	57	198	e245	680	154	391	283	147	41	50	119
7	53	56	172	e240	536	143	394	654	127	41	48	89
8	53	56	154	e240	494	138	393	607	111	41	48	72
9	53	57	142	e250	422	134	356	511	104	41	47	63
10	53	77	137	e255	370	136	326	445	105	40	45	59
11	51	252	144	e250	327	136	301	395	112	42	46	55
12	53	221	146	e230	297	134	284	342	99	50	68	53
13	56	162	140	e215	273	139	301	299	89	48	64	51
14	57	136	134	195	224	148	323	269	81	53	56	48
15	57	121	140	165	241	149	308	259	74	50	48	46
16	55	108	158	140	250	147	290	279	70	46	44	45
17	54	105	178	142	245	143	270	257	66	42	43	45
18	53	154	184	156	223	140	256	366	67	42	44	47
19	53	251	179	334	217	137	265	400	67	43	43	48
20	53	219	175	1130	218	136	277	373	63	99	50	51
21	53	187	169	1380	219	135	281	353	63	82	55	48
22	52	160	156	856	205	130	311	321	57	120	55	46
23	51	140	145	651	192	125	539	287	55	158	52	44
24	51	125	137	535	191	121	746	254	53	100	54	52
25	52	115	138	458	183	118	894	248	52	118	52	134
26	53	105	193	426	173	125	702	232	51	97	53	252
27	56	103	303	339	166	140	591	200	49	99	48	218
28	61	116	366	297	164	155	502	177	48	103	46	157
29	63	649	641	283	161	157	431	163	46	135	86	121
30	68	1080	640	253	---	153	370	149	46	117	121	97
31	64	---	516	237	---	152	---	134	---	91	106	---
TOTAL	1692	5107	7695	11559	8477	4367	11147	9589	2583	2155	1771	2416
MEAN	54.6	170	248	373	292	141	372	309	86.1	69.5	57.1	80.5
MAX	68	1080	641	1380	738	157	894	654	168	158	121	252
MIN	51	56	134	140	161	118	150	134	46	40	43	44
CFSM	.17	.52	.75	1.13	.89	.43	1.13	.94	.26	.21	.17	.24
IN.	.19	.58	.87	1.31	.96	.49	1.26	1.08	.29	.24	.20	.27

CAL YR 1987 TOTAL 184237 MEAN 505 MAX 9720 MIN 39 CFSM 1.53 IN. 20.83
WTR YR 1988 TOTAL 68558 MEAN 187 MAX 1380 MIN 40 CFSM .57 IN. 7.75

e Estimated.

02018500 CATAWBA CREEK NEAR CATAWBA, VA

LOCATION.--Lat 37°28'05", long 80°00'20", Botetourt County, Hydrologic Unit 02080201, on right bank 80 ft upstream from bridge on State Highway 779, 1.0 mi downstream from Little Catawba Creek, 1.9 mi west of Haymakertown, and 8.2 mi northeast of Catawba.
DRAINAGE AREA.--34.3 mi².
PERIOD OF RECORD.--September 1943 to current year.
REVISED RECORDS.--WSP 1303: 1944-45(M). WSP 2104: Drainage area. WDR VA-72-1: 1954, 1955(P), 1957-58(P), 1959, 1960-62(P), 1963, 1964(M), 1965-67(P), 1968(M), 1969, 1970(M), 1971.
GAGE.--Water-stage recorder. Datum of gage is 1,299.96 ft above National Geodetic Vertical Datum 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. 6-13, 15, 16, 27, which are fair. At a point 5.3 mi upstream from station, there is transmountain diversion through a tunnel into Roanoke River basin for municipal water supply of city of Roanoke since December 1974. Prior to October 1976, monthly means adjusted for pumpage by Citadel Cement Corporation. 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 Water Control Board.
AVERAGE DISCHARGE.--45 years, 36.7 ft³/s, 14.53 in/yr, adjusted for pumpage from October 1952 to September 1976, and transmountain diversion since December 1974.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,200 ft³/s, Nov. 4, 1985, gage height, 19.19 ft, from high-water mark, from rating curve extended above 1,700 ft³/s on basis of slope-area measurements at gage heights 10.35 ft and 19.19 ft; minimum, 0.28 ft³/s, Aug. 21, 1987, gage height, 0.99 ft, cause unknown; minimum daily, 0.67 ft³/s, Aug. 14, 1981.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 13.26 ft, from information by observer.
EXTREMES FOR CURRENT YEAR.--Maximum discharge, 145 ft³/s, Nov. 29, gage height, 2.65 ft; minimum, 1.6 ft³/s, July 7, gage height, 1.28 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.6	6.1	26	21	22	14	11	22	11	4.9	5.4	9.2
2	8.3	6.1	23	19	21	14	11	20	11	4.6	6.1	9.2
3	8.1	6.0	19	18	27	14	11	18	17	4.5	6.9	8.5
4	7.6	5.9	17	17	68	15	25	18	15	4.5	7.8	14
5	7.8	5.5	14	12	75	15	30	19	12	3.1	7.7	12
6	8.4	4.8	13	e12	61	14	28	21	11	1.9	6.4	11
7	9.3	5.2	13	e11	54	13	31	21	10	1.9	5.2	12
8	7.9	5.5	13	e11	43	13	28	20	9.8	2.7	5.7	10
9	7.2	5.6	14	e10	38	13	25	20	12	4.9	5.5	9.5
10	7.3	22	15	e9.8	33	13	23	20	12	5.9	5.5	9.1
11	6.8	22	15	e9.4	29	12	21	19	9.8	5.2	5.6	7.0
12	12	16	14	e10	27	12	24	18	9.0	6.5	8.1	7.3
13	11	15	12	e11	25	12	34	16	8.5	6.8	6.8	6.4
14	8.4	13	13	10	21	12	31	16	8.2	5.6	5.2	5.5
15	7.4	11	16	e9.8	24	12	29	15	7.8	4.5	5.1	5.1
16	7.4	9.6	15	e9.0	27	11	26	16	7.6	3.7	4.9	5.0
17	7.0	14	14	13	23	11	24	18	9.9	3.5	3.9	6.2
18	6.5	20	13	21	21	11	24	45	9.9	3.8	3.3	7.6
19	6.4	18	13	26	23	11	25	43	8.7	12	4.9	7.0
20	6.1	16	15	64	23	11	23	38	8.4	9.7	8.3	7.0
21	5.8	14	14	40	21	10	21	32	8.3	21	7.0	5.3
22	5.9	12	14	26	20	10	47	28	7.4	11	5.4	4.9
23	6.1	12	14	21	21	10	66	25	6.6	7.0	5.1	5.3
24	6.2	10	13	18	20	10	92	22	6.3	10	7.4	11
25	6.2	9.6	14	32	18	9.3	67	22	6.4	9.4	6.3	9.2
26	6.1	9.0	14	43	17	12	53	18	6.1	12	5.0	11
27	7.9	16	15	e35	16	14	44	16	5.6	12	4.1	9.1
28	9.5	32	22	29	16	12	38	15	5.3	10	5.3	8.5
29	7.7	103	31	26	15	12	31	14	5.2	7.3	14	8.9
30	6.6	47	27	24	---	11	25	12	5.4	5.9	12	8.0
31	6.2	---	24	23	---	11	---	12	---	5.7	9.8	---
TOTAL	233.7	491.9	509	641.0	849	374.3	968	659	271.2	211.5	199.7	249.8
MEAN	7.54	16.4	16.4	20.7	29.3	12.1	32.3	21.3	9.04	6.82	6.44	8.33
MAX	12	103	31	64	75	15	92	45	17	21	14	14
MIN	5.8	4.8	12	9.0	15	9.3	11	12	5.2	1.9	3.3	4.9
(*)	0	0	10.2	14.4	0	0	0	0	0	0	0	0
MEAN‡	7.54	16.4	26.6	35.1	29.3	12.1	32.3	21.3	9.04	6.82	6.44	8.33
CFSM‡	.22	.48	.78	1.02	.85	.35	.94	.62	.26	.20	.19	.24
IN.‡	.25	.53	.89	1.18	.92	.41	1.05	.72	.29	.23	.22	.27

CAL YR 1987 TOTAL 23156.2 MEAN 63.4 MAX 2140 MIN 2.1 MEAN‡ 66.0 CFSM‡ 1.92 IN.‡ 26.13
WTR YR 1988 TOTAL 5658.1 MEAN 15.5 MAX 103 MIN 1.9 MEAN‡ 17.6 CFSM‡ .51 IN.‡ 6.99

* Average diversion, equivalent in cubic feet per second, provided by city of Roanoke.
‡ Adjusted for diversion.
e Estimated.

02019500 JAMES RIVER AT BUCHANAN, VA

LOCATION.--Lat 37°31'50", long 79°40'45", Botetourt County, Hydrologic Unit 02080201, on left bank 300 ft upstream from bridge on U.S. Highway 11 at Buchanan, 1,000 ft upstream from Purgatory Creek, 1.5 mi downstream from Looney Creek, and at mile 306.4.
DRAINAGE AREA.--2,075 mi².
PERIOD OF RECORD.--February 1898 to current year. Monthly discharge only for some periods, published in WSP 1303. Records for August 1895 to Feb. 11, 1898, published in WSP 11, 15, and 27 are in error and should not be used. Gage-height records collected at this site since 1893 are contained in reports of the National Weather Service.
REVISED RECORDS.--WSP 602: 1917-24. WSP 972: 1935-36. WSP 1303: 1898-1916, 1917-20(M), 1922(M), 1924(M). WSP 1383: 1927. WSP 2104: Drainage area. WDR VA-72-1: 1913(M). See also PERIOD OF RECORD.
GAGE.--Water-stage recorder. Datum of gage is 802.90 ft above National Geodetic Vertical Datum of 1929. Prior to July 1, 1927, nonrecording gage at same site and datum.
REMARKS.--Records good except for period with ice effect, Jan. 9-11, which is fair. Flow regulated since December 1979 by Moomaw Lake (station 02011795) 79.6 mi upstream; since October 1984 by Back Creek Lake 107.6 mi upstream, amount unknown; and since January 1985 by Little Back Creek Lake 110.7 mi upstream, amount unknown. National Weather Service gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.
AVERAGE DISCHARGE.--90 years, 2,474 ft³/s, 16.19 in/yr, unadjusted.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 179,000 ft³/s, Nov. 5, 1985, gage height, 38.84 ft, from floodmarks, from rating curve extended above 110,000 ft³/s; minimum, 202 ft³/s, Sept. 8, 1966, gage height, 1.44 ft; minimum daily, 207 ft³/s, Sept. 12, 1966.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1877 reached a stage of 34.9 ft, from floodmark, discharge, about 142,000 ft³/s, from rating curve extended above 110,000 ft³/s.
EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,500 ft³/s, Jan. 21, gage height, 10.27 ft; minimum, 527 ft³/s, Oct. 23, gage height, 2.14 ft; minimum daily, 541 ft³/s, Nov. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	844	641	4280	3050	1890	1140	1160	1680	1170	658	891	1010
2	763	611	2910	2850	1950	1090	1170	1560	1230	648	822	871
3	744	582	2230	2500	2010	1010	1130	1450	1530	652	783	784
4	706	579	1830	2270	2420	982	1220	1350	1560	645	790	886
5	685	582	1580	2100	4040	1020	1500	1420	1410	642	773	1770
6	680	552	1390	1760	4400	1020	1790	1990	1260	636	808	1330
7	694	543	1230	1400	3440	1010	1760	6290	1150	631	892	1140
8	697	541	1110	1290	2940	980	2140	6650	1060	628	771	949
9	678	547	1030	e1200	2810	972	2360	5450	1030	639	737	852
10	658	718	1010	e1150	2640	1070	2160	4080	1070	649	729	799
11	649	1390	1090	e1100	2380	1070	2040	3510	1040	663	709	769
12	675	1570	1090	1130	2080	1070	1940	2790	1010	751	727	725
13	702	1270	1030	1190	1910	1090	1910	2360	949	911	754	699
14	666	1090	977	1170	1650	1120	1870	2070	906	853	743	679
15	653	1010	1010	1070	1420	1140	1720	1900	870	791	725	653
16	646	949	1600	984	1520	1130	1590	2100	841	743	703	618
17	633	900	2250	937	1520	1020	1510	2510	815	700	681	623
18	620	1020	1850	1100	1420	990	1450	2820	809	678	663	648
19	616	1340	1580	1610	1410	977	1430	4150	819	1020	697	639
20	612	1520	1430	6040	1640	965	1440	4070	807	1100	836	643
21	608	1360	1360	11900	1570	960	1420	3600	807	1300	914	655
22	598	1220	1290	10100	1540	1030	1450	3080	773	2280	840	623
23	564	1110	1200	6890	1430	1000	1740	2670	742	1530	787	595
24	591	1020	1130	4500	1350	972	2200	2860	726	1540	877	631
25	596	965	1110	3550	1310	871	2870	2370	714	1210	877	930
26	599	906	1190	3220	1250	1140	2620	2140	713	1290	795	1470
27	616	887	2110	2840	1200	1220	2350	1770	697	1250	770	1480
28	671	942	2990	2260	1190	1280	2250	1570	674	1070	753	1210
29	681	2320	5090	2000	1180	1280	2120	1450	666	1090	1300	981
30	659	5680	5250	1920	---	1230	1870	1350	670	1040	1490	853
31	653	---	3650	1840	---	1190	---	1260	---	938	1200	---
TOTAL	17884	37185	71525	86828	57510	33287	53940	83824	23268	23472	19575	22435
MEAN	660	1145	1899	2804	1983	1066	1806	2720	951	941	833	884
MAX	844	5680	5250	11900	4400	1280	2870	6650	1560	2280	1490	1770
MIN	564	541	977	937	1180	871	1130	1260	666	628	663	595
(*)	-83	+94	+408	-3	.00	+8	-8	-16	-175	-184	-202	-136
MEAN‡	577	1240	2307	2801	1983	1074	1798	2704	776	757	631	748
CFSM‡	.28	.60	1.11	1.35	.96	.52	.87	1.30	.37	.36	.30	.36
IN.‡	.32	.67	1.28	1.56	1.03	.60	.97	1.50	.42	.42	.35	.40

CAL YR 1987	TOTAL 1290087	MEAN 3534	MAX 63800	MIN 541	MEAN‡ 3542	CFSM‡ 1.71	IN.‡ 23.18
WTR YR 1988	TOTAL 530565	MEAN 1475	MAX 11900	MIN 541	MEAN‡ 1450	CFSM‡ .70	IN.‡ 9.51

* Change in contents, equivalent in cubic feet per second, in Moomaw Lake; provided by U.S. Army Corps of Engineers.
‡ Adjusted for change in contents.
e Estimated.

02020500 CALFPASTURE RIVER ABOVE MILL CREEK, AT GOSHEN, VA

LOCATION.--Lat 37°59'16", long 79°29'38", 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 mi².

PERIOD OF RECORD.--October 1938 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 1,384.84 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for period of backwater from temporary dam, June 23 to Aug. 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.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--50 years, 165 ft³/s, 15.56 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 56,300 ft³/s, Nov. 4, 1985, gage height, 20.23 ft, from rating curve extended above 9,200 ft³/s on basis of slope-area measurements of gage heights 12.78 ft and 20.23 ft; no flow Sept. 5, 6, 1957, Sept. 28, 1959, result of diversion.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	1500	*1,870	*4.62	No peak equal to or greater than base discharge.			

Minimum daily discharge, 3.0 ft³/s, Aug. 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	24	412	336	113	60	67	41	49	7.5	8.0	6.8
2	43	23	254	247	115	57	66	40	44	6.6	8.9	5.5
3	39	22	169	185	141	55	64	38	51	6.6	8.0	4.9
4	34	22	131	156	193	56	68	39	49	6.2	8.7	12
5	31	21	107	e120	267	60	69	47	42	6.0	8.3	13
6	30	20	88	e95	262	57	69	323	36	5.6	12	10
7	31	20	77	89	218	54	93	983	32	3.7	9.4	9.7
8	29	19	72	e90	211	52	141	520	33	5.2	6.2	8.3
9	26	20	68	e94	175	52	172	315	33	9.4	4.9	7.3
10	25	31	67	92	142	54	162	234	33	12	4.5	7.0
11	23	48	72	88	125	52	142	184	28	11	4.4	6.3
12	24	52	69	91	115	53	126	147	24	19	4.3	5.8
13	23	53	65	e94	105	57	115	122	22	19	4.5	5.3
14	21	53	63	82	e92	56	100	105	19	15	4.3	4.9
15	21	51	172	74	e94	56	88	96	17	10	3.9	4.3
16	20	52	532	68	97	55	79	123	15	7.4	3.8	5.0
17	20	53	375	75	87	53	72	107	14	5.9	4.0	4.6
18	19	61	249	89	81	52	69	165	13	6.3	3.0	5.6
19	19	80	181	107	78	51	70	353	13	13	5.2	5.8
20	19	90	155	1220	84	50	64	372	12	18	8.6	5.5
21	20	84	133	1110	86	49	58	268	11	22	8.3	5.6
22	20	73	114	638	79	47	57	214	9.7	22	8.7	5.2
23	20	64	105	392	81	44	58	172	8.7	11	7.2	5.3
24	20	59	96	295	80	42	56	153	8.4	8.5	8.6	8.4
25	19	54	93	246	75	41	51	136	8.2	6.6	7.9	12
26	19	52	153	215	71	45	49	115	8.0	8.4	6.5	14
27	22	53	481	e170	68	52	46	95	7.5	9.8	5.0	20
28	29	56	685	e155	67	56	45	83	7.9	8.4	5.3	19
29	29	153	1230	e140	63	62	44	73	8.3	6.9	13	17
30	27	697	695	e125	---	66	43	64	8.1	7.6	12	15
31	25	---	452	116	---	68	---	57	---	8.7	9.2	---
TOTAL	795	2160	7615	7094	3465	1664	2403	5784	664.8	313.3	216.6	259.1
MEAN	25.6	72.0	246	229	119	53.7	80.1	187	22.2	10.1	6.99	8.64
MAX	48	697	1230	1220	267	68	172	983	51	22	13	20
MIN	19	19	63	68	63	41	43	38	7.5	3.7	3.0	4.3
CFSM	.18	.50	1.71	1.59	.83	.37	.56	1.30	.15	.07	.05	.06
IN.	.21	.56	1.97	1.83	.90	.43	.62	1.49	.17	.08	.06	.07

CAL YR 1987 TOTAL 88849.2 MEAN 243 MAX 4090 MIN 3.5 CFSM 1.69 IN. 22.95
WTR YR 1988 TOTAL 32433.8 MEAN 88.6 MAX 1230 MIN 3.0 CFSM .62 IN. 8.38

e Estimated.

02021500 MAURY RIVER AT ROCKBRIDGE BATHS, VA

LOCATION.--Lat 37°54'26", long 79°25'20", Rockbridge County, Hydrologic Unit 02080202, on right bank at Rockbridge Baths, 1,200 ft upstream from bridge on State Highway 39, and 1.0 mi upstream from Hays Creek.

DRAINAGE AREA.--329 mi².

PERIOD OF RECORD.--October 1928 to current year. Monthly discharge only for some periods, published in WSP 1303. Prior to October 1945, published as North River at Rockbridge Baths.

REVISED RECORDS.--WSP 972: 1929-40, 1941(M). WSP 1002: 1930(m). WSP 1553: 1931(m).

GAGE.--Water-stage recorder. Datum of gage is 1,100.33 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Records good except those for periods of no gage-height record, Oct. 1-14 and July 29 to Aug. 2, and period with ice effect, Jan. 7-14, which are fair. Since 1966, some regulation at times by Lake Merriweather on Little Calfpasture River. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--60 years, 376 ft³/s, 15.52 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 87,700 ft³/s, Nov. 5, 1985, gage height, 19.19 ft, from flood-mark, from rating curve extended above 16,000 ft³/s on basis of slope-area measurement at peak flow; minimum, 5.8 ft³/s, Sept. 10, 1966, gage height, 0.79 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	1500	*3,650	*5.86	No peak equal to or greater than base discharge.			

Minimum discharge, 13 ft³/s, July 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e85	48	749	636	277	143	179	95	128	19	e37	40
2	e80	59	512	501	278	136	177	90	101	19	e35	33
3	e76	106	376	403	343	134	168	87	132	17	33	29
4	e77	136	307	353	444	140	173	87	141	17	28	59
5	e88	86	252	291	583	160	171	109	115	16	29	114
6	e97	34	209	209	538	145	164	382	97	16	30	71
7	e99	33	181	e200	430	137	253	1250	86	15	36	51
8	e96	35	162	e180	440	130	315	782	76	18	32	42
9	e90	34	149	e195	368	129	342	540	75	38	27	37
10	e89	60	144	e175	322	138	323	427	82	31	25	36
11	e87	129	186	e165	284	130	291	340	73	26	24	34
12	e80	96	185	e153	270	127	266	272	63	86	31	32
13	e87	87	166	e144	228	148	250	225	57	63	26	30
14	e108	87	150	e135	189	150	219	198	52	46	23	29
15	116	88	270	132	223	142	200	187	48	37	23	27
16	126	96	813	135	253	137	182	269	45	30	21	26
17	126	102	628	130	223	132	167	222	43	26	20	28
18	87	127	461	221	204	128	164	540	41	25	19	28
19	60	142	369	358	202	130	163	1490	40	43	18	28
20	55	158	329	2400	221	126	134	1170	37	84	41	27
21	53	151	295	2070	219	123	123	806	35	146	42	26
22	44	135	252	1220	195	118	124	616	33	483	32	24
23	44	122	229	862	193	111	130	486	30	111	27	23
24	44	113	206	670	192	107	136	433	28	93	32	27
25	44	105	199	574	178	103	124	378	26	70	31	51
26	43	99	285	526	165	139	117	313	26	75	26	52
27	45	102	714	366	165	217	112	257	24	83	22	48
28	59	113	967	339	161	201	108	188	22	74	22	46
29	56	404	2040	302	152	189	103	174	21	e61	82	42
30	52	1110	1160	292	---	186	100	158	20	e43	83	37
31	50	---	799	280	---	183	---	142	---	e34	54	---
TOTAL	2343	4197	13744	14617	7940	4419	5478	12713	1797	1945	1011	1177
MEAN	75.6	140	443	472	274	143	183	410	59.9	62.7	32.6	39.2
MAX	126	1110	2040	2400	583	217	342	1490	141	483	83	114
MIN	43	33	144	130	152	103	100	87	20	15	18	23
CFSM	.23	.43	1.35	1.43	.83	.43	.56	1.25	.18	.19	.10	.12
IN.	.26	.47	1.55	1.65	.90	.50	.62	1.44	.20	.22	.11	.13

CAL YR 1987 TOTAL 181170 MEAN 496 MAX 11200 MIN 21 CFSM 1.51 IN. 20.48
WTR YR 1988 TOTAL 71381 MEAN 195 MAX 2400 MIN 15 CFSM .59 IN. 8.07

e Estimated.

02022500 KERRS CREEK NEAR LEXINGTON, VA

LOCATION.--Lat 37°49'32", long 79°26'36", Rockbridge County, Hydrologic Unit 02080202, on right bank 100 ft upstream from bridge on Interstate Highway 64, 1.4 mi upstream from mouth, and 2.9 mi north of Lexington.

DRAINAGE AREA.--35.0 mi².

PERIOD OF RECORD.--October 1926 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 1203: 1927-29, 1930-34(M), 1935-40, 1941(M), 1942, 1943-48(M), 1949. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 980.32 ft above National Geodetic Vertical Datum 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. 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 Water Control Board.

AVERAGE DISCHARGE.--62 years, 35.7 ft³/s, 13.85 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,000 ft³/s, Sept. 10, 1950, gage height, 13.8 ft, from flood-marks, site and datum then in use, from rating curve extended above 800 ft³/s on basis of contracted-opening and slope-area measurements of peak flow; minimum, 0.90 ft³/s, July 22, 1966 (result of temporary dam upstream); minimum daily, 4.0 ft³/s many days in August and September 1932, Nov. 21, 1938, July 22, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 600 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	0730	*334	*4.37	No peak equal to or greater than base discharge.			

Minimum discharge, 5.4 ft³/s, Aug. 18, 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	9.7	39	27	23	15	15	11	13	6.6	7.3	7.3
2	13	9.7	30	24	24	15	15	11	12	6.9	7.1	6.9
3	13	9.8	26	21	28	15	15	11	17	6.9	6.9	6.5
4	12	9.8	23	20	71	17	16	11	14	6.8	7.3	15
5	12	9.8	21	18	60	17	14	15	11	6.5	7.7	12
6	12	9.9	19	17	43	16	15	35	11	6.1	7.1	8.8
7	13	9.7	18	16	37	16	18	39	9.7	6.2	7.1	7.7
8	12	9.6	17	e17	32	16	16	30	9.1	7.0	6.7	7.1
9	11	9.6	17	e16	29	16	15	25	9.4	11	6.4	6.9
10	11	25	17	e15	26	16	15	23	9.6	7.9	6.2	7.1
11	11	20	20	e14	24	15	14	20	8.7	7.9	6.2	6.7
12	12	15	18	e14	24	15	15	18	8.5	15	6.1	6.4
13	12	14	17	14	21	16	15	16	8.5	9.8	6.1	6.4
14	e11	13	16	14	e19	14	14	15	8.5	8.8	6.0	6.2
15	e11	12	25	e13	20	14	13	18	8.4	8.1	6.0	6.0
16	10	12	27	e13	21	14	13	20	8.3	7.7	5.9	6.0
17	10	12	24	13	19	13	13	18	8.6	7.5	5.7	6.3
18	10	13	22	31	18	13	13	142	8.4	7.7	5.6	6.3
19	10	12	20	37	18	13	13	187	8.4	10	6.2	6.2
20	11	12	20	192	18	13	12	82	8.3	13	7.9	6.7
21	11	12	18	91	17	13	12	54	8.2	19	7.2	6.6
22	11	12	18	60	17	13	13	41	7.9	16	6.5	6.2
23	e10	12	17	47	17	12	13	33	7.4	11	6.6	6.1
24	e10	e11	16	39	16	12	13	31	7.4	9.8	8.6	9.7
25	e10	e11	17	37	16	12	12	28	7.2	8.9	6.8	15
26	e10	e11	18	35	16	16	12	22	7.1	11	6.4	10
27	12	13	19	30	16	19	12	19	6.8	9.5	6.1	8.1
28	12	14	41	26	16	17	12	18	6.9	9.0	7.2	7.5
29	11	107	52	25	15	16	12	16	6.9	8.2	20	7.2
30	10	62	37	24	---	16	11	15	7.0	7.7	10	7.0
31	10	---	30	23	---	16	---	14	---	7.6	8.2	---
TOTAL	347	512.6	719	983	721	461	411	1038	273.2	285.1	225.1	231.9
MEAN	11.2	17.1	23.2	31.7	24.9	14.9	13.7	33.5	9.11	9.20	7.26	7.73
MAX	13	107	52	192	71	19	18	187	17	19	20	15
MIN	10	9.6	16	13	15	12	11	11	6.8	6.1	5.6	6.0
CFSM	.32	.49	.66	.91	.71	.42	.39	.96	.26	.26	.21	.22
IN.	.37	.54	.76	1.04	.77	.49	.44	1.10	.29	.30	.24	.25

CAL YR 1987 TOTAL 21305.1 MEAN 58.4 MAX 1940 MIN 7.8 CFSM 1.67 IN. 22.64
WTR YR 1988 TOTAL 6207.9 MEAN 17.0 MAX 192 MIN 5.6 CFSM .48 IN. 6.60

e Estimated.

02024000 MAURY RIVER NEAR BUENA VISTA, VA

LOCATION.--Lat 37°45'45", long 79°23'30", Rockbridge County, Hydrologic Unit 02080202, on right bank 0.5 mi downstream from South River and 2.8 mi northwest of Buena Vista.

DRAINAGE AREA.--646 mi².

PERIOD OF RECORD.--October 1938 to current year. Monthly discharge only for some periods, published in WSP 1303. Prior to October 1945, published as North River near Buena Vista.

REVISED RECORDS.--WSP 952: 1940-41. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 846.58 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 7-15, which is fair. Since 1966, some regulation at times by Lake Merriweather on Little Calfpasture River. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--50 years, 659 ft³/s, 13.85 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 105,000 ft³/s, Aug. 20, 1969, gage height, 31.23 ft, from floodmarks, from rating curve extended above 17,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 20 ft³/s, Oct. 10, 1941, occurred during filling of a small reservoir 2 mi upstream; unqualified minimum, 37 ft³/s, Sept. 9, 1966; minimum gage height, 0.98 ft, Jan. 5, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 18, 1936, reached a stage of about 22 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 6,200 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	1930	*4,180	*6.37		No peak equal to or greater than base discharge.		

Minimum discharge, 58 ft³/s, July 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	245	135	1150	842	469	289	375	216	332	82	129	165
2	226	131	816	700	467	277	366	207	298	75	113	143
3	213	158	624	587	517	273	344	201	340	75	106	134
4	211	214	523	523	644	279	361	199	334	72	120	243
5	231	203	452	461	806	305	343	220	294	68	120	337
6	269	153	392	341	783	291	337	336	258	65	117	245
7	286	109	348	e340	644	273	472	1300	235	63	119	181
8	273	110	316	e335	674	262	590	1040	214	60	124	152
9	258	111	296	e337	601	260	665	744	208	84	109	130
10	242	189	290	e335	541	266	613	604	214	114	100	127
11	245	308	382	e325	493	260	549	514	203	89	97	124
12	213	249	393	e312	470	250	500	437	187	184	94	117
13	223	214	360	e300	418	267	471	377	172	188	111	114
14	229	205	329	e287	353	280	429	345	159	137	110	108
15	194	197	383	e275	420	268	389	325	150	113	100	104
16	227	197	878	274	463	259	359	362	144	100	104	96
17	219	204	859	263	429	253	335	389	140	89	96	91
18	210	235	675	413	393	245	324	970	137	86	94	101
19	165	258	562	577	383	245	332	2200	135	105	100	97
20	145	268	511	2480	400	242	296	1760	129	164	136	99
21	145	267	476	2760	399	236	272	1240	125	235	182	109
22	133	250	424	1680	369	233	271	962	118	633	154	99
23	127	233	389	1230	357	224	279	775	112	342	127	94
24	128	221	361	984	359	217	290	962	105	236	160	113
25	129	211	348	854	340	212	269	857	102	185	148	183
26	127	203	370	805	322	382	254	807	102	236	130	173
27	137	205	707	596	316	757	245	659	96	239	119	141
28	164	238	928	570	313	564	237	534	90	200	115	126
29	157	779	2090	524	301	467	230	455	85	169	266	119
30	144	1550	1450	503	---	423	224	403	85	143	300	113
31	138	---	1030	484	---	396	---	365	---	127	202	---
TOTAL	6053	8005	19112	21297	13444	9455	11021	20765	5303	4758	4102	4178
MEAN	195	267	617	687	464	305	367	670	177	153	132	139
MAX	286	1550	2090	2760	806	757	665	2200	340	633	300	337
MIN	127	109	290	263	301	212	224	199	85	60	94	91
CFSM	.30	.41	.95	1.06	.72	.47	.57	1.04	.27	.24	.20	.22
IN.	.35	.46	1.10	1.23	.77	.54	.63	1.20	.31	.27	.24	.24

CAL YR 1987 TOTAL 314973 MEAN 863 MAX 15400 MIN 79 CFSM 1.34 IN. 18.14
WTR YR 1988 TOTAL 127493 MEAN 348 MAX 2760 MIN 60 CFSM .54 IN. 7.34

e Estimated.

02025500 JAMES RIVER AT HOLCOMBS ROCK, VA

LOCATION.--Lat 37°30'04", long 79°15'46", Bedford County, Hydrologic Unit 02080203, on right bank at Holcombs Rock, 0.9 mi downstream from Pedlar River, and at mile 268.6.
DRAINAGE AREA.--3,259 mi².
PERIOD OF RECORD.--January 1900 to September 1915 (gage heights only), October 1926 to current year. Monthly discharge only for some periods, published in WSP 1303. Published as "at Salt Creek" December 1926 to June 1931.
REVISED RECORDS.--WSP 972: 1913(M), 1932-33, 1935(M), 1936. WSP 1303: 1928(M). WSP 2104: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 548.53 ft above National Geodetic Vertical Datum 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 good except for period with ice effect, Jan. 8-11, which is fair. Some diurnal fluctuation caused by powerplants upstream from station. Flow regulated since December 1979 by Moomaw Lake (station 02011795) 117.4 mi upstream; since October 1984 by Back Creek Lake 145.4 mi upstream; and since January 1985 by Little Back Creek Lake 148.5 mi upstream, amount unknown. National Weather Service gage-height telemeter at station. 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 Water Control Board.
AVERAGE DISCHARGE.--62 years, 3,585 ft³/s, 14.94 in/yr, unadjusted.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 207,000 ft³/s, Nov. 5, 1985, gage height, 42.15 ft, from high-water mark in gage house, from rating curve extended above 73,000 ft³/s on basis of records for other stations in James River basin; minimum, 20 ft³/s, Oct. 29, 1987, gage height, 2.80 ft; minimum daily, 223 ft³/s, July 28, 1930.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1913 reached a stage of 31.3 ft, from floodmarks, discharge, 118,000 ft³/s, from rating curve extended as explained above.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 25,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 21	0745	*17,400	*12.14	No peak equal to or greater than base discharge.			

Minimum discharge, 20 ft³/s, Oct. 29, gage height, 2.80 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1150	1020	6490	3920	2310	1710	1890	1980	1710	526	1040	1140
2	1210	1010	4280	3590	2380	1590	1840	1780	1560	829	910	1010
3	1150	986	3250	3110	2520	1570	1820	1750	1980	822	913	854
4	1120	941	2720	2840	2650	1570	1950	1710	2080	705	921	1010
5	1110	999	2360	2630	3820	1570	1970	1670	1840	757	938	1600
6	1100	991	2030	2310	4960	1600	2150	1870	1640	638	913	1700
7	1310	937	1950	1800	4250	1580	2370	4950	1570	966	991	1390
8	1140	926	1830	e1750	3530	1530	2610	7160	1550	767	949	1130
9	1070	920	1680	e1700	3310	1510	2900	6070	1210	756	858	981
10	1120	1260	1580	e1670	3070	1550	2790	4650	1460	776	832	1000
11	1120	1770	2230	e1650	2870	1590	2620	3730	1410	813	814	984
12	1140	1890	1890	1670	2640	1540	2470	3240	1380	922	826	801
13	1100	1790	1880	1750	2400	1570	2410	2600	1150	1070	784	801
14	1120	1500	1740	1650	2260	1600	2280	2350	1200	1080	805	847
15	1100	1410	1770	1600	2120	1580	2210	2150	1160	950	784	771
16	1040	1330	2210	1540	2220	1650	2070	2150	1050	903	825	835
17	1110	1320	3140	1490	2170	1560	1970	2890	1010	863	794	797
18	1150	1350	2790	1700	2110	1470	1840	6250	1040	747	786	829
19	1250	1500	2400	2170	2030	1460	1950	7540	1030	834	751	831
20	894	1770	2230	5200	2120	1450	1870	6860	961	1190	777	729
21	1080	1730	2110	15300	2150	1410	1810	5490	1070	1330	928	852
22	1010	1630	1990	11400	2070	1450	1790	4510	984	2180	962	866
23	690	1520	1900	9390	2040	1500	1910	3740	925	2090	873	774
24	912	1450	1690	5610	1960	1420	2280	3950	880	1610	887	719
25	852	1380	1760	4690	1900	1410	2600	3770	834	1540	947	944
26	906	1310	1790	3920	1850	1660	2780	3290	824	1300	888	1460
27	952	1300	2060	3600	1800	3140	2510	2770	872	1600	825	1460
28	1080	1390	3710	2920	1750	2450	2350	2430	852	1280	808	1260
29	738	4010	5410	2590	1730	2230	2310	2150	854	1200	1260	1170
30	1040	7190	7080	2450	---	2070	2080	2040	932	1170	1800	1010
31	984	---	4960	2320	---	1920	---	1850	---	1100	1460	---
TOTAL	32748	48530	84910	109930	72990	51910	66400	109340	37018	33314	28849	30555
MEAN	1056	1618	2739	3546	2517	1675	2213	3527	1234	1075	931	1018
MAX	1310	7190	7080	15300	4960	3140	2900	7540	2080	2180	1800	1700
MIN	690	920	1580	1490	1730	1410	1790	1670	824	526	751	719
(*)	-83	+94	+408	-3	0	+8	-8	-16	-175	-184	-202	-136
MEAN‡	973	1712	3147	3543	2517	1683	2205	3511	1059	891	729	882
CFSM‡	.30	.53	.97	1.09	.77	.52	.68	1.08	.32	.27	.22	.27
IN.‡	.34	.59	1.11	1.25	.83	.60	.76	1.24	.36	.32	.26	.30

CAL YR 1987 TOTAL 1743847 MEAN 4778 MAX 87400 MIN 513 MEAN‡ 4786 CFSM‡ 1.47 IN.‡ 19.94
WTR YR 1988 TOTAL 706494 MEAN 1930 MAX 15300 MIN 526 MEAN‡ 1905 CFSM‡ .58 IN.‡ 7.96

* Change in contents, equivalent in cubic feet per second, in Moomaw Lake; provided by U.S. Army Corps of Engineers.
‡ Adjusted for change in contents.
e Estimated.

02026000 JAMES RIVER AT BENT CREEK, VA

LOCATION.--Lat 37°32'10", long 78°49'30", Nelson County, Hydrologic Unit 02080203, on left bank at town of Bent Creek, 150 ft downstream from Bent Creek, 525 ft upstream from bridge on U.S. Highway 60, 1.3 mi southeast of Gladstone, and at mile 227.8.
DRAINAGE AREA.--3,683 mi².
PERIOD OF RECORD.--October 1924 to current year. Monthly discharge only for some periods, published in WSP 1303. Prior to 1926, published as "at Bent Creek, near Gladstone."
REVISED RECORDS.--WSP 742: 1931(m). WSP 972: 1935-36. WSP 1066: 1940. WSP 1203: 1942. WSP 2104: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 381.39 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 12, 1930, nonrecording gage at same site and datum.
REMARKS.--Records good except those for period of no gage-height record, Oct. 1 to Nov. 19, and period with ice effect, Jan. 8-15, which are fair. Large diurnal fluctuation caused by powerplants upstream from station. Flow regulated since December 1979 by Moomaw Lake (station 02011795) 158.3 mi upstream; since October 1984 by Back Creek Lake 186.3 mi upstream; and since January 1985 by Little Back Creek Lake 189.4 mi upstream, amount unknown. National Weather Service gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.
AVERAGE DISCHARGE.--64 years, 4,181 ft³/s, 15.42 in/yr, unadjusted.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 226,000 ft³/s, Nov. 5, 1985, gage height, 30.76 ft, from floodmarks, from rating curve extended above 177,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 222 ft³/s, Oct. 13, 14, 1930, gage height, 2.21 ft.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 26,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 21	1630	*18,800	*8.73	No peak equal to or greater than base discharge.			

Minimum daily discharge, 636 ft³/s, Aug. 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e1360	e980	8650	5470	3270	2170	2450	2470	2150	783	1170	1690
2	e1200	e1100	6470	4660	3130	2080	2080	2690	1990	697	1340	1040
3	e1130	e1130	4610	4190	3090	2060	2290	2090	2410	667	1000	1350
4	e1190	e1070	3910	4160	3600	1790	3090	2100	2390	665	1080	802
5	e1280	e1060	2830	3320	4400	1800	2920	2610	2470	889	935	1230
6	e1150	e1110	2570	3240	5840	2030	2700	2650	2280	918	665	2320
7	e1280	e1030	2760	2530	5610	2160	3560	2800	1900	887	799	2090
8	e1300	e960	2140	e2500	4650	1960	3060	8510	1790	933	1020	948
9	e1110	e1040	2250	e2350	4250	1940	3320	7560	1670	866	1030	1210
10	e1010	e1300	2230	e2400	4070	1900	3770	6300	1670	659	939	1130
11	e1090	e1700	4610	e2300	3890	1930	3510	5040	1850	847	664	1120
12	e1230	e2150	2730	e2320	3590	1810	3360	4710	1380	908	1010	1050
13	e1260	e2000	2710	e2300	2950	2000	3270	4130	1530	905	645	814
14	e1230	e1760	2600	e2400	3040	2110	2960	2380	1950	1200	636	684
15	e1200	e1650	2490	e2500	2740	2210	2890	2930	1610	1280	907	766
16	e1140	e1560	2830	1680	3130	2180	2600	2800	1340	916	650	850
17	e1150	e1550	3470	2120	2850	1760	2500	3190	1240	909	925	859
18	e1300	e1560	4190	2120	2760	2320	2620	5610	1530	844	776	718
19	e1340	e1690	3020	3220	2920	1410	2570	8710	1340	1000	895	1030
20	e1280	1890	3030	4880	2210	1590	2630	8740	1320	1220	733	835
21	e1140	1910	3060	14500	2980	2030	2410	7110	1270	1160	774	923
22	e1070	1840	2430	13200	2940	1830	2280	6430	1290	2040	916	692
23	e1020	2020	2770	11900	2560	1630	2150	5170	1270	4140	1160	780
24	e960	1740	1930	7560	2630	1920	2600	4690	1230	2830	711	904
25	e970	1670	2020	6590	2370	1750	3180	5080	950	1490	951	690
26	e1050	1440	2290	5640	2530	1850	3530	4960	1030	1660	999	896
27	e1160	1830	2320	4780	1790	3700	3440	3790	942	1480	979	1910
28	e1220	1910	4360	3950	2290	3520	3010	2570	1090	1790	658	1480
29	e1200	3730	4910	3660	2570	3090	2990	2850	937	1520	1390	1600
30	e1130	7670	8550	2930	---	2800	2560	2470	854	1200	2380	914
31	e1080	---	6910	3200	---	2700	---	2590	---	1100	2270	---
TOTAL	36230	54050	111650	138570	94650	66030	86300	135730	46673	38403	31007	33325
MEAN	1169	1802	3602	4470	3264	2130	2877	4378	1556	1239	1000	1111
MAX	1360	7670	8650	14500	5840	3700	3770	8740	2470	4140	2380	2320
MIN	960	960	1930	1680	1790	1410	2080	2090	854	659	636	684
(*)	-83	+94	+408	-3	0	+8	-8	-16	-175	-184	-202	-136
MEAN‡	1086	1896	4010	4467	3264	2138	2869	4362	1381	1055	798	975
CFSM‡	.29	.51	1.09	1.21	.89	.58	.78	1.18	.37	.29	.22	.26
IN.‡	.34	.57	1.26	1.40	.96	.67	.87	1.37	.42	.33	.25	.30

CAL YR 1987	TOTAL	2049441	MEAN	5615	MAX	107000	MIN	640	MEAN‡	5623	CFSM‡	1.53	IN.‡	20.73
WTR YR 1988	TOTAL	872618	MEAN	2384	MAX	14500	MIN	636	MEAN‡	2359	CFSM‡	.64	IN.‡	8.72

* Change in contents, equivalent in cubic feet per second, in Moomaw Lake; provided by U.S. Army Corps of Engineers.
‡ Adjusted for change in contents.
e Estimated.

02027000 TYE RIVER NEAR LOVINGSTON, VA

LOCATION.--Lat 37°42'55", long 78°58'55", Nelson County, Hydrologic Unit 02080203, on right bank at downstream side of bridge on State Highway 158, 3.5 mi downstream from Hat Creek, 4.8 mi upstream from Piney River, and 6.8 mi southwest of Lovingston.

DRAINAGE AREA.--92.8 mi².

PERIOD OF RECORD.--August 1938 to current year.

REVISED RECORDS.--WSP 892: 1938. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 578.39 ft above National Geodetic Vertical Datum of 1929. Sept. 15, 1969, to Oct. 15, 1970, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods of doubtful gage-height record, Dec. 12-15, 17-28, Dec. 30 to Jan. 6, Jan. 22 to Feb. 4, Feb. 6-15, 17-19, Feb. 21 to Mar. 10, Apr. 8-12, and June 7 to July 5, and period with with ice effect, Jan. 7-17, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--50 years, 154 ft³/s, 22.54 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 80,000 ft³/s, Aug. 20, 1969, gage height, 29.0 ft, from flood-marks, from rating curve extended above 7,600 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.50 ft³/s, Sept. 10, 11, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,600 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Mar. 26	2000	*965	*2.99	No peak equal to or greater than base discharge.			

Minimum discharge, 8.7 ft³/s, Aug. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	70	32	420	e115	e135	e95	187	96	132	e25	19	20
2	61	31	332	e105	e140	e90	171	94	121	e22	18	15
3	56	31	279	e98	e150	e84	156	93	154	e20	17	14
4	52	32	246	e92	e170	e84	178	95	122	e19	17	71
5	49	31	215	e86	190	e86	150	140	108	e17	40	82
6	47	30	192	e84	e165	e84	144	182	102	16	34	46
7	49	29	175	e80	e150	e86	181	273	e92	14	27	34
8	45	30	161	e75	e155	e88	e170	208	e80	13	21	27
9	42	30	151	e70	e140	e82	e150	178	e76	12	16	23
10	40	101	144	e68	e130	e80	e140	165	e82	11	15	25
11	38	110	212	e66	e120	78	e130	147	e72	11	14	23
12	42	62	e170	e70	e135	77	e130	133	e64	31	14	19
13	42	53	e155	e78	e125	80	161	122	e56	31	13	17
14	37	50	e145	e77	e115	76	143	115	e60	22	13	16
15	36	48	e170	e72	e135	74	131	113	e58	15	12	16
16	36	45	229	e64	166	70	122	107	e53	13	12	15
17	34	69	e180	e84	e135	69	119	105	e52	12	12	14
18	34	185	e160	134	e120	68	123	331	e54	11	10	16
19	33	141	e150	163	e118	69	127	301	e62	13	9.8	16
20	33	121	e145	261	148	67	117	269	e50	14	13	22
21	32	104	e140	330	e130	66	109	244	e46	26	19	31
22	31	92	e130	e260	e120	65	111	231	e40	51	15	20
23	31	84	e125	e230	e120	64	107	201	e37	34	12	16
24	32	78	e120	e210	e115	64	110	250	e45	37	13	24
25	32	73	e118	e215	e105	62	104	314	e38	24	15	58
26	32	68	e120	e190	e102	359	103	301	e35	70	12	41
27	37	86	e115	e170	e105	513	102	263	e33	64	9.5	28
28	47	114	e125	e155	e105	339	102	226	e31	40	9.0	24
29	38	467	168	e140	e100	274	102	194	e28	30	140	21
30	34	586	e135	e135	---	234	99	169	e33	24	54	19
31	33	---	e120	e145	---	206	---	148	---	20	31	---
TOTAL	1255	3013	5447	4122	3844	3833	3979	5808	2016	762	676.3	813
MEAN	40.5	100	176	133	133	124	133	187	67.2	24.6	21.8	27.1
MAX	70	586	420	330	190	513	187	331	154	70	140	82
MIN	31	29	115	64	100	62	99	93	28	11	9.0	14
CFSM	.44	1.08	1.89	1.43	1.43	1.33	1.43	2.02	.72	.26	.24	.29
IN.	.50	1.21	2.18	1.65	1.54	1.54	1.60	2.33	.81	.31	.27	.33

CAL YR 1987 TOTAL 65093.6 MEAN 178 MAX 2540 MIN 5.4 CFSM 1.92 IN. 26.09
WTR YR 1988 TOTAL 35568.3 MEAN 97.2 MAX 586 MIN 9.0 CFSM 1.05 IN. 14.26

e Estimated.

02027500 PINEY RIVER AT PINEY RIVER, VA

LOCATION.--Lat 37°42'08", long 79°01'40", Nelson County, Hydrologic Unit 02080203, on left bank at upstream side of bridge on State Highway 151, 0.2 mi southwest of Piney River post office, 1.7 mi downstream from Indian Creek, and 2.5 mi southeast of Lowesville.
DRAINAGE AREA.--47.6 mi².
PERIOD OF RECORD.--July 1949 to current year.
REVISED RECORDS.--WSP 2104: Drainage area. WDR VA-72-1: 1971(M).
GAGE.--Water-stage recorder. Datum of gage is 633.58 ft above National Geodetic Vertical Datum 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.
REMARKS.--Records good except those for periods of doubtful or no gage-height record, Nov. 20-26, Dec. 17-21, 27-29, Jan. 8, 9, 22-24, Feb. 7, 10, 11, 14, 19, Feb. 21 to Mar. 2, Apr. 9-12, June 28, 29, and July 1-7, and periods with ice effect, Jan. 7, 10-13, 16, 19, which are fair. Periodic dewatering of upstream quarries adds small amount of inflow. 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 Water Control Board.
AVERAGE DISCHARGE.--39 years, 93.7 ft³/s, 26.73 in/yr.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,000 ft³/s, Aug. 20, 1969, gage height, 13.8 ft, from floodmarks, from rating curve extended above 6,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 1.1 ft³/s, Sept. 13, 1966.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1949 reached a stage of 9.9 ft, from floodmarks.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 650 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1500	*541	*2.48	No peak equal to or greater than base discharge.			

Minimum discharge, 3.3 ft³/s, Aug. 27, 28, gage height, -0.09 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	22	280	72	73	e49	113	47	78	e16	8.1	16
2	39	22	215	67	73	e48	104	46	71	e15	7.8	13
3	37	22	178	66	81	47	94	45	83	e14	7.2	11
4	35	22	152	67	84	47	104	47	68	e12	25	64
5	33	22	126	63	84	47	90	63	62	e10	20	92
6	32	21	108	54	83	44	88	61	56	e9.8	22	69
7	32	22	94	e50	e78	43	97	63	51	e9.0	19	36
8	29	21	83	e45	86	42	90	62	47	12	12	30
9	28	21	75	e43	82	43	e84	64	46	14	9.8	27
10	27	54	99	e40	e75	42	e80	66	46	13	8.9	26
11	27	45	118	e38	e70	41	e76	65	42	12	8.2	22
12	29	32	101	e42	75	40	e72	62	38	18	9.2	20
13	27	29	95	e45	65	41	84	58	36	18	8.5	18
14	26	29	99	46	e60	39	78	57	34	15	7.2	17
15	25	28	122	42	71	38	74	55	33	13	6.5	16
16	24	28	114	e40	84	37	70	55	31	11	7.0	15
17	23	43	e100	44	69	37	68	52	31	10	6.5	15
18	23	78	e90	66	65	36	68	110	31	9.5	5.4	16
19	22	72	e85	e54	e61	36	70	92	31	10	5.8	14
20	22	e68	e82	148	70	35	64	100	29	11	8.5	20
21	22	e60	e80	158	e64	35	60	101	27	14	8.8	28
22	22	e54	78	e145	e60	34	61	108	25	29	7.0	17
23	23	e49	72	e130	e61	34	59	102	24	24	6.0	16
24	23	e46	69	e120	e58	34	61	130	23	24	8.4	23
25	22	e43	67	124	e54	33	55	132	23	16	7.8	43
26	22	e41	70	114	e52	146	54	128	22	28	5.6	35
27	26	53	e66	99	e57	216	53	125	20	22	5.1	31
28	30	72	e70	91	e54	188	52	116	e18	14	4.5	29
29	25	390	e80	84	e51	162	50	106	e17	11	81	27
30	24	396	74	79	---	142	49	96	19	9.6	33	26
31	23	---	74	76	---	125	---	86	---	9.0	21	---
TOTAL	844	1905	3216	2352	2000	1981	2222	2500	1162	452.9	400.8	832
MEAN	27.2	63.5	104	75.9	69.0	63.9	74.1	80.6	38.7	14.6	12.9	27.7
MAX	42	396	280	158	86	216	113	132	83	29	81	92
MIN	22	21	66	38	51	33	49	45	17	9.0	4.5	11
CFSM	.57	1.33	2.18	1.59	1.45	1.34	1.56	1.69	.81	.31	.27	.58
IN.	.66	1.49	2.51	1.84	1.56	1.55	1.74	1.95	.91	.35	.31	.65

CAL YR 1987 TOTAL 38264.2 MEAN 105 MAX 1650 MIN 3.0 CFSM 2.20 IN. 29.90
WTR YR 1988 TOTAL 19867.7 MEAN 54.3 MAX 396 MIN 4.5 CFSM 1.14 IN. 15.53

e Estimated.

02027800 BUFFALO RIVER NEAR TYE RIVER, VA

LOCATION.--Lat 37°36'20", long 78°55'25", Nelson County, Hydrologic Unit 02080203, on right bank 35 ft upstream from bridge on State Highway 657, 2.1 mi upstream from mouth, and 3.5 mi southeast of town of Tye River.

DRAINAGE AREA.--147 mi².

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

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 444.39 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for periods of doubtful gage-height record, Oct. 1-5, 10-12, 14-27, Oct. 29 to Nov. 9, Feb. 29 to Mar. 3, and July 3-9, 16-18, and periods with ice effect, Jan. 6-20, 28, 29, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--28 years, 169 ft³/s, 15.61 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,000 ft³/s, Aug. 20, 1969, gage height, 27.95 ft, from flood-mark, from rating curve extended above 1,800 ft³/s on basis of computation of flow over dam at gage height 11.03 ft and slope-area measurement at gage height 27.95 ft; minimum, 3.2 ft³/s, Sept. 8-13, 1966; minimum gage height, 0.28 ft, Sept. 9-13, 1964.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 7	---	---	*a5.19	May 18	1215	*737	3.83

a Ice jam.

Minimum daily discharge, 21 ft³/s, Aug. 19, 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e125	e68	203	157	137	e97	123	94	97	44	36	42
2	e120	e67	180	146	132	e90	122	93	93	39	34	34
3	e115	e66	168	143	153	e88	117	91	134	e35	32	30
4	e108	e66	144	141	154	100	136	93	120	e34	39	34
5	e102	e65	126	133	153	103	135	177	103	e33	46	74
6	96	e63	117	e125	145	97	123	149	95	e30	37	59
7	98	e62	112	e110	147	96	146	133	88	e28	40	45
8	94	e63	108	e100	167	93	139	114	82	e27	42	39
9	79	e64	105	e92	138	94	130	106	81	e26	33	36
10	e78	183	116	e90	134	100	126	109	89	45	29	40
11	e75	197	408	e88	131	93	123	114	79	47	27	41
12	e84	125	205	e92	136	90	121	102	74	41	26	34
13	97	110	178	e120	126	91	131	96	69	50	25	32
14	e82	103	157	e118	145	88	119	94	66	54	24	30
15	e77	100	200	e108	128	87	115	103	63	45	24	29
16	e74	96	229	e96	150	86	107	98	61	e33	24	27
17	e70	93	202	e110	137	86	104	134	64	e28	24	27
18	e70	119	170	e170	130	85	105	410	77	e25	22	32
19	e68	109	170	e230	128	88	119	249	72	65	21	33
20	e67	104	163	e400	131	85	126	182	69	82	23	31
21	e66	100	154	275	126	84	110	180	59	46	30	31
22	e65	95	141	200	120	84	110	161	55	66	27	37
23	e64	95	137	173	121	83	112	141	50	166	24	32
24	e64	95	148	161	120	83	113	145	50	120	24	38
25	e65	94	139	163	117	83	106	156	47	66	26	51
26	e68	93	143	175	115	137	103	142	46	49	24	56
27	e80	105	146	165	116	192	104	128	43	82	22	47
28	105	120	161	e155	115	161	103	121	40	75	21	41
29	e80	279	191	e145	e102	141	99	116	40	58	94	38
30	e75	325	174	142	---	131	97	110	44	46	94	37
31	e68	---	160	140	---	127	---	102	---	40	62	---
TOTAL	2579	3324	5155	4663	3854	3143	3524	4243	2150	1625	1056	1157
MEAN	83.2	111	166	150	133	101	117	137	71.7	52.4	34.1	38.6
MAX	125	325	408	400	167	192	146	410	134	166	94	74
MIN	64	62	105	88	102	83	97	91	40	25	21	27
CFSM	.57	.75	1.13	1.02	.90	.69	.80	.93	.49	.36	.23	.26
IN.	.65	.84	1.30	1.18	.98	.80	.89	1.07	.54	.41	.27	.29

CAL YR 1987 TOTAL 76290.5 MEAN 209 MAX 3420 MIN 9.5 CFSM 1.42 IN. 19.31
WTR YR 1988 TOTAL 36473 MEAN 99.7 MAX 410 MIN 21 CFSM .68 IN. 9.23

e Estimated.

02028500 ROCKFISH RIVER NEAR GREENFIELD, VA

LOCATION.--Lat 37°52'10", long 78°49'25", Nelson County, Hydrologic Unit 02080203, on left bank 50 ft downstream from bridge on State Highway 634, 2.8 mi downstream from confluence of North and South Forks, and 4.1 mi south of Greenfield.
DRAINAGE AREA.--94.6 mi².
PERIOD OF RECORD.--April 1943 to current year.
REVISED RECORDS.--WSP 2104: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 530.29 ft above National Geodetic Vertical Datum 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. 7-16, 18, and period of no gage-height record, Mar. 26 to Apr. 25, which are fair. Several measurements of water temperature were made during the year.
COOPERATION.--Records were provided by the Virginia Water Control Board.
AVERAGE DISCHARGE.--45 years, 140 ft³/s, 20.10 in/yr.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 70,000 ft³/s, Aug. 20, 1969, gage height, 31.2 ft, from floodmarks, from rating curve extended above 8,500 ft³/s on basis of contracted-opening measurement at gage height 18.11 ft, slope-area measurements at gage heights 17.2 ft, 23.4 ft, and 31.2 ft, and peak runoff comparison with nearby stations; minimum, 0.20 ft³/s, Sept. 8-12, 1966.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 15, 1942, reached a stage of 23.4 ft, from floodmarks, discharge, about 30,000 ft³/s.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1400	*1,700	*5.53	No other peak equal to or greater than base discharge.			

Minimum discharge, 4.8 ft³/s, Aug. 19, gage height, 0.29 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	46	352	115	129	91	e140	72	88	23	22	18
2	79	46	250	109	129	88	e135	70	83	20	18	14
3	77	46	199	102	137	86	e130	67	112	20	15	12
4	72	46	174	102	139	88	e145	70	88	18	25	57
5	69	46	142	94	133	89	e120	128	77	17	20	52
6	66	44	128	89	125	83	e100	226	69	16	21	33
7	66	42	120	e88	118	86	e125	268	62	15	26	26
8	61	42	112	e84	121	86	e120	204	57	12	15	22
9	58	45	105	e80	118	78	e110	170	58	12	12	19
10	57	122	107	e74	117	77	e100	146	60	13	11	23
11	56	96	218	e70	113	75	e92	128	54	12	9.5	21
12	59	74	154	e83	121	73	e90	115	51	46	8.6	17
13	57	71	135	e90	104	73	e100	105	48	36	8.2	16
14	54	70	125	e84	99	72	e98	96	53	25	7.7	14
15	52	67	183	e78	110	70	e88	91	49	18	7.7	14
16	52	66	183	e74	140	67	e84	86	48	14	9.0	13
17	51	72	162	88	120	64	e82	119	45	12	7.2	13
18	51	102	148	e115	113	64	e82	584	45	12	5.4	15
19	50	88	140	131	113	64	e90	477	85	37	4.8	14
20	50	82	139	421	120	64	e98	338	49	43	12	14
21	49	75	129	324	110	64	e91	268	45	69	16	15
22	46	69	120	255	104	64	e95	224	40	70	9.5	12
23	46	67	115	216	105	63	e90	179	38	47	7.7	11
24	46	65	107	188	102	63	e96	181	42	42	8.6	22
25	46	63	105	197	96	63	e91	202	36	35	8.6	36
26	45	61	110	174	94	e350	88	170	34	32	7.2	26
27	55	82	109	146	96	e500	85	150	31	40	5.4	19
28	65	120	125	135	94	e350	81	135	27	57	5.0	16
29	51	897	137	129	93	e250	78	120	25	37	95	14
30	49	557	120	129	---	e180	75	109	32	28	42	12
31	47	---	115	131	---	e155	---	97	---	24	28	---
TOTAL	1767	3369	4568	4195	3313	3640	2999	5395	1631	902	498.1	610
MEAN	57.0	112	147	135	114	117	100	174	54.4	29.1	16.1	20.3
MAX	85	897	352	421	140	500	145	584	112	70	95	57
MIN	45	42	105	70	93	63	75	67	25	12	4.8	11
CFSM	.60	1.19	1.56	1.43	1.21	1.24	1.06	1.84	.57	.31	.17	.21
IN.	.69	1.32	1.80	1.65	1.30	1.43	1.18	2.12	.64	.35	.20	.24

CAL YR 1987 TOTAL 64048.7 MEAN 175 MAX 2610 MIN 5.1 CFSM 1.85 IN. 25.19
WTR YR 1988 TOTAL 32887.1 MEAN 89.9 MAX 897 MIN 4.8 CFSM .95 IN. 12.93

e Estimated.

02029000 JAMES RIVER AT SCOTTSVILLE, VA

LOCATION.--Lat 37°47'50", long 78°29'30", Albemarle County, Hydrologic Unit 02080203, on left bank 900 ft downstream from bridge on State Highway 20 at Scottsville, 6.8 mi upstream from Hardware River, and at mile 188.6.
DRAINAGE AREA.--4,584 mi².
PERIOD OF RECORD.--October 1924 to current year. Monthly discharge only for some periods, published in WSP 1303.
REVISED RECORDS.--WSP 727: 1931(m). WSP 972: 1936(M), 1940(M). WSP 2104: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 253.18 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 28, 1928, nonrecording gage at same site and datum.
REMARKS.--Records good except for period with ice effect, Jan. 9-15, which is fair. Large diurnal fluctuation caused by powerplants upstream from station. Flow regulated since December 1979 by Moomaw Lake (station 02011795) 197.5 mi upstream; since October 1984 by Back Creek Lake 225.5 mi upstream; and since January 1985 by Little Back Creek Lake 228.6 mi upstream, amount unknown. National Weather Service gage-height telemeter at station.
AVERAGE DISCHARGE.--64 years, 5,155 ft³/s, 15.27 in/yr, unadjusted.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 301,000 ft³/s, June 22, 1972, gage height, 34.02 ft, from floodmarks, from rating curve extended above 120,000 ft³/s on basis of slope-conveyance study; minimum daily, 300 ft³/s, Sept. 13, 1966.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1870 reached a stage of 30.7 ft, discharge, about 215,000 ft³/s, and flood in November 1877 reached a stage of 27.9 ft, discharge, about 160,000 ft³/s, from information by local resident. Flood in March 1913 reached a stage of 25.16 ft, from floodmarks, discharge, 121,000 ft³/s.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 35,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 21	2400	*20,200	*10.68	No peak equal to or greater than base discharge.			

Minimum discharge, 692 ft³/s, July 11, 12; minimum daily, 728 ft³/s, July 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2150	1070	11700	6560	3920	3120	3410	2990	3220	956	1340	2030
2	1430	952	9140	6000	4230	2370	3020	2900	2750	893	1620	1570
3	1840	1470	6620	4940	3940	2520	3110	3090	2940	792	1330	1180
4	1370	1360	5240	4720	4530	2580	3180	2550	3640	755	1220	1520
5	1430	1170	4240	4180	4940	2200	4190	3230	2900	745	1260	1120
6	1830	1530	3440	3930	5890	2130	3430	4230	2950	963	1180	1750
7	1360	965	3210	3420	6880	2410	4190	4360	2870	985	957	2940
8	1480	976	3170	2470	5670	2550	3920	6850	2530	951	1090	1720
9	1950	907	2760	e2550	5430	2360	4210	9360	2110	1000	1270	1170
10	1290	2070	2850	e2700	4830	2400	4480	8140	2060	945	1230	1430
11	1040	3500	5520	e2600	4420	2270	4280	6630	2330	728	1120	1310
12	1430	2740	6510	e2520	4690	2360	4220	5580	2040	913	856	1300
13	2010	3220	3670	e2580	4100	2120	4330	5380	1620	1010	1140	1210
14	1480	2290	3170	e2650	3280	2230	3960	3860	2090	1120	778	953
15	1240	2100	3550	e2780	3660	2500	3380	3120	2310	1440	739	785
16	1380	2100	4350	2680	3850	2560	3660	3680	1670	1350	1020	871
17	1480	2380	3850	2110	3820	2290	3010	3480	1580	1010	782	962
18	1200	1710	5030	2910	3440	2090	3100	8440	1620	980	1030	979
19	1510	2540	4790	3850	3550	2650	3600	11600	1810	1040	863	852
20	1390	1810	3510	6460	3300	1460	3660	11200	1720	1280	1020	1200
21	1570	2120	3750	12300	2880	1990	3120	9820	1680	1470	842	1020
22	1150	2360	3640	17300	3500	2370	2870	8570	1570	1720	861	1140
23	1240	2060	3200	14000	3280	2060	2860	7080	1530	3210	1040	832
24	1170	2170	3140	10900	3150	1860	3060	6340	1550	5030	1300	936
25	1000	1980	2480	7890	3140	2250	3250	6480	1430	2300	850	1080
26	998	1910	2820	7570	2910	2380	3900	6870	1160	1900	1020	925
27	1140	1780	3100	6170	2880	5400	4400	5780	1230	2040	1080	1270
28	1630	2600	3660	5170	2400	5790	3970	4190	1070	2210	1030	2280
29	1390	5880	5710	4760	2590	4320	3220	4130	1260	2310	968	1710
30	1520	11900	7360	4230	---	4090	3530	3490	1070	1460	2700	1470
31	1200	---	9000	3590	---	3620	---	3160	---	1430	2920	---
TOTAL	44298	71620	144180	166490	115100	83300	108520	176580	60310	44936	36456	39515
MEAN	1429	2387	4651	5371	3969	2687	3617	5696	2010	1450	1176	1317
MAX	2150	11900	11700	17300	6880	5790	4480	11600	3640	5030	2920	2940
MIN	998	907	2480	2110	2400	1460	2860	2550	1070	728	739	785
(*)	-83	+94	+408	-3	0	+8	-8	-16	-175	-184	-202	-136
MEAN‡	1346	2481	5059	5368	3969	2695	3609	5680	1835	1266	974	1181
CFSM‡	.29	.54	1.10	1.17	.87	.59	.79	1.24	.40	.28	.21	.26
IN.‡	.34	.60	1.27	1.35	.93	.68	.88	1.43	.45	.32	.24	.29

CAL YR 1987	TOTAL	2519910	MEAN	6904	MAX	124000	MIN	623	MEAN‡	6912	CFSM‡	1.51	IN.‡	20.47
WTR YR 1988	TOTAL	1091305	MEAN	2982	MAX	17300	MIN	728	MEAN‡	2957	CFSM‡	.64	IN.‡	8.78

* Change in contents, equivalent in cubic feet per second, in Moomaw Lake; provided by U.S. Army Corps of Engineers.
‡ Adjusted for change in contents.
e Estimated.

02030000 HARDWARE RIVER BELOW BRIERY RUN, NEAR SCOTTSVILLE, VA

LOCATION.--Lat 37°48'45", long 78°27'20", Fluvanna County, Hydrologic Unit 02080203, on left bank 75 ft upstream from bridge on State Highway 637, 0.8 mi downstream from Briery Run, 2.4 mi northeast of Scottsville, and 10.8 mi upstream from mouth.

DRAINAGE AREA.--116 mi².

PERIOD OF RECORD.--October 1938 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 952: 1941(M). WSP 1002: 1940, 1943. WSP 1032: 1940, 1944.

GAGE.--Water-stage recorder. Datum of gage is 294.96 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for periods of no gage-height record, Nov. 29, 30, and Dec. 11, and period with ice effect, Jan. 7-19, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--50 years, 128 ft³/s, 14.98 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 52,000 ft³/s, Aug. 20, 1969, gage height, 31.0 ft, from flood-marks, from rating curve extended above 18,000 ft³/s on basis of slope-area measurements at gage heights 23.8 ft and 31.0 ft; minimum, 0.10 ft³/s, Sept. 5-8, 1966; minimum gage height, 0.81 ft, Sept. 8, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	Unknown	*a1,500	Unknown	No other peak equal to or greater than base discharge.			

a Daily mean discharge; actual peak is known to be greater than value shown.

Minimum discharge, 10 ft³/s, Aug. 27-28, gage height, 1.35 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	106	78	315	118	149	97	136	73	85	35	33	22
2	99	79	221	111	145	95	127	72	83	33	29	19
3	99	77	173	104	227	97	121	71	128	32	25	17
4	100	77	154	108	203	101	138	75	102	31	25	25
5	96	77	132	102	181	102	120	266	86	29	24	44
6	94	73	118	84	153	95	114	344	79	28	23	27
7	98	71	112	e83	132	94	141	266	71	26	23	21
8	91	73	105	e82	135	91	139	164	68	25	22	19
9	87	73	103	e80	129	93	122	130	67	25	20	19
10	88	143	124	e78	124	99	109	120	73	46	19	22
11	86	225	e280	e74	119	90	103	110	66	32	18	21
12	91	126	220	e80	155	87	101	97	61	35	16	19
13	91	125	158	e100	134	88	111	90	59	40	16	17
14	86	117	135	e98	116	86	99	85	56	33	15	16
15	87	96	214	e92	122	84	94	83	54	28	13	16
16	84	86	233	e78	165	82	88	83	53	25	12	16
17	84	82	168	e82	139	81	87	88	51	22	11	16
18	82	102	143	e130	130	81	88	386	52	21	11	18
19	82	89	133	e160	127	83	102	260	67	24	11	19
20	81	83	129	755	145	81	106	196	60	34	14	19
21	79	76	124	392	129	81	91	157	52	42	22	23
22	76	71	113	246	114	81	89	283	48	109	17	19
23	77	70	110	196	114	79	90	166	48	83	14	16
24	78	70	103	167	114	80	93	151	55	64	14	17
25	78	69	104	177	107	80	83	332	47	41	15	28
26	77	68	112	204	104	334	80	244	51	35	11	28
27	87	113	119	150	105	833	80	160	54	38	10	22
28	116	155	134	146	102	277	79	131	43	54	10	19
29	88	e1500	166	138	99	196	76	113	40	40	59	18
30	82	e600	132	135	---	167	75	101	40	31	72	18
31	80	---	120	153	---	148	---	92	---	30	30	---
TOTAL	2730	4744	4707	4703	3918	4163	3082	4989	1899	1171	654	620
MEAN	88.1	158	152	152	135	134	103	161	63.3	37.8	21.1	20.7
MAX	116	1500	315	755	227	833	141	386	128	109	72	44
MIN	76	68	103	74	99	79	75	71	40	21	10	16
CFSM	.76	1.36	1.31	1.31	1.16	1.16	.89	1.39	.55	.33	.18	.18
IN.	.88	1.52	1.51	1.51	1.26	1.34	.99	1.60	.61	.38	.21	.20

CAL YR 1987 TOTAL 59852.2 MEAN 164 MAX 3000 MIN 9.4 CFSM 1.41 IN. 19.19
WTR YR 1988 TOTAL 37380 MEAN 102 MAX 1500 MIN 10 CFSM .88 IN. 11.99

e Estimated.

02030500 SLATE RIVER NEAR ARVONIA, VA

LOCATION.--Lat 37°42'10", long 78°22'40", Buckingham County, Hydrologic Unit 02080203, on left bank 250 ft upstream from bridge on State Highway 676, 1.8 mi northwest of Arvonia, 2.9 mi upstream from Hunts Creek, and 3.8 mi upstream from mouth.

DRAINAGE AREA.--226 mi².

PERIOD OF RECORD.--April 1926 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 972: 1928-29, 1932, 1933-34(M), 1935. WSP 2104: 1928(M), 1935-37(M), 1940(M), 1944(M), 1949(M), 1955(M), drainage area. WDR VA-72-1: 1935, 1937, 1944, 1949, 1971(M).

GAGE.--Water-stage recorder. Datum of gage is 238.78 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Feb. 15, 1936, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 7-16, 26, 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.

AVERAGE DISCHARGE.--62 years, 227 ft³/s, 13.64 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,200 ft³/s, June 22, 1972, gage height, 25.10 ft, from high-water mark in gage house, from rating curve extended above 5,900 ft³/s on basis of slope-area measurement of peak flow; minimum, 2.0 ft³/s, Sept. 28 to Oct. 2, 1930; minimum gage height, 1.35 ft, Sept. 12, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,100 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1630	*2,290	*8.82	No other peak equal to or greater than base discharge.			

Minimum discharge, 13 ft³/s, Aug. 17, 19-20, 27, 28, 29; minimum gage height, 1.92 ft, Aug. 17, 19-20, 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	96	70	448	165	209	137	137	119	96	49	36	51
2	80	67	272	155	214	134	134	117	92	45	33	39
3	73	67	202	144	462	134	131	113	132	41	31	33
4	86	67	177	151	359	136	198	113	188	38	29	34
5	80	68	160	162	342	145	353	450	132	36	28	40
6	73	66	141	137	259	141	220	551	107	35	27	42
7	80	63	131	e130	212	135	218	343	94	33	31	34
8	78	63	124	e125	196	130	228	237	85	31	33	29
9	68	63	120	e120	191	130	214	180	79	30	29	27
10	64	217	143	e118	183	165	183	163	86	30	24	31
11	64	739	1470	e115	176	165	166	156	89	28	22	38
12	64	375	626	e117	251	142	159	143	80	27	21	37
13	66	325	318	e130	242	134	203	129	74	30	22	30
14	64	252	226	e127	189	132	189	122	69	32	19	27
15	62	187	316	e125	184	125	166	115	64	32	17	25
16	62	151	499	e130	216	121	153	112	61	29	15	23
17	62	135	303	146	211	117	142	111	59	25	13	22
18	62	144	222	299	185	116	140	695	59	22	15	24
19	63	144	189	498	178	120	165	1240	62	19	14	27
20	60	126	176	1370	188	121	244	446	61	25	14	31
21	59	116	166	943	182	116	197	365	67	34	16	37
22	56	104	153	423	163	112	171	316	61	32	22	30
23	54	98	145	296	157	111	165	270	56	322	23	25
24	54	97	138	236	157	113	159	190	65	229	21	22
25	56	96	137	223	150	115	154	175	87	111	19	23
26	56	95	152	e230	145	168	140	175	83	65	17	27
27	64	181	174	225	145	415	134	145	113	51	14	28
28	126	284	201	192	145	260	135	130	68	90	14	27
29	108	1350	299	192	140	178	131	119	54	64	98	25
30	79	1500	227	186	---	156	124	110	51	61	211	23
31	72	---	179	211	---	145	---	103	---	49	86	---
TOTAL	2191	7310	8234	7821	6031	4569	5253	7753	2474	1745	1014	911
MEAN	70.7	244	266	252	208	147	175	250	82.5	56.3	32.7	30.4
MAX	126	1500	1470	1370	462	415	353	1240	188	322	211	51
MIN	54	63	120	115	140	111	124	103	51	19	13	22
CFSM	.31	1.08	1.18	1.12	.92	.65	.77	1.11	.36	.25	.14	.13
IN.	.36	1.20	1.36	1.29	.99	.75	.86	1.28	.41	.29	.17	.15

CAL YR 1987 TOTAL 88453.1 MEAN 242 MAX 5250 MIN 8.2 CFSM 1.07 IN. 14.56
WTR YR 1988 TOTAL 55306 MEAN 151 MAX 1500 MIN 13 CFSM .67 IN. 9.10

e Estimated.

02031000 MECHUMS RIVER NEAR WHITE HALL, VA

LOCATION.--Lat 38°06'09", long 78°35'35", Albemarle County, Hydrologic Unit 02080204, on right bank 20 ft downstream from bridge on State Highway 614, 1.5 mi downstream from Rocky Run, 4.0 mi southeast of White Hall, and 4.9 mi upstream from confluence with Moormans River.

DRAINAGE AREA.--95.4 mi².

PERIOD OF RECORD.--October 1942 to September 1951, October 1979 to current year. Prior to September 1951, published as Mechum River near Ivy.

GAGE.--Water-stage recorder. Datum of gage is 429.75 ft above National Geodetic Vertical Datum 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 with ice effect, Jan. 6-16, 28, 29, and Feb. 7, 8, 14, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--18 years, 108 ft³/s, 15.37 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft³/s, Oct. 15, 1942, gage height, 30.3 ft, datum then in use, from floodmarks, from rating curve extended above 8,000 ft³/s; minimum, 0.6 ft³/s, Sept. 9, 1944.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 6, 1979, reached a stage of 24.5 ft, from floodmarks, discharge, about 13,500 ft³/s, from rating curve extended above 8,300 ft³/s.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1630	*2,080	*10.55	No other peak equal to or greater than base discharge.			

Minimum discharge, 8.7 ft³/s, Aug. 15, 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	45	249	96	98	70	108	59	73	25	22	21
2	59	43	177	90	94	67	102	57	67	24	21	18
3	59	43	140	85	107	68	97	59	104	24	20	17
4	57	44	123	87	112	71	100	55	81	23	20	38
5	55	45	106	81	108	75	93	98	71	22	19	46
6	53	41	94	e71	98	70	87	177	65	21	19	26
7	57	39	87	e67	e95	67	107	195	63	20	26	20
8	51	41	85	e63	e100	64	97	147	58	19	18	18
9	50	40	81	e60	93	64	87	120	58	28	14	16
10	49	95	85	e58	88	66	84	106	61	32	13	20
11	49	110	147	e55	85	61	79	94	57	40	14	18
12	51	72	120	e61	97	61	75	84	52	76	14	16
13	50	65	102	e66	84	63	78	78	50	43	13	16
14	47	60	92	e68	e74	60	74	74	49	31	12	14
15	47	56	128	e62	82	58	71	70	46	25	10	14
16	47	53	140	e58	108	57	68	67	43	22	9.6	13
17	46	55	115	70	91	56	65	65	43	18	12	13
18	45	66	104	106	86	55	65	467	43	18	17	16
19	45	58	100	116	86	57	66	376	69	31	20	16
20	45	57	98	401	96	57	65	263	51	45	30	15
21	43	53	93	254	87	55	64	209	55	58	41	14
22	41	49	87	181	81	54	63	181	43	57	29	12
23	41	49	85	151	82	53	64	151	36	39	26	11
24	42	49	80	130	80	55	67	156	34	51	34	11
25	41	49	80	130	75	56	61	173	31	49	36	29
26	41	51	87	133	74	306	59	142	34	31	32	25
27	47	61	90	116	74	416	59	118	31	47	31	18
28	78	98	102	e110	73	214	59	104	27	43	34	15
29	52	856	122	e100	72	161	59	94	26	77	98	14
30	48	444	102	93	---	140	60	90	26	29	44	15
31	45	---	97	97	---	123	---	82	---	25	29	---
TOTAL	1546	2887	3398	3316	2580	2900	2283	4211	1547	1093	777.6	555
MEAN	49.9	96.2	110	107	89.0	93.5	76.1	136	51.6	35.3	25.1	18.5
MAX	78	856	249	401	112	416	108	467	104	77	98	46
MIN	41	39	80	55	72	53	59	55	26	18	9.6	11
CFSM	.52	1.01	1.15	1.12	.93	.98	.80	1.42	.54	.37	.26	.19
IN.	.60	1.13	1.33	1.29	1.01	1.13	.89	1.64	.60	.43	.30	.22

CAL YR 1987 TOTAL 52744.4 MEAN 145 MAX 4000 MIN 8.0 CFSM 1.51 IN. 20.57
WTR YR 1988 TOTAL 27093.6 MEAN 74.0 MAX 856 MIN 9.6 CFSM .78 IN. 10.56

e Estimated.

02032250 MOORMANS RIVER NEAR FREE UNION, VA

LOCATION.--Lat 38°08'26", long 78°33'22", Albemarle County, Hydrologic Unit 02080204, on right bank 130 ft upstream from bridge on State Highway 601, 0.4 mi upstream from confluence with Mechums River, 0.8 mi downstream from Wards Creek, and 1.1 mi southeast of Free Union.

DRAINAGE AREA.--74.6 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 403.11 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for periods of doubtful gage-height record, Nov. 14-23, Dec. 16-18, Dec. 30 to Jan. 2, Jan. 4, June 15-19, July 2, and Aug. 21-27, and periods with ice effect, Jan. 6-13, 16, and Feb. 6-8, 14, which are fair. Flow regulated by Rivanna Water and Sewer Authority at Sugar Hollow Reservoir 12.0 mi upstream from station, capacity, 1,320 acre-ft, from which an average of 5.6 ft³/s is diverted for industrial use. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--9 years, 100 ft³/s, 18.20 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,500 ft³/s, Nov. 4, 1985, gage height, 20.41 ft, from high-water mark, from rating curve extended above 5,600 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.58 ft³/s, Sept. 5, 1987.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1972, reached a stage of 20.2 ft, from floodmarks, discharge, 15,100 ft³/s, and flood of Sept. 6, 1979, reached a stage of 21.55 ft, from floodmarks, discharge, about 16,500 ft³/s, from rating curve extended as explained above.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 700 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1500	*2,050	*7.97	May 18	1730	1,760	7.45

Minimum discharge, 1.6 ft³/s, Aug. 18, gage height, 2.82 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	20	335	e98	68	39	70	30	52	5.2	10	15
2	25	19	200	e88	70	38	65	29	51	e4.8	6.7	12
3	24	19	143	78	82	36	62	28	90	3.8	6.1	9.6
4	26	19	118	e70	90	38	62	27	62	3.1	6.1	22
5	24	19	90	57	102	45	57	76	48	3.0	4.6	23
6	20	17	74	e45	e90	38	53	362	45	2.6	4.9	17
7	24	17	62	e38	e85	37	82	542	38	2.6	9.0	13
8	20	19	54	e36	e89	34	80	307	32	2.2	5.2	10
9	18	19	50	e35	84	34	74	200	32	2.0	4.0	9.0
10	19	42	53	e34	76	37	70	155	36	16	3.1	9.0
11	19	58	90	e33	70	35	68	122	30	6.7	3.0	7.0
12	20	40	84	e35	76	33	65	98	27	16	2.4	4.9
13	19	36	76	e38	59	36	62	78	24	14	2.2	4.6
14	17	e30	67	39	e50	34	56	65	25	7.6	2.2	4.0
15	17	e27	108	34	54	32	53	60	e21	5.5	2.0	3.6
16	17	e25	e110	e32	72	32	48	57	e20	4.3	1.9	3.1
17	18	e29	e100	38	59	32	45	56	e19	3.5	1.8	2.8
18	19	e38	e88	67	65	30	45	659	e24	3.0	1.7	3.0
19	18	e24	88	70	70	30	47	758	e33	8.0	2.0	3.1
20	19	e23	88	289	53	31	43	511	21	15	10	3.0
21	17	e22	78	239	47	32	40	343	24	36	e23	2.4
22	14	e21	67	191	44	30	38	259	17	46	e18	2.6
23	14	e21	62	155	45	29	39	194	14	28	e15	2.8
24	15	22	53	128	48	30	43	191	14	50	e16	3.1
25	16	22	52	128	44	30	38	218	12	52	e18	8.3
26	15	21	57	125	42	174	34	173	14	33	e12	9.0
27	22	27	62	95	43	196	33	140	15	59	e9.0	5.2
28	38	61	80	84	43	122	33	120	12	33	10	4.3
29	24	868	152	74	39	100	32	98	7.0	24	48	4.0
30	22	712	e120	65	---	88	31	76	6.4	19	30	3.8
31	20	---	e105	68	---	78	---	64	---	13	19	---
TOTAL	624	2337	2966	2606	1859	1610	1568	6096	865.4	521.9	306.9	224.2
MEAN	20.1	77.9	95.7	84.1	64.1	51.9	52.3	197	28.8	16.8	9.90	7.47
MAX	38	868	335	289	102	196	82	758	90	59	48	23
MIN	14	17	50	32	39	29	31	27	6.4	2.0	1.7	2.4
CFSM	.27	1.04	1.28	1.13	.86	.70	.70	2.64	.39	.23	.13	.10
IN.	.31	1.17	1.48	1.30	.93	.80	.78	3.04	.43	.26	.15	.11

CAL YR 1987 TOTAL 49199.59 MEAN 135 MAX 3490 MIN .61 CFSM 1.81 IN. 24.53
WTR YR 1988 TOTAL 21584.4 MEAN 59.0 MAX 868 MIN 1.7 CFSM .79 IN. 10.76

e Estimated.

02032400 BUCK MOUNTAIN CREEK NEAR FREE UNION, VA

LOCATION.--Lat 38°09'16", long 78°32'22", Albemarle County, Hydrologic Unit 02080204, on left bank at downstream side of bridge on State Highway 665, 0.2 mi downstream from Piney Creek, 1.6 mi east of Free Union, and 2.0 mi upstream from mouth.

DRAINAGE AREA.--37.0 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 408.71 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for periods of doubtful gage-height record, Nov. 13, 16-18, July 2-8, and Aug. 26-28, and periods with ice effect, Jan. 8-19, 29, and Feb. 7, 14, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--9 years, 42.6 ft³/s, 15.64 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,200 ft³/s, Sept. 8, 1987, gage height, 9.50 ft, from rating curve extended above 1,200 ft³/s on basis of contracted-opening measurement of peak flow; minimum, 0.35 ft³/s, Aug. 21, 1987.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 22, 1979, reached a stage of 11.12 ft, from floodmarks, discharge, about 6,600 ft³/s.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1400	*1,390	*5.56	No other peak equal to or greater than base discharge.			

Minimum discharge, 1.3 ft³/s, Aug. 16, 17, 18, 19, gage height, 0.34 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	12	113	43	34	22	33	13	20	4.9	4.8	3.6
2	19	12	73	40	35	21	27	13	21	e4.5	4.3	3.0
3	18	12	58	37	45	22	26	13	42	e4.2	4.1	2.6
4	18	12	49	30	47	24	27	14	26	e4.0	4.3	14
5	16	12	41	27	45	25	25	44	22	e3.8	4.2	9.6
6	17	10	35	30	40	22	23	109	19	e3.4	4.0	5.3
7	21	9.8	32	22	e37	22	43	103	17	e3.0	9.7	4.4
8	16	9.9	30	e20	41	21	35	65	15	e2.7	4.7	3.6
9	14	10	29	e19	35	21	30	49	16	2.6	3.5	3.4
10	14	33	30	e18	31	21	28	40	17	3.4	3.0	3.9
11	14	31	56	e20	30	19	26	34	14	3.6	2.8	3.3
12	17	22	41	e21	37	19	26	28	13	5.4	2.5	2.9
13	15	e20	32	e22	32	20	26	24	12	5.3	2.3	2.7
14	13	18	29	e21	e27	19	23	22	11	4.3	2.0	2.4
15	13	16	54	e20	28	18	23	21	10	3.4	1.7	2.5
16	13	e15	55	e17	38	18	21	20	9.8	2.7	1.5	2.2
17	13	e14	47	e19	30	17	20	21	21	2.2	1.4	2.3
18	13	e19	41	e34	29	17	21	130	13	2.7	1.3	2.7
19	13	22	40	e40	30	18	21	103	12	4.8	2.8	2.8
20	12	20	41	180	34	17	19	90	11	8.5	6.0	2.7
21	11	18	33	93	29	17	18	84	10	24	4.4	2.6
22	10	17	30	68	27	17	17	87	8.5	19	2.5	2.2
23	10	16	28	56	27	16	18	65	7.9	23	2.0	1.9
24	11	15	27	47	26	16	20	69	7.8	13	9.8	2.8
25	11	14	26	54	25	16	17	108	7.1	17	13	5.4
26	11	15	32	54	24	121	16	62	7.5	11	e7.0	5.0
27	19	20	31	45	24	95	16	46	6.8	16	e4.5	3.3
28	28	40	53	41	23	56	17	38	6.0	9.0	e4.0	2.7
29	16	516	72	e38	22	45	14	32	5.7	7.1	33	2.5
30	13	230	53	34	---	38	14	27	5.5	5.9	8.6	2.5
31	13	---	46	35	---	33	---	23	---	5.1	5.0	---
TOTAL	463	1230.7	1357	1245	932	873	690	1597	414.6	229.5	164.7	110.8
MEAN	14.9	41.0	43.8	40.2	32.1	28.2	23.0	51.5	13.8	7.40	5.31	3.69
MAX	28	516	113	180	47	121	43	130	42	24	33	14
MIN	10	9.8	26	17	22	16	14	13	5.5	2.2	1.3	1.9
CFSM	.40	1.11	1.18	1.09	.87	.76	.62	1.39	.37	.20	.14	.10
IN.	.47	1.24	1.36	1.25	.94	.88	.69	1.61	.42	.23	.17	.11

CAL YR 1987 TOTAL 22582.26 MEAN 61.9 MAX 1730 MIN .45 CFSM 1.67 IN. 22.70
WTR YR 1988 TOTAL 9307.3 MEAN 25.4 MAX 516 MIN 1.3 CFSM .69 IN. 9.36

e Estimated.

02032515 SOUTH FORK RIVANNA RIVER NEAR CHARLOTTESVILLE, VA

LOCATION.--Lat 38°06'06", long 78°27'39", Albemarle County, Hydrologic Unit 02080204, on left bank at downstream side of bridge on U.S. Highway 29, 0.4 mi downstream from South Fork Rivanna River dam, 2.5 mi northeast of Charlottesville city limits, and 2.9 mi upstream from mouth.

DRAINAGE AREA.--260 mi².

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

GAGE.--Water-stage recorder. Elevation of gage is 330 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except for period with ice effect, Jan. 7-16, which is fair. Flow regulated by Rivanna Water and Sewer Authority at South Fork Rivanna and Sugar Hollow Reservoirs, combined capacity, 6,540 acre-ft, from which an average of 15.4 ft³/s is diverted for industrial and municipal use. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--9 years, 285 ft³/s, 14.89 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,200 ft³/s, Sept. 6, 1979, gage height, 23.50 ft, from flood-marks, from rating curve extended above 12,000 ft³/s; minimum, 3.3 ft³/s, Sept. 1, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,440 ft³/s, Nov. 29, gage height, 11.42 ft; minimum, 7.4 ft³/s, May 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	105	80	754	259	253	176	251	64	68	33	43	31
2	90	80	458	241	256	172	238	136	152	30	38	22
3	90	83	362	219	278	172	227	123	283	33	32	20
4	87	83	310	212	287	182	238	117	235	33	32	45
5	81	84	264	199	292	204	216	219	156	28	28	90
6	81	76	232	138	275	186	204	506	123	23	30	48
7	91	72	210	e135	245	176	273	787	134	20	49	31
8	81	74	192	e130	264	166	269	478	109	20	41	24
9	72	79	182	e125	260	164	240	362	140	19	25	22
10	72	142	188	e122	247	170	229	311	146	56	20	25
11	73	277	304	e120	234	162	216	272	154	48	17	23
12	80	168	273	e135	256	160	206	230	114	90	17	20
13	79	146	236	e140	225	164	212	180	51	82	14	19
14	73	132	219	e138	196	158	198	190	23	51	12	17
15	69	123	276	e130	227	150	188	174	83	39	11	16
16	73	117	338	e120	264	148	174	206	77	28	9.0	14
17	70	119	291	156	240	144	166	179	115	23	10	13
18	70	146	261	210	229	142	170	720	65	28	15	17
19	70	128	247	278	249	146	176	1350	66	68	12	20
20	72	119	243	981	245	144	168	856	98	95	16	20
21	74	110	232	735	223	142	169	622	98	116	32	18
22	66	97	214	493	206	140	149	561	24	186	25	15
23	60	97	199	394	208	136	166	425	26	124	16	16
24	63	99	188	336	208	136	168	421	64	146	17	17
25	66	100	188	333	192	136	144	494	59	244	17	38
26	66	102	199	350	188	396	153	490	85	95	14	45
27	87	124	210	269	192	975	122	308	71	140	12	28
28	152	197	223	253	188	453	145	296	50	107	12	22
29	104	2560	338	249	182	342	142	244	45	82	111	18
30	88	1560	294	249	---	296	142	238	40	62	138	16
31	83	---	268	249	---	271	---	161	---	53	50	---
TOTAL	2488	7374	8393	8098	6809	6709	5759	11720	2954	2202	915.0	770
MEAN	80.3	246	271	261	235	216	192	378	98.5	71.0	29.5	25.7
MAX	152	2560	754	981	292	975	273	1350	283	244	138	90
MIN	60	72	182	120	182	136	122	64	23	19	9.0	13
*FT³/S	16.1	14.7	13.6	13.7	14.4	14.3	15.0	15.1	16.5	17.5	17.8	17.0

CAL YR 1987 TOTAL 123265.8 MEAN 338 MAX 7370 MIN 3.6 CFSM 1.30 IN. 17.64 *FT³/S 15.4
WTR YR 1988 TOTAL 64191.0 MEAN 175 MAX 2560 MIN 9.0 CFSM .67 IN. 9.18 *FT³/S 15.5

* Average diversion, in cubic feet per second, at South Fork Rivanna and Sugar Hollow Reservoirs; provided by Rivanna Water and Sewer Authority.
e Estimated.

02032680 NORTH FORK RIVANNA RIVER NEAR PROFFIT, VA

LOCATION.--Lat 38°05'16", long 78°24'44", Albemarle County, Hydrologic Unit 02080204, on left bank 50 ft downstream from bridge on State Highway 649, 1.9 mi southeast of Proffit, and 2.2 mi upstream from confluence with South Fork.

DRAINAGE AREA.--176 mi².

PERIOD OF RECORD.--April 1970 to current year.

GAGE.--Water-stage recorder. Datum of gage is 323.43 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for periods of doubtful gage-height record, Dec. 4-10, 20-28, June 2, 12-18, 23, June 27 to July 10, July 14-18, July 31 to Aug. 7, Aug. 9-20, 23-27, and Sept. 2-4, 8-24, 27-30, and period with ice effect, Jan. 6-16, which are fair. Rivanna Water and Sewer Authority diverts about 0.2 ft³/s daily for municipal water supply 7.8 mi upstream from station. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--18 years, 243 ft³/s, 18.75 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,800 ft³/s, June 21, 1972, gage height, 30.4 ft, from floodmarks, from rating curve extended above 9,000 ft³/s; minimum, 1.8 ft³/s, Oct. 6, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	2030	*4,140	*12.11	No other peak equal to or greater than base discharge.			

Minimum daily discharge, 9.8 ft³/s, Aug. 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	87	57	650	212	180	115	151	81	123	e34	e32	39
2	75	56	411	201	179	113	144	79	e100	e31	e28	e28
3	75	55	315	194	247	111	136	80	187	e28	e27	e23
4	75	56	e260	195	230	115	140	80	145	e27	e24	e24
5	67	55	e220	217	218	131	129	435	122	e25	e23	61
6	69	51	e200	e160	190	117	122	989	108	e23	e23	49
7	80	50	e180	e135	173	113	190	767	99	e21	e26	39
8	69	51	e170	e120	174	110	190	402	95	e19	31	e28
9	61	52	e160	e115	161	109	169	273	95	e21	e25	e24
10	61	85	e170	e112	154	111	154	224	101	e50	e22	e22
11	60	151	272	e110	147	106	147	192	91	31	e19	e22
12	64	113	257	e120	170	102	139	163	e80	42	e17	e21
13	63	107	219	e125	151	105	140	142	e65	38	e16	e19
14	58	101	199	e120	139	103	127	129	e52	e32	e14	e18
15	57	94	227	e115	141	100	122	122	e43	e29	e12	e17
16	56	88	297	e125	176	97	114	117	e47	e25	e11	e16
17	56	82	257	147	155	95	110	114	e54	e23	e9.8	e15
18	55	102	228	195	148	96	109	623	e68	e21	e13	e16
19	56	104	213	255	153	97	113	483	152	44	e20	e19
20	53	95	e200	852	174	94	107	483	82	58	e17	e20
21	53	88	e190	530	159	92	103	699	84	53	29	e17
22	50	80	e180	336	146	92	97	759	64	137	31	e15
23	50	79	e170	267	146	91	98	397	e56	148	e22	e16
24	51	76	e160	228	150	91	107	346	71	85	e17	e19
25	52	73	e150	231	143	90	95	556	58	79	e16	38
26	51	71	e160	266	137	334	92	362	74	61	e15	32
27	65	80	e170	210	138	608	89	246	e60	76	e14	e28
28	125	117	e180	192	134	292	90	202	e50	57	26	e24
29	78	1810	347	183	126	219	86	173	e45	47	71	e20
30	64	1700	252	171	---	188	84	151	e38	43	84	e16
31	60	---	222	181	---	167	---	137	---	e37	53	---
TOTAL	1996	5779	7286	6620	4739	4404	3694	10006	2509	1445	787.8	745
MEAN	64.4	193	235	214	163	142	123	323	83.6	46.6	25.4	24.8
MAX	125	1810	650	852	247	608	190	989	187	148	84	61
MIN	50	50	150	110	126	90	84	79	38	19	9.8	15
CFSM	.37	1.09	1.34	1.21	.93	.81	.70	1.83	.48	.26	.14	.14
IN.	.42	1.22	1.54	1.40	1.00	.93	.78	2.11	.53	.31	.17	.16

CAL YR 1987 TOTAL 89827.9 MEAN 246 MAX 7300 MIN 6.0 CFSM 1.40 IN. 18.99
WTR YR 1988 TOTAL 50010.8 MEAN 137 MAX 1810 MIN 9.8 CFSM .78 IN. 10.57

e Estimated.

02034000 RIVANNA RIVER AT PALMYRA, VA

LOCATION.--Lat 37°51'28", long 78°15'58", Fluvanna County, Hydrologic Unit 02080204, on left bank 10 ft upstream from bridge on U.S. Highway 15 at Palmyra, 0.5 mi upstream from Cunningham Creek, and 15 mi upstream from mouth.

DRAINAGE AREA.--664 mi².

PERIOD OF RECORD.--October 1933 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 802: 1936(M). WSP 852: 1937. WSP 892: 1934-35. WSP 1303: 1945-46(M). WSP 1503: 1956. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 210.39 ft above National Geodetic Vertical Datum 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 for period with ice effect, Jan. 11-18, which is fair. Some diurnal fluctuation at times mostly at low and medium flow by South Fork Rivanna River Reservoir. Combined diversion for water supply and discharge from waste-water treatment plant upstream at Charlottesville resulted in an average gain of about 1.3 ft³/s upstream from the gage. 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.

AVERAGE DISCHARGE.--55 years, 721 ft³/s, 14.75 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 86,000 ft³/s, Aug. 20, 1969, gage height, 39.85 ft, from rating curve extended above 76,000 ft³/s on basis of contracted-opening measurement of peak flow and velocity-area study; minimum, 5.2 ft³/s, Sept. 9-11, 1966, gage height, 2.13 ft.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 30	0430	*10,300	*16.92	No other peak equal to or greater than base discharge.			

Minimum discharge, 35 ft³/s, Aug. 17-18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	335	239	2300	737	748	432	621	316	484	122	138	137
2	279	231	1460	696	729	415	572	267	363	112	121	99
3	266	230	1110	623	1050	420	532	334	679	102	109	78
4	285	230	956	602	1030	427	551	302	806	98	99	78
5	261	227	827	649	1000	496	552	1150	566	94	94	147
6	249	223	723	530	858	460	481	2220	440	88	90	186
7	271	208	652	467	716	428	640	2280	430	79	91	129
8	277	207	595	476	703	412	802	1550	344	70	102	96
9	245	208	561	552	699	392	688	1190	334	82	98	81
10	232	327	577	521	648	409	600	1030	385	277	81	80
11	235	880	1600	e520	614	395	571	904	405	121	69	80
12	242	636	1130	e530	728	372	525	786	358	132	62	75
13	259	539	862	e520	722	378	535	655	308	174	57	71
14	243	483	726	e520	554	376	499	598	212	148	53	67
15	229	413	926	e512	579	363	470	516	170	116	45	63
16	227	360	1210	e520	747	346	450	504	224	98	40	59
17	233	336	1010	e580	723	337	421	532	201	81	37	58
18	229	382	856	e710	633	330	420	1530	257	74	38	54
19	225	405	761	1050	629	331	455	2880	368	178	73	55
20	226	363	725	3000	711	327	475	1890	348	162	60	63
21	220	336	707	2570	661	323	430	1740	292	295	85	66
22	220	302	643	1500	566	321	408	2890	251	430	88	59
23	206	277	600	1190	536	313	401	1560	177	560	72	55
24	207	275	554	1010	556	312	416	1310	238	558	63	56
25	207	274	531	949	521	313	407	1750	182	526	60	79
26	208	272	559	1140	489	780	365	1690	205	352	54	122
27	219	316	607	876	479	3240	376	1220	300	264	49	107
28	451	511	624	744	477	1430	331	922	195	303	45	90
29	384	3700	1010	708	454	1040	363	861	150	226	188	73
30	276	6570	941	704	---	831	353	708	135	181	398	65
31	248	---	789	736	---	710	---	638	---	155	233	---
TOTAL	7894	19960	27132	26442	19560	17459	14710	36723	9807	6258	2892	2528
MEAN	255	665	875	853	674	563	490	1185	327	202	93.3	84.3
MAX	451	6570	2300	3000	1050	3240	802	2890	806	560	398	186
MIN	206	207	531	467	454	312	331	267	135	70	37	54
CFSM	.38	1.00	1.32	1.28	1.02	.85	.74	1.78	.49	.30	.14	.13
IN.	.44	1.12	1.52	1.48	1.10	.98	.82	2.06	.55	.35	.16	.14

CAL YR 1987 TOTAL 331582 MEAN 908 MAX 26800 MIN 30 CFSM 1.37 IN. 18.58
WTR YR 1988 TOTAL 191365 MEAN 523 MAX 6570 MIN 37 CFSM .79 IN. 10.72

e Estimated.

02035000 JAMES RIVER AT CARTERSVILLE, VA
(National stream-quality accounting network station)

LOCATION.--Lat 37°40'15", long 78°05'10", Goochland County, Hydrologic Unit 02080205, on left bank 200 ft downstream from bridge on State Highway 45 at Cartersville, 1.8 mi downstream from Willis River, and at mile 156.4.

DRAINAGE AREA.--6,257 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1898 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 972: 1936(M). WSP 1203: 1901-2(M), 1923-25(M), 1928(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 163.90 ft above National Geodetic Vertical Datum of 1929. Prior to June 4, 1927, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Oct. 1-30, Dec. 20-23, Jan. 11-19, 24-28, Jan. 31 to Feb. 5, Feb. 16, 17, and Mar. 29, which are fair. Moderate diurnal fluctuation caused by powerplants upstream from station. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--90 years, 7,056 ft³/s, 15.31 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 362,000 ft³/s, June 22, 1972, gage height, 37.87 ft, from flood-marks, from rating curve extended above 160,000 ft³/s on basis of slope-conveyance study; minimum, 316 ft³/s, Sept. 13, 14, 1966, gage height, 0.02 ft; minimum daily, 330 ft³/s, Sept. 14, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 40,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 30	0930	*32,600	*12.21	No peak equal to or greater than base discharge.			

Minimum discharge, 801 ft³/s, Aug. 16-17, 18; minimum gage height, 0.49 ft, Aug. 16-17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e3050	1850	17500	9610	e5800	3860	5020	4200	3970	1460	1710	3730
2	e2800	1820	14300	7920	e7000	4080	4720	3670	3740	1340	1630	2470
3	e2300	1700	10600	6930	e8400	3300	4230	3700	3700	1250	1880	1700
4	e2590	2220	7960	6320	e8000	3600	4400	3490	4640	1140	1430	1710
5	e2310	2090	6750	6260	e7700	3680	5810	4410	4840	1080	1390	1780
6	e2200	1800	5320	5300	7950	3600	5480	11200	3940	1080	1360	1650
7	e2380	2090	4750	4520	8830	3300	5030	9580	3490	1260	1300	2560
8	e2100	1560	4540	4000	8090	3320	6450	8460	3480	1280	1260	3530
9	e2260	1570	4180	3840	7280	3570	5640	11900	3150	1230	1350	1800
10	e2390	2050	4080	4080	6730	3480	5780	10500	2740	1440	1420	1640
11	e1900	6280	10400	e3850	6260	3640	5970	8910	2750	1400	1320	1790
12	e1700	6940	12600	e3700	7020	3430	5550	7440	3010	1100	1210	1640
13	e1900	5270	8070	e3900	6730	3420	5570	6680	2540	1300	965	1610
14	e2400	5180	6180	e4200	5500	3140	5560	6030	2290	1450	1170	1500
15	e1960	4230	5690	e4050	5150	3200	5020	4180	2640	1510	864	1170
16	e1720	3310	7740	e3950	e5500	3400	4580	4430	2740	1790	813	958
17	e1800	3460	7230	e4200	e5600	3460	4490	4380	2060	1430	1020	1040
18	e1890	3250	6780	e5100	5400	3080	4030	5740	2030	1240	856	1150
19	e1700	3040	7130	e8000	5060	3100	4270	17400	2300	1220	1030	1160
20	e1800	3480	e5800	13000	5310	3370	4990	14700	2430	1500	932	1110
21	e1950	2940	e5050	18000	5060	2440	4880	13700	2320	1820	1070	1490
22	e1880	2820	e5220	22700	4640	2950	4170	14200	2170	2030	952	1310
23	e1710	3100	e4600	18500	4860	3320	3910	11200	2060	3100	975	1320
24	e1760	2880	4490	e15500	4600	2900	4030	8810	2050	5450	1170	986
25	e1650	2820	4130	e11000	4540	2830	4220	8450	2060	4910	1320	1180
26	e1560	2660	3740	e9700	4250	3360	4510	10200	1900	2680	922	1300
27	e1900	2900	4270	e8600	4220	9870	5020	8390	2540	2430	1060	1210
28	e2350	3660	4470	e7000	4000	10300	5070	6670	2210	2840	1130	1890
29	e2900	9660	7050	6650	3690	e7000	4660	5040	1680	2780	1480	2570
30	e2500	28400	8470	6250	---	6240	4180	5310	1740	2690	2360	2060
31	2400	---	11500	e5750	---	5530	---	4430	---	1750	4150	---
TOTAL	65710	125030	220590	242380	173170	125770	147240	247400	83210	58980	41499	51014
MEAN	2120	4168	7116	7819	5971	4057	4908	7981	2774	1903	1339	1700
MAX	3050	28400	17500	22700	8830	10300	6450	17400	4840	5450	4150	3730
MIN	1560	1560	3740	3700	3690	2440	3910	3490	1680	1080	813	958
CFSM	.34	.67	1.14	1.25	.95	.65	.78	1.28	.44	.30	.21	.27
IN.	.39	.74	1.31	1.44	1.03	.75	.88	1.47	.49	.35	.25	.30

CAL YR 1987 TOTAL 3222588 MEAN 8829 MAX 134000 MIN 816 CFSM 1.41 IN. 19.16
WTR YR 1988 TOTAL 1581993 MEAN 4322 MAX 28400 MIN 813 CFSM .69 IN. 9.41

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 DAILY RECORD.--
SPECIFIC CONDUCTANCE: April 1968 to January 1976, October 1980 to May 1981.
WATER TEMPERATURE: April 1968 to January 1976, October 1980 to May 1981.
SUSPENDED-SEDIMENT DISCHARGE: October 1980 to May 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV											
25...	0930	4690	240	7.70	8.0	758	1.9	11.8	100	20	K12
JAN											
28...	1130	6690	126	7.20	1.0	764	6.3	13.6	95	K13	K12
FEB											
25...	0930	4420	75	7.20	5.0	755	2.8	11.6	92	13	K7
APR											
28...	1230	5150	192	7.40	16.5	744	3.3	9.1	96	25	K11
JUN											
29...	1130	1560	194	7.80	26.0	745	1.3	7.6	96	21	K5
AUG											
30...	0930	2060	295	8.10	22.0	755	4.2	8.0	93	48	380

DATE	HARD-NESS TOTAL (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
NOV											
25...	81	24	5.1	16	2.4	66	18	19	0.10	8.5	146
JAN											
28...	50	15	3.1	5.4	1.0	41	12	6.6	0.10	8.2	80
FEB											
25...	64	19	4.1	7.8	1.6	54	13	9.7	0.20	7.3	98
APR											
28...	69	20	4.6	10	1.8	56	17	14	0.20	4.7	107
JUN											
29...	59	16	4.7	13	2.3	52	19	13	0.30	6.2	118
AUG											
30...	87	25	6.0	22	2.7	67	26	26	0.20	8.0	161

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)
NOV											
25...	135	<0.010	0.260	<0.010	<0.010	0.30	0.380	0.370	0.320	20	1
JAN											
28...	78	<0.010	0.340	0.030	5.00	0.40	0.090	0.070	0.030	--	--
FEB											
25...	97	0.010	0.350	0.020	0.030	<0.20	0.200	0.170	0.120	<10	<1
APR											
28...	108	<0.010	0.260	0.020	<0.010	<0.20	0.300	0.270	0.220	20	<1
JUN											
29...	107	<0.010	0.180	0.020	0.040	0.60	0.170	0.160	0.130	--	--
AUG											
30...	157	<0.010	<0.100	0.020	0.010	0.80	0.280	0.280	0.200	100	1

02035000 JAMES RIVER AT CARTERSVILLE, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)
NOV 25...	34	<0.5	<1	<1	<3	2	170	<5	<4	16	--
JAN 28...	--	--	--	--	--	--	--	--	--	--	--
FEB 25...	25	<0.5	1	<1	<3	<1	67	<5	<4	11	<0.1
APR 28...	36	<0.5	<1	<1	<3	1	100	<5	5	32	<0.1
JUN 29...	--	--	--	--	--	--	--	--	--	--	--
AUG 30...	34	<0.5	<1	<1	<3	2	120	<5	8	18	<0.1

DATE	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 25...	<10	4	<1	<1.0	100	<6	4	--	4	86
JAN 28...	--	--	--	--	--	--	--	--	13	93
FEB 25...	<10	<1	<1	<1.0	76	<6	6	--	11	62
APR 28...	<10	<1	<1	<1.0	91	<6	<3	--	16	91
JUN 29...	--	--	--	--	--	--	--	--	5	100
AUG 30...	<10	3	<1	<1.0	120	<6	4	5.8	10	97

02036500 FINE CREEK AT FINE CREEK MILLS, VA

LOCATION.--Lat 37°35'52", long 77°49'12", Powhatan County, Hydrologic Unit 02080205, on right bank 75 ft downstream from bridge on State Highway 711 at Fine Creek Mills, 0.8 mi upstream from mouth, and 6.7 mi northeast of Powhatan.

DRAINAGE AREA.--22.1 mi².

PERIOD OF RECORD.--July 1944 to current year.

REVISED RECORDS.--WSP 1203: 1948. WSP 1303: 1945(M). WSP 1383: 1954. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 156.59 ft above National Geodetic Vertical Datum 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. 8-16, 28, 29, 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 Water Control Board.

AVERAGE DISCHARGE.--44 years, 20.2 ft³/s, 12.41 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,180 ft³/s, Oct. 6, 1972, gage height, 9.02 ft, from rating curve extended above 2,600 ft³/s; minimum daily, 0.08 ft³/s, Oct. 1, 1968; minimum gage height, 1.53 ft, Sept. 30, Oct. 1, 1970.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 11	2000	*295	*3.16	No other peak equal to or greater than base discharge.			

Minimum discharge, 0.52 ft³/s, Aug. 14, 16-19, gage height, 1.56 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.5	8.0	55	13	22	15	18	11	4.2	1.4	2.0	4.6
2	6.1	6.9	29	13	23	14	17	10	4.3	1.3	1.6	1.9
3	7.2	6.5	20	12	66	14	17	9.7	11	1.2	1.4	1.5
4	8.9	6.5	19	17	63	16	34	10	13	1.2	1.2	1.7
5	8.0	6.8	18	22	48	16	46	21	9.9	1.2	1.0	1.6
6	6.6	6.5	15	17	34	15	29	28	7.0	1.0	.92	1.3
7	9.1	6.4	13	11	25	14	36	22	5.5	1.0	.94	1.4
8	7.7	6.3	12	e10	24	13	35	16	4.5	.92	.78	1.1
9	6.3	6.3	11	e9.8	23	16	29	12	4.2	.96	.73	1.3
10	4.9	33	16	e9.6	21	33	24	12	4.7	.96	.73	2.3
11	4.2	115	185	e9.2	21	27	20	14	4.4	.93	.74	1.6
12	4.2	69	132	e10	45	20	19	12	4.1	.99	.68	1.4
13	3.6	37	50	e11	43	18	23	10	3.8	1.5	.66	1.6
14	3.1	28	29	e12	31	17	21	9.3	3.5	1.3	.61	1.6
15	3.0	20	33	e11	26	16	18	8.6	3.2	1.1	.59	1.6
16	3.1	16	43	e10	30	15	16	8.6	3.0	.87	.56	1.3
17	3.2	15	31	13	27	13	14	8.9	3.0	.77	.52	1.2
18	3.1	16	23	34	23	13	14	8.6	3.0	.71	.52	1.2
19	3.3	15	19	44	22	15	22	8.2	3.1	.75	.59	1.2
20	3.7	12	18	114	25	15	30	7.4	2.8	1.1	1.4	1.2
21	4.3	10	16	123	23	14	22	7.2	2.6	1.4	.91	1.2
22	4.6	8.4	15	58	20	13	18	18	2.6	6.1	.73	1.2
23	4.9	7.7	13	37	18	13	16	14	2.4	5.6	.67	1.2
24	4.9	8.2	12	28	19	13	17	10	2.2	5.0	.73	1.3
25	5.4	7.7	13	29	18	13	16	16	2.0	2.8	.72	1.4
26	5.9	7.7	16	44	17	26	14	15	2.1	1.8	.69	1.3
27	17	13	18	34	17	61	13	11	2.2	6.1	.70	1.2
28	62	23	19	e30	17	35	16	8.0	1.9	19	.69	1.1
29	39	61	20	e25	16	24	14	6.4	1.7	18	14	.99
30	16	115	17	22	---	21	12	5.4	1.6	7.7	18	.98
31	10	---	14	23	---	19	---	4.7	---	3.1	13	---
TOTAL	280.8	697.9	944	855.6	807	587	640	363.0	123.5	97.76	69.01	44.47
MEAN	9.06	23.3	30.5	27.6	27.8	18.9	21.3	11.7	4.12	3.15	2.23	1.48
MAX	62	115	185	123	66	61	46	28	13	19	18	4.6
MIN	3.0	6.3	11	9.2	16	13	12	4.7	1.6	.71	.52	.98
CFSM	.41	1.05	1.38	1.25	1.26	.86	.97	.53	.19	.14	.10	.07
IN.	.47	1.17	1.59	1.44	1.36	.99	1.08	.61	.21	.16	.12	.07

CAL YR 1987 TOTAL 8293.31 MEAN 22.7 MAX 401 MIN .22 CFSM 1.03 IN. 13.96
WTR YR 1988 TOTAL 5510.04 MEAN 15.1 MAX 185 MIN .52 CFSM .68 IN. 9.27

e Estimated.

02037000 JAMES RIVER AND KANAWHA CANAL NEAR RICHMOND, VA

LOCATION.--Lat 37°33'52", long 77°34'28", Henrico County, Hydrologic Unit 02080205, on left bank 75 ft downstream from Canal bridge, 400 ft downstream from head gates, 1,200 ft north of north end of Bosher Dam on James River, 1.6 mi upstream from Huguenot Memorial Bridge, and 2.0 mi west of Richmond city limits.

PERIOD OF RECORD.--September 1936 to current year.

GAGE.--Water-stage recorder. Datum of gage is 106.07 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1938, at datum 3.06 ft higher.

REMARKS.--Records good except for period with ice effect, Jan. 6-12, which is fair. 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. Above 2,540 ft^3/s, gage height, 14.5 ft, there is interchange of flow with James River; discharge above 2,540 ft^3/s included in discharge for James River near Richmond (station 02037500). Figures given show flow in canal only. 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 Water Control Board.

AVERAGE DISCHARGE.--52 years, 733 ft^3/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 29.1 ft, June 23, 1972, from floodmarks, interchange of flow with James River makes maximum discharge indeterminate; no flow at times when head gates were closed.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 536 ft^3/s, July 9, gage height, 6.01 ft; minimum, 1.0 ft^3/s, Feb. 28, gage height, 0.57 ft, result of head gates being closed.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	180	1.7	204	241	240	1.2	219	209	1.8	429	401	391
2	213	1.8	229	233	247	1.2	217	207	93	424	401	364
3	211	140	254	231	220	1.1	215	206	216	421	429	318
4	210	257	245	232	210	1.2	219	207	215	420	422	311
5	85	258	239	229	208	1.3	166	190	218	448	409	312
6	1.8	258	234	e220	213	1.3	174	123	234	480	393	394
7	135	256	229	e215	213	1.4	216	112	260	488	403	405
8	218	256	227	e210	214	1.6	215	157	263	500	385	409
9	215	253	242	e210	210	2.5	213	184	273	486	402	395
10	218	239	251	e205	209	105	213	186	263	466	400	397
11	218	240	250	e200	232	218	213	183	223	430	402	400
12	216	221	242	e220	215	216	189	179	246	456	420	402
13	190	214	230	243	218	216	159	176	238	395	418	401
14	130	204	228	249	214	214	178	175	314	421	418	299
15	130	221	240	246	210	226	208	172	405	448	423	301
16	129	230	234	247	213	227	206	173	389	446	431	276
17	130	248	235	228	212	227	207	157	391	446	415	274
18	130	250	229	232	211	208	205	164	386	453	430	275
19	131	245	230	238	221	230	209	193	385	447	421	276
20	131	248	228	209	236	233	211	202	390	436	413	397
21	132	245	251	233	235	229	213	201	389	421	393	423
22	133	265	253	232	232	228	210	206	433	408	423	401
23	132	261	252	229	129	231	208	95	473	384	420	406
24	132	260	248	228	1.4	231	206	2.1	435	356	415	410
25	132	260	249	232	1.2	230	207	2.7	433	396	408	405
26	73	259	246	226	1.2	246	208	2.3	412	398	419	401
27	2.2	247	246	231	1.1	222	211	1.9	412	422	427	400
28	1.9	200	250	230	1.1	229	213	1.9	418	398	418	419
29	1.6	205	231	240	1.2	234	211	2.0	421	412	385	413
30	1.6	215	234	245	---	225	208	2.0	422	415	399	405
31	1.6	---	239	242	---	222	---	1.8	---	413	416	---
TOTAL	3964.7	6658.5	7399	7106	4969.2	4859.8	6147	4073.7	9651.8	13363	12759	11080
MEAN	128	222	239	229	171	157	205	131	322	431	412	369
MAX	218	265	254	249	247	246	219	209	473	500	431	423
MIN	1.6	1.7	204	200	1.1	1.1	159	1.8	1.8	356	385	274

CAL YR 1987 TOTAL 85989.3 MEAN 236 MAX 2540 MIN 1.6
WTR YR 1988 TOTAL 92031.7 MEAN 251 MAX 500 MIN 1.1

e Estimated.

02037500 JAMES RIVER NEAR RICHMOND, VA

LOCATION.--Lat 37°33'47", long 77°32'50", Henrico County, Hydrologic Unit 02080205, on left bank 0.2 mi upstream from Huguenot Memorial Bridge, 0.5 mi southwest of Richmond city limits, 1.7 mi downstream from Bosher Dam, 3.3 mi upstream from Powhite Creek, and at mile 116.6.
DRAINAGE AREA.--6,758 mi².
PERIOD OF RECORD.--October 1934 to current year. Gage-height records collected in vicinity of Mayo's Bridge, at mile 109.5, 1876-1956, and at mile 108.7 since 1957, are contained in reports of the National Weather Service.
REVISED RECORDS.--WSP 972: 1936(M). WSP 1433: 1951(M). WSP 2104: Drainage area.
GAGE.--Water-stage recorder. Control is Williams Island dams which divert flow for city of Richmond water supply. Datum of gage is 98.82 ft above National Geodetic Vertical Datum of 1929.
REMARKS.--Records good except those for period with ice effect, Jan. 10-12, and period of no gage-height record, May 14-16, which are fair. City of Richmond takes from 40 ft³/s to 90 ft³/s for water supply from river downstream from gage except during periods of low flow when supply is obtained from James River and Kanawha Canal. Flow regulated by powerplants upstream from station. Above 18.2 ft stage, there is interchange of flow with James River and Kanawha Canal. Records of daily discharge include diversion by city of Richmond but do not include flow in James River and Kanawha Canal (station 02037000) which diverts around station. National Weather Service gage-height telemeter at station. 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 Water Control Board.
AVERAGE DISCHARGE.--54 years, 7,513 ft³/s, 15.10 in/yr, includes flow in James River and Kanawha Canal.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 313,000 ft³/s, includes canal flow, June 23, 1972, gage height, 28.62 ft; minimum daily, about 10 ft³/s, Sept. 8-15, 1966, Sept. 30, Oct. 5, 6, 1968, Oct. 8-10, 1970; minimum daily discharge of James River and James River and Kanawha Canal combined, 214 ft³/s, Oct. 5, 1941, caused by recharging of the pool above Bosher Dam after the canal gates were closed.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 50,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 30	1800	*31,100	*10.72	No peak equal to or greater than base discharge.			

Minimum discharge, 569 ft³/s, Aug. 17-18, gage height, 3.33 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3550	2470	20900	9890	6090	4520	5450	4380	4670	1680	2120	3280
2	3300	2210	15400	7890	6220	4530	5100	4170	4430	1530	1810	2820
3	2990	1990	11500	7170	8130	4480	4790	3960	4140	1370	1610	2050
4	2570	1750	8770	6470	9320	4200	4720	4010	4120	1260	1540	1470
5	2760	1950	7320	6350	8470	4280	5390	3940	4650	1130	1450	1550
6	2510	2010	6350	6070	8210	4260	6360	7290	4560	1020	1320	1410
7	2510	1930	5360	5270	8240	4220	5680	9900	4120	941	1290	1420
8	2650	1970	4900	4880	8670	4120	6060	8830	3850	966	1220	2260
9	2250	1790	4750	4340	7720	4180	6300	9350	3690	990	1130	2530
10	2420	1720	4560	e4200	7300	4670	5960	10400	3450	1010	1100	1500
11	2500	3280	7770	e4100	6740	4820	5920	9100	3170	1070	1150	1390
12	2010	6810	14400	e4300	7000	4750	5740	7720	3060	1160	1110	1430
13	1850	6270	11000	4370	7840	4580	5670	6690	3110	1090	1010	1330
14	2130	5700	7250	4950	7000	4560	5780	e6400	2900	1040	905	1350
15	2570	5150	6320	5080	5920	4340	5400	e5400	2610	1070	838	1260
16	2150	4420	6950	4760	5770	4230	4900	e4400	2630	1130	746	1040
17	1980	3980	7720	4500	6090	4150	4830	4620	2700	1260	630	879
18	2050	3950	6660	4610	6090	4100	4510	4630	2430	1250	580	947
19	2040	3910	6740	6080	5550	4070	4410	11000	2260	1090	619	1020
20	1940	3810	6570	10100	5540	4170	5030	15000	2270	1010	685	985
21	2100	3830	5500	20000	5470	4100	5300	13700	2360	1080	744	890
22	2110	3610	5330	20600	5100	3900	4800	13600	2320	1400	735	1190
23	2050	3500	5160	19700	5160	3950	4420	13500	2180	1940	704	1070
24	1850	3490	4740	16500	5250	3970	4300	9900	2070	2560	667	1060
25	1850	3400	4720	12800	5100	3920	4330	8710	2030	4580	686	850
26	1790	3340	4530	10800	5110	4060	4490	9450	2000	4150	909	972
27	1760	3250	4530	10300	4920	6020	4740	9200	1950	3160	707	1090
28	2250	3420	4870	8510	4930	11400	5150	7580	2140	2740	783	990
29	2630	5050	5390	7260	4740	9040	4900	6080	2110	2690	1230	1630
30	2870	22900	7430	6680	---	6900	4460	5350	1850	2660	1580	1950
31	2570	---	8850	6380	---	6120	---	5140	---	2520	2530	---
TOTAL	72560	122860	232240	254910	187690	150610	154890	243400	89830	52547	34138	43613
MEAN	2341	4095	7492	8223	6472	4858	5163	7852	2994	1695	1101	1454
MAX	3550	22900	20900	20600	9320	11400	6360	15000	4670	4580	2530	3280
MIN	1760	1720	4530	4100	4740	3900	4300	3940	1850	941	580	850
(*)	128	222	239	229	171	157	205	131	322	431	412	369
MEAN‡	2469	4317	7731	8452	6643	5015	5368	7983	3316	2126	1513	1823
CFSM‡	.37	.64	1.14	1.25	.98	.74	.79	1.18	.49	.31	.22	.27
IN.‡	.42	.71	1.32	1.44	1.06	.86	.89	1.36	.55	.36	.26	.30

CAL YR 1987 TOTAL 3321715 MEAN 9101 MAX 148000 MIN 475 MEAN‡ 9337 CFSM‡ 1.38 IN.‡ 18.76
WTR YR 1988 TOTAL 1639288 MEAN 4479 MAX 22900 MIN 580 MEAN‡ 4730 CFSM‡ .70 IN.‡ 9.53

* Average diversion, in cubic feet per second, by James River & Kanawha Canal.
‡ Adjusted for diversion.
e Estimated.

02038000 FALLING CREEK NEAR CHESTERFIELD, VA

LOCATION.--Lat 37°26'37", long 77°31'21", Chesterfield County, Hydrologic Unit 02080206, on left bank 50 ft upstream from bridge on State Highway 651, 0.8 mi downstream from Licking Creek, 2.8 mi upstream from Pocoshock Creek, and 4.7 mi northwest of Chesterfield.

DRAINAGE AREA.--32.8 mi².

PERIOD OF RECORD.--October 1955 to current year.

REVISED RECORDS.--WSP 1904: 1957(M), 1958-60.

GAGE.--Water-stage recorder. Datum of gage is 126.39 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 8-12, 15-17, 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.

AVERAGE DISCHARGE.--33 years, 33.3 ft³/s, 13.79 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,930 ft³/s, Oct. 1, 1979, gage height, 15.32 ft, from floodmarks, from rating curve extended above 3,200 ft³/s on basis of slope-conveyance study; minimum, 0.01 ft³/s, Sept. 20, Oct. 3, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 220 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
July 23	2300	*598	*8.55	No other peak equal to or greater than base discharge.			

Minimum discharge, 1.5 ft³/s, Aug. 16-17, Sept. 20, gage height, 2.82 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.7	6.8	19	17	20	15	20	12	5.3	2.6	4.0	4.1
2	6.2	5.8	13	16	20	15	18	11	4.8	2.6	3.2	2.7
3	4.7	5.6	11	15	79	18	17	11	15	2.5	2.7	2.1
4	4.5	4.5	10	26	53	19	32	11	21	2.4	2.3	2.1
5	3.6	4.5	11	30	42	17	45	19	12	2.4	2.1	4.2
6	3.3	4.6	9.9	20	30	14	29	30	8.5	2.4	2.1	2.3
7	8.4	4.6	8.6	16	24	14	44	23	6.7	2.4	2.1	1.9
8	10	4.5	7.7	e15	22	13	48	17	5.4	2.5	1.9	1.7
9	7.4	4.4	7.4	e14	21	16	36	13	4.6	7.9	1.8	2.1
10	5.6	28	17	e13	20	45	26	12	5.1	23	4.7	14
11	4.6	59	154	e12	23	31	23	13	4.4	14	2.4	14
12	4.1	35	71	e14	86	22	22	12	4.0	9.1	1.9	7.4
13	3.5	23	30	15	45	21	26	11	3.7	8.0	2.4	4.1
14	3.1	16	21	17	30	20	22	9.9	3.5	9.9	2.3	2.7
15	2.7	12	36	e16	27	18	20	9.1	3.2	6.9	1.9	2.2
16	2.5	10	46	e14	28	17	17	8.6	2.8	4.5	1.6	1.9
17	2.4	9.0	25	e13	26	16	16	9.3	27	3.2	2.2	1.6
18	2.4	9.2	19	42	23	15	16	15	18	3.7	5.1	1.6
19	2.6	9.0	17	52	22	20	25	12	7.3	8.1	4.9	1.6
20	2.8	8.9	16	89	28	21	39	11	5.2	4.3	14	1.6
21	2.7	8.2	15	69	25	17	24	10	4.1	3.4	13	1.6
22	3.1	6.6	14	39	20	15	19	32	3.6	31	7.4	1.6
23	3.8	6.2	14	30	19	14	17	24	3.3	201	4.4	1.7
24	3.4	5.7	13	25	20	14	17	14	3.8	181	5.5	1.6
25	3.7	5.6	15	27	19	14	16	13	3.9	22	4.2	1.7
26	4.1	5.7	18	44	18	29	14	15	3.2	11	3.1	1.9
27	6.9	8.7	21	29	17	84	13	13	3.3	9.6	2.3	1.9
28	8.6	17	22	23	17	39	17	10	3.1	18	2.0	1.9
29	12	45	31	21	16	27	14	8.5	2.9	16	4.2	1.9
30	9.9	39	23	21	---	23	13	7.1	2.9	8.9	5.3	2.7
31	8.1	---	18	21	---	21	---	6.0	---	5.8	6.8	---
TOTAL	156.4	412.1	753.6	815	840	684	705	422.5	201.6	630.1	123.8	94.4
MEAN	5.05	13.7	24.3	26.3	29.0	22.1	23.5	13.6	6.72	20.3	3.99	3.15
MAX	12	59	154	89	86	84	48	32	27	201	14	14
MIN	2.4	4.4	7.4	12	16	13	13	6.0	2.8	2.4	1.6	1.6
CFSM	.15	.42	.74	.80	.88	.67	.72	.42	.20	.62	.12	.10
IN.	.18	.47	.85	.92	.95	.78	.80	.48	.23	.71	.14	.11

CAL YR 1987 TOTAL 11503.3 MEAN 31.5 MAX 645 MIN 1.3 CFSM .96 IN. 13.05
WTR YR 1988 TOTAL 5838.5 MEAN 16.0 MAX 201 MIN 1.6 CFSM .49 IN. 6.62

e Estimated.

02038850 HOLIDAY CREEK NEAR ANDERSONVILLE, VA
(Hydrologic bench-mark station)

LOCATION.--Lat 37°24'55", long 78°38'10", Appomattox County, Hydrologic Unit 02080207, on right bank 350 ft downstream from culvert on State Highway 614, 1.0 mi upstream from Holiday Lake, and 5.2 mi southwest of Andersonville.

DRAINAGE AREA.--8.53 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1966 to current year.

REVISED RECORDS.--WDR VA-72-1: 1971(P).

GAGE.--Water-stage recorder. Datum of gage is 472.97 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for period of no gage-height record, Dec. 27 to Jan. 5, and periods with ice effect, Jan. 6-17, 26-29, and Feb. 7, 14, which are fair. Recording rain gage at station.

AVERAGE DISCHARGE.--22 years, 8.59 ft³/s, 13.68 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,640 ft³/s, June 21, 1972, gage height, 14.64 ft, from high-water mark in gage house, from rating curve extended above 4,200 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.10 ft³/s, Sept. 11, 12, 1966; minimum gage height, 0.73 ft, Aug. 12, 14, 15, 1987.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 18	0645	*194	*2.73	Aug. 29	0830	*194	*2.73

Minimum discharge, 0.59 ft³/s, Aug. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	2.1	7.6	e5.5	5.8	5.0	5.0	5.0	3.6	2.2	1.6	2.3
2	1.7	2.1	5.5	e5.2	6.1	5.0	4.8	4.8	3.6	2.0	1.5	1.9
3	2.2	2.1	4.6	e5.0	9.1	5.2	4.8	4.7	8.7	1.9	1.5	1.8
4	2.2	2.2	4.3	e5.1	12	5.5	15	5.1	5.8	1.8	1.6	2.3
5	1.9	2.2	3.8	e5.1	9.5	5.5	10	11	4.4	1.7	1.5	2.4
6	1.9	2.2	3.5	e5.0	7.4	5.1	7.7	9.9	3.8	1.6	1.4	1.9
7	2.2	2.1	3.5	e4.5	e6.8	5.1	8.9	8.4	3.4	1.5	1.3	1.7
8	1.9	2.1	3.3	e4.2	6.1	5.0	8.1	6.4	3.1	1.5	1.2	1.6
9	1.7	2.2	3.3	e4.1	5.9	5.9	6.9	5.6	3.5	1.4	1.1	1.7
10	1.7	19	8.0	e4.0	5.6	7.0	6.2	5.6	4.2	1.4	3.1	2.6
11	1.7	14	33	e3.9	5.8	5.7	5.7	5.6	3.4	1.3	1.5	1.9
12	1.8	7.7	11	e4.1	7.9	5.2	6.3	4.8	3.1	1.7	1.2	1.6
13	1.9	6.5	6.7	e4.4	6.8	5.2	7.5	4.5	2.9	2.0	1.1	1.6
14	1.8	5.0	5.5	e4.2	e6.3	4.8	6.1	4.3	2.8	1.9	.97	1.5
15	1.7	4.0	11	e4.1	5.8	4.6	5.7	4.1	2.6	1.6	.92	1.4
16	1.8	3.7	9.4	e4.5	7.3	4.5	5.2	6.0	2.5	1.4	.93	1.3
17	1.8	3.7	6.5	e5.0	6.1	4.5	5.0	8.6	2.5	1.2	.87	1.5
18	1.7	4.6	5.3	14	5.8	4.6	5.3	50	2.6	1.1	.78	1.8
19	1.7	3.7	4.9	10	5.9	4.9	8.1	14	3.9	1.1	.76	1.7
20	1.9	3.5	4.6	32	6.3	4.6	7.7	15	2.9	1.3	1.6	1.7
21	1.7	3.2	4.4	16	5.6	4.5	6.4	11	2.5	1.3	1.4	1.6
22	1.6	2.9	4.3	9.7	5.3	4.4	6.4	21	2.4	2.8	1.1	1.4
23	1.8	2.9	4.0	7.5	5.4	4.4	6.1	10	4.5	17	1.0	1.4
24	1.8	2.9	3.8	6.5	5.4	4.5	7.5	8.1	6.3	5.6	.98	1.5
25	1.9	2.9	4.8	7.2	5.3	4.6	5.9	7.2	3.4	3.0	.84	1.6
26	1.9	3.0	5.4	e6.7	5.2	9.9	5.5	6.1	3.1	2.3	.72	1.7
27	3.0	5.6	e6.0	e6.2	5.3	12	7.2	5.2	2.9	2.3	.65	1.5
28	3.7	5.8	e6.8	e6.1	5.2	7.0	7.5	4.9	2.4	2.2	.65	1.4
29	2.5	28	e8.5	e6.0	5.1	5.9	6.0	4.5	2.3	1.9	28	1.4
30	2.3	15	e6.8	5.8	---	5.4	5.4	4.1	2.5	1.7	7.2	1.4
31	2.1	---	e5.7	6.2	---	5.1	---	3.8	---	1.6	3.3	---
TOTAL	61.4	166.9	205.8	217.8	186.1	170.6	203.9	269.3	105.6	73.3	72.27	51.1
MEAN	1.98	5.56	6.64	7.03	6.42	5.50	6.80	8.69	3.52	2.36	2.33	1.70
MAX	3.7	28	33	32	12	12	15	50	8.7	17	28	2.6
MIN	1.6	2.1	3.3	3.9	5.1	4.4	4.8	3.8	2.3	1.1	.65	1.3
CFSM	.23	.65	.78	.82	.75	.65	.80	1.02	.41	.28	.27	.20
IN.	.27	.73	.90	.95	.81	.74	.89	1.17	.46	.32	.32	.22

CAL YR 1987 TOTAL 2566.85 MEAN 7.03 MAX 301 MIN .32 CFSM .82 IN. 11.19
WTR YR 1988 TOTAL 1784.07 MEAN 4.87 MAX 50 MIN .65 CFSM .57 IN. 7.78

e Estimated.

02038850 HOLIDAY CREEK NEAR ANDERSONVILLE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (FTU)	BARO-METRIC PRES-SURE (MM OF HG)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
DEC											
01...	0915	7.7	35	6.60	8.0	2.6	742	11.2	97	18	94
MAR											
24...	0945	4.5	33	6.60	9.5	1.3	760	11.8	104	K6	K4
JUN											
21...	0930	2.6	38	6.80	20.0	2.4	750	8.8	98	16	380
SEP											
07...	0945	1.7	39	6.70	14.5	2.2	755	10.4	103	94	150

DATE	HARD-NESS TOTAL (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
DEC											
01...	10	2.1	1.1	2.2	0.90	0	12	10	8.0	8.1	2.8
MAR											
24...	10	2.2	1.1	2.8	0.50	0	13	11	12	4.6	1.2
JUN											
21...	13	2.9	1.3	2.9	0.60	0	16	13	16	5.6	1.6
SEP											
07...	13	3.0	1.3	2.9	0.60	0	17	14	16	3.8	1.6

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)
DEC										
01...	0.10	10	30	33	<0.100	0.030	0.020	0.40	0.020	0.020
MAR										
24...	0.10	12	28	32	<0.100	0.010	0.010	<0.20	0.010	0.010
JUN										
21...	0.20	13	46	38	<0.100	<0.010	0.030	0.50	0.020	0.010
SEP										
07...	0.10	14	36	38	<0.100	<0.010	<0.010	0.30	0.020	0.020

02038850 HOLIDAY CREEK NEAR ANDERSONVILLE, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
DEC										
01...	0.020	70	<1	18	<0.5	<1	<1	<3	3	360
MAR										
24...	<0.010	20	<1	15	<0.5	<1	<1	<3	1	170
JUN										
21...	<0.010	40	<1	17	<0.5	<1	<1	<3	<1	580
SEP										
07...	0.030	30	<1	15	<0.5	<1	<1	<3	1	430

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)
DEC										
01...	<5	<4	13	<0.1	<10	4	<1	<1.0	20	<6
MAR										
24...	<5	<4	5	--	<10	<1	<1	<1.0	20	<6
JUN										
21...	<5	<4	12	<0.1	<10	<1	<1	<1.0	27	<6
SEP										
07...	<5	<4	12	<0.1	<10	<1	<1	<1.0	26	<6

DATE	ZINC, DIS-SOLVED (UG/L AS ZN)	GROSS ALPHA, DIS-SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, DIS-SOLVED (PCI/L AS SR/YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90)	RADIUM 226, DIS-SOLVED, RADON METHOD (PCI/L)	SEDI-MENT, SUS-PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
DEC										
01...	3	--	--	--	--	--	--	--	5	69
MAR										
24...	<3	<0.4	<0.4	0.6	<0.4	0.5	<0.4	<0.02	3	58
JUN										
21...	9	--	--	--	--	--	--	--	12	89
SEP										
07...	37	--	--	--	--	--	--	--	4	3

02039000 BUFFALO CREEK NEAR HAMPDEN SYDNEY, VA

LOCATION.--Lat 37°15'25", long 78°29'12", Prince Edward County, Hydrologic Unit 02080207, on left bank 100 ft upstream from bridge on State Highway 658, 0.8 mi upstream from Locket Creek, 2.0 mi northwest of Hampden Sydney, and 6.0 mi southwest of Farmville.
DRAINAGE AREA.--69.7 mi².
PERIOD OF RECORD.--August 1946 to current year.
REVISED RECORDS.--WSP 1303: 1948-50(M). WSP 2104: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 339.19 ft above National Geodetic Vertical Datum 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 of doubtful or no gage-height record, Oct. 1 to Nov. 17, Dec. 6-9, 20-25, Jan. 1-6, 10-13, 16, Jan. 29 to Feb. 2, Feb. 8-11, 14, 15, Feb. 17 to Mar. 7, Mar. 11, 12, 23, Apr. 6, 9-12, Apr. 28 to May 3, May 28 to June 2, June 5-9, and Sept. 2-4, 7-9, 13-20, 23-25, 28-30, and periods with ice effect, Jan. 7-9, 14, 15, 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 Water Control Board.
AVERAGE DISCHARGE.--42 years, 66.9 ft³/s, 13.03 in/yr.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,160 ft³/s, June 21, 1972, gage height, 12.38 ft, from rating curve extended above 1,600 ft³/s on basis of slope-area measurement at gage height 11.96 ft; minimum daily, 2.7 ft³/s, Oct. 7, 8, 1970.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of about 15 ft, from information by local resident.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 22	1700	*546	*5.65	No other peak equal to or greater than base discharge.			

Minimum discharge, 9.4 ft³/s, Aug. 19-20, gage height, 1.24 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e60	e37	91	e63	e58	e45	51	e37	e40	24	20	45
2	e50	e37	67	e58	e59	e43	49	e36	e38	22	18	e30
3	e45	e36	54	e55	72	e42	47	e34	55	21	17	e20
4	e56	e36	52	e60	86	e43	57	37	65	20	18	e24
5	e45	e35	54	e62	88	e43	66	110	e55	19	17	30
6	e40	e34	e48	e56	70	e42	e56	124	e46	19	18	27
7	e50	e33	e47	e51	66	e39	70	88	e40	18	28	e22
8	e47	e32	e46	e49	e64	39	68	65	e37	17	20	e20
9	e42	e32	e45	e47	e60	41	e62	57	e35	17	18	e21
10	e38	e64	71	e45	e58	56	e57	52	38	16	17	32
11	e35	e100	334	e42	e55	e50	e55	52	35	16	16	28
12	e34	e90	238	e45	80	e49	e52	48	33	18	16	25
13	e34	e70	132	e48	69	48	65	45	31	26	14	e21
14	e33	e64	86	e50	e60	46	63	43	29	24	14	e19
15	e33	e56	115	e48	e58	44	56	41	27	22	13	e18
16	e32	e52	130	e45	69	43	51	40	26	20	12	e17
17	e34	e49	90	57	e62	42	48	39	26	18	11	e17
18	e34	52	68	86	e57	40	47	43	27	16	10	e18
19	e32	48	66	125	e54	43	61	49	37	15	9.5	e18
20	e31	45	e62	324	e60	43	74	76	33	15	16	e21
21	e31	42	e60	318	e56	41	66	76	30	15	22	29
22	e30	39	e57	175	e52	39	65	387	29	21	20	24
23	e29	39	e54	119	e51	e36	63	277	27	26	17	e21
24	e32	38	e53	90	e54	39	59	150	30	34	15	e19
25	e37	37	e58	82	e50	39	53	100	27	28	14	e19
26	e36	37	63	93	e47	48	50	74	31	25	13	22
27	e42	45	65	75	e47	98	48	65	32	31	11	21
28	e62	51	80	66	e46	70	e44	e56	26	40	10	e19
29	e46	110	106	e64	e45	65	e40	e50	24	31	193	e18
30	e40	143	79	e60	---	62	e38	e45	25	25	187	e17
31	e38	---	66	e59	---	57	---	e42	---	21	79	---
TOTAL	1228	1583	2637	2617	1753	1475	1681	2438	1034	680	903.5	682
MEAN	39.6	52.8	85.1	84.4	60.4	47.6	56.0	78.6	34.5	21.9	29.1	22.7
MAX	62	143	334	324	88	98	74	387	65	40	193	45
MIN	29	32	45	42	45	36	38	34	24	15	9.5	17
CFSM	.57	.76	1.22	1.21	.87	.68	.80	1.13	.49	.31	.42	.33
IN.	.66	.84	1.41	1.40	.94	.79	.90	1.30	.55	.36	.48	.36

CAL YR 1987 TOTAL 27585.9 MEAN 75.6 MAX 1330 MIN 9.5 CFSM 1.08 IN. 14.72
WTR YR 1988 TOTAL 18711.5 MEAN 51.1 MAX 387 MIN 9.5 CFSM .73 IN. 9.99

e Estimated.

02039500 APPOMATTOX RIVER AT FARMVILLE, VA

LOCATION.--Lat 37°18'25", long 78°23'20", Cumberland County, Hydrologic Unit 02080207, on left bank at downstream side of bridge on State Highway 45 at north town limits of Farmville and 1.1 mi downstream from Buffalo Creek.

DRAINAGE AREA.--303 mi².

PERIOD OF RECORD.--March 1926 to current year.

REVISED RECORDS.--WSP 972: 1927-37, 1938(M). WSP 1303: 1927(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 281.93 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 29, 1928, nonrecording gage at same site and datum.

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

AVERAGE DISCHARGE.--62 years, 286 ft³/s, 12.82 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,100 ft³/s, June 22, 1972, gage height, 29.70 ft, from flood-marks, from rating curve extended above 12,000 ft³/s on basis of contracted-opening measurement of peak flow; minimum, 3.8 ft³/s, Sept. 25, 1941.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,900 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 22	2330	*2,350	*12.88	No other peak equal to or greater than base discharge.			

Minimum discharge, 32 ft³/s, Aug. 19, gage height, 3.21 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	188	117	500	222	232	141	167	126	123	75	55	145
2	121	114	315	201	226	136	157	119	112	68	51	91
3	98	113	239	182	305	136	152	113	191	62	49	72
4	102	112	207	215	386	140	278	114	288	57	48	70
5	96	112	184	243	498	141	509	501	187	54	48	80
6	92	107	164	185	345	135	298	672	141	52	48	76
7	149	104	151	151	265	130	316	394	119	49	87	65
8	128	103	142	213	237	127	318	275	102	48	60	58
9	99	103	132	251	225	136	273	205	95	46	49	58
10	87	301	192	227	212	203	229	181	108	45	45	78
11	85	1180	1250	206	208	209	201	187	103	44	42	83
12	84	779	1090	190	334	172	195	186	91	46	47	70
13	78	518	517	180	312	156	246	149	84	58	42	61
14	76	367	321	185	236	150	228	132	79	64	39	56
15	74	280	408	166	226	137	194	122	75	59	38	53
16	74	233	584	154	273	131	174	119	71	52	38	50
17	74	209	385	166	258	124	156	153	68	47	37	49
18	73	207	280	342	238	122	152	591	70	43	35	54
19	73	197	233	587	223	135	200	688	81	44	34	59
20	72	177	211	1180	227	136	289	536	94	44	44	59
21	71	160	194	1370	213	126	254	518	81	47	53	69
22	69	144	179	713	186	118	216	1870	72	54	53	64
23	67	138	166	441	175	116	204	1450	71	139	48	57
24	67	136	154	331	175	118	195	619	88	258	43	55
25	69	129	157	304	165	119	195	433	83	132	40	54
26	71	121	187	375	155	179	164	343	174	99	38	54
27	88	157	207	297	154	523	152	264	368	98	36	54
28	129	202	279	246	152	359	155	212	118	180	34	51
29	131	524	466	234	145	247	154	183	82	100	417	49
30	100	1160	343	226	---	203	136	158	77	74	653	49
31	94	---	254	230	---	183	---	138	---	62	316	---
TOTAL	2879	8304	10091	10213	6986	5188	6557	11751	3496	2300	2667	1943
MEAN	92.9	277	326	329	241	167	219	379	117	74.2	86.0	64.8
MAX	188	1180	1250	1370	498	523	509	1870	368	258	653	145
MIN	67	103	132	151	145	116	136	113	68	43	34	49
CFSM	.31	.91	1.07	1.09	.80	.55	.72	1.25	.38	.24	.28	.21
IN.	.35	1.02	1.24	1.25	.86	.64	.81	1.44	.43	.28	.33	.24

CAL YR 1987 TOTAL 108220 MEAN 296 MAX 7220 MIN 28 CFSM .98 IN. 13.29
WTR YR 1988 TOTAL 72375 MEAN 198 MAX 1870 MIN 34 CFSM .65 IN. 8.89

02040000 APPOMATTOX RIVER AT MATTOAX, VA

LOCATION.--Lat 37°25'17", long 77°51'33", Amelia County, Hydrologic Unit 02080207, on right bank 75 ft upstream from Norfolk Southern Railway bridge at Mattoax, 0.3 mi upstream from Skinquarter Creek, and 3.7 mi upstream from Flat Creek.

DRAINAGE AREA.--726 mi².

PERIOD OF RECORD.--August 1900 to December 1905, March 1926 to current year.

REVISED RECORDS.--WSP 892: 1938. WSP 972: 1928, 1932, 1934-38. WSP 1303: 1901(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 174.51 ft above National Geodetic Vertical Datum of 1929. August 1900 to December 1905, nonrecording 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 with ice effect, Jan. 6, 7, 9-19, 27, 28, and periods of doubtful gage-height record, Feb. 15, 16, 19, Feb. 26 to Mar. 4, Mar. 6-8, May 1-4, June 30 to July 7, Aug. 18, 19, and Sept. 4, 15, which are fair. Appomattox Water Authority 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.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--67 years, 720 ft³/s, 13.47 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,000 ft³/s, Aug. 18, 1940, gage height, 35.3 ft, from floodmark in gage house, from rating curve extended above 20,000 ft³/s on basis of records for stations at Farmville and near Petersburg; minimum, 11 ft³/s, Oct. 2, 1930, gage height, 3.52 ft.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 13	1030	*3,310	*16.60	No peak equal to or greater than base discharge.			

Minimum discharge, 59 ft³/s, Aug. 28-29, gage height, 5.81 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	272	267	2660	753	720	e450	535	e370	359	e215	300	500
2	363	264	1470	681	708	e430	505	e340	325	e200	317	288
3	274	266	872	632	982	e415	477	e315	346	e170	194	198
4	247	287	714	639	1170	e450	585	e310	460	e160	130	e120
5	242	291	626	747	1280	460	856	407	553	e145	116	137
6	235	279	551	e700	1220	e440	942	2140	444	e135	108	132
7	234	284	489	e560	938	e400	783	3060	360	e130	158	133
8	291	275	450	432	789	e390	805	1870	312	106	265	120
9	289	271	426	e425	727	409	806	886	287	96	200	109
10	236	387	461	e415	688	541	710	695	271	94	139	118
11	202	1660	2400	e410	652	675	621	621	268	89	109	140
12	186	2420	3250	e440	1000	650	566	595	271	87	96	171
13	177	2170	3290	e480	1380	560	616	549	248	90	89	146
14	166	1370	2200	e500	1030	515	677	480	227	98	88	119
15	162	965	1200	e480	e720	485	627	435	214	125	79	e110
16	174	740	1700	e460	e770	450	551	405	202	117	71	91
17	170	634	1610	e440	862	423	501	387	190	104	67	85
18	159	597	1110	e750	799	406	472	396	184	93	e66	83
19	155	558	875	e1300	e700	411	498	708	180	84	e64	83
20	151	518	774	2650	731	425	654	927	181	83	83	87
21	149	467	707	3180	719	425	827	718	193	83	90	91
22	144	423	656	3220	673	402	693	969	250	116	101	92
23	140	384	608	2430	617	382	620	2210	280	137	108	104
24	138	361	569	1260	588	376	591	2500	270	174	99	94
25	137	353	548	1030	569	374	558	1240	277	448	87	85
26	139	346	560	1150	e530	432	517	867	280	320	76	83
27	176	462	604	e950	e500	737	474	711	322	221	68	81
28	636	676	659	e840	e480	1090	449	576	668	1450	63	80
29	565	1300	905	779	e470	844	432	492	401	1040	173	79
30	416	2700	1150	740	---	655	419	437	e250	450	634	78
31	316	---	912	729	---	572	---	394	---	306	857	---
TOTAL	7341	21975	35006	30202	23012	15674	18367	27010	9073	7166	5095	3837
MEAN	237	732	1129	974	794	506	612	871	302	231	164	128
MAX	636	2700	3290	3220	1380	1090	942	3060	668	1450	857	500
MIN	137	264	426	410	470	374	419	310	180	83	63	78
CFSM	.33	1.01	1.56	1.34	1.09	.70	.84	1.20	.42	.32	.23	.18
IN.	.38	1.13	1.79	1.55	1.18	.80	.94	1.38	.46	.37	.26	.20

CAL YR 1987 TOTAL 299854 MEAN 822 MAX 10900 MIN 37 CFSM 1.13 IN. 15.36
WTR YR 1988 TOTAL 203758 MEAN 557 MAX 3290 MIN 63 CFSM .77 IN. 10.44

e Estimated.

02041000 DEEP CREEK NEAR MANNBORO, VA

LOCATION.--Lat 37°16'59", long 77°52'12", Amelia County, Hydrologic Unit 02080207, on left bank 300 ft upstream from bridge on State Highway 153, 0.9 mi upstream from Sweathouse Creek, 3.4 mi northwest of Mannboro, and 7.5 mi southeast of Amelia.

DRAINAGE AREA.--158 mi².

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

REVISED RECORDS.--WSP 1203: 1948 (calendar year figures only). WSP 2104: Drainage area. WDR VA-79-1: 1973-76(P), 1978.

GAGE.--Water-stage recorder. Datum of gage is 177.20 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 2, 1949, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 6-10, 12-16, 27, 28, and period of no gage-height record, Jan. 11, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--42 years, 150 ft³/s, 12.89 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,000 ft³/s, Oct. 6, 1972, gage height, 24.04 ft, from high-water mark, from rating curve extended above 3,900 ft³/s; minimum, 0.03 ft³/s, Oct. 4, 5, 1968; minimum gage height, 0.29 ft, Aug. 9-12, 1957.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 14.8 ft, from information by local resident.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 12	1300	*975	*6.87	No peak equal to or greater than base discharge.			

Minimum discharge, 7.5 ft³/s, Sept. 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	51	645	113	128	76	86	52	37	27	40	37
2	31	42	245	105	123	72	81	49	34	23	34	30
3	30	38	159	96	201	70	85	48	48	21	29	23
4	31	37	126	121	290	72	94	48	92	19	25	21
5	29	37	108	164	303	74	124	76	100	18	23	20
6	28	36	93	e120	249	72	114	132	65	18	22	19
7	31	35	82	e95	174	73	118	137	46	17	24	18
8	31	34	74	e84	147	71	142	99	37	16	34	17
9	29	34	70	e82	137	77	141	74	33	15	35	17
10	29	64	91	e82	129	170	117	63	32	18	28	32
11	27	246	344	e81	121	231	100	65	31	20	25	42
12	25	410	859	e88	147	174	92	66	29	19	23	50
13	23	284	452	e92	186	137	111	60	28	29	21	36
14	22	193	197	e99	161	122	122	53	26	23	20	22
15	21	150	186	e98	144	112	103	47	25	19	19	16
16	20	116	258	e92	141	98	85	44	24	17	17	14
17	20	97	256	88	133	89	74	43	24	16	16	12
18	20	104	173	154	121	83	70	43	35	15	16	11
19	20	102	138	286	111	92	88	42	38	15	15	10
20	20	92	122	453	121	100	165	39	46	27	21	9.7
21	20	77	112	680	126	97	171	38	39	33	28	9.5
22	20	66	104	507	115	86	123	225	34	134	25	8.9
23	20	60	97	247	102	80	106	465	30	309	24	8.3
24	21	56	89	185	97	79	98	344	26	882	26	8.0
25	22	55	85	165	92	78	85	126	24	565	22	7.9
26	22	54	90	216	86	87	73	86	23	175	20	8.0
27	27	81	99	e190	83	150	65	69	30	74	18	7.8
28	96	174	116	e170	82	167	61	61	31	63	17	8.9
29	154	305	153	152	79	126	58	52	30	53	20	24
30	123	573	161	139	---	102	55	45	31	44	52	26
31	71	---	132	135	---	92	---	40	---	39	50	---
TOTAL	1115	3703	5916	5379	4129	3209	3007	2831	1128	2763	789	574.0
MEAN	36.0	123	191	174	142	104	100	91.3	37.6	89.1	25.5	19.1
MAX	154	573	859	680	303	231	171	465	100	882	52	50
MIN	20	34	70	81	79	70	55	38	23	15	15	7.8
CFSM	.23	.78	1.21	1.10	.90	.66	.63	.58	.24	.56	.16	.12
IN.	.26	.87	1.39	1.27	.97	.76	.71	.67	.27	.65	.19	.14

CAL YR 1987 TOTAL 64593.2 MEAN 177 MAX 8180 MIN 1.4 CFSM 1.12 IN. 15.21
WTR YR 1988 TOTAL 34543.0 MEAN 94.4 MAX 882 MIN 7.8 CFSM .60 IN. 8.13

e Estimated.

02041650 APPOMATTOX RIVER AT MATOACA, VA
(National stream-quality accounting network station)

LOCATION.--Lat 37°13'28", long 77°28'32", Chesterfield County, Hydrologic Unit 02080207, on left bank at upstream side of bridge on State Highway 600, 0.2 mi south of Matoaca, 2.0 mi upstream from Rohoic Creek, 2.8 mi downstream from Lake Chesdin, 3.5 mi west of Petersburg, and at mile 15.9.

DRAINAGE AREA.--1,344 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is 68.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for period of no gage-height record, Jan. 6-17, and period with ice effect, Jan. 27, 28, 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 12.4 ft³/s is diverted for industrial and municipal use. Records do not include flow of Upper Appomattox Canal of city of Petersburg which diverts around station. National Weather Service gage-height telemeter at station.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--19 years, 1,444 ft³/s, 14.59 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,800 ft³/s, Oct. 7, 1972, gage height, 18.39 ft; minimum, 41 ft³/s, Oct. 4, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,880 ft³/s, Jan. 21, gage height, 7.40 ft; minimum, 93 ft³/s, Sept. 13, gage height, 1.54 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	272	601	4350	1260	1130	720	917	555	471	340	444	109
2	267	466	3960	1090	1110	677	831	537	417	281	356	103
3	401	408	2100	1020	1430	662	776	500	508	245	327	101
4	364	378	1400	1030	2140	659	825	509	564	231	310	102
5	329	385	1110	1140	2350	663	1060	589	669	219	303	111
6	343	343	926	e1050	2230	643	1260	965	713	216	304	97
7	381	313	834	e880	1800	650	1390	2600	583	214	303	97
8	344	305	750	e750	1450	611	1400	3350	452	213	302	96
9	329	302	715	e700	1260	648	1390	1980	419	217	304	143
10	338	400	732	e695	1150	973	1280	1240	391	217	303	137
11	319	1090	1740	e690	1110	1240	1110	962	356	211	298	101
12	294	2460	4550	e750	1480	1280	989	826	326	218	297	97
13	268	3430	5400	e830	2060	1180	1020	767	310	214	294	97
14	239	2830	4940	e820	2120	1010	1040	700	299	213	294	108
15	232	1880	2940	e810	1640	928	1100	619	285	212	292	121
16	227	1370	2330	e770	1420	810	983	564	270	211	291	125
17	224	1080	2520	e740	1310	725	844	540	259	210	274	119
18	224	996	2120	956	1290	662	783	520	249	218	243	114
19	225	892	1530	1610	1210	714	819	525	256	218	252	112
20	226	864	1240	2870	1180	738	1020	838	249	218	251	105
21	235	792	1100	5520	1190	683	1260	969	243	211	243	105
22	232	622	1010	5680	1090	674	1260	1540	237	216	239	107
23	231	582	931	5020	1040	620	1110	2300	241	676	236	103
24	231	557	857	3070	987	611	1040	3270	242	3190	236	102
25	233	533	837	1900	900	592	897	2850	241	1840	233	105
26	234	527	841	1870	820	663	816	1560	267	1230	232	109
27	238	605	859	e1750	822	1010	745	1130	317	752	231	105
28	239	980	938	e1550	767	1400	764	905	328	592	230	101
29	596	1460	1150	1370	739	1530	627	745	486	1340	233	99
30	940	3080	1320	1210	---	1260	601	624	431	1070	191	98
31	820	---	1450	1150	---	1040	---	532	---	651	127	---
TOTAL	10075	30531	57480	50551	39225	26276	29957	36111	11079	16304	8473	3229
MEAN	325	1018	1854	1631	1353	848	999	1165	369	526	273	108
MAX	940	3430	5400	5680	2350	1530	1400	3350	713	3190	444	143
MIN	224	302	715	690	739	592	601	500	237	210	127	96

CAL YR 1987 TOTAL 525914 MEAN 1441 MAX 13500 MIN 68
WTR YR 1988 TOTAL 319291 MEAN 872 MAX 5680 MIN 96

e Estimated.

02041650 APPOMATTOX RIVER AT MATOACA, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV											
24...	1300	564	90	7.30	9.5	761	8.5	12.2	107	16	K6
JAN											
15...	1130	880	82	7.00	3.0	765	6.0	14.2	105	16	K6
FEB											
24...	0930	990	72	6.70	5.0	753	17	12.8	101	K12	K10
MAY											
04...	0900	510	82	6.80	15.0	752	1.7	9.5	95	K4	25
JUN											
22...	0900	236	84	7.20	22.5	750	2.6	7.6	89	13	19
AUG											
19...	1000	215	72	7.20	26.0	750	4.6	6.9	87	130	23

DATE	HARD-NESS TOTAL (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
NOV											
24...	28	6.5	2.8	5.0	3.7	25	14	5.8	0.10	16	73
JAN											
15...	27	6.2	2.8	5.2	2.2	25	16	5.6	0.20	17	69
FEB											
24...	24	5.7	2.4	5.0	1.8	20	15	4.6	0.20	15	62
MAY											
04...	29	6.6	3.0	5.4	1.6	31	8.4	4.3	0.10	13	62
JUN											
22...	31	7.2	3.1	4.6	1.9	30	9.9	3.6	0.10	15	65
AUG											
19...	27	6.3	2.6	3.8	2.5	25	15	3.4	0.10	14	62

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)
NOV											
24...	70	<0.010	<0.100	0.070	0.080	0.60	0.040	0.030	0.010	170	1
JAN											
15...	71	0.020	0.200	0.030	0.020	0.40	0.030	<0.010	<0.010	--	--
FEB											
24...	64	0.010	0.220	0.010	0.020	<0.20	0.040	0.030	0.020	170	<1
MAY											
04...	61	<0.010	<0.100	0.030	0.020	0.30	0.020	0.010	<0.010	20	<1
JUN											
22...	65	0.020	0.290	0.030	0.040	0.60	0.020	0.020	<0.010	--	--
AUG											
19...	66	0.010	0.260	0.020	0.020	0.30	0.060	0.020	0.030	90	<1

02041650 APPOMATTOX RIVER AT MATOACA, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
NOV 24...	26	<0.5	<1	<1	<3	3	480	<5	<4	16
JAN 15...	--	--	--	--	--	--	--	--	--	--
FEB 24...	24	<0.5	<1	<1	<3	<1	490	<5	<4	40
MAY 04...	23	<0.5	<1	<1	<3	1	190	<5	<4	7
JUN 22...	--	--	--	--	--	--	--	--	--	--
AUG 19...	22	<0.5	<1	1	<3	1	2100	<5	<4	270

DATE	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	SEDI-MENT, SUS-PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 24...	<0.1	<10	3	<1	<1.0	46	<6	6	8	93
JAN 15...	--	--	--	--	--	--	--	--	6	94
FEB 24...	<0.1	<10	<1	<1	<1.0	42	<6	13	9	97
MAY 04...	<0.1	<10	<1	<1	<1.0	51	<6	6	4	93
JUN 22...	--	--	--	--	--	--	--	--	4	89
AUG 19...	<0.1	<10	<1	<1	<1.0	52	<6	<3	11	93

02042500 CHICKAHOMINY RIVER NEAR PROVIDENCE FORGE, VA

LOCATION.--Lat 37°26'10", long 77°03'40", New Kent County, Hydrologic Unit 02080206, on left bank 100 ft downstream from bridge on State Highway 618, 1.1 mi southwest of Providence Forge, and 1.7 mi downstream from Schiminoe Creek.

DRAINAGE AREA.--248 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1942 to current year.

REVISED RECORDS.--WSP 1553: 1956. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 6.07 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 5-14, 27-29, which are fair.

AVERAGE DISCHARGE.--46 years, 262 ft³/s, 14.35 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,710 ft³/s, Aug. 15, 1955, gage height, 11.67 ft; minimum, 0.70 ft³/s, July 7, 1977; minimum gage height, 1.53 ft, Sept. 13, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,030 ft³/s, May 27, gage height, 8.27 ft; minimum, 6.4 ft³/s, July 7-9, Sept. 30, gage height, 1.85 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	24	176	193	294	186	367	109	252	18	244	9.0
2	16	30	172	198	278	174	349	103	190	17	165	9.0
3	13	26	174	200	303	165	294	101	173	15	120	8.7
4	15	28	205	214	326	159	243	95	176	13	102	9.9
5	18	31	239	e220	356	157	226	112	152	10	92	19
6	20	32	243	e228	363	151	215	160	143	7.9	81	19
7	28	32	219	e212	415	144	231	162	127	7.5	76	17
8	35	31	189	e200	524	137	252	171	108	6.8	59	14
9	38	31	165	e187	544	139	321	162	101	6.5	42	13
10	38	35	155	e192	475	203	389	161	98	7.4	34	55
11	34	62	197	e185	395	225	387	190	88	9.7	40	72
12	31	81	217	e172	445	228	373	240	75	12	36	68
13	29	102	246	e164	559	219	378	220	61	12	35	71
14	30	120	261	e155	713	227	356	174	50	13	31	62
15	28	124	318	144	657	245	319	141	40	15	27	52
16	26	134	440	138	606	246	270	116	33	29	23	42
17	24	155	469	130	547	225	228	130	27	16	18	33
18	22	183	440	172	461	198	200	134	23	16	12	26
19	21	196	382	212	395	187	193	221	21	23	8.9	20
20	24	180	326	267	351	178	203	405	29	23	21	16
21	21	158	299	337	329	166	192	339	46	20	31	12
22	16	133	274	386	311	154	186	427	60	19	34	9.7
23	14	112	246	435	287	142	175	622	61	19	36	8.5
24	12	97	214	517	268	135	168	834	44	45	34	7.4
25	10	86	195	607	253	129	170	740	31	88	34	7.5
26	9.6	79	188	639	242	133	172	751	24	210	28	7.3
27	12	79	180	e564	228	171	163	998	23	304	23	6.9
28	12	93	180	e435	213	205	149	899	20	292	17	6.9
29	17	130	198	e349	199	243	132	648	17	274	12	6.8
30	19	173	194	317	---	251	119	463	17	325	11	6.6
31	22	---	192	301	---	317	---	342	---	315	9.5	---
TOTAL	674.6	2777	7593	8670	11337	5839	7420	10370	2310	2188.8	1536.4	715.2
MEAN	21.8	92.6	245	280	391	188	247	335	77.0	70.6	49.6	23.8
MAX	38	196	469	639	713	317	389	998	252	325	244	72
MIN	9.6	24	155	130	199	129	119	95	17	6.5	8.9	6.6
CFSM	.09	.37	.99	1.13	1.58	.76	1.00	1.35	.31	.28	.20	.10
IN.	.10	.42	1.14	1.30	1.70	.88	1.11	1.56	.35	.33	.23	.11

CAL YR 1987 TOTAL 103375.3 MEAN 283 MAX 2430 MIN 2.7 CFSM 1.14 IN. 15.51
WTR YR 1988 TOTAL 61431.0 MEAN 168 MAX 998 MIN 6.5 CFSM .68 IN. 9.21

e Estimated.

02042500 CHICKAHOMINY RIVER NEAR PROVIDENCE FORGE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969-70, 1972 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	COLOR (PLAT-INUM-COBALT UNITS)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	CALCIUM DIS-SOLVED (MG/L AS CA)
NOV 13...	0830	98	143	6.60	5.0	757	27	8.8	69	8.9
FEB 02...	0800	280	175	5.90	9.5	761	17	8.4	74	6.8
APR 12...	1400	370	110	6.80	11.5	753	110	7.4	68	6.0
MAY 25...	0830	757	82	6.30	19.5	750	90	4.5	50	6.4
JUN 28...	0815	18	118	7.00	19.0	755	60	5.6	61	9.3
AUG 10...	0800	29	135	6.80	26.5	763	70	5.3	66	11
SEP 14...	0900	58	87	6.70	16.5	761	50	7.4	76	6.5

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
NOV 13...	2.3	9.5	5.1	13	19	17	0.10	10	81	<0.010
FEB 02...	1.8	18	2.8	6.0	19	32	0.20	4.4	89	<0.010
APR 12...	1.6	12	2.1	17	18	15	0.20	4.6	71	<0.010
MAY 25...	1.6	7.8	1.4	19	14	9.3	0.20	4.1	57	0.044
JUN 28...	2.4	8.9	1.6	27	19	3.9	0.30	8.1	72	0.228
AUG 10...	2.6	11	0.70	36	16	10	0.10	14	90	0.156
SEP 14...	1.4	7.2	0.50	15	17	8.4	0.10	8.2	59	0.028

DATE	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
NOV 13...	0.020	0.50	0.056	0.034	0.022	--	--	--	2	--
FEB 02...	<0.010	0.40	0.015	0.012	<0.001	--	--	--	<1	--
APR 12...	0.020	0.70	0.070	0.067	0.045	<1	--	<1	<1	<1
MAY 25...	0.030	1.1	0.054	0.024	0.016	--	<1	--	<1	--
JUN 28...	0.030	0.90	0.100	0.057	0.048	--	1	--	2	--
AUG 10...	0.010	0.40	0.100	0.083	0.066	--	1	--	4	--
SEP 14...	0.040	0.90	0.053	0.038	0.024	1	--	3	3	<1

02042500 CHICKAHOMINY RIVER NEAR PROVIDENCE FORGE, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	COPPER, DISSOLVED (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)
NOV 13...	--	--	--	2	750	420	--	<5	230	270
FEB 02...	<1	--	--	1	310	110	--	<5	40	31
APR 12...	<1	<1	2	3	2000	990	<5	<5	80	74
MAY 25...	1	--	--	1	1600	820	--	<5	120	13
JUN 28...	<1	--	--	1	1200	1000	--	<5	280	140
AUG 10...	<1	--	--	<1	2300	1400	--	<5	270	250
SEP 14...	--	1	3	1	1000	600	<5	<5	50	36

DATE	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	MERCURY DISSOLVED (UG/L AS HG)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI)	SELENIUM, TOTAL (UG/L AS SE)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	ZINC, DISSOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 13...	--	<0.1	--	--	--	25	12	--	--
FEB 02...	--	<0.1	--	--	--	19	7.1	--	--
APR 12...	0.10	<0.1	1	<1	<10	16	12	7	85
MAY 25...	--	0.2	--	--	--	7	13	--	--
JUN 28...	--	<0.1	--	--	--	4	12	--	--
AUG 10...	--	<0.1	--	--	--	10	16	--	--
SEP 14...	<0.10	<0.1	<1	<1	<10	7	8.5	4	85

02042720 CHICKAHOMINY RIVER ABOVE WALKERS DAM, AT WALKERS, VA

LOCATION.--Lat 37°24'31", long 76°56'18", New Kent County, Hydrologic Unit 02080206, on left bank 600 ft upstream from Walkers Dam at city of Newport News pumping station, 0.7 mi south of Walkers, and 8.0 mi upstream from Diascund Creek.

DRAINAGE AREA.--301 mi^2.

PERIOD OF RECORD.--Water years 1983 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	BAROMETRIC PRESSURE (MM OF HG)	COLOR (PLATINUM-COBALT UNITS)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	POTASSIUM, DISSOLVED (MG/L AS K)
NOV												
13...	0930	145	6.50	10.0	757	14	9.7	86	8.1	2.4	15	1.4
FEB												
02...	0900	175	5.90	6.5	761	13	11.1	90	7.4	2.0	19	3.4
APR												
12...	0900	118	6.40	14.0	755	110	7.9	78	7.2	1.7	11	2.4
MAY												
25...	0930	175	6.60	19.0	750	100	7.7	84	5.4	1.3	7.2	1.5
JUN												
28...	0830	100	6.20	22.5	755	55	4.7	55	7.3	1.8	8.4	1.7
AUG												
10...	0900	138	6.30	28.0	763	70	1.2	15	9.6	2.1	9.2	1.2
SEP												
14...	1000	115	6.60	18.5	761	31	7.5	80	8.3	2.1	9.8	1.3

DATE	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHOROUS TOTAL (MG/L AS P)	PHOSPHOROUS DISSOLVED (MG/L AS P)	PHOSPHOROUS ORTHO, DISSOLVED (MG/L AS P)
NOV												
13...	16	15	23	0.10	5.2	80	<0.010	0.020	0.70	0.027	0.018	0.008
FEB												
02...	6.0	18	34	0.20	6.5	95	0.053	<0.010	0.40	0.023	0.010	<0.001
APR												
12...	20	17	14	0.20	2.7	69	<0.010	0.020	0.80	0.038	0.024	0.011
MAY												
25...	14	15	9.6	0.20	6.7	57	0.031	0.040	1.0	0.085	0.046	0.033
JUN												
28...	22	14	2.3	0.30	6.2	56	0.012	0.020	0.50	0.070	0.022	0.008
AUG												
10...	16	22	10	0.10	12	79	<0.010	0.070	1.3	0.101	0.035	0.023
SEP												
14...	21	16	11	0.10	8.4	70	<0.010	0.030	0.70	0.024	0.015	0.003

02042720 CHICKAHOMINY RIVER ABOVE WALKERS DAM, AT WALKERS, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)
NOV 13...	--	--	--	<1	--	--	--	--	<1	350	32	--
FEB 02...	--	--	--	<1	--	<1	--	--	1	460	150	--
APR 12...	1	--	<1	<1	<1	<1	<1	2	2	1400	800	<5
MAY 25...	--	1	--	4	--	<1	--	--	2	1900	970	--
JUN 28...	--	1	--	<1	--	<1	--	--	2	1400	590	--
AUG 10...	--	2	--	<1	--	<1	--	--	<1	2600	2300	--
SEP 14...	1	--	1	<1	<1	--	2	3	<1	650	230	<5

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI)	SELE-NIUM, TOTAL (UG/L AS SE)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 13...	<5	40	5	--	<0.1	--	--	--	<3	9.0	--	--
FEB 02...	<5	80	81	--	<0.1	--	--	--	21	7.0	--	--
APR 12...	<5	90	16	<0.10	0.1	3	<1	30	10	13	4	92
MAY 25...	<5	90	77	--	<0.1	--	--	--	13	17	--	--
JUN 28...	<5	180	100	--	0.2	--	--	--	<3	21	--	--
AUG 10...	<5	830	850	--	<0.1	--	--	--	7	16	--	--
SEP 14...	<5	170	65	<0.10	<0.1	5	<1	<10	3	12	8	81

02042726 DIASCUND CREEK AT RT. 628, NEAR NEW KENT, VA

LOCATION.--Lat 37°28'52", long 76°58'21", New Kent County, Hydrologic Unit 02080206, at bridge on State Highway 628, 2.4 mi south of New Kent, and 6.0 mi upstream from Timber Swamp.

DRAINAGE AREA.--9.25 mi².

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	ALKA-LINITY LAB (MG/L AS CACO3)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	SILICA, DIS-SOLVED (MG/L AS SIO2)
NOV											
13...	1200	11	72	6.20	6.0	757	9.4	76	16	7.5	7.1
FEB											
02...	1115	6.2	65	6.30	12.5	759	9.6	90	20	6.0	5.1
APR											
12...	1200	6.6	85	7.00	10.0	753	8.9	80	29	5.5	2.1
MAY											
25...	1215	7.6	100	6.60	15.0	750	--	--	34	4.1	6.9
JUN											
28...	1100	5.0	85	6.60	17.5	755	6.5	68	32	4.6	7.2
SEP											
14...	1130	2.7	85	6.60	17.0	761	6.0	62	29	4.9	6.7

DATE	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	CARBON, ORGANIC TOTAL (MG/L AS C)
NOV										
13...	<0.010	0.020	0.40	0.044	0.012	790	370	40	31	9.3
FEB										
02...	<0.010	0.020	0.40	0.011	<0.002	1100	350	50	44	4.5
APR										
12...	<0.010	--	--	0.055	0.023	2400	610	90	83	--
MAY										
25...	0.024	0.050	0.50	0.147	0.020	4300	1900	180	210	11
JUN										
28...	<0.010	0.020	0.40	0.140	0.007	3500	3600	80	81	8.7
SEP										
14...	0.013	0.010	0.80	0.094	0.027	2800	980	230	230	11

02042734 DIASCUND CREEK RESERVOIR OFF TIMBER SWAMP, NEAR WALKERS, VA

LOCATION.--Lat 37°25'48", long 76°54'19", New Kent County, Hydrologic Unit 02080206, in Diascund Creek Reservoir at mouth of Timber Swamp, 0.3 mi west of bridge on State Highway 603, and 2.1 mi east of Walkers.

PERIOD OF RECORD.--Water years 1983 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	BAROMETRIC PRESSURE (MM OF HG)	OXYGEN, DISSOLVED (MG/L)
NOV							
12...	1345	3.00	67	6.80	11.5	756	9.2
12...	1400	10.0	67	6.80	11.5	756	9.1
12...	1415	18.0	67	6.80	11.0	756	8.1
FEB							
01...	0900	3.00	67	7.00	5.5	765	13.8
01...	0915	10.0	65	7.00	5.0	765	13.3
01...	0930	18.0	65	7.00	5.0	765	12.8
APR							
11...	0945	3.00	75	6.60	16.0	788	8.6
11...	1000	10.0	70	6.60	15.5	758	8.4
11...	1015	18.0	80	6.40	11.5	758	3.6
MAY							
24...	0900	3.00	80	7.20	24.0	757	7.8
24...	0915	10.0	92	7.00	23.0	757	6.6
24...	0930	18.0	95	6.80	17.0	757	0.6
JUN							
27...	0845	3.00	82	6.80	26.0	758	6.2
27...	0900	10.0	85	6.80	25.5	758	6.1
27...	0915	18.0	105	6.70	19.0	758	0
AUG							
09...	0900	3.00	80	6.70	30.0	760	8.0
09...	0915	10.0	95	7.00	29.0	760	1.7
09...	0930	18.0	230	6.80	19.5	760	0
SEP							
13...	0930	3.00	90	6.70	23.0	761	8.1
13...	0945	10.0	87	6.90	23.0	761	7.8
13...	1000	17.0	95	6.80	22.0	761	0

DATE	OXYGEN, DISSOLVED (PERCENT SATURATION)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS TOTAL (MG/L AS P)	PHOSPHOROUS ORTHO, DISSOLVED (MG/L AS P)
NOV						
12...	85	0.012	0.060	0.90	0.020	<0.001
12...	84	0.013	0.060	0.90	0.020	<0.001
12...	74	0.013	0.080	1.2	0.021	<0.001
FEB						
01...	109	<0.010	--	--	0.015	<0.002
01...	104	<0.010	<0.010	--	0.024	0.002
01...	100	<0.010	<0.010	--	0.016	0.002
APR						
11...	84	<0.010	<0.010	0.70	0.008	<0.001
11...	85	0.017	<0.010	0.50	0.015	0.010
11...	33	<0.010	0.040	0.70	0.009	<0.001
MAY						
24...	93	0.014	0.010	0.40	0.011	0.004
24...	78	<0.010	0.070	0.40	0.007	<0.001
24...	6	<0.010	0.260	0.50	0.009	<0.001
JUN						
27...	77	<0.010	0.070	0.70	0.019	0.003
27...	75	<0.010	0.080	0.60	0.022	0.003
27...	0	<0.010	0.510	0.90	0.017	0.003
AUG						
09...	106	<0.010	0.020	<0.20	0.048	<0.001
09...	22	<0.010	0.110	0.20	0.072	<0.001
09...	0	<0.010	3.70	5.0	0.065	0.020
SEP						
13...	95	<0.010	0.030	1.3	0.017	<0.001
13...	91	0.012	0.050	0.40	0.023	<0.001
13...	0	0.012	0.340	0.90	0.028	<0.001

02042736 BEAVERDAM CREEK AT RT. 632, NEAR BARHAMSVILLE, VA

LOCATION.--Lat 37°28'58", long 76°54'23", New Kent County, Hydrologic Unit 02080206, on State Highway 632, 4.0 mi northwest of Barhamsville, and 4.1 mi upstream from mouth.

DRAINAGE AREA.--4.82 mi².

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	ALKA-LINITY LAB (MG/L AS CACO3)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	SILICA, DIS-SOLVED (MG/L AS SIO2)
NOV											
13...	1100	2.7	200	6.70	4.0	757	6.8	52	42	25	9.1
FEB											
02...	1015	0.39	148	6.20	11.0	759	9.0	82	47	15	4.7
APR											
12...	1100	3.4	160	6.80	12.0	753	6.8	64	57	10	5.2
MAY											
25...	1130	1.6	170	6.70	19.0	750	4.2	46	57	6.7	7.1

DATE	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	CARBON, ORGANIC TOTAL (MG/L AS C)
NOV										
13...	<0.010	0.030	0.40	0.055	0.031	1100	550	30	29	11
FEB										
02...	<0.010	<0.010	0.30	0.010	<0.001	960	280	50	47	5.2
APR										
12...	0.010	--	--	0.040	--	2300	780	70	53	--
MAY										
25...	<0.010	0.020	0.60	0.090	0.018	6400	1500	700	690	13

02042742 WAHRANI SWAMP AT RT. 632, NEAR BARHAMSVILLE, VA

LOCATION.--Lat 37°27'30", long 76°51'57", New Kent County, Hydrologic Unit 02080206, on State Highway 632, 1.3 mi west of Barhamsville, and 1.8 mi upstream from Barnes Swamp.

DRAINAGE AREA.--4.02 mi².

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	ALKA-LINITY LAB (MG/L AS CACO3)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	SILICA, DIS-SOLVED (MG/L AS SIO2)
NOV											
13...	1015	4.2	95	6.30	4.0	757	7.3	56	20	11	10
FEB											
02...	0945	2.1	95	6.40	10.0	761	8.3	74	26	9.4	6.3
APR											
12...	1000	2.2	110	6.50	9.5	755	5.2	46	38	7.8	4.2
MAY											
25...	1030	1.7	150	6.50	17.0	750	2.1	22	55	5.9	7.7
JUN											
28...	1000	0.02	142	6.10	16.5	755	3.1	32	34	7.4	10
SEP											
14...	1030	0.43	125	6.10	20.5	761	3.7	41	24	9.6	12

DATE	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	CARBON, ORGANIC TOTAL (MG/L AS C)
NOV										
13...	<0.010	0.030	0.50	0.100	0.027	2500	1200	50	49	13
FEB										
02...	<0.010	0.020	0.40	0.015	<0.002	1800	540	30	25	8.1
APR										
12...	0.080	--	--	0.066	0.018	2700	710	90	81	--
MAY										
25...	0.016	0.150	0.90	0.123	0.024	7700	3800	1700	1500	17
JUN										
28...	<0.010	0.070	0.60	0.100	<0.001	12000	500	1200	1100	11
SEP										
14...	<0.010	0.030	0.60	0.084	0.015	5300	1600	990	930	19

02042746 DIASCUND CREEK RESERVOIR OFF PUMP STATION, NEAR WALKERS, VA

LOCATION.--Lat 37°25'51", long 76°53'38", New Kent County, Hydrologic Unit 02080206, in Diascund Creek Reservoir 0.1 mi northwest of city of Newport News pumping station, 0.4 mi east of bridge on State Highway 603, and 2.8 mi east of Walkers.

PERIOD OF RECORD.--Water years 1983 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	BAROMETRIC PRESSURE (MM OF HG)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	ALKALINITY LAB (MG/L AS CACO3)	CHLORIDE, DISSOLVED (MG/L AS CL)	SILICA, DISSOLVED (MG/L AS SIO2)
NOV											
12...	1430	3.00	72	7.20	11.5	756	9.4	87	23	5.3	2.8
12...	1445	10.0	73	7.20	11.5	756	9.3	86	23	5.4	2.8
12...	1500	18.0	72	7.20	11.0	756	8.8	80	23	5.4	2.7
FEB											
01...	0945	3.00	79	7.10	5.5	765	13.9	110	23	7.6	9.6
01...	1000	10.0	79	7.40	5.0	765	13.6	106	23	7.5	4.0
01...	1015	18.0	84	7.40	5.0	765	13.4	104	23	7.6	3.9
APR											
11...	1030	3.00	89	6.60	16.0	758	8.3	85	21	8.7	2.7
11...	1045	10.0	88	6.70	15.5	758	8.3	84	21	7.5	2.7
11...	1100	18.0	95	6.60	13.5	758	5.7	55	25	8.8	3.7
MAY											
24...	0945	3.00	125	6.90	24.0	757	7.6	91	22	7.7	0.74
24...	1000	10.0	92	6.80	23.0	757	6.4	75	24	12	0.97
24...	1015	18.0	100	6.70	17.5	757	0.5	5	26	8.1	2.0
JUN											
27...	0930	3.00	85	6.80	25.5	758	6.2	76	24	7.8	1.1
27...	0945	10.0	87	6.80	25.5	758	6.2	76	31	7.7	1.1
27...	1000	18.0	110	6.70	19.0	758	0	0	31	8.9	2.5
AUG											
09...	0945	3.00	85	7.00	30.0	760	8.2	109	24	7.6	1.5
09...	1000	10.0	89	6.90	29.0	760	1.2	16	22	7.6	1.8
09...	1015	18.0	260	6.90	20.0	760	0	0	59	9.0	8.4
SEP											
13...	1015	3.00	98	6.90	23.0	761	9.1	107	27	7.3	2.6
13...	1030	10.0	100	6.80	23.0	761	3.8	44	26	7.5	2.9
13...	1045	17.0	102	6.90	22.0	761	0	0	26	7.7	3.1

DATE	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHOROUS TOTAL (MG/L AS P)	PHOSPHOROUS DISSOLVED (MG/L AS P)	PHOSPHOROUS ORTHO, DISSOLVED (MG/L AS P)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	CARBON, ORGANIC TOTAL (MG/L AS C)
NOV											
12...	<0.010	0.040	0.80	0.018	0.007	<0.001	640	51	60	4	8.5
12...	<0.010	0.040	1.2	0.017	0.006	<0.001	620	57	70	4	8.5
12...	0.010	0.040	0.70	0.016	0.006	0.001	670	93	70	7	8.2
FEB											
01...	<0.010	<0.010	--	0.018	0.006	<0.002	480	140	30	16	9.5
01...	<0.010	<0.010	--	0.016	0.008	<0.002	510	130	30	16	9.3
01...	<0.010	<0.010	--	0.014	0.005	<0.002	540	140	40	18	8.9
APR											
11...	<0.010	<0.010	0.30	0.011	<0.002	<0.001	260	36	70	8	6.4
11...	<0.010	<0.010	0.40	0.009	0.002	<0.001	240	26	60	4	8.7
11...	<0.010	0.100	0.50	0.007	0.002	<0.001	690	51	400	240	6.7
MAY											
24...	<0.010	0.020	0.50	0.017	0.006	0.002	240	70	40	2	6.3
24...	0.012	0.060	0.50	0.022	0.008	0.003	410	91	110	24	6.7
24...	0.010	0.250	0.50	0.021	0.008	0.004	2200	260	670	720	7.2
JUN											
27...	<0.010	0.060	0.70	0.014	0.007	<0.001	280	69	80	30	8.5
27...	<0.010	0.040	0.80	0.013	0.007	<0.001	320	50	90	8	8.1
27...	<0.010	0.570	0.70	0.014	0.006	<0.001	3000	2800	1200	1100	7.1
AUG											
09...	<0.010	0.030	<0.20	0.040	0.005	<0.001	280	200	70	50	7.9
09...	<0.010	0.030	0.30	0.058	0.010	<0.001	370	39	700	280	9.5
09...	<0.010	4.10	4.2	0.029	0.025	<0.001	24000	27000	2900	2700	16
SEP											
13...	0.015	0.030	0.50	0.016	<0.001	<0.001	690	160	140	4	7.4
13...	0.011	0.250	1.1	0.018	<0.001	<0.001	960	150	280	180	7.0
13...	<0.010	0.370	0.80	0.032	0.002	<0.001	1300	180	640	600	7.8

0204275430 LITTLE CREEK RESERVOIR (NORTH CENTRAL) NEAR NORGE, VA

LOCATION.--Lat 37°21'43", long 76°49'42", James City County, Hydrologic Unit 02080206, near city of Newport News pumping station in north-central arm of Little Creek Reservoir, 1.8 mi south of Toano, and 3.3 mi west of Norge.

PERIOD OF RECORD.--Water years 1983 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	BAROMETRIC PRESSURE (MM OF HG)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	ALKALINITY LAB (MG/L AS CACO3)	CHLORIDE, DISSOLVED (MG/L AS CL)	SILICA, DISSOLVED (MG/L AS SIO2)
NOV											
12...	1000	3.00	107	6.80	12.5	756	7.3	69	--	--	2.5
12...	1015	10.0	105	6.90	12.5	756	7.2	68	26	10	2.4
12...	1030	20.0	100	6.90	12.5	756	7.2	68	--	--	2.5
12...	1045	30.0	100	6.90	12.5	756	7.2	68	--	--	2.4
12...	1100	40.0	104	6.80	12.0	756	6.0	56	27	11	2.9
FEB											
01...	1100	3.00	112	6.80	4.5	765	13.4	103	--	--	4.3
01...	1115	10.0	115	6.80	4.0	765	13.4	102	18	15	4.4
01...	1130	20.0	113	6.80	4.0	765	13.2	100	--	--	4.5
01...	1145	30.0	107	6.80	4.0	765	13.2	100	--	--	4.7
01...	1200	40.0	108	6.80	4.0	765	13.2	100	14	19	5.4
APR											
11...	1430	3.00	120	6.80	17.0	758	8.1	84	--	--	2.4
11...	1445	10.0	125	6.90	15.5	758	7.7	78	17	14	2.4
11...	1500	20.0	120	6.90	11.0	758	7.7	70	--	--	3.0
11...	1515	30.0	120	6.80	9.0	758	7.0	61	--	--	3.2
11...	1530	40.0	120	6.80	8.5	758	6.6	57	17	14	3.3
MAY											
24...	1130	3.00	135	6.80	24.5	757	8.1	98	--	--	1.1
24...	1145	10.0	118	6.90	23.5	757	8.0	95	18	14	8.4
24...	1200	20.0	120	6.70	14.0	757	4.5	44	--	--	2.2
24...	1215	30.0	125	6.60	11.0	757	2.8	26	--	--	3.2
24...	1230	40.0	125	6.50	10.0	757	2.4	21	17	14	3.3
JUN											
27...	1015	3.00	118	6.80	26.5	758	7.7	96	--	--	0.50
27...	1030	10.0	119	7.10	26.0	758	7.6	95	18	14	0.46
27...	1045	20.0	120	6.60	16.0	758	2.6	26	--	--	1.6
27...	1100	30.0	130	6.80	11.5	758	0	0	--	--	3.0
27...	1115	40.0	132	6.60	10.5	758	0	0	22	14	3.7
AUG											
09...	1030	3.00	120	6.80	31.0	760	7.9	107	--	--	1.5
09...	1045	10.0	125	6.80	30.0	760	7.4	98	18	11	6.3
09...	1100	20.0	140	6.70	16.0	760	0	0	--	--	2.5
09...	1115	30.0	160	6.80	11.5	760	0	0	--	--	4.4
09...	1130	40.0	160	6.70	10.5	760	0	0	25	15	4.5
SEP											
13...	1100	3.00	120	6.80	24.0	761	10.1	120	--	--	2.0
13...	1115	10.0	115	7.10	24.0	761	9.3	110	21	12	2.0
13...	1130	20.0	125	6.90	21.5	761	1.1	12	--	--	2.7
13...	1145	30.0	165	6.90	12.0	761	0	0	--	--	4.9
13...	1200	40.0	165	6.90	11.0	761	0	0	28	15	5.2

0204275430 LITTLE CREEK RESERVOIR (NORTH CENTRAL) NEAR NORGE, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	CARBON, ORGANIC TOTAL (MG/L AS C)
NOV											
12...	0.031	0.170	0.70	0.006	<0.005	<0.001	--	660	--	230	--
12...	0.029	0.180	0.70	0.007	0.007	<0.001	1700	380	260	240	6.9
12...	0.031	0.190	0.80	0.006	<0.005	<0.001	--	760	--	260	--
12...	0.031	0.180	0.70	0.006	0.005	<0.001	--	360	--	240	--
12...	0.033	0.470	0.80	0.011	0.006	<0.001	3500	3200	380	500	7.3
FEB											
01...	0.070	0.050	0.40	0.010	0.006	<0.002	--	120	--	18	--
01...	0.072	0.050	0.50	0.012	0.005	<0.002	320	140	30	19	6.2
01...	0.072	0.050	0.40	0.012	0.006	<0.002	--	160	--	20	--
01...	0.071	0.040	0.60	0.031	0.008	<0.002	--	170	--	22	--
01...	0.070	0.020	0.40	0.014	0.008	<0.002	500	120	50	38	6.4
APR											
11...	0.020	0.010	0.40	0.005	0.007	0.004	--	200	--	10	--
11...	0.024	0.010	0.30	0.005	0.007	0.002	260	190	10	10	7.0
11...	0.074	0.030	0.30	0.004	0.004	<0.001	--	150	--	13	--
11...	0.095	0.060	0.30	0.004	0.004	0.001	--	190	--	41	--
11...	0.088	0.070	0.40	0.007	0.006	<0.001	240	200	60	48	5.6
MAY											
24...	0.014	<0.010	0.40	0.011	0.006	<0.001	--	91	--	26	--
24...	0.023	<0.010	0.40	0.014	0.007	0.002	240	57	10	2	6.8
24...	0.077	0.060	0.30	0.010	0.007	0.002	--	47	--	46	--
24...	0.088	0.160	0.50	0.008	0.007	<0.001	--	220	--	240	--
24...	0.088	0.170	0.60	0.009	0.006	<0.001	360	270	290	280	5.2
JUN											
27...	<0.010	0.050	0.40	0.007	0.004	0.002	--	50	--	27	--
27...	<0.010	0.030	0.60	0.009	0.004	<0.001	120	30	20	2	6.0
27...	0.034	0.050	<0.20	0.008	0.004	0.001	--	19	--	120	--
27...	0.045	0.270	0.50	0.009	0.002	0.001	--	200	--	590	--
27...	0.020	0.360	2.4	0.016	0.003	<0.001	2200	1600	670	680	6.2
AUG											
09...	<0.010	0.020	0.60	0.005	0.003	<0.001	--	620	--	100	--
09...	<0.010	0.040	1.4	0.016	0.002	<0.001	700	270	390	82	11
09...	<0.010	0.010	0.50	0.016	<0.001	<0.001	--	84	--	1300	--
09...	<0.010	0.500	0.70	0.016	0.001	<0.001	--	6200	--	1100	--
09...	<0.010	0.550	0.90	0.018	0.006	<0.001	6000	6300	860	880	7.8
SEP											
13...	<0.010	--	0.50	0.007	<0.001	<0.001	--	25	--	5	--
13...	<0.010	0.020	0.50	0.005	<0.001	<0.001	180	27	50	2	6.0
13...	<0.010	<0.010	0.80	0.020	<0.001	<0.001	--	55	--	1100	--
13...	<0.010	0.650	1.2	0.011	<0.001	<0.001	--	9400	--	1200	--
13...	<0.010	0.760	1.0	0.008	<0.001	<0.001	9100	9600	960	1000	8.1

0204275470 LITTLE CREEK RESERVOIR (SOUTH CENTRAL) NEAR NORGE, VA

LOCATION.--Lat 37°21'17", long 76°50'27", James City County, Hydrologic Unit 02080206, 0.3 mi north of Little Creek Reservoir dam, 0.9 mi southwest of city of Newport News pumping station, 2.7 mi southwest of Toano, and 4.0 mi west of Norge.

PERIOD OF RECORD.--Water years 1983 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	BAROMETRIC PRESSURE (MM OF HG)	OXYGEN, DISSOLVED (MG/L)
NOV							
12...	1130	3.00	104	7.00	13.0	756	7.6
12...	1145	10.0	106	7.00	13.0	756	7.6
12...	1200	20.0	102	7.00	13.0	756	7.6
12...	1215	35.0	107	7.00	12.5	756	7.3
12...	1230	50.0	159	6.80	11.0	756	0
FEB							
01...	1200	3.00	112	6.80	4.5	765	13.3
01...	1215	10.0	111	6.80	4.0	765	13.2
01...	1230	20.0	109	6.80	4.0	765	13.2
01...	1245	35.0	104	6.90	4.0	765	13.2
01...	1300	50.0	109	6.90	4.0	765	13.1
APR							
11...	1315	3.00	120	6.70	16.0	758	7.9
11...	1330	10.0	120	6.80	16.0	758	7.8
11...	1345	20.0	120	6.90	10.0	758	7.5
11...	1400	35.0	125	6.80	8.5	758	7.4
11...	1415	50.0	120	6.80	8.0	758	6.8
MAY							
24...	1245	3.00	130	6.90	24.5	757	7.8
24...	1300	10.0	120	7.10	21.0	757	7.7
24...	1315	20.0	123	6.80	14.5	757	4.9
24...	1330	35.0	121	6.60	10.5	757	3.1
24...	1345	50.0	128	6.50	10.0	757	2.5
JUN							
27...	1130	3.00	118	7.20	26.0	758	7.7
27...	1145	10.0	115	7.30	26.0	758	7.7
27...	1200	20.0	128	6.90	16.5	758	4.6
27...	1215	35.0	150	6.60	11.0	758	0.9
27...	1230	50.0	150	6.40	10.0	758	0
AUG							
09...	1145	3.00	120	6.80	31.0	760	7.5
09...	1200	10.0	120	7.00	30.0	760	7.3
09...	1215	20.0	122	6.70	16.5	760	0
09...	1230	35.0	138	6.50	11.0	760	0
09...	1245	50.0	150	6.70	10.0	760	0
SEP							
13...	1215	3.00	122	7.10	24.0	761	10.7
13...	1230	10.0	120	7.10	23.0	761	10.0
13...	1245	20.0	130	6.90	17.5	761	0
13...	1300	35.0	140	6.80	11.0	761	0
13...	1315	46.0	150	6.80	10.5	761	0

0204275470 LITTLE CREEK RESERVOIR (SOUTH CENTRAL) NEAR NORGE, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	OXYGEN, DISSOLVED (PERCENT SATURATION)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHOROUS TOTAL (MG/L AS P)	PHOSPHOROUS ORTHO, DISSOLVED (MG/L AS P)
NOV						
12...	73	0.030	0.170	0.40	<0.005	<0.001
12...	73	0.029	0.150	0.50	0.005	<0.001
12...	73	0.028	0.140	0.70	0.006	<0.001
12...	69	0.029	0.190	1.8	<0.005	<0.001
12...	0	<0.010	1.00	1.6	0.007	0.003
FEB						
01...	102	0.087	0.090	--	0.005	0.002
01...	100	0.086	0.080	--	0.005	<0.002
01...	100	0.086	0.080	<0.20	0.004	<0.002
01...	100	0.086	0.080	<0.20	0.003	<0.002
01...	100	0.087	0.080	--	0.005	<0.002
APR						
11...	80	0.029	<0.010	0.40	0.006	<0.001
11...	79	0.033	0.010	0.50	0.005	0.002
11...	67	0.087	0.020	0.40	0.002	0.001
11...	64	0.092	0.060	0.40	0.009	0.001
11...	58	0.094	0.070	0.40	0.009	<0.001
MAY						
24...	94	0.016	0.010	0.30	0.009	<0.001
24...	87	0.013	<0.010	0.40	0.010	0.001
24...	48	0.063	0.050	0.40	0.009	<0.001
24...	28	0.093	0.140	0.40	0.008	<0.001
24...	22	0.096	0.140	0.40	0.008	<0.001
JUN						
27...	96	<0.010	0.040	0.80	0.005	<0.001
27...	95	<0.010	0.030	0.30	0.005	<0.001
27...	47	0.016	0.040	0.40	0.009	<0.001
27...	8	0.148	0.150	0.70	0.005	<0.001
27...	0	0.072	0.290	0.60	0.006	<0.001
AUG						
09...	101	<0.010	0.020	0.90	0.011	<0.001
09...	97	<0.010	0.010	1.0	0.010	<0.001
09...	0	<0.010	<0.010	1.4	0.015	<0.001
09...	0	<0.010	0.490	1.4	0.023	<0.001
09...	0	<0.010	0.310	1.0	0.026	<0.001
SEP						
13...	127	<0.010	0.010	0.30	0.003	<0.001
13...	117	<0.010	0.040	0.30	0.004	<0.001
13...	0	<0.010	0.030	0.40	0.011	<0.001
13...	0	<0.010	0.340	0.70	0.007	<0.001
13...	0	<0.010	0.410	0.90	0.007	<0.001

02043500 CYPRESS SWAMP AT CYPRESS CHAPEL, VA

LOCATION.--Lat 36°37'24", long 76°36'07", Suffolk City, Hydrologic Unit 03010205, near center of span on downstream side of bridge on State Highway 32, 0.5 mi downstream from Dragon Swamp, 0.8 mi northwest of Cypress Chapel, and 6.5 mi south of downtown Suffolk.

DRAINAGE AREA.--23.8 mi².

PERIOD OF RECORD.--October 1953 to September 1971, March 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is 28.65 ft above National Geodetic Vertical Datum of 1929. October 1953 to September 1971, recording gage on right bank 30 ft upstream at same datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 6-16, 28, 29, and Feb. 7, 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.

AVERAGE DISCHARGE.--28 years, 26.5 ft³/s, 15.12 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,330 ft³/s, Aug. 11, 1967, gage height, 6.85 ft; no flow at times each year.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 6	1800	*215	*4.26	No other peak equal to or greater than base discharge.			

No flow part or all of October, November, June to September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.11	.00	58	33	15	9.3	7.8	9.6	2.7	.60	.00	.00
2	.08	.00	32	35	13	13	5.9	6.3	1.6	.10	.00	.00
3	.05	.00	18	55	50	16	5.3	4.5	8.4	.02	.00	.00
4	.09	.00	11	162	97	9.0	4.6	8.6	32	.01	.00	.00
5	.08	.00	8.1	155	126	9.0	4.6	59	23	.00	.00	.00
6	.06	.00	6.1	e86	85	8.6	13	186	8.8	.00	.00	.00
7	.09	.00	4.6	e71	e55	14	11	176	3.6	.00	.00	.00
8	.12	.00	3.6	e85	40	20	9.3	108	1.5	.00	.00	.00
9	.09	.00	2.7	e79	33	16	9.7	66	.99	.00	.00	.00
10	.05	.00	2.9	e60	27	15	9.0	46	6.9	.00	.00	.00
11	.04	.00	9.2	e46	24	14	5.6	36	9.2	.00	.00	.00
12	.03	.01	17	e39	74	11	5.1	30	4.4	.00	.00	.00
13	.02	.01	13	e32	119	9.0	34	24	1.7	.00	.00	.00
14	.02	.03	8.3	e30	81	7.9	54	20	.59	.00	.00	.00
15	.01	.05	10	e27	55	6.2	37	14	.15	.00	.00	.00
16	.00	.07	27	e25	63	4.5	28	9.8	.03	.00	.00	.00
17	.00	.12	24	25	64	3.8	22	20	.02	.00	.00	.00
18	.00	.31	17	42	50	3.1	15	83	.02	.00	.00	.00
19	.00	1.9	13	61	40	8.6	23	75	.02	.00	.00	.00
20	.00	4.4	13	61	41	14	61	90	4.4	18	.00	.00
21	.00	2.7	9.4	59	39	11	51	91	2.7	20	.00	.00
22	.00	1.5	8.2	55	30	8.4	32	65	.62	6.4	.00	.00
23	.00	.95	20	41	24	6.4	23	60	.06	12	.00	.00
24	.00	.74	20	32	20	5.3	20	39	.02	10	.00	.00
25	.00	.62	12	28	16	5.0	16	26	.02	5.3	.00	.00
26	.00	.55	15	36	12	8.1	11	26	.00	.96	.00	.00
27	.00	.96	15	35	11	47	8.6	22	19	.21	.00	.00
28	.00	6.8	27	e30	11	46	14	14	34	.05	.00	.00
29	.00	32	70	e23	10	39	21	11	4.1	.02	.00	.00
30	.00	66	83	21	---	22	15	7.8	1.6	.01	.00	.00
31	.00	---	52	19	---	11	---	4.9	---	.00	.00	---
TOTAL	0.94	119.72	630.1	1588	1325	421.2	576.5	1438.5	172.14	73.68	0.00	0.00
MEAN	.030	3.99	20.3	51.2	45.7	13.6	19.2	46.4	5.74	2.38	.00	.00
MAX	.12	66	83	162	126	47	61	186	34	20	.00	.00
MIN	.00	.00	2.7	19	10	3.1	4.6	4.5	.00	.00	.00	.00
CFSM	.00	.17	.85	2.15	1.92	.57	.81	1.95	.24	.10	.00	.00
IN.	.00	.19	.98	2.48	2.07	.66	.90	2.25	.27	.12	.00	.00

CAL YR 1987 TOTAL 8056.60 MEAN 22.1 MAX 479 MIN .00 CFSM .93 IN. 12.59
WTR YR 1988 TOTAL 6345.78 MEAN 17.3 MAX 186 MIN .00 CFSM .73 IN. 9.92

e Estimated.

02043600 LAKE DRUMMOND IN GREAT DISMAL SWAMP, VA

LOCATION.--Lat 36°35'42", long 76°26'23", Chesapeake City, Hydrologic Unit 03010205, on right bank in outlet canal, 200 ft upstream from dam and gates, 0.5 mi downstream from Lake Drummond, 3.1 mi north of North Carolina State line, and 20 mi southwest of Norfolk.

PERIOD OF RECORD.--May 1926 to current year. Prior to October 1973, published as Lake Drummond in Dismal Swamp.

REVISED RECORDS.--WSP 1032: 1934-43.

GAGE.--Nonrecording gage. Datum of gage is 12.16 ft above National Geodetic Vertical Datum of 1929. Aug. 22, 1978, to Oct. 1, 1981, water-stage recorder at same site and datum.

REMARKS.--Mean daily gage heights are shown in table below.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 6.68 ft, Sept. 17, 1960; minimum, -0.67 ft, Nov. 3, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 5.16 ft, May 14; minimum, 3.59 ft, Sept. 30.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.06	4.66	4.80	5.05	4.94	5.04	5.10	5.03	5.10	4.95	4.52	4.06
2	5.00	4.67	4.86	5.12	5.00	5.01	5.10	5.05	5.08	4.94	4.48	4.04
3	5.05	4.65	4.82	5.05	5.00	5.00	5.10	5.00	5.09	4.94	4.46	4.00
4	5.02	4.61	4.84	5.02	5.05	4.94	5.10	5.09	5.00	4.92	4.44	3.96
5	4.98	4.59	4.86	5.06	4.95	4.98	5.10	5.10	4.98	4.90	4.39	4.00
6	4.97	4.62	4.88	5.06	4.94	4.92	4.98	5.06	5.00	4.90	4.34	3.97
7	4.95	4.57	4.90	5.02	4.94	5.00	5.00	5.00	5.14	4.86	4.36	3.95
8	4.98	4.51	4.92	5.10	4.92	5.02	5.10	5.04	5.10	4.87	4.32	3.96
9	4.96	4.54	4.90	4.99	4.93	5.01	5.08	5.02	5.08	4.84	4.32	3.96
10	4.96	4.53	4.94	5.02	4.94	4.93	5.06	5.05	5.10	4.80	4.30	4.00
11	4.96	4.62	5.04	5.00	4.92	4.92	5.06	5.02	5.10	4.80	4.19	3.96
12	4.94	4.62	5.06	4.90	4.94	4.90	4.98	5.00	5.10	4.80	4.20	3.96
13	4.90	4.60	5.06	5.00	4.94	5.00	5.05	5.07	5.10	4.84	4.18	3.91
14	4.86	4.60	5.06	5.00	4.94	4.98	5.10	5.16	5.08	4.82	4.13	3.90
15	4.90	4.58	5.10	5.00	4.91	5.08	4.99	5.15	5.06	4.81	4.11	3.90
16	4.90	4.58	5.14	4.98	5.00	5.09	5.02	5.14	5.05	4.81	4.10	3.86
17	4.86	4.57	5.11	4.94	4.90	5.00	5.05	5.10	5.04	4.79	4.04	3.82
18	4.84	4.59	5.01	5.04	4.89	4.92	4.98	5.08	5.04	4.76	4.01	3.80
19	4.83	4.54	5.04	5.03	4.90	4.92	5.09	5.00	5.10	4.76	4.05	3.78
20	4.83	4.60	5.00	4.94	4.81	4.89	4.98	5.06	5.10	4.76	4.00	3.80
21	4.81	4.60	5.00	4.94	4.92	4.98	5.00	5.08	5.12	4.76	4.19	3.80
22	4.80	4.60	5.04	4.92	4.90	5.03	5.08	5.08	5.14	4.71	4.15	3.78
23	4.72	4.57	5.04	4.92	4.91	5.07	5.08	5.05	5.12	4.69	4.11	3.75
24	4.70	4.53	5.03	4.89	4.89	5.05	5.10	5.06	5.06	4.71	4.10	3.71
25	4.71	4.54	5.00	4.89	4.86	5.05	5.10	5.00	5.06	4.70	4.06	3.70
26	4.70	4.54	5.05	4.94	4.85	5.04	5.10	5.04	5.02	4.68	4.05	3.65
27	4.69	4.56	5.01	4.90	4.88	5.07	5.10	5.06	5.03	4.68	4.04	3.61
28	4.74	4.62	5.00	4.87	5.00	4.99	5.10	5.00	5.00	4.60	4.00	3.62
29	4.68	4.70	4.97	4.90	5.02	5.10	5.10	5.00	4.96	4.64	3.97	3.60
30	4.70	4.80	4.90	4.94	---	5.10	5.10	5.07	4.96	4.57	4.10	3.59
31	4.69	---	5.02	4.94	---	5.10	---	5.10	---	4.55	4.06	---
TOTAL	150.69	137.91	154.40	154.37	142.99	155.13	151.88	156.76	151.91	148.16	129.77	115.40
MEAN	4.86	4.60	4.98	4.98	4.93	5.00	5.06	5.06	5.06	4.78	4.19	3.85
MAX	5.06	4.80	5.14	5.12	5.05	5.10	5.10	5.16	5.14	4.95	4.52	4.06
MIN	4.68	4.51	4.80	4.87	4.81	4.89	4.98	5.00	4.96	4.55	3.97	3.59

CAL YR 1987 TOTAL 1756.96 MEAN 4.81 MAX 5.24 MIN 3.54
WTR YR 1988 TOTAL 1749.37 MEAN 4.78 MAX 5.16 MIN 3.59

02044500 NOTTOWAY RIVER NEAR RAWLINGS, VA

LOCATION.--Lat 36°59'00", long 77°48'00", Brunswick County, Hydrologic Unit 03010201, on right bank at downstream side of bridge on State Highway 612 at Harpers Bridge, 0.1 mi upstream from Beaver Pond Creek, and 2.6 mi northwest of Rawlings.

DRAINAGE AREA.--309 mi².

PERIOD OF RECORD.--October 1950 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 184.88 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 8-12, 17, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--38 years, 311 ft³/s, 13.67 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,900 ft³/s, Oct. 6, 1972, gage height, 23.25 ft, from rating curve extended above 16,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.40 ft³/s, Oct. 14, 15, 1954; minimum gage height, 1.83 ft, Oct. 15, 1954.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 20.8 ft, discharge, about 19,000 ft³/s, from information by local resident.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 12	1200	*1,310	*5.28	No peak equal to or greater than base discharge.			

Minimum discharge, 14 ft³/s, July 21-22, Aug. 28-29, gage height, 2.29 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	111	812	251	250	183	187	147	87	54	62	88
2	143	97	392	234	241	175	181	135	80	44	49	50
3	95	89	275	221	392	172	177	127	113	41	40	34
4	76	85	229	258	721	172	188	126	216	36	35	27
5	72	83	203	341	835	175	235	176	210	32	31	33
6	81	79	179	358	600	174	245	337	148	28	28	31
7	88	75	162	257	400	168	248	407	113	25	27	26
8	89	74	152	e210	328	164	329	276	92	22	27	22
9	90	72	146	e190	298	168	338	209	105	20	32	21
10	81	86	154	e180	279	297	265	179	89	19	37	53
11	70	271	532	e170	266	521	231	170	108	17	31	111
12	64	521	1190	e180	340	372	213	167	86	20	26	106
13	58	353	576	201	566	282	247	154	74	43	23	68
14	53	316	333	208	403	258	282	138	63	55	19	46
15	49	248	310	203	317	238	249	129	57	52	17	44
16	49	198	491	184	296	215	219	124	52	39	15	36
17	49	166	449	e170	280	201	197	120	49	30	18	28
18	49	163	310	247	261	193	189	117	45	25	18	25
19	49	155	254	498	244	206	223	115	45	20	17	26
20	50	145	228	713	265	223	392	109	48	17	22	25
21	52	133	213	1090	276	211	408	105	57	15	37	25
22	52	118	202	728	249	195	280	185	49	16	51	23
23	49	109	191	467	226	184	246	492	41	51	41	21
24	49	106	179	355	219	182	234	293	35	441	34	19
25	49	105	176	313	212	182	200	194	31	491	29	18
26	51	105	189	389	204	190	176	166	33	194	22	17
27	63	179	202	458	199	230	161	144	43	154	18	18
28	171	401	237	324	198	263	200	127	112	233	15	18
29	415	475	375	274	192	235	195	115	97	179	16	18
30	205	976	405	258	---	205	165	104	68	121	116	18
31	136	---	294	255	---	192	---	95	---	83	175	---
TOTAL	2747	6094	10040	10185	9557	6826	7100	5482	2446	2617	1128	1095
MEAN	88.6	203	324	329	330	220	237	177	81.5	84.4	36.4	36.5
MAX	415	976	1190	1090	835	521	408	492	216	491	175	111
MIN	49	72	146	170	192	164	161	95	31	15	15	17
CFSM	.29	.66	1.05	1.06	1.07	.71	.77	.57	.26	.27	.12	.12
IN.	.33	.73	1.21	1.23	1.15	.82	.85	.66	.29	.32	.14	.13

CAL YR 1987 TOTAL 132111 MEAN 362 MAX 11700 MIN 10 CFSM 1.17 IN. 15.90
WTR YR 1988 TOTAL 65317 MEAN 178 MAX 1190 MIN 15 CFSM .58 IN. 7.86

e Estimated.

02045500 NOTTOWAY RIVER NEAR STONY CREEK, VA

LOCATION.--Lat 36°54'00", long 77°24'00", Sussex County, Hydrologic Unit 03010201, on left bank 15 ft downstream from bridge on U.S. Highway 301, 1.8 mi upstream from Island Swamp, 3.3 mi south of town of Stony Creek, and 4.4 mi upstream from Stony Creek.

DRAINAGE AREA.--579 mi².

PERIOD OF RECORD.--October 1929 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 802: 1935(M). WSP 972: 1931(M), 1932, 1934-35, 1939. WSP 2104: Drainage area. WDR VA-74-1: 1972.

GAGE.--Water-stage recorder. Datum of gage is 58.42 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 11, 1934, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Diurnal fluctuation at low flow caused by Baskerville Mill, 33 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.

AVERAGE DISCHARGE.--59 years, 563 ft³/s, 13.20 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,200 ft³/s, Aug. 17, 1940, gage height, 23.66 ft, from rating curve extended above 13,000 ft³/s; minimum, 3.4 ft³/s, Aug. 15, 16, 1977; minimum gage height, 0.62 ft, Sept. 2, 5, 1932.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Feb. 12	1830	*1,950	*9.68	No peak equal to or greater than base discharge.			

Minimum discharge, 19 ft³/s, Aug. 19, gage height, 2.46 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	71	152	1350	445	408	315	287	303	129	82	100	164
2	86	124	837	398	394	298	282	265	120	66	76	97
3	158	111	493	385	624	291	269	243	140	56	61	63
4	123	103	366	569	1230	286	270	239	240	49	52	47
5	97	100	306	743	1680	288	322	366	311	45	45	57
6	85	99	265	673	1310	284	362	618	269	41	41	50
7	109	96	232	533	836	279	379	663	194	37	38	48
8	124	91	212	419	619	271	429	563	151	34	35	43
9	115	90	199	426	541	275	514	411	130	33	32	37
10	106	95	201	451	497	415	453	326	137	41	32	49
11	98	140	375	395	481	597	370	302	132	34	37	64
12	86	480	1140	359	1460	656	331	280	129	34	38	110
13	79	629	1330	374	1480	497	364	259	120	40	35	120
14	74	451	642	396	1040	417	407	234	99	37	30	83
15	68	382	507	389	721	377	403	213	88	55	27	62
16	65	294	701	343	619	349	349	196	81	59	25	48
17	62	234	752	344	553	314	305	189	75	53	22	43
18	61	209	580	417	494	296	278	180	70	44	20	38
19	61	213	434	652	455	325	307	172	68	53	20	33
20	60	194	363	1050	508	377	558	177	82	46	25	31
21	61	177	330	1590	547	361	625	193	75	40	35	31
22	59	161	310	1530	484	322	532	234	75	45	44	31
23	59	144	294	923	421	294	431	434	76	56	63	30
24	58	134	275	660	394	282	389	609	117	66	59	29
25	57	130	269	547	379	280	357	383	69	520	50	27
26	59	130	287	651	354	293	311	274	69	461	43	26
27	59	163	311	721	338	398	287	231	101	253	38	24
28	71	446	366	629	332	410	355	200	76	483	32	23
29	187	677	612	487	322	401	435	182	88	317	28	23
30	419	934	696	438	---	344	373	163	110	206	31	23
31	221	---	575	417	---	304	---	143	---	143	29	---
TOTAL	3098	7383	15610	18354	19521	10896	11334	9245	3621	3529	1243	1554
MEAN	99.9	246	504	592	673	351	378	298	121	114	40.1	51.8
MAX	419	934	1350	1590	1680	656	625	663	311	520	100	164
MIN	57	90	199	343	322	271	269	143	68	33	20	23
CFSM	.17	.43	.87	1.02	1.16	.61	.65	.52	.21	.20	.07	.09
IN.	.20	.47	1.00	1.18	1.25	.70	.73	.59	.23	.23	.08	.10

CAL YR 1987 TOTAL 260053 MEAN 712 MAX 12700 MIN 20 CFSM 1.23 IN. 16.71
WTR YR 1988 TOTAL 105388 MEAN 288 MAX 1680 MIN 20 CFSM .50 IN. 6.77

02046000 STONY CREEK NEAR DINWIDDIE, VA

LOCATION.--Lat 37°04'01", long 77°36'10", Dinwiddie County, Hydrologic Unit 03010201, on right bank at upstream side of upstream bridge on U.S. Highway 1, 1.2 mi southwest of Dinwiddie, 1.7 mi downstream from Chamberlains Bed Creek, and 5.7 mi downstream from confluence of White Oak and Butterwood Creeks.

DRAINAGE AREA.--112 mi².

PERIOD OF RECORD.--September 1946 to current year. Published as "at Dinwiddie" September 1946 to September 1947 and October 1949 to September 1950.

REVISED RECORDS.--WSP 1303: 1947(M). WSP 1433: 1951(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 129.94 ft above National Geodetic Vertical Datum 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. 8-13, 17, 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 Water Control Board.

AVERAGE DISCHARGE.--42 years, 112 ft³/s, 13.58 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,400 ft³/s, Oct. 6, 1972, gage height, 20.84 ft, from rating curve extended above 5,800 ft³/s on basis of contracted-opening measurement of peak flow; no flow for part of Oct. 13, 1954.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Feb. 12	1330	*595	*5.65	No peak equal to or greater than base discharge.			

Minimum discharge, 0.65 ft³/s, July 9, gage height, 0.83 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.2	12	113	69	77	63	54	40	15	3.6	7.6	1.3
2	6.5	9.9	74	65	74	58	60	35	14	3.2	6.3	.95
3	6.5	8.6	54	61	217	56	55	31	32	3.0	5.4	.90
4	6.6	8.0	47	90	312	57	56	31	63	2.8	4.6	.89
5	6.3	7.3	43	142	283	57	72	44	64	2.4	3.6	2.2
6	5.6	7.1	38	104	172	56	68	96	47	2.0	3.2	1.7
7	7.7	7.0	34	71	119	55	72	89	31	1.6	2.7	1.3
8	13	6.9	32	e62	99	53	124	67	21	1.2	2.3	1.3
9	12	7.3	30	e55	93	55	126	51	17	1.4	2.0	1.7
10	9.7	10	32	e53	88	117	91	41	17	5.0	8.0	4.7
11	8.2	61	139	e50	86	153	72	38	14	3.2	20	5.8
12	6.6	86	191	e52	461	102	64	34	12	4.7	14	7.0
13	5.6	71	111	e54	337	83	87	31	9.9	6.1	8.5	6.3
14	4.8	56	77	63	175	78	86	29	8.8	5.4	5.7	4.9
15	4.3	44	104	60	136	73	72	27	8.1	5.0	3.9	3.5
16	3.9	35	176	52	122	67	60	25	7.0	4.2	2.9	2.6
17	3.6	30	116	e49	104	61	53	23	6.4	5.0	2.1	2.0
18	3.2	34	82	120	93	58	49	21	5.8	5.3	1.9	1.8
19	3.0	31	67	214	87	66	64	20	5.7	5.2	1.6	1.5
20	2.7	27	60	345	111	76	131	21	6.1	6.9	2.7	1.3
21	2.4	24	56	387	112	70	102	22	5.7	6.7	4.2	1.1
22	2.2	19	54	225	93	62	79	114	5.2	7.3	3.7	.90
23	2.1	18	51	143	82	57	70	168	4.6	11	2.8	.85
24	2.2	17	47	108	79	55	65	90	4.1	18	2.4	.85
25	2.3	16	46	98	76	55	56	62	3.8	115	1.8	.90
26	2.4	16	50	165	71	59	49	48	4.1	60	1.5	.98
27	3.1	36	55	131	69	83	44	37	5.8	29	1.4	1.0
28	6.9	89	75	95	67	86	48	31	5.0	20	1.5	1.0
29	12	109	131	82	66	72	48	28	4.9	15	2.0	1.1
30	14	153	107	78	---	62	45	24	4.2	11	2.8	1.2
31	14	---	81	78	---	57	---	19	---	8.6	1.9	---
TOTAL	189.6	1056.1	2373	3421	3961	2162	2122	1437	452.2	378.8	135.0	63.52
MEAN	6.12	35.2	76.5	110	137	69.7	70.7	46.4	15.1	12.2	4.35	2.12
MAX	14	153	191	387	461	153	131	168	64	115	20	7.0
MIN	2.1	6.9	30	49	66	53	44	19	3.8	1.2	1.4	.85
CFSM	.05	.31	.68	.99	1.22	.62	.63	.41	.13	.11	.04	.02
IN.	.06	.35	.79	1.14	1.32	.72	.70	.48	.15	.13	.04	.02

CAL YR 1987 TOTAL 44191.65 MEAN 121 MAX 2680 MIN .71 CFSM 1.08 IN. 14.68
WTR YR 1988 TOTAL 17751.22 MEAN 48.5 MAX 461 MIN .85 CFSM .43 IN. 5.90

e Estimated.

02047000 NOTTOWAY RIVER NEAR SEBRELL, VA
(National stream-quality accounting network station)

LOCATION.--Lat 36°46'13", long 77°09'59", Southampton County, Hydrologic Unit 03010201, on right bank 1,000 ft upstream from bridge on State Highway 653, 1 mi downstream from Three Creek, 2.5 mi southwest of Sebrell, and 5.5 mi upstream from Assamoosick Swamp.

DRAINAGE AREA.--1,421 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1941 to current year.

REVISED RECORDS.--WSP 1333: 1942, 1944, 1948-49. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 5.94 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 23, 1950, nonrecording gage at same site and datum.

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

AVERAGE DISCHARGE.--47 years, 1,364 ft³/s, 13.04 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,000 ft³/s, July 19, 1975, gage height, 24.43 ft; minimum, 4.0 ft³/s, Oct. 25, 1981; minimum gage height, 2.82 ft, Oct. 24-25, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,840 ft³/s, Feb. 16, gage height, 14.84 ft; minimum, 41 ft³/s, Sept. 30, gage height, 2.93 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	116	395	1260	1460	1190	1040	1020	954	398	221	579	64
2	111	272	1610	1270	1130	990	894	802	322	183	447	73
3	112	214	1540	1170	1190	935	810	695	308	141	309	149
4	151	183	1080	1280	1670	895	762	639	414	116	204	115
5	202	165	806	1540	2440	871	761	840	544	102	151	123
6	164	151	674	1850	2970	859	821	1410	648	89	126	126
7	154	141	587	1840	3310	875	951	1890	613	80	110	137
8	153	137	518	1590	3360	855	1070	2030	488	73	99	115
9	175	134	467	1340	2820	828	1160	1890	384	66	90	103
10	192	140	445	1260	2150	888	1260	1600	334	65	85	109
11	181	162	517	1170	1800	1170	1240	1320	293	65	79	111
12	166	199	692	1090	2200	1430	1080	1090	276	70	72	125
13	149	438	1370	1020	3160	1530	1030	921	245	77	69	143
14	129	843	1870	994	3970	1370	1070	788	229	77	70	176
15	118	789	1610	940	4610	1200	1130	686	195	78	72	161
16	110	684	1300	935	4750	1070	1100	601	167	74	65	121
17	104	584	1450	929	4040	971	970	536	151	81	60	100
18	100	491	1600	959	3120	880	838	495	160	85	54	86
19	96	419	1440	1150	2430	857	789	450	168	84	50	78
20	93	394	1160	1560	2020	915	940	412	163	74	51	72
21	92	382	976	2020	1870	1020	1370	389	153	89	54	64
22	90	340	873	2460	1850	1010	1570	500	169	96	55	58
23	89	312	793	2800	1700	929	1470	677	158	121	63	55
24	87	285	733	2880	1520	854	1270	989	164	219	69	53
25	87	259	703	2390	1390	808	1110	1290	227	268	90	51
26	87	247	694	1860	1310	788	962	1170	485	453	88	50
27	87	260	713	1730	1220	947	818	890	470	786	79	48
28	90	288	784	1790	1140	1250	820	697	433	888	70	45
29	91	519	965	1660	1090	1350	919	600	388	1180	65	43
30	99	911	1290	1410	---	1290	1050	537	277	1080	76	42
31	362	---	1540	1260	---	1160	---	474	---	761	68	---
TOTAL	4037	10738	32060	47607	67420	31835	31055	28262	9424	7842	3619	2796
MEAN	130	358	1034	1536	2325	1027	1035	912	314	253	117	93.2
MAX	362	911	1870	2880	4750	1530	1570	2030	648	1180	579	176
MIN	87	134	445	929	1090	788	761	389	151	65	50	42
CFSM	.09	.25	.73	1.08	1.64	.72	.73	.64	.22	.18	.08	.07
IN.	.11	.28	.84	1.25	1.76	.83	.81	.74	.25	.21	.09	.07

CAL YR 1987 TOTAL 647319 MEAN 1773 MAX 14300 MIN 46 CFSM 1.25 IN. 16.95
WTR YR 1988 TOTAL 276695 MEAN 756 MAX 4750 MIN 42 CFSM .53 IN. 7.24

02047000 NOTTOWAY RIVER NEAR SEBRELL, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1947, 1978 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1946 to September 1947.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV											
19...	1300	415	75	6.60	11.5	759	2.6	9.0	83	56	60
FEB											
10...	1030	818	67	6.30	3.0	763	8.6	11.8	88	86	48
MAY											
05...	1000	777	70	6.70	15.0	751	5.5	8.2	83	280	280
AUG											
23...	1200	64	99	7.30	24.0	757	2.8	6.4	77	25	33

DATE	HARD-NESS TOTAL (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
NOV											
19...	24	5.8	2.2	6.5	2.5	22	13	10	0.10	17	76
FEB											
10...	18	4.6	1.6	4.6	1.7	10	12	6.7	0.10	12	62
MAY											
05...	22	5.6	1.9	4.8	1.5	26	13	6.0	0.10	8.3	57
AUG											
23...	34	8.8	3.0	6.2	1.8	33	11	6.0	0.10	7.8	68

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)
NOV											
19...	71	<0.010	<0.100	0.020	0.020	0.40	0.040	0.020	<0.010	80	<1
FEB											
10...	51	<0.010	0.130	0.030	0.030	0.40	0.040	0.020	<0.010	180	1
MAY											
05...	58	<0.010	<0.100	0.030	0.020	0.60	0.050	0.030	<0.010	60	<1
AUG											
23...	67	<0.010	0.180	0.030	0.030	0.50	0.050	0.040	0.040	20	<1

02047000 NOTTOWAY RIVER NEAR SEBRELL, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
NOV 19...	29	<0.5	<1	<1	<3	1	700	<5	<4	30
FEB 10...	34	<0.5	<1	<1	<3	1	510	<5	<4	29
MAY 05...	30	<0.5	<1	<1	<3	<1	680	<5	<4	60
AUG 23...	21	<0.5	<1	<1	<3	1	1600	<5	<4	100

DATE	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	SEDI-MENT, SUS-PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 19...	<0.1	<10	<1	<1	<1.0	49	<6	5	7	78
FEB 10...	<0.1	<10	4	<1	<1.0	34	<6	4	10	99
MAY 05...	<0.1	<10	1	<1	<1.0	46	<6	13	16	96
AUG 23...	<0.1	<10	2	<1	<1.0	26	<6	15	10	67

02048000 BLACKWATER RIVER AT ZUNI, VA

LOCATION.--Lat 36°52'05", long 76°50'07", Isle of Wight County, Hydrologic Unit 03010202, on left bank at downstream side of bridge on U.S. Highway 460 at Zuni, 1.6 mi downstream from Pope Swamp, and 4.2 mi upstream from Antioch Swamp.

DRAINAGE AREA.--456 mi².

PERIOD OF RECORD.--October 1942 to January 1989 (discontinued). Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 8.56 ft above National Geodetic Vertical Datum of 1929. Prior to July 18, 1957, nonrecording gage at same site and datum.

REMARKS.--Records good for period October 1987 to September 1988 except for period of doubtful gage-height record, Oct. 1 to Nov. 10, which is poor. Records good for period October 1988 to January 1989. 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 Water Control Board.

AVERAGE DISCHARGE.--46 years, 497 ft³/s, 14.80 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,000 ft³/s, Mar. 21, 1975; maximum gage height, 17.51 ft, June 5, 1963; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 23.2 ft, discharge, 16,000 ft³/s, from rating curve extended above 5,500 ft³/s.

EXTREMES FOR CURRENT PERIOD.--Water year 1988: Maximum discharge, 2,420 ft³/s, Feb. 15, gage height, 10.22 ft; minimum daily, 0.35 ft³/s, Oct. 6.

October 1988 to January 1989: Maximum discharge during period, 323 ft³/s, Nov. 6, gage height, 6.45 ft; minimum daily, 12 ft³/s, Oct. 1, 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e3.0	e1.0	179	369	435	421	703	340	585	87	421	183
2	e1.0	e1.0	218	376	407	412	549	304	460	69	338	252
3	e.90	e.95	234	385	461	392	463	266	403	52	260	230
4	e.70	e.88	234	494	608	361	418	275	443	37	169	151
5	e.45	e.82	223	602	781	337	383	841	452	27	115	151
6	e.35	e.80	200	630	894	320	361	1180	454	20	86	216
7	e.70	e.76	186	579	984	348	351	1370	453	16	58	290
8	e1.3	e.80	180	537	980	421	354	1390	408	11	43	315
9	e2.4	e1.2	176	495	927	429	357	1180	353	9.8	33	263
10	e1.7	e5.0	176	450	861	410	344	911	323	9.9	29	299
11	e1.6	25	218	436	824	407	328	709	294	9.8	109	355
12	e1.6	31	288	416	1110	406	308	570	266	9.9	136	333
13	e1.5	27	335	384	1670	406	350	492	225	15	69	282
14	e1.4	22	335	355	2140	400	409	437	178	17	42	212
15	e1.4	21	331	336	2390	383	432	397	137	19	29	155
16	e1.4	22	369	320	2340	362	434	375	105	16	22	101
17	e1.3	24	400	305	2080	357	409	392	86	13	17	82
18	e1.4	26	402	325	1810	370	364	476	149	12	14	70
19	e1.3	27	391	378	1650	394	360	527	170	11	17	58
20	e1.3	28	376	427	1520	407	419	550	149	14	29	50
21	e1.2	26	351	486	1340	402	430	534	108	54	177	46
22	e1.1	23	333	536	1140	383	424	697	75	87	298	40
23	e1.0	22	324	544	952	362	405	1090	56	142	240	33
24	e1.0	20	326	524	820	350	368	1710	65	227	115	27
25	e1.0	19	331	519	708	332	345	1960	70	426	59	23
26	e.98	18	325	524	612	311	330	1790	55	580	40	20
27	e.98	20	311	526	541	408	310	1480	99	466	31	18
28	e1.2	32	310	533	482	690	331	1210	143	392	25	16
29	e1.4	83	346	504	443	954	363	1030	137	403	22	15
30	e1.5	141	367	470	---	1020	366	884	114	561	28	14
31	e1.3	---	368	457	---	877	---	738	---	531	61	---
TOTAL	39.36	670.21	9143	14222	31910	13832	11768	26105	7015	4344.4	3132	4300
MEAN	1.27	22.3	295	459	1100	446	392	842	234	140	101	143
MAX	3.0	141	402	630	2390	1020	703	1960	585	580	421	355
MIN	.35	.76	176	305	407	311	308	266	55	9.8	14	14
CFSM	.00	.05	.65	1.01	2.41	.98	.86	1.85	.51	.31	.22	.31
IN.	.00	.05	.75	1.16	2.60	1.13	.96	2.13	.57	.35	.26	.35

CAL YR 1987 TOTAL 257933.77 MEAN 707 MAX 6110 MIN .09 CFSM 1.55 IN. 21.04
WTR YR 1988 TOTAL 126480.97 MEAN 346 MAX 2390 MIN .35 CFSM .76 IN. 10.32

e Estimated.

02048000 BLACKWATER RIVER AT ZUNI, VA--Continued

DISCHARGE, CUBIC FEET PER SECOND, OCTOBER 1988 TO JANUARY 1989
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	80	300	128	---	---	---	---	---	---	---	---
2	12	218	296	143	---	---	---	---	---	---	---	---
3	14	280	267	154	---	---	---	---	---	---	---	---
4	36	307	233	---	---	---	---	---	---	---	---	---
5	86	313	212	---	---	---	---	---	---	---	---	---
6	94	321	205	---	---	---	---	---	---	---	---	---
7	87	312	206	---	---	---	---	---	---	---	---	---
8	78	303	206	---	---	---	---	---	---	---	---	---
9	62	295	204	---	---	---	---	---	---	---	---	---
10	46	261	221	---	---	---	---	---	---	---	---	---
11	34	215	226	---	---	---	---	---	---	---	---	---
12	29	181	212	---	---	---	---	---	---	---	---	---
13	24	166	193	---	---	---	---	---	---	---	---	---
14	21	165	178	---	---	---	---	---	---	---	---	---
15	19	165	170	---	---	---	---	---	---	---	---	---
16	17	157	168	---	---	---	---	---	---	---	---	---
17	16	163	164	---	---	---	---	---	---	---	---	---
18	15	190	156	---	---	---	---	---	---	---	---	---
19	16	187	149	---	---	---	---	---	---	---	---	---
20	17	180	147	---	---	---	---	---	---	---	---	---
21	19	185	147	---	---	---	---	---	---	---	---	---
22	45	209	149	---	---	---	---	---	---	---	---	---
23	61	208	148	---	---	---	---	---	---	---	---	---
24	57	197	145	---	---	---	---	---	---	---	---	---
25	56	197	145	---	---	---	---	---	---	---	---	---
26	53	202	143	---	---	---	---	---	---	---	---	---
27	46	195	140	---	---	---	---	---	---	---	---	---
28	44	230	135	---	---	---	---	---	---	---	---	---
29	47	306	130	---	---	---	---	---	---	---	---	---
30	45	303	126	---	---	---	---	---	---	---	---	---
31	43	---	124	---	---	---	---	---	---	---	---	---
TOTAL	1251	6691	5645	---	---	---	---	---	---	---	---	---
MEAN	40.4	223	182	---	---	---	---	---	---	---	---	---
MAX	94	321	300	---	---	---	---	---	---	---	---	---
MIN	12	80	124	---	---	---	---	---	---	---	---	---
CFSM	.09	.49	.40	---	---	---	---	---	---	---	---	---
IN.	.10	.55	.46	---	---	---	---	---	---	---	---	---

CAL YR 1988 TOTAL 130215.4 MEAN 356 MAX 2390 MIN 9.8 CFSM .78 IN. 10.62

02049500 BLACKWATER RIVER NEAR FRANKLIN, VA
(National stream-quality accounting network station)

LOCATION.--Lat 36°45'45", long 76°53'55", Southampton County, Hydrologic Unit 03010202, on right bank 0.4 mi south of Burdette, 0.5 mi upstream from Black Creek, 3.3 mi downstream from Corrowaugh Swamp, and 6.0 mi north of Franklin.

DRAINAGE AREA.--617 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1944 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1.56 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good except those for periods of tidal effect below 20 ft³/s during October, November, July, and September, which are poor. Low flow reversed by tide some years. Diversion upstream from station by city of Norfolk for municipal water supply most years.

AVERAGE DISCHARGE.--44 years, 637 ft³/s, 14.02 in/yr, adjusted for diversion.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,420 ft³/s, Sept. 14, 1960, gage height, 17.14 ft, from flood-marks; minimum daily, 0.07 ft³/s, Oct. 16, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of about 22 ft, discharge, 21,000 ft³/s, from rating curve extended above 9,400 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,460 ft³/s, Feb. 15-16, gage height, 10.00 ft; minimum daily, 0.16 ft³/s, Oct. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	2.6	110	496	555	551	942	456	745	82	633	25
2	.40	2.7	157	512	532	520	780	417	629	62	504	163
3	1.2	2.1	200	528	561	498	649	366	562	45	391	269
4	.33	.28	220	649	677	476	568	328	585	30	291	239
5	.16	.23	220	763	891	446	522	695	615	16	210	204
6	.19	.21	208	824	1070	414	480	1430	605	7.0	152	191
7	.40	.25	186	819	1160	414	470	1770	553	8.2	110	232
8	.33	.27	161	768	1180	448	461	1800	519	11	87	318
9	.33	.27	145	692	1120	523	447	1680	452	7.1	67	364
10	.33	.53	147	634	1040	565	444	1450	410	5.3	57	379
11	.30	.67	177	582	965	562	429	1180	371	3.6	49	412
12	.27	.47	226	557	1140	557	406	948	323	3.5	79	426
13	.24	.25	298	534	1620	545	439	773	279	4.5	120	400
14	.20	1.9	367	493	2150	528	531	668	231	2.1	92	336
15	.20	5.1	411	441	2410	507	573	603	172	1.8	66	256
16	.25	6.3	447	408	2440	478	565	544	112	2.0	45	182
17	.36	3.9	464	396	2300	445	539	503	83	2.0	29	115
18	.47	4.1	485	423	2060	426	500	535	237	1.9	12	87
19	.60	1.6	489	496	1840	443	473	621	342	4.5	6.2	71
20	1.1	.78	474	566	1680	486	530	655	283	4.3	29	56
21	2.1	.74	448	629	1540	510	579	692	235	3.3	106	44
22	1.5	.26	414	671	1390	511	584	768	163	9.4	277	34
23	1.4	.24	385	705	1220	499	573	1030	103	32	367	26
24	1.6	1.0	363	692	1060	452	524	1260	73	67	291	19
25	1.8	.33	361	650	915	423	468	1540	55	242	169	11
26	1.7	.29	373	646	795	408	422	1700	47	586	93	5.2
27	1.7	.78	374	640	710	483	388	1640	57	697	59	2.7
28	1.9	.80	379	628	647	621	390	1440	64	727	36	2.3
29	2.0	12	426	618	593	825	420	1230	89	676	29	2.9
30	2.1	67	473	601	---	1010	453	1040	99	638	18	3.0
31	2.6	---	495	577	---	1050	---	889	---	683	8.9	---
TOTAL	29.06	117.95	10083	18638	36261	16624	15549	30651	9093	4664.5	4483.1	4875.1
MEAN	.94	3.93	325	601	1250	536	518	989	303	150	145	163
MAX	2.6	67	495	824	2440	1050	942	1800	745	727	633	426
MIN	.16	.21	110	396	532	408	388	328	47	1.8	6.2	2.3
(*)	.25	21.2	36.8	36.0	37.0	35.8	34.6	6.41	27.8	18.1	21.3	34.7
MEAN‡	1.19	25.1	362	637	1287	572	553	995	331	168	166	198
CFSM‡	.00	.04	.59	1.03	2.09	.93	.90	1.61	.54	.27	.27	.32
IN.‡	.00	.05	.68	1.19	2.25	1.07	1.00	1.86	.60	.31	.31	.36

CAL YR 1987 TOTAL 262740.71 MEAN 720 MAX 5560 MIN .16 MEAN‡ 737 CFSM‡ 1.19 IN.‡ 16.22
WTR YR 1988 TOTAL 151068.71 MEAN 413 MAX 2440 MIN .16 MEAN‡ 438 CFSM‡ .71 IN.‡ 9.64

* Average diversion, in cubic feet per second, by city of Norfolk.
‡ Adjusted for diversion.

02049500 BLACKWATER RIVER NEAR FRANKLIN, VA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples taken at bridge 2.0 mi upstream from discharge station.

PERIOD OF RECORD.--Water years 1947, 1952, 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV											
18...	1100	4.1	119	6.60	11.5	757	1.9	5.9	54	39	69
FEB											
11...	1000	950	99	6.30	3.5	763	5.9	11.2	84	86	42
MAY											
04...	1300	320	100	6.50	13.0	752	4.5	7.2	69	27	K15
AUG											
25...	1200	169	94	6.60	23.0	749	5.0	4.6	55	82	44

DATE	HARD-NESS TOTAL (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
NOV											
18...	53	17	2.5	6.2	3.8	39	18	11	0.10	6.2	105
FEB											
11...	35	11	1.9	4.3	2.1	11	19	9.8	0.20	6.7	77
MAY											
04...	35	11	1.8	4.3	1.8	23	17	9.7	0.10	1.9	80
AUG											
25...	34	11	1.5	3.1	2.5	17	13	8.6	0.10	7.2	80

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)
NOV											
18...	89	<0.010	<0.100	0.020	0.020	0.40	0.060	0.010	<0.010	20	<1
FEB											
11...	64	<0.010	0.410	0.010	<0.010	0.50	0.030	0.020	<0.010	150	<1
MAY											
04...	63	<0.010	<0.100	0.070	0.070	0.70	0.040	0.030	<0.010	100	<1
AUG											
25...	59	<0.010	0.230	0.060	0.070	1.1	0.060	0.040	0.010	100	1

02049500 BLACKWATER RIVER NEAR FRANKLIN, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
NOV										
18...	55	<0.5	<1	<1	<3	1	230	<5	<4	150
FEB										
11...	45	<0.5	<1	<1	<3	<1	390	<5	<4	18
MAY										
04...	41	<0.5	<1	1	<3	<1	880	<5	<4	60
AUG										
25...	53	<0.5	<1	<1	<3	1	780	<5	<4	73

DATE	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	SEDI-MENT, SUS-PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV										
18...	<0.1	<10	<1	<1	<1.0	93	<6	8	10	61
FEB										
11...	<0.1	<10	2	<1	<1.0	54	<6	5	7	99
MAY										
04...	0.3	<10	2	<1	<1.0	65	<6	29	6	99
AUG										
25...	<0.1	<10	3	<1	1.0	60	<6	6	6	88

02051000 NORTH MEHERRIN RIVER NEAR LUNENBURG, VA

LOCATION.--Lat 36°59'53", long 78°21'03", Lunenburg County, Hydrologic Unit 03010204, on right bank at upstream side of bridge on State Highway 40, 0.5 mi downstream from Tusekiah Creek, 4.6 mi upstream from Juniper Creek, and 5.2 mi northwest of Lunenburg.
DRAINAGE AREA.--55.6 mi².
PERIOD OF RECORD.--August 1946 to September 1980, October 1981 to current year.
REVISED RECORDS.--WSP 1303: 1947(M), 1949(M). WSP 2104: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 333.7 ft above National Geodetic Vertical Datum 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. 6-13, 28, 29, 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 Water Control Board.
AVERAGE DISCHARGE.--41 years, 52.6 ft³/s, 12.85 in/yr.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,400 ft³/s, Oct. 23, 1971, gage height, 28.30 ft, from rating curve extended above 1,700 ft³/s on basis of slope-area measurement of peak flow; no flow Sept. 5-21, Oct. 8-14, 1954.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 48 ft, from information by local resident.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,200 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Aug. 29	1100	*847	*6.87	No peak equal to or greater than base discharge.			

Minimum discharge, 2.1 ft³/s, Aug. 28, 29, gage height, 0.57 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	15	59	40	39	26	29	24	13	7.9	7.4	13
2	16	13	39	36	38	25	28	22	13	6.9	6.4	8.6
3	18	12	31	34	134	25	26	21	32	5.6	5.8	6.9
4	46	11	27	76	187	27	57	22	34	5.2	6.0	6.2
5	19	11	23	98	112	26	59	219	19	4.9	9.5	7.4
6	13	10	21	e45	69	24	37	123	16	4.1	6.7	6.2
7	33	9.5	19	e40	51	24	65	91	14	4.1	6.9	5.4
8	19	9.5	18	e36	46	22	64	46	12	3.8	5.8	4.7
9	13	9.5	18	e32	43	34	51	35	12	3.6	4.9	6.4
10	11	72	147	e28	40	173	40	31	15	3.3	4.1	72
11	9.2	153	370	e26	38	78	36	34	13	3.3	3.9	20
12	8.1	85	108	e28	208	49	34	27	11	11	4.1	12
13	7.4	87	59	e31	86	45	71	22	10	25	3.5	8.1
14	7.2	57	42	37	59	41	46	21	9.2	9.5	3.1	7.4
15	7.2	37	124	30	53	36	38	19	8.6	6.9	3.0	6.9
16	6.9	28	103	28	59	32	33	18	8.4	5.6	8.1	5.8
17	6.9	25	57	32	47	29	31	17	8.1	4.5	4.9	5.2
18	6.9	25	42	135	42	28	30	19	8.6	3.6	3.3	6.4
19	6.7	21	36	124	40	37	87	19	8.4	3.3	2.8	6.9
20	6.7	19	33	344	53	34	124	17	16	3.1	8.6	6.4
21	6.7	17	31	135	44	29	64	17	11	5.0	10	5.8
22	6.2	15	28	81	36	27	53	224	8.6	48	5.6	5.4
23	5.8	15	27	60	34	25	58	56	7.9	145	3.9	4.7
24	6.2	15	24	48	34	26	44	33	12	71	3.6	4.3
25	6.7	15	30	62	31	26	35	28	8.9	18	3.9	4.5
26	7.2	15	39	123	29	31	32	26	35	100	3.0	4.9
27	195	64	43	61	29	75	31	20	62	71	2.4	5.2
28	112	65	130	e50	28	44	34	18	15	30	2.1	4.7
29	34	201	121	e45	27	34	29	17	9.2	17	249	4.3
30	22	121	61	41	---	31	26	16	8.6	11	151	4.1
31	17	---	46	40	---	29	---	15	---	8.6	24	---
TOTAL	724.0	1252.5	1956	2026	1736	1192	1392	1317	459.5	649.8	567.3	269.8
MEAN	23.4	41.7	63.1	65.4	59.9	38.5	46.4	42.5	15.3	21.0	18.3	8.99
MAX	195	201	370	344	208	173	124	224	62	145	249	72
MIN	5.8	9.5	18	26	27	22	26	15	7.9	3.1	2.1	4.1
CFSM	.42	.75	1.13	1.18	1.08	.69	.83	.76	.28	.38	.33	.16
IN.	.48	.84	1.31	1.36	1.16	.80	.93	.88	.31	.43	.38	.18

CAL YR 1987 TOTAL 16764.4 MEAN 45.9 MAX 569 MIN 1.2 CFSM .83 IN. 11.22
WTR YR 1988 TOTAL 13541.9 MEAN 37.0 MAX 370 MIN 2.1 CFSM .67 IN. 9.06

e Estimated.

02051500 MEHERRIN RIVER NEAR LAWRENCEVILLE, VA

LOCATION.--Lat 36°43'00", long 77°49'55", Brunswick County, Hydrologic Unit 03010204, on right bank 50 ft upstream from Gholson Bridge on State Highway 715, 0.6 mi upstream from Allen Creek, and 3.0 mi southeast of Lawrenceville.

DRAINAGE AREA.--552 mi².

PERIOD OF RECORD.--October 1928 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 972: 1932(M), 1935. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 136.56 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 17, 1931, nonrecording gage at same site and datum.

REMARKS.--Records good except for period with ice effect, Jan. 10-18, 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.

AVERAGE DISCHARGE.--60 years, 500 ft³/s, 12.30 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,000 ft³/s, Aug. 17, 1940, gage height, 42.0 ft, from floodmark, from rating curve extended above 13,000 ft³/s on basis of velocity-area studies and records for Nottoway River near Stony Creek; minimum, 4.2 ft³/s, Oct. 7, 8, 1954; minimum gage height, 0.72 ft, Sept. 23, 24, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 21	0730	*2,980	*11.96	No peak equal to or greater than base discharge.			

Minimum discharge, 42 ft³/s, Sept. 29, 30, gage height, 1.58 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	112	146	898	381	395	283	272	348	137	112	111	183
2	267	132	505	351	383	271	261	309	132	97	94	102
3	139	122	363	333	481	266	254	284	154	94	83	76
4	109	118	297	519	1210	269	262	267	219	83	78	74
5	105	114	257	816	2060	274	393	313	210	84	76	97
6	143	109	231	731	1070	269	494	1260	183	87	72	113
7	152	105	208	390	685	259	418	954	154	72	71	78
8	138	102	202	226	544	252	597	689	132	66	68	66
9	140	102	181	335	487	261	642	447	109	64	63	61
10	124	109	196	e350	453	409	475	355	144	56	67	108
11	105	257	1200	e305	431	970	387	332	143	49	64	246
12	95	795	1970	e315	703	604	344	368	123	46	58	212
13	90	508	709	e330	1330	442	384	319	115	66	54	117
14	84	456	443	e350	746	406	488	268	116	138	50	88
15	82	334	392	e340	562	370	404	235	101	127	48	80
16	80	255	704	e290	518	339	339	228	86	86	47	73
17	81	210	654	e315	481	267	307	222	101	70	71	64
18	82	205	395	e500	437	280	282	206	91	61	65	62
19	83	195	301	991	401	313	350	224	182	76	56	63
20	83	182	253	1620	420	337	755	221	357	89	60	66
21	81	171	234	2550	457	342	753	218	190	65	110	64
22	78	157	220	1170	417	301	496	198	156	64	298	61
23	72	148	205	750	361	275	486	511	120	95	117	56
24	76	142	187	581	318	265	501	354	86	1490	82	53
25	77	140	200	508	344	264	404	238	106	638	71	50
26	80	142	277	704	309	275	338	222	92	234	57	50
27	87	177	311	916	295	314	307	220	240	362	50	53
28	570	729	461	551	296	379	523	196	560	907	45	50
29	750	631	1430	447	292	372	802	182	227	375	44	49
30	289	1440	944	442	---	282	444	161	137	219	572	47
31	182	---	515	409	---	276	---	128	---	141	449	---
TOTAL	4636	8433	15343	18816	16886	10486	13162	10477	4903	6213	3251	2562
MEAN	150	281	495	607	582	338	439	338	163	200	105	85.4
MAX	750	1440	1970	2550	2060	970	802	1260	560	1490	572	246
MIN	72	102	181	226	292	252	254	128	86	46	44	47
CFSM	.27	.51	.90	1.10	1.05	.61	.79	.61	.30	.36	.19	.15
IN.	.31	.57	1.03	1.27	1.14	.71	.89	.71	.33	.42	.22	.17

CAL YR 1987 TOTAL 238985 MEAN 655 MAX 13600 MIN 46 CFSM 1.19 IN. 16.11
WTR YR 1988 TOTAL 115168 MEAN 315 MAX 2550 MIN 44 CFSM .57 IN. 7.76

e Estimated.

02052000 MEHERRIN RIVER AT EMPORIA, VA
(National stream-quality accounting network station)

LOCATION.--Lat 36°41'24", long 77°32'27", Emporia City, Hydrologic Unit 03010204, on left bank at downstream side of bridge on U.S. Highway 301 and 1.2 mi upstream from Falling Run.

DRAINAGE AREA.--747 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1951 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 67.17 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Records good except for period with ice effect, Jan. 10, 11, which is fair. Prior to November 1965 and since April 1986, low and medium flow regulated by powerplant 0.8 mi upstream from station.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--37 years, 699 ft³/s, 12.71 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,100 ft³/s, Oct. 8, 1972, gage height, 27.38 ft; minimum, 5.0 ft³/s, Nov. 11, 1954, gage height, 1.00 ft; minimum daily, 7.1 ft³/s, July 20, 1986.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 31.5 ft, from floodmarks, discharge, about 40,000 ft³/s, from rating curve extended above 18,000 ft³/s on basis of record for station near Lawrenceville.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,800 ft³/s, Jan. 21, gage height, 13.85 ft; minimum discharge, 12 ft³/s, Aug. 19, gage height, 1.16 ft; minimum daily, 14 ft³/s, Aug. 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	139	216	1870	638	534	514	432	391	177	234	145	288
2	237	178	1010	736	572	493	120	431	196	116	126	224
3	178	130	696	767	698	195	363	394	224	50	113	78
4	159	168	446	1220	1400	458	466	335	140	44	73	75
5	100	129	329	1220	2800	198	529	681	235	158	82	94
6	207	135	549	1530	2450	447	770	1090	258	120	81	234
7	188	110	257	1100	1340	379	697	1940	255	129	82	91
8	159	86	279	757	914	331	737	1240	223	107	87	81
9	163	143	277	439	784	394	917	643	149	94	77	78
10	157	253	91	e400	768	445	798	578	145	79	83	93
11	193	193	701	e350	602	1060	526	518	144	69	97	173
12	146	868	2990	458	1480	1140	484	487	143	65	70	313
13	63	880	1860	614	2190	671	580	401	143	65	68	227
14	58	636	1090	520	1700	483	644	326	134	65	62	91
15	133	518	756	497	1110	561	736	259	108	66	69	93
16	113	354	735	298	984	427	442	281	96	132	38	93
17	81	274	1250	475	717	430	316	319	131	102	20	85
18	40	306	1140	762	865	404	534	318	101	79	14	75
19	70	306	430	1010	658	196	415	263	69	68	115	75
20	152	273	427	1890	396	691	951	380	549	124	40	75
21	157	258	480	3330	779	373	1300	121	434	103	154	75
22	67	252	467	2650	660	509	959	367	150	268	282	75
23	54	160	437	1450	576	321	524	325	149	91	194	76
24	52	384	396	934	489	418	716	607	194	654	180	76
25	52	209	208	796	465	486	586	458	89	1900	87	71
26	118	182	567	863	503	132	582	287	94	441	84	63
27	135	265	388	1380	229	536	392	286	133	154	74	60
28	143	704	982	1100	478	460	390	225	654	1220	65	61
29	1040	1120	1590	735	452	518	1200	109	463	738	66	57
30	775	1290	2130	554	---	515	891	190	144	284	85	53
31	236	---	1370	536	---	376	---	232	---	152	820	---
TOTAL	5565	10980	26198	30009	27593	14561	18997	14482	6124	7971	3633	3303
MEAN	180	366	845	968	951	470	633	467	204	257	117	110
MAX	1040	1290	2990	3330	2800	1140	1300	1940	654	1900	820	313
MIN	40	86	91	298	229	132	120	109	69	44	14	53
CFSM	.24	.49	1.13	1.30	1.27	.63	.85	.63	.27	.34	.16	.15
IN.	.28	.55	1.30	1.49	1.37	.73	.95	.72	.30	.40	.18	.16

CAL YR 1987 TOTAL 373386 MEAN 1023 MAX 15700 MIN 14 CFSM 1.37 IN. 18.59
WTR YR 1988 TOTAL 169416 MEAN 463 MAX 3330 MIN 14 CFSM .62 IN. 8.44

e Estimated.

02052000 MEHERRIN RIVER AT EMPORIA, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: April 1968 to September 1971, October 1972 to September 1978.
WATER TEMPERATURE: April 1968 to September 1971, October 1972 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV											
24...	1000	182	81	6.60	7.0	763	3.6	10.2	84	37	220
FEB											
24...	1300	849	70	6.60	7.0	753	8.0	11.6	97	K10	61
MAY											
05...	1300	964	75	6.80	16.0	751	10	8.8	90	46	150
AUG											
19...	1300	254	87	7.10	29.5	750	1.2	4.1	55	46	200

DATE	HARD-NESS TOTAL (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
NOV											
24...	23	5.2	2.3	6.3	2.3	24	9.2	6.4	0.10	15	66
FEB											
24...	21	5.0	2.1	5.4	1.5	22	10	4.6	0.20	17	60
MAY											
05...	23	5.4	2.4	5.4	1.4	26	9.0	4.3	0.10	16	59
AUG											
19...	31	7.1	3.1	5.5	2.0	33	7.3	4.0	0.10	16	65

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)
NOV											
24...	62	<0.010	<0.100	0.050	0.050	0.50	0.040	0.020	0.010	70	1
FEB											
24...	60	<0.010	0.100	0.020	0.030	<0.20	0.030	0.020	--	90	<1
MAY											
05...	60	<0.010	<0.100	0.060	0.050	0.40	0.030	0.020	<0.010	70	<1
AUG											
19...	66	<0.010	<0.100	0.060	0.060	0.30	0.030	0.020	0.010	20	1

02052000 MEHERRIN RIVER AT EMPORIA, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
NOV 24...	23	<0.5	<1	<1	<3	1	690	<5	<4	82
FEB 24...	25	<0.5	<1	<1	<3	<1	450	<5	<4	63
MAY 05...	20	<0.5	<1	<1	<3	<1	520	<5	<4	130
AUG 19...	27	<0.5	<1	<1	<3	<1	540	<5	<4	240

DATE	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	SEDI-MENT, SUS-PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 24...	<0.1	<10	3	<1	<1.0	42	<6	<3	9	92
FEB 24...	<0.1	<10	<1	<1	<1.0	37	<6	<3	8	87
MAY 05...	<0.1	<10	<1	<1	<1.0	43	<6	25	18	97
AUG 19...	<0.1	<10	1	<1	<1.0	59	<6	<3	14	93

02052500 FOUNTAINS CREEK NEAR BRINK, VA

LOCATION.--Lat 36°36'55", long 77°42'00", Greensville County, Hydrologic Unit 03010204, on left bank 30 ft upstream from bridge on State Highway 603, 0.3 mi downstream from Quarrel Creek, 3.6 mi west of Brink, and 10 mi southwest of Emporia.

DRAINAGE AREA.--65.2 mi^2.

PERIOD OF RECORD.--October 1953 to current year. Prior to October 1980, published as Fontaine Creek near Brink.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 152.59 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 9-11, 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.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--35 years, 68.5 ft^3/s, 14.27 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,000 ft^3/s, Oct. 6, 1972, gage height, 24.14 ft, from floodmark, from rating curve extended above 3,000 ft^3/s; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or 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)
Feb. 12	1730	*394	*8.11	No peak equal to or greater than base discharge.			

Minimum daily discharge, 1.2 ft^3/s, Oct. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	3.0	35	40	37	33	25	30	11	13	16	3.1
2	1.4	2.9	26	40	35	31	24	26	9.4	9.9	12	2.6
3	1.3	3.1	18	52	59	30	23	24	17	7.9	10	2.4
4	1.2	3.0	14	156	141	30	26	25	35	6.5	8.8	2.5
5	1.3	3.1	12	141	183	30	54	112	24	5.4	8.2	14
6	1.3	3.1	9.3	97	132	30	44	201	18	4.6	7.1	20
7	3.1	3.2	7.6	57	76	29	49	117	14	4.2	6.5	12
8	3.4	3.2	6.5	48	58	28	64	63	11	3.5	9.3	7.1
9	2.5	3.3	6.6	e40	53	31	58	47	9.7	3.3	6.9	5.7
10	1.8	3.8	7.7	e35	48	52	42	43	13	3.2	6.4	14
11	2.0	5.3	27	e32	58	55	33	64	13	4.3	5.6	17
12	2.0	7.2	32	34	354	52	31	52	11	3.8	5.2	12
13	2.1	8.0	27	35	296	45	54	41	9.3	7.9	4.4	7.6
14	2.1	7.4	20	36	165	38	56	29	7.7	8.1	3.9	5.6
15	2.0	7.2	30	33	98	36	43	25	6.9	6.5	3.5	9.4
16	2.0	6.7	43	30	83	33	37	23	6.1	4.7	3.1	9.9
17	2.0	6.3	36	31	73	29	30	22	6.0	3.7	2.8	7.7
18	2.0	7.4	28	62	63	28	27	32	7.2	3.5	2.6	6.2
19	2.0	7.4	20	85	56	38	112	29	67	41	2.4	5.5
20	2.0	7.0	16	106	62	46	173	23	58	75	2.6	4.9
21	2.0	6.6	14	111	62	45	95	22	26	60	7.3	4.4
22	2.0	6.0	16	87	52	33	63	21	26	36	7.0	4.0
23	2.0	5.5	18	62	45	28	55	18	15	64	4.6	3.6
24	1.9	5.6	15	49	43	27	46	16	14	113	3.7	3.3
25	2.0	5.8	20	47	41	27	36	15	11	63	3.7	3.1
26	2.0	6.7	32	76	37	29	30	16	13	26	3.4	3.1
27	2.2	14	35	69	36	53	27	15	111	21	2.9	3.0
28	2.6	19	76	52	36	46	61	14	48	35	2.8	2.9
29	3.2	30	118	43	34	35	55	15	24	73	2.6	2.8
30	3.3	34	91	39	---	29	39	14	17	46	3.7	2.8
31	3.1	---	58	38	---	27	---	13	---	23	3.9	---
TOTAL	65.2	234.8	914.7	1863	2516	1103	1512	1207	659.3	780.0	172.9	202.2
MEAN	2.10	7.83	29.5	60.1	86.8	35.6	50.4	38.9	22.0	25.2	5.58	6.74
MAX	3.4	34	118	156	354	55	173	201	111	113	16	20
MIN	1.2	2.9	6.5	30	34	27	23	13	6.0	3.2	2.4	2.4
CFSM	.03	.12	.45	.92	1.33	.55	.77	.60	.34	.39	.09	.10
IN.	.04	.13	.52	1.06	1.44	.63	.86	.69	.38	.45	.10	.12

CAL YR 1987 TOTAL 33430.72 MEAN 91.6 MAX 2210 MIN .00 CFSM 1.40 IN. 19.07
WTR YR 1988 TOTAL 11230.1 MEAN 30.7 MAX 354 MIN 1.2 CFSM .47 IN. 6.41

e Estimated.

02053800 SOUTH FORK ROANOKE RIVER NEAR SHAWSVILLE, VA

LOCATION.--Lat 37°08'24", long 80°16'00", Montgomery County, Hydrologic Unit 03010101, on right bank 95 ft downstream from bridge on State Highway 637, 0.3 mi downstream from Georges Run, 1.3 mi downstream from Elliott Creek, and 2.0 mi southwest of Shawsville.

DRAINAGE AREA.--110 mi².

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

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,361.87 ft above National Geodetic Vertical Datum 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 periods with ice effect, Jan. 6-12, 16, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--28 years, 110 ft³/s, 13.58 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,200 ft³/s, June 21, 1972, gage height, 11.12 ft, from high-water mark in well, from rating curve extended above 3,700 ft³/s on basis of slope-area measurement of peak flow; minimum, 7.5 ft³/s, July 27-29, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 30, 1959, reached a stage of 9.89 ft, from information by local resident.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	1200	*411	*1.87		No peak equal to or greater than base discharge.		

Minimum discharge, 30 ft³/s, Aug. 27-28, gage height, 0.18 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	47	165	148	93	59	54	80	51	37	42	40
2	45	47	125	126	91	58	53	75	50	35	41	37
3	44	46	100	110	111	60	52	71	105	35	39	35
4	44	47	95	106	198	63	93	71	79	34	42	64
5	43	46	80	86	238	66	78	82	60	34	42	62
6	44	45	70	e80	191	59	77	94	54	34	40	44
7	48	45	66	e75	175	57	109	88	51	33	42	40
8	45	45	63	e72	148	56	102	77	48	32	39	38
9	43	46	61	e70	129	59	93	73	74	33	38	37
10	43	132	73	e67	117	63	84	78	88	35	39	40
11	43	122	138	e64	107	57	79	93	58	34	39	37
12	72	78	113	e70	104	55	86	75	51	60	66	36
13	57	70	97	74	83	60	117	69	48	58	37	35
14	48	65	86	74	107	56	127	65	46	40	34	36
15	46	61	135	70	94	54	117	113	44	37	36	35
16	45	57	149	e68	95	52	103	124	43	35	54	34
17	45	58	129	64	79	52	91	97	53	33	34	61
18	44	68	109	134	77	53	94	140	155	36	32	75
19	44	60	98	167	77	55	133	126	73	44	32	47
20	45	57	92	340	80	53	148	146	55	37	35	42
21	47	55	83	306	73	51	141	120	49	41	35	39
22	47	51	76	229	66	50	154	105	44	56	33	37
23	47	51	74	186	70	49	157	90	41	45	32	36
24	47	51	67	156	71	49	189	87	40	42	34	36
25	47	49	121	146	64	49	168	79	41	38	33	37
26	47	48	140	126	61	67	148	69	40	83	31	38
27	54	56	143	123	65	86	130	64	39	123	31	36
28	67	101	212	114	62	63	113	60	37	118	31	35
29	52	313	255	96	61	58	99	57	36	63	102	35
30	49	237	202	94	---	55	88	55	38	50	66	35
31	48	---	168	95	---	55	---	52	---	45	49	---
TOTAL	1489	2254	3585	3736	2987	1779	3277	2675	1691	1460	1280	1239
MEAN	48.0	75.1	116	121	103	57.4	109	86.3	56.4	47.1	41.3	41.3
MAX	72	313	255	340	238	86	189	146	155	123	102	75
MIN	43	45	61	64	61	49	52	52	36	32	31	34
CFSM	.44	.68	1.05	1.10	.94	.52	.99	.78	.51	.43	.38	.38
IN.	.50	.76	1.21	1.26	1.01	.60	1.11	.90	.57	.49	.43	.42

CAL YR 1987 TOTAL 68855 MEAN 189 MAX 3590 MIN 34 CFSM 1.71 IN. 23.29
WTR YR 1988 TOTAL 27452 MEAN 75.0 MAX 340 MIN 31 CFSM .68 IN. 9.28

e Estimated.

02054500 ROANOKE RIVER AT LAFAYETTE, VA

LOCATION.--Lat 37°14'11", long 80°12'34", Montgomery County, Hydrologic Unit 03010101, on right bank 120 ft upstream from bridge on State Highway 603 at Lafayette, 0.4 mi downstream from confluence of North and South Forks, and 1.1 mi upstream from Cove Hollow.

DRAINAGE AREA.--257 mi².

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

REVISED RECORDS.--WSP 1333: 1944-47(M), 1948-49.

GAGE.--Water-stage recorder. Datum of gage is 1,174.47 ft above National Geodetic Vertical Datum of 1929. Prior to July 30, 1949, nonrecording gage at same site and datum.

REMARKS.--Records good except those for period of no gage-height record, Jan. 5, 6, and period with ice effect, Jan. 8-12, which are fair. Occasional diurnal fluctuation caused by meat-processing plant 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 Water Control Board.

AVERAGE DISCHARGE.--45 years, 239 ft³/s, 12.63 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,500 ft³/s, June 21, 1972, gage height, 15.60 ft, from floodmarks, from rating curve extended above 12,000 ft³/s on basis of slope-area measurement of peak flow; minimum daily, 10 ft³/s, Jan. 14, 15, 18, 19, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 12.2 ft, from information by local residents, discharge, 19,000 ft³/s, from rating curve extended above 12,000 ft³/s.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	1345	*1,050	*3.07	No peak equal to or greater than base discharge.			

Minimum discharge, 32 ft³/s, Aug. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	61	254	258	164	106	112	194	78	54	56	55
2	76	58	197	223	161	104	137	177	76	48	51	45
3	73	58	166	206	189	104	123	166	146	46	47	39
4	71	61	155	188	386	109	275	161	136	45	47	77
5	71	57	133	e155	502	118	271	170	101	43	56	119
6	72	55	119	e130	376	107	223	179	88	42	50	72
7	78	54	112	119	293	104	245	178	79	40	57	57
8	75	56	107	e118	276	101	226	160	73	39	50	50
9	70	56	104	e115	244	103	204	149	85	40	45	46
10	68	172	142	e110	220	110	186	146	143	46	45	52
11	68	224	198	e108	200	103	172	159	95	43	68	47
12	96	142	173	e115	191	99	181	141	81	59	88	42
13	103	121	153	135	156	105	256	130	73	107	60	42
14	81	110	151	122	150	101	253	123	68	67	47	40
15	76	102	242	110	169	96	237	152	64	54	41	38
16	73	97	238	106	174	92	213	208	62	47	69	35
17	71	97	206	119	148	92	193	160	84	42	46	57
18	70	118	180	220	141	94	193	214	198	42	39	143
19	68	108	166	371	140	95	274	201	119	77	36	81
20	68	100	154	865	144	91	321	215	92	53	40	62
21	67	96	141	707	136	87	294	184	82	62	49	53
22	66	90	133	466	120	86	346	164	72	98	43	47
23	69	88	125	352	130	84	385	145	65	75	39	43
24	71	87	128	289	129	84	472	138	59	80	45	44
25	71	83	238	266	117	84	428	136	62	60	43	57
26	71	81	240	244	108	108	365	118	59	146	37	68
27	75	92	285	190	118	191	314	106	60	153	34	53
28	100	145	504	186	112	142	273	99	54	176	35	49
29	77	546	451	176	108	124	241	94	51	94	125	47
30	67	367	337	170	---	115	215	87	52	71	113	47
31	64	---	294	167	---	111	---	83	---	62	79	---
TOTAL	2311	3582	6226	7106	5502	3250	7628	4737	2557	2111	1680	1707
MEAN	74.5	119	201	229	190	105	254	153	85.2	68.1	54.2	56.9
MAX	103	546	504	865	502	191	472	215	198	176	125	143
MIN	64	54	104	106	108	84	112	83	51	39	34	35
CFSM	.29	.46	.78	.89	.74	.41	.99	.59	.33	.26	.21	.22
IN.	.33	.52	.90	1.03	.80	.47	1.10	.69	.37	.31	.24	.25

CAL YR 1987 TOTAL 128171 MEAN 351 MAX 7480 MIN 44 CFSM 1.37 IN. 18.55
WTR YR 1988 TOTAL 48397 MEAN 132 MAX 865 MIN 34 CFSM .51 IN. 7.01

e Estimated.

02055000 ROANOKE RIVER AT ROANOKE, VA

LOCATION.--Lat 37°15'30", long 79°56'20", Roanoke City, Hydrologic Unit 03010101, on left bank 50 ft downstream from Walnut Street Bridge, 3.2 mi upstream from Tinker Creek, and at mile 360.6.

DRAINAGE AREA.--395 mi².

PERIOD OF RECORD.--February 1899 to current year. Monthly discharge only for some periods, published in WSP 1303. Records for July 1896 to January 1899 published in WSP 11, 15, 27, and 20th Annual Report, Part 4, are unreliable, due to doubtful gage-height record, and should not be used.

REVISED RECORDS.--WSP 972: 1928, 1930, 1933. WSP 1433: 1899-1904, 1914-17(M), 1918-24, 1925-27(M), 1929-34(M), 1935, 1936-39(M). WSP 2104: Drainage area. WDR VA-72-1: 1928(M), 1940(M). See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 906.84 ft above National Geodetic Vertical Datum 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 with ice effect, Jan. 8-13, which is fair. Prior to 1949, diurnal fluctuation at low flow caused by powerplants upstream from station. Appalachian Power Company 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.

AVERAGE DISCHARGE.--89 years, 371 ft³/s, 12.75 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,300 ft³/s, Nov. 4, 1985, gage height, 23.35 ft, from floodmark, from rating curve extended above 26,000 ft³/s; practically no flow Dec. 23, 1909, Dec. 19, 1963, when flow was retarded by freezing, gage height, 0.0 ft; minimum daily discharge, 19 ft³/s, Aug. 29, 1981.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	2030	*1,460	*3.31		No peak equal to or greater than base discharge.		

Minimum discharge, 33 ft³/s, Aug. 28, gage height, 0.32 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	122	91	467	394	245	159	170	275	105	60	76	89
2	114	90	346	336	241	155	190	248	103	60	68	71
3	108	87	284	294	260	153	178	231	211	56	60	62
4	105	87	249	274	400	173	265	220	216	54	58	143
5	102	86	223	254	713	170	414	250	151	51	67	138
6	103	85	195	187	584	161	342	243	122	47	73	117
7	108	83	172	166	450	151	342	247	108	44	63	91
8	106	85	159	e160	422	146	329	226	99	49	64	78
9	101	85	151	e150	366	147	301	211	155	104	54	72
10	98	317	183	e140	327	153	280	205	162	63	49	77
11	98	328	246	e135	299	149	255	208	142	54	52	73
12	133	213	253	e130	284	143	287	199	114	83	67	67
13	134	165	230	e150	258	146	343	179	102	98	86	63
14	117	148	211	167	219	146	360	168	94	96	61	58
15	105	137	264	153	254	139	344	171	87	71	49	55
16	99	128	324	145	262	135	315	246	93	59	41	52
17	98	138	305	167	235	131	287	262	190	52	63	85
18	97	139	274	225	218	130	275	340	274	50	43	115
19	93	146	250	425	213	134	346	371	196	56	60	118
20	91	134	238	1050	219	131	427	321	147	119	65	94
21	89	129	220	1140	212	125	405	293	111	112	48	81
22	86	125	205	774	196	122	478	257	97	111	50	69
23	86	117	193	573	190	120	581	224	85	110	45	62
24	88	115	178	467	197	119	746	204	78	96	58	79
25	89	114	214	416	187	118	689	205	75	85	45	78
26	88	109	287	388	174	161	551	181	76	264	42	80
27	112	214	308	302	171	259	465	156	70	186	37	78
28	104	280	437	286	171	235	396	144	68	191	50	68
29	112	937	727	276	164	200	345	135	63	137	254	63
30	98	785	602	260	---	184	304	122	62	105	175	60
31	93	---	469	251	---	167	---	113	---	86	113	---
TOTAL	3177	5697	8864	10235	8131	4762	11010	6855	3656	2809	2136	2436
MEAN	102	190	286	330	280	154	367	221	122	90.6	68.9	81.2
MAX	134	937	727	1140	713	259	746	371	274	264	254	143
MIN	86	83	151	130	164	118	170	113	62	44	37	52
CFSM	.26	.48	.72	.84	.71	.39	.93	.56	.31	.23	.17	.21
IN.	.30	.54	.83	.96	.77	.45	1.04	.65	.34	.26	.20	.23

CAL YR 1987 TOTAL 204383 MEAN 560 MAX 13800 MIN 54 CFSM 1.42 IN. 19.25
WTR YR 1988 TOTAL 69768 MEAN 191 MAX 1140 MIN 37 CFSM .48 IN. 6.57

e Estimated.

02055100 TINKER CREEK NEAR DALEVILLE, VA

LOCATION.--Lat 37°25'03", long 79°56'08", Botetourt County, Hydrologic Unit 03010101, on left bank 1,100 ft downstream from Norfolk Southern Railway bridge, 0.2 mi downstream from unnamed tributary, 0.5 mi south of Glebe Mills, and 1.3 mi northwest of Daleville.

DRAINAGE AREA.--11.7 mi².

PERIOD OF RECORD.--April 1956 to current year.

REVISED RECORDS.--WSP 1904: 1958-60(P). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,217.47 ft above National Geodetic Vertical Datum of 1929 (Norfolk Southern Railway bench mark).

REMARKS.--Records good except for period with ice effect, Jan. 7-13, 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.

AVERAGE DISCHARGE.--32 years, 11.9 ft³/s, 13.81 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,400 ft³/s, Nov. 4, 1985, gage height, 13.36 ft, from floodmark, from rating curve extended above 130 ft³/s on basis of contracted-opening measurement at gage height 9.82 ft and slope-area measurements at gage heights 8.52 ft, 9.82 ft, and 13.36 ft; minimum, 0.20 ft³/s, Jan. 24, 1961, result of freezeup; minimum daily, 0.90 ft³/s, July 26, 1966; minimum gage height, 0.99 ft, June 12, 24, 1970.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1940 reached a stage of 9.0 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
July 21	1730	*117	*2.82		No peak equal to or greater than base discharge.		

Minimum discharge, 0.88 ft³/s, July 4, gage height, 1.00 ft, result of temporary pumpage; minimum daily, 1.2 ft³/s, July 1-8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.5	5.7	17	11	8.5	5.4	5.1	4.8	2.4	1.2	2.3	4.2
2	4.6	5.4	13	9.8	8.5	5.2	5.0	4.6	2.3	1.2	2.1	3.6
3	4.4	5.5	11	9.0	9.3	5.3	4.8	4.4	4.1	1.2	2.0	3.3
4	4.4	5.4	9.6	8.9	12	5.6	8.9	4.5	3.2	1.2	1.9	17
5	4.5	5.4	9.4	7.3	11	5.3	6.5	5.9	2.6	1.2	1.9	11
6	4.7	6.2	9.0	7.1	10	5.1	6.9	5.8	2.3	1.2	2.6	7.0
7	4.8	6.3	8.4	e6.2	9.2	4.8	7.8	4.9	2.2	1.2	2.5	5.7
8	4.3	6.1	7.9	e5.6	9.2	4.7	6.9	4.3	2.0	1.2	1.9	4.8
9	4.3	6.1	7.5	e5.2	8.7	4.8	6.2	4.1	2.9	1.5	1.7	4.5
10	4.4	17	8.5	e5.0	8.3	4.8	5.8	4.0	2.9	1.5	1.6	4.5
11	4.3	8.6	9.5	e4.8	7.9	4.5	5.8	3.8	2.3	1.4	6.6	3.9
12	6.1	5.9	8.3	e4.5	8.0	4.5	6.9	3.5	2.1	1.9	7.4	3.7
13	5.1	5.2	7.5	e5.2	7.2	4.5	6.8	3.3	1.9	1.9	5.8	3.5
14	4.8	4.7	7.3	5.7	7.0	4.2	5.4	3.3	1.8	1.7	3.7	3.4
15	4.7	4.4	11	5.4	8.3	4.3	5.2	3.2	1.8	1.5	2.4	3.2
16	4.7	4.2	10	5.3	8.6	4.2	4.8	3.2	1.7	1.4	1.8	3.1
17	4.7	5.4	9.7	6.8	7.4	4.0	4.6	3.2	1.9	1.3	1.7	3.9
18	4.9	5.4	9.4	22	7.2	4.1	4.8	6.4	2.2	1.6	1.7	4.1
19	4.9	4.8	9.1	18	7.4	4.2	5.4	4.5	1.8	3.7	6.7	3.6
20	5.2	4.7	9.0	36	7.4	4.1	4.7	3.8	1.7	3.5	6.1	4.3
21	5.6	4.7	8.7	23	6.7	4.4	4.4	3.6	1.6	14	3.7	3.4
22	5.7	4.9	8.7	18	6.3	4.3	9.3	4.8	1.4	8.8	2.8	2.9
23	5.9	4.9	8.4	15	6.3	4.3	8.2	3.6	1.5	10	2.6	3.0
24	6.3	4.9	7.9	14	6.2	4.4	8.7	3.8	1.5	4.3	3.7	6.9
25	6.2	4.8	10	14	6.0	4.3	7.3	3.8	1.5	3.0	2.5	6.9
26	6.2	4.9	9.7	12	5.9	12	6.7	3.1	1.4	17	2.2	5.4
27	7.2	9.5	9.8	10	5.9	13	6.1	3.0	1.4	7.6	2.0	4.4
28	6.8	17	15	9.5	5.6	7.3	5.7	2.9	1.3	4.6	3.4	3.8
29	5.9	56	17	9.0	5.4	6.1	5.3	2.7	1.3	3.2	20	3.6
30	5.9	26	14	8.8	---	5.6	5.0	2.6	1.4	2.6	8.3	3.4
31	5.9	---	13	8.6	---	5.3	---	2.4	---	2.6	5.5	---
TOTAL	161.9	260.0	314.3	330.7	225.4	164.6	185.0	121.8	60.4	110.2	121.1	146.0
MEAN	5.22	8.67	10.1	10.7	7.77	5.31	6.17	3.93	2.01	3.55	3.91	4.87
MAX	7.2	56	17	36	12	13	9.3	6.4	4.1	17	20	17
MIN	4.3	4.2	7.3	4.5	5.4	4.0	4.4	2.4	1.3	1.2	1.6	2.9
CFSM	.45	.74	.87	.91	.66	.45	.53	.34	.17	.30	.33	.42
IN.	.51	.83	1.00	1.05	.72	.52	.59	.39	.19	.35	.39	.46

CAL YR 1987 TOTAL 7198.5 MEAN 19.7 MAX 641 MIN 2.3 CFSM 1.69 IN. 22.89
WTR YR 1988 TOTAL 2201.4 MEAN 6.01 MAX 56 MIN 1.2 CFSM .51 IN. 7.00

e Estimated.

02056000 ROANOKE RIVER AT NIAGARA, VA

LOCATION.--Lat 37°15'18", long 79°52'18", Roanoke County, Hydrologic Unit 03010101, on right bank 200 ft downstream from powerplant of Appalachian Power Company at Niagara, 2 mi downstream from Tinker Creek, 2.1 mi southeast of Vinton, and at mile 355.3.

DRAINAGE AREA.--512 mi².

PERIOD OF RECORD.--July 1926 to current year.

REVISED RECORDS.--WSP 972: 1927(M), 1929(M), 1934(M), 1937(M). WSP 1303: 1928, 1930, 1933-38, 1940. WSP 2104: Drainage area. WDR VA-72-1: 1928(M), 1930(M), 1933(M), 1935-36(M), 1938(M), 1940, 1944-45(M), 1948-49(M), 1951(M), 1955(M), 1960(M), 1967(M), 1969(M).

GAGE.--Water-stage recorder. Datum of gage is 820.15 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Records good except for period with ice effect, Jan. 7-13, which is fair. Flow regulated by dam and powerplant 200 ft 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.

AVERAGE DISCHARGE.--62 years, 513 ft³/s, 13.61 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 52,300 ft³/s, Nov. 4, 1985, gage height, 25.30 ft, from floodmark, from rating curve extended above 12,000 ft³/s on basis of slope-area measurements at gage heights 18.98 ft and 25.30 ft; minimum, 1.0 ft³/s, Oct. 16, 20, 1956; minimum daily, 8 ft³/s, Oct. 9, 1954; minimum gage height, 0.17 ft, Aug. 25, 1971.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	0515	*2,010	*6.09	No peak equal to or greater than base discharge.			

Minimum discharge, 26 ft³/s, Sept. 23, gage height, 0.77 ft; minimum daily, 114 ft³/s, Sept. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	227	187	687	536	376	263	279	376	204	145	168	204
2	223	186	537	477	371	259	303	350	206	142	161	175
3	212	184	449	435	400	256	282	331	366	137	150	161
4	203	184	395	413	566	289	394	327	324	135	152	341
5	201	181	360	381	869	279	515	405	252	149	160	274
6	200	177	328	315	745	264	449	366	222	135	165	241
7	207	174	305	e280	596	254	449	359	203	129	149	202
8	205	174	290	e260	565	249	430	329	191	148	152	183
9	201	176	278	e250	512	249	392	313	294	172	143	177
10	196	564	333	e230	471	253	365	308	273	172	137	190
11	193	461	422	e220	442	252	346	308	243	142	138	170
12	241	338	392	e210	420	244	413	301	208	173	208	166
13	238	285	357	e240	387	245	464	281	197	191	175	161
14	227	260	338	285	338	244	467	267	185	191	151	156
15	209	243	437	268	375	237	451	270	176	162	141	155
16	202	235	464	256	390	232	418	333	177	144	131	219
17	198	239	442	270	356	227	386	393	268	135	146	197
18	196	258	408	367	332	228	378	554	457	141	131	216
19	196	250	376	585	326	230	476	524	301	149	277	202
20	192	240	356	1360	331	225	523	462	252	231	264	210
21	186	230	339	1420	320	222	501	406	215	292	162	136
22	180	225	321	978	306	217	654	362	195	278	150	164
23	181	221	310	755	297	215	721	328	180	216	145	137
24	181	219	293	634	300	214	909	320	171	192	179	179
25	180	214	340	587	292	214	841	307	164	185	144	193
26	182	209	400	554	281	296	693	281	164	504	138	184
27	205	379	441	459	275	400	594	258	159	309	128	156
28	232	514	604	432	273	348	522	242	155	296	156	114
29	212	1510	879	419	270	308	468	231	150	244	563	165
30	202	1070	757	394	---	291	421	219	148	196	333	151
31	192	---	616	383	---	278	---	212	---	183	243	---
TOTAL	6300	9787	13254	14653	11782	7982	14504	10323	6700	6018	5640	5579
MEAN	203	326	428	473	406	257	483	333	223	194	182	186
MAX	241	1510	879	1420	869	400	909	554	457	504	563	341
MIN	180	174	278	210	270	214	279	212	148	129	128	114
CFSM	.40	.64	.84	.92	.79	.50	.94	.65	.44	.38	.36	.36
IN.	.46	.71	.96	1.06	.86	.58	1.05	.75	.49	.44	.41	.41

CAL YR 1987 TOTAL 306704 MEAN 840 MAX 18500 MIN 157 CFSM 1.64 IN. 22.28
WTR YR 1988 TOTAL 112522 MEAN 307 MAX 1510 MIN 114 CFSM .60 IN. 8.18

e Estimated.

02056650 BACK CREEK NEAR DUNDEE, VA

LOCATION.--Lat 37°13'39", long 79°52'06", Roanoke County, Hydrologic Unit 03010101, on right bank 80 ft upstream from bridge on State Highway 660, 0.9 mi upstream from Horseshoe Branch, 1.1 mi southeast of Dundee, 2.8 mi west of Hardy post office, and at mile 2.4.

DRAINAGE AREA.--56.8 mi².

PERIOD OF RECORD.--July 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 822.67 ft above National Geodetic Vertical Datum 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 periods with ice effect, Jan. 8-13, 28, 29, and period of doubtful gage-height record, July 21, which are fair. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--14 years, 61.2 ft³/s, 14.63 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft³/s, Nov. 4, 1985, gage height, 25.1 ft, from floodmark, present site, from rating curve extended above 5,900 ft³/s on basis of slope-area measurement of peak flow; minimum daily, 0.90 ft³/s, Aug. 30, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods of May 30, 1971, and June 21, 1972, reached a stage of 17.5 ft and 20.0 ft, respectively, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 600 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1730	*521	*5.63	No peak equal to or greater than base discharge.			

Minimum discharge, 4.3 ft³/s, July 8; minimum gage height, 2.44 ft, Aug. 18, 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	24	93	52	43	31	27	32	19	7.4	14	18
2	23	24	69	44	42	30	27	31	18	6.4	13	14
3	22	24	57	39	45	31	27	30	37	5.8	12	12
4	21	24	51	38	69	32	39	30	39	5.6	11	21
5	21	24	44	32	74	35	36	36	27	5.5	11	26
6	22	23	40	28	61	31	31	35	23	4.9	12	17
7	23	23	37	25	56	31	36	34	21	4.7	12	15
8	23	24	35	e23	60	30	34	30	18	4.8	12	13
9	21	24	34	e22	50	31	31	28	25	8.8	9.5	12
10	21	84	38	e21	47	32	30	27	42	6.9	8.5	14
11	22	60	76	e20	44	30	29	27	26	7.0	8.1	14
12	29	38	55	e19	44	29	33	25	21	14	8.2	12
13	30	32	47	e23	38	30	58	25	20	25	8.6	11
14	24	29	43	26	42	29	49	24	18	13	7.7	11
15	23	27	67	23	42	28	45	23	17	9.1	6.9	10
16	23	25	68	23	44	28	41	26	16	7.0	10	9.5
17	23	26	57	26	37	28	38	32	23	5.8	7.6	11
18	22	32	51	50	36	27	37	86	56	5.2	6.5	23
19	22	27	47	66	36	29	47	51	22	8.5	10	16
20	22	26	45	151	37	28	48	45	16	6.4	25	14
21	22	25	42	119	35	27	42	37	18	e90	14	13
22	22	23	39	90	33	27	47	34	14	30	10	11
23	22	24	38	75	35	27	50	31	11	13	8.9	10
24	23	24	35	64	34	27	51	34	9.7	15	9.5	10
25	23	23	42	63	33	27	46	31	9.7	9.6	9.3	11
26	23	23	44	59	31	34	44	26	9.7	14	8.1	12
27	27	44	42	54	33	37	41	24	8.5	59	7.3	12
28	35	102	70	e50	32	30	38	23	7.5	57	7.4	11
29	27	343	91	e47	31	28	36	22	7.0	25	70	10
30	25	145	70	44	---	29	34	21	7.2	18	37	10
31	24	---	59	44	---	28	---	20	---	16	25	---
TOTAL	735	1396	1626	1460	1244	921	1172	980	606.3	508.4	420.1	403.5
MEAN	23.7	46.5	52.5	47.1	42.9	29.7	39.1	31.6	20.2	16.4	13.6	13.4
MAX	35	343	93	151	74	37	58	86	56	90	70	26
MIN	21	23	34	19	31	27	27	20	7.0	4.7	6.5	9.5
CFSM	.42	.82	.92	.83	.76	.52	.69	.56	.36	.29	.24	.24
IN.	.48	.91	1.06	.96	.81	.60	.77	.64	.40	.33	.28	.26

CAL YR 1987 TOTAL 37798 MEAN 104 MAX 2560 MIN 10 CFSM 1.82 IN. 24.76
WTR YR 1988 TOTAL 11472.3 MEAN 31.3 MAX 343 MIN 4.7 CFSM .55 IN. 7.51

e Estimated.

02056900 BLACKWATER RIVER NEAR ROCKY MOUNT, VA

LOCATION.--Lat 37°02'42", long 79°50'40", Franklin County, Hydrologic Unit 03010101, on right bank 45 ft downstream from bridge on State Highway 122, 3.0 mi northeast of Rocky Mount, and 4.1 mi upstream from Maggodee Creek.

DRAINAGE AREA.--115 mi².

PERIOD OF RECORD.--October 1976 to current year.

GAGE.--Water-stage recorder. Datum of gage is 876.45 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for period of doubtful gage-height record, Nov. 6-9, and periods with ice effect, Jan. 7-13, 28, 29, and Feb. 8, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--12 years, 136 ft³/s, 16.06 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,800 ft³/s, Nov. 5, 1985, gage height, 21.92 ft, from rating curve extended above 7,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 6.6 ft³/s, July 21, 1986, gage height, 1.13 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1130	*779	*4.41	No peak equal to or greater than base discharge.			

Minimum discharge, 19 ft³/s, Aug. 19, gage height, 1.42 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	93	73	189	150	115	88	80	86	58	42	50	46
2	77	73	151	137	113	86	78	83	58	37	45	38
3	74	73	131	128	124	87	76	82	92	35	41	35
4	72	73	127	128	157	89	121	84	101	33	39	86
5	71	72	115	121	177	89	114	105	73	32	40	102
6	72	e68	106	94	146	85	95	99	63	31	44	61
7	75	e66	102	e92	125	83	102	92	58	29	74	50
8	72	e64	97	e90	e125	83	94	81	52	27	41	44
9	70	e59	95	e88	126	86	87	77	58	30	35	42
10	71	172	103	e85	121	95	85	78	127	30	32	50
11	71	193	181	e82	117	87	81	86	75	28	30	47
12	83	107	135	e90	118	83	89	75	64	52	30	39
13	95	88	117	e110	103	83	130	71	59	166	34	37
14	77	81	108	122	102	81	110	69	54	56	28	37
15	74	77	126	111	119	79	101	69	51	43	28	34
16	74	73	137	110	121	78	94	69	49	36	30	32
17	73	75	117	117	107	77	89	87	57	32	27	39
18	73	83	112	149	104	77	90	189	60	35	24	81
19	72	77	108	170	103	80	113	143	110	91	34	60
20	71	74	106	388	109	78	125	200	78	58	104	51
21	71	70	103	256	101	75	101	121	63	46	52	46
22	68	68	99	190	95	74	111	114	53	121	36	40
23	69	68	97	163	96	74	127	98	48	72	31	37
24	71	69	93	146	96	74	123	94	45	63	31	35
25	72	68	116	146	93	75	116	87	48	49	30	37
26	71	68	134	151	91	93	110	78	48	53	27	40
27	77	99	127	118	91	108	105	74	43	243	25	39
28	100	203	213	e118	91	86	98	71	39	167	27	36
29	81	518	271	e115	89	81	94	68	38	95	108	35
30	75	293	192	118	---	78	89	65	40	69	88	36
31	74	---	163	116	---	79	---	61	---	57	59	---
TOTAL	2339	3245.0	4071	4199	3275	2571	3028	2856	1862	1958	1324	1392
MEAN	75.5	108	131	135	113	82.9	101	92.1	62.1	63.2	42.7	46.4
MAX	100	518	271	388	177	108	130	200	127	243	108	102
MIN	68	59	93	82	89	74	76	61	38	27	24	32
CFSM	.66	.94	1.14	1.18	.98	.72	.88	.80	.54	.55	.37	.40
IN.	.76	1.05	1.32	1.36	1.06	.83	.98	.92	.60	.63	.43	.45

CAL YR 1987 TOTAL 84086.0 MEAN 230 MAX 4990 MIN 36 CFSM 2.00 IN. 27.20
WTR YR 1988 TOTAL 32120.0 MEAN 87.8 MAX 518 MIN 24 CFSM .76 IN. 10.39

e Estimated.

02057400 SMITH MOUNTAIN LAKE NEAR PENHOOK, VA

LOCATION.--Lat 37°02'28", long 79°32'09", Pittsylvania County, Hydrologic Unit 03010101, at dam on Roanoke (Staunton) River 6.5 mi northeast of Penhook and at mile 314.0.

DRAINAGE AREA.--1,024 mi².

PERIOD OF RECORD.--September 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to July 19, 1965, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by concrete dam. Two ungated spillways, one near each end of dam, with crests at elevation 795 ft, are each 105 ft long. Initial filling began in September 1963 during construction; water in reservoir first reached minimum power pool, elevation, 787 ft, in May 1965. Total capacity at maximum pool elevation, 811 ft, is 1,517,000 acre-ft of which 375,000 acre-ft is above the spillway crest; 157,800 acre-ft is normally used for power between elevation 787 ft, minimum power pool, and the spillway crest. Capacity at invert of lowest penstock, elevation, 601 ft, is 100 acre-ft. Figures given herein represent total contents. Reservoir is part of the Smith Mountain Combination Project (pumped storage) which is used for hydroelectric power, flood control, low-water regulation for pollution abatement and water supply, water releases for downstream fish spawning, and recreation.

COOPERATION.--Records were provided by the Appalachian Power Company.

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, 1,142,000 acre-ft, many days in January, April, and May, elevation, 795.0 ft; minimum, 1,086,900 acre-ft, Sept. 23, elevation, 792.3 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	794.6	1,133,800	-
Oct. 31	794.0	1,121,600	-12,200
Nov. 30	794.5	1,131,800	+10,200
Dec. 31	793.7	1,115,500	-16,300
CAL YR 1987	-	-	-20,400
Jan. 31	794.3	1,127,700	+12,200
Feb. 29	794.4	1,129,800	+2,100
Mar. 31	794.1	1,123,600	-6,200
Apr. 30	794.7	1,135,900	+12,300
May 31	793.8	1,117,500	-18,400
June 30	794.1	1,123,600	+6,100
July 31	794.5	1,131,800	+8,200
Aug. 31	793.8	1,117,500	-14,300
Sept. 30	793.1	1,103,200	-14,300
WTR YR 1988	-	-	-30,600

02058400 PIGG RIVER NEAR SANDY LEVEL, VA

LOCATION.--Lat 36°56'45", long 79°31'30", Pittsylvania County, Hydrologic Unit 03010101, on left bank 300 ft downstream from Harpen Creek, 0.5 mi upstream from bridge on State Highway 40, and 1.1 mi south of Sandy Level.

DRAINAGE AREA.--350 mi².

PERIOD OF RECORD.--May 1963 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 617.00 ft above National Geodetic Vertical Datum 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 those below 142 ft³/s, and for period with ice effect, Jan. 9, 10, which are fair. Appalachian Power Company gage-height transmitter at station, recorder at Roanoke. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--25 years, 373 ft³/s, 14.47 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 65,600 ft³/s, Sept. 8, 1987, gage height, 31.12 ft, from high-water marks, from rating curve extended above 25,500 ft³/s on basis of slope-area measurement of peak flow; minimum, 24 ft³/s, Aug. 29, 30, 1981, gage height, 1.95 ft.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
July 28	1130	*2,670	*5.97	No peak equal to or greater than base discharge.			

Minimum daily discharge, 90 ft³/s, Aug. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	325	254	558	422	331	293	308	303	208	134	213	176
2	278	255	428	393	332	289	307	295	204	131	182	142
3	254	257	364	371	348	286	304	288	262	124	168	128
4	245	260	345	378	419	294	327	288	340	118	159	148
5	241	257	333	381	601	297	456	325	276	115	158	298
6	239	249	309	333	491	295	411	402	231	111	156	223
7	253	242	297	294	399	289	430	383	211	107	152	162
8	258	244	289	297	374	286	459	342	199	102	144	141
9	252	248	277	e360	368	287	405	312	189	126	141	139
10	253	514	305	e370	345	326	367	296	212	117	141	215
11	258	1180	852	321	332	341	340	299	251	106	138	186
12	261	483	576	321	338	310	332	314	219	140	137	151
13	275	350	411	341	326	302	416	299	195	725	133	138
14	277	306	345	344	282	298	440	289	184	310	126	129
15	266	281	377	329	304	283	390	293	176	206	123	123
16	267	265	448	305	347	275	358	261	169	170	142	117
17	259	264	374	322	339	271	337	354	164	150	141	125
18	257	274	330	352	310	271	321	352	160	142	119	207
19	258	270	314	470	308	281	350	390	198	283	114	217
20	250	266	307	1070	334	283	487	345	292	300	286	167
21	250	257	309	1180	329	270	478	337	233	224	223	148
22	244	247	305	621	303	263	424	316	195	218	140	134
23	239	237	299	467	302	262	490	299	168	311	115	125
24	241	237	291	401	311	265	459	282	182	297	110	122
25	245	237	336	391	304	265	408	275	181	224	104	125
26	249	241	490	453	297	290	378	258	169	181	98	129
27	253	286	422	359	297	409	355	240	154	551	92	127
28	291	705	555	345	298	385	340	229	140	1860	90	122
29	301	1270	907	353	294	315	325	227	133	546	517	118
30	266	1100	621	328	---	319	312	220	131	323	599	120
31	255	---	480	330	---	312	---	212	---	245	262	---
TOTAL	8060	11536	12854	13002	9963	9212	11514	9325	6026	8697	5423	4602
MEAN	260	385	415	419	344	297	384	301	201	281	175	153
MAX	325	1270	907	1180	601	409	490	402	340	1860	599	298
MIN	239	237	277	294	282	262	304	212	131	102	90	117
CFSM	.74	1.10	1.18	1.20	.98	.85	1.10	.86	.57	.80	.50	.44
IN.	.86	1.23	1.37	1.38	1.06	.98	1.22	.99	.64	.92	.58	.49

CAL YR 1987 TOTAL 258855 MEAN 709 MAX 34900 MIN 117 CFSM 2.03 IN. 27.51
WTR YR 1988 TOTAL 110214 MEAN 301 MAX 1860 MIN 90 CFSM .86 IN. 11.71

e Estimated.

02059400 LEESVILLE LAKE NEAR LEESVILLE, VA

LOCATION.--Lat 37°05'35", long 79°24'09", Campbell County, Hydrologic Unit 03010101, at Leesville Dam on Roanoke (Staunton) River, 2.0 mi south of Leesville, 3.5 mi upstream from Goose Creek, and at mile 296.

DRAINAGE AREA.--1,505 mi².

PERIOD OF RECORD.--September 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum 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, 613 ft, is 94,960 acre-ft of which 75,960 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 Appalachian Power Company.

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, 93,670 acre-ft, June 17, Sept. 13, elevation, 612.6 ft; minimum, 57,200 acre-ft, Sept. 26, elevation, 600.0 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	603.8	67,380	-
Oct. 31	605.5	72,070	+4,690
Nov. 30	602.6	64,170	-7,900
Dec. 31	605.8	72,950	+8,780
CAL YR 1987	-	-	-10,660
Jan. 31	603.7	67,120	-5,830
Feb. 29	603.2	65,780	-1,340
Mar. 31	609.2	82,950	+17,170
Apr. 30	605.0	70,600	-12,350
May 31	609.4	83,540	+12,940
June 30	605.5	72,970	-11,470
July 31	603.0	65,240	-6,830
Aug. 31	604.9	70,330	+5,090
Sept. 30	605.4	71,780	+1,450
WTR YR 1988	-	-	+4,400

02059500 GOOSE CREEK NEAR HUDDLESTON, VA

LOCATION.--Lat 37°10'23", long 79°31'14", Bedford County, Hydrologic Unit 03010101, on left bank 0.3 mi upstream from Haden Bridge on State Highway 732, 0.4 mi upstream from Rockcastle Creek, and 3.5 mi northwest of Huddleston.

DRAINAGE AREA.--188 mi².

PERIOD OF RECORD.--March 1925 to August 1928 (gage heights only), September 1930 to current year.

REVISED RECORDS.--WSP 892: 1933, 1935(M), 1939. WSP 972: 1931-32(M), 1934(M), 1935-38, 1940, 1941(M). WSP 1082: 1940(P). WSP 1142: 1938-40(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 592.91 ft above National Geodetic Vertical Datum 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 of no gage-height record, Oct. 1-7, July 17 to Aug. 1, and Aug. 5-23, and period with ice effect, Jan. 7-16, which are fair. Prior to October 1954, diurnal fluctuation at low flow caused by mill upstream from station. Appalachian Power Company gage-height transmitter at station, recorder at Roanoke. 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 Water Control Board.

AVERAGE DISCHARGE.--58 years, 179 ft³/s, 12.93 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 53,200 ft³/s, Sept. 8, 1987, gage height, 37.49 ft, from floodmarks, from rating curve extended above 11,000 ft³/s on basis of slope-area measurements at gage heights 19.25 ft, 24.1 ft, 24.89 ft, and 37.49 ft; minimum, 3 ft³/s, Aug. 31, 1932, Jan. 30, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,300 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1700	*1,400	*5.05	No peak equal to or greater than base discharge.			

Minimum daily discharge, 30 ft³/s, Aug. 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e150	95	463	192	170	115	132	122	85	57	e52	71
2	e140	93	329	169	171	116	132	117	86	53	51	60
3	e130	91	251	153	189	118	127	114	119	53	49	56
4	e125	90	218	153	232	125	213	119	133	51	49	108
5	e120	89	187	141	251	141	181	169	102	50	e66	144
6	e120	83	170	110	206	122	158	151	92	50	e62	89
7	e125	81	153	e105	165	120	190	134	86	48	e74	73
8	137	82	142	e100	181	117	172	120	79	47	e60	65
9	130	84	133	e99	168	126	157	115	85	56	e54	64
10	128	427	170	e97	159	144	147	117	116	51	e47	71
11	130	459	577	e96	155	126	141	115	92	50	e43	65
12	145	230	302	e110	158	119	148	106	84	81	e40	58
13	140	176	224	e128	133	122	190	102	80	76	e43	58
14	108	150	189	e125	122	117	158	101	76	64	e38	55
15	109	129	237	e120	146	113	148	104	74	57	e37	53
16	116	117	254	e130	171	113	138	100	72	51	e40	52
17	109	115	200	149	143	113	130	104	69	e48	e35	61
18	107	123	177	258	137	115	136	270	73	e80	e30	80
19	103	111	166	349	138	120	183	275	105	e98	e52	57
20	103	104	159	746	142	116	189	288	80	e78	e90	64
21	103	98	151	589	132	114	158	169	75	e66	e72	86
22	101	92	142	405	120	114	203	147	71	e180	e56	61
23	99	91	137	301	126	115	242	130	65	e145	e52	57
24	103	92	131	248	124	115	223	127	63	e110	54	65
25	106	91	167	240	118	119	199	140	65	e82	54	72
26	107	94	189	260	116	156	181	121	65	e60	47	71
27	117	110	181	193	117	189	164	109	62	e90	44	65
28	154	171	295	190	116	158	148	103	57	e80	59	58
29	118	783	352	181	114	144	138	98	57	e65	271	57
30	104	761	258	177	---	139	129	94	60	e56	184	58
31	99	---	212	174	---	135	---	89	---	e53	96	---
TOTAL	3686	5312	6916	6488	4420	3916	4955	4170	2428	2186	2001	2064
MEAN	119	177	223	209	152	126	165	135	80.9	70.5	64.5	68.8
MAX	154	783	577	746	251	189	242	288	133	180	271	144
MIN	99	81	131	96	114	113	127	89	57	47	30	52
CFSM	.63	.94	1.19	1.11	.81	.67	.88	.72	.43	.38	.34	.37
IN.	.73	1.05	1.37	1.28	.87	.77	.98	.83	.48	.43	.40	.41

CAL YR 1987 TOTAL 144114 MEAN 395 MAX 26000 MIN 40 CFSM 2.10 IN. 28.52
WTR YR 1988 TOTAL 48542 MEAN 133 MAX 783 MIN 30 CFSM .71 IN. 9.61

e Estimated.

02060500 ROANOKE (STAUNTON) RIVER AT ALTAVISTA, VA

LOCATION.--Lat 37°06'16", long 79°17'44", Pittsylvania County, Hydrologic Unit 03010101, on right bank 12 ft upstream from bridge on alternate U.S. Highway 29, 0.3 mi south of Altavista, 0.3 mi downstream from Sycamore Creek, 3.5 mi upstream from Big Otter River, and at mile 286.5.

DRAINAGE AREA.--1,789 mi².

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

REVISED RECORDS.--WSP 892: 1938(M). WSP 972: 1931-33. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 503.10 ft above National Geodetic Vertical Datum 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. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Appalachian Power Company gage-height transmitter at station, recorder at Roanoke. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--58 years, 1,788 ft³/s, 13.57 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 105,000 ft³/s, Aug. 15, 1940, gage height, 40.08 ft, from floodmark, from rating curve extended above 52,000 ft³/s on basis of unit hydrograph and flood-routing studies by U.S. Army Corps of Engineers and records for other stations in Roanoke River basin; minimum, 13 ft³/s, Jan. 30, 1966; minimum daily, 39 ft³/s, July 10, 1966; minimum gage height, 1.53 ft, Jan. 2, 1977, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,310 ft³/s, Jan. 19, gage height, 11.17 ft; minimum daily, 200 ft³/s, Oct. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1150	287	3030	525	1410	902	873	1230	846	791	763	792
2	1200	313	1880	382	1350	900	867	1230	860	790	771	757
3	325	866	1530	372	1340	904	861	1250	895	766	771	751
4	200	1710	1410	1140	1390	905	1050	1190	923	759	791	782
5	1190	1840	465	1450	1450	921	1110	1230	886	756	768	835
6	640	1660	347	1380	1380	904	1240	1220	855	772	770	783
7	1080	1600	1110	1030	1330	891	1660	1140	855	776	758	794
8	859	336	865	952	1320	890	1650	1110	857	763	759	751
9	1040	331	1020	446	1300	902	1440	1090	837	723	743	861
10	298	1030	1110	340	1290	913	1380	1090	855	820	746	894
11	204	1780	1680	675	1280	919	1290	1110	848	804	739	772
12	839	1560	650	1220	1290	920	1220	1150	825	812	777	801
13	867	1610	452	1720	1280	885	1510	1160	816	836	818	788
14	926	466	2490	1420	1260	866	1410	1360	821	762	794	778
15	872	318	3170	949	1280	857	1300	1220	815	756	778	764
16	910	1040	2760	390	1300	865	1160	1180	817	773	783	750
17	1030	1660	1290	355	1290	822	1150	1200	812	776	764	751
18	273	1050	1840	1360	1230	843	1230	1530	814	766	754	778
19	316	910	476	3660	1230	845	1390	1580	805	801	725	779
20	904	920	341	4600	1220	830	1390	1550	805	795	880	776
21	930	351	1390	3110	1210	819	1380	1420	780	803	829	849
22	899	284	1390	3140	1200	833	1560	1370	772	943	774	865
23	731	898	1370	3230	1230	868	1870	1350	755	929	802	843
24	800	1110	1270	800	1200	866	1960	1350	805	838	811	524
25	639	1170	1250	1870	1170	852	2110	1280	955	810	752	720
26	448	398	2910	1840	1130	913	2250	1170	796	767	729	959
27	667	4100	3460	1840	1050	963	2020	1140	773	807	720	790
28	701	3840	3340	1600	1040	910	1520	1140	753	879	730	777
29	893	3680	1920	1550	991	888	1330	1130	768	821	984	808
30	1320	2160	1810	1430	---	875	1240	1130	781	821	1050	805
31	1100	---	1740	1420	---	875	---	1080	---	807	835	---
TOTAL	24251	39278	49766	46196	36441	27346	42421	38380	24785	24822	24468	23677
MEAN	782	1309	1605	1490	1257	882	1414	1238	826	801	789	789
MAX	1320	4100	3460	4600	1450	963	2250	1580	955	943	1050	959
MIN	200	284	341	340	991	819	861	1080	753	723	720	524
(*)	-122	+38	-122	+103	+14	+178	-1	-89	-90	+22	-150	-216
MEAN‡	660	1347	1483	1593	1271	1060	1413	1149	736	823	639	573
CFSM‡	.37	.75	.83	.89	.71	.59	.79	.64	.41	.46	.36	.32
IN.‡	.43	.84	.96	1.03	.77	.68	.88	.74	.46	.53	.41	.36

CAL YR 1987 TOTAL 1047656 MEAN 2870 MAX 46700 MIN 160 MEAN‡ 2857 CFSM‡ 1.60 IN.‡ 21.68
WTR YR 1988 TOTAL 401831 MEAN 1098 MAX 4600 MIN 200 MEAN‡ 1062 CFSM‡ .59 IN.‡ 8.08

* Change in contents, equivalent in cubic feet per second, in Smith Mountain and Leesville Lakes; provided by Appalachian Power Company.
‡ Adjusted for change in contents.

02061500 BIG OTTER RIVER NEAR EVINGTON, VA

LOCATION.--Lat 37°12'30", long 79°18'14", Campbell County, Hydrologic Unit 03010101, on right bank 60 ft upstream from bridge on State Highway 682, 2.0 mi southwest of Evington, and 2.1 mi upstream from Flat Creek.
DRAINAGE AREA.--320 mi².
PERIOD OF RECORD.--October 1936 to current year. Monthly discharge only for some periods, published in WSP 1303. Prior to October 1965, published as Otter River near Evington.
REVISED RECORDS.--WSP 852: 1937. WSP 892: 1938-39(M). WSP 972: 1937-39. WSP 1032: 1940. WSP 2104: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 544.02 ft above National Geodetic Vertical Datum of 1929.
REMARKS.--Records good except those for periods of doubtful gage-height record, Nov. 14-17, Dec. 7-9, May 1-3, 13-17, May 27 to June 2, June 6-8, 10, 12-20, 22-24, 27-29, and July 1-11, and periods with ice effect, Jan. 8-12, 28, 29, and Feb. 8, 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 Water Control Board.
AVERAGE DISCHARGE.--52 years, 332 ft³/s, 14.09 in/yr.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,900 ft³/s, Sept. 8, 1987, gage height, 24.96 ft, from rating curve extended above 24,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 7.5 ft³/s, Sept. 14, 1966.
EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in October 1937 and August 1939 reached a stage of 23.1 ft, discharge, 27,500 ft³/s, from rating curve extended above 7,000 ft³/s on basis of unit hydrograph and flood-routing studies by U.S. Army Corps of Engineers, and records for other stations in Roanoke River basin.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	1800	*2,340	*5.97		No peak equal to or greater than base discharge.		

Minimum discharge, 29 ft³/s, Aug. 19, gage height, -0.13 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	156	134	488	331	288	219	216	e215	e150	e75	48	73
2	135	133	372	301	283	221	220	e205	e145	e68	46	58
3	135	131	309	278	320	220	217	e195	243	e68	45	52
4	130	130	283	281	381	222	487	222	277	e64	52	65
5	129	129	250	271	453	231	409	288	216	e62	64	175
6	131	127	230	243	360	220	296	370	e180	e61	61	97
7	137	125	e220	224	303	219	424	296	e150	e56	68	74
8	137	123	e210	e220	e300	219	350	246	e130	e50	53	66
9	135	122	e205	e210	303	216	293	220	171	e56	45	62
10	129	676	238	e205	285	230	271	220	e220	e52	42	71
11	128	739	1550	e200	272	221	254	227	168	e50	40	68
12	127	306	589	e220	282	219	255	217	e140	51	39	58
13	144	232	414	264	255	219	367	e195	e119	65	37	54
14	131	e210	339	269	258	216	289	e185	e110	68	36	53
15	124	e190	401	260	270	213	259	e190	e105	59	34	50
16	123	e180	465	249	315	211	239	e180	e100	49	32	48
17	122	e190	353	246	292	208	224	e200	e120	44	32	54
18	122	200	308	284	262	206	226	576	e130	52	32	73
19	120	199	285	567	256	206	306	436	e185	50	41	73
20	120	194	276	1150	262	206	398	399	e127	46	145	68
21	122	188	268	780	248	204	286	314	106	58	82	82
22	122	181	248	524	227	201	324	283	e90	201	54	66
23	120	174	240	436	227	198	418	251	e84	130	45	56
24	120	170	226	384	225	195	347	232	e80	98	44	63
25	122	168	262	377	215	195	302	257	84	77	44	69
26	124	166	335	455	214	237	271	228	84	63	42	72
27	125	166	318	366	217	380	256	e200	e75	85	39	67
28	137	183	449	e350	217	277	243	e185	e71	123	39	62
29	148	1260	568	e330	216	236	231	e170	e70	72	200	62
30	144	920	422	301	---	222	219	e165	77	58	327	62
31	138	---	356	292	---	218	---	e155	---	52	108	---
TOTAL	4037	8046	11477	10868	8006	6905	8897	7722	4007	2163	2016	2053
MEAN	130	268	370	351	276	223	297	249	134	69.8	65.0	68.4
MAX	156	1260	1550	1150	453	380	487	576	277	201	327	175
MIN	120	122	205	200	214	195	216	155	70	44	32	48
CFSM	.41	.84	1.16	1.10	.86	.70	.93	.78	.42	.22	.20	.21
IN.	.47	.94	1.33	1.26	.93	.80	1.03	.90	.47	.25	.23	.24

CAL YR 1987 TOTAL 206521 MEAN 566 MAX 20200 MIN 54 CFSM 1.77 IN. 24.01
WTR YR 1988 TOTAL 76197 MEAN 208 MAX 1550 MIN 32 CFSM .65 IN. 8.86

e Estimated.

02062500 ROANOKE (STAUNTON) RIVER AT BROOKNEAL, VA

LOCATION.--Lat 37°02'28", long 78°57'02", Campbell County, Hydrologic Unit 03010102, on left bank 1,600 ft upstream from bridge on U.S. Highway 501 at Brookneal, 2.9 mi upstream from Falling River, and at mile 255.9.

DRAINAGE AREA.--2,415 mi².

PERIOD OF RECORD.--April 1923 to current year.

REVISED RECORDS.--WSP 892: 1928(M). WSP 972: 1928-34. WSP 1303: 1924-27(M), 1929(M), 1941(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 351.96 ft above National Geodetic Vertical Datum 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.--No estimated daily discharges. Records good. 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. Gage-height and U.S. Army Corps of Engineers satellite telemeters 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.

AVERAGE DISCHARGE.--65 years, 2,385 ft³/s, 13.41 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 130,000 ft³/s, Aug. 15, 1940, gage height, 46.5 ft, at present site, from gage-height relation curve, from rating curve extended above 55,000 ft³/s on basis of slope-area measurement by Geological Survey, unit hydrograph and flood-routing studies by U.S. Army Corps of Engineers, and records for other stations in Roanoke River basin; minimum daily, 140 ft³/s, July 25, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,400 ft³/s, Jan. 20, gage height, 16.80 ft; minimum daily, 438 ft³/s, Oct. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1400	978	4570	2290	2030	1220	1120	1700	1300	948	924	1060
2	1400	682	3500	920	1990	1170	1110	1680	1140	942	892	968
3	1450	1020	2560	828	1970	1160	1100	1670	1230	921	908	915
4	481	1060	2020	1100	2140	1170	1420	1710	1390	894	962	949
5	438	1190	2000	1740	2410	1190	2070	1910	1310	884	999	1050
6	1490	1630	735	2170	2210	1200	1740	2230	1190	883	948	1120
7	933	1340	789	1900	2010	1150	2230	1870	1150	902	946	985
8	1380	539	1880	1540	1950	1130	2720	1690	1120	893	925	970
9	1150	619	1960	1460	1930	1150	2160	1590	1110	866	900	935
10	1290	1770	2130	802	1880	1250	1960	1570	1140	871	888	1200
11	480	3550	2940	748	1840	1250	1880	1600	1160	929	873	1010
12	480	2600	3670	1260	1870	1200	1720	1600	1110	986	878	938
13	1470	2330	2910	2240	1840	1190	2160	1570	1060	1010	918	984
14	1290	2020	2710	2390	1730	1110	2120	1720	1060	971	947	939
15	1210	678	3670	1580	1760	1080	1920	1760	1040	899	887	917
16	918	840	4310	1300	1860	1060	1670	1580	1020	903	912	897
17	755	1380	3310	684	1900	1040	1560	1620	1020	888	889	892
18	1020	2300	2240	1040	1760	1010	1570	1980	1030	884	874	928
19	496	1640	2250	2790	1700	1050	1950	2810	1080	967	863	955
20	1150	1320	801	8660	1710	1040	2340	2380	1090	978	1000	954
21	1220	1610	982	5180	1680	1000	2060	2250	1030	928	1240	959
22	1170	1140	2070	4970	1610	983	2190	2090	987	1050	995	1040
23	1340	1110	1980	4620	1630	1010	2840	1950	962	1470	951	1020
24	1180	1510	1900	3890	1640	1040	2980	1960	947	1590	961	995
25	478	1740	1760	1660	1550	1030	2900	1880	1100	1090	942	572
26	639	1830	2320	2990	1520	1200	3220	1660	1050	979	883	953
27	1160	1380	3140	2830	1410	1790	3140	1560	952	988	857	1030
28	1390	3900	4840	2610	1360	1460	2440	1520	939	1110	845	877
29	1270	5020	3830	2310	1340	1230	1970	1500	913	1080	1180	860
30	1060	5260	3020	2140	---	1170	1780	1470	935	997	2070	891
31	1120	---	2700	2040	---	1140	---	1440	---	959	1390	---
TOTAL	32708	53986	79497	72682	52230	35873	62040	55520	32565	30660	30647	28763
MEAN	1055	1800	2564	2345	1801	1157	2068	1791	1085	989	989	959
MAX	1490	5260	4840	8660	2410	1790	3220	2810	1390	1590	2070	1200
MIN	438	539	735	684	1340	983	1100	1440	913	866	845	572
(*)	-122	+38	-122	+103	+14	+178	-1	-89	-90	+22	-150	-216
MEAN‡	933	1838	2442	2448	1815	1335	2067	1702	995	1011	839	743
CFSM‡	.39	.76	1.01	1.01	.75	.55	.86	.70	.41	.42	.35	.31
IN.‡	.45	.85	1.17	1.17	.81	.64	.96	.81	.46	.48	.40	.34

CAL YR 1987	TOTAL	1398407	MEAN	3831	MAX	65600	MIN	327	MEAN‡	3818	CFSM‡	1.58	IN.‡	21.47
WTR YR 1988	TOTAL	567171	MEAN	1550	MAX	8660	MIN	438	MEAN‡	1514	CFSM‡	.63	IN.‡	8.54

* Change in contents, equivalent in cubic feet per second, in Smith Mountain and Leesville Lakes; provided by Appalachian Power Company.
‡ Adjusted for change in contents.

02064000 FALLING RIVER NEAR NARUNA, VA

LOCATION.--Lat 37°07'36", long 78°57'36", Campbell County, Hydrologic Unit 03010102, on left bank at upstream side of bridge on State Highway 643, 2.7 mi northeast of Naruna, and 3.2 mi upstream from Little Falling River.

DRAINAGE AREA.--173 mi².

PERIOD OF RECORD.--July 1929 to January 1935, September 1941 to current year.

REVISED RECORDS.--WSP 1333: 1930, 1931-34(M), 1935. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 412.32 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 15, 1935, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 7-13, 16, 28, which are fair. Small diurnal fluctuation caused by gristmill at Spring Mills. 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 Water Control Board.

AVERAGE DISCHARGE.--52 years (water years 1930-34, 1942-88), 149 ft³/s, 11.70 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,600 ft³/s, June 22, 1972, gage height, 29.21 ft, from rating curve extended above 7,100 ft³/s on basis of slope-area measurement of peak flow; minimum, 3.0 ft³/s, Oct. 9, 1932, gage height, 2.18 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 26.5 ft, from floodmarks, discharge, 22,000 ft³/s, by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,300 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 11	0800	*1,730	*7.74		No peak equal to or greater than base discharge.		

Minimum discharge, 21 ft³/s, Aug. 19, gage height, 2.51 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	84	63	207	146	141	98	117	91	87	63	40	52
2	66	62	153	134	139	97	115	88	86	49	38	42
3	64	62	126	127	172	97	109	85	157	46	41	39
4	65	64	117	142	243	101	348	88	143	44	55	52
5	63	65	104	139	252	102	250	205	104	43	49	73
6	64	60	95	124	183	96	166	222	91	41	41	54
7	67	60	91	e120	151	94	255	161	84	40	38	90
8	63	71	89	e105	145	92	185	121	78	39	36	74
9	60	59	87	e100	140	101	151	105	79	38	34	44
10	61	346	119	e100	134	131	130	101	94	54	32	62
11	62	417	919	e97	130	118	118	156	80	44	32	54
12	61	196	310	e100	156	104	136	111	73	75	31	45
13	63	148	194	e110	135	105	188	95	70	65	30	42
14	61	120	154	139	124	100	141	88	67	54	28	39
15	61	103	207	123	124	94	126	84	65	47	27	38
16	60	93	254	e105	150	90	114	85	63	41	26	36
17	61	92	178	111	132	89	107	118	61	37	24	39
18	60	105	147	192	124	90	111	274	106	39	23	48
19	60	92	137	251	122	100	175	168	99	95	26	46
20	59	89	132	672	128	93	205	219	81	72	75	45
21	58	81	126	421	119	88	147	155	67	50	51	62
22	57	75	118	255	109	85	180	421	63	69	39	49
23	55	74	113	201	112	86	166	204	59	254	34	42
24	59	74	107	173	113	89	160	393	55	180	33	45
25	60	73	133	189	106	90	132	223	56	80	31	44
26	61	73	152	229	102	190	120	163	56	60	29	43
27	68	88	151	172	104	350	114	131	53	57	26	41
28	95	112	257	e160	102	184	112	118	49	60	26	39
29	73	529	303	155	99	145	102	107	48	52	199	38
30	65	439	192	140	---	131	96	99	54	46	203	38
31	63	---	159	143	---	123	---	93	---	42	75	---
TOTAL	1979	3985	5631	5375	3991	3553	4576	4772	2328	1976	1472	1455
MEAN	63.8	133	182	173	138	115	153	154	77.6	63.7	47.5	48.5
MAX	95	529	919	672	252	350	348	421	157	254	203	90
MIN	55	59	87	97	99	85	96	84	48	37	23	36
CFSM	.37	.77	1.05	1.00	.80	.66	.88	.89	.45	.37	.27	.28
IN.	.43	.86	1.21	1.16	.86	.76	.98	1.03	.50	.42	.32	.31

CAL YR 1987 TOTAL 78498 MEAN 215 MAX 14600 MIN 17 CFSM 1.24 IN. 16.88
WTR YR 1988 TOTAL 41093 MEAN 112 MAX 919 MIN 23 CFSM .65 IN. 8.84

e Estimated.

02065500 CUB CREEK AT PHENIX, VA

LOCATION.--Lat 37°04'45", long 78°45'50", Charlotte County, Hydrologic Unit 03010102, on right bank 10 ft upstream from bridge on State Highway 40, 0.9 mi west of Phenix, 1.9 mi downstream from Rough Creek, and 6.4 mi upstream from Louse Creek.
DRAINAGE AREA.--98.0 mi².
PERIOD OF RECORD.--August 1946 to current year.
REVISED RECORDS.--WSP 1333: 1947(M), 1948, 1949(M). WSP 2104: Drainage area. WDR VA-76-1: 1975.
GAGE.--Water-stage recorder. Datum of gage is 370.19 ft above National Geodetic Vertical Datum of 1929. Prior to July 14, 1950, nonrecording gage at same site and datum.
REMARKS.--Records good except for period of no gage-height record, Jan. 7-18, 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.
COOPERATION.--Records were provided by the Virginia Water Control Board.
AVERAGE DISCHARGE.--42 years, 97.4 ft³/s, 13.50 in/yr.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,600 ft³/s, Sept. 8, 1987, gage height, 19.31 ft, from floodmark, from rating curve extended above 5,400 ft³/s on basis of contracted-opening measurement of peak flow; maximum gage height, 20.37 ft, June 22, 1972; minimum discharge, 2.6 ft³/s, Oct. 6, 1970, gage height, 0.74 ft.
EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in August 1940 and June 1972 reached stages of 17.5 ft and 20.37 ft, respectively, from floodmarks.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
May 23	0430	*722	*5.95	No peak equal to or greater than base discharge.			

Minimum discharge, 14 ft³/s, Aug. 19, gage height, 1.13 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	111	55	181	91	86	63	79	67	54	39	24	36
2	66	55	102	85	84	61	78	66	52	32	23	29
3	61	55	86	80	102	62	77	65	82	29	23	26
4	68	55	81	89	111	65	110	68	92	28	30	33
5	60	55	75	92	129	65	141	99	64	28	27	43
6	57	53	70	78	99	62	100	106	56	27	24	34
7	64	51	68	e70	86	61	121	88	52	26	29	28
8	60	52	67	e68	82	60	116	77	48	25	26	26
9	53	52	66	e66	81	64	100	71	47	25	22	26
10	52	105	90	e64	78	91	90	70	55	35	21	45
11	52	332	276	e62	77	78	85	76	50	33	20	39
12	51	281	336	e65	103	67	86	70	46	32	20	29
13	51	126	127	e70	93	67	107	64	44	54	19	27
14	50	100	99	e80	78	66	90	62	43	40	18	25
15	50	86	117	e75	79	62	84	61	41	33	17	24
16	50	78	151	e65	91	59	79	60	40	29	17	23
17	51	75	110	e76	83	58	76	63	39	28	16	23
18	51	82	93	e86	76	58	79	122	47	27	15	28
19	50	76	86	159	75	66	105	112	51	32	17	29
20	50	71	83	244	81	63	126	230	53	32	46	28
21	49	67	80	339	76	58	96	141	44	31	66	34
22	48	63	77	161	69	56	96	292	40	30	40	30
23	47	62	74	115	69	56	95	506	38	47	27	25
24	49	62	71	99	71	58	88	126	36	85	24	25
25	52	62	80	98	67	58	81	99	36	42	22	25
26	51	62	94	121	65	84	77	95	35	31	21	26
27	57	73	96	111	66	153	75	76	34	39	19	26
28	82	86	124	102	65	112	74	69	31	45	19	24
29	66	122	170	97	63	92	70	65	30	35	97	23
30	57	286	119	89	---	84	69	60	33	29	147	23
31	56	---	97	86	---	83	---	57	---	26	57	---
TOTAL	1772	2840	3446	3183	2385	2192	2750	3283	1413	1074	993	862
MEAN	57.2	94.7	111	103	82.2	70.7	91.7	106	47.1	34.6	32.0	28.7
MAX	111	332	336	339	129	153	141	506	92	85	147	45
MIN	47	51	66	62	63	56	69	57	30	25	15	23
CFSM	.58	.97	1.13	1.05	.84	.72	.94	1.08	.48	.35	.33	.29
IN.	.67	1.08	1.31	1.21	.91	.83	1.04	1.25	.54	.41	.38	.33

CAL YR 1987 TOTAL 46243 MEAN 127 MAX 4840 MIN 13 CFSM 1.29 IN. 17.55
WTR YR 1988 TOTAL 26193 MEAN 71.6 MAX 506 MIN 15 CFSM .73 IN. 9.94

e Estimated.

02066000 ROANOKE (STAUNTON) RIVER AT RANDOLPH, VA

LOCATION.--Lat 36°54'54", long 78°44'28", Halifax County, Hydrologic Unit 03010102, on right bank 6 ft downstream from bridge on State Highway 746, 2.8 mi northwest of Randolph, 3.6 mi upstream from Roanoke Creek, and at mile 227.3.
DRAINAGE AREA.--2,977 mi².
PERIOD OF RECORD.--August 1900 to September 1906, October 1927 to September 1930, October 1950 to current year. Monthly discharge only for some periods, published in WSP 1303. Prior to October 1902, published as Staunton River at Randolph. Gage heights collected since 1905 at this site or at former site are contained in reports of the National Weather Service.
REVISED RECORDS.--WSP 1203: 1928-30. WSP 1303: 1901-6. WSP 2104: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 307.59 ft above National Geodetic Vertical Datum 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. Gage-height and U.S. Army Corps of Engineers satellite telemeters 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.
AVERAGE DISCHARGE.--47 years, 3,060 ft³/s, 13.96 in/yr, unadjusted.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 97,000 ft³/s, Dec. 31, 1901, gage height, 35.0 ft, from graph based on gage readings, site and datum then in use; minimum daily, 179 ft³/s, Sept. 8, 1965, July 7, 1970.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 16, 1940, reached a stage of 41.6 ft, present site and datum, discharge, 150,000 ft³/s, from information by U.S. Army Corps of Engineers.
EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,400 ft³/s, Jan. 20, gage height, 18.08 ft; minimum daily, 647 ft³/s, Oct. 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2710	1160	5470	3180	2430	1670	1570	1980	1650	1110	1100	1510
2	2120	1150	5140	1710	2420	1530	1540	1930	1360	1090	1030	1200
3	2080	880	3530	1060	2480	1510	1510	1900	1380	1050	1010	1080
4	1280	1210	2890	1060	2720	1530	1610	1900	1730	1010	1040	1050
5	732	1530	2520	2010	3270	1540	2940	2150	1710	985	1100	1170
6	1480	1610	1550	2250	3040	1560	2500	2960	1470	968	1080	1340
7	1430	1910	899	2080	2580	1530	2660	2610	1340	975	1030	1240
8	1740	1210	1470	1870	2320	1480	3550	2140	1290	989	1030	1150
9	1510	679	1800	1600	2310	1490	3140	1920	1260	965	996	1120
10	1710	1390	1710	1170	2260	1710	2610	1820	1280	930	941	1240
11	1040	5190	4990	784	2200	1790	2390	1840	1330	1020	937	1480
12	647	4950	6120	1010	2350	1640	2240	1880	1300	1090	919	1160
13	1180	3660	2890	1890	2370	1590	2570	1820	1230	1440	928	1100
14	1650	3110	1670	2660	2170	1550	2940	1760	1180	1250	973	1110
15	1690	1770	4160	2330	2070	1460	2520	2000	1170	1110	979	1060
16	1290	1010	5670	1460	2300	1410	2260	1880	1140	1020	922	1030
17	926	1740	4880	923	2410	1390	1960	1810	1120	1010	941	1020
18	1310	2520	2650	866	2290	1350	1920	2140	1130	987	903	1050
19	848	2280	3180	2690	2150	1400	2190	3380	1310	1010	894	1110
20	882	1720	1660	8870	2180	1420	3020	3280	1350	1210	999	1130
21	1400	1670	992	9350	2180	1380	2840	3220	1280	1160	1340	1100
22	1470	1090	1980	6500	2080	1320	2600	2990	1150	1140	1360	1170
23	1630	779	2330	5380	2010	1300	3240	3290	1100	1440	1060	1220
24	1610	1310	2260	5220	2070	1360	3530	3020	1100	2730	1020	1180
25	949	1600	2210	2120	2020	1380	3440	2730	1060	1750	1030	1090
26	648	1910	2620	3440	1920	1440	3520	2360	1320	1330	967	883
27	1260	1370	4520	3580	1870	2620	3670	2020	1140	1290	923	1250
28	1500	5670	6430	3190	1750	2560	3330	1860	1050	1330	890	1080
29	1750	6330	5970	2760	1720	1930	2520	1810	1020	1430	1220	1010
30	1380	8080	4290	2660	---	1710	2160	1760	1010	1250	2680	1000
31	1200	---	3500	2460	---	1620	---	1710	---	1160	2510	---
TOTAL	43052	70488	101951	88133	65940	49170	78490	69870	37960	37229	34752	34333
MEAN	1389	2350	3289	2843	2274	1586	2616	2254	1265	1201	1121	1144
MAX	2710	8080	6430	9350	3270	2620	3670	3380	1730	2730	2680	1510
MIN	647	679	899	784	1720	1300	1510	1710	1010	930	890	883
(*)	-122	+38	-122	+103	+14	+178	-1	-89	-90	+22	-150	-216
MEAN‡	1267	2388	3167	2946	2288	1764	2615	2165	1175	1223	971	928
CFSM‡	.43	.80	1.06	.99	.77	.59	.88	.73	.39	.41	.33	.31
IN.‡	.49	.90	1.23	1.14	.83	.68	.98	.84	.44	.47	.38	.35

CAL YR 1987	TOTAL	1858875	MEAN	5093	MAX	70000	MIN	350	MEAN‡	5080	CFSM‡	1.71	IN.‡	23.17
WTR YR 1988	TOTAL	711368	MEAN	1944	MAX	9350	MIN	647	MEAN‡	1908	CFSM‡	.64	IN.‡	8.73

* Change in contents, equivalent in cubic feet per second, in Smith Mountain and Leesville Lakes; provided by Appalachian Power Company.
‡ Adjusted for change in contents.

02067800; 02067820 TALBOTT AND TOWNES RESERVOIRS NEAR KIBLER, VA

LOCATION.--Talbott Dam: Lat 36°40'39", long 80°23'52", Patrick County, Hydrologic Unit 03010103, on Dan River 4.5 mi northeast of Kibler. Townes Dam: Lat 36°41'10", long 80°25'50", Patrick County, Hydrologic Unit 03010103, on Dan River about 4 mi north of Kibler.

DRAINAGE AREA.--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, 8,035 acre-ft, and Townes Reservoir, 1,377 acre-ft. Storage began in Talbott Reservoir on Feb. 13, 1939, and in Townes Reservoir several months earlier.

COOPERATION.--Records were provided by the city of Danville.

COMBINED MONTHEND CONTENTS AT 2400, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

Date	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	7,140	-
Oct. 31	6,940	-200
Nov. 30	7,610	+670
Dec. 31	7,580	-30
CAL YR 1987	-	+230
Jan. 31	7,280	-300
Feb. 29	7,050	-230
Mar. 31	7,050	0
Apr. 30	7,170	+120
May 31	6,710	-460
June 30	6,710	0
July 31	6,760	+50
Aug. 31	6,210	-550
Sept. 30	6,510	+300
WTR YR 1988	-	-630

02069700 SOUTH MAYO RIVER NEAR NETTLERIDGE, VA

LOCATION.--Lat 36°34'15", long 80°07'47", Patrick County, Hydrologic Unit 03010103, on right bank 60 ft downstream from bridge on State Highway 700, 1.2 mi southeast of Nettleridge, 1.4 mi downstream from Russell Creek, and 3.6 mi upstream from Spoon Creek.

DRAINAGE AREA.--84.6 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 above National Geodetic Vertical Datum 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. 8-16, 28, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--26 years, 126 ft^3/s, 20.23 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,600 ft^3/s, Sept. 22, 1979, gage height, 22.00 ft, 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; minimum, 20 ft^3/s, Aug. 29, 30, 1981.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,300 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
June 19	0430	*1,130	*6.79		No peak equal to or greater than base discharge.		

Minimum discharge, 36 ft^3/s, Aug. 27, 28, gage height, 3.14 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	101	87	160	141	122	83	111	106	62	58	53	50
2	96	87	138	133	123	82	110	104	61	52	51	46
3	94	86	127	128	139	83	107	103	71	51	49	46
4	92	86	138	133	181	86	253	108	70	50	58	150
5	93	86	122	127	166	88	192	132	63	52	70	107
6	93	83	116	121	139	82	162	111	60	48	65	69
7	101	83	112	116	127	81	163	104	58	47	77	60
8	92	84	109	e110	121	79	141	100	55	49	56	54
9	91	84	108	e100	117	87	131	97	63	50	51	62
10	91	314	126	e93	112	96	126	100	88	59	50	93
11	90	230	228	e94	108	89	123	114	63	50	67	62
12	95	139	153	e100	110	82	130	98	59	96	57	56
13	95	120	134	e108	101	86	142	95	57	96	50	54
14	90	111	125	e110	99	81	126	94	54	64	47	51
15	89	105	146	e112	102	79	122	99	53	55	45	49
16	89	101	143	e108	115	78	117	104	59	51	44	47
17	88	103	129	114	99	77	114	169	64	48	43	76
18	88	108	123	131	97	78	120	116	60	51	41	94
19	87	99	120	147	98	83	178	94	374	71	39	63
20	87	101	119	347	105	78	170	88	127	55	46	56
21	87	94	117	256	96	76	146	82	99	84	48	51
22	84	93	114	192	92	75	136	79	77	169	43	45
23	86	93	111	165	92	75	130	76	71	103	42	44
24	86	92	108	150	91	76	132	88	68	83	43	45
25	86	91	137	152	87	77	122	89	68	64	40	54
26	86	91	130	147	86	196	119	74	65	59	38	47
27	94	126	134	135	86	172	117	71	67	98	37	44
28	107	158	207	e130	85	135	115	70	58	119	40	43
29	90	301	209	125	84	123	111	68	56	66	137	42
30	89	213	167	123	---	116	108	66	56	58	85	43
31	88	---	150	123	---	114	---	64	---	57	58	---
TOTAL	2825	3649	4260	4271	3180	2893	4074	2963	2306	2113	1670	1803
MEAN	91.1	122	137	138	110	93.3	136	95.6	76.9	68.2	53.9	60.1
MAX	107	314	228	347	181	196	253	169	374	169	137	150
MIN	84	83	108	93	84	75	107	64	53	47	37	42
CFSM	1.08	1.44	1.62	1.63	1.30	1.10	1.61	1.13	.91	.81	.64	.71
IN.	1.24	1.60	1.87	1.88	1.40	1.27	1.79	1.30	1.01	.93	.73	.79

CAL YR 1987 TOTAL 71432 MEAN 196 MAX 2800 MIN 72 CFSM 2.31 IN. 31.41
WTR YR 1988 TOTAL 36007 MEAN 98.4 MAX 374 MIN 37 CFSM 1.16 IN. 15.83

e Estimated.

02070000 NORTH MAYO RIVER NEAR SPENCER, VA

LOCATION.--Lat 36°34'05", long 79°59'15", 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 mi².

PERIOD OF RECORD.--October 1928 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 1303: 1929-32(M), 1934(M).

GAGE.--Water-stage recorder. Datum of gage is 730.94 ft above National Geodetic Vertical Datum 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. 7-16, 28, and period of no gage-height record, July 28 to Aug. 3, 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 Water Control Board.

AVERAGE DISCHARGE.--60 years, 127 ft³/s, 15.97 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,200 ft³/s, Oct. 9, 1947, gage height, 15.80 ft, from rating curve extended above 7,200 ft³/s on basis of slope-area measurement at gage height 13.41 ft and velocity-area study; minimum, 14 ft³/s, Aug. 11, 1956; minimum gage height, 1.08 ft, Oct. 8, 1954.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 10	2100	*845	*3.71	No peak equal to or greater than base discharge.			

Minimum discharge, 31 ft³/s, Aug. 27-28, gage height, 1.26 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	97	86	169	133	114	94	100	91	66	56	e56	62
2	91	86	140	123	114	94	99	89	65	50	e52	56
3	90	86	124	118	131	94	97	88	80	48	e50	53
4	88	86	127	123	177	98	217	93	80	47	55	89
5	89	86	114	119	186	100	173	123	70	48	62	96
6	90	83	109	108	145	94	134	101	66	46	54	69
7	93	83	105	e105	126	94	145	94	64	44	79	62
8	89	84	103	e100	125	92	123	88	61	44	57	57
9	88	84	102	e95	119	96	113	86	64	62	51	74
10	89	284	138	e93	115	106	108	89	85	54	48	116
11	88	328	338	e91	113	102	104	145	68	48	47	72
12	91	152	177	e100	116	95	109	92	63	93	47	63
13	94	121	140	e105	108	98	137	86	61	157	44	60
14	88	110	124	e110	105	93	112	87	59	76	42	58
15	88	103	148	e115	110	91	106	90	58	61	41	55
16	88	99	160	e110	116	90	101	87	58	55	43	52
17	88	99	131	120	107	89	99	114	80	58	40	64
18	87	106	120	128	104	90	101	114	67	56	38	112
19	86	98	116	165	106	97	152	91	97	54	35	76
20	86	98	114	491	114	91	173	88	73	55	43	68
21	85	93	112	302	105	89	127	83	83	52	45	63
22	83	90	109	189	100	88	116	80	66	106	41	58
23	84	90	105	157	100	88	110	77	60	78	39	56
24	85	90	102	141	101	89	109	79	62	71	39	55
25	86	90	124	143	97	90	101	82	62	58	36	64
26	86	90	124	150	96	171	99	75	59	54	33	61
27	92	127	122	127	97	175	98	73	55	84	32	57
28	106	211	251	e120	96	127	98	72	52	e450	34	55
29	89	422	254	117	95	111	94	70	51	e95	150	54
30	87	261	166	115	---	105	91	69	53	e70	189	55
31	86	---	144	115	---	102	---	67	---	e62	78	---
TOTAL	2757	3926	4412	4328	3338	3133	3546	2763	1988	2392	1700	1992
MEAN	88.9	131	142	140	115	101	118	89.1	66.3	77.2	54.8	66.4
MAX	106	422	338	491	186	175	217	145	97	450	189	116
MIN	83	83	102	91	95	88	91	67	51	44	32	52
CFSM	.82	1.21	1.32	1.29	1.07	.94	1.09	.83	.61	.71	.51	.61
IN.	.95	1.35	1.52	1.49	1.15	1.08	1.22	.95	.68	.82	.59	.69

CAL YR 1987 TOTAL 80292 MEAN 220 MAX 6490 MIN 59 CFSM 2.04 IN. 27.66
WTR YR 1988 TOTAL 36275 MEAN 99.1 MAX 491 MIN 32 CFSM .92 IN. 12.49

e Estimated.

02071900 PHILPOTT LAKE NEAR PHILPOTT, VA

LOCATION.--Lat 36°46'52", long 80°01'40", Henry County, Hydrologic Unit 03010103, at Philpott Dam on Smith River, 1.5 mi west of Philpott, 12.0 mi upstream from Reed Creek, and at mile 44.3.

DRAINAGE AREA.--216 mi^2.

PERIOD OF RECORD.--August 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum 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 upstream from 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, 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, 166,920 acre-ft, Apr. 25, elevation, 974.25 ft; minimum, 142,260 acre-ft, Sept. 30, elevation, 965.31 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	971.74	159,710	-
Oct. 31	971.33	158,560	-1,150
Nov. 30	972.94	163,130	+4,570
Dec. 31	972.94	163,130	-1,920
CAL YR 1987	-	-	+5,730
Jan. 31	970.72	156,850	-4,360
Feb. 29	972.17	160,930	+4,080
Mar. 31	972.67	162,360	+1,430
Apr. 30	973.88	165,840	+3,480
May 31	973.54	164,860	-980
June 30	971.89	160,130	-4,730
July 31	969.85	154,430	-5,700
Aug. 31	967.00	146,700	-7,730
Sept. 30	965.32	142,280	-4,420
WTR YR 1988	-	-	-17,430

02072000 SMITH RIVER NEAR PHILPOTT, VA

LOCATION.--Lat 36°46'50", long 80°01'30", Franklin County, Hydrologic Unit 03010103, on left bank 900 ft downstream from Philpott Dam, 3.1 mi west of Philpott, 11.6 mi upstream from Reed Creek, and at mile 44.1.

DRAINAGE AREA.--216 mi².

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

REVISED RECORDS.--WSP 1553: 1953(M), 1955-56(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 804.27 ft above National Geodetic Vertical Datum 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. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--42 years, 278 ft³/s, 17.48 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,000 ft³/s, June 29, 1949, gage height, 20.3 ft, site and datum then in use, from rating curve extended above 9,700 ft³/s on basis of slope-area measurements at gage heights 18.2 ft and 20.3 ft; minimum observed, 2.3 ft³/s, Dec. 16, 1985 (result of repairs at dam), but may have been less during periods of estimated record; minimum daily, 20 ft³/s, Mar. 24, 1984, caused by turbines being shut down for repair at Philpott Dam.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,430 ft³/s, Aug. 29, gage height, 5.11 ft; minimum, 3.8 ft³/s, Oct. 28, due to inspection in front of dam; minimum daily, 38 ft³/s, July 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	237	48	610	92	247	239	189	46	242	246	131	305
2	248	182	630	45	96	190	45	293	239	44	132	307
3	49	193	662	45	93	190	46	293	238	44	135	44
4	50	345	629	532	94	143	240	287	44	193	133	44
5	200	47	46	585	45	46	189	292	44	338	139	44
6	195	196	46	629	46	46	189	283	244	343	43	194
7	192	46	198	625	46	243	189	44	244	343	43	193
8	193	46	195	831	290	194	143	45	243	243	333	140
9	195	144	87	46	289	195	45	244	242	44	344	140
10	50	142	91	46	193	192	44	192	240	44	349	44
11	49	141	93	46	192	143	238	194	44	291	245	44
12	194	140	46	91	142	46	191	193	44	352	197	244
13	194	141	46	86	45	46	190	143	242	281	44	247
14	195	46	333	91	46	238	191	46	247	290	43	247
15	196	46	333	186	241	192	140	46	245	244	352	256
16	194	330	531	46	192	195	46	240	245	43	365	253
17	49	324	648	45	193	194	46	190	246	43	363	46
18	49	342	629	233	192	144	238	191	45	287	399	46
19	192	344	45	100	143	46	192	191	45	334	46	247
20	191	348	45	93	45	46	194	142	224	285	44	248
21	196	46	397	96	45	243	194	46	245	296	44	252
22	196	46	336	577	240	194	144	46	247	247	329	254
23	194	305	338	732	243	192	45	242	244	43	346	254
24	51	300	241	47	244	191	45	192	239	43	341	46
25	50	298	237	794	246	143	335	192	44	296	251	46
26	191	46	45	778	144	46	287	193	45	339	197	253
27	190	46	45	802	45	46	287	143	240	285	45	255
28	181	46	285	806	44	241	295	46	243	284	45	250
29	186	46	241	791	287	193	244	46	238	234	314	246
30	195	139	242	44	---	191	46	242	245	38	292	247
31	44	---	240	45	---	140	---	242	---	39	296	---
TOTAL	4786	4909	8590	10005	4408	4788	4907	5225	5677	6476	6380	5436
MEAN	154	164	277	323	152	154	164	169	189	209	206	181
MAX	248	348	662	831	290	243	335	293	247	352	399	307
MIN	44	46	45	44	44	46	44	44	44	38	43	44
(*)	-19	+77	-31	-71	+71	+23	+58	-16	-79	-93	-126	-74
MEAN‡	135	241	246	252	223	177	222	153	110	116	80	107
CFSM‡	.62	1.12	1.14	1.17	1.03	.82	1.03	.71	.51	.54	.37	.50
IN.‡	.72	1.25	1.31	1.35	1.11	.94	1.15	.82	.57	.62	.43	.55

CAL YR 1987 TOTAL 153832 MEAN 421 MAX 3580 MIN 44 MEAN‡ 429 CFSM‡ 1.99 IN.‡ 26.97
WTR YR 1988 TOTAL 71587 MEAN 196 MAX 831 MIN 38 MEAN‡ 173 CFSM‡ .80 IN.‡ 20.90

* Change in contents, equivalent in cubic feet per second, in Philpott Lake; provided by U.S. Army Corps of Engineers.
‡ Adjusted for change in contents.

02072500 SMITH RIVER AT BASSETT, VA

LOCATION.--Lat 36°46'12", long 80°00'04", Henry County, Hydrologic Unit 03010103, on left bank 25 ft upstream from bridge on State Highway 666 at north edge of North Bassett, 1.0 mi northwest of Bassett, 3.0 mi downstream from Town Creek, 5.6 mi upstream from Reed Creek, 6.2 mi downstream from Philpott Dam, and at mile 38.1.

DRAINAGE AREA.--259 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 above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Records good except for period with sluggish intakes, Oct. 1 to Mar. 16, which is fair. 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. Gage-height and U.S. Army Corps of Engineers satellite telemeters 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.

AVERAGE DISCHARGE.--49 years, 331 ft^3/s, 17.36 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,600 ft^3/s, Aug. 14, 1940, gage height, 18.28 ft; minimum, 19 ft^3/s, July 19, 1956; minimum daily, 44 ft^3/s, Aug. 23, 1964; minimum gage height, 1.06 ft, Sept. 18, 26, 1953.

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.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,830 ft^3/s, July 12, gage height, 4.20 ft; minimum, 48 ft^3/s, Aug. 27, 28; minimum daily, 51 ft^3/s, Aug. 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	274	e63	722	246	316	288	238	79	280	274	158	343
2	285	237	756	e80	171	234	78	349	278	58	155	344
3	e66	240	790	e78	165	235	79	348	286	56	158	55
4	e66	393	750	620	197	184	328	346	72	211	157	90
5	233	e63	e86	705	e84	e78	255	367	67	372	160	81
6	238	240	e84	735	e82	e76	250	346	282	376	58	224
7	227	e61	302	744	e80	291	254	80	281	378	59	221
8	239	e61	328	966	388	237	195	78	282	266	376	164
9	236	187	227	215	413	243	84	294	288	56	386	166
10	e63	286	228	e80	318	242	81	237	290	56	393	67
11	e63	235	248	317	325	182	294	238	69	323	277	59
12	239	202	e80	165	285	e76	251	238	66	539	222	278
13	245	196	e78	123	e82	e76	255	179	282	362	55	284
14	228	e68	433	122	e83	272	247	75	281	346	52	276
15	227	e64	478	221	361	222	189	75	279	286	385	287
16	225	385	663	e76	340	228	83	298	280	61	403	284
17	e63	413	777	e78	329	237	81	252	285	59	397	68
18	e63	465	759	281	329	183	294	252	85	331	436	77
19	225	467	e86	163	284	78	271	239	76	391	56	284
20	235	473	e84	306	e82	75	319	182	263	339	54	283
21	237	154	503	188	e82	290	255	75	281	349	55	284
22	243	104	475	661	358	235	201	76	277	332	362	284
23	234	402	476	825	335	232	89	286	276	76	379	284
24	e66	425	384	e82	295	233	90	238	267	69	384	59
25	e66	423	395	889	297	180	402	233	63	339	281	58
26	230	149	e86	875	186	120	347	229	62	390	224	282
27	235	106	e86	896	e78	109	347	173	266	409	51	285
28	210	118	425	905	e76	302	354	69	268	433	53	279
29	215	141	416	894	341	243	298	68	265	285	392	274
30	221	269	398	e80	---	242	80	281	274	65	366	276
31	e72	---	392	e80	---	185	---	280	---	59	337	---
TOTAL	5769	7090	11995	12696	6762	6108	6589	6560	6671	7946	7281	6300
MEAN	186	236	387	410	233	197	220	212	222	256	235	210
MAX	285	473	790	966	413	302	402	367	290	539	436	344
MIN	63	61	78	76	76	75	78	68	62	56	51	55
(*)	-19	+77	-31	-71	+71	+23	+58	-16	-79	-93	-126	-74
MEAN‡	167	313	356	339	304	220	278	196	143	163	109	136
CFSM‡	.64	1.21	1.37	1.31	1.17	.85	1.07	.76	.55	.63	.42	.53
IN.‡	.74	1.35	1.59	1.51	1.27	.98	1.20	.87	.62	.73	.49	.59

CAL YR 1987	TOTAL	197319	MEAN	541	MAX	5110	MIN	54	MEAN‡	549	CFSM‡	2.12	IN.‡	28.78
WTR YR 1988	TOTAL	91767	MEAN	251	MAX	966	MIN	51	MEAN‡	228	CFSM‡	.88	IN.‡	11.99

* Change in contents, equivalent in cubic feet per second, in Philpott Lake; provided by U.S. Army Corps of Engineers.
‡ Adjusted for change in contents.
e Estimated.

02073000 SMITH RIVER AT MARTINSVILLE, VA

LOCATION.--Lat 36°39'40", long 79°52'51", Henry County, Hydrologic Unit 03010103, on right bank at south edge of Martinsville, 800 ft downstream from bridge on U.S. Highways 58 and 220, and 5.0 mi downstream from Beaver Creek.

DRAINAGE AREA.--380 mi².

PERIOD OF RECORD.--August 1929 to current year.

REVISED RECORDS.--WSP 1032: 1933-35(M), 1936-39, 1940-41(P). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 657.22 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for period of no gage-height record, Dec. 5 to Jan. 6, which is 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. 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 Water Control Board.

AVERAGE DISCHARGE.--59 years, 460 ft³/s, 16.44 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 39,000 ft³/s, Oct. 19, 1937, gage height, 21.50 ft, from rating curve extended above 17,000 ft³/s on basis of computations of flow over dam at gage heights 16.76 ft and 21.50 ft; minimum, 3.8 ft³/s, Mar. 19, 1955; minimum daily, 19 ft³/s, Oct. 6, 1935; minimum gage height, 0.69 ft, Sept. 8, 1969.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,480 ft³/s, July 27, gage height, 7.81 ft; minimum, 7.4 ft³/s, Mar. 18, gage height, 0.86 ft; minimum daily, 54 ft³/s, Aug. 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	497	225	888	e330	465	371	344	150	340	278	198	422
2	497	414	941	e250	253	320	123	473	361	244	240	422
3	224	417	968	e200	281	323	156	421	367	69	280	156
4	212	633	943	e500	408	320	573	440	213	215	232	188
5	406	215	e230	e800	281	96	402	530	121	505	199	191
6	414	413	e220	e760	239	157	376	463	315	396	154	300
7	415	266	e270	929	206	418	454	112	337	455	98	296
8	408	232	e390	1210	525	326	301	153	334	350	382	254
9	405	366	e300	421	474	327	168	405	365	184	450	300
10	220	898	e450	190	357	359	175	344	360	58	461	179
11	217	547	e900	392	354	317	426	328	201	307	405	134
12	438	361	e480	232	340	91	409	329	104	1380	322	335
13	420	368	e330	255	109	157	404	291	292	685	54	351
14	422	155	e460	228	166	416	355	80	330	423	96	347
15	410	184	e600	305	393	314	280	138	330	346	378	351
16	410	506	e620	177	400	316	155	409	380	141	472	384
17	224	583	e680	180	334	304	166	388	332	133	459	208
18	220	530	e800	438	332	227	431	367	261	389	427	209
19	369	541	e650	428	336	178	487	299	219	474	297	363
20	406	553	e200	918	113	151	442	262	308	425	104	367
21	414	138	e370	530	168	412	380	158	350	477	64	356
22	407	166	e560	724	372	311	325	122	343	441	351	359
23	402	507	e450	1070	389	313	162	327	354	198	428	357
24	226	462	e390	400	391	305	195	363	335	137	436	163
25	225	456	e540	1020	388	282	542	286	218	339	395	123
26	417	127	e350	1140	278	257	443	299	92	383	301	310
27	470	381	e250	1140	164	279	435	288	294	1580	65	353
28	351	313	e600	1130	163	464	462	108	325	1750	102	349
29	396	703	e850	1120	467	339	415	114	323	492	778	374
30	515	557	e550	368	---	341	99	274	334	199	551	376
31	226	---	e430	197	---	283	---	386	---	151	433	---
TOTAL	11283	12217	16660	17982	9146	9074	10085	9107	8838	13604	9612	8877
MEAN	364	407	537	580	315	293	336	294	295	439	310	296
MAX	515	898	968	1210	525	464	573	530	380	1750	778	422
MIN	212	127	200	177	109	91	99	80	92	58	54	123
(*)	-19	+77	-31	-71	+71	+23	+58	-16	-79	-93	-126	-74
MEAN‡	345	484	506	509	386	316	394	278	216	346	184	222
CFSM‡	.91	1.27	1.33	1.34	1.02	.83	1.04	.73	.57	.91	.48	.58
IN.‡	1.05	1.42	1.54	1.54	1.10	.96	1.16	.84	.63	1.05	.56	.65

CAL YR 1987 TOTAL 306850 MEAN 841 MAX 11300 MIN 97 MEAN‡ 849 CFSM‡ 2.23 IN.‡ 30.34
WTR YR 1988 TOTAL 136485 MEAN 373 MAX 1750 MIN 54 MEAN‡ 350 CFSM‡ .92 IN.‡ 12.54

* Change in contents, equivalent in cubic feet per second, in Philpott Lake; provided by U.S. Army Corps of Engineers.
‡ Adjusted for change in contents.
e Estimated.

02074000 SMITH RIVER AT EDEN, NC

LOCATION.--Lat 36°31'31", long 79°45'57", Rockingham County, Hydrologic Unit 03010103, on right bank at Eden, 0.3 mi downstream from 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 from Stuart Creek, and 3.9 mi upstream from mouth.

DRAINAGE AREA.--538 mi².

PERIOD OF RECORD.--October 1939 to current year. Prior to October 1970, published as "at Spray".

REVISED RECORDS.--WSP 1433: 1946.

GAGE.--Water-stage recorder. Datum of gage is 539.56 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow regulated since August 1950 by Philpott Lake (station 02071900) 40 mi upstream, usable capacity, 6,325,000 ft³. Additional regulation by hydroelectric plant at Martinsville, VA, 18 mi upstream. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--49 years, 624 ft³/s, 15.75 in/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,600 ft³/s, Aug. 15, 1940, gage height, 19.28 ft, from rating curve extended above 12,000 ft³/s on basis of computation of peak flow over dam 1.5 mi downstream; minimum, 38 ft³/s, Aug. 7, 1967; minimum daily, 46 ft³/s, Aug. 14, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,130 ft³/s, July 28, gage height, 8.96 ft; minimum, 67 ft³/s, July 10, 11, gage height, 1.36 ft; minimum daily, 81 ft³/s, Aug. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	514	233	768	466	499	534	444	197	416	385	299	479
2	463	318	1070	472	501	467	397	442	409	408	305	466
3	434	388	1050	270	413	425	217	563	498	108	294	461
4	241	450	1070	624	543	383	670	566	513	115	299	181
5	318	487	754	967	656	417	677	731	160	326	282	316
6	402	251	299	932	429	204	550	638	245	438	299	297
7	399	362	390	1020	298	420	621	505	416	435	119	355
8	387	176	458	1060	496	471	529	211	405	460	214	334
9	376	252	400	1070	674	446	399	427	412	370	462	425
10	295	851	487	242	566	501	255	488	491	92	476	633
11	236	1120	1290	395	482	459	448	489	463	157	479	224
12	353	520	595	445	466	362	581	414	138	1260	364	289
13	387	445	423	354	398	210	677	420	228	1580	326	404
14	379	379	576	365	214	427	548	341	387	593	91	393
15	377	281	833	346	413	481	457	181	389	512	173	383
16	383	485	886	378	561	429	412	404	387	431	452	300
17	309	562	980	220	469	414	235	546	463	133	476	507
18	233	620	1070	455	452	369	441	531	472	320	468	326
19	318	635	845	621	437	389	724	473	278	601	497	334
20	378	623	250	1490	425	209	767	428	288	535	225	422
21	389	401	521	1150	231	405	604	355	396	465	107	415
22	369	239	704	811	432	472	534	172	402	683	137	406
23	380	401	637	1160	503	421	458	290	390	669	431	392
24	285	520	547	985	509	424	276	448	424	245	454	366
25	229	519	724	739	499	396	515	411	442	276	454	146
26	333	370	550	1330	439	450	647	387	133	464	343	e270
27	425	472	414	1300	286	476	595	386	207	630	318	e350
28	440	766	1100	1250	275	555	623	356	365	3310	81	e360
29	395	986	1230	1250	430	541	562	149	365	779	843	387
30	382	921	795	1010	---	499	464	214	368	563	890	362
31	305	---	682	281	---	442	---	463	---	224	526	---
TOTAL	11114	15033	22398	23458	12996	13098	15327	12626	10950	17567	11184	10983
MEAN	359	501	723	757	448	423	511	407	365	567	361	366
MAX	514	1120	1290	1490	674	555	767	731	513	3310	890	633
MIN	229	176	250	220	214	204	217	149	133	92	81	146
(*)	-19	+77	-31	-71	+71	+23	+58	-16	-79	-93	-126	-74

CAL YR 1987	TOTAL	378230	MEAN	1036	MAX	14300	MIN	176	MEAN‡	1044	CFSM‡	1.94	IN‡	26.35
WTR YR 1988	TOTAL	176734	MEAN	483	MAX	3310	MIN	81	MEAN‡	460	CFSM‡	0.86	IN‡	11.64

* Change in contents, equivalent in cubic feet per second, in Philpott Lake; provided by U.S. Army Corps of Engineers.
‡ Adjusted for change in contents.
e Estimated.

02074500 SANDY RIVER NEAR DANVILLE, VA

LOCATION.--Lat 36°37'10", long 79°30'16", Pittsylvania County, Hydrologic Unit 03010103, on right bank 200 ft downstream from Hickory Forest Creek, 400 ft upstream from bridge on State Highway 863 between Callahans Store and Mount Cross, 5.5 mi northwest of western city limits of Danville, and 5.8 mi upstream from mouth.

DRAINAGE AREA.--112 mi².

PERIOD OF RECORD.--October 1929 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 972: 1930-41. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 460.38 ft above National Geodetic Vertical Datum 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. 7, 8, 28, and period of no gage-height record, Jan. 9-17, which are fair. Diurnal fluctuation at low flow caused by small mill 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 Water Control Board.

AVERAGE DISCHARGE.--59 years, 107 ft³/s, 12.97 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,000 ft³/s, Aug. 14, 1940, gage height, 14.8 ft, present datum, from floodmarks, from rating curve extended above 11,000 ft³/s; minimum, 3 ft³/s, Sept. 29, 1930, gage height, 0.40 ft, site and datum then in use; minimum daily, 8 ft³/s, Aug. 29, 31, Sept. 1, 2, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
July 23	1730	*2,930	*5.72	No other peak equal to or greater than base discharge.			

Minimum discharge, 17 ft³/s, Aug. 28, gage height, 1.00 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	80	51	125	123	95	71	78	69	46	31	38	46
2	65	51	100	113	94	70	77	68	45	28	36	38
3	62	52	89	107	103	72	76	66	60	27	35	35
4	58	52	87	117	149	75	122	71	57	26	38	50
5	58	52	81	111	147	88	109	123	48	26	35	56
6	59	49	77	99	113	75	97	94	46	25	33	42
7	60	49	76	e97	97	72	131	80	44	23	32	37
8	57	50	74	e93	99	71	114	71	42	23	30	35
9	54	51	74	e90	94	77	96	67	44	24	29	68
10	55	118	137	e86	92	94	89	69	50	30	28	236
11	56	197	385	e87	89	83	85	78	45	25	27	86
12	55	97	186	e98	95	76	104	65	42	40	27	62
13	57	74	128	e100	84	80	140	61	42	124	26	55
14	54	68	107	e102	84	75	103	61	40	47	24	49
15	54	62	143	e100	87	71	94	60	39	36	24	49
16	53	59	161	e98	100	69	87	63	38	30	27	44
17	53	61	119	e105	86	68	82	77	39	28	25	53
18	53	65	103	127	83	69	87	71	45	40	22	76
19	53	58	97	156	85	82	157	65	44	92	20	58
20	53	59	93	533	94	72	149	71	43	40	30	53
21	50	55	91	296	84	68	109	64	41	34	30	47
22	47	53	87	179	78	66	110	60	37	64	26	43
23	48	53	85	137	79	66	103	59	40	725	23	42
24	50	53	81	117	79	68	95	64	105	207	23	41
25	51	54	202	129	74	69	86	59	47	72	21	47
26	51	53	172	149	74	109	82	57	37	59	19	45
27	57	82	140	117	75	147	80	55	33	74	18	43
28	68	166	326	e115	73	100	82	53	30	96	19	41
29	54	200	313	104	72	88	75	49	29	56	227	41
30	52	199	172	97	---	83	72	47	30	49	315	42
31	52	---	137	96	---	80	---	46	---	42	77	---
TOTAL	1729	2343	4248	4078	2658	2454	2971	2063	1328	2243	1384	1660
MEAN	55.8	78.1	137	132	91.7	79.2	99.0	66.5	44.3	72.4	44.6	55.3
MAX	80	200	385	533	149	147	157	123	105	725	315	236
MIN	47	49	74	86	72	66	72	46	29	23	18	35
CFSM	.50	.70	1.22	1.17	.82	.71	.88	.59	.40	.65	.40	.49
IN.	.57	.78	1.41	1.35	.88	.82	.99	.69	.44	.74	.46	.55

CAL YR 1987 TOTAL 58709 MEAN 161 MAX 7490 MIN 25 CFSM 1.44 IN. 19.50
WTR YR 1988 TOTAL 29159 MEAN 79.7 MAX 725 MIN 18 CFSM .71 IN. 9.68

e Estimated.

02075000 DAN RIVER AT DANVILLE, VA

LOCATION.--Lat 36°35'15", long 79°22'55", Danville City, Hydrologic Unit 03010104, on left bank 50 ft downstream from Norfolk Southern Railway bridge, 1,000 ft upstream from Fall Creek, and at mile 62.7.

DRAINAGE AREA.--2,050 mi², approximately.

PERIOD OF RECORD.--August 1934 to current year. Gage-height records collected in this vicinity 1890-1934, at same site 1934-49, and at Main Street bridge, 0.25 mi upstream 1949-68, are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 972: 1936.

GAGE.--Water-stage recorder. Datum of gage is 379.29 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Diurnal fluctuation caused by mills upstream. Since August 1950, flow regulated by Philpott Lake (station 02071900) 74.7 mi upstream. Gage-height and U.S. Army Corps of Engineers satellite telemeters 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.

AVERAGE DISCHARGE.--54 years, 2,297 ft³/s, 15.22 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 75,000 ft³/s, Aug. 15, 1940, gage height, 20.96 ft; maximum gage height, 21.34 ft, June 22, 1972, backwater from debris; minimum discharge, 11 ft³/s, Sept. 5, 1966, gage height, 1.18 ft; minimum daily, 110 ft³/s, Sept. 5, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,400 ft³/s, Jan. 21, gage height, 6.91 ft; minimum, 248 ft³/s, July 5, gage height, 1.59 ft, result of temporary storage by Dan River Mills dam 3.3 mi upstream; minimum daily, 418 ft³/s, July 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1460	799	2540	2050	1490	1540	1590	1350	1070	825	1040	1150
2	1220	769	2250	1730	1700	1470	1600	1280	998	824	816	939
3	1100	851	2030	1690	1630	1420	1420	1550	1160	820	1030	899
4	904	903	1960	1630	2420	1470	1580	1500	1170	748	705	798
5	847	1050	1930	2190	3590	1530	2520	2310	1060	418	1030	844
6	939	782	1310	2180	2690	1390	2340	2260	817	828	885	1340
7	1030	730	1200	1950	2100	1310	2470	1880	888	795	998	1020
8	1050	840	1270	1830	1790	1510	2370	1430	963	800	513	860
9	1060	978	1310	2260	1980	1460	2000	1290	917	790	854	922
10	973	1270	1370	1840	1860	1580	1720	1460	1030	838	892	1890
11	836	3140	3720	1260	1710	1690	1620	1470	1120	592	911	1700
12	875	2780	4230	1440	1720	1590	1870	1490	995	835	928	1070
13	1030	1750	2240	1460	1670	1380	2090	1370	718	2650	926	942
14	1010	1440	1720	1640	1420	1370	2040	1300	797	1700	743	929
15	986	1150	2010	1490	1400	1560	1820	1150	872	1170	567	994
16	944	1110	2800	1390	1740	1450	1680	1140	853	984	682	914
17	842	1300	2630	1430	1760	1460	1500	1660	918	814	812	917
18	759	1410	2280	1390	1610	1450	1480	1920	1030	696	822	1010
19	791	1390	2060	2060	1570	1450	2320	1940	955	1160	744	1250
20	834	1350	1520	4020	1690	1500	3410	1710	1210	1590	799	1120
21	895	1330	1350	7480	1590	1370	2810	1500	1240	1240	594	1010
22	935	990	1630	4500	1400	1560	2260	1330	1250	1450	503	935
23	856	929	1570	3160	1530	1460	2210	1120	1040	2740	592	886
24	885	1230	1550	2890	1570	1440	1710	1310	1230	2800	766	831
25	783	1190	1490	2200	1550	1460	1640	1270	1230	1620	754	811
26	778	1190	1910	2630	1510	1620	1840	1250	1080	1120	720	664
27	954	1110	1680	2680	1440	2330	1730	1150	776	1540	624	811
28	1110	1910	2300	2330	1320	2510	1750	1090	840	3460	582	856
29	1010	2360	4780	2350	1310	2100	1720	993	856	2620	889	821
30	958	3530	3560	2280	---	1790	1610	862	826	1450	2730	832
31	925	---	2420	1590	---	1690	---	952	---	1070	1820	---
TOTAL	29579	41561	66620	71020	50760	48910	58720	44287	29909	40987	27271	29965
MEAN	954	1385	2149	2291	1750	1578	1957	1429	997	1322	880	999
MAX	1460	3530	4780	7480	3590	2510	3410	2310	1250	3460	2730	1890
MIN	759	730	1200	1260	1310	1310	1420	862	718	418	503	664
(*)	-19	+77	-31	-71	+71	+23	+58	-16	-79	-93	-126	-74
MEAN‡	935	1462	2118	2220	1821	1601	2015	1413	918	1229	754	925
CFSM‡	.46	.71	1.03	1.08	.89	.78	.98	.69	.45	.60	.37	.45
IN.‡	.53	.80	1.19	1.25	.96	.90	1.10	.79	.50	.69	.42	.50

CAL YR 1987	TOTAL	1204816	MEAN	3301	MAX	48700	MIN	516	MEAN‡	3309	CFSM‡	1.61	IN.‡	21.92
WTR YR 1988	TOTAL	539589	MEAN	1474	MAX	7480	MIN	418	MEAN‡	1450	CFSM‡	.71	IN.‡	9.61

* Change in contents, equivalent in cubic feet per second, in Philpott Lake; provided by U.S. Army Corps of Engineers.

‡ Adjusted for change in contents.

02075500 DAN RIVER AT PACES, VA
(National stream-quality accounting network station)

LOCATION.--Lat 36°38'32", long 79°05'23", Halifax County, Hydrologic Unit 03010104, on right bank 100 ft upstream from bridge on State Highway 658, 0.5 mi southeast of Paces, 0.5 mi upstream from Big Toby Creek, 2.7 mi upstream from Birch Creek, and at mile 36.0.

DRAINAGE AREA.--2,550 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 322.48 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Diurnal fluctuation by mills 23 mi upstream at Danville. Since August 1950, flow regulated by Philpott Lake (station 02071900) 101.4 mi upstream. Gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

AVERAGE DISCHARGE.--37 years (water years 1952-88), 2,691 ft³/s, 14.33 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 64,800 ft³/s, June 23, 1972, gage height, 33.15 ft, from rating curve extended above 32,000 ft³/s; minimum, 193 ft³/s, Sept. 4, 1956, gage height, 1.71 ft; minimum daily, 244 ft³/s, Sept. 4, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 16, 1940, reached a stage of 32.3 ft, from floodmark.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,400 ft³/s, Jan. 21, gage height, 14.44 ft; minimum, 214 ft³/s, July 6, gage height, 1.87 ft, result of temporary storage by Dan River Mills dam at Danville; minimum daily, 424 ft³/s, Aug. 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1630	1180	3590	2800	1940	1550	1820	1710	1130	888	1240	1680
2	1580	1050	2570	2470	2050	1700	1740	1410	1150	890	836	1190
3	1370	1100	2420	2370	2190	1630	1710	1470	1240	874	1150	1000
4	1260	1180	2270	2380	2960	1610	1630	1670	1380	910	772	1000
5	1030	1250	2230	3130	5140	1760	2320	3400	1310	491	1080	736
6	1060	1390	1970	3120	4230	1750	2870	3440	1030	507	853	1220
7	1220	1010	1460	2630	3100	1500	2890	2600	881	877	1270	1330
8	1230	1160	1410	2380	2450	1550	3310	2040	1000	818	569	1050
9	1210	1000	1470	2470	2450	1680	2600	1550	1030	829	688	934
10	1190	1130	1910	2830	2400	1890	2180	1530	1080	802	962	1720
11	1080	2370	4310	1690	2220	2040	1870	1720	1210	771	955	2470
12	971	3950	6410	1630	2220	1950	1950	1690	1260	616	944	1570
13	1070	2410	3610	1900	2160	1790	2640	1590	941	2100	988	1130
14	1180	1820	2510	1890	1950	1590	2580	1490	731	2710	957	1090
15	1160	1540	2430	1880	1700	1670	2260	1410	914	1620	597	1040
16	1150	1260	3600	1650	2010	1690	2040	1220	941	1270	561	1120
17	1130	1320	3600	1720	2170	1590	1870	1520	912	1080	745	998
18	1090	1570	2940	1900	2020	1590	1650	2040	1120	852	843	1150
19	979	1630	2670	3120	1910	1670	2740	2290	1380	1560	818	1260
20	1040	1610	2350	6730	1950	1770	4210	2050	1070	2010	761	1390
21	1130	1570	1760	9820	2080	1570	3920	1820	1540	1800	713	1240
22	1120	1460	1840	6780	1750	1580	2990	1610	1440	1640	534	1100
23	1110	1090	1990	4270	1730	1660	2660	1380	1310	2130	424	1020
24	1100	1130	1970	3740	1850	1570	2380	1370	1410	3840	625	959
25	1080	1430	1880	3180	1840	1570	1940	1540	1480	2480	759	906
26	989	1390	2320	3560	1770	1780	1970	1490	1440	1540	735	787
27	1080	1490	2270	3660	1700	2320	2010	1370	1130	1640	663	706
28	1390	1980	3210	3090	1580	3000	2060	1270	846	2530	573	897
29	1470	3070	6240	2930	1500	2520	1970	1190	964	3990	656	895
30	1380	3790	5450	2900	---	2130	1830	1030	923	2150	2120	865
31	1230	---	3500	2600	---	1930	---	931	---	1490	2670	---
TOTAL	36709	49330	88160	97220	65020	55600	70610	52841	34193	47705	28061	34453
MEAN	1184	1644	2844	3136	2242	1794	2354	1705	1140	1539	905	1148
MAX	1630	3950	6410	9820	5140	3000	4210	3440	1540	3990	2670	2470
MIN	971	1000	1410	1630	1500	1500	1630	931	731	491	424	706
(*)	-19	+77	-31	-71	+71	+23	+58	-16	-79	-93	-126	-74
MEAN‡	1165	1721	2813	3065	2313	1817	2413	1689	1061	1446	779	1074
CFSM‡	.46	.67	1.10	1.20	.91	.71	.95	.66	.42	.57	.31	.42
IN.‡	.53	.75	1.27	1.39	.98	.82	1.06	.76	.46	.65	.35	.47

CAL YR 1987	TOTAL 1403558	MEAN 3845	MAX 51100	MIN 672	MEAN‡ 3853	CFSM‡ 1.51	IN.‡ 20.52
WTR YR 1988	TOTAL 659942	MEAN 1803	MAX 9820	MIN 424	MEAN‡ 1779	CFSM‡ .70	IN.‡ 9.47

* Change in contents, equivalent in cubic feet per second, in Philpott Lake; provided by U.S. Army Corps of Engineers.
‡ Adjusted for change in contents.

02075500 DAN RIVER AT PACES, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1954 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: January 1954 to September 1956.
WATER TEMPERATURE: January 1954 to September 1956.
SUSPENDED-SEDIMENT DISCHARGE: January 1954 to September 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
NOV											
17...	1130	1300	121	6.90	10.0	749	11	10.0	90	96	100
DEC											
07...	1330	1540	142	6.70	8.0	768	4.5	--	--	60	40
FEB											
03...	1120	2220	182	7.10	5.0	759	5.3	11.8	93	K15	190
MAY											
02...	1300	1460	198	6.70	19.0	758	3.4	7.9	86	K15	42
JUN											
13...	1300	914	222	6.80	23.0	765	12	6.9	80	110	34
AUG											
02...	1215	656	168	7.10	31.0	762	65	5.0	67	75	320

DATE	HARD-NESS TOTAL (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
NOV											
17...	25	6.1	2.3	18	2.9	30	17	15	0.20	17	99
DEC											
07...	24	5.9	2.3	17	2.0	27	14	15	0.30	16	84
FEB											
03...	24	5.9	2.3	17	2.1	27	13	16	0.20	17	89
MAY											
02...	27	6.5	2.5	20	2.4	31	15	17	0.20	16	--
JUN											
13...	25	6.3	2.3	25	2.5	33	18	21	0.30	16	118
AUG											
02...	22	5.3	2.1	17	2.7	22	21	14	0.20	14	118

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)
NOV											
17...	99	0.010	0.320	0.140	0.150	0.30	0.090	0.070	0.040	140	1
DEC											
07...	90	<0.010	0.280	0.070	0.090	0.40	0.090	0.060	0.040	--	--
FEB											
03...	92	0.010	0.430	0.040	0.050	0.30	0.070	0.040	0.030	--	--
MAY											
02...	101	<0.010	0.430	0.050	0.050	1.0	0.090	0.080	0.050	10	1
JUN											
13...	115	0.020	0.670	0.060	0.080	0.60	0.150	0.130	0.100	--	--
AUG											
02...	93	0.020	0.720	0.110	0.070	0.50	0.180	0.120	0.110	100	1

02075500 DAN RIVER AT PACES, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
NOV										
17...	21	<0.5	<1	<1	<3	4	320	<5	<4	16
DEC										
07...	--	--	--	--	--	--	--	--	--	--
FEB										
03...	--	--	--	--	--	--	--	--	--	--
MAY										
02...	20	<0.5	<1	<1	<3	4	160	<5	11	16
JUN										
13...	--	--	--	--	--	--	--	--	--	--
AUG										
02...	21	<0.5	<1	<1	<3	3	150	<5	<4	13

DATE	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	SEDI-MENT, SUS-PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV										
17...	<0.1	<10	<1	<1	<1.0	46	<6	12	15	89
DEC										
07...	--	--	--	--	--	--	--	--	8	--
FEB										
03...	--	--	--	--	--	--	--	--	16	--
MAY										
02...	<0.1	<10	<1	<1	<1.0	53	<6	8	13	99
JUN										
13...	--	--	--	--	--	--	--	--	20	85
AUG										
02...	0.2	<10	2	<1	<1.0	44	<6	10	70	94

02076500 GEORGES CREEK NEAR GRETNA, VA

LOCATION.--Lat 36°56'11", long 79°18'42", Pittsylvania County, Hydrologic Unit 03010105, on left bank 15 ft downstream from bridge on State Highway 40, 2.8 mi southeast of Gretna, and 5.8 mi upstream from Whitethorn Creek.

DRAINAGE AREA.--9.24 mi².

PERIOD OF RECORD.--September 1949 to current year.

REVISED RECORDS.--WSP 1703: 1950-52. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 629.54 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for periods of no gage-height record, Jan. 8-10, 14, 15, and periods with ice effect, Jan. 11, 16, 17, which are fair. Occasional regulation at low flow from unknown source. 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 Water Control Board.

AVERAGE DISCHARGE.--39 years, 9.62 ft³/s, 14.14 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,480 ft³/s, Sept. 22, 1979, gage height, 8.50 ft, from rating curve extended above 640 ft³/s on basis of slope-area measurements at gage heights 4.93 ft and 6.22 ft and contracted-opening measurements at gage heights 7.75 ft and 8.50 ft; minimum daily, 1.0 ft³/s, Mar. 12, Apr. 5, 1956, July 28, 1966.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
July 23	1400	*158	*2.73	No other peak equal to or greater than base discharge.			

Minimum discharge, 1.1 ft³/s, July 18, gage height, 0.44 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.0	11	12	11	8.2	6.0	8.0	6.7	4.8	3.6	4.2	3.2
2	7.9	10	11	10	8.0	5.9	7.7	6.6	4.7	3.4	4.1	3.0
3	7.7	9.6	10	10	8.4	5.9	7.6	6.6	6.4	3.2	4.0	2.9
4	7.6	9.3	9.5	10	10	5.9	12	6.9	5.9	3.1	4.7	5.1
5	7.6	9.7	9.2	10	9.2	6.2	9.5	15	5.4	3.0	4.2	4.5
6	7.6	11	9.0	9.4	8.1	6.4	9.6	10	4.9	3.0	4.0	3.5
7	7.6	11	8.9	8.5	7.4	6.6	11	8.9	4.6	2.9	3.9	3.2
8	7.6	11	8.8	e8.4	7.4	6.6	9.4	8.1	4.8	2.9	3.8	3.1
9	7.5	10	8.4	e8.2	7.5	7.2	8.4	7.5	5.1	2.5	3.5	4.0
10	7.4	39	12	e7.8	7.3	8.6	8.1	7.2	5.6	2.3	3.6	5.5
11	7.5	19	18	e8.3	7.0	7.4	7.8	7.0	5.0	2.3	3.8	3.9
12	7.6	13	12	8.4	7.2	6.9	11	6.8	4.6	5.5	3.4	3.3
13	7.6	11	11	8.7	6.9	6.8	11	6.7	4.4	4.9	3.0	3.0
14	7.6	9.6	9.3	e8.3	6.5	6.6	9.2	6.6	4.3	3.7	2.9	3.1
15	7.6	9.2	12	e7.8	6.5	6.6	8.3	6.3	4.0	3.4	3.0	3.1
16	7.6	9.1	12	e7.2	7.8	6.5	7.8	6.2	3.8	3.1	3.2	2.9
17	7.6	8.9	11	e7.3	6.9	6.2	7.6	6.4	3.8	2.8	2.8	3.9
18	7.4	8.6	9.6	11	6.6	6.2	7.7	12	4.1	2.9	2.7	5.0
19	7.5	8.4	9.4	12	6.6	6.9	9.3	7.6	4.2	3.6	3.1	4.2
20	7.6	8.4	9.2	22	6.8	7.1	8.7	7.1	4.2	3.3	5.1	3.7
21	7.6	8.3	9.3	15	6.7	6.9	8.0	6.5	3.4	3.4	5.3	3.7
22	7.9	8.2	8.8	12	6.4	6.8	11	6.5	3.6	4.8	3.9	3.3
23	8.3	8.6	8.4	11	6.5	6.7	10	6.2	3.7	28	3.6	3.2
24	8.5	8.9	8.4	9.4	6.5	6.6	9.4	6.3	4.5	7.3	3.6	3.2
25	8.8	8.7	14	10	6.3	6.6	8.6	6.0	4.0	4.9	3.4	3.6
26	9.1	8.9	12	11	6.1	16	8.2	5.7	3.9	4.5	3.1	3.6
27	11	11	12	9.1	5.9	15	7.4	5.7	3.8	6.9	2.7	3.4
28	11	13	18	8.6	5.9	11	6.8	5.5	3.5	6.5	3.1	3.1
29	11	20	17	8.4	6.0	9.0	6.9	5.4	3.3	4.9	14	3.0
30	11	15	13	8.4	---	8.5	7.0	5.2	3.5	4.4	4.9	3.1
31	10	---	12	8.4	---	8.4	---	5.0	---	4.3	3.9	---
TOTAL	257.3	347.4	345.2	305.6	206.6	234.0	263.0	220.2	131.8	145.3	124.5	107.3
MEAN	8.30	11.6	11.1	9.86	7.12	7.55	8.77	7.10	4.39	4.69	4.02	3.58
MAX	11	39	18	22	10	16	12	15	6.4	28	14	5.5
MIN	7.4	8.2	8.4	7.2	5.9	5.9	6.8	5.0	3.3	2.3	2.7	2.9
CFSM	.90	1.25	1.21	1.07	.77	.82	.95	.77	.48	.51	.43	.39
IN.	1.04	1.40	1.39	1.23	.83	.94	1.06	.89	.53	.58	.50	.43

CAL YR 1987 TOTAL 5040.6 MEAN 13.8 MAX 393 MIN 3.1 CFSM 1.49 IN. 20.29
WTR YR 1988 TOTAL 2688.2 MEAN 7.34 MAX 39 MIN 2.3 CFSM .79 IN. 10.82

e Estimated.

02077000 BANISTER RIVER AT HALIFAX, VA

LOCATION.--Lat 36°46'35", long 78°54'58", Halifax County, Hydrologic Unit 03010105, on left bank 10 ft downstream from bridge on State Highway 360, 1,700 ft downstream from Terrible Creek, 1 mi northeast of Halifax, and 10 mi upstream from mouth.

DRAINAGE AREA.--547 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 318.54 ft above National Geodetic Vertical Datum 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 at present datum.

REMARKS.--Records good except for period of no gage-height record, Aug. 5 to Sept. 30, which is fair. Low and medium flow regulated at times during year by a reservoir 0.5 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.

AVERAGE DISCHARGE.--61 years, 504 ft^3/s, 12.51 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,000 ft^3/s, Sept. 20, 1944, gage height, 40.8 ft, from floodmarks, from rating curve extended above 13,000 ft^3/s on basis of slope-area measurement of peak flow and velocity-area study; minimum, 6.0 ft^3/s many days in August and September 1932.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,510 ft^3/s, Jan. 21, gage height, 10.04 ft; minimum daily, 67 ft^3/s, Aug. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	434	186	855	554	448	308	354	e312	e86	119	168	e130
2	309	185	553	486	433	300	338	e292	133	115	149	e105
3	240	185	425	440	454	297	325	e281	223	110	138	e97
4	219	186	366	449	614	304	344	277	295	104	136	e110
5	199	187	268	496	872	307	449	487	269	99	e143	e180
6	195	179	207	458	734	305	440	929	221	95	e148	e140
7	220	174	266	356	547	301	525	711	195	92	e132	e120
8	202	174	261	135	479	291	668	481	176	89	e120	e110
9	186	177	257	308	453	297	544	396	170	87	e118	e100
10	179	248	351	404	436	365	439	357	181	86	e113	e250
11	177	789	1120	334	419	416	393	356	184	87	e108	e180
12	176	904	1220	313	439	394	376	357	174	153	e104	e133
13	176	556	747	360	455	363	512	326	161	291	e99	e110
14	171	393	518	360	420	347	564	296	150	230	e95	e100
15	170	322	495	334	384	331	450	270	144	178	e92	e92
16	168	288	724	295	408	312	395	256	139	142	e120	e88
17	168	275	680	315	452	297	357	258	135	124	e118	e94
18	171	293	507	431	430	288	340	313	239	123	e97	e190
19	170	289	430	720	405	304	388	451	193	203	e87	e210
20	169	273	389	1720	400	314	612	359	188	313	e160	e144
21	167	252	367	2360	403	307	587	332	168	248	e270	e150
22	161	233	345	1440	385	293	497	316	154	209	e150	e123
23	160	227	325	846	362	276	604	292	141	256	e110	e110
24	161	225	302	646	353	272	558	300	144	852	e93	e102
25	164	225	335	576	342	274	452	484	166	1020	e85	e99
26	169	225	563	742	331	296	400	360	184	448	e77	e103
27	187	261	629	738	323	572	366	293	161	275	e72	e100
28	229	315	738	547	318	702	390	248	144	326	e67	e95
29	230	523	1290	493	315	495	e365	220	128	542	e530	e92
30	210	1280	1100	472	---	415	e335	212	121	308	e640	e90
31	192	---	704	455	---	377	---	206	---	205	e250	---
TOTAL	6129	10029	17337	18583	12814	10720	13367	11028	5167	7529	4789	3747
MEAN	198	334	559	599	442	346	446	356	172	243	154	125
MAX	434	1280	1290	2360	872	702	668	929	295	1020	640	250
MIN	160	174	207	135	315	272	325	206	86	86	67	88
CFSM	.36	.61	1.02	1.10	.81	.63	.81	.65	.31	.44	.28	.23
IN.	.42	.68	1.18	1.26	.87	.73	.91	.75	.35	.51	.33	.25

CAL YR 1987 TOTAL 237728 MEAN 651 MAX 12200 MIN 77 CFSM 1.19 IN. 16.17
WTR YR 1988 TOTAL 121239 MEAN 331 MAX 2360 MIN 67 CFSM .61 IN. 8.25

e Estimated.

02077500 HYCO RIVER NEAR DENNISTON, VA

LOCATION.--Lat 36°35'16", long 78°53'56", Halifax County, Hydrologic Unit 03010104, on left bank 60 ft upstream from bridge on U.S. Highway 501, 0.8 mi upstream from Mayo Creek, 2.5 mi northeast of Denniston, and 7.3 mi south of South Boston.

DRAINAGE AREA.--289 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). WDR VA-75-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 315.24 ft above National Geodetic Vertical Datum 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 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. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--44 years, 251 ft^3/s, 11.79 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft^3/s, July 15, 1975, gage height, 24.27 ft, from rating curve extended above 8,200 ft^3/s; minimum, 0.004 ft^3/s, Sept. 14, 1932, gage height, 3.58 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in August 1928 and September 1945 reached stages of 26.4 ft and 25.6 ft, respectively, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,380 ft^3/s, Jan. 21, gage height, 12.49 ft; minimum, 17 ft^3/s, Sept. 26-27, gage height, 4.50 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	23	91	503	71	45	54	56	35	27	26	32
2	31	21	62	457	73	45	39	51	35	25	26	30
3	27	21	51	671	73	45	37	53	41	24	26	28
4	26	25	46	742	335	47	41	51	49	24	26	27
5	23	24	41	431	704	57	45	78	40	23	26	42
6	23	31	36	289	569	54	48	83	35	23	24	42
7	37	34	43	297	525	136	113	71	35	24	28	28
8	36	33	46	459	437	156	212	57	34	23	37	27
9	26	30	49	451	313	157	101	50	34	23	37	23
10	24	35	166	433	302	292	73	55	44	23	36	82
11	22	74	1190	420	297	235	131	57	38	22	35	44
12	21	73	978	413	367	194	135	52	32	25	32	22
13	22	55	775	378	317	184	223	48	31	34	31	21
14	24	48	687	276	225	181	238	45	32	29	30	20
15	25	40	324	221	219	171	453	43	33	26	28	20
16	26	36	357	66	219	164	439	42	33	24	30	21
17	26	36	348	64	209	159	268	46	30	23	30	19
18	24	41	688	190	204	158	125	51	31	24	30	21
19	23	41	667	325	202	182	314	46	30	55	30	22
20	24	36	646	903	210	180	547	50	28	42	30	20
21	27	35	624	1360	201	165	750	59	31	30	29	21
22	27	32	211	1230	188	161	433	42	29	64	29	20
23	29	30	56	772	66	159	375	39	28	63	28	20
24	30	31	48	684	55	157	229	41	30	57	30	19
25	28	32	48	671	53	156	205	47	32	45	30	18
26	25	32	56	742	50	155	197	62	27	40	29	17
27	30	54	58	568	48	161	170	47	30	40	28	17
28	80	136	401	299	47	154	100	41	31	49	27	18
29	45	173	562	280	44	151	73	37	28	38	84	18
30	34	217	678	101	---	149	63	35	27	30	107	18
31	28	---	632	73	---	146	---	36	---	29	36	---
TOTAL	906	1529	10665	14769	6623	4556	6231	1571	993	1028	1055	777
MEAN	29.2	51.0	344	476	228	147	208	50.7	33.1	33.2	34.0	25.9
MAX	80	217	1190	1360	704	292	750	83	49	64	107	82
MIN	21	21	36	64	44	45	37	35	27	22	24	17
CFSM	.10	.18	1.19	1.65	.79	.51	.72	.18	.11	.11	.12	.09
IN.	.12	.20	1.37	1.90	.85	.59	.80	.20	.13	.13	.14	.10

CAL YR 1987 TOTAL 134516 MEAN 369 MAX 7650 MIN 12 CFSM 1.28 IN. 17.31
WTR YR 1988 TOTAL 50703 MEAN 139 MAX 1360 MIN 17 CFSM .48 IN. 6.53

02079000 ROANOKE (STAUNTON) RIVER AT CLARKSVILLE, VA

LOCATION.--Lat 36°37'40°, long 78°33'04", Mecklenburg County, Hydrologic Unit 03010102, at water treatment plant intake, in Clarksville.

DRAINAGE AREA.--7,320 mi².

PERIOD OF RECORD.--August 1987 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	CARBON, ORGANIC TOTAL (MG/L AS C)	PHENOLS TOTAL (UG/L)
OCT 27...	0830	4.2	2
NOV 19...	0830	3.9	<1
DEC 16...	1815	7.6	<1
JAN 19...	1400	2.6	2
FEB 17...	1530	2.9	1
MAR 29...	0800	3.2	1
APR 21...	0830	3.5	1
MAY 11...	0830	3.7	1
JUN 21...	0830	3.4	3
JUL 19...	0900	3.2	2
AUG 18...	0800	4.3	--
SEP 07...	0900	4.2	<1

02079490 JOHN H. KERR RESERVOIR NEAR BOYDTON, VA

LOCATION.--Lat 36°35'56", long 78°18'06", Mecklenburg County, Hydrologic Unit 03010102, at John H. Kerr Dam on Roanoke River, 2.7 mi upstream from Allen Creek, 6.7 mi southeast of Boydton, 18 mi upstream from the Virginia-North Carolina State line, and at mile 178.7.

DRAINAGE AREA.--7,780 mi², approximately.

PERIOD OF RECORD.--July 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum 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, 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, 1,623,440 acre-ft, May 2, elevation, 302.62 ft; minimum, 1,281,420 acre-ft, Jan. 16, elevation, 295.58 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	300.40	1,508,800	-
Oct. 31	297.44	1,365,600	-143,200
Nov. 30	297.48	1,367,470	+1,870
Dec. 31	298.96	1,437,590	+70,120
CAL YR 1987	-	-	-96,460
Jan. 31	299.39	1,458,650	+21,060
Feb. 29	299.09	1,443,920	-14,730
Mar. 31	299.33	1,455,700	+11,780
Apr. 30	302.51	1,617,630	+161,930
May 31	300.27	1,502,240	-115,390
June 30	298.89	1,434,240	-68,000
July 31	299.42	1,460,120	+25,880
Aug. 31	298.48	1,414,640	-45,480
Sept. 30	297.36	1,316,880	-52,760
WTR YR 1988	-	-	-146,920

02079640 ALLEN CREEK NEAR BOYDTON, VA

LOCATION.--Lat 36°40'46", long 78°19'37", Mecklenburg County, Hydrologic Unit 03010106, on left bank at upstream side of 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 mi².

PERIOD OF RECORD.--October 1961 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 216.50 ft above National Geodetic Vertical Datum of 1929 (levels by Virginia Department of Transportation).

REMARKS.--Records good except those for periods with ice effect, Jan. 7-11, 13-17, and period of no gage-height record, June 27 to July 25, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--27 years, 45.0 ft³/s, 11.44 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,620 ft³/s, Oct. 23, 1971, gage height, 21.80 ft, from rating curve extended above 3,100 ft³/s; no flow many days in August, September, and October 1968, September and October 1970.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 850 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	1530	*541	*8.95		No peak equal to or greater than base discharge.		

Minimum discharge, 0.82 ft³/s, Aug. 27, gage height, 1.27 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.5	14	46	40	29	20	18	20	9.6	e8.2	5.5	2.7
2	5.8	14	30	47	28	19	17	19	9.3	e6.5	4.7	1.9
3	4.7	14	24	46	56	19	17	18	18	e5.0	4.3	1.6
4	4.6	14	22	173	248	20	21	19	22	e4.3	4.5	1.9
5	5.3	15	20	149	145	20	25	36	14	e3.7	4.7	5.0
6	5.5	15	18	59	66	18	20	33	11	e3.3	4.3	4.2
7	9.1	15	16	e45	44	18	44	30	10	e2.8	3.9	2.7
8	9.9	15	16	e38	39	18	65	22	9.1	e2.6	3.3	2.0
9	6.5	16	16	e33	36	19	38	19	9.6	e2.5	2.9	1.9
10	5.2	18	50	e28	32	74	28	19	15	e4.0	2.5	10
11	5.0	105	296	e26	31	45	24	21	12	e3.8	2.4	8.0
12	5.4	36	80	31	159	29	24	19	9.3	e3.6	2.3	3.6
13	5.4	27	42	e30	85	28	45	17	8.3	e7.5	2.0	2.5
14	5.6	20	29	e35	47	27	30	16	7.7	e6.3	1.9	1.8
15	5.9	15	71	e30	41	23	24	15	7.2	e5.2	1.7	1.7
16	6.0	13	83	e26	39	21	22	15	7.0	e4.0	1.5	1.8
17	6.0	12	39	e28	32	19	19	15	6.7	e3.3	1.5	1.4
18	6.0	12	29	126	29	19	20	17	7.0	e2.7	1.3	2.0
19	6.4	12	25	139	28	29	100	15	127	e8.0	1.2	2.6
20	6.5	11	23	417	37	28	104	16	37	e72	1.0	2.5
21	6.8	11	22	177	32	22	49	15	20	e45	1.7	2.3
22	6.8	10	21	84	26	20	43	14	15	e32	1.7	2.0
23	7.8	9.4	20	55	25	19	45	12	12	e110	1.4	1.7
24	10	9.4	18	43	24	19	36	12	11	e65	3.2	1.6
25	11	9.4	67	45	23	19	29	22	15	e18	2.7	1.5
26	12	9.3	66	128	22	21	26	22	12	14	1.8	1.5
27	16	200	55	53	22	25	24	15	e95	68	1.1	1.5
28	78	87	257	39	21	21	27	13	e45	20	1.0	1.5
29	22	174	203	34	20	19	23	12	e22	13	3.4	1.3
30	15	122	72	32	---	19	21	11	e14	8.8	9.7	1.3
31	14	---	45	30	---	18	---	10	---	6.8	4.2	---
TOTAL	320.7	1054.5	1821	2266	1466	735	1028	559	617.8	559.9	89.3	78.0
MEAN	10.3	35.1	58.7	73.1	50.6	23.7	34.3	18.0	20.6	18.1	2.88	2.60
MAX	78	200	296	417	248	74	104	36	127	110	9.7	10
MIN	4.6	9.3	16	26	20	18	17	10	6.7	2.5	1.0	1.3
CFSM	.19	.66	1.10	1.37	.95	.44	.64	.34	.39	.34	.05	.05
IN.	.22	.73	1.27	1.58	1.02	.51	.72	.39	.43	.39	.06	.05

CAL YR 1987 TOTAL 30274.0 MEAN 82.9 MAX 3700 MIN 1.5 CFSM 1.55 IN. 21.09
WTR YR 1988 TOTAL 10595.2 MEAN 28.9 MAX 417 MIN 1.0 CFSM .54 IN. 7.38

e Estimated.

02079785 LAKE GASTON (ROANOKE RIVER) NEAR ELAMS, NC

LOCATION.--Lat 36°31'05", long 77°57'40", Warren County, Hydrologic Unit 03010106, in Lake Gaston at bridge on State Highway 1344, 1.9 mi southwest of Elams.

PERIOD OF RECORD.--December 1987 to February 1988 (discontinued).

WATER QUALITY DATA, DECEMBER 1987 TO FEBRUARY 1988

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	SPECIFIC CONDUCTANCE LAB (US/CM)	PH (STANDARD UNITS)	PH LAB (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	BAROMETRIC PRESSURE (MM OF HG)	TURBIDITY (FTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
DEC										
16...	1600	112	114	6.50	7.90	9.0	745	12	10.7	95
JAN										
19...	1030	115	113	6.90	7.80	6.0	757	2.5	11.8	95
FEB										
17...	1045	105	102	6.80	7.90	5.0	757	8.7	11.8	93

DATE	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	HARDNESS TOTAL (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)
DEC										
16...	1.0	480	320	28	6.8	2.7	8.2	2.2	30	10
JAN										
19...	1.0	K3	K2	31	7.5	3.1	8.7	2.9	30	11
FEB										
17...	1.0	720	K6	28	6.6	2.7	7.1	2.1	27	12

DATE	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHOROUS TOTAL (MG/L AS P)	PHOSPHOROUS DISSOLVED (MG/L AS P)
DEC									
16...	8.4	0.20	6.8	64	0.200	0.020	0.60	0.020	0.010
JAN									
19...	8.2	0.20	8.9	70	0.210	0.010	0.50	0.020	<0.010
FEB									
17...	6.8	0.20	11	66	0.262	0.020	0.40	0.030	0.030

DATE	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLOROPHYLL A FLUOROMETRIC METHOD CORR. (UG/L)	PHEOPHYTIN A FLUOROMETRIC METHOD (UG/L)	PHENOLS TOTAL (UG/L)	SEDIMENT, SUSPENDED (MG/L)
DEC									
16...	840	55	60	35	4.9	12.9	1.90	2	23
JAN									
19...	300	62	50	17	3.9	13.1	1.30	2	8
FEB									
17...	650	180	50	28	3.9	14.9	0.300	1	9

0207987950 LAKE GASTON (LITTLE RIVER CHANNEL) NEAR HENRICO, NC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD-NESS TOTAL (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)
OCT										
26...	81	1.0	K32	K2	29	7.0	2.9	6.3	2.5	27
26...	78	1.0	K4	K3	29	7.0	2.9	6.3	2.5	27
26...	77	1.0	K8	K4	29	6.9	2.9	6.3	2.5	27
26...	77	2.0	K4	K2	29	6.9	2.8	6.3	2.5	28
26...	77	1.0	K8	K3	29	7.0	2.8	6.4	2.5	27
NOV										
18...	88	<1.0	K52	<1	29	7.0	2.9	6.9	2.4	28
18...	87	1.0	K20	<1	29	6.9	2.9	6.9	2.4	28
18...	86	<1.0	K28	<1	29	7.0	2.9	7.0	2.4	28
18...	85	<1.0	K40	<1	29	7.0	2.8	7.4	2.4	29
18...	79	1.0	120	K2	29	7.0	2.9	7.6	2.4	29
MAR										
28...	107	2.0	400	K2	28	6.6	2.7	6.8	2.0	27
28...	87	1.0	K9	<1	28	6.8	2.7	6.9	2.0	27
28...	86	2.0	120	<1	28	6.6	2.7	6.8	2.0	27
28...	101	2.0	140	<1	28	6.7	2.7	6.9	2.0	27
28...	82	1.0	190	<1	29	6.8	2.8	7.0	2.0	27
APR										
20...	90	1.0	120	<1	28	6.6	2.8	6.9	1.7	27
20...	88	1.0	98	<1	28	6.7	2.8	6.9	1.8	27
20...	88	1.0	80	<1	28	6.6	2.8	6.9	1.7	27
20...	87	1.0	180	<1	28	6.6	2.8	6.9	1.7	27
20...	67	1.0	120	<1	29	6.7	2.9	6.9	1.9	28
MAY										
10...	98	1.0	<1	<1	29	6.8	2.8	7.3	1.8	28
10...	97	1.0	37	<1	29	6.9	2.8	7.3	1.9	28
10...	93	1.0	73	<1	29	6.9	2.8	7.5	2.2	27
10...	76	<1.0	61	<1	29	6.9	2.8	7.9	2.3	28
10...	62	1.0	530	<1	28	6.7	2.8	6.8	2.2	28
JUN										
20...	104	<1.0	>4000	K2	30	7.1	3.0	8.3	1.7	30
20...	113	<1.0	>4000	<1	29	6.9	2.9	8.1	1.7	29
20...	60	1.0	>4000	<1	29	7.0	2.9	8.2	1.8	29
20...	23	<1.0	2200	<1	31	7.3	3.0	8.2	1.7	29
20...	3	<1.0	>4000	<1	31	7.5	3.1	7.7	1.8	30
JUL										
18...	99	<1.0	290	K1	30	7.2	2.9	8.5	1.7	30
18...	98	<1.0	K1400	K2	31	7.3	3.0	8.2	1.7	30
18...	14	1.0	4800	K1	31	7.5	3.0	7.7	1.8	31
18...	0	<1.0	350	<1	32	7.8	3.1	8.4	1.8	30
18...	0	<1.0	3100	<1	33	8.0	3.1	8.0	1.8	33
AUG										
17...	94	1.0	360	<1	31	7.5	3.0	8.7	1.8	31
17...	91	<1.0	15	<1	31	7.5	3.0	8.7	1.8	31
17...	0	<1.0	K8	<1	32	7.9	3.1	8.8	1.8	32
17...	0	1.0	26	<1	33	8.1	3.2	8.6	1.8	32
17...	0	1.0	59	<1	33	8.2	3.1	8.4	1.9	35
SEP										
06...	97	1.0	230	K4	32	7.6	3.2	8.8	1.7	32
06...	96	1.0	220	K5	32	7.5	3.3	8.8	1.7	32
06...	94	<1.0	K26	<1	32	7.5	3.2	8.5	1.7	32
06...	0	1.0	K6	K2	33	7.8	3.2	8.5	1.8	33
06...	0	2.0	K10	<1	34	8.0	3.3	8.0	1.8	36

ROANOKE RIVER BASIN

0207987950 LAKE GASTON (LITTLE RIVER CHANNEL) NEAR HENRICO, NC

LOCATION.--Lat 36°30'34", long 77°51'49", Northampton County, Hydrologic Unit 03010106, in Lake Gas
southwest of Henrico.

PERIOD OF RECORD.--August 1987 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (US/CM)	SPECIFIC CONDUCTANCE LAB (US/CM)	PH (STANDARD UNITS)	PH LAB (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	BAROMETRIC PRESSURE (MM OF HG)	TURBIDITY (FTU)	OXYGEN, DISSOLVED (MG/L)
OCT										
26...	1100	2.00	101	101	7.00	7.70	17.0	757	4.0	7.8
26...	1115	12.0	96	101	7.00	7.70	17.0	757	4.5	7.5
26...	1130	21.0	96	101	7.20	7.70	17.0	757	5.1	7.4
26...	1145	39.0	97	101	7.20	7.80	17.0	757	5.8	7.4
26...	1200	47.0	94	101	7.10	7.70	17.0	757	4.9	7.4
NOV										
18...	1030	2.00	100	103	7.00	7.80	14.5	755	2.7	8.9
18...	1100	12.0	100	104	7.10	7.90	14.5	755	2.5	8.8
18...	1115	21.0	100	105	7.20	7.90	14.0	755	1.8	8.8
18...	1130	39.0	105	105	7.00	7.70	14.0	755	2.8	8.7
18...	1145	58.0	110	108	6.90	8.10	13.0	755	5.5	8.2
MAR										
28...	1145	2.00	110	98	6.20	7.90	12.5	760	4.0	11.4
28...	1200	12.0	110	99	6.70	7.70	10.0	760	3.8	9.8
28...	1215	21.0	110	99	7.50	7.80	10.0	760	3.2	9.7
28...	1230	39.0	105	99	7.50	7.90	17.0	760	3.3	9.7
28...	1245	43.0	105	99	7.00	7.70	9.0	760	3.9	9.4
APR										
20...	1000	2.00	105	91	6.80	7.50	13.0	755	1.9	9.4
20...	1015	12.0	100	99	7.00	7.90	13.0	755	3.2	9.2
20...	1030	21.0	102	98	7.10	7.50	13.0	755	1.2	9.2
20...	1045	39.0	102	98	7.20	7.50	13.0	755	2.2	9.1
20...	1100	58.0	102	99	7.20	7.70	11.0	755	--	7.3
MAY										
10...	1015	2.00	130	104	7.20	8.20	18.0	755	1.2	9.2
10...	1030	12.0	105	103	7.30	8.10	17.5	755	1.0	9.2
10...	1045	21.0	105	101	7.30	7.80	17.0	755	1.6	8.9
10...	1100	39.0	105	102	7.20	7.70	15.5	755	1.5	7.5
10...	1115	58.0	105	102	7.10	7.40	14.0	755	2.8	6.3
JUN										
20...	1030	2.00	115	106	7.70	7.30	26.0	761	1.1	8.4
20...	1045	12.0	108	105	7.90	8.20	24.0	761	1.3	9.5
20...	1100	21.0	112	104	7.50	8.00	20.5	761	1.1	5.4
20...	1115	39.0	117	107	7.00	7.10	18.0	761	1.5	2.2
20...	1130	58.0	120	108	6.50	7.10	15.5	761	2.1	0.3
JUL										
18...	1000	2.00	120	108	7.40	7.80	29.5	759	1.4	7.5
18...	1015	12.0	117	107	7.50	7.90	29.0	759	0.60	7.5
18...	1030	21.0	118	110	7.30	7.20	23.0	759	1.3	1.2
18...	1045	39.0	121	109	7.10	7.20	19.5	759	1.2	0
18...	1100	57.0	124	120	7.00	7.60	16.0	759	1.8	0
AUG										
17...	1000	2.00	115	108	6.80	7.70	29.0	757	1.5	7.2
17...	1015	12.0	120	108	7.20	7.70	28.5	757	1.0	7.0
17...	1030	21.0	122	111	7.00	7.10	24.5	757	2.0	0
17...	1045	39.0	130	118	6.90	7.20	21.0	757	3.0	0
17...	1100	56.0	142	121	7.00	7.30	16.0	757	4.0	0
SEP										
06...	1030	2.00	118	109	7.20	7.60	25.0	754	1.5	7.9
06...	1045	12.0	118	109	7.30	7.50	25.0	754	1.5	7.8
06...	1100	21.0	120	109	7.70	7.90	25.0	754	2.1	7.7
06...	1115	39.0	128	119	7.10	7.20	22.5	754	5.4	0
06...	1130	56.0	140	121	7.20	7.10	17.0	754	3.6	0

0207987950 LAKE GASTON (LITTLE RIVER CHANNEL) NEAR HENRICO, NC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)
OCT										
26...	13	6.5	0.10	6.9	62	0.212	0.030	0.30	<0.010	<0.010
26...	13	6.5	0.10	6.9	62	0.216	0.020	0.30	0.020	<0.010
26...	13	6.5	0.10	6.7	62	0.214	0.020	0.50	<0.010	<0.010
26...	13	5.8	0.10	6.9	62	0.223	0.030	0.30	0.010	<0.010
26...	13	5.8	0.10	6.8	62	0.226	0.020	0.20	0.010	<0.010
NOV										
18...	9.6	8.6	0.10	5.6	60	0.075	0.020	<0.20	0.010	0.010
18...	9.7	6.7	0.10	5.5	59	0.201	0.030	<0.20	0.010	<0.010
18...	9.8	6.7	0.10	5.6	59	0.209	0.030	<0.20	0.010	<0.010
18...	9.8	7.1	0.20	5.7	61	0.185	0.030	<0.20	0.010	<0.010
18...	9.9	10	0.20	6.0	64	0.153	0.040	0.30	0.010	<0.010
MAR										
28...	13	6.5	0.10	7.8	62	0.137	<0.010	0.20	0.020	0.010
28...	13	6.4	0.10	8.2	63	0.162	<0.010	0.30	0.010	0.010
28...	13	6.3	0.10	8.0	62	0.141	<0.010	0.20	0.020	0.010
28...	13	8.9	0.10	8.1	65	0.142	<0.010	0.20	0.020	0.010
28...	13	6.4	0.10	8.2	63	0.161	<0.010	0.30	0.020	0.020
APR										
20...	11	6.9	0.20	7.5	61	0.161	0.030	0.50	0.020	0.010
20...	12	6.8	0.20	7.7	62	0.159	0.020	0.30	<0.010	<0.010
20...	12	6.8	0.20	7.6	62	0.157	0.040	0.30	0.020	0.020
20...	12	6.7	0.20	7.6	62	0.158	0.030	0.30	0.020	0.020
20...	12	6.8	0.20	8.6	64	0.186	0.060	0.40	0.010	<0.010
MAY										
10...	12	7.4	0.20	7.3	63	0.112	0.020	<0.20	0.010	0.010
10...	11	7.2	0.20	7.3	62	0.111	0.020	0.20	0.010	0.010
10...	11	7.1	0.20	7.5	62	0.111	0.010	0.20	0.020	0.020
10...	11	7.2	0.20	7.7	64	0.134	0.060	0.20	0.020	0.020
10...	11	6.9	0.20	8.3	63	0.161	0.090	0.30	0.020	0.020
JUN										
20...	10	7.5	0.10	7.3	63	0.100	0.030	0.50	0.010	<0.010
20...	10	7.4	0.20	6.4	61	<0.010	<0.010	0.70	<0.010	<0.010
20...	9.9	7.3	0.10	6.6	61	<0.010	<0.010	0.50	0.010	<0.010
20...	11	7.4	0.10	8.3	65	0.200	0.030	0.30	<0.010	<0.010
20...	10	7.3	0.10	9.7	66	0.250	0.030	<0.20	<0.010	<0.010
JUL										
18...	10	7.7	0.20	6.7	63	<0.010	<0.010	0.40	0.010	0.010
18...	10	7.4	0.10	6.7	62	<0.010	<0.010	0.40	0.010	<0.010
18...	10	7.6	0.10	8.2	65	0.120	0.060	0.40	0.020	<0.010
18...	9.4	7.5	0.20	9.1	67	0.210	0.040	0.30	0.010	<0.010
18...	10	8.2	0.20	10	73	0.120	0.190	0.60	<0.010	<0.010
AUG										
17...	9.9	7.5	0.10	6.9	64	<0.010	<0.010	0.70	0.020	0.020
17...	10	7.5	0.10	7.0	64	0.018	<0.010	0.40	0.020	0.020
17...	9.9	7.7	0.10	9.0	68	0.058	0.060	0.40	0.020	0.020
17...	9.2	7.6	0.10	10	70	<0.010	0.240	0.20	0.020	0.010
17...	12	7.7	0.10	11	78	<0.010	0.330	0.60	0.030	0.030
SEP										
06...	10	11	0.10	7.6	69	<0.010	0.030	0.50	0.020	<0.010
06...	9.8	7.7	0.10	7.5	66	<0.010	0.030	0.50	0.010	<0.010
06...	9.6	8.5	0.10	7.5	66	<0.010	0.020	0.30	0.020	<0.010
06...	9.5	8.3	0.10	9.7	71	<0.010	0.170	0.40	0.010	<0.010
06...	15	8.5	0.10	12	85	0.028	0.490	0.60	0.020	0.020

0207987950 LAKE GASTON (LITTLE RIVER CHANNEL) NEAR HENRICO, NC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLORO-PHYLL A FLUORO-METRIC METHOD CORR. (UG/L)	PHEOPHY-TIN A FLUORO-METRIC METHOD (UG/L)	PHENOLS TOTAL (UG/L)	SEDI-MENT, SUS-PENDED (MG/L)
OCT									
26...	370	63	60	4	--	5.80	5.00	--	8
26...	440	70	60	3	4.6	5.20	4.40	2	5
26...	430	67	60	5	--	5.70	4.70	--	8
26...	480	93	70	16	--	10.0	8.20	--	7
26...	400	67	60	6	4.7	5.10	4.10	2	6
NOV									
18...	170	30	40	1	--	8.30	0.700	--	4
18...	160	30	30	1	3.9	8.10	0.600	3	4
18...	140	37	30	1	--	5.50	1.40	--	6
18...	230	39	50	4	--	7.80	1.60	--	4
18...	470	52	100	47	3.8	8.70	1.10	2	8
MAR									
28...	270	120	10	<1	--	8.20	2.00	--	2
28...	250	130	10	<1	3.9	6.60	3.30	4	2
28...	300	130	20	<1	--	8.00	2.20	--	2
28...	280	140	20	<1	--	8.20	2.60	--	2
28...	270	140	20	3	3.9	9.10	2.10	3	2
APR									
20...	230	24	20	5	--	2.80	1.20	--	3
20...	180	120	20	19	4.3	3.30	1.60	<1	2
20...	220	120	20	19	--	1.40	2.20	--	3
20...	200	120	10	19	--	2.50	2.20	--	2
20...	150	150	50	50	3.7	0.800	1.80	1	3
MAY									
10...	100	66	20	14	--	4.10	2.50	--	1
10...	90	66	20	14	3.7	3.00	2.30	3	2
10...	120	80	20	16	--	3.30	2.30	--	2
10...	160	110	20	22	--	2.20	2.40	--	2
10...	280	120	90	77	3.5	0.800	3.50	<1	3
JUN									
20...	90	8	40	<1	--	1.40	0.900	--	--
20...	40	3	20	<1	4.0	4.90	2.00	<1	<1
20...	40	7	20	1	--	3.00	3.20	--	1
20...	140	6	80	<1	--	3.30	2.00	--	4
20...	140	4	420	48	3.4	2.50	2.10	2	2
JUL									
18...	50	<3	30	<1	--	1.60	0.600	--	3
18...	50	<3	40	<1	3.5	2.10	0.900	2	4
18...	80	<3	110	64	--	3.10	1.20	--	6
18...	130	5	460	460	--	1.00	1.30	--	5
18...	160	<3	2900	2700	3.1	0.300	1.20	2	11
AUG									
17...	50	9	50	12	--	3.00	0.900	--	5
17...	40	4	60	<1	3.4	3.00	1.90	--	1
17...	90	8	490	460	--	3.60	4.00	--	4
17...	460	480	1900	1500	--	1.10	1.50	--	8
17...	1500	1600	2800	2800	3.7	0.500	0.600	1	8
SEP									
06...	60	8	180	4	--	2.40	1.80	--	3
06...	50	15	310	3	3.1	2.70	2.00	1	3
06...	90	12	190	3	--	4.50	2.10	--	3
06...	150	54	2100	2100	--	1.40	2.00	--	7
06...	2500	2600	2800	3100	4.2	0.800	1.80	<1	9

02079880 PEA HILL CREEK AT ROUTE 665, NEAR GASBURG, VA

LOCATION.--Lat 36°34'57", long 77°53'20", Brunswick County, Hydrologic Unit 03010106, at bridge on State Highway 665, 1.0 mi north of Gasburg, and 3.3 mi west of Valentines.

PERIOD OF RECORD.--August 1987 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM)	PH (STAND-ARD UNITS)	PH LAB (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)
OCT										
26...	1430	0.68	85	91	6.70	7.90	10.5	757	1.6	8.3
NOV										
18...	1430	1.3	85	88	7.00	7.70	14.5	755	2.7	8.0
DEC										
16...	1430	4.1	65	72	6.10	7.50	7.5	745	17	10.4
JAN										
19...	1130	7.9	58	61	6.20	7.10	5.0	757	17	11.8
FEB										
17...	1200	5.0	63	62	6.40	7.50	4.0	757	7.8	10.8
MAR										
28...	1630	3.0	63	70	7.00	7.40	13.0	760	5.3	9.9
APR										
20...	1400	8.4	65	60	6.60	7.70	12.0	755	16	9.2
MAY										
10...	1400	2.7	100	78	6.80	7.40	19.0	755	8.9	8.4
JUN										
20...	1500	5.9	58	54	6.20	6.90	21.5	761	38	10.4
JUL										
18...	1400	0.88	93	87	6.80	8.30	25.5	759	5.9	5.4
AUG										
17...	1400	0.43	95	88	6.80	7.40	24.5	757	5.5	6.2
SEP										
06...	1530	1.6	78	75	7.40	7.70	18.5	754	8.0	8.6

DATE	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD-NESS TOTAL (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)
OCT										
26...	75	2.0	420	200	27	6.2	2.8	6.7	2.0	27
NOV										
18...	79	1.0	K2100	260	24	5.6	2.5	6.5	2.0	32
DEC										
16...	89	1.0	8600	6000	17	3.9	1.8	5.9	1.8	17
JAN										
19...	93	1.0	4300	120	14	3.2	1.5	5.2	1.2	13
FEB										
17...	83	1.0	700	K20	15	3.3	1.6	5.4	1.3	17
MAR										
28...	94	1.0	370	K110	18	4.2	1.8	6.8	1.3	24
APR										
20...	86	2.0	4500	330	16	3.5	1.7	5.5	1.2	17
MAY										
10...	91	3.0	5900	2900	22	4.9	2.3	6.3	2.0	27
JUN										
20...	118	2.0	3100	K500	16	3.7	1.6	3.9	1.7	12
JUL										
18...	66	1.0	2900	K72	27	6.5	2.7	6.5	1.8	37
AUG										
17...	75	1.0	730	<1	28	6.5	2.8	6.5	2.0	36
SEP										
06...	93	5.0	2000	K150	24	5.3	2.5	5.6	1.6	29

02079880 PEA HILL CREEK AT ROUTE 665, NEAR GASBURG, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)
OCT 26...	5.7	3.5	0.10	25	69	<0.010	0.010	0.30	0.030	0.030
NOV 18...	4.4	4.4	0.10	24	69	<0.010	0.020	0.30	0.020	0.010
DEC 16...	10	5.7	0.20	17	58	0.110	0.040	0.50	0.010	0.020
JAN 19...	11	4.6	0.20	16	52	0.176	0.020	0.40	0.030	0.020
FEB 17...	9.4	4.4	0.20	17	54	0.134	0.040	0.30	0.020	0.010
MAR 28...	9.8	3.7	0.10	19	62	0.031	<0.010	0.30	0.020	0.010
APR 20...	12	3.9	0.10	16	55	0.070	0.030	0.40	0.020	0.020
MAY 10...	9.2	4.8	0.20	21	68	0.081	0.070	1.3	0.040	0.020
JUN 20...	18	3.6	0.10	14	55	0.072	0.050	0.80	0.060	0.020
JUL 18...	7.9	3.7	0.20	23	77	0.160	0.020	1.0	0.030	<0.010
AUG 17...	5.2	3.8	0.10	23	74	0.263	0.040	0.40	0.050	0.030
SEP 06...	11	3.6	0.10	19	69	0.060	0.010	0.40	0.040	0.040

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLORO-PHYLL A FLUORO-METRIC METHOD CORR. (UG/L)	PHEOPHY-TIN A FLUORO-METRIC METHOD (UG/L)	PHENOLS TOTAL (UG/L)	SEDI-MENT, SUS-PENDED (MG/L)
OCT 26...	700	250	40	55	4.5	8.00	3.60	3	3
NOV 18...	880	55	30	34	4.4	0.200	0.200	2	--
DEC 16...	2200	440	30	47	9.4	1.20	0.500	<1	13
JAN 19...	980	440	40	52	7.7	1.30	0.300	2	13
FEB 17...	770	300	40	51	3.9	1.20	0.700	<1	9
MAR 28...	1400	820	60	67	5.7	--	--	4	4
APR 20...	1700	480	70	79	12	2.20	1.40	<1	14
MAY 10...	1800	920	140	130	7.2	2.70	7.80	5	10
JUN 20...	2700	930	110	88	14	1.60	1.30	5	54
JUL 18...	1600	1100	180	190	4.2	0.700	0.300	2	10
AUG 17...	1800	1300	190	180	4.9	0.500	0.700	--	5
SEP 06...	2300	2200	110	99	6.5	0.900	0.700	5	7

02079882 PEA HILL CREEK NEAR BOWENS CORNER, NEAR VALENTINES, VA

LOCATION.--Lat 36°33'28", long 77°51'34", Brunswick County, Hydrologic Unit 03010106, in Pea Hill Creek Arm of Lake Gaston at bridge on State Highway 626, 2.2 mi southwest of Bowens Corner, and 2.6 mi southwest of Valentines.

PERIOD OF RECORD.--December 1987 to February 1988 (discontinued).

WATER QUALITY DATA, DECEMBER 1987 TO FEBRUARY 1988

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	SPECIFIC CONDUCTANCE LAB (US/CM)	PH (STANDARD UNITS)	PH LAB (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	BAROMETRIC PRESSURE (MM OF HG)	TURBIDITY (FTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
DEC										
16...	1330	100	89	6.30	7.70	8.5	745	3.3	10.0	87
JAN										
19...	0915	65	78	6.50	7.50	4.0	757	7.2	10.0	77
FEB										
17...	0930	69	67	6.70	7.50	5.0	757	7.6	10.6	84

DATE	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARDNESS TOTAL (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)
DEC										
16...	2.0	390	K69	24	5.3	2.5	5.7	2.3	23	11
JAN										
19...	2.0	420	K2	21	4.8	2.2	5.6	2.3	19	11
FEB										
17...	2.0	940	K4	15	3.5	1.6	5.2	1.8	15	13

DATE	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHOROUS TOTAL (MG/L AS P)	PHOSPHOROUS DISSOLVED (MG/L AS P)
DEC									
16...	6.7	0.20	5.7	54	0.060	0.070	0.50	0.010	<0.010
JAN									
19...	5.0	0.20	11	55	0.110	0.250	0.80	0.010	--
FEB									
17...	4.8	0.20	13	53	0.168	0.180	0.90	0.050	0.030

DATE	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLOROPHYLL A FLUOROMETRIC METHOD CORR. (UG/L)	PHEOPHYTIN A FLUOROMETRIC METHOD (UG/L)	PHENOLS TOTAL (UG/L)	SEDIMENT, SUSPENDED (MG/L)
DEC									
16...	600	87	70	57	6.3	12.4	3.50	<1	13
JAN									
19...	1100	260	190	160	6.8	9.80	2.30	6	13
FEB									
17...	1900	260	140	110	7.2	11.8	3.70	1	19

0207988450 PEA HILL CREEK ABOVE NC STATELINE, NEAR GASBURG, VA

LOCATION.--Lat 36°32'43", long 77°51'52", Brunswick County, Hydrologic Unit 03010106, in Pea Hill Creek Arm of Lake Gaston, 0.1 mi north of North Carolina stateline, and 2.3 mi southeast of Gasburg.

PERIOD OF RECORD.--August 1987 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (US/CM)	SPECIFIC CONDUCTANCE LAB (US/CM)	PH (STANDARD UNITS)	PH LAB (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	BAROMETRIC PRESSURE (MM OF HG)	TURBIDITY (FTU)	OXYGEN, DISSOLVED (MG/L)
OCT										
26...	1245	2.00	88	91	7.00	7.70	16.5	757	2.8	8.3
26...	1300	12.0	88	92	7.00	7.50	16.5	757	3.0	8.0
26...	1315	21.0	87	92	7.10	7.70	16.0	757	2.8	7.9
26...	1330	27.0	89	92	7.10	7.70	16.0	757	2.9	7.8
NOV										
18...	1230	2.00	98	95	7.00	7.80	14.0	755	1.6	9.4
18...	1245	12.0	98	96	7.20	7.80	14.0	755	1.9	9.4
18...	1300	21.0	100	96	7.10	7.70	13.0	755	1.3	8.7
18...	1315	25.0	98	96	7.10	7.70	13.0	755	3.0	8.7
MAR										
28...	1400	2.00	105	92	7.30	7.90	15.0	760	4.4	11.8
28...	1415	12.0	100	96	7.60	7.80	11.5	760	4.3	11.2
28...	1430	21.0	98	94	7.60	7.60	10.0	760	3.9	10.8
28...	1445	29.0	97	94	7.50	7.50	9.5	760	4.9	9.9
APR										
20...	1130	2.00	155	92	6.80	7.50	14.5	755	0.90	9.6
20...	1145	12.0	100	91	6.90	7.50	14.0	755	1.8	9.4
20...	1200	21.0	100	93	7.20	7.50	13.5	755	3.8	8.9
20...	1215	28.0	100	93	7.20	7.50	13.0	755	2.9	7.8
MAY										
10...	1200	2.00	150	94	7.40	8.00	19.0	755	1.7	9.6
10...	1215	12.0	125	93	7.40	8.00	18.5	755	1.5	9.3
10...	1230	21.0	100	93	7.20	9.80	17.0	755	1.7	7.0
10...	1245	28.0	100	98	7.30	7.40	16.0	755	3.5	6.1
JUN										
20...	1300	2.00	105	98	7.40	7.90	28.0	761	2.0	8.0
20...	1315	12.0	100	96	7.10	7.60	24.0	761	2.1	7.3
20...	1330	21.0	108	98	6.60	7.00	21.0	761	3.4	1.6
20...	1345	27.0	120	106	6.60	7.00	20.0	761	5.2	0.1
JUL										
18...	1115	2.00	110	101	7.20	8.10	31.0	759	1.6	7.1
18...	1130	12.0	102	97	7.10	7.70	28.0	759	1.4	5.2
18...	1145	21.0	109	106	6.80	7.20	24.0	759	3.3	0
18...	1200	27.0	129	109	6.70	7.30	21.0	759	4.7	0
AUG										
17...	1115	2.00	102	96	6.80	8.00	31.0	757	2.0	7.4
17...	1130	12.0	108	100	7.00	8.00	29.5	757	0.50	6.0
17...	1145	21.0	125	113	7.10	7.20	26.5	757	2.8	0
17...	1200	27.0	155	119	7.10	7.60	22.0	757	2.8	0
SEP										
06...	1145	2.00	115	98	7.40	7.60	26.0	754	2.2	8.4
06...	1200	12.0	108	98	7.50	7.60	25.5	754	2.6	8.0
06...	1215	21.0	105	100	7.50	7.50	25.0	754	2.5	6.3
06...	1230	28.0	130	118	7.30	7.20	23.5	754	4.2	0

0207988450 PEA HILL CREEK ABOVE NC STATELINE, NEAR GASBURG, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD-NESS TOTAL (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)
OCT										
26...	86	2.0	820	K3	27	5.9	2.9	5.8	2.3	25
26...	82	2.0	580	K2	26	5.9	2.8	5.8	2.3	25
26...	81	2.0	720	K2	26	5.9	2.8	5.7	2.3	25
26...	80	1.0	440	K3	26	5.9	2.8	5.7	2.3	25
NOV										
18...	92	1.0	500	K3	27	6.3	2.8	6.1	2.3	25
18...	92	1.0	220	<1	27	6.2	2.9	6.1	2.3	25
18...	83	1.0	160	<1	27	6.3	2.8	6.1	2.3	26
18...	83	1.0	360	K3	27	6.2	2.8	6.1	2.3	25
MAR										
28...	117	3.0	140	<1	25	6.0	2.5	6.5	2.0	25
28...	103	2.0	230	<1	26	6.2	2.6	6.6	2.0	26
28...	96	2.0	160	<1	26	6.1	2.5	6.6	2.0	25
28...	87	3.0	180	<1	26	6.2	2.6	6.6	2.0	26
APR										
20...	95	2.0	230	K2	26	6.1	2.6	6.7	1.7	25
20...	92	1.0	200	<1	27	6.3	2.7	6.9	1.8	25
20...	86	1.0	190	K2	26	6.0	2.6	6.6	1.8	26
20...	75	1.0	430	K2	27	6.4	2.7	6.9	1.7	26
MAY										
10...	105	2.0	310	K12	26	6.3	2.6	6.5	2.3	26
10...	100	1.0	460	K4	27	6.4	2.6	6.5	2.1	26
10...	73	1.0	4500	K5	26	6.3	2.6	6.4	2.2	26
10...	62	2.0	4200	K4	27	6.5	2.7	6.5	1.9	27
JUN										
20...	102	1.0	840	<1	29	6.8	2.9	7.4	1.8	28
20...	87	1.0	>4000	K3	28	6.7	2.7	8.3	1.8	28
20...	18	<1.0	>4000	<1	29	6.9	2.8	7.2	1.7	29
20...	1	1.0	>4000	K2	31	7.5	3.0	7.2	1.9	32
JUL										
18...	96	3.0	K1300	K4	29	7.0	2.8	7.7	1.4	29
18...	67	1.0	K1700	K5	28	6.7	2.7	7.4	1.4	28
18...	0	1.0	2000	<1	31	7.7	2.9	7.4	1.8	32
18...	0	2.0	510	K5	32	8.0	3.0	7.4	1.9	35
AUG										
17...	100	<1.0	470	<1	27	6.5	2.7	7.8	1.8	27
17...	79	1.0	530	K4	29	6.8	2.8	8.0	1.8	28
17...	0	1.0	210	<1	34	8.9	2.9	7.7	1.8	37
17...	0	5.0	2800	<1	35	9.1	3.0	7.5	2.0	45
SEP										
06...	104	<1.0	31	K12	29	6.7	2.9	7.7	1.7	29
06...	99	1.0	33	K4	29	6.7	2.9	7.7	1.8	29
06...	77	--	K42	K6	29	6.7	2.9	7.6	1.8	29
06...	0	2.0	K14	K7	36	9.0	3.2	7.8	1.8	36

0207988450 PEA HILL CREEK ABOVE NC STATELINE, NEAR GASBURG, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)
OCT										
26...	11	5.7	0.10	6.2	55	0.083	0.040	0.30	<0.010	<0.010
26...	12	5.8	0.10	6.2	56	0.092	0.050	<0.20	<0.010	<0.010
26...	11	--	0.10	6.3	--	0.087	0.050	0.20	<0.010	<0.010
26...	11	5.8	0.10	6.3	55	0.087	0.050	0.30	<0.010	<0.010
NOV										
18...	9.0	6.3	0.10	5.7	54	0.133	0.030	0.80	0.010	<0.010
18...	8.9	5.9	0.20	5.6	54	0.133	0.040	0.40	0.010	<0.010
18...	9.0	7.3	0.20	5.6	56	0.130	0.040	0.70	0.010	<0.010
18...	8.8	7.6	0.20	5.7	55	0.159	0.040	<0.20	0.010	<0.010
MAR										
28...	12	5.9	0.10	6.4	57	0.106	<0.010	0.30	0.020	0.010
28...	12	6.2	0.10	6.8	59	0.137	<0.010	0.30	0.020	0.010
28...	12	6.3	0.10	6.9	58	0.120	0.010	0.40	0.020	0.010
28...	12	6.2	0.10	7.0	59	0.142	0.020	0.40	0.020	0.010
APR										
20...	11	6.3	0.20	6.4	57	0.100	0.020	0.30	0.020	0.020
20...	11	6.2	0.20	6.7	57	0.100	0.020	0.30	0.020	0.020
20...	10	6.6	0.20	6.4	56	0.115	0.030	0.40	0.020	<0.010
20...	14	6.3	0.20	6.9	61	0.115	0.050	0.40	0.020	0.020
MAY										
10...	11	6.5	0.20	6.5	58	0.029	0.020	0.30	0.020	0.020
10...	11	6.7	0.20	6.4	58	0.029	0.030	0.20	0.020	0.010
10...	11	6.3	0.20	7.0	58	0.052	0.040	0.30	0.020	0.020
10...	11	6.7	0.20	7.3	60	0.076	0.090	0.60	0.020	0.020
JUN										
20...	9.4	6.7	0.10	5.0	57	<0.010	<0.010	0.40	0.010	<0.010
20...	9.7	6.5	0.10	5.3	58	<0.010	0.010	0.40	<0.010	<0.010
20...	8.4	6.6	0.10	6.8	58	<0.010	0.090	0.90	0.020	<0.010
20...	12	7.1	0.10	8.3	70	<0.010	0.320	0.70	0.020	<0.010
JUL										
18...	9.5	6.9	0.10	4.8	58	<0.010	<0.010	0.20	<0.010	<0.010
18...	9.1	6.6	0.10	4.9	56	<0.010	<0.010	0.70	0.010	<0.010
18...	9.9	6.8	0.20	6.5	64	<0.010	0.170	0.60	0.010	<0.010
18...	14	7.3	0.20	8.2	76	<0.010	0.420	0.60	<0.010	<0.010
AUG										
17...	8.6	7.0	0.10	3.9	55	<0.010	<0.010	0.40	0.020	0.020
17...	9.5	11	0.10	5.1	62	<0.010	0.020	0.90	0.010	0.020
17...	10	6.9	0.10	6.8	70	0.024	0.300	0.50	0.020	0.020
17...	14	8.0	0.10	9.9	89	<0.010	0.970	1.5	0.030	0.020
SEP										
06...	8.8	7.0	0.10	3.5	56	<0.010	0.020	0.20	0.020	<0.010
06...	8.6	7.0	0.10	3.5	56	<0.010	0.020	0.50	0.020	<0.010
06...	8.3	7.0	0.10	3.9	56	<0.010	0.070	0.50	0.020	<0.010
06...	9.6	7.1	0.10	7.8	72	<0.010	0.380	1.1	0.020	<0.010

0207988450 PEA HILL CREEK ABOVE NC STATELINE, NEAR GASBURG, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLORO-PHYLL A FLUORO-METRIC METHOD CORR. (UG/L)	PHEOPHY-TIN A FLUORO-METRIC METHOD (UG/L)	PHENOLS TOTAL (UG/L)	SEDI-MENT, SUS-PENDED (MG/L)
OCT									
26...	1000	25	40	1	--	11.3	2.60	--	7
26...	290	27	50	<1	5.2	10.7	3.50	2	8
26...	320	26	50	1	--	11.3	3.20	--	8
26...	480	35	70	17	5.2	11.6	3.60	<1	13
NOV									
18...	130	19	30	2	--	13.2	2.30	--	4
18...	120	18	30	1	4.6	14.3	2.20	2	4
18...	210	21	40	4	--	13.8	2.10	--	6
18...	220	18	40	2	4.5	11.0	3.90	2	6
MAR									
28...	270	59	20	<1	--	12.4	3.80	--	4
28...	240	98	10	<1	4.2	14.0	4.80	4	2
28...	300	110	30	<1	--	11.0	3.80	--	4
28...	370	110	30	5	4.3	13.2	5.90	5	4
APR									
20...	220	120	20	20	--	11.0	3.50	--	4
20...	200	140	20	25	5.1	9.10	3.50	<1	4
20...	360	26	30	6	--	8.50	3.40	--	6
20...	310	180	30	40	4.3	9.30	3.80	<1	8
MAY									
10...	120	53	20	16	--	8.20	2.30	--	4
10...	110	45	20	18	4.6	7.20	2.80	1	6
10...	200	140	50	44	--	13.5	3.40	--	4
10...	310	200	80	70	4.4	10.7	5.10	2	8
JUN									
20...	120	7	30	1	--	4.70	1.60	--	2
20...	170	4	70	<1	4.5	29.7	2.30	3	4
20...	440	20	430	43	--	4.70	3.60	--	4
20...	1500	1700	1200	1200	4.5	2.20	3.10	1	8
JUL									
18...	120	17	30	2	--	3.50	0.800	--	2
18...	220	16	70	<1	4.7	25.6	2.50	3	6
18...	800	730	790	790	--	4.60	5.60	--	10
18...	2800	3100	1200	1200	4.7	3.80	4.80	3	11
AUG									
17...	90	16	20	12	--	5.50	2.40	--	3
17...	90	15	40	2	4.5	13.5	2.70	--	2
17...	1000	1000	950	1000	--	3.80	4.10	--	7
17...	5700	5900	1500	1600	5.6	2.50	3.80	--	12
SEP									
06...	220	30	130	16	--	9.10	3.30	--	6
06...	180	33	130	9	3.9	8.40	3.70	<1	6
06...	330	66	290	210	--	8.70	2.90	--	6
06...	1600	1600	2200	2400	5.4	4.30	3.80	<1	12

KANAWHA RIVER BASIN

03161000 SOUTH FORK NEW RIVER NEAR JEFFERSON, NC

LOCATION.--Lat 36°23'35", long 81°24'26", Ashe County, Hydrologic Unit 05050001, on right bank 600 ft upstream from bridge on State Highways 16 and 88, 0.2 mi downstream from Bear Creek, and 4 mi southeast of Jefferson.
DRAINAGE AREA.--205 mi².
PERIOD OF RECORD.--October 1924 to current year. Monthly discharge only for some periods, published in WSP 1305.
REVISED RECORDS.--WSP 1275: 1925-26(M), 1928-30(M), 1931-32, 1933-35(M), 1941-42(m), 1944(m). WDR NC-81-1: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 2,657.04 ft above National Geodetic Vertical Datum 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.
REMARKS.--Records good except those for estimated daily discharges, which are fair. 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.
AVERAGE DISCHARGE.--64 years, 226 ft³/s, 28.42 in/yr.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 52,800 ft³/s, Aug. 14, 1940, gage height, 22.50 ft, from rating curve extended above 5,100 ft³/s on basis of slope-area measurement of peak flow; minimum, 52 ft³/s, Dec. 24, 1943, result of freezeup; minimum daily, 65 ft³/s, Sept. 9, 1925.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 15, 1916, reached a stage of 18.0 ft, from floodmarks witnessed by local resident, discharge, 35,200 ft³/s.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,600 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 18	0300	*1,950	*4.69	No peak equal to or greater than base discharge.			

Minimum discharge, 91 ft³/s, July 9, Aug. 28, gage height, 1.51 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	196	163	424	311	269	211	203	244	162	114	118	166
2	191	160	315	304	270	208	200	239	158	116	108	132
3	188	158	282	285	288	207	205	232	161	108	118	120
4	185	157	296	285	508	210	690	240	164	109	123	237
5	182	160	289	e235	670	209	641	266	161	112	149	524
6	185	152	257	e155	e390	204	433	258	151	108	178	277
7	199	149	245	e150	e300	200	442	238	145	102	129	200
8	208	148	241	e160	e280	196	447	227	139	98	114	170
9	188	150	235	e160	e270	214	404	217	151	95	104	157
10	184	279	251	e170	e270	267	368	224	227	94	109	168
11	179	390	289	e170	296	336	341	243	196	115	159	168
12	188	222	282	e180	289	266	335	223	151	133	362	148
13	207	185	271	e200	e200	254	382	208	141	156	259	145
14	198	189	245	e220	e200	263	367	202	135	145	161	155
15	181	181	282	e230	e288	233	340	230	131	129	131	137
16	173	177	396	e260	310	219	322	241	136	121	124	127
17	170	575	e300	e280	272	218	302	226	204	102	116	262
18	167	1110	e270	370	254	218	297	289	252	110	108	675
19	165	402	e260	490	256	223	437	244	255	117	100	331
20	166	294	254	e590	271	217	563	220	199	149	102	256
21	168	252	248	e650	256	206	416	220	164	192	139	220
22	163	223	241	462	233	203	364	203	151	435	167	188
23	162	215	232	349	234	199	339	201	143	235	120	168
24	162	206	226	304	237	195	371	211	138	154	114	170
25	164	196	316	300	222	201	344	242	138	135	107	185
26	165	191	368	277	218	227	311	229	136	119	102	159
27	176	211	317	e190	227	256	293	189	122	117	95	147
28	212	326	443	e230	220	231	275	182	117	295	98	138
29	204	892	454	e280	213	204	262	175	110	204	300	134
30	173	564	358	e280	---	200	251	168	111	140	278	134
31	166	---	322	288	---	199	---	165	---	131	179	---
TOTAL	5615	8677	9209	8815	8211	6894	10945	6896	4749	4490	4571	6198
MEAN	181	289	297	284	283	222	365	222	158	145	147	207
MAX	212	1110	454	650	670	336	690	289	255	435	362	675
MIN	162	148	226	150	200	195	200	165	110	94	95	120
CFSM	.88	1.41	1.45	1.39	1.38	1.08	1.78	1.09	.77	.71	.72	1.01
IN.	1.02	1.57	1.67	1.60	1.49	1.25	1.99	1.25	.86	.81	.83	1.12

CAL YR 1987 TOTAL 165166 MEAN 453 MAX 3330 MIN 138 CFSM 2.21 IN. 29.97
WTR YR 1988 TOTAL 85270 MEAN 233 MAX 1110 MIN 94 CFSM 1.14 IN. 15.47

e Estimated.

03164000 NEW RIVER NEAR GALAX, VA

LOCATION.--Lat 36°38'50", long 80°58'45", Grayson County, Hydrologic Unit 05050001, on left bank at upstream side of bridge on State Highway 94, 500 ft downstream from Meadow Creek, 1.2 mi southwest of Old Town, 3.1 mi southwest of Galax, and 3.6 mi downstream from Elk Creek.

DRAINAGE AREA.--1,131 mi².

PERIOD OF RECORD.--October 1929 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 758: Drainage area, 1933(M). WSP 893: 1930(M), 1935(M).

GAGE.--Water-stage recorder. Datum of gage is 2,208.04 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 5-19 and Jan. 29 to Feb. 1, which are fair. Appalachian Power Company gage-height transmitter at station, recorder at Roanoke. U.S. Army Corps of Engineers satellite precipitation and 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.

AVERAGE DISCHARGE.--59 years, 1,886 ft³/s, 22.65 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 141,000 ft³/s, Aug. 14, 1940, gage height, 25.7 ft, from flood-mark, from rating curve extended above 32,000 ft³/s on basis of computation of peak flow over dam at Fries 6 mi downstream and slope-area measurement of peak flow; minimum, 193 ft³/s, Jan. 9, 1956, gage height, 0.52 ft, result of freezeup; minimum daily, 265 ft³/s, Sept. 19, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 9,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	1930	*6,200	*3.15	No peak equal to or greater than base discharge.			

Minimum discharge, 252 ft³/s, Aug. 28, gage height, 0.54 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	792	675	2040	1870	e1100	916	884	1130	679	384	483	637
2	740	661	1590	1790	1260	893	903	1080	650	393	441	514
3	713	656	1370	1650	1410	881	899	1030	645	391	406	439
4	689	664	1410	1590	2680	918	1520	1030	678	365	386	490
5	676	665	1450	e1300	5150	945	2380	1100	678	358	416	1130
6	693	643	1310	e1000	3320	943	1840	1170	628	344	454	1390
7	739	628	1210	e800	2180	882	1590	1160	589	325	468	935
8	747	619	1210	e740	2080	859	1620	1070	550	308	479	704
9	738	622	1180	e700	1860	880	1660	999	627	301	400	628
10	715	911	1240	e660	1650	1030	1630	992	931	285	355	622
11	694	1700	1400	e640	1490	1110	1520	1250	898	369	372	615
12	774	1380	1450	e750	1390	1110	1440	1150	730	366	559	577
13	858	1010	1380	e850	1250	1080	1530	1080	613	464	680	550
14	868	815	1280	e800	1080	1110	1470	1020	553	512	810	544
15	780	765	1370	e750	1310	1050	1340	1110	519	531	514	495
16	732	748	1840	e700	1370	961	1290	1160	499	448	426	472
17	703	1010	1670	e1000	1240	934	1230	1080	500	372	367	606
18	683	3650	1380	e1700	1130	974	1190	1650	627	362	362	1760
19	669	2500	1330	e2500	1140	1000	1560	1440	952	444	309	1830
20	661	1520	1410	4400	1200	972	2270	1220	775	605	317	1150
21	661	1220	1290	4340	1170	915	2090	1090	713	637	383	882
22	648	1040	1220	2960	1070	903	1760	1000	584	972	487	728
23	651	950	1160	2220	1050	886	1580	927	539	1030	474	634
24	647	926	1130	1800	1080	866	1680	891	485	892	448	637
25	653	889	1320	1660	1060	867	2060	916	507	604	372	731
26	660	857	2060	1500	923	916	1750	1010	549	688	331	733
27	687	893	2110	1160	966	1060	1560	921	484	830	299	620
28	773	1100	2680	1100	1000	1080	1400	830	435	827	283	557
29	790	3190	3150	e1100	956	967	1280	781	406	797	462	510
30	765	3160	2600	e1050	---	892	1190	744	383	775	687	485
31	719	---	2110	e1000	---	884	---	711	---	588	823	---
TOTAL	22318	36067	49350	46080	44565	29684	46116	32742	18406	16567	14053	22605
MEAN	720	1202	1592	1486	1537	958	1537	1056	614	534	453	753
MAX	868	3650	3150	4400	5150	1110	2380	1650	952	1030	823	1830
MIN	647	619	1130	640	923	859	884	711	383	285	283	439
CFSM	.64	1.06	1.41	1.31	1.36	.85	1.36	.93	.54	.47	.40	.67
IN.	.73	1.19	1.62	1.52	1.47	.98	1.52	1.08	.61	.54	.46	.74

CAL YR 1987 TOTAL 817547 MEAN 2240 MAX 21000 MIN 575 CFSM 1.98 IN. 26.89
WTR YR 1988 TOTAL 378553 MEAN 1034 MAX 5150 MIN 283 CFSM .91 IN. 12.45

e Estimated.

03165000 CHESTNUT CREEK AT GALAX, VA

LOCATION.--Lat 36°38'45", long 80°55'10", Galax City, Hydrologic Unit 05050001, on right bank 200 ft upstream from bridge on State Highway 89 and 1.7 mi downstream from Wards Mill Branch.

DRAINAGE AREA.--39.4 mi².

PERIOD OF RECORD.--September 1944 to current year.

REVISED RECORDS.--WSP 1385: 1953.

GAGE.--Water-stage recorder. Concrete control since Aug. 30, 1979. Datum of gage is 2,344.17 ft above National Geodetic Vertical Datum 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 those for periods with ice effect, Jan. 6-16 and Jan. 27 to Feb. 1, 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.

AVERAGE DISCHARGE.--44 years, 66.6 ft³/s, 22.96 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,980 ft³/s, Oct. 17, 1947, gage height, 14.4 ft, from flood-mark, site and datum then in use, from rating curve extended above 2,200 ft³/s on basis of two slope-area and one contracted-opening measurements at gage heights 9.5 ft, 14.4 ft, and 17.4 ft, respectively, site and datum then in use; minimum, 12 ft³/s, part or all of each day Aug. 25-30, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 14, 1940, reached a stage of 17.4 ft, at site and datum used 1944-53, discharge, 11,000 ft³/s, by contracted-opening measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 850 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 29	0530	*846	*3.22		No peak equal to or greater than base discharge.		

Minimum discharge, 16 ft³/s, part or all of each day July 7-11, 16-18, Aug. 28; minimum gage height, 1.22 ft, July 8, 9, 11, 17, 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	35	76	62	e42	39	36	34	26	21	22	24
2	37	34	63	57	53	39	37	34	25	19	21	22
3	36	34	57	55	66	40	36	34	28	18	21	21
4	35	34	70	58	133	41	135	38	28	19	25	53
5	36	34	55	52	84	40	61	39	26	19	28	47
6	37	33	51	e40	63	38	52	38	25	18	22	30
7	40	33	50	e32	74	38	55	35	24	17	22	28
8	37	33	48	e28	60	37	47	33	23	16	21	25
9	35	33	47	e27	54	45	43	33	39	17	19	26
10	36	121	60	e26	52	48	41	39	39	17	19	33
11	36	59	70	e25	50	42	40	44	28	17	83	26
12	46	45	54	e30	50	39	44	34	26	26	64	24
13	40	42	49	e34	48	39	46	32	25	23	28	23
14	37	39	48	e30	68	37	40	31	24	22	24	21
15	37	37	78	e29	49	36	39	33	24	19	22	20
16	36	37	63	e27	51	36	37	41	25	17	23	20
17	35	86	52	49	46	36	36	44	28	17	21	54
18	35	75	52	80	45	37	40	81	29	34	20	42
19	35	51	49	89	48	37	80	48	29	41	18	32
20	35	46	49	183	50	35	56	52	25	32	24	32
21	35	41	48	104	45	35	46	41	24	42	31	26
22	34	39	47	71	42	34	43	37	22	49	22	23
23	35	39	45	61	44	34	41	34	22	31	21	22
24	35	38	44	56	42	35	51	33	22	28	22	38
25	35	38	67	58	40	35	42	32	25	23	19	41
26	35	38	55	53	41	41	39	30	22	28	18	28
27	45	53	72	e46	41	47	38	30	21	54	17	25
28	47	102	117	e44	40	37	36	29	20	50	20	22
29	37	426	91	e42	39	35	36	28	20	30	60	21
30	36	110	68	e41	---	35	34	27	20	25	28	22
31	35	---	65	e40	---	35	---	27	---	24	28	---
TOTAL	1148	1865	1860	1629	1560	1182	1407	1145	764	813	833	871
MEAN	37.0	62.2	60.0	52.5	53.8	38.1	46.9	36.9	25.5	26.2	26.9	29.0
MAX	47	426	117	183	133	48	135	81	39	54	83	54
MIN	34	33	44	25	39	34	34	27	20	16	17	20
CFSM	.94	1.58	1.52	1.33	1.37	.97	1.19	.94	.65	.67	.68	.74
IN.	1.08	1.76	1.76	1.54	1.47	1.12	1.33	1.08	.72	.77	.79	.82

CAL YR 1987 TOTAL 28935 MEAN 79.3 MAX 1280 MIN 25 CFSM 2.01 IN. 27.32
WTR YR 1988 TOTAL 15077 MEAN 41.2 MAX 426 MIN 16 CFSM 1.05 IN. 14.24

e Estimated.

03166800 GLADE CREEK AT GRAHAMS FORGE, VA

LOCATION.--Lat 36°55'51", long 80°54'02", Wythe County, Hydrologic Unit 05050001, on left bank 30 ft downstream from bridge on State Highway 629, 1.0 mi southwest of Grahams Forge, and at mile 0.4.

DRAINAGE AREA.--7.15 mi².

PERIOD OF RECORD.--May 1976 to current year.

GAGE.--Water-stage recorder. Concrete control since June 1, 1979. Elevation of gage is 1,972 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except those for periods of doubtful or no gage-height record, Oct. 16-25, Nov. 4-8, 14, 15, 20-24, and Dec. 22, 23, and periods with ice effect, Jan. 6-14, 16, which are poor. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--12 years, 1.04 ft³/s, 1.98 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,350 ft³/s, July 5, 1984, gage height, 5.37 ft, from rating curve extended above 30 ft³/s on basis of slope-area measurement at gage height 5.11 ft; minimum, 0.01 ft³/s, July 8, 9, 1988, result of temporary pumpage; minimum daily, 0.01 ft³/s, July 8, 1988; minimum gage height, 1.36 ft, Sept. 7, 1976, Sept. 11, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Sept. 24	1615	*5.8	*1.90	No peak equal to or greater than base discharge.			

Minimum discharge, 0.01 ft³/s, July 8, 9, gage height, 1.37 ft, result of temporary pumpage; minimum daily, 0.01 ft³/s, July 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.21	.36	.48	.32	.21	.11	.08	.08	.06	.03	.02	.04
2	.16	.35	.40	.26	.22	.10	.08	.08	.06	.03	.03	.04
3	.15	.32	.36	.24	.25	.11	.08	.08	.11	.03	.03	.04
4	.13	e.28	.38	.24	2.0	.13	.33	.10	.07	.03	.03	.11
5	.12	e.25	.32	.19	1.1	.13	.15	.12	.06	.03	.02	.05
6	.13	e.22	.32	e.16	.69	.12	.16	.12	.05	.03	.22	.04
7	.15	e.21	.32	e.14	.53	.11	.15	.10	.05	.02	.06	.03
8	.15	e.20	.32	e.13	.48	.09	.14	.09	.05	.01	.04	.03
9	.14	.32	.25	e.12	.38	.10	.12	.08	.17	.02	.04	.03
10	.12	.70	.19	e.11	.34	.11	.12	.09	.05	.02	.04	.03
11	.12	.42	.19	e.11	.32	.10	.12	.08	.04	.02	.09	.03
12	.38	.34	.17	e.13	.29	.10	.16	.07	.03	.04	.06	.03
13	.17	.32	.15	e.14	.24	.11	.15	.08	.02	.04	.04	.03
14	.14	e.29	.15	e.13	.18	.10	.13	.08	.02	.03	.04	.03
15	.12	e.25	.23	.12	.21	.10	.11	.08	.02	.02	.08	.03
16	e.11	.31	.19	e.14	.21	.09	.10	.13	.03	.02	.05	.03
17	e.10	.75	.17	.17	.18	.08	.10	.12	.05	.02	.03	.52
18	e.10	.51	.18	.53	.18	.08	.14	.24	.07	.02	.04	.06
19	e.09	.41	.18	.59	.18	.10	.22	.10	.05	.03	.04	.05
20	e.09	e.28	.16	1.6	.18	.09	.12	.10	.05	.03	.05	.04
21	e.08	e.22	.15	.96	.15	.08	.12	.10	.04	.09	.04	.04
22	e.08	e.17	e.14	.69	.14	.08	.10	.10	.02	.05	.04	.04
23	e.08	e.15	e.13	.55	.15	.08	.12	.08	.02	.03	.03	.03
24	e.07	e.14	.15	.43	.15	.08	.17	.13	.03	.03	.03	.50
25	e.07	.12	.84	.43	.13	.08	.12	.15	.03	.04	.03	.05
26	.12	.12	.46	.37	.12	.13	.10	.09	.03	.12	.03	.03
27	.15	.16	.49	.28	.12	.10	.10	.08	.02	.05	.03	.03
28	.17	.24	.74	.24	.12	.08	.10	.08	.02	.12	.03	.03
29	.15	1.4	.58	.22	.12	.08	.09	.08	.02	.06	.04	.02
30	.15	.60	.43	.21	---	.08	.08	.08	.03	.03	.04	.02
31	.22	---	.37	.21	---	.08	---	.08	---	.03	.04	---
TOTAL	4.22	10.41	9.59	10.16	9.57	3.01	3.86	3.07	1.37	1.17	1.43	2.08
MEAN	.14	.35	.31	.33	.33	.097	.13	.099	.046	.038	.046	.069
MAX	.38	1.4	.84	1.6	2.0	.13	.33	.24	.17	.12	.22	.52
MIN	.07	.12	.13	.11	.12	.08	.08	.07	.02	.01	.02	.02
CFSM	.02	.05	.04	.05	.05	.01	.02	.01	.01	.01	.01	.01
IN.	.02	.05	.05	.05	.05	.02	.02	.02	.01	.01	.01	.01

CAL YR 1987 TOTAL 579.49 MEAN 1.59 MAX 87 MIN .07 CFSM .22 IN. 3.01
WTR YR 1988 TOTAL 59.94 MEAN .16 MAX 2.0 MIN .01 CFSM .02 IN. .31

e Estimated.

03167000 REED CREEK AT GRAHAMS FORGE, VA

LOCATION.--Lat 36°56'22", long 80°53'13", Wythe County, Hydrologic Unit 05050001, on left bank 20 ft downstream from bridge on State Highway 619 at Grahams Forge, 2.2 mi downstream from Glade Creek, and at mile 7.3.

DRAINAGE AREA.--247 mi².

PERIOD OF RECORD.--July 1908 to September 1916, January 1927 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 1235: 1912-13, 1915-16. WSP 1275: 1911, 1927-28(M), 1930-34(M). WSP 1705: 1913(M), 1916(M), 1957 calendar year runoff. WSP 1725: 1915 calendar year runoff.

GAGE.--Water-stage recorder. Datum of gage is 1,924.65 ft above National Geodetic Vertical Datum 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 period of doubtful or no gage-height record, Dec. 9 to Jan. 15, and period with ice effect, Jan. 16, which are fair. Occasional diurnal fluctuation at low flow caused by mills 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.

AVERAGE DISCHARGE.--69 years, 267 ft³/s, 14.68 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,500 ft³/s, July 16, 1916, gage height, 11.4 ft, present datum, from floodmarks, from rating curve extended above 7,600 ft³/s on basis of velocity-area study and slope-area measurement at gage heights 11.4 ft and 10.01 ft, respectively; minimum observed, about 5 ft³/s, Dec. 22, 1909, gage height, 0.49 ft, present datum, result of freezeup; minimum daily, 22 ft³/s, Jan. 30, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,300 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Feb. 4	2330	*1,710	*3.58	No peak equal to or greater than base discharge.			

Minimum discharge, 38 ft³/s, Aug. 28, gage height, 1.23 ft; minimum daily, 43 ft³/s, Aug. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	89	78	161	e180	163	124	129	134	86	61	62	59
2	84	77	133	e170	160	122	129	128	88	59	63	53
3	80	81	119	e160	182	121	131	123	85	58	62	54
4	79	72	116	e150	613	124	190	126	82	60	56	70
5	79	76	112	e140	1150	124	404	129	81	60	54	101
6	79	74	107	e120	557	122	325	129	76	61	59	74
7	85	74	103	e110	373	118	292	124	74	63	76	62
8	79	73	100	e100	343	115	280	119	73	57	61	59
9	78	75	e95	e95	284	117	266	118	93	60	56	58
10	77	100	e110	e90	255	117	238	122	103	56	60	53
11	75	161	e180	e85	233	114	213	130	88	52	64	54
12	91	126	e160	e90	219	113	198	128	80	60	100	53
13	99	99	e130	e110	195	127	206	126	79	73	79	58
14	89	91	e110	e105	168	126	189	122	69	65	67	48
15	83	86	e120	e100	197	120	175	121	70	65	59	49
16	79	82	e160	e95	181	117	166	128	70	62	133	51
17	80	94	e140	109	167	118	157	144	72	57	77	76
18	77	194	e110	186	159	117	171	535	105	56	65	144
19	77	181	e130	410	156	116	248	509	82	60	50	101
20	79	128	e120	1050	154	112	251	324	74	63	59	77
21	75	108	e110	926	148	110	233	250	77	70	62	69
22	75	96	e105	505	141	107	215	208	70	82	57	62
23	77	92	e100	365	139	106	208	177	68	70	55	60
24	76	90	e95	295	143	105	207	161	66	59	55	80
25	77	86	e200	263	139	104	192	159	72	62	49	93
26	77	84	e280	237	131	108	188	141	62	72	53	72
27	83	84	e230	189	129	164	176	126	65	94	50	66
28	79	91	e300	185	130	144	162	115	65	178	43	64
29	81	195	e350	182	128	132	151	109	65	90	60	60
30	79	210	e250	173	---	126	142	106	62	73	61	61
31	78	---	e200	165	---	126	---	93	---	65	66	---
TOTAL	2495	3158	4736	7140	7137	3716	6232	5164	2302	2123	1973	2041
MEAN	80.5	105	153	230	246	120	208	167	76.7	68.5	63.6	68.0
MAX	99	210	350	1050	1150	164	404	535	105	178	133	144
MIN	75	72	95	85	128	104	129	93	62	52	43	48
CFSM	.33	.43	.62	.93	1.00	.49	.84	.67	.31	.28	.26	.28
IN.	.38	.48	.71	1.08	1.07	.56	.94	.78	.35	.32	.30	.31

CAL YR 1987 TOTAL 136888 MEAN 375 MAX 4520 MIN 69 CFSM 1.52 IN. 20.62
WTR YR 1988 TOTAL 48217 MEAN 132 MAX 1150 MIN 43 CFSM .53 IN. 7.26

e Estimated.

03167500 BIG REED ISLAND CREEK NEAR ALLISONIA, VA

LOCATION.--Lat 36°53'20", long 80°43'40", Pulaski County, Hydrologic Unit 05050001, on left bank 700 ft downstream from bridge on State Highway 693, 3.5 mi southeast of Allisonia, 4 mi upstream from Little Reed Island Creek, and at mile 4.5.

DRAINAGE AREA.--278 mi².

PERIOD OF RECORD.--August 1908 to September 1916, April 1939 to current year.

REVISED RECORDS.--WSP 1033: 1939(P), 1940, 1941-43(P). WSP 1305: 1912(M). WSP 1625: 1940, 1945(M), 1947, 1951, 1952(M).

GAGE.--Water-stage recorder. Datum of gage is 1,902.74 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 30, 1916, nonrecording gage at site 4 mi downstream at different datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 7-18 and Jan. 28 to Feb. 2, 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.

AVERAGE DISCHARGE.--57 years, 396 ft³/s, 19.34 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,500 ft³/s, Sept. 30, 1959, gage height, 12.54 ft, from rating curve extended above 6,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 57 ft³/s, Jan. 28, 1986, gage height, 1.58 ft, result of freezeup; minimum daily, 75 ft³/s, Jan. 5, 1981, Jan. 28, 1986.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	1600	*3,480	*5.89	No peak equal to or greater than base discharge.			

Minimum discharge, 85 ft³/s, Aug. 28, gage height, 1.77 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	242	189	407	371	e190	222	199	213	145	110	124	134
2	206	186	328	338	e200	216	201	208	140	107	114	114
3	194	185	288	306	410	219	199	203	145	100	106	105
4	190	183	292	310	804	233	513	215	179	98	126	303
5	189	182	277	259	771	253	520	231	154	100	242	659
6	191	176	251	151	489	226	338	247	142	98	155	272
7	218	172	241	e140	363	212	539	234	150	93	279	187
8	208	175	237	e130	414	208	427	208	124	89	173	156
9	193	175	232	e120	385	214	336	199	143	87	131	143
10	190	438	254	e115	342	264	292	205	326	89	133	177
11	190	636	426	e110	304	252	269	316	183	113	232	167
12	268	325	344	e130	297	223	263	242	151	218	185	140
13	279	279	280	e150	219	223	322	208	140	346	170	130
14	215	257	252	e140	245	216	300	198	132	169	135	124
15	201	235	292	e130	342	202	266	204	125	133	119	117
16	197	220	367	e120	363	187	246	391	126	113	119	111
17	194	244	279	e170	296	203	234	306	141	103	108	172
18	191	330	250	e350	276	206	238	347	135	97	100	391
19	189	261	280	689	275	218	427	293	329	130	94	224
20	188	234	254	1080	301	212	578	295	245	153	111	178
21	190	236	242	792	279	203	386	269	180	167	146	164
22	185	195	236	502	238	201	321	254	145	554	120	143
23	182	208	228	404	264	195	294	225	130	240	105	128
24	185	197	217	350	256	189	314	210	129	267	107	131
25	185	194	620	341	237	190	291	214	140	186	106	193
26	185	194	611	329	218	205	259	189	134	479	95	157
27	198	206	489	224	239	316	247	174	127	198	89	135
28	296	335	690	e220	238	240	233	169	120	196	88	125
29	227	920	754	e210	224	210	225	165	110	149	162	120
30	201	645	510	e200	---	200	217	158	108	138	237	118
31	193	---	411	e190	---	199	---	151	---	134	164	---
TOTAL	6360	8412	10839	9071	9479	6757	9494	7141	4678	5254	4375	5418
MEAN	205	280	350	293	327	218	316	230	156	169	141	181
MAX	296	920	754	1080	804	316	578	391	329	554	279	659
MIN	182	172	217	110	190	187	199	151	108	87	88	105
CFSM	.74	1.01	1.26	1.05	1.18	.78	1.14	.83	.56	.61	.51	.65
IN.	.85	1.13	1.45	1.21	1.27	.90	1.27	.96	.63	.70	.59	.72

CAL YR 1987 TOTAL 173908 MEAN 476 MAX 7180 MIN 136 CFSM 1.71 IN. 23.27
WTR YR 1988 TOTAL 87278 MEAN 238 MAX 1080 MIN 87 CFSM .86 IN. 11.68

e Estimated.

03168000 NEW RIVER AT ALLISONIA, VA

LOCATION.--Lat 36°56'15", long 80°44'45", Pulaski County, Hydrologic Unit 05050001, on left bank on State Highway 653, 0.2 mi downstream from Big Reed Island Creek, and 0.5 mi upstream from Allisonia.

DRAINAGE AREA.--2,202 mi².

PERIOD OF RECORD.--September 1929 to current year.

REVISED RECORDS.--WSP 783: Drainage area. WSP 823: 1936. WSP 1305: 1933(M).

GAGE.--Water-stage recorder. Datum of gage is 1,848.36 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 7-16 and Jan. 28 to Feb. 2, which are fair. Large diurnal fluctuation and some regulation by powerplant 25 mi upstream from station. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--59 years, 3,180 ft³/s, 19.61 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 185,000 ft³/s, Aug. 14, 1940, gage height, 23.42 ft, from rating curve extended above 52,000 ft³/s on basis of flood records for other stations on New River; minimum, 412 ft³/s, Sept. 7, 1930, gage height, 0.47 ft; minimum daily, 453 ft³/s, Sept. 6, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 17,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 21	0430	*10,700	*4.22		No peak equal to or greater than base discharge.		

Minimum discharge, 508 ft³/s, Aug. 28, gage height, 0.75 ft; minimum daily, 566 ft³/s, July 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1110	1220	3810	2660	e1600	1630	1290	1660	1170	663	928	1210
2	1390	1200	2460	2640	e1700	1560	1310	1990	1060	672	857	952
3	974	1130	2140	2440	2200	1550	1430	1720	1250	729	677	838
4	1120	990	1930	2560	4380	1400	2300	1670	919	670	749	972
5	1370	1180	1800	1990	8390	1480	3190	1480	899	735	923	1780
6	993	1220	1920	1340	6650	1550	3570	1880	1340	694	872	1800
7	1250	918	1740	e1200	3820	1760	2710	1430	1120	657	903	1670
8	1350	1060	1850	e1100	3700	1490	2590	1720	935	566	887	1240
9	1140	1170	1720	e1000	3090	1500	2260	1840	1000	626	916	1030
10	1070	1400	1700	e980	2990	1580	2550	1560	1570	601	771	1120
11	1110	2850	1960	e950	2570	1660	2590	1750	1250	623	844	999
12	1520	2310	1780	e1100	2300	1520	2210	1750	1310	1120	937	1010
13	1440	1650	2060	e1300	1860	1690	2350	1770	1410	1130	1020	974
14	1670	1300	1850	e1200	1730	1860	2320	1290	1140	911	1130	655
15	1010	1370	2150	e1100	2180	1770	2250	1590	817	885	1170	1130
16	1260	1480	2270	e1000	2580	1540	1860	2480	698	888	935	766
17	1070	1440	2320	1560	2170	1390	1950	1850	935	712	884	963
18	1220	3140	2210	2250	2050	1560	2060	2590	967	751	742	1760
19	1230	4450	1480	3550	1850	1320	2360	3000	1310	781	670	2580
20	1200	2330	1950	6060	1750	1550	3360	2340	1500	815	679	1900
21	1120	1680	2070	8300	1940	1760	3110	1870	1480	1050	702	1430
22	1110	1670	1680	5890	1920	1380	2730	1800	1240	1870	726	1260
23	1140	1730	1600	4020	1740	1430	2270	1990	1040	1580	753	1040
24	900	1300	1510	3210	1890	1370	2330	1530	924	1460	879	989
25	1130	1470	2390	3080	1760	1400	2810	1580	846	1270	742	1330
26	1220	1190	3650	2420	1560	1250	2780	1580	771	1700	765	1240
27	1190	1800	3270	1840	1350	1770	2230	1650	858	1220	646	1040
28	1400	1710	4190	e1800	1620	1840	2280	1130	886	1550	599	873
29	1270	4540	5200	e1700	1820	1600	1950	1240	714	1300	740	930
30	1280	5550	4450	e1650	---	1610	1520	1190	663	1130	1050	689
31	1090	---	3280	e1600	---	1400	---	1600	---	1170	1240	---
TOTAL	37347	56448	74390	73490	75160	48170	70520	54520	32022	30529	26336	36170
MEAN	1205	1882	2400	2371	2592	1554	2351	1759	1067	985	850	1206
MAX	1670	5550	5200	8300	8390	1860	3570	3000	1570	1870	1240	2580
MIN	900	918	1480	950	1350	1250	1290	1130	663	566	599	655
CFSM	.55	.85	1.09	1.08	1.18	.71	1.07	.80	.48	.45	.39	.55
IN.	.63	.95	1.26	1.24	1.27	.81	1.19	.92	.54	.52	.44	.61

CAL YR 1987 TOTAL 1406671 MEAN 3854 MAX 40300 MIN 830 CFSM 1.75 IN. 23.76
WTR YR 1988 TOTAL 615102 MEAN 1681 MAX 8390 MIN 566 CFSM .76 IN. 10.39

e Estimated.

03169000 CLAYTOR RESERVOIR NEAR RADFORD, VA

LOCATION.--Lat 37°04'28", long 80°35'05", Pulaski County, Hydrologic Unit 05050001, at Claytor Dam on New River, 0.5 mi upstream from Little River, and 5.5 mi upstream from Radford.

DRAINAGE AREA.--2,382 mi².

PERIOD OF RECORD.--May 1939 to current year (monthly figures only).

REVISED RECORDS.--WSP 2108: 1961-65 monthend contents and change in contents.

GAGE.--Water-stage recorder. Datum of gage is approximately National Geodetic Vertical Datum 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 Appalachian Power Company.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,845.33	222,600	-
Oct. 31	1,840.62	202,500	-20,100
Nov. 30	1,844.62	219,600	+17,100
Dec. 31	1,843.30	213,900	-5,700
CAL YR 1987	-	-	-3,500
Jan. 31	1,845.18	222,000	+8,100
Feb. 29	1,844.69	219,900	-2,100
Mar. 31	1,844.66	219,800	-100
Apr. 30	1,844.87	220,700	+900
May 31	1,845.55	223,600	+2,900
June 30	1,845.01	221,300	-2,300
July 31	1,845.78	224,600	+3,300
Aug. 31	1,844.84	220,500	-4,100
Sept. 30	1,844.16	217,600	-2,900
WTR YR 1988	-	-	-5,000

03170000 LITTLE RIVER AT GRAYSONTON, VA

LOCATION.--Lat 37°02'15", long 80°33'25", Pulaski County, Hydrologic Unit 05050001, on left bank at upstream side of bridge on State Highway 693 at Snowville, 0.5 mi southeast of Graysonton, 7 mi south of Radford, and at mile 8.6.

DRAINAGE AREA.--300 mi².

PERIOD OF RECORD.--October 1928 to current year.

REVISED RECORDS.--WSP 823: 1929-36. WSP 1143: 1945. WSP 1305: 1929(M). WSP 1555: Drainage area (at site used 1928-41). WSP 1625: 1951(M). WSP 1725: 1936(M).

GAGE.--Water-stage recorder. Datum of gage is 1,816.04 ft above National Geodetic Vertical Datum 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 those for periods with ice effect, Jan. 6-17 and Jan. 28 to Feb. 2, which are fair. 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.

AVERAGE DISCHARGE.--60 years, 361 ft³/s, 16.34 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,800 ft³/s, June 21, 1972, gage height, 13.40 ft, from rating curve extended above 16,000 ft³/s on basis of slope-area measurements at gage heights 12.76 ft and 13.40 ft; minimum, 21 ft³/s, Feb. 22, 1942, result of freezeup; minimum daily, 50 ft³/s, Sept. 21, 1932.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	2115	*2,850	*3.98	No peak equal to or greater than base discharge.			

Minimum discharge, 80 ft³/s, July 8, 9, Aug. 19, 20, 27, 28, gage height, 0.81 ft, result of temporary pumpage; minimum daily, 82 ft³/s, July 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	290	197	407	360	e180	226	216	215	145	107	127	215
2	223	193	327	336	e200	221	215	211	141	108	116	164
3	207	193	283	304	348	224	212	205	169	99	106	143
4	198	192	274	298	673	234	265	209	239	94	123	184
5	197	191	264	252	806	246	380	229	193	93	218	376
6	198	187	233	e170	485	233	285	251	163	90	195	265
7	210	180	234	e150	313	223	330	248	150	87	172	196
8	214	178	228	e130	379	220	330	224	138	83	160	173
9	200	180	224	e120	348	222	289	204	152	82	122	157
10	194	184	239	e115	364	244	269	208	312	85	108	166
11	196	518	442	e110	317	245	255	263	236	87	104	186
12	246	439	381	e130	306	225	253	245	175	111	122	157
13	333	294	300	e150	237	230	295	211	157	358	141	144
14	246	275	266	e140	210	227	321	201	146	207	117	136
15	217	257	295	e130	353	214	285	195	138	141	99	129
16	210	236	367	e120	326	203	261	221	132	116	115	122
17	206	224	300	e150	288	205	245	216	139	102	132	158
18	202	243	234	424	269	213	251	286	151	100	101	326
19	199	278	264	644	269	217	335	314	193	114	87	260
20	197	250	259	925	285	215	479	270	203	154	170	193
21	196	230	250	906	278	207	364	258	166	130	246	173
22	192	219	245	533	246	202	310	221	146	237	147	155
23	186	203	237	423	253	198	296	223	130	234	115	138
24	186	211	230	366	263	199	327	201	121	177	105	133
25	189	208	337	350	246	200	328	203	120	147	101	134
26	189	205	525	336	227	224	286	189	129	253	95	144
27	191	201	427	212	235	339	266	176	129	278	86	147
28	235	210	523	e205	238	279	247	167	133	380	84	133
29	273	350	695	e200	229	239	232	165	109	247	166	127
30	214	576	489	e190	---	225	223	159	106	157	399	125
31	203	---	396	e180	---	220	---	151	---	141	260	---
TOTAL	6637	7502	10175	9059	9171	7019	8650	6739	4761	4799	4439	5259
MEAN	214	250	328	292	316	226	288	217	159	155	143	175
MAX	333	576	695	925	806	339	479	314	312	380	399	376
MIN	186	178	224	110	180	198	212	151	106	82	84	122
CFSM	.71	.83	1.09	.97	1.05	.75	.96	.72	.53	.52	.48	.58
IN.	.82	.93	1.26	1.12	1.14	.87	1.07	.84	.59	.60	.55	.65

CAL YR 1987 TOTAL 183924 MEAN 504 MAX 6300 MIN 138 CFSM 1.68 IN. 22.81
WTR YR 1988 TOTAL 84210 MEAN 230 MAX 925 MIN 82 CFSM .77 IN. 10.44

e Estimated.

03171000 NEW RIVER AT RADFORD, VA

LOCATION.--Lat 37°08'30", long 80°34'10", Pulaski County, Hydrologic Unit 05050001, on left bank 2,000 ft downstream from bridge on U.S. Highway 11 at Radford, 5 mi downstream from Little River, and 5.5 mi downstream from Claytor Dam.
DRAINAGE AREA.--2,748 mi².
PERIOD OF RECORD.--October 1907 to September 1915, August 1939 to current year. Records for August 1898 to September 1907, published in WSP 27, 36, 48, 65, 83, 98, 128, 169, 205, 243, and 536, are unreliable and should not be used. Gage-height records collected at same site since 1895 are contained in reports of the National Weather Service.
REVISED RECORDS.--WSP 873: Drainage area. WSP 953: 1940-41. WSP 1305: 1908-12. See also PERIOD OF RECORD.
GAGE.--Water-stage recorder. Datum of gage is 1,712.16 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 30, 1939, nonrecording gage at highway bridge 2,000 ft upstream at datum 0.85 ft lower.
REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1939 by Claytor Reservoir (station 03169000). Some additional regulation at low flow by dam and powerplant on Little River. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.
AVERAGE DISCHARGE.--57 years, 3,835 ft³/s, 18.95 in/yr, unadjusted.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 218,000 ft³/s, Aug. 14, 1940, gage height, 35.96 ft, from rating curve extended above 76,000 ft³/s on basis of records for other stations on New River and flow over Claytor Dam, computed by Appalachian Power Company; minimum, 165 ft³/s, Aug. 25, 27, 1944, gage height, 1.08 ft; minimum daily, 550 ft³/s, Aug. 22, 1911.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 16, 1916, reached a stage of 35.7 ft, discharge, 200,000 ft³/s, at site and datum used by Geological Survey 1907-15, from reports of the National Weather Service.
EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,200 ft³/s, Nov. 17, gage height, 4.48 ft; minimum, 502 ft³/s, July 21, gage height, 1.50 ft; minimum daily, 754 ft³/s, July 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1740	1160	6050	1310	3900	3150	2740	1150	1520	912	1110	1040
2	1720	1110	4680	1270	5630	1850	1280	1970	1990	846	1090	1080
3	1160	1200	2610	1450	3770	2640	1110	2190	1750	759	1040	1010
4	1140	1120	2420	4330	4850	2090	2770	2220	1180	818	879	1040
5	1180	1280	1230	4120	8650	1190	4200	2260	1070	915	987	1210
6	1340	1130	1170	2780	7780	1180	5500	2030	1260	767	1070	1200
7	1570	1100	2570	2210	3600	1890	4790	2950	1280	792	995	2620
8	1350	1100	2050	1570	4190	2230	4150	975	1600	809	1200	2640
9	2370	1090	2670	1210	4450	2540	1280	2210	1220	852	1510	2560
10	1150	1250	2260	1210	4510	2570	1210	2160	1270	754	1460	1160
11	1130	1510	3230	1330	3710	2300	3580	2240	1170	858	1650	1020
12	5000	1370	1370	3310	4060	1240	4070	2090	1120	856	1610	1260
13	4010	1270	1270	2600	2820	1140	3930	2100	2590	1160	1010	1150
14	3350	1180	2600	2880	1110	2340	1810	1070	1190	1060	1020	1200
15	4010	1180	5130	1790	2450	2830	2260	1200	1140	1010	1180	1040
16	3020	1910	4250	1120	3930	2710	1180	3690	992	1050	1110	1080
17	1570	5010	3380	1510	3980	1990	1130	3110	1020	946	1200	1530
18	1540	2460	2610	2990	2410	1860	2560	4420	983	1030	1150	2820
19	1520	3810	1230	5960	2270	1150	4100	4160	1080	1080	1110	1980
20	4170	5230	1240	7590	1170	1140	3910	2580	1680	1070	1050	2500
21	1280	1320	2230	8350	1200	2030	3580	1170	1840	1200	1160	1910
22	1410	1130	2470	8390	2440	1890	5740	1070	2380	3730	1030	1350
23	1190	2540	2330	5930	2450	1850	2620	2420	2110	2330	940	1190
24	1150	2380	2100	4400	2840	1940	1260	1950	993	1620	822	1060
25	1100	3010	2150	3560	2530	2030	3720	2460	1150	1170	984	974
26	1270	1180	5830	3620	1940	1330	3310	2230	991	1910	1010	1450
27	1130	1140	4910	3780	1120	1250	3840	1960	1090	1780	900	1570
28	1610	1180	5690	2050	1180	2070	2820	1030	1050	1740	1020	1420
29	1940	4510	5860	1900	2600	2500	2170	1050	897	1620	918	1070
30	1830	7730	6040	1190	---	2730	1170	1040	880	988	1300	1060
31	1160	---	4490	1660	---	2840	---	2200	---	1010	1110	---
TOTAL	59110	62590	98120	97370	97540	62490	87790	65355	40486	37442	34625	44194
MEAN	1907	2086	3165	3141	3363	2016	2926	2108	1350	1208	1117	1473
MAX	5000	7730	6050	8390	8650	3150	5740	4420	2590	3730	1650	2820
MIN	1100	1090	1170	1120	1110	1140	1110	975	880	754	822	974
(*)	-327	+287	-93	+132	-37	-2	+15	+47	-39	+54	-67	-49
MEAN‡	1580	2373	3072	3273	3326	2014	2941	2155	1311	1262	1050	1424
CFSM‡	.57	.86	1.12	1.19	1.21	.73	1.07	.78	.48	.46	.38	.52
IN.‡	.66	.96	1.29	1.37	1.31	.85	1.19	.90	.53	.53	.44	.58

CAL YR 1987 TOTAL 1761490 MEAN 4826 MAX 47900 MIN 1070 MEAN‡ 4821 CFSM‡ 1.75 IN.‡ 23.82
WTR YR 1988 TOTAL 787112 MEAN 2151 MAX 8650 MIN 754 MEAN‡ 2144 CFSM‡ .78 IN.‡ 10.62

* Change in contents, equivalent in cubic feet per second, in Claytor Reservoir; provided by Appalachian Power Company.
‡ Adjusted for change in contents.

03173000 WALKER CREEK AT BANE, VA

LOCATION.--Lat 37°16'05", long 80°42'35", Giles County, Hydrologic Unit 05050002, on left bank at Bane, 0.2 mi downstream from bridge on State Highway 100, 0.2 mi downstream from Sugar Run, and at mile 7.9.

DRAINAGE AREA.--305 mi².

PERIOD OF RECORD.--March 1938 to current year.

REVISED RECORDS.--WSP 1143: 1939(M), 1940, 1944, 1946. WSP 1305: 1938(M).

GAGE.--Water-stage recorder. Datum of gage is 1,665.92 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 1, 1938, nonrecording gage at same site and datum.

REMARKS.--Records good except for period with ice effect, Jan. 6-12, which is fair. 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.

AVERAGE DISCHARGE.--50 years, 322 ft³/s, 14.34 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,900 ft³/s, Apr. 5, 1977, gage height, 16.69 ft, from rating curve extended above 7,200 ft³/s on basis of slope-area measurement at gage height 16.50 ft; minimum, 15 ft³/s, Dec. 21, 1958, gage height, 2.42 ft, result of freezeup; minimum daily, 24 ft³/s, Sept. 27, 28, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in September 1878 reached a stage of about 23.5 ft.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	1730	*2,130	*7.42	No peak equal to or greater than base discharge.			

Minimum discharge, 25 ft³/s, Aug. 22; minimum gage height, 2.65 ft, July 8, 9, Aug. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	46	179	273	160	108	98	194	92	41	39	43
2	44	46	132	240	159	104	102	174	86	40	35	36
3	46	45	109	215	182	102	104	157	88	39	34	32
4	44	45	99	198	446	104	182	149	86	37	33	41
5	43	44	95	160	967	108	453	155	86	37	35	50
6	44	42	89	e110	654	113	396	171	77	36	33	70
7	46	41	84	e105	441	107	395	215	70	35	38	57
8	44	41	80	e100	411	103	443	213	65	32	33	45
9	44	41	75	e94	325	102	431	198	64	32	33	39
10	45	63	74	e90	281	103	376	191	69	34	33	37
11	44	135	80	e88	246	104	323	183	78	35	34	36
12	47	123	91	e85	225	101	288	167	70	37	50	35
13	48	82	91	107	195	108	289	151	63	41	48	35
14	49	65	86	105	150	128	264	140	59	40	35	32
15	48	58	94	93	201	132	245	134	55	40	30	30
16	46	55	146	89	178	129	230	137	53	40	34	28
17	45	60	144	90	162	126	212	138	51	37	34	50
18	44	151	123	138	146	122	203	649	51	35	30	126
19	44	179	108	448	140	120	228	796	49	42	28	119
20	43	115	101	1410	141	118	254	510	50	51	29	76
21	42	91	93	1260	140	112	258	385	49	43	29	57
22	39	76	87	717	128	106	260	306	47	42	26	47
23	41	67	83	499	124	100	254	253	45	42	27	42
24	41	64	78	387	128	96	384	224	44	47	32	42
25	45	61	115	323	125	93	525	200	43	43	29	78
26	42	60	421	283	113	98	425	183	44	46	32	109
27	45	59	376	208	115	106	352	155	47	57	30	105
28	46	63	511	193	114	106	293	136	46	62	29	73
29	46	183	629	194	112	99	252	123	47	57	34	58
30	46	248	456	180	---	95	218	112	44	50	38	50
31	47	---	335	167	---	94	---	102	---	41	42	---
TOTAL	1382	2449	5264	8649	6909	3347	8737	7001	1818	1291	1046	1678
MEAN	44.6	81.6	170	279	238	108	291	226	60.6	41.6	33.7	55.9
MAX	49	248	629	1410	967	132	525	796	92	62	50	126
MIN	39	41	74	85	112	93	98	102	43	32	26	28
CFSM	.15	.27	.56	.91	.78	.35	.95	.74	.20	.14	.11	.18
IN.	.17	.30	.64	1.05	.84	.41	1.07	.85	.22	.16	.13	.20

CAL YR 1987 TOTAL 150083 MEAN 411 MAX 8270 MIN 39 CFSM 1.35 IN. 18.31
WTR YR 1988 TOTAL 49571 MEAN 135 MAX 1410 MIN 26 CFSM .44 IN. 6.05

e Estimated.

03175500 WOLF CREEK NEAR NARROWS, VA

LOCATION.--Lat 37°18'20", long 80°51'00", Giles County, Hydrologic Unit 05050002, on right bank at downstream side of bridge on State Highway 724, 2.8 mi southwest of Narrows, and at mile 3.5.

DRAINAGE AREA.--223 mi².

PERIOD OF RECORD.--July 1908 to September 1916, March 1938 to 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 above National Geodetic Vertical Datum of 1929. July 22, 1908, to Sept. 30, 1916, and Mar. 31 to Nov. 7, 1938, nonrecording gage at same site and datum.

REMARKS.--Records fair except those for periods of doubtful or no gage-height record, Oct. 1 to Nov. 10, Nov. 13-17, 20-29, and Dec. 1-4, 6-11, 13-15, 17-19, and period with ice effect, Jan. 7-12, which are poor. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--58 years, 297 ft³/s, 18.09 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,900 ft³/s, Jan. 29, 1957, gage height, 12.55 ft, from floodmark in gage well, 13.8 ft, from floodmark at downstream side of bridge, from rating curve extended above 5,700 ft³/s on basis of contracted-opening measurement of peak flow; minimum, 8.8 ft³/s, Dec. 25, 1953, result of freezeup; minimum daily, 16 ft³/s, Sept. 17, 18, 26-28, 1964; minimum gage height, 2.19 ft, Dec. 24, 1943.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,200 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	1515	*1,490	*5.78	No peak equal to or greater than base discharge.			

Minimum discharge, 17 ft³/s, Aug. 5, 6; minimum gage height, 2.50 ft, July 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e34	e36	e65	304	141	95	99	187	78	33	25	36
2	e33	e35	e60	357	147	91	101	167	72	32	21	32
3	e35	e35	e58	329	231	90	103	152	72	30	19	29
4	e34	e34	e70	283	518	92	149	144	74	30	18	41
5	e33	e34	102	216	921	108	295	156	69	29	17	84
6	e34	e33	e75	140	654	117	244	184	64	27	18	66
7	e35	e32	e66	e120	472	112	258	232	58	26	21	50
8	e34	e31	e62	e105	404	109	354	239	54	26	29	42
9	e33	e30	e58	e100	324	107	423	223	54	27	31	37
10	e34	e60	e56	e96	276	110	403	220	68	33	28	34
11	e33	171	e62	e94	236	108	352	212	68	29	25	33
12	e35	135	120	e115	210	101	307	187	58	33	31	31
13	e36	e84	e80	123	166	124	312	169	52	38	24	31
14	e38	e55	e65	111	136	165	268	155	48	46	27	33
15	e36	e45	e75	95	179	162	245	147	44	42	23	31
16	e35	e42	104	92	159	154	224	139	42	36	22	29
17	e34	e44	e85	100	141	144	206	212	40	35	22	52
18	e33	275	e70	165	131	136	197	310	39	37	23	142
19	e33	189	e80	619	125	134	261	338	38	47	21	84
20	e32	e100	97	1230	129	129	279	277	38	32	28	59
21	e31	e75	91	1020	125	117	279	237	37	30	42	48
22	e30	e60	88	668	107	110	280	202	36	34	35	41
23	e31	e54	86	491	114	103	273	173	43	35	31	36
24	e32	e50	84	381	118	98	461	160	43	34	32	38
25	e35	e48	156	316	109	95	473	157	43	32	31	59
26	e32	e46	610	268	98	98	405	148	45	31	29	114
27	e34	e45	498	197	104	105	344	127	54	33	26	77
28	e35	e50	576	172	101	100	287	113	46	35	25	59
29	e35	e80	619	158	98	93	247	102	39	31	28	49
30	e36	121	468	157	---	90	213	93	36	24	36	43
31	e36	---	353	145	---	92	---	86	---	33	42	---
TOTAL	1051	2129	5139	8767	6674	3489	8342	5648	1552	1020	830	1540
MEAN	33.9	71.0	166	283	230	113	278	182	51.7	32.9	26.8	51.3
MAX	38	275	619	1230	921	165	473	338	78	47	42	142
MIN	30	30	56	92	98	90	99	86	36	24	17	29
CFSM	.15	.32	.74	1.27	1.03	.50	1.25	.82	.23	.15	.12	.23
IN.	.18	.36	.86	1.46	1.11	.58	1.39	.94	.26	.17	.14	.26

CAL YR 1987 TOTAL 134291 MEAN 368 MAX 7910 MIN 26 CFSM 1.65 IN. 22.40
WTR YR 1988 TOTAL 46181 MEAN 126 MAX 1230 MIN 17 CFSM .57 IN. 7.70

e Estimated.

03176500 NEW RIVER AT GLEN LYN, VA
(National stream-quality accounting network station)

LOCATION.--Lat 37°22'22", long 80°51'39", Giles County, Hydrologic Unit 05050002, on right bank 90 ft upstream from bridge on U.S. Highway 460 at Glen Lyn, 0.3 mi upstream from East River, and 6.3 mi downstream from Wolf Creek.

DRAINAGE AREA.--3,768 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1927 to current year.

REVISED RECORDS.--WSP 758: Drainage area. WSP 1305: 1928(M), 1930(M).

GAGE.--Water-stage recorder. Datum of gage is 1,490.11 ft above National Geodetic Vertical Datum 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.--No estimated daily discharges. Records good. Flow regulated since 1939 by Claytor Reservoir (station 03169000) 55 mi upstream from station. U.S. Army Corps of Engineers satellite gage-height telemeter at station.

AVERAGE DISCHARGE.--61 years, 4,965 ft³/s, 17.89 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 226,000 ft³/s, Aug. 14, 1940, gage height, 27.50 ft, from rating curve extended above 89,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 697 ft³/s, July 5, 1988; minimum daily, 787 ft³/s, July 8, 1988; minimum gage height, 2.10 ft, Sept. 8, 1930.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,900 ft³/s, Jan. 20, gage height, 6.47 ft; minimum, 697 ft³/s, July 5, gage height, 2.20 ft; minimum daily, 787 ft³/s, July 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1340	1400	6920	5100	2280	2870	3190	2050	2580	1210	1060	1560
2	1760	1370	5750	2360	4360	3370	3210	1980	1980	1160	1220	1480
3	1850	1350	4840	2200	6180	2310	1810	2750	2580	1110	1180	1490
4	1260	1400	2930	2970	4910	2900	1740	2900	2400	1010	1130	1540
5	1220	1350	2700	4000	10000	2570	3800	2960	1620	826	1070	1670
6	1300	1390	1550	4340	10200	1690	5030	3370	1420	870	1110	1650
7	1380	1470	1460	3370	7450	1620	6470	3650	1530	901	1380	1620
8	1620	1380	2710	2890	3840	2260	5540	3900	1510	787	1150	2680
9	1530	1310	2300	2150	5090	2530	5170	2150	1920	803	1270	2790
10	2500	1390	2860	1710	5240	2880	2590	3210	1700	858	1630	2760
11	1320	1780	2560	1680	5020	2930	2330	3150	1750	814	1650	1390
12	1380	1870	3540	1730	4430	2710	4470	3090	1650	974	2250	1150
13	4870	1710	1840	3530	4510	1860	5010	2920	1450	1120	1910	1350
14	3990	1580	1590	2890	3270	1670	4470	2880	2870	1370	1210	1210
15	3430	1530	2810	3100	1840	2670	2730	1880	1590	1370	1070	1250
16	3930	1430	5240	2190	3050	3180	3040	2100	1480	1090	1310	1060
17	3130	2190	4390	1540	4350	3060	1990	4190	1330	1120	1250	1230
18	1740	5200	3590	1980	4390	2430	1920	4200	1400	958	1340	2530
19	1760	2980	2900	4280	3010	2350	3560	6410	1330	1290	1480	2670
20	1820	4000	1640	11500	2800	1640	4550	5120	1310	1190	1550	2140
21	4170	5350	1560	10500	1790	1610	4640	3790	1900	1230	1510	2670
22	1570	1640	2410	10500	1770	2380	4520	2320	2090	1340	1300	2030
23	1590	1400	2660	8210	2840	2250	6560	2100	2580	4060	1190	1490
24	1450	2630	2570	6280	2950	2230	4590	3220	2300	2800	1130	1390
25	1410	2640	2570	4900	3160	2340	3560	2870	1460	1890	1020	1660
26	1300	3200	4300	4290	2910	2450	5220	3210	1510	1430	1120	1610
27	1450	1600	6470	4250	2390	1810	4660	2950	1290	2210	1090	1870
28	1360	1480	6740	4260	1580	1720	4860	2660	1290	2050	1130	1850
29	1730	1770	6320	2780	1620	2490	3810	1730	1240	1910	1190	1600
30	2110	6430	7320	2590	---	2770	3070	1660	1170	1880	1430	1240
31	2020	---	6480	1900	---	3060	---	1660	---	1470	1780	---
TOTAL	63290	66220	113520	125970	117230	74610	118110	93030	52230	43101	41110	52630
MEAN	2042	2207	3662	4064	4042	2407	3937	3001	1741	1390	1326	1754
MAX	4870	6430	7320	11500	10200	3370	6560	6410	2870	4060	2250	2790
MIN	1220	1310	1460	1540	1580	1610	1740	1660	1170	787	1020	1060
(*)	-327	+287	-93	+132	-37	-2	+15	+47	-39	+54	-67	-49
MEAN‡	1715	2494	3569	4196	4005	2405	3952	3048	1702	1444	1259	1705
CFSM‡	.46	.66	.95	1.11	1.06	.64	1.05	.81	.45	.38	.33	.45
IN.‡	.52	.74	1.09	1.28	1.15	.74	1.17	.93	.50	.44	.39	.51

CAL YR 1987 TOTAL 2251980 MEAN 6170 MAX 79800 MIN 1210 MEAN‡ 6165 CFSM‡ 1.64 IN.‡ 22.21
WTR YR 1988 TOTAL 961051 MEAN 2626 MAX 11500 MIN 787 MEAN‡ 2619 CFSM‡ .70 IN.‡ 9.46

* Change in contents, equivalent in cubic feet per second, in Claytor Reservoir; provided by Appalachian Power Company.
‡ Adjusted for change in contents.

03176500 NEW RIVER AT GLEN LYN, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1931, 1950, 1952, 1955-56, 1965 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: April 1968 to current year.
WATER TEMPERATURE: October 1964 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum, 350 microsiemens, Nov. 6, 1968; minimum, 70 microsiemens, Mar. 26, 27, 1979.
WATER TEMPERATURE: Maximum, 30.5°C, June 24, 1983; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 245 microsiemens, Sept. 29; minimum daily, 100 microsiemens, Feb. 8.
WATER TEMPERATURE: Maximum daily, 30.0°C, July 17; minimum, 1.0°C, Jan. 14.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
DEC											
02...	1100	6460	138	7.50	6.0	722	3.3	10.4	88	560	530
JAN											
20...	1030	11400	140	7.10	2.5	718	4.4	12.8	100	210	640
MAR											
08...	1045	2520	150	7.60	8.0	730	1.2	11.2	99	K2	K16
MAY											
10...	1100	3370	135	7.60	16.0	722	1.1	8.9	95	57	K7
JUN											
28...	0930	1270	180	7.50	23.5	725	1.1	7.0	87	33	720
AUG											
18...	0900	1240	200	7.50	26.5	724	0.60	6.0	79	18	52

DATE	HARD-NESS TOTAL (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
DEC											
02...	55	13	5.4	5.4	2.1	45	14	5.6	0.10	6.0	83
JAN											
20...	56	14	5.0	5.2	1.8	44	14	7.2	0.10	6.9	88
MAR											
08...	75	19	6.7	4.1	1.6	55	19	6.1	0.10	4.1	103
MAY											
10...	61	15	5.6	3.7	1.3	52	13	4.5	0.10	2.4	79
JUN											
28...	78	16	9.3	4.8	2.2	54	26	4.6	0.30	7.3	105
AUG											
18...	96	22	10	6.2	1.8	64	28	5.6	0.10	7.0	131

03176500 NEW RIVER AT GLEN LYN, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)
DEC 02...	82	<0.010	0.620	0.070	0.070	0.40	0.030	0.020	0.010	<10	<1
JAN 20...	84	0.010	0.790	0.030	0.040	1.1	0.150	0.080	0.050	--	--
MAR 08...	102	0.020	1.90	0.030	0.030	0.40	0.090	0.080	0.030	10	1
MAY 10...	79	<0.010	0.350	0.040	0.060	0.30	0.050	0.040	0.030	<10	1
JUN 28...	107	0.020	0.940	0.030	0.060	0.30	0.120	0.090	0.070	--	--
AUG 18...	128	0.030	1.90	0.020	0.050	0.40	0.120	0.120	0.070	10	1

DATE	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
DEC 02...	21	<0.5	1	<1	<3	9	34	<5	<4	4
JAN 20...	--	--	--	--	--	--	--	--	--	--
MAR 08...	31	<0.5	2	<1	<3	3	25	<5	<4	6
MAY 10...	24	<0.5	<1	<1	<3	3	35	<5	<4	10
JUN 28...	--	--	--	--	--	--	--	--	--	--
AUG 18...	36	<0.5	<1	<1	<3	2	10	<5	<4	11

DATE	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	SEDI-MENT, SUS-PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
DEC 02...	<0.1	<10	5	<1	<1.0	63	<6	19	13	88
JAN 20...	--	--	--	--	--	--	--	--	41	81
MAR 08...	0.1	<10	3	<1	<1.0	82	<6	60	6	--
MAY 10...	<0.1	<10	7	<1	1.0	63	<6	60	5	83
JUN 28...	--	--	--	--	--	--	--	--	2	84
AUG 18...	<0.1	<10	<1	<1	<1.0	110	<6	5	2	90

03176500 NEW RIVER AT GLEN LYN, VA--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS/CM AT 25 DEG. C, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	220	195	130	142	185	198	125	145	190	210	190	---
2	221	210	140	145	180	---	140	160	140	210	200	210
3	210	200	142	150	130	150	150	---	140	210	200	210
4	200	230	145	155	130	150	160	180	160	220	205	210
5	---	237	198	165	125	170	160	160	160	---	205	210
6	---	215	198	138	118	160	150	160	180	230	205	210
7	220	220	192	140	---	170	119	---	180	220	210	220
8	---	220	200	155	100	162	130	160	190	220	200	172
9	225	215	220	160	131	179	125	160	198	---	---	172
10	170	210	180	168	138	170	120	140	174	215	210	190
11	200	215	180	179	121	159	135	160	174	220	185	195
12	200	210	162	190	135	150	160	150	170	230	185	200
13	170	225	172	195	140	154	130	160	---	240	185	---
14	139	225	172	---	129	162	130	---	199	225	185	210
15	150	---	170	150	165	166	---	152	178	220	200	200
16	155	204	139	165	155	---	120	165	185	215	205	220
17	155	200	140	165	168	154	160	130	185	220	210	230
18	---	181	156	180	145	150	160	130	185	200	225	220
19	180	160	160	180	130	150	150	130	190	210	220	---
20	---	180	170	145	168	165	---	142	190	200	---	190
21	---	155	158	120	159	180	140	140	196	200	---	190
22	---	155	180	120	175	175	115	140	185	200	200	180
23	180	170	190	120	190	185	120	144	178	160	209	170
24	210	172	162	125	175	160	130	155	160	160	220	190
25	210	172	160	130	165	140	128	160	---	150	215	190
26	---	168	168	140	165	170	---	140	---	180	220	200
27	---	180	---	146	165	---	120	155	170	180	220	230
28	---	180	130	135	130	170	110	150	180	185	220	235
29	240	179	---	150	179	---	---	160	200	180	222	245
30	220	---	160	155	---	176	130	---	215	180	220	240
31	210	---	135	165	---	165	---	170	---	---	---	---
MEAN	195	196	166	152	150	164	135	152	180	203	206	205

WTR YR 1988 MEAN 175 MAX 245 MIN 100

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.0	14.0	9.5	6.5	6.0	8.0	14.0	13.0	27.0	25.0	26.5	22.0
2	18.0	15.0	9.0	6.0	9.0	5.0	13.0	14.0	28.0	23.5	28.0	25.0
3	18.0	16.0	8.0	5.0	7.0	6.0	14.0	12.5	28.5	23.5	29.0	25.0
4	16.0	16.0	8.0	5.0	7.0	7.5	15.0	17.0	27.5	23.5	29.0	24.0
5	14.5	16.0	6.0	3.0	5.0	9.0	15.0	16.0	26.0	25.5	28.0	23.0
6	15.0	12.0	5.5	2.0	4.0	8.0	15.0	14.5	28.0	25.0	28.0	21.0
7	16.0	11.0	6.0	3.0	---	7.5	11.0	15.0	28.0	27.0	27.0	25.0
8	14.0	11.5	7.0	2.0	5.0	10.0	10.0	16.5	29.0	27.0	27.0	21.0
9	13.0	12.0	8.0	2.0	4.0	12.0	10.5	17.0	29.0	25.5	28.5	21.5
10	9.5	14.0	10.0	2.0	6.0	11.0	12.5	17.0	20.0	27.0	28.5	22.5
11	16.0	11.0	9.0	2.0	6.0	10.0	12.0	18.0	20.0	28.0	28.0	24.0
12	16.0	8.0	9.0	3.0	6.0	10.5	13.0	17.0	20.0	28.0	28.5	24.0
13	14.0	8.0	8.0	4.0	4.5	11.0	11.0	18.5	19.5	26.0	29.5	24.5
14	15.0	7.0	8.0	1.0	3.5	10.0	11.0	18.0	26.0	27.0	29.0	25.0
15	15.0	7.0	8.0	3.0	5.0	7.0	10.0	19.0	29.0	27.5	29.0	22.0
16	15.0	10.0	6.0	4.5	6.0	9.0	12.0	20.0	25.0	28.5	29.0	23.0
17	16.0	13.0	5.0	5.0	5.0	5.0	12.0	14.0	26.0	30.0	28.0	23.0
18	15.5	14.0	5.0	6.0	5.0	6.0	13.0	15.5	26.0	29.0	28.0	22.0
19	16.0	12.0	6.0	6.0	7.0	8.0	13.0	16.5	26.0	28.0	28.0	22.0
20	15.5	11.0	9.0	5.0	7.0	7.0	10.5	17.5	26.0	29.0	29.5	22.5
21	16.0	9.5	10.0	7.0	5.0	8.0	15.5	18.0	27.0	29.0	26.5	23.0
22	13.5	7.0	9.0	7.0	4.0	9.0	16.0	18.5	27.0	28.0	25.0	23.5
23	12.0	7.0	8.0	5.0	6.0	11.0	15.0	21.0	27.0	25.0	26.0	22.0
24	12.5	9.0	8.0	5.0	5.0	13.0	15.0	21.0	27.0	25.0	27.0	22.0
25	14.0	11.0	10.0	6.0	5.0	13.0	14.0	20.0	23.5	25.0	26.5	22.5
26	13.5	11.0	11.0	4.0	5.5	12.5	12.5	19.0	27.5	25.0	26.5	21.0
27	13.0	12.0	10.0	2.0	5.0	11.0	15.0	19.0	25.0	26.0	27.0	20.0
28	11.5	11.0	9.0	2.5	7.0	12.0	14.0	20.0	25.0	26.5	27.0	20.0
29	13.0	11.0	10.0	3.5	6.0	11.0	10.0	21.0	25.5	26.5	26.0	20.5
30	13.0	11.0	10.5	3.5	---	14.0	13.0	23.5	24.0	27.0	25.0	20.0
31	14.0	---	6.0	5.0	---	14.0	---	27.0	---	25.5	22.0	---
MEAN	14.5	11.5	8.0	4.0	5.5	9.5	13.0	18.0	26.0	26.5	27.5	22.5

WTR YR 1988 MEAN 15.5 MAX 30.0 MIN 1.0

03177710 BLUESTONE RIVER AT FALLS MILLS, VA

LOCATION.--Lat 37°16'17", long 81°18'18", Tazewell County, Hydrologic Unit 05050002, on right bank at upstream side of bridge on State Highway 717, 0.3 mi upstream from Brush Fork, and 0.4 mi southeast of Falls Mills.

DRAINAGE AREA.--44.2 mi².

PERIOD OF RECORD.--October 1980 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,310.41 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 6-13, which is fair. Some diurnal fluctuation caused by discharge from sewage treatment plant 2.3 mi upstream. About 65 percent of water discharged from the treatment plant was diverted from another drainage basin for municipal supply. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--8 years, 56.2 ft³/s, 17.27 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,050 ft³/s, May 7, 1984, gage height, 8.37 ft, from rating curve extended above 670 ft³/s; minimum, 1.0 ft³/s, Jan. 18, 1981, gage height, 0.92 ft, result of freezeup; minimum daily, 3.9 ft³/s, Jan. 19, 1981.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 450 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Sept. 17	1330	*296	*3.19		No peak equal to or greater than base discharge.		

Minimum discharge, 4.1 ft³/s, Aug. 28, gage height, 0.93 ft; minimum daily, 6.2 ft³/s, Sept. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	11	15	52	28	19	57	32	15	14	9.4	7.8
2	12	11	14	52	46	19	43	30	15	12	9.5	7.5
3	15	11	13	42	77	20	34	29	20	12	9.9	6.5
4	13	11	19	37	140	23	39	30	14	12	9.5	54
5	12	11	15	32	129	22	32	37	13	11	9.0	24
6	16	10	14	e25	85	20	34	47	12	11	12	19
7	19	11	15	e22	63	20	46	44	11	10	16	14
8	14	10	15	e20	52	19	66	42	9.6	10	11	12
9	14	10	16	e19	45	19	65	40	20	10	9.2	10
10	13	55	16	e18	41	20	58	42	17	9.5	8.1	10
11	11	26	15	e17	37	19	52	37	11	9.2	8.3	8.6
12	18	18	14	e17	35	19	55	32	9.7	13	10	8.8
13	14	15	12	e19	31	35	52	31	9.3	32	11	8.0
14	12	15	12	20	30	26	46	29	9.1	20	7.9	8.7
15	12	13	14	18	31	25	45	27	9.0	14	8.5	6.5
16	12	11	12	20	32	24	43	29	9.2	14	7.6	6.2
17	11	65	11	24	27	23	38	37	9.2	35	7.3	89
18	11	34	11	49	24	22	50	39	8.6	16	6.6	44
19	11	22	11	65	23	22	57	31	8.6	15	7.1	24
20	12	18	12	102	26	21	52	26	9.3	13	33	21
21	18	16	11	73	23	20	52	25	8.4	21	19	17
22	14	14	12	54	22	19	54	24	7.6	20	10	15
23	13	14	12	44	27	18	53	30	7.9	17	11	16
24	13	13	12	39	28	17	65	31	8.6	14	16	59
25	11	13	101	39	23	17	55	39	8.6	12	9.7	97
26	12	13	97	34	21	22	52	26	36	12	7.4	57
27	13	12	70	29	22	19	46	23	26	11	6.6	36
28	12	11	77	25	21	17	44	20	17	11	6.7	28
29	11	20	64	24	20	17	40	19	15	9.0	12	23
30	11	14	45	26	---	17	35	17	15	12	17	21
31	11	---	37	27	---	32	---	16	---	10	11	---
TOTAL	406	528	814	1084	1209	652	1460	961	389.7	441.7	337.3	758.6
MEAN	13.1	17.6	26.3	35.0	41.7	21.0	48.7	31.0	13.0	14.2	10.9	25.3
MAX	19	65	101	102	140	35	66	47	36	35	33	97
MIN	11	10	11	17	20	17	32	16	7.6	9.0	6.6	6.2
(*)	3.06	3.31	3.70	4.19	4.57	3.52	4.23	3.78	3.20	3.05	3.03	3.93

CAL YR 1987 TOTAL 26526.6 MEAN 72.7 MAX 935 MIN 9.8 (*) 4.42
WTR YR 1988 TOTAL 9041.3 MEAN 24.7 MAX 140 MIN 6.2 (*) 3.63

* Discharge from sewage treatment plant, equivalent in cubic feet per second; provided by the Sanitary Board of Bluefield.
e Estimated.

03207800 LEVISA FORK AT BIG ROCK, VA

LOCATION.--Lat 37°21'13", long 82°11'45", Buchanan County, Hydrologic Unit 05070202, on left bank at Big Rock, 2,000 ft downstream from Rocklick Creek, and 2,500 ft downstream from bridge on State Highway 645.

DRAINAGE AREA.--297 mi².

PERIOD OF RECORD.--October 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 866.37 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 6-16, which is fair. U.S. Army Corps of Engineers satellite precipitation and 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.

AVERAGE DISCHARGE.--21 years, 368 ft³/s, 16.83 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 56,000 ft³/s, Apr. 4, 1977, gage height, 27.38 ft, from rating curve extended above 7,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 5.0 ft³/s, Oct. 1, 13, 14, 17, 18, 19, 20, 1969.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 29, 1957, reached a stage of about 23.0 ft, information from local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 25	1900	*2,260	*7.06	No peak equal to or greater than base discharge.			

Minimum discharge, 14 ft³/s, Aug. 19, gage height, 2.85 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	62	30	31	231	96	95	242	176	66	25	26	22
2	43	31	32	380	116	90	246	160	63	24	19	18
3	39	28	32	306	332	88	227	147	66	25	45	17
4	38	28	42	236	628	111	218	175	65	25	44	195
5	36	28	47	165	785	137	194	247	60	24	55	176
6	33	27	43	e100	455	124	198	258	56	20	96	71
7	42	27	41	e90	299	120	365	271	50	18	151	46
8	37	29	41	e82	254	113	895	267	48	18	59	35
9	32	29	41	e75	202	113	750	248	59	18	36	29
10	31	70	42	e70	173	116	574	274	68	25	29	27
11	32	103	41	e67	149	106	469	236	57	22	25	27
12	32	64	40	e64	150	102	398	202	50	23	27	29
13	30	48	40	e74	123	167	377	177	47	43	29	29
14	29	43	39	e72	120	168	316	165	41	50	28	26
15	28	42	41	e68	133	172	289	153	40	36	22	24
16	27	38	41	e66	130	159	262	152	38	27	18	20
17	27	49	38	84	113	143	238	235	36	27	16	308
18	28	61	35	111	110	136	285	184	36	31	16	245
19	29	53	34	220	115	143	498	161	39	47	14	95
20	29	46	37	480	124	136	498	147	66	38	29	61
21	41	44	37	421	113	124	453	134	49	44	117	48
22	36	41	34	296	98	113	404	123	37	55	50	39
23	31	38	33	225	111	107	357	111	33	42	35	48
24	30	36	33	183	130	104	370	107	31	32	43	334
25	30	35	918	165	115	103	318	141	30	27	30	433
26	31	34	998	145	105	150	286	131	32	21	24	321
27	30	37	495	115	114	224	259	98	32	19	21	141
28	34	36	380	106	112	240	229	90	29	35	21	92
29	33	35	387	98	103	215	205	84	26	32	24	70
30	31	34	263	100	---	194	186	78	25	31	23	58
31	29	---	196	98	---	185	---	72	---	36	21	---
TOTAL	1040	1244	4552	4993	5608	4298	10606	5204	1375	940	1193	3084
MEAN	33.5	41.5	147	161	193	139	354	168	45.8	30.3	38.5	103
MAX	62	103	998	480	785	240	895	274	68	55	151	433
MIN	27	27	31	64	96	88	186	72	25	18	14	17
CFSM	.11	.14	.49	.54	.65	.47	1.19	.57	.15	.10	.13	.35
IN.	.13	.16	.57	.63	.70	.54	1.33	.65	.17	.12	.15	.39

CAL YR 1987 TOTAL 175540 MEAN 481 MAX 7650 MIN 19 CFSM 1.62 IN. 21.99
WTR YR 1988 TOTAL 44137 MEAN 121 MAX 998 MIN 14 CFSM .41 IN. 5.53

e Estimated.

03208000 LEVISA FORK BELOW FISHTRAP DAM, NEAR MILLARD, KY

LOCATION.--Lat 37°25'33", long 82°24'45", Pike County, Hydrologic Unit 05070202, on right bank, 0.4 mi downstream from Fishtrap Dam, 1.1 mi upstream from Lower Pompey Branch, 1.9 mi northeast of Millard, 2.4 mi upstream from confluence with Russell Fork, and at mile 129.6.

DRAINAGE AREA.--392 mi^2.

PERIOD OF RECORD.--February 1938 to current year. Prior to April 1968, published as "Levisa Fork at Fishtrap."

REVISED RECORDS.--WSP 953. Drainage area. WSP 1335: 1938(M), 1939, 1940(M), 1942-43, 1944-45(M), 1946, 1948.

GAGE.--Water-stage recorder. Datum of gage is 600.00 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Apr. 19, 1968, nonrecording gage at site 3.7 mi upstream at different datum. Apr. 19, 1968, to June 18, 1973, water-stage recorder at site 1.0 mi downstream at datum 59.96 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Fishtrap Lake beginning October 1968. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--50 years, 472 ft^3/s, 16.35 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,000 ft^3/s, Jan. 29, 1957, gage height, 33.9 ft, from floodmark, site and datum then in use, from rating curve extended above 15,000 ft^3/s on basis of slope-area measurement of peak flow; maximum gage height, 107.55 ft, Apr. 5, 1977, from floodmark, backwater from Russell Fork; no flow Apr. 5, 1977, all gates on Fishtrap Dam closed; minimum observed discharge prior to Fishtrap Lake, 0.1 ft^3/s, Nov. 8, 9, 1939, site then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,890 ft^3/s, Dec. 26, gage height, 75.32 ft; minimum daily, 22 ft^3/s, Dec. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	169	194	53	398	222	154	60	194	71	80	94	82
2	435	194	53	404	255	153	51	160	70	82	91	80
3	424	194	32	587	325	139	51	157	77	87	80	81
4	233	190	22	619	816	116	51	155	87	92	85	83
5	241	187	37	381	1200	116	56	375	72	87	85	79
6	210	193	60	182	1100	202	58	408	71	82	81	79
7	174	188	58	93	593	205	54	347	77	85	78	83
8	151	192	53	112	324	152	56	305	75	82	79	81
9	147	187	58	111	312	153	58	300	71	82	78	79
10	146	243	65	227	313	153	60	310	70	85	76	79
11	144	294	56	253	263	132	56	318	71	83	73	79
12	142	294	45	122	152	96	52	227	71	87	75	82
13	142	288	30	114	90	207	52	137	69	94	76	90
14	149	287	54	111	90	203	56	135	73	87	78	89
15	149	237	57	87	90	213	65	134	74	97	77	86
16	149	173	46	51	290	213	67	139	77	98	79	87
17	165	256	46	51	311	186	67	211	72	97	80	89
18	186	339	41	153	215	80	67	297	70	96	80	96
19	193	272	30	327	153	80	69	236	75	98	79	96
20	207	174	50	767	153	79	62	161	76	99	79	95
21	238	173	61	958	152	80	62	139	83	102	79	87
22	222	170	51	700	141	81	64	140	75	94	79	87
23	189	169	37	537	157	81	90	92	55	88	79	83
24	232	167	29	537	141	81	332	61	53	86	79	92
25	277	167	32	536	114	82	526	276	56	119	79	92
26	242	165	855	345	114	85	420	183	53	101	80	280
27	197	164	1800	201	115	86	292	67	72	86	81	449
28	195	164	1130	266	116	87	232	61	83	85	80	505
29	194	160	730	168	200	83	240	61	85	87	84	697
30	193	100	942	121	---	76	221	61	82	91	88	634
31	197	---	425	176	---	76	---	63	---	88	83	---
TOTAL	6332	6175	7038	9695	8517	3930	3647	5910	2166	2807	2494	4701
MEAN	204	206	227	313	294	127	122	191	72.2	90.5	80.5	157
MAX	435	339	1800	958	1200	213	526	408	87	119	94	697
MIN	142	100	22	51	90	76	51	61	53	80	73	79

CAL YR 1987 TOTAL 217753 MEAN 597 MAX 4980 MIN 22
WTR YR 1988 TOTAL 63412 MEAN 173 MAX 1800 MIN 22

03208500 RUSSELL FORK AT HAYSI, VA

LOCATION.--Lat 37°12'25", long 82°17'45", Dickenson County, Hydrologic Unit 05070202, on right bank 180 ft downstream from bridge on State Highway 63, at Haysi, and 700 ft downstream from McClure River.

DRAINAGE AREA.--286 mi².

PERIOD OF RECORD.--July 1926 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 1003: 1926-43. WSP 1385: 1928(M), 1929, 1933(M), 1935(M), 1937-38(M).

GAGE.--Water-stage recorder. Datum of gage is 1,237.61 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 21, 1939, nonrecording gage at highway bridge 180 ft upstream at same datum.

REMARKS.--Records good except those for period of no gage-height record, Oct. 1-6, and period with ice effect, Jan. 6-16, which are fair. U.S. Army Corps of Engineers satellite precipitation and 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.

AVERAGE DISCHARGE.--62 years, 327 ft³/s, 15.53 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59,000 ft³/s, Apr. 4, 1977, gage height, 28.24 ft, from rating curve extended above 32,000 ft³/s on basis of slope-area measurement of peak flow; minimum observed, 0.2 ft³/s, June 27, 28, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 25	1730	*3,060	*5.76	No peak equal to or greater than base discharge.			

Minimum discharge, 11 ft³/s, Aug. 19, 20, Sept. 3, gage height, 1.74 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e50	25	28	242	116	116	203	147	68	17	20	16
2	e38	24	30	323	148	108	217	136	63	17	16	14
3	e34	25	28	291	582	107	211	126	71	16	25	12
4	e32	24	30	249	996	120	217	150	66	15	40	139
5	e31	25	34	183	1070	142	214	219	56	15	30	171
6	e30	23	32	e105	631	122	229	217	49	15	118	63
7	35	22	28	e95	410	123	464	216	47	13	158	37
8	35	23	28	e90	330	121	998	204	44	12	56	28
9	31	23	28	e85	261	122	809	197	52	12	32	23
10	28	71	30	e82	223	130	582	213	71	12	25	20
11	27	157	30	e80	194	121	455	195	53	12	20	19
12	27	78	29	e76	192	114	393	168	43	15	18	19
13	26	54	28	e90	154	224	391	150	38	28	19	17
14	26	43	28	e86	160	259	345	139	35	35	18	17
15	24	37	30	e82	164	252	316	137	34	27	19	15
16	23	34	35	e78	158	218	275	188	32	20	15	14
17	23	41	36	99	136	188	241	538	31	16	13	139
18	23	75	31	166	130	175	280	306	31	22	12	174
19	22	71	29	463	132	177	426	230	33	68	11	65
20	22	56	31	1220	142	160	424	199	30	40	31	41
21	27	48	31	860	136	144	404	169	29	38	62	32
22	29	40	30	502	116	129	362	145	27	44	43	26
23	27	36	29	344	127	119	310	126	25	36	25	24
24	25	35	28	261	148	116	289	124	24	26	23	146
25	25	34	1280	230	130	115	240	185	23	21	19	282
26	27	33	1110	193	121	222	224	170	22	17	17	207
27	27	33	688	151	136	315	213	128	21	16	14	93
28	28	31	752	139	132	279	191	109	23	25	12	56
29	28	30	581	124	122	244	173	95	19	21	12	41
30	27	29	335	123	---	221	159	82	18	18	14	34
31	26	---	238	119	---	209	---	74	---	27	14	---
TOTAL	883	1280	5705	7231	7497	5212	10255	5482	1178	716	951	1984
MEAN	28.5	42.7	184	233	259	168	342	177	39.3	23.1	30.7	66.1
MAX	50	157	1280	1220	1070	315	998	538	71	68	158	282
MIN	22	22	28	76	116	107	159	74	18	12	11	12
CFSM	.10	.15	.64	.82	.90	.59	1.20	.62	.14	.08	.11	.23
IN.	.11	.17	.74	.94	.98	.68	1.33	.71	.15	.09	.12	.26

CAL YR 1987 TOTAL 152103 MEAN 417 MAX 7370 MIN 21 CFSM 1.46 IN. 19.78
WTR YR 1988 TOTAL 48374 MEAN 132 MAX 1280 MIN 11 CFSM .46 IN. 6.29

e Estimated.

03208680 NORTH FORK POUND RIVER LAKE AT POUND, VA

LOCATION.--Lat 37°07'27", long 82°37'52", Wise County, Hydrologic Unit 05070202, in control tower of North Fork Pound Dam at Pound, 1,200 ft upstream from Stacy Branch, and 1.2 mi upstream from South Fork Pound River.

DRAINAGE AREA.--17.2 mi^2.

PERIOD OF RECORD.--July 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical datum 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 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, 3,420 acre-ft, May 17, elevation, 1,612.51 ft; minimum, 1,920 acre-ft, Dec. 24, elevation, 1,601.25 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,610.10	3,048	-
Oct. 31	1,606.89	2,596	-452
Nov. 30	1,601.77	1,977	-619
Dec. 31	1,601.87	1,988	+11
CAL YR 1987	-	-	-5
Jan. 31	1,601.96	1,998	+10
Feb. 29	1,601.94	1,996	-2
Mar. 31	1,603.33	2,153	+157
Apr. 30	1,611.43	3,251	+1,098
May 31	1,611.34	3,237	-14
June 30	1,610.44	3,099	-138
July 31	1,609.48	2,957	-142
Aug. 31	1,608.18	2,771	-186
Sept. 30	1,607.71	2,706	-65
WTR YR 1988	-	-	-342

03208950 CRANES NEST RIVER NEAR CLINTWOOD, VA

LOCATION.--Lat 37°07'26", long 82°26'20", Dickenson County, Hydrologic Unit 05070202, on left bank on State Highway 649, 500 ft downstream from Clinchfield Railway bridge, 1,000 ft downstream from Rush Creek, and 2.1 mi southeast of Clintwood.

DRAINAGE AREA.--66.5 mi².

PERIOD OF RECORD.--October 1963 to current year.

REVISED RECORDS.--WDR VA-77-1: 1967(M).

GAGE.--Water-stage recorder. Datum of gage is 1,440.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 6-14, which is fair. U.S. Army Corps of Engineers satellite precipitation and 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.

AVERAGE DISCHARGE.--25 years, 77.5 ft³/s, 15.83 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,000 ft³/s, Apr. 4, 1977, gage height, 26.09 ft, from floodmark, from rating curve extended above 3,100 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.48 ft³/s, Sept. 28, 1964, gage height, 0.91 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 29, 1957, reached a stage of about 20.0 ft.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 25	1500	*866	*6.26	No peak equal to or greater than base discharge.			

Minimum discharge, 2.6 ft³/s, July 6, 7, gage height, 1.13 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	9.6	9.5	60	35	26	40	37	14	8.3	6.5	8.2
2	16	8.0	13	64	60	28	51	36	16	7.0	5.0	7.6
3	15	8.3	9.5	56	152	29	47	33	22	3.9	30	7.2
4	12	13	17	52	227	35	53	49	16	3.6	50	42
5	10	9.7	16	43	207	38	50	73	12	3.4	62	32
6	10	13	10	e35	130	30	53	63	11	3.0	79	14
7	17	9.1	11	e29	102	29	155	55	12	5.9	73	10
8	15	7.5	11	e27	73	29	231	50	13	6.6	30	11
9	10	7.4	14	e25	62	33	159	45	19	6.2	18	8.2
10	12	35	11	e24	57	34	113	51	25	3.4	13	9.4
11	8.8	38	11	e23	52	31	89	53	14	3.4	14	9.6
12	8.7	21	14	e22	52	28	87	42	11	7.4	13	9.6
13	8.9	14	10	e26	44	62	98	38	9.1	22	11	9.2
14	13	11	9.4	e24	55	56	81	36	8.5	18	7.5	6.8
15	14	9.8	13	23	52	54	73	39	12	10	6.5	5.1
16	14	9.0	22	24	46	50	63	45	11	7.9	6.0	6.3
17	13	13	14	29	42	44	53	96	11	4.6	5.4	45
18	8.5	31	15	72	39	43	66	62	10	5.6	7.4	31
19	7.9	24	17	145	38	41	86	51	7.4	40	9.4	14
20	8.4	21	13	373	38	36	75	47	6.6	12	12	10
21	22	19	12	190	35	32	72	41	6.2	20	16	9.3
22	15	16	12	115	30	30	70	37	10	24	8.9	8.1
23	11	16	15	81	30	32	61	32	10	12	6.3	9.7
24	14	16	14	66	35	30	66	34	9.5	7.8	6.2	24
25	11	15	432	60	33	30	56	52	8.4	5.9	9.3	36
26	8.7	14	251	51	30	41	53	38	5.3	5.2	8.6	30
27	9.1	11	162	55	31	55	49	31	8.5	18	8.2	15
28	15	11	191	43	28	44	42	27	5.7	21	5.0	11
29	11	10	130	37	26	41	41	21	7.7	11	4.1	13
30	14	9.5	81	37	---	41	39	17	8.2	9.6	4.5	14
31	14	---	59	36	---	41	---	15	---	9.7	7.6	---
TOTAL	388.0	449.9	1619.4	1947	1841	1173	2272	1346	340.1	326.4	543.4	466.3
MEAN	12.5	15.0	52.2	62.8	63.5	37.8	75.7	43.4	11.3	10.5	17.5	15.5
MAX	22	38	432	373	227	62	231	96	25	40	79	45
MIN	7.9	7.4	9.4	22	26	26	39	15	5.3	3.0	4.1	5.1
CFSM	.19	.23	.79	.94	.95	.57	1.14	.65	.17	.16	.26	.23
IN.	.22	.25	.91	1.09	1.03	.66	1.27	.75	.19	.18	.30	.26

CAL YR 1987 TOTAL 28573.8 MEAN 78.3 MAX 979 MIN 5.3 CFSM 1.18 IN. 15.98
WTR YR 1988 TOTAL 12712.5 MEAN 34.7 MAX 432 MIN 3.0 CFSM .52 IN. 7.11

e Estimated.

03208990 JOHN W. FLANNAGAN RESERVOIR NEAR HAYSI, VA

LOCATION.--Lat 37°14'00", long 82°20'56", Dickenson County, Hydrologic Unit 05070202, in control tower of John W. Flannagan Dam on Pound River, 1.3 mi upstream from Blacklog Branch, and 3.7 mi northwest of Haysi.

DRAINAGE AREA.--221 mi².

PERIOD OF RECORD.--September 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum 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 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, 63,800 acre-ft, May 30, 31, elevation, 1,393.06 ft; minimum, 48,500 acre-ft, Dec. 25, elevation, 1,377.70 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,392.20	62,800	-
Oct. 31	1,388.54	59,000	-3,800
Nov. 30	1,380.19	50,700	-8,300
Dec. 31	1,380.19	50,700	0
CAL YR 1987	-	-	-300
Jan. 31	1,380.61	51,100	+400
Feb. 29	1,380.69	51,200	+100
Mar. 31	1,380.76	51,300	+100
Apr. 30	1,387.76	58,200	+6,900
May 31	1,393.06	63,800	+5,600
June 30	1,390.14	60,600	-3,200
July 31	1,386.28	56,600	-4,000
Aug. 31	1,382.71	53,100	-3,500
Sept. 30	1,381.80	52,300	-800
WTR YR 1988	-	-	-10,500

03209000 POUND RIVER BELOW FLANNAGAN DAM, NEAR HAYSI, VA

LOCATION.--Lat 37°14'13", long 82°20'36", Dickenson County, Hydrologic Unit 05070202, on right bank 1,100 ft upstream from Blacklog Branch, 1,700 ft downstream from John W. Flannagan Dam, 1.4 mi upstream from mouth, and 3.4 mi northwest of Haysi.

DRAINAGE AREA.--221 mi².

PERIOD OF RECORD.--July 1926 to current year. Monthly discharge only for some periods, published in WSP 1305. Prior to October 1963, published as Pound River near Haysi.

REVISED RECORDS.--WSP 953: 1940-41. WSP 1003: 1942, 1943(P). WSP 1275: 1927-30, 1931(M), 1932-39.

GAGE.--Water-stage recorder. Datum of gage is 1,200.00 ft above National Geodetic Vertical Datum 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 Pound River Lake (station 03208680) 33 mi upstream. U.S. Army Corps of Engineers satellite precipitation and 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.

AVERAGE DISCHARGE.--62 years, 272 ft³/s, 16.71 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 30,000 ft³/s, Mar. 23, 1929, gage height, 16.5 ft, from floodmarks, site and datum then in use; minimum, less than 0.1 ft³/s on several days in September 1932. Maximum discharge since construction of John W. Flannagan Dam in 1965, 4,540 ft³/s, Apr. 8, 1977, gage height, 8.20 ft; minimum, 1.2 ft³/s, Feb. 16, 1968, Aug. 26, 1986; minimum daily, 2.3 ft³/s, June 26-29, 1965; minimum gage height, 1.42 ft, Feb. 16, 1968.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,750 ft³/s, Apr. 8, gage height, 5.50 ft; minimum, 12 ft³/s, Dec. 3, gage height, 1.81 ft; minimum daily, 17 ft³/s, Dec. 4-7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	203	42	161	138	111	122	51	53	107	108	96
2	55	184	21	161	231	111	143	51	53	110	108	102
3	56	131	20	161	367	111	143	51	53	111	108	113
4	56	115	17	236	624	111	221	51	53	110	108	82
5	56	115	17	164	647	113	258	51	53	111	108	39
6	55	130	17	118	380	112	258	51	63	111	109	45
7	54	150	17	97	380	112	586	51	72	115	108	52
8	54	150	30	109	348	112	1090	51	72	124	101	60
9	54	153	66	155	246	86	720	51	80	124	87	73
10	54	198	94	154	179	72	584	51	81	124	94	85
11	54	254	94	95	179	72	408	51	71	124	104	89
12	54	244	94	46	133	72	193	51	71	124	106	89
13	54	190	94	46	70	72	51	51	85	124	106	88
14	54	158	112	46	70	114	51	51	98	110	106	88
15	54	158	124	53	70	179	51	52	98	99	114	88
16	54	158	107	63	158	179	51	51	98	100	119	96
17	284	158	94	63	201	149	51	51	100	100	119	102
18	346	228	94	63	162	106	51	51	100	105	119	101
19	53	247	94	235	111	106	51	51	98	104	112	77
20	53	130	94	766	111	106	51	51	98	68	101	60
21	54	77	109	1130	111	106	51	51	98	67	92	60
22	54	77	123	655	94	106	51	51	98	60	85	64
23	54	184	140	323	105	106	51	51	98	46	85	68
24	363	216	153	322	122	106	52	51	98	47	75	69
25	377	197	153	153	74	93	53	51	100	77	72	50
26	51	182	565	68	74	70	53	51	100	100	82	40
27	54	201	657	107	74	70	53	51	100	104	86	42
28	54	228	682	126	74	86	53	51	100	111	94	42
29	54	228	780	103	126	183	51	51	100	110	98	42
30	111	115	459	72	---	159	51	52	100	109	98	42
31	203	---	234	72	---	111	---	53	---	108	96	---
TOTAL	3038	5159	5397	6123	5659	3402	5653	1585	2542	3144	3108	2144
MEAN	98.0	172	174	198	195	110	188	51.1	84.7	101	100	71.5
MAX	377	254	780	1130	647	183	1090	53	100	124	119	113
MIN	51	77	17	46	70	70	51	51	53	46	72	39
(*)	-69	-149	.00	+7	+2	+5	+134	+91	-56	-67	-60	-14
MEAN‡	29.0	23.0	174	205	197	115	322	142	28.7	34.4	40.3	57.5
CFSM‡	.13	.10	.79	.93	.89	.52	1.46	.64	.13	.16	.18	.26
IN.‡	.15	.12	.91	1.07	.96	.60	1.63	.74	.15	.18	.21	.29

CAL YR 1987	TOTAL	99829	MEAN	274	MAX	3620	MIN	17	MEAN‡	274	CFSM‡	1.24	IN.‡	16.80
WTR YR 1988	TOTAL	46954	MEAN	128	MAX	1130	MIN	17	MEAN‡	114	CFSM‡	.52	IN.‡	7.04

* Change in contents, equivalent in cubic feet per second, in North Fork Pound River Lake and John W. Flannagan Reservoir; provided by U.S. Army Corps of Engineers.
‡ Adjusted for change in contents.

03209300 RUSSELL FORK AT ELKHORN CITY, KY

LOCATION.--Lat 37°18'14", long 82°20'35", Pike County, Hydrologic Unit 05070202, on left bank 10 ft downstream from steel highway bridge on abandoned section of State Highway 80, at Elkhorn City, 0.9 mi upstream from Elkhorn Creek, and at mile 13.2.

DRAINAGE AREA.--554 mi^2.

PERIOD OF RECORD.--Annual maximum, water years 1957-60 and occasional low-flow measurements, 1958-60. October 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 773.00 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Mar. 12, 1957, to Jan. 4, 1961, nonrecording gage at site 10 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since August 1966 by North Fork Pound River Lake (station 03208680) and since March 1965 by John W. Flannagan Lake (station 03208990). Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVRAGE DISCHARGE.--28 years, 702 ft^3/s, 17.21 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 54,200 ft^3/s, Apr. 4, 1977, gage height, 24.80 ft; minimum, 4.2 ft^3/s, Sept. 20, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--A discharge of 2.4 ft^3/s was measured on Oct. 18, 1930 (exact location unknown).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,640 ft^3/s, Dec. 25, gage height, 9.35 ft; minimum, 51 ft^3/s, Dec. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	128	247	96	454	240	259	357	221	127	128	138	143
2	107	237	62	537	396	242	394	207	122	133	135	144
3	97	180	57	513	854	240	395	195	124	132	145	157
4	92	149	55	527	1500	258	455	213	124	131	164	249
5	89	149	56	418	1810	292	510	300	119	131	148	328
6	88	151	59	258	1060	283	518	305	114	131	211	171
7	91	182	56	247	811	278	969	308	125	130	320	135
8	91	182	52	229	748	274	2110	318	121	133	206	117
9	88	184	80	314	580	252	1530	328	127	133	152	125
10	84	240	122	297	456	226	1190	362	155	133	145	135
11	81	444	124	233	422	220	891	373	137	133	151	143
12	80	371	124	139	395	209	662	343	123	141	154	143
13	80	288	124	146	280	297	489	295	122	147	153	143
14	78	222	133	145	224	385	436	260	133	170	152	141
15	78	214	166	132	282	469	409	235	133	140	155	139
16	76	210	160	140	329	436	369	214	133	132	158	139
17	299	221	138	154	385	388	331	572	133	126	156	291
18	353	295	134	189	361	314	347	389	132	125	155	322
19	89	353	131	575	292	318	488	309	134	167	154	186
20	82	255	131	1800	300	305	498	277	135	153	153	122
21	84	140	137	1940	297	291	478	243	135	106	200	107
22	85	132	161	1240	273	273	444	214	133	129	178	98
23	85	190	169	710	243	259	402	191	135	99	151	102
24	379	286	191	622	342	255	386	187	134	86	143	222
25	384	268	1300	468	249	246	336	233	133	85	114	332
26	92	244	1730	314	235	272	312	254	132	124	123	298
27	88	251	1380	277	246	406	304	196	130	125	129	168
28	88	282	1320	303	250	390	282	175	130	133	130	124
29	88	282	1360	280	277	438	252	161	129	136	142	102
30	102	214	873	217	---	434	236	147	127	144	142	90
31	247	---	544	213	---	351	---	136	---	142	142	---
TOTAL	3973	7063	11225	14031	14137	9560	16780	8161	3891	4058	4899	5116
MEAN	128	235	362	453	487	308	559	263	130	131	158	171
MAX	384	444	1730	1940	1810	469	2110	572	155	170	320	332
MIN	76	132	52	132	224	209	236	136	114	85	114	90

CAL YR 1987 TOTAL 268860 MEAN 737 MAX 8860 MIN 52
WTR YR 1988 TOTAL 102894 MEAN 281 MAX 2110 MIN 52

03471500 SOUTH FORK HOLSTON RIVER AT RIVERSIDE, NEAR CHILHOWIE, VA

LOCATION.--Lat 36°45'37", long 81°37'53", Smyth County, Hydrologic Unit 06010102, on right bank 400 ft upstream from highway bridge at Riverside, 900 ft upstream from Spring Branch, 3.2 mi downstream from Redstone Branch, 4.0 mi southeast of Chilhowie, and at mile 97.2.

DRAINAGE AREA.--76.1 mi².

PERIOD OF RECORD.--October 1920 to December 1931, July 1942 to current year. Monthly discharge only for some periods, published in WSP 1306. Prior to October 1924, published as "near Chilhowie." June 1907 to December 1909, at site 4.5 mi downstream also published as "near Chilhowie"; records not equivalent.

REVISED RECORDS.--WSP 1033: 1943-44(m). WSP 1306: Drainage area, 1921-31(M).

GAGE.--Water-stage recorder. Datum of gage is 2,106.77 ft above National Geodetic Vertical Datum of 1929. Nov. 1, 1920, to Nov. 14, 1931, nonrecording gage at site 400 ft downstream at same datum.

REMARKS.--Records good except those for period of no gage-height record, Oct. 1, 2, and period with ice effect, Jan. 7-12, which are fair. Prior to August 1951, diurnal fluctuation at low flow caused by mill 500 ft 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.

AVERAGE DISCHARGE.--57 years, 111 ft³/s, 19.81 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,600 ft³/s, Nov. 6, 1977, gage height, 10.20 ft, from rating curve extended above 3,700 ft³/s on basis of slope-area measurement of peak flow; minimum recorded, 2 ft³/s, Aug. 26, Oct. 15, 1943, Aug. 9, 11, 1944, Oct. 19, 1945, but may have been less in 1925 and 1926 before installation of water-stage recorder; minimum daily, 8 ft³/s, July 19, 1926.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Feb. 4	1730	*1,190	*4.38	No other peak equal to or greater base discharge.			

Minimum discharge, 14 ft³/s, Aug. 18, 19, gage height, 1.16 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e27	25	42	106	58	53	51	62	43	21	20	18
2	e26	24	39	100	61	52	51	58	40	20	19	17
3	25	24	36	96	81	52	50	55	40	20	18	16
4	25	24	38	90	676	52	60	54	39	19	18	23
5	24	24	36	77	672	52	66	57	38	19	18	24
6	24	23	34	71	330	51	70	57	36	19	18	19
7	25	24	33	e68	200	50	82	54	35	19	18	19
8	24	24	32	e50	156	48	110	51	33	18	17	18
9	24	24	33	e47	126	50	123	51	37	20	17	18
10	24	34	35	e44	108	52	114	86	48	20	16	18
11	24	38	44	e42	96	51	102	114	37	20	17	17
12	30	30	43	e40	90	50	95	100	34	29	18	18
13	30	28	41	48	79	58	90	87	31	35	17	22
14	27	27	40	44	77	54	83	78	30	26	17	19
15	26	26	41	42	76	54	81	71	29	23	17	18
16	25	26	41	41	75	53	78	69	29	21	17	17
17	24	51	40	43	69	53	73	81	29	20	16	26
18	24	67	39	70	67	54	76	83	30	21	16	31
19	24	43	40	113	66	54	154	79	29	26	16	24
20	24	37	38	353	65	52	197	73	28	22	20	22
21	26	34	37	324	62	51	166	67	28	22	21	21
22	25	32	36	200	58	49	131	62	25	31	18	20
23	25	30	34	144	63	47	108	59	24	27	17	20
24	25	29	33	113	65	47	107	56	24	24	19	23
25	25	28	117	97	59	46	94	67	24	22	17	24
26	25	27	185	83	58	50	89	61	23	23	16	24
27	25	27	199	70	60	53	83	56	24	26	16	22
28	25	27	220	65	58	51	76	52	23	24	16	21
29	25	44	215	62	58	50	71	49	21	21	17	20
30	25	47	154	60	---	51	66	48	21	21	18	19
31	25	---	117	58	---	51	---	46	---	20	19	---
TOTAL	782	948	2112	2861	3769	1591	2797	2043	932	699	544	618
MEAN	25.2	31.6	68.1	92.3	130	51.3	93.2	65.9	31.1	22.5	17.5	20.6
MAX	30	67	220	353	676	58	197	114	48	35	21	31
MIN	24	23	32	40	58	46	50	46	21	18	16	16
CFSM	.33	.42	.90	1.21	1.71	.67	1.23	.87	.41	.30	.23	.27
IN.	.38	.46	1.03	1.40	1.84	.78	1.37	1.00	.46	.34	.27	.30

CAL YR 1987 TOTAL 49012 MEAN 134 MAX 1830 MIN 19 CFSM 1.76 IN. 23.96
WTR YR 1988 TOTAL 19696 MEAN 53.8 MAX 676 MIN 16 CFSM .71 IN. 9.63

e Estimated.

03473000 SOUTH FORK HOLSTON RIVER NEAR DAMASCUS, VA

LOCATION.--Lat 36°39'06", long 81°50'39", Washington County, Hydrologic Unit 06010102, on right bank 500 ft upstream from bridge on U.S. Highway 58, 0.7 mi downstream from Laurel Creek, 3.2 mi northwest of Damascus, 4.9 mi upstream from Middle Fork, and at mile 77.2.

DRAINAGE AREA.--301 mi².

PERIOD OF RECORD.--October 1931 to current year. Monthly discharge only for some periods, published in WSP 1306. Published as "at Vestal" prior to October 1978.

REVISED RECORDS.--WSP 823: Drainage area. WSP 1306: 1932-33(M).

GAGE.--Water-stage recorder. Datum of gage is 1,792.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for period with ice effect, Jan. 7-14, and periods of no gage-height record, Feb. 4-18 and Sept. 15-30, which are fair. Some diurnal fluctuation caused by powerplant upstream from station. Tennessee Valley Authority 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.

AVERAGE DISCHARGE.--57 years, 473 ft³/s, 21.34 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,000 ft³/s, Apr. 5, 1977, gage height, 17.11 ft, from rating curve extended above 10,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 30 ft³/s, Oct. 14, 1941, Dec. 24, 1943; minimum daily, 40 ft³/s, Dec. 27, 1983; minimum gage height, 2.07 ft, Aug. 19, 1988.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Feb. 4	1400	*5,910	*9.72	No other peak equal to or greater than base discharge.			

Minimum discharge, 63 ft³/s, Aug. 19, gage height, 2.07 ft; minimum daily, 65 ft³/s, July 8, 9, Aug. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	86	124	504	262	238	224	327	174	92	93	82
2	82	85	121	515	302	225	223	301	165	83	88	72
3	83	85	112	485	589	222	212	280	174	77	82	68
4	83	84	134	443	e3000	226	320	274	168	75	79	123
5	83	83	127	363	e2800	231	304	313	153	72	85	175
6	82	80	107	283	e1500	214	310	309	144	69	138	112
7	89	80	117	e230	e850	208	433	295	135	66	140	95
8	88	81	117	e210	e700	201	659	276	129	65	98	84
9	82	82	135	e200	e550	204	767	270	145	65	83	79
10	81	192	147	e190	e470	217	717	500	212	68	78	80
11	80	197	215	e180	e420	207	612	570	149	68	76	78
12	113	130	199	e175	e380	199	536	504	132	99	90	90
13	130	113	179	e200	e350	280	478	436	124	161	110	133
14	99	106	164	e190	e330	261	414	388	116	118	87	104
15	91	101	192	180	e320	257	379	350	110	103	76	e85
16	87	98	204	179	e320	250	358	327	113	85	91	e75
17	85	359	184	196	e310	239	327	360	122	77	77	e250
18	82	442	162	418	e290	240	349	378	158	81	70	e150
19	83	251	170	622	273	244	757	341	125	107	66	e120
20	83	193	159	1210	274	232	846	308	111	87	108	e100
21	101	162	148	1160	259	224	728	284	128	81	159	e95
22	102	140	141	802	239	215	597	259	109	178	100	e90
23	90	131	137	606	265	203	515	244	98	120	82	e88
24	88	123	129	489	324	198	880	274	106	102	86	e100
25	87	116	504	435	279	196	820	318	113	86	84	e110
26	87	111	781	367	265	233	664	282	97	93	73	e105
27	88	108	891	305	274	265	550	250	96	184	68	e97
28	96	105	999	287	261	241	465	231	88	217	65	e92
29	93	108	946	267	248	232	408	213	83	124	70	e87
30	89	134	680	260	---	228	362	199	84	101	83	e82
31	88	---	522	258	---	228	---	187	---	101	93	---
TOTAL	2785	4166	8947	12209	16704	7058	15214	9848	3861	3105	2778	3101
MEAN	89.8	139	289	394	576	228	507	318	129	100	89.6	103
MAX	130	442	999	1210	3000	280	880	570	212	217	159	250
MIN	80	80	107	175	239	196	212	187	83	65	65	68
CFSM	.30	.46	.96	1.31	1.91	.76	1.68	1.06	.43	.33	.30	.34
IN.	.34	.51	1.11	1.51	2.06	.87	1.88	1.22	.48	.38	.34	.38

CAL YR 1987 TOTAL 175725 MEAN 481 MAX 7000 MIN 74 CFSM 1.60 IN. 21.72
WTR YR 1988 TOTAL 89776 MEAN 245 MAX 3000 MIN 65 CFSM .81 IN. 11.10

e Estimated.

03473500 MIDDLE FORK HOLSTON RIVER AT GROSECLOSE, VA

LOCATION.--Lat 36°53'19", long 81°20'51", Smyth County, Hydrologic Unit 06010102, on left bank 10 ft downstream from culverts on State Highway 679 at Groseclose, 0.2 mi upstream from Rocky Spring Branch, 10 mi northeast of Marion, and at mile 54.7.
DRAINAGE AREA.--7.39 mi².
PERIOD OF RECORD.--October 1947 to September 1957, October 1957 to September 1987 (annual maximum only), October 1987 to September 1988. Monthly discharge only for some periods, published in WSP 1306.
REVISED RECORDS.--WSP 1236: 1948(M), 1949(P), 1950, 1951(P).
GAGE.--Water-stage recorder. Datum of gage is 2,442.86 ft above National Geodetic Vertical Datum of 1929. Concrete control prior to October 1957. Oct. 1, 1957, to Sept. 30, 1987, crest-stage gage at same site and datum.
REMARKS.--Records good except those for periods of no gage-height record, Oct. 1 to Dec. 8 and Jan. 8-15, which are fair. Water-quality records at this location are published in this report under "Analyses of samples collected at special study sites."
AVERAGE DISCHARGE.--11 years, 8.65 ft³/s, 15.90 in/yr.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 819 ft³/s (corrected), July 6, 1953, gage height, 7.42 ft, from rating curve extended above 300 ft³/s on basis of slope-area measurement of peak flow; minimum, 1.8 ft³/s, Jan. 24, 1948, result of freezeup; minimum daily, 2.4 ft³/s, Sept. 16, 1988; minimum gage height, 1.48 ft, Nov. 25, 1950.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 90 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Feb. 4	1215	*46	*2.69	No peak equal to or greater than base discharge.			

Minimum discharge, 1.9 ft³/s, Sept. 16, gage height, 1.83 ft, result of temporary pumpage; minimum daily, 2.4 ft³/s, Sept. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e5.0	e3.9	e3.8	8.0	5.9	5.1	4.4	5.2	4.0	3.4	2.8	2.6
2	e4.0	e3.9	e3.6	6.9	7.3	5.0	4.4	5.1	4.0	3.3	2.7	2.5
3	e4.1	e3.8	e3.4	6.3	10	5.0	4.4	5.0	4.2	3.6	2.7	2.6
4	e4.2	e3.9	e3.6	5.9	30	5.2	5.9	5.2	4.0	3.5	2.7	3.8
5	e4.0	e3.8	e3.8	5.2	21	5.1	4.9	5.2	4.0	3.5	2.7	3.0
6	e4.0	e3.7	e3.6	4.7	14	5.0	5.1	5.4	3.8	3.3	2.7	2.7
7	e4.5	e3.6	e3.5	4.4	11	5.0	5.9	4.9	3.8	2.9	2.7	2.6
8	e4.3	e3.7	e3.4	e4.4	9.9	4.8	5.6	4.7	3.8	2.8	2.6	2.5
9	e4.0	e3.8	3.3	e4.3	9.2	4.9	5.2	4.7	4.6	3.2	2.6	2.6
10	e4.0	e7.0	3.4	e4.1	9.0	4.9	5.1	5.3	4.3	3.2	2.6	2.5
11	e3.8	e6.0	3.7	e4.0	8.7	4.7	4.9	4.7	4.2	3.0	2.7	2.5
12	e4.4	e5.0	3.6	e4.0	8.5	4.8	5.7	4.6	4.1	3.6	2.7	2.5
13	e5.5	e4.5	3.4	e4.2	7.2	5.8	5.7	4.9	3.9	3.5	2.6	2.5
14	e4.5	e4.4	3.3	e4.1	7.1	5.0	5.2	5.0	3.8	3.3	2.6	2.5
15	e4.3	e4.2	3.7	e4.0	7.5	4.9	5.1	4.9	3.8	3.0	2.6	2.5
16	e4.1	e4.0	3.6	3.9	7.1	4.7	5.0	5.5	3.8	2.9	2.5	2.4
17	e4.0	e12	3.3	4.3	6.5	4.7	5.0	5.4	3.8	2.8	2.5	4.3
18	e3.9	e14	3.3	10	6.3	4.7	7.3	6.7	3.8	3.3	2.5	3.1
19	e4.0	e7.0	3.3	12	6.4	4.7	8.3	5.2	3.8	4.3	2.5	2.8
20	e3.9	e6.0	3.3	17	6.3	4.6	7.2	5.0	3.8	2.8	3.0	2.6
21	e4.5	e5.2	3.3	13	5.9	4.4	6.8	4.9	3.7	2.9	2.7	2.6
22	e4.2	e5.0	3.3	10	5.6	4.4	6.6	4.9	3.7	3.0	2.7	2.5
23	e4.0	e4.5	3.1	8.2	6.3	4.3	6.4	4.8	3.8	2.9	2.6	2.6
24	e3.9	e4.0	3.1	7.2	6.3	4.3	7.7	4.8	3.7	2.8	2.7	3.3
25	e4.0	e4.2	12	7.2	5.7	4.4	6.3	4.8	3.7	2.9	2.6	3.5
26	e3.9	e4.5	9.8	6.6	5.4	5.0	6.1	4.6	3.7	2.9	2.5	3.0
27	e4.0	e4.0	9.6	6.0	5.5	4.9	5.8	4.4	3.8	6.2	2.5	2.7
28	e4.5	e4.5	12	5.7	5.3	4.5	5.7	4.3	3.5	4.3	2.6	2.6
29	e4.2	e5.5	10	5.7	5.3	4.4	5.5	4.2	3.5	3.2	2.8	2.6
30	e4.1	e4.0	7.5	5.8	---	4.4	5.3	4.1	3.5	3.0	2.7	2.6
31	e4.0	---	6.8	5.9	---	4.4	---	4.1	---	2.9	2.7	---
TOTAL	129.8	153.6	150.4	203.0	250.2	148.0	172.5	152.5	115.9	102.2	82.1	83.1
MEAN	4.19	5.12	4.85	6.55	8.63	4.77	5.75	4.92	3.86	3.30	2.65	2.77
MAX	5.5	14	12	17	30	5.8	8.3	6.7	4.6	6.2	3.0	4.3
MIN	3.8	3.6	3.1	3.9	5.3	4.3	4.4	4.1	3.5	2.8	2.5	2.4
CFSM	.57	.69	.66	.89	1.17	.65	.78	.67	.52	.45	.36	.37
IN.	.65	.77	.76	1.02	1.26	.75	.87	.77	.58	.51	.41	.42

WTR YR 1988 TOTAL 1743.3 MEAN 4.76 MAX 30 MIN 2.4 CFSM .64 IN. 8.78

e Estimated.

03474000 MIDDLE FORK HOLSTON RIVER AT SEVEN MILE FORD, VA

LOCATION.--Lat 36°48'26", long 81°37'20", Smyth County, Hydrologic Unit 06010102, on right bank at downstream side of bridge on U.S. Highway 11 at Seven Mile Ford, 0.3 mi upstream from Meade Creek, 3.3 mi downstream from Walker Creek, and at mile 32.1.
DRAINAGE AREA.--132 mi².
PERIOD OF RECORD.--July 1942 to December 1981, January 1982 to September 1987 (annual maximum only), October 1987 to September 1988.
REVISED RECORDS.--WSP 973: 1942(m). WSP 1306: 1947(M).
GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,960.00 ft above National Geodetic Vertical Datum of 1929.
REMARKS.--Records good except those for period of no gage-height record, Oct. 1 to Nov. 2, and period with ice effect, Jan. 8-14, which are fair. 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 Automatic Data Acquisition System at station, called at 6-hour intervals by computer at Knoxville, TN. Water-quality records at this location are published in this report under "Analyses of samples collected at special study sites."
COOPERATION.--Gage-height record of extremes were provided by Tennessee Valley Authority for the period Jan. 1, 1982, to Sept. 30, 1987.
AVERAGE DISCHARGE.--40 years, 164 ft³/s, 16.87 in/yr.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,500 ft³/s, Nov. 6, 1977; maximum gage height, 10.75 ft, Jan. 29, 1957; minimum discharge, 9 ft³/s, Sept. 26, 1944; minimum daily, 20 ft³/s, Sept. 26, 1944, Aug. 2, 1964.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Feb. 4	1430	*1,510	*3.20	No peak equal to or greater than base discharge.			

Minimum discharge, 17 ft³/s, Sept. 8, gage height, 0.89 ft; minimum daily, 23 ft³/s, Aug. 18, 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e50	e40	47	134	85	71	81	93	45	29	31	27
2	e41	e40	45	161	99	68	84	86	43	28	29	25
3	e42	39	40	148	218	68	80	80	44	29	28	25
4	e43	40	43	125	989	69	209	78	44	29	28	42
5	e41	39	45	98	708	76	246	83	44	29	28	43
6	e42	37	43	78	367	70	191	83	41	27	30	31
7	e42	37	40	65	250	66	195	84	39	28	30	29
8	e41	39	39	e60	205	64	232	81	37	26	28	27
9	e40	39	39	e58	172	65	220	78	50	28	24	27
10	e39	71	39	e56	150	65	181	159	62	31	24	27
11	e39	68	57	e54	131	62	152	176	48	30	24	28
12	e45	53	54	e52	124	62	138	144	44	39	34	27
13	e55	45	49	e56	105	92	139	121	40	38	31	27
14	e46	44	45	e54	98	89	121	109	38	33	28	26
15	e43	43	50	52	99	85	116	101	36	30	27	25
16	e42	41	51	51	98	80	112	90	37	30	27	25
17	e40	149	48	57	88	76	104	98	36	29	25	50
18	e40	162	43	120	82	75	115	102	36	29	23	55
19	e41	76	43	314	79	77	276	92	36	55	23	40
20	e40	59	43	691	79	73	298	83	38	35	32	32
21	e42	53	42	424	75	68	237	80	42	32	45	30
22	e41	50	40	253	70	65	187	75	35	35	30	28
23	e41	45	40	183	79	61	154	69	33	33	26	28
24	e40	43	39	148	92	61	170	73	33	33	30	39
25	e41	44	505	132	79	60	154	77	32	31	27	45
26	e41	43	361	116	75	81	146	69	33	31	26	41
27	e41	41	266	95	78	103	133	61	34	79	25	35
28	e42	43	294	86	76	96	117	58	30	43	26	31
29	e41	53	276	80	73	90	107	54	29	36	26	29
30	e42	50	179	83	---	86	100	52	29	32	27	28
31	e41	---	130	85	---	84	---	49	---	32	28	---
TOTAL	1305	1626	3075	4169	4923	2308	4795	2738	1168	1049	870	972
MEAN	42.1	54.2	99.2	134	170	74.5	160	88.3	38.9	33.8	28.1	32.4
MAX	55	162	505	691	989	103	298	176	62	79	45	55
MIN	39	37	39	51	70	60	80	49	29	26	23	25
CFSM	.32	.41	.75	1.02	1.29	.56	1.21	.67	.29	.26	.21	.25
IN.	.37	.46	.87	1.17	1.39	.65	1.35	.77	.33	.30	.25	.27

WTR YR 1988 TOTAL 28998 MEAN 79.2 MAX 989 MIN 23 CFSM .60 IN. 8.17

e Estimated.

03475000 MIDDLE FORK HOLSTON RIVER NEAR MEADOWVIEW, VA

LOCATION.--Lat 36°42'47", long 81°49'08", Washington County, Hydrologic Unit 06010102, on left bank 48 ft downstream from bridge on State Highway 803, 0.9 mi upstream from Cedar Creek, 4.1 mi southeast of Meadowview, and at mile 13.2.

DRAINAGE AREA.--211 mi².

PERIOD OF RECORD.--October 1931 to September 1953, May 1976 to current year. Monthly discharge only for October 1931, published in WSP 1306.

REVISED RECORDS.--WSP 823: Drainage area. WSP 1276: 1932-34.

GAGE.--Water-stage recorder. Datum of gage is 1,820.22 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 6-16, which is fair. Prior to 1954, flow regulated by powerplant 0.9 mi upstream from station. Water-quality records at this location are published in this report under "Analyses of samples collected at special study sites".

AVERAGE DISCHARGE.--34 years, 238 ft³/s, 15.32 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,500 ft³/s, Nov. 7, 1977, gage height, 13.41 ft; minimum, 6 ft³/s, Nov. 10, 1933, Dec. 4, 1936, Jan. 21, 22, Feb. 1, 1940, Jan. 8, 1942, Oct. 15, 16, 31, 1943; minimum daily, 7 ft³/s, Nov. 19, 1950.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 29, 1957, reached a stage of 11.8 ft, from floodmark, discharge, 10,000 ft³/s, and flood of Dec. 10, 1972, reached a stage of 11.0 ft, from floodmark, discharge, 8,540 ft³/s, from information by Tennessee Valley Authority. Flood of Mar. 30, 1975, reached a stage of 10.37 ft, discharge, 7,410 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Feb. 4	2200	*2,630	*6.46	No other peak equal to or greater than base discharge.			

Minimum discharge, 37 ft³/s, July 7, Aug. 19, gage height, 1.75 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77	61	57	197	129	122	114	132	69	49	53	50
2	63	60	55	240	139	117	116	125	66	47	48	46
3	64	59	53	222	275	117	112	117	66	48	47	44
4	65	59	56	191	1360	117	188	116	66	48	48	62
5	62	59	60	156	1370	123	311	126	65	45	50	88
6	63	56	57	e120	630	116	244	123	63	44	56	64
7	63	56	55	e100	425	112	241	123	60	42	54	54
8	62	59	53	e90	352	108	289	115	57	43	50	51
9	60	59	52	e86	292	108	285	112	63	43	47	49
10	59	92	54	e82	255	109	242	184	93	47	44	50
11	59	131	65	e80	227	106	205	236	78	47	44	49
12	70	91	74	e78	210	101	184	202	70	60	48	47
13	79	76	66	e86	188	126	187	171	67	76	59	48
14	66	70	60	e82	172	133	164	151	63	61	52	47
15	65	68	63	e80	169	126	151	142	60	54	46	45
16	63	63	69	e78	171	123	145	131	58	51	46	43
17	61	130	65	90	155	116	136	134	59	49	45	74
18	60	301	59	144	146	113	139	138	59	49	40	112
19	61	124	56	389	141	115	259	130	59	65	41	74
20	60	86	57	1010	140	112	359	120	59	71	58	58
21	63	72	55	747	135	106	300	112	64	56	80	48
22	63	65	51	430	126	100	246	107	59	59	62	45
23	62	60	51	303	130	96	209	100	55	60	51	44
24	61	57	50	236	154	92	215	103	55	56	57	54
25	62	55	526	207	138	91	202	109	55	54	54	84
26	62	55	650	190	130	107	192	106	52	52	47	68
27	62	54	402	157	128	134	180	93	54	88	45	59
28	63	50	428	142	128	130	164	85	52	85	45	51
29	62	53	443	132	126	122	151	81	49	62	48	47
30	63	60	298	128	---	117	140	77	50	54	51	44
31	61	---	211	129	---	114	---	74	---	54	50	---
TOTAL	1966	2341	4351	6402	8141	3529	6070	3875	1845	1719	1566	1699
MEAN	63.4	78.0	140	207	281	114	202	125	61.5	55.5	50.5	56.6
MAX	79	301	650	1010	1370	134	359	236	93	88	80	112
MIN	59	50	50	78	126	91	112	74	49	42	40	43
CFSM	.30	.37	.67	.98	1.33	.54	.96	.59	.29	.26	.24	.27
IN.	.35	.41	.77	1.13	1.44	.62	1.07	.68	.33	.30	.28	.30

CAL YR 1987 TOTAL 108191 MEAN 296 MAX 3700 MIN 50 CFSM 1.40 IN. 19.07
WTR YR 1988 TOTAL 43504 MEAN 119 MAX 1370 MIN 40 CFSM .56 IN. 7.67

e Estimated.

03478400 BEAVER CREEK AT BRISTOL, VA

LOCATION.--Lat 36°37'54", long 82°08'02", Bristol City, Hydrologic Unit 06010102, on right bank 50 ft upstream from bridge on State Highway 1405, 75 ft downstream from Goose Creek, 0.9 mi downstream from Clear Creek, 3.7 mi northeast of Bristol, VA post office, and at mile 20.6.

DRAINAGE AREA.--27.7 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 above National Geodetic Vertical Datum 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. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--31 years, 34.4 ft^3/s, 16.86 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,600 ft^3/s, Oct. 2, 1977, gage height, 9.94 ft, from rating curve extended above 390 ft^3/s on basis of slope-area measurement of peak flow; minimum, 3.4 ft^3/s, Dec. 30, 1963; minimum daily, 7.4 ft^3/s, Sept. 28, 29, Oct. 5, 15, 18, 19, 23, 24, 1969.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1936 reached a stage of about 12 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 162 ft^3/s, Feb. 4, gage height, 4.41 ft; minimum daily, 8.2 ft^3/s, Sept. 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	9.8	10	26	18	21	17	20	15	11	[illegible]	8.7
2	11	9.8	10	23	25	21	17	20	15	9.9	10	8.5
3	11	9.8	10	20	31	21	17	20	16	9.6	10	8.2
4	11	9.8	11	20	118	22	20	23	15	9.4	11	15
5	11	9.8	10	18	72	22	17	23	14	9.2	11	12
6	11	9.3	9.8	16	53	21	17	21	14	8.9	11	10
7	11	9.3	9.8	16	44	20	21	20	14	8.6	11	9.8
8	12	9.3	9.9	16	40	20	20	20	14	8.6	9.9	11
9	11	9.7	10	15	37	20	19	19	16	8.6	9.5	11
10	11	17	10	14	35	21	18	30	15	8.5	9.3	11
11	11	13	10	13	33	20	17	22	14	9.0	9.2	11
12	11	11	10	13	32	20	17	19	13	13	9.2	11
13	11	11	9.8	14	30	25	16	19	13	10	9.1	11
14	10	10	10	13	28	22	16	18	13	9.9	8.8	11
15	10	9.8	12	13	29	21	15	17	13	9.1	9.6	11
16	10	9.8	11	13	30	20	14	24	13	9.6	10	11
17	10	20	10	15	28	20	14	22	13	9.1	8.9	26
18	10	15	10	24	27	20	20	25	12	9.7	8.5	17
19	10	13	10	32	27	20	26	20	12	9.6	8.7	14
20	11	12	10	59	26	19	22	19	12	8.8	15	13
21	11	11	9.8	40	25	19	21	18	13	12	11	12
22	10	10	9.8	32	24	18	20	18	12	12	9.7	11
23	10	10	9.6	28	25	18	20	17	12	13	9.8	12
24	10	10	10	25	26	18	36	17	12	11	12	18
25	10	10	41	25	24	18	27	18	12	9.0	9.8	15
26	10	10	25	23	24	19	25	17	11	12	9.2	13
27	11	10	24	21	23	18	23	16	11	14	9.0	11
28	10	10	33	20	22	17	22	15	10	11	8.7	11
29	10	10	27	19	22	17	21	15	10	11	10	10
30	10	10	21	19	---	17	21	14	11	11	9.8	9.9
31	9.8	---	19	18	---	17	---	15	---	11	9.2	---
TOTAL	327.8	329.2	432.5	663	978	612	596	601	390	317.1	308.9	364.1
MEAN	10.6	11.0	14.0	21.4	33.7	19.7	19.9	19.4	13.0	10.2	9.96	12.1
MAX	12	20	41	59	118	25	36	30	16	14	15	26
MIN	9.8	9.3	9.6	13	18	17	14	14	10	8.5	8.5	8.2
CFSM	.38	.40	.50	.77	1.22	.71	.72	.70	.47	.37	.36	.44
IN.	.44	.44	.58	.89	1.31	.82	.80	.81	.52	.43	.41	.49

CAL YR 1987 TOTAL 12118.5 MEAN 33.2 MAX 280 MIN 9.3 CFSM 1.20 IN. 16.27
WTR YR 1988 TOTAL 5919.6 MEAN 16.2 MAX 118 MIN 8.2 CFSM .58 IN. 7.95

03488000 NORTH FORK HOLSTON RIVER NEAR SALTVILLE, VA

LOCATION.--Lat 36°53'48", long 81°44'47", Smyth County, Hydrologic Unit 06010101, on right bank 0.5 mi upstream from Cedar Branch bridge, 1.5 mi northeast of Saltville, 7.8 mi downstream from Laurel Creek, and at mile 85.0.

DRAINAGE AREA.--222 mi².

PERIOD OF RECORD.--June 1907 to December 1908 (published as "at Saltville"), October 1920 to current year. Monthly discharge only for some periods, published in WSP 1306.

REVISED RECORDS.--WSP 758: Drainage area. WSP 1113: 1944-47. WSP 1306: 1907(M), 1921-22(M), 1924-30(M), 1932-34(M), drainage area at site used 1907-8. WSP 1726: 1947, monthly and yearly runoff.

GAGE.--Water-stage recorder. Datum of gage is 1,703.53 ft above National Geodetic Vertical Datum 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.--Records good except for period with ice effect, Jan. 7-16, 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.

AVERAGE DISCHARGE.--69 years, 298 ft³/s, 18.23 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,500 ft³/s, Jan. 29, 1957, gage height, 13.20 ft; maximum gage height, 13.57 ft, Nov. 6, 1977; minimum discharge, 1.0 ft³/s, Oct. 15, 16, 1947, gage height, 0.13 ft, flow retarded by mine cave-in; minimum daily, 2.0 ft³/s, Oct. 15, 1947.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 20	1530	*2,280	*4.61		No peak equal to or greater than base discharge.		

Minimum discharge, 16 ft³/s, Aug. 19, gage height, 0.30 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	29	45	281	146	101	108	156	72	27	25	27
2	39	29	43	372	164	98	122	143	67	26	23	26
3	35	28	40	335	332	97	127	132	66	25	22	23
4	33	28	45	275	1100	101	369	132	70	25	21	49
5	32	28	46	208	1320	112	627	158	66	24	24	91
6	32	26	43	153	690	115	435	186	59	22	32	66
7	32	26	41	e130	450	108	410	320	55	22	33	45
8	32	26	41	e110	369	106	572	298	51	22	27	36
9	32	26	41	e100	295	106	595	252	53	22	26	32
10	32	54	47	e98	254	110	484	298	68	23	24	29
11	28	117	59	e92	220	108	391	342	67	23	21	28
12	29	88	60	e90	201	102	328	306	54	31	20	28
13	31	54	56	e100	167	142	299	259	48	32	27	30
14	32	42	52	e98	145	188	251	226	45	33	25	28
15	29	37	59	e94	170	186	223	203	42	31	23	25
16	28	33	70	e90	165	172	202	221	40	28	21	24
17	27	62	73	93	145	156	185	670	39	26	19	56
18	27	319	62	152	135	145	193	415	38	51	18	129
19	26	150	59	578	131	144	399	341	37	67	17	93
20	27	89	57	1730	134	136	475	283	37	57	24	57
21	28	68	53	1140	129	126	416	238	50	44	37	42
22	27	55	50	626	114	117	349	200	43	52	33	34
23	27	48	47	427	118	109	293	172	37	54	30	30
24	28	45	45	324	132	104	288	158	33	46	29	32
25	28	43	652	275	117	101	272	153	33	38	27	44
26	29	42	892	238	105	107	255	137	33	34	28	60
27	28	40	583	186	109	124	237	116	32	38	26	56
28	29	38	624	164	108	117	211	103	32	33	23	42
29	29	39	594	156	105	108	191	93	29	31	24	34
30	29	41	407	147	---	105	171	86	28	28	25	29
31	30	---	295	144	---	107	---	79	---	26	26	---
TOTAL	938	1750	5281	9006	7770	3758	9478	6876	1424	1041	780	1325
MEAN	30.3	58.3	170	291	268	121	316	222	47.5	33.6	25.2	44.2
MAX	43	319	892	1730	1320	188	627	670	72	67	37	129
MIN	26	26	40	90	105	97	108	79	28	22	17	23
CFSM	.14	.26	.77	1.31	1.21	.55	1.42	1.00	.21	.15	.11	.20
IN.	.16	.29	.88	1.51	1.30	.63	1.59	1.15	.24	.17	.13	.22

CAL YR 1987 TOTAL 112902 MEAN 309 MAX 4240 MIN 24 CFSM 1.39 IN. 18.92
WTR YR 1988 TOTAL 49427 MEAN 135 MAX 1730 MIN 17 CFSM .61 IN. 8.28

e Estimated.

03521500 CLINCH RIVER AT RICHLANDS, VA

LOCATION.--Lat 37°05'10", long 81°46'52", Tazewell County, Hydrologic Unit 06010205, on right bank 1.0 mi southeast of Richlands, 1.6 mi downstream from Middle Creek, 2.2 mi upstream from Big Creek, and at mile 321.0.
DRAINAGE AREA.--137 mi².
PERIOD OF RECORD.--October 1945 to current year. Monthly discharge only for some periods, published in WSP 1306.
REVISED RECORDS.--WSP 1306: 1946(M), 1948-50(M).
GAGE.--Water-stage recorder. Datum of gage is 1,924.08 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 6, 1950, nonrecording gage at bridge 1.1 mi downstream at datum 6.53 ft lower.
REMARKS.--Records good except for period with ice effect, Jan. 6-16, which is fair. Prior to October 1970, diurnal fluctuation at low flow caused by mill 1.7 mi upstream from station. Town of Richlands Office of Emergency Services 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.
AVERAGE DISCHARGE.--43 years, 190 ft³/s, 18.83 in/yr.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,640 ft³/s, Jan. 29, 1957, gage height, 19.3 ft, from floodmark, from rating curve extended above 4,900 ft³/s on basis of contracted-opening measurement of peak flow; minimum, 3.2 ft³/s, Sept. 8, 1955; minimum daily, 8.8 ft³/s, July 6, Sept. 10, 16, 1964; minimum gage height, 0.45 ft, July 2, 3, 1951.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 22, 1901, reached a stage of 21.3 ft, present site and datum, from floodmark, discharge, 11,500 ft³/s, from report by Tennessee Valley Authority. Flood of Feb. 18, 1944, reached a stage of 13.7 ft, present site and datum, from floodmark, discharge, 5,500 ft³/s, from report by Tennessee Valley Authority.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,600 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Feb. 4	2330	*802	*4.11	No peak equal to or greater than base discharge.			

Minimum discharge, 12 ft³/s, part or all of each day Aug. 6, 16-20; minimum gage height, 0.65 ft, Aug. 16, 17, 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	23	26	179	72	65	102	85	39	18	15	20
2	27	23	25	278	90	61	100	77	35	17	15	17
3	25	27	25	195	239	61	95	72	38	17	14	15
4	27	23	31	147	454	64	104	73	37	16	13	77
5	25	21	39	106	593	80	106	92	34	15	13	106
6	25	21	35	e75	322	81	102	104	32	15	15	50
7	34	20	33	e65	217	79	155	122	30	14	16	35
8	35	20	33	e56	176	76	465	116	27	13	21	27
9	27	21	34	e52	141	74	435	107	33	14	17	24
10	25	47	35	e49	123	75	294	137	41	15	14	22
11	23	87	34	e47	110	70	227	125	34	15	13	33
12	23	47	34	e45	104	66	191	108	29	26	15	48
13	25	35	31	e52	87	112	177	100	27	36	20	28
14	24	31	29	e50	79	123	142	99	26	35	19	23
15	22	27	29	e48	85	116	125	91	24	28	15	20
16	22	25	29	e46	95	104	112	96	22	22	13	18
17	21	36	28	50	83	93	101	194	22	30	16	79
18	21	91	26	116	79	88	119	224	23	56	14	116
19	20	61	25	237	77	87	206	136	24	47	12	62
20	21	42	25	442	82	81	201	108	24	33	15	42
21	24	35	25	342	78	74	178	91	27	30	23	33
22	26	31	24	222	69	68	157	79	23	40	22	28
23	25	28	24	163	74	62	141	69	20	33	18	25
24	23	27	23	129	83	60	192	67	19	26	19	90
25	23	26	380	115	75	58	176	78	19	23	18	167
26	23	25	487	100	69	72	153	70	19	20	16	156
27	23	25	352	85	71	78	134	58	21	19	14	83
28	25	24	361	80	71	74	116	51	23	18	13	52
29	24	24	280	69	68	70	103	47	19	17	17	38
30	23	27	185	69	---	68	94	43	18	16	21	31
31	23	---	137	71	---	76	---	40	---	16	23	---
TOTAL	766	1000	2884	3780	3966	2416	5003	2959	809	740	509	1565
MEAN	24.7	33.3	93.0	122	137	77.9	167	95.5	27.0	23.9	16.4	52.2
MAX	35	91	487	442	593	123	465	224	41	56	23	167
MIN	20	20	23	45	68	58	94	40	18	13	12	15
CFSM	.18	.24	.68	.89	1.00	.57	1.22	.70	.20	.17	.12	.38
IN.	.21	.27	.78	1.03	1.08	.66	1.36	.80	.22	.20	.14	.42

CAL YR 1987 TOTAL 80538 MEAN 221 MAX 3150 MIN 17 CFSM 1.61 IN. 21.87
WTR YR 1988 TOTAL 26397 MEAN 72.1 MAX 593 MIN 12 CFSM .53 IN. 7.17

e Estimated.

03524000 CLINCH RIVER AT CLEVELAND, VA

LOCATION.--Lat 36°56'41", long 82°09'18", Russell County, Hydrologic Unit 06010205, on right bank 500 ft upstream from highway bridge at Cleveland, 0.5 mi downstream from Muddy Hollow, 2.3 mi downstream from Weaver Creek, 4.4 mi downstream from Thompson Creek, and at mile 271.6.

DRAINAGE AREA.--528 mi².

PERIOD OF RECORD.--October 1920 to current year. Monthly discharge only for some periods, published in WSP 1306.

REVISED RECORDS.--WSP 823: Drainage area. WSP 1306: 1921-23(M), 1926(M), 1929-31(M). WSP 1706: 1927(M).

GAGE.--Water-stage recorder. Datum of gage is 1,500.24 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 1, 1931, nonrecording gage on highway bridge 500 ft downstream at datum 1.0 ft lower.

REMARKS.--Records good except for period with ice effect, Jan. 6-16, which is fair. Tennessee Valley Authority gage-height Automatic Data Acquisition System 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 collected at this location.

AVERAGE DISCHARGE.--68 years, 703 ft³/s, 18.08 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,500 ft³/s, Apr. 5, 1977, gage height, 26.40 ft; minimum, 35 ft³/s, Sept. 28, 1964; minimum gage height, 0.96 ft, Feb. 10, 1934.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Feb. 5	1030	*2,430	*5.61	No peak equal to or greater than base discharge.			

Minimum discharge, 37 ft³/s, Aug. 19, gage height, 1.14 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	131	72	78	621	289	266	278	309	170	67	62	76
2	108	71	80	1050	349	251	327	281	160	63	58	66
3	99	71	80	910	967	242	322	260	162	61	54	57
4	89	71	84	680	1580	243	328	255	158	62	52	185
5	85	69	91	521	2260	278	373	304	152	62	60	493
6	82	74	97	e300	1550	313	380	333	145	56	73	313
7	91	66	100	e250	1020	311	455	340	134	52	73	189
8	99	65	95	e220	815	296	1140	365	123	50	79	132
9	98	65	96	e210	655	283	1550	361	127	47	67	102
10	93	102	96	e200	552	285	1210	437	155	48	58	87
11	82	193	98	e190	481	277	933	514	153	51	56	79
12	79	213	99	e180	442	260	763	455	136	64	50	74
13	76	162	97	e210	394	371	688	393	122	85	47	97
14	74	125	94	e200	323	536	584	353	116	107	58	89
15	73	107	98	e190	344	505	498	365	106	111	54	70
16	73	95	112	e180	359	452	441	523	98	95	52	62
17	70	98	110	251	361	396	396	1240	96	81	44	102
18	70	152	106	582	329	358	392	1350	94	76	49	312
19	67	235	101	981	317	348	681	917	95	162	39	295
20	69	206	96	1950	322	333	785	650	92	211	52	194
21	70	152	90	1870	326	307	709	515	93	147	106	141
22	69	126	86	1210	297	277	636	423	91	170	121	110
23	78	110	83	851	287	257	560	361	92	159	86	91
24	73	100	81	650	329	241	543	314	83	123	79	102
25	74	94	1040	547	320	233	581	321	77	103	72	317
26	73	90	2180	483	294	259	522	348	73	87	66	623
27	73	87	1640	388	282	302	469	294	71	78	55	402
28	74	83	1600	330	284	298	415	252	75	74	51	249
29	74	82	1360	308	278	281	370	227	70	71	49	177
30	75	78	929	289	---	268	334	204	70	71	60	139
31	73	---	650	286	---	264	---	185	---	68	76	---
TOTAL	2514	3314	11647	17088	16406	9591	17663	13449	3389	2762	1958	5425
MEAN	81.1	110	376	551	566	309	589	434	113	89.1	63.2	181
MAX	131	235	2180	1950	2260	536	1550	1350	170	211	121	623
MIN	67	65	78	180	278	233	278	185	70	47	39	57
CFSM	.15	.21	.71	1.04	1.07	.59	1.12	.82	.21	.17	.12	.34
IN.	.18	.23	.82	1.20	1.16	.68	1.24	.95	.24	.19	.14	.38

CAL YR 1987 TOTAL 264835 MEAN 726 MAX 10900 MIN 51 CFSM 1.37 IN. 18.66
WTR YR 1988 TOTAL 105206 MEAN 287 MAX 2260 MIN 39 CFSM .54 IN. 7.41

e Estimated.

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 mi².
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.--Water-stage recorder. Datum of gage is 1,060.7 ft above National Geodetic Vertical Datum of 1929. Apr. 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. Several measurements of water temperature were made during the year.
AVERAGE DISCHARGE.--70 years, 2,062 ft³/s, 19.00 in/yr.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 98,100 ft³/s, Apr. 5, 1977, gage height, 29.32 ft, from floodmarks; minimum, 108 ft³/s, Sept. 11, 1925; minimum gage height, at present site and datum, 0.33 ft, Sept. 20, 1955.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in February 1862 reached a stage of about 24 ft, present site and datum, from information by local resident, discharge, about 66,000 ft³/s.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 14,000 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage Height (ft)	Date	Time	Discharge (ft³/s)	Gage Height (ft)
Jan. 21	0430	*11,200	*8.32		No peak equal to or greater than base discharge.		

Minimum discharge, 129 ft³/s, Aug. 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	319	192	233	1870	821	797	750	945	487	179	206	148
2	344	195	225	1950	862	761	751	859	446	170	194	145
3	349	192	220	2290	2510	726	796	796	414	168	206	148
4	317	192	216	2220	6620	719	900	795	395	161	189	867
5	286	192	217	1780	8880	724	1020	1070	383	157	192	1040
6	261	186	220	1400	6450	786	1170	1420	371	150	220	1180
7	252	178	224	1100	4260	815	1470	1350	357	145	272	923
8	241	180	228	770	2970	831	2090	1210	340	142	250	646
9	234	181	229	753	2330	809	2670	1100	337	141	279	476
10	235	201	233	824	1940	982	3110	2210	351	141	259	368
11	237	228	233	702	1650	1110	2660	1990	357	148	210	304
12	237	278	231	648	1450	951	2190	1700	371	148	192	266
13	230	405	232	686	1310	1420	1900	1490	354	155	182	233
14	219	405	230	636	1170	1920	1670	1270	332	182	167	211
15	208	383	248	635	1060	1870	1490	1100	304	241	183	197
16	203	329	280	585	1020	1690	1310	996	280	270	194	184
17	200	313	312	579	1020	1440	1160	1230	262	254	169	236
18	194	322	363	765	963	1260	1130	1570	248	232	143	618
19	192	347	351	2360	934	1150	1690	1830	238	261	132	956
20	192	401	322	8290	909	1060	2180	1800	236	231	143	741
21	191	413	306	9920	899	985	2240	1330	232	377	150	644
22	190	448	299	5670	864	911	2010	1090	230	504	148	496
23	190	388	287	3510	843	836	1750	937	230	503	184	391
24	183	336	276	2510	889	773	1710	865	214	451	247	374
25	192	304	632	1980	945	730	2150	947	206	371	242	486
26	190	282	6880	1660	935	706	1720	898	236	317	241	569
27	191	266	5740	1420	892	732	1530	813	235	282	212	659
28	198	255	4610	1200	853	797	1330	746	214	236	189	924
29	199	249	4620	1030	820	823	1170	658	185	236	168	705
30	197	245	3530	922	---	794	1050	580	183	232	154	534
31	192	---	2420	862	---	777	---	529	---	231	151	---
TOTAL	7063	8486	34647	61527	57069	30685	48767	36124	9028	7416	6068	15669
MEAN	228	283	1118	1985	1968	990	1626	1165	301	239	196	522
MAX	349	448	6880	9920	8880	1920	3110	2210	487	504	279	1180
MIN	183	178	216	579	820	706	750	529	183	141	132	145
CFSM	.15	.19	.76	1.35	1.34	.67	1.10	.79	.20	.16	.13	.35
IN.	.18	.21	.87	1.55	1.44	.77	1.23	.91	.23	.19	.15	.40

CAL YR 1987 TOTAL 716510 MEAN 1963 MAX 23000 MIN 169 CFSM 1.33 IN. 18.08
WTR YR 1988 TOTAL 322549 MEAN 881 MAX 9920 MIN 132 CFSM .60 IN. 8.14

03531500 POWELL RIVER NEAR JONESVILLE, VA

LOCATION.--Lat 36°39'43", long 83°05'42", Lee County, Hydrologic Unit 06010206, on right bank 175 ft downstream from highway bridge, 2 mi southeast of Jonesville, 10 mi upstream from Wallen Creek, and at mile 143.1.

DRAINAGE AREA.--319 mi².

PERIOD OF RECORD.--October 1931 to current year. Monthly discharge only for some periods, published in WSP 1306.

REVISED RECORDS.--WSP 823: Drainage area. WSP 1033: 1932-44. WSP 1436: 1946(M), 1948(M).

GAGE.--Water-stage recorder. Datum of gage is 1,259.08 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for period with ice effect, Jan. 6-16, and period of no gage-height record, May 4-26, which are fair. Tennessee Valley Authority gage-height Automatic Data Acquisition System 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 collected at this location.

AVERAGE DISCHARGE.--57 years, 530 ft³/s, 22.56 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,000 ft³/s, Apr. 5, 1977, gage height, 44.32 ft, from flood-mark, from rating curve extended above 20,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 17 ft³/s, Sept. 19, 20, 1954, and as result of storage behind temporary dam Oct. 18, 1961; minimum gage height, 0.68 ft, Oct. 18, 1961.

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

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 25	2030	*6,050	*11.78	Jan. 20	1430	5,160	10.38

Minimum discharge, 34 ft³/s, July 9, gage height, 1.07 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	162	52	47	582	233	215	226	258	114	48	107	43
2	107	52	45	761	338	204	262	241	107	47	82	40
3	78	48	44	628	1300	195	312	223	105	49	75	42
4	66	44	46	525	1790	219	488	e200	109	45	163	199
5	60	42	50	422	1910	391	568	e210	100	42	136	519
6	59	40	56	e250	1170	362	562	e220	93	39	99	240
7	60	40	51	e200	809	339	1040	e230	85	38	301	128
8	65	38	45	e180	646	309	1690	e240	80	37	199	87
9	66	38	46	e170	526	289	1330	e230	88	35	111	69
10	58	45	47	e160	452	293	957	e280	129	38	87	60
11	52	82	49	e150	394	269	741	e340	123	36	72	54
12	51	115	49	e140	368	239	624	e300	92	44	64	51
13	50	73	49	e170	330	443	591	e260	82	51	68	48
14	48	59	49	e160	281	506	481	e220	78	89	74	46
15	45	54	52	e150	299	452	421	e240	73	94	63	46
16	45	52	85	e140	331	395	378	e300	71	68	54	42
17	46	54	111	158	291	339	341	e750	68	58	51	172
18	48	106	84	449	265	305	384	e850	65	57	50	469
19	47	136	69	1170	263	296	974	e650	63	350	48	227
20	47	94	65	4180	297	276	885	e450	59	312	55	134
21	48	76	68	2300	289	246	723	e350	56	144	72	101
22	53	68	66	1180	261	224	594	e290	54	166	76	82
23	63	62	59	820	259	207	503	e250	54	174	63	69
24	55	55	56	621	302	195	726	e200	61	112	66	163
25	49	52	3040	513	283	191	571	e210	59	90	127	342
26	48	50	2860	445	257	200	469	e290	55	75	84	320
27	46	48	1490	358	253	249	407	203	81	66	59	225
28	47	47	1490	313	253	229	352	169	78	73	48	147
29	46	47	1290	278	232	208	312	151	64	68	46	112
30	47	46	840	261	---	204	281	136	54	69	45	93
31	50	---	573	249	---	215	---	123	---	75	43	---
TOTAL	1812	1815	12971	18083	14682	8704	18193	9064	2400	2689	2688	4370
MEAN	58.5	60.5	418	583	506	281	606	292	80.0	86.7	86.7	146
MAX	162	136	3040	4180	1910	506	1690	850	129	350	301	519
MIN	45	38	44	140	232	191	226	123	54	35	43	40
CFSM	.18	.19	1.31	1.83	1.59	.88	1.90	.92	.25	.27	.27	.46
IN.	.21	.21	1.51	2.11	1.71	1.02	2.12	1.06	.28	.31	.31	.51

CAL YR 1987 TOTAL 155672 MEAN 426 MAX 4010 MIN 38 CFSM 1.34 IN. 18.15
WTR YR 1988 TOTAL 97471 MEAN 266 MAX 4180 MIN 35 CFSM .83 IN. 11.37

e Estimated.

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 low-flow partial-record sites and 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 which 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.

Annual maximum discharge at crest-stage partial-record stations during water year 1988

Station No.	Station Name	Location	Drainage area (mi^2)	Period of record	Annual Maximum		
					Date	Gage height (ft)	Discharge (ft^3/s)
		POTOMAC RIVER BASIN					
01613900	Hogue Creek near Hayfield, Va.	Lat 39°12'52", long 78°17'18", Frederick County, on right bank 15 ft upstream from bridge on State Highway 614, 0.8 mi upstream from Gap Run, 1.3 mi south-southeast of Hayfield, and opposite mouth of small unnamed branch from southwest. Datum of gage is 668.60 ft above National Geodetic Vertical Datum of 1929.	15.0	1961-86‡, 1987-88	5- 6-88	5.79	1,020
01622400	Buffalo Branch tributary near Christian, Va.	Lat 38°11'55", long 79°13'10", Augusta County, on left upstream wingwall of culvert on State Highway 42, 0.8 mi upstream from mouth, and 1.3 mi north of Christian. Datum of gage is 1,622.53 ft above National Geodetic Vertical Datum of 1929.	.49	1967-88	-	<2.78	<23
01629945	Chub Run near Stanley, Va.	Lat 38°34'31", long 78°27'32", Page County, at culvert on State Highway 689, 2.2 mi east of Stanley, and 3.1 mi upstream from mouth. Datum of gage is 1,023.05 ft above National Geodetic Vertical Datum of 1929.	3.16	1959-69a, 1970-88	11-29-87	2.42	210
01632970	Crooked Run near Mt. Jackson, Va.	Lat 38°45'44", long 78°41'06", Shenandoah County, 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 above National Geodetic Vertical Datum of 1929.	6.49	1972-88	5- 6-88	3.38	295
01633650	Pughs Run near Woodstock, Va.	Lat 38°55'48", long 78°32'43", Shenandoah County, on left upstream wingwall of culvert on State Highway 623, 4.0 mi northwest of Woodstock, and 5.4 mi upstream from mouth. Datum of gage is 1,027.27 ft above National Geodetic Vertical Datum of 1929.	3.66	1972-88	5- 6-88	4.14	68

‡ Operated as a continuous-record gaging station.
a Records provided by U.S. Department of Agriculture, Soil Conservation Service.
< Less than.

Annual maximum discharge at crest-stage partial-record stations during water year 1988--Continued

Station No.	Station Name	Location	Drainage area (mi^2)	Period of record	Annual Maximum		
					Date	Gage height (ft)	Discharge (ft^3/s)
		POTOMAC RIVER BASIN--Continued					
01652500	Fourmile Run at Alexandria, Va.	Lat 38°50'35", long 77°05'09", Arlington County, on left upstream wingwall of bridge on Shirlington Road, at Arlington County-Alexandria City line, 0.1 mi upstream from Interstate Highway 395, and 2.5 mi upstream from mouth. Datum of gage is 28.57 ft above National Geodetic Vertical Datum of 1929.	13.8	1951-69‡, 1970-73, 1974-75‡, 1976-77b, 1979-82‡, 1983-88	5- 6-88	7.87	2,740
01655500	Cedar Run near Warrenton, Va.	Lat 38°44'25", long 77°47'16", Fauquier County, on right bank at bridge on State Highway 672, 1.9 mi north of Warrenton. Datum of gage is 419.40 ft above National Geodetic Vertical Datum of 1929.	12.3	1951-86‡, 1987-88	11-29-87	6.88	643
01656000	Cedar Run near Catlett, Va.	Lat 38°38'12", long 77°37'31", Fauquier County, 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. Datum of gage is 199.15 ft above National Geodetic Vertical Datum of 1929.	93.4	1951-86‡, 1987-88	11-29-87	12.78	4,780
01656200	Broad Run near Warrenton, Va.	Lat 38°48'25", long 77°48'47", Fauquier County, on left downstream wingwall of culvert on State Highway 17, 7 mi north of Warrenton, and 8.6 mi upstream from Mill Run.	2.94	1950-78, 1983-88	5- 6-88	4.49	71
		GREAT WICOMICO RIVER BASIN					
01661600	Great Wicomico River near Horse Head, Va.	Lat 37°53'15", long 76°27'00", Northumberland County, on right upstream wingwall of culvert on State Highway 604, 1.5 mi upstream from Bush Mill Stream, and 1.7 mi west of Horse Head.	6.98	1969-88	5- 6-88	5.03	708
01661800	Bush Mill Stream near Heathsville, Va.	Lat 37°52'36", long 76°29'42", Northumberland County, 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 above National Geodetic Vertical Datum of 1929.	6.82	1964-69‡, 1970-86‡, 1987-88	2-12-88	5.25	98
		RAPPAHANNOCK RIVER BASIN					
01661900	Carter Run near Marshall, Va.	Lat 38°47'57", long 77°52'09", Fauquier County, on left bank 50 ft upstream from farm road, 1.2 mi downstream from Horner Run, 4.7 mi south of Marshall, 6.7 mi southwest of The Plains, and 9 mi upstream from mouth. Datum of gage is 388.39 ft above National Geodetic Vertical Datum of 1929.	19.5	1976-82‡, 1983-88	5-23-88	7.95	2,620

‡ Operated as a continuous-record gaging station.
b Prior to Sept. 28, 1973, at site 0.4 mi downstream at datum 6.02 ft lower.

Annual maximum discharge at crest-stage partial-record stations during water year 1988--Continued

Station No.	Station Name	Location	Drainage area (mi^2)	Period of record	Annual Maximum		
					Date	Gage height (ft)	Discharge (ft^3/s)
		RAPPAHANNOCK RIVER BASIN--Continued					
01662000	Rappahannock River near Warrenton, Va.	Lat 38°41'05", long 77°54'15", Fauquier County, on left bank 50 ft downstream from westbound bridge on U.S. Highway 211, 0.9 mi downstream from Carter Run, 6.2 mi southwest of Warrenton, and 15 mi upstream from Hazel River. Datum of gage is 312.57 ft above National Geodetic Vertical Datum of 1929.	195	1942-86‡, 1987-88	5- 6-88	11.51	3,830
01665050	Pony Mountain Branch near Culpeper, Va.	Lat 38°27'04", long 77°57'24", Culpeper County, at culvert on State Highway 3, 0.3 mi upstream from mouth, and 2.7 mi southeast of Culpeper.	.30	1958-69a, 1970-88	7-21-88	1.39	40
01668300	Farmers Hall Creek near Champlain, Va.	Lat 38°00'05", long 76°58'40", Essex County, 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 above National Geodetic Vertical Datum of 1929.	2.18	1966-88	2-12-88	4.09	47
01668800	Hoskins Creek near Tappahannock, Va.	Lat 37°55'38", long 76°57'16", Essex County, at bridge on State Highway 717, 0.4 mi upstream from Criddlin Swamp, and 5.0 mi west of Tappahannock. Datum of gage is 36.28 ft above National Geodetic Vertical Datum of 1929.	15.5	1965-69‡, 1971-86‡, 1987-88	2-12-88	4.05	96
		PIANKATANK RIVER BASIN					
01669800	My Ladys Swamp near Saluda, Va.	Lat 37°34'34", long 76°31'30", Middlesex County, on left upstream wingwall of culvert on State Highway 629, 1.45 mi upstream from mouth, and 4.4 mi southeast of Saluda. Datum of gage is 4.16 ft above National Geodetic Vertical Datum of 1929.	4.81	1969-88	2-12-88	4.98	134
		YORK RIVER BASIN					
01670300	Contrary Creek near Mineral, Va.	Lat 38°03'53", long 77°52'45", Louisa County, on left bank 400 ft downstream from bridge on U.S. Highway 522, 4.0 mi northeast of Mineral.	5.53	1976-86‡, 1987-88	5-21-88	2.41	254
01671615	Foster Creek near Ferncliff, Va.	Lat 37°57'35", long 78°11'20", Louisa County, at culvert on U.S. Highway 250, 1.9 mi southeast of Zion Crossroads, 4.6 mi northwest of Ferncliff, and 5.0 mi upstream from mouth. Datum of gage is 424.22 ft above National Geodetic Vertical Datum of 1929.	.61	1960-68a, 1969-88	5-21-88	4.26	186

‡ Operated as a continuous-record gaging station.
a Records provided by U.S. Department of Agriculture, Soil Conservation Service.

Annual maximum discharge at crest-stage partial-record stations during water year 1988--Continued

Station No.	Station Name	Location	Drainage area (mi²)	Period of record	Annual Maximum		
					Date	Gage height (ft)	Discharge (ft³/s)
		YORK RIVER BASIN--Continued					
01671650	Waldrop Creek near Louisa, Va.	Lat 38°00'08", long 78°04'22", Louisa County, 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 above National Geodetic Vertical Datum of 1929.	2.85	1969-88	5-21-88	6.63	323
01671750	Harris Creek near Trevilians, Va.	Lat 38°01'02", long 78°03'06", Louisa County, on right upstream wingwall of culvert on State Highway 632, 2.7 mi southeast of Trevilians, and 6 mi upstream from mouth.	3.31	1969-88	11-29-87	5.31	446
01674200	Reedy Creek near Dawn, Va.	Lat 37°52'55", long 77°21'35", Caroline County, at bridge on U.S. Highway 301, 3.3 mi north of Dawn, and 11 mi south of Bowling Green.	16.8	1950-69, 1972-88	2- 3-88	5.15	215
01674700	Aylett Creek at Aylett, Va.	Lat 37°47'05", long 77°06'23", King William County, on right upstream wingwall of culvert on U.S. Highway 360 at Aylett and 2.8 mi upstream from mouth. Datum of gage is 26.72 ft above National Geodetic Vertical Datum of 1929.	6.17	1969-88	5-18-88	4.18	>160
		JAMES RIVER BASIN					
02012500	Jackson River at Falling Spring, Va.	Lat 37°52'36", long 79°58'39", Alleghany County, 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 National Geodetic Vertical Datum of 1929.	411	1925-84‡, 1987-88	1-21-88	9.05	5,090
02012950	Sweet Springs Creek tributary at Sweet Chalybeate, Va.	Lat 37°39'25", long 80°14'10", Alleghany County, on left bank 20 ft upstream from culvert on State Highway 311, 0.1 mi upstream from mouth, and 0.9 mi north of Sweet Chalybeate. Datum of gage is 1,926.94 ft above National Geodetic Vertical Datum of 1929.	.66	1966-75, 1978-88	-	<4.14	<36
02015600	Cowpasture River near Head Waters, Va.	Lat 38°19'30", long 79°26'14", Highland County, 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 above National Geodetic Vertical Datum of 1929.	11.3	1949-88	1-20-88	3.30	147

‡ Operated as a continuous-record gaging station.
< Less than.
> Greater than.

Annual maximum discharge at crest-stage partial-record stations during water year 1988--Continued

Station No.	Station Name	Location	Drainage area (mi^2)	Period of record	Annual Maximum		
					Date	Gage height (ft)	Discharge (ft^3/s)
		JAMES RIVER BASIN--Continued					
02017300	Craig Creek at New Castle, Va.	Lat 37°30'06", long 80°06'18", Craig County, on left upstream pier of old bridge, about 20 ft downstream from new bridge on State Highway 616, 800 ft upstream from Johns Creek, and 0.3 mi southeast of New Castle. Datum of gage is 1,245.69 ft above National Geodetic Vertical Datum of 1929.	112	1967-88	-	<8.49	<1,810
02017700	Craig Creek tributary near New Castle, Va.	Lat 37°33'21", long 79°59'52", Craig County, on right upstream wingwall of culvert on State Highway 606, 0.4 mi upstream from mouth, and 7.1 mi northeast of New Castle.	2.05	1968-88	1-20-88	3.49	54
02018800	North Fork near Fincastle, Va.	Lat 37°32'07", long 79°56'03", Botetourt County, on left upstream wingwall of culvert on State Highway 606, 3.5 mi upstream from mouth, and 3.9 mi northwest of Fincastle. Datum of gage is 1,248.65 ft above National Geodetic Vertical Datum of 1929.	4.17	1968-88	1-20-88	3.46	78
02020100	Renick Run near Buchanan, Va.	Lat 37°35'27", long 79°38'04", Botetourt County, on left upstream wingwall of culvert on Frontage Road of Interstate Highway 81 between exits 48 and 49, 2.2 mi upstream from mouth, and 4.8 mi northeast of Buchanan. Datum of gage is 1,261.85 ft above National Geodetic Vertical Datum of 1929.	2.06	1967-88	7-21-88	5.76	454
02021700	Cedar Grove Branch near Rockbridge Baths, Va.	Lat 37°53'00", long 79°23'10", Rockbridge County, on right upstream wingwall of culvert on State Highway 39, 0.1 mi upstream from mouth, and 1.8 mi southeast of Rockbridge Baths. Datum of gage is 1,041.22 ft above National Geodetic Vertical Datum of 1929.	12.3	1967-88	1-20-88	3.94	86
02023300	South River near Steeles Tavern, Va.	Lat 37°55'50", long 79°09'55", Augusta County, at bridge on State Highway 608, 2.5 mi northeast of Vesuvius, 3 mi east of Steeles Tavern, and 5 mi south of Greenville.	15.7	1951-88	-	<3.68	<685
02027700	Buffalo River tributary near Amherst, Va.	Lat 37°33'45", long 78°57'35", Amherst County, on left bank just upstream from culvert on U.S. Highway 60, 0.8 mi upstream from mouth, and 5.2 mi southeast of Amherst. Datum of gage is 583.66 ft above National Geodetic Vertical Datum of 1929.	.46	1966-88	5-18-88	3.06	22
02030800	Stockton Creek near Afton, Va.	Lat 38°01'48", long 78°48'30", Albemarle County, 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 above National Geodetic Vertical Datum of 1929.	2.80	1967-88	-	<4.29	<50

< Less than.

Annual maximum discharge at crest-stage partial-record stations during water year 1988--Continued

Station No.	Station Name	Location	Drainage area (mi^2)	Period of record	Annual Maximum		
					Date	Gage height (ft)	Discharge (ft^3/s)
		JAMES RIVER BASIN--Continued					
02032200	Doyles River near White Hall, Va.	Lat 38°12'10", long 78°40'17", Albemarle County, on right downstream abutment of bridge on State Highway 810, 5.5 mi upstream from mouth, and 5.9 mi north of White Hall. Datum of gage is 928.08 ft above National Geodetic Vertical Datum of 1929.	6.70	1967-88	-	<10.09	(*)
02032300	Muddy Run near Stanardsville, Va.	Lat 38°14'05", long 78°37'02", Albemarle County, 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 National Geodetic Vertical Datum of 1929.	3.36	1967-88	-	<6.06	<1,400
02032540	Haneytown Creek near Stanardsville, Va.	Lat 38°16'48", long 78°30'50", Greene County, on left downstream wingwall of bridge on State Highway 810, 0.2 mi upstream from mouth, and 4.5 mi west of Stanardsville. Datum of gage is 616.34 ft above National Geodetic Vertical Datum of 1929.	4.45	1967-88	-	<12.33	<390
02032550	Lynch River at Nortonsville, Va.	Lat 38°14'16", long 78°32'32", Albemarle County, on right downstream abutment of bridge on State Highway 810, 4 mi upstream from mouth, and 7 mi southwest of Stanardsville. Datum of gage is 591.70 ft above National Geodetic Vertical Datum of 1929.	13.6	1967-88	-	<12.01	<1,100
02032700	Schenks Branch at Charlottesville, Va.	Lat 38°02'32", long 78°28'30", Charlottesville City, on right downstream retaining wall of small road culvert, 25 ft upstream from U.S. Highway 250 bypass culvert, 200 ft southeast of intersection of U.S. Highway 250 bypass and McIntire Road, and 1.2 mi upstream from mouth. Datum of gage is 371.63 ft above National Geodetic Vertical Datum of 1929.	1.34	1950-77, 1979-88	6-20-88	7.31	(*)
02033300	Moores Creek near Charlottesville, Va.	Lat 38°00'25", long 78°34'25", Albemarle County, 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.	3.52	1967-77, 1979-88	-	<13.81	<100
02034500	Willis River at Lakeside Village, Va.	Lat 37°40'00", long 78°10'00", Cumberland County, on left bank 15 ft upstream from bridge on State Highway 690, 0.4 mi east of Lakeside Village, 6.9 mi upstream from mouth, and 7.7 mi downstream from Reynolds Creek. Datum of gage is 178.98 ft above National Geodetic Vertical Datum of 1929.	262	1927-86‡, 1987-88	5- 6-88	13.06	1,740

* Discharge not determined.
‡ Operated as a continuous-record gaging station.
< Less than.

Annual maximum discharge at crest-stage partial-record stations during water year 1988--Continued

Station No.	Station Name	Location	Drainage area (mi^2)	Period of record	Annual Maximum		
					Date	Gage height (ft)	Discharge (ft^3/s)
		JAMES RIVER BASIN--Continued					
02037800	Falling Creek near Midlothian, Va.	Lat 37°27'15", long 77°35'20", Chesterfield County, at bridge on State Highway 653, 2.25 mi upstream from Horners Run, and 4 mi southeast of Midlothian. Datum of gage is 170.06 ft above National Geodetic Vertical Datum of 1929.	18.1	1951-88	7-22-88	4.31	296
02038840	Holiday Creek near Toga, Va.	Lat 37°25'58", long 78°41'12", Buckingham County, 40 ft downstream from State Forest Road 2307, 5.9 mi southwest of Toga.	1.68	1967-88	5-18-88	2.13	(*)
02038845	North Holiday Creek near Toga, Va.	Lat 37°26'09, long 78°40'04", Buckingham County, 18 ft upstream from State Forest Road 2307, 4.5 mi southwest of Toga.	1.31	1967-88	5-18-88	1.28	(*)
02040500	Flat Creek near Amelia, Va.	Lat 37°23'27", long 78°03'45", Amelia County, at bridge on State Highway 681, 0.5 mi downstream from Horsepen Creek, and 6.0 mi northwest of Amelia.	73.0	1946-70, 1972-88	11-11-87	7.27	986
02042250	Bailey Branch tributary at Spring Grove, Va.	Lat 37°10'29", long 76°59'13", Surry County, on right upstream wingwall of culvert on State Highway 10, 1.0 mi northwest of Spring Grove. Datum of gage is 61.39 ft above National Geodetic Vertical Datum of 1929.	.71	1967-88	-	<2.28	<7
02042300	Horsepen Branch at Richmond, Va.	Lat 37°35'45", long 77°30'40", Henrico County, on left downstream retaining wall at culverts on U.S. Highway 250 (Broad Street), at Richmond, and 0.9 mi upstream from mouth.	1.35	1965-88	7-23-88	3.68	590
02042400	Jordans Branch at Richmond, Va.	Lat 37°35'10", long 77°29'55", Henrico County, on left downstream wall of bridge on U.S. Highway 250 (Broad Street), at Richmond, and 2.0 mi upstream from mouth.	2.41	1965-88	7-23-88	8.98	(*)
02042780	West Branch Long Hill Swamp near Lightfoot, Va.	Lat 37°18'50", long 77°46'01", James City County, on left upstream wingwall of culvert on State Highway 612, 1.1 mi upstream from mouth, and 2.0 mi south of Lightfoot.	2.47	1970-76, 1978-88	5- 5-88	3.34	68
		CHOWAN RIVER BASIN					
02044000	Nottoway River near Burkeville, Va.	Lat 37°04'40", long 78°11'52", Lunenburg County, on right bank at downstream side of bridge on State Highway 723, 4.0 mi upstream from Modest Creek, 5.6 mi north of Victoria, and 7.5 mi south of Burkeville. Datum of gage is 354.58 ft above National Geodetic Vertical Datum of 1929.	38.7	1947-86‡, 1987-88	12-11-87	8.05	391

* Discharge not determined.
‡ Operated as a continous-record gaging station.
< Less than.

Annual maximum discharge at crest-stage partial-record stations during water year 1988--Continued

Station No.	Station Name	Location	Drainage area (mi^2)	Period of record	Annual Maximum		
					Date	Gage height (ft)	Discharge (ft^3/s)
		CHOWAN RIVER BASIN--Continued					
02044200	Falls Creek tributary near Victoria, Va.	Lat 37°02'04", long 78°10'26", Lunenburg County, at upstream end of culvert on State Highway 49, 3.6 mi northeast of Victoria.	.34	1962-88	7-22-88	3.54	34
02047500	Blackwater River near Dendron, Va.	Lat 37°01'30", long 76°52'30", Surry County, on left bank 10 ft upstream from Walls Bridge on State Highway 617, 3.5 mi southeast of Dendron. Datum of gage is 30.99 ft above National Geodetic Vertical Datum of 1929.	294	1942-86‡, 1987-88	2-14-88	5.43	1,380
02050050	Blackwater River tributary near Holland, Va.	Lat 36°38'44", long 76°51'29", Suffolk City, on left upstream wingwall of culvert on State Highway 189, 3.0 mi upstream from mouth, and 4.9 mi southwest of Holland. Datum of gage is 29.25 ft above National Geodetic Vertical Datum of 1929.	2.76	1967-88	7-20-88	4.57	88
02051600	Great Creek near Cochran, Va.	Lat 36°48'46", long 77°55'19", Brunswick County, on left bank at upstream side of bridge on State Highway 763, 1.4 mi southwest of Cochran. Datum of gage is 215.72 ft above National Geodetic Vertical Datum of 1929.	30.7	1958-86‡, 1987-88	2-12-88	4.53	137
		ROANOKE RIVER BASIN					
02057700	Powder Mill Creek at Rocky Mount, Va.	Lat 37°00'26", long 79°52'25", Franklin County, on right upstream wingwall of westernmost culvert in the interchange between U.S. Highway 220 bypass and State Highways 40 and 122 at Rocky Mount, 3.5 mi upstream from mouth.	.64	1967-88	5-16-88	14.65	126
02065100	Snake Creek near Brookneal, Va.	Lat 37°00'42", long 78°57'52", Halifax County, on left upstream wingwall of culvert on U.S. Highway 501, 0.5 mi upstream from mouth, and 2.1 mi south of Brookneal.	1.68	1967-88	5-23-88	c3.87	c92
02065300	Right Hand Fork near Appomattox, Va.	Lat 37°16'12", long 78°49'14", Appomattox County, on right upstream wingwall of culvert on State Highway 727, 0.5 mi upstream from Maple Spring Branch, and 5.2 mi south of Appomattox.	2.08	1967-88	11-11-87	3.78	61
02075350	Powells Creek near Turbeville, Va.	Lat 36°34'50", long 79°11'20", Halifax County, 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 383.95 ft above National Geodetic Vertical Datum of 1929.	.28	1958-69a, 1970-88	8- 4-88	4.19	40

‡ Operated as a continuous-record gaging station.
a Records provided by U.S. Department of Agriculture, Soil Conservation Service.
c Possible backwater from beaver dam 50 ft downstream.

Annual maximum discharge at crest-stage partial-record stations during water year 1988--Continued

Station No.	Station Name	Location	Drainage area (mi^2)	Period of record	Annual Maximum		
					Date	Gage height (ft)	Discharge (ft^3/s)
		ROANOKE RIVER BASIN--Continued					
02076000	Dan River at South Boston, Va.	Lat 36°41'37", long 78°54'09", South Boston City, on left bank 100 ft upstream from Norfolk and Western Railroad bridge at South Boston.	2,730	1900-07‡, 1923-52‡, 1953-62d, 1980-88d	1-21-88	<19.51	(*)
02076200	Bearskin Creek near Chatham, Va.	Lat 36°50'30", long 79°29'05", Pittsylvania County, on left upstream wingwall of culvert on State Highway 57, 4.5 mi west of Chatham, and 6 mi upstream from mouth.	4.06	1967-88	-	<3.18	<118
02076700	Blacks Creek near Mt. Airy, Va.	Lat 36°56'40", long 79°09'56", Pittsylvania County, on left upstream wingwall of culvert on State Highway 40, 1.5 mi east of Mt. Airy, and 3.5 mi upstream from mouth.	3.44	1966-88	11-10-87	2.76	18
02079500	Roanoke River at Buggs Island, Va.	Lat 36°36'06", long 78°17'56", Mecklenburg County, on left bank 1,200 ft downstream from John H. Kerr dam, 5.3 mi upstream from bridge on U.S. Highway 1, and 6.7 mi southeast of Boydton.	7,780	1947-62‡, 1963-88	7-29-88	10.47	(*)
		KANAWHA RIVER BASIN					
03165700	Cripple Creek at Cedar Springs, Va.	Lat 36°49'31", long 81°16'45", Wythe County, on right downstream wingwall of bridge on State Highway 749, 0.6 mi southeast of Cedar Springs.	11.3	1967-88	-	<13.88	<357
03167300	Mira Fork tributary near Dugspur, Va.	Lat 36°50'16", long 80°35'47", Carroll County, 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 above National Geodetic Vertical Datum of 1929.	.62	1967-88	4- 4-88	3.55	67
03167700	Beaverdam Creek at Hillsville, Va.	Lat 36°46'05", long 80°43'33", Carroll County, at bridge on private road to Burlington Industries, 0.2 mi east of Hillsville corporate limits, and 3.0 mi upstream from mouth. Datum of gage is 2,373.04 ft above National Geodetic Vertical Datum of 1929.	4.75	1968-88	4- 4-88	3.06	146
03168750	Thorne Springs Branch near Dublin, Va.	Lat 37°05'30", long 80°44'34", Pulaski County, at pond dam just upstream from U.S. Highway 11, 3.3 mi southwest of Dublin, and 4.3 mi upstream from mouth.	4.77	1957-69a, 1970-88	9-17-88	1.37	30

* Discharge not determined.
‡ Operated as a continuous-record gaging station.
< Less than.
a Records provided by U.S. Department of Agriculture, Soil Conservation Service.
d Operated as a stage-only station.

Annual maximum discharge at crest-stage partial-record stations during water year 1988--Continued

Station No.	Station Name	Location	Drainage area (mi^2)	Period of record	Annual Maximum		
					Date	Gage height (ft)	Discharge (ft^3/s)
		BIG SANDY RIVER BASIN					
03207500	Levisa Fork near Grundy, Va.	Lat 37°17'52", long 82°07'34", Buchanan County, on right bank 200 ft upstream from Six and Twenty Mile Creek, 2.4 mi northwest of Grundy.	e235	1942-74‡, 1986-87‡, 1988	12-25-87	7.32	1,780
03208040	Russell Fork at Council, Va.	Lat 37°04'41", long 82°03'56", Buchanan County, 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.	10.2	1981-83‡, 1984-88	4- 8-88	2.93	343
03208100	Russell Fork near Birchleaf, Va.	Lat 37°09'50", long 82°15'20", Dickenson County, on right bank 125 ft upstream from bridge on State Highway 80, 150 ft upstream from Fryingpan Creek, 1.3 mi southeast of Birchleaf, and 3.5 mi southeast of Haysi.	87.4	1981-83‡, 1984-88	4- 8-88	4.04	523
03208700	North Fork Pound River at Pound, Va.	Lat 37°07'32", long 82°37'36", Wise County, on right bank 700 ft downstream from Stacy Branch, 1,600 ft downstream from North Fork Pound River dam, at Pound. Datum of gage is 1,500.00 ft above National Geodetic Vertical Datum of 1929.	18.5	1962-87‡, 1988	12-25-87	50.22	301
03208800	Pound River above Indian Creek, at Pound, Va.	Lat 37°07'26", long 82°36'29", Wise County, 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 above National Geodetic Vertical Datum of 1929.	36.7	1966-78‡, 1979-88	12-25-87	6.32	436
03208850	Pound River below Bold Camp Creek, at Pound, Va.	Lat 37°07'19", long 82°35'55", Wise County, at Pound, on left bank 1,000 ft upstream from bridge on State Highway 83, 0.3 mi downstream from Bold Camp Creek, and 0.5 mi downstream from Indian Creek. Datum of gage is 1,527.36 ft above National Geodetic Vertical Datum of 1929.	61.2	1966-78‡, 1979-88	12-25-87	9.60	759
03208900	Pound River near Georges Fork, Va.	Lat 37°09'51", long 82°31'30", Dickenson County, 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 above National Geodetic Vertical Datum of 1929.	82.5	1964-82‡, 1983-88	12-25-87	6.03	1,070

‡ Operated as a continuous-record station.
e Includes drainage area of Six and Twenty Mile Creek.

Annual maximum discharge at crest-stage partial-record stations during water year 1988--Continued

Station No.	Station Name	Location	Drainage area (mi^2)	Period of record	Annual Maximum		
					Date	Gage height (ft)	Discharge (ft^3/s)
		BIG SANDY RIVER BASIN--Continued					
03209200	Russell Fork at Bartlick, Va.	Lat 37°14'45", long 82°19'25", Dickenson County, 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 above National Geodetic Vertical Datum of 1929.	526	1963-82‡, 1983-88	12-25-87	11.08	3,070
03213590	Knox Creek at Kelsa, Va.	Lat 37°27'02", long 82°03'34", Buchanan County, on downstream end of center 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.	84.3	1980-81‡, 1982-88	12-25-87	5.04	720
		TENNESSEE RIVER BASIN					
03471200	South Fork Holston River at Teas, Va.	Lat 36°46'22", long 81°27'08", Smyth County, at Teas, on right downstream pier of bridge on State Highway 601, and 0.1 mi downstream from Mullins Branch. Datum of gage is 2,496.98 ft above National Geodetic Vertical Datum of 1929.	31.1	1967-88	-	<10.88	<60
03472500	Beaverdam Creek at Damascus, Va.	Lat 36°37'40", long 81°47'28", Washington County, at Damascus, on right bank 350 ft west of State Highway 716, in old plant area of Mobay Chemical Corporation, and 0.6 mi upstream from mouth. Datum of gage is 1,946.66 ft above National Geodetic Vertical Datum of 1929.	56.0	1948-59‡, 1960-88	2- 4-88	4.90	2,410
03474700	Hutton Creek near Chilhowie, Va.	Lat 36°47'00", long 81°44'05", Washington County, on left downstream wingwall of bridge on U.S. Highway 11, 3.3 mi southwest of Chilhowie, and 1.4 mi upstream from mouth.	8.32	1967-88	-	<10.50	<190
03474800	Hall Creek near Glade Spring, Va.	Lat 36°45'47", long 81°48'15", Washington County, on right downstream wingwall of bridge on U.S. Highway 11, 2.0 mi upstream from Tattle Branch, and 2.5 mi southwest of Glade Spring.	7.90	1967-88	-	<9.60	<200
03475600	Cedar Creek near Meadowview, Va.	Lat 36°44'50", long 81°51'20", Washington County, 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 above National Geodetic Vertical Datum of 1929.	3.38	1967-88	-	<5.30	<15

‡ Operated as a continuous-record gaging station.
< Less than.

Annual maximum discharge at crest-stage partial-record stations during water year 1988--Continued

Station No.	Station Name	Location	Drainage area (mi^2)	Period of record	Annual Maximum		
					Date	Gage height (ft)	Discharge (ft^3/s)
		TENNESSEE RIVER BASIN--Continued					
03475700	Spring Creek near Abingdon, Va.	Lat 36°40'43", long 82°02'29", Washington County, on right upstream and left downstream wingwall of culvert on U.S. Highway 11, 1.5 mi upstream from Sinking Creek, and 3.8 mi southwest of Abingdon. Datum of gage is 1,977.54 ft above National Geodetic Vertical Datum of 1929.	2.99	1967-88	4-24-88	4.41	171
03487800	Lick Creek near Chatham Hill, Va.	Lat 36°57'44", long 81°28'21", Smyth County, on left bank 270 ft upstream from bridge on State Highway 42, 2.9 mi northeast of Chatham Hill, and 1.6 mi upstream from mouth. Datum of gage is 2,076.97 ft above National Geodetic Vertical Datum of 1929.	25.5	1966-68‡, 1969-88	1-20-88	4.40	615
03488450	Brumley Creek at Brumley Gap, Va.	Lat 36°47'30", long 82°01'10", Washington County, on left downstream wingwall of bridge on State Highway 611, 0.2 mi upstream from mouth, 0.8 mi southeast of Brumley Gap, and 2.7 mi downstream from Lee Creek. Datum of gage is 1,489.16 ft above National Geodetic Vertical Datum of 1929.	21.1	1979-81‡, 1982-88	2- 4-88	5.16	784
03489800	Cove Creek near Shelleys, Va.	Lat 36°39'13", long 82°21'16", Scott County, on right downstream wingwall of bridge on U.S. Highways 58 and 421, 1.5 mi northwest of Shelleys. Datum of gage is 1,381.53 ft above National Geodetic Vertical Datum of 1929.	17.3	1951-88	2- 4-88	5.43	662
03489870	Big Moccasin Creek at Collinwood, near Hansonville, Va.	Lat 36°44'16", long 82°19'25", Russell County, at Collinwood, on left downstream wingwall of bridge on State Highway 612, and 50 ft downstream from Meade Branch. Datum of gage is 1,796.34 ft above National Geodetic Vertical Datum of 1929.	41.9	1967-68‡, 1969-88	2- 4-88	3.28	868
03490000	North Fork Holston River near Gate City, Va.	Lat 36°36'31", long 82°34'05", Scott County, on left bank 75 ft upstream from bridge on U.S. Highway 23, 1.6 mi downstream from Big Moccasin Creek, 2.1 mi southeast of Gate City, and 8.8 mi upstream from mouth. Datum of gage is 1,197.56 ft above National Geodetic Vertical Datum of 1929.	672	1931-81‡, 1982-88f	2- 4-88	7.68	7,040

‡ Operated as a continuous-record gaging station.
f Records provided by Tennessee Valley Authority since Jan. 1, 1982.

Annual maximum discharge at crest-stage partial-record stations during water year 1988--Continued

Station No.	Station Name	Location	Drainage area (mi^2)	Period of record	Annual Maximum		
					Date	Gage height (ft)	Discharge (ft^3/s)
		TENNESSEE RIVER BASIN--Continued					
03524500	Guest River at Coeburn, Va.	Lat 36°55'45', long 82°27'23", Wise County, on right bank 30 ft downstream from bridge on State Highway 72, 1.0 mi southeast of Coeburn, 1.4 mi upstream from Jaybird Branch, 1.8 mi downstream from Pine Camp Creek, and 6.3 mi upstream from mouth. Datum of gage is 1,925.80 ft above National Geodetic Vertical Datum of 1929.	87.3	1949-59‡, 1960-78, 1979-81‡, 1982-88	2- 4-88	6.70	1,610
03524900	Stony Creek at Ka, Va.	Lat 36°48'57", long 82°37'02", Scott County, 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.	30.9	1980-81‡, 1982-88	2- 4-88	5.73	2,610
03526000	Copper Creek near Gate City, Va.	Lat 36°40'26", long 82°33'57", Scott County, on right bank 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 National Geodetic Vertical Datum of 1929.	106	1948-72‡, 1973-88	2- 4-88	7.48	1,510
03527000	Clinch River at Speers Ferry, Va.	Lat 36°38'55", long 82°45'02", Scott County, 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 211.0 mi upstream from mouth. Datum of gage is 1,196.54 ft above National Geodetic Vertical Datum of 1929.	1,126	1920-76‡, 1977-78, 1979-81‡, 1982-88	2- 5-88	10.85	8,770
03529500	Powell River at Big Stone Gap, Va.	Lat 36°52'08", long 82°46'32", Wise County, on right bank 10 ft upstream from bridge on U.S. Highway 23, at Big Stone Gap, 1.0 mi upstream from South Fork Powell River, 2.5 mi downstream from Pigeon Creek, and 179.2 mi upstream from mouth. Datum of gage is 1,459.07 ft above National Geodetic Vertical Datum of 1929.	112	1945-59‡, 1960-77, 1979-81‡, 1982-88	12-25-87	4.98	2,500
03530500	North Fork Powell River at Pennington Gap, Va.	Lat 36°46'26", long 83°01'59", Lee County, near right bank on downstream side of bridge on State Highway 621, 0.8 mi north of Pennington Gap, 1.3 mi downstream from Straight Creek, and 4.7 mi upstream from mouth. Datum of gage is 1,363.02 ft above National Geodetic Vertical Datum of 1929.	71.4	1945-51‡, 1952-77, 1979-81‡, 1982-88	12-25-87	6.71	2,660

‡ Operated as a continuous-record gaging station.

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 Water Control Board are noted by an "[a]".

Discharge measurements made at special study and miscellaneous sites during water year 1988

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
NASSAWADOX CREEK BASIN						
Nassawadox Creek [a]	Chesapeake Bay	Lat 37°31'31", long 75°52'37", Northampton County, at culvert on State Highway 606, 2.7 mi upstream from Kelly Cove, and 3.5 mi north of Nassawadox.	b4.2	1968-87	1- 6-88	0.96
					3- 1-88	2.44
					4-25-88	.30
					8- 2-88	1.64
GREAT WICOMICO RIVER BASIN						
01661800 Bush Mill Stream	Great Wicomico River	Lat 37°52'36", long 76°29'42", Northumberland County, at bridge on State Highway 601, 2.2 mi northwest of Howland, 3.0 mi southwest of Heathsville, and 3.5 mi upstream from mouth.	6.82	1964-69‡, 1970-86‡, 1987	7-24-87	0.06
					3-31-88	4.56
					6-29-88	.61
RAPPAHANNOCK RIVER BASIN						
01668800 Hoskins Creek	Rappahannock River	Lat 37°55'38", long 76°57'16", Essex County, at bridge on State Highway 717, 0.4 mi upstream from Criddlin Swamp, 2.9 mi downstream from old site of Hutchinson Mill Pond, and 5.0 mi west of Tappahannock.	15.5	1965-69‡, 1970-86‡, 1987	7-24-87	2.34
					10- 1-87	3.64
					3-30-88	14.5
					6-30-88	.35
JAMES RIVER BASIN						
Swift Creek [a]	Appomattox River	Lat 37°27'18", long 77°42'12", Chesterfield County, at bridge on State Highway 667, 2.6 mi southeast of Hallsboro.			5-31-87	2.77
					6-25-87	.83
					7-12-87	.511
					7-30-87	0
					8-17-87	0
					9- 5-87	.025
					9-13-87	19.6
					9-27-87	.827
					10-16-87	.633
					10-22-87	.355
					10-29-87	3.29
					11- 8-87	.43
					11-11-87	65.0
					11-12-87	23.2
					11-29-87	62.4
					12-19-87	13.4
					1- 7-88	10.3
					1-16-88	8.86
					1-20-88	219
					1-24-88	21.7
					2-13-88	30.1
					3- 6-88	8.14
					3-26-88	16.7
					4-16-88	10.3
					5- 7-88	10.4
					5-14-88	4.26
					5-30-88	1.44
					6-12-88	.93
					7-16-88	.053
					8-17-88	.015

‡ Operated as a continuous-record gaging station.
a Provided by the Virginia Water Control Board.
b Approximately.

Discharge measurements made at special study and miscellaneous sites during water year 1988--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
		JAMES RIVER BASIN--Continued				
Otterdale Branch [a]	Deep Creek	Lat 37°26'28", long 77°42'40", Chesterfield County, at bridge on State Highway 667, 3.3 mi southeast of Hallsboro.	-	-	5-31-87	0.197
					6-25-87	.016
					7-12-87	0
					7-30-87	0
					8-17-87	0
					9- 5-87	.030
					9-27-87	0
					11- 8-87	.01
					11-12-87	1.20
					11-29-87	14.0
					12-12-87	5.86
					12-19-87	2.27
					1- 7-88	1.41
					1-16-88	1.04
					1-20-88	31.5
					1-24-88	3.40
					2-13-88	4.16
					3- 6-88	1.07
					3-26-88	3.48
					4-16-88	1.91
					5- 7-88	1.51
					5-14-88	.53
					5-30-88	.297
					6-12-88	.064
					7-16-88	0
					7-30-88	0
Blackman Creek [a]	Deep Creek	Lat 37°24'55", long 77°43'38", Chesterfield County, at bridge on State Highway 667, 0.5 mi upstream from confluence with Horsepen Creek, and 4.6 mi north of Winterpock.	-	-	5-31-87	0.246
					6-25-87	0
					7-12-87	0
					7-16-87	0
					7-30-87	0
					8-17-87	0
					9- 5-87	0
					9- 8-87	0
					9-27-87	0
					11-12-87	1.74
					11-29-87	23.5
					12-12-87	9.18
					12-19-87	2.38
					1-20-88	48.4
					2-13-88	6.71
					3-13-88	4.46
					4-16-88	2.76
					5-14-88	.691
					6-12-88	.058
					7-16-88	0
					7-23-88	17.7
Horsepen Creek [a]	Deep Creek	Lat 37°25'24", long 77°43'35", Chesterfield County, at bridge on State Highway 667, 0.3 mi upstream from confluence with Blackman Branch, and 4.5 mi south of Hallsboro.	-	-	5-31-87	0.092
					6-25-87	0
					7-12-87	0
					7-16-87	0
					7-30-87	0
					8-17-87	0
					9- 5-87	0
					9- 8-87	0
					9-27-87	0
					11-12-87	1.95
					11-29-87	23.4
					12-12-87	8.42
					12-19-87	1.64
					1-20-88	42.0
					2-13-88	5.21
					3-13-88	3.09
					4-16-88	1.69
					5-14-88	.383
					6-12-88	.021
					7-16-88	0
					7-23-88	3.60

a Provided by the Virginia Water Control Board.

Discharge measurements made at special study and miscellaneous sites during water year 1988--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft^3/s)
		JAMES RIVER BASIN--Continued				
Tomahawk Creek [a]	Swift Creek	Lat 37°28'10", long 77°40'54", Chesterfield County, at bridge on State Highway 652, 1.7 mi upstream from Little Tomahawk Creek, and 2.7 mi southeast of Hallsboro.	-	-	5-31-87	0.30
					6-25-87	0
					7-12-87	0
					7-30-87	0
					8-17-87	0
					9- 5-87	0
					9- 8-87	.016
					9-12-87	1.39
					9-27-87	0
					11- 8-87	.01
					11-12-87	1.99
					11-29-87	10.9
					12-12-87	9.02
					12-19-87	2.83
					1- 7-88	2.43
					1-16-88	2.03
					1-20-88	32.6
					1-24-88	5.05
					2-13-88	5.73
					3- 6-88	2.10
					3-26-88	3.82
					4-16-88	2.98
					5- 7-88	2.35
					5-14-88	.582
					5-30-88	.195
					6-12-88	.013
					7-16-88	0
					7-23-88	5.43
Little Tomahawk Creek [a]	Tomahawk Creek	Lat 37°27'52", long 77°40'21", Chesterfield County, at bridge on State Highway 652, 3.4 mi southeast of Hallsboro.	-	-	5-31-87	0.104
					6-25-87	0
					7-12-87	0
					7-16-87	0
					7-30-87	0
					8-17-87	0
					9- 5-87	0
					9- 8-87	.584
					9-27-87	0
					11-29-87	4.44
					12-12-87	2.22
					12-19-87	.881
					1-20-88	11.2
					2-13-88	2.60
					3-13-88	2.27
					4-16-88	1.74
					5-14-88	.46
					6-12-88	.018
West Branch [a]	Dry Creek	Lat 37°24'40", long 77°41'53", Chesterfield County, 0.6 mi north of U.S. Highway 360, 0.7 mi upstream from Swift Creek Reservoir, 1.2 mi downstream from State Highway 667, and 4.8 mi northeast of Winterpock.	-	-	5-31-87	0.069
					6-25-87	0
					7-12-87	0
					7-16-87	0
					7-30-87	0
					8-17-87	0
					9- 5-87	0
					9- 8-87	0
					9-27-87	0
					11-12-87	.053
					11-29-87	2.83
					12-12-87	2.22
					12-19-87	.536
					1-20-88	15.4
					2-13-88	2.38
					3-13-88	1.35
					4-16-88	.898
					5-14-88	.147
					6-12-88	.005
					7-16-88	0

a Provided by the Virginia Water Control Board.

Discharge measurements made at special study and miscellaneous sites during water year 1988--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
		JAMES RIVER BASIN--Continued				
Swift Creek [a]	Appomattox River	Lat 37°24'52", long 77°38'39", Chesterfield County, at bridge on U.S. Highway 360, 200 ft downstream from Swift Creek Reservoir Dam, and 5.1 mi northwest of Beach.	-	1963	6-25-87	0.053
					7-12-87	.023
					7-30-87	.012
					8-17-87	.043
					9- 5-87	.65
					9-27-87	.069
					11- 8-87	.028
					11-29-87	.473
					12-19-87	.074
					1-20-88	74.6
					2-13-88	94.1
					3-13-88	46.2
					4-16-88	22.5
					5-14-88	.122
					7-16-88	.048
02042270 Chickahominy River	James River	Lat 37°41'10", long 77°32'35", Hanover County, at bridge on U.S. Highway 33, 2.7 mi northwest of Glen Allen.	-	1976, 1985, 1987	9-13-88	0.67
02042280 Chickahominy River	James River	Lat 37°41'38", long 77°29'28", Hanover-Henrico County line, at bridge on State Highway 626, 1.2 mi south of Elmont.	56	1957-58, 1976, 1984-85	9-13-88	2.18
02042284 Stony Run	Chickahominy River	Lat 37°41'05", long 77°26'58", Hanover County, 50 ft upstream from culvert on State Highway 656, 3.0 mi northwest of Atlee.	17.9	1984-85, 1987	9-13-88	0.35
02042288 Chickahominy River	James River	Lat 37°36'41", long 77°22'18", Hanover-Henrico County line, at bridge on State Highway 627, 2.2 mi northeast of Richmond.	-	1984-85, 1987	9-13-88	<b3.5
02042226 Upham Brook	Chickahominy River	Lat 37°36'47", long 77°25'28", Henrico County, at bridge on Wilkinson Road, 1.2 mi north of Richmond.	-	1987	9-13-88	<b2.8
02042433 Beaverdam Creek	Chickahominy River	Lat 37°35'45", long 77°21'32", Hanover County, at bridge on State Highway 156, 0.7 mi southeast of Mechanicsville.	-	1984-85, 1987	9-13-88	2.21
02042435 Chickahominy River	James River	Lat 37°34'36", long 77°20'03", Hanover-Henrico County line, at bridge on State Highway 615, 1.5 mi north of Highland Springs.	-	1976, 1984-85, 1987	9-14-88	16.2
02042440 Chickahominy River	James River	Lat 37°33'07", long 77°16'17", Hanover-Henrico County line, at bridge on State Highway 156, 2.7 mi northeast of Seven Pines.	-	1953-54, 1984-85, 1987	9-14-88	16.1
02042443 Chickahominy River	James River	Lat 37°31'03", long 77°12'34", New Kent-Henrico County line, at bridge on Interstate Highway 64, 2.2 mi northwest of White Oak Swamp.	164	1985, 1987	9-14-88	34
02042455 White Oak Swamp	Chickahominy River	Lat 37°28'05", long 77°12'32", Henrico County, at bridge on State Highway 156, at Elko.	-	1984-85, 1987	9-14-88	3.93

< Less than.
a Provided by the Virginia Water Control Board.
b Approximately.

Discharge measurements made at special study and miscellaneous sites during water year 1988--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
		JAMES RIVER BASIN--Continued				
02042465 Toe Ink Swamp	Chickahominy River	Lat 37°29'03", long 77°07'56", New Kent County, at outfall downstream from Kent Lake dam, and 1.5 mi north of Roxbury.	-	1984-85, 1987	9-14-88	2.17
02042470 Chicka-hominy River	James River	Lat 37°28'11", long 77°08'17", New Kent-Charles City County line, 600 ft upstream from bridge on State Highway 609, 0.4 mi north of Roxbury.	-	1942, 1984-85, 1987	9-14-88	28.1
02042610 Jones Run	Chickahominy River	Lat 37°26'28", long 77°02'48", New Kent County, at Chesapeake and Ohio railroad bridge, at Providence Forge.	-	1985, 1987	9-14-88	5.98
02042726 Diascund Creek	Chickahominy River	Lat 37°28'52", long 76°58'21", New Kent County, at bridge on State Highway 628, 2.4 mi south of New Kent, and 6.0 mi upstream from Timber Swamp.	9.25	1985, 1987	11-13-87 2- 2-88 4-12-88 5-25-88 6-28-88 8-10-88 9-14-88	11.3 6.16 6.57 7.65 5.00 (c) 2.69
02042736 Beaverdam Creek	Diascund Reservoir	Lat 37°28'53", long 76°54'23", New Kent County, at bridge on State Highway 632, 4.0 mi northwest of Barhamsville, and 4.1 mi upstream from mouth.	4.82	1985, 1987	11-13-87 2- 2-88 4-12-88 5-25-88 6-28-88 8-10-88 9-13-88	2.74 .39 3.40 1.56 (c) (c) (c)
02042742 Wahrani Swamp	Diascund Reservoir	Lat 37°27'30", long 76°51'57", New Kent County, at culvert on State Highway 632, 1.3 mi west of Barhamsville, and 1.8 mi upstream from Barnes Swamp.	4.02	1985, 1987	11-13-87 2- 2-88 4-12-88 5-25-88 6-28-88 8-10-88 9-14-88	4.16 2.08 2.21 1.71 .02 (c) .44
		ROANOKE RIVER BASIN				
02079880 Pea Hill Creek	Lake Gaston	Lat 36°34'57", long 77°53'20", Brunswick County, at bridge on State Highway 665, 1.1 mi north of Gasburg.	-	1987	10-26-87 11-18-87 12-16-87 1-19-88 2-17-88 3-28-88 4-20-88 5-10-88 6-20-88 7-18-88 8-17-88 9- 6-88	0.68 1.34 4.12 7.90 4.97 2.97 8.44 2.72 5.91 .88 .43 1.55
		KANAWHA RIVER BASIN				
03175100 Cox Branch	Clear Fork	Lat 37°09'12", long 81°24'51", Tazewell County, Jefferson National Forest, 200 ft upstream from town of Tazewell Reservoir, 1.2 mi north of Gratton, 1.6 mi upstream from bridge on State Highway 61, and 1.8 mi upstream from Clear Fork.	-	-	6- 8-88 6-30-88 8- 1-88 8-31-88 9-29-88	0.76 .56 .33 .59 .50

c No apparent flow.

Discharge measurements made at special study and miscellaneous sites during water year 1988--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
		TENNESSEE RIVER BASIN				
03473500 Middle Fork Holston River	South Fork Holston River	Lat 36°53'19", long 81°20'51", Smyth County, 15 ft downstream from culvert on State Highway 679, at Groseclose.	7.39	1948-57‡	12-14-87 2- 3-88 4-19-88 6-27-88 8-17-88	3.3 8.9 8.1 3.9 2.6
03473650 Nicks Creek	Middle Fork Holston River	Lat 36°51'52", long 81°26'09", Smyth County, at bridge on U.S. Highway 11, 3.5 mi northeast of Marion.	6.00	-	12-14-87 2- 3-88 4-19-88 6-27-88 8-17-88	1.4 14 13 .65 .31
03473660 Bear Creek	Middle Fork Holston River	Lat 36°52'08", long 81°26'33", Smyth County, at bridge on State Highway 622, 3 mi northeast of Marion.	14.66	-	12-14-87 2- 3-88 4-19-88 6-27-88 8-17-88	2.5 35 70 .37 .29
03473820 Staley Creek	Middle Fork Holston River	Lat 36°50'10", long 81°31'03", Smyth County, at bridge on Lee Street, in Marion.	14.74	-	12-14-87 2- 3-88 4-19-88 6-27-88 8-17-88	7.1 19 18 6.6 5.3
03473900 Walker Creek	Middle Fork Holston River	Lat 36°50'06", long 81°35'51", Smyth County, at bridge on State Highway 645, 2.3 mi northeast of Seven Mile Ford.	15.50	-	12-14-87 2- 3-88 4-19-88 6-27-88 8-17-88	1.5 34 47 .52 .40
03474000 Middle Fork Holston River	South Fork Holston River	Lat 36°48'26", long 81°37'20", Smyth County, at bridge on U.S. Highway 11, at Seven Mile Ford.	132	1942-81‡, 1983-85, 1987‡	12-14-87 2- 3-88 4-19-88 6-27-88 8-17-88	44 234 286 31 25
03474720 Hutton Creek	Middle Fork Holston River	Lat 36°46'21", long 81°43'49", Smyth County, at Huff Airport Road, 2.2 mi southwest of Chilhowie.	10.97	-	12-14-87 2- 3-88 4-19-88 6-27-88 8-17-88	2.9 11 8.7 3.1 2.4
03474900 Byers Creek	Middle Fork Holston River	Lat 36°44'22", long 81°47'57", Washington County, at bridge on State Highway 735, 4 mi south of Glade Spring.	15.2	1961-73d	12-14-87 2- 3-88 4-19-88 6-27-88 8-17-88	4.3 14 12 5.0 3.8
03475000 Middle Fork Holston River	South Fork Holston River	Lat 36°42'47", long 81°49'08", Washington County, on left bank 48 ft downstream from bridge on State Highway 803, 4.1 mi southeast of Meadowview.	211	1932-53‡, 1976-87‡	12-14-87 2- 3-88 4-19-88 6-27-88 8-17-88	61 291 280 53 44
03475602 Cedar Creek	Middle Fork Holston River	Lat 36°42'53", long 81°49'51", Washington County, at bridge on State Highway 706, 2.6 mi southeast of Cedarville.	7.15	-	12-14-87 2- 3-88 4-19-88 6-27-88 8-17-88	2.0 5.8 4.9 1.6 1.3
Cove Spring [a]	South Fork Clinch River	Lat 37°08'21", long 81°25'56", Tazewell County, 0.7 mi upstream from South Fork Clinch River, 0.7 mi upstream from bridge on State Highway 61, and 1.0 mi northwest of Gratton.	-	-	6- 9-88	0.11

‡ Operated as a continuous-record gaging station.
a Provided by the Virginia Water Control Board.
d Measurement by Tennessee Valley Authority.

Discharge measurements made at special study and miscellaneous sites during water year 1988--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
		TENNESSEE RIVER BASIN--Continued				
Burton Spring [a]	South Fork Clinch River	Lat 37°08'08", long 81°26'25", Tazewell County, 0.5 mi upstream from South Fork Clinch River, 0.5 mi upstream from bridge on State Highway 61, and 1.4 mi west of Gratton.	-	-	6- 9-88	0.22
Clinch River [a]	Tennessee River	Lat 37°07'30", long 81°33'28", Tazewell County, 0.1 mi west of Tazewell town limits, 0.8 mi downstream from bridge on State Highway Alt. 16.	-	1980, 1987	8-16-88 8-18-88	16.0 6.0
Unnamed tributary [a]	Clinch River	Lat 37°07'39", long 81°33'38", Tazewell County, at confluence with Clinch River, 0.2 mi west of Tazewell town limits, and 1.0 mi downstream from bridge on State Highway Alt. 16.	-	1980	8-16-88 8-18-88	0.26 .24
Clinch River [a]	Tennessee River	Lat 37°07'28", long 81°34'07", Tazewell County, 0.7 mi west of Tazewell town limits, 1.6 mi downstream from bridge on State Highway Alt. 16.	-	-	8-16-88 8-18-88	15.1 6.66
Plum Creek [a]	Clinch River	Lat 37°07'27", long 81°34'00", Tazewell County, 200 ft upstream from confluence with Clinch River, 0.6 mi west of Tazewell town limits, and 0.3 mi downstream from bridge on State Highway 632.	9.03	-	8-16-88 8-18-88	1.07 .83
Clinch River [a]	Tennessee River	Lat 37°07'20", long 81°34'42", Tazewell County, at bridge on State Highway 632, 1.4 mi west of Tazewell town limits.	-	1987	8-18-88	6.61
Clinch River [a]	Tennessee River	Lat 37°07'17", long 81°36'24", Tazewell County, 1.4 mi northeast of Maxwell, 1.9 mi upstream from bridge on State Highway 637.	-	1978, 1980	8-18-88	9.10

a Provided by the Virginia Water Control Board.

Samples are collected at partial-record, special study, and miscellaneous sites to give better areal coverage. The results of these samples are given herein.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	COLOR (PLAT-INUM-COBALT UNITS)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
JAMES RIVER BASIN											
02042270	CHICKAHOMINY RIVER AT RT 33 NR GLEN ALLEN, VA (LAT 37 41 10N LONG 077 32 35W)										
APR 1988											
12...	0700	16	115	7.30	11.0	760	120	10.7	97	5.5	1.5
SEP											
13...	0815	0.67	250	7.20	19.5	748	49	5.9	66	24	4.7
02042275	CHICKAHOMINY RIVER AT RT 625 NEAR GLEN ALLEN, VA (LAT 37 42 02N LONG 077 30 49W)										
APR 1988											
12...	0800	25	138	6.40	11.0	760	100	8.7	79	8.8	1.8
SEP											
13...	0900	2.2	318	7.20	20.5	748	19	6.4	73	29	3.9
02042284	STONY RUN AT RT 656 NEAR GREENWOOD, VA (LAT 37 41 05N LONG 077 26 58W)										
APR 1988											
12...	0910	17	110	6.30	11.0	762	110	9.3	84	4.8	1.7
SEP											
13...	1045	0.35	178	6.70	22.0	749	52	7.4	86	13	3.2
02042288	CHICKAHOMINY RIVER AT RT 627 NEAR RICHMOND, VA (LAT 37 36 41N LONG 077 24 24W)										
APR 1988											
12...	1150	42	120	6.30	12.0	762	110	5.0	46	6.4	1.6
SEP											
13...	1230	<3.5	141	6.50	22.0	750	71	2.4	28	10	2.2
02042426	UPHAM BROOK AT WILKINSON ROAD NR RICHMOND, VA (LAT 37 36 47N LONG 077 25 28W)										
APR 1988											
12...	1030	13	200	6.30	12.0	762	100	7.8	72	11	2.5
SEP											
13...	1130	<2.8	126	6.60	21.0	751	62	3.6	41	10	2.0
02042433	BEAVERDAM CREEK AT RT 156 AT MECHANICSVILLE, VA (LAT 37 35 45N LONG 077 21 32W)										
APR 1988											
12...	1310	5.9	115	6.00	12.0	761	76	10.4	97	5.2	3.0
SEP											
13...	1330	2.2	88	6.50	23.0	750	40	7.4	88	3.4	2.6
02042435	CHICKAHOMINY RIV AT RT 615 NR HIGHLAND SPGS, VA (LAT 37 34 36N LONG 077 20 03W)										
APR 1988											
12...	0815	190	130	6.40	13.0	750	110	4.7	45	7.1	1.9
SEP											
14...	0800	16	132	6.50	22.0	764	52	4.3	49	9.0	2.1

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)
					JAMES RIVER BASIN--Continued						
02042270			CHICKAHOMINY RIVER AT RT 33 NR GLEN ALLEN, VA (LAT 37 41 10N LONG 077 32 35W)								
APR 1988											
12...	9.5	1.9	12	26	11	0.20	13	79	0.347	0.090	0.60
SEP											
13...	16	4.0	40	52	11	0.40	8.0	149	1.10	0.040	0.80
02042275			CHICKAHOMINY RIVER AT RT 625 NEAR GLEN ALLEN, VA (LAT 37 42 02N LONG 077 30 49W)								
APR 1988											
12...	10	2.9	16	15	11	0.20	12	79	1.60	0.050	0.80
SEP											
13...	21	10	55	42	24	0.20	3.6	181	3.10	<0.010	0.80
02042284			STONY RUN AT RT 656 NEAR GREENWOOD, VA (LAT 37 41 05N LONG 077 26 58W)								
APR 1988											
12...	9.7	1.7	10	17	13	0.20	7.2	63	0.175	0.150	0.70
SEP											
13...	15	3.0	33	14	21	0.10	7.9	98	0.136	0.040	0.40
02042288			CHICKAHOMINY RIVER AT RT 627 NEAR RICHMOND, VA (LAT 37 36 41N LONG 077 24 24W)								
APR 1988											
12...	10	2.5	18	20	13	0.20	4.1	70	0.062	0.050	0.60
SEP											
13...	14	1.6	31	14	17	0.10	11	90	<0.010	<0.010	0.70
02042426			UPHAM BROOK AT WILKINSON ROAD NR RICHMOND, VA (LAT 37 36 47N LONG 077 25 28W)								
APR 1988											
12...	18	2.6	28	17	26	0.20	9.9	108	0.547	0.170	0.80
SEP											
13...	11	2.3	28	15	12	0.10	6.0	77	<0.010	0.060	0.70
02042433			BEAVERDAM CREEK AT RT 156 AT MECHANICSVILLE, VA (LAT 37 35 45N LONG 077 21 32W)								
APR 1988											
12...	11	2.2	16	12	13	0.10	2.7	65	1.30	0.080	0.40
SEP											
13...	9.0	1.5	17	5.8	10	0.10	5.2	52	0.838	<0.010	0.60
02042435			CHICKAHOMINY RIV AT RT 615 NR HIGHLAND SPGS, VA (LAT 37 34 36N LONG 077 20 03W)								
APR 1988											
12...	12	3.2	19	18	15	0.20	3.6	74	0.026	0.020	--
SEP											
14...	13	0.80	14	23	13	0.10	11	81	0.045	0.030	0.60

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)
				JAMES RIVER BASIN--Continued						
02042270	CHICKAHOMINY RIVER AT RT 33 NR GLEN ALLEN, VA (LAT 37 41 10N LONG 077 32 35W)									
APR 1988										
12...	0.030	0.024	0.016	1	<1	<1	<1	5	2000	1400
SEP										
13...	0.029	0.006	0.014	1	2	<1	1	4	1700	340
02042275	CHICKAHOMINY RIVER AT RT 625 NEAR GLEN ALLEN, VA (LAT 37 42 02N LONG 077 30 49W)									
APR 1988										
12...	0.023	0.014	0.007	<1	<1	<1	<1	4	1600	640
SEP										
13...	0.021	0.006	0.007	<1	1	<1	3	8	440	230
02042284	STONY RUN AT RT 656 NEAR GREENWOOD, VA (LAT 37 41 05N LONG 077 26 58W)									
APR 1988										
12...	0.072	0.020	0.014	<1	<1	<1	<1	4	1800	790
SEP										
13...	0.059	0.011	0.009	1	2	<1	2	6	2300	620
02042288	CHICKAHOMINY RIVER AT RT 627 NEAR RICHMOND, VA (LAT 37 36 41N LONG 077 24 24W)									
APR 1988										
12...	0.037	0.025	0.017	1	<1	<1	<1	3	1600	780
SEP										
13...	0.078	0.015	0.014	1	1	1	3	9	2800	990
02042426	UPHAM BROOK AT WILKINSON ROAD NR RICHMOND, VA (LAT 37 36 47N LONG 077 25 28W)									
APR 1988										
12...	0.057	0.043	0.034	2	<1	<1	<1	6	2500	1300
SEP										
13...	0.099	<0.001	<0.001	3	1	1	4	8	1900	1500
02042433	BEAVERDAM CREEK AT RT 156 AT MECHANICSVILLE, VA (LAT 37 35 45N LONG 077 21 32W)									
APR 1988										
12...	0.011	0.004	0.005	1	<1	<1	<1	3	1800	320
SEP										
13...	0.016	<0.001	0.002	<1	1	<1	<1	2	1300	360
02042435	CHICKAHOMINY RIV AT RT 615 NR HIGHLAND SPGS, VA (LAT 37 34 36N LONG 077 20 03W)									
APR 1988										
12...	0.066	0.069	0.042	1	<1	<1	<1	4	2400	1500
SEP										
14...	0.064	0.025	0.015	1	1	<1	2	3	1600	120

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI)	SELE-NIUM, TOTAL (UG/L AS SE)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
					JAMES RIVER BASIN--Continued					
02042270	CHICKAHOMINY RIVER AT RT 33 NR GLEN ALLEN, VA (LAT 37 41 10N LONG 077 32 35W)									
APR 1988										
12...	<5	120	140	<0.10	<1	<1	20	11	46	72
SEP										
13...	<5	140	130	<0.10	1	<1	10	7.7	15	96
02042275	CHICKAHOMINY RIVER AT RT 625 NEAR GLEN ALLEN, VA (LAT 37 42 02N LONG 077 30 49W)									
APR 1988										
12...	<5	110	110	<0.10	<1	<1	10	11	21	58
SEP										
13...	<5	50	42	<0.10	1	<1	<10	7.8	7	76
02042284	STONY RUN AT RT 656 NEAR GREENWOOD, VA (LAT 37 41 05N LONG 077 26 58W)									
APR 1988										
12...	<5	90	90	<0.10	3	<1	50	9.9	13	84
SEP										
13...	<5	200	200	<0.10	5	<1	20	5.6	11	95
02042288	CHICKAHOMINY RIVER AT RT 627 NEAR RICHMOND, VA (LAT 37 36 41N LONG 077 24 24W)									
APR 1988										
12...	<5	110	110	<0.10	5	<1	30	12	7	88
SEP										
13...	<5	680	700	<0.10	5	<1	30	11	10	89
02042426	UPHAM BROOK AT WILKINSON ROAD NR RICHMOND, VA (LAT 37 36 47N LONG 077 25 28W)									
APR 1988										
12...	<5	160	160	<0.10	1	<1	20	9.4	31	39
SEP										
13...	<5	300	310	<0.10	<1	<1	20	8.5	9	98
02042433	BEAVERDAM CREEK AT RT 156 AT MECHANICSVILLE, VA (LAT 37 35 45N LONG 077 21 32W)									
APR 1988										
12...	<5	100	120	<0.10	<1	<1	<10	3.8	5	87
SEP										
13...	<5	70	62	<0.10	<1	<1	<10	4.0	5	94
02042435	CHICKAHOMINY RIV AT RT 615 NR HIGHLAND SPGS, VA (LAT 37 34 36N LONG 077 20 03W)									
APR 1988										
12...	<5	170	140	<0.10	1	<1	20	--	7	82
SEP										
14...	<5	460	450	0.20	<1	<1	260	8.2	9	92

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	COLOR (PLAT-INUM-COBALT UNITS)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
JAMES RIVER BASIN--Continued											
02042440 CHICKAHOMINY RIVER AT RT 156 NR SEVEN PINES, VA (LAT 37 33 07N LONG 077 16 17W)											
APR 1988											
12...	1045	236	110	6.10	12.5	750	120	10.2	97	6.1	1.7
SEP											
14...	0930	13	128	6.40	22.0	765	55	3.4	39	8.4	2.1
02042443 CHICKAHOMINY RIV AT I64 NR WHITE OAK SWAMP, VA (LAT 37 31 03N LONG 077 12 34W)											
APR 1988											
12...	1235	270	110	6.10	13.0	750	120	10.0	96	5.6	1.6
SEP											
14...	1030	34	109	6.50	22.0	765	55	6.0	68	6.9	1.9
02042455 WHITE OAK SWAMP AT RT 156 AT ELKO, VA (LAT 37 28 05N LONG 077 12 32W)											
APR 1988											
12...	1415	11	70	6.00	12.0	750	--	8.3	78	9.6	0.97
SEP											
14...	1130	3.9	56	6.00	21.0	765	100	4.7	53	4.3	0.71
02042465 TOE INK SWAMP BELOW KENT LAKE DAM NR ROXBURY, VA (LAT 37 29 03N LONG 077 07 56W)											
APR 1988											
12...	1645	6.4	90	5.70	15.0	750	110	10.1	102	3.7	0.69
SEP											
14...	0830	2.2	100	6.80	22.5	753	22	3.5	41	13	1.4
02042470 CHICKAHOMINY RIVER AT RT 609 AT ROXBURY, VA (LAT 37 28 11N LONG 077 08 17W)											
APR 1988											
12...	1520	3.9	85	5.90	12.0	750	120	10.2	97	5.6	1.4
SEP											
14...	0945	28	86	6.60	22.0	754	50	5.2	60	6.5	1.4
02042610 JONES RUN ABOVE C&O RR AT PROVIDENCE FORGE, VA (LAT 37 26 28N LONG 077 02 48W)											
APR 1988											
12...	1300	10	85	6.90	15.0	753	58	9.0	90	7.9	1.0
SEP											
14...	1145	6.0	62	7.00	23.5	754	40	6.8	81	7.3	1.1

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)
JAMES RIVER BASIN--Continued											
02042440 CHICKAHOMINY RIVER AT RT 156 NR SEVEN PINES, VA (LAT 37 33 07N LONG 077 16 17W)											
APR 1988											
12...	12	3.0	18	19	14	0.20	3.2	71	<0.010	0.020	0.70
SEP											
14...	13	0.80	13	22	13	<0.10	11	79	0.030	0.050	0.30
02042443 CHICKAHOMINY RIV AT I64 NR WHITE OAK SWAMP, VA (LAT 37 31 03N LONG 077 12 34W)											
APR 1988											
12...	12	3.0	17	19	15	0.20	4.2	72	<0.010	0.020	0.60
SEP											
14...	11	0.80	14	17	11	0.10	10	68	0.034	0.020	0.40
02042455 WHITE OAK SWAMP AT RT 156 AT ELKO, VA (LAT 37 28 05N LONG 077 12 32W)											
APR 1988											
12...	4.4	1.8	23	8.6	8.5	0.10	3.2	52	0.094	0.020	0.50
SEP											
14...	4.7	0.30	8.0	14	5.9	<0.10	6.5	42	0.018	0.020	0.80
02042465 TOE INK SWAMP BELOW KENT LAKE DAM NR ROXBURY, VA (LAT 37 29 03N LONG 077 07 56W)											
APR 1988											
12...	5.3	1.7	8.0	18	9.7	0.10	3.3	49	0.043	0.020	0.50
SEP											
14...	4.7	1.4	30	6.7	7.5	0.10	3.1	57	0.012	0.320	0.80
02042470 CHICKAHOMINY RIVER AT RT 609 AT ROXBURY, VA (LAT 37 28 11N LONG 077 08 17W)											
APR 1988											
12...	11	2.8	17	20	15	0.20	4.4	72	<0.010	0.020	0.80
SEP											
14...	8.1	0.40	15	14	9.7	<0.10	7.8	57	0.033	<0.010	0.80
02042610 JONES RUN ABOVE C&O RR AT PROVIDENCE FORGE, VA (LAT 37 26 28N LONG 077 02 48W)											
APR 1988											
12...	3.4	1.0	24	7.1	6.6	0.10	1.9	44	0.010	0.020	0.40
SEP											
14...	3.2	0.80	20	4.9	5.0	<0.10	9.4	44	0.015	0.030	0.40

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	PHOS-PHOROUS TOTAL (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)
				JAMES RIVER BASIN--Continued						
02042440 CHICKAHOMINY RIVER AT RT 156 NR SEVEN PINES, VA (LAT 37 33 07N LONG 077 16 17W)										
APR 1988 12...	0.067	0.041	0.033	1	<1	<1	4	4	1900	1200
SEP 14...	0.063	0.016	0.010	1	<1	<1	3	4	1500	310
02042443 CHICKAHOMINY RIV AT I64 NR WHITE OAK SWAMP, VA (LAT 37 31 03N LONG 077 12 34W)										
APR 1988 12...	0.064	0.062	0.033	<1	<1	<1	4	2	1900	1100
SEP 14...	0.061	0.016	0.014	1	1	<1	<1	2	1300	320
02042455 WHITE OAK SWAMP AT RT 156 AT ELKO, VA (LAT 37 28 05N LONG 077 12 32W)										
APR 1988 12...	0.012	0.006	0.003	1	<1	<1	<1	4	810	390
SEP 14...	0.021	0.012	<0.001	1	2	3	3	10	1500	380
02042465 TOE INK SWAMP BELOW KENT LAKE DAM NR ROXBURY, VA (LAT 37 29 03N LONG 077 07 56W)										
APR 1988 12...	0.026	0.012	0.006	<1	<1	<1	<1	15	2400	1400
SEP 14...	0.024	0.002	<0.001	2	<1	<1	2	4	1600	300
02042470 CHICKAHOMINY RIVER AT RT 609 AT ROXBURY, VA (LAT 37 28 11N LONG 077 08 17W)										
APR 1988 12...	0.069	0.039	0.030	1	<1	<1	<1	3	2300	1300
SEP 14...	0.095	0.028	0.018	<1	1	<1	2	4	--	280
02042610 JONES RUN ABOVE C&O RR AT PROVIDENCE FORGE, VA (LAT 37 26 28N LONG 077 02 48W)										
APR 1988 12...	0.020	--	--	<1	<1	<1	4	2	1200	540
SEP 14...	0.039	0.011	0.005	<1	1	<1	4	2	1200	470

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI)	SELE-NIUM, TOTAL (UG/L AS SE)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
JAMES RIVER BASIN--Continued										
02042440 CHICKAHOMINY RIVER AT RT 156 NR SEVEN PINES, VA (LAT 37 33 07N LONG 077 16 17W)										
APR 1988										
12...	<5	100	89	0.10	7	<1	20	14	7	76
SEP										
14...	<5	450	450	0.10	8	<1	40	7.7	9	88
02042443 CHICKAHOMINY RIV AT I64 NR WHITE OAK SWAMP, VA (LAT 37 31 03N LONG 077 12 34W)										
APR 1988										
12...	<5	90	85	<0.10	6	<1	20	13	7	86
SEP										
14...	<5	240	220	0.20	5	<1	20	7.1	5	79
02042455 WHITE OAK SWAMP AT RT 156 AT ELKO, VA (LAT 37 28 05N LONG 077 12 32W)										
APR 1988										
12...	<5	30	11	<0.10	<1	<1	<10	6.7	6	91
SEP										
14...	<5	50	46	0.10	7	<1	130	14	7	51
02042465 TOE INK SWAMP BELOW KENT LAKE DAM NR ROXBURY, VA (LAT 37 29 03N LONG 077 07 56W)										
APR 1988										
12...	<5	30	25	<0.10	6	<1	<10	12	9	98
SEP										
14...	<5	110	100	0.20	4	<1	<10	9.5	13	88
02042470 CHICKAHOMINY RIVER AT RT 609 AT ROXBURY, VA (LAT 37 28 11N LONG 077 08 17W)										
APR 1988										
12...	<5	160	110	<0.10	<1	<1	<10	12	7	93
SEP										
14...	<5	130	110	<0.10	4	<1	--	7.9	5	87
02042610 JONES RUN ABOVE C&O RR AT PROVIDENCE FORGE, VA (LAT 37 26 28N LONG 077 02 48W)										
APR 1988										
12...	<5	50	22	<0.10	3	<1	<10	6.1	4	94
SEP										
14...	<5	80	41	<0.10	8	<1	<10	8.1	4	90

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
TENNESSEE RIVER BASIN											
03473500 M F HOLSTON RIVER AT GROSECLOSE, VA (LAT 36 53 19N LONG 081 20 51W)											
DEC 1987											
14...	0830	3.3	235	7.80	7.0	700	9.7	87	1.1	160	90
FEB 1988											
03...	0900	8.9	220	7.30	9.0	705	10.6	99	1.8	7600	K140000
APR											
19...	0910	8.1	220	7.30	10.0	690	9.2	90	1.8	22000	90000
JUN											
27...	0840	3.9	215	7.90	13.0	697	8.5	88	0.7	K1800	3600
AUG											
17...	0810	2.6	205	7.70	13.0	702	8.0	83	0.6	1900	2400
03473650 NICKS CREEK NEAR MARION, VA (LAT 36 51 52N LONG 081 26 09W)											
DEC 1987											
14...	0945	1.4	70	7.00	4.0	710	11.5	94	2.0	110	310
FEB 1988											
03...	0955	14	50	6.80	6.0	707	11.1	96	1.4	K1500	1900
APR											
19...	1000	13	48	6.50	7.0	695	10.7	97	1.2	1300	1600
JUN											
27...	0945	0.65	90	7.80	18.0	698	8.6	99	0.6	1700	3200
AUG											
17...	0900	0.31	125	7.80	18.5	705	8.0	92	0.7	K100	900
03473660 BEAR CREEK NEAR MARION, VA (LAT 36 52 08N LONG 081 26 33W)											
DEC 1987											
14...	1100	2.5	130	7.00	4.0	710	10.6	87	2.3	770	340
FEB 1988											
03...	1100	35	60	6.80	6.0	708	11.2	97	1.6	360	600
APR											
19...	1115	70	42	6.50	7.5	695	10.1	92	1.4	600	1900
JUN											
27...	1045	0.37	330	7.90	18.5	704	7.7	89	1.3	1900	1800
AUG											
17...	1015	0.29	360	7.90	19.0	707	7.2	84	0.4	3500	1400
03473820 STALEY CREEK AT MARION, VA (LAT 36 50 10N LONG 081 31 03W)											
DEC 1987											
14...	1220	7.1	215	7.60	6.0	710	11.2	97	2.4	1400	110
FEB 1988											
03...	1230	19	260	7.50	9.0	710	10.4	97	1.7	2500	4000
APR											
19...	1250	18	210	7.50	10.0	700	9.6	93	1.9	2300	900
JUN											
27...	1215	6.6	210	8.20	19.0	705	8.5	99	1.0	K6800	2600
AUG											
17...	1110	5.3	205	8.00	19.0	710	7.7	89	0.2	5000	3200
03473900 WALKER CREEK NEAR SEVEN MILE FORD, VA (LAT 36 50 06N LONG 081 35 51W)											
DEC 1987											
14...	1315	1.5	290	8.00	5.5	710	11.6	99	2.0	240	410
FEB 1988											
03...	1330	34	100	7.00	7.5	713	11.1	99	1.5	620	3500
APR											
19...	1345	47	90	7.00	11.0	700	9.8	97	1.4	2900	1600
JUN											
27...	1315	0.52	320	8.10	20.5	710	9.5	114	1.0	K1800	1100
AUG											
17...	1250	0.40	420	8.00	22.0	715	8.0	98	1.6	7200	930

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	CHLORIDE, DISSOLVED (MG/L AS CL)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHOROUS TOTAL (MG/L AS P)	PHOSPHOROUS DISSOLVED (MG/L AS P)	PHOSPHOROUS ORTHO, DISSOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)
TENNESSEE RIVER BASIN--Continued										
03473500 M F HOLSTON RIVER AT GROSECLOSE, VA (LAT 36 53 19N LONG 081 20 51W)										
DEC 1987 14...	1.9	131	0.500	0.020	0.30	0.020	0.010	<0.010	3.1	10
FEB 1988 03...	4.5	125	0.720	0.240	0.70	0.100	0.060	0.040	4.7	27
APR 19...	2.2	122	0.470	0.080	0.70	0.090	0.030	0.020	6.7	87
JUN 27...	0.90	126	0.440	0.030	0.40	0.020	0.020	0.010	1.6	29
AUG 17...	0.90	125	0.420	0.040	1.4	0.040	0.020	<0.010	1.8	22
03473650 NICKS CREEK NEAR MARION, VA (LAT 36 51 52N LONG 081 26 09W)										
DEC 1987 14...	1.6	42	0.170	<0.010	0.30	0.010	<0.010	<0.010	2.6	4
FEB 1988 03...	3.2	37	0.210	<0.010	0.20	0.020	0.010	<0.010	3.7	111
APR 19...	3.0	30	0.130	0.020	0.30	0.040	0.020	<0.010	3.4	73
JUN 27...	1.5	55	0.130	0.050	0.20	0.040	0.020	0.010	2.9	82
AUG 17...	1.2	69	0.140	0.020	0.50	0.030	0.020	0.010	1.7	12
03473660 BEAR CREEK NEAR MARION, VA (LAT 36 52 08N LONG 081 26 33W)										
DEC 1987 14...	11	73	0.270	<0.010	0.20	<0.010	<0.010	<0.010	3.0	2
FEB 1988 03...	1.2	37	0.210	<0.010	<0.20	0.010	<0.010	<0.010	2.2	11
APR 19...	1.0	33	<0.100	0.010	0.20	0.020	<0.010	<0.010	3.3	11
JUN 27...	2.2	180	1.10	0.050	0.40	0.020	0.010	<0.010	2.5	25
AUG 17...	2.5	189	0.860	0.040	0.50	0.030	0.020	<0.010	2.4	9
03473820 STALEY CREEK AT MARION, VA (LAT 36 50 10N LONG 081 31 03W)										
DEC 1987 14...	11	113	0.740	0.020	0.30	0.130	0.110	0.080	2.9	6
FEB 1988 03...	29	134	0.840	0.040	0.40	0.080	0.080	0.060	3.4	19
APR 19...	18	115	0.530	0.050	0.40	0.110	0.050	0.030	--	18
JUN 27...	6.8	115	0.430	0.020	0.50	0.130	0.110	0.070	3.8	61
AUG 17...	5.9	113	0.340	0.020	0.50	0.090	0.060	0.050	2.3	9
03473900 WALKER CREEK NEAR SEVEN MILE FORD, VA (LAT 36 50 06N LONG 081 35 51W)										
DEC 1987 14...	5.8	169	0.530	<0.010	0.60	0.010	<0.010	<0.010	2.6	3
FEB 1988 03...	4.0	56	0.480	<0.010	0.20	0.010	0.010	<0.010	4.3	11
APR 19...	2.7	57	0.260	0.020	<0.20	0.030	<0.010	<0.010	--	38
JUN 27...	3.9	230	0.790	0.060	0.30	0.030	0.020	0.010	2.8	14
AUG 17...	4.0	230	0.640	0.090	1.4	0.060	0.040	0.020	4.6	42

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	BARO-METRIC PRES-SURE (MM OF HG)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
TENNESSEE RIVER BASIN--Continued											
03474000 M F HOLSTON RIVER AT SEVEN MILE FORD, VA (LAT 36 48 26N LONG 081 37 20W)											
DEC 1987											
14...	1330	44	275	8.00	5.5	712	14.8	126	2.6	340	63
FEB 1988											
03...	1425	234	240	7.80	9.0	715	12.2	113	1.6	600	1900
APR											
19...	1415	286	165	7.80	11.0	704	12.0	118	3.1	1100	1100
JUN											
27...	1350	31	345	7.90	24.0	711	9.6	123	1.2	K410	K49
AUG											
17...	1320	25	320	8.10	24.0	716	12.0	152	0.7	210	73
03474720 HUTTON CREEK AT HUFF AIRPORT NEAR CHILHOWIE, VA (LAT 36 46 21N LONG 081 43 49W)											
DEC 1987											
14...	1200	2.9	480	7.60	9.0	715	11.0	102	2.0	1700	7200
FEB 1988											
03...	0945	11	510	7.80	10.0	717	10.2	96	2.2	K8400	38000
APR											
19...	0950	8.7	440	7.70	9.5	705	9.7	92	2.9	23000	K130000
JUN											
27...	0900	3.1	500	7.90	16.0	711	9.8	107	1.0	27000	10000
AUG											
17...	0900	2.4	485	7.70	15.5	715	3.9	42	0.6	6400	3200
03474900 BYERS CREEK NEAR GLADE SPRING, VA (LAT 36 44 22N LONG 081 47 57W)											
DEC 1987											
14...	0915	4.3	480	7.90	5.0	716	11.8	99	1.6	600	800
FEB 1988											
03...	1315	14	445	8.00	11.5	716	9.8	96	1.4	2100	3300
APR											
19...	1315	12	450	8.10	11.5	701	10.8	108	2.0	57000	35000
JUN											
27...	1240	5.0	495	7.90	19.0	713	7.8	90	0.5	K1400	K630
AUG											
17...	1215	3.8	430	8.00	20.0	718	4.2	49	0.4	2400	970
03475000 M F HOLSTON RIVER NEAR MEADOWVIEW, VA (LAT 36 42 47N LONG 081 49 08W)											
DEC 1987											
14...	1100	61	380	7.90	5.0	718	12.4	103	2.7	380	1200
FEB 1988											
03...	1220	291	320	7.70	9.5	719	11.8	110	1.3	2800	6400
APR											
19...	1230	280	285	7.80	11.5	708	10.6	105	2.0	1900	K1400
JUN											
27...	1150	53	415	8.10	23.0	715	8.9	111	1.1	K510	K170
AUG											
17...	1135	44	405	8.00	24.5	719	8.5	108	0.5	280	2800
03475602 CEDAR CREEK NEAR CEDARVILLE, VA (LAT 36 42 53N LONG 081 49 51W)											
DEC 1987											
14...	1000	2.0	425	8.00	5.0	718	11.8	98	2.1	5300	11000
FEB 1988											
03...	1140	5.8	405	8.20	11.0	720	10.4	100	1.4	K1000	K980
APR											
19...	1145	4.9	480	8.20	10.0	708	11.0	105	1.6	3900	1800
JUN											
27...	1045	1.6	445	8.20	19.0	715	7.9	91	1.8	4500	2000
AUG											
17...	1040	1.3	460	8.00	21.5	719	4.0	48	0.8	2500	2000

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	CHLORIDE, DISSOLVED (MG/L AS CL)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHOROUS TOTAL (MG/L AS P)	PHOSPHOROUS DISSOLVED (MG/L AS P)	PHOSPHOROUS ORTHO, DISSOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)
TENNESSEE RIVER BASIN--Continued										
03474000 M F HOLSTON RIVER AT SEVEN MILE FORD, VA (LAT 36 48 26N LONG 081 37 20W)										
DEC 1987 14...	16	166	0.800	<0.010	0.20	0.130	0.090	0.090	7.7	2
FEB 1988 03...	17	141	0.940	0.040	0.40	0.080	0.040	0.030	3.3	15
APR 19...	9.4	97	0.430	0.040	0.60	0.130	0.040	0.020	5.1	25
JUN 27...	11	182	0.990	0.050	0.50	0.210	0.180	0.150	2.9	13
AUG 17...	11	178	0.850	0.010	0.50	0.160	0.160	0.130	2.9	4
03474720 HUTTON CREEK AT HUFF AIRPORT NEAR CHILHOWIE, VA (LAT 36 46 21N LONG 081 43 49W)										
DEC 1987 14...	16	297	1.60	0.030	0.40	0.050	0.030	0.030	3.1	22
FEB 1988 03...	36	293	2.00	0.080	0.60	0.110	0.080	0.060	8.9	57
APR 19...	20	253	1.30	0.150	0.70	0.110	0.070	0.050	6.9	24
JUN 27...	14	295	1.40	0.020	0.20	0.040	0.040	0.030	1.8	29
AUG 17...	14	315	1.20	0.020	0.40	0.040	0.040	0.020	2.7	48
03474900 BYERS CREEK NEAR GLADE SPRING, VA (LAT 36 44 22N LONG 081 47 57W)										
DEC 1987 14...	15	301	1.60	0.030	0.30	0.080	0.070	0.060	5.6	3
FEB 1988 03...	17	269	2.10	0.040	0.60	0.100	0.060	0.050	7.0	30
APR 19...	15	270	1.50	0.080	0.50	0.120	0.080	0.060	5.9	27
JUN 27...	13	309	1.30	0.040	0.30	0.080	0.060	0.060	2.7	30
AUG 17...	14	315	1.20	0.030	0.50	0.070	0.060	0.050	2.2	14
03475000 M F HOLSTON RIVER NEAR MEADOWVIEW, VA (LAT 36 42 47N LONG 081 49 08W)										
DEC 1987 14...	19	212	1.10	0.020	0.20	0.100	0.080	0.070	4.6	5
FEB 1988 03...	15	194	1.30	0.060	0.60	0.130	0.060	0.050	3.7	39
APR 19...	11	160	0.630	0.030	0.30	0.080	0.030	0.020	3.6	29
JUN 27...	14	227	0.870	0.060	0.30	0.190	0.150	0.130	3.9	66
AUG 17...	14	207	0.530	0.040	0.30	0.130	0.090	0.080	2.9	26
03475602 CEDAR CREEK NEAR CEDARVILLE, VA (LAT 36 42 53N LONG 081 49 51W)										
DEC 1987 14...	14	256	2.10	0.020	<0.20	0.050	0.030	0.030	2.8	25
FEB 1988 03...	17	282	2.80	0.030	0.50	0.070	0.050	0.040	5.2	29
APR 19...	18	283	3.00	0.300	0.70	0.170	0.150	0.130	--	19
JUN 27...	11	274	0.720	0.100	0.50	0.160	0.080	0.070	5.6	82
AUG 17...	11	265	0.910	0.060	0.80	0.110	0.080	0.050	4.9	37

THIS IS A BLANK PAGE

GROUND-WATER-QUALITY RECORDS

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

PRINTED OUTPUT	REMARK
E	Estimated value
>	Actual value is known to be greater than the value shown.
<	Actual value is known to be less than the the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)
L	Biological organism count less than 0.5 percent (organism may be observed rather than counted)
D	Biological organism count equal to or greater than 15 percent (dominant)
&	Biological organism estimated as dominant

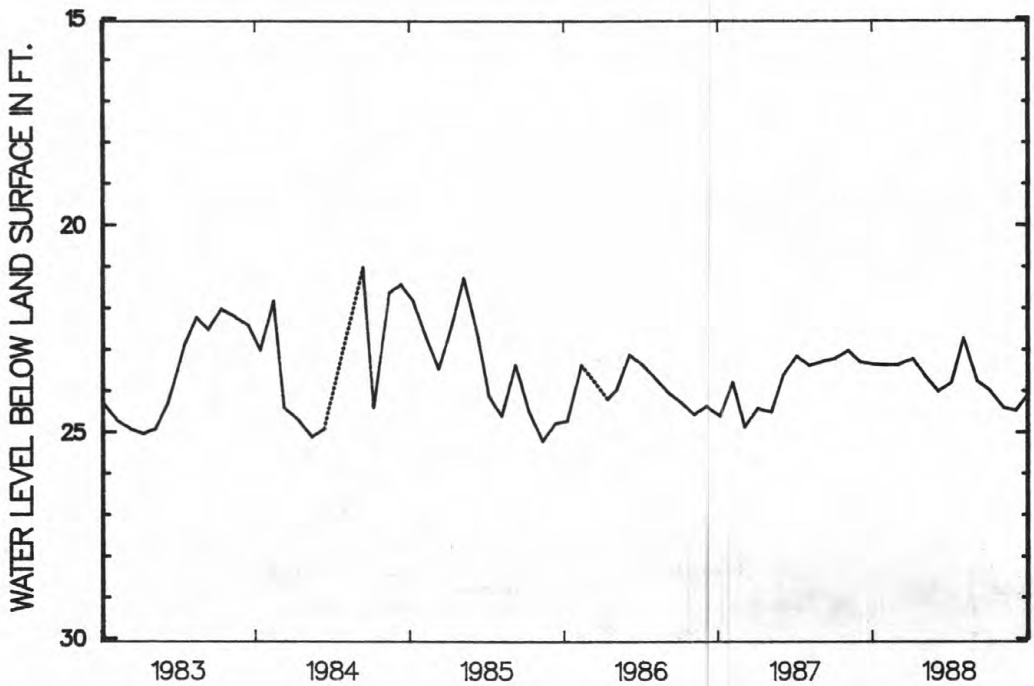
ACCOMACK COUNTY

375622075280101 Local number, 67M 2.
LOCATION.--Lat 37°56'23", long 75°28'02", Hydrologic Unit 02060010, well B31 Wallops Flight Center, 5.0 mi west of Chincoteague. Owner: National Aeronautics and Space Administration (formerly U.S. Naval Air Station, Wallops Island).
AQUIFER.--Columbia Group sand of Pleistocene age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 8 in., depth 60 ft, screen depth unknown.
INSTRUMENTATION.--Monthly measurement with chalked tape by NASA personnel.
DATUM.--Elevation of land-surface datum is 35 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.38 ft above land-surface datum.
REMARKS.--Records provided by the National Aeronautics and Space Administration.
PERIOD OF RECORD.--May 1963 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.82 ft below land-surface datum, May 9, 1963; lowest measured, 25.22 ft below land-surface datum, Dec. 1, 1981, Aug. 6, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	23.38	DEC 31	23.22	FEB 29	24.02	APR 29	22.72	JUN 30	24.00	AUG 31	24.48
NOV 25	23.37	JAN 29	23.64	MAR 31	23.80	MAY 31	23.77	AUG 02	24.42	SEP 30	24.06

WATER YEAR 1988 HIGHEST 22.72 APR 29, 1988 LOWEST 24.48 AUG 31, 1988



ALBEMARLE COUNTY

380333078264801 Local number, 43N 1 SOW 028.
LOCATION.--Lat 38°03'33", long 78°26'48", Hydrologic Unit 02080204, at Key West Subdivision, 1.1 mi east of Charlottesville. Owner: Key West Development Corporation.
AQUIFER.--Lynchburg Formation of Precambrian age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 409 ft, cased to 52 ft, open hole 52 to 409 ft.
INSTRUMENTATION.--Continuous strip-chart recorder.
DATUM.--Elevation of land-surface datum is 345 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.2 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--February 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 8.65 ft below land-surface datum, May 3, 1984; lowest recorded, 22.10 ft below land-surface datum, Nov. 30, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	15.61	16.19	15.09	15.33	14.79	14.90	14.90	15.49	15.38	16.25	16.65	17.40
10	15.88	16.30	15.38	15.38	14.77	14.90	15.08	15.47	15.62	16.33	16.71	17.50
15	15.96	16.20	15.16	15.46	14.72	14.92	15.11	15.46	15.70	16.69	17.00	17.52
20	16.00	16.01	15.15	15.31	14.65	15.06	15.18	14.77	15.93	16.66	17.32	17.51
25	16.19	16.00	15.25	14.51	14.74	15.20	15.24	14.82	16.12	16.66	17.57	17.49
EOM	16.20	15.59	15.38	14.90	14.79	14.88	15.30	15.06	16.18	16.65	17.50	17.60

WATER YEAR 1988 HIGHEST 14.50 JAN 23-25, 1988 LOWEST 17.60 AUG 27-29, SEP 30, 1988

APPOMATTOX COUNTY

372133078493701 Local number, 40G 1 SOW 012.
LOCATION.--Lat 37°21'33", long 78°49'37", Hydrologic Unit 02080207, 0.45 mi east of State Highway 131, 300 ft north of U.S. Highway 460 in the town of Appomattox. Owner: Town of Appomattox.
AQUIFER.--Metamorphic rock of uncertain age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 8 in., depth 288 ft, cased to 40 ft, open hole 40 to 288 ft.
INSTRUMENTATION.--Continuous strip-chart recorder.
DATUM.--Elevation of land-surface datum is 860 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--May 1949, October 1967 to current year. Unpublished record available in May 1949 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 34.78 ft below land-surface datum, June 13, 1973; lowest recorded, 58.21 ft below land-surface datum, Nov. 17, 18, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	50.40	51.42	51.80	51.91	52.67	52.91	52.56	52.29	52.11	51.90	51.35	51.89
10	50.70	51.45	51.70	51.99	52.68	52.98	52.63	52.23	52.14	51.88	51.56	51.98
15	50.74	51.60	51.78	52.18	52.53	52.90	52.55	52.28	52.01	51.63	51.50	52.13
20	50.73	51.67	51.88	52.05	52.41	52.87	52.48	52.30	51.84	51.40	51.61	52.10
25	50.90	51.80	51.90	52.06	52.47	52.84	52.40	52.23	51.98	51.25	51.71	52.15
EOM	51.17	51.42	51.90	52.31	52.39	52.73	52.44	52.03	51.88	51.28	51.95	52.05

WATER YEAR 1988 HIGHEST 50.22 OCT 06, 1987 LOWEST 53.03 MAR 11, 1988

372514078394301 Local number, 41H 2.
LOCATION.--Lat 37°25'14", long 78°39'43", Hydrologic Unit 02080207, 1.0 mi south of intersection of State Highway 636 on the east side of State Highway 640, 2.8 mi southeast of Sliders. Owner: U.S. Geological Survey.
AQUIFER.--Candler Formation of Paleozoic age.
WELL CHARACTERISTICS.--Augered observation water well, diameter 3 in. to 68 ft, 1.25 in. 68 to 73 ft, depth 73 ft, screened 68 to 73 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 640 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.5 ft above land-surface datum.
PERIOD OF RECORD.--March 1971 to current year. Unpublished records available prior to October 1977 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 32.99 ft below land-surface datum, May 20, 1973; lowest measured, 49.41 ft below land-surface datum, Mar. 30, 1971.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	45.60	JAN 05	46.05	MAR 11	45.55	MAY 02	45.13	JUN 24	44.70	AUG 24	44.88

WATER YEAR 1988 HIGHEST 44.70 JUN 24, 1988 LOWEST 46.05 JAN 05, 1988

ARLINGTON COUNTY

385346077073701 Local number, 53V 1.
LOCATION.--Lat 38°53'46", long 77°07'37", Hydrologic Unit 02070010, at Langston School, 4854 Lee Highway in Arlington. Owner: Arlington County School Board.
AQUIFER.--Brandywine Formation of Pleistocene age and Bryn Mawr (?) gravel of Pliocene (?) age, overlying the Sykesville Formation of Precambrian age.
WELL CHARACTERISTICS.--Dug unused water well, diameter 24 in., depth 35 ft, terracotta casing.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 410 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Inner flange of manhole, at land-surface datum.
PERIOD OF RECORD.--October 1931 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.74 ft below land-surface datum, Apr. 20, 1935; lowest measured, 34.81 ft below land-surface datum, Dec. 5, 1931.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	27.00	JAN 28	25.68	MAR 30	24.25	MAY 26	23.77	JUL 27	25.13	SEP 29	27.45

WATER YEAR 1988 HIGHEST 23.77 MAY 26, 1988 LOWEST 27.45 SEP 29, 1988

ARLINGTON COUNTY--Continued

385253077042301 Local number, 54V 3.
LOCATION.--Lat 38°52'53", long 77°04'23", Hydrologic Unit 02070010, at Arlington National Cemetery in Arlington. Owner: NPS National Capitol Parks.
AQUIFER.--Terrace gravels of Holocene age and sand of early Cretaceous age.
WELL CHARACTERISTICS.--Dug unused water well, diameter 48 in., depth 50 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 205 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of brick and stone casing, 3.0 ft above land-surface datum.
PERIOD OF RECORD.--January 1958 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 40.34 ft below land-surface datum, June 26, 1978; lowest measured, 44.90 ft below land-surface datum, May 4, 1966.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JAN 28	44.79	MAR 30	43.13	MAY 26	42.89	JUL 27	43.30	SEP 29	43.85		

WATER YEAR 1988 HIGHEST 42.89 MAY 26, 1988 LOWEST 44.79 JAN 28, 1988

BUCHANAN COUNTY

370443082022301. Local number, 14E 40.
LOCATION.--Lat 37°04'43", long 82°02'23", Hydrologic Unit 05070202, 50 ft south of the intersection of State Highways 622 and 620, at Grissom School. Owner: U.S. Geological Survey.
AQUIFER.--Jawbone coalbed of Norton Formation of Pennsylvanian age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 60 ft, cased to 14 ft, open hole 14 to 60 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 1,820 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.80 ft above land-surface datum.
PERIOD OF RECORD.--August 1982 to September 1983, October 1986 to current year. Unpublished records available prior to October 1986 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 0.99 ft below land-surface datum, Apr. 30, 1987; lowest measured, 11.49 ft below land-surface datum, Oct. 6, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	6.88	7.73	7.01	5.63	3.17	3.32	2.73	---	4.11	6.77	---	---
10	7.50	6.06	5.21	6.23	4.34	3.41	1.52	---	6.40	---	---	---
15	6.70	6.67	5.58	6.34	4.56	6.01	2.82	5.82	6.84	---	---	---
20	7.39	7.07	6.15	3.09	2.20	3.43	1.05	6.59	7.20	---	---	---
25	7.62	6.68	3.61	3.82	2.21	4.02	1.04	7.11	7.18	---	---	---
EOM	7.81	6.83	5.40	2.23	1.91	3.68	1.07	7.49	7.28	---	9.22	10.14

WATER YEAR 1987 HIGHEST 0.99 APR 30, 1987 LOWEST 10.14 SEP 30, 1987

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	---	---	---	---	---	---	---	---	---	8.66	8.93	8.76
10	---	---	---	---	---	---	---	---	---	8.80	9.14	9.07
15	---	---	---	---	---	---	---	---	---	8.67	9.03	9.21
20	---	---	---	---	---	---	---	---	---	8.73	9.15	8.89
25	---	---	---	---	---	---	---	---	---	8.68	9.12	8.61
EOM	10.14	10.16	---	6.85	6.91	6.68	6.53	7.39	8.69	8.83	9.10	8.84

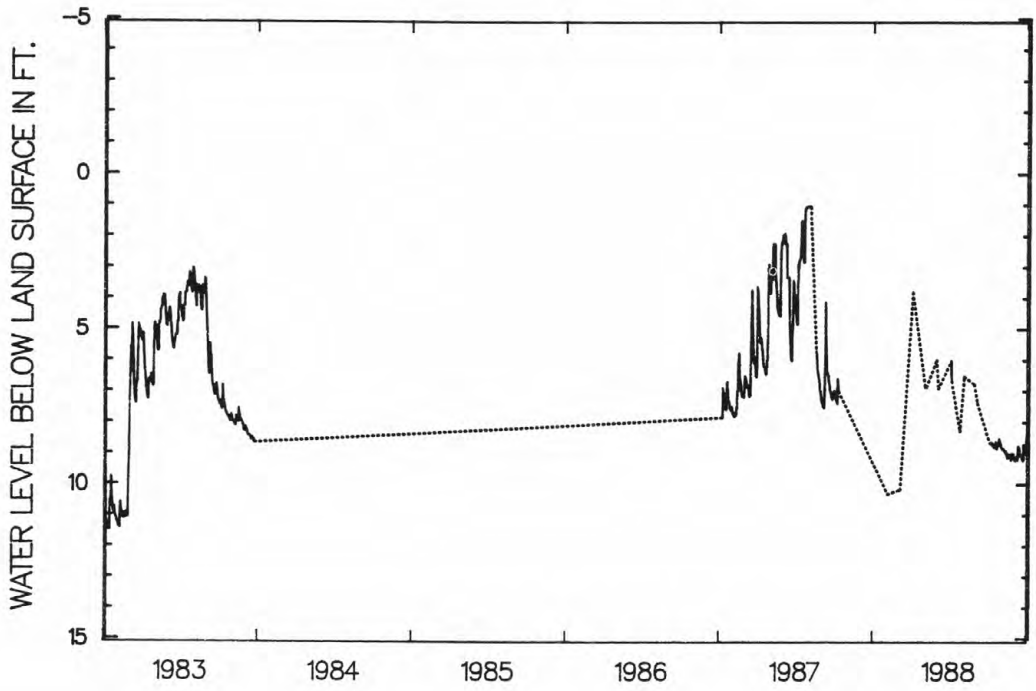
WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, DECEMBER 1987 TO MAY 1988

DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 29	3.81	MAR 30	6.01
JAN 28	6.37	APR 20	8.29
FEB 24	5.98	MAY 24	6.78

WATER YEAR 1988 HIGHEST 3.81 DEC 29, 1987 LOWEST 10.16 NOV 30, 1987

BUCHANAN COUNTY--Continued

370443082022301. Local number, 14E 40--Continued



BUCKINGHAM COUNTY

372541078392101 Local number, 41H 1.
LOCATION.--Lat 37°25'41", long 78°39'21", Hydrologic Unit 02080207, 200 ft east of State Highway 640, 2.6 mi southeast of Sliders. Owner: U.S. Geological Survey.
AQUIFER.--Candler Formation of Paleozoic age.
WELL CHARACTERISTICS.--Augered observation water well, diameter 3 in. to 83 ft, diameter 1.25 in. 83 to 88 ft, depth 88 ft, screened 83 to 88 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 660 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.2 ft above land-surface datum.
PERIOD OF RECORD.--March 1971 to current year. Unpublished records available prior to October 1977 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 30.95 ft below land-surface datum, May 20, 1973; lowest measured, 50.41 ft below land-surface datum, Dec. 8, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	48.92	JAN 05	49.72	MAR 11	48.57	MAY 02	47.60	JUN 24	46.64	AUG 24	47.24

WATER YEAR 1988 HIGHEST 46.64 JUN 24, 1988 LOWEST 49.72 JAN 05, 1988

372608078404601 Local number, 41H 3.
LOCATION.--Lat 37°26'08", long 78°40'46", Hydrologic Unit 02080207, 0.85 mi west of Ranger Headquarters on south side of dirt road off State Highway 636, 1.5 mi south of Sliders. Owner: U.S. Geological Survey.
AQUIFER.--Candler Formation of Paleozoic age.
WELL CHARACTERISTICS.--Augered observation water well, diameter 3 in. to 49 ft, diameter 1.25 in. 49 to 54 ft, depth 54 ft, screened 49 to 54 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 683.8 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1.3 ft above land-surface datum.
REMARKS.--Prior to Oct. 1, 1981, well was reported as being located in Appomattox County.
PERIOD OF RECORD.--March 1971 to current year. Unpublished records available prior to October 1977 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 7.31 ft below land-surface datum, Apr. 12, 1973; lowest measured, 28.30 ft below land-surface datum, Oct. 17, 1977.

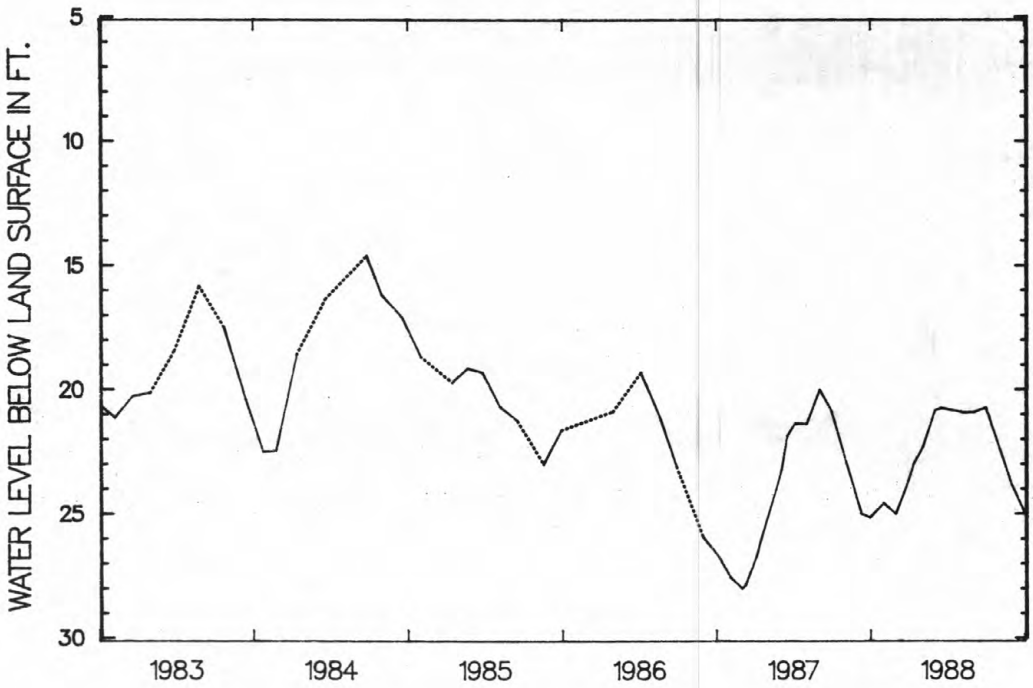
WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	24.57	JAN 05	23.00	MAR 11	20.74	MAY 02	20.95	JUN 24	20.72	AUG 24	23.84
NOV 24	25.02	27	22.32	24	20.80	26	20.92	JUL 27	22.42	SEP 28	25.13
DEC 23	23.71	FEB 25	20.85	APR 26	20.90						

WATER YEAR 1988 HIGHEST 20.72 JUN 24, 1988 LOWEST 25.13 SEP 28, 1988

BUCKINGHAM COUNTY--Continued

372608078404601 Local number, 41H 3--Continued



372519078374001 Local number, 41H 4.
LOCATION.--Lat 37°25'19", long 78°37'40", Hydrologic Unit 02080207, 0.65 mi northeast of Holiday Creek, 0.85 mi southeast of State Highway 636 off State Highway 614, and 4.0 mi southeast of Sliders. Owner: U.S. Geological Survey.
AQUIFER.--Candler Formation of Paleozoic age.
WELL CHARACTERISTICS.--Augered observation water well, diameter 3 in. to 72 ft, diameter 1.25 in. 72 to 77 ft, depth 77 ft, screened 72 to 77 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 647 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.4 ft above land-surface datum.
PERIOD OF RECORD.--March 1971 to current year. Unpublished records available prior to October 1977 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 28.45 ft below land-surface datum, May 1, 1980; lowest measured, 48.13 ft below land-surface datum, Mar. 30, 1971.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	43.35	JAN 05	43.01	MAR 11	41.21	MAY 02	40.07	JUN 24	39.04	AUG 24	40.87

WATER YEAR 1988 HIGHEST 39.04 JUN 24, 1988 LOWEST 43.35 OCT 26, 1987

CHARLES CITY COUNTY

371956077055203 Local number, 54G 11 SOW 066.
LOCATION.--Lat 37°19'56", long 77°05'52", Hydrologic Unit 02080206, 0.6 mi east of Bowens Store on State Highway 5, 1.6 mi west of Charles City. Owner: Virginia Water Control Board.
AQUIFER.--Sand and gravel of undifferentiated Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 6 in., depth 540 ft, screened 290 to 310 ft, 404 to 424 ft, 486 to 496 ft, 510 to 530 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 54 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of recorder shelf, 2.0 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--May 1973 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 50.07 ft below land-surface datum, May 1, 1973; lowest measured, 65.90 ft below land-surface datum, Aug. 11, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 11	64.95	MAR 03	64.92	MAR 08	65.00	MAY 11	65.05	JUN 23	65.45	AUG 11	65.90
JAN 14	65.01										

WATER YEAR 1988 HIGHEST 64.92 MAR 03, 1988 LOWEST 65.90 AUG 11, 1988

CHARLES CITY COUNTY--Continued

371956076055101 Local number, 54G 13 SOW 067.
LOCATION.--Lat 37°19'56", long 77°05'51", Hydrologic Unit 02080206, 0.6 mi east of Bowens Store on State Highway 5, 1.6 mi southwest of Charles City. Owner: Virginia Water Control Board.
AQUIFER.--Sand and gravel of undifferentiated Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 2 in., depth 227 ft, screened 222 to 227 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 35 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.4 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--June 1973 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 44.63 ft below land-surface datum, June 7, 1973; lowest measured, 59.85 ft below land-surface datum, Aug. 11, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 11	58.82	MAR 03	58.88	MAR 08	58.86	MAY 11	59.40	JUN 23	59.30	AUG 11	59.85
JAN 14	58.99										

WATER YEAR 1988 HIGHEST 58.82 NOV 11, 1987 LOWEST 59.85 AUG 11, 1988

CITY OF CHESAPEAKE

364852076252201 Local number, 59C 29 SOW 163A.
LOCATION.--Lat 36°48'52", long 76°25'22", Hydrologic Unit 02080208, 0.7 mi southeast of intersection of State Highways 191 and 337 in Chesapeake. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 35 ft, screened 25 to 35 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 15 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.9 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--November 1981 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.97 ft below land-surface datum, Dec. 30, 1982; lowest measured, 10.00 ft below land-surface datum, Nov. 18, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 18	6.48	JAN 12	3.58	MAR 15	4.35	MAY 10	4.59	JUN 29	5.60	AUG 03	7.30

WATER YEAR 1988 HIGHEST 3.58 JAN 12, 1988 LOWEST 7.30 AUG 03, 1988

364852076252202 Local number, 59C 30 SOW 163B.
LOCATION.--Lat 36°48'52", long 76°25'22", Hydrologic Unit 02080208, 0.7 mi southeast of intersection of State Highways 191 and 337 in Chesapeake. Owner: Virginia Water Control Board.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 2 in., depth 948 ft, screened 938 to 948 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 15 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.8 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--November 1981 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 67.06 ft below land-surface datum, May 25, 1983; lowest measured, 78.72 ft below land-surface datum, Jan. 12, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 18	77.02	JAN 12	78.72	MAR 15	78.25	MAY 10	77.25	JUN 29	78.40	AUG 03	78.00

WATER YEAR 1988 HIGHEST 77.02 NOV 18, 1987 LOWEST 78.72 JAN 12, 1988

CITY OF CHESAPEAKE--Continued

364852076252203 Local number, 59C 31 SOW 163C.
LOCATION.--Lat 36°48'52", long 76°25'22", Hydrologic Unit 02080208, 0.7 mi southeast of intersection of State Highways 191 and 337 in Chesapeake. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 2 in., depth 631 ft, screened 621 to 631 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 15 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.2 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--November 1981 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 67.13 ft below land-surface datum, Feb. 23, 1983; lowest measured, 79.15 ft below land-surface datum, Jan. 12, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 18	77.35	JAN 12	79.15	MAR 15	78.46	MAY 10	77.40	JUN 29	77.88	AUG 03	78.70

WATER YEAR 1988 HIGHEST 77.35 NOV 18, 1987 LOWEST 79.15 JAN 12, 1988

363836076201701 Local number, 60B 3 SOW 090A.
LOCATION.--Lat 36°38'36", long 76°20'17", Hydrologic Unit 03010205, 0.15 mi north of intersection of Benefit and West Roads, 1.5 mi north of Cornland. Owner: Virginia Water Control Board.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 855 ft, screened 824 to 834 ft.
INSTRUMENTATION.--Continuous strip-chart recorder.
DATUM.--Elevation of land-surface datum is 16 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--July 1978 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 52.61 ft below land-surface datum, Sept. 19, 1979; lowest recorded, 70.05 ft below land-surface datum, Sept. 30, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	68.50	68.56	68.60	68.80	69.12	69.63	69.64	69.49	69.48	69.61	69.89	69.99
10	68.57	68.60	68.62	68.82	69.23	69.50	69.62	69.48	69.49	69.59	69.90	70.00
15	68.56	68.60	68.67	68.99	69.23	69.57	69.60	69.48	69.58	69.60	69.92	70.01
20	68.55	68.60	68.69	68.94	69.14	69.61	69.58	69.39	69.60	69.66	69.94	70.02
25	68.63	68.66	68.76	68.97	69.33	69.73	69.61	69.40	69.51	69.70	69.95	70.03
EOM	68.64	68.45	68.80	69.17	69.36	69.69	69.51	69.46	69.45	69.78	69.97	70.05

WATER YEAR 1988 HIGHEST 68.39 OCT 01, 1987 LOWEST 70.05 SEP 30, 1988

363836076201702 Local number, 60B 4 SOW 090B.
LOCATION.--Lat 36°38'36", long 76°20'17", Hydrologic Unit 03010205, 0.15 mi north of intersection of Benefit and West Roads, 1.5 mi north of Cornland. Owner: Virginia Water Control Board.
AQUIFER.--Sand of late Cretaceous-early Paleocene age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 556 ft, screened 525 to 535 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 16 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.05 ft above land-surface datum prior to Mar. 2, 1988; 1.2 ft thereafter.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--February 1978 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.20 ft above land-surface datum, Feb. 1, 1978; lowest measured, 3.25 ft below land-surface datum, Aug. 3, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	2.59	JAN 13	2.94	MAR 08	2.72	APR 27	2.70	JUN 21	2.87	AUG 03	3.25
18	3.05	MAR 02	2.74								

WATER YEAR 1988 HIGHEST 2.59 NOV 04, 1987 LOWEST 3.25 AUG 03, 1988

CLARKE COUNTY

390348078035501. Local number, 46W175.
LOCATION.--Lat 39°03'48", long 78°03'55", Hydrologic Unit 02070007, 1.5 mi east of the intersection of U.S. Highway 17/50 and U.S. Highway 340 at Blandy Experimental Farm. Owner: University of Virginia.
AQUIFER.--Conococheague limestone of middle Cambrian age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 80.40 ft, cased to 24 ft, open hole 24 to 80.40 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 600 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 3.7 ft above land-surface datum.
PERIOD OF RECORD.--July 1987 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 33.53 ft below land-surface datum, May 28, 1988; lowest recorded, 40.11 ft below land-surface datum, Nov. 27, 28, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, JULY TO SEPTEMBER 1987
LOWEST VALUES

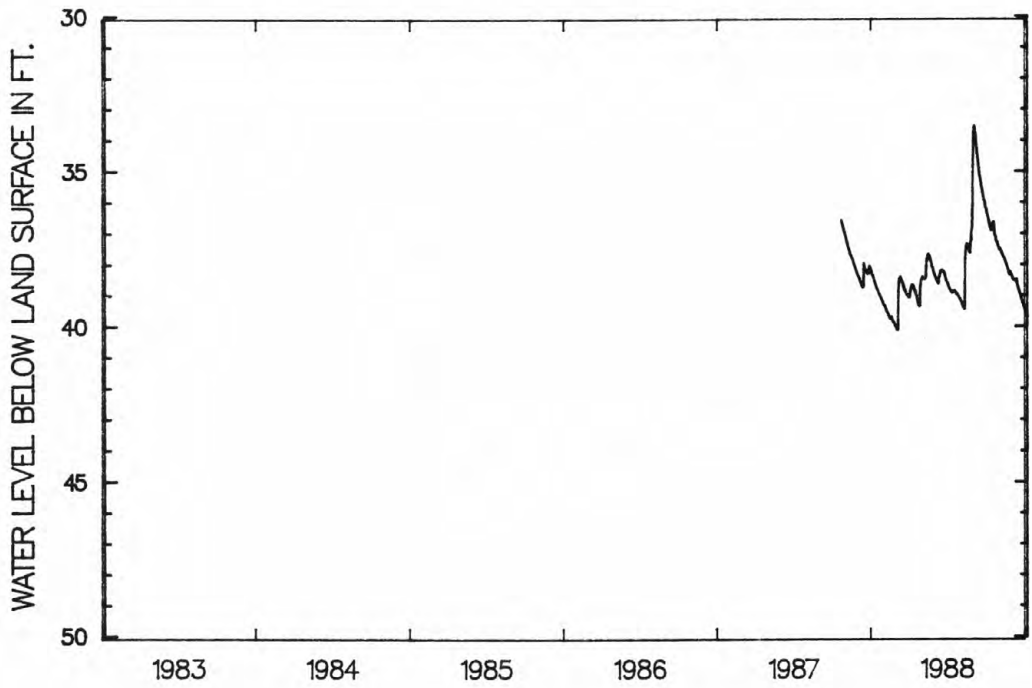
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	---	---	---	---	---	---	---	---	---	---	37.57	38.71
10	---	---	---	---	---	---	---	---	---	---	37.75	38.05
15	---	---	---	---	---	---	---	---	---	---	37.94	38.21
20	---	---	---	---	---	---	---	---	---	36.75	38.15	38.26
25	---	---	---	---	---	---	---	---	---	37.00	38.33	38.14
EOM	---	---	---	---	---	---	---	---	---	37.33	38.53	38.33

PERIOD JULY TO SEPTEMBER 1987 HIGHEST 36.50 JUL 16, 1987 LOWEST 38.71 SEP 05-07, 1987

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	38.61	39.60	38.42	38.73	37.91	38.55	38.90	39.44	34.55	36.84	37.76	38.48
10	38.80	39.76	38.62	38.94	37.71	38.19	38.86	37.38	35.15	36.71	37.94	38.82
15	38.96	39.80	38.85	39.21	37.88	38.22	38.92	37.48	35.57	36.94	38.13	39.05
20	39.11	39.91	38.97	39.33	38.13	38.37	39.02	37.28	35.93	37.29	38.33	39.25
25	39.28	40.07	39.07	38.43	38.37	38.60	39.14	34.87	36.22	37.49	38.38	39.47
EOM	39.45	38.97	38.72	38.46	38.50	38.80	39.30	33.85	36.52	37.60	38.50	39.70

WATER YEAR 1988 HIGHEST 33.53 MAY 28, 1988 LOWEST 40.11 NOV 27, 28, 1987



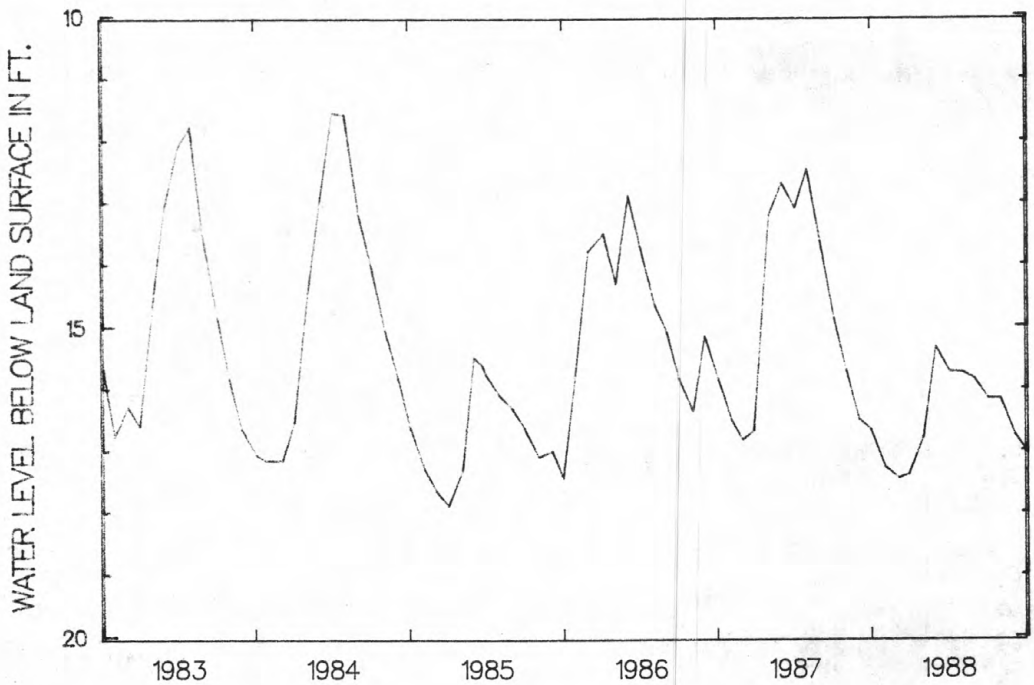
CITY OF COLONIAL HEIGHTS

371644077244601 Local number, 51G 1.
LOCATION.--Lat 37°16'44", long 77°24'46", Hydrologic Unit 02080207, 200 ft west of U.S. Highways 1 and 301, 0.50 mi south of the intersection of State Highway 144 and U.S. Highway 1 and 301 in Colonial Heights.
Owner: Dean Whittington.
AQUIFER.--Petersburg granite of late Paleozoic age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 100 ft, cased to 50 ft, open hole 50 to 100 ft.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 57.30 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1.0 ft above land-surface datum.
PERIOD OF RECORD.--October 1939 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.73 ft below land-surface datum, Jan. 26, 1978; lowest measured, 19.26 ft below land-surface datum, Dec. 3, 1963.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	17.27	DEC 23	17.39	FEB 26	15.32	APR 29	15.74	JUN 28	16.17	AUG 31	16.75
NOV 30	17.46	JAN 27	16.80	MAR 29	15.73	MAY 27	15.85	JUL 28	16.16	SEP 29	17.04

WATER YEAR 1988 HIGHEST 15.32 FEB 26, 1988 LOWEST 17.46 NOV 30, 1987



FAIRFAX COUNTY

384518077163501 Local number, 52U 4.
LOCATION.--Lat 38°45'18", long 77°16'35", Hydrologic Unit 02070010, 200 ft east of intersection of State Highways 641 and 643 in Springfield. Owner: Sydenstricker Church.
AQUIFER.--Granite of undetermined age.
WELL CHARACTERISTICS.--Dug unused water well, diameter 24 in., depth 28 ft.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 340 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Hole in cement platform, 0.67 ft above land-surface datum.
PERIOD OF RECORD.--May 1957 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.54 ft below land-surface datum, Apr. 30, 1973; lowest measured, 27.57 ft below land-surface datum, Nov. 30, 1964.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	25.41	DEC 27	25.79	FEB 29	24.47	APR 28	22.90	JUN 29	23.71	AUG 30	26.16
NOV 30	23.03	JAN 28	25.37	MAR 30	23.92	MAY 26	23.10	JUL 27	25.05	SEP 29	26.79

WATER YEAR 1988 HIGHEST 22.90 APR 28, 1988 LOWEST 26.79 SEP 29, 1988

385638077220101 Local number, 52V 2.
LOCATION.--Lat 38°56'58", long 77°22'01", Hydrologic Unit 02070008, at U.S. Geological Survey National Center in Reston. Owner: U.S. Geological Survey.
AQUIFER.--Manassas sandtone of Triassic age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 8 in., depth 205 ft, cased to 35 ft, open hole 35 to 205 ft.
INSTRUMENTATION.--Continuous strip-chart recorder.
DATUM.--Elevation of land-surface datum is 390 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.
PERIOD OF RECORD.--October 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 6.47 ft below land-surface datum, Mar. 30, 1984; lowest recorded, 18.19 ft below land-surface datum, Oct. 25, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	15.95	16.21	---	14.38	---	---	10.44	11.19	10.30	14.24	15.22	15.91
10	16.05	16.16	---	14.38	---	---	9.18	9.11	10.41	14.56	15.40	16.06
15	16.10	15.71	---	14.55	---	---	9.47	9.80	12.14	14.83	15.53	16.27
20	16.15	15.74	14.98	---	---	---	10.02	8.70	12.64	15.05	15.78	16.38
25	16.32	15.60	14.85	---	---	---	10.63	7.12	13.25	14.97	15.79	---
EOM	16.25	15.17	14.45	---	---	10.21	10.95	9.06	13.71	14.99	15.98	---

WATER YEAR 1988 HIGHEST 7.12 MAY 25, 1988 LOWEST 16.55 SEP 24, 1988

CITY OF FRANKLIN

364047076552401 Local number, 55B 22.
LOCATION.--Lat 36°40'47", long 76°55'24", Hydrologic Unit 03010202, at the intersection of 5th Avenue and Middle Street in Franklin. Owner: City of Franklin.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Jetted observation water well, diameter 4 in., depth 354 ft, screened 335 to 354 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 21.24 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top edge of manhole, at land-surface datum.
REMARKS.--Water level affected by local pumpage.
PERIOD OF RECORD.--June 1942 to December 1987 (discontinued).
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 14.50 ft below land-surface datum, June 25, 1942; lowest measured, 192.69 ft below land-surface datum, Aug. 2, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	190.62	DEC 16	191.99

WATER YEAR 1988 HIGHEST 190.62 OCT 29, 1987 LOWEST 191.99 DEC 16, 1987

CITY OF FRANKLIN--Continued

364033076562603 Local number, 55B 66 SOW 145C.
LOCATION.--Lat 36°40'33", long 76°56'26", Hydrologic Unit 03010202, at P. D. Camp Community College in Franklin.
Owner: U.S. Geological Survey.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 360 ft, screened 350 to 360 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 34 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.58 ft above land-surface datum.
REMARKS.--Water levels affected by local pumpage.
PERIOD OF RECORD.--November 1984 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 175.39 ft below land-surface datum, Dec. 27, 1984; lowest measured, 197.22 ft below land-surface datum, June 24, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	189.35	DEC 16	191.06	FEB 24	194.42	APR 27	194.32	JUN 24	197.22	SEP 30	190.01

WATER YEAR 1988 HIGHEST 189.35 OCT 29, 1987 LOWEST 197.22 JUN 24, 1988

364033076562604 Local number, 55B 67 SOW 145D.
LOCATION.--Lat 36°40'33", long 76°56'26", Hydrologic Unit 03010202, at P. D. Camp Community College in Franklin.
Owner: U.S. Geological Survey.
AQUIFER.--Sand of Paleocene age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 140 ft, screened 130 to 140 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 34 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.15 ft above land-surface datum.
REMARKS.--Water level affected by local pumpage.
PERIOD OF RECORD.--November 1984 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 29.51 ft below land-surface datum, Mar. 19, 1985; lowest measured, 32.20 ft below land-surface datum, Sept. 30, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	31.88	DEC 16	31.72	FEB 24	31.51	APR 27	31.57	JUN 27	31.69	SEP 30	32.20

WATER YEAR 1988 HIGHEST 31.51 FEB 24, 1988 LOWEST 32.20 SEP 30, 1988

364033076562605 Local number, 55B 68 SOW 145E.
LOCATION.--Lat 36°40'33", long 76°56'26", Hydrologic Unit 03010202, at P. D. Camp Community College in Franklin.
Owner: Virginia Water Control Board.
AQUIFER.--Sand of Miocene-Pliocene age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 98 ft, screen depth unknown.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 34 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.8 ft above land-surface datum prior to Feb. 24, 1988; 1.5 ft thereafter.
PERIOD OF RECORD.--November 1984 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 22.10 ft below land-surface datum, Nov. 1, 1984; lowest measured, 29.41 ft below land-surface datum, Sept. 30, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	28.26	DEC 16	27.43	FEB 24	28.75	APR 27	28.95	JUN 24	29.11	SEP 30	29.41

WATER YEAR 1988 HIGHEST 27.43 DEC 16, 1987 LOWEST 29.41 SEP 30, 1988

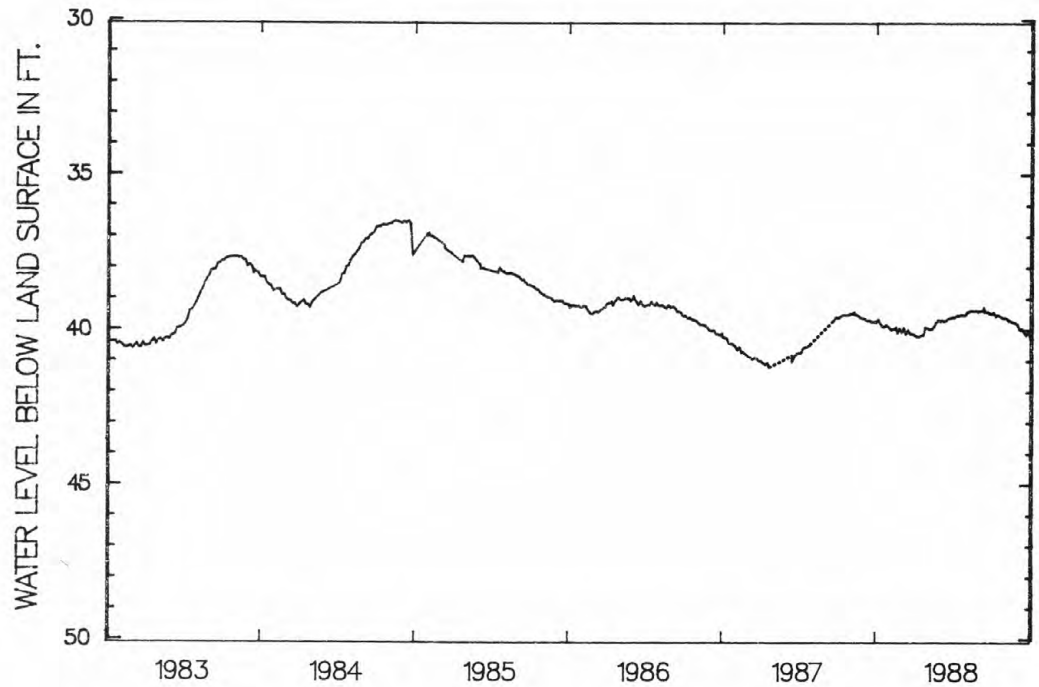
HALIFAX COUNTY

364550078562301 Local number, 39C 1 SOW 011.
LOCATION.--Lat 36°45'50", long 78°56'23", Hydrologic Unit 03010105, 0.6 mi west of intersection of U.S. Highways 501 and 360, in the town of Halifax. Owner: Town of Halifax.
AQUIFER.--Granite and gneiss of uncertain age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 8 in., depth 302 ft, cased to 52 ft, open hole 52 to 302 ft.
INSTRUMENTATION.--Continuous strip-chart recorder.
DATUM.--Elevation of land-surface datum is 380 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.28 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--October 1968 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 36.28 ft below land-surface datum, June 8, 1980; lowest recorded, 45.09 ft below land-surface datum, Dec. 30, 1968.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	39.78	39.95	40.13	40.21	39.95	39.72	39.52	39.37	39.39	39.55	39.66	39.95
10	39.88	39.94	40.00	40.17	39.88	39.68	39.53	39.37	39.42	39.50	39.72	40.06
15	39.88	40.09	40.12	40.15	39.75	39.63	39.49	39.37	39.41	39.55	39.75	40.17
20	39.83	39.94	40.13	39.90	39.66	39.60	39.52	39.37	39.46	39.60	39.77	40.09
25	39.90	40.07	40.15	39.93	39.71	39.58	39.51	39.41	39.48	39.62	39.81	40.21
EOM	39.99	39.92	40.22	39.97	39.67	39.57	39.43	39.37	39.43	39.63	39.98	40.29

WATER YEAR 1988 HIGHEST 39.26 JUN 07, 1988 LOWEST 40.30 SEP 29, 1988



HENRICO COUNTY

373428077233001. Local number, 51J 13.
LOCATION.--Lat 37°34'28", long 77°23'30", Hydrologic Unit 02080206, 1,600 ft east of the intersection of U.S. Highway 360 (Mechanicsville Turnpike) and Laburnum Avenue and 500 ft south of Laburnum Avenue at water tower. Owner: Henrico County.
AQUIFER.--Middle Potomac aquifer of Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 8 in. 275 ft, diameter 6 in. from 275 to 307 ft, depth 307 ft, screened 167 to 186 ft, 213 to 226 ft, 248 to 258 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 168 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.7 ft above land-surface datum.
PERIOD OF RECORD.--January to September 1988.
EXTREMES FOR PERIOD JANUARY TO SEPTEMBER 1988.--Highest water level recorded, 190.85 ft below land-surface datum, Apr. 7, 1988; lowest recorded, 192.14 ft below land-surface datum, Sept. 30, 1988.

HENRICO COUNTY--Continued

373428077233001. Local number, 51J 13--Continued

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, JANUARY TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	---	---	---	---	191.53	191.54	191.35	191.38	191.53	191.81	191.86	191.54
10	---	---	---	191.65	191.63	191.14	191.26	191.40	191.52	191.59	191.80	191.85
15	---	---	---	191.75	191.40	191.21	191.31	191.51	191.72	191.62	191.81	192.03
20	---	---	---	191.43	191.03	191.31	191.27	191.38	191.68	191.72	191.63	191.90
25	---	---	---	191.31	191.38	191.56	191.31	191.41	191.70	191.70	191.61	191.91
EOM	---	---	---	191.67	191.37	191.60	191.39	191.55	191.46	191.71	191.89	192.14

PERIOD JANUARY TO SEPTEMBER 1988 HIGHEST 190.85 APR 7, 1988 LOWEST 192.14 SEP 30, 1988

373301077194001. Local number, 52J 1.
LOCATION.--Lat 37°33'01", long 77°19'40", Hydrologic Unit 02080206, at the intersection of Daisy and Vine Streets, at water tower in Highland Springs. Owner: Henrico County.
AQUIFER.--Middle Potomac aquifer of Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 10 in. to 212 ft, diameter 6 in. from 212 to 306 ft, depth 306 ft, screened 212 to 306 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 172 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
PERIOD OF RECORD.--January to September 1988.
EXTREMES FOR PERIOD JANUARY TO SEPTEMBER 1988.--Highest water level recorded, 197.64 ft below land-surface datum, Jan. 25, 26, 1988; lowest recorded, 200.71 ft below land-surface datum, Sept. 1, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, JANUARY TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	---	---	---	---	197.84	198.35	198.50	198.42	198.51	199.42	200.48	200.51
10	---	---	---	197.90	198.07	198.25	198.19	198.37	198.59	199.48	200.50	200.39
15	---	---	---	198.07	198.12	198.30	198.22	198.43	198.84	199.76	200.61	200.50
20	---	---	---	197.91	198.02	198.47	198.16	198.42	198.98	200.05	200.60	200.53
25	---	---	---	197.76	198.25	198.68	198.26	198.43	199.19	200.04	200.55	200.60
EOM	---	---	---	198.03	198.35	198.64	198.44	198.59	199.21	200.29	200.69	200.69

PERIOD JANUARY TO SEPTEMBER 1988 HIGHEST 197.64 JAN 25, 26, 1988 LOWEST 200.71 SEP 01, 1988

373125077185001. Local number, 52J 34.
LOCATION.--Lat 37°31'25", long 77°18'50", Hydrologic Unit 02080206, 300 ft north of the intersection of U.S. Highway 60 (Williamsburg Road) and Finley Drive and 200 ft east of Finley Drive. Owner: Henrico County.
AQUIFER.--Lower Potomac aquifer of Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 10 in. to 165 ft, diameter 8 in. from 165 to 272 ft, depth 272 ft, screened 222 to 265 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 162 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.90 ft above land-surface datum.
REMARKS.--Water-level affected by local pumpage.
PERIOD OF RECORD.--January to September 1988.
EXTREMES FOR PERIOD JANUARY TO SEPTEMBER 1988.--Highest water level recorded, 187.76 ft below land-surface datum, Apr. 7, 1988; lowest recorded, 189.70 ft below land-surface datum, Sept. 30, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, JANUARY TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	---	---	---	---	188.44	188.54	188.30	188.23	188.72	189.12	189.09	188.98
10	---	---	---	188.58	188.54	188.13	188.31	188.28	188.78	188.83	189.08	189.33
15	---	---	---	188.17	188.33	188.11	188.32	188.58	188.93	188.85	189.08	189.54
20	---	---	---	188.26	187.94	188.31	188.35	188.54	188.89	188.96	188.96	189.35
25	---	---	---	188.23	188.39	188.51	188.37	188.62	188.92	188.94	188.99	189.43
EOM	---	---	---	188.62	188.38	188.55	188.27	188.67	188.70	188.92	189.35	189.70

PERIOD JANUARY TO SEPTEMBER 1988 HIGHEST 187.76 APR 07, 1988 LOWEST 189.70 SEP 30, 1988

HENRICO COUNTY--Continued

373117077210201. Local number, 52J 35.
LOCATION.--Lat 37°31'17", long 77°21'02", Hydrologic Unit 02080206, 400 ft east of the intersection of South Laburnum Avenue and Finley Street, on Finley Street. Owner: Henrico County.
AQUIFER.--Lower Potomac aquifer of Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 265 ft, screened 220 to 260 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 160 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
REMARKS.--Water-level affected by local pumpage.
PERIOD OF RECORD.--January to September 1988.
EXTREMES FOR PERIOD JANUARY TO SEPTEMBER 1988.--Highest water level recorded, 191.24 ft below land-surface datum, Jan. 20, 1988; lowest recorded, 205.46 ft below land-surface datum, Aug. 19, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, JANUARY TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	---	---	---	---	199.84	201.83	196.16	201.37	197.96	197.19	204.03	198.94
10	---	---	---	---	200.58	200.92	197.29	200.35	201.62	198.81	203.62	204.09
15	---	---	---	191.72	200.94	202.27	199.35	198.98	200.06	202.43	202.72	205.01
20	---	---	---	191.56	202.39	202.85	200.80	201.62	198.23	201.62	205.43	203.67
25	---	---	---	192.07	202.02	203.05	200.42	200.53	201.28	200.53	205.27	202.66
EOM	---	---	---	192.84	200.78	202.46	200.47	197.28	200.34	199.37	204.25	205.07

PERIOD JANUARY TO SEPTEMBER 1988 HIGHEST 191.24 JAN 20, 1988 LOWEST 205.46 AUG 19, 1988

CITY OF HOPEWELL

371801077164201 Local number, 52G 1.
LOCATION.--Lat 37°18'01", long 77°16'42", Hydrologic Unit 02080206, 0.2 mi north of intersection of State Highways 156 and 10 in Hopewell. Owner: Virginia American Water Corporation.
AQUIFER.--Sand of lower Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 300 ft, screen depth unknown.
INSTRUMENTATION.--Weekly measurement with chalked tape by observer.
DATUM.--Elevation of land-surface datum is 50.26 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.34 ft above land-surface datum.
PERIOD OF RECORD.--May 1939 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 20.56 ft below land-surface datum, Sept. 7, 1979; lowest measured, 56.95 ft below land-surface datum, Aug. 14, 1943.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 02	35.06	DEC 04	34.92	JAN 29	35.15	APR 22	35.32	JUN 17	35.36	AUG 12	35.32
09	35.33	12	34.85	FEB 05	35.18	29	35.25	24	35.33	19	35.37
16	35.29	19	34.36	11	35.16	MAY 06	35.34	JUL 01	35.31	26	35.41
23	35.31	26	34.96	19	35.01	13	35.40	08	35.35	SEP 02	35.36
31	35.36	31	35.04	26	35.07	20	35.17	15	35.25	09	35.24
NOV 06	35.10	JAN 01	35.37	APR 01	35.06	27	35.28	22	35.30	16	35.14
13	35.35	08	35.34	08	35.24	JUN 03	35.15	29	35.27	23	35.33
20	35.25	15	35.23	15	35.28	10	35.16	AUG 05	35.29	30	35.35
25	35.03	22	35.33								

WATER YEAR 1988 HIGHEST 34.36 DEC 19, 1987 LOWEST 35.41 AUG 26, 1988

371727077160401 Local number, 52G 15 SOW 142A.
LOCATION.--Lat 37°17'27", long 77°16'04", Hydrologic Unit 02080206, 0.2 mi south of State Highway 10, 0.8 mi east of State Highway 156 in Hopewell. Owner: Virginia Water Control Board.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 100 ft, screened 84 to 94 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 45 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.7 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--March 1985 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 34.67 ft below land-surface datum, Feb. 24, 1986; lowest measured, 35.53 ft below land-surface datum, Aug. 09, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	34.96	JAN 21	35.15	MAR 08	35.25	MAY 02	35.20	JUN 28	35.32	AUG 09	35.53

WATER YEAR 1988 HIGHEST 34.96 NOV 16, 1987 LOWEST 35.53 AUG 09, 1988

CITY OF HOPEWELL--Continued

371727077160402 Local number, 52G 16 SOW 142B.
LOCATION.--Lat 37°17'27", long 77°16'04", Hydrologic Unit 02080206, 0.2 mi south of State Highway 10, 0.8 mi east of State Highway 156 in Hopewell. Owner: Virginia Water Control Board.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 164 ft, screened 154 to 164 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 45 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--March 1985 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 34.93 ft below land-surface datum, Feb. 24, 1986; lowest measured, 35.95 ft below land-surface datum, Mar. 8, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	35.90	JAN 21	35.49	MAR 08	35.95	MAY 02	35.45	JUN 28	35.70	AUG 09	35.88

WATER YEAR 1988 HIGHEST 35.45 MAY 02, 1988 LOWEST 35.95 MAR 08, 1988

ISLE OF WIGHT COUNTY

364059076544901 Local number, 55B 16.
LOCATION.--Lat 36°40'59", long 76°54'49", Hydrologic Unit 03010202, off U.S. Highways 258 and 58, 200 ft west of the intersection of U.S. Highways 258 and 58 and Lynn Road, 0.3 mi east of Franklin. Owner: Union Camp Corporation.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 6 in., depth 305 ft, screened 285 to 305 ft.
INSTRUMENTATION.--Continuous strip-chart recorder prior to May 27, 1988; digital recorder (60 minute punch) thereafter.
DATUM.--Elevation of land-surface datum is 25 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.45 ft above land-surface datum.
PERIOD OF RECORD.--June 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 99.00 ft below land-surface datum, Dec. 27, 1960; lowest recorded, 206.21 ft below land-surface datum, June 24, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	193.76	196.04	199.23	---	203.34	---	---	---	204.71	203.02	200.26	197.94
10	195.78	197.08	199.88	---	203.46	---	---	---	204.44	202.25	201.06	193.92
15	196.10	197.49	199.76	---	203.52	---	---	---	205.92	201.91	201.26	194.80
20	196.73	198.09	200.78	203.10	---	---	---	---	205.63	200.80	199.19	194.75
25	197.52	198.71	202.45	203.12	---	---	---	---	206.20	200.28	197.89	195.26
EOM	197.77	198.03	---	203.12	---	---	---	203.74	205.11	200.28	198.01	196.13

WATER YEAR 1988 HIGHEST 192.45 SEP 08, 1988 LOWEST 206.21 JUN 24, 1988

364143076535701 Local number, 55B 25.
LOCATION.--Lat 36°41'43", long 76°53'57", Hydrologic Unit 03010202, at Rose Municipal Airport, 0.3 mi west of U.S. Highways 258 and 58, and 1.5 mi northeast of Franklin. Owner: City of Franklin.
AQUIFER.--Sand of Paleocene age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 8 in., depth 167.8 ft, screened 155 to 161 ft.
INSTRUMENTATION.--Semiannual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 36 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, at land-surface datum.
PERIOD OF RECORD.--November 1942, August 1968, November 1972 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 13.00 ft below land-surface datum, Nov. 27, 1942; lowest measured, 48.46 ft below land-surface datum, Nov. 3, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	48.46	MAR 08	47.56

WATER YEAR 1988 HIGHEST 47.56 MAR 08, 1988 LOWEST 48.46 NOV 03, 1987

ISLE OF WIGHT COUNTY--Continued

364125076544801 Local number, 55B 36.
LOCATION.--Lat 36°41'25", long 76°54'48", Hydrologic Unit 03010202, on Lynn Road, 0.45 mi north of intersection with U.S. Highways 258 and 58, and 0.7 mi northeast of Franklin. Owner: Union Camp Corporation.
AQUIFER.--Sand of lower Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 860 ft, screened 720 to 725 ft, 800 to 805 ft, 855 to 860 ft.
INSTRUMENTATION.--Continuous strip-chart recorder.
DATUM.--Elevation of land-surface datum is 37 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 4.56 ft above land-surface datum.
REMARKS.--Water level affected by local pumpage.
PERIOD OF RECORD.--March 1969 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 156.65 ft below land-surface datum, Dec. 27, 1969; lowest measured, 219.29 ft below land-surface datum, May 18, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	190.80	192.55	193.42	195.86	196.04	196.74	195.95	196.71	196.12	196.67	194.52	194.21
10	190.87	192.55	193.73	195.89	196.13	196.67	195.92	196.50	196.20	195.95	194.38	---
15	191.35	192.56	194.54	195.44	196.16	196.66	196.13	196.30	196.38	195.50	194.37	---
20	191.85	192.61	195.17	195.59	196.42	196.60	196.45	196.17	196.60	195.14	194.37	---
25	192.18	192.72	195.56	195.82	196.62	196.67	---	196.09	196.84	194.88	194.31	---
EOM	192.38	193.30	195.82	195.90	196.71	196.23	196.63	196.13	196.93	194.64	194.23	192.54

WATER YEAR 1988 HIGHEST 190.80 OCT 05, 1987 LOWEST 196.93 JUN 30, 1988

364141076530701 Local number, 55B 43.
LOCATION.--Lat 36°41'46", long 76°53'07", Hydrologic Unit 03010202, off U.S. Highway 58, 2.1 mi east of Franklin. Owner: Ray A. Tillet.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 4 in., depth 315 ft, screened 305 to 315 ft.
INSTRUMENTATION.--Annual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 30 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of well housing, 3.9 ft above land-surface datum.
PERIOD OF RECORD.--August 1970 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 145.47 ft below land-surface datum, Aug. 12, 1974; lowest measured, 186.11 ft below land-surface datum, Mar. 8, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL
MAR 08	186.11

364425076532701 Local number, 55B 45 SOW 033.
LOCATION.--Lat 36°44'25", long 76°53'27", Hydrologic Unit 03010202, 0.8 mi west of intersection of State Highway 611 and U.S. Highway 258, 4.2 mi northeast of Franklin. Owner: R. J. Goodrich.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in., depth 348 ft, screened 338 to 348 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 37 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of recorder shelf, 2.2 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board. Water level affected by local pumpage.
PERIOD OF RECORD.--December 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 130.06 ft below land-surface datum, Aug. 15, 1974; lowest measured, 171.55 ft below land-surface datum, Aug. 9, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	166.89	JAN 11	168.85	MAR 14	166.30	MAY 02	165.83	JUN 28	168.37	AUG 09	171.55
16	166.84	MAR 08	167.21								

WATER YEAR 1988 HIGHEST 165.83 MAY 02, 1988 LOWEST 171.55 AUG 09, 1988

ISLE OF WIGHT COUNTY--Continued

364101076544802 Local number, 55B 60.
LOCATION.--Lat 36°41'01", long 76°54'48", Hydrologic Unit 03010202, 200 ft northwest of intersection of U.S. Highways 58 and 258 and Lynn Road, 0.3 mi east of Franklin. Owner: Virginia Water Control Board.
AQUIFER.--Sand of lower Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in. to 830 ft, diameter 3 in. from 830 to 860 ft, depth 860 ft, screened 830 to 840 ft.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 25 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.5 ft above land-surface datum.
PERIOD OF RECORD.--May 1979 to September 1983, October 1986 to September 1987. Unpublished records available prior to October 1986 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 168.90 ft below land-surface datum, Sept. 19, 1979; lowest measured, 184.39 ft below land-surface datum, Mar. 22, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	180.70	DEC 16	181.42	FEB 19	182.68	APR 27	183.94	JUN 24	182.67	AUG 26	180.46
NOV 18	180.83	JAN 19	183.30	MAR 22	184.39	MAY 27	183.19	JUL 25	181.67	SEP 30	178.46

WATER YEAR 1988 HIGHEST 178.46 SEP 30, 1988 LOWEST 184.39 MAR 22, 1988

364101076544803 Local number, 55B 62 SOW 96B.
LOCATION.--Lat 36°41'01", long 76°54'48", Hydrologic Unit 03010202, 200 ft northwest of intersection of U.S. Highways 58 and 258 and Lynn Road, 0.3 mi east of Franklin. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 3 in., depth 30.77 ft, screened 25 to 30 ft.
INSTRUMENTATION.--Digital recorder--60 minute punch.
DATUM.--Elevation of land-surface datum is 27 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.15 ft above land-surface datum.
PERIOD OF RECORD.--May 1979, October 1980 to September 1981, October 1982 to September 1983, October 1984 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.00 ft below land-surface datum, Feb. 26, 1987; lowest measured, 15.38 ft below land-surface datum, Oct. 17, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	11.88	12.07	11.68	11.36	11.10	11.08	11.18	11.15	10.95	11.26	11.20	11.34
10	11.93	12.08	11.68	11.30	11.14	11.06	11.22	11.03	11.02	11.28	11.22	11.14
15	11.96	11.84	11.67	11.31	10.99	11.14	11.18	11.08	11.12	11.34	11.29	11.18
20	12.00	11.83	11.62	11.18	10.93	11.16	11.14	10.95	11.10	11.10	11.32	11.22
25	12.06	11.92	11.66	11.20	10.98	11.19	11.20	10.90	11.19	11.04	11.21	11.26
EOM	12.08	11.61	11.53	11.21	11.02	11.16	11.20	10.99	11.16	11.14	11.40	11.35

WATER YEAR 1988 HIGHEST 10.80 MAY 22, 1988 LOWEST 12.09 NOV 06-09, 1987

365300076380001 Local number, 56B 5.
LOCATION.--Lat 36°42'41", long 76°49'33", Hydrologic Unit 03010202, 0.05 mi south of U.S. Highway 58 in Carrsville. Owner: John Rose.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 6 in., depth 372 ft, screened 352 to 372 ft.
INSTRUMENTATION.--Semiannual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 72 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.1 ft above land-surface datum.
PERIOD OF RECORD.--August 1970 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 163.00 ft below land-surface datum, Aug. 26, 1970; lowest measured, 193.61 ft below land-surface datum, Mar. 8, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	191.00	MAR 08	193.61

WATER YEAR 1988 HIGHEST 191.00 NOV 03, 1987 LOWEST 193.61 MAR 08, 1988

ISLE OF WIGHT COUNTY--Continued

365305076380001 Local number, 56C 1.
LOCATION.--Lat 36°50'06", long 76°50'03", Hydrologic Unit 03010202, 0.13 mi west of State Highway 614, 2.2 mi south of Zuni. Owner: Zuni Presbyterian Home.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 8 in., depth 434 ft, screened 418 to 434 ft.
INSTRUMENTATION.--Semiannual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 75 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of pump base, 1.7 ft above land-surface datum.
REMARKS.--Water levels affected by pumpage.
PERIOD OF RECORD.--August 1970 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 125.02 ft below land-surface datum, Aug. 27, 1970; lowest measured, 161.99 ft below land-surface datum, June 16, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	157.03	MAR 10	158.29

WATER YEAR 1988 HIGHEST 157.03 NOV 05, 1987 LOWEST 158.29 MAR 10, 1988

364825076441701 Local number, 57C 8.
LOCATION.--Lat 36°48'25", long 76°44'17", Hydrologic Unit 02080208, off U.S. Highway 460, 0.3 mi east-southeast of Windsor. Owner: C. A. Bracey.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 3 in., depth 436 ft, screened 426 to 436 ft.
INSTRUMENTATION.--Annual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 81 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, at land-surface datum.
PERIOD OF RECORD.--October 1968 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 121.75 ft below land-surface datum, Oct. 24, 1968; lowest measured, 166.54 ft below land-surface datum, Mar. 9, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL
MAR 09	166.54

364814076440701 Local number, 57C 25 SOW 149A.
LOCATION.--Lat 36°48'14", long 76°44'07", Hydrologic Unit 02080208, at Windsor Community Center in Windsor. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 26 ft, screened 16 to 26 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 70 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.2 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--March 1985 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.27 ft above land-surface datum, Feb. 23, 1987; lowest measured, 3.29 ft below land-surface datum, July 22, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	1.82	JAN 11	0.35	MAR 14	0.74	MAY 02	0.93	JUN 28	1.40	AUG 09	2.45

WATER YEAR 1988 HIGHEST 0.35 JAN 11, 1988 LOWEST 2.45 AUG 09, 1988

ISLE OF WIGHT COUNTY--Continued

364814076440702 Local number, 57C 26 SOW 149B.
LOCATION.--Lat 36°48'14", long 76°44'07", Hydrologic Unit 02080208, at Windsor Community Center in Windsor. Owner: Virginia Water Control Board.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in., depth 380 ft, screened 370 to 380 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 70 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.2 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--March 1985 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 144.42 ft below land-surface datum, Feb. 25, 1986; lowest measured, 158.20 ft below land-surface datum, Jan. 11, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	154.87	JAN 11	158.20	MAR 14	153.62	MAY 02	151.98	JUN 28	152.18	AUG 09	151.70

WATER YEAR 1988 HIGHEST 151.70 AUG 09, 1988 LOWEST 158.20 JAN 11, 1988

364814076440704 Local number, 57C 28 SOW 149D.
LOCATION.--Lat 36°48'14", long 76°44'07", Hydrologic Unit 02080208, at Windsor Community Center in Windsor. Owner: Virginia Water Control Board.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 807 ft, screened 797 to 807 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 70 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.4 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--March 1985 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 142.80 ft below land-surface datum, Feb. 25, 1986; lowest measured, 155.67 ft below land-surface datum, Jan. 12, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	152.45	JAN 11	155.42	MAR 14	151.20	MAY 02	149.86	JUN 28	148.90	AUG 09	149.30

WATER YEAR 1988 HIGHEST 148.90 JUN 28, 1988 LOWEST 155.42 JAN 11, 1988

365751076433501 Local number, 57D 21 SOW 143A.
LOCATION.--Lat 36°57'51", long 76°43'35", Hydrologic Unit 03010202, 50 ft west of State Highway 652, 0.5 mi south of State Highway 682, and 1.8 mi southwest of Magnet. Owner: Virginia Water Control Board.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 650 ft, screened 640 to 650 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 73 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--April 1980 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 122.60 ft below land-surface datum, Aug. 27, 1980; lowest measured, 139.95 ft below land-surface datum, Jan. 11, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	138.55	JAN 11	139.95	MAR 16	139.75	MAY 02	138.95	JUN 28	138.30	AUG 09	138.85

WATER YEAR 1988 HIGHEST 138.30 JUN 28, 1988 LOWEST 139.95 JAN 11, 1988

ISLE OF WIGHT COUNTY--Continued

365751076433502 Local number, 57D 22 SOW 143B.
LOCATION.--Lat 36°57'51", long 76°43'35", Hydrologic Unit 03010202, 50 ft west of State Highway 652, 0.5 mi south of State Highway 682, and 1.8 mi southwest of Magnet. Owner: Virginia Water Control Board.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 350 ft, screened 340 to 350 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 73 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--April 1980 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 125.10 ft below land-surface datum, Apr. 24, May 29, 1980; lowest measured, 140.25 ft below land-surface datum, Mar. 16, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	138.67	JAN 11	140.17	MAR 16	140.25	MAY 02	139.24	JUN 28	138.60	AUG 09	139.10

WATER YEAR 1988 HIGHEST 138.60 JUN 28, 1988 LOWEST 140.25 MAR 16, 1988

365751076433503 Local number, 57D 23 SOW 143C.
LOCATION.--Lat 36°57'51", long 76°43'35", Hydrologic Unit 03010202, 50 ft west of State Highway 652, 0.5 mi south of State Highway 682, and 1.8 mi southwest of Magnet. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 18 ft, screened 8 to 18 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 73 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--April 1980 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.29 ft below land-surface datum, Feb. 23, 1987; lowest measured, 8.70 ft below land-surface datum, Aug. 11, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	7.55	JAN 11	5.35	MAR 16	4.63	MAY 02	4.83	JUN 28	6.02	AUG 09	7.35

WATER YEAR 1988 HIGHEST 4.63 MAR 16, 1988 LOWEST 7.55 NOV 16, 1987

370236076425901 Local number, 57E 10 SOW 144B.
LOCATION.--Lat 37°02'36", long 76°42'59", Hydrologic Unit 02080206, 0.5 mi east of State Highway 627, 1.0 mi north of State Highway 621, and 2.5 mi southwest of Rushmere. Owner: Virginia Water Control Board.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 440 ft, screened 430 to 440 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 85 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.5 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--April 1980 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 139.90 ft below land-surface datum, Apr. 24, July 24, 1980; lowest measured, 154.35 ft below land-surface datum, Aug. 9, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	153.42	JAN 14	153.52	MAR 16	153.50	MAY 02	153.10	JUN 28	153.40	AUG 09	154.35

WATER YEAR 1988 HIGHEST 153.10 MAY 02, 1988 LOWEST 154.35 AUG 09, 1988

ISLE OF WIGHT COUNTY--Continued

370253076431201 Local number, 57E 14 SOW 144A.
LOCATION.--Lat 37°02'53", long 76°43'12", Hydrologic Unit 02080208, 0.5 mi east of State Highway 627, 1.0 mi north of State Highway 621, and 2.5 mi southwest of Rushmere. Owner: Virginia Water Control Board.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in. to 590 ft, diameter 3 in. from 590 to 600 ft, depth 600 ft, screened 590 to 600 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 86 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--April 1980 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 139.49 ft below land-surface datum, Apr. 24, 1980; lowest measured, 153.90 ft below land-surface datum, Aug. 9, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	152.98	JAN 14	153.09	MAR 16	152.90	MAY 02	152.62	JUN 28	152.95	AUG 09	153.90

WATER YEAR 1988 HIGHEST 152.62 MAY 02, 1988 LOWEST 153.90 AUG 09, 1988

370253076431202 Local number, 57E 15 SOW 144C.
LOCATION.--Lat 37°02'53", long 76°43'12", Hydrologic Unit 02080208, 0.5 mi east of State Highway 627, 1.0 mi north of State Highway 621, and 2.5 mi southwest of Rushmere. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 20 ft, screened 10 to 20 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 86 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--April 1980 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.90 ft below land-surface datum, Feb. 25, 1987; lowest measured, 13.73 ft below land-surface datum, Nov. 16, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	13.73	JAN 14	3.54	MAR 16	2.65	MAY 02	2.88	JUN 28	5.50	AUG 09	5.15

WATER YEAR 1988 HIGHEST 2.65 MAR 16, 1988 LOWEST 13.73 NOV 16, 1987

JAMES CITY COUNTY

372546076532901. Local number, 55H 20.
LOCATION.--Lat 37°25'46", long 76°53'29", Hydrologic Unit 02080206, 700 ft east of the pumping station at Diascund Creek Reservoir, 100 ft north of State Highway 603, 0.6 mi northwest of the intersection of U.S. Highway 60 and State Highway 603 in James City County. Owner: City of Newport News.
AQUIFER.--Potomac aquifer of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 12 in. to 300 ft, diameter 6 in. from 300 to 735 ft, depth 735 ft, screened 515 to 540 ft, 600 to 620 ft, 630 to 655 ft, 665 to 685 ft, 720 to 730 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 28 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 3.6 ft above land-surface datum.
PERIOD OF RECORD.--May to September 1988.
EXTREMES FOR PERIOD MAY TO SEPTEMBER 1988.--Highest water level recorded, 190.99 ft below land-surface datum, June 4, 1988; lowest recorded, 192.40 ft below land-surface datum, Sept. 30, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, MAY TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	---	---	---	---	---	---	---	---	191.22	191.73	191.90	191.96
10	---	---	---	---	---	---	---	191.18	191.30	191.71	191.91	192.08
15	---	---	---	---	---	---	---	191.24	191.44	191.78	191.97	192.23
20	---	---	---	---	---	---	---	191.22	191.45	191.88	191.95	192.20
25	---	---	---	---	---	---	---	191.16	191.54	191.84	191.94	192.28
EOM	---	---	---	---	---	---	---	191.26	191.50	191.83	192.12	192.40

PERIOD MAY TO SEPTEMBER 1988 HIGHEST 190.99 JUN 04, 1988 LOWEST 192.40 SEP 30, 1988

JAMES CITY COUNTY--Continued

371311076463601 Local number, 56F 1 SOW 018.
LOCATION.--Lat 37°13'11", long 76°46'36", Hydrologic Unit 02080206, 1,100 ft southwest of Colonial Parkway, 0.5 mi west of State Highway 682, and 0.6 mi north of Jamestown. Owner: U.S. Department of Interior, Colonial National Historical Park.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in., depth 346 ft, screened 336 to 346 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 10 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top edge of recorder shelf, 3.15 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--May 1969 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 43.29 ft below land-surface datum, May 8, 1969; lowest measured, 81.40 ft below land-surface datum, Aug. 25, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	80.26	JAN 19	77.73	MAR 04	77.30	MAY 11	79.10	JUN 23	79.90	AUG 25	81.40

WATER YEAR 1988 HIGHEST 77.30 MAR 04, 1988 LOWEST 81.40 AUG 25, 1988

372145076493201. Local number, 56G 57.
LOCATION.--Lat 37°21'45", long 76°49'32", Hydrologic Unit 02080206, 1.75 mi south of the intersection of U.S. Highway 60 and State Highway 631 (Church Lane), off a dirt road at the end of State Highway 631, and 0.10 mi north of the pump station at Little Creek Reservoir. Owner: City of Newport News.
AQUIFER.--Middle Potomac aquifer of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 12 in. to 300 ft, diameter 6 in. from 300 to 695 ft, depth 695 ft, screened 530 to 540 ft, 558 to 598 ft, 604 to 624 ft, 660 to 690 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 84 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 4.3 ft above land-surface datum.
PERIOD OF RECORD.--May to September 1988.
EXTREMES FOR PERIOD MAY TO SEPTEMBER 1988.--Highest water level recorded, 155.79 ft below land-surface datum, May 25, 1988; lowest recorded, 157.13 ft below land-surface datum, Sept. 29, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, MAY TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	---	---	---	---	---	---	---	---	155.92	156.36	---	156.69
10	---	---	---	---	---	---	---	155.96	156.01	156.34	---	156.80
15	---	---	---	---	---	---	---	155.99	156.15	156.42	---	---
20	---	---	---	---	---	---	---	155.96	156.16	156.51	---	---
25	---	---	---	---	---	---	---	155.90	156.24	156.58	---	---
EOM	---	---	---	---	---	---	---	155.97	156.17	---	---	---

PERIOD MAY TO SEPTEMBER 1988 HIGHEST 155.79 MAY 25, 1988 LOWEST 157.13 SEPT. 29, 1988

372506076511701. Local number, 56H 25 SOW 177A.
LOCATION.--Lat 37°25'06", long 76°51'17", Hydrologic Unit 02080206, 3.15 mi west of the intersection of U.S. Highway 60 and State Highway 168, 0.7 mi north of the intersection of State Highways 168 and 601, and on the northwest side of State Highway 601 in James City County. Owner: Virginia Water Control Board.
AQUIFER.--Lower Potomac aquifer of Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in., depth 929 ft, screened 888 to 908 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch prior to June 28, 1988; quarterly measurements with chalked tape by USGS personnel thereafter.
DATUM.--Elevation of land-surface datum is 103 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.15 ft above land-surface datum.
PERIOD OF RECORD.--April 1985 to current year. Unpublished records available prior to October 1986 in the files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 158.21 ft below land-surface datum, Mar. 19, 20, 1986; lowest recorded, 165.63 ft below land-surface datum, June 1, 19, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	161.28	161.55	---	---	---	162.29	162.53	162.81	163.20	163.65	164.11	164.62
10	161.48	161.62	---	---	---	162.30	162.65	162.89	163.39	163.73	164.16	164.62
15	161.41	161.65	---	---	---	162.34	162.81	163.00	163.39	163.78	164.31	164.62
20	161.52	161.63	---	---	---	162.30	162.74	163.09	163.47	163.92	164.42	164.50
25	161.54	161.64	---	---	162.19	162.46	162.71	163.17	163.56	164.00	164.55	164.52
EOM	161.64	161.66	---	---	162.22	162.48	162.73	163.19	163.69	164.13	164.61	164.60

WATER YEAR 1987 HIGHEST 161.21 OCT. 04, 1986 LOWEST 164.62 SEP 05-16, 1987

JAMES CITY COUNTY--Continued

372506076511701. Local number, 56H 25 SOW 177A--Continued

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	164.60	165.00	165.22	165.55	165.60	165.58	165.54	---	---	---	---	---
10	164.70	165.02	165.20	165.62	165.59	165.56	165.54	---	---	---	---	---
15	164.73	165.20	165.32	165.61	165.59	165.56	165.53	---	---	---	---	---
20	164.73	165.11	165.37	165.61	165.59	165.55	165.53	---	---	---	---	---
25	164.89	165.27	165.42	165.61	165.58	165.55	---	---	---	---	---	---
EOM	164.98	165.01	165.55	165.60	165.58	165.55	---	---	---	---	---	---

WATER YEAR 1988 HIGHEST 164.60 OCT 01-08, 1986 LOWEST 165.63 JAN 01, 19, 1988

372506076511702. Local number, 56H 26 SOW 177B.
LOCATION.--Lat 37°25'06", long 76°51'17", Hydrologic Unit 02080206, 3.15 mi west of the intersection of U.S. Highway 60 and State Highway 168, 0.7 mi north of the intersection of State Highways 168 and 601, and on the northwest side of State Highway 601 in James City County. Owner: Virginia Water Control Board.
AQUIFER.--Middle Potomac aquifer of Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in., depth 581 ft, screened 550 to 560 ft.
INSTRUMENTATION.--Digital recorder--60 minute punch.
DATUM.--Elevation of land-surface datum is 103 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.15 ft above land-surface datum.
PERIOD OF RECORD.--April 1985 to current year. Unpublished records prior to October 1986 available in the files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 157.61 ft below land-surface datum, June 1, 2, 1985; lowest recorded, 165.89 ft below land-surface datum, Sept. 30, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	---	---	---	---	---	---	---	---	162.47	162.47	163.37	163.65
10	---	---	---	---	---	---	---	---	162.47	162.47	163.37	163.65
15	---	---	---	---	---	---	---	162.28	162.47	162.47	163.37	163.66
20	---	---	---	---	---	---	---	162.29	162.47	162.47	163.52	163.66
25	---	---	---	---	---	---	---	162.36	162.47	162.47	163.60	163.66
EOM	---	---	---	---	---	---	---	162.40	162.47	163.37	163.65	163.67

WATER YEAR 1987 HIGHEST 162.28 MAY 13-21, 1987 LOWEST 163.67 SEP 28-30, 1987

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	163.67	164.11	164.41	164.67	164.74	164.71	164.73	164.81	164.81	165.25	165.56	165.70
10	163.79	164.17	164.48	164.69	164.74	164.70	164.72	164.81	164.84	165.27	165.59	165.69
15	163.85	---	164.48	164.70	164.74	164.70	164.72	164.81	164.99	165.33	165.64	165.72
20	163.87	164.34	164.51	164.69	164.73	164.69	164.71	164.81	165.03	165.42	165.65	165.76
25	164.01	164.42	164.56	164.68	164.72	164.75	164.74	164.81	165.09	165.44	165.64	165.78
EOM	164.06	164.42	164.64	164.75	164.72	164.74	164.76	164.81	165.13	165.50	165.65	165.89

WATER YEAR 1988 HIGHEST 163.45 OCT 07, 1987 LOWEST 165.89 SEP 30, 1988

JAMES CITY COUNTY--Continued

372506076511703. Local number, 56H 27 SOW 177C.
LOCATION.--Lat 37°25'06", long 76°51'17", Hydrologic Unit 02080206, 3.15 mi west of the intersection of U.S. Highway 60 and State Highway 168, 0.7 mi north of the intersection of State Highways 168 and 601, and on the northwest side of State Highway 601 in James City County. Owner: Virginia Water Control Board.
AQUIFER.--Upper Potomac aquifer of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 401 ft, screened 370 to 380 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 103 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.95 ft above land-surface datum.
PERIOD OF RECORD.--April 1985 to current year. Unpublished records available prior to October 1986 in the files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 153.47 ft below land-surface datum, June 1, 2, 1985; lowest recorded, 160.30 ft below land-surface datum, Sept. 30, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	156.48	156.75	156.91	156.81	156.74	156.77	156.64	156.62	156.69	157.06	157.51	158.10
10	156.64	156.82	156.87	156.81	156.74	156.68	156.72	156.66	156.83	157.17	157.55	158.06
15	156.57	156.87	156.92	156.83	156.79	156.69	156.83	156.74	156.84	157.18	157.70	158.02
20	156.67	156.85	156.91	156.69	156.79	156.65	156.63	156.76	156.92	157.32	157.80	158.08
25	156.73	156.89	156.77	156.67	156.77	156.72	156.65	156.79	157.00	157.42	157.97	158.10
EOM	156.80	156.94	156.85	156.59	156.80	156.71	156.52	156.80	157.11	157.52	158.04	158.25

WATER YEAR 1987 HIGHEST 156.42 JAN 22, 1987 LOWEST 158.25 SEP 29, 30, 1987

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	158.23	158.59	158.65	158.79	158.78	158.72	158.71	158.68	158.72	159.35	159.85	159.97
10	158.34	158.65	158.72	158.82	158.83	158.78	158.58	158.65	158.82	159.41	159.90	160.00
15	158.39	158.70	158.77	158.93	158.73	158.61	158.57	158.66	158.98	159.53	159.96	160.14
20	158.40	158.65	158.78	158.85	158.74	158.69	158.53	158.68	159.05	159.64	159.96	160.14
25	158.51	158.78	158.81	158.78	158.72	158.80	158.63	158.64	159.17	159.70	159.94	160.21
EOM	158.53	158.56	158.83	158.91	158.73	158.73	158.69	158.75	159.15	159.76	160.08	160.30

WATER YEAR 1988 HIGHEST 158.12 OCT 01, 02, 1987 LOWEST 160.30 SEP 30, 1988

372506076511704. Local number, 56H 28 SOW 177D.
LOCATION.--Lat 37°25'06", long 76°51'17", Hydrologic Unit 02080206, 3.15 mi west of the intersection of U.S. Highway 60 and State Highway 168, 0.7 mi north of the intersection of State Highways 168 and 601, and on the northwest side of State Highway 601 in James City County. Owner: Virginia Water Control Board.
AQUIFER.--Aquia aquifer of Tertiary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 321 ft, screened 290 to 300 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 193 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.9 ft above land-surface datum.
PERIOD OF RECORD.--April 1985 to current year. Unpublished records available prior to October 1986 in the files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 153.20 ft below land-surface datum, May 31, 1985; lowest recorded, 159.83 ft below land-surface datum, Sept. 30, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	156.07	---	156.44	156.34	---	156.31	156.23	156.16	156.01	156.11	157.03	157.58
10	---	---	156.41	156.35	---	156.21	156.26	156.17	156.09	156.10	157.04	157.54
15	---	---	156.48	156.38	156.36	156.28	156.38	156.28	156.04	156.12	157.20	157.49
20	---	---	156.41	156.23	156.36	156.28	156.21	156.26	156.06	156.18	157.28	157.55
25	---	---	156.29	156.22	156.30	156.27	156.24	156.24	156.09	156.22	157.43	157.60
EOM	---	---	156.39	---	156.33	156.31	156.17	156.16	156.16	157.04	157.53	157.75

WATER YEAR 1987 HIGHEST 155.95 OCT. 01-04, 1986 LOWEST 157.75 SEP 29, 30, 1987

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	157.72	158.10	158.19	158.31	---	---	---	158.23	158.26	158.87	159.32	159.47
10	157.84	158.13	158.17	158.39	---	---	---	158.21	158.37	158.89	159.37	159.58
15	157.89	158.19	158.25	158.26	---	---	---	158.20	158.48	159.00	159.41	159.64
20	157.89	158.11	158.27	---	---	---	---	158.23	158.54	159.10	159.45	159.65
25	158.02	158.25	158.29	---	---	---	158.19	158.17	158.66	159.17	159.43	159.72
EOM	158.04	158.03	158.34	---	---	---	158.26	158.26	158.64	159.22	159.58	159.83

WATER YEAR 1988 HIGHEST 157.63 OCT. 01, 02, 1987 LOWEST 159.83 SEP 30, 1988

JAMES CITY COUNTY--Continued

372506076511705. Local number, 56H 29 SOW 177E.
LOCATION.--Lat 37°25'06", long 76°51'17", Hydrologic Unit 02080206, 3.15 mi west of intersection of U.S. Highway 60 and State Highway 168, 0.7 mi north of intersection of State Highways 168 and 601, and on the northwest side of State Highway 601 in James City County. Owner: Virginia Water Control Board.
AQUIFER.--Chickahominy-Piney Point aquifer of Tertiary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 235 ft, screened 204 to 214 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 103 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.8 ft above land-surface datum.
PERIOD OF RECORD.--April 1985 to current year. Unpublished records available prior to October 1986 in the files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 111.96 ft below land-surface datum, Feb. 27, 1986; lowest recorded, 119.05 ft below land-surface datum, Sept. 29, 30, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	115.21	115.17	115.06	114.88	114.72	114.66	114.44	114.47	114.79	115.23	116.07	116.65
10	115.35	115.16	115.00	114.82	114.73	114.57	114.47	114.70	115.00	115.44	116.18	116.55
15	115.35	---	115.00	114.85	114.73	114.51	114.55	114.78	115.00	115.48	116.32	116.45
20	115.29	---	115.00	114.70	114.72	114.43	114.42	114.89	115.03	115.59	116.47	116.40
25	115.31	---	114.88	114.67	114.68	114.49	114.35	114.92	115.25	115.87	116.61	116.42
EOM	115.35	---	114.95	114.59	114.64	114.48	114.39	114.94	115.33	116.03	116.69	116.34

WATER YEAR 1987 HIGHEST 114.22 APR 25, 1987 LOWEST 116.75 AUG 26, 1987

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	116.34	116.45	116.42	116.36	116.29	116.29	116.23	116.48	116.73	117.77	118.64	118.84
10	116.41	116.50	116.37	116.37	116.32	116.14	116.24	116.46	116.88	118.06	118.72	118.80
15	116.39	116.57	116.37	116.80	116.23	116.16	116.21	116.54	117.02	118.19	118.79	118.89
20	116.37	116.42	116.38	116.48	116.17	116.15	116.21	116.59	117.17	118.44	118.80	118.89
25	116.43	116.56	116.38	116.38	116.28	116.23	116.32	116.61	117.39	118.51	118.85	118.97
EOM	116.49	116.33	116.36	116.45	116.26	116.23	116.49	116.77	117.44	118.58	118.99	119.05

WATER YEAR 1988 HIGHEST 116.01 MAR 10, 1988 LOWEST 119.05 SEP 29, 30, 1988

372506076511706. Local number, 56H 30 SOW 177F.
LOCATION.--Lat 37°25'06", long 76°51'17", Hydrologic Unit 02080206, 3.15 mi west of intersection of U.S. Highway 60 and State Highway 168, 0.7 mi north of intersection of State Highways 168 and 601, and on the northwest side of State Highway 601 in James City County. Owner: Virginia Water Control Board.
AQUIFER.--Yorktown-Eastover aquifer of Tertiary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 60 ft, screened 50 to 60 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 103 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.9 ft above land-surface datum.
PERIOD OF RECORD.--April 1985 to current year. Unpublished records available prior to October 1986 in the files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 17.25 ft below land-surface datum, June 8, 9, 12, 13, 1987; lowest recorded, 22.22 ft below land-surface datum, Sept. 29, 30, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	20.49	20.93	21.37	21.44	20.79	19.81	19.02	18.15	17.43	17.60	18.16	18.87
10	20.62	21.04	21.38	21.43	20.63	19.55	19.09	17.84	17.35	17.69	18.26	18.92
15	20.65	21.07	21.42	21.46	20.50	19.39	19.19	17.78	17.32	17.81	18.41	18.99
20	20.73	21.17	21.51	21.22	20.43	19.21	18.84	17.80	17.36	17.90	18.54	19.09
25	20.82	21.23	21.42	21.02	20.15	19.19	18.74	17.82	17.47	17.99	18.66	19.17
EOM	20.94	21.30	21.50	20.85	20.00	19.10	18.19	17.72	17.60	18.10	18.77	19.30

WATER YEAR 1987 HIGHEST 17.25 JUNE 08, 09, 12, 13, 1987 LOWEST 21.55 DEC 22, 1986

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	19.39	19.95	20.54	20.97	21.18	21.16	21.16	21.29	21.13	21.24	21.51	21.84
10	19.57	20.05	20.54	21.03	21.22	21.07	21.20	21.31	21.16	21.22	21.58	21.91
15	19.62	20.23	20.69	21.11	21.07	21.15	21.20	21.31	21.15	21.27	21.62	22.03
20	19.68	20.21	20.74	21.09	20.97	21.18	21.22	21.34	21.14	21.34	21.66	22.07
25	19.80	20.36	20.81	21.12	21.07	21.20	21.28	21.17	21.17	21.39	21.73	22.14
EOM	19.90	20.33	20.93	21.20	21.09	21.18	21.32	21.13	21.12	21.44	21.84	22.22

WATER YEAR 1988 HIGHEST 19.16 OCT 01, 1987 LOWEST 22.22 SEP 29, 30, 1988

KING AND QUEEN COUNTY

373126076454101 Local number, 56J 11 SOW 073.
LOCATION.--Lat 37°31'26", long 76°45'41", Hydrologic Unit 02080105, at West Point Airport, 1.7 mi southeast of West Point. Owner: Chesapeake Corporation.
AQUIFER.--Sand and gravel of undifferentiated Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 1,254 ft, screened 1,233 to 1,248 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS.
DATUM.--Elevation of land-surface datum is 15 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.6 ft above land-surface datum.
PERIOD OF RECORD.--November 1974 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 73.08 ft below land-surface datum, Apr. 25, 1975; lowest measured, 102.99 ft below land-surface datum, July 27, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 02	101.08	JAN 27	102.84	MAR 11	102.44	MAY 25	101.07	JUL 27	102.99	SEP 27	102.81
DEC 01	102.03										

WATER YEAR 1988 HIGHEST 101.07 MAY 25, 1988 LOWEST 102.99 JUL 27, 1988

373008076425601 Local number, 57J 3 SOW 074.
LOCATION.--Lat 37°30'08", long 76°42'56", Hydrologic Unit 02080107, off State Highway 606, 0.4 mi northeast of intersection of State Highways 606 and 605, and 2.8 mi south of Shacklefords. Owner: Chesapeake Corporation.
AQUIFER.--Sand of undifferentiated Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in. to 200 ft, diameter 4 in. from 200 to 760 ft, depth 760 ft, screened 741 to 756 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 51 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.20 ft above land-surface datum.
PERIOD OF RECORD.--November 1974 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 109.90 ft below land-surface datum, Jan. 26, 1975; lowest measured, 132.33 ft below land-surface datum, Sept. 27, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 02	130.09	JAN 27	131.21	MAR 11	131.12	MAY 25	131.12	JUL 27	132.00	SEP 27	132.33
DEC 01	130.52										

WATER YEAR 1988 HIGHEST 130.09 OCT 02, 1987 LOWEST 132.33 SEP 27, 1988

KING WILLIAM COUNTY

373226076481201 Local number, 56J 2.
LOCATION.--Lat 37°32'26", long 76°48'12", State Hydrologic Unit 02080106, 0.1 mi west of State Highway 30, 0.3 mi north of State Highway 33, and in West Point. Owner: Chesapeake Corporation.
AQUIFER.--Sand of undifferentiated Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused withdrawal water well, diameter 18 in. to 300 ft, diameter 8 in. from 300 to 600 ft, depth 600 ft, screened 390 to 400 ft, 550 to 570 ft, 580 to 600 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 25 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.5 ft above land-surface datum.
REMARKS.--Water levels affected by local pumpage.
PERIOD OF RECORD.--November 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 141.48 ft below land-surface datum, Feb. 15, 1983; lowest measured, 174.36 ft below land-surface datum, May 25, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 05	165.49	JAN 27	169.17	MAR 11	163.68	MAY 25	174.36	JUL 29	170.61	SEP 27	163.16
DEC 18	168.64										

WATER YEAR 1988 HIGHEST 163.16 SEP 27, 1988 LOWEST 174.36 MAY 25, 1988

KING WILLIAM COUNTY--Continued

373206076481201 Local number, 56J 18.
LOCATION.--Lat 37°32'06", long 76°48'12", Hydrologic Unit 02080106, near State Highway 33 at Chesapeake Corporation, in brick pump house at northeast corner of 13th and A Streets in West Point. Owner: Chesapeake Corporation.
AQUIFER.--Sand and clay of Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused withdrawal water well, diameter 18 in. to 180 ft, diameter 8 in. from 165 to 446 ft, depth 446 ft, screened 210 to 240 ft, 380 to 390 ft, 405 to 445 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 5 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.45 ft above land-surface datum.
REMARKS.--Water levels affected by local pumpage.
PERIOD OF RECORD.--March 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 111.68 ft below land-surface datum, Dec. 29, 1978; lowest measured, 173.08 ft below land-surface datum, Feb. 23, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 05	163.88	JAN 27	166.73	MAR 11	160.60	MAY 25	167.95	JUL 29	165.03	SEP 27	165.03
DEC 18	164.34										

WATER YEAR 1988 HIGHEST 160.60 MAR 11, 1988 LOWEST 167.95 MAY 25, 1988

LANCASTER COUNTY

374249076230101 Local number, 59K 1 SOW 015.
LOCATION.--Lat 37°42'49", long 76°23'01", Hydrologic Unit 02080104, at Lancaster County High School in Kilmarnock. Owner: Lancaster County Public Schools.
AQUIFER.--Sand of early Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in. to 163 ft., diameter 2 in. from 163 to 716 ft, depth 716 ft, screened 706 to 716 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 85 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, at land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--October 1967 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 95.89 ft below land-surface datum, Feb. 20, 1968; lowest measured, 122.57 ft below land-surface datum, Aug. 24, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	121.75	MAR 07	120.56	MAR 31	120.10	MAY 06	120.05	JUN 22	120.40	AUG 24	122.57
JAN 20	120.77										

WATER YEAR 1988 HIGHEST 120.05 MAY 06, 1988 LOWEST 122.57 AUG 24, 1988

LOUDOUN COUNTY

391542077423801 Local number, 49Y 1 SOW 022.
LOCATION.--Lat 39°15'42", long 77°42'38", Hydrologic Unit 02070008, 4.2 mi southeast of Harpers Ferry. Owner: American Telephone and Telegraph Company.
AQUIFER.--Bedrock of Precambrian or Cambrian age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 6.5 in., depth 516 ft, cased to 45 ft, open hole 45 to 516 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 1,100 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, at land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--August 1969 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 48.00 ft below land-surface datum, June 22, 1972; lowest measured, 61.70 ft below land-surface datum, Sept. 27, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	60.34	MAR 02	58.40	APR 27	58.25	JUN 16	58.99	AUG 02	59.99	SEP 21	60.40
JAN 15	59.31										

WATER YEAR 1988 HIGHEST 58.25 APR 27, 1988 LOWEST 60.40 SEP 21, 1988

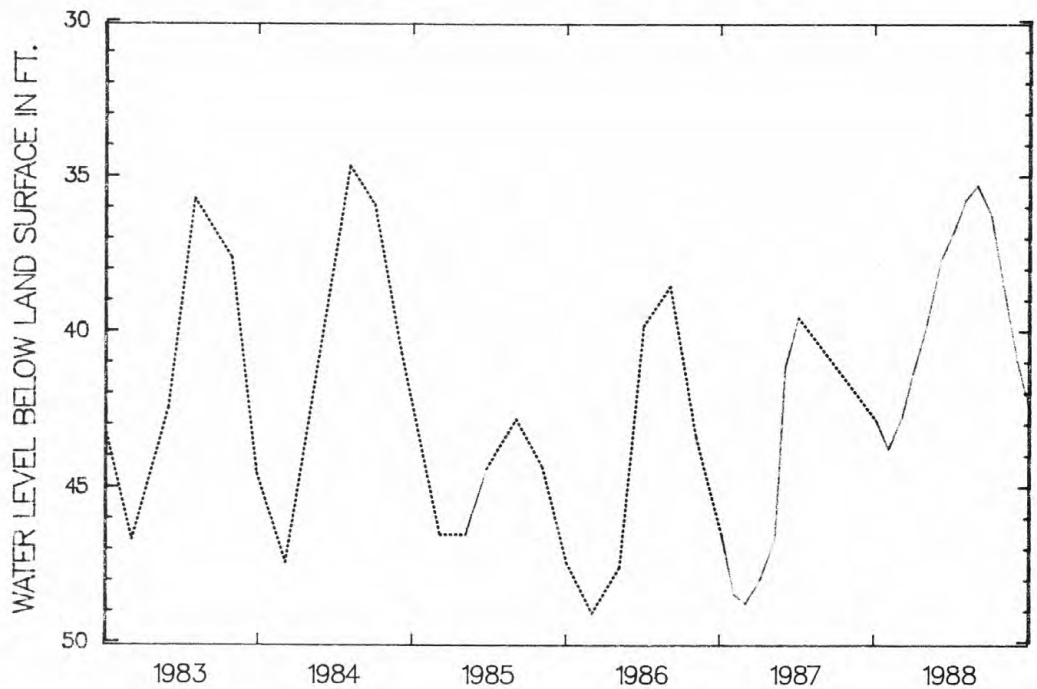
LOUDOUN COUNTY-Continued

390623077314201 Local number, 50W 4C.
LOCATION.--Lat 39°06'23", long 77°31'42", Hydrologic Unit 02070008, under water tower 500 ft east of State Highway 7, 0.75 mi east of Leesburg. Owner: Town of Leesburg.
AQUIFER.--Slightly metamorphosed Balls Bluff Formation of Triassic age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 535 ft, cased to 6 ft, open hole 6 to 535 ft.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 400 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.
PERIOD OF RECORD.--October 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 34.69 ft below land-surface datum, Apr. 30, 1984; lowest measured, 49.06 ft below land-surface datum, Nov. 27, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	43.78	DEC 27	41.35	MAR 01	37.72	APR 29	35.77	JUN 29	36.26	AUG 30	40.95
DEC 01	42.75	JAN 29	39.75	31	36.82	MAY 27	35.29	JUL 28	38.53	SEP 30	42.60

WATER YEAR 1988 HIGHEST 35.29 MAY 27, 1988 LOWEST 43.78 OCT 30, 1987



LOUISA COUNTY

380217078133701 Local number, 45N 1.
LOCATION.--Lat 38°02'17", long 78°13'43", Hydrologic Unit 02080106, off State Highway 640 on Tyler property, 0.9 mi southeast of Thelma, and 3 mi southwest of Boswells Tavern. Owner: Tyler.
AQUIFER.--Wissahickon Formation of late Precambrian (?) age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 6 in., depth 56 ft, length of casing unknown.
INSTRUMENTATION.--Continuous strip-chart recorder.
DATUM.--Elevation of land-surface datum is 500 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.95 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--July 1952 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 11.97 ft below land-surface datum, Apr. 30, 1973; lowest measured, 35.17 ft below land-surface datum, Dec. 2, 1981.

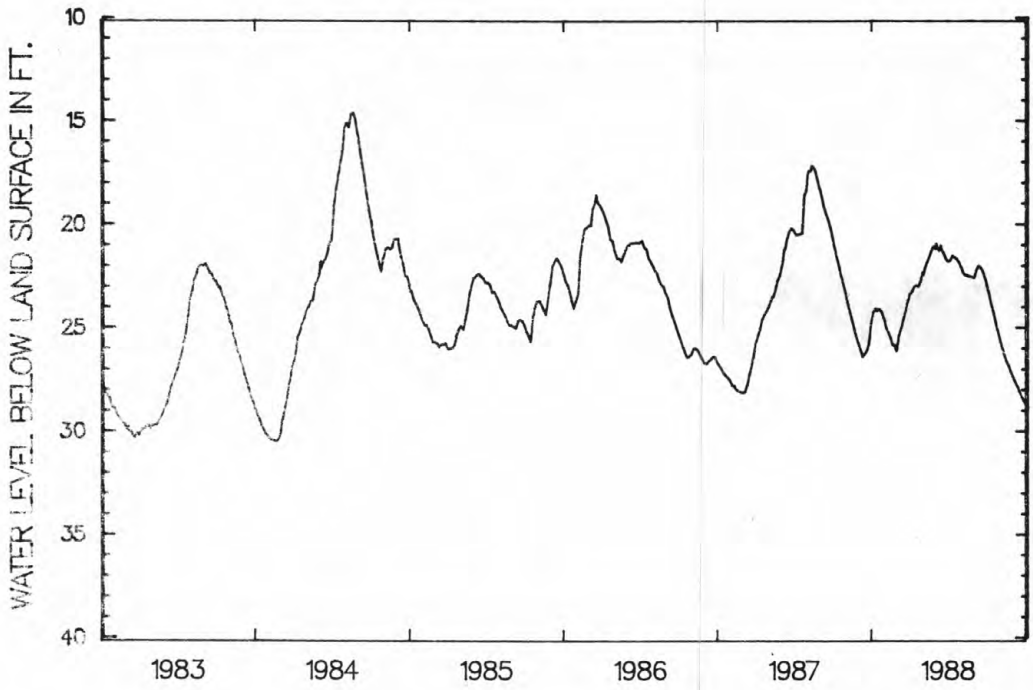
WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	24.08	25.25	25.10	23.03	21.83	21.28	21.53	22.45	22.00	23.85	26.30	27.83
10	24.10	25.48	24.65	22.95	21.59	21.22	21.60	---	22.09	24.20	26.63	28.10
15	24.12	25.83	24.28	23.00	21.29	21.40	21.68	---	22.25	24.68	26.82	28.34
20	24.22	25.85	23.80	22.80	21.06	21.65	21.83	---	22.57	25.10	27.10	28.49
25	24.56	26.09	23.40	22.33	21.17	21.80	22.08	---	22.96	25.50	27.34	28.68
EOM	25.02	25.40	23.28	22.10	21.11	21.74	22.33	22.20	23.34	25.95	27.65	28.85

WATER YEAR 1988 HIGHEST 20.93 FEB 27, 1988 LOWEST 28.85 SEP 30, 1988

LOUISA COUNTY--Continued

380217078133701 Local number, 45N 1.--Continued



380043078111301 Local number, 45N 4.
LOCATION.--Lat 38°00'45", long 78°11'14", Hydrologic Unit 02080106, 0.25 mi east of U.S. Highway 15, 4.1 mi south of Boswells Tavern. Owner: Virginia Department of Correction.
AQUIFER.--Metamorphosed sedimentary and volcanic rocks of unknown age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 200 ft, cased to 42 ft, open hole 42 to 200 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 415 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.3 ft above land-surface datum.
PERIOD OF RECORD.--February 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.40 ft below land-surface datum, Apr. 28, 1980; lowest measured, 14.43 ft below land-surface datum, Aug. 26, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 27	12.09	DEC 23	11.08	FEB 25	10.33	APR 26	11.46	JUN 28	11.87	AUG 29	12.19

WATER YEAR 1988 HIGHEST 10.33 FEB 25, 1988 LOWEST 12.19 AUG 29, 1988

380131078001001 Local number, 46N 1 SOW 056.
LOCATION.--Lat 38°01'31", long 78°00'10", Hydrologic Unit 02080106, 200 ft northeast of intersection of State Highway 208 and U.S. Highway 33 in Louisa. Owner: Town of Louisa.
AQUIFER.--Metamorphosed sedimentary and volcanic rocks of unknown age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 132 ft, length of casing unknown.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 455 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.6 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--March 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 26.27 ft below land-surface datum, May 18, 1973; lowest measured, 34.78 ft below land-surface datum, Dec. 8, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	29.51	MAR 08	29.43	APR 29	28.62	JUN 13	28.60	JUL 25	29.74	SEP 20	30.58
JAN 12	29.00										

WATER YEAR 1988 HIGHEST 28.60 JUN 13, 1988 LOWEST 30.58 SEP 20, 1988

MIDDLESEX COUNTY

373809076342501 Local number, 58K 1 SOW 031.
LOCATION.--Lat 37°38'09", long 76°34'25", Hydrologic Unit 02080104, 500 ft southeast of intersection of State Highways 227 and 602 in Urbanna. Owner: Town of Urbanna.
AQUIFER.--Sand of undifferentiated Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 552 ft, screen depth unknown.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 20 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing. 1.0 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--May 1970 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 44.33 ft below land-surface datum, May 16, 1970; lowest measured, 63.12 ft below land-surface datum, July 16, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	60.70	MAR 07	59.68	MAR 31	59.60	MAY 06	59.45	JUN 22	59.85	AUG 24	60.40
JAN 20	59.89										

WATER YEAR 1988 HIGHEST 59.45 MAY 06, 1988 LOWEST 60.70 NOV 20, 1987

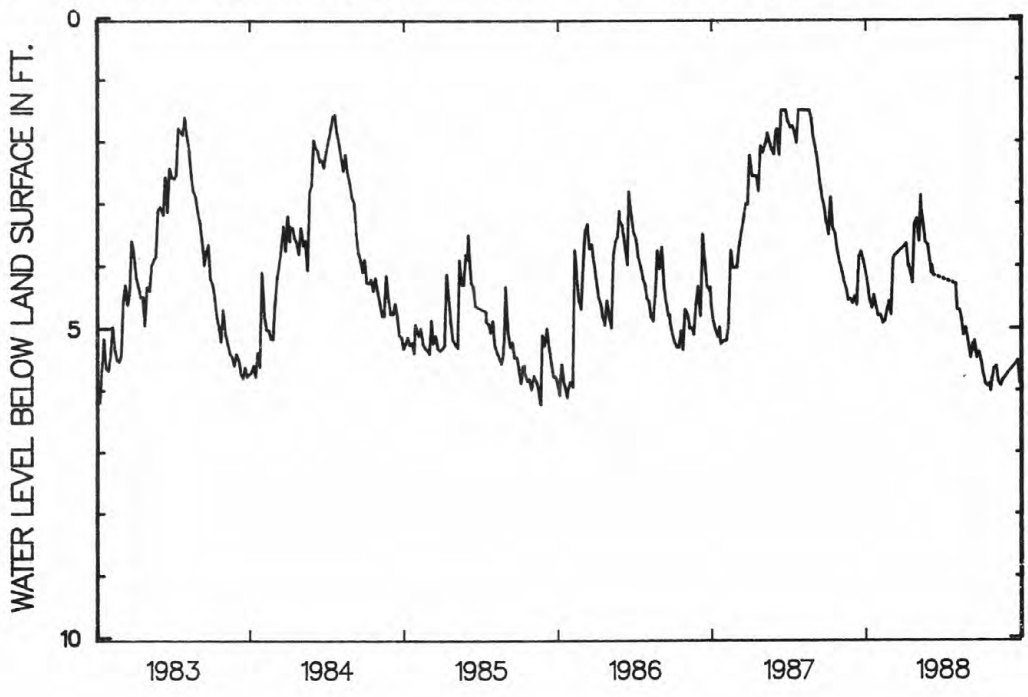
MONTGOMERY COUNTY

370812080261901 Local number, 27F 2 SOW 019.
LOCATION.--Lat 37°08'12", long 80°26'19", Hydrologic Unit 05050001, off entrance road to Round Meadow Country Club, 400 ft north of State Highway 661, and 0.5 mi west of Christiansburg. Owner: Town of Christiansburg.
AQUIFER.--Beekmantown Formation of early Ordovician age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 10 in., depth 450 ft, length of casing unknown.
INSTRUMENTATION.--Continuous strip-chart recorder.
DATUM.--Elevation of land-surface datum is 1,970 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.5 ft below land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board. Lowest recorded water level, 7.39 ft, is a result of the Mexico earthquake of Sept. 19, 1985, but is not shown as the minimum of record since it is an earthquake-induced measurement.
PERIOD OF RECORD.--July 1953, April 1969 to current year. Unpublished record available July 1953 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 1.50 ft below land-surface datum, several days in 1983, 1984, 1987, water flowing over top of casing; lowest recorded, 7.30 ft below land-surface datum, Dec. 5, 1969.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	4.55	4.92	---	4.02	3.11	4.16	---	4.71	5.26	5.90	5.87	---
10	4.68	4.88	---	4.13	3.34	---	---	4.84	5.20	5.94	5.93	---
15	4.47	4.72	---	4.28	3.63	---	---	5.11	5.48	5.90	5.84	---
20	4.65	4.57	---	3.33	3.67	---	---	4.99	5.39	5.87	---	5.52
25	4.80	4.78	---	3.25	3.92	---	---	5.20	5.53	5.66	---	5.89
EOM	4.80	3.87	3.65	3.61	4.12	---	4.71	5.48	5.74	5.62	---	5.92

WATER YEAR 1988 HIGHEST 2.87 FEB 04, 1988 LOWEST 6.01 JUL 18, 1988



NELSON COUNTY

374224078555601 Local number, 39K 1 SOW 006.
LOCATION.--Lat 37°42'24", long 78°55'56", Hydrologic Unit 02080203, 700 ft southeast of intersection of State Highway 655 and U.S. Highway 29 in Colleen. Owner: P. D. Payne.
AQUIFER.--Lovingston (or Marshall?) Formation of Precambrian age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 275 ft, length of casing unknown.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 770 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.94 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--October 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 27.08 ft below land-surface datum, June 29, 1973; lowest recorded, 35.66 ft below land-surface datum, Mar. 7, 1969.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 17	32.84	MAR 03	32.36	APR 25	32.36	JUN 13	32.41	AUG 05	32.94	SEP 29	33.64
JAN 04	32.68										

WATER YEAR 1988 HIGHEST 32.36 MAR 03, APR 25, 1988 LOWEST 33.64 SEP 29, 1988

NEW KENT COUNTY

372428076561501 Local number, 55H 1 SOW 017.
LOCATION.--Lat 37°24'28", long 76°56'15", Hydrologic Unit 02080206, at city of Newport News pump station, 500 ft upstream from Walkers Dam, and 0.6 mi southeast of Walkers. Owner: City of Newport News.
AQUIFER.--Sand of undifferentiated Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in. to 145 ft, diameter 4 in. from 145 to 630 ft, depth 630 ft, screened (slotted casing) 252 to 257 ft, 339 to 344 ft, 439 to 444 ft, 615 to 625 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 10 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of recorder shelf, 1.7 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--March 1969 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 30.24 ft below land-surface datum, Apr. 10, 1969; lowest measured, 61.15 ft below land-surface datum, Aug. 11, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	59.51	MAR 03	60.03	MAR 08	60.24	MAY 11	59.93	JUN 23	60.35	AUG 11	61.15
JAN 05	59.97										

WATER YEAR 1988 HIGHEST 59.51 NOV 20, 1987 LOWEST 61.15 AUG 11, 1988

CITY OF NEWPORT NEWS

371027076335601 Local number, 58F 1 SOW 002.
LOCATION.--Lat 37°10'27", long 76°33'56", Hydrologic Unit 02080206, on shore of Lee Hall Reservoir, 0.15 mi north of intersection of State Highway 105 and U.S. Highway 60, and 0.65 mi northeast of Fort Eustis in Newport News. Owner: City of Newport News.
AQUIFER.--Sand and gravel of undifferentiated Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 10 in. to 431.3 ft, diameter 8 in. to 443.0 ft, diameter 6 in. to 497 ft, depth 443 ft, screen depth unknown.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 20 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of recorder shelf, 2.3 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--January 1968 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 54.76 ft below land-surface datum, May 10, 1969; lowest measured, 97.10 ft below land-surface datum, Aug. 24, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	94.49	MAR 07	90.85	MAR 08	90.82	MAY 11	91.15	JUN 21	94.22	AUG 24	97.10
JAN 19	92.59										

WATER YEAR 1988 HIGHEST 90.82 MAR 08, 1988 LOWEST 97.10 AUG 24, 1988

CITY OF NEWPORT NEWS--Continued

371208076341101. Local number, 58F 50 SOW 171A.
LOCATION.--Lat 37°12'08", long 76°34'11", Hydrologic Unit 02080206, 0.4 mi south of the intersection of State Highways 143 and 238 and 150 ft north of State Highway 143 in the city of Newport News. Owner: Virginia Water Control Board.
AQUIFER.--Lower Potomac aquifer of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 1,236 ft, screened 1,205 to 1,215 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 55 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
PERIOD OF RECORD.--July 1984 to current year. Unpublished records available prior to October 1986 in the files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 90.08 ft below land-surface datum, Sept. 5, 1986; lowest recorded, 124.57 ft below land-surface datum, Sept. 30, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	---	---	122.26	121.91	121.82	---	---	---	---	---	---	122.39
10	---	---	122.16	121.89	121.75	---	---	---	---	---	---	122.30
15	---	---	122.24	121.89	---	---	---	121.41	121.48	---	122.16	122.38
20	---	---	122.10	121.74	---	---	---	121.39	---	---	---	122.38
25	---	---	121.92	121.74	---	121.32	---	121.40	121.58	122.00	---	122.38
EOM	---	---	121.99	121.64	---	---	---	121.40	---	122.04	122.31	122.56

WATER YEAR 1987 HIGHEST 121.22 MAR 20, 1987 LOWEST 122.56 SEP 28-30, 1987

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	---	---	122.65	122.61	122.41	122.21	121.93	121.87	121.97	---	123.61	124.06
10	---	122.82	122.76	122.61	122.48	122.06	121.81	121.82	122.09	---	---	124.10
15	---	122.86	122.75	122.67	122.28	122.00	---	121.88	122.24	---	123.75	124.20
20	122.71	122.83	122.73	122.53	122.16	122.00	---	121.87	122.31	---	123.85	124.29
25	122.76	122.88	122.72	122.47	122.21	122.12	121.69	121.84	122.53	---	123.96	124.42
EOM	122.74	122.60	122.73	122.60	122.18	122.00	121.77	121.95	122.50	123.46	124.06	124.57

WATER YEAR 1988 HIGHEST 121.64 APR 24, 25, 1988 LOWEST 124.57 SEP 30, 1988

371208076341102. Local number, 58F 51 SOW 171B.
LOCATION.--Lat 37°12'08", long 76°34'11", Hydrologic Unit 02080206, 0.4 mi south of the intersection of State Highways 143 and 238 and 150 ft north of State Highway 143 in the city of Newport News. Owner: Virginia Water Control Board.
AQUIFER.--Lower Potomac aquifer of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 851 ft, screened 820 to 830 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 55 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
PERIOD OF RECORD.--July 1984 to current year. Unpublished records available prior to October 1986 in the files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 126.35 ft below land-surface datum, Mar. 23-25, 1985; lowest recorded, 136.10 ft below land-surface datum, Aug. 4, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	134.34	133.86	133.16	132.08	131.50	131.14	130.84	130.89	132.04	132.95	133.91	133.79
10	134.34	133.85	132.99	132.01	131.43	131.02	130.89	130.96	132.31	133.12	133.60	133.84
15	134.10	133.81	132.94	131.93	131.38	130.91	130.99	131.05	132.42	133.31	133.39	133.91
20	134.08	133.64	132.76	131.68	131.30	130.77	130.84	131.37	132.61	133.46	133.38	133.92
25	134.00	133.47	132.32	131.63	131.23	130.85	130.78	131.61	132.69	133.67	133.55	133.96
EOM	133.99	133.33	132.26	131.41	131.23	130.80	130.76	131.92	132.81	133.90	133.66	133.94

WATER YEAR 1987 HIGHEST 130.66 MAR 31, 1987 LOWEST 134.40 OCT 07, 1986

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	133.96	133.64	132.92	131.75	130.64	129.45	129.08	129.72	131.59	134.31	136.08	---
10	133.99	133.66	132.80	131.64	130.52	129.14	129.17	129.74	132.07	134.57	136.01	---
15	133.87	133.63	132.60	131.51	130.19	129.04	129.17	129.95	132.55	134.94	---	---
20	133.75	133.43	132.40	131.18	129.82	128.93	129.33	130.27	132.93	135.31	136.00	---
25	133.78	133.47	132.16	131.02	129.74	128.99	129.52	130.72	133.39	135.65	135.86	---
EOM	133.79	133.02	131.96	130.90	129.61	129.04	129.65	131.25	133.81	135.99	---	---

WATER YEAR 1988 HIGHEST 128.79 MAR 27, 1988 LOWEST 136.10 AUG 04, 1988

CITY OF NEWPORT NEWS--Continued

371208076341103. Local number, 58F 52 SOW 171C.
LOCATION.--Lat 37°12'08", long 76°34'11", Hydrologic Unit 02080206, 0.4 mi south of the intersection of State Highways 143 and 238 and 150 ft north of State Highway 143 in the city of Newport News. Owner: Virginia Water Control Board.
AQUIFER.--Upper Potomac aquifer of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 537 ft, screened 527 to 537 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 55 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.
PERIOD OF RECORD.--June 1984 to current year. Unpublished records available prior to October 1986 in the files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 128.12 ft below land-surface datum, Mar. 23, 1985; lowest recorded, 139.28 ft below land-surface datum, Sept. 16, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	136.90	---	135.16	133.93	---	133.00	132.80	132.92	---	---	136.65	136.30
10	136.87	---	134.93	133.85	---	132.96	132.86	132.93	---	---	136.14	136.49
15	136.82	---	134.89	---	133.21	132.84	133.03	---	---	---	136.30	136.54
20	136.78	---	134.65	---	133.16	132.68	132.83	---	---	---	136.30	136.56
25	136.75	---	134.18	---	133.10	132.79	132.76	---	---	---	136.30	136.50
EOM	---	---	134.18	---	133.10	132.75	132.77	---	---	136.73	136.30	136.58

WATER YEAR 1987 HIGHEST 132.63 MAR 31, 1987 LOWEST 136.93 OCT 01, 1986

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	136.50	136.15	135.15	133.74	132.44	131.08	130.97	131.80	134.17	137.26	139.17	138.99
10	136.47	136.14	135.02	133.64	132.31	130.79	131.10	131.84	134.74	137.58	139.07	139.15
15	136.33	135.99	134.77	133.47	131.97	130.67	131.12	132.12	135.30	138.07	139.03	139.26
20	136.20	135.80	134.50	133.10	131.54	130.56	131.32	132.57	135.85	138.43	138.94	139.17
25	136.27	135.83	134.21	132.88	131.43	130.67	131.49	133.12	136.35	138.87	138.71	139.12
EOM	136.22	135.29	133.98	132.79	131.30	130.82	131.70	133.76	136.80	139.18	138.88	139.05

WATER YEAR 1988 HIGHEST 130.47 MAR 26, 27, 1988 LOWEST 139.28 SEP 16, 1988

371208076341104. Local number, 58F 53 SOW 171D.
LOCATION.--Lat 37°12'08", long 76°34'11", Hydrologic Unit 02080206, 0.4 mi south of the intersection of State Highways 143 and 238 and 150 ft north of State Highway 143 in the city of Newport News. Owner: Virginia Water Control Board.
AQUIFER.--Chickahominy-Piney Point aquifer of Tertiary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 343 ft, screened 333 to 343 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 55 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.
PERIOD OF RECORD.--July 1984 to current year. Unpublished records available prior to October 1986 in the files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 55.18 ft below land-surface datum, Feb. 2, 1985; lowest recorded, 58.46 ft below land-surface datum, Sept. 30, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	56.85	57.01	57.03	56.81	56.68	57.04	56.98	57.06	56.75	56.97	57.37	57.68
10	56.95	57.08	56.97	56.80	56.65	56.96	57.02	57.10	56.86	57.04	57.42	57.66
15	56.92	57.08	56.98	56.78	57.05	56.97	57.08	56.80	56.87	57.13	57.51	57.68
20	56.98	57.05	56.95	56.61	57.06	56.96	57.04	56.86	56.95	57.24	57.58	57.68
25	57.01	57.07	56.79	56.62	57.02	57.04	57.02	56.90	56.96	57.31	57.64	57.78
EOM	57.07	57.05	56.85	56.54	57.03	56.97	57.04	56.87	56.96	57.38	57.64	57.74

WATER YEAR 1987 HIGHEST 56.38 JAN 22, 1987 LOWEST 57.81 SEP 27, 28, 1987

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	57.77	57.89	57.84	57.76	57.67	57.69	57.53	57.61	57.61	57.97	58.15	58.25
10	57.84	57.92	57.82	57.74	57.71	57.56	57.54	57.55	57.67	57.99	58.20	58.26
15	57.85	57.94	57.83	57.79	57.60	57.60	57.54	57.60	57.77	58.06	58.24	58.29
20	57.85	57.89	57.80	57.70	57.50	57.61	57.55	57.58	57.76	58.07	58.27	58.32
25	57.91	57.96	57.80	57.71	57.62	57.68	57.60	57.53	57.82	58.07	58.26	58.37
EOM	57.94	57.73	57.84	57.77	57.63	57.56	57.63	57.62	57.81	58.09	58.29	58.46

WATER YEAR 1988 HIGHEST 57.42 APR 07, 1988 LOWEST 58.46 SEP 30, 1988

CITY OF NEWPORT NEWS--Continued

371208076341105. Local number, 58F 54 SOW 171E.
LOCATION.--Lat 37°12'08", long 76°34'11", Hydrologic Unit 02080206, 0.4 mi south of the intersection of State Highways 143 and 238 and 150 ft north of State Highway 143 in the city of Newport News. Owner: Virginia Water Control Board.
AQUIFER.--Yorktown-Eastover aquifer of Tertiary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 88 ft, screened 78 to 88 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 55 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
PERIOD OF RECORD.--June 1984 to current year. Unpublished records available prior to October 1986 in the files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 23.47 ft below land-surface datum, May 7-11, 1987; lowest recorded, 26.59 ft below land-surface datum, Nov. 23, 24, 30, Dec. 3, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	26.13	26.46	26.57	26.21	25.29	24.69	24.01	23.55	23.59	23.84	24.54	25.19
10	26.18	26.51	26.53	26.16	25.19	24.53	23.91	23.48	23.58	23.96	24.66	25.24
15	26.29	26.55	26.51	26.13	25.16	24.36	23.92	23.57	23.64	24.07	24.79	25.35
20	26.33	26.58	26.47	25.91	25.08	24.26	23.77	23.64	23.77	24.21	24.93	25.39
25	26.39	26.58	26.36	25.55	24.95	24.23	23.65	23.71	23.77	24.39	24.99	25.52
EOM	26.44	26.59	26.30	25.29	24.85	24.14	23.56	23.69	23.77	24.51	25.09	25.55

WATER YEAR 1987 HIGHEST 23.47 MAY 07-11, 1987 LOWEST 26.59 NOV 23, 24, 30, DEC 03, 1986

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	25.61	26.04	26.05	26.00	25.95	25.70	25.14	24.78	24.24	24.46	24.88	25.19
10	25.71	26.08	26.04	25.94	25.90	25.69	---	24.61	24.24	24.54	24.96	25.18
15	25.77	26.05	25.90	25.96	25.71	25.69	---	24.59	24.28	24.70	25.00	25.22
20	25.86	26.04	25.96	25.95	25.69	25.71	---	24.53	24.28	24.70	25.14	25.27
25	25.93	26.12	25.95	25.98	25.69	25.51	---	24.50	24.32	24.73	25.14	25.34
EOM	26.00	25.94	25.98	26.01	25.69	25.30	24.84	24.35	24.36	---	25.19	25.39

WATER YEAR 1988 HIGHEST 24.24 JUN 03-13, 1988 LOWEST 26.12 NOV 25, 1987

371208076341106. Local number, 58F 55 SOW 171F.
LOCATION.--Lat 37°12'08", long 76°34'11", Hydrologic Unit 02080206, 0.4 mi south of the intersection of State Highways 143 and 238 and 150 ft north of State Highway 143 in the city of Newport News. Owner: Virginia Water Control Board.
AQUIFER.--Columbia aquifer of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 60 ft, screened 50 to 60 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 55 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.9 ft above land-surface datum.
PERIOD OF RECORD.--July 1984 to current year. Unpublished records available prior to October 1986 in the files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 23.96 ft below land-surface datum, May 7, 1987; lowest recorded, 28.10 ft below land-surface datum, Dec. 10, 11, 22-24, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	27.65	27.94	28.09	---	---	25.53	24.70	24.07	24.46	25.11	25.92	26.69
10	27.71	27.98	28.10	---	---	25.32	24.61	24.00	24.58	25.22	26.05	26.76
15	27.76	28.00	28.08	---	26.27	25.03	24.60	24.09	24.69	25.35	26.18	26.85
20	27.81	28.03	28.09	---	26.27	24.93	24.36	24.25	24.81	25.49	26.30	26.94
25	27.87	28.06	---	---	25.84	24.94	24.29	24.39	24.93	25.64	26.44	27.04
EOM	27.92	28.08	---	---	25.81	24.90	24.15	24.55	25.01	25.81	26.56	27.12

WATER YEAR 1987 HIGHEST 23.96 MAY 07, 1987 LOWEST 28.10 DEC 10, 11, 22-24, 1986

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	27.21	27.64	27.83	27.80	27.70	27.37	26.43	26.26	25.29	26.02	26.59	27.11
10	27.29	27.67	27.84	27.81	27.66	27.36	26.40	25.80	25.43	26.13	26.70	27.15
15	27.38	27.72	27.82	27.84	27.36	27.35	26.33	25.79	25.56	26.26	26.82	27.20
20	27.45	27.74	27.82	27.81	27.31	27.34	26.27	25.75	25.66	26.35	26.89	27.23
25	27.54	27.79	27.84	27.80	27.32	27.33	26.25	25.26	25.78	26.41	26.96	27.28
EOM	27.61	27.77	27.85	27.81	27.33	26.45	26.26	25.27	25.88	26.50	27.07	27.34

WATER YEAR 1988 HIGHEST 25.24 MAY 28, 29, 1988 LOWEST 27.85 DEC 07, 08, 27, 28, 30, 31, 1987, JAN 02, 1988

CITY OF NORFOLK

365223076122101 Local number, 61C 1.
LOCATION.--Lat 36°52'23", long 76°12'21", Hydrologic Unit 02080108, at Moores Bridge Filter Plant, 0.3 mi east of intersection of State Highway 165 and U.S. Highway 13 in Norfolk. Owner: City of Norfolk.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 6 in., depth 970 ft, screened 900 to 960 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 10.80 ft above National Geodetic Vertical Datum of 1929. Measuring point: Inner edge of manhole at land-surface datum. Prior to Oct. 29, 1987, measuring point at top of casing, 3.15 ft above land-surface datum.
REMARKS.--Water level affected by pumping and recharge operations in nearby wells May 18, 1971, to Nov. 5, 1973.
PERIOD OF RECORD.--January 1968 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 13.70 ft below land-surface datum, Feb. 17, 1968; lowest measured, 58.76 ft below land-surface datum, Sept. 28, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	56.86	DEC 18	56.99	FEB 22	57.19	APR 26	57.44	JUN 27	57.76	SEP 28	58.76

WATER YEAR 1988 HIGHEST 56.86 OCT 29, 1987 LOWEST 58.76 SEP 28, 1988

365221076121302 Local number, 61C 2.
LOCATION.--Lat 36°52'21", long 76°12'15", Hydrologic Unit 02080108, at Moores Bridge Filter Plant, 0.3 mi east of intersection of State Highway 165 and U.S. Highway 13 in Norfolk. Owner: U.S. Geological Survey.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 1,000 ft, screened 900 to 990 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 13.47 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 4.3 ft above land-surface datum.
PERIOD OF RECORD.--October 1968 to February 1984, October 1985 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.8 ft below land-surface datum, Oct. 8, 1968; lowest measured, 60.87 ft below land-surface datum, Sept. 28, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	58.90	DEC 18	59.08	FEB 22	59.48	APR 26	59.59	JUN 27	59.87	SEP 28	60.87

WATER YEAR 1988 HIGHEST 58.90 OCT 29, 1987 LOWEST 60.87 SEP 28, 1988

365221076121303 Local number, 61C 3.
LOCATION.--Lat 36°52'21", long 76°12'15", Hydrologic Unit 02080108, at Moores Bridge Filter Plant, 0.3 mi east of intersection of State Highway 165 and U.S. Highway 13 in Norfolk. Owner: U.S. Geological Survey.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 991 ft, screened 900 to 980.7 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 7 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.22 ft above land-surface datum.
PERIOD OF RECORD.--February 1969 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 14.30 ft below land-surface datum, Feb. 19, 1969; lowest measured, 55.98 ft below land-surface datum, Sept. 28, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	54.63	DEC 18	54.03	FEB 22	55.32	APR 26	54.54	JUN 27	54.88	SEP 28	55.98

WATER YEAR 1988 HIGHEST 54.03 DEC 18, 1987 LOWEST 55.98 SEP 28, 1988

ORANGE COUNTY

381002078094201. Local number, 45P 1 SOW 030.
LOCATION.--Lat 38°10'02", long 78°09'42", Hydrologic Unit 02080106, off U.S. Highway 15, 2.3 mi north of Gordonsville. Owner: M. L. Johnson.
AQUIFER.--Phyllite of Evington Group of Cambrian or Precambrian age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 98 ft, length of casing unknown.
INSTRUMENTATION.--Continuous strip-chart recorder.
DATUM.--Elevation of land-surface datum is 480 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.4 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--February 1965 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 11.83 ft below land-surface datum, Apr. 10, 1973; lowest recorded, 35.90 ft below land-surface datum, Jan. 31, 1966.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	26.15	28.19	24.78	22.30	19.60	20.15	20.50	22.74	23.99	26.30	27.40	29.40
10	26.61	28.41	24.48	22.55	19.63	20.44	20.57	22.45	24.47	26.48	27.80	29.88
15	26.90	28.63	23.61	22.90	19.69	21.00	20.57	22.97	24.81	26.92	28.00	30.23
20	27.11	28.40	22.92	22.12	19.05	21.46	21.17	23.40	25.20	27.30	28.30	30.38
25	27.62	28.76	22.90	20.49	19.60	21.86	21.80	23.64	25.60	27.02	28.67	30.79
EOM	28.09	26.88	22.55	20.55	19.75	20.58	22.46	23.60	25.68	26.90	29.22	31.06

WATER YEAR 1988 HIGHEST 18.92 FEB 20, 1988 LOWEST 31.06 SEP 30, 1988

PRINCE GEORGE COUNTY

371315077171901 Local number, 52F 1 SOW 038.
LOCATION.--Lat 37°13'15", long 77°17'19", Hydrologic Unit 03010202, 0.1 mi north of State Highway 106 in Prince George. Owner: Prince George County.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in., depth 180 ft, cased to 170 ft, open hole 170 to 180 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 132 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of recorder shelf, 3.4 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--December 1970 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 69.32 ft below land-surface datum, Feb. 4, 1980; lowest measured, 77.89 ft below land-surface datum, Sept. 20, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 12	76.50	MAR 08	75.90	MAY 02	76.20	JUN 21	76.65	JUL 27	77.40	SEP 20	77.89
JAN 13	76.40										

WATER YEAR 1988 HIGHEST 75.90 MAR 08, 1988 LOWEST 77.89 SEP 20, 1988

PRINCE WILLIAM COUNTY

384931077420301 Local number, 49U 1.
LOCATION.--Lat 38°49'30", long 77°42'08", Hydrologic Unit 02070010, 500 ft north of State Highway 55, 0.8 mi east of Thoroughfare Gap, and 3.7 mi west of Haymarket. Owner: Virginia Department of Transportation.
AQUIFER.--Shale and sandtone of Newark Group of Triassic age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 7 in., depth 345 ft, cased to 20 ft, open hole 20 to 345 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 383 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.
PERIOD OF RECORD.--October 1968 to current year. Unpublished records available prior to May 1969 in files of of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 2.59 ft below land-surface datum, Mar. 19, 1975; lowest recorded, 10.22 ft below land-surface datum, Nov. 8, 9, 1968.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 22	8.25	JAN 12	5.74	MAR 01	5.06	APR 13	4.15	JUN 10	6.23	AUG 23	8.75
NOV 24	6.62										

WATER YEAR 1988 HIGHEST 4.15 APR 13, 1988 LOWEST 8.75 AUG 23, 1988

PRINCE WILLIAM COUNTY--Continued

385607077381101 Local number, 49V 1.
LOCATION.--Lat 38°56'07", long 77°38'11", Hydrologic Unit 02070010, near intersection of State Highways 600 and 615, 2.8 mi south of Aldie. Owner: J. H. Hutchison.
AQUIFER.--Shale and sandtone of Newark Group of Triassic age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 7 in., depth 165 ft, cased to 10 ft, open hole 10 to 165 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 420 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum. Readings from 1979 to 1981 should be 0.7 ft lower than previously published.
PERIOD OF RECORD.--November 1968 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 6.85 ft below land-surface datum, Oct. 12, 1979; lowest recorded, 12.28 ft below land-surface datum, July 12, 13, 1970.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	---	10.01	7.92	8.40	7.59	8.36	8.58	9.16	8.71	10.58	10.50	10.38
10	---	10.07	8.18	8.63	8.05	8.29	7.72	7.87	9.40	10.81	10.52	10.63
15	---	9.48	8.57	8.83	8.20	8.67	8.15	7.87	9.78	10.92	10.77	10.93
20	---	8.83	8.26	8.72	7.90	8.83	8.58	7.55	9.85	11.07	10.79	11.04
25	10.40	8.92	8.30	8.01	8.10	9.01	8.88	7.16	9.99	10.29	10.51	11.29
EOM	10.04	7.82	7.95	8.11	8.38	8.17	9.58	8.02	10.31	10.27	10.54	11.11

WATER YEAR 1988 HIGHEST 6.99 MAY 25, 1988 LOWEST 11.35 SEP 24, 1988

383423077245901 Local number, 51S 7.
LOCATION.--Lat 38°34'23", long 77°24'59", Hydrologic Unit 02070011, in Prince William Forest Park, 700 ft north of State Highway 619, 0.7 mi southeast of Belfair Crossroads, and 4.6 mi south of Independent Hill. Owner: National Park Service.
AQUIFER.--Wissahickon Formation of Paleozoic age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 6 in., depth 490 ft, cased to 50 ft, open hole 50 to 490 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 295 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.
PERIOD OF RECORD.--September 1973 to November 1975, December 1977 to current year. Unpublished records available prior to December 1975 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.14 ft below land-surface datum, Apr. 20, 1983; lowest measured, 12.69 ft below land-surface datum, Nov. 7, 1986.

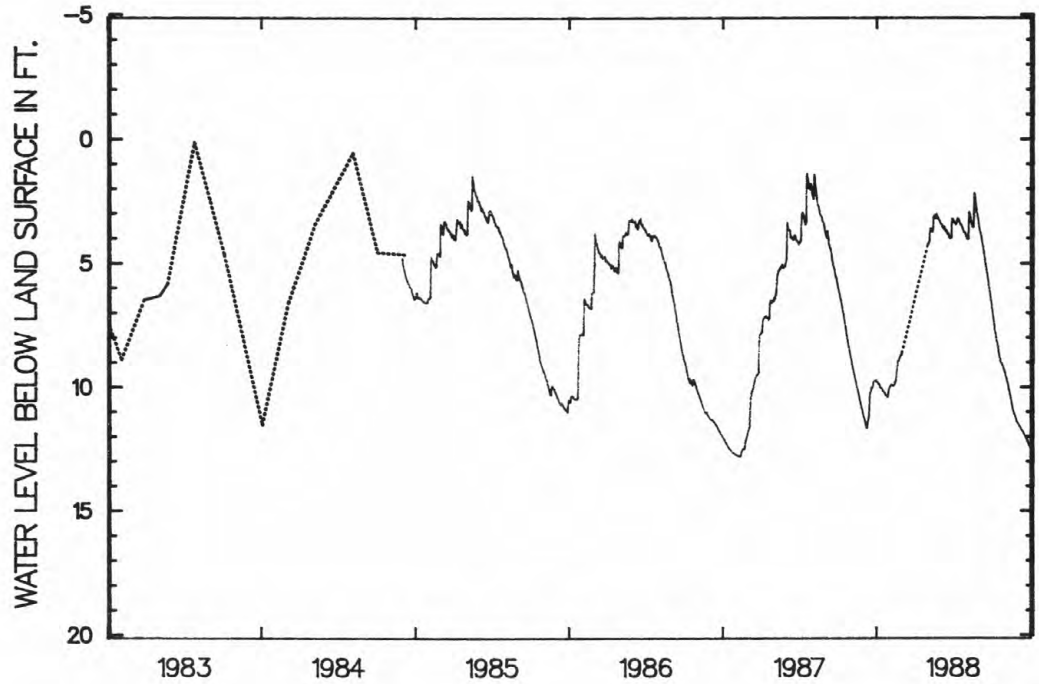
WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	9.76	9.81	---	---	3.49	3.49	3.34	3.91	3.83	7.39	9.69	11.55
10	9.92	9.82	---	---	3.63	3.52	3.07	3.05	4.38	7.96	10.12	11.68
15	10.04	9.60	---	---	2.96	3.66	3.29	3.45	4.97	8.40	10.55	11.85
20	10.15	8.86	---	---	2.92	3.84	3.45	2.13	5.48	8.89	10.93	12.03
25	10.29	8.67	---	---	3.16	3.88	3.64	2.86	6.10	9.05	11.16	12.22
EOM	9.88	---	---	4.15	3.29	3.23	3.85	3.52	6.75	9.35	11.41	12.34

WATER YEAR 1988 HIGHEST 1.82 MAY 19, 1988 LOWEST 12.34 SEP 30, 1988

PRINCE WILLIAM COUNTY--Continued

383423077245901 Local number, 51S 7--Continued



PULASKI COUNTY

370516080411501 Local number, 25E 2 SOW 059.
LOCATION.--Lat 37°05'16", long 80°41'15", Hydrologic Unit 05050001, 400 ft east of State Highway 100, 0.5 mi south of Dublin. Owner: Town of Dublin.
AQUIFER.--Conococheague Formation of late Cambrian age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in., depth 370 ft, length of casing unknown.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 2,170 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, at land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--April 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 60.00 ft below land-surface datum, Mar. 18, 1973; lowest measured, 82.50 ft below land-surface datum, Oct. 5, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	80.54	MAR 02	79.52	APR 27	77.95	JUN 06	79.48	AUG 03	78.69	SEP 27	77.25
JAN 06	77.88										

WATER YEAR 1988 HIGHEST 77.25 SEP 27, 1988 LOWEST 80.54 NOV 10, 1987

CITY OF ROANOKE

371653079552101 Local number, 31G 1 SOW 008.
LOCATION.--Lat 37°16'53", long 79°55'21", Hydrologic Unit 03010101, 700 ft south of intersection of 10th Street and Orange Avenue in Roanoke. Owner: Nelson-Roanoke Corporation.
AQUIFER.--Rome Formation of Cambrian age. Prior to 1974, reported as Elbrook Formation.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 48 ft, length of casing unknown.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 930 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.9 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--August 1966 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.36 ft below land-surface datum, Feb. 13, 1986; lowest measured, 23.15 ft below land-surface datum, May 23, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	18.99	MAR 01	19.03	APR 26	18.91	JUN 14	18.81	AUG 01	18.83	SEP 26	18.86
JAN 05	18.86										

WATER YEAR 1988 HIGHEST 18.81 JUN 14, 1988 LOWEST 19.03 MAR 01, 1988

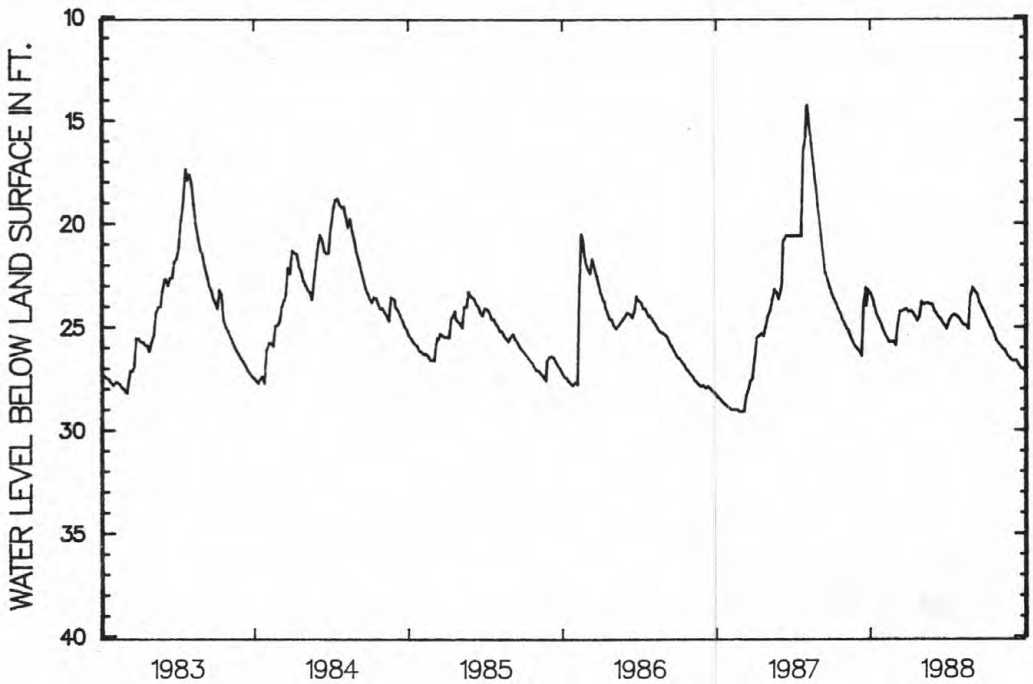
ROCKBRIDGE COUNTY

373758079271601 Local number, 35K 1 SOW 063.
LOCATION.--Lat 37°37'58", long 79°27'16", Hydrologic Unit 02080202, 0.35 mi northwest of intersection of State Highways 684 and 130 in Glasgow. Owner: Town of Glasgow.
AQUIFER.--Rome Formation of Cambrian age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 695 ft, cased to 101 ft, open hole from 101 to 695 ft.
INSTRUMENTATION.--Continuous strip-chart recorder.
DATUM.--Elevation of land-surface datum is 745 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--June 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 14.27 ft below land-surface datum, Apr. 29, 1987; lowest recorded, 29.13 ft below land-surface datum, Dec. 13, 14, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	24.00	25.55	24.23	24.33	23.83	24.50	24.50	24.89	23.43	24.94	26.09	26.62
10	24.38	25.72	24.22	24.50	23.83	24.60	24.40	24.95	23.80	25.09	26.19	26.80
15	24.60	25.72	24.16	24.69	23.90	24.80	24.42	25.10	24.03	25.34	26.37	26.98
20	24.80	25.70	24.12	24.50	23.91	24.93	24.51	23.50	24.23	25.64	26.50	27.04
25	25.10	25.89	24.26	23.76	24.22	25.09	24.62	23.09	24.48	25.80	26.62	27.16
EOM	25.38	24.81	24.20	23.90	24.34	24.68	24.80	23.29	24.67	25.95	26.65	27.30

WATER YEAR 1988 HIGHEST 22.91 MAY 25, 1988 LOWEST 27.30 SEP 29, 30, 1988



ROCKINGHAM COUNTY

382150078424001 Local number, 41Q 1.
LOCATION.--Lat 38°21'50", long 78°42'40", Hydrologic Unit 02070005, at Virginia Department of Transportation garage, 1.3 mi southeast of McGaheysville. Owner: U.S. Geological Survey.
AQUIFER.--Conococheague Formation of late Cambrian age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 6.25 in., depth 310 ft, cased to 131 ft, open hole 131 to 310 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 1,105 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top edge of recorder shelf, 3.5 ft above land-surface datum.
PERIOD OF RECORD.--August 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 60.38 ft below land-surface datum, Dec. 26, 1972; lowest recorded, 87.18 ft below land-surface datum, Oct. 26, 1977.

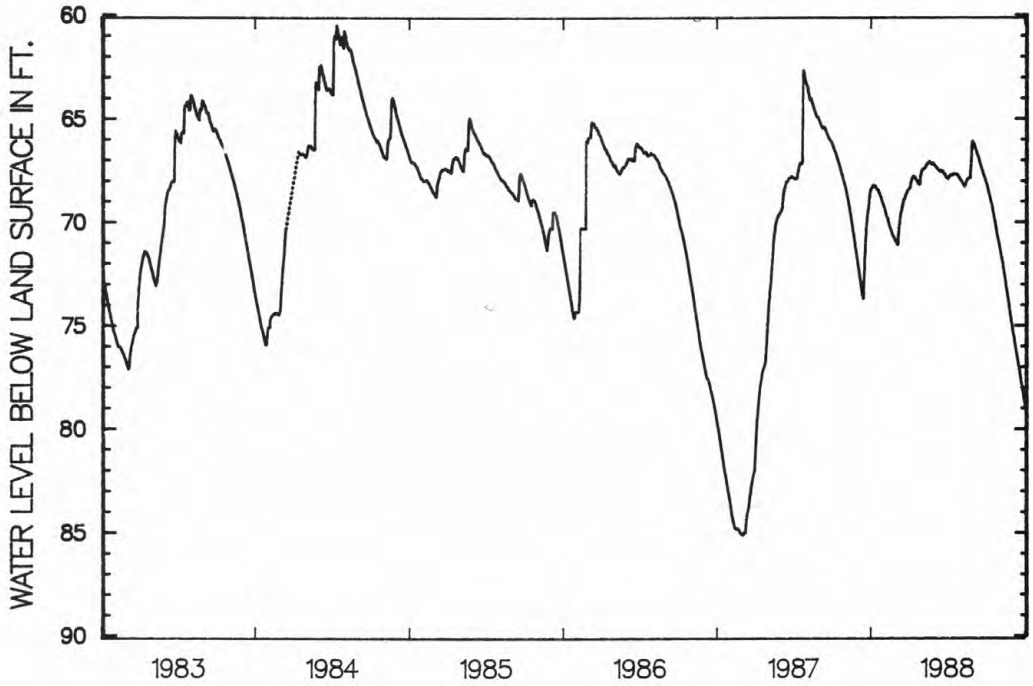
WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	68.27	69.93	69.61	67.80	67.20	67.53	67.73	68.28	66.80	68.95	72.32	76.38
10	68.42	70.31	69.10	67.93	67.13	67.52	67.68	67.96	67.16	69.39	72.95	76.99
15	68.61	70.61	68.82	68.11	67.10	67.60	67.69	67.87	67.48	69.93	73.65	77.60
20	68.85	70.79	68.53	68.14	67.14	67.73	67.79	67.28	67.79	70.54	74.34	78.22
25	69.19	71.00	68.38	67.47	67.29	67.88	67.96	66.14	68.12	71.05	75.01	78.87
EOM	69.63	70.56	67.97	67.39	67.40	67.76	68.14	66.49	68.50	71.71	75.80	79.45

WATER YEAR 1988 HIGHEST 66.01 MAY 24, 25, 1988 LOWEST 79.45 SEP 30, 1988

ROCKINGHAM COUNTY--Continued

382150078424001 Local number, 41Q 1--Continued



SOUTHAMPTON COUNTY

364109077230701 Local number, 51B 3.
LOCATION.--Lat 36°41'09", long 77°23'07", Hydrologic Unit 03010201, 150 ft west of the intersection of State Highway 615 and U.S. Highway 58, 0.5 mi south of Adams Grove. Owner: U.S. Geological Survey.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 253 ft, screened 165 to 175 ft, open hole 175 tc 253 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 126 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of recorder shelf, 3.2 ft above land-surface datum.
PERIOD OF RECORD.--October 1974 to current year. Unpublished records available prior to July 1975 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 54.21 ft below land-surface datum, Apr. 30, 1978; lowest recorded, 60.03 ft below land-surface datum, Oct. 24, 25, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	58.72	58.71	58.26	57.32	56.79	56.36	56.34	56.23	56.51	57.19	57.67	58.37
10	58.65	58.77	58.23	57.19	56.63	56.25	56.21	56.17	56.65	57.43	57.71	58.32
15	58.66	58.60	58.08	57.30	56.37	56.29	56.18	56.29	56.84	57.70	58.05	58.32
20	58.66	58.54	57.99	57.23	56.28	56.28	56.19	56.35	56.91	57.83	58.16	58.41
25	58.75	58.59	57.87	57.03	56.30	56.35	56.18	56.35	56.96	57.71	58.15	58.58
EOM	58.72	58.28	57.61	56.96	56.32	56.30	56.17	56.46	56.98	57.66	58.30	58.72

WATER YEAR 1988 HIGHEST 56.15 APR 13, 14, 28-30, MAY 09, 10, 1988 LOWEST 58.77 NOV 09, 10, 1987

363410077150801 Local number, 52A 1.
LOCATION.--Lat 36°34'10", long 77°15'08", Hydrologic Unit 03010204, along Seaboard Coastline railroad, 0.15 mi northwest of intersection of State Highways 195 and 701 in Branchville. Owner: L. W. Grizzard.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 4 in., depth 217 ft, screened 204 to 217 ft.
INSTRUMENTATION.--Semiannual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 44 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.8 ft above land-surface datum.
PERIOD OF RECORD.--September 1970 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 32.85 ft below land-surface datum, Sept. 9, 1970; lowest measured, 48.24 ft below land-surface datum, Nov. 2, 1987.

SOUTHAMPTON COUNTY--Continued

363410077150801 Local number, 52A 1--Continued

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	48.24	MAR 07	47.83

WATER YEAR 1988 HIGHEST 47.83 MAR 07, 1988 LOWEST 48.24 NOV 02, 1987

363916077201002 Local number, 52B 9 SOW 178B.
LOCATION.--Lat 36°39'16", long 77°20'10", Hydrologic Unit 03010204, 0.25 mi northeast of State Highway 661, 0.6 mi south of intersection of State Highways 652 and 661, and 4.5 mi southeast of Drewryville. Owner: Virginia Water Control Board.
AQUIFER.--Sand of lower Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 329 ft, screened 298 to 308 ft.
INSTRUMENTATION.--Annual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 120 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.
PERIOD OF RECORD.--December 1985 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 68.87 ft below land-surface datum, Mar. 7, 1988; lowest recorded, 69.92 ft below land-surface datum, Dec. 18, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL
MAR 07	68.87

363916077201003 Local number, 52B 10, SOW 178C.
LOCATION.--Lat 36°39'16", long 77°20'10", Hydrologic Unit 03010204, 0.25 mi northeast of State Highway 661, 0.6 mi south of intersection of State Highways 652 and 661, and 4.5 mi southeast of Drewryville. Owner: Virginia Water Control Board.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 233 ft, screened 218 to 228 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch--prior to Oct. 28, 1987; annual measurement with chalked tape by USGS personnel thereafter.
DATUM.--Elevation of land-surface datum is 120 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.9 ft above land-surface datum.
PERIOD OF RECORD.--December 1985 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 69.75 ft below land-surface datum, Apr. 16, 1987; lowest recorded, 72.97 ft below land-surface datum, Oct. 1, 24, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	72.84	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
10	72.87	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
15	72.89	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
20	72.90	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
25	72.95	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
EOM	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, OCTOBER 28, 1987 TO SEPTEMBER 30, 1988

DATE	WATER LEVEL
MAR 07	70.62

WATER YEAR 1988 HIGHEST 70.62 MAR 07, 1988 LOWEST 72.97 OCT 01, 24, 1987

SOUTHAMPTON COUNTY--Continued

363916077201004 Local number, 52B 11 SOW 178D.
LOCATION.--Lat 36°39'16", long 77°20'10", Hydrologic Unit 03010204, 0.25 mi northeast of State Highway 661, 0.6 mi south of intersection of State Highways 652 and 661, and 4.5 mi southeast of Drewryville. Owner: Virginia Water Control Board.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 190 ft, screened 160 to 170 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch--prior to Oct. 28, 1987; annual measurement with chalked tape by USGS personnel thereafter.
DATUM.--Elevation of land-surface datum is 120 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.1 ft above land-surface datum.
PERIOD OF RECORD.--December 1985 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 69.81 ft below land-surface datum, Apr. 16, 1987; lowest recorded, 73.03 ft below land-surface datum, Oct. 24-27, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	72.88	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
10	72.91	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
15	72.93	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
20	72.94	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
25	73.03	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
EOM	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, OCTOBER 28, 1987 TO SEPTEMBER 30, 1988

DATE	WATER LEVEL
MAR 07	70.57

WATER YEAR 1988 HIGHEST 70.57 MAR 07, 1988 LOWEST 73.03 OCT 24-27, 1987

363916077201005 Local number, 52B 12 SOW 178E.
LOCATION.--Lat 36°39'16", long 77°20'10", Hydrologic Unit 03010204, 0.25 mi northeast of State Highway 661, 0.6 mi south of intersection of State Highways 652 and 661, and 4.5 mi southeast of Drewryville. Owner: Virginia Water Control Board.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 135 ft, screened 120 to 130 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch--prior to Oct. 28, 1987; annual measurement with chalked tape by USGS personnel thereafter.
DATUM.--Elevation of land-surface datum is 120 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.2 ft above land-surface datum.
PERIOD OF RECORD.--December 1985 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 68.75 ft below land-surface datum, Apr. 16, 1987; lowest recorded, 71.90 ft below land-surface datum, Oct. 23, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	71.76	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
10	71.79	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
15	71.81	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
20	71.83	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
25	71.89	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
EOM	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, OCTOBER 28, 1987, TO SEPTEMBER 30, 1988

DATE	WATER LEVEL
MAR 07	69.44

WATER YEAR 1988 HIGHEST 69.44 MAR 07, 1988 LOWEST 71.90 OCT 23, 1987

SOUTHAMPTON COUNTY--Continued

363916077201006 Local number, 52B 13 SOW 178F.
LOCATION.--Lat 36°39'16", long 77°20'10", Hydrologic Unit 03010204, 0.25 mi northeast of State Highway 661, 0.6 mi south of intersection of State Highways 652 and 661, and 4.5 mi southeast of Drewryville. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Miocene-Pliocene age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 65 ft, screened 40 to 50 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch--prior to Oct. 28, 1987; annual measurement with chalked tape by USGS personnel thereafter.
DATUM.--Elevation of land-surface datum is 120 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.9 ft above land-surface datum.
PERIOD OF RECORD.--December 1985 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 37.90 ft below land-surface datum, Apr. 29, 1987; lowest recorded, 43.77 ft below land-surface datum, Oct. 6-9, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	43.76	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
10	43.76	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
15	43.68	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
20	43.67	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
25	42.26	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
EOM	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, OCTOBER 28, 1987 TO SEPTEMBER 30, 1988

DATE	WATER LEVEL
MAR 07	40.04

WATER YEAR 1988 HIGHEST 40.04 MAR 07, 1988 LOWEST 43.77 OCT 06-09, 1987

364239077115801 Local number, 53B 1.
LOCATION.--Lat 36°42'39", long 77°11'58", Hydrologic Unit 03010201, 200 ft east of intersection of State Highways 654 and 655 in Capron. Owner: Town of Capron.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled public supply water well, diameter 8 in., depth 221 ft, screened 200 to 221 ft.
INSTRUMENTATION.--Annual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 115 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.6 ft above land-surface datum.
PERIOD OF RECORD.--June 1952, August 1970, November 1972 to December 1975, February 1979 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 74.5 ft below land-surface datum, June 9, 1952; lowest measured, 117.12 ft below land-surface datum, June 11, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL
MAR 07	107.90

363722077014601 Local number, 54A 1.
LOCATION.--Lat 36°37'22", long 77°01'46", Hydrologic Unit 03010201, 100 ft west of State Highway 681, 0.5 mi north of intersection of State Highways 681 and 672, and 2.4 mi north of Sunbeam. Owner: William Britt.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 4 in., depth 254 ft, screened 244 to 254 ft.
INSTRUMENTATION.--Semiannual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 35 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.03 ft above land-surface datum.
PERIOD OF RECORD.--August 1970 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 113.4 ft below land-surface datum, Aug. 17, 1970; lowest measured, 145.80 ft below land-surface datum, Mar. 7, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	143.52	MAR 07	145.80

WATER YEAR 1988 HIGHEST 143.52 NOV 03, 1987 LOWEST 145.80 MAR 07, 1988

SOUTHAMPTON COUNTY--Continued

363915077001101 Local number, 54B 1 SOW 046.
LOCATION.--Lat 36°39'15", long 77°00'11", Hydrologic Unit 03010201, at the Hercules plant on State Highway 650, 0.1 mi north of intersection of State Highways 671 and 650, 0.3 mi northwest of Delaware, and 1.7 mi northeast of Handsom. Owner: Hercules Incorporated.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 20 in. to 200 ft, diameter 10 in. from 200 to 610 ft, depth 610 ft, screened 358 to 368 ft, 390 to 410 ft, 510 to 520 ft, 524 to 534 ft, 590 to 600 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 19.4 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.0 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board. Water level affected by pumping of nearby well.
PERIOD OF RECORD.--December 1971 to August 1974, November 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 133.37 ft below land-surface datum, Dec. 1, 1971; lowest measured, 286.00 ft below land-surface datum, May 6, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	164.56	JAN 11	*175.70	MAR 14	*176.10	MAY 03	*177.08	JUN 30	*183.00	AUG 10	*180.10
18	*267.20	MAR 07	172.47								

WATER YEAR 1988 HIGHEST 164.56 NOV 03, 1987 LOWEST *267.20 NOV 18, 1987

* Affected by local pumpage.

364307077041002 Local number, 54B 5.
LOCATION.--Lat 36°43'04", long 77°04'16", Hydrologic Unit 03010201, at water tank near the intersection of U.S. Highway 58 and State Highway 35 in the town of Courtland. Owner: Town of Courtland.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 4 in., depth 228 ft, screened 200 to 220 ft.
INSTRUMENTATION.--Semiannual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 18 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.8 ft above land-surface datum.
PERIOD OF RECORD.--December 1963, September 1968, August 1970, November 1971 to December 1975, February 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 57.00 ft below land-surface datum, December 1963; lowest measured, 131.98 ft below land-surface datum, Mar. 18, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	95.89	MAR 07	96.51

WATER YEAR 1988 HIGHEST 95.89 NOV 03, 1987 LOWEST 96.51 MAR 07, 1988

363942077002701 Local number, 54B 12.
LOCATION.--Lat 36°39'42", long 77°00'27", Hydrologic Unit 03010201, off State Highway 650, 0.9 mi north of town of Delaware, and 1.8 mi northeast of Handsom. Owner: L. W. Overby.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 4 in., depth 236 ft, screened 226 to 236 ft.
INSTRUMENTATION.--Semiannual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 23 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.8 ft above land-surface datum.
PERIOD OF RECORD.--September 1970 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 122.17 ft below land-surface datum, Dec. 29, 1970; lowest measured, 155.35 ft below land-surface datum, Mar. 7, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	154.08	MAR 07	155.35

WATER YEAR 1988 HIGHEST 154.08 NOV 03, 1987 LOWEST 155.35 MAR 07, 1988

SOUTHAMPTON COUNTY--Continued

364211077054301 Local number, 54B 18.
LOCATION.--Lat 36°42'11", long 77°05'43", Hydrologic Unit 03010201, 600 ft southwest of intersection of State Highway 675 and U.S. Highway 58, 1.75 mi southwest of Courtland. Owner: F. E. Nottingham.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 4 in., depth 234 ft, screened 224 to 234 ft.
INSTRUMENTATION.--Semiannual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 50 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.7 ft above land-surface datum.
PERIOD OF RECORD.--September 1970 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 94.75 ft below land-surface datum, Sept. 16, 1970; lowest measured, 115.50 ft below land-surface datum, Mar. 7, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

	DATE	WATER LEVEL	DATE	WATER LEVEL
	NOV 03	114.52	MAR 07	115.50

WATER YEAR 1988	HIGHEST	114.52	NOV 03, 1987	LOWEST	115.50	MAR 07, 1988

364050077011701 Local number, 54B 20.
LOCATION.--Lat 36°40'50", long 77°01'17", Hydrologic Unit 03010201, off unpaved road near Nottoway Swamp, 0.2 mi southwest of U.S. Highway 58, and 2.3 mi southeast of Courtland. Owner: D. R. Bess.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 4 in., depth 316 ft, screened 297 to 316 ft.
INSTRUMENTATION.--Semiannual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 22 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of sanitary seal, 1.7 ft above land-surface datum.
PERIOD OF RECORD.--August 1970 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 112.45 ft below land-surface datum, Dec. 29, 1970; lowest measured, 142.84 ft below land-surface datum, Mar. 7, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

	DATE	WATER LEVEL	DATE	WATER LEVEL
	NOV 03	141.47	MAR 07	142.84

WATER YEAR 1988	HIGHEST	141.47	NOV 03, 1987	LOWEST	142.84	MAR 07, 1988

364121077013701 Local number, 54B 24 SOW 034.
LOCATION.--Lat 36°41'21", long 77°01'37", Hydrologic Unit 03010201, off U.S. Highway 58, 1.7 mi southeast of Courtland. Owner: Clarence Pittman.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in. to 71 ft, diameter 2 in. from 71 to 224 ft, depth 224 ft.
INSTRUMENTATION.--Semiannual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 29 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.2 ft above land-surface datum.
PERIOD OF RECORD.--September 1970 to August 1974, December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 111.82 ft below land-surface datum, Dec. 29, 1970; lowest measured, 137.86 ft below land-surface datum, Mar. 7, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

	DATE	WATER LEVEL	DATE	WATER LEVEL
	NOV 03	136.43	MAR 07	137.86

WATER YEAR 1988	HIGHEST	136.43	NOV 03, 1987	LOWEST	137.86	MAR 07, 1988

SOUTHAMPTON COUNTY--Continued

364110077011301 Local number, 54B 25.
LOCATION.--Lat 36°41'10", long 77°01'13", Hydrologic Unit 03010201, at the end of State Highway 739, 1.5 mi south of Story. Owner: J. W. Coggsdale.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 4 in., depth 245 ft, screened 225 to 245 ft.
INSTRUMENTATION.--Semiannual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 25 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.
PERIOD OF RECORD.--August 1970 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 110.72 ft below land-surface datum, Dec. 29, 1970; lowest measured, 138.81 ft below land-surface datum, Mar. 7, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	137.38	MAR 07	138.81

WATER YEAR 1988 HIGHEST 137.38 NOV 03, 1987 LOWEST 138.81 MAR 07, 1988

364251077004401 Local number, 54B 26.
LOCATION.--Lat 36°42'51", long 77°00'45", Hydrologic Unit 03010201, at Federal Aviation Administration beacon site, 3.3 mi east of Courtland off State Highway 611. Owner: Federal Aviation Administration.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 4 in., depth 324 ft, screened 314 to 324 ft.
INSTRUMENTATION.--Semiannual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 81 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
PERIOD OF RECORD.--August 1970 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 167.15 ft below land-surface datum, Aug. 19, 1970; lowest measured, 196.48 ft below land-surface datum, Nov. 3, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	196.48	MAR 08	192.71

WATER YEAR 1988 HIGHEST 192.71 MAR 08, 1988 LOWEST 196.48 NOV 03, 1987

364706077072301 Local number, 54C 1.
LOCATION.--Lat 36°47'06", long 77°07'23", Hydrologic Unit 03010201, 0.25 mi northwest of intersection of State Highways 35 and 713 in Sebrell. Owner: Norfolk and Western Railway.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 10 in., depth 344 ft, screen depth unknown.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 58.4 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, at land-surface datum.
PERIOD OF RECORD.--1907, July 1938, April 1940 to December 1946, October 1948 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.00 ft below land-surface datum, 1907; lowest measured, 101.04 ft below land-surface datum, Aug. 23, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	99.47	DEC 16	99.66	FEB 24	100.18	APR 27	100.10	JUN 24	100.32	AUG 23	101.04

WATER YEAR 1988 HIGHEST 99.47 OCT 28, 1987 LOWEST 101.04 AUG 23, 1988

SOUTHAMPTON COUNTY--Continued

363632076580101 Local number, 55A 3 SOW 086.
LOCATION.--Lat 36°36'32", long 76°58'01", Hydrologic Unit 03010201, 0.1 mi southeast of intersection of State Highways 689 and 687, 4.0 mi southwest of Franklin. Owner: Virginia Water Control Board.
AQUIFER.--Sand of lower Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in., depth 745 ft, screened 714 to 724 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 18 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum prior to Jan. 11, 1988; 1.3 ft thereafter.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--March 1977, October 1978 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 125.00 ft below land-surface datum, Mar. 18, 1977; lowest measured, 150.10 ft below land-surface datum, Aug. 10, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	147.32	JAN 11	147.90	MAR 14	148.40	MAY 03	149.05	JUN 30	149.85	AUG 10	150.10
18	147.40	MAR 08	148.46								

WATER YEAR 1988 HIGHEST 147.32 NOV 03, 1987 LOWEST 150.10 AUG 10, 1988

364001076584701 Local number, 55B 40.
LOCATION.--Lat 36°40'01", long 76°58'47", Hydrologic Unit 03010201, 400 ft east of intersection of State Highways 687 and 688, just east of Watkins Corner, and 1.5 mi southwest of Franklin. Owner: Walter D. Young.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 4 in., depth 370 ft, screened 353 to 362 ft.
INSTRUMENTATION.--Annual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 32 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.5 ft above land-surface datum.
PERIOD OF RECORD.--September 1970 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 141.48 ft below land-surface datum, Dec. 29, 1970; lowest measured, 175.19 ft below land-surface datum, Mar. 7, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL
MAR 07	175.19

364336076575601 Local number, 55B 49.
LOCATION.--Lat 36°43'36", long 76°57'56", Hydrologic Unit 03010202, 0.3 mi northeast of intersection of State Highways 641 and 635, 1.75 mi north of Hunterdale. Owner: Lankford Nursery.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 4 in., depth 390 ft, screened 372 to 384 ft.
INSTRUMENTATION.--Annual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 96 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
PERIOD OF RECORD.--March 1968, August 1970 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 141.33 ft below land-surface datum, Mar. 22, 1968; lowest measured, 222.25 ft below land-surface datum, Mar. 8, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL
MAR 08	222.25

SOUTHAMPTON COUNTY--Continued

364321076595401 Local number, 55B 51.
LOCATION.--Lat 36°43'22", long 76°59'55", Hydrologic Unit 03010201, off State Highway 611, 2.2 mi northwest of Hunterdale. Owner: Owen Wade.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in., depth 332 ft, screened 322 to 327 ft.
INSTRUMENTATION.--Annual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 66 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of sanitary seal, 1.0 ft above land-surface datum.
PERIOD OF RECORD.--August to December 1970, November 1972 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 154.15 ft below land-surface datum, Dec. 29, 1970; lowest measured, 180.29 ft below land-surface datum, Mar. 8, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL
MAR 08	180.29

364628076552701 Local number, 55C 3.
LOCATION.--Lat 36°46'28", long 76°55'27", Hydrologic Unit 03010202, off State Highway 635 at Black Creek Baptist Church, 0.2 mi north of Black Creek, and 1.5 mi west of Burdette. Owner: Black Creek Baptist Church.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 4 in., depth 312 ft, screened 300 to 312 ft.
INSTRUMENTATION.--Semiannual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 57 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of coupling breather pipe, 1.6 ft above land-surface datum.
PERIOD OF RECORD.--August 1970 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 132.80 ft below land-surface datum, Dec. 29, 1970; lowest measured, 159.48 ft below land-surface datum, Mar. 8, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	158.62	MAR 08	159.48

WATER YEAR 1988 HIGHEST 158.62 NOV 03, 1987 LOWEST 159.48 MAR 08, 1988

365120076585101 Local number, 55C 10.
LOCATION.--Lat 36°51'20", long 76°58'51", Hydrologic Unit 03010202, 100 ft west of State Highway 616, 0.3 mi south of Berlin. Owner: R. L. Hurrup.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 4 in., depth 326 ft, screened 316 to 326 ft.
INSTRUMENTATION.--Semiannual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 65 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
PERIOD OF RECORD.--August 1970 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 94.62 ft below land-surface datum, Aug. 21, 1970; lowest measured, 122.49 ft below land-surface datum, Aug. 31, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	121.38	MAR 09	122.34

WATER YEAR 1988 HIGHEST 121.38 NOV 05, 1987 LOWEST 122.34 MAR 09, 1988

SOUTHAMPTON COUNTY--Continued

365415076535201 Local number, 55D 5.
LOCATION.--Lat 36°54'15", long 76°53'20", Hydrologic Unit 03010202, off State Highway 616, 0.25 mi southwest of intersection of State Highway 616 and U.S. Highway 460 in Ivor. Owner: Town of Ivor.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 8 in., depth 450 ft, screened 384 to 394 ft, 425 to 440 ft.
INSTRUMENTATION.--Semiannual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 90 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of water-level access line, 1.75 ft above land-surface datum.
PERIOD OF RECORD.--October 1970 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 120.47 ft below land-surface datum, Nov. 2, 1970; lowest measured, 155.05 ft below land-surface datum, Mar. 16, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	150.05	MAR 09	151.43

WATER YEAR 1988 HIGHEST 150.05 NOV 05, 1987 LOWEST 151.43 MAR 09, 1988

CITY OF SUFFOLK

363511076492901 Local number, 56A 1 SOW 047.
LOCATION.--Lat 36°35'11", long 76°49'29", Hydrologic Unit 03010203, at intersection of State Highways 666 and 667, 0.5 mi southeast of Cleopus. Owner: Virginia Water Control Board.
AQUIFER.--Sand of lower and middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 1,149.5 ft, screened 401 to 406 ft, 495 to 500 ft, 628 to 633 ft, 727 to 732 ft, 989 to 999 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 37 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--June 1971 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 101.00 ft below land-surface datum, Nov. 15, 1973; lowest measured, 130.10 ft below land-surface datum, June 30, Aug. 10, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	127.28	JAN 12	127.87	MAR 14	128.95	MAY 03	129.25	JUN 30	130.10	AUG 10	130.10
18	127.36	MAR 08	129.06								

WATER YEAR 1988 HIGHEST 127.28 NOV 02, 1987 LOWEST 130.10 JUN 30, AUG 10, 1988

363625076522601 Local number, 56A 9 SOW 076A.
LOCATION.--Lat 36°36'25", long 76°52'26", Hydrologic Unit 03010203, 700 ft west of State Highway 615, 8.1 mi south of Holland. Owner: Virginia Water Control Board.
AQUIFER.--Sand of lower, middle, and upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 519 ft, screened 452 to 457 ft, 500 to 505 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 80 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.5 ft above land-surface datum prior to Jan. 12, 1988; 2.0 ft thereafter.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--July 1978 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 81.99 ft below land-surface datum, Jan. 8, 1979; lowest measured, 90.95 ft below land-surface datum, Aug. 10, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	89.92	JAN 12	90.07	MAR 14	90.48	MAY 03	90.40	JUN 30	90.80	AUG 10	90.95
18	89.92	MAR 08	90.60								

WATER YEAR 1988 HIGHEST 89.92 NOV 02, 18, 1987 LOWEST 90.95 AUG 10, 1988

CITY OF SUFFOLK--Continued

363345076470201 Local number, 56A 10 SOW 088A.
LOCATION.--Lat 36°33'45", long 76°47'02", Hydrologic Unit 03010203, 0.1 mi north of intersection of State Highways 668 and 669, 1.9 mi west of Somerton. Owner: Virginia Water Control Board.
AQUIFER.--Sand of lower Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 1,060 ft, screened 1,050 to 1,060 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 45 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum prior to Jan. 12, 1988; 1.3 ft thereafter.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--June 1977 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 104.70 ft below land-surface datum, June 30, 1980; lowest measured, 124.19 ft below land-surface datum, Mar. 19, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	122.24	JAN 12	122.10	MAR 14	122.30	MAY 03	122.90	JUN 30	123.30	AUG 10	123.55
18	122.20	MAR 08	122.46								

WATER YEAR 1988 HIGHEST 122.10 JAN 12, 1988 LOWEST 123.55 AUG 10, 1988

363653076455401 Local number, 56A 11 SOW 089.
LOCATION.--Lat 36°36'53", long 76°45'54", Hydrologic Unit 03010203, off State Highway 616, 1.1 mi east of Holy Neck Church, and 3.4 mi north of Somerton. Owner: Virginia Water Control Board.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 861 ft, screened 830 to 840 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 79 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum prior to Nov. 18, 1987; 0.6 ft prior to Jan. 12, 1988; 1.3 ft thereafter.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--August 1977 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 154.00 ft below land-surface datum, Aug. 9, 1977; lowest measured, 177.50 ft below land-surface datum, Aug. 10, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	175.21	JAN 12	175.90	MAR 14	176.85	MAY 03	177.16	JUN 30	177.47	AUG 10	177.50
18	175.31	MAR 08	176.95								

WATER YEAR 1988 HIGHEST 175.21 NOV 02, 1987 LOWEST 177.50 AUG 10, 1988

363345076470202 Local number, 56A 12 SOW 088B.
LOCATION.--Lat 36°33'45", long 76°47'02", Hydrologic Unit 03010203, 0.1 mi north of intersection of State Highways 668 and 669, 1.9 mi west of Somerton. Owner: Virginia Water Control Board.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 580 ft, screened 570 to 580 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 45 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum prior to Jan. 12, 1988; 1.3 ft thereafter.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--June 1977 to November 1982, June 1985 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 103.00 ft below land-surface datum, June 30, 1977; lowest measured, 132.50 ft below land-surface datum, Aug. 10, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	130.26	JAN 12	130.65	MAR 14	131.47	MAY 03	131.87	JUN 30	132.20	AUG 10	132.50
18	130.17	MAR 08	131.93								

WATER YEAR 1988 HIGHEST 130.17 NOV 18, 1987 LOWEST 132.50 AUG 10, 1988

CITY OF SUFFOLK--Continued

363625076522602 Local number, 56A 13 SOW 076B.
LOCATION.--Lat 36°36'25", long 76°52'26", Hydrologic Unit 03010203, 700 ft west of State Highway 615, 0.5 mi southwest of Olive Branch Church, and 8.1 mi south of Holland. Owner: Virginia Water Control Board.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 807 ft, screened 797 to 802 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 75 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum prior to Jan. 12, 1988; 0.8 ft thereafter.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--May 1979 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 204.34 ft below land-surface datum, Oct. 26, 1982; lowest measured, 219.46 ft below land-surface datum, Sept. 21, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	214.98	JAN 12	216.50	MAR 14	218.55	MAY 03	217.78	JUN 30	218.65	AUG 10	218.95
18	215.49	MAR 08	218.42								

WATER YEAR 1988 HIGHEST 214.98 NOV 02, 1987 LOWEST 218.95 AUG 10, 1988

363625076522603 Local number, 56A 14 SOW 076C.
LOCATION.--Lat 36°36'25", long 76°52'26", Hydrologic Unit 03010203, 700 ft west of State Highway 615, 0.5 mi southwest of Olive Branch Church, and 8.1 mi south of Holland. Owner: Virginia Water Control Board.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 735 ft, screened 730 to 735 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 75 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum prior to Jan. 12, 1988; 1.2 ft thereafter.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--March 1979 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 205.62 ft below land-surface datum, Mar. 7, 1979; lowest measured, 211.50 ft below land-surface datum, Aug. 10, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	210.96	JAN 12	209.85	MAR 14	210.30	MAY 03	210.70	JUN 30	211.20	AUG 10	211.50
18	209.70	MAR 08	210.25								

WATER YEAR 1988 HIGHEST 209.70 NOV 18, 1987 LOWEST 211.50 AUG.10, 1988

364051076455601 Local number, 56B 7.
LOCATION.--Lat 36°40'51", long 76°45'56", Hydrologic Unit 03010202, at Virginia Polytechnic Institute and State University Research Station, 0.4 mi south of U.S. Highway 58, and 0.7 mi east of Holland. Owner: Virginia Polytechnic Institute and State University Extension Service.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 6 in., depth 511 ft, screened 490 to 510 ft.
INSTRUMENTATION.--Semiannual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 80 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.4 ft above land-surface datum.
PERIOD OF RECORD.--December 1970 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 154.10 ft below land-surface datum, Dec. 30, 1970; lowest measured, 184.93 ft below land-surface datum, Mar. 8, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	182.98	MAR 08	184.93

WATER YEAR 1988 HIGHEST 182.98 NOV 03, 1987 LOWEST 184.93 MAR 08, 1988

CITY OF SUFFOLK--Continued

363611076400901 Local number, 57A 6 SOW 085.
LOCATION.--Lat 36°36'11", long 76°40'09", Hydrologic Unit 03010203, at Virginia Department of Transportation shop off U.S. Highway 13, 0.3 mi northeast of Whaleyville. Owner: Virginia Water Control Board.
AQUIFER.--Sand of lower and middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 1,095 ft, screened 660 to 665 ft, 833 to 838 ft, 988 to 993 ft, 1,069 to 1,074 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 73 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.25 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--February 1978 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 137.54 ft below land-surface datum, Mar. 22, 1978; lowest measured, 151.62 ft below land-surface datum, Mar. 8, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	LEVEL	DATE	LEVEL	DATE	LEVEL	DATE	LEVEL	DATE	LEVEL	DATE	LEVEL
NOV 04	150.26	JAN 12	150.15	MAR 14	150.95	MAY 03	150.55	JUN 30	151.08	AUG 10	151.50
18	150.12	MAR 08	151.62								

WATER YEAR 1988 HIGHEST 150.12 NOV 18, 1987 LOWEST 151.62 MAR 08, 1988

364013076434601 Local number, 57B 1.
LOCATION.--Lat 36°40'13", long 76°43'46", Hydrologic Unit 03010202, at the Virginia Swine Evaluation Station, 0.2 mi east of State Highway 610, and 2.3 mi southwest of Lummis. Owner: Virginia Cooperative Extension Service.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 4 in., depth 496 ft, screened 472 to 496 ft.
INSTRUMENTATION.--Semiannual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 65 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.7 ft above land-surface datum.
PERIOD OF RECORD.--August 1970 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 127.09 ft below land-surface datum, Aug. 26, 1970; lowest measured, 162.34 ft below land-surface datum, Mar. 8, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	160.02	MAR 08	162.34

WATER YEAR 1988 HIGHEST 160.02 NOV 03, 1987 LOWEST 162.34 MAR 08, 1988

363834076382301 Local number, 57B 8.
LOCATION.--Lat 36°38'27", long 76°38'05", Hydrologic Unit 03010205, 0.3 mi southwest of State Highway 664, 0.8 mi southeast of U.S. Highway 13, and 1.1 mi south of Nurneysville. Owner: Soren F. Andresen.
AQUIFER.--Sand of Miocene-Pliocene age.
WELL CHARACTERISTICS.--Drilled flowing water well, diameter 2 in., depth 65 ft, screened 50 to 65 ft.
INSTRUMENTATION.--Bimonthly measurement with a manometer by USGS personnel.
DATUM.--Elevation of land-surface datum is 45 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, at land-surface datum.
PERIOD OF RECORD.--March 1975, November 1977 to current year. Unpublished records available March 1975 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.51 ft above land-surface datum, May 9, 1979; lowest measured, at land-surface datum, Sept. 26, 1980.

WATER LEVEL, IN FEET ABOVE LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	3.88	DEC 17	5.74	FEB 22	6.13	APR 26	6.27	JUN 27	5.18	SEP 28	2.80

NOTE.--Flowing well, readings given are above land-surface.

WATER YEAR 1988 HIGHEST 6.27 APR 26, 1988 LOWEST 2.80 SEP 28, 1988

CITY OF SUFFOLK--Continued

363810076381001 Local number, 57B 9.
LOCATION.--Lat 36°38'36", long 76°38'10", Hydrologic Unit 03010205, 0.2 mi southwest of State Highway 664, 0.7 mi southeast of U.S. Highway 13, and 0.9 mi south of Nurneysville. Owner: Soren F. Andresen.
AQUIFER.--Sand of Miocene-Pliocene age.
WELL CHARACTERISTICS.--Drilled flowing unused water well, diameter 1.25 in., depth 85 ft, screened 70 to 85 ft.
INSTRUMENTATION.--Bimonthly measurement with a manometer by USGS personnel.
DATUM.--Elevation of land-surface datum is 45 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, at land-surface datum.
PERIOD OF RECORD.--August 1975, November 1977 to current year. Unpublished records available August 1975 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.85 ft above land-surface datum, Feb. 7, 1983; lowest measured, 0.22 ft below land-surface datum, Sept. 26, 1980.

WATER LEVEL, IN FEET ABOVE LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	2.82	DEC 17	5.08	FEB 22	5.22	APR 26	5.53	JUN 27	3.46	SEP 28	0.80

NOTE.--Flowing well, readings given are above land-surface datum.

WATER YEAR 1988 HIGHEST 5.53 APR 26, 1988 LOWEST 0.80 SEP 28, 1988

364655076381101 Local number, 57C 12.
LOCATION.--Lat 36°46'55", long 76°38'11", Hydrologic Unit 02080208, in Idlewood Homes Subdivision near U.S. Highway 460 and State Highway 604, at Providence Church, and 0.6 mi northwest of Kings Fork. Owner: P. D. Pruden.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 6 in., depth 535 ft, screened 515 to 535 ft.
INSTRUMENTATION.--Semiannual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 78 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.2 ft above land-surface datum.
PERIOD OF RECORD.--September 1962, May 1965, September 1970 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 90.00 ft below land-surface datum, Sept. 23, 1962; lowest measured, 172.30 ft below land-surface datum, Feb. 2, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	171.14	MAR 09	163.09

WATER YEAR 1988 HIGHEST 163.09 MAR 09, 1988 LOWEST 171.14 NOV 05, 1987

364703076383701 Local number, 57C 21 SOW 099A.
LOCATION.--Lat 36°47'03", long 76°38'37", Hydrologic Unit 02080208, 700 ft south of U.S. Highway 460, 0.5 mi west of Providence Church, and 1.0 mi west of Kings Fork. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Eocene age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 248 ft, screened 238 to 248 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 72 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing. 1.5 ft above land-surface datum prior to Jan. 12, 1988; 1.1 ft thereafter.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--September 1983 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 46.32 ft below land-surface datum, Apr. 19, 1984; lowest measured, 48.70 ft below land-surface datum, Aug. 9, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	48.64	JAN 12	48.45	MAR 16	48.45	MAY 02	48.50	JUN 29	48.55	AUG 09	48.70

WATER YEAR 1988 HIGHEST 48.45 JAN 12, MAR 16, 1988 LOWEST 48.70 AUG 09, 1988

CITY OF SUFFOLK--Continued

364703076383702 Local number, 57C 22 SOW 099B.
LOCATION.--Lat 36°47'03", long 76°38'37", Hydrologic Unit 02080208, 700 ft south of U.S. Highway 460, 0.5 mi west of Providence Church, and 1.0 mi west of Kings Fork. Owner: Virginia Water Control Board.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 694 ft, screened 684 to 694 ft.
INSTRUMENTATION.--Continuous strip-chart recorder.
DATUM.--Elevation of land-surface datum is 72 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of recorder shelf, 1.7 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--February 1980 to current year. Unpublished records available prior to August 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 128.24 ft below land-surface datum, Feb. 18, 1980; lowest recorded, 176.13 ft below land-surface datum, Jan. 13, 14, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	156.98	169.70	173.20	175.27	164.48	161.23	159.35	158.47	157.88	157.75	158.24	158.21
10	162.39	170.42	173.52	175.52	163.76	160.87	159.04	158.31	157.77	157.70	158.20	158.20
15	165.09	171.26	173.90	172.43	162.96	160.60	158.80	158.27	157.86	157.90	158.30	158.20
20	166.94	171.79	174.28	168.93	162.32	160.06	158.62	158.09	157.72	158.07	158.32	158.10
25	166.25	172.43	174.59	166.96	161.94	159.94	158.54	157.95	157.73	158.08	158.31	158.06
EOM	168.55	172.60	174.93	165.56	161.61	159.65	158.36	157.91	157.60	158.11	158.38	158.10

WATER YEAR 1988 HIGHEST 156.98 OCT. 03-06, 1987 LOWEST 175.60 JAN 12, 1988

364703076383703 Local number, 57C 23 SOW 099C.
LOCATION.--Lat 36°47'03", long 76°38'37", Hydrologic Unit 02080208, 700 ft south of U.S. Highway 460, 0.5 mi west of Providence Church, and 1.0 mi west of Kings Fork. Owner: Virginia Water Control Board.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 478 ft, screened 468 to 478 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 72 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.6 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--February 1981 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 147.67 ft below land-surface datum, Nov. 5, 1984; lowest measured, 179.38 ft below land-surface datum, Jan. 12, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	174.10	JAN 12	179.38	MAR 16	162.55	MAY 02	160.08	JUN 29	159.40	AUG 09	159.90

WATER YEAR 1988 HIGHEST 159.40 JUN 29, 1988 LOWEST 179.38 JAN 12, 1988

364703076383704 Local number, 57C 24 SOW 099D.
LOCATION.--Lat 36°47'03", long 76°38'37", Hydrologic Unit 02080208, 700 ft south of U.S. Highway 460, 0.5 mi west of Providence Church, and 1.0 mi west of Kings Fork. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in., depth 25 ft, screened 20 to 25 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 72 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.5 ft above land-surface datum prior to Mar. 25, 1987; 2.0 ft prior to Jan. 12, 1988; 1.3 ft thereafter.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--September 1983 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.60 ft below land-surface datum, Feb. 23, 1987; lowest measured, 15.20 ft below land-surface datum, Nov. 18, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	12.80	JAN 12	5.15	MAR 16	6.80	MAY 02	8.18	JUN 29	8.10	AUG 09	9.22

WATER YEAR 1988 HIGHEST 5.15 JAN 12, 1988 LOWEST 12.80 NOV 16, 1987

CITY OF SUFFOLK--Continued

363704076334501 Local number, 58A 1 SOW 036.
LOCATION.--Lat 36°37'02", long 76°33'45", Hydrologic Unit 03010205, 200 ft west of State Highway 604, 1.9 mi east of Cypress Chapel. Owner: Union Camp Corporation.
AQUIFER.--Sand of Eocene age.
WELL CHARACTERISTICS.--Jetted unused water well, diameter 3 in., depth 420 ft, screened 410 to 420 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 32 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.5 ft above land-surface datum prior to Jan. 12, 1988; 2.1 ft thereafter.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--January 1938, February 1960, September 1970 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.05 ft below land-surface datum, Jan. 1, 1938; lowest measured, 18.40 ft below land-surface datum, Aug. 10, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	17.95	JAN 12	17.73	MAR 14	17.75	MAY 03	17.95	JUN 30	18.10	AUG 10	18.40
NOV 18	18.00	MAR 07	17.81								

WATER YEAR 1988 HIGHEST 17.73 JAN 12, 1988 LOWEST 18.40 AUG 10, 1988

363408076350001 Local number, 58A 2 SOW 042.
LOCATION.--Lat 36°34'08", long 76°35'00", Hydrologic Unit 03010205, 200 ft southwest of intersection of State Highways 32 and 678, 1.3 mi north of North Carolina State line, and 3.4 mi south of Cypress Chapel. Owner: Virginia Water Control Board.
AQUIFER.--Sand of lower, middle, and upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in., depth 1,920 ft, screened 481 to 486 ft, 730 to 735 ft, 947 to 952 ft, 1,115 to 1,120 ft, 1,222 to 1,227 ft, 1,427 to 1,432 ft, 1,537 to 1,542 ft, 1,874 to 1,879 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 58 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.5 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--December 1971 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 72.52 ft below land-surface datum, Dec. 1, 1971; lowest measured, 95.64 ft below land-surface datum, Sept. 2, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	94.80	JAN 12	94.75	MAR 14	94.95	MAY 03	94.65	JUN 30	94.80	AUG 10	94.70
NOV 18	94.60	MAR 07	95.20								

WATER YEAR 1988 HIGHEST 94.60 NOV 18, 1987 LOWEST 95.20 MAR 07, 1988

363303076330201 Local number, 58A 75 SOW 170.
LOCATION.--Lat 36°33'03", long 76°33'02", Hydrologic Unit 03010205, 100 ft north of North Carolina State line, 0.4 mi east of Desert Road, and 5.0 mi southeast of Cypress Chapel. Owner: Virginia Water Control Board.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 535 ft, screened 525 to 535 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 40 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--July 1985 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 25.52 ft below land-surface datum, July 11, 1985; lowest measured, 27.90 ft below land-surface datum, Aug. 10, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 18	27.60	JAN 12	27.40	MAR 14	27.22	MAY 03	27.40	JUN 30	27.65	AUG 10	27.90

WATER YEAR 1988 HIGHEST 27.22 MAR 14, 1988 LOWEST 27.90 AUG 10, 1988

CITY OF SUFFOLK--Continued

363655076332002 Local number, 58A 77 SOW 180A.
LOCATION.--Lat 36°36'55", long 76°33'20", Hydrologic Unit 03010205, 0.3 mi north of Great Dismal Swamp Wildlife Refuge Headquarters on Desert Road, 2.0 mi east of Cypress Chapel. Owner: Virginia Water Control Board.
AQUIFER.--Sand of lower Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in. to 1,158 ft, diameter 3 in. from 1,136 to 1,209 ft, depth 1,209 ft, screened 1,199 to 1,209 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 34.02 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.5 ft above land-surface datum.
PERIOD OF RECORD.--February 1987 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 96.84 ft below land-surface datum, Sept. 17, Oct. 1, 1987; lowest recorded, 98.54 ft below land-surface datum, Sept. 30, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	96.98	97.12	97.25	97.57	97.95	98.45	98.33	98.22	98.14	98.30	98.38	98.27
10	97.09	97.03	97.19	97.61	98.07	98.29	98.32	98.19	98.17	98.27	98.35	98.37
15	97.07	97.23	97.19	97.72	98.01	98.35	98.28	98.23	98.25	98.29	98.38	98.45
20	97.06	97.17	97.38	97.63	98.19	98.37	98.24	98.11	98.17	98.32	98.35	98.41
25	97.13	97.26	97.41	97.76	98.37	98.44	98.27	98.13	98.21	98.28	98.29	98.45
EOM	97.13	97.00	97.55	98.00	98.39	98.40	98.30	98.18	98.13	98.31	98.38	98.54

WATER YEAR 1988 HIGHEST 96.84 OCT 1, 1987 LOWEST 98.54 SEP 30, 1988

363655076332003 Local number, 58A 78 SOW 180B.
LOCATION.--Lat 36°36'55", long 76°33'20", Hydrologic Unit 03010205, 0.3 mi north of Great Dismal Swamp Wildlife Refuge Headquarters on Desert Road, 2.0 mi east of Cypress Chapel. Owner: Virginia Water Control Board.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in. to 811 ft, diameter 2 in. from 766 to 850 ft, 860 to 880 ft, depth 880 ft, screened 850 to 860 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 34.02 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.5 ft above land-surface datum.
PERIOD OF RECORD.--February 1987 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 102.14 ft below land-surface datum, June 5, 27, 1987; lowest recorded, 103.95 ft below land-surface datum, Sept. 30, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	102.40	102.56	102.84	103.25	103.70	103.91	103.74	103.57	103.42	103.62	103.81	103.84
10	102.49	102.63	102.88	103.32	103.80	103.72	103.70	103.53	103.40	103.63	103.79	103.87
15	102.47	102.76	102.98	103.47	103.75	103.78	103.63	103.53	103.55	103.65	103.83	103.82
20	102.46	102.68	103.07	103.44	103.67	103.77	103.56	103.41	103.52	103.71	103.81	103.89
25	102.54	102.87	103.14	103.55	103.84	103.87	103.58	103.39	103.53	103.66	103.82	103.86
EOM	102.61	102.61	103.24	103.76	103.85	103.81	103.59	103.48	103.49	103.74	103.85	103.95

WATER YEAR 1988 HIGHEST 102.27 OCT 01, 1987 LOWEST 103.95 SEP 30, 1988

363655076332004. Local number, 58A 79 SOW 180C.
LOCATION.--Lat 36°36'55", long 76°33'20", Hydrologic Unit 03010205, 0.3 mi north of Great Dismal Swamp Wildlife Refuge Headquarters on Desert Road, 2.0 mi east of Cypress Chapel. Owner: Virginia Water Control Board.
AQUIFER.--Aquia aquifer of Tertiary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4.5 in. to 670 ft, diameter 2 in. from 657 to 710 ft, depth 710 ft, screened 700 to 720 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 33.97 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.4 ft above land-surface datum.
PERIOD OF RECORD.--February 1987 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 102.72 ft below land-surface datum, May 11, 1987; lowest recorded, 104.79 ft below land-surface datum, Sept. 30, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	103.22	103.37	103.66	104.07	104.57	104.58	104.62	104.43	104.42	104.44	104.59	104.56
10	103.30	103.44	103.70	104.16	104.67	104.58	104.62	104.42	104.42	104.44	104.59	104.63
15	103.29	103.57	103.81	104.33	104.51	104.58	104.62	104.42	104.42	104.46	104.63	104.70
20	103.28	103.50	103.90	104.31	104.54	104.58	104.40	104.42	104.42	104.52	104.62	104.68
25	103.35	103.68	103.98	104.43	104.54	104.62	104.38	104.42	104.42	104.50	104.57	104.71
EOM	103.42	103.43	104.07	104.64	104.54	104.62	104.38	104.42	104.42	104.54	104.65	104.79

WATER YEAR 1988 HIGHEST 103.09 OCT 01, 1987 LOWEST 104.79 SEP 30, 1988

CITY OF SUFFOLK--Continued

363655076332005. Local number, 58A 80 SOW 180D.
LOCATION.--Lat 36°36'55", long 76°33'20", Hydrologic Unit 03010205, 0.3 mi north of Great Dismal Swamp Wildlife Refuge Headquarters on Desert Road, 2.0 mi east of Cypress Chapel. Owner: Virginia Water Control Board.
AQUIFER.--Aquia aquifer of Tertiary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4.5 in. to 397 ft, diameter 2 in. from 388 to 430 ft, depth 440 ft, screened 430 to 440 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 34.26 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.3 ft above land-surface datum.
PERIOD OF RECORD.--June 1987 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 21.55 ft below land-surface datum, June 17, 1987; lowest recorded, 23.37 ft below land-surface datum, Feb. 10, 1988, affected by local pumpage.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, JUNE TO SEPTEMBER 1987

DATE	WATER LEVEL	DATE	WATER LEVEL
JUN 17	21.55	SEP 02	22.11

PERIOD JUNE TO SEPTEMBER 1987 HIGHEST 21.55 JUN 17, 1987 LOWEST 22.11 SEP 02, 1987

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	---	22.01	21.91	21.87	21.89	21.95	21.92	21.93	22.00	22.31	22.63	22.75
10	---	22.07	21.97	21.82	*23.37	21.83	21.92	21.91	22.05	22.32	22.64	22.77
15	---	22.09	21.94	21.85	21.99	21.88	21.89	21.96	22.16	22.40	22.71	22.83
20	---	22.08	21.94	21.84	21.79	21.89	21.88	21.89	22.13	22.44	22.73	22.84
25	---	22.10	21.94	21.84	21.88	21.96	21.93	21.93	22.16	22.45	22.70	22.88
EOM	22.07	21.96	21.90	21.94	21.90	21.94	21.96	22.01	22.15	22.53	22.78	22.97

WATER YEAR 1988 HIGHEST 21.79 MAR 10, 1988 LOWEST *23.37 FEB 10, 1988

* Affected by local pumpage.

363655076332006 Local number, 58A 81 SOW 180E.
LOCATION.--Lat 36°36'55", long 76°33'20", Hydrologic Unit 03010205, 0.3 mi north of Great Dismal Swamp Wildlife Refuge Headquarters on Desert Road, 2.0 mi east of Cypress Chapel. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Paleocene age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4.5 in. to 309 ft, diameter 2 in. from 298 to 329 ft, depth 329 ft, screened 319 to 329 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 34.00 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.4 ft above land-surface datum.
PERIOD OF RECORD.--February 1987 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 12.47 ft below land-surface datum, Jan. 27, 1988; lowest recorded, 16.83 ft below land-surface datum, Sept. 30, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	16.03	16.11	16.01	14.07	13.87	15.94	15.89	15.91	16.00	16.27	16.55	16.57
10	16.12	16.18	16.17	13.47	14.07	15.82	15.90	15.93	16.07	16.26	16.57	16.63
15	16.12	16.22	16.17	14.37	15.86	15.88	15.88	15.98	16.15	16.33	16.61	16.72
20	16.12	16.17	16.07	13.67	15.75	15.89	15.87	15.91	16.10	16.39	16.60	16.70
25	16.18	16.24	15.97	13.67	15.88	15.94	15.91	15.94	16.13	16.40	16.55	16.74
EOM	16.21	15.98	15.27	14.87	15.89	15.93	15.96	16.02	16.09	16.47	16.64	16.83

WATER YEAR 1988 HIGHEST 12.47 JAN. 27, 1988 LOWEST 16.83 SEP 30, 1988

363655076332007 Local number, 58A 82 SOW 180F.
LOCATION.--Lat 36°36'55", long 76°33'20", Hydrologic Unit 03010205, 0.3 mi north of Great Dismal Swamp Wildlife Refuge Headquarters on Desert Road, 2.0 mi east of Cypress Chapel. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Eocene age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4.5 in. to 274 ft, diameter 2 in. from 262 to 306 ft, depth 306 ft, screened 286 to 306 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 33.87 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.5 ft above land-surface datum.
PERIOD OF RECORD.--February 1987 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 6.12 ft below land-surface datum, Apr. 13, 1987; lowest recorded, 13.97 ft below land-surface datum, Feb. 11, 1988.

CITY OF SUFFOLK--Continued

363655076332007 Local number, 58A 82 SOW 180F--Continued

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	12.15	12.22	12.10	11.90	11.86	12.03	11.95	11.96	12.04	12.33	12.63	12.67
10	12.22	12.29	12.17	11.85	11.88	11.90	11.96	11.97	12.07	12.34	12.63	12.71
15	12.22	12.30	12.15	11.93	12.24	11.95	11.93	12.03	12.20	12.41	12.68	12.79
20	12.21	12.27	12.12	11.87	11.94	11.95	11.91	11.96	12.15	12.46	12.68	12.78
25	12.22	12.31	12.11	11.87	12.01	12.00	11.97	11.99	12.19	12.48	12.63	12.83
EOM	12.29	12.08	12.04	11.97	12.00	11.98	12.01	12.06	12.16	12.55	12.72	12.90

WATER YEAR 1988 HIGHEST 11.75 FEB 06, 1988 LOWEST 13.97 FEB 11, 1988

363655076332008 Local number, 58A 83 SOW 180G.
LOCATION.--Lat 36°36'55", long 76°33'20", Hydrologic Unit 03010205, 0.3 mi north of Great Dismal Swamp Wildlife Refuge Headquarters on Desert Road, 2.0 mi east of Cypress Chapel. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Miocene-Pliocene age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4.5 in. to 145 ft, diameter 2 in. from 135 to 165 ft, depth 165 ft, screened 155 to 165 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 33.84 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.5 ft above land-surface datum.
PERIOD OF RECORD.--February 1987 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 6.46 ft below land-surface datum, Apr. 20, 1987; lowest recorded, 8.68 ft below land-surface datum, Apr. 15, 1987, due to pumpage at unknown location.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	8.12	8.37	8.33	8.18	8.02	7.82	7.47	7.22	---	---	---	---
10	8.19	8.42	8.37	8.14	8.34	7.67	7.43	7.20	---	---	---	---
15	8.23	8.44	8.37	8.19	7.98	7.66	7.36	7.21	---	---	---	---
20	8.27	8.44	8.36	8.12	7.84	7.61	7.29	---	---	---	---	---
25	8.34	8.49	8.36	8.11	7.87	7.62	7.30	---	---	---	---	---
EOM	8.38	8.27	8.30	8.13	7.84	7.54	7.30	---	---	---	---	---

WATER YEAR 1988 HIGHEST 7.09 MAY 18, 1988 LOWEST 8.49 NOV 24-27, 1987

363655076332009 Local number, 58A 84 SOW 180H.
LOCATION.--Lat 36°36'55", long 76°33'20", Hydrologic Unit 03010205, 0.3 mi north of Great Dismal Swamp Wildlife Refuge Headquarters on Desert Road, 2.0 mi east of Cypress Chapel. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4.5 in., depth 20 ft, screened 10 to 20 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 33.87 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.5 ft above land-surface datum.
PERIOD OF RECORD.--February 1987 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 2.73 ft below land-surface datum, Mar. 1, 1987; lowest recorded, 8.60 ft below land-surface datum, Nov. 28, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	7.57	8.23	8.16	5.06	4.10	4.54	4.36	4.45	4.61	5.50	6.72	7.74
10	7.75	8.24	8.12	4.86	4.20	4.21	4.49	4.21	4.82	5.68	6.91	7.89
15	7.86	8.42	7.93	4.88	3.97	4.35	4.09	4.40	4.92	5.90	7.08	8.03
20	7.97	8.48	7.60	4.78	3.83	4.46	3.90	4.35	5.02	6.10	7.25	8.15
25	8.08	8.56	7.44	4.66	4.16	4.51	4.24	4.48	5.15	6.28	7.40	8.28
EOM	8.20	8.39	6.46	4.66	4.32	4.22	4.46	4.58	5.25	6.53	7.61	8.41

WATER YEAR 1988 HIGHEST 3.61 FEB 05, 1988 LOWEST 8.60 NOV 28, 1987

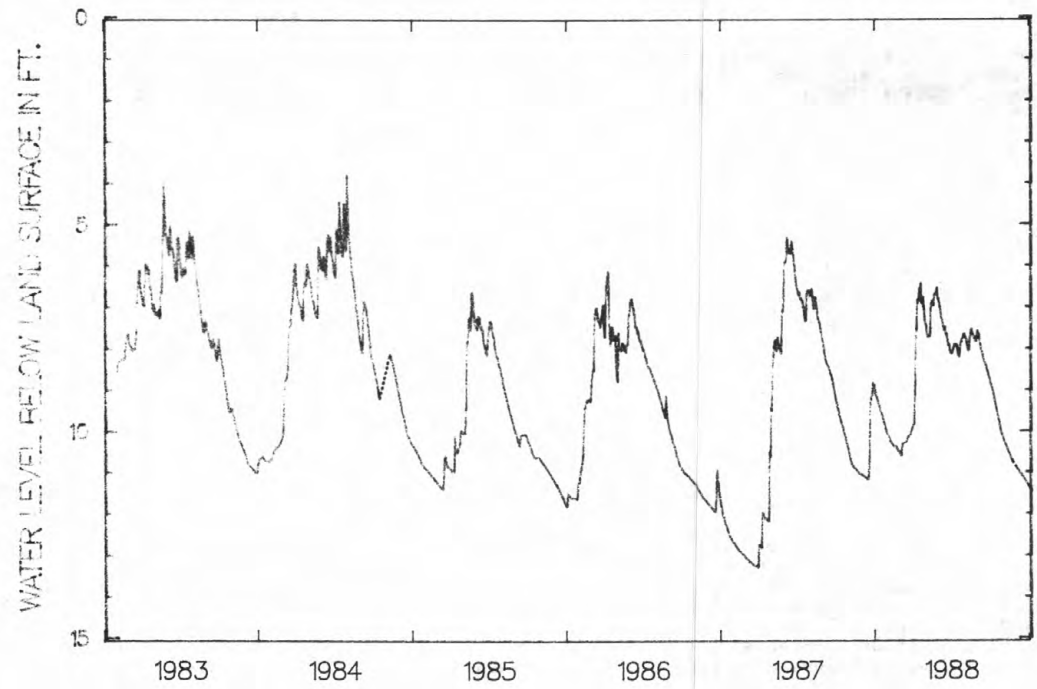
CITY OF SUFFOLK--Continued

363928076332901 Local number, 58B 13.
LOCATION.--Lat 36°39'28", long 76°33'29", Hydrologic Unit 03010205, 700 ft east of State Highway 642, 4.0 mi south of Suffolk. Owner: Melvin Brinkley.
AQUIFER.--Sand of Pleistocene age.
WELL CHARACTERISTICS.--Dug unused water well, diameter 22 in., depth 15 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 40 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of recorder shelf, 1.9 ft above land-surface datum.
PERIOD OF RECORD.--March 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 2.95 ft below land-surface datum, May 25, 1979; lowest recorded, 13.44 ft below land-surface datum, Jan. 23-26, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	9.36	10.30	10.28	6.91	7.10	7.48	7.91	8.06	8.11	9.28	10.48	11.05
10	9.54	10.38	10.22	6.61	6.95	7.47	8.15	7.56	8.33	9.52	10.61	11.13
15	9.70	10.38	10.14	6.92	6.69	7.75	7.94	7.70	8.45	9.77	10.72	11.21
20	9.89	10.48	10.05	6.98	6.54	7.92	7.77	7.83	8.65	10.03	---	11.29
25	10.07	10.57	9.88	7.44	6.93	8.13	7.70	7.57	8.85	10.18	---	11.37
EOM	10.21	10.29	8.27	7.70	7.16	7.91	7.88	7.87	9.03	10.35	10.98	11.46

WATER YEAR 1988 HIGHEST 6.36 JAN 13, 1988 LOWEST 11.46 SEP 30, 1988



364328076345201 Local number, 58B235.
LOCATION.--Lat 36°43'30", long 76°34'51", Hydrologic Unit 02080208, in the Planters Peanut Plant, 0.3 mi southeast of intersection of State Highway 337 and U.S. Highway 13 in Suffolk. Owner: Planters Peanut Company.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 10 in. to 254 ft, 8 in. from 254 to 422 ft, 6 in. from 422 to 570 ft, depth 570 ft, screened 530 to 561.6 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 53 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.5 ft above land-surface datum.
PERIOD OF RECORD.--August 1919, November 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 21.0 ft below land-surface datum, Aug. 4, 1919; lowest measured, 153.21 ft below land-surface datum, Dec. 23, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	140.56	DEC 17	143.39	FEB 22	141.95	APR 26	140.75	JUN 27	140.18	SEP 28	140.22

WATER YEAR 1988 HIGHEST 140.18 JUN 27, 1988 LOWEST 143.39 DEC 17, 1987

CITY OF SUFFOLK--Continued

364318076365501 Local number, 58B268 SOW 169A.
LOCATION.--Lat 36°43'18", long 76°36'55", Hydrologic Unit 02080208, 500 ft north of Norfolk and Western Railroad near Lake Kilby, 0.5 mi west of Suffolk. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 20 ft, screened 12 to 20 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 35 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.5 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--February 1987 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.44 ft below land-surface datum, Feb. 24, 1987; lowest measured, 10.35 ft below land-surface datum, Nov. 16, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	10.35	JAN 12	6.49	MAR 16	8.70	MAY 03	8.53	JUN 30	9.60	AUG 10	10.30

WATER YEAR 1988 HIGHEST 6.49 JAN 12, 1988 LOWEST 10.35 NOV 16, 1987

364318076365502 Local number, 58B269 SOW 169B.
LOCATION.--Lat 36°43'18", long 76°36'55", Hydrologic Unit 02080202, 500 ft north of Norfolk and Western Railroad near Lake Kilby, 0.5 mi west of Suffolk. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Paleocene age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in., depth 360 ft, screened 350 to 360 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 35 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.4 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--July 1985 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 43.06 ft below land-surface datum, July 8, 1985; lowest measured, 47.80 ft below land-surface datum, Aug. 10, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	46.83	JAN 12	46.72	MAR 16	46.98	MAY 03	47.10	JUN 30	47.50	AUG 10	47.80

WATER YEAR 1988 HIGHEST 46.72 JAN 12, 1988 LOWEST 47.80 AUG 10, 1988

364318076365503 Local number, 58B270 SOW 169C.
LOCATION.--Lat 36°43'18", long 76°36'55", Hydrologic Unit 02080208, 500 ft north of Norfolk and Western Railroad near Lake Kilby, 0.5 mi west of Suffolk. Owner: Virginia Water Control Board.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 500 ft, screened 490 to 500 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 35 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.4 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--July 1985 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 112.59 ft below land-surface datum, Feb. 25, 1986; lowest measured, 131.90 ft below land-surface datum, Jan. 12, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	126.85	JAN 12	129.00	MAR 16	126.68	MAY 03	126.68	JUN 30	124.80	AUG 10	124.75

WATER YEAR 1988 HIGHEST 124.75 AUG 10, 1988 LOWEST 129.00 JAN 12, 1988

CITY OF SUFFOLK--Continued

364317076363501 Local number, 58B271 SOW 169D.
LOCATION.--Lat 36°43'17", long 76°36'35", Hydrologic Unit 02080208, 200 ft south of Norfolk and Western Railroad near Lake Kilby, 0.5 mi west of Suffolk. Owner: Virginia Water Control Board.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 710 ft, screened 501 to 506 ft, 632 to 637 ft, 700 to 710 ft.
INSTRUMENTATION.--Continuous strip-chart recorder.
DATUM.--Elevation of land-surface datum is 29 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.4 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--July 1985 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 107.70 ft below land-surface datum, Feb. 25, 1986; lowest recorded, 147.30 ft below land-surface datum, Dec. 23, 24, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	117.78	120.20	122.22	---	122.60	121.09	118.38	119.09	118.65	118.70	118.73	118.60
10	117.88	120.62	122.30	---	122.31	120.77	119.20	118.99	118.61	118.70	118.69	118.61
15	118.30	121.12	122.64	124.12	121.93	120.60	119.27	118.94	118.65	118.81	118.66	118.69
20	129.09	121.25	122.97	123.86	121.57	120.33	119.24	118.79	118.64	118.63	118.55	128.98
25	119.30	121.70	123.20	123.49	121.40	120.29	119.24	118.70	118.89	118.61	118.57	118.57
EOM	119.82	121.70	123.48	123.19	121.26	120.04	119.21	118.74	118.75	118.63	118.70	118.60

WATER YEAR 1988 HIGHEST 117.58 OCT 07, 1987 LOWEST 129.70 MAY 03, 1988

364319076365501 Local number, 58B272 SOW 169E.
LOCATION.--Lat 36°43'19", long 76°36'55", Hydrologic Unit 02080208, 400 ft south of Norfolk and Western Railroad near Lake Kilby, 0.6 mi west of Suffolk. Owner: Virginia Water Control Board.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 733 ft, screened 498 to 508 ft, 550 to 555 ft, 702 to 712 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 41 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.5 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--July 1985 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 111.54 ft below land-surface datum, Feb. 25, 1986; lowest measured, 139.40 ft below land-surface datum, Jan. 12, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	135.85	JAN 12	139.40	MAR 16	136.22	MAY 03	136.65	JUN 30	134.30	AUG 10	133.70

WATER YEAR 1988 HIGHEST 133.70 AUG 10, 1988 LOWEST 139.40 JAN 12, 1988

364348076363201 Local number, 58B273 SOW 169F.
LOCATION.--Lat 36°43'48", long 76°36'32", Hydrologic Unit 02080208, 100 ft south of U.S. Highway 58 near Lake Kilby, 0.2 mi west of Suffolk. Owner: Virginia Water Control Board.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 661 ft, screened 541 to 546 ft, 567 to 572 ft, 635 to 640 ft.
INSTRUMENTATION.--Continuous strip-chart recorder.
DATUM.--Elevation of land-surface datum is 26 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.2 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--July 1985 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 111.54 ft below land-surface datum, Feb. 25, 1986; lowest recorded, 146.11 ft below land-surface datum, Dec. 24, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	126.73	---	131.70	143.58	131.59	129.77	129.00	127.50	127.07	127.59	127.19	127.15
10	126.90	---	131.60	133.32	131.28	129.41	127.70	127.60	127.12	127.63	127.20	127.14
15	127.39	---	132.03	133.43	130.82	129.27	127.90	127.53	127.11	127.38	127.22	127.19
20	128.33	130.67	132.34	133.08	130.42	129.20	127.90	127.23	127.12	127.04	126.73	127.60
25	---	131.15	132.54	132.64	130.30	129.10	127.98	127.29	127.83	127.12	127.12	127.03
EOM	---	131.13	132.85	132.23	130.10	128.85	127.90	127.26	127.15	127.12	127.24	127.10

WATER YEAR 1988 HIGHEST 122.87 APR 05, 1988 LOWEST 143.58 JAN 05, 1988

CITY OF SUFFOLK--Continued

365055076355301 Local number, 58C 2.
LOCATION.--Lat 36°50'55", long 76°35'53", Hydrologic Unit 02080208, 900 ft northwest of State Highway 603, 0.5 mi south of Oakland. Owner: Scott Saunders.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 4 in., depth 651 ft, screened 638 to 651 ft.
INSTRUMENTATION.--Semiannual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 87 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing. 1.6 ft above land-surface datum.
PERIOD OF RECORD.--August 1970, December 1971 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 117.40 ft below land-surface datum, Aug. 28, 1970; lowest measured, 173.32 ft below land-surface datum, Dec. 16, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	169.25	MAR 07	164.22

WATER YEAR 1988 HIGHEST 164.22 MAR 07, 1988 LOWEST 169.25 NOV 05, 1987

365218076313001 Local number, 58C 8.
LOCATION.--Lat 36°52'18", long 76°31'30", Hydrologic Unit 02080208, 0.5 mi west of Wilkerson Landing, 3.2 mi northeast of Chuckatuck. Owner: G. A. Nimo.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 4 in., depth 562 ft, screened 552 to 562 ft.
INSTRUMENTATION.--Semiannual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 22 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
PERIOD OF RECORD.--August to December 1970, November 1972 to December 1975, January 1978 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 48.40 ft below land-surface datum, Aug. 28, 1970; lowest measured, 94.53 ft below land-surface datum, Dec. 16, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	91.98	MAR 07	93.03

WATER YEAR 1988 HIGHEST 91.98 NOV 05, 1987 LOWEST 93.03 MAR 07, 1988

364512076343701 Local number, 58C 52.
LOCATION.--Lat 36°45'12", long 76°34'37", Hydrologic Unit 02080208, at Virginia Department of Transportation Headquarters, 2,000 ft east of U.S. Highway 460, and 0.8 mi southeast of Elephant Fork. Owner: Virginia Water Control Board.
AQUIFER.--Sand of lower Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 1,688 ft, cased to 1,620 ft, open hole, 1,620 to 1,688 ft.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 10 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.3 ft above land-surface datum.
PERIOD OF RECORD.--October 1984 to current year. Unpublished records available prior to October 1985 in files of the Geological Survey.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.35 ft below land-surface datum, Nov. 2, 1984; lowest measured, 19.22 ft below land-surface datum, Sept. 28, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	14.21	DEC 17	15.13	FEB 19	16.26	APR 26	17.22	JUN 27	18.04	AUG 26	18.84
NOV 18	14.58	JAN 19	15.74	MAR 22	16.76	MAY 27	17.56	JUL 25	18.43	SEP 28	19.22

WATER YEAR 1988 HIGHEST 14.21 OCT 28, 1987 LOWEST 19.22 SEP 28, 1988

CITY OF SUFFOLK--Continued

364512076343702 Local number, 58C 53 SOW 162B.
LOCATION.--Lat 36°45'12", long 76°34'37", Hydrologic Unit 02080208, 750 ft northeast of Virginia Department of Transportation fuel storage area, 2,000 ft east of U.S. Highway 460, and 0.8 mi southeast of Elephant Fork. Owner: Virginia Water Control Board.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in. to 294 ft, diameter 2 in. from 294 to 881 ft, depth 896 ft, screened 881 to 896 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 10 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 3.4 ft above land-surface datum.
PERIOD OF RECORD.--February 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 69.41 ft below land-surface datum, Apr. 24, 1983; lowest recorded, 101.39 ft below land-surface datum, Dec. 20, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	80.10	83.05	85.26	87.18	85.03	83.47	82.25	81.51	81.09	80.99	81.18	81.24
10	80.35	83.52	85.48	86.96	84.61	83.02	82.11	81.38	81.00	80.89	81.20	81.30
15	81.11	84.02	85.66	87.14	84.31	82.92	82.18	81.34	80.98	80.93	81.28	81.32
20	81.73	84.26	86.03	86.54	83.95	82.85	82.03	81.12	80.88	80.96	81.33	81.20
25	82.46	84.77	86.28	85.92	83.70	82.69	81.71	80.98	80.88	80.97	81.33	81.45
EOM	82.79	84.89	86.64	85.54	83.63	82.48	81.60	81.04	80.98	81.14	81.48	81.42

WATER YEAR 1988 HIGHEST 79.56 OCT 06, 07, 1987 LOWEST 87.31 JAN 16, 1988

364512076343705 Local number, 58C 56 SOW 162D.
LOCATION.--Lat 36°45'12", long 76°34'37", Hydrologic Unit 02080208, 750 ft northeast of Virginia Department of Transportation fuel storage area, 2,000 ft east of U.S. Highway 460, and 0.8 mi southeast of Elephant Fork. Owner: Virginia Water Control Board.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 567 ft, screened 557 to 567 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 10 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 3.35 ft above land-surface datum.
PERIOD OF RECORD.--February 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 77.24 ft below land-surface datum, Oct. 1, 1984; lowest measured, 104.14 ft below land-surface datum, Dec. 23, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	91.06	94.00	96.55	98.15	96.48	94.52	92.43	92.04	91.73	91.89	---	---
10	91.19	94.54	96.82	98.39	96.01	94.00	92.54	92.01	91.68	91.82	---	---
15	91.92	95.07	96.98	98.71	95.63	93.78	92.76	91.99	91.75	92.05	92.30	---
20	92.49	95.46	97.44	98.25	95.15	93.67	92.50	91.78	91.73	91.88	92.03	---
25	93.14	95.99	97.66	97.57	94.83	93.52	92.36	91.70	91.87	91.94	---	---
EOM	93.65	96.15	98.00	97.12	94.72	93.29	92.24	91.71	91.84	92.25	---	92.03

WATER YEAR 1988 HIGHEST 90.39 OCT 07, 1987 LOWEST 98.72 JAN 14, 1988

365133076351201 Local number, 58C 57 SOW 141A.
LOCATION.--Lat 36°51'33", long 76°35'12", Hydrologic Unit 02080208, 500 ft west of old Chuckatuck High School in Chuckatuck. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Miocene-Pliocene age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 122 ft, screened 112 to 122 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 52 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.5 ft above land-surface datum prior to Jan. 12, 1988; 1.0 ft thereafter.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--February 1980 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.86 ft below land-surface datum, Apr. 18, 1983; lowest measured, 11.65 ft below land-surface datum, Nov. 26, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 17	11.52	JAN 12	10.50	MAR 15	9.75	MAY 02	9.95	JUN 29	9.55	AUG 09	9.90

WATER YEAR 1988 HIGHEST 9.55 JUN 29, 1988 LOWEST 11.52 NOV 17, 1987

CITY OF SUFFOLK--Continued

365133076351202 Local number, 58C 58 SOW 141B.
LOCATION.--Lat 36°51'33", long 76°35'12", Hydrologic Unit 02080208, 500 ft west of old Chuckatuck High School in Chuckatuck. Owner: Virginia Water Control Board.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 605 ft, screened 595 to 605 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 52 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.5 ft above land-surface datum prior to Jan. 12, 1988; 1.5 ft thereafter.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--April 1980 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 108.60 ft below land-surface datum, Apr. 24, 1980; lowest measured, 142.67 ft below land-surface datum, Jan. 12, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 17	137.95	JAN 12	142.67	MAR 15	128.00	MAY 02	126.15	JUN 29	124.90	AUG 09	131.54

WATER YEAR 1988 HIGHEST 124.90 JUN 29, 1988 LOWEST 142.67 JAN 12, 1988

365133076351203 Local number, 58C 59 SOW 141C.
LOCATION.--Lat 36°51'33", long 76°35'12", Hydrologic Unit 02080208, 500 ft west of old Chuckatuck High School in Chuckatuck. Owner: Virginia Water Control Board.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 447 ft, screened 437 to 447 ft.
INSTRUMENTATION.--Continuous strip-chart recorder.
DATUM.--Elevation of land-surface datum is 52 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.5 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--April 1980 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 108.80 ft below land-surface datum, June 30, 1980; lowest recorded, 145.32 ft below land-surface datum, Jan. 15, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	129.26	136.03	142.22	144.75	---	132.67	130.50	128.90	127.97	128.16	130.20	132.46
10	129.51	136.70	142.71	145.20	136.05	132.10	130.09	128.69	127.80	128.92	130.38	132.16
15	131.01	139.36	143.06	145.32	134.83	131.69	129.70	128.60	127.97	129.80	130.39	132.04
20	132.37	140.20	143.64	---	134.17	131.39	129.52	128.29	127.98	130.36	130.15	131.90
25	133.47	141.32	144.02	---	133.75	131.28	129.41	128.20	128.00	130.69	131.20	131.42
EOM	134.30	141.22	144.37	---	132.98	130.93	129.20	128.00	129.05	129.90	132.72	130.53

WATER YEAR 1988 HIGHEST 127.69 JUN 10, 1988 LOWEST 145.32 JAN 15, 1988

364731076355501 Local number, 58C 61 SOW 159A.
LOCATION.--Lat 36°47'31", long 76°35'55", Hydrologic Unit 02080208, 0.5 mi northwest of intersection of State Highways 622 and 634, 2.3 mi northwest of Elephant Fork. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 25 ft, screened 20 to 25 ft, sounded to 17.50 ft on July 8, 1985.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 40 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.85 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board. Well reported dry several days in 1985-88.
PERIOD OF RECORD.--June 1981 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.95 ft below land-surface datum, Apr. 19, 1984; lowest measured, 16.05 ft below land-surface datum, Nov. 18, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	*DRY	MAR 14	*DRY	JUN 29	*DRY	AUG 09	*DRY
JAN 12	15.27	MAY 02	*DRY				

* See REMARKS paragraph.

WATER YEAR 1988 HIGHEST 15.27 JAN 12, 1988 LOWEST *WELL DRY SEVERAL DAYS DURING YEAR.

CITY OF SUFFOLK--Continued

364731076355502 Local number, 58C 62 SOW 159B.
LOCATION.--Lat 36°47'31", long 76°35'55", Hydrologic Unit 02080208, 0.5 mi northwest of intersection of State Highways 622 and 634, 2.3 mi northwest of Elephant Fork. Owner: Virginia Water Control Board.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 2 in., depth 575 ft, screened 555 to 575 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 40 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.6 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--June 1981 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 129.90 ft below land-surface datum, Aug. 28, 1984; lowest measured, 159.63 ft below land-surface datum, Jan. 13, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	153.51	JAN 12	158.25	MAR 14	144.70	MAY 02	142.50	JUN 29	141.85	AUG 09	142.90

WATER YEAR 1988 HIGHEST 141.85 JUN 29, 1988 LOWEST 158.25 JAN 12, 1988

364731076355503 Local number, 58C 63 SOW 159C.
LOCATION.--Lat 36°47'31", long 76°35'55", Hydrologic Unit 02080208, 0.5 mi northwest of intersection of State Highways 622 and 634, 2.3 mi northwest of Elephant Fork. Owner: Virginia Water Control Board.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 2 in., depth 650 ft, screened 630 to 650 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 40 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.6 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--October 1981 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 127.75 ft below land-surface datum, Dec. 23, 1981; lowest measured, 158.33 ft below land-surface datum, Jan. 13, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	153.20	JAN 12	157.60	MAR 14	143.30	MAY 02	141.30	JUN 29	140.30	AUG 09	141.45

WATER YEAR 1988 HIGHEST 140.30 JUN 29, 1988 LOWEST 157.60 JAN 12, 1988

SURRY COUNTY

370408076460101 Local number, 56E 1.
LOCATION.--Lat 37°04'08", long 76°40'01", Hydrologic Unit 03010202, off State Highway 617, 3.2 mi southwest of Bacons Castle. Owner: Buster E. Cox.
AQUIFER.--Sands of middle and upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 18 in. to 360 ft, 8 in. from 333.5 to 705 ft, depth 705 ft, screened 401 to 411 ft, 431 to 441 ft, 463 to 473 ft, 495 to 505 ft, 540 to 555 ft, 700 to 705 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 93 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top edge of recorder shelf, 3.6 ft above land-surface datum.
PERIOD OF RECORD.--March 1942, April 1969 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 73.52 ft below land-surface datum, Mar. 10, 1942; lowest recorded, 155.73 ft below land-surface datum, Sept. 30, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	154.22	154.31	154.21	154.19	154.27	154.32	154.11	153.91	153.94	154.60	155.04	155.29
10	154.33	154.35	154.21	154.20	154.32	154.17	154.06	153.88	154.03	154.65	155.17	155.39
15	154.34	154.37	154.21	154.26	154.19	154.19	153.97	153.92	154.17	154.79	155.26	155.54
20	154.28	154.26	154.21	154.16	154.13	154.19	153.89	153.89	154.23	154.77	155.32	155.54
25	154.34	154.38	154.20	154.18	154.27	154.23	153.95	153.84	154.37	154.82	155.36	155.64
EOM	154.39	154.10	154.24	154.33	154.28	154.19	153.97	153.95	154.35	154.88	155.41	155.73

WATER YEAR 1988 HIGHEST 153.72 MAY 22, 1988 LOWEST 155.73 SEP 30, 1988

370800076500701 Local number, 56F 2 SOW 039.
LOCATION.--Lat 37°08'00", long 76°50'07", Hydrologic Unit 02080206, off State Highway 10, at Surry County Administration building in Surry. Owner: Town of Surry.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 367 ft, screened 350 to 362 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 122 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.1 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--December 1970 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 146.53 ft below land-surface datum, Mar. 1, 1971; lowest measured, 177.96 ft below land-surface datum, Aug. 9, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	177.35	JAN 11	177.00	MAR 16	176.88	MAY 02	176.67	JUN 28	177.12	AUG 09	177.96
16	176.58	MAR 07	176.81								

WATER YEAR 1988 HIGHEST 176.58 NOV 16, 1987 LOWEST 177.96 AUG 09, 1988

370712076413201 Local number, 57E 11 SOW 094A.
LOCATION.--Lat 37°07'12", long 76°41'32", Hydrologic Unit 02080206, 0.5 mi east of State Highway 690, 2.5 mi northwest of Bacons Castle. Owner: Virginia Water Control Board.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 605 ft, screened 595 to 605 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 45 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--July 1978 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 92.19 ft below land-surface datum, July 24, 1980; lowest measured, 108.75 ft below land-surface datum, Aug. 9, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	107.25	JAN 11	106.45	MAR 16	105.70	MAY 02	106.75	JUN 28	107.50	AUG 09	108.75

WATER YEAR 1988 HIGHEST 105.70 MAR 16, 1988 LOWEST 108.75 AUG 09, 1988

370712076413202 Local number, 57E 12 SOW 094B.
LOCATION.--Lat 37°07'12", long 76°41'32", Hydrologic Unit 02080206, 0.5 mi east of State Highway 690, 2.5 mi northwest of Bacons Castle. Owner: Virginia Water Control Board.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in. to 430 ft, diameter 3 in. from 430 to 440 ft, depth 440 ft, screened 430 to 440 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 45 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--July 1978 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 92.90 ft below land-surface datum, May 29, 1980; lowest measured, 109.65 ft below land-surface datum, Aug. 9, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	107.78	JAN 11	107.00	MAR 16	106.05	MAY 02	106.06	JUN 28	108.20	AUG 09	109.65

WATER YEAR 1988 HIGHEST 106.05 MAR 16, 1988 LOWEST 109.65 AUG 09, 1988

SURRY COUNTY--Continued

370712076413203 Local number, 57E 13 SOW 094C.
LOCATION.--Lat 37°07'12", long 76°41'32", Hydrologic Unit 02080206, 0.5 mi east of State Highway 690, 2.5 mi northwest of Bacons Castle. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Miocene-Pliocene age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in. to 41 ft, diameter 3 in. from 41 to 46 ft, depth 46 ft, screened 41 to 46 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 45 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.6 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--July 1978 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.90 ft below land-surface datum, May 29, 1980; lowest measured, 11.17 ft below land-surface datum, Dec. 13, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	10.59	JAN 11	8.25	MAR 16	7.90	MAY 02	8.15	JUN 28	7.95	AUG 09	9.02

WATER YEAR 1988 HIGHEST 7.90 MAR 16, 1988 LOWEST 10.59 NOV 16, 1987

371132076405501 Local number, 57F 16 SOW 087A.
LOCATION.--Lat 37°11'32", long 76°40'55", Hydrologic Unit 02080206, at the end of State Highway 650 in Homewood, 7.6 mi northeast of Bacons Castle. Owner: Virginia State Water Control Board.
AQUIFER.--Sand of lower Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in., depth 1,206 ft, screened 1,170 to 1,185 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 5 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.5 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--July 1978 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 53.22 ft below land-surface datum, July 20, 1978; lowest measured, 70.74 ft below land-surface datum, Aug. 9, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	70.25	JAN 11	69.95	MAR 16	69.50	MAY 02	68.86	JUN 28	69.41	AUG 09	70.74
16	70.35	MAR 08	69.34								

WATER YEAR 1988 HIGHEST 68.86 MAY 02, 1988 LOWEST 70.74 AUG 09, 1988

371132076405502 Local number, 57F 24 SOW 087B.
LOCATION.--Lat 37°11'32", long 76°40'55", Hydrologic Unit 02080206, at the end of State Highway 650 in Homewood. 7.6 mi northeast of Bacons Castle. Owner: Virginia Water Control Board.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in., depth 520 ft, screened 510 to 520 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 5 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--July 1978 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 62.17 ft below land-surface datum, Aug. 17, 1982; lowest measured, 81.30 ft below land-surface datum, Aug. 9, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	78.21	JAN 11	75.65	MAR 16	74.20	MAY 02	74.16	JUN 28	79.66	AUG 09	81.30
16	77.84	MAR 08	73.07								

WATER YEAR 1988 HIGHEST 73.07 MAR 08, 1988 LOWEST 81.30 AUG 09, 1988

SUSSEX COUNTY

365843077090201 Local number, 53D 3 SOW 048.
LOCATION.--Lat 36°58'43", long 77°09'02", Hydrologic Unit 03010201, off State Highway 40, 2.4 mi northeast of Homeville, and 5.5 mi south of Waverly. Owner: Virginia Water Control Board.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 6 in., depth 554 ft, screened 279 to 284 ft, 358 to 363 ft, 439 to 444 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 90 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.6 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--August 1971 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 72.39 ft below land-surface datum, May 15, 1972; lowest measured, 85.91 ft below land-surface datum, Sept. 20, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	85.43	JAN 13	85.38	MAR 09	85.03	JUN 20	85.00	JUL 26	85.50	SEP 20	85.91
NOV 12	83.80	MAR 08	85.00	MAY 02	84.85						

WATER YEAR 1988 HIGHEST 83.80 NOV 12, 1987 LOWEST 85.91 SEP 20, 1988

365530077104002 Local number, 53D 6 SOW 179A
LOCATION.--Lat 36°55'30", long 77°10'40", Hydrologic Unit 03010201, off State Highway 634, 1.4 mi south of State Highway 35, and 1.7 mi southeast of Homeville. Owner: Virginia Water Control Board.
AQUIFER.--Sand of lower Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 470 ft, screened 460 to 470 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch--prior to Mar. 3, 1988; semiannual measurement with chalked tape by USGS personnel thereafter.
DATUM.--Elevation of land-surface datum is 90 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
PERIOD OF RECORD.--November 1985 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 78.50 ft below land-surface datum, Feb. 12, 1988; lowest recorded, 84.39 ft below land-surface datum, Nov. 25, 26, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	83.98	84.23	84.23	84.05	83.63	-----	-----	-----	-----	-----	-----	-----
10	84.05	84.33	84.30	83.99	83.55	-----	-----	-----	-----	-----	-----	-----
15	84.09	84.32	84.26	84.01	83.42	-----	-----	-----	-----	-----	-----	-----
20	84.12	84.31	84.22	83.89	83.30	-----	-----	-----	-----	-----	-----	-----
25	84.22	84.39	84.22	83.77	83.24	-----	-----	-----	-----	-----	-----	-----
EOM	84.29	84.22	84.18	83.81	83.20	-----	-----	-----	-----	-----	-----	-----

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, MARCH 03 TO SEPTEMBER 30, 1988

DATE	WATER LEVEL
MAR 03	83.14
09	82.93

WATER YEAR 1988 HIGHEST 78.50 FEB 12, 1988 LOWEST 84.39 NOV 25, 26, 1987

365530077104003 Local number, 53D 7 SOW 179B.
LOCATION.--Lat 36°55'30", long 77°10'40", Hydrologic Unit 03010201, off State Highway 634, 1.4 mi south of State Highway 35, and 1.7 mi southeast of Homeville. Owner: Virginia Water Control Board.
AQUIFER.--Sand of lower Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in. to 398 ft, diameter 2 in. from 394 to 415 ft, depth 425 ft, screened 415 to 425 ft.
INSTRUMENTATION.--Annual measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 90 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.5 ft above land-surface datum.
PERIOD OF RECORD.--December 1985 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 79.47 ft below land-surface datum, Dec. 17, 1985; lowest measured, 82.42 ft below land-surface datum, Aug. 31, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL
MAR 09	81.79

SUSSEX COUNTY--Continued

365530077104004 Local number, 53D 8 SOW 179C.
LOCATION.--Lat 36°55'30", long 77°10'40", Hydrologic Unit 03010201, off State Highway 634, 1.4 mi south of State Highway 35, and 1.7 mi southeast of Homeville. Owner: Virginia Water Control Board.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4.5 in. to 256 ft, diameter 2 in. from 249 to 270 ft, depth 280 ft, screened 270 to 280 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch--prior to Mar. 3, 1988; annual measurement with chalked tape by USGS personnel thereafter.
DATUM.--Elevation of land-surface datum is 90 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.4 ft above land-surface datum.
PERIOD OF RECORD.--December 1986 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 78.79 ft below land-surface datum, Apr. 18, 1987; lowest recorded, 82.95 ft below land-surface datum, Nov. 25, 26, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	82.63	82.78	82.76	82.60	82.05	-----	-----	-----	-----	-----	-----	-----
10	82.66	82.89	82.89	82.53	82.05	-----	-----	-----	-----	-----	-----	-----
15	82.78	82.87	82.81	82.51	81.69	-----	-----	-----	-----	-----	-----	-----
20	-----	82.89	82.78	82.35	81.68	-----	-----	-----	-----	-----	-----	-----
25	-----	82.95	82.77	82.28	81.73	-----	-----	-----	-----	-----	-----	-----
EOM	82.85	82.85	82.67	82.25	81.69	-----	-----	-----	-----	-----	-----	-----

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, MARCH 03 TO SEPTEMBER 30, 1988

DATE	WATER LEVEL
MAR 08	81.41

WATER YEAR 1988 HIGHEST 81.41 MAR 08, 1988 LOWEST 82.95 NOV 25, 26, 1987

365530077104005 Local number, 53D 9 SOW 179D.
LOCATION.--Lat 36°55'30", long 77°10'40", Hydrologic Unit 03010201, off State Highway 634, 1.4 mi south of State Highway 35, and 1.7 mi southeast of Homeville. Owner: Virginia Water Control Board.
AQUIFER.--Sand of middle Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4.5 in. to 185 ft, diameter 2 in. from 178 to 199 ft, depth 209 ft, screened 199 to 209 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch--prior to Mar. 2, 1988; annual measurement with chalked tape by USGS personnel thereafter.
DATUM.--Elevation of land-surface datum is 90 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.1 ft above land-surface datum.
PERIOD OF RECORD.--December 1986 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 76.51 ft below land-surface datum, Apr. 17, 1987; lowest recorded, 82.56 ft below land-surface datum, Nov. 25, 26, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	82.19	82.47	82.37	82.12	81.62	-----	-----	-----	-----	-----	-----	-----
10	82.26	82.53	82.44	82.02	81.48	-----	-----	-----	-----	-----	-----	-----
15	82.30	82.52	82.39	81.98	81.26	-----	-----	-----	-----	-----	-----	-----
20	82.33	82.49	82.31	81.93	81.13	-----	-----	-----	-----	-----	-----	-----
25	82.43	82.56	82.29	81.82	81.12	-----	-----	-----	-----	-----	-----	-----
EOM	82.51	82.40	82.25	81.77	81.11	-----	-----	-----	-----	-----	-----	-----

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, MARCH 02 TO SEPTEMBER 30, 1988

DATE	WATER LEVEL
MAR 03	81.00

WATER YEAR 1988 HIGHEST 80.09 FEB 12, 1988 LOWEST 82.56 NOV 25, 26, 1987

365530077104006 Local number, 53D 10 SOW 179E.
LOCATION.--Lat 36°55'30", long 77°10'40", Hydrologic Unit 03010201, off State Highway 634, 1.4 mi south of State Highway 35, and 1.7 mi southeast of Homeville. Owner: Virginia Water Control Board.
AQUIFER.--Sand of upper Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4.5 in. to 130 ft, diameter 4 in. from 140 to 145 ft, depth 145 ft, screened 130 to 140 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch--prior to Mar. 2, 1988; annual measurement with chalked tape by USGS personnel thereafter.
DATUM.--Elevation of land-surface datum is 90 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.3 ft above land-surface datum.
PERIOD OF RECORD.--December 1985 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 76.25 ft below land-surface datum, Apr. 24, 1987; lowest recorded, 80.65 ft below land-surface datum, Nov. 25, 1987.

SUSSEX COUNTY--Continued

365530077104006 Local number, 53D 10 SOW 179E--Continued

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	80.29	80.59	80.46	80.10	79.55	-----	-----	-----	-----	-----	-----	-----
10	80.35	80.64	80.49	80.00	79.41	-----	-----	-----	-----	-----	-----	-----
15	80.41	80.62	80.45	80.01	79.18	-----	-----	-----	-----	-----	-----	-----
20	80.45	80.58	80.32	79.92	79.00	-----	-----	-----	-----	-----	-----	-----
25	80.55	80.65	80.31	79.77	79.03	-----	-----	-----	-----	-----	-----	-----
EOM	80.62	80.48	80.26	79.70	79.05	-----	-----	-----	-----	-----	-----	-----

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, MARCH 02 TO SEPTEMBER 30, 1988

DATE	WATER LEVEL
MAR 09	78.88

WATER YEAR 1988 HIGHEST 78.88 MAR 9, 1988 LOWEST 80.65 NOV 25, 1987

365530077104007 Local number, 53D 11 SOW 179F.
LOCATION.--Lat 36°55'30", long 77°10'40", Hydrologic Unit 03010201, off State Highway 634, 1.4 mi south of State Highway 35, and 1.7 mi southeast of Homeville. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Paleocene age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4.5 in. to 82 ft, diameter 4 in. from 92 to 97 ft, depth 97 ft, screened 82 to 92 ft.
INSTRUMENTION.--Digital recorder--60-minute punch--prior to Mar. 3, 1988; annual measurement with chalked tape by USGS personnel thereafter.
DATUM.--Elevation of land-surface datum is 90 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
PERIOD OF RECORD.--December 1985 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 70.60 ft below land-surface datum, Apr. 20, 1987; lowest recorded, 77.16 ft below land-surface datum, Nov. 28-30, Dec. 1, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	76.52	76.93	77.12	76.85	76.23	-----	-----	-----	-----	-----	-----	-----
10	76.57	76.94	77.10	76.79	76.08	-----	-----	-----	-----	-----	-----	-----
15	76.63	76.97	77.06	76.76	75.82	-----	-----	-----	-----	-----	-----	-----
20	76.71	77.10	77.00	76.76	75.48	-----	-----	-----	-----	-----	-----	-----
25	76.81	77.13	76.95	76.75	75.33	-----	-----	-----	-----	-----	-----	-----
EOM	76.87	77.16	76.91	76.32	75.28	-----	-----	-----	-----	-----	-----	-----

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, MARCH 03 TO SEPTEMBER 30, 1988

DATE	WATER LEVEL
MAR 09	75.21

WATER YEAR 1988 HIGHEST 75.00 FEB 22, 1988 LOWEST 77.16 NOV 28-30, Dec. 01, 1987

365530077104008 Local number, 53D 12 SOW 179G.
LOCATION.--Lat 36°55'30", long 77°10'40", Hydrologic Unit 03010201, off State Highway 634, 1.4 mi south of State Highway 35, and 1.7 mi south of Homeville. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Miocene-Pliocene age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4.5 in. to 47 ft, diameter 4 in. from 57 to 67 ft, depth 67 ft, screened 47 to 57 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch--prior to Jan. 3, 1988; annual measurement with chalked tape by USGS personnel thereafter.
DATUM.--Elevation of land-surface datum is 90 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
PERIOD OF RECORD.--December 1985 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 11.46 ft below land-surface datum, Apr. 29, 1987; lowest recorded, 27.09 ft below land-surface datum, Nov. 25-27, 1987.

SUSSEX COUNTY--Continued

365530077104008 Local number, 53D 12 SOW 179G--Continued

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	-----	26.89	26.91	-----	-----	-----	-----	-----	-----	-----	-----	-----
10	-----	27.01	26.86	-----	-----	-----	-----	-----	-----	-----	-----	-----
15	-----	27.04	26.72	-----	-----	-----	-----	-----	-----	-----	-----	-----
20	-----	27.02	26.50	-----	-----	-----	-----	-----	-----	-----	-----	-----
25	-----	27.09	26.42	-----	-----	-----	-----	-----	-----	-----	-----	-----
EOM	26.76	26.93	26.14	-----	-----	-----	-----	-----	-----	-----	-----	-----

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, JANUARY 03 TO SEPTEMBER 30, 1988

DATE	WATER LEVEL
MAR 09	21.32

WATER YEAR 1988 HIGHEST 21.32 MAR 09, 1988 LOWEST 27.09 NOV 25-27, 1987

365235077150501 Local number, 53E 5 SOW 045.
LOCATION.--Lat 37°02'37", long 77°11'30", Hydrologic Unit 03010201, 400 ft northeast of State Highway 625, 2.5 mi north of Newville. Owner: Butler Lumber Company.
AQUIFER.--Sand of Paleocene age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in., depth 172 ft, screened 162 to 172 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 126.65 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.3 ft above land-surface datum prior to Mar. 8, 1988; 1.2 ft thereafter.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--September 1971, October 1974 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 81.90 ft below land-surface datum, Mar. 16, 1976; lowest measured, 91.28 ft below land-surface datum, Sept. 20, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	90.71	JAN 13	90.60	MAR 09	89.62	JUN 20	89.45	JUL 26	90.50	SEP 20	91.28
NOV 12	90.80	MAR 08	89.75	MAY 02	89.60						

WATER YEAR 1988 HIGHEST 89.45 JUN 20, 1988 LOWEST 91.28 SEP 20, 1988

CITY OF VIRGINIA BEACH

364920076093201 Local number, 61C 27 SOW 174A.
LOCATION.--Lat 36°49'20", long 76°09'32", Hydrologic Unit 02080208, at Kempsville High School in Virginia Beach. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Miocene-Pliocene age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 3 in., depth 175 ft, screened 160 to 170 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 15 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.8 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--April 1984 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.09 ft below land-surface datum, Apr. 25, 1984; lowest measured, 11.73 ft below land-surface datum, Aug. 6, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 19	10.22	JAN 13	9.00	MAR 15	8.40	MAY 10	7.47	JUN 21	7.73	AUG 03	9.75

WATER YEAR 1988 HIGHEST 7.47 MAY 10, 1988 LOWEST 10.22 NOV 19, 1987

CITY OF VIRGINIA BEACH--Continued

364920076093202 Local number, 61C 28 SOW 174B.
LOCATION.--Lat 36°49'20", long 76°09'32", Hydrologic Unit 02080208, at Kempsville High School in Virginia Beach. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 3 in., depth 80 ft, screened 65 to 75 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 15 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.2 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--April 1984 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.51 ft below land-surface datum, Apr. 25, 1984; lowest measured, 17.99 ft below land-surface datum, July 18, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 19	10.12	JAN 13	10.92	MAR 15	9.30	MAY 10	9.70	JUN 21	12.58	AUG 03	12.30

WATER YEAR 1988 HIGHEST 9.30 MAR 15, 1988 LOWEST 12.58 JUN 21, 1988

364837076092001 Local number, 61C 29 SOW 175.
LOCATION.--Lat 36°48'37", long 76°09'20", Hydrologic Unit 02080208, at Providence Elementary School in Virginia Beach. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 3 in., depth 105 ft, screened 90 to 100 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 15 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.1 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--April 1984 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.17 ft below land-surface datum, Apr. 25, 1984; lowest measured, 13.09 ft below land-surface datum, July 18, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 19	8.95	JAN 13	8.87	MAR 15	7.95	MAY 10	6.60	JUN 21	8.85	AUG 03	9.94

WATER YEAR 1988 HIGHEST 6.60 MAY 10, 1988 LOWEST 9.94 AUG 03, 1988

365327076080501 Local number, 61D 6 SOW 124.
LOCATION.--Lat 36°53'27", long 76°08'05", Hydrologic Unit 02080108, at Thoroughgood School in Virginia Beach. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 8 in. to 25 ft, diameter 6 in. from 25 to 40 ft, depth 40 ft, screened 25 to 30 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 25 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.8 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--April 1978 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.85 ft below land-surface datum, Apr. 27, 1984; lowest measured, 10.72 ft below land-surface datum, Nov. 12, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 19	10.52	JAN 19	9.72	MAR 15	9.45	APR 27	9.32	JUN 20	9.05	AUG 04	9.52

WATER YEAR 1988 HIGHEST 9.05 JUN 20, 1988 LOWEST 10.52 NOV 19, 1987

CITY OF VIRGINIA BEACH--Continued

363537076061001 Local number, 62A 2 SOW 097A.
LOCATION.--Lat 36°33'54", long 76°06'14", Hydrologic Unit 03010205, 0.2 mi south of Baum Road, 0.25 mi west of Crags Causeway in Virginia Beach. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 76 ft, screened 66 to 76 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 10 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.5 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--July 1979 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.18 ft below land-surface datum, Apr. 30, 1980; lowest measured, 6.68 ft below land-surface datum, Nov. 28, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 18	6.36	JAN 13	5.35	MAR 02	3.64	APR 27	2.92	JUN 21	3.30	AUG 03	3.50

WATER YEAR 1988 HIGHEST 2.92 APR 27, 1988 LOWEST 6.36 NOV 18, 1987

363537076061002 Local number, 62A 3 SOW 097B.
LOCATION.--Lat 36°33'54", long 76°06'14", Hydrologic Unit 03010205, 0.2 mi south of Baum Road, 0.25 mi west of Crags Causeway in Virginia Beach. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 24 ft, screened 20 to 24 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 10 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.5 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--July 1979 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.59 ft below land-surface datum, Feb. 16, 1983; lowest measured, 6.50 ft below land-surface datum, Oct. 17, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 18	6.34	JAN 13	1.20	MAR 02	1.78	APR 27	0.90	JUN 21	0.65	AUG 03	4.60

WATER YEAR 1988 HIGHEST 0.65 JUN 21, 1988 LOWEST 6.34 NOV 18, 1987

364126076003501 Local number, 62B 1 SOW 098A.
LOCATION.--Lat 36°41'26", long 76°00'35", Hydrologic Unit 03010205, on north side of Pleasant Ridge Road at the Virginia Department of Transportation shop, 0.9 mi east of Pleasant Ridge in Virginia Beach. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 24 ft, screened 20 to 24 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 10 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.8 ft above land-surface datum prior to Mar. 2, 1988; 1.05 ft thereafter.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--June 1979 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.60 ft below land-surface datum, Feb. 26, 1987, Jan. 13, 1988; lowest measured, 11.95 ft below land-surface datum, Sept. 16, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 18	5.30	JAN 13	1.60	MAR 02	2.40	APR 27	2.47	JUN 21	2.90	AUG 03	3.41

WATER YEAR 1988 HIGHEST 1.60 JAN 13, 1988 LOWEST 5.30 NOV 18, 1987

CITY OF VIRGINIA BEACH--Continued

364126076003502 Local number, 62B 2 SOW 098B.
LOCATION.--Lat 36°41'26", long 76°00'35", Hydrologic Unit 03010205, on north side of Pleasant Ridge Road at the Virginia Department of Transportation shop, 0.9 mi east of Pleasant Ridge in Virginia Beach. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 98 ft, screened 88 to 98 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 10 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.8 ft above land-surface datum prior to Mar. 2, 1988; 1.2 ft thereafter.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--June 1979 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.50 ft below land-surface datum, Mar. 2, 1988; lowest measured, 11.76 ft below land-surface datum, Sept. 16, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 18	5.54	JAN 13	2.70	MAR 02	2.50	APR 27	2.56	JUN 21	3.15	AUG 03	3.49

WATER YEAR 1988 HIGHEST 2.50 MAR 02, 1988 LOWEST 5.54 NOV 18, 1987

364715076030801 Local number, 62C 3 SOW 092B.
LOCATION.--Lat 36°47'15", long 76°03'08", Hydrologic Unit 03010205, at entrance to Oceana Naval Air Station on London Bridge Road in Virginia Beach. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 58 ft, screened 53 to 58 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 14 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.05 ft above land-surface datum prior to Mar. 2, 1988; 0.9 ft thereafter.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--February 1978 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.36 ft below land-surface datum, Feb. 16, 1983; lowest measured, 11.07 ft below land-surface datum, Aug. 6, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 19	10.63	JAN 13	7.88	MAR 02	6.80	APR 27	6.20	JUN 20	7.90	AUG 03	9.00

WATER YEAR 1988 HIGHEST 6.20 APR 27, 1988 LOWEST 10.63 NOV 19, 1987

364711076060001 Local number, 62C 4 SOW 083.
LOCATION.--Lat 36°47'11", long 76°06'00", Hydrologic Unit 03010205, 0.3 mi northeast of State Highway 165, 3.5 mi northwest of Princess Anne, and in Virginia Beach. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Miocene-Pliocene age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 149 ft, screened 118 to 128 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 13 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.8 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--March 1978 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.10 ft below land-surface datum, Feb. 20, 1980; lowest measured, 14.87 ft below land-surface datum, July 17, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	12.33	JAN 13	10.96	MAR 08	9.80	APR 27	9.76	JUN 21	9.85	AUG 03	12.10
19	12.05	MAR 02	9.90								

WATER YEAR 1988 HIGHEST 9.76 APR 27, 1988 LOWEST 12.33 NOV 04, 1987

CITY OF VIRGINIA BEACH--Continued

364504076031301 Local number, 62C 5 SOW 093.
LOCATION.--Lat 36°45'04", long 76°03'13", Hydrologic Unit 03010205, 200 ft southeast of intersection of State Highways 149 and 165 in Princess Anne, in Virginia Beach. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 65 ft, screened 60 to 65 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 7 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.91 ft above land-surface datum prior to Mar. 2, 1988; 0.6 ft thereafter.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--February 1978 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.84 ft below land-surface datum, Feb. 8, 1978; lowest measured, 7.88 ft below land-surface datum, Nov. 12, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 19	6.00	JAN 13	5.78	MAR 02	5.24	APR 27	5.15	JUN 21	5.60	AUG 03	7.50

WATER YEAR 1988 HIGHEST 5.15 APR 27, 1988 LOWEST 7.50 AUG 03, 1988

365158076030401 Local number, 62C 6 SOW 125.
LOCATION.--Lat 36°51'58", long 76°03'04", Hydrologic Unit 02080108, at Trantwood Elementary School in Virginia Beach. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 57 ft, screened 52 to 57 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 15 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.1 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--April 1978 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.86 ft below land-surface datum, Feb. 28, 1979; lowest measured, 11.19 ft below land-surface datum, July 17, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 19	10.28	JAN 19	9.55	MAR 15	9.15	APR 27	8.88	JUN 20	9.00	AUG 04	9.38

WATER YEAR 1988 HIGHEST 8.88 APR 27, 1988 LOWEST 10.28 NOV 19, 1987

364906076043901 Local number, 62C 7 SOW 126.
LOCATION.--Lat 36°49'06", long 76°04'39", Hydrologic Unit 02080108, at Plaza Elementary School in Virginia Beach. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 6 in., depth 67 ft, screened 55 to 60 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 5 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.1 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--April 1978 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.84 ft below land-surface datum, Feb. 16, 1983; lowest measured, 7.32 ft below land-surface datum, July 17, 1986, Nov. 19, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 19	7.32	JAN 13	5.03	MAR 15	4.30	APR 27	4.10	JUN 20	5.22	AUG 03	6.20

WATER YEAR 1988 HIGHEST 4.10 APR 27, 1988 LOWEST 7.32 NOV 19, 1987

CITY OF VIRGINIA BEACH--Continued

364745076004301 Local number, 62C 9 SOW 172A.
LOCATION.--Lat 36°47'45", long 76°00'43", Hydrologic Unit 03010205, at the end of Phantom Boulevard, 0.25 mi south of Harpers Road and Oceana Naval Air Station in Virginia Beach. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Miocene-Pliocene age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 3 in., depth 170 ft, screened 155 to 165 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 17 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.6 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--April 1984 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.46 ft below land-surface datum, Apr. 25, 1984; lowest measured, 12.37 ft below land-surface datum, Aug. 6, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 19	11.13	JAN 13	10.15	MAR 02	9.28	APR 27	8.92	JUN 20	9.78	AUG 03	11.30

WATER YEAR 1988 HIGHEST 8.92 APR 27, 1988 LOWEST 11.30 AUG 03, 1988

364745076004302 Local number, 62C 10 SOW 172B.
LOCATION.--Lat 36°47'45", long 76°00'43", Hydrologic Unit 03010205, at the end of Phantom Boulevard, 0.25 mi south of Harpers Road and Oceana Naval Air Station in Virginia Beach. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Miocene-Pliocene age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 3 in., depth 280 ft, screened 270 to 280 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 7 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.8 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--April 1984 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.98 ft below land-surface datum, Apr. 25, 1984; lowest measured, 12.75 ft below land-surface datum, Aug. 6, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 19	11.14	JAN 13	10.47	MAR 02	9.56	APR 27	9.37	JUN 20	10.22	AUG 03	11.80

WATER YEAR 1988 HIGHEST 9.37 APR 27, 1988 LOWEST 11.80 AUG 03, 1988

364613075583201 Local number, 63C 2 SOW 100B.
LOCATION.--Lat 36°46'13", long 75°58'32", Hydrologic Unit 03010205, at Hampton Roads Sanitary District sludge disposal site off Old Dam Neck Road, 1.7 mi southeast of intersection of Oceana Boulevard and Old Dam Neck Road in Virginia Beach. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 1.25 in., depth 54 ft, screened 49 to 54 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 8 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.85 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--March 1981 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.33 ft below land-surface datum, Mar. 26, 1983; lowest measured, 10.58 ft below land-surface datum, Mar. 20, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	8.04	FEB 18	5.61	MAR 21	5.71	JUN 06	5.51	JUN 28	5.91	JUL 25	6.40

WATER YEAR 1988 HIGHEST 5.51 JUN 06, 1988 LOWEST 8.04 OCT 30, 1987

CITY OF VIRGINIA BEACH--Continued

364613075583202 Local number, 63C 3 SOW 100C.
LOCATION.--Lat 36°46'13", long 75°58'32", Hydrologic Unit 03010205, at Hampton Roads Sanitary District sludge disposal site off Old Dam Neck Road, 1.7 mi southeast of intersection of Oceana Boulevard and Old Dam Neck Road in Virginia Beach. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 1.25 in., depth 35 ft, screened 30 to 35 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 8 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.63 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--April 1981 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.79 ft below land-surface datum, Feb. 16, Apr. 20, 1983; lowest measured, 12.35 ft below land-surface datum, Apr. 20, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	7.77	FEB 18	4.91	MAR 21	5.11	JUN 06	4.88	JUN 28	5.37	JUL 25	6.00

WATER YEAR 1988 HIGHEST 4.88 JUN 06, 1988 LOWEST 7.77 OCT 30, 1987

364722075591801 Local number, 63C 4 SOW 173A.
LOCATION.--Lat 36°47'22", long 75°59'18", Hydrologic Unit 02080108, at Redwing Park, 0.7 mi northeast of intersection of Oceana Boulevard and Dam Neck Road in Virginia Beach. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Miocene-Pliocene age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 3 in., depth 291 ft, screened 281 to 291 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 8 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.8 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--April 1984 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.62 ft below land-surface datum, Apr. 25, 1984; lowest measured, 4.63 ft below land-surface datum, Nov. 12, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 18	4.44	JAN 13	4.09	MAR 02	4.22	APR 26	4.14	JUN 20	4.23	AUG 03	4.38

WATER YEAR 1988 HIGHEST 4.09 JAN 13, 1988 LOWEST 4.44 NOV 18, 1987

364722075591802 Local number, 63C 5 SOW 173B.
LOCATION.--Lat 36°47'22", long 75°59'18", Hydrologic Unit 02080108, at Redwing Park, 0.7 mi northeast of intersection of Oceana Boulevard and Dam Neck Road in Virginia Beach. Owner: Virginia Water Control Board.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 3 in., depth 95 ft, screened 80 to 90 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 9 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.9 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--April 1984 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.49 ft below land-surface datum, Feb. 26, 1987; lowest measured, 7.63 ft below land-surface datum, Aug. 6, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 18	5.40	JAN 13	3.95	MAR 02	3.30	APR 27	3.20	JUN 20	4.85	AUG 03	6.47

WATER YEAR 1988 HIGHEST 3.20 APR 27, 1988 LOWEST 6.47 AUG 03, 1988

WESTMORELAND COUNTY

381110076550501 Local number, 55P 5.
LOCATION.--Lat 38°11'10", long 76°55'05", Hydrologic Unit 02070011, behind craft shop at George Washington Birthplace National Monument, 3.8 mi southeast of Colonial Beach. Owner: National Park Service.
AQUIFER.--Sand of undifferentiated Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 6 in., depth 471 ft, screened 451 to 466 ft.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 24 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of recorder shelf, 3.0 ft above land-surface datum.
PERIOD OF RECORD.--June 1974 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 25.05 ft below land-surface datum, June 24, 1974; lowest recorded, 40.99 ft below land-surface datum, Sept. 6, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	39.63	39.34	39.16	38.96	39.00	38.91	38.65	38.67	38.97	39.95	40.45	40.81
10	39.54	39.41	38.98	38.81	39.05	38.63	38.42	38.50	39.05	40.09	40.52	40.90
15	39.16	39.32	38.85	39.07	39.11	38.86	38.23	38.77	39.41	40.26	40.69	40.94
20	39.16	39.20	38.80	38.74	38.71	38.80	38.57	38.44	39.44	40.36	40.57	40.76
25	39.42	39.35	38.77	38.72	39.00	38.91	38.74	38.83	39.55	40.45	40.75	40.75
EOM	39.42	38.62	38.77	39.19	38.62	38.79	38.86	38.95	39.68	40.49	40.86	40.76

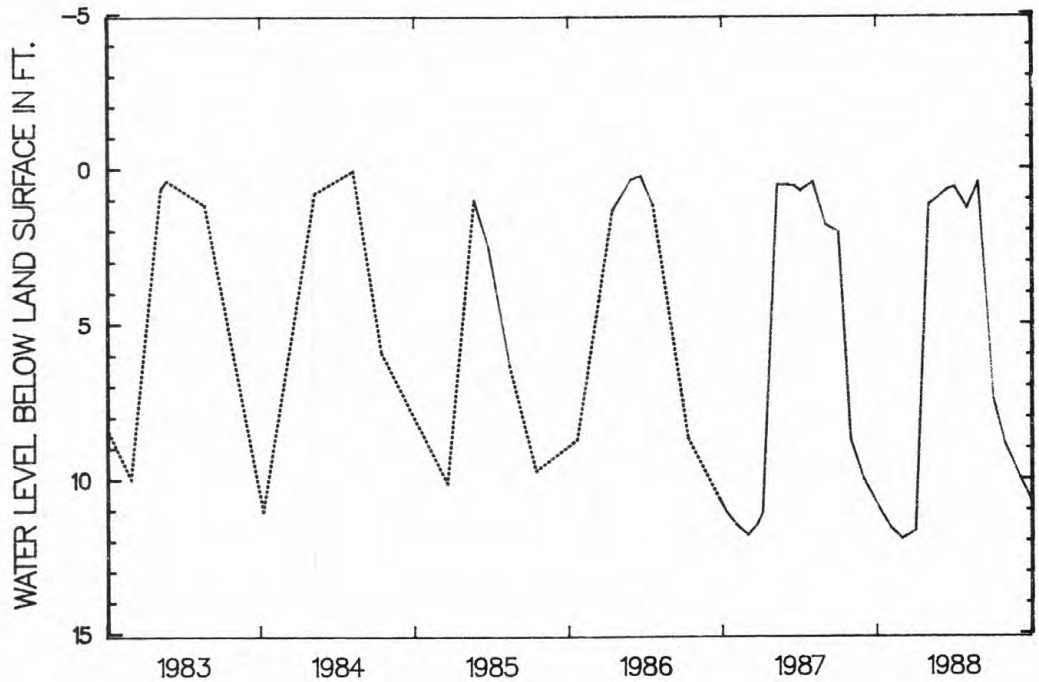
WATER YEAR 1988 HIGHEST 37.51 APR 13, 1988 LOWEST 40.99 SEP 06, 1988

381132076551001. Local number, 55P 9.
LOCATION.--Lat 38°11'32", long 76°55'10", Hydrologic Unit 02070011, at George Washington Birthplace National Monument, 500 ft east of park road, 0.6 mi north of the end of State Highway 204, and 3.4 mi southeast of Colonial Beach. Owner: National Park Service.
AQUIFER.--Sand of Quaternary age.
WELL CHARACTERISTICS.--Dug unused water well, diameter 36 in., depth 22.6 ft.
INSTRUMENTATION.--Monthly measurements with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 17 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of concrete lip on casing, 1.65 ft above land-surface datum.
PERIOD OF RECORD.--July 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.11 ft below land-surface datum, Oct. 11, 1979; lowest measured, 11.95 ft below land-surface datum, Nov. 25, 1987.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	10.93	DEC 27	11.68	MAR 10	0.72	APR 28	1.31	JUN 29	7.45	AUG 30	9.95
29	11.60	JAN 29	1.18	30	.60	MAY 25	.45	JUL 27	8.91	SEP 27	10.74
NOV 25	11.95	FEB 29	.85								

WATER YEAR 1988 HIGHEST 0.45 MAY 25, 1988 LOWEST 11.95 NOV 25, 1987



WESTMORELAND COUNTY--Continued

380538076490801 Local number, 56N 1 SOW 016.
LOCATION.--Lat 38°05'38", long 76°49'08", Hydrologic Unit 02080104, at Washington and Lee School, 0.5 mi east of Montross. Owner: Westmoreland County Public Schools.
AQUIFER.--Sand of undifferentiated Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in. to 189 ft, 2 in. from 189 to 641 ft, depth 641 ft, screened 608 to 628 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 149 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--August 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 133.47 ft below land-surface datum, Aug. 28, 1967; lowest measured, 157.20 ft below land-surface datum, Jan. 28, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	155.69	MAR 01	154.95	APR 26	154.86	JUN 15	155.15	JUL 28	155.99	SEP 20	156.35
JAN 13	155.12	MAR 10	154.79								

WATER YEAR 1988 HIGHEST 154.79 MAR 10, 1988 LOWEST 156.35 SEP 20, 1988

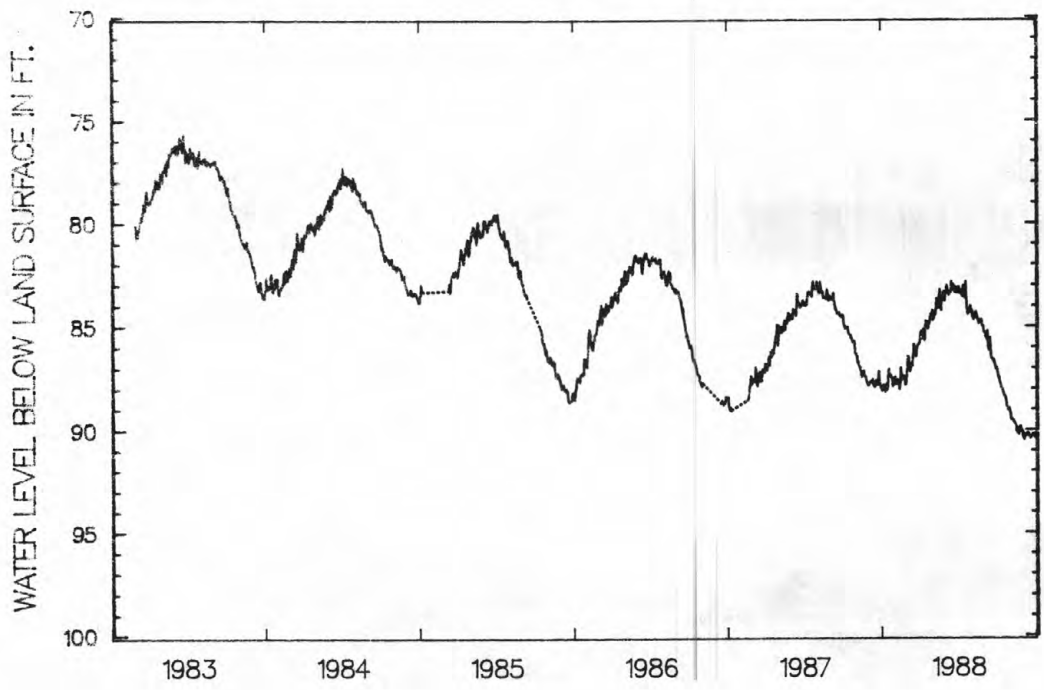
YORK COUNTY

371916076375901 Local number, 57G 2.
LOCATION.--Lat 37°19'16", long 76°37'59", Hydrologic Unit 02080107, at Building 3101 on Camp Peary Naval Reservation, 3.3 mi northeast of Williamsburg. Owner: U.S. Department of the Navy.
AQUIFER.--Sand and gravel of undifferentiated Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 10 in. to 352 ft, diameter 8 in. from 352 to 387 ft, depth 387 ft, screen depth unknown.
INSTRUMENTATION.--Digital recorder--60-minute punch.
DATUM.--Elevation of land-surface datum is 15 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.2 ft above land-surface datum.
PERIOD OF RECORD.--January 1968 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 43.09 ft below land-surface datum, Mar. 7, 1968; lowest measured, 90.51 ft below land-surface datum, Aug. 29, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	88.16	87.61	86.81	85.38	83.90	83.32	83.57	84.59	85.98	87.93	89.65	90.17
10	88.07	87.64	86.43	84.88	83.65	82.84	83.62	84.62	85.96	88.17	89.86	90.29
15	87.30	87.52	86.00	85.06	84.25	83.04	83.80	84.80	86.60	88.41	90.20	90.31
20	87.49	87.43	85.95	84.56	83.33	83.22	84.19	84.72	86.87	88.96	89.83	90.21
25	87.80	87.43	85.78	84.23	83.34	83.31	84.34	85.24	87.00	89.02	90.11	90.20
EOM	87.77	86.52	85.57	84.45	83.09	83.26	84.59	85.60	87.45	89.49	90.23	90.26

WATER YEAR 1988 HIGHEST 81.93 APR 08, 1988 LOWEST 90.51 AUG 29, 1988



YORK COUNTY--Continued

371654076401601 Local number, 57G 17 SOW 068.
LOCATION.--Lat 37°16'54", long 76°40'16", Hydrologic Unit 02080107, 0.05 mi east of State Highway 716 at Parkway Estates, 0.5 mi east of Williamsburg. Owner: Sydnor Hydrodynamics.
AQUIFER.--Sand of undifferentiated Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation water well, diameter 8 in., depth 452.3 ft, screened 411 to 426 ft, 442.2 to 452.3 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 60 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.85 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--November 1972 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 106.09 ft below land-surface datum, Nov. 22, 1972; lowest measured, 148.26 ft below land-surface datum, Aug. 11, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	139.45	MAR 04	133.67	MAR 08	133.84	MAY 11	136.85	JUN 23	143.12	AUG 25	146.75
JAN 19	134.75										

WATER YEAR 1988 HIGHEST 133.67 MAR 04, 1988 LOWEST 146.75 AUG 25, 1988

371735076391501 Local number, 57G 19 SOW 069.
LOCATION.--Lat 37°17'35", long 76°39'15", Hydrologic Unit 02080107, 0.05 mi east of State Highway 716 at Queens Lake Subdivision, 1.6 mi east of Williamsburg. Owner: Sydnor Hydrodynamics.
AQUIFER.--Sand of undifferentiated Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 515 ft, screened 420 to 430 ft, 445 to 460 ft, 505 to 515 ft.
INSTRUMENTATION.--Bimonthly measurement with chalked tape by Virginia Water Control Board personnel.
DATUM.--Elevation of land-surface datum is 64 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1.1 ft above land-surface datum.
REMARKS.--Records provided by the Virginia Water Control Board.
PERIOD OF RECORD.--November 1972 to current year. Unpublished records available prior to October 1985 in files of the Virginia Water Control Board.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 109.95 ft below land-surface datum, Nov. 29, 1972; lowest measured, 136.10 ft below land-surface datum, Aug. 25, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	132.65	MAR 04	128.30	MAR 08	128.80	MAY 11	130.45	JUN 23	133.05	AUG 25	136.10

WATER YEAR 1988 HIGHEST 128.30 MAR 04, 1988 LOWEST 136.10 AUG 25, 1988

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

	LOCAL IDENT-I-FIER	STATION NUMBER	GEO-LOGIC UNIT	DATE	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET)	DEPTH OF WELL, TOTAL (FEET)	DEPTH TO BOT-TOM OF SAMPLE INTER-VAL (FT)	DEPTH TO TOP OF SAMPLE INTER-VAL (FT)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD)
ACCOMACK COUNTY									
64H 7	SOW 102B	372905075474001	121CSPKU	11-12-87	2.51	220.00	220	210	6.0
64H 5	SOW 102C	372922076470101	121CSPKU	11-12-87	2.63	306.00	306	296	6.0
64J 29		373330075494601	112CLMB	08-18-88	6.60	40.00	40	37	36.0
64J 28		373330075494602	112CLMB	08-18-88	6.30	13.00	13	10	36.0
65K 39		373916075410801	112CLMB	08-19-88	5.00	30.00	22	19	5.0
65K 38		373916075410802	112CLMB	08-19-88	2.50	13.00	13	10	5.0
64K 11	SOW 108B	373932075452702	121CSPKU	01-26-88	15.05	180.00	180	170	47.0
64K 12	SOW 108C	373932075452703	121CSPKU	01-26-88	24.81	284.00	284	274	47.0
66K 2	SOW 101C	374320075380501	121CSPKU	01-27-88	11.32	292.00	292	282	10.0
65K 29	SOW 114C	374425075400003	121CSPKU	11-11-87	83.85	315.00	290	280	45.0
65K 23	SOW 109C	374442075432501	121CSPKU	02-01-88	14.19	290.00	290	280	13.0
65K 25	SOW 109B	374442075432503	121CSPKU	01-27-88	11.99	228.00	228	218	12.0
66L 12		374755075371001	112CLMB	08-10-88	7.10	28.00	28	25	47.0
66L 11		374755075371002	112CLMB	08-10-88	7.00	15.00	15	12	47.0
66L 1	SOW 107C	375225075321701	121CSPKU	02-01-88	6.10	305.00	305	295	5.0
66L 3	SOW 107B	375225075321703	121CSPKU	02-02-88	4.57	206.00	201	191	5.0
66M 1		375303075310101	211CRCSU	02-23-88	26.05	1510.00	--	--	42.0
66M 23	SOW 181A	375610075361801	211CRCSU	10-29-87	--	1298.00	1300	1290	6.0
66M 23	SOW 181A	375610075361801	211CRCSU	08-29-88	--	1298.00	1300	1290	6.0
66M 24	SOW 181B	375610075361802	121CSPK	10-28-87	1.03	508.00	508	498	6.0
66M 24	SOW 181B	375610075361802	121CSPK	08-29-88	--	508.00	508	498	6.0
66M 25	SOW 181C	375610075361803	121CSPKU	10-30-87	2.97	340.00	340	330	6.0
66M 25	SOW 181C	375610075361803	121CSPKU	08-29-88	--	340.00	340	330	6.0
66M 26	SOW 181D	375610075361804	121CSPKU	10-30-87	3.70	230.00	230	220	6.0
66M 26	SOW 181D	375610075361804	121CSPKU	08-29-88	--	230.00	230	220	6.0
66M 27	SOW 181E	375610075361805	112CLMB	10-29-87	4.26	30.00	30	20	6.0
66M 27	SOW 181E	375610075361805	112CLMB	01-26-88	2.81	30.00	30	20	6.0
66M 27	SOW 181E	375610075361805	112CLMB	08-29-88	--	30.00	30	20	6.0
67M 14	SOW 115E	375617075273701	121CSPKU	01-26-88	26.92	280.00	280	260	26.0
66M 18	SOW 110C	375723075344403	121CSPKU	10-30-87	--	240.00	240	230	11.0
NORTHAMPTON COUNTY									
63F 29		371121075565001	112CLMB	08-17-88	6.00	9.50	9.5	6.5	13.2
63F 47		371121075565002	112CLMB	08-17-88	6.80	28.00	28	25	13.4
63F 28		371125075570201	112CLMB	08-16-88	12.30	17.00	17	14	26.9
63F 44		371125075570202	112CLMB	08-16-88	12.65	26.00	26	23	27.3
63F 45		371125075570203	112CLMB	08-16-88	14.00	41.50	41	38	26.9
63F 46		371125075570204	112CLMB	08-16-88	25.80	61.50	61	58	27.1
63F 32		371136075574801	112CLMB	11-12-87	7.14	12.00	12	9.4	28.9
63F 31		371136075580201	112CLMB	08-17-88	9.00	12.00	12	9.0	31.8
63F 48		371136075580202	112CLMB	08-17-88	10.30	31.00	31	28	31.3
63F 35		371301075584401	112CLMB	08-17-88	10.00	13.00	13	10	29.5
63F 36		371302075583201	112CLMB	11-13-87	7.77	13.00	13	10	32.2
63F 36		371302075583201	112CLMB	08-18-88	4.20	13.00	13	10	32.2
63F 16	SOW 105C	371307075583502	121CSPKU	11-09-87	25.34	285.00	285	275	31.2
63G 23	SOW 111B	371653075584802	121CSPKU	01-25-88	15.86	280.00	280	270	15.0
63G 24	SOW 111C	371653075584803	121CSPKU	11-10-87	19.72	330.00	330	320	15.0
63G 16	SOW 104B	371709075560802	121CSPKU	01-25-88	19.21	240.00	240	230	28.0
63H 4	SOW 103C	372705075555901	121CSPKU	01-28-88	11.94	235.00	235	225	17.0
63H 5	SOW 103B	372705075555902	121CSPKU	01-25-88	11.24	132.00	132	122	17.0
64H 8		372758075500801	121CSPKU	09-15-88	--	280.00	--	--	3.0
64H 10		372758075500802	121CSPKU	09-15-88	--	135.00	--	--	3.0
64J 31		373049075484101	112CLMB	08-18-88	12.60	30.00	30	27	24.0
64J 30		373049075484102	112CLMB	08-18-88	12.20	22.00	22	19	24.0
64J 10	SOW 112B	373059075484502	121CSPKU	02-22-88	25.61	210.00	210	200	30.0
64J 11	SOW 112C	373059075484503	121CSPKU	11-10-87	23.32	313.00	313	303	30.0
63J 3	SOW 113C	373230075541003	121CSPKU	11-18-87	--	290.00	290	280	22.0

Geologic unit (aquifer):

112CLMB - Columbia Group
121CSPK - Chesapeake Group
121CSPKU - Upper Chesapeake Group
211CRCSU - Upper Cretaceous Series

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

LOCAL IDENT-I-FIER	PUMP OR FLOW PERIOD PRIOR TO SAM-PLING (MIN)	DEPTH OF HOLE, TOTAL (FEET)	FLOW RATE, INSTAN-TANEOUS (G/M)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM)	PH (STAND-ARD UNITS)	PH LAB (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)
ACCOMACK COUNTY--Continued									
64H 7 SOW 102B	--	--	--	1070	1610	7.95	--	17.0	--
64H 5 SOW 102C	--	--	--	7500	7290	8.40	--	17.5	--
64J 29	15	40	1.0	126	127	5.25	6.20	16.5	--
64J 28	15	55	1.0	570	555	6.29	7.00	19.5	--
65K 39	15	30	0.8	245	240	6.14	6.90	16.0	--
65K 38	15	13	0.8	266	274	5.42	6.40	18.5	--
64K 11 SOW 108B	--	--	--	233	226	7.40	--	15.5	--
64K 12 SOW 108C	--	--	--	285	286	7.40	--	16.0	--
66K 2 SOW 101C	--	--	--	262	259	7.70	--	16.0	--
65K 29 SOW 114C	--	--	--	1220	1270	7.55	--	16.0	--
65K 23 SOW 109C	--	--	--	4050	4350	7.70	--	17.5	--
65K 25 SOW 109B	--	--	--	440	434	7.50	--	16.0	--
66L 12	17	32	0.6	202	202	5.68	6.70	16.0	--
66L 11	18	15	0.7	365	353	7.10	7.70	17.0	--
66L 1 SOW 107C	--	--	--	341	350	7.40	--	16.5	--
66L 3 SOW 107B	--	--	--	230	234	6.60	--	15.0	--
66M 1	--	--	--	10200	9290	7.24	7.80	20.0	4
66M 23 SOW 181A	--	--	--	5200	6070	8.25	8.00	22.5	13
66M 23 SOW 181A	--	--	--	6900	5930	8.20	8.00	23.0	25
66M 24 SOW 181B	--	--	--	13100	12400	7.40	7.50	18.0	9
66M 24 SOW 181B	--	--	--	>8000	12200	7.40	--	18.5	--
66M 25 SOW 181C	--	--	--	5700	7880	6.72	7.60	17.0	8
66M 25 SOW 181C	--	--	--	8000	7740	7.60	--	18.0	--
66M 26 SOW 181D	--	--	--	3050	3530	6.80	7.80	7.5	7
66M 26 SOW 181D	--	--	--	3700	3470	7.90	--	17.0	--
66M 27 SOW 181E	--	--	--	155	173	5.92	6.40	16.5	38
66M 27 SOW 181E	--	--	--	195	135	6.10	6.40	9.0	8
66M 27 SOW 181E	--	--	--	170	167	6.10	--	16.0	--
67M 14 SOW 115E	--	--	--	830	818	7.50	--	15.0	--
66M 18 SOW 110C	--	--	--	4400	5930	7.00	7.60	16.0	8
NORTHAMPTON COUNTY--Continued									
63F 29	20	9.5	0.7	311	299	5.16	6.40	21.5	--
63F 47	25	28	0.6	462	444	5.14	5.90	16.5	--
63F 28	15	17	0.4	291	289	5.12	5.90	19.5	--
63F 44	20	26	0.3	333	325	5.37	6.00	19.0	--
63F 45	40	41	0.4	431	446	6.18	6.80	18.5	--
63F 46	60	61	0.2	336	332	7.43	7.60	19.5	--
63F 32	26	12	0.1	564	554	5.52	5.70	18.0	--
63F 31	15	12	0.3	422	416	5.48	6.80	18.5	--
63F 48	30	31	0.4	384	363	6.73	7.20	19.0	--
63F 35	25	13	1.8	431	406	4.99	6.90	19.5	--
63F 36	17	13	0.1	588	630	4.69	4.90	18.0	--
63F 36	20	13	1.0	719	685	4.42	4.80	17.5	--
63F 16 SOW 105C	--	--	--	890	901	8.60	--	17.0	--
63G 23 SOW 111B	--	--	--	290	302	7.20	--	15.5	--
63G 24 SOW 111C	--	--	--	2400	2480	8.45	--	18.0	--
63G 16 SOW 104B	--	--	--	242	244	7.00	--	15.5	--
63H 4 SOW 103C	--	--	--	1590	1540	7.90	--	16.0	--
63H 5 SOW 103B	--	--	--	392	373	7.10	--	15.0	--
64H 8	--	--	--	--	--	--	--	--	--
64H 10	--	--	--	--	--	--	--	--	--
64J 31	10	40	1.0	316	313	4.98	5.60	16.5	--
64J 30	10	22	1.0	250	246	5.30	6.00	17.0	--
64J 10 SOW 112B	--	--	--	445	438	7.10	--	16.0	--
64J 11 SOW 112C	--	--	--	4500	5930	7.90	--	17.5	--
63J 3 SOW 113C	--	--	--	--	18100	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

LOCAL IDENTIFIER	OXYGEN, DISSOLVED (MG/L)	HARDNESS TOTAL (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE WATER WH IT FIELD MG/L AS HCO3	ALKALINITY WAT WH TOT IT FIELD MG/L AS CACO3	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3
ACCOMACK COUNTY--Continued									
64H 7 SOW 102B	--	--	--	--	--	--	--	--	262
64H 5 SOW 102C	--	--	--	--	--	--	--	--	404
64J 29	0.2	39	13	1.5	5.9	1.7	9	7	--
64J 28	0.3	130	33	12	62	9.7	168	138	--
65K 39	2.4	92	29	4.8	7.4	1.0	31	26	--
65K 38	--	110	37	4.7	6.5	0.50	15	12	--
64K 11 SOW 108B	--	--	--	--	--	--	--	--	--
64K 12 SOW 108C	--	--	--	--	--	--	--	--	--
66K 2 SOW 101C	--	--	--	--	--	--	--	--	--
65K 29 SOW 114C	--	--	--	--	--	--	--	--	221
65K 23 SOW 109C	--	--	--	--	--	--	--	--	--
65K 25 SOW 109B	--	--	--	--	--	--	--	--	--
66L 12	0.2	54	15	4.0	15	0.70	43	35	--
66L 11	0.5	180	68	1.7	5.8	0.50	163	134	--
66L 1 SOW 107C	--	--	--	--	--	--	--	--	--
66L 3 SOW 107B	--	--	--	--	--	--	--	--	--
66M 1	--	140	28	18	2000	40	--	--	742
66M 23 SOW 181A	--	62	10	8.9	1400	24	--	--	881
66M 23 SOW 181A	--	61	9.8	8.9	1200	17	--	--	848
66M 24 SOW 181B	--	420	54	69	2700	62	--	--	936
66M 24 SOW 181B	--	--	--	--	--	--	--	--	851
66M 25 SOW 181C	--	480	60	81	1500	50	--	--	207
66M 25 SOW 181C	--	--	--	--	--	--	--	--	455
66M 26 SOW 181D	--	210	33	30	720	24	--	--	332
66M 26 SOW 181D	--	--	--	--	--	--	--	--	411
66M 27 SOW 181E	--	28	6.9	2.5	15	1.7	--	--	41
66M 27 SOW 181E	--	27	6.8	2.4	15	2.0	--	--	43
66M 27 SOW 181E	--	--	--	--	--	--	--	--	45
67M 14 SOW 115E	--	--	--	--	--	--	--	--	--
66M 18 SOW 110C	--	360	46	60	1200	35	--	--	--
NORTHAMPTON COUNTY--Continued									
63F 29	8.5	110	35	6.0	7.3	4.8	18	15	--
63F 47	8.6	180	58	8.8	11	1.2	7	6	--
63F 28	9.0	97	29	5.8	9.6	8.5	5	4	--
63F 44	7.7	130	40	6.1	6.5	6.1	5	4	--
63F 45	5.1	180	56	9.3	12	3.5	33	27	--
63F 46	0.3	130	47	3.3	10	1.3	79	65	--
63F 32	4.8	240	73	14	6.9	7.4	7	6	--
63F 31	5.2	94	28	5.9	36	5.4	15	12	--
63F 48	7.5	110	35	6.3	22	3.8	70	57	--
63F 35	3.5	160	46	11	7.4	7.9	28	23	--
63F 36	3.7	260	68	21	6.9	13	2	1	--
63F 36	4.2	280	72	25	8.1	10	2	2	--
63F 16 SOW 105C	--	--	--	--	--	--	--	--	339
63G 23 SOW 111B	--	--	--	--	--	--	--	--	--
63G 24 SOW 111C	--	--	--	--	--	--	--	--	231
63G 16 SOW 104B	--	--	--	--	--	--	--	--	--
63H 4 SOW 103C	--	--	--	--	--	--	--	--	--
63H 5 SOW 103B	--	--	--	--	--	--	--	--	--
64H 8	--	--	--	--	--	--	--	--	--
64H 10	--	--	--	--	--	--	--	--	--
64J 31	3.0	110	26	12	8.8	4.4	5	4	--
64J 30	6.4	94	28	5.7	5.1	2.6	5	4	--
64J 10 SOW 112B	--	--	--	--	--	--	--	--	--
64J 11 SOW 112C	--	--	--	--	--	--	--	--	397
63J 3 SOW 113C	--	--	--	--	--	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

	LOCAL IDENT-I-FIER	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
ACCOMACK COUNTY--Continued										
64H 7	SOW 102B	--	--	430	--	--	--	--	--	--
64H 5	SOW 102C	--	--	2100	--	--	--	--	--	--
64J 29		6.0	33	9.4	<0.10	5.5	--	75	<0.010	<0.100
64J 28		129	41	32	<0.10	11	--	346	<0.010	15.0
65K 39		20	41	16	<0.10	11	--	150	0.030	6.20
65K 38		12	51	20	<0.10	8.7	--	171	<0.010	8.10
64K 11	SOW 108B	--	--	8.9	--	--	--	--	--	--
64K 12	SOW 108C	--	--	11	--	--	--	--	--	--
66K 2	SOW 101C	--	--	9.4	--	--	--	--	--	--
65K 29	SOW 114C	--	--	320	--	--	--	--	--	--
65K 23	SOW 109C	--	--	800	--	--	--	--	--	--
65K 25	SOW 109B	--	--	15	--	--	--	--	--	--
66L 12		33	24	20	<0.10	9.2	--	110	<0.010	<0.100
66L 11		123	24	10	<0.10	9.2	--	195	0.050	0.290
66L 1	SOW 107C	--	--	14	--	--	--	--	--	--
66L 3	SOW 107B	--	--	8.4	--	--	--	--	--	--
66M 1		730	2.9	2500	1.2	2.8	5230	5050	--	<0.100
66M 23	SOW 181A	829	1.5	1500	1.6	13	3390	3490	--	<0.100
66M 23	SOW 181A	829	0.70	1500	1.5	12	3430	3270	--	<0.100
66M 24	SOW 181B	780	29	3900	0.40	40	7080	7430	--	0.190
66M 24	SOW 181B	--	--	3800	--	--	--	--	--	--
66M 25	SOW 181C	426	200	2100	0.40	17	4460	4140	--	<0.100
66M 25	SOW 181C	--	--	2100	--	--	--	--	--	--
66M 26	SOW 181D	412	93	1000	0.30	20	1970	2120	--	<0.100
66M 26	SOW 181D	--	--	810	--	--	--	--	--	--
66M 27	SOW 181E	31	8.8	31	0.10	28	123	131	--	<0.100
66M 27	SOW 181E	34	8.5	18	0.10	26	109	107	--	<0.100
66M 27	SOW 181E	--	--	23	--	--	--	--	--	--
67M 14	SOW 115E	--	--	140	--	--	--	--	--	--
66M 18	SOW 110C	388	230	1400	0.40	16	3220	3220	--	--
NORTHAMPTON COUNTY--Continued										
63F 29		14	54	22	<0.10	6.3	--	183	<0.010	8.90
63F 47		5.0	110	31	<0.10	13	--	285	<0.010	11.0
63F 28		4.0	49	28	<0.10	7.0	--	182	<0.010	9.70
63F 44		6.0	68	21	<0.10	9.1	--	203	<0.010	9.60
63F 45		32	110	27	<0.10	12	--	290	<0.010	9.20
63F 46		51	67	24	<0.10	13	--	198	<0.010	0.370
63F 32		--	140	37	0.10	8.2	--	353	<0.010	15.0
63F 31		13	33	70	<0.10	5.3	--	232	<0.010	9.10
63F 48		58	36	42	<0.10	9.2	--	205	0.010	3.50
63F 35		22	68	32	<0.10	5.2	--	244	<0.010	12.0
63F 36		--	110	42	0.20	6.3	--	397	<0.010	29.0
63F 36		1.0	110	52	0.20	6.3	--	454	<0.010	38.0
63F 16	SOW 105C	--	--	92	--	--	--	--	--	--
63G 23	SOW 111B	--	--	9.1	--	--	--	--	--	--
63G 24	SOW 111C	--	--	730	--	--	--	--	--	--
63G 16	SOW 104B	--	--	14	--	--	--	--	--	--
63H 4	SOW 103C	--	--	260	--	--	--	--	--	--
63H 5	SOW 103B	--	--	28	--	--	--	--	--	--
64H 8		--	--	730	--	--	--	--	--	--
64H 10		--	--	8.1	--	--	--	--	--	--
64J 31		5.0	58	21	<0.10	14	--	196	<0.010	11.0
64J 30		4.0	43	17	<0.10	8.8	--	153	<0.010	9.20
64J 10	SOW 112B	--	--	35	--	--	--	--	--	--
64J 11	SOW 112C	--	--	1900	--	--	--	--	--	--
63J 3	SOW 113C	--	--	6200	--	--	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

LOCAL IDENTIFIER	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHOROUS TOTAL (MG/L AS P)	PHOSPHOROUS ORTHO, DISSOLVED (MG/L AS P)	ALUMINUM, DISSOLVED (UG/L AS AL)	ANTIMONY, DISSOLVED (UG/L AS SB)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)
ACCOMACK COUNTY--Continued									
64H 7 SOW 102B	--	--	--	--	--	--	--	--	--
64H 5 SOW 102C	--	--	--	--	--	--	--	--	--
64J 29	0.040	--	<0.20	--	<0.010	20	<1	4	28
64J 28	0.920	--	1.3	--	<0.010	<10	<1	<1	35
65K 39	<0.010	--	0.40	--	<0.010	<10	<1	<1	15
65K 38	<0.010	--	0.30	--	<0.010	20	<1	<1	20
64K 11 SOW 108B	--	--	--	--	--	--	--	--	--
64K 12 SOW 108C	--	--	--	--	--	--	--	--	--
66K 2 SOW 101C	--	--	--	--	--	--	--	--	--
65K 29 SOW 114C	--	--	--	--	--	--	--	--	--
65K 23 SOW 109C	--	--	--	--	--	--	--	--	--
65K 25 SOW 109B	--	--	--	--	--	--	--	--	--
66L 12	0.020	--	0.30	--	<0.010	20	<1	2	20
66L 11	<0.010	--	0.30	--	<0.010	10	<1	1	13
66L 1 SOW 107C	--	--	--	--	--	--	--	--	--
66L 3 SOW 107B	--	--	--	--	--	--	--	--	--
66M 1	5.90	6.1	--	0.010	--	<10	--	--	--
66M 23 SOW 181A	0.170	--	--	<0.010	--	10	--	--	--
66M 23 SOW 181A	3.70	3.7	--	0.060	--	20	--	--	--
66M 24 SOW 181B	3.10	--	--	0.030	--	20	--	--	--
66M 24 SOW 181B	--	--	--	--	--	--	--	--	--
66M 25 SOW 181C	2.20	--	--	0.070	--	<10	--	--	--
66M 25 SOW 181C	--	--	--	--	--	--	--	--	--
66M 26 SOW 181D	--	--	--	0.010	--	<10	--	--	--
66M 26 SOW 181D	--	--	--	--	--	--	--	--	--
66M 27 SOW 181E	3.90	--	--	0.080	--	20	--	--	--
66M 27 SOW 181E	0.150	0.40	--	0.080	--	--	--	--	--
66M 27 SOW 181E	--	--	--	--	--	--	--	--	--
67M 14 SOW 115E	--	--	--	--	--	--	--	--	--
66M 18 SOW 110C	--	--	--	--	--	<10	--	--	--
NORTHAMPTON COUNTY--Continued									
63F 29	<0.010	--	0.70	--	<0.010	10	<1	<1	19
63F 47	<0.010	--	0.80	--	<0.010	20	<1	<1	37
63F 28	<0.010	--	0.40	--	<0.010	20	<1	<1	51
63F 44	0.010	--	0.30	--	<0.010	10	<1	<1	70
63F 45	0.010	--	0.50	--	<0.010	<10	<1	<1	49
63F 46	0.020	--	0.40	--	0.020	<10	<1	<1	6
63F 32	0.020	--	0.40	--	<0.010	20	--	--	60
63F 31	0.030	--	0.80	--	<0.010	20	<1	<1	45
63F 48	0.010	--	0.20	--	<0.010	<10	<1	<1	13
63F 35	0.030	--	1.1	--	0.030	<10	<1	<1	18
63F 36	0.020	--	0.70	--	<0.010	900	--	--	92
63F 36	0.030	--	1.0	--	<0.010	1300	<1	<1	59
63F 16 SOW 105C	--	--	--	--	--	--	--	--	--
63G 23 SOW 111B	--	--	--	--	--	--	--	--	--
63G 24 SOW 111C	--	--	--	--	--	--	--	--	--
63G 16 SOW 104B	--	--	--	--	--	--	--	--	--
63H 4 SOW 103C	--	--	--	--	--	--	--	--	--
63H 5 SOW 103B	--	--	--	--	--	--	--	--	--
64H 8	--	--	--	--	--	--	--	--	--
64H 10	--	--	--	--	--	--	--	--	--
64J 31	<0.010	--	0.70	--	<0.010	40	<1	<1	110
64J 30	<0.010	--	<0.20	--	<0.010	10	<1	<1	17
64J 10 SOW 112B	--	--	--	--	--	--	--	--	--
64J 11 SOW 112C	--	--	--	--	--	--	--	--	--
63J 3 SOW 113C	--	--	--	--	--	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

LOCAL IDENTIFIER	BERYLLIUM, DISSOLVED (UG/L AS BE)	BORON, DISSOLVED (UG/L AS B)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)
ACCOMACK COUNTY--Continued									
64H 7 SOW 102B	--	--	--	--	--	--	--	--	--
64H 5 SOW 102C	--	--	--	--	--	--	--	--	--
64J 29	1	20	1	<5	<3	<10	--	1200	<10
64J 28	<0.5	560	<1	<5	<3	<10	--	10	<10
65K 39	<0.5	20	<1	<5	<3	<10	--	31	<10
65K 38	<0.5	<10	<1	<5	<3	<10	--	<3	<10
64K 11 SOW 108B	--	--	--	--	--	--	--	--	--
64K 12 SOW 108C	--	--	--	--	--	--	--	--	--
66K 2 SOW 101C	--	--	--	--	--	--	--	--	--
65K 29 SOW 114C	--	--	--	--	--	--	--	--	--
65K 23 SOW 109C	--	--	--	--	--	--	--	--	--
65K 25 SOW 109B	--	--	--	--	--	--	--	--	--
66L 12	<0.5	20	1	<5	<3	<10	--	1800	<10
66L 11	<0.5	<10	<1	<5	<3	<10	--	600	<10
66L 1 SOW 107C	--	--	--	--	--	--	--	--	--
66L 3 SOW 107B	--	--	--	--	--	--	--	--	--
66M 1	--	6300	--	--	--	--	8200	1200	--
66M 23 SOW 181A	--	5600	--	--	--	--	4000	1100	--
66M 23 SOW 181A	--	5100	--	--	--	--	1000	330	--
66M 24 SOW 181B	--	5300	--	--	--	--	18000	1100	--
66M 24 SOW 181B	--	--	--	--	--	--	--	--	--
66M 25 SOW 181C	--	2900	--	--	--	--	870	230	--
66M 25 SOW 181C	--	--	--	--	--	--	--	--	--
66M 26 SOW 181D	--	1200	--	--	--	--	300	240	--
66M 26 SOW 181D	--	--	--	--	--	--	--	--	--
66M 27 SOW 181E	--	30	--	--	--	--	5800	5100	--
66M 27 SOW 181E	--	20	--	--	--	--	4800	2400	--
66M 27 SOW 181E	--	--	--	--	--	--	--	--	--
67M 14 SOW 115E	--	--	--	--	--	--	--	--	--
66M 18 SOW 110C	--	1700	--	--	--	--	430	300	--
NORTHAMPTON COUNTY--Continued									
63F 29	<0.5	40	<1	<5	<3	<10	--	92	<10
63F 47	<0.5	20	<1	<5	<3	<10	--	13	<10
63F 28	<0.5	30	<1	<5	<3	<10	--	43	<10
63F 44	<0.5	20	<1	<5	<3	<10	--	40	<10
63F 45	<0.5	20	<1	<5	<3	<10	--	24	<10
63F 46	<0.5	20	2	<5	<3	<10	--	33	<10
63F 32	<0.5	20	<1	<5	<3	<10	--	6	<10
63F 31	<0.5	30	<1	<5	<3	<10	--	16	<10
63F 48	<0.5	30	<1	<5	<3	<10	--	15	<10
63F 35	<0.5	20	<1	<5	<3	<10	--	8	<10
63F 36	<0.5	30	<1	<5	<3	<10	--	7	<10
63F 36	<0.5	30	2	<5	<3	<10	--	12	<10
63F 16 SOW 105C	--	--	--	--	--	--	--	--	--
63G 23 SOW 111B	--	--	--	--	--	--	--	--	--
63G 24 SOW 111C	--	--	--	--	--	--	--	--	--
63G 16 SOW 104B	--	--	--	--	--	--	--	--	--
63H 4 SOW 103C	--	--	--	--	--	--	--	--	--
63H 5 SOW 103B	--	--	--	--	--	--	--	--	--
64H 8	--	--	--	--	--	--	--	--	--
64H 10	--	--	--	--	--	--	--	--	--
64J 31	<0.5	20	<1	<5	<3	<10	--	11	<10
64J 30	<0.5	10	<1	<5	<3	<10	--	6	<10
64J 10 SOW 112B	--	--	--	--	--	--	--	--	--
64J 11 SOW 112C	--	--	--	--	--	--	--	--	--
63J 3 SOW 113C	--	--	--	--	--	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

LOCAL IDENTIFIER	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)
ACCOMACK COUNTY--Continued									
64H 7 SOW 102B	--	--	--	--	--	--	--	--	--
64H 5 SOW 102C	--	--	--	--	--	--	--	--	--
64J 29	<4	--	35	<0.1	<10	<10	<1	<1.0	72
64J 28	<4	--	7	<0.1	<10	10	<1	<1.0	120
65K 39	<4	--	48	<0.1	<10	<10	<1	<1.0	120
65K 38	<4	--	18	<0.1	<10	10	<1	<1.0	140
64K 11 SOW 108B	--	--	--	--	--	--	--	--	--
64K 12 SOW 108C	--	--	--	--	--	--	--	--	--
66K 2 SOW 101C	--	--	--	--	--	--	--	--	--
65K 29 SOW 114C	--	--	--	--	--	--	--	--	--
65K 23 SOW 109C	--	--	--	--	--	--	--	--	--
65K 25 SOW 109B	--	--	--	--	--	--	--	--	--
66L 12	<4	--	69	<0.1	<10	<10	<1	<1.0	82
66L 11	5	--	47	<0.1	<10	<10	<1	<1.0	340
66L 1 SOW 107C	--	--	--	--	--	--	--	--	--
66L 3 SOW 107B	--	--	--	--	--	--	--	--	--
66M 1	--	190	130	--	--	--	--	--	--
66M 23 SOW 181A	--	60	10	--	--	--	--	--	--
66M 23 SOW 181A	--	40	20	--	--	--	--	--	--
66M 24 SOW 181B	--	110	10	--	--	--	--	--	--
66M 24 SOW 181B	--	--	--	--	--	--	--	--	--
66M 25 SOW 181C	--	30	10	--	--	--	--	--	--
66M 25 SOW 181C	--	--	--	--	--	--	--	--	--
66M 26 SOW 181D	--	<10	<10	--	--	--	--	--	--
66M 26 SOW 181D	--	--	--	--	--	--	--	--	--
66M 27 SOW 181E	--	80	70	--	--	--	--	--	--
66M 27 SOW 181E	--	70	78	--	--	--	--	--	--
66M 27 SOW 181E	--	--	--	--	--	--	--	--	--
67M 14 SOW 115E	--	--	--	--	--	--	--	--	--
66M 18 SOW 110C	--	30	20	--	--	--	--	--	--
NORTHAMPTON COUNTY--Continued									
63F 29	<4	--	9	--	<10	50	<1	<1.0	180
63F 47	<4	--	8	--	<10	<10	<1	2.0	67
63F 28	<4	--	19	--	<10	<10	<1	3.0	150
63F 44	<4	--	19	--	<10	<10	<1	<1.0	200
63F 45	<4	--	85	--	<10	<10	<1	<1.0	220
63F 46	<4	--	77	--	<10	<10	<1	4.0	230
63F 32	8	--	59	--	<10	<10	--	<1.0	190
63F 31	<4	--	20	--	<10	<10	<1	3.0	150
63F 48	<4	--	49	--	<10	<10	<1	1.0	190
63F 35	<4	--	3	--	<10	<10	<1	2.0	160
63F 36	5	--	330	--	<10	<10	--	<1.0	190
63F 36	<4	--	510	--	<10	<10	<1	<1.0	200
63F 16 SOW 105C	--	--	--	--	--	--	--	--	--
63G 23 SOW 111B	--	--	--	--	--	--	--	--	--
63G 24 SOW 111C	--	--	--	--	--	--	--	--	--
63G 16 SOW 104B	--	--	--	--	--	--	--	--	--
63H 4 SOW 103C	--	--	--	--	--	--	--	--	--
63H 5 SOW 103B	--	--	--	--	--	--	--	--	--
64H 8	--	--	--	--	--	--	--	--	--
64H 10	--	--	--	--	--	--	--	--	--
64J 31	<4	--	27	<0.1	<10	<10	2	<1.0	180
64J 30	<4	--	8	0.2	<10	<10	<1	<1.0	170
64J 10 SOW 112B	--	--	--	--	--	--	--	--	--
64J 11 SOW 112C	--	--	--	--	--	--	--	--	--
63J 3 SOW 113C	--	--	--	--	--	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

	LOCAL IDENTIFIER	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)	GROSS ALPHA, DISSOLVED (UG/L AS U-NAT)	GROSS BETA, DISSOLVED (PCI/L AS CS-137)	GROSS BETA, DISSOLVED (PCI/L AS SR/YT-90)	RADON 222 TOTAL (PC/L)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
		ACCOMACK COUNTY--Continued							
64H 7	SOW 102B	--	--	--	--	--	--	--	--
64H 5	SOW 102C	--	--	--	--	--	--	--	--
64J 29		<6	<3	1.2	2.6	2.3	96	--	1.2
64J 28		<6	<3	1.4	12	9.4	<80	--	2.8
65K 39		<6	<3	<0.4	1.2	1.0	<80	--	0.8
65K 38		<6	<3	--	--	--	<80	--	0.8
64K 11	SOW 108B	--	--	--	--	--	--	--	--
64K 12	SOW 108C	--	--	--	--	--	--	--	--
66K 2	SOW 101C	--	--	--	--	--	--	--	--
65K 29	SOW 114C	--	--	--	--	--	--	--	--
65K 23	SOW 109C	--	--	--	--	--	--	--	--
65K 25	SOW 109B	--	--	--	--	--	--	--	--
66L 12		<6	<3	<0.4	0.6	0.5	<80	--	1.9
66L 11		<6	<3	0.4	0.7	0.5	<80	--	2.3
66L 1	SOW 107C	--	--	--	--	--	--	--	--
66L 3	SOW 107B	--	--	--	--	--	--	--	--
66M 1		--	10	--	--	--	--	3.1	--
66M 23	SOW 181A	--	20	--	--	--	--	2.7	--
66M 23	SOW 181A	--	10	--	--	--	--	1.9	--
66M 24	SOW 181B	--	20	--	--	--	--	2.4	--
66M 24	SOW 181B	--	--	--	--	--	--	--	--
66M 25	SOW 181C	--	340	--	--	--	--	6.3	--
66M 25	SOW 181C	--	--	--	--	--	--	--	--
66M 26	SOW 181D	--	380	--	--	--	--	17	--
66M 26	SOW 181D	--	--	--	--	--	--	--	--
66M 27	SOW 181E	--	1800	--	--	--	--	7.7	--
66M 27	SOW 181E	--	40	--	--	--	--	2.9	--
66M 27	SOW 181E	--	--	--	--	--	--	--	--
67M 14	SOW 115E	--	--	--	--	--	--	--	--
66M 18	SOW 110C	--	20	--	--	--	--	4.7	--
		NORTHAMPTON COUNTY--Continued							
63F 29		<6	49	--	--	--	--	--	1.2
63F 47		<6	<3	--	--	--	--	--	1.2
63F 28		<6	23	--	--	--	--	--	11
63F 44		<6	<3	--	--	--	--	--	0.7
63F 45		<6	<3	--	--	--	--	--	1.0
63F 46		<6	<3	--	--	--	--	--	0.5
63F 32		<6	95	--	--	--	--	--	10
63F 31		<6	3	--	--	--	--	--	1.2
63F 48		<6	<3	--	--	--	--	--	1.3
63F 35		<6	4	--	--	--	--	--	1.2
63F 36		<6	31	--	--	--	--	--	2.8
63F 36		<6	5	--	--	--	--	--	1.8
63F 16	SOW 105C	--	--	--	--	--	--	--	--
63G 23	SOW 111B	--	--	--	--	--	--	--	--
63G 24	SOW 111C	--	--	--	--	--	--	--	--
63G 16	SOW 104B	--	--	--	--	--	--	--	--
63H 4	SOW 103C	--	--	--	--	--	--	--	--
63H 5	SOW 103B	--	--	--	--	--	--	--	--
64H 8		--	--	--	--	--	--	--	--
64H 10		--	--	--	--	--	--	--	--
64J 31		<6	<3	1.0	5.9	4.7	120	--	0.6
64J 30		<6	<3	0.9	3.3	2.7	250	--	18
64J 10	SOW 112B	--	--	--	--	--	--	--	--
64J 11	SOW 112C	--	--	--	--	--	--	--	--
63J 3	SOW 113C	--	--	--	--	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

LOCAL IDENTIFIER	STATION NUMBER	GEOLOGIC UNIT	DATE	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET)	DEPTH OF WELL, TOTAL (FEET)	DEPTH TO BOTTOM OF SAMPLE INTERVAL (FT)	DEPTH TO TOP OF SAMPLE INTERVAL (FT)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)
	CITY OF SUFFOLK								
58A 84 SOW 180H	363655076332009	110QRNR	02-09-88	4.11	20.00	20	10	540	6.00
58A 80 SOW 180D	363655076332005	125PLCN	02-09-88	21.85	440.00	440	430	1650	7.90
58A 83 SOW 180G	363655076332008	121CSPKU	02-09-88	8.00	165.00	165	155	1550	7.40
58A 79 SOW 180C	363655076332004	211CRCSU	02-11-88	104.69	710.00	710	700	1400	8.20
58A 81 SOW 180E	363655076332006	125PLCN	02-10-88	16.32	329.00	329	319	3300	8.20
58A 82 SOW 180F	363655076332007	124EOCN	02-10-88	11.83	306.00	306	286	3500	8.10
58A 78 SOW 180B	363655076332003	217PPSC	02-16-88	103.65	880.00	880	870	1320	7.80
58A 77 SOW 180A	363655076332002	217PTXN	02-17-88	97.95	1209.00	1210	1200	8000	6.90

LOCAL IDENTIFIER	PH LAB (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	COLOR (PLATINUM-COBALT UNITS)	HARDNESS TOTAL (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY WAT WH TOT FET FIELD MG/L AS CACO3
58A 84 SOW 180H	6.10	14.0	2	210	61	15	4.2	1.9	14
58A 80 SOW 180D	8.40	18.5	5	12	1.6	1.9	340	15	616
58A 83 SOW 180G	8.00	17.0	27	62	8.9	9.7	390	20	626
58A 79 SOW 180C	8.30	20.0	4	8	1.6	1.0	310	11	561
58A 81 SOW 180E	8.20	18.0	3	43	5.3	7.3	650	27	756
58A 82 SOW 180F	8.10	17.0	9	52	6.7	8.6	650	28	776
58A 78 SOW 180B	8.20	20.0	13	6	1.8	0.48	290	9.9	--
58A 77 SOW 180A	7.30	20.0	4	120	26	14	1300	33	551

LOCAL IDENTIFIER	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)
58A 84 SOW 180H	4.0	150	24	0.20	7.9	307	316	9.60	0.100
58A 80 SOW 180D	630	42	110	4.4	10	927	898	<0.100	0.220
58A 83 SOW 180G	640	40	210	1.0	35	1120	1090	<0.100	1.40
58A 79 SOW 180C	571	22	86	4.8	12	802	787	<0.100	0.020
58A 81 SOW 180E	790	98	450	2.5	16	1720	1720	<0.100	1.80
58A 82 SOW 180F	780	87	430	2.0	21	1770	1710	0.200	2.20
58A 78 SOW 180B	523	25	85	4.4	14	755	747	<0.100	0.120
58A 77 SOW 180A	562	220	1600	0.30	37	3670	3570	<0.100	0.530

LOCAL IDENTIFIER	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHOROUS TOTAL (MG/L AS P)	BORON, DISSOLVED (UG/L AS B)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	ZINC, DISSOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)
58A 84 SOW 180H	0.40	<0.010	10	940	660	140	150	530	5.2
58A 80 SOW 180D	2.1	0.110	3600	540	120	<10	3	25	2.5
58A 83 SOW 180G	1.9	0.330	2200	160	78	10	4	18	6.1
58A 79 SOW 180C	0.40	0.250	2200	310	310	<10	7	53	0.8
58A 81 SOW 180E	2.2	0.060	4100	46000	80	20	30	80	4.7
58A 82 SOW 180F	2.5	0.160	4200	1300	50	10	<10	20	10
58A 78 SOW 180B	0.30	0.310	1800	520	530	30	34	27	0.3
58A 77 SOW 180A	0.70	0.050	2700	12000	7000	170	150	60	0.9

Geologic unit (aquifer):

110QRNR - Quaternary System
121CSPKU - Upper Chesapeake Group
124EOCN - Eocene Series
125PLCN - Pliocene Series
211CRCSU - Upper Cretaceous Series
217PPSC - Patapsco Formation
217PTXN - Patuxent Formation

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

LOCAL IDENT-I-FIER	STATION NUMBER	GEO-LOGIC UNIT	DATE	DEPTH OF WELL, TOTAL (FEET)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	DI-CHLORO-BROMO-METHANE TOTAL (UG/L)
	PRINCE WILLIAM COUNTY							
49U 63	385153077410701	231BLRN	07-19-88	--	635	179	6.25	<0.20
50V 87	385436077363301	231BLRN	07-19-88	--	350	E460	7.00	<0.20
50V 88	385259077341201	000IRSV	07-19-88	--	315	480	6.80	<0.20
50U127	384819077342401	000MMPS	07-19-88	--	290	560	7.00	<0.20
50U128	384627077373001	000IRSV	07-19-88	300.00	332	620	7.50	<0.20
50T 63	384146077320901	231BLBF	07-19-88	--	199	490	7.40	<0.20
51U144	384553077271601	231MNSS	07-21-88	--	302	290	7.30	<0.20
50T 65	383810077340101	231MNSS	07-21-88	--	220	420	7.20	<0.20
50T 64	383843077300701	231BLBF	07-21-88	--	270	300	7.30	<0.20

LOCAL IDENT-I-FIER	CARBON-TETRA-CHLO-RIDE TOTAL (UG/L)	1,2-DI-CHLORO-ETHANE TOTAL (UG/L)	BROMO-FORM TOTAL (UG/L)	CHLORO-DI-BROMO-METHANE TOTAL (UG/L)	CHLORO-FORM TOTAL (UG/L)	TOLUENE TOTAL (UG/L)	BENZENE TOTAL (UG/L)	CHLORO-BENZENE TOTAL (UG/L)	CHLORO-ETHANE TOTAL (UG/L)
49U 63	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
50V 87	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
50V 88	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
50U127	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
50U128	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
50T 63	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
51U144	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
50T 65	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
50T 64	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

LOCAL IDENT-I-FIER	ETHYL-BENZENE TOTAL (UG/L)	METHYL-BROMIDE TOTAL (UG/L)	METHYL-CHLO-RIDE TOTAL (UG/L)	METHYL-ENE CHLO-RIDE TOTAL (UG/L)	TETRA-CHLORO-ETHYL-ENE TOTAL (UG/L)	TRI-CHLORO-FLUORO-METHANE TOTAL (UG/L)	1,1-DI-CHLORO-ETHANE TOTAL (UG/L)	1,1-DI-CHLORO-ETHYL-ENE TOTAL (UG/L)	1,1,1-TRI-CHLORO-ETHANE TOTAL (UG/L)
49U 63	<0.20	<0.20	<0.20	<4.8	<0.20	<0.20	<0.20	<0.20	<0.20
50V 87	<0.20	<0.20	<0.20	<7.8	<0.20	<0.20	<0.20	<0.20	<0.20
50V 88	<0.20	<0.20	<0.20	<16	<0.20	<0.20	<0.20	<0.20	<0.20
50U127	<0.20	<0.20	<0.20	<9.8	<0.20	<0.20	<0.20	<0.20	<0.20
50U128	<0.20	<0.20	<0.20	<10	<0.20	<0.20	<0.20	<0.20	<0.20
50T 63	<0.20	<0.20	<0.20	<10	<0.20	<0.20	<0.20	<0.20	<0.20
51U144	<0.20	<0.20	<0.20	<7.6	<0.20	<0.20	<0.20	<0.20	<0.20
50T 65	<0.20	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
50T 64	<0.20	<0.20	1.7	<17	<0.20	<0.20	<0.20	<0.20	<0.20

Geologic unit (aquifer):

000IRSV - Intrusive rocks
000MMPS - Metamorphosed sedimentary rocks
231BLBF - Balls Bluff Formation
231BLRN - Bull Run Formation
231MNSS - Manassas Formation

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

LOCAL IDENT-I-FIER	1,1,2-TRI-CHLORO-ETHANE TOTAL (UG/L)	1,1,2,2 TETRA-CHLORO-ETHANE TOTAL (UG/L)	1,2-DI-CHLORO-BENZENE TOTAL (UG/L)	1,2-DI-CHLORO-PROPANE TOTAL (UG/L)	1,2-TRANSDI CHLORO-ETHENE TOTAL (UG/L)	1,3-DI-CHLORO-PROPENE TOTAL (UG/L)	1,3-DI-CHLORO-BENZENE TOTAL (UG/L)	1,4-DI-CHLORO-BENZENE TOTAL (UG/L)	2-CHLORO-ETHYL-VINYL-ETHER TOTAL (UG/L)
				PRINCE WILLIAM COUNTY--Continued					
49U 63	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
50V 87	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
50V 88	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
50U127	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
50U128	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
50T 63	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
51U144	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
50T 65	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
50T 64	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

LOCAL IDENT-I-FIER	DI-CHLORO-DI-FLUORO-METHANE TOTAL (UG/L)	TRANS-1,3-DI-CHLORO-PROPENE TOTAL (UG/L)	CIS 1,3-DI-CHLORO-PROPENE TOTAL (UG/L)	1,2-DIBROMO ETHYL-ENE TOTAL (UG/L)	VINYL CHLO-RIDE TOTAL (UG/L)	TRI-CHLORO-ETHYL-ENE TOTAL (UG/L)	STYRENE TOTAL (UG/L)	XYLENE TOTAL WATER WHOLE TOT REC (UG/L)
49U 63	<0.20	<0.20	<0.20	<0.2	<0.20	<0.2	<0.2	<0.2
50V 87	<0.20	<0.20	<0.20	<0.2	<0.20	<0.2	<0.2	<0.2
50V 88	<0.20	<0.20	<0.20	<0.2	<0.20	<0.2	<0.2	<0.2
50U127	<0.20	<0.20	<0.20	<0.2	<0.20	<0.2	<0.2	<0.2
50U128	<0.20	<0.20	<0.20	<0.2	<0.20	<0.2	<0.2	<0.2
50T 63	<0.20	<0.20	<0.20	<0.2	<0.20	<0.2	<0.2	<0.2
51U144	<0.20	<0.20	<0.20	<0.2	<0.20	<0.2	<0.2	<0.2
50T 65	<0.20	<0.20	<0.20	<0.2	<0.20	<0.2	<0.2	<0.2
50T 64	1.0	<0.20	<0.20	<0.2	<0.20	<0.2	<0.2	<0.2

Page

Abingdon, Spring Creek near..... 325
Abrams Creek, at Winchester..... 34
near Winchester..... 56
Access to WATSTORE data..... 21-22
Accomack County, ground-water records in..... 348
quality of ground water.....428-435
Accotink Creek, near Accotink Station..... 35
near Annandale..... 90
Accuracy of stage and water-discharge records.. 16
Acre-foot, definition of..... 22
Adenosine triphosphate (ATP), definition of.... 22
Afton, Stockton Creek near..... 318
Albemarle County, ground-water records in..... 348
Alexandria, Cameron Run at..... 89
Fourmile Run at..... 315
Algae, definition of..... 22
Algal growth potential (AGP), definition of.... 22
Allen Creek near Boydton..... 265
Allisonia, Big Reed Island Creek near..... 283
New River at..... 284
Altavista, Roanoke River at..... 241
Amelia, Flat Creek near..... 320
Amherst, Buffalo River tributary near..... 318
Analyses of samples collected at
partial-record, special study, and
miscellaneous sites.....334-345
Anderson Branch at Sussex..... 37
Andersonville, Holiday Creek near.....187-189
Annandale, Accotink Creek near..... 90
Annual mean discharge at selected
gaging stations..... 4
Annual mean flow for seven representative
gaging stations..... 5
Annual median concentration of total
phosphorus for period 1974-88 in
James River at Cartersville, Va..... 10
Appomattox County, ground-water records in..... 349
Appomattox, Right Hand Fork near..... 321
Appomattox River, at Farmville..... 191
at Matoaca.....194-196
at Mattoax..... 192
near Petersburg..... 37
Aquia Creek near Garrisonville..... 92
Aquifer, definition of..... 22
explanation of..... 20
Ark, Beaverdam Swamp near.....108-109
Arlington County, ground-water records in.....349-350
Arrangement of surface-water quality records... 17
Artesian, definition of..... 22
Artificial substrate, definition of..... 28
Arvonia, Slate River near..... 173
Ash mass, definition of..... 23
Ashland, South Anna River near..... 113
Average discharge, explanation of..... 15
Aylett, Aylett Creek at..... 317
Aylett Creek at Aylett..... 317

Back Creek (James River basin), at Sunrise.....130-132
on Rt. 600, near Mountain Grove..... 36
near Mountain Grove.....136-138
near Sunrise.....127-129
Back Creek (Potomac River basin)
near Lyndhurst..... 34
Back Creek (Roanoke River basin), near Dundee.. 235
near Roanoke..... 37
Bacova, Jackson River near.....124-126
Bacteria, definition of..... 22
fecal coliform, definition of..... 22
fecal streptococcal, definition of..... 23
total coliform, definition of..... 22
Bailey Branch tributary at Spring Grove..... 320
Bane, Walker Creek at..... 288
Banister River at Halifax..... 261
Barhamsville, Beaverdam Creek
at Rt. 632, near..... 204
Wahrani Swamp at Rt. 632, near..... 205
Bartlick, Russell Fork at..... 324
Barton Fork near Council..... 43

Page

Bassett, Smith River at..... 252
Battle Run near Laurel Mills..... 93
Bear Creek, miscellaneous site..... 332
near Marion.....342-343
Bearskin Creek near Chatham..... 322
Beaver Creek, at Bristol..... 308
near Wallace..... 39
Beaverdam Creek (James River basin),
at Rt. 156, at Mechanicsville.....334-337
at Rt. 632, near Barhamsville..... 204
at State Farm..... 37
miscellaneous sites.....330-331
Beaverdam Creek (Kanawha River basin)
at Hillsville..... 322
Beaverdam Creek (Tennessee River basin)
at Damascus..... 39,324
Beaverdam Run near Garrisonville..... 35
Beaverdam Swamp near Ark.....108-109
Bed load, definition of..... 27
Bed load discharge, definition of..... 27
Bed material, definition of..... 23
Bell Creek, at Franks Mill, near Staunton..... 34
at St. Pauls Chapel, near Staunton..... 34
near Staunton..... 34
Bent Creek, James River at..... 166
Berryville, Opequon Creek near..... 55
Beulahville, Mattaponi River near.....120-121
Big Moccasin Creek at Collinwood,
near Hansonville..... 40,325
near Gate City..... 40
Big Otter River, near Altavista..... 38
near Bedford..... 38
near Evington..... 242
Big Reed Island Creek near Allisonia..... 283
Big Rock, Levisa Fork at..... 295
Big Sandy River basin, crest-stage
partial-record stations in.....323-324
gaging-station records in.....295-302
reservoirs in.....298,300
Big Spring (James River basin) at Kerrs Creek.. 34
Big Spring (Potomac River basin)
near Leesburg..... 34
Big Springs at Elliston..... 37
Big Stone Gap, Powell River at..... 326
Biochemical oxygen demand (BOD),
definition of..... 23
Biomass, definition of..... 23
Birchleaf, Russell Fork near..... 323
Blackman Creek, miscellaneous site..... 328
Blacks Creek near Mt. Airy..... 322
Blackwater River (Chowan River basin),
at Zuni.....42,219-220
near Burdette..... 37
near Dendron..... 37,321
near Franklin.....221-223
tributary near Holland..... 321
Blackwater River (Roanoke River basin),
near Rocky Mount..... 236
near Union Hall..... 37
Blue-green algae, definition of..... 26
Bluestone River, at Bluefield..... 39
at Falls Mills..... 294
Bolar Spring at Bolar..... 36
Bottom material, definition of..... 23
Bowling Green, Mattaponi River near..... 119
Boydton, Allen Creek near..... 265
Kerr Reservoir, John H., near..... 264
Brink, Fountains Creek near..... 229
Bristol, Beaver Creek at..... 308
Broad Run, at Buckland..... 35
near Bristow..... 35
near Warrenton..... 315
Broadway, Linville Creek at..... 69
Brookneal, Roanoke River at..... 243
Snake Creek near..... 321
Brumley Creek, at Brumley Gap.....39,43,325
near Hansonville..... 39,41
Brumley Gap, Brumley Creek at..... 325

Page

Buchanan County, ground-water records in.....350-351
Buchanan, James River at..... 160
Renick Run near..... 318
Buck Mountain Creek near Free Union..... 176
Buckingham County, ground-water records in.....351-352
Buckton, Passage Creek near..... 74
Buena Vista, Maury River near..... 164
Buffalo Branch tributary near Christian..... 314
Buffalo Creek, near Glasgow..... 36
near Hampden Sydney..... 190
Buffalo River, near Tye River..... 169
tributary near Amherst..... 318
Buggs Island, Roanoke River at..... 322
Bull Run, Cub Run near..... 33,39
Bull Run, near Catharpin..... 35,41
near Clifton..... 35,41
near Manassas..... 35
near Manassas Park..... 35
Bullpasture River at Williamsville..... 154
Bunch Creek near Boswells Tavern..... 36,41
Burketown, North River near..... 58
Burkeville, Nottoway River near..... 320
Burton Spring, miscellaneous site..... 333
Bush Mill Stream, miscellaneous site..... 327
near Heathsville..... 35,315
Byers Creek, miscellaneous site..... 332
near Glade Spring.....344-345

Caldwells Creek near Appomattox..... 38
Calfpasture River, above Mill Creek at Goshen.. 161
at Goshen..... 36
Cameron Run at Alexandria..... 89
Carter Run near Marshall..... 41,315
Cartersville, James River at.....180-182
Castle Spring near Churchville..... 34
Cat Point Creek near Montross..... 105
Catawba, Catawba Creek near..... 159
Catawba Creek, near Catawba..... 159
near Fincastle..... 36
Catlett, Cedar Run near..... 315
Catoctin Creek at Taylorstown..... 78
Cedar Creek (Potomac River basin)
near Winchester..... 73
Cedar Creek (Tennessee River basin),
miscellaneous site..... 332
near Cedarville.....344-345
near Lebanon..... 40
near Meadowview..... 324
Cedar Grove Branch near Rockbridge Baths..... 318
Cedar Run, near Aden..... 41
near Catlett..... 33,315
near Warrenton..... 33,315
Cedar Springs, Cripple Creek at..... 322
Cedarville, Cedar Creek near.....344-345
Cedarville Spring at..... 39
Cedarville Spring at Cedarville..... 39
Cells/volume, definition of..... 23
CFSM, explanation of..... 16
Champlain, Farmers Hall Creek near..... 316
Charles City County, ground-water
records in.....352-353
Charlottesville, Moores Creek near..... 319
Rivanna River, South Fork, near..... 177
Schenks Branch at..... 319
Chatham, Bearskin Creek near..... 322
Chatham Hill, Lick Creek near..... 325
Chemical oxygen demand (COD), definition of.... 23
Chesapeake (independent city),
ground-water records in.....353-354
Chesterfield, Falling Creek near..... 186
Chestnut Creek at Galax..... 280
Chickahominy River, above Walkers Dam,
at Walkers.....200-201
above Walkers Dam, near Walkers..... 42
miscellaneous sites.....330-331
near Providence Forge.....197-199
Chickahominy River, analyses of samples
collected at partial-record, special study,
and miscellaneous sites:
at I-64, near White Oak Swamp.....338-341
at Rt. 33, near Glen Allen.....334-337
at Rt. 156, near Seven Pines.....338-341
at Rt. 609, at Roxbury.....338-341
at Rt. 615, near Highland Springs.....334-337
at Rt. 625, near Glen Allen.....338-341
at Rt. 627, near Richmond.....334-337

Page

Chilhowie, Hutton Creek near.....324,344-345
South Fork Holston River at
Riverside near..... 303
Chlorophyll, definition of..... 23
Chopawamsic Creek:
Middle Fork, near Garrisonville..... 35
North Branch, near Independent Hill..... 35
South Branch, near Garrisonville..... 35
Chowan River basin, crest-stage partial-record
stations in.....320-321
gaging-station records in.....213-229
Christian, Buffalo Branch tributary near..... 314
Christians Creek near Fishersville..... 59
Chub Run near Stanley..... 314
Clarke County, ground-water records in..... 355
Classification of surface-water quality
records..... 17
Clarksville, Roanoke River at..... 263
Claytor Reservoir near Radford..... 285
Cleveland, Clinch River at..... 311
Clifton Forge, Cowpasture River near..... 155
Clinch River, above Tazewell, TN..... 312
at Cedar Bluff..... 40
at Cleveland..... 311
at Clinchport..... 40
at Richlands..... 310
at Speers Ferry.....40,43,326
miscellaneous sites..... 333
North Fork, at Duffield..... 40
Clintwood, Cranes Nest River near..... 299
Cochran, Great Creek near..... 321
Coeburn, Guest River at..... 326
Coliform bacteria, fecal..... 22
total..... 22
Collection and computation of,
ground-water levels..... 20
ground-water quality..... 21
stage and water-discharge records..... 11-12
Colonial Heights (independent city), ground-
water records in..... 356
Color unit, definition of..... 23
Contents, definition of..... 23
Contrary Creek near Mineral..... 36,316
Control, definition of..... 23
Control structure, definition of..... 23
Conversion factors.....inside back cover
Cooks Creek at Mt. Crawford..... 34
Cooperation, explanation of.....2,15,19
Cootes Store, North Fork Shenandoah
River at..... 68
Copper Creek near Gate City..... 40,326
Council, Russell Fork at..... 323
Cove Creek, near Hilton..... 39
near Shelleys..... 325
West Fork, near Bluefield..... 39
Cove Spring, miscellaneous site..... 332
Covington, Dunlap Creek near..... 151
Jackson River at Filtration Plant, at.....149-150
Jackson River below Dunlap Creek, at..... 152
Potts Creek near..... 153
Cowpasture River, near Clifton Forge..... 155
near Head Waters..... 317
Cox Branch, miscellaneous site..... 331
Craig Creek, at New Castle..... 318
at Parr..... 158
tributary near New Castle..... 318
Cranes Nest River near Clintwood..... 299
Crest-stage partial-record stations.....314-326
Cripple Creek, at Cedar Springs..... 322
near Ivanhoe..... 38
Crooked Run near Mt. Jackson..... 314
Cub Creek at Phenix..... 245
Cub Run near Bull Run..... 33,39
Cubic feet per second per square mile,
definition of..... 23
Cubic foot per second, definition of..... 23
Cubic-foot-per-second day, definition of..... 24
Culpeper, Mountain Run near..... 98
Pony Mountain Branch near..... 316
Rapidan River near..... 101
Cypress Chapel, Cypress Swamp at..... 211
Cypress Swamp at Cypress Chapel..... 211

Daleville, Tinker Creek near..... 233
Damascus, Beaverdam Creek at..... 324
South Fork, Holston River near..... 304

Page

Dan River, at Clarksville..... 38
at Danville..... 256
at Paces.....43,257-259
at South Boston.....38,43,322
Danville, Dan River at..... 256
Sandy River near..... 255
Data, accuracy of..... 16
collection and computation of ground-water levels..... 20
collection and computation of ground-water quality..... 21
collection and computation of stage and water discharge..... 13-14
presentation, ground-water levels..... 20
ground-water quality..... 21
stage and water-discharge..... 14-16
surface-water quality..... 18-19
Datum of ground-water levels, explanation of... 20
Dawn, Reedy Creek near..... 317
Deep Creek near Mannboro..... 193
Definition of terms..... 22-30
Dendron, Blackwater River near..... 321
Denniston, Hyco River near..... 262
Diascund Creek, at Rt. 628, near New Kent..... 202
miscellaneous site..... 331
Diascund Creek Reservoir, off pump station, near Walkers..... 206
off Timber Swamp, near Walkers..... 203
Diatoms, definition of..... 26
Difficult Run near Great Falls..... 84
Dinwiddie, Stony Creek near..... 215
Discharge, annual mean, at selected gaging stations..... 4
Discharge at partial-record stations and miscellaneous sites.....314-333
Discharge, definition of..... 24
estimated daily, explanation of..... 16
instantaneous, definition of..... 24
mean, definition of..... 24
Discharge during 1988 water year compared with median discharge for period 1951-80 for four representative gaging stations..... 6
Discontinued gaging stations, list of..... 34-40
Discontinued water-quality stations, list of... 41-43
Dissolved, definition of..... 24
Dissolved-solids concentration, definition of.. 24
Dooms, South River near..... 62
Doswell, Little River near..... 112
North Anna River at Hart Corner near..... 111
Downstream order system, explanation of..... 12
Doyles River near White Hall..... 319
Dragon Swamp, at Mascot..... 107
near Church View..... 36
Drainage area, definition of..... 24
explanation of, stage and water discharge... 14
explanation of, surface-water quality..... 19
Drainage basin, definition of..... 24
Dry mass, definition of..... 23
Dry River at Rawley Springs..... 34
Dublin, Thorne Springs Branch near..... 322
Dugspur, Mira Fork tributary near..... 322
Dundee, Back Creek near..... 235
Dunlap Creek near Covington..... 151

Eden, NC, Smith River at..... 254
Elams, NC, Lake Gaston near..... 266
Elk Run at Elkton..... 34
Elkhorn City, KY, Russell Fork at..... 302
Elko, White Oak Swamp at Rt. 186 at.....338-341
Emporia, Meherrin River at.....226-228
Estimated daily discharges, identification of.. 16
Evington, Big Otter River near..... 242
Explanation of ground-water level records..... 20-21
Explanation of stage and water-discharge records..... 13-17
Explanation of the records..... 11-21
Explanation of water-quality records..... 17-19
Extremes, explanation of:
ground-water levels..... 21
stage and water discharge..... 15
surface-water quality..... 19

Factors for converting inch-pound units to International System of Units (SI).....inside back cover

Page

Fairfax County, ground-water records in..... 357
Falling Creek, near Chesterfield..... 186
near Drewrys Bluff..... 37
near Midlothian..... 320
Falling River, at Spring Mills..... 38
near Brookneal..... 38
near Naruna..... 244
Falling Spring Creek near Falling Spring..... 36
Falling Spring, Jackson River at..... 317
Falls Creek tributary near Victoria..... 321
Falls Mills, Bluestone River at..... 294
Farmers Hall Creek near Champlain..... 316
Farmville, Appomattox River at..... 191
Fecal coliform bacteria, definition of..... 22
streptococcal bacteria, definition of..... 23
Ferncliff, Foster Creek near..... 316
Figure 1. Annual mean discharge at selected gaging stations..... 4
2. Discharge during 1988 water year compared with median discharge for period 1951-80 for four representative streamflow gaging stations... 6
3. Monthly departure of actual streamflow from median streamflow... 8
4. Monthly ground-water levels at key observation wells..... 9
5. Annual median concentration of total phosphorus for period 1974-88 in James River at Cartersville, Va.. 10
6. System for numbering wells and miscellaneous sites..... 12
7. Map of Virginia showing location of surface-water and water-quality data-collection stations..... 44-45
8. Map of Virginia showing location of surface-water partial-record stations..... 46-47
9. Map of Virginia showing location of ground-water observation wells..... 48-49
10. Map of southeastern Virginia showing location of ground-water observation wells..... 50-51
Fincastle, North Fork near..... 318
Fine Creek at Fine Creek Mills..... 183
Fine Creek Mills, Fine Creek at..... 183
Fishersville, Christians Creek near..... 59
Fishpond Creek near Hixsburg..... 42
Flannagan Reservoir, John W., near Haysi..... 300
Flat Creek near Amelia..... 37,320
Fontaine Creek near Emporia..... 37
Footnotes, ground-water quality records..... 347
surface-water and quality-of-water records.. 53
Foster Creek near Ferncliff..... 316
Fountains Creek near Brink..... 229
Fourmile Run at Alexandria..... 34,315
Francis Spring near Bane..... 38
Franklin, Blackwater River near.....221-223
Franklin (independent city), ground-water records in.....357-358
Fredericksburg, Rappahannock River near.....102-104
Free Union, Buck Mountain Creek near..... 176
Moormans River near..... 175
Front Royal, South Fork Shenandoah River at.... 67

Gage, explanation of..... 15
Gage height (G.H.), definition of..... 24
Gaging station, definition of..... 24
Gaging-station records..... 54-313
Gaging stations, discontinued list of..... 34-40
Galax, Chestnut Creek at..... 280
New River near..... 279
Garrisonville, Aquia Creek near..... 92
Gasburg, Pea Hill Creek above N C. State line, near.....274-277
Pea Hill Creek at Rt. 665 near.....271-272
Gate City, Copper Creek near..... 326
North Fork Holston River near..... 325
Georges Creek near Gretna..... 260
Georges Fork, Pound River near..... 323
Glade Creek at Grahams Forge..... 281
Glade Spring, Byers Creek near.....344-345
Hall Creek near..... 324
Glen Lyn, New River at.....290-293
Glen Allen, Chickahominy River at Rt. 35 near..334-337
Chickahominy River at Rt. 625 near.....334-337

Page

Goose Creek (Potomac River basin), near Leesburg..... 41,83
near Middleburg..... 82
Goose Creek (Roanoke River basin), at Huddleston..... 38
near Huddleston..... 240
Goshen, Calfpasture River above Mill Creek, at..... 161
Grahams Forge, Glade Creek at..... 281
Reed Creek at..... 282
Graysonton, Little River at..... 286
Great Creek near Cochran..... 37,321
Great Dismal Swamp basin, gaging-station records in.....211-212
Great Dismal Swamp, Lake Drummond in..... 212
Great Falls, Difficult Run near..... 84
Great Wicomico River basin, crest-stage partial-record stations in..... 315
discharge measurements made at miscellaneous site in..... 327
Great Wicomico River near Horse Head..... 315
Green algae, definition of..... 26
Greenfield, Rockfish River near..... 170
Greenwood, Stony Run at Rt. 656 near.....334-337
Gretna, Georges Creek near..... 260
Grissom Creek near Council..... 43
Groseclose, Middle Fork Holston River at...305,342-343
Grottoes, Middle River near..... 60
White Oak Run near..... 64
Ground-water level records.....348-427
Ground-water level records, explanation of..... 18-19
Ground-water levels at key observation wells... 9
Ground-water quality records.....428-438
explanation of..... 21
Grundy, Levisa Fork near..... 323
Guest River at Coeburn..... 40,326
Guy Creek near Nassawadox..... 54

Halifax, Banister River at..... 261
Halifax County, ground-water records in..... 359
Hall Creek near Glade Spring..... 324
Hampden Sydney, Buffalo Creek near..... 190
Haneytown Creek near Stanardsville..... 319
Hanover, Pamunkey River near.....114-116
Hansonville, Big Moccasin Creek at Collinwood, near..... 325
Happy Creek at Front Royal..... 34
Hardness, definition of..... 24
Hardware River, below Briery Run near Scottsville..... 172
near Scottsville..... 36
Harris Creek near Trevilians..... 317
Harriston, South River at..... 63
Hawksbill Creek near Luray..... 34
Hayfield, Hogue Creek near..... 314
Haysi, John W. Flannagan Reservoir near..... 300
Pound River below Flannagan Dam, near..... 301
Russell Fork at..... 297
Hazel River at Rixeyville..... 41,94
Head Waters, Cowpasture River near..... 317
Heathsville, Bush Mill Stream near..... 315
Henrico County, ground-water records in.....359-361
Henrico, NC, Lake Gaston near.....267-270
Highland Springs, Chickahominy River at Rt. 615 near.....334-337
Hillsville, Beaverdam Creek at..... 322
Hogue Creek near Hayfield..... 34,314
Holcombs Rock, James River at..... 165
Holiday Creek, near Andersonville.....187-189
near Toga..... 320
North, near Toga..... 320
Holland, Blackwater River tributary near..... 321
Holston River:
Middle Fork, at Chilhowie..... 39,41
at Groseclose.....305,342-343
at Seven Mile Ford.....306,344-345
miscellaneous sites..... 332
near Meadowview.....307,344-345
North Fork, at Holston..... 39,41
near Gate City.....40,43,325
near Mendota..... 39
near Plasterco..... 39
near Saltville..... 309
South Fork, at Riverside, near Chilhowie.... 303
at Teas..... 324
near Chilhowie..... 39
near Damascus..... 43,304

Page

Hooes Run near Occoquan..... 35
Hopewell (independent city), ground-water records in.....361-362
Horse Head, Great Wicomico River near..... 315
Horsepen Branch at Richmond..... 320
Horsepen Creek, miscellaneous site..... 328
Hoskins Creek, miscellaneous site..... 327
near Tappahannock..... 33,316
Hot Springs, Jackson River below Gathright Dam, near.....140-148
Lake Moomaw near..... 139
Huddleston, Goose Creek near..... 240
Hutton Creek, miscellaneous site..... 332
near Chilhowie.....324,344-345
Hyco River, near Denniston..... 262
near Omega..... 38
Hydrologic bench-mark network, definition of... 11,25
Hydrologic conditions, summary of..... 2-11
Hydrologic unit, definition of..... 24

Identifying estimated daily discharge..... 16
Independent Hill, South Fork Quantico Creek near..... 91
Instantaneous discharge, definition of..... 24
Instrumentation, explanation of..... 19,20
Introduction..... 1
Isle of Wight County, ground-water records in.....362-368

Jackson River, at Covington..... 36
at Falling Spring.....36,42,317
at Filtration Plant, at Covington.....149-150
below Dunlap Creek, at Covington..... 152
below Gathright Dam, near Hot Springs.....140-148
near Bacova.....124-126
James City County, ground-water records in.....368-372
James River, at Bent Creek..... 42,166
at Buchanan..... 42,160
at Cartersville.....42,180-182
at Holcombs Rock..... 165
at Lick Run..... 156
at Scottsville..... 42,171
near Richmond..... 42,185
James River and Kanawha Canal near Richmond.... 42,184
James River basin, analyses of samples collected at partial-record, special study, and miscellaneous sites.....334-341
crest-stage partial-record stations in.....317-320
discharge measurements made at miscellaneous sites in.....327-331
gaging-station records in.....124-210
Jefferson, NC, South Fork New River near..... 278
Johns Creek at New Castle..... 157
Jones Run, above C&O RR at Providence Forge....338-341
miscellaneous site..... 331
Jonesville, Powell River near..... 313
Jordans Branch at Richmond..... 320

Ka, Stony Creek at..... 326
Kanawha River basin, crest-stage partial-record stations in..... 322
discharge measurements made at miscellaneous sites in..... 331
gaging-station records in.....278-294
Karnes Spring near Buchanan..... 36
Kelsa, Knox Creek at..... 324
Kerr Reservoir, John H., near Boydton..... 264
Kerrs Creek near Lexington..... 163
Kersaw Branch near Hurley..... 39
Kibler, Talbott Reservoir near..... 247
Townes Reservoir near..... 247
King and Queen County, ground-water records in..... 373
King Wlliam County, ground-water records in....373-374
Knox Creek at Kelsa..... 39,324

Laboratory measurements..... 18
Lafayette, Roanoke River at..... 231
Lake Drummond in Great Dismal Swamp..... 212
Lake Gaston, near Elams, NC..... 266
near Henrico, NC.....267-270
Lake Moomaw near Hot Springs..... 139
Lakes and reservoirs:
Claytor Reservoir near Radford..... 285
Drummond, Lake, in Great Dismal Swamp..... 212
Flannagan, John W., Reservoir near Haysi.... 300
Kerr, John H., Reservoir near Boydton..... 264

Page

Lakes and reservoirs (Continued):
Leesville Lake near Leesville..... 239
Moomaw Lake near Hot Springs..... 139
Philpott Lake near Philpott..... 250
Pound River, North Fork, Lake near Pound.... 298
Smith Mountain Lake near Penhook..... 237
Talbott Reservoir near Kibler..... 247
Townes Reservoir near Kibler..... 247
Lakeside Village, Willis River at..... 319
Lancaster County, ground-water records in..... 374
Land-surface datum, definition of..... 24
Latitude-longitude system, explanation of..... 12-13
Laurel Mills, Battle Run near..... 93
Lawrenceville, Meherrin River near..... 225
Leatherwood Creek near Old Liberty..... 38
Leesburg, Goose Creek near..... 83
Leesville Lake near Leesville..... 239
Leesville, Leesville Lake near..... 239
Levisa Fork, at Big Rock..... 43,295
below Fishtrap Dam, near Millard, KY..... 296
near Grundy.....39,43,323
Lewis Creek near Staunton..... 34
Lexington, Kerrs Creek near..... 163
Lick Creek near Chatham Hill..... 39,325
Lick Run, James River at..... 156
Lickinghole Creek near Goochland..... 37
Lightfoot, West Branch Long Hill Swamp near.... 320
Linville Creek at Broadway..... 69
Little Back Creek near Sunrise.....133-135
Little Creek Reservoir, North Central, near Norge.....207-208
South Central, near Norge.....209-210
Little Falling River at Hat Creek..... 38
Little River (Kanawha River basin), at Graysonton..... 286
near Copper Valley..... 38
Little River (Tennessee River basin) at Wardell..... 40
Little River (York River basin) near Doswell... 112
Little Tomahawk Creek, miscellaneous site..... 329
Location, explanation of:
ground-water levels..... 20
stage and water-discharge..... 14
surface-water quality..... 19
Locust Dale, Robinson River near..... 100
Long Branch near Annandale..... 34
Long Hill Swamp, West Branch, near Lightfoot... 320
Loudoun County, ground-water records in.....374-375
Louisa County, ground-water records in.....375-376
Louisa, Waldrop Creek near..... 317
Lovingston, Tye River near..... 167
Low flows, new record annual mean, established during the 1988 water year..... 3
Lunenburg, North Meherrin River near..... 224
Luray, South Fork Shenandoah River near..... 66
Lynch River at Nortonsville..... 319
Lynnwood, South Fork Shenandoah River near..... 65

Mannboro, Deep Creek near..... 193
Map of Virginia showing location of:
ground-water observation wells..... 48-49
surface-water, partial-record stations..... 46-47
surface-water and water-quality data-collection stations..... 44-45
Map of southeastern Virginia showing location of ground-water observation wells..... 50-51
Marion, Bear Creek near.....342-343
Nicks Creek near.....342-343
Staley Creek near.....342-343
Marlboro Spring at Marlboro..... 34
Marshall, Carter Run near..... 315
Martinsville, Smith River at..... 253
Mascot, Dragon Swamp at..... 107
Matoaca, Appomattox River at.....194-196
Mattaponi River, near Beulahville.....36,42,120-121
near Bowling Green..... 41,119
Mattoax, Appomattox River at..... 192
Maury River, at Glasgow..... 36
at Rockbridge Baths..... 162
near Buena Vista..... 164
near Lexington..... 36
Meadow Creek at New Castle..... 36
Meadowview, Cedar Creek near..... 324
Middle Fork Holston River near.....307,344-345
Mean concentration, definition of..... 27
Mean discharge, definition of..... 24

Page

Mean flow, annual, for seven representative gaging stations..... 5
Measurements, on-site..... 17-18
laboratory..... 18
Measuring point, definition of..... 24
Mechanicsville, Beaverdam Creek at Rt. 156, at.....334-337
Mechums River, near Ivy..... 37
near White Hall..... 174
Meherrin River, at Emporia.....42,226-228
near Lawrenceville..... 225
Metamorphic stage, definition of..... 24
Methylene blue active substance (MBAS), definition of..... 24
Micrograms per gram, definition of..... 25
Micrograms per liter, definition of..... 25
Middle River, near Grottoes..... 60
near Verona..... 34
Middleburg, Goose Creek near..... 82
Middlesex County, ground-water records in..... 377
Midlothian, Falling Creek near..... 320
Millard, KY, Levisa Fork below Fishtrap Dam, near..... 296
Milligrams of carbon per area or volume per unit of time for periphyton, macrophytes, and phytoplankton, definition of..... 26
Milligrams of oxygen per area or volume per unit of time for periphyton, macrophytes, and phytoplankton, definition of..... 27
Milligrams per liter, definition of..... 25
Millville, WV, Shenandoah River at..... 75-77
Mineral, Contrary Creek near..... 316
Mira Fork tributary near Dugspur..... 322
Miscellaneous sites, discharge measurements made at.....327-333
explanation of..... 16
numbering system for..... 12-13
Montgomery County, ground-water records in..... 377
Monthly departure of actual streamflow from median streamflow..... 8
Monthly ground-water levels at key observation wells..... 9
Montross, Cat Point Creek near..... 105
Moomaw Lake near Hot Springs..... 139
Moores Creek near Charlottesville..... 319
Moormans River, near Free Union..... 175
near White Hall..... 37
North Fork, near White Hall..... 37
Mount Jackson, North Fork Shenandoah River at.. 71
Mountain Grove, Back Creek near.....136-138
Mountain Run near Culpeper..... 98
Mt. Airy, Blacks Creek near..... 322
Mt. Jackson, Crooked Run near..... 314
Muddy Run near Stanardsville..... 319
Muddy Run Spring near Warm Springs..... 36
My Ladys Swamp near Saluda..... 316

Narrows, Wolf Creek near..... 289
Naruna, Falling River near..... 244
Nassawadox Creek basin, discharge measurement made at miscellaneous site in..... 327
gaging-station record in..... 54
Nassawadox Creek, miscellaneous site..... 327
Nassawadox, Guy Creek near..... 54
National Geodetic Vertical Datum of 1929 (NGVD), definition of..... 25
National stream-quality accounting network (NASQAN), definition of..... 11,25
National Technical Information Center..... 1
National trends network, definition of..... 11,25
Natural substrate, definition of..... 28
Neff-Litz Spring near Rural Retreat..... 38
Nelson County, ground-water records in..... 378
Nettleridge, South Mayo River near..... 248
New Castle, Craig Creek at..... 318
Craig Creek tributary near..... 318
Johns Creek at..... 157
New Kent, Diascund Creek at Rt. 628, near..... 202
New Kent County, ground-water records in..... 378
New Market, Smith Creek near..... 70
New River, at Allisonia..... 284
at Eggleston..... 38,41
at Glen Lyn.....290-293
at Ivanhoe..... 38
at Radford..... 43,287
near Baywood..... 38

Page

New River (Continued):
near Galax..... 43,279
near Grayson..... 38
South Fork, near Jefferson, NC..... 278
Newport News (independent city), ground-water records in.....378-381
Niagara, Roanoke River at..... 234
Nicks Creek, miscellaneous site..... 332
near Marion.....342-343
Norfolk (independent city), ground-water records in..... 382
Norge, Little Creek Reservoir (north central) near.....207-208
Little Creek Reservoir (south central) near.....209-210
Northampton County, quality of ground water....428-435
North Anna River, at Hart Corner near Doswell.. 111
below Lake Anna, near Hewlett..... 41
near Doswell..... 36
near Hewlett..... 36
near Partlow..... 110
North Atlantic Slope basins, gaging-station records in..... 54-123
North Fork near Fincastle..... 318
North Holiday Creek near Toga..... 320
North Mayo River near Spencer..... 249
North Meherrin River, near Keysville..... 37
near Lunenburg..... 42,224
North River, at Port Republic..... 34
near Burketown..... 58
near Stokesville..... 57
Nortonsville, Lynch River at..... 319
Nottoway River, near Burkeville.....37,42,320
near McKenney..... 37
near Rawlings..... 213
near Sebrell.....42,216-218
near Stony Creek..... 214
Numbering system for wells and miscellaneous sites..... 12-13
Numbers, station identification..... 12

Occoquan River, near Manassas..... 35
near Occoquan..... 35
Ohio River basin, gaging-station records in....278-313
On-site measurements and sample collection, surface-water quality..... 17-18
Opequon Creek near Berryville..... 55
Orange County, ground-water records in..... 383
Organic mass, definition of..... 23
Organism, definition of..... 25
Organism count/area, definition of..... 25
Organism count/volume, definition of..... 25
Organism total count, definition of..... 25
Other records available, explanation of..... 17
Otterdale Branch, miscellaneous site..... 328

Paces, Dan River at.....257-259
Palmyra, Rivanna River at..... 179
Pamunkey River near Hanover.....41,114-116
Parameter code, definition of..... 25
Parr, Craig Creek at..... 158
Partial-record station, definition of..... 25
explanation of..... 16
Partial-record stations, discharge measurements made at.....314-326
Particle-size classification, definition of.... 26
Particle size, definition of..... 25
Partlow, North Anna River near..... 110
Passage Creek near Buckton..... 74
Pea Hill Creek, above N.C. State line, near Gasburg.....274-277
at Rt. 665, near Gasburg.....271-272
miscellaneous site..... 331
near Bowens Corner, near Valentines..... 273
Peak Creek at Pulaski..... 38
Pedlar River near Pedlar Mills..... 36
Penhook, Smith Mountain Lake near..... 237
Pennington Gap, North Fork Powell River at..... 326
Percent composition, definition of..... 26
Percy Preston Spring near Wallace..... 39
Period of record, explanation of:
ground-water levels..... 21
stage and water discharge..... 14
surface-water quality..... 19
Periphyton, definition of..... 26

Page

Pesticides, definition of..... 26
Phenix, Cub Creek at..... 245
Philpott Lake near Philpott..... 250
Philpott, Philpott Lake near..... 250
Smith River near..... 251
Phytoplankton, definition of..... 26
Piankatank River basin, crest-stage partial-record station in..... 316
gaging-station record in..... 107
Picocurie, definition of..... 26
Pigg River, near Sandy Level..... 238
near Toshes..... 38
Piney River at Piney River..... 168
Piney River, Piney River at..... 168
Piscataway Creek near Tappahannock..... 106
Plains Mill Spring near New Market..... 34
Plankton, definition of..... 26
Plum Creek, miscellaneous site..... 334
Po River near Spotsylvania..... 118
Point of Rocks, MD, Potomac River at..... 79-81
Pony Mountain Branch near Culpeper..... 316
Potomac River, at Chain Bridge at Washington, DC..... 86-88
at Point of Rocks, MD..... 79-81
near Washington, DC..... 85
Potomac River basin, crest-stage partial-record stations in.....314-315
gaging-station records in..... 55-92
Potts Creek near Covington..... 153
Pound, Pound River above Indian Creek, at..... 323
Pound River below Bold Camp Creek, at..... 323
Pound River Lake, North Fork, at..... 298
Pound River, North Fork, at..... 323
Pound River, above Indian Creek, at Pound..... 39,323
below Bold Camp Creek, at Pound..... 39,323
below Flannagan Dam, near Haysi..... 301
near Georges Fork..... 39,323
North Fork, at Pound..... 39,323
Pound River Lake, North Fork, at Pound..... 298
Powder Mill Creek at Rocky Mount..... 321
Powell River, at Big Stone Gap.....40,43,326
near Jonesville..... 43,313
near Pennington Gap..... 40
North Fork, at Pennington Gap..... 40,326
South Fork, at Big Stone Gap..... 40
Powells Creek near Turbeville..... 321
Preface..... iii
Primary productivity, definition of..... 26
Prince George County, ground-water records in.. 383
Prince William County, ground-water records in.....383-385
quality of ground water.....437-438
Proffit, North Fork Rivanna River near..... 178
Providence Forge, Chickahominy River near.....197-199
Jones Run above C&O RR at.....338-341
Publications on techniques of water-resources investigations..... 30-32
Pughs Run near Woodstock..... 314
Pulaski County, ground-water records in..... 385

Quality of ground water.....428-438
Quantico Creek, near Dumfries..... 35
South Fork, near Dumfries..... 35
near Independent Hill..... 91
near Joplin..... 35
near Triangle..... 41
Quillen Springs near Gate City..... 40

Radford, Claytor Reservoir near..... 285
New River at..... 287
Radiochemical program, definition of..... 11,27
Randolph, Roanoke River at..... 246
Rapidan River, at Rapidan..... 35
near Culpeper..... 41,101
near Ruckersville..... 99
Rappahannock River, at Kellys Ford..... 35
at Remington..... 95-97
at VEPCO Dam, at Fredericksburg..... 41
near Fredericksburg.....41,102-104
near Warrenton..... 33,316
Rappahannock River basin, crest-stage partial-record stations in.....315-316
discharge measurements made at miscellaneous site in..... 327
gaging-station records in..... 93-106

Page

Rawlings, Nottoway River near..... 213
Records, accuracy of..... 16
  arrangement of surface-water quality..... 17
  collected by the State of Virginia..... 2
  explanation of, ground-water levels..... 20-21
    ground-water quality..... 21
    stage and water discharge..... 13-17
    surface-water quality..... 17-19
  other available..... 17
Recoverable from bottom material, definition of..... 27
Reed Creek at Grahams Forge..... 282
Reedy Creek near Dawn..... 317
Remarks codes.....19,53,347
Remarks, explanation of:
  ground-water levels..... 20
  stage and water discharge..... 15
  surface-water quality..... 19
Remington, Rappahannock River at..... 95-97
Renick Run near Buchanan..... 318
Reports, selected U.S. Geological Survey, on water resources in Virginia..... 33
Reservoir stations, explanation of..... 16
Reservoirs, See Lakes and reservoirs:
  in Big Sandy River basin.....298,300
  in James River basin..... 139
  in Kanawha River basin..... 285
  in Roanoke River basin.....237,239,247,250,264
Return period, definition of..... 27
Revised stage and discharge records, explanation of..... 14
Revisions, stage and water-discharge records... 15
  surface-water quality records..... 19
Richlands, Clinch River at..... 310
Richmond, Chickahominy River at Rt. 627 near.....334-337
  Horsepen Branch at..... 320
  James River and Kanawha Canal near..... 184
  James River near..... 185
  Jordans Branch at..... 320
  Upham Brook at Wilkinson Road near.....334-337
Right Hand Fork near Appomattox..... 321
Rivanna River, at Palmyra..... 179
  below Moores Creek, near Charlottesville.... 37
  near Charlottesville..... 37
  North Fork, near Proffit..... 178
  South Fork, near Charlottesville..... 177
    near Earlysville..... 37
Rixeyville, Hazel River at..... 94
Roanoke Creek at Saxe..... 38
Roanoke (independent city), ground-water records in..... 385
Roanoke River, above Dan River, at Clarksville..... 38
  at Altavista..... 42,241
  at Brookneal..... 243
  at Buggs Island..... 38,322
  at Clarksville..... 38,263
  at Clarkton..... 38
  at Lafayette..... 42,231
  at Niagara..... 234
  at Randolph..... 42,246
  at Roanoke..... 232
  near Clover..... 38
  near Gretna..... 38
  near Toshes..... 37
  South Fork, near Shawsville..... 230
Roanoke River basin, crest-stage partial-record stations in.....321-322
  discharge measurement made at miscellaneous site in..... 331
  gaging-station records in.....230-277
Roanoke, Roanoke River at..... 232
Robinson River, at Locust Dale..... 35
  near Locust Dale..... 100
Rockbridge Baths, Cedar Grove Branch near..... 318
  Maury River at..... 162
Rockbridge County, ground-water records in..... 386
Rockfish River near Greenfield..... 170
Rockingham County, ground-water records in.....386-387
Rocky Mount, Blackwater River near..... 236
  Powder Mill Creek at..... 321
Roxbury, Chickahominy River at Rt. 609, at.....338-341
  Toe Ink Swamp below Kent Lake Dam near.....338-341
Ruckersville, Rapidan River near..... 99
Runoff in inches, definition of..... 27

Page

Rush River at Washington..... 35
Russell Fork, at Bartlick..... 39,324
  at Council.....39,43,323
  at Elkhorn City, KY..... 302
  at Haysi..... 297
  near Birchleaf.....39,43,323

Saltville, North Fork Holston River near..... 309
Saluda, My Ladys Swamp near..... 316
Sample collection, surface-water quality, explanation of..... 15-16
Sandy Level, Pigg River near..... 238
Sandy River near Danville..... 255
Schenks Branch at Charlottesville..... 319
Scottsville, Hardware River below Briery Run, near..... 172
  James River at..... 171
Seacock Creek at Unity..... 37
Sebrell, Nottoway River near.....216-218
Sediment, definition of..... 27
  explanation of..... 18
Selected USGS reports on water resources in Virginia..... 33
Seven-day, 10-year low flow, definition of..... 28
Seven Mile Ford, Middle Fork Holston River at.....306,344-345
  Walker Creek near.....342-343
Seven Pines, Chickahominy River at Rt. 156, near.....338-341
Shawsville, South Fork Roanoke River near..... 230
Shelleys, Cove Creek near..... 325
Shenandoah River, at Millville, WV..... 75-77
  North Fork, at Cootes Store..... 68
    at Mount Jackson..... 71
    near Riverton..... 34
    near Strasburg..... 41,72
  South Fork, at Front Royal..... 41,67
    near Luray..... 41,66
    near Lynnwood..... 65
Slate River near Arvonia..... 173
Smilax Branch at Reston..... 34,39
Smith Creek, above old dam, near Clifton Forge. 36
  near Clifton Forge..... 36
  near New Market..... 70
Smith Mountain Lake near Penhook..... 237
Smith River, at Bassett..... 252
  at Eden, NC..... 254
  at Martinsville..... 253
  near Philpott..... 251
Snake Creek near Brookneal..... 321
Snakeden Branch at Reston..... 34,39
Snow Creek at Sago..... 37
Sodium-adsorption-ratio, definition of..... 28
Solute, definition of..... 28
South Anna River, at Vontay..... 36
  near Ashland..... 113
South Atlantic Slope basins, gaging-station records in.....124-277
South Boston, Dan River at..... 322
South Mayo River near Nettleridge..... 248
South River (James River basin), near Riverside..... 36
  near Steeles Tavern..... 318
South River (Potomac River basin), at Harriston..... 41,63
  at Port Republic..... 34
  at Waynesboro..... 34
  near Dooms..... 62
  near Waynesboro..... 61
Southampton County, ground-water records in....387-396
Special networks and programs..... 11
Specific conductance, definition of..... 28
Speers Ferry, Clinch River at..... 326
Spencer, North Mayo River near..... 249
Spotsylvania, Po River near..... 118
Spring Creek near Abingdon..... 325
Spring Grove, Bailey Branch tributary at..... 320
Stage and water discharge records, explanation of..... 13
Stage-discharge relation, definition of..... 28
Staley Creek, at Marion.....342-343
  miscellaneous site..... 332
Stanardsville, Haneytown Creek near..... 319
  Muddy Run near..... 319
Stanley, Chub Run near..... 314
Station identification number, explanation of.. 12

Page

Stave Run, at Reston..... 34
near Reston..... 34,39
Steeles Tavern, South River near..... 318
Steve Keesling Spring at Sugar Grove..... 39
Stockton Creek near Afton..... 318
Stokesville, North River near..... 57
Stony Creek (Chowan River basin) near Dinwiddie..... 215
Stony Creek (Potomac River basin) at Columbia Furnace..... 34
Stony Creek (Tennessee River basin), at Fort Blackmore..... 40
at Ka..... 40,326
Stony Creek, Nottoway River near..... 214
Stony Run, at Rt. 656, near Greenwood.....334-337
miscellaneous site..... 330
Strasburg, North Fork Shenandoah River near.... 72
Streamflow, definition of..... 28
Streptococcal bacteria, fecal..... 23
Stuart Spring near McDowell..... 36
Studley, Totopotomoy Creek near..... 117
Substrate, definition of..... 28
artificial, definition of..... 28
natural, definition of..... 28
Suffolk (independent city), ground-water records in.....396-412
quality of ground water..... 436
Summary of hydrologic conditions..... 2-11
Sunrise, Back Creek at.....130-132
Back Creek near.....127-129
Little Back Creek near.....133-135
Surface area, definition of..... 28
Surface-water quality records, explanation of..... 17-19
Surficial bed material, definition of..... 28
Surry County, ground-water records in.....412-414
Suspended, definition of..... 28
Suspended recoverable, definition of..... 28
Suspended sediment, definition of..... 27
Suspended-sediment concentration, definition of..... 27
Suspended-sediment discharge, definition of.... 27
Suspended-sediment load, definition of..... 27
Suspended, total, definition of..... 26-27
Sussex County, ground-water records in.....415-418
Sweet Chalybeate, Sweet Springs Creek tributary at..... 317
Sweet Springs Creek tributary at Sweet Chalybeate..... 317
Swift Creek, miscellaneous sites.....327,330
near Chester..... 37
System for numbering wells and miscellaneous sites..... 11-12

Tables:
Annual mean flow during 1988 water year for seven representative gaging stations..... 5
Discontinued gaging stations..... 34-40
Discontinued water-quality stations..... 41-43
New record low annual mean flows established during the 1988 water year..... 3
Publications on techniques of water-resources investigations..... 30-32
Selected U.S. Geological Survey reports on water-resources in Virginia..... 33
Talbott Reservoir near Kibler..... 247
Tappahannock, Hoskins Creek near..... 316
Piscataway Creek near..... 106
Taxonomy, definition of..... 29
Taylor Springs at Cedar Bluff..... 40
Taylorstown, Catoctin Creek at..... 78
Tazewell, TN, Clinch River above..... 312
Teas, South Fork Holston River at..... 324
Techniques of water-resources investigations, publications on..... 30-32
Terms, definition of..... 22-30
Temperature, water, explanation of..... 18
Tennessee River basin, analyses of samples collected at partial-record, special study, and miscellaneous sites.....342-345
crest-stage partial-record stations in.....324-326
discharge measurements made at miscellaneous sites in.....332-333
gaging-station records in.....303-313

Page

Thermograph, definition of..... 29
Thompson Creek near Coulwood..... 40
Thorne Springs Branch near Dublin..... 322
Thornton River near Laurel Mills..... 35
Time-weighted average, definition of..... 29
Tinker Creek, at Roanoke..... 37
near Daleville..... 233
Toano, Ware Creek near.....122-123
Toe Ink Swamp, below Kent Lake Dam, near Roxbury.....338-341
miscellaneous site..... 331
Toga, Holiday Creek near..... 320
North Holiday Creek near..... 320
Tomahawk Creek, miscellaneous site..... 329
Tons per acre-foot, definition of..... 29
Tons per day, definition of..... 29
Total, definition of..... 29
Total discharge, definition of..... 29
Total organism count..... 25
Total, recoverable, definition of..... 29
Total sediment discharge, definition of..... 27
Total sediment load, definition of..... 27
Totopotomoy Creek, near Atlee..... 36
near Studley..... 117
Townes Reservoir near Kibler..... 247
Trevilians, Harris Creek near..... 317
Tritium network, definition of..... 11,29
Turbeville, Powells Creek near..... 321
Tye River, Buffalo River near..... 169
Tye River, at Roseland..... 36
near Lovingston..... 167
near Norwood..... 36

Upham Brook, at Wilkinson Road, near Richmond.....334-337
miscellaneous site..... 330

Valentines, Pea Hill Creek near Bowens Corner, near..... 273
Vaughns Creek near Hixsburg..... 42
Victoria, Falls Creek tributary near..... 321
Virginia Beach (independent city), ground-water records in.....418-424

Wabash Spring near Poplar Hill..... 38
Wahrani Swamp, at Rt. 632, near Barhamsville..... 205
miscellaneous site..... 331
Waldrop Creek near Louisa..... 317
Walker Creek, at Bane..... 288
miscellaneous site..... 332
near Seven Mile Ford.....342-343
Walkers, Chickahominy River above Walkers Dam, at.....200-201
Diascund Creek Reservoir off pump station, near..... 206
Diascund Creek Reservoir off Timber Swamp, near..... 203
Waqua Creek near Alberta..... 37
Ware Creek near Toano.....122-123
Ware River basin, gaging-station record in..... 108
Warm Spring at Warm Springs..... 36
Warrenton, Broad Run near..... 315
Cedar Run near..... 315
Rappahannock River near..... 316
Washington, DC, Potomac River at Chain Bridge at..... 86-88
Potomac River near..... 85
Water-discharge records and stage, explanation of..... 13-17
Water-level records, explanation of..... 19-20
Water-quality records, explanation of..... 17-19
Water-quality stations, discontinued list of... 41-43
Water-resources data for Virginia, 1988, explanation of..... 1-51
Water-resources investigations, publications on techniques of..... 30-32
Water resources reports, selected, in Virginia..... 33
Water temperature, explanation of..... 18
Water year, definition of..... 29
WATSTORE data, access to..... 21-22
Waynesboro, South River near..... 61
WDR (Water Data Reports), definition of..... 30
Weighted average, definition of..... 30
Well characteristics, explanation of..... 20

Page
Well descriptions and ground-water levels:
Accomack County..... 348
Albemarle County..... 348
Appomattox County..... 349
Arlington County.....349-350
Buchanan County.....350-351
Buckingham County.....351-352
Charles City County.....352-353
Chesapeake (independent city).....353-354
Clarke County..... 355
Colonial Heights (independent city)..... 356
Fairfax County..... 357
Franklin (independent city).....357-358
Halifax County..... 359
Henrico County.....359-361
Hopewell (independent city).....361-362
Isle of Wight County.....362-368
James City County.....368-372
King and Queen County..... 373
King William County.....373-374
Lancaster County..... 374
Loudoun County.....374-375
Louisa County.....375-376
Middlesex County..... 377
Montgomery County..... 377
Nelson County..... 378
New Kent County..... 378
Newport News (independent city).....378-381
Norfolk (independent city)..... 382
Orange County..... 383
Prince George County..... 383
Prince William County.....383-384
Pulaski County..... 385
Roanoke (independent city)..... 385
Rockbridge County..... 386
Rockingham County..... 386
Southampton County.....387-396

Page
Well descriptions and ground-water levels (Continued):
Suffolk (independent city).....396-412
Surry County.....412-414
Sussex County.....415-418
Virginia Beach (independent city).....418-424
Westmoreland County.....425-426
York County.....426-427
Wells, numbering system for, explanation of.... 12-13
West Branch, miscellaneous site..... 329
Westmoreland County, ground-water records in...425-426
Wet mass, definition of..... 23
White Hall, Doyles River near..... 319
Mechums River near..... 174
White Oak Run near Grottoes..... 64
White Oak Swamp, at Rt. 156, at Elko.....338-341
miscellaneous site..... 330
White Oak Swamp, Chickahominy River at I-64 near.....338-341
Will Brook Spring at Wardell..... 40
Williamsville, Bullpasture River at..... 154
Willis River at Lakeside Village..... 37,319
Winchester, Abrams Creek near..... 56
Cedar Creek near..... 73
Wolf Creek, near Burkes Garden..... 38
near Narrows..... 289
Woodstock, Pughs Run near..... 314
WSP (Water-Supply Paper), definition of..... 30

Yagers Spring near Luray..... 34
York County, ground-water records in.....426-427
York River basin, crest-stage partial-record stations in.....316-317
gaging-station records in.....110-123

Zooplankton, definition of..... 26
Zuni, Blackwater River at.....219-220

* U. S. GOVERNMENT PRINTING OFFICE: 1989 -628-768/ 28768

CALENDAR FOR WATER YEAR 1988

1987

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	26	27	28	29	30	31

NOVEMBER

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					

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		

1988

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	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

MAY

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				

JUNE

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		

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
INT 413

U.S. DEPARTMENT OF THE INTERIOR
Geological Survey
3600 West Broad Street, Room 606
Richmond, VA 23230

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

SPECIAL 4TH CLASS BOOK RATE