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

Remarks Codes

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

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

Dissolved Trace-Element Concentrations

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

Change in National Trends Network Procedures

NOTE.-- Sample handling procedures at all National Trends Network stations were changed substantially on January 11, 1994, in order to reduce contamination from the sample shipping container. The data for samples before and after that date are different and not directly comparable. A tabular summary of the differences based on a special intercomparison study, is available from the NADP/NTN Coordination Office, Colorado State University, Fort Collins, CO 80523 (Telephone: 303-491-5643).

01613900 HOGUE CREEK NEAR HAYFIELD, VA

LOCATION.--Lat 39°12'52", long 78°17'17", NAD83, Frederick County, Hydrologic Unit 02070004, on right bank 15 ft upstream from bridge on State Highway 614, 0.8 mi upstream from Gap Run, and 1.3 mi southeast of Hayfield.

DRAINAGE AREA.--15.0 mi^2.

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

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 668.60 ft NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Dec. 4-10, Jan. 16-27, and Feb. 1-15, and period of doubtful gage-height record, Feb. 16-21, which are fair. Maximum discharge, 4,090 ft^3/s, from rating curve extended above 870 ft^3/s. Several measurements of water temperature were made during the year.

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 1	1915	*784	*4.37	Mar 20	1630	752	4.29
Feb 22	1445	409	3.31				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	10	7.0	241	e4.6	27	44	8.4	20	4.5	3.9	2.0
2	1.1	7.7	5.9	214	e4.5	60	46	7.7	12	4.7	3.5	2.8
3	1.1	5.8	5.5	104	e4.5	82	36	6.8	14	6.4	3.9	3.7
4	1.1	5.4	e5.1	65	e5.2	53	24	7.3	83	5.2	5.1	11
5	1.2	6.1	e4.8	45	e6.0	90	20	11	50	4.6	4.5	5.1
6	1.2	23	e5.3	35	e5.3	190	15	16	25	4.2	3.6	3.1
7	1.3	13	e5.1	26	e4.7	136	59	14	49	3.9	3.0	2.7
8	1.3	9.3	e4.8	30	e4.4	109	64	16	45	4.0	2.8	2.1
9	1.3	7.6	e4.7	36	e4.0	173	127	44	37	8.4	2.6	2.1
10	1.9	6.4	e4.6	28	e4.9	120	109	169	23	7.9	2.6	2.3
11	3.7	13	53	22	e4.3	70	149	113	16	9.3	4.0	1.9
12	4.8	57	78	17	e4.2	51	91	52	16	5.2	3.2	1.8
13	3.4	49	116	15	e3.9	66	52	33	54	4.5	2.8	3.3
14	2.6	21	150	13	e3.8	69	34	25	72	4.2	2.8	3.6
15	2.1	13	98	11	e5.2	44	27	21	37	4.0	2.0	5.4
16	44	14	57	e9.4	e4.6	34	22	174	23	3.9	2.0	12
17	21	83	36	e8.5	e12	27	19	110	30	3.5	4.4	12
18	7.9	64	26	e7.8	e24	23	17	88	39	3.3	3.7	5.3
19	5.3	31	22	e6.9	e17	21	25	68	33	3.3	2.5	135
20	4.7	20	21	e6.5	e13	296	19	47	87	2.9	2.1	24
21	4.2	27	17	e6.1	e55	204	19	36	73	2.7	2.1	11
22	3.9	43	14	e5.9	204	112	28	26	47	2.7	1.9	7.9
23	3.6	24	13	e5.5	195	64	24	20	26	3.7	1.7	39
24	3.5	17	11	e5.1	110	38	24	31	14	4.2	1.7	14
25	3.5	13	13	e4.7	78	28	20	38	11	3.1	1.6	9.4
26	5.6	11	14	e5.0	59	26	17	31	8.0	2.8	1.7	7.3
27	5.2	9.9	12	e5.4	55	24	14	26	6.8	2.7	1.9	6.9
28	4.8	8.3	10	5.0	43	18	11	25	5.9	4.1	1.9	10
29	17	7.4	11	4.8	---	18	10	19	5.2	4.8	1.9	7.0
30	40	7.1	11	4.7	---	26	9.5	16	4.7	3.4	1.9	5.3
31	17	---	13	4.8	---	32	---	22	---	3.0	1.9	---
TOTAL	220.5	627.0	848.8	998.1	939.1	2,331	1,175.5	1,321.2	966.6	135.1	85.2	359.0
MEAN	7.11	20.9	27.4	32.2	33.5	75.2	39.2	42.6	32.2	4.36	2.75	12.0
MAX	44	83	150	241	204	296	149	174	87	9.3	5.1	135
MIN	1.1	5.4	4.6	4.7	3.8	18	9.5	6.8	4.7	2.7	1.6	1.8
CFSM	0.47	1.39	1.83	2.15	2.24	5.01	2.61	2.84	2.15	0.29	0.18	0.80
IN.	0.55	1.55	2.11	2.48	2.33	5.78	2.92	3.28	2.40	0.34	0.21	0.89

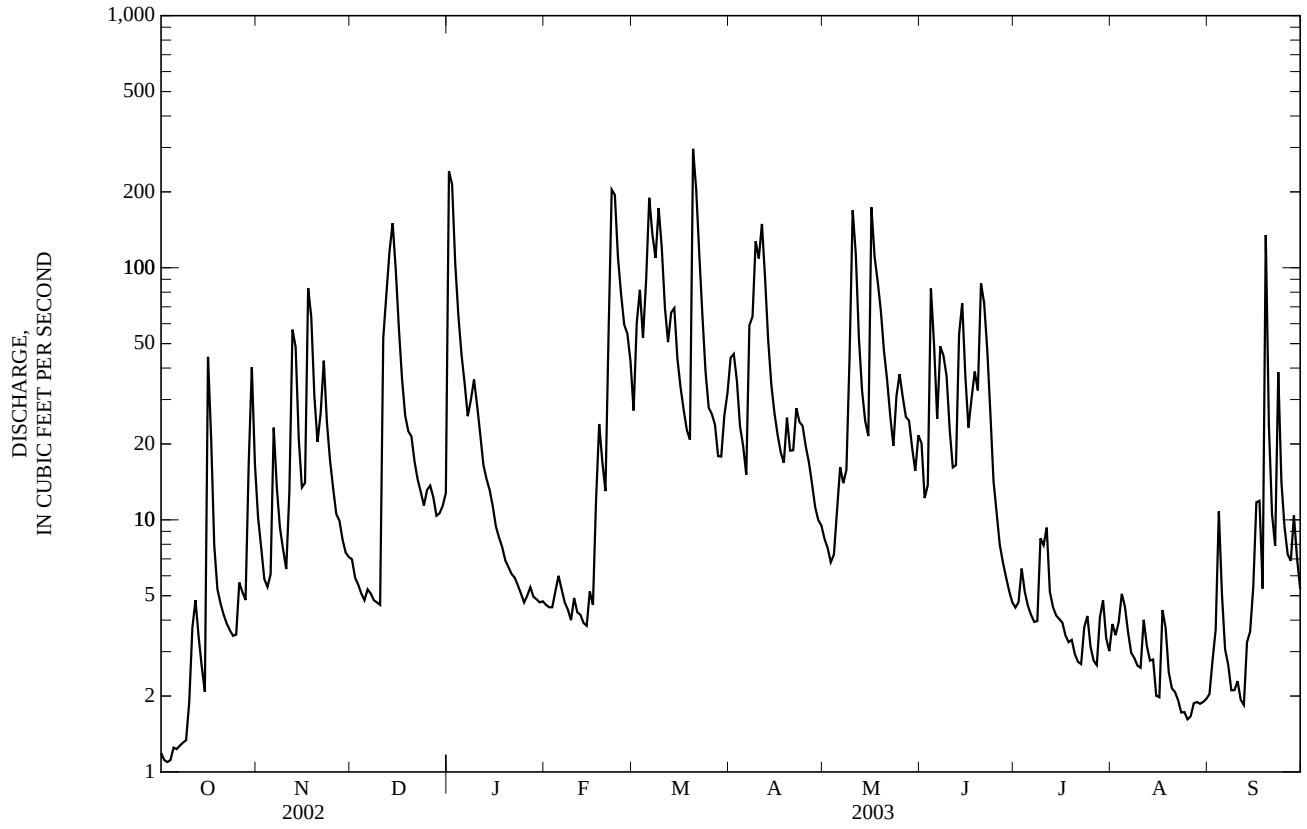
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1989, 1993 - 2003, BY WATER YEAR (WY)

MEAN	6.80	12.3	15.6	19.0	25.4	38.3	25.7	17.1	12.6	4.73	5.07	5.96
MAX	53.6	52.5	51.2	81.0	75.9	114	89.7	47.4	94.2	30.6	54.2	65.8
(WY)	(1980)	(1986)	(1973)	(1996)	(1998)	(1993)	(1983)	(1978)	(1972)	(1978)	(1978)	(1996)
MIN	0.52	1.08	1.06	1.72	2.22	5.81	6.31	2.17	0.98	0.81	0.31	0.78
(WY)	(1964)	(1966)	(1966)	(1966)	(2002)	(1981)	(1963)	(1969)	(1969)	(1964)	(1999)	(1963)

01613900 HOGUE CREEK NEAR HAYFIELD, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1960 - 1986, 1993 - 2003	
ANNUAL TOTAL	3,468.27		10,007.1			
ANNUAL MEAN	9.50		27.4		15.7	
HIGHEST ANNUAL MEAN					32.2	1996
LOWEST ANNUAL MEAN					3.84	1969
HIGHEST DAILY MEAN	150	Dec 14	296	Mar 20	1,060	Sep 6, 1996
LOWEST DAILY MEAN	0.41	Aug 11	1.1	aOct 2	0.06	Sep 14, 1968
ANNUAL SEVEN-DAY MINIMUM	0.44	Aug 9	1.2	bOct 1	0.19	Aug 7, 1999
MAXIMUM PEAK FLOW			784	Jan 1	4,090	Sep 6, 1996
MAXIMUM PEAK STAGE			4.37	Jan 1	9.71	Sep 6, 1996
INSTANTANEOUS LOW FLOW			0.97	Oct 4	0.00	cSep 14, 1968
ANNUAL RUNOFF (CFSM)	0.63		1.83		1.05	
ANNUAL RUNOFF (INCHES)	8.60		24.82		14.21	
10 PERCENT EXCEEDS	24		71		35	
50 PERCENT EXCEEDS	3.0		11		5.2	
90 PERCENT EXCEEDS	0.73		2.7		1.2	

a Also Oct. 3, 4, 2002.
b Also Oct. 2, 2002.
c No flow part of day, cause unknown.
e Estimated.



01614830 OPEQUON CREEK NEAR STEPHENS CITY, VA

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

DRAINAGE AREA.--14.8 mi^2.

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

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

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Nov. 22-25, Dec. 25-27, Jan. 22, Mar. 25 to Apr. 4, and Sept. 26, which are fair.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	4.6	6.4	50	6.9	14	e22	14	17	17	13	7.4
2	1.7	5.7	6.0	51	6.9	19	e19	14	15	17	12	8.2
3	1.4	4.1	5.7	24	6.6	23	e17	13	15	22	19	13
4	1.2	4.0	5.5	20	8.1	18	e16	14	33	18	17	20
5	1.2	4.1	5.9	16	7.3	31	16	14	21	17	14	12
6	1.1	6.0	6.0	15	6.5	96	15	14	17	20	12	9.9
7	1.1	5.2	5.5	14	6.7	53	23	13	25	33	12	9.1
8	0.93	4.6	5.0	14	6.3	47	20	15	22	18	12	8.6
9	0.81	4.3	4.6	14	6.1	76	40	19	21	45	11	8.4
10	1.0	4.1	4.4	12	6.2	42	27	32	17	43	11	8.2
11	2.1	5.7	9.7	11	6.1	28	49	21	17	39	13	7.9
12	2.4	10	20	11	5.8	25	28	16	17	25	11	8.0
13	2.0	13	51	10	5.5	24	22	15	24	26	11	9.9
14	1.6	9.6	124	10	5.5	25	20	14	31	20	10	9.3
15	1.5	8.0	41	9.8	5.7	20	19	14	23	19	9.9	8.6
16	6.5	8.2	17	9.2	4.8	19	18	59	20	18	9.6	8.2
17	5.7	17	14	9.3	5.4	19	17	23	24	16	23	7.8
18	4.1	15	13	9.0	5.5	18	17	23	27	16	12	12
19	3.6	12	12	8.8	5.2	17	21	20	28	15	11	95
20	3.2	11	14	8.6	5.6	89	18	18	54	14	10	16
21	3.0	12	12	8.2	6.0	63	17	17	36	14	9.5	10
22	2.8	e15	11	e7.7	18	40	20	17	60	13	9.1	9.8
23	2.5	e13	9.9	7.3	31	27	17	17	28	13	8.6	34
24	2.3	e11	9.6	7.0	26	22	16	20	24	13	8.3	14
25	2.4	e10	e10	7.0	23	21	16	24	22	12	8.3	11
26	3.3	9.9	e9.6	7.1	18	20	16	19	20	12	8.1	e10
27	2.7	9.6	e8.9	6.8	16	21	15	18	19	12	8.2	9.8
28	2.5	8.6	8.7	6.8	15	19	15	20	19	14	8.2	10
29	4.0	8.1	8.8	7.0	---	e18	14	18	18	16	7.5	9.4
30	6.4	7.3	9.2	6.7	---	e19	14	16	17	13	7.4	8.7
31	5.3	---	8.9	6.8	---	e24	---	16	---	12	7.3	---
TOTAL	82.34	260.7	477.3	405.1	275.7	997	604	587	731	602	344.0	414.2
MEAN	2.66	8.69	15.4	13.1	9.85	32.2	20.1	18.9	24.4	19.4	11.1	13.8
MAX	6.5	17	124	51	31	96	49	59	60	45	23	95
MIN	0.81	4.0	4.4	6.7	4.8	14	14	13	15	12	7.3	7.4
CFSM	0.17	0.57	1.01	0.86	0.65	2.12	1.32	1.25	1.60	1.28	0.73	0.91
IN.	0.20	0.64	1.17	0.99	0.67	2.44	1.48	1.44	1.79	1.47	0.84	1.01

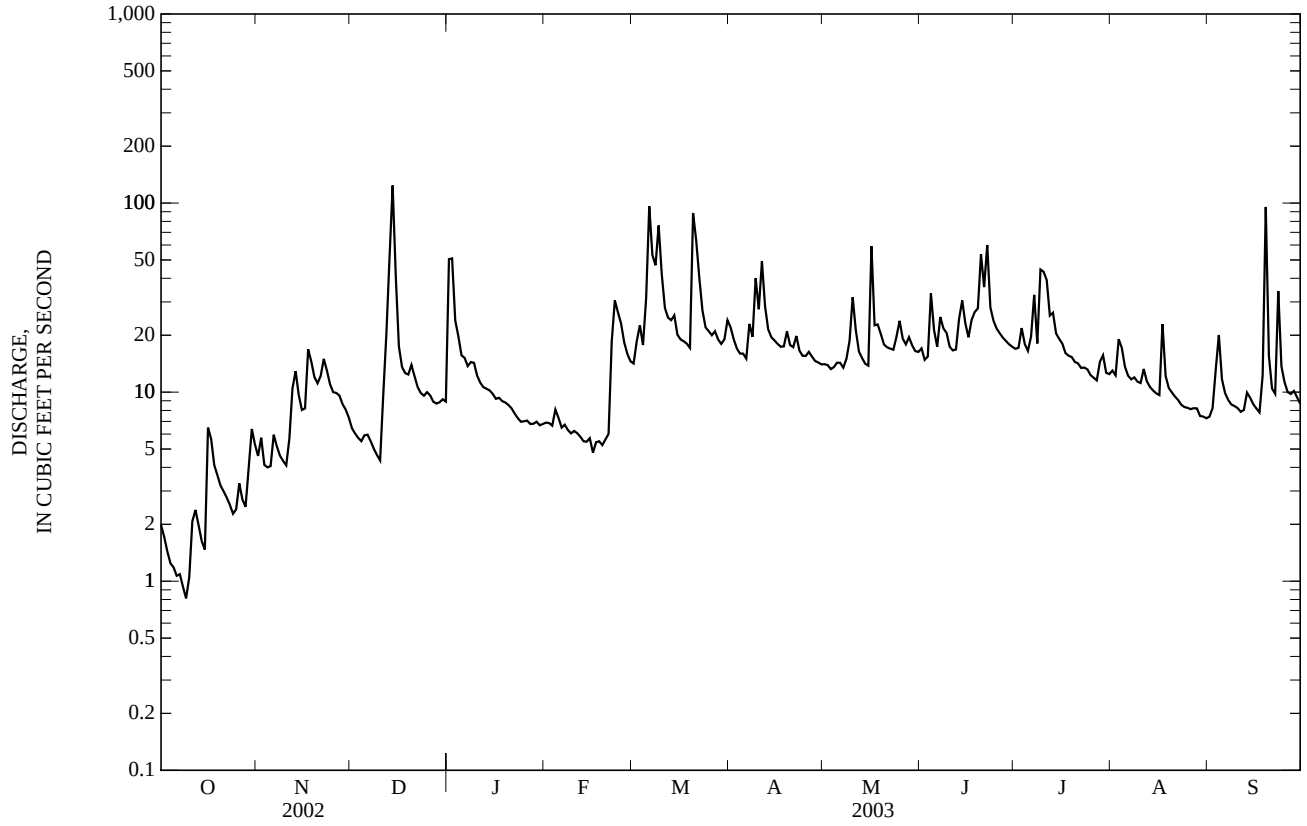
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2003, BY WATER YEAR (WY)

MEAN	2.34	5.38	8.83	6.14	5.37	13.6	10.4	9.82	11.4	8.43	5.22	5.99
MAX	2.66	8.69	15.4	13.1	9.85	32.2	20.1	18.9	24.4	19.4	11.1	13.8
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	2.03	2.07	2.26	2.04	1.72	1.61	2.08	4.97	4.75	2.54	1.19	1.73
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2001)	(2002)	(2002)	(2002)

01614830 OPEQUON CREEK NEAR STEPHENS CITY, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 2001 - 2003	
ANNUAL TOTAL	1,519.17		5,780.34			
ANNUAL MEAN	4.16		15.8		9.14	
HIGHEST ANNUAL MEAN					15.8	2003
LOWEST ANNUAL MEAN					2.45	2002
HIGHEST DAILY MEAN	124	Dec 14	124	Dec 14	124	Dec 14, 2002
LOWEST DAILY MEAN	0.79	Aug 21	0.81	Oct 9	0.79	Aug 21, 2002
ANNUAL SEVEN-DAY MINIMUM	0.89	Aug 17	1.0	Oct 4	0.89	Aug 17, 2002
MAXIMUM PEAK FLOW			320	Sep 19	320	Sep 19, 2003
MAXIMUM PEAK STAGE			6.15	Sep 19	6.15	Sep 19, 2003
INSTANTANEOUS LOW FLOW			0.47	Oct 10	0.47	Oct 10, 2002
ANNUAL RUNOFF (CFSM)	0.27		1.04		0.60	
ANNUAL RUNOFF (INCHES)	3.72		14.15		8.17	
10 PERCENT EXCEEDS	8.9		27		20	
50 PERCENT EXCEEDS	2.1		13		4.6	
90 PERCENT EXCEEDS	1.1		4.7		1.4	

e Estimated.



01615000 OPEQUON CREEK NEAR BERRYVILLE, VA

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

DRAINAGE AREA.--57.3 mi^2.

PERIOD OF RECORD.--October 1943 to September 1997, October 2002 to September 2003.

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

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

REMARKS.--Records good except those for periods of no gage-height record, Dec. 10-27 and Jan. 5-8, and periods with ice effect, Jan. 16 to Feb. 21, which are fair. Some diurnal fluctuation caused by mills upstream. Records from July 18, 1988 to Sept. 30, 1997 affected by water discharged from treatment plant, which was diverted from another drainage basin for municipal supply. Present location of the gage is upstream from treatment plant and as a result, records after 2003 are no longer affected by this inflow. Statistics of monthly mean data and summary statistics after 2003 reflect unregulated flow only for the period of record. Maximum discharge, 12,600 ft^3/s, from rating curve extended above 4,800 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 1	2330	1,920	9.83	May 16	0900	1,600	9.05
Feb 22	1915	1,550	8.94	Jun 20	1630	1,160	7.95
Mar 5	2345	1,070	7.70	Jun 22	0130	1,280	8.27
Mar 6	1845	1,210	8.09	Jul 9	2400	1,110	7.82
Mar 20	2115	1,810	9.56	Sep 19	0915	*2,770	*11.71
May 10	1545	983	7.48	Sep 23	0830	987	7.49

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	72	33	571	e21	101	133	34	56	40	34	19
2	---	52	30	721	e23	207	95	40	44	36	31	27
3	---	42	28	247	e23	336	75	33	42	58	29	35
4	---	35	31	197	e27	180	65	34	270	48	63	202
5	---	32	80	e120	e30	337	60	38	309	37	69	68
6	---	133	53	e100	e29	879	53	46	111	35	37	38
7	---	71	43	e92	e28	429	159	38	167	292	31	30
8	---	49	27	e89	e27	317	183	48	167	79	38	26
9	---	39	25	97	e26	539	447	116	113	262	29	23
10	---	35	e48	74	e26	285	258	444	77	338	27	22
11	---	84	e90	61	e25	153	403	247	60	133	32	20
12	---	284	e250	52	e25	130	202	107	53	71	29	19
13	---	234	e600	48	e24	142	117	72	89	108	25	44
14	---	103	e1,800	45	e24	176	89	54	151	59	23	47
15	15	69	e400	42	e26	113	75	46	125	49	21	35
16	329	61	e200	e42	e32	96	64	755	75	43	20	30
17	187	365	e97	e41	e36	86	55	213	95	37	181	24
18	69	218	e88	e40	e45	74	51	171	175	36	82	29
19	44	107	e82	e37	e55	63	86	144	124	37	38	1,290
20	34	77	e170	e35	e45	651	68	95	655	33	29	185
21	29	102	e110	e31	e55	552	59	75	361	31	25	93
22	23	187	e90	e30	760	243	78	66	580	32	22	69
23	19	96	e78	e29	672	140	62	60	144	36	21	430
24	17	67	e74	e29	330	105	50	109	89	35	18	131
25	15	55	e80	e30	259	87	46	147	68	30	18	88
26	54	47	e66	e30	175	85	51	103	57	27	18	167
27	40	45	e56	e31	130	104	47	85	49	25	18	79
28	30	41	51	e31	110	77	40	94	43	30	18	66
29	111	37	52	e30	---	70	37	82	40	64	19	57
30	321	37	62	e27	---	93	35	63	37	34	21	49
31	135	---	66	e25	---	136	---	55	---	29	18	---
TOTAL	---	2,876	4,960	3,074	3,088	6,986	3,243	3,714	4,426	2,204	1,084	3,442
MEAN	---	95.9	160	99.2	110	225	108	120	148	71.1	35.0	115
MAX	---	365	1,800	721	760	879	447	755	655	338	181	1,290
MIN	---	32	25	25	21	63	35	33	37	25	18	19
CFSM	---	1.67	2.79	1.73	1.92	3.93	1.89	2.09	2.57	1.24	0.61	2.00
IN.	---	1.87	3.22	2.00	2.00	4.54	2.11	2.41	2.87	1.43	0.70	2.23

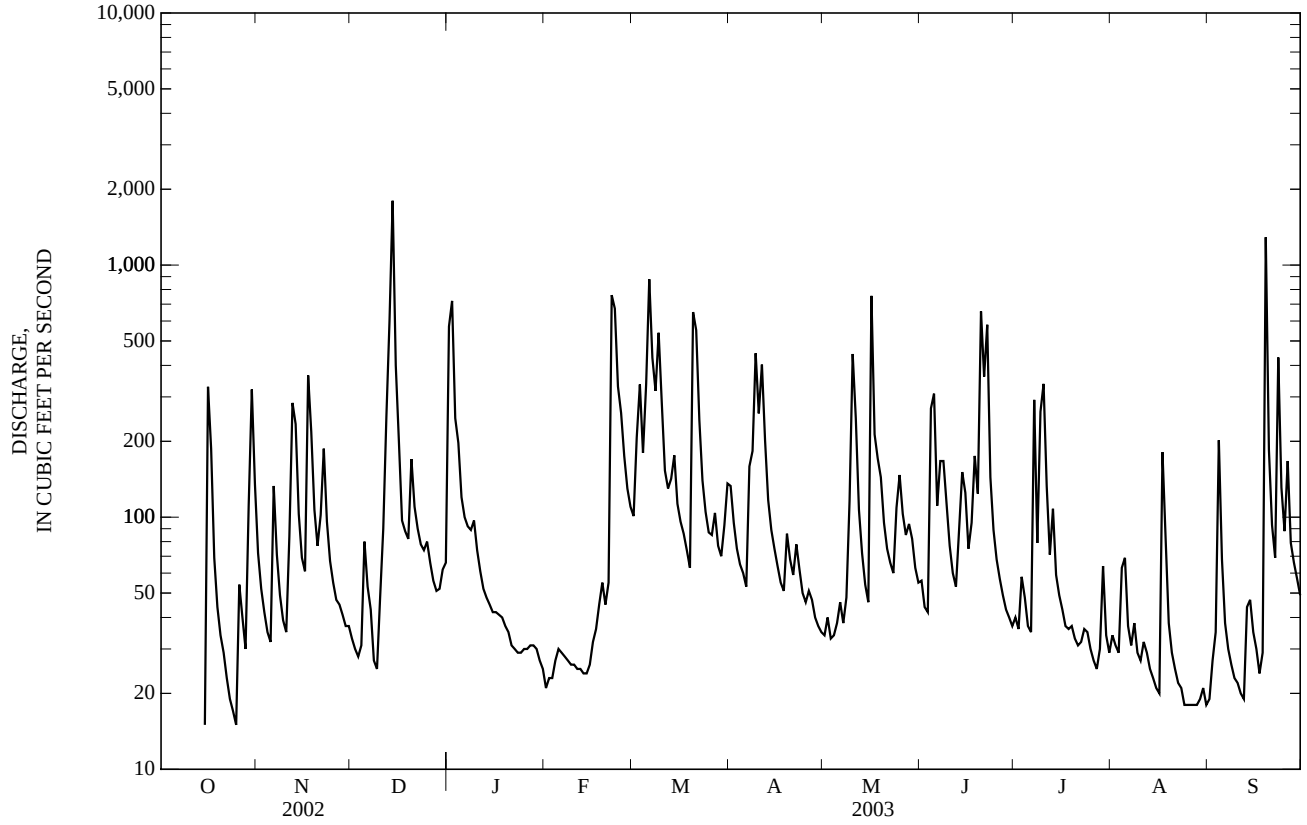
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 1997, 2003, BY WATER YEAR (WY)

MEAN	29.3	35.5	52.3	60.0	71.5	92.6	64.3	48.7	38.4	22.0	23.1	26.7
MAX	186	146	167	288	250	309	254	269	347	120	130	230
(WY)	(1977)	(1971)	(1973)	(1996)	(1984)	(1993)	(1952)	(1988)	(1972)	(1975)	(1955)	(1996)
MIN	2.67	2.61	2.83	4.63	12.0	16.8	11.0	10.3	5.58	1.87	0.92	1.32
(WY)	(1966)	(1966)	(1966)	(1966)	(1947)	(1981)	(1947)	(1969)	(1966)	(1966)	(1966)	(1965)

01615000 OPEQUON CREEK NEAR BERRYVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 WATER YEAR		WATER YEARS 1944 - 1997 2003	
ANNUAL TOTAL				
ANNUAL MEAN			46.9	
HIGHEST ANNUAL MEAN			116	2003
LOWEST ANNUAL MEAN			14.5	1947
HIGHEST DAILY MEAN	1,800	Dec 14	4,670	Jun 22, 1972
LOWEST DAILY MEAN	15	Oct 15	0.20	aSep 12, 1966
ANNUAL SEVEN-DAY MINIMUM	19	Aug 23	0.27	Sep 7, 1966
MAXIMUM PEAK FLOW	2,770	Sep 19	12,600	May 18, 1988
MAXIMUM PEAK STAGE	11.71	Sep 19	13.49	May 18, 1988
INSTANTANEOUS LOW FLOW	13	Oct 15	0.20	Sep 11, 1966
ANNUAL RUNOFF (CFSM)			0.82	
ANNUAL RUNOFF (INCHES)			11.12	
10 PERCENT EXCEEDS			89	
50 PERCENT EXCEEDS			19	
90 PERCENT EXCEEDS			5.4	

a Also Sept. 13, 1966.
e Estimated.



01616100 DRY MARSH RUN NEAR BERRYVILLE, VA

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

DRAINAGE AREA.--11.4 mi^2.

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

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

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

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	---	1.8
2	---	---	---	---	---	---	---	---	---	---	---	1.7
3	---	---	---	---	---	---	---	---	---	---	---	1.7
4	---	---	---	---	---	---	---	---	---	---	---	1.8
5	---	---	---	---	---	---	---	---	---	---	---	1.7
6	---	---	---	---	---	---	---	---	---	---	---	1.7
7	---	---	---	---	---	---	---	---	---	---	---	1.7
8	---	---	---	---	---	---	---	---	---	---	---	1.7
9	---	---	---	---	---	---	---	---	---	---	---	1.7
10	---	---	---	---	---	---	---	---	---	---	---	1.6
11	---	---	---	---	---	---	---	---	---	---	---	1.6
12	---	---	---	---	---	---	---	---	---	---	---	1.7
13	---	---	---	---	---	---	---	---	---	---	---	1.6
14	---	---	---	---	---	---	---	---	---	---	---	1.6
15	---	---	---	---	---	---	---	---	---	---	---	1.6
16	---	---	---	---	---	---	---	---	---	---	---	1.6
17	---	---	---	---	---	---	---	---	---	---	---	1.5
18	---	---	---	---	---	---	---	---	---	---	---	1.5
19	---	---	---	---	---	---	---	---	---	---	---	1.5
20	---	---	---	---	---	---	---	---	---	---	---	1.4
21	---	---	---	---	---	---	---	---	---	---	---	1.4
22	---	---	---	---	---	---	---	---	---	---	2.1	1.5
23	---	---	---	---	---	---	---	---	---	---	2.1	1.5
24	---	---	---	---	---	---	---	---	---	---	2.2	1.4
25	---	---	---	---	---	---	---	---	---	---	2.1	1.4
26	---	---	---	---	---	---	---	---	---	---	2.0	1.6
27	---	---	---	---	---	---	---	---	---	---	1.9	2.1
28	---	---	---	---	---	---	---	---	---	---	2.0	2.1
29	---	---	---	---	---	---	---	---	---	---	1.9	2.1
30	---	---	---	---	---	---	---	---	---	---	1.9	2.0
31	---	---	---	---	---	---	---	---	---	---	1.8	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	49.8
MEAN	---	---	---	---	---	---	---	---	---	---	---	1.66
MAX	---	---	---	---	---	---	---	---	---	---	---	2.1
MIN	---	---	---	---	---	---	---	---	---	---	---	1.4
CFSM	---	---	---	---	---	---	---	---	---	---	---	0.15
IN.	---	---	---	---	---	---	---	---	---	---	---	0.16

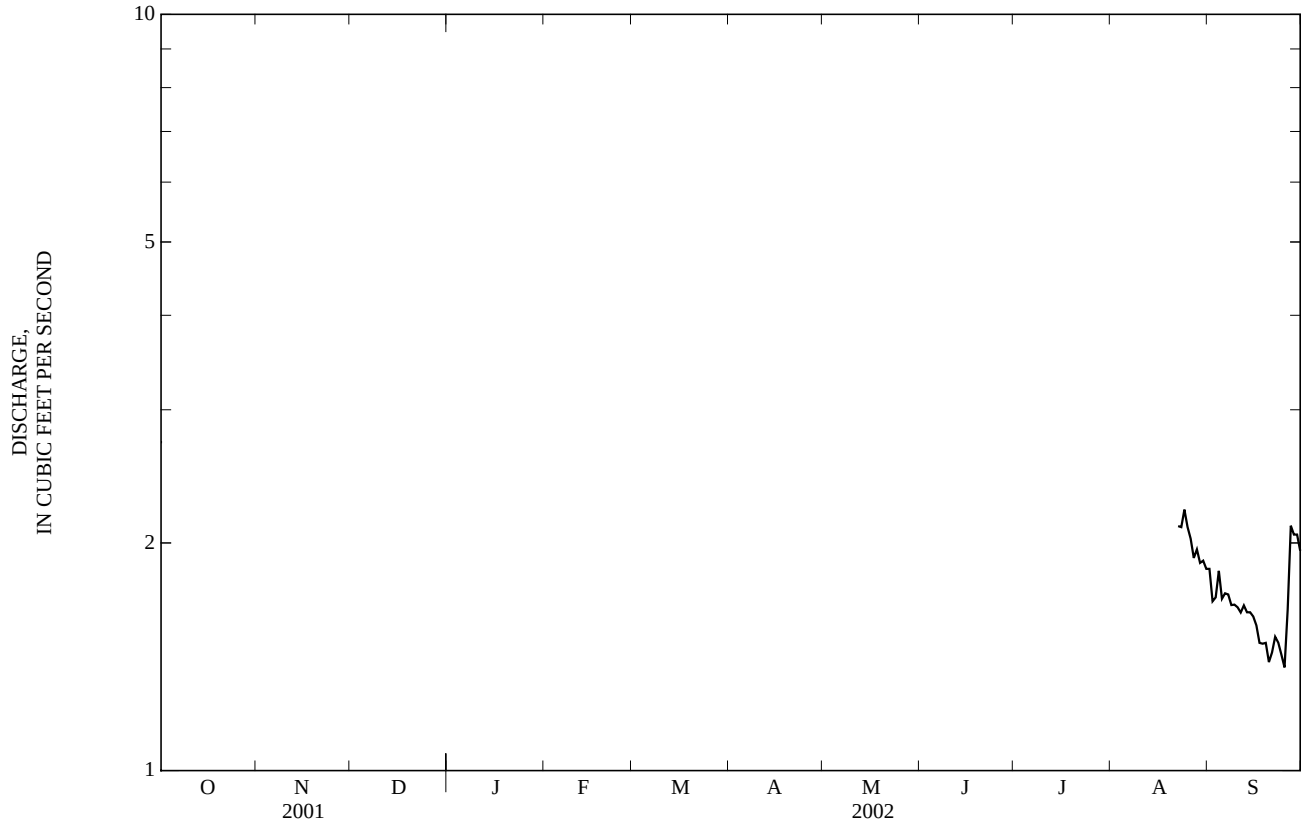
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEAR 2002

MEAN	---	---	---	---	---	---	---	---	---	---	---	1.66
MAX	---	---	---	---	---	---	---	---	---	---	---	1.66
(WY)	---	---	---	---	---	---	---	---	---	---	---	(2002)
MIN	---	---	---	---	---	---	---	---	---	---	---	1.66
(WY)	---	---	---	---	---	---	---	---	---	---	---	(2002)

01616100 DRY MARSH RUN NEAR BERRYVILLE, VA—Continued

SUMMARY STATISTICS	FOR WATER YEAR 2002	
HIGHEST DAILY MEAN	2.2	Aug 24
LOWEST DAILY MEAN	1.4	aSep 20
ANNUAL SEVEN-DAY MINIMUM	1.4	Sep 19
MAXIMUM PEAK FLOW	2.5	Sep 27
MAXIMUM PEAK STAGE	1.36	Aug 21
INSTANTANEOUS LOW FLOW	1.3	bSep 18

a Also Sept. 21, 24, 25, 2002.
b Also Sept. 20, 21, 24-26, 2002.



01616100 DRY MARSH RUN NEAR BERRYVILLE, VA—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	4.9	7.2	29	12	24	29	15	21	19	11	6.0
2	1.8	4.6	7.1	66	12	27	28	15	20	18	10	6.6
3	1.7	4.4	6.5	37	11	38	27	14	20	20	9.8	6.4
4	1.7	4.4	6.4	33	13	33	26	15	32	18	9.8	7.7
5	1.7	4.3	6.9	29	12	35	25	15	41	17	10	7.0
6	1.7	4.5	6.6	27	11	71	24	15	32	15	9.3	6.4
7	1.7	4.4	6.5	24	11	72	28	14	33	16	9.3	6.0
8	1.6	4.4	6.4	23	11	58	30	15	39	15	9.7	6.0
9	1.5	4.4	6.1	22	10	118	47	16	32	17	9.1	6.3
10	1.5	4.6	6.2	21	11	80	49	19	27	20	8.5	6.1
11	1.6	4.9	9.8	19	11	53	50	21	24	17	8.4	6.0
12	1.8	5.7	16	18	11	47	44	18	23	15	8.1	5.9
13	1.7	6.8	24	18	11	43	35	17	24	15	8.0	6.8
14	1.6	6.5	38	17	10	44	31	16	23	15	8.2	6.8
15	1.5	6.0	31	16	11	39	29	16	22	15	8.4	6.8
16	3.1	5.8	25	16	9.8	36	27	62	20	15	8.3	7.1
17	4.1	8.5	21	15	9.7	33	25	42	20	14	8.0	6.3
18	3.6	8.1	20	14	11	31	23	34	21	14	8.0	6.6
19	3.2	7.6	19	14	11	28	24	30	21	14	7.8	24
20	3.0	7.0	19	14	11	60	22	26	33	13	7.5	18
21	3.0	6.9	17	13	12	78	21	25	57	13	7.2	14
22	3.0	7.6	15	13	23	50	21	23	149	12	6.9	12
23	3.0	7.5	14	12	37	41	19	22	54	13	6.8	21
24	3.0	8.3	14	12	36	35	18	26	38	13	6.4	19
25	3.0	8.8	15	12	33	32	18	42	32	12	6.4	17
26	3.4	8.8	13	12	31	31	18	35	28	11	6.2	17
27	3.3	8.9	12	11	28	30	17	30	25	11	6.2	16
28	3.3	8.9	12	11	25	28	16	28	23	12	6.0	15
29	3.8	9.1	12	11	---	27	16	26	21	12	6.0	14
30	5.0	7.9	11	11	---	28	15	24	20	10	6.0	13
31	5.0	---	12	11	---	29	---	23	---	10	5.7	---
TOTAL	80.8	194.5	435.7	601	445.5	1,379	802	739	975	451	247.0	316.8
MEAN	2.61	6.48	14.1	19.4	15.9	44.5	26.7	23.8	32.5	14.5	7.97	10.6
MAX	5.0	9.1	38	66	37	118	50	62	149	20	11	24
MIN	1.5	4.3	6.1	11	9.7	24	15	14	20	10	5.7	5.9
CFSM	0.23	0.57	1.23	1.70	1.40	3.90	2.35	2.09	2.85	1.28	0.70	0.93
IN.	0.26	0.63	1.42	1.96	1.45	4.50	2.62	2.41	3.18	1.47	0.81	1.03

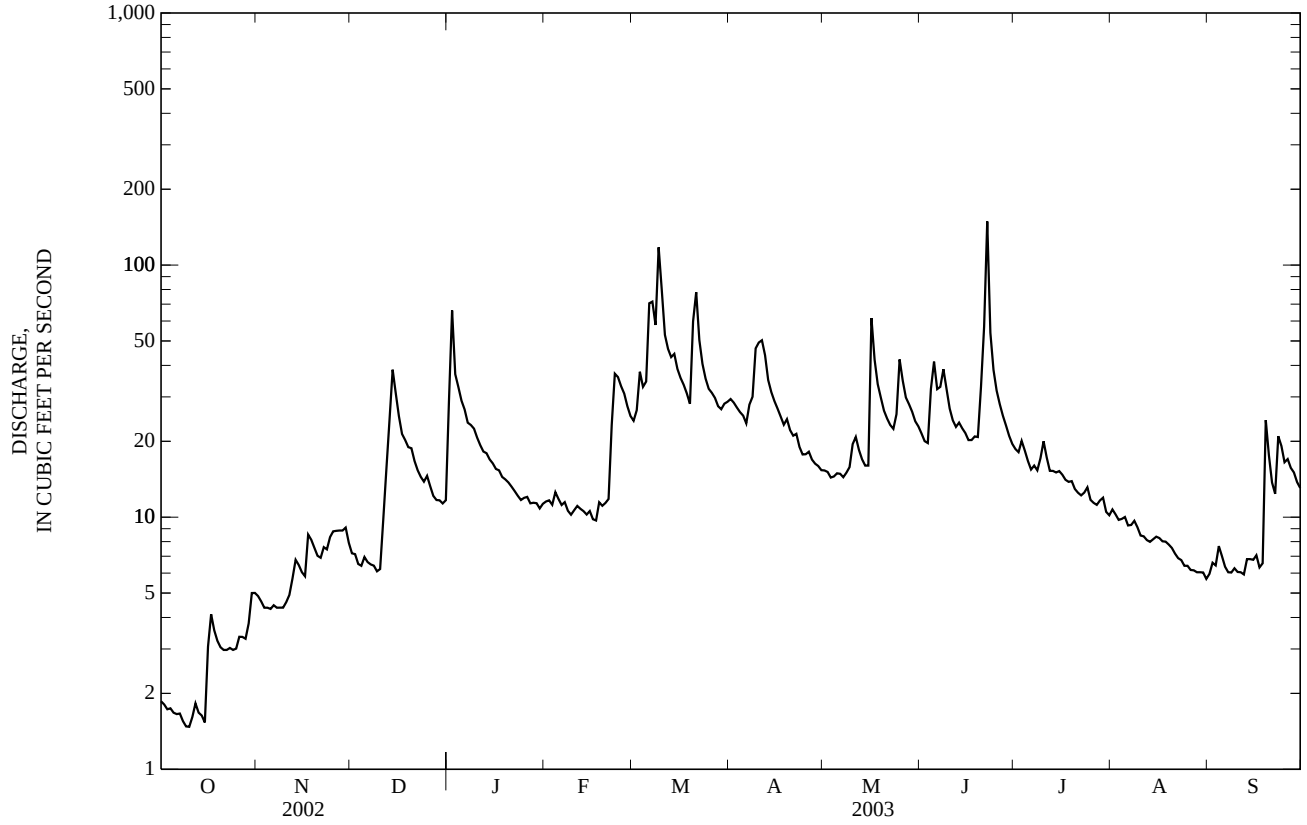
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2003, BY WATER YEAR (WY)

MEAN	2.61	6.48	14.1	19.4	15.9	44.5	26.7	23.8	32.5	14.5	7.97	6.11
MAX	2.61	6.48	14.1	19.4	15.9	44.5	26.7	23.8	32.5	14.5	7.97	10.6
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	2.61	6.48	14.1	19.4	15.9	44.5	26.7	23.8	32.5	14.5	7.97	1.66
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2002)

01616100 DRY MARSH RUN NEAR BERRYVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2003 WATER YEAR		WATER YEARS 2002 - 2003	
ANNUAL TOTAL	6,667.3			
ANNUAL MEAN	18.3		18.3	
HIGHEST ANNUAL MEAN			18.3	2003
LOWEST ANNUAL MEAN			18.3	2003
HIGHEST DAILY MEAN	149	Jun 22	149	Jun 22, 2003
LOWEST DAILY MEAN	1.5	aOct 9	1.4	bSep 20, 2002
ANNUAL SEVEN-DAY MINIMUM	1.6	Oct 9	1.4	Sep 19, 2002
MAXIMUM PEAK FLOW	274	Jun 22	274	Jun 22, 2003
MAXIMUM PEAK STAGE	3.31	Jun 22	3.31	Jun 22, 2003
INSTANTANEOUS LOW FLOW	c1.4	Oct 15	1.3	dSep 18, 2002
ANNUAL RUNOFF (CFSM)	1.60		1.60	
ANNUAL RUNOFF (INCHES)	21.76		21.77	
10 PERCENT EXCEEDS	35		35	
50 PERCENT EXCEEDS	14		14	
90 PERCENT EXCEEDS	4.6		4.6	

a Also Oct. 10, 15, 2002.
b Also Sept. 21, 24, 25, 2002.
c Observed.
d Also Sept. 20, 21, 24-26, 2002.



01620500 NORTH RIVER NEAR STOKESVILLE, VA

LOCATION.--Lat 38°20'15", long 79°14'24", NAD83, Augusta County, Hydrologic Unit 02070005, George Washington National Forest, on left bank 575 ft upstream from highway bridge, 2.8 mi upstream from city of Staunton dam, 3.8 mi upstream from Broad Run, 5.0 mi west of Stokesville, and 7.8 mi upstream from Skidmore Fork.

DRAINAGE AREA.--17.2 mi^2.

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

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

GAGE.--Water-stage recorder. Datum of gage is 2,051.37 ft NGVD of 1929. Prior to June 10, 1958, at site 575 ft downstream at datum 6.0 ft lower. Prior to Oct. 25, 1996, at site 400 ft upstream at datum 3.2 ft higher.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Oct. 2-4, 19-25, Dec. 18, 27-31, Jan. 3-7, 11-14, Jan. 22 to Mar. 7, June 21, 22, and Aug. 7-14, which are poor. Maximum discharge, 9,530 ft^3/s, from rating curve extended above 900 ft^3/s on basis of computation of peak flow over dam at site 2.8 mi downstream. Several measurements of water temperature were made during the year. Water- quality records for some prior periods have been collected at this location.

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 20	1330	382	3.62	Jun 18	0515	245	3.27
Mar 21	0245	255	3.30	Sep 19	0330	*2,080	*5.63
Apr 10	0445	228	3.22	Sep 23	1215	216	2.79
May 10	0130	228	3.22				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	68	21	46	e6.8	e70	34	38	18	14	3.9	4.1
2	e10	51	18	109	e6.6	e110	67	32	15	15	3.8	12
3	e8.2	39	16	e88	e6.6	e130	78	29	18	19	3.9	30
4	e7.0	32	14	e70	e7.0	e100	68	53	53	17	4.7	31
5	e5.8	28	14	e58	e7.6	e130	55	79	92	14	5.2	39
6	5.2	54	13	e50	e7.4	e200	45	80	79	12	5.3	32
7	4.7	58	12	e42	e7.2	e150	66	71	69	10	e4.7	24
8	4.2	50	11	38	e7.2	116	88	57	71	9.8	e4.5	18
9	3.8	43	11	34	e7.0	97	162	106	91	9.5	e16	14
10	3.7	36	9.9	30	e6.8	91	208	193	84	13	e14	12
11	4.1	47	14	e26	e6.8	78	200	123	64	18	e13	10
12	3.7	96	23	e22	e6.6	65	158	85	52	19	e94	9.0
13	3.8	168	34	e19	e6.2	60	121	64	89	18	e52	9.3
14	3.8	111	49	e18	e6.8	73	90	47	130	18	e40	9.1
15	3.7	76	53	17	e7.6	72	68	38	101	16	32	8.4
16	32	60	49	15	e8.6	62	53	32	81	14	24	7.9
17	79	72	42	14	e11	54	43	27	123	13	18	7.1
18	56	83	e36	13	e12	51	38	81	224	12	14	12
19	e40	75	34	12	e11	46	41	176	151	10	12	1,140
20	e30	62	265	11	e15	106	45	123	119	8.9	10	315
21	e23	55	201	10	e30	226	46	91	e100	7.7	8.5	145
22	e19	60	114	e9.6	e300	142	43	76	e92	6.9	7.3	90
23	e17	62	78	e9.4	e820	96	37	67	72	6.4	6.4	192
24	e15	55	60	e9.2	e370	72	32	59	52	5.9	5.8	149
25	e13	47	50	e9.0	e220	55	28	50	39	5.4	5.1	91
26	14	39	39	e8.6	e150	46	32	42	29	4.8	4.5	61
27	16	34	e34	e8.2	e110	38	48	35	24	4.4	4.3	47
28	18	29	e24	e8.0	e66	32	54	30	20	3.9	4.5	51
29	41	25	e23	e7.6	---	30	51	26	18	3.8	4.0	42
30	136	23	e21	e7.4	---	31	45	22	15	3.7	4.0	36
31	98	---	e20	e7.0	---	31	---	20	---	3.7	3.7	---
TOTAL	731.7	1,738	1,402.9	826.0	2,227.8	2,660	2,144	2,052	2,185	336.8	433.1	2,647.9
MEAN	23.6	57.9	45.3	26.6	79.6	85.8	71.5	66.2	72.8	10.9	14.0	88.3
MAX	136	168	265	109	820	226	208	193	224	19	94	1,140
MIN	3.7	23	9.9	7.0	6.2	30	28	20	15	3.7	3.7	4.1
CFSM	1.37	3.37	2.63	1.55	4.63	4.99	4.16	3.85	4.23	0.63	0.81	5.13
IN.	1.58	3.76	3.03	1.79	4.82	5.75	4.64	4.44	4.73	0.73	0.94	5.73

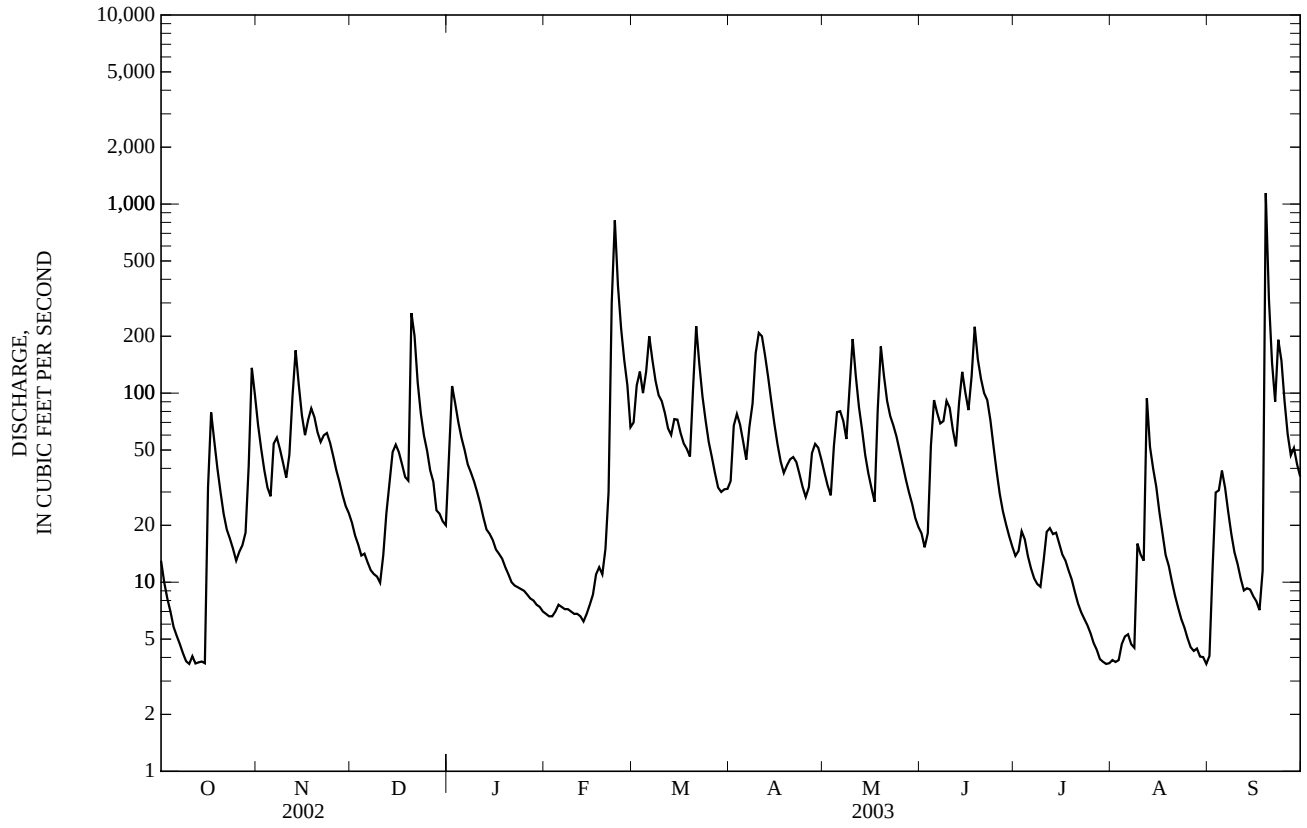
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 2003, BY WATER YEAR (WY)

MEAN	13.6	26.3	27.0	33.5	36.6	56.9	47.1	35.0	24.3	7.16	8.61	11.8
MAX	90.7	257	99.5	152	99.9	230	196	86.4	177	53.1	66.8	157
(WY)	(1980)	(1986)	(1974)	(1995)	(1998)	(1993)	(1992)	(1960)	(1949)	(1995)	(1989)	(1996)
MIN	0.21	0.41	0.71	0.74	3.67	8.21	11.1	5.32	1.65	0.76	0.26	0.25
(WY)	(1964)	(1954)	(1999)	(1981)	(2002)	(1981)	(1999)	(1977)	(1999)	(1999)	(1987)	(1963)

01620500 NORTH RIVER NEAR STOKESVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1947 - 2003	
ANNUAL TOTAL	7,652.21		19,385.2			
ANNUAL MEAN	21.0		53.1		27.3	
HIGHEST ANNUAL MEAN					53.1	2003
LOWEST ANNUAL MEAN					9.52	1999
HIGHEST DAILY MEAN	314	Apr 22	1,140	Sep 19	3,300	Nov 5, 1985
LOWEST DAILY MEAN	0.24	aSep 11	3.7	bOct 10	0.10	cSep 15, 1962
ANNUAL SEVEN-DAY MINIMUM	0.26	Sep 9	3.8	Oct 9	0.12	Sep 29, 1968
MAXIMUM PEAK FLOW			2,080	Sep 19	9,530	Jun 17, 1949
MAXIMUM PEAK STAGE			5.63	Sep 19	d19.80	Nov 5, 1985
INSTANTANEOUS LOW FLOW			3.5	fOct 12	0.10	gSep 15, 1962
ANNUAL RUNOFF (CFSM)	1.22		3.09		1.58	
ANNUAL RUNOFF (INCHES)	16.55		41.93		21.53	
10 PERCENT EXCEEDS	55		112		61	
50 PERCENT EXCEEDS	5.4		32		12	
90 PERCENT EXCEEDS	1.2		6.1		1.1	

a Also Sept. 13, 14, 2002.
b Also Oct. 12, 15, 2002, and July 30, 31, Aug. 31, 2003.
c Also Sept. 16, 19-22, 1962, and Sept. 9, 11, 12, 1966.
d From floodmarks, backwater from Elkhorn Lake.
e Estimated.
f Also Aug. 2, 3, and Sept. 1, 2003.
d Also Sept. 16, 19-22, 1962, and Sept. 7-13, 1966.



01621050 MUDDY CREEK AT MOUNT CLINTON, VA

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

DRAINAGE AREA.--14.2 mi^2.

WATER-DISCHARGE RECORDS

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

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

REMARKS.--Records good except for period with ice effect, Feb, 13-19, which is fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1700	188	4.21	Jun 20	1145	490	5.17
Mar 2	1845	168	4.12	Jul 6	2245	2,450	8.55
Mar 5	1700	313	4.67	Jul 8	1130	172	4.14
Mar 20	1600	433	5.01	Jul 9	1700	170	4.13
Apr 11	0215	277	4.55	Aug 5	2030	192	4.23
Jun 4	2300	157	4.07	Aug 9	2030	209	4.30
Jun 13	1915	216	4.33	Sep 2	1630	195	4.24
Jun 18	2330	190	4.22	Sep 19	0315	*2,550	*8.68
Jun 19	2230	603	5.46	Sep 23	0145	190	4.22

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.72	11	11	46	7.4	24	22	14	14	18	12	17
2	0.65	10	11	35	7.1	69	20	13	13	19	13	37
3	0.62	9.6	10	37	6.9	59	18	13	15	54	13	20
4	0.59	9.1	9.9	29	7.6	49	17	19	37	26	13	19
5	0.55	9.5	10	25	6.8	125	17	17	48	22	31	15
6	0.51	14	9.7	23	6.5	81	15	15	25	286	20	13
7	0.49	11	9.3	20	6.8	51	34	14	39	158	14	12
8	0.49	9.7	9.0	19	6.0	39	27	13	34	64	13	12
9	0.49	9.2	8.6	17	5.7	34	54	18	39	54	38	11
10	0.55	8.9	8.1	16	6.0	28	40	27	27	40	28	11
11	3.8	14	15	14	5.6	26	101	30	24	38	49	10
12	3.2	30	18	13	5.3	24	45	21	22	29	28	10
13	1.3	22	27	13	e5.2	23	34	18	48	25	21	10
14	0.88	16	36	12	e5.0	21	29	16	35	24	18	10
15	0.74	14	28	12	e4.9	19	26	16	28	22	16	9.7
16	8.8	15	24	11	e4.8	19	24	21	31	20	15	9.2
17	8.2	27	21	11	e4.8	18	22	17	52	18	14	8.8
18	5.9	20	19	11	e4.9	17	24	56	64	17	13	27
19	4.6	16	17	10	e5.0	16	27	47	128	17	13	697
20	3.5	15	46	10	5.5	138	22	32	186	15	12	69
21	3.0	16	27	10	6.5	67	21	30	74	15	12	44
22	2.4	19	22	9.3	84	41	20	26	47	14	12	39
23	2.0	15	19	8.8	118	33	18	24	36	14	11	83
24	1.8	14	18	8.9	61	28	17	22	30	15	11	38
25	1.8	14	20	8.5	45	25	17	20	26	13	10	32
26	6.0	13	17	8.2	32	24	18	19	24	12	10	29
27	3.5	13	15	8.0	27	21	16	18	22	12	9.8	32
28	5.1	12	15	7.7	24	20	15	18	20	12	10	34
29	16	12	14	7.8	---	20	14	17	19	12	10	25
30	19	12	14	7.5	---	23	14	15	18	11	9.2	22
31	12	---	14	7.4	---	23	---	15	---	11	9.1	---
TOTAL	119.18	431.0	542.6	476.1	515.3	1,205	788	661	1,225	1,107	508.1	1,405.7
MEAN	3.84	14.4	17.5	15.4	18.4	38.9	26.3	21.3	40.8	35.7	16.4	46.9
MAX	19	30	46	46	118	138	101	56	186	286	49	697
MIN	0.49	8.9	8.1	7.4	4.8	16	14	13	13	11	9.1	8.8
CFSM	0.27	1.01	1.23	1.08	1.30	2.74	1.85	1.50	2.88	2.51	1.15	3.30
IN.	0.31	1.13	1.42	1.25	1.35	3.16	2.06	1.73	3.21	2.90	1.33	3.68

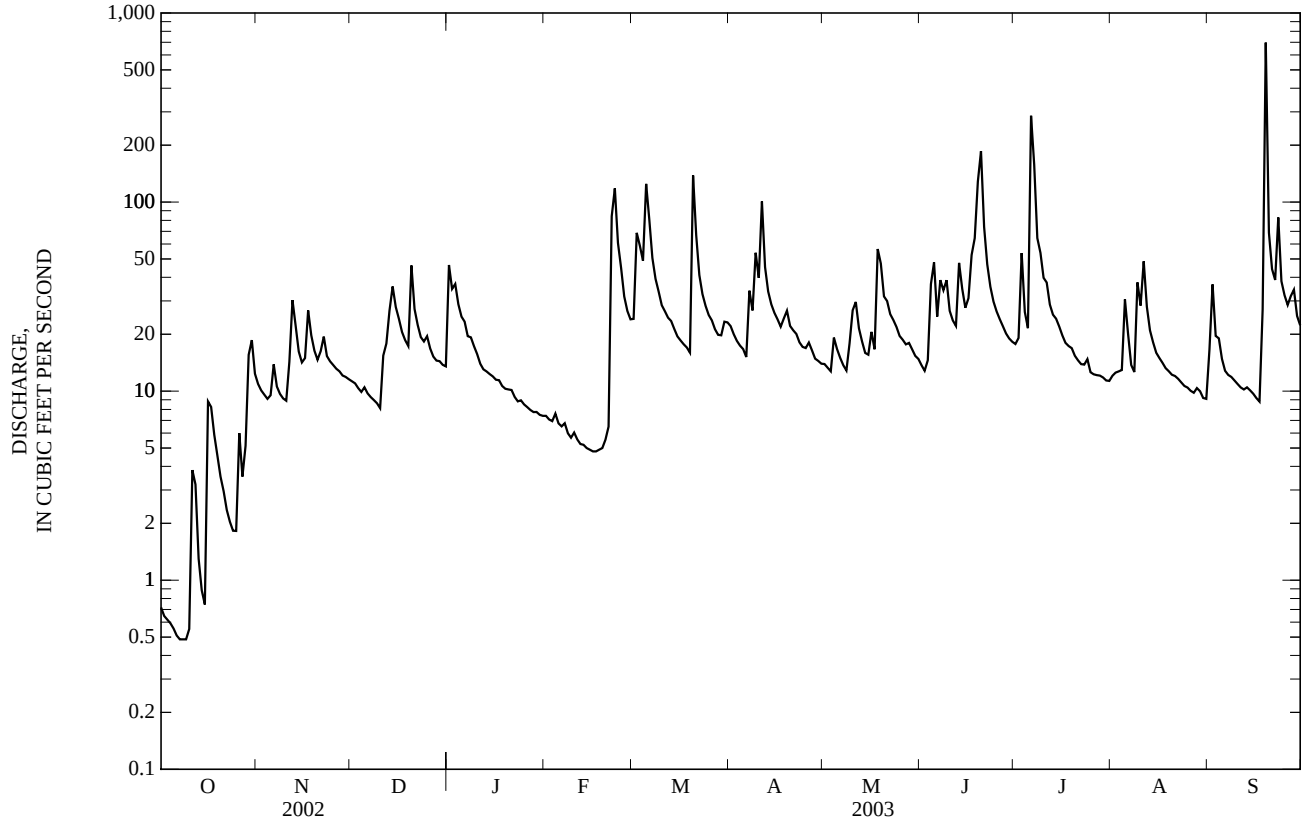
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 2003, BY WATER YEAR (WY)

MEAN	6.09	6.31	8.78	16.3	16.6	19.8	12.0	10.4	11.9	8.91	8.15	16.2
MAX	22.1	19.3	37.5	66.9	63.5	44.0	26.3	22.7	40.8	35.7	33.8	105
(WY)	(1996)	(1997)	(1997)	(1996)	(1998)	(1998)	(2003)	(1998)	(2003)	(2003)	(1996)	(1996)
MIN	0.96	0.92	0.96	0.73	0.59	0.81	2.64	2.30	1.01	1.20	0.97	0.71
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(1999)	(1999)	(1999)	(1999)	(2002)	(2001)

01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1993 - 2003	
ANNUAL TOTAL	1,707.66		8,983.98			
ANNUAL MEAN	4.68		24.6		12.0	
HIGHEST ANNUAL MEAN					30.0	1996
LOWEST ANNUAL MEAN					1.92	2002
HIGHEST DAILY MEAN	82	May 27	697	Sep 19	1,760	Sep 6, 1996
LOWEST DAILY MEAN	0.29	Sep 14	0.49	aOct 7	0.29	Sep 14, 2002
ANNUAL SEVEN-DAY MINIMUM	0.33	Sep 11	0.52	Oct 4	0.33	Sep 11, 2002
MAXIMUM PEAK FLOW			2,550	Sep 19	3,850	Sep 6, 1996
MAXIMUM PEAK STAGE			8.68	Sep 19	10.37	Sep 6, 1996
INSTANTANEOUS LOW FLOW			0.49	bOct 6	0.27	cOct 5, 2001
ANNUAL RUNOFF (CFSM)	0.33		1.73		0.85	
ANNUAL RUNOFF (INCHES)	4.47		23.54		11.51	
10 PERCENT EXCEEDS	14		44		25	
50 PERCENT EXCEEDS	1.2		17		5.0	
90 PERCENT EXCEEDS	0.44		6.0		1.1	

a Also Oct. 8, 9, 2002.
b Also Oct. 7-10, 2002.
c Also Sept. 14, 2002.
e Estimated.



01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: January 2002 to current year.
WATER TEMPERATURE: January 2002 to current year.

INSTRUMENTATION.--Water-quality monitor January 2002 to current year.

REMARKS.--Missing record due to instrument malfunctions. Records good.

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

EXTREMES FOR JANUARY 2002 TO SEPTEMBER 2002.--
SPECIFIC CONDUCTANCE: Maximum, 534 microsiemens/cm, Sept. 30; minimum, 186 microsiemens/cm, May 28
WATER TEMPERATURE: Maximum, 31.0°C, Aug. 2; minimum, 0.0°C, Feb. 8, Mar. 5.

EXTREMES FOR WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003.--
SPECIFIC CONDUCTANCE: Maximum, 596 microsiemens/cm, Nov. 1-3; minimum, 136 microsiemens/cm, July 6, Sept. 19.
WATER TEMPERATURE: Maximum, 25.0°C, Aug. 27; minimum, 0.0°C, on many day during winter periods.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Sample type	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Bicarbonate, wat flt incrm. titr., field, mg/L (00453)
OCT												
16...	1330	Environmental	12	718	8.3	83	7.9	550	13.5	12.6	183	222
NOV												
06...	1230	Environmental	13	714	13.6	129	7.3	520	10.0	10.0	184	224
DEC												
09...	1305	Environmental	8.5	735	19.0	149	8.4	542	-0.5	3.6	212	236
JAN												
08...	1210	Environmental	19	712	15.3	135	7.9	507	9.5	7.0	173	211
FEB												
12...	1200	Environmental	5.6	722	16.5	129	8.6	497	-1.0	2.9	209	246
MAR												
03...	1200	Environmental	51	725	14.7	119	7.6	386	0.0	6.3	122	150
19...	0945	Environmental	16	758	16.1	146	8.2	494	11.5	10.6	--	--
APR												
02...	1115	Environmental	20	728	22.4	226	8.8	434	23.0	13.6	166	195
24...	1045	Environmental	17	730	14.8	147	8.5	446	16.5	13.0	--	--
MAY												
07...	*1114*	*Blank*	--	--	--	--	--	--	--	--	--	--
07...	1230	Environmental	14	724	12.1	136	8.0	443	25.0	18.3	183	223
22...	1000	Environmental	26	730	10.1	100	6.6	444	13.0	12.7	--	--
JUN												
11...	1100	Environmental	24	730	10.4	112	6.8	461	28.0	16.9	191	231
11...	*1101*	*Replicate*	--	--	--	--	--	--	--	--	*E191*	*E230*
16...	1030	Environmental	26	731	9.6	100	6.2	442	19.0	15.4	--	--
JUL												
08...	1145	Environmental	170	728	8.2	95	7.3	326	27.5	20.0	176	211
22...	1100	Environmental	14	725	17.1	198	8.3	500	28.0	20.1	--	--
AUG												
04...	1300	Environmental	--	--	--	--	--	--	--	--	--	--
05...	1045	Environmental	14	724	11.1	129	7.3	488	24.0	19.9	209	254
21...	1015	Environmental	12	762	12.5	136	8.1	506	26.5	19.5	--	--
SEP												
04...	1030	Environmental	19	723	--	78	7.8	512	22.0	18.2	221	269

01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Carbonate, wat flt incrm. titr., field, mg/L (00452)	Chloride, water, fltrd, mg/L (00940)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitrogen, water, unfltrd mg/L (00605)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, unfltrd mg/L (00600)
OCT													
16...	--	18.8	--	26.1	2.4	0.28	6.86	6.96	0.100	2.1	0.87	1.20	9.4
NOV													
06...	--	14.0	--	23.0	1.3	0.08	9.31	9.39	0.077	1.2	0.31	0.41	11
DEC													
09...	11	10.2	--	15.6	0.27	<0.04	9.25	9.27	0.020	--	0.04	0.027	9.5
JAN													
08...	--	11.3	--	16.3	0.34	<0.04	11.0	11.0	0.016	--	0.04	0.072	11
FEB													
12...	6	8.64	--	13.5	0.30	<0.04	7.79	7.82	0.027	--	E.01	0.040	8.1
MAR													
03...	--	9.30	--	15.2	0.92	0.18	7.99	8.02	0.026	0.74	0.22	0.31	8.9
19...	--	--	--	--	0.39	<0.04	9.40	9.43	0.031	--	E.02	0.047	9.8
APR													
02...	4	9.92	--	13.2	0.52	<0.04	8.07	8.09	0.018	--	E.02	0.053	8.6
24...	--	--	--	--	0.36	<0.04	7.94	7.96	0.029	--	E.01	0.030	8.3
MAY													
07...	--	*<0.20*	--	*<0.2*	*E.06*	*<0.04*	--	*<0.06*	*<0.008*	--	*<0.02*	*<0.004*	--
07...	--	8.95	3.58	12.1	0.45	<0.04	6.58	6.62	0.038	--	0.03	0.069	7.1
22...	--	--	--	--	0.64	<0.04	6.73	6.79	0.060	--	<0.02	0.130	7.4
JUN													
11...	--	9.35	--	12.4	0.60	<0.04	7.14	7.20	0.066	--	E.01	0.128	7.8
11...	--	*9.54*	--	*12.1*	*0.68*	*<0.04*	*7.38*	*7.44*	*0.062*	--	*E.01*	*0.126*	*8.1*
16...	--	--	--	--	0.75	E.03	6.71	6.76	0.056	--	0.06	0.134	7.5
JUL													
08...	--	6.98	--	9.7	2.6	<0.04	3.41	3.47	0.060	--	0.32	0.82	6.0
22...	--	--	--	--	0.45	<0.04	8.63	8.67	0.040	--	E.01	0.055	9.1
AUG													
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
05...	--	10.4	--	11.2	0.92	<0.04	5.76	5.85	0.086	--	0.06	0.195	6.8
21...	--	--	--	--	0.35	<0.04	7.51	7.54	0.032	--	0.02	0.056	7.9
SEP													
04...	--	11.0	--	13.5	0.73	<0.04	6.02	6.09	0.066	--	0.06	0.177	6.8

01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Organic carbon, suspnd sedimnt total, mg/L (00689)	Organic carbon, water, fltrd, mg/L (00681)	Peri-phyton biomass ash weight, g/m2 (00572)	Peri-phyton biomass dry weight, g/m2 (00573)	Pheo-phytin a, peri-phyton, mg/m2 (62359)	Chloro-phyll a peri-phyton, chromo-fluoro, mg/m2 (70957)	Iron, water, fltrd, ug/L (01046)	2,6-Di-ethyl-aniline water fltrd 0.7u GF ug/L (82660)	CIAT, water, fltrd, ug/L (04040)	Aceto-chlor, water, fltrd, ug/L (49260)	Ala-chlor, water, fltrd, ug/L (46342)	alpha-HCH, water, fltrd, ug/L (34253)	alpha-HCH-d6, surrog, wat flt 0.7u GF percent recovry (91065)
OCT													
16...	12.0	14.6	--	--	--	--	--	<0.006	E.083	<0.006	<0.004	<0.005	94.5
NOV													
06...	1.9	8.0	--	--	--	--	--	<0.006	E.111	<0.006	<0.004	<0.005	92.7
DEC													
09...	0.2	1.7	--	--	--	--	--	<0.006	E.164	<0.006	<0.004	<0.005	85.4
JAN													
08...	0.5	1.8	--	--	--	--	--	<0.006	E.125	<0.006	<0.004	<0.005	101
FEB													
12...	0.4	1.4	--	--	--	--	--	<0.006	E.130	<0.006	<0.004	<0.005	97.3
MAR													
03...	2.0	4.1	--	--	--	--	--	<0.006	E.110	<0.006	<0.004	<0.005	80.6
19...	--	--	--	--	--	--	--	<0.006	E.193	<0.006	<0.004	<0.005	91.1
APR													
02...	0.7	2.2	--	--	--	--	--	<0.006	E.166	<0.006	<0.004	<0.005	86.9
24...	--	--	--	--	--	--	--	<0.006	E.154	<0.006	<0.004	<0.005	107
MAY													
07...	*<0.1*	*<0.3*	--	--	--	--	--	*<0.006*	*<0.006*	*<0.006*	*<0.004*	*<0.005*	*89.0*
07...	0.6	2.1	--	--	--	--	15	<0.006	E.095	<0.006	<0.004	<0.005	88.1
22...	--	--	--	--	--	--	--	<0.006	E.153	<0.006	<0.004	<0.005	95.7
JUN													
11...	0.9	2.8	--	--	--	--	--	<0.006	E.184	<0.006	<0.004	<0.005	85.2
11...	*0.8*	*2.7*	--	--	--	--	--	*<0.006*	*E.196*	*<0.006*	*<0.004*	*<0.005*	*102*
16...	--	--	--	--	--	--	--	<0.006	E.220	<0.006	<0.004	<0.005	108
JUL													
08...	6.6	10.4	--	--	--	--	--	<0.006	E.258	<0.006	<0.004	<0.005	101
22...	--	--	--	--	--	--	--	<0.006	E.192	<0.006	<0.004	<0.005	111
AUG													
04...	--	--	13	13.80	1.2	2.5	--	--	--	--	--	--	--
05...	1.1	4.2	--	--	--	--	--	<0.006	E.161	<0.006	<0.004	<0.005	111
21...	--	--	--	--	--	--	--	<0.006	E.142	<0.006	<0.004	<0.005	84.3
SEP													
04...	1.6	4.6	--	--	--	--	--	<0.006	E.125	<0.006	<0.004	<0.005	101

01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Atrazine, water, fltrd, ug/L (39632)	Azinphos-methyl, water, fltrd 0.7u GF ug/L (82686)	Benfluralin, water, fltrd 0.7u GF ug/L (82673)	Butylate, water, fltrd, ug/L (04028)	Carbaryl, water, fltrd 0.7u GF ug/L (82680)	Carbofuran, water, fltrd 0.7u GF ug/L (82674)	Chlorpyrifos water, fltrd, ug/L (38933)	cis-Permethrin water fltrd 0.7u GF ug/L (82687)	Cyanazine, water, fltrd, ug/L (04041)	DCPA, water fltrd 0.7u GF ug/L (82682)	Diazinon, water, fltrd, ug/L (39572)	Diazinon-d10 surrog. wat flt 0.7u GF percent recovry (91063)	Dieldrin, water, fltrd, ug/L (39381)
OCT													
16...	0.105	<0.050	<0.010	<0.002	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	110	<0.005
NOV													
06...	0.095	<0.050	<0.010	<0.002	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	117	<0.005
DEC													
09...	0.115	<0.050	<0.010	<0.002	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	114	<0.005
JAN													
08...	0.087	<0.050	<0.010	<0.002	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	123	<0.005
FEB													
12...	0.097	<0.050	<0.010	<0.002	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	109	<0.005
MAR													
03...	0.044	<0.050	<0.010	<0.002	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	96.5	<0.005
19...	0.097	<0.050	<0.010	<0.002	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	116	<0.005
APR													
02...	0.078	<0.050	<0.010	<0.002	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	115	<0.005
24...	0.117	<0.050	<0.010	<0.002	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	124	<0.005
MAY													
07...	*<0.007*	*<0.050*	*<0.010*	*<0.002*	*<0.041*	*<0.020*	*<0.005*	*<0.006*	*<0.018*	*<0.003*	*<0.005*	*98.3*	*<0.005*
07...	0.083	<0.050	<0.010	<0.002	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	96.6	<0.005
22...	0.906	<0.050	<0.010	<0.002	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	108	<0.005
JUN													
11...	1.96	<0.050	<0.010	<0.002	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	106	<0.005
11...	*2.23*	*<0.050*	*<0.010*	*<0.002*	*<0.041*	*<0.020*	*E.004*	*<0.006*	*<0.018*	*<0.003*	*<0.005*	*119*	*<0.005*
16...	2.02	<0.050	<0.010	<0.002	<0.041	<0.020	0.005	<0.006	<0.018	<0.003	<0.005	130	<0.005
JUL													
08...	2.73	<0.050	<0.010	<0.002	<0.041	<0.020	0.037	<0.006	<0.018	<0.003	<0.005	129	<0.005
22...	0.492	<0.050	<0.010	<0.002	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	127	<0.005
AUG													
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
05...	0.313	<0.050	<0.010	<0.002	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	129	<0.005
21...	0.245	<0.050	<0.010	<0.002	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	109	<0.005
SEP													
04...	0.171	<0.050	<0.010	<0.002	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	105	<0.005

01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Disulfoton, water, fltrd 0.7u GF ug/L (82677)	EPTC, water, fltrd 0.7u GF ug/L (82668)	Ethalfluralin, water, fltrd 0.7u GF ug/L (82663)	Ethoprop, water, fltrd 0.7u GF ug/L (82672)	Fonofos water, fltrd, ug/L (04095)	Lindane water, fltrd, ug/L (39341)	Linuron water fltrd 0.7u GF ug/L (82666)	Malathion, water, fltrd, ug/L (39532)	Methyl parathion, water, fltrd 0.7u GF ug/L (82667)	Metolachlor, water, fltrd, ug/L (39415)	Metribuzin, water, fltrd, ug/L (82630)	Molinate, water, fltrd 0.7u GF ug/L (82671)	Napropamide, water, fltrd 0.7u GF ug/L (82684)
OCT													
16...	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004	<0.035	<0.027	<0.006	E.009	<0.006	<0.002	<0.007
NOV													
06...	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004	<0.035	<0.027	<0.006	<0.013	<0.006	<0.002	<0.007
DEC													
09...	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004	<0.035	<0.027	<0.006	<0.013	<0.006	<0.002	<0.007
JAN													
08...	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004	<0.035	<0.027	<0.006	<0.013	<0.006	<0.002	<0.007
FEB													
12...	<0.02	<0.010	<0.009	<0.005	<0.003	<0.004	<0.035	<0.027	<0.006	<0.013	<0.006	<0.002	<0.007
MAR													
03...	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004	<0.035	<0.027	<0.006	E.006	<0.006	<0.002	<0.007
19...	<0.02	0.033	<0.009	<0.005	<0.003	<0.004	<0.035	<0.027	<0.006	E.003	<0.006	<0.002	<0.007
APR													
02...	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004	<0.035	<0.027	<0.006	E.004	<0.006	<0.004	<0.007
24...	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004	<0.035	<0.027	<0.006	0.043	<0.006	<0.002	<0.007
MAY													
07...	*<0.02*	*<0.002*	*<0.009*	*<0.005*	*<0.003*	*<0.004*	*<0.035*	*<0.027*	*<0.006*	*<0.013*	*<0.006*	*<0.002*	*<0.007*
07...	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004	<0.035	<0.027	<0.006	E.004	<0.006	<0.002	<0.007
22...	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004	<0.035	<0.027	<0.006	0.118	<0.006	<0.002	<0.007
JUN													
11...	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004	<0.035	<0.027	<0.006	0.358	<0.006	<0.002	<0.007
11...	*<0.02*	*<0.015*	*<0.009*	*<0.005*	*<0.003*	*<0.004*	*<0.035*	*<0.027*	*<0.006*	*0.359*	*<0.006*	*<0.002*	*<0.007*
16...	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004	<0.035	<0.027	<0.006	0.360	<0.006	<0.002	<0.007
JUL													
08...	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004	<0.035	<0.027	<0.006	1.13	<0.006	<0.002	<0.007
22...	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004	<0.035	<0.027	<0.006	0.051	<0.006	<0.002	<0.007
AUG													
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
05...	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004	<0.035	<0.027	<0.006	0.023	<0.006	<0.002	<0.007
21...	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004	<0.035	<0.027	<0.006	0.019	<0.006	<0.002	<0.007
SEP													
04...	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004	<0.035	<0.027	<0.006	0.018	<0.006	<0.002	<0.007

01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	p,p'-DDE, water, fltrd, ug/L (34653)	Parathion, water, fltrd, ug/L (39542)	Pebulate, water, fltrd 0.7u GF ug/L (82669)	Pendimethalin, water, fltrd 0.7u GF ug/L (82683)	Phorate water fltrd 0.7u GF ug/L (82664)	Prometon, water, fltrd, ug/L (04037)	Pronamide, water, fltrd 0.7u GF ug/L (82676)	Propachlor, water, fltrd, ug/L (04024)	Propanil, water, fltrd 0.7u GF ug/L (82679)	Propargite, water, fltrd 0.7u GF ug/L (82685)	Simazine, water, fltrd, ug/L (04035)	Tebuthiuron water fltrd 0.7u GF ug/L (82670)	Terbacil, water, fltrd 0.7u GF ug/L (82665)
OCT													
16...	<0.003	<0.010	<0.007	<0.022	<0.011	M	<0.004	<0.010	<0.011	<0.02	0.055	E.01	<0.050
NOV													
06...	<0.003	<0.010	<0.004	<0.022	<0.011	<0.01	<0.004	<0.010	<0.011	<0.02	0.047	<0.02	<0.034
DEC													
09...	<0.003	<0.010	<0.004	<0.022	<0.011	<0.01	<0.004	<0.010	<0.011	<0.02	0.052	<0.02	<0.034
JAN													
08...	<0.003	<0.010	<0.004	<0.022	<0.011	<0.01	<0.004	<0.010	<0.011	<0.02	0.034	<0.02	<0.034
FEB													
12...	<0.003	<0.010	<0.004	<0.022	<0.011	M	<0.004	<0.010	<0.011	<0.02	0.042	E.01	<0.034
MAR													
03...	<0.003	<0.010	<0.004	<0.022	<0.011	<0.01	<0.004	<0.010	<0.011	<0.02	0.022	E.01	<0.034
19...	<0.003	<0.010	<0.004	<0.022	<0.011	M	<0.004	<0.010	<0.011	<0.02	0.040	E.01	<0.034
APR													
02...	<0.003	<0.010	<0.004	<0.022	<0.011	M	<0.004	<0.010	<0.011	<0.02	0.031	<0.02	<0.034
24...	<0.003	<0.010	<0.004	<0.022	<0.011	M	<0.004	<0.010	<0.011	<0.02	0.068	E.01	<0.034
MAY													
07...	*<0.003*	*<0.010*	*<0.004*	*<0.022*	*<0.011*	*<0.01*	*<0.004*	*<0.010*	*<0.011*	*<0.02*	*<0.005*	*<0.02*	*<0.034*
07...	<0.003	<0.010	<0.004	<0.022	<0.011	E.01	<0.004	<0.010	<0.011	<0.02	0.032	<0.02	<0.034
22...	<0.003	<0.010	<0.004	<0.022	<0.011	<0.01	<0.004	<0.010	<0.011	<0.02	0.462	<0.02	<0.034
JUN													
11...	<0.003	<0.010	<0.004	<0.022	<0.011	<0.01	<0.004	<0.010	<0.011	<0.02	1.13	E.01	<0.034
11...	*<0.003*	*<0.010*	*<0.004*	*<0.022*	*<0.011*	*M*	*<0.004*	*<0.010*	*<0.011*	*<0.02*	*1.38*	*E.01*	*<0.034*
16...	<0.003	<0.010	<0.004	<0.022	<0.011	M	<0.004	<0.010	<0.011	<0.02	1.08	E.01	<0.034
JUL													
08...	<0.003	<0.010	<0.004	<0.022	<0.011	<0.01	<0.004	<0.010	<0.011	<0.02	1.92	0.02	<0.034
22...	<0.003	<0.010	<0.004	<0.022	<0.011	<0.01	<0.004	<0.010	<0.011	<0.02	0.196	E.02	<0.034
AUG													
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
05...	<0.003	<0.010	<0.004	<0.022	<0.011	<0.01	<0.004	<0.010	<0.011	<0.02	0.140	E.05	<0.034
21...	<0.003	<0.010	<0.004	<0.022	<0.011	M	<0.004	<0.010	<0.011	<0.02	0.092	<0.02	<0.034
SEP													
04...	<0.003	<0.010	<0.004	<0.022	<0.011	<0.01	<0.004	<0.010	<0.011	<0.02	0.072	0.04	<0.034

01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Terbufos, water, fltrd 0.7u GF ug/L (82675)	Thiobencarb water fltrd 0.7u GF ug/L (82681)	Triallate, water, fltrd 0.7u GF ug/L (82678)	Trifluralin, water, fltrd 0.7u GF ug/L (82661)	Suspended sediment concentration mg/L (80154)	Suspended sediment load, tons/d (80155)
OCT						
16...	<0.02	<0.005	<0.002	<0.009	97	3.1
NOV						
06...	<0.02	<0.005	<0.002	<0.009	18	0.65
DEC						
09...	<0.02	<0.005	<0.002	<0.009	6	0.15
JAN						
08...	<0.02	<0.005	<0.002	<0.009	9	0.48
FEB						
12...	<0.02	<0.005	<0.002	<0.009	40	0.61
MAR						
03...	<0.02	<0.005	<0.002	<0.009	35	4.9
19...	<0.02	<0.005	<0.002	<0.009	7	0.31
APR						
02...	<0.02	<0.005	<0.002	<0.009	11	0.60
24...	<0.02	<0.005	<0.002	<0.009	13	0.61
MAY						
07...	*<0.02*	*<0.005*	*<0.002*	*<0.009*	*0.0*	--
07...	<0.02	<0.005	<0.002	<0.009	10	0.37
22...	<0.02	<0.005	<0.002	<0.009	26	1.8
JUN						
11...	<0.02	<0.005	<0.002	<0.009	27	1.7
11...	*<0.02*	*<0.005*	*<0.002*	*<0.009*	*27*	--
16...	<0.02	<0.005	<0.002	<0.009	19	1.3
JUL						
08...	<0.02	<0.005	<0.002	<0.009	183	84
22...	<0.02	<0.005	<0.002	<0.009	23	0.88
AUG						
04...	--	--	--	--	--	--
05...	<0.02	<0.005	<0.002	<0.009	25	0.95
21...	<0.02	<0.005	<0.002	<0.009	9	0.30
SEP						
04...	<0.02	<0.005	<0.002	<0.009	21	1.1

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

01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued

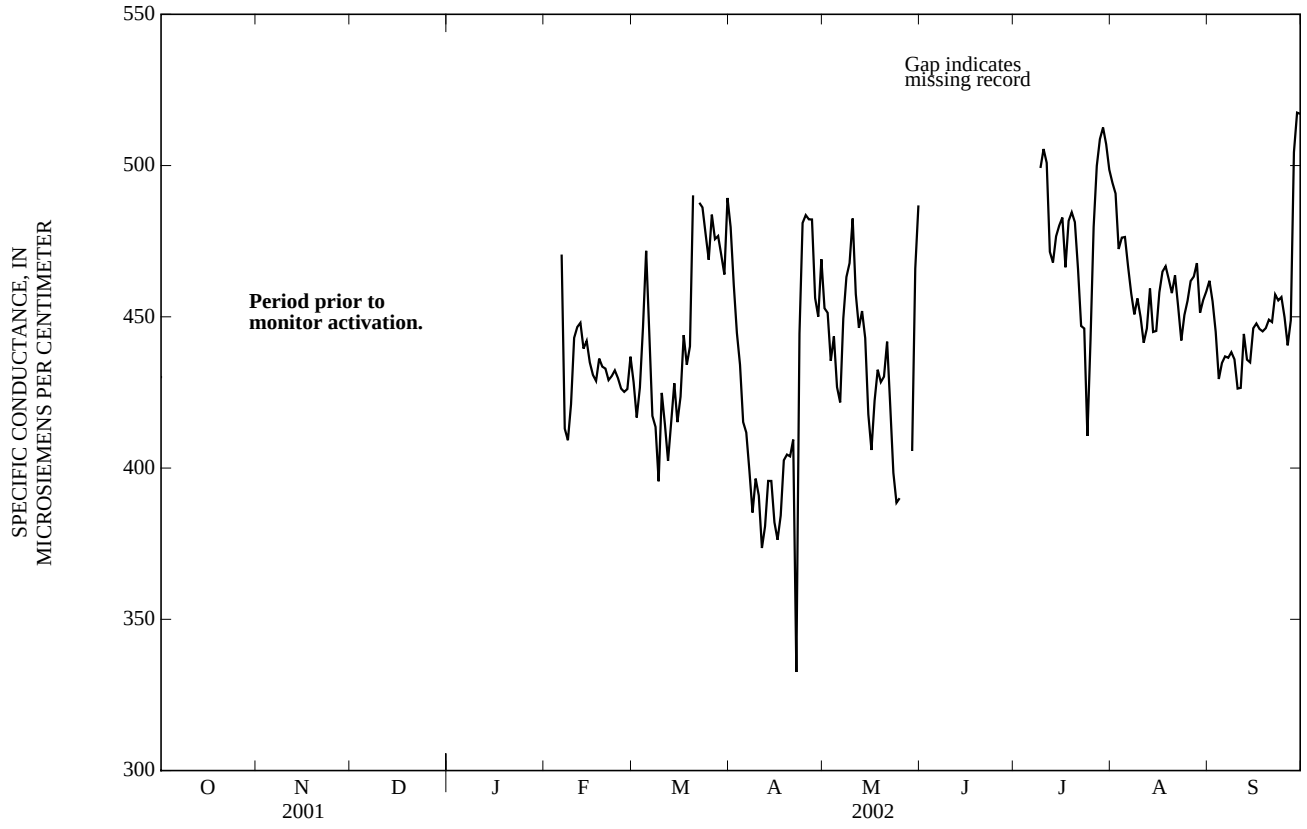
SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
JANUARY 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	467	392	428	509	417	480	490	391	453
2	---	---	---	436	393	417	510	391	461	481	400	451
3	---	---	---	445	384	427	471	417	445	478	369	435
4	---	---	---	459	434	447	464	385	434	471	406	444
5	---	---	---	507	444	472	448	365	415	471	352	427
6	507	356	471	458	416	445	437	376	412	459	371	422
7	435	386	413	456	315	417	431	349	399	465	419	449
8	420	399	409	453	304	414	426	323	385	484	443	463
9	433	405	421	451	288	396	414	372	397	517	385	468
10	452	428	443	447	391	425	439	326	391	519	438	483
11	460	425	447	439	374	414	409	320	374	490	401	458
12	469	423	448	432	323	402	399	348	381	485	387	446
13	451	417	440	441	349	415	409	362	396	479	410	452
14	469	413	442	457	387	428	440	347	396	480	380	443
15	451	410	435	445	372	415	411	345	382	469	352	418
16	446	407	431	447	390	424	409	327	376	459	342	406
17	442	409	429	454	428	444	416	359	384	463	358	422
18	463	411	436	449	411	434	438	369	403	459	403	433
19	457	406	434	457	422	440	427	367	404	455	379	428
20	443	416	433	524	425	490	422	388	404	463	394	430
21	447	398	429	---	---	---	423	349	409	474	400	442
22	443	416	430	501	469	488	406	271	333	468	354	421
23	446	412	432	502	465	486	475	397	444	451	341	398
24	447	406	430	496	451	477	486	475	481	447	334	389
25	440	405	426	492	435	469	491	472	484	445	338	390
26	439	406	425	505	439	484	490	469	482	---	---	---
27	437	409	426	503	437	476	493	466	482	---	---	---
28	475	399	437	503	424	477	483	412	456	---	---	---
29	---	---	---	521	374	470	478	420	450	442	356	406
30	---	---	---	505	371	464	491	432	469	484	442	466
31	---	---	---	502	470	489	---	---	---	494	477	487
MONTH	507	356	433	524	288	446	510	271	420	519	334	437

01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS—CONTINUED
JANUARY 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	---	---	---	528	449	494	481	430	462
2	---	---	---	---	---	---	531	439	491	480	418	455
3	---	---	---	---	---	---	504	439	472	480	397	445
4	---	---	---	---	---	---	506	441	476	461	384	429
5	---	---	---	---	---	---	507	433	476	468	399	435
6	---	---	---	---	---	---	502	428	467	471	409	437
7	---	---	---	---	---	---	486	417	458	462	406	436
8	---	---	---	---	---	---	475	416	451	462	414	438
9	---	---	---	515	474	499	480	428	456	453	414	436
10	---	---	---	520	491	505	469	421	450	443	402	426
11	---	---	---	530	460	501	460	412	441	456	384	427
12	---	---	---	488	440	471	463	423	446	492	395	444
13	---	---	---	476	459	468	492	420	459	484	384	436
14	---	---	---	490	453	477	468	407	445	444	424	435
15	---	---	---	499	447	480	458	421	445	451	441	446
16	---	---	---	511	445	483	470	442	458	464	426	448
17	---	---	---	490	421	466	481	442	465	467	417	446
18	---	---	---	510	450	482	485	439	467	462	419	445
19	---	---	---	503	449	485	484	431	462	456	434	446
20	---	---	---	499	461	481	484	426	458	463	431	449
21	---	---	---	498	418	466	489	430	464	458	440	448
22	---	---	---	486	388	447	497	402	453	463	440	457
23	---	---	---	472	400	446	481	401	442	465	445	455
24	---	---	---	471	385	411	481	417	451	475	432	457
25	---	---	---	476	403	442	486	425	455	464	432	450
26	---	---	---	502	473	480	487	432	462	477	390	441
27	---	---	---	512	489	500	486	445	463	492	417	449
28	---	---	---	520	494	509	480	452	468	519	481	504
29	---	---	---	532	478	513	463	437	451	530	493	517
30	---	---	---	533	469	507	465	446	456	534	492	517
31	---	---	---	531	457	499	472	445	458	---	---	---
MONTH	---	---	---	533	385	479	531	401	460	534	384	451



DAILY MEAN SPECIFIC CONDUCTANCE - JANUARY 2002 TO SEPTEMBER 2002

01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued

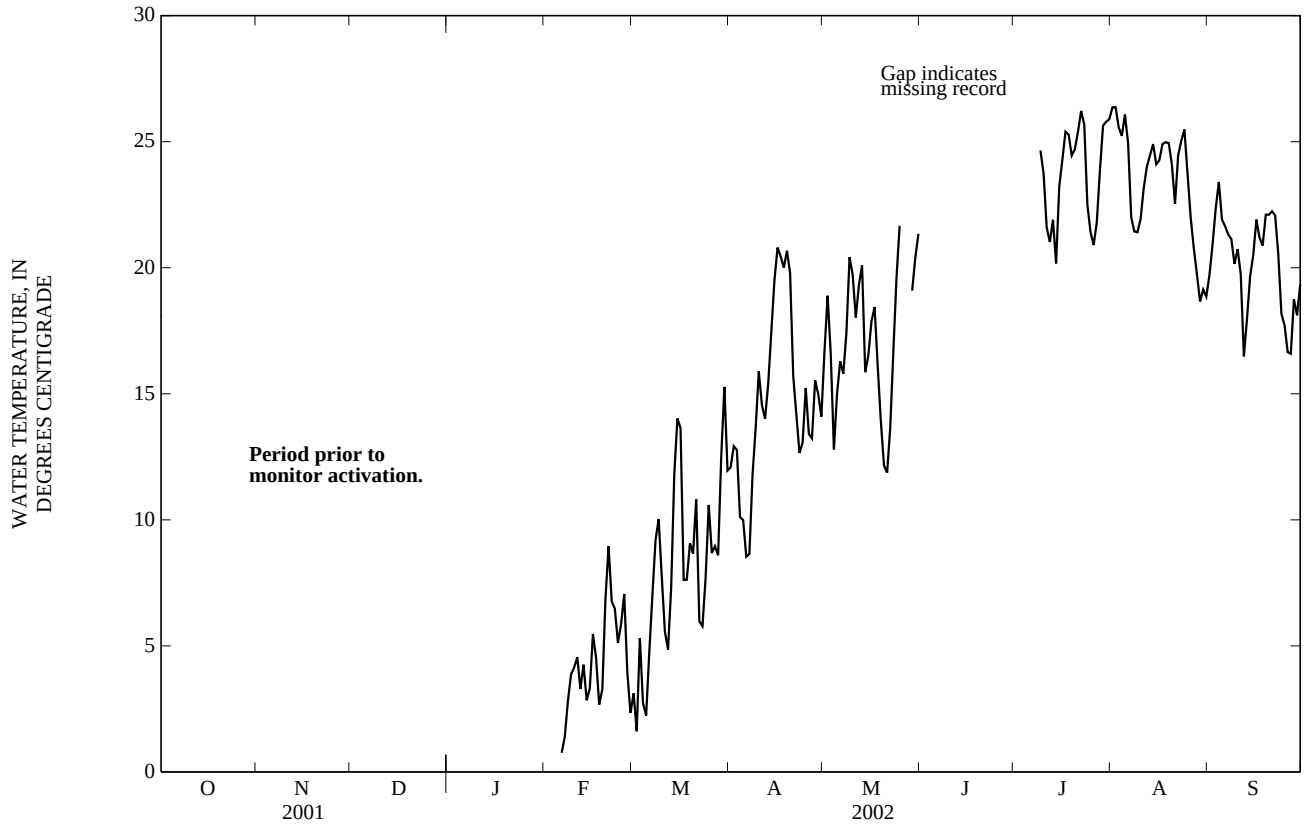
TEMPERATURE, WATER, DEGREES CELSIUS
JANUARY 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	7.4	0.2	3.1	18.1	8.0	12.1	22.8	11.4	16.7
2	---	---	---	3.1	0.9	1.6	19.1	7.6	12.9	22.4	16.0	18.9
3	---	---	---	10.6	2.0	5.3	15.5	8.2	12.8	20.6	13.0	16.6
4	---	---	---	6.6	0.2	2.7	17.2	4.4	10.1	15.0	10.4	12.8
5	---	---	---	6.5	0.0	2.2	16.1	5.3	10	21.5	10.2	15.0
6	1.6	0.1	0.8	10.9	0.1	4.7	12.8	5.0	8.5	20.2	11.9	16.3
7	3.3	0.1	1.4	12.9	1.8	7.0	15.3	2.5	8.6	16.8	14.6	15.8
8	7.3	0.0	2.8	15.1	3.9	9.2	18.7	6.9	11.8	21.3	13.3	17.4
9	8.4	0.4	3.9	13.2	6.4	10.0	15.4	12.0	13.6	25.4	17.2	20.4
10	5.2	3.0	4.1	11.4	3.6	7.7	22.1	11.2	15.9	23.7	16.2	19.7
11	7.4	2.3	4.5	10.9	1.1	5.6	21.6	8.4	14.5	23.4	13.1	18.0
12	6.9	0.4	3.3	6.3	3.4	4.9	18.0	10.2	14.0	23.9	14.9	19.3
13	7.7	1.3	4.3	9.1	6.0	7.3	17.5	13.4	15.4	22.8	17.2	20.1
14	6.2	0.3	2.8	17.9	7.4	11.8	22.5	13.0	17.4	19.9	12.5	15.9
15	6.9	0.5	3.3	19.8	9.1	14.0	24.9	15.3	19.5	23.0	10.6	16.5
16	9.7	2.2	5.5	16.7	11.4	13.6	28.0	14.5	20.8	24.4	11.6	17.9
17	6.9	1.9	4.5	11.4	5.9	7.6	25.1	15.8	20.4	20.8	15.2	18.4
18	6.3	0.2	2.7	10.4	5.3	7.6	23.9	16.4	20.0	18.8	12.7	16.1
19	6.8	0.3	3.3	11.1	7.5	9.1	25.6	16.5	20.7	18.3	10.0	13.9
20	9.2	4.6	6.9	10.8	6.7	8.7	22.0	17.3	19.8	14.5	8.9	12.2
21	12.3	6.1	9.0	17.2	6.4	10.8	18.7	11.7	15.7	15.8	9.0	11.9
22	8.8	5.2	6.8	10.9	1.9	6.0	19.2	10.8	14.2	20.9	7.1	13.6
23	9.9	4.2	6.5	12.5	0.5	5.8	16.3	10.3	12.7	23.9	10.1	16.7
24	9.8	1.1	5.1	14.3	2.1	7.7	19.1	7.6	13.1	26.9	13.0	19.6
25	10.3	1.7	5.9	16.4	5.8	10.6	19.9	12.6	15.2	25.9	17.7	21.7
26	10.9	3.3	7.1	10.1	7.7	8.7	18.5	9.6	13.4	---	---	---
27	7.0	0.8	3.9	13.4	6.4	9.0	16.7	9.0	13.2	---	---	---
28	5.2	0.2	2.3	15.3	2.7	8.6	20.7	12.4	15.5	---	---	---
29	---	---	---	18.7	7.6	12.5	19.8	11.5	15.0	22.9	15.4	19.1
30	---	---	---	20.6	11.4	15.3	19.9	9.0	14.1	24.6	16.5	20.4
31	---	---	---	14.7	9.6	12.0	---	---	---	25.7	17.4	21.3
MONTH	12.3	0.0	4.4	20.6	0.0	8.1	28.0	2.5	14.7	26.9	7.1	17.2

01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS—CONTINUED
JANUARY 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	---	---	---	30.6	22.5	26.4	21.9	18.1	19.7
2	---	---	---	---	---	---	31.0	22.7	26.4	24.4	18.6	20.9
3	---	---	---	---	---	---	30.4	22.5	25.6	25.6	19.3	22.3
4	---	---	---	---	---	---	29.8	21.2	25.2	27.0	20.5	23.4
5	---	---	---	---	---	---	30.3	22.6	26.1	25.0	18.7	21.9
6	---	---	---	---	---	---	27.6	22.4	25.0	24.8	18.5	21.6
7	---	---	---	---	---	---	25.7	18.8	22.0	24.5	17.9	21.3
8	---	---	---	---	---	---	25.7	18.1	21.4	24.4	17.9	21.1
9	---	---	---	27.9	21.9	24.7	26.0	17.4	21.4	23.0	17.0	20.2
10	---	---	---	24.8	22.4	23.7	26.7	17.8	21.9	24.7	17.2	20.7
11	---	---	---	24.1	18.9	21.6	27.2	19.5	23.2	22.9	16.4	19.7
12	---	---	---	25.6	16.5	21.0	27.2	20.8	24.0	20.8	10.8	16.5
13	---	---	---	23.3	20.6	21.9	28.3	21.0	24.5	24.9	11.2	18.0
14	---	---	---	21.1	19.2	20.2	28.1	22.1	24.9	21.2	17.3	19.7
15	---	---	---	28.0	19.5	23.2	27.5	21.0	24.1	21.4	19.8	20.5
16	---	---	---	27.9	20.5	24.3	26.4	22.3	24.3	24.7	19.8	21.9
17	---	---	---	29.7	21.6	25.4	27.0	23.0	24.9	24.2	18.6	21.2
18	---	---	---	27.2	23.4	25.3	27.4	22.6	25.0	23.0	18.4	20.9
19	---	---	---	27.1	22.2	24.5	27.9	22.1	24.9	23.3	20.9	22.1
20	---	---	---	28.1	22.1	24.7	26.0	22.0	24.1	23.4	20.3	22.1
21	---	---	---	29.5	21.8	25.4	25.4	20.0	22.5	23.4	21.0	22.2
22	---	---	---	30.4	22.7	26.2	27.5	21.8	24.5	22.7	21.2	22.1
23	---	---	---	29.6	23.0	25.7	27.9	22.1	25.0	22.7	18.3	20.5
24	---	---	---	24.3	21.5	22.5	26.9	23.7	25.5	21.8	14.8	18.2
25	---	---	---	22.2	20.8	21.4	25.4	21.5	23.7	19.2	15.8	17.7
26	---	---	---	22.0	20.1	20.9	23.6	20.7	22.0	17.9	15.7	16.7
27	---	---	---	23.7	20.1	21.8	22.0	19.7	20.8	18.5	15.3	16.6
28	---	---	---	27.3	20.6	23.8	20.6	18.0	19.7	21.5	16.9	18.7
29	---	---	---	29.5	22.2	25.6	20.6	17.1	18.7	21.5	15.0	18.1
30	---	---	---	29.8	22.3	25.8	20.4	17.9	19.1	22.0	17.1	19.3
31	---	---	---	30.1	22.2	25.9	20.2	17.4	18.9	---	---	---
MONTH	---	---	---	30.4	16.5	23.7	31.0	17.1	23.4	27.0	10.8	20.2



DAILY MEAN WATER TEMPERATURE - JANUARY 2002 TO SEPTEMBER 2002

01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued

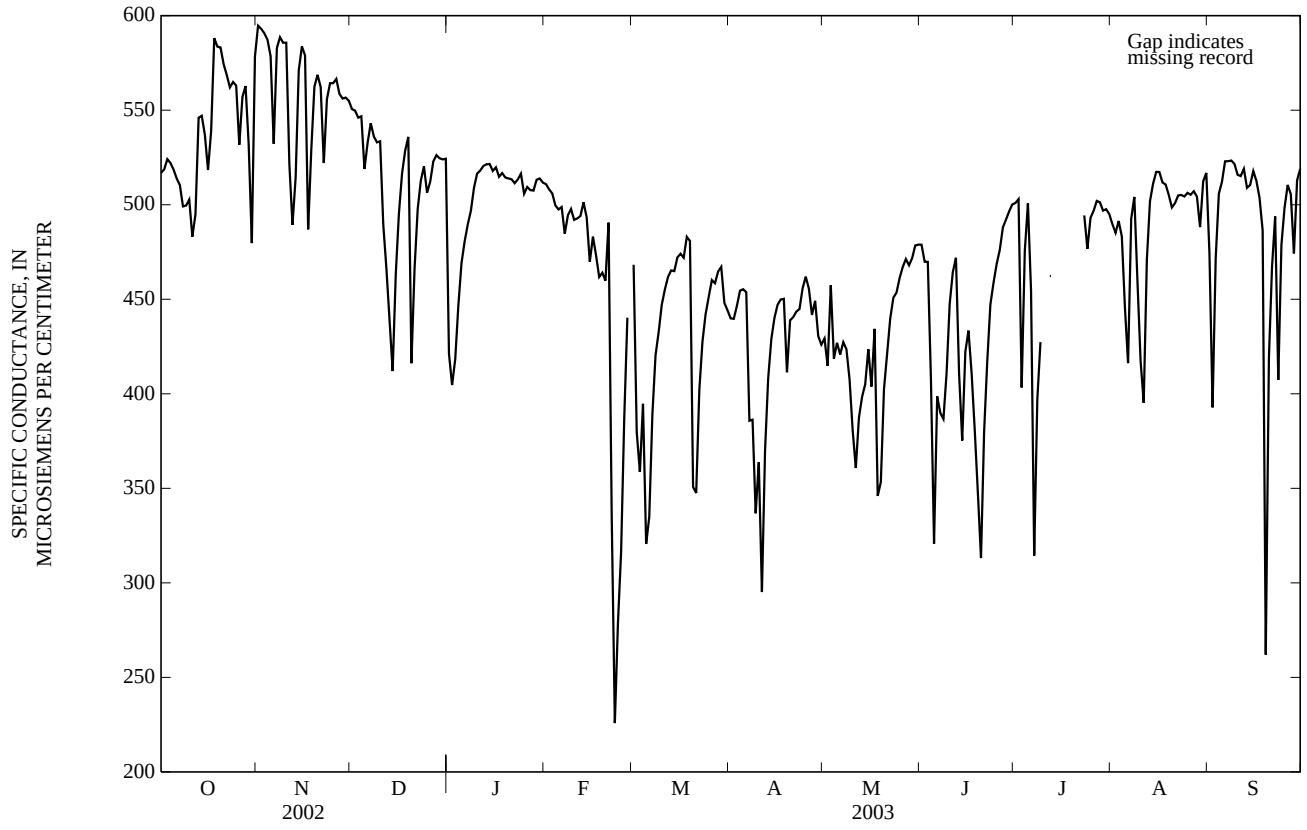
SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	535	492	517	596	593	595	561	532	551	532	277	421
2	541	483	519	596	589	593	557	534	550	434	349	405
3	544	496	524	596	585	591	555	526	546	438	402	418
4	543	490	522	592	581	587	553	534	547	463	427	447
5	540	481	519	590	559	579	546	495	519	474	463	469
6	533	483	514	564	512	532	541	516	533	484	474	480
7	531	481	510	592	564	583	563	522	543	495	478	490
8	519	465	499	593	580	589	549	512	536	501	492	497
9	509	482	500	592	573	586	544	511	533	517	500	509
10	509	493	503	591	575	586	546	509	534	520	509	516
11	510	442	483	592	467	521	541	425	490	521	511	518
12	539	467	495	574	378	489	501	433	466	525	513	521
13	553	538	546	559	426	514	483	377	439	527	510	521
14	560	527	547	583	559	571	435	378	412	525	513	522
15	546	525	537	590	580	584	484	421	463	524	504	518
16	553	485	518	590	540	579	509	484	495	525	513	520
17	591	481	539	540	451	487	524	509	516	522	499	515
18	594	580	588	556	503	529	536	523	529	527	502	517
19	589	574	584	567	556	562	541	525	536	521	500	514
20	588	576	583	574	564	569	538	322	416	522	495	514
21	584	558	574	576	529	562	489	435	466	522	495	513
22	579	551	569	545	508	522	506	489	498	520	492	511
23	574	542	562	566	545	556	520	506	513	527	496	513
24	570	557	565	569	556	564	524	515	520	536	490	516
25	571	536	563	570	551	564	516	493	506	517	483	506
26	550	520	532	571	560	567	523	494	512	518	493	509
27	572	540	557	566	546	559	527	517	523	522	488	508
28	579	545	563	564	541	556	530	521	526	517	487	507
29	586	384	532	564	541	557	530	511	525	520	504	513
30	552	373	480	565	536	555	531	510	524	519	508	514
31	594	552	578	---	---	---	532	507	524	518	503	512
MONTH	594	373	536	596	378	560	563	322	509	536	277	499
		FEBRUARY			MARCH			APRIL			MAY	
1	517	501	511	482	448	468	456	424	440	454	376	429
2	517	495	508	448	254	380	465	408	440	447	333	415
3	516	490	506	397	285	359	468	404	446	475	441	457
4	514	483	500	423	350	395	472	418	455	472	372	419
5	505	486	498	398	206	321	474	413	455	443	413	427
6	508	488	499	372	289	335	475	413	454	440	378	421
7	493	473	485	414	354	389	471	301	386	443	381	427
8	505	482	494	442	409	420	404	360	386	439	383	424
9	516	483	498	443	427	433	404	283	337	437	346	408
10	506	475	492	459	443	447	378	341	364	413	348	381
11	502	479	493	466	450	455	371	220	295	377	345	361
12	504	485	494	470	456	462	397	344	370	397	377	387
13	540	474	501	470	454	465	425	397	408	407	381	398
14	511	482	493	477	452	465	441	424	429	419	386	405
15	487	455	470	484	453	472	452	430	440	428	418	424
16	491	462	483	488	446	474	458	433	447	423	385	404
17	485	462	473	490	438	472	461	432	450	452	423	434
18	471	453	462	494	465	483	465	394	450	437	292	346
19	476	455	464	496	453	481	439	386	411	386	328	353
20	487	435	460	489	204	351	448	428	439	418	385	402
21	512	468	491	383	287	348	452	420	441	430	415	421
22	496	196	335	421	383	402	456	424	443	449	430	440
23	250	213	226	440	406	428	463	417	445	453	449	451
24	297	250	279	454	435	442	492	423	456	459	451	453
25	347	277	316	464	438	451	470	449	462	466	458	461
26	429	339	387	465	448	460	465	443	456	473	460	467
27	456	422	440	473	439	458	465	396	442	476	464	471
28	---	---	---	479	439	465	469	401	449	474	464	468
29	---	---	---	483	429	467	461	359	430	478	466	472
30	---	---	---	476	424	448	454	362	426	488	472	478
31	---	---	---	454	420	444	---	---	---	493	464	479
MONTH	540	196	454	496	204	430	492	220	425	493	292	425

01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	494	449	479	511	483	501	498	479	490	521	335	474
2	487	459	470	513	491	503	497	454	485	475	222	393
3	482	445	470	492	333	403	504	444	491	511	383	471
4	458	274	408	496	444	476	501	444	483	520	487	506
5	371	249	321	508	487	501	502	217	445	524	496	512
6	421	365	399	511	136	454	479	276	416	528	518	523
7	434	334	390	409	156	314	502	479	493	528	513	523
8	421	344	387	430	326	397	508	494	504	528	517	523
9	455	378	411	455	302	427	509	262	460	526	514	522
10	458	440	448	---	---	---	472	306	417	525	497	516
11	471	456	464	---	---	---	471	314	395	526	494	515
12	478	461	472	469	452	462	494	447	471	527	509	519
13	462	240	411	---	---	---	508	494	502	522	489	509
14	413	305	375	---	---	---	519	499	511	525	498	510
15	427	413	422	---	---	---	533	507	517	526	506	518
16	446	407	433	---	---	---	525	507	517	524	492	513
17	439	366	411	---	---	---	524	494	512	521	482	504
18	407	306	381	---	---	---	525	491	511	524	243	486
19	395	225	348	---	---	---	525	467	505	379	136	262
20	364	247	313	---	---	---	513	475	499	452	376	419
21	415	336	380	---	---	---	515	471	501	486	449	467
22	430	396	417	---	---	---	518	477	505	501	472	494
23	462	427	447	505	480	494	518	481	505	472	338	407
24	467	449	459	491	461	477	517	478	504	492	463	479
25	479	452	469	505	480	493	521	478	506	506	491	498
26	488	467	476	509	477	497	520	480	505	516	506	510
27	494	480	488	509	492	502	523	474	507	519	438	506
28	499	478	492	510	495	501	521	461	504	507	429	474
29	506	480	497	504	487	497	515	469	488	519	505	513
30	510	478	500	505	490	498	521	496	512	524	511	519
31	---	---	---	504	481	495	522	507	517	---	---	---
MONTH	510	225	428	513	136	468	533	217	490	528	136	486



DAILY MEAN SPECIFIC CONDUCTANCE - 2003 WATER YEAR

01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

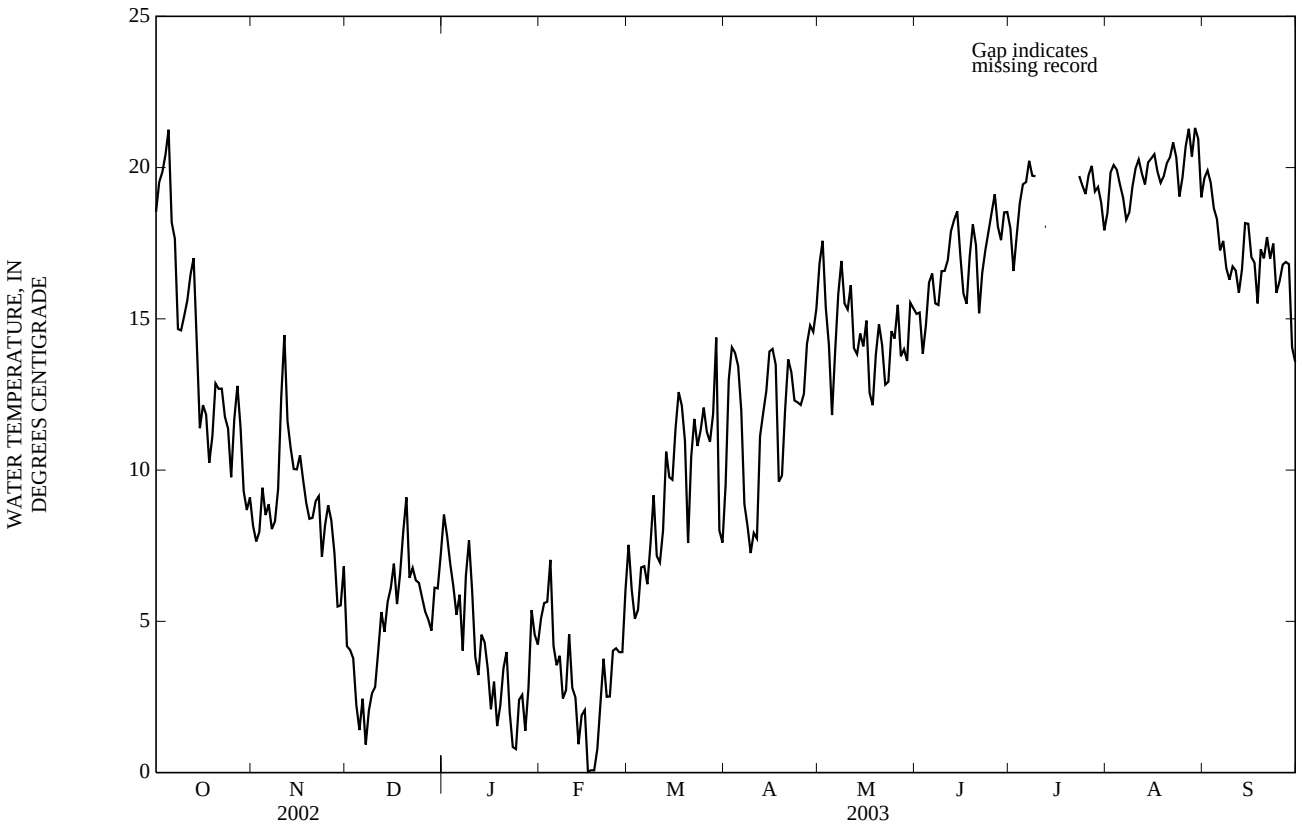
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	21.5	15.7	18.5	9.3	7.0	8.2	5.8	2.7	4.2	8.9	8.0	8.5
2	23.3	16.5	19.5	9.9	5.8	7.6	5.8	2.5	4.1	8.0	7.6	7.8
3	22.3	17.6	19.9	10.3	5.8	8.0	5.1	2.3	3.8	7.6	6.0	6.9
4	23.1	18.1	20.4	10.7	8.2	9.4	3.2	0.9	2.2	7.5	5.2	6.2
5	24.1	19.2	21.3	9.5	8.0	8.5	2.5	0.1	1.4	5.5	4.7	5.2
6	21.2	15.4	18.2	10.0	8.1	8.9	5.0	1.0	2.4	7.0	3.8	5.9
7	19.7	15.8	17.7	9.1	7.2	8.1	2.4	0.0	0.9	5.8	2.4	4.0
8	16.7	12.5	14.7	11.2	5.6	8.3	3.9	0.3	2.0	8.9	4.5	6.5
9	16.0	13.4	14.6	11.7	7.0	9.4	4.3	1.0	2.6	9.9	6.0	7.7
10	15.9	14.5	15.1	14.6	10.0	12.4	4.9	1.4	2.8	7.4	4.4	6.0
11	16.1	15.3	15.6	15.7	12.8	14.5	4.9	3.3	4.0	5.9	2.3	3.8
12	17.7	15.4	16.5	12.8	10.8	11.6	7.9	3.8	5.3	5.5	1.2	3.2
13	18.3	16.0	17.0	12.2	9.4	10.7	5.3	4.0	4.7	7.0	2.7	4.6
14	16.6	12.2	14.2	12.3	7.9	10.0	6.7	4.5	5.6	5.4	3.4	4.3
15	13.0	9.5	11.4	11.7	8.1	10.0	7.8	4.5	6.1	5.3	1.9	3.4
16	13.4	11.3	12.1	10.8	10.2	10.5	8.4	5.6	6.9	3.4	0.9	2.1
17	12.7	10.3	11.8	10.2	8.9	9.7	7.1	3.7	5.6	5.1	1.8	3.0
18	12.8	7.9	10.2	10.6	7.4	8.9	7.5	6.0	6.6	3.4	0.1	1.5
19	12.9	9.6	11.1	9.8	7.0	8.4	10.1	5.8	8.0	4.3	1.1	2.2
20	13.4	12.5	12.9	10.7	6.3	8.4	10.0	6.7	9.1	6.0	1.5	3.4
21	14.6	11.3	12.7	10.2	7.9	9.0	8.1	5.1	6.4	5.3	2.5	4.0
22	15.4	10.9	12.7	10.2	6.8	9.1	8.8	5.1	6.8	4.1	0.4	2.0
23	14.4	9.2	11.8	8.9	5.3	7.1	7.8	5.0	6.4	2.1	0.0	0.8
24	12.4	10.8	11.4	10.7	5.9	8.2	6.9	5.8	6.3	2.1	0.0	0.8
25	10.8	9.3	9.8	11.1	6.5	8.8	7.3	4.8	5.8	4.8	0.9	2.4
26	14.7	9.3	11.7	9.6	7.6	8.3	7.1	4.1	5.3	4.2	1.0	2.6
27	15.3	10.4	12.8	8.5	5.4	7.3	7.1	3.4	5.1	3.4	0.0	1.4
28	12.7	10.3	11.4	7.9	3.8	5.5	5.8	3.3	4.7	5.3	0.6	2.8
29	10.3	8.4	9.3	7.4	4.0	5.5	8.4	4.3	6.1	6.4	4.5	5.4
30	9.2	8.3	8.7	8.8	5.0	6.8	7.6	4.2	6.1	5.2	4.0	4.6
31	10.4	8.3	9.1	---	---	---	9.0	5.2	7.2	4.9	3.5	4.2
MONTH	24.1	7.9	14.0	15.7	3.8	8.9	10.1	0.0	5.0	9.9	0.0	4.1
		FEBRUARY			MARCH			APRIL			MAY	
1	6.4	4.1	5.1	10.6	5.7	7.5	14.4	5.4	9.5	21.3	13.3	16.8
2	9.0	3.3	5.6	8.7	3.3	6.0	18.2	8.6	13.0	22.4	13.6	17.6
3	7.6	3.6	5.6	8.7	3.0	5.1	19.1	9.5	14.1	17.1	13.6	15.4
4	9.3	4.4	7.0	9.3	2.7	5.4	17.3	10.5	13.9	16.4	12.2	14.1
5	7.3	1.8	4.2	9.8	5.0	6.8	17.5	11.0	13.4	13.8	11.0	11.8
6	5.4	2.3	3.5	8.7	5.2	6.8	16.1	8.3	12.0	17.8	10.8	13.9
7	6.5	2.0	3.9	9.3	4.1	6.2	12.1	7.5	8.9	19.8	12.5	15.8
8	5.6	0.1	2.4	11.9	4.0	7.6	9.6	7.0	8.1	20.6	13.5	16.9
9	6.1	0.0	2.7	12.7	6.7	9.2	8.5	6.0	7.3	17.1	13.9	15.5
10	6.7	3.4	4.6	10.5	4.2	7.2	9.7	6.9	7.9	16.0	14.7	15.3
11	4.8	0.7	2.8	10.1	4.2	6.9	9.9	5.6	7.7	19.2	14.1	16.1
12	5.6	0.0	2.5	10.6	5.1	8.0	15.9	7.6	11.1	16.1	12.4	14.0
13	2.8	0.0	0.9	14.0	7.6	10.6	16.8	7.7	11.9	17.5	11.0	13.8
14	3.9	0.1	1.9	13.1	6.8	9.8	17.4	8.3	12.6	19.4	10.0	14.5
15	3.1	0.0	2.1	14.0	5.8	9.7	19.0	9.4	13.9	15.6	12.5	14.1
16	0.1	0.0	0.0	14.3	8.4	11.4	17.7	10.3	14.0	18.2	13.1	14.9
17	0.1	0.0	0.1	16.5	8.9	12.6	16.0	11.2	13.5	14.1	12.0	12.6
18	0.1	0.0	0.1	13.3	11.1	12.1	12.1	8.5	9.6	13.0	11.4	12.1
19	1.4	0.1	0.8	12.5	9.4	11.0	11.8	8.3	9.8	17.4	11.6	13.8
20	4.3	1.1	2.3	9.4	6.6	7.6	13.8	10.5	12.0	18.9	11.2	14.8
21	5.1	2.1	3.8	14.8	7.0	10.4	16.7	11.5	13.7	15.4	13.0	14.1
22	4.3	1.1	2.5	15.3	9.3	11.7	15.5	11.6	13.2	13.7	11.9	12.8
23	3.4	1.8	2.5	13.7	8.6	10.8	16.6	8.7	12.3	13.8	12.2	12.9
24	7.7	1.8	4.0	15.8	7.4	11.3	16.8	7.8	12.2	17.9	12.4	14.6
25	5.6	2.9	4.1	16.6	8.0	12.1	13.2	10.5	12.2	17.5	11.5	14.3
26	5.2	3.0	4.0	13.4	9.3	11.3	13.7	11.6	12.5	17.2	13.5	15.5
27	5.1	3.3	4.0	15.6	6.9	10.9	19.3	9.9	14.2	15.1	12.9	13.8
28	9.5	3.3	6.0	15.5	9.0	11.9	20.2	9.8	14.8	16.1	12.2	14.0
29	---	---	---	18.1	12.2	14.4	17.9	11.8	14.6	14.6	12.7	13.6
30	---	---	---	12.3	5.8	8.0	20.1	11.4	15.3	20.0	11.7	15.5
31	---	---	---	10.9	4.6	7.6	---	---	---	17.1	13.5	15.3
MONTH	9.5	0.0	3.2	18.1	2.7	9.3	20.2	5.4	12.0	22.4	10.0	14.5

01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	18.9	12.2	15.2	19.6	16.4	18.0	20.6	17.1	18.5	22.9	17.6	19.7
2	19.5	11.2	15.2	17.6	15.8	16.6	23.0	17.1	19.8	21.2	18.5	19.9
3	15.7	13.4	13.8	19.7	16.4	17.7	23.4	18.0	20.1	21.3	18.1	19.5
4	16.3	13.7	14.8	21.9	16.1	18.8	22.4	17.9	19.9	19.6	18.1	18.7
5	19.6	13.6	16.2	22.6	16.4	19.4	22.2	17.8	19.4	21.0	16.1	18.3
6	20.5	13.0	16.5	22.7	16.6	19.5	21.1	16.8	19.0	20.1	14.7	17.3
7	16.9	14.5	15.5	23.0	17.8	20.2	19.2	17.2	18.3	20.3	14.8	17.6
8	16.6	14.5	15.5	22.7	17.2	19.7	20.6	16.9	18.5	18.0	15.3	16.7
9	19.2	14.2	16.6	22.4	17.5	19.7	21.4	17.4	19.4	17.6	14.7	16.3
10	20.1	13.3	16.6	---	---	---	22.9	17.7	20.0	19.9	14.2	16.7
11	19.7	14.5	16.9	---	---	---	22.6	18.8	20.3	20.1	13.3	16.6
12	21.4	15.0	17.9	20.2	15.7	18.0	22.0	17.7	19.8	17.0	14.5	15.9
13	20.5	16.1	18.3	---	---	---	21.8	17.4	19.4	18.4	15.2	16.6
14	21.8	15.6	18.6	---	---	---	23.5	17.3	20.2	20.9	16.5	18.2
15	18.3	15.9	17.1	---	---	---	23.2	17.8	20.3	19.6	16.8	18.1
16	16.9	15.0	15.8	---	---	---	23.0	18.4	20.4	20.4	14.0	17.0
17	15.9	15.0	15.5	---	---	---	22.2	18.1	19.9	20.1	13.8	16.9
18	20.2	14.7	17.1	---	---	---	22.3	17.2	19.5	16.8	15.0	15.5
19	19.8	16.5	18.1	---	---	---	22.7	17.5	19.7	17.8	16.4	17.3
20	20.0	15.8	17.4	---	---	---	23.6	17.3	20.1	19.2	15.0	17.0
21	17.4	13.6	15.2	---	---	---	23.5	17.4	20.3	19.6	16.3	17.7
22	19.8	13.9	16.5	---	---	---	24.1	18.1	20.8	17.7	16.3	17.0
23	21.1	14.0	17.3	22.4	17.4	19.7	23.5	18.0	20.3	18.4	16.0	17.5
24	21.7	14.4	17.9	22.2	16.7	19.4	22.3	16.1	19.0	18.4	13.5	15.9
25	22.4	15.0	18.5	22.8	15.6	19.1	23.3	16.6	19.7	18.4	13.7	16.2
26	22.8	15.8	19.1	23.1	16.4	19.8	24.4	17.5	20.7	18.4	15.6	16.8
27	20.0	16.0	18.0	22.6	17.7	20.1	25.0	18.9	21.3	19.3	14.7	16.9
28	20.5	14.9	17.6	20.4	18.2	19.2	23.1	17.9	20.4	18.3	15.4	16.8
29	21.7	15.4	18.5	21.6	17.4	19.4	24.9	18.5	21.3	15.4	12.9	14.1
30	21.0	15.7	18.5	20.0	17.5	18.8	22.9	18.9	21.0	16.5	11.3	13.6
31	---	---	---	18.8	16.9	17.9	20.5	18.1	19.0	---	---	---
MONTH	22.8	11.2	16.9	23.1	15.6	19.0	25.0	16.1	19.9	22.9	11.3	17.1

01621050 MUDDY CREEK AT MOUNT CLINTON, VA—Continued



DAILY MEAN WATER TEMPERATURE - 2003 WATER YEAR

01622000 NORTH RIVER NEAR BURKETOWN, VA

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

DRAINAGE AREA.--379 mi^2.

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

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

GAGE.--Water-stage recorder. Datum of gage is 1,103.49 ft NGVD of 1929. Prior to Dec. 12, 1938, nonrecording gage at site 3.0 mi downstream at different datum.

REMARKS.--Records good except those for period of doubtful gage-height record, Oct. 30, 31, and periods with ice effect, Jan. 24, 27, 28, which are fair. At a point 26.8 mi upstream from station, there is an aqueduct tunnel diversion of about 2.4 ft^3/s from Staunton Dam Reservoir by city of Staunton for industrial and municipal use. Diurnal fluctuation at low and medium flow caused by wastewater treatment plant and diversions for industrial, municipal, and irrigation at points upstream. Maximum discharge, 70,400 ft^3/s, from rating curve extended above 16,000 ft^3/s on basis of slope-area measurements at gage heights 32.4 ft and 36.3 ft and contracted-opening measurements at gage heights 35.85 ft and 36.3 ft. Minimum discharge, 16 ft^3/s, result of temporary dam upstream. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1915	5,230	9.40	Aug 12	0215	3,360	7.31
Mar 20	2015	3,780	7.81	Sep 19	0915	*13,600	*16.99
Apr 11	0630	3,630	7.63	Sep 23	0700	4,960	9.12
Jun 20	1930	3,230	7.16				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	79	865	247	825	166	927	493	518	434	353	198	181
2	81	623	226	2,000	164	1,310	499	488	386	365	173	265
3	82	456	203	1,910	159	1,640	596	474	390	656	203	277
4	80	355	183	1,610	165	1,430	635	615	641	564	232	270
5	77	296	189	1,280	160	1,540	609	946	1,370	451	234	263
6	71	424	174	1,040	155	1,990	542	1,070	1,280	362	359	244
7	70	472	158	843	160	2,040	821	1,010	1,270	1,000	275	224
8	66	456	152	726	153	1,660	1,190	864	1,300	605	245	209
9	66	408	144	642	147	1,390	1,820	877	1,570	647	286	196
10	66	356	136	568	148	1,250	2,220	1,550	1,370	648	770	184
11	99	431	202	500	143	1,100	2,980	2,140	1,130	609	822	176
12	100	824	338	449	140	946	2,320	1,810	920	528	1,640	168
13	81	1,560	649	415	135	835	1,830	1,390	1,040	459	1,070	190
14	78	1,310	1,140	384	136	816	1,470	1,050	1,310	443	916	173
15	74	984	1,140	362	149	846	1,190	797	1,320	394	710	167
16	196	759	983	328	143	797	962	769	1,300	349	577	159
17	195	906	803	316	146	723	790	580	1,680	309	491	151
18	372	992	667	282	145	658	684	1,260	2,590	281	426	232
19	303	894	581	272	147	612	800	2,130	2,310	276	365	7,540
20	217	766	1,550	262	152	1,710	735	1,780	2,690	278	320	3,690
21	169	659	2,160	246	174	2,750	739	1,570	2,090	235	283	2,740
22	143	652	1,620	229	2,040	2,080	730	1,320	1,620	225	260	1,930
23	121	592	1,240	217	4,410	1,580	651	1,140	1,290	221	239	3,250
24	106	546	964	e190	3,370	1,240	578	1,010	999	272	223	1,810
25	99	492	835	198	2,400	968	528	861	790	211	212	1,350
26	141	430	685	193	1,740	791	525	754	640	199	203	1,030
27	110	382	562	e180	1,340	673	568	655	537	191	193	836
28	131	338	499	e170	1,070	573	590	608	471	186	188	967
29	228	297	451	173	---	523	574	542	422	184	188	737
30	e1,110	275	413	169	---	561	545	504	383	176	179	634
31	e1,210	---	386	169	---	525	---	460	---	174	173	---
TOTAL	6,021	18,800	19,680	17,148	19,557	36,484	29,214	31,542	35,543	11,851	12,653	30,243
MEAN	194	627	635	553	698	1,177	974	1,017	1,185	382	408	1,008
MAX	1,210	1,560	2,160	2,000	4,410	2,750	2,980	2,140	2,690	1,000	1,640	7,540
MIN	66	275	136	169	135	523	493	460	383	174	173	151
CFSM	0.51	1.65	1.68	1.46	1.84	3.11	2.57	2.68	3.13	1.01	1.08	2.66
IN.	0.59	1.85	1.93	1.68	1.92	3.58	2.87	3.10	3.49	1.16	1.24	2.97

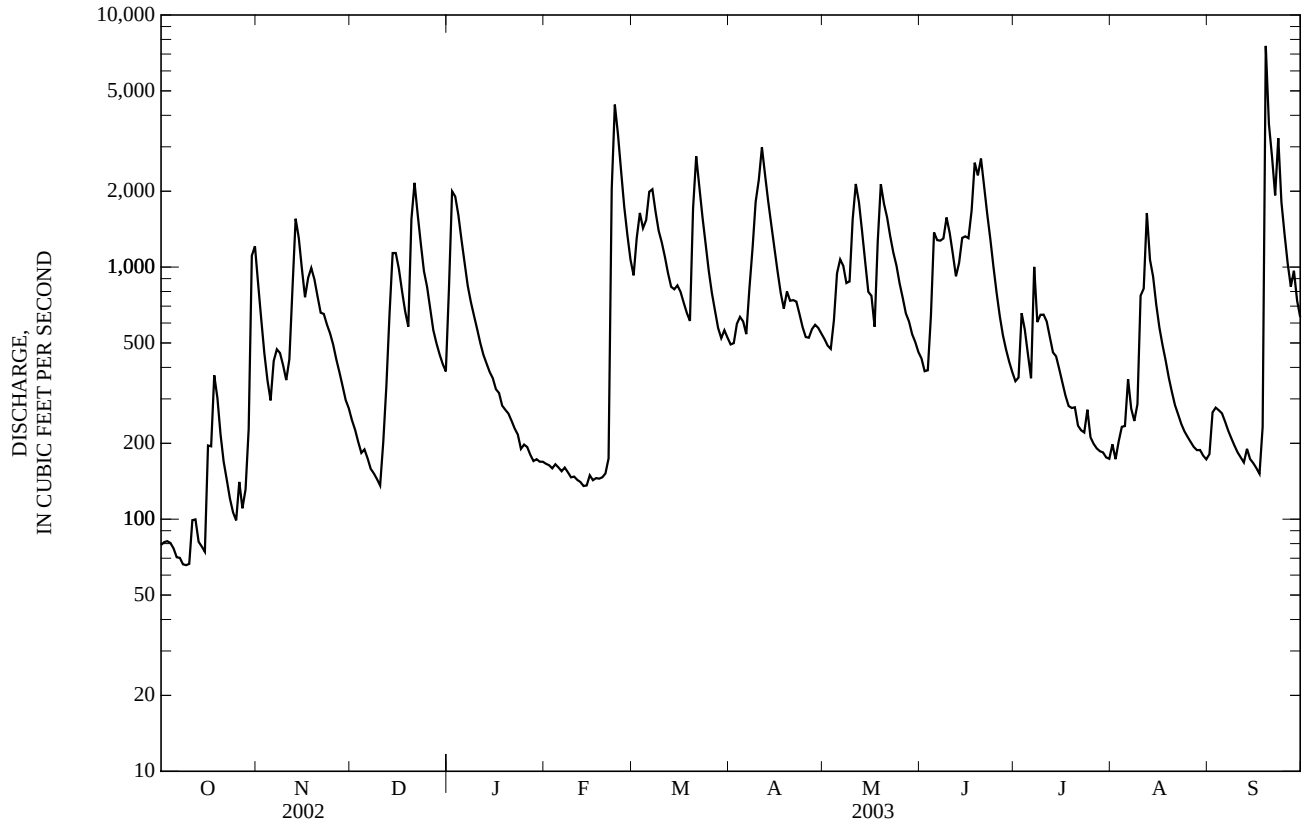
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 1972, 1976 - 2003, BY WATER YEAR (WY)

MEAN	243	282	331	432	516	709	613	495	342	198	237	235
MAX	1,500	2,080	1,087	1,777	1,841	1,932	1,831	1,486	1,704	809	1,102	3,130
(WY)	(1943)	(1986)	(1935)	(1996)	(1998)	(1936)	(1987)	(1942)	(1949)	(1949)	(1949)	(1996)
MIN	38.1	36.5	39.2	53.5	47.9	136	107	106	72.7	41.5	41.0	34.2
(WY)	(1931)	(1931)	(1966)	(1966)	(1931)	(1981)	(1981)	(1930)	(1977)	(1999)	(1964)	(1930)

01622000 NORTH RIVER NEAR BURKETOWN, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1926 - 1972 1976 - 2003	
ANNUAL TOTAL	94,057		268,736			
ANNUAL MEAN	258		736		385	
HIGHEST ANNUAL MEAN					871	1996
LOWEST ANNUAL MEAN					145	1999
HIGHEST DAILY MEAN	4,070	Apr 22	7,540	Sep 19	e32,000	Sep 7, 1996
LOWEST DAILY MEAN	32	aJul 13	66	bOct 8	22	Sep 24, 1930
ANNUAL SEVEN-DAY MINIMUM	34	Sep 9	71	Oct 4	30	Dec 20, 1930
MAXIMUM PEAK FLOW			13,600	Sep 19	70,400	Sep 6, 1996
MAXIMUM PEAK STAGE			16.99	Sep 19	c36.70	Sep 6, 1996
INSTANTANEOUS LOW FLOW			59	Oct 9	d16	Nov 23, 1965
ANNUAL RUNOFF (CFSM)	0.68		1.94		1.01	
ANNUAL RUNOFF (INCHES)	9.23		26.38		13.79	
10 PERCENT EXCEEDS	688		1,630		832	
50 PERCENT EXCEEDS	88		525		203	
90 PERCENT EXCEEDS	42		152		63	

a Also Aug. 24 and Sept. 15, 2002.
b Also Oct. 9, 10, 2002.
c From high-water mark in gage house.
d Result of temporary dam upstream.
e Estimated.



01625000 MIDDLE RIVER NEAR GROTTOES, VA

LOCATION.--Lat 38°15'42", long 78°51'43", NAD83, Augusta County, Hydrologic Unit 02070005, on left bank at upstream side of bridge on State Highway 769 at Mount Meridian, 1.8 mi upstream from mouth, and 2.0 mi west of Grottoes.

DRAINAGE AREA.--375 mi^2.

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

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

GAGE.--Water-stage recorder. Datum of gage is 1,061.51 ft NGVD of 1929. Prior to Sep. 1, 1938, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Dec. 6-10, Jan. 19-29, and Feb. 10-12, 16, 17, and periods of doubtful or no gage-height record, Feb. 18-20 and Sept. 21-30, which are fair. There are discharges of about 7.4 ft^3/s from wastewater treatment plants upstream from station. Most of water discharged from treatment plants was diverted from another drainage basin for industrial and municipal supply. Small diurnal fluctuation at low flow caused by mills and irrigation upstream from station. Maximum discharge, 44,300 ft^3/s, from rating curve extended above 15,000 ft^3/s on basis of slope-area measurement at gage height 33.09 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 23	0730	8,670	15.98	Jun 21	0300	4,370	11.19
Apr 11	0900	3,380	9.88	Sep 19	1500	*12,900	*19.31

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	182	117	459	143	868	481	407	579	416	220	192
2	41	131	108	1,170	141	1,670	442	367	506	435	219	185
3	38	108	104	1,070	138	1,810	456	327	465	822	203	196
4	36	96	95	978	144	1,240	442	400	908	807	239	196
5	36	93	117	775	161	1,070	413	741	1,540	707	286	259
6	36	145	e110	636	149	1,250	383	665	1,290	470	429	203
7	35	196	e102	531	148	1,210	522	567	1,030	409	312	181
8	35	203	e97	452	147	923	999	481	1,220	388	367	172
9	36	159	e92	413	135	742	1,560	498	1,220	396	508	169
10	37	135	e90	366	e130	641	1,980	1,130	1,010	398	601	165
11	43	176	118	324	e128	569	2,830	1,270	807	375	716	157
12	59	311	235	289	e125	508	1,890	949	951	348	530	152
13	56	823	404	264	121	459	1,290	696	828	309	664	171
14	49	558	958	255	127	428	986	551	934	1,050	574	184
15	45	327	852	242	147	392	807	480	1,340	967	449	170
16	65	259	625	222	e210	370	689	866	1,820	642	379	155
17	155	565	474	214	e185	356	609	577	1,490	483	391	148
18	90	845	382	195	e240	334	549	1,510	2,190	398	449	340
19	74	574	323	e190	e220	316	603	2,340	1,620	356	335	9,220
20	63	400	645	e188	e275	906	536	1,490	1,970	327	291	3,220
21	58	304	1,640	e182	322	2,190	490	1,200	3,010	299	267	e2,600
22	58	274	819	e178	2,680	1,280	596	1,050	1,620	281	250	e2,100
23	54	257	557	e170	7,710	875	586	872	1,150	283	234	e4,400
24	52	237	435	e165	4,060	693	493	830	903	277	219	e2,500
25	50	212	456	e190	2,440	583	456	741	752	255	208	e1,500
26	57	187	466	e175	1,450	513	451	698	653	232	197	e1,100
27	71	168	367	e157	1,080	474	429	643	581	220	194	e860
28	62	150	315	e150	894	418	395	634	525	217	189	e1,000
29	77	135	287	e160	---	389	377	592	482	231	225	e800
30	176	125	265	152	---	436	363	744	447	242	201	e650
31	241	---	248	146	---	515	---	602	---	219	217	---
TOTAL	2,029	8,335	11,903	11,058	23,850	24,428	23,103	24,918	33,841	13,259	10,563	33,345
MEAN	65.5	278	384	357	852	788	770	804	1,128	428	341	1,112
MAX	241	845	1,640	1,170	7,710	2,190	2,830	2,340	3,010	1,050	716	9,220
MIN	35	93	90	146	121	316	363	327	447	217	189	148
CFSM	0.17	0.74	1.02	0.95	2.27	2.10	2.05	2.14	3.01	1.14	0.91	2.96
IN.	0.20	0.83	1.18	1.10	2.37	2.42	2.29	2.47	3.36	1.32	1.05	3.31

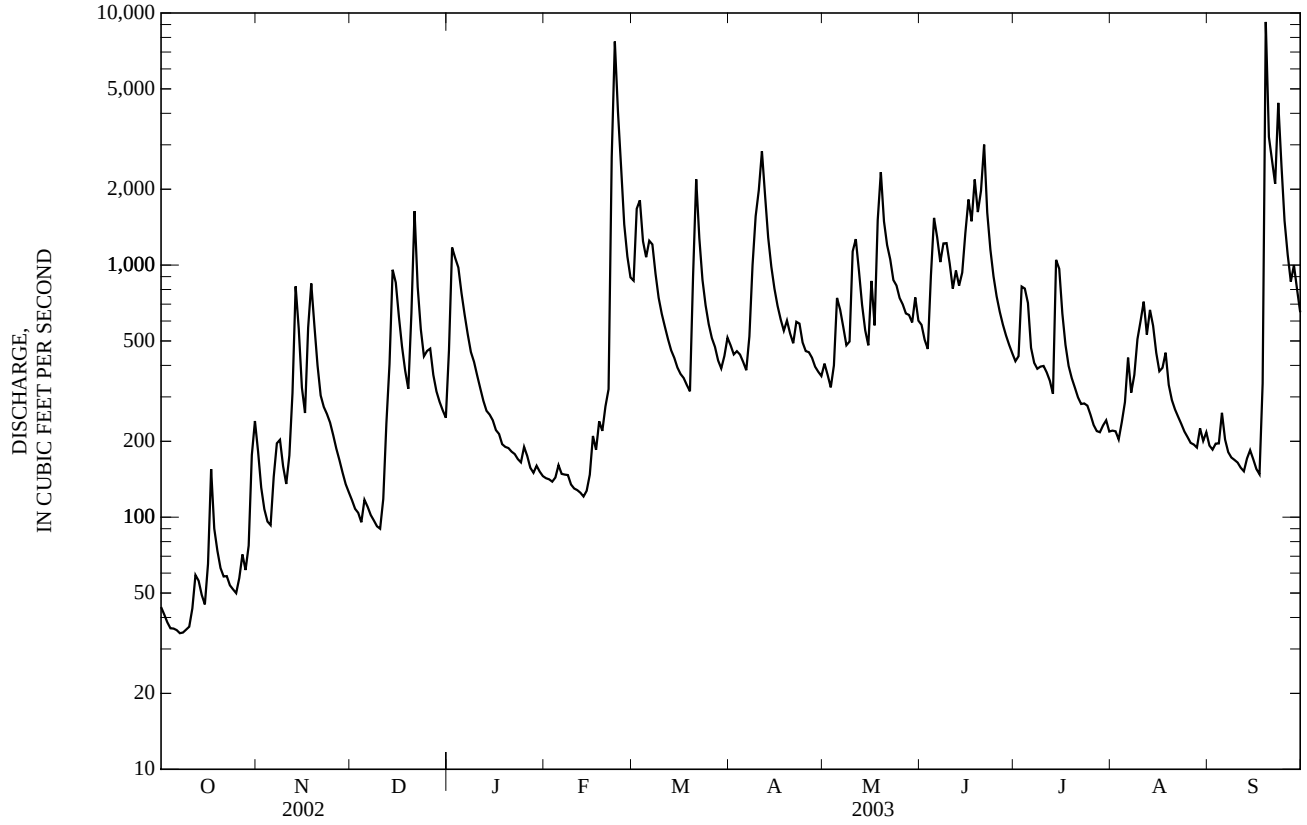
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 2003, BY WATER YEAR (WY)

MEAN	228	230	298	397	465	579	461	344	262	178	193	211
MAX	1,138	2,019	1,111	1,436	2,288	1,704	1,674	963	1,128	705	1,017	1,887
(WY)	(1980)	(1986)	(1949)	(1996)	(1998)	(1936)	(1987)	(1989)	(2003)	(1972)	(1940)	(1996)
MIN	57.6	58.9	55.8	56.4	50.2	78.2	95.8	89.7	47.1	47.2	31.8	37.8
(WY)	(2002)	(1931)	(1966)	(2002)	(2002)	(2002)	(1981)	(1969)	(2002)	(1966)	(2002)	(2002)

01625000 MIDDLE RIVER NEAR GROTTOES, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1928 - 2003	
ANNUAL TOTAL	44,221		220,632			
ANNUAL MEAN	121		604		320	
HIGHEST ANNUAL MEAN					623	1998
LOWEST ANNUAL MEAN					75.6	2002
HIGHEST DAILY MEAN	1,640	Dec 21	9,220	Sep 19	26,000	Nov 5, 1985
LOWEST DAILY MEAN	18	Sep 14	35	aOct 7	18	Sep 14, 2002
ANNUAL SEVEN-DAY MINIMUM	20	Sep 9	36	Oct 4	20	Sep 9, 2002
MAXIMUM PEAK FLOW			12,900	Sep 19	44,300	Sep 7, 1996
MAXIMUM PEAK STAGE			19.31	Sep 19	b35.62	Sep 7, 1996
INSTANTANEOUS LOW FLOW			32	aOct 7	c8.9	Dec 31, 2001
ANNUAL RUNOFF (CFSM)	0.32		1.61		0.85	
ANNUAL RUNOFF (INCHES)	4.39		21.89		11.58	
10 PERCENT EXCEEDS	264		1,260		635	
50 PERCENT EXCEEDS	60		389		186	
90 PERCENT EXCEEDS	29		106		81	

a Also Oct. 8, 2002.
b From high-water mark in gage house.
c Result of freezeup.
e Estimated.



01626000 SOUTH RIVER NEAR WAYNESBORO, VA

LOCATION.--Lat 38°03'27", long 78°54'29", NAD83, Waynesboro City, Hydrologic Unit 02070005, on right bank 80 ft downstream from bridge on State Highway 664, 1.3 mi southwest of Waynesboro Post Office, and 2.4 mi downstream from Back Creek.

DRAINAGE AREA.--127 mi^2, of which 41 mi^2 are above flood-detention structures.

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

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,296.20 ft NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 17, 19-24, 26-28, and Feb. 16-19, which are fair. There is discharge of about 4.8 ft^3/s from a wastewater treatment plant upstream from station, originating from well fields. Flow from 41 mi^2 upstream from station slightly regulated by flood-detention reservoirs (sixteen of which were built by Soil Conservation Service between 1954 and 1961). National Weather Service gage-height telemeter and Virginia Department of Emergency Services gage-height radio transmitter at station. Maximum discharge, 17,500 ft^3/s, from rating curve extended above 4,200 ft^3/s on basis of contracted-opening measurement at gage height 13.95 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1942 reached a stage of 14.3 ft, from floodmarks, discharge, 14,500 ft^3/s.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 23	0700	2,070	6.68	Sep 19	0400	*13,800	*13.95
Apr 11	1430	1,350	5.69	Sep 23	2200	2,180	6.82

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	45	53	291	57	342	301	170	327	137	77	79
2	18	37	50	483	58	478	319	149	274	167	79	76
3	17	33	47	365	57	569	307	137	247	584	87	86
4	17	32	44	308	62	457	277	155	268	633	187	96
5	17	31	50	264	68	425	254	152	357	448	244	123
6	17	50	48	237	60	508	227	146	330	335	203	91
7	25	55	45	210	62	504	274	134	298	253	161	80
8	18	45	44	191	60	411	327	126	354	220	207	74
9	16	39	44	173	55	349	519	200	420	210	178	72
10	17	35	43	159	57	307	733	366	396	210	353	69
11	20	53	53	138	57	274	1,280	306	336	184	335	65
12	20	177	70	121	56	248	1,030	232	389	157	269	64
13	23	260	104	115	51	227	686	191	401	138	223	126
14	19	165	230	111	53	211	525	167	339	132	203	165
15	19	118	228	103	66	194	435	163	291	126	177	128
16	41	124	196	94	e63	184	372	248	305	116	155	108
17	52	301	168	e92	e57	178	321	214	364	106	227	91
18	30	350	144	81	e68	167	290	491	399	98	282	605
19	23	255	129	e78	e80	156	289	721	384	92	224	8,110
20	20	196	254	e76	89	454	270	522	471	87	187	2,910
21	20	159	313	e74	104	759	251	430	490	81	159	1,700
22	20	136	250	e70	811	517	239	422	402	77	139	1,210
23	19	111	208	e64	1,950	379	221	395	327	80	125	1,850
24	19	93	185	e61	1,420	313	203	391	275	81	111	1,550
25	19	82	190	66	890	274	193	358	238	74	101	970
26	21	73	171	e60	622	250	190	371	212	67	91	716
27	26	67	147	e56	463	236	182	367	192	64	83	575
28	25	61	134	e53	381	210	165	360	177	62	82	640
29	32	57	125	60	---	219	153	365	163	90	122	491
30	84	56	118	59	---	264	148	409	148	80	92	365
31	62	---	112	58	---	291	---	362	---	69	83	---
TOTAL	795	3,296	3,997	4,371	7,877	10,355	10,981	9,220	9,574	5,258	5,246	23,285
MEAN	25.6	110	129	141	281	334	366	297	319	170	169	776
MAX	84	350	313	483	1,950	759	1,280	721	490	633	353	8,110
MIN	16	31	43	53	51	156	148	126	148	62	77	64
CFSM	0.20	0.87	1.02	1.11	2.22	2.63	2.88	2.34	2.51	1.34	1.33	6.11
IN.	0.23	0.97	1.17	1.28	2.31	3.03	3.22	2.70	2.80	1.54	1.54	6.82

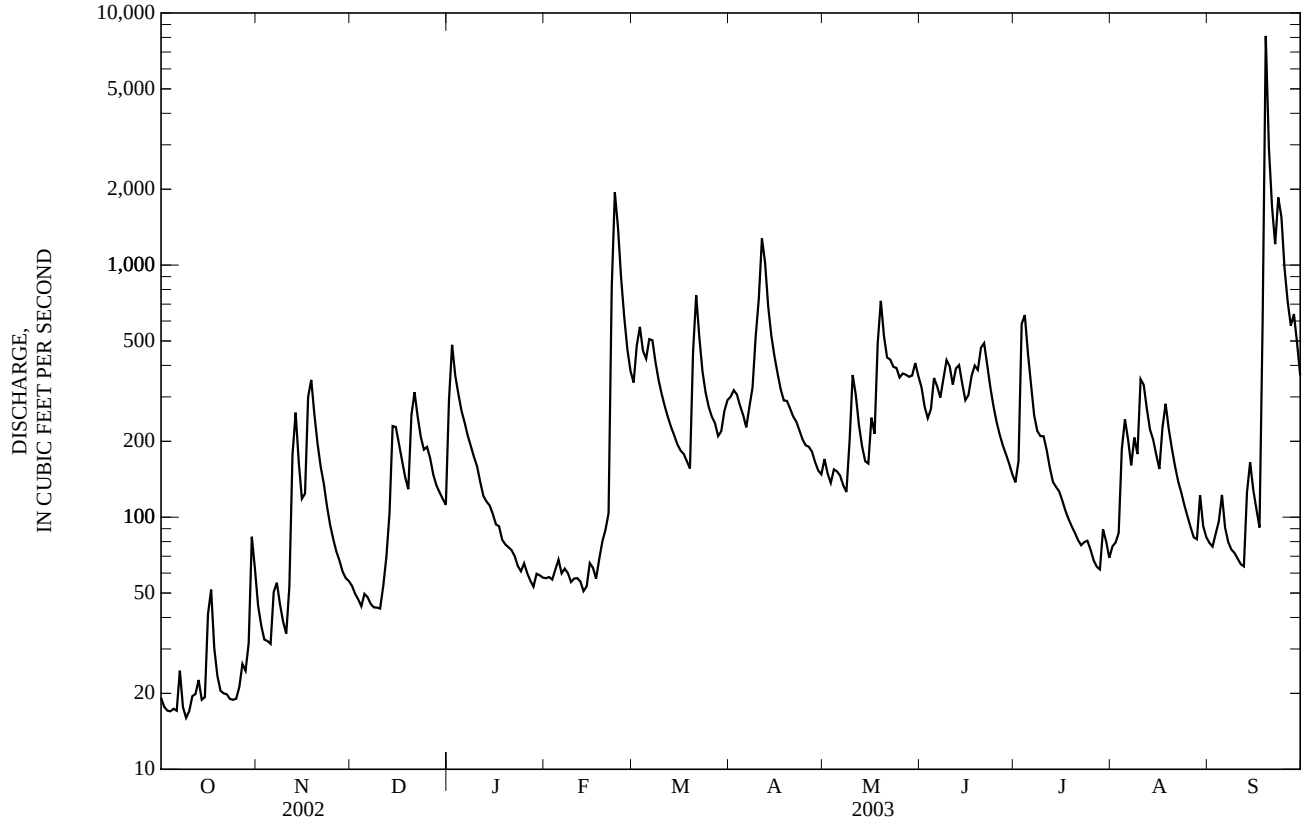
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2003, BY WATER YEAR (WY)

MEAN	109	128	132	175	204	276	240	165	119	66.9	79.8	95.9
MAX	549	1,214	355	767	1,312	748	1,062	485	875	305	700	776
(WY)	(1973)	(1986)	(1997)	(1996)	(1998)	(1993)	(1987)	(1989)	(1972)	(1972)	(1955)	(2003)
MIN	25.5	24.7	24.2	23.6	23.8	49.0	44.0	50.4	22.1	21.5	18.5	18.4
(WY)	(1966)	(2002)	(1966)	(1966)	(2002)	(1981)	(1981)	(1981)	(2002)	(2002)	(2002)	(2002)

01626000 SOUTH RIVER NEAR WAYNESBORO, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1953 - 2003	
ANNUAL TOTAL	19,245		94,255			
ANNUAL MEAN	52.7		258		149	
HIGHEST ANNUAL MEAN					312	1998
LOWEST ANNUAL MEAN					37.1	2002
HIGHEST DAILY MEAN	464	Apr 22	8,110	Sep 19	9,670	Aug 18, 1955
LOWEST DAILY MEAN	16	aSep 12	16	Oct 9	16	aSep 12, 2002
ANNUAL SEVEN-DAY MINIMUM	16	bSep 11	18	Oct 3	16	bSep 11, 2002
MAXIMUM PEAK FLOW			13,800	Sep 19	17,500	Nov 4, 1985
MAXIMUM PEAK STAGE			13.95	Sep 19	15.30	Nov 4, 1985
INSTANTANEOUS LOW FLOW			15	Oct 9	c7.0	Jul 18, 1966
ANNUAL RUNOFF (CFSM)	0.42		2.03		1.17	
ANNUAL RUNOFF (INCHES)	5.64		27.61		15.93	
10 PERCENT EXCEEDS	120		474		299	
50 PERCENT EXCEEDS	26		163		81	
90 PERCENT EXCEEDS	18		44		32	

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



01627500 SOUTH RIVER AT HARRISTON, VA

LOCATION.--Lat 38°13'07", long 78°50'12", NAD83, Augusta County, Hydrologic Unit 02070005, on left bank 200 ft downstream from bridge on State Highway 778, 0.3 mi northwest of Harriston, 0.6 mi downstream from Paine Run, and 7.2 mi upstream from confluence with North River.

DRAINAGE AREA.--212 mi^2.

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

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

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

REMARKS.--Records good except those for periods with ice effect, Jan. 24, 25, 27, 28 and Feb. 16-18, which are fair. There are discharges of about 11.1 ft^3/s from industrial and municipal wastewater treatment plants upstream from station, originating from well fields. Maximum discharge, 28,900 ft^3/s, from rating curve extended above 10,000 ft^3/s on basis of slope-area measurement at gage height 15.47 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 23	0930	4,150	7.98	Sep 19	0715	*22,000	*14.41
Mar 21	0100	1,600	5.31	Sep 21	1330	2,330	6.16
Apr 11	0945	2,200	6.01	Sep 23	1130	3,600	7.46
May 19	0515	1,450	5.10	Sep 28	0200	1,230	4.78
Jun 20	2230	1,290	4.85				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	80	96	265	96	556	510	267	534	217	135	137
2	40	67	91	762	95	786	529	242	442	246	139	131
3	39	59	88	571	95	995	507	219	395	744	140	136
4	38	57	84	474	100	785	456	236	431	1,010	307	158
5	37	56	91	393	106	704	407	239	499	704	272	178
6	37	83	87	345	100	877	359	229	501	524	310	154
7	39	88	83	298	102	891	430	217	457	408	252	137
8	41	77	80	263	99	703	555	206	524	348	298	129
9	37	68	80	241	94	584	868	279	594	323	252	125
10	35	62	78	219	92	509	1,210	652	580	334	378	121
11	42	105	96	200	93	448	2,030	611	492	285	478	116
12	48	194	111	181	91	403	1,650	469	606	247	395	113
13	40	441	137	168	88	366	1,080	365	625	220	362	166
14	39	245	337	162	87	336	799	302	544	209	313	227
15	36	174	385	154	105	306	652	274	483	201	266	198
16	86	167	312	141	e130	288	561	447	480	187	236	171
17	86	400	257	138	e115	276	490	397	536	176	272	152
18	60	607	219	128	e150	261	442	825	622	166	351	252
19	47	412	197	126	127	245	451	1,300	619	160	318	12,500
20	42	300	297	125	128	613	408	922	840	157	253	4,940
21	41	237	470	121	150	1,360	377	728	1,010	147	221	2,450
22	41	206	379	116	1,460	903	369	677	748	141	202	1,710
23	40	177	304	111	3,830	638	332	622	581	149	184	2,950
24	39	152	258	e108	2,450	517	301	605	471	140	170	2,350
25	39	136	270	e104	1,510	438	282	552	397	137	160	1,460
26	51	124	251	102	1,010	393	280	557	344	128	148	1,090
27	44	116	213	e95	752	369	269	543	305	122	139	858
28	48	109	196	e91	612	324	248	543	275	118	134	1,050
29	59	103	184	99	---	338	233	566	253	144	161	803
30	116	100	174	97	---	461	225	684	234	147	160	593
31	106	---	166	96	---	505	---	595	---	128	149	---
TOTAL	1,534	5,202	6,071	6,494	13,867	17,178	17,310	15,370	15,422	8,367	7,555	35,555
MEAN	49.5	173	196	209	495	554	577	496	514	270	244	1,185
MAX	116	607	470	762	3,830	1,360	2,030	1,300	1,010	1,010	478	12,500
MIN	35	56	78	91	87	245	225	206	234	118	134	113
CFSM	0.23	0.82	0.92	0.99	2.34	2.61	2.72	2.34	2.42	1.27	1.15	5.59
IN.	0.27	0.91	1.07	1.14	2.43	3.01	3.04	2.70	2.71	1.47	1.33	6.24

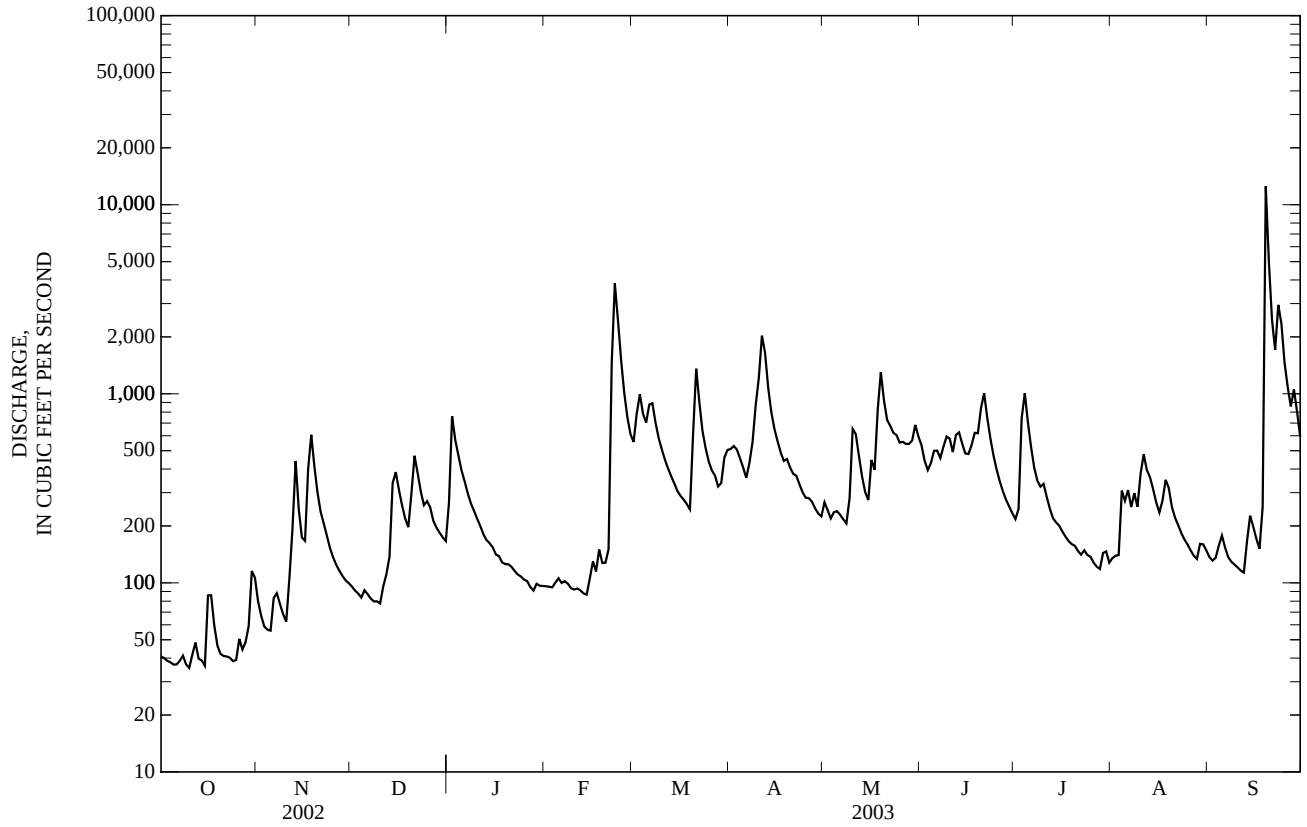
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 1951, 1969 - 2003, BY WATER YEAR (WY)

MEAN	217	228	247	307	350	403	392	282	208	132	147	195
MAX	1,048	1,988	802	1,252	2,160	1,407	1,414	819	1,454	520	925	1,185
(WY)	(1943)	(1986)	(1949)	(1996)	(1998)	(1936)	(1987)	(1989)	(1972)	(1972)	(1940)	(2003)
MIN	46.5	54.0	53.8	55.7	55.4	97.8	93.1	83.2	47.6	46.8	38.5	41.0
(WY)	(1931)	(1931)	(1932)	(2002)	(2002)	(2002)	(1981)	(1930)	(2002)	(2002)	(2002)	(1930)

01627500 SOUTH RIVER AT HARRISTON, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1926 - 1951, 1969 - 2003	
ANNUAL TOTAL	33,027		149,925			
ANNUAL MEAN	90.5		411		260	
HIGHEST ANNUAL MEAN					516	1998
LOWEST ANNUAL MEAN					69.8	2002
HIGHEST DAILY MEAN	663	Apr 22	12,500	Sep 19	16,400	Nov 5, 1985
LOWEST DAILY MEAN	35	aSep 12	35	Oct 10	b25	Aug 24, 1930
ANNUAL SEVEN-DAY MINIMUM	36	Aug 21	38	Oct 4	36	Aug 21, 2002
MAXIMUM PEAK FLOW			22,000	Sep 19	28,900	Sep 6, 1996
MAXIMUM PEAK STAGE			14.41	Sep 19	c17.20	Oct 15, 1942
INSTANTANEOUS LOW FLOW			34	Oct 10	b17	Nov 14, 1941
ANNUAL RUNOFF (CFSM)	0.43		1.94		1.22	
ANNUAL RUNOFF (INCHES)	5.80		26.31		16.64	
10 PERCENT EXCEEDS	179		756		490	
50 PERCENT EXCEEDS	57		245		153	
90 PERCENT EXCEEDS	38		80		68	

a Also Sept. 13 and Oct. 10, 2002.
b Probably result of regulation by mill then in existence upstream from station.
c Peak discharge 23,100 ft^3/s.
e Estimated.



01628500 SOUTH FORK SHENANDOAH RIVER NEAR LYNNWOOD, VA

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

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

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

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

GAGE.--Water-stage recorder. Datum of gage is 1,013.17 ft NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 20, 21, 25, and period of doubtful gage-height record, Feb. 17-19, which are fair. Diurnal fluctuation at low flow prior to 1960 caused by mill at Lynnwood and since by irrigation. National Weather Service rain gage and gage-height telemeters and Virginia Department of Emergency Services gage-height radio transmitter at station. Maximum discharge, 107,000 ft^3/s, from rating curve extended above 22,000 ft^3/s on basis of computations of flow over dam at gage heights 23.60 ft and 27.2 ft. Minimum gage height, 1.63 ft, Sept. 20, 1932. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 23	1200	20,200	15.19	Jun 21	0330	9,390	10.52
Mar 21	0100	8,400	9.87	Sep 19	1530	*48,400	*22.40
Apr 11	1100	9,940	10.87	Sep 23	0700	18,100	14.46

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	186	1,260	429	1,220	439	2,590	1,730	1,270	1,670	1,110	641	597
2	179	905	394	3,930	435	3,940	1,690	1,190	1,440	1,120	639	658
3	177	666	364	3,710	428	5,050	1,760	1,110	1,300	2,280	609	715
4	179	515	328	3,280	435	3,800	1,760	1,200	2,030	2,750	856	695
5	176	431	321	2,650	458	3,500	1,660	1,860	3,220	2,300	848	796
6	174	571	318	2,190	435	4,310	1,530	2,000	3,250	1,570	1,140	708
7	167	705	298	1,820	437	4,460	1,800	1,860	2,790	1,880	936	647
8	175	739	297	1,560	430	3,620	2,930	1,640	3,160	1,440	997	608
9	167	631	278	1,420	405	3,010	4,380	1,550	3,390	1,450	1,100	586
10	164	539	260	1,260	399	2,650	6,040	3,170	3,110	1,480	1,830	564
11	181	609	309	1,120	398	2,360	8,650	4,040	2,590	1,370	2,500	541
12	250	1,020	621	1,010	391	2,100	6,730	3,430	2,600	1,240	2,930	526
13	209	2,870	1,020	930	372	1,890	4,640	2,620	2,480	1,100	2,180	588
14	196	2,390	2,460	882	370	1,780	3,530	2,050	2,970	1,630	1,950	674
15	188	1,670	2,550	842	417	1,730	2,870	1,660	3,680	1,700	1,560	631
16	292	1,290	2,050	780	588	1,660	2,410	2,160	4,090	1,270	1,300	574
17	537	1,820	1,630	735	e530	1,560	2,060	1,700	3,800	1,060	1,220	539
18	498	2,610	1,330	672	e840	1,450	1,800	3,420	5,930	942	1,350	682
19	492	2,060	1,120	653	e650	1,370	1,970	6,480	4,980	885	1,130	33,800
20	371	1,610	1,990	e620	544	2,880	1,810	4,610	5,780	880	979	15,000
21	302	1,280	4,570	e610	631	7,200	1,720	3,840	7,410	790	887	7,340
22	264	1,190	3,080	585	5,460	4,800	1,820	3,390	4,450	753	829	5,030
23	240	1,060	2,320	532	18,400	3,430	1,700	2,860	3,330	751	769	14,200
24	216	962	1,820	491	11,400	2,750	1,490	2,660	2,620	779	717	7,860
25	204	862	1,680	e550	7,350	2,270	1,370	2,330	2,150	718	682	4,670
26	250	758	1,560	511	4,710	1,960	1,350	2,150	1,820	666	651	3,430
27	253	670	1,270	479	3,530	1,770	1,340	1,980	1,590	635	628	2,730
28	238	583	1,110	440	2,890	1,560	1,310	1,930	1,420	620	607	3,220
29	313	514	1,020	473	---	1,460	1,270	1,790	1,290	636	644	2,570
30	1,120	474	954	455	---	1,630	1,220	2,080	1,190	667	648	2,040
31	1,630	---	892	445	---	1,820	---	1,790	---	622	627	---
TOTAL	9,988	33,264	38,643	36,855	63,772	86,360	76,340	75,820	91,530	37,094	34,384	113,219
MEAN	322	1,109	1,247	1,189	2,278	2,786	2,545	2,446	3,051	1,197	1,109	3,774
MAX	1,630	2,870	4,570	3,930	18,400	7,200	8,650	6,480	7,410	2,750	2,930	33,800
MIN	164	431	260	440	370	1,370	1,220	1,110	1,190	620	607	526
CFSM	0.30	1.02	1.15	1.10	2.10	2.57	2.35	2.26	2.81	1.10	1.02	3.48
IN.	0.34	1.14	1.33	1.26	2.19	2.96	2.62	2.60	3.14	1.27	1.18	3.89

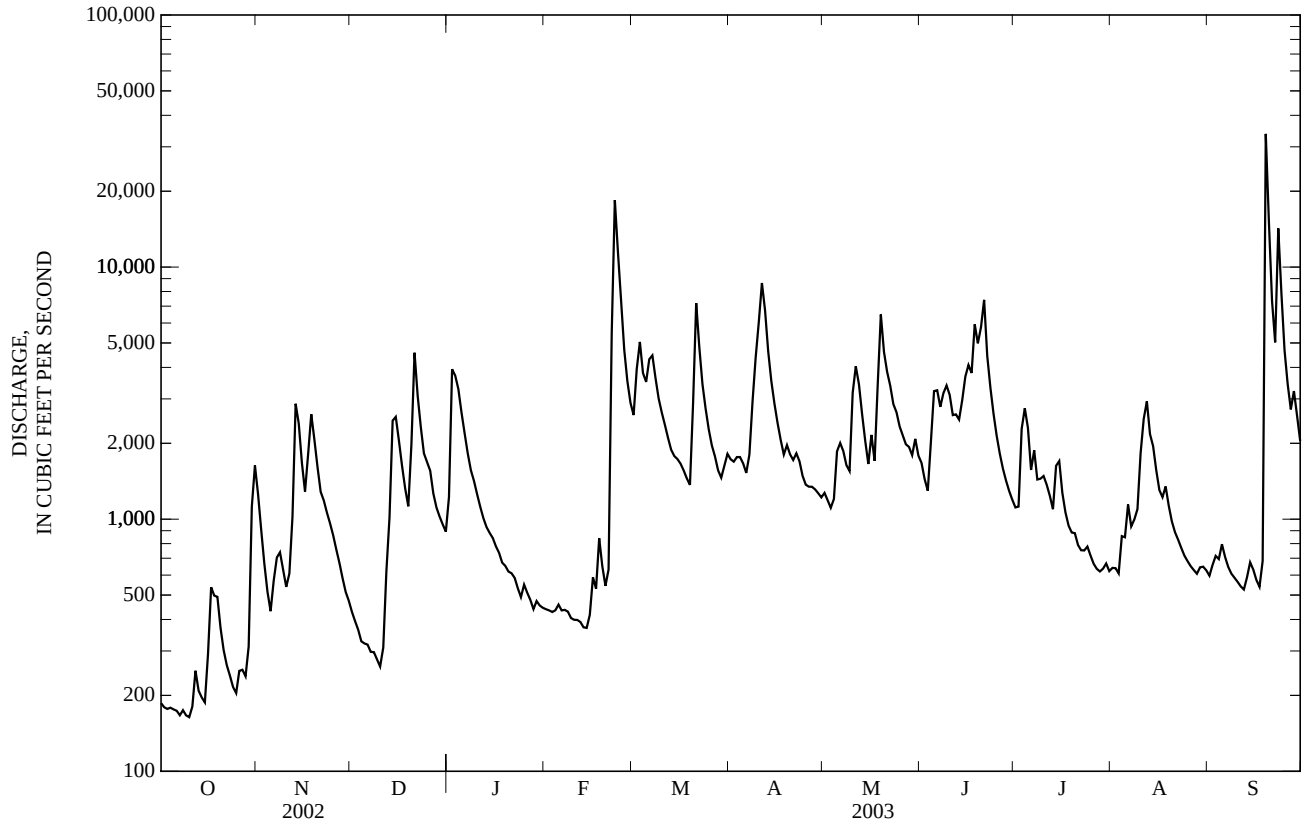
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2003, BY WATER YEAR (WY)

MEAN	709	767	939	1,228	1,435	1,865	1,571	1,203	882	546	610	662
MAX	4,172	6,886	3,302	4,904	6,939	5,785	5,454	3,086	3,656	2,013	2,895	5,822
(WY)	(1943)	(1986)	(1949)	(1996)	(1998)	(1936)	(1987)	(1989)	(1972)	(1949)	(1940)	(1996)
MIN	122	150	156	154	168	333	317	362	215	155	137	142
(WY)	(1931)	(1931)	(1966)	(1966)	(2002)	(2002)	(1981)	(1977)	(2002)	(2002)	(2002)	(2002)

01628500 SOUTH FORK SHENANDOAH RIVER NEAR LYNNWOOD, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1931 - 2003	
ANNUAL TOTAL	177,542		697,269			
ANNUAL MEAN	486		1,910		1,033	
HIGHEST ANNUAL MEAN					2,020	1996
LOWEST ANNUAL MEAN					306	2002
HIGHEST DAILY MEAN	5,230	Apr 22	33,800	Sep 19	e63,500	Sep 7, 1996
LOWEST DAILY MEAN	84	aJul 7	164	Oct 10	84	aJul 7, 2002
ANNUAL SEVEN-DAY MINIMUM	90	bAug 21	172	cOct 4	90	bAug 21, 2002
MAXIMUM PEAK FLOW			48,400	Sep 19	107,000	Sep 7, 1996
MAXIMUM PEAK STAGE			22.40	Sep 19	d30.84	Sep 7, 1996
INSTANTANEOUS LOW FLOW			160	fOct 7	g32	Sep 20, 1932
ANNUAL RUNOFF (CFSM)	0.45		1.76		0.95	
ANNUAL RUNOFF (INCHES)	6.09		23.93		12.94	
10 PERCENT EXCEEDS	1,170		3,800		2,120	
50 PERCENT EXCEEDS	209		1,280		594	
90 PERCENT EXCEEDS	112		372		234	

a Also Aug. 25, 2002.
b Also Aug. 22, 2002.
c Also Oct. 5, 2002.
d From high-water mark in gage house.
e Estimated.
f Also Oct. 9-11, 2002.
g Result of regulation.



01629500 SOUTH FORK SHENANDOAH RIVER NEAR LURAY, VA

LOCATION.--Lat 38°38'46", long 78°32'05", NAD83, Page County, Hydrologic Unit 02070005, on right bank between bridges on U.S. Highway 211, 1.2 mi downstream from Big Run, 2.2 mi upstream from Mill Creek, and 4.1 mi west of Luray.

DRAINAGE AREA.--1,377 mi^2.

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

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

REMARKS.--Records good except those for periods with ice effect, Jan. 19, 24, 26-28, and periods of doubtful gage-height record, Feb. 26 to Mar. 9, Apr. 27 to May 4, May 20 to June 4, June 11-14, June 24 to July 2, and July 5-31, which are fair. Diurnal fluctuation at low and medium flow caused by powerplant 10 mi upstream from station. Virginia Department of Emergency Services and National Weather Service gage-height transmitters at station. Maximum discharge, 112,000 ft^3/s, from rating curve extended above 86,300 ft^3/s. Minimum gage height, 1.88 ft, Sept. 2, 1999. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 18, 1936, reached a stage of 23.6 ft, from floodmarks, discharge, 81,600 ft^3/s.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 23	1815	28,000	14.48	Jun 18	2400	9,530	8.15
Mar 21	0945	12,000	9.30	Jun 21	1315	12,200	9.37
Apr 11	1915	13,800	10.10	Sep 20	0030	*50,600	*19.11
May 19	1745	9,440	8.11	Sep 23	1230	32,500	15.49

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	296	1,870	569	2,190	585	e3,300	2,510	e1,550	e2,250	e1,550	809	809
2	267	1,330	537	6,180	581	e4,500	2,570	e1,520	e2,000	e1,440	845	865
3	248	941	482	5,860	582	e7,100	2,500	e1,460	e1,800	3,420	816	991
4	245	719	444	5,100	598	e5,700	2,450	e1,410	e2,000	5,080	879	1,010
5	236	575	443	4,030	608	e5,200	2,310	1,920	3,750	e3,700	1,170	1,010
6	227	539	398	3,190	606	e6,200	2,110	2,480	4,820	e2,650	1,370	1,030
7	225	687	389	2,520	601	e7,000	2,180	2,430	4,020	e2,350	1,500	897
8	209	790	370	2,060	578	e5,700	3,770	2,220	4,480	e2,150	1,290	819
9	206	763	390	1,800	556	e4,800	5,420	2,000	4,890	e2,000	1,330	764
10	212	671	360	1,600	545	3,970	8,750	3,010	4,790	e1,950	1,890	738
11	231	652	399	1,400	534	3,470	11,700	5,060	e3,700	e1,800	2,920	703
12	233	1,010	512	1,230	533	3,010	10,700	5,010	e3,450	e1,700	3,730	680
13	262	2,630	988	1,080	515	2,650	7,510	3,850	e3,200	e1,500	2,790	778
14	267	3,670	2,480	1,030	490	2,460	5,610	2,960	e3,900	e1,320	2,600	954
15	229	2,440	3,670	969	533	2,310	4,470	2,370	4,570	e2,300	2,180	1,030
16	335	1,780	3,050	909	633	2,220	3,700	2,710	6,490	e1,900	1,830	910
17	425	1,990	2,330	851	497	2,090	3,090	2,900	5,500	e1,500	1,670	806
18	612	3,560	1,850	821	583	1,960	2,630	3,430	8,200	e1,200	1,650	1,090
19	528	3,180	1,530	e760	770	1,820	2,730	8,540	8,310	e1,150	1,640	38,900
20	537	2,340	1,680	738	738	3,330	2,640	e6,700	7,450	e1,100	1,390	29,900
21	426	1,810	5,210	757	803	10,500	2,400	e5,200	10,800	e1,060	1,210	11,100
22	339	1,530	4,660	717	4,190	8,130	2,430	e4,600	7,790	e1,020	1,090	7,780
23	296	1,380	3,250	689	23,200	5,650	2,450	e4,000	5,740	e950	1,030	22,100
24	271	1,220	2,370	e625	18,800	4,330	2,160	e3,600	e4,100	e1,040	940	14,000
25	249	1,120	1,940	611	11,700	3,450	1,970	e3,250	e3,150	e1,000	866	7,910
26	253	970	1,860	e605	e7,200	2,830	1,900	e2,950	e2,600	e950	841	5,660
27	258	842	1,510	e575	e4,700	2,480	e1,800	e2,700	e2,100	e940	803	4,370
28	300	742	1,250	e560	e3,800	2,180	e1,740	e2,630	e1,950	e920	785	4,460
29	320	687	1,100	563	---	1,990	e1,680	e2,500	e1,750	e900	769	4,070
30	561	607	986	596	---	2,140	e1,600	e2,600	e1,600	e850	834	3,150
31	1,810	---	899	582	---	2,520	---	e2,500	---	e820	825	---
TOTAL	11,113	43,045	47,906	51,198	86,059	124,990	109,480	100,060	131,150	52,210	44,292	169,284
MEAN	358	1,435	1,545	1,652	3,074	4,032	3,649	3,228	4,372	1,684	1,429	5,643
MAX	1,810	3,670	5,210	6,180	23,200	10,500	11,700	8,540	10,800	5,080	3,730	38,900
MIN	206	539	360	560	490	1,820	1,600	1,410	1,600	820	769	680
CFSM	0.26	1.04	1.12	1.20	2.23	2.93	2.65	2.34	3.17	1.22	1.04	4.10
IN.	0.30	1.16	1.29	1.38	2.32	3.38	2.96	2.70	3.54	1.41	1.20	4.57

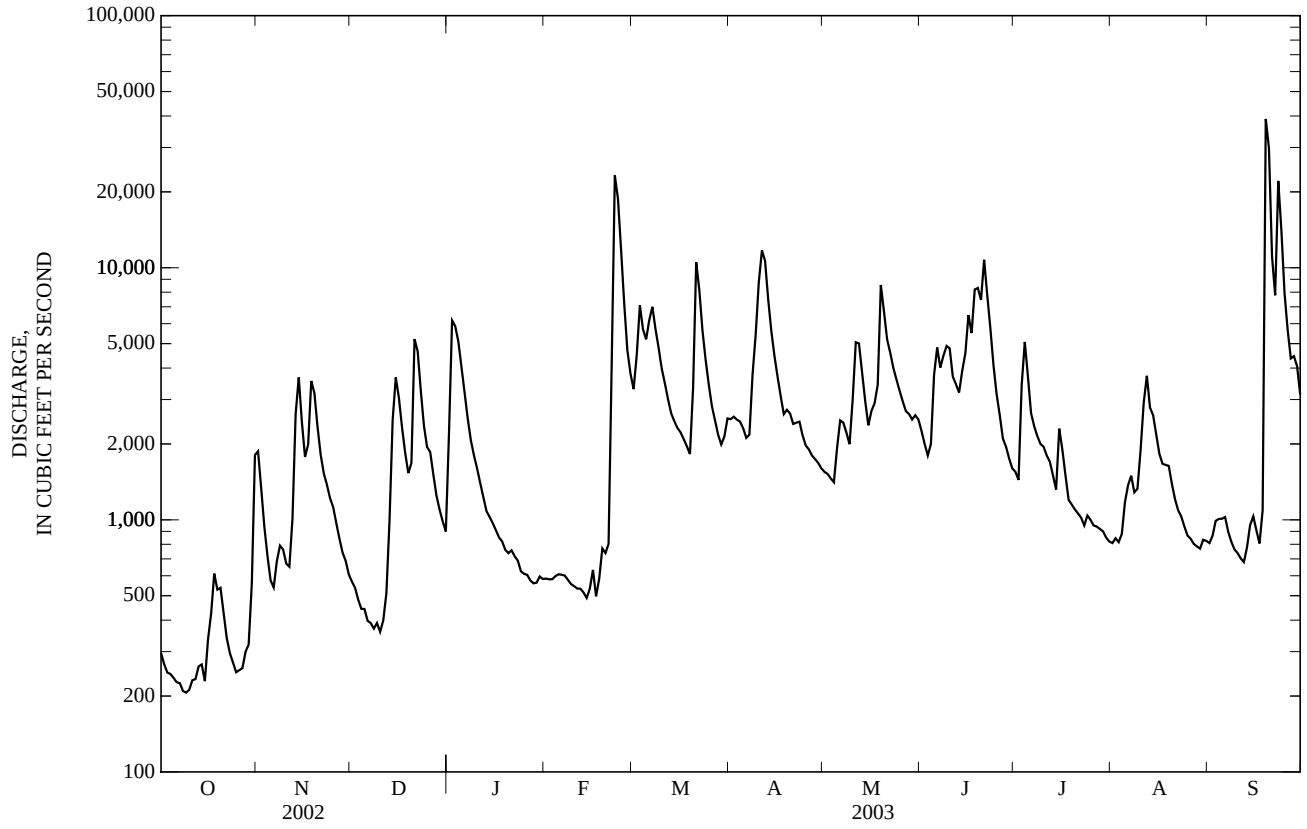
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 1930, 1939 - 1951, 1980 - 2003, BY WATER YEAR (WY)

MEAN	985	1,104	1,290	1,563	1,977	2,261	2,162	1,662	1,262	755	846	1,103
MAX	6,332	8,783	3,821	6,490	9,892	7,143	7,412	4,449	4,372	2,460	3,637	8,043
(WY)	(1943)	(1986)	(1949)	(1996)	(1998)	(1993)	(1987)	(1989)	(2003)	(1949)	(1940)	(1996)
MIN	237	249	307	260	276	482	452	499	332	231	216	228
(WY)	(2002)	(2002)	(2002)	(1981)	(2002)	(2002)	(1981)	(1930)	(1999)	(2002)	(2002)	(2002)

01629500 SOUTH FORK SHENANDOAH RIVER NEAR LURAY, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1926 - 1930, 1939 - 1951, 1980 - 2003	
ANNUAL TOTAL	238,179		970,787			
ANNUAL MEAN	653		2,660		1,403	
HIGHEST ANNUAL MEAN					2,707	1996
LOWEST ANNUAL MEAN					440	2002
HIGHEST DAILY MEAN	e8,290	Apr 23	38,900	Sep 19	84,400	Sep 7, 1996
LOWEST DAILY MEAN	163	Aug 27	206	Oct 9	a135	bSep 28, 1930
ANNUAL SEVEN-DAY MINIMUM	168	Aug 21	220	Oct 6	168	Aug 21, 2002
MAXIMUM PEAK FLOW			50,600	Sep 20	112,000	Sep 7, 1996
MAXIMUM PEAK STAGE			19.11	Sep 20	26.95	Sep 7, 1996
INSTANTANEOUS LOW FLOW			204	Oct 9	a70	Sep 27, 1941
ANNUAL RUNOFF (CFSM)	0.47		1.93		1.02	
ANNUAL RUNOFF (INCHES)	6.43		26.23		13.84	
10 PERCENT EXCEEDS	1,520		5,540		2,800	
50 PERCENT EXCEEDS	321		1,740		820	
90 PERCENT EXCEEDS	189		494		352	

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



01630700 GOONEY RUN NEAR GLEN ECHO, VA

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

DRAINAGE AREA.--20.6 mi^2.

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

GAGE.--Water stage recorder. Datum of gage is 819 ft NGVD of 1929, from topographic map.

REMARKS.--Records good except for period with ice effect, Jan. 16 to Feb. 21, 2003, which is fair. Miscellaneous water-quality data collected at this site in 1968 and 1969 were published as site 01630600.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	15	2.7	0.60	0.93
2	---	---	---	---	---	---	---	---	12	2.2	0.52	1.2
3	---	---	---	---	---	---	---	---	9.8	1.9	0.52	1.1
4	---	---	---	---	---	---	---	---	9.4	1.6	0.81	0.86
5	---	---	---	---	---	---	---	---	23	1.4	0.59	0.68
6	---	---	---	---	---	---	---	---	24	1.2	0.81	0.58
7	---	---	---	---	---	---	---	---	14	1.1	0.62	0.53
8	---	---	---	---	---	---	---	---	11	1.1	0.49	0.46
9	---	---	---	---	---	---	---	---	9.0	0.98	0.39	0.42
10	---	---	---	---	---	---	---	---	7.6	1.0	0.31	0.39
11	---	---	---	---	---	---	---	---	6.3	1.2	0.25	0.35
12	---	---	---	---	---	---	---	---	5.4	0.95	0.25	0.29
13	---	---	---	---	---	---	---	---	15	0.85	0.39	0.21
14	---	---	---	---	---	---	---	---	24	9.6	0.30	0.18
15	---	---	---	---	---	---	---	---	16	4.2	0.23	0.20
16	---	---	---	---	---	---	---	---	10	1.9	0.20	0.37
17	---	---	---	---	---	---	---	---	8.3	1.4	0.22	0.45
18	---	---	---	---	---	---	---	---	6.7	1.3	0.40	0.39
19	---	---	---	---	---	---	---	---	6.1	1.4	0.85	0.28
20	---	---	---	---	---	---	---	---	5.6	1.3	0.46	0.23
21	---	---	---	---	---	---	---	---	4.4	1.2	0.37	0.21
22	---	---	---	---	---	---	---	---	3.7	0.98	0.29	0.72
23	---	---	---	---	---	---	---	---	3.1	0.83	0.21	5.0
24	---	---	---	---	---	---	---	---	2.7	1.0	0.27	1.2
25	---	---	---	---	---	---	---	---	2.2	1.2	0.27	0.91
26	---	---	---	---	---	---	---	---	3.4	1.6	0.18	11
27	---	---	---	---	---	---	---	---	12	1.9	0.18	19
28	---	---	---	---	---	---	---	---	10	1.8	0.34	10
29	---	---	---	---	---	---	---	31	4.9	1.1	2.8	4.5
30	---	---	---	---	---	---	---	24	3.5	0.84	1.3	2.6
31	---	---	---	---	---	---	---	19	---	0.67	0.96	---
TOTAL	---	---	---	---	---	---	---	---	288.1	52.40	16.38	65.24
MEAN	---	---	---	---	---	---	---	---	9.60	1.69	0.53	2.17
MAX	---	---	---	---	---	---	---	---	24	9.6	2.8	19
MIN	---	---	---	---	---	---	---	---	2.2	0.67	0.18	0.18
CFSM	---	---	---	---	---	---	---	---	0.47	0.08	0.03	0.11
IN.	---	---	---	---	---	---	---	---	0.52	0.09	0.03	0.12

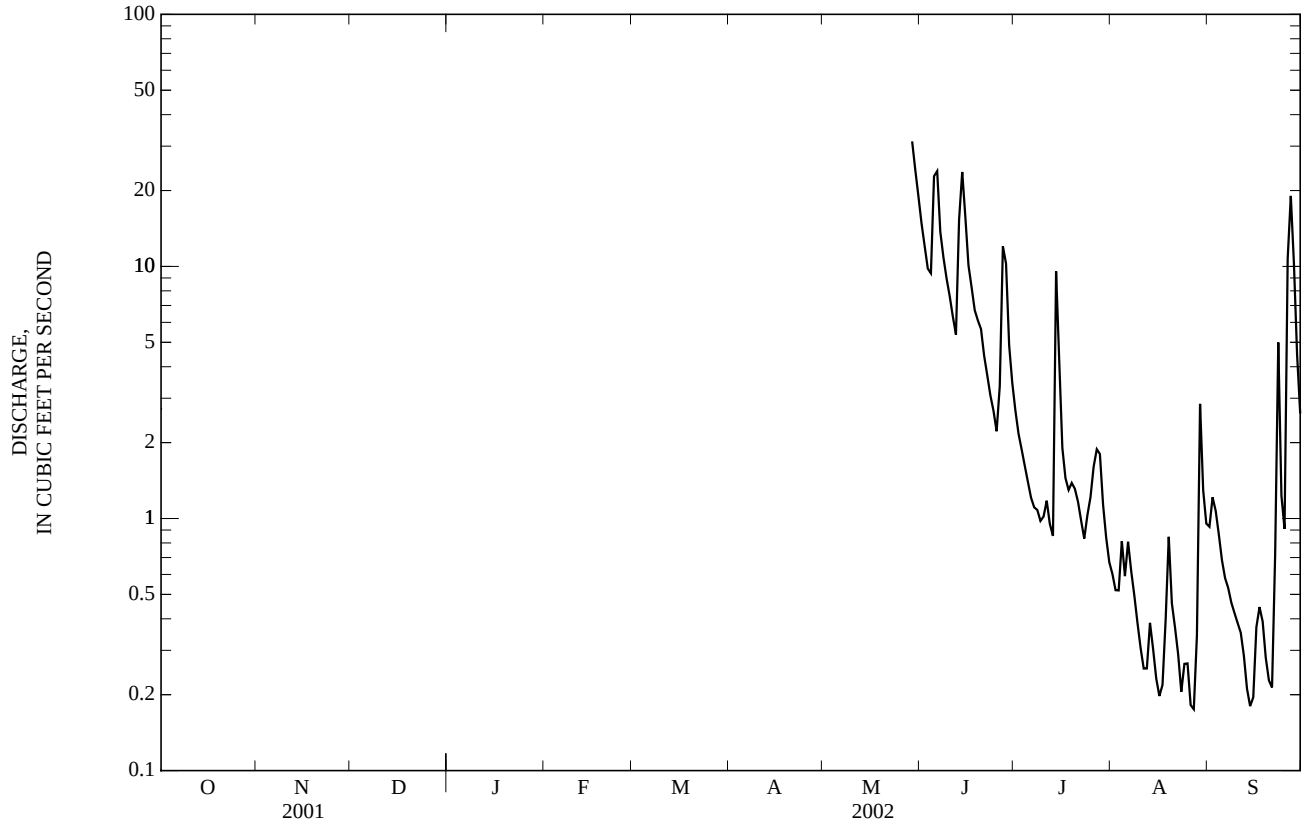
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEAR 2002

MEAN	---	---	---	---	---	---	---	---	9.60	1.69	0.53	2.17
MAX	---	---	---	---	---	---	---	---	9.60	1.69	0.53	2.17
(WY)	---	---	---	---	---	---	---	---	(2002)	(2002)	(2002)	(2002)
MIN	---	---	---	---	---	---	---	---	9.60	1.69	0.53	2.17
(WY)	---	---	---	---	---	---	---	---	(2002)	(2002)	(2002)	(2002)

01630700 GOONEY RUN NEAR GLEN ECHO, VA—Continued

SUMMARY STATISTICS	FOR WATER YEAR 2002	
HIGHEST DAILY MEAN	31	May 29
LOWEST DAILY MEAN	0.18	aAug 26
ANNUAL SEVEN-DAY MINIMUM	0.25	Aug 22
MAXIMUM PEAK FLOW	106	Jun 5
MAXIMUM PEAK STAGE	2.49	Jun 5
INSTANTANEOUS LOW FLOW	0.17	bAug 17

a Also Aug. 27 and Sept. 14, 2002.
b Also Aug. 23, 24, 26-28, and Sept. 19, 2002.



01630700 GOONEY RUN NEAR GLEN ECHO, VA—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	31	13	122	e13	42	82	34	43	27	13	6.0
2	1.6	24	12	143	e13	53	87	31	36	31	13	11
3	1.4	20	11	109	e13	57	83	29	40	142	20	13
4	1.3	17	11	83	e13	49	76	29	80	97	21	24
5	1.3	16	12	68	e12	79	69	29	82	68	14	15
6	1.2	38	9.9	59	e12	118	59	28	64	65	12	9.4
7	1.1	24	19	48	e12	99	88	35	75	64	12	7.6
8	1.1	21	13	44	e12	99	78	42	70	52	12	7.2
9	1.0	18	9.3	40	e11	153	110	45	103	56	11	7.0
10	1.3	17	8.3	34	e11	122	105	66	79	53	12	6.3
11	6.8	23	21	30	e11	96	207	69	68	52	15	5.6
12	11	49	28	26	e10	83	156	56	58	35	12	10
13	6.7	56	54	24	e10	107	124	49	109	29	11	80
14	5.6	42	86	23	e9.7	145	102	42	94	26	9.4	75
15	4.2	34	69	21	e9.5	114	88	46	75	23	8.0	43
16	74	38	56	e20	e9.2	99	77	126	66	20	7.6	30
17	47	109	43	e19	e30	95	68	105	83	18	7.4	23
18	21	95	35	e17	e35	92	65	122	88	17	7.1	142
19	14	73	32	e15	e28	83	74	110	85	17	6.8	1,040
20	11	57	63	e15	e25	256	59	94	123	14	6.0	215
21	8.6	50	62	e14	e28	224	54	97	119	13	5.3	119
22	7.2	42	54	e13	156	154	70	87	119	12	4.9	89
23	6.1	32	46	e13	144	121	53	85	93	13	5.2	530
24	5.2	27	39	e13	105	100	48	85	77	24	3.8	209
25	5.3	23	41	e13	80	86	46	78	63	13	3.5	133
26	19	21	32	e14	63	85	50	79	52	11	3.2	98
27	12	19	26	e16	52	75	44	71	56	9.7	6.9	76
28	11	17	23	e15	45	64	39	66	43	12	11	68
29	30	15	22	e14	---	68	37	62	35	13	5.5	54
30	69	15	20	e14	---	79	34	54	30	10	5.8	46
31	45	---	21	e14	---	78	---	48	---	9.8	6.0	---
TOTAL	432.8	1,063	991.5	1,113	972.4	3,175	2,332	1,999	2,208	1,046.5	291.4	3,192.1
MEAN	14.0	35.4	32.0	35.9	34.7	102	77.7	64.5	73.6	33.8	9.40	106
MAX	74	109	86	143	156	256	207	126	123	142	21	1,040
MIN	1.0	15	8.3	13	9.2	42	34	28	30	9.7	3.2	5.6
CFSM	0.68	1.72	1.55	1.74	1.69	4.97	3.77	3.13	3.57	1.64	0.46	5.17
IN.	0.78	1.92	1.79	2.01	1.76	5.73	4.21	3.61	3.99	1.89	0.53	5.76

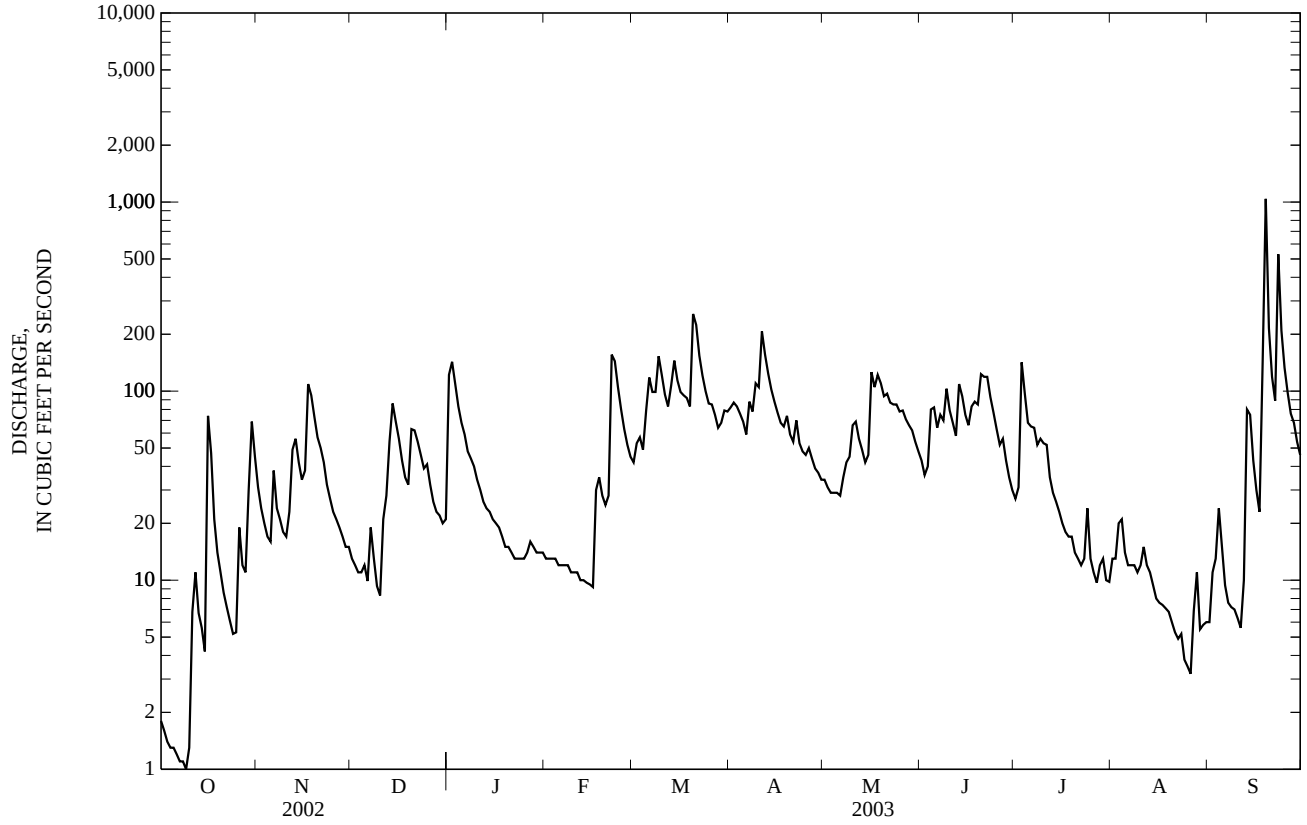
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2003, BY WATER YEAR (WY)

MEAN	14.0	35.4	32.0	35.9	34.7	102	77.7	64.5	41.6	17.7	4.96	54.3
MAX	14.0	35.4	32.0	35.9	34.7	102	77.7	64.5	73.6	33.8	9.40	106
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	14.0	35.4	32.0	35.9	34.7	102	77.7	64.5	9.60	1.69	0.53	2.17
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2002)	(2002)	(2002)	(2002)

01630700 GOONEY RUN NEAR GLEN ECHO, VA—Continued

SUMMARY STATISTICS	FOR 2003 WATER YEAR		WATER YEARS 2002 - 2003	
ANNUAL TOTAL	18,816.7			
ANNUAL MEAN	51.6		51.6	
HIGHEST ANNUAL MEAN			51.6	2003
LOWEST ANNUAL MEAN			51.6	2003
HIGHEST DAILY MEAN	1,040	Sep 19	1,040	Sep 19, 2003
LOWEST DAILY MEAN	1.0	Oct 9	0.18	aAug 26, 2002
ANNUAL SEVEN-DAY MINIMUM	1.2	Oct 4	0.25	Aug 22, 2002
MAXIMUM PEAK FLOW	2,650	Sep 19	2,650	Sep 19, 2003
MAXIMUM PEAK STAGE	8.89	Sep 19	8.89	Sep 19, 2003
INSTANTANEOUS LOW FLOW	1.0	bOct 8	0.17	cAug 17, 2002
ANNUAL RUNOFF (CFSM)	2.50		2.50	
ANNUAL RUNOFF (INCHES)	33.98		34.00	
10 PERCENT EXCEEDS	105		105	
50 PERCENT EXCEEDS	35		35	
90 PERCENT EXCEEDS	7.3		7.3	

a Also Aug. 27 and Sept. 14, 2002.
b Also Oct. 9, 10, 2002.
c Also Aug. 23, 24, 26-28, and Sept. 19, 2002.
e Estimated.



01631000 SOUTH FORK SHENANDOAH RIVER AT FRONT ROYAL, VA

LOCATION.--Lat 38°54'50", long 78°12'39", NAD83, Warren County, Hydrologic Unit 02070005, on left bank 0.7 mi downstream from bridge on State Highway 619, 1.0 mi west of Front Royal, and 3.5 mi upstream from confluence with North Fork.

DRAINAGE AREA.--1,642 mi^2.

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

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

GAGE.--Water-stage recorder. Datum of gage is 469.38 ft NGVD of 1929. June 1899 to July 1906, nonrecording gage at site 1.0 mi upstream at different datum.

REMARKS.--Records good except those for periods of no gage-height record, Jan. 9-14, Mar. 28-30, and June 26, 27, and period with ice effect, Jan. 22-29, which are poor. Large diurnal fluctuation at low and medium flow caused by powerplants upstream from station prior to 1954; occasional large diurnal fluctuation thereafter. National Weather Service gage-height telemeter at station. Maximum discharge, 130,000 ft^3/s, from rating curve extended above 92,000 ft^3/s on basis of slope-area measurement of peak flow. Water-quality records for some prior periods have been collected at this location.

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 24	0415	27,100	12.76	Jun 21	2200	10,700	7.50
Mar 21	1945	12,000	8.02	Sep 19	2230	*47,500	*18.07
Apr 12	0345	13,600	8.62	Sep 23	2345	30,700	13.78

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	388	1,800	995	1,550	830	3,900	2,860	1,890	2,590	1,810	979	880
2	334	1,570	955	5,130	823	3,870	2,820	1,900	2,390	1,740	955	892
3	308	1,210	923	6,140	805	6,570	2,820	1,850	2,260	2,470	975	988
4	296	955	866	5,300	809	6,410	2,720	1,720	2,380	5,280	985	1,120
5	289	803	865	4,500	813	5,620	2,620	1,770	3,400	4,520	1,030	1,090
6	279	807	842	3,700	807	6,870	2,430	2,290	4,190	3,680	1,250	1,030
7	274	711	826	3,100	832	6,940	2,370	2,550	4,200	2,870	1,400	1,040
8	271	783	778	2,650	804	6,320	3,020	2,500	4,010	2,720	1,450	948
9	268	860	747	e2,200	782	5,560	4,590	2,330	4,720	2,450	1,270	894
10	274	831	764	e1,900	776	4,740	7,320	2,430	4,730	2,420	1,350	852
11	315	805	823	e1,700	761	3,980	10,400	4,340	4,140	2,250	2,060	825
12	349	896	934	e1,600	755	3,490	11,900	4,850	3,600	2,130	2,870	810
13	345	1,450	1,240	e1,500	738	3,160	8,090	4,140	3,800	1,880	3,440	917
14	325	3,150	2,220	e1,400	726	3,180	6,050	3,310	3,930	1,670	2,440	1,020
15	380	2,980	3,510	1,360	739	2,890	4,920	2,760	4,640	1,730	2,350	1,120
16	523	2,200	3,570	1,300	1,030	2,670	4,160	2,950	5,130	2,370	1,960	1,090
17	642	2,270	2,980	1,250	1,570	2,520	3,600	3,410	5,220	1,810	1,670	1,010
18	582	3,100	2,450	1,230	1,320	2,360	3,180	3,210	6,050	1,560	1,530	1,060
19	662	3,670	2,080	1,250	1,230	2,180	3,040	6,380	7,860	1,400	1,560	27,500
20	576	2,980	1,970	1,100	1,510	3,150	3,050	7,590	6,860	1,320	1,470	41,700
21	619	2,460	2,820	1,040	1,190	9,330	2,830	5,750	8,680	1,210	1,290	14,000
22	526	2,110	5,120	e1,000	2,160	9,200	2,760	5,280	8,170	1,220	1,160	8,040
23	461	1,850	3,770	e980	16,000	6,330	2,760	4,640	5,780	1,090	1,080	16,500
24	436	1,690	2,940	e920	23,300	4,860	2,600	4,110	4,660	1,220	1,030	20,700
25	411	1,550	2,460	e860	12,800	3,920	2,380	3,820	3,800	1,230	958	9,120
26	410	1,430	2,190	e860	8,280	3,300	2,260	3,430	e3,300	1,120	909	6,150
27	397	1,320	2,050	e860	5,910	3,000	2,160	3,150	e2,700	1,020	932	4,780
28	399	1,200	1,720	e880	4,740	e2,650	2,070	3,000	2,360	1,000	875	3,990
29	489	1,120	1,510	e860	---	e2,400	2,000	2,880	2,120	984	873	4,280
30	713	1,070	1,390	849	---	e2,500	1,940	2,700	1,940	954	854	3,450
31	862	---	1,310	848	---	2,690	---	2,870	---	965	883	---
TOTAL	13,403	49,631	57,618	59,817	92,840	136,560	115,720	105,800	129,610	60,093	43,838	177,796
MEAN	432	1,654	1,859	1,930	3,316	4,405	3,857	3,413	4,320	1,938	1,414	5,927
MAX	862	3,670	5,120	6,140	23,300	9,330	11,900	7,590	8,680	5,280	3,440	41,700
MIN	268	711	747	848	726	2,180	1,940	1,720	1,940	954	854	810
CFSM	0.26	1.01	1.13	1.18	2.02	2.68	2.35	2.08	2.63	1.18	0.86	3.61
IN.	0.30	1.12	1.31	1.36	2.10	3.09	2.62	2.40	2.94	1.36	0.99	4.03

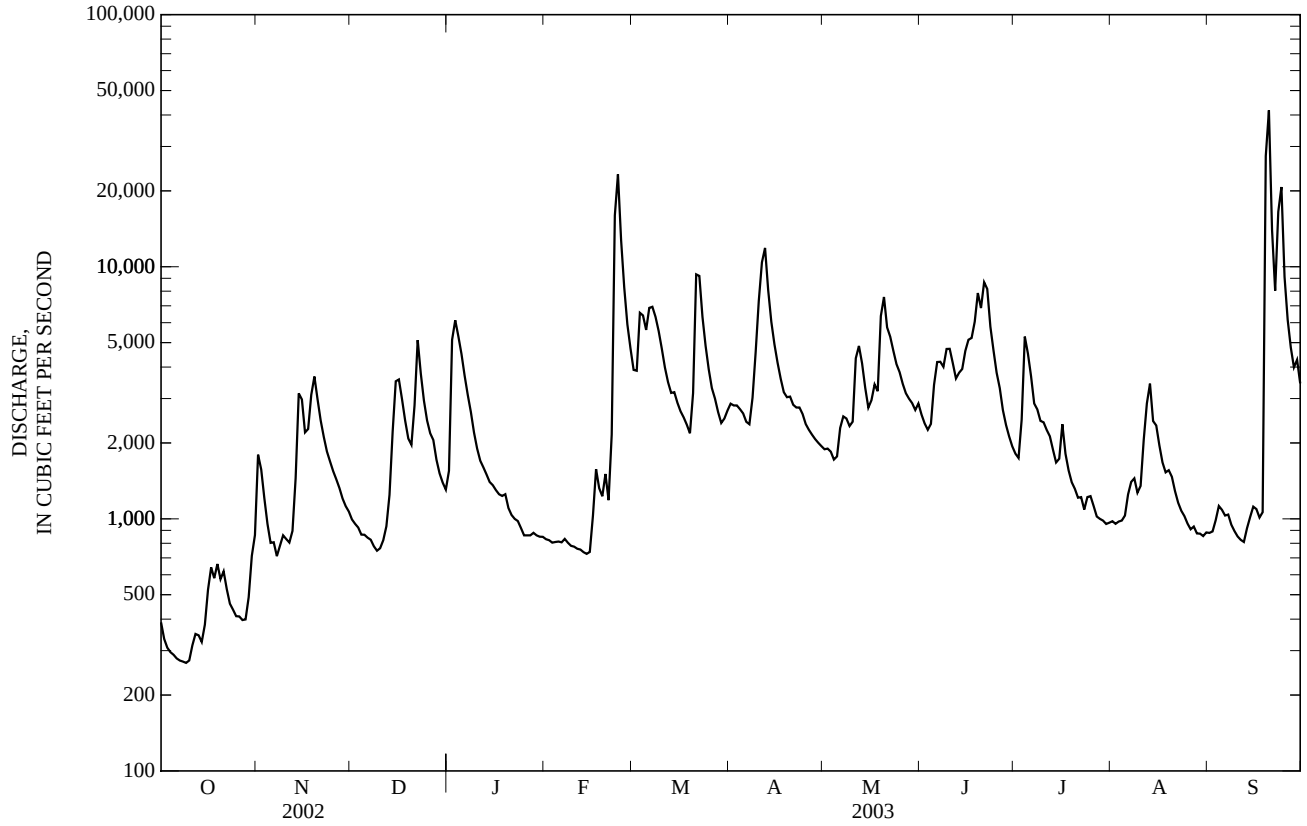
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2003, BY WATER YEAR (WY)

MEAN	1,131	1,204	1,456	1,886	2,195	2,843	2,446	1,843	1,354	806	935	1,029
MAX	8,678	10,130	4,795	7,876	10,600	10,300	7,963	4,807	6,586	2,876	6,807	9,631
(WY)	(1943)	(1986)	(1973)	(1996)	(1998)	(1936)	(1987)	(1989)	(1972)	(1949)	(1955)	(1996)
MIN	225	242	268	285	311	510	516	578	377	252	260	280
(WY)	(1931)	(1931)	(1966)	(1966)	(2002)	(2002)	(1981)	(1977)	(1999)	(1966)	(2002)	(2002)

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

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1931 - 2003	
ANNUAL TOTAL	271,145		1,042,726			
ANNUAL MEAN	743		2,857		1,590	
HIGHEST ANNUAL MEAN					3,189	1996
LOWEST ANNUAL MEAN					493	2002
HIGHEST DAILY MEAN	6,510	Apr 23	41,700	Sep 20	114,000	Oct 16, 1942
LOWEST DAILY MEAN	e196	Aug 21	268	Oct 9	107	Nov 18, 1930
ANNUAL SEVEN-DAY MINIMUM	208	Aug 16	279	Oct 4	152	Sep 6, 1966
MAXIMUM PEAK FLOW			47,500	Sep 19	130,000	Oct 16, 1942
MAXIMUM PEAK STAGE			18.07	Sep 19	a34.80	Oct 16, 1942
INSTANTANEOUS LOW FLOW			260	bOct 9	59	Jan 30, 1934
ANNUAL RUNOFF (CFSM)	0.45		1.74		0.97	
ANNUAL RUNOFF (INCHES)	6.14		23.62		13.16	
10 PERCENT EXCEEDS	1,780		5,670		3,200	
50 PERCENT EXCEEDS	388		1,940		939	
90 PERCENT EXCEEDS	242		759		384	

a From floodmarks.
b Also Oct. 10, 2002.
e Estimated.



01632000 NORTH FORK SHENANDOAH RIVER AT COOTES STORE, VA

LOCATION.--Lat 38°38'13", long 78°51'10", NAD83, Rockingham County, Hydrologic Unit 02070006, on right bank at Cootes Store, 300 ft upstream from bridge on State Highway 259, and 3.7 mi upstream from Linville Creek.

DRAINAGE AREA.--210 mi^2.

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

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

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

REMARKS.--Records good except those for periods with ice effect, Jan. 19-29 and Feb. 9-15, 18-20, and periods of doubtful gage-height record, July 15 tp Aug. 4, Aug. 7-9, and Aug. 15 to Sept. 18, which are poor. National Weather Service gage-height telemeter and Virginia Department of Emergency Services gage-height radio transmitter at station. Maximum discharge, 63,400 ft^3/s, from rating curve extended above 9,000 ft^3/s on basis of indirect measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

REVISIONS.--Revised maximum discharges for water years 1997-2002, and revised daily discharges, in cubic feet per second, are given in the following tables. These figures supersede those published in the reports for 1997-2002.

PEAK DISCHARGES FOR 1997 WATER YEAR.--Peak discharges greater than base discharge of 3,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 8	0530	*6,160	*8.38	Mar 3	1900	5,510	7.95

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	82	1,930	175	223	851	184	87	38	21	29	7.6
2	77	75	e1,700	162	196	1,080	167	88	1,260	20	25	7.0
3	67	69	e1,260	154	171	2,450	158	85	1,380	19	23	6.6
4	59	62	e960	144	168	2,380	154	85	900	17	22	6.0
5	52	58	e800	136	198	1,310	148	79	538	16	23	5.8
6	48	54	e700	126	209	861	141	72	354	15	19	5.6
7	61	89	e690	113	211	588	134	68	256	14	17	5.2
8	217	4,010	e820	100	227	454	121	63	193	13	15	5.1
9	401	1,280	e530	104	217	361	115	63	148	13	14	5.4
10	439	641	e400	102	203	309	107	62	118	14	13	10
11	325	431	e350	95	193	261	98	58	97	13	12	15
12	248	322	392	80	184	220	105	53	84	12	11	21
13	198	266	1,500	74	170	187	122	53	80	11	11	22
14	161	226	1,210	68	169	211	104	55	73	11	11	21
15	135	189	724	65	186	217	93	52	66	10	10	19
16	113	165	523	76	233	192	86	47	56	9.6	9.2	17
17	99	150	422	64	269	178	82	44	49	11	8.3	16
18	425	161	349	e61	278	195	80	42	46	9.2	7.8	15
19	466	157	326	e58	389	793	77	40	44	8.4	7.7	13
20	409	143	268	e55	509	935	76	40	39	7.5	11	12
21	339	143	214	63	456	634	72	38	39	6.9	19	11
22	279	131	198	71	394	487	66	35	38	7.9	16	11
23	236	125	189	97	317	377	64	33	33	190	15	10
24	201	126	255	120	266	305	69	31	30	859	15	10
25	170	982	308	285	233	260	64	30	27	462	14	10
26	150	1,440	291	340	211	244	58	42	31	194	12	9.7
27	132	741	274	312	194	216	55	48	37	105	11	9.0
28	119	507	253	316	172	190	73	43	27	66	11	12
29	108	392	231	278	---	175	82	38	24	49	9.6	38
30	97	541	210	248	---	167	82	36	22	38	8.7	28
31	89	---	192	237	---	207	---	34	---	32	8.0	---
TOTAL	6,005	13,758	18,469	4,379	6,846	17,295	3,037	1,644	6,127	2,274.5	438.3	384.0
MEAN	194	459	596	141	244	558	101	53.0	204	73.4	14.1	12.8
MAX	466	4,010	1,930	340	509	2,450	184	88	1,380	859	29	38
MIN	48	54	189	55	168	167	55	30	22	6.9	7.7	5.1
CFSM	0.92	2.18	2.84	0.67	1.16	2.66	0.48	0.25	0.97	0.35	0.07	0.06
IN.	1.06	2.44	3.27	0.78	1.21	3.06	0.54	0.29	1.09	0.40	0.08	0.07

e Estimated

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

REVISIONS.--Revised maximum discharges for water years 1997-2002, and revised daily discharges, in cubic feet per second, are given in the following tables. These figures supersede those published in the reports for 1997-2002.

PEAK DISCHARGES FOR 1998 WATER YEAR.--Peak discharges greater than base discharge of 3,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 8	0815	10,100	10.63	Mar 21	0700	5,330	7.83
Feb 17	1930	*10,700	*10.97				

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	30	61	74	541	1,100	224	143	34	39	4.2	2.4
2	20	64	56	78	474	729	258	264	30	35	4.0	2.2
3	18	69	51	130	487	600	233	268	28	32	3.8	2.0
4	17	52	48	408	764	471	457	270	25	30	3.6	1.8
5	16	42	45	463	1,310	378	627	518	24	28	3.2	1.6
6	14	40	43	381	1,050	310	487	717	24	25	3.0	1.6
7	14	1,460	40	342	766	270	382	460	22	22	2.9	1.5
8	13	1,910	38	5,510	640	711	318	2,000	21	26	2.8	2.6
9	12	773	38	2,490	624	2,310	559	1,490	21	21	3.3	2.1
10	12	411	39	1,100	620	1,590	978	729	25	18	3.9	1.9
11	12	267	40	626	786	771	831	501	24	16	3.9	1.7
12	11	192	41	419	1,660	507	568	425	27	14	3.1	1.6
13	11	144	40	327	1,530	390	425	396	23	13	3.0	1.5
14	11	148	40	262	998	326	349	358	35	12	3.5	1.4
15	10	190	39	241	654	275	295	304	38	11	4.4	2.2
16	10	178	39	339	522	231	263	260	175	10	5.9	1.3
17	10	154	38	412	4,030	200	229	322	91	9.8	37	1.3
18	10	131	38	384	4,160	287	196	250	57	9.0	22	1.7
19	9.9	112	37	333	1,980	1,880	266	198	56	8.1	14	1.6
20	9.3	97	36	288	1,520	1,520	953	158	66	7.7	9.6	1.8
21	8.8	86	35	243	1,230	4,190	628	128	50	7.1	7.4	1.5
22	8.8	95	36	213	932	1,560	455	104	43	6.3	6.2	1.5
23	8.3	104	36	726	911	744	364	86	49	5.8	5.5	1.6
24	8.6	102	35	1,080	1,090	514	301	77	59	5.4	4.7	1.6
25	10	94	46	802	1,000	393	251	73	42	5.0	4.0	1.6
26	11	88	68	559	1,010	325	213	61	35	4.5	3.6	1.7
27	12	81	78	447	844	287	202	56	31	4.3	e3.3	1.4
28	12	74	80	638	958	277	172	52	33	4.3	e3.2	1.7
29	11	67	80	607	---	255	147	46	50	4.0	e3.0	1.5
30	11	64	92	692	---	221	134	41	51	3.7	e2.9	1.7
31	11	---	90	665	---	193	---	38	---	4.2	e2.6	---
TOTAL	374.7	7,319	1,523	21,279	33,091	23,815	11,765	10,793	1,289	441.2	187.5	51.6
MEAN	12.1	244	49.1	686	1,182	768	392	348	43.0	14.2	6.05	1.72
MAX	22	1,910	92	5,510	4,160	4,190	978	2,000	175	39	37	2.6
MIN	8.3	30	35	74	474	193	134	38	21	3.7	2.6	1.3
CFSM	0.06	1.16	0.23	3.27	5.63	3.66	1.87	1.66	0.20	0.07	0.03	0.01
IN.	0.07	1.30	0.27	3.77	5.86	4.22	2.08	1.91	0.23	0.08	0.03	0.01

e Estimated

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

REVISIONS.--Revised maximum discharges for water years 1997-2002, and revised daily discharges, in cubic feet per second, are given in the following tables. These figures supersede those published in the reports for 1997-2002.

PEAK DISCHARGES FOR 1999 WATER YEAR.--Peak discharges greater than base discharge of 3,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Sep 6	1815	*3,810	*6.87	No other peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	2.5	4.3	6.1	54	41	92	39	24	2.8	0.66	18
2	1.2	2.7	4.3	6.0	52	38	89	37	22	3.1	0.56	16
3	1.2	4.1	4.5	11	46	36	79	36	20	2.7	0.77	14
4	1.5	3.8	4.4	12	42	38	72	35	18	2.4	0.47	13
5	1.7	3.4	4.5	9.3	39	38	68	33	16	2.1	0.46	470
6	1.7	3.3	4.5	7.2	36	40	62	32	15	1.8	0.44	2,390
7	1.9	3.3	4.7	8.6	35	49	56	31	14	1.5	0.41	1,540
8	3.2	3.4	6.2	e9.6	34	67	52	184	12	1.2	0.44	541
9	3.1	3.6	8.6	e18	33	81	52	176	11	1.0	0.45	269
10	2.6	3.6	7.0	e19	31	83	53	121	9.9	0.98	0.44	191
11	2.4	3.8	5.9	e9.4	30	76	53	88	9.7	1.0	0.42	127
12	2.4	3.7	5.6	10	30	75	52	70	9.4	1.0	0.39	88
13	2.3	3.6	7.6	17	30	90	50	59	8.6	1.2	0.39	65
14	2.2	3.7	7.8	36	28	119	47	85	8.2	1.1	1.0	52
15	2.1	3.6	7.1	52	27	143	47	126	7.7	0.94	0.61	46
16	2.3	3.6	6.9	55	26	197	47	102	6.7	0.81	0.54	76
17	2.3	3.7	6.7	48	25	613	44	88	7.2	0.73	0.50	83
18	2.3	3.6	6.6	66	45	1,460	42	75	7.5	0.68	0.47	82
19	2.1	3.8	6.6	103	74	887	40	66	7.6	0.68	16	70
20	2.1	3.9	6.7	74	77	472	39	57	7.6	0.62	45	70
21	2.0	3.8	6.7	100	73	361	38	50	7.6	0.68	54	153
22	1.9	3.9	6.5	354	66	425	38	46	7.1	0.75	18	213
23	2.1	4.0	6.4	248	63	378	38	90	6.5	0.69	12	159
24	2.1	3.9	6.8	554	60	308	47	77	5.8	0.68	9.1	115
25	2.4	4.1	6.6	410	54	254	45	60	5.4	0.71	61	85
26	2.3	4.3	6.3	250	49	213	44	49	5.0	0.61	67	65
27	2.5	4.2	6.2	173	45	183	44	42	4.2	0.57	62	52
28	2.3	4.4	6.1	128	44	155	44	37	2.8	0.61	41	50
29	2.4	4.5	6.4	97	---	133	43	33	2.5	0.70	30	54
30	2.5	4.4	6.3	77	---	113	41	29	2.3	0.67	24	488
31	2.5	---	6.2	62	---	96	---	26	---	0.62	21	---
TOTAL	67.1	112.2	191.0	3,030.2	1,248	7,262	1,558	2,079	291.3	35.63	469.52	7,655
MEAN	2.16	3.74	6.16	97.7	44.6	234	51.9	67.1	9.71	1.15	15.1	255
MAX	3.2	4.5	8.6	554	77	1,460	92	184	24	3.1	67	2,390
MIN	1.2	2.5	4.3	6.0	25	36	38	26	2.3	0.57	0.39	13
CFSM	0.01	0.02	0.03	0.47	0.21	1.12	0.25	0.32	0.05	0.01	0.07	1.22
IN.	0.01	0.02	0.03	0.54	0.22	1.29	0.28	0.37	0.05	0.01	0.08	1.36

e Estimated

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

REVISIONS.--Revised maximum discharges for water years 1997-2002, and revised daily discharges, in cubic feet per second, are given in the following tables. These figures supersede those published in the reports for 1997-2002.

PEAK DISCHARGES FOR 2000 WATER YEAR.--Peak discharges greater than base discharge of 3,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jun 14	1930	*2,240	*5.68	No peak greater than base discharge.			

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	282	25	180	73	e31	123	185	226	67	72	491	24
2	199	60	149	67	e31	118	170	209	59	61	415	30
3	146	185	129	62	e31	110	160	189	51	55	414	34
4	138	168	111	60	31	101	210	167	46	57	374	44
5	246	144	96	57	31	94	222	159	42	50	283	131
6	231	123	89	53	30	85	219	151	87	45	199	247
7	183	105	81	49	30	77	214	138	114	40	153	182
8	142	91	71	46	31	70	208	135	91	36	113	130
9	114	79	63	45	32	66	201	121	76	33	88	97
10	149	70	64	47	35	63	186	109	64	30	75	77
11	241	63	71	50	44	71	168	98	54	32	60	66
12	201	58	75	48	57	477	155	86	77	31	53	59
13	167	53	84	47	59	460	143	81	66	30	47	e49
14	146	48	518	46	73	358	132	81	449	27	41	45
15	120	45	780	43	88	290	126	67	663	25	36	e36
16	97	42	482	44	92	246	123	57	381	24	32	e28
17	82	39	344	43	99	227	135	51	354	22	29	e22
18	69	37	270	43	124	190	385	48	963	20	65	e20
19	60	35	220	43	1,100	161	515	47	671	19	70	43
20	57	34	198	e42	784	153	430	51	555	35	49	43
21	53	31	185	e40	472	545	367	48	396	38	42	33
22	47	31	173	e39	342	996	320	135	312	31	38	28
23	43	30	158	e37	274	770	278	188	232	27	36	25
24	40	29	151	e35	230	635	248	152	173	28	35	24
25	37	29	138	e34	199	499	252	134	138	28	32	71
26	34	280	128	e34	172	406	239	108	109	27	29	441
27	31	700	123	e33	151	342	229	92	e90	26	26	318
28	30	413	112	e29	149	303	222	88	e90	27	25	220
29	28	287	101	e30	134	265	253	88	e106	147	23	156
30	27	223	90	e31	---	232	249	85	86	388	22	117
31	26	---	82	e31	---	205	---	75	---	583	23	---
TOTAL	3,466	3,557	5,516	1,381	4,956	8,738	6,944	3,464	6,662	2,094	3,418	2,840
MEAN	112	119	178	44.5	171	282	231	112	222	67.5	110	94.7
MAX	282	700	780	73	1,100	996	515	226	963	583	491	441
MIN	26	25	63	29	30	63	123	47	42	19	22	20
CFSM	0.53	0.56	0.85	0.21	0.81	1.34	1.10	0.53	1.06	0.32	0.53	0.45
IN.	0.61	0.63	0.98	0.24	0.88	1.55	1.23	0.61	1.18	0.37	0.61	0.50

e Estimated

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

REVISIONS.--Revised maximum discharges for water years 1997-2002, and revised daily discharges, in cubic feet per second, are given in the following tables. These figures supersede those published in the reports for 1997-2002.

PEAK DISCHARGES FOR 2001 WATER YEAR.--Peak discharges greater than base discharge of 3,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar 21	1615	4,830	7.50	Jun 22	2215	*13,600	*12.37
Jun 22	0200	4,380	7.23				

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	15	32	e38	443	126	645	57	112	94	297	40
2	72	15	33	e37	333	121	597	54	96	90	205	33
3	60	14	34	e37	267	115	506	51	81	80	155	28
4	51	14	34	e34	216	111	430	49	72	69	143	25
5	45	14	34	e30	187	130	369	48	137	62	156	23
6	41	14	34	e29	162	140	335	45	117	55	122	23
7	36	13	33	e26	139	140	325	42	141	49	95	22
8	33	13	32	e27	118	134	300	39	156	47	76	21
9	30	14	31	e28	103	133	278	38	144	61	62	19
10	28	41	30	e29	96	128	274	35	121	57	53	18
11	26	49	30	e28	88	120	1,330	34	97	51	51	18
12	24	37	29	e27	78	113	1,070	32	78	48	242	18
13	23	32	27	e26	71	110	609	30	132	46	580	16
14	22	30	39	e25	68	110	425	28	311	45	242	15
15	21	31	62	e25	67	109	333	27	182	43	164	14
16	20	31	81	25	73	171	282	28	138	41	123	13
17	19	30	368	25	132	232	239	28	117	39	97	12
18	18	30	401	24	157	263	199	30	87	38	75	11
19	17	29	287	46	152	256	169	95	69	37	64	10
20	16	28	216	263	146	234	148	147	59	36	65	10
21	16	26	163	301	135	2,140	136	183	155	36	53	9.4
22	15	25	e130	240	125	1,800	124	424	3,380	35	44	8.8
23	15	24	e95	202	115	998	110	1,250	3,360	34	39	7.7
24	15	22	e85	186	112	622	100	549	777	32	41	7.3
25	15	22	e73	164	112	485	93	336	384	31	38	7.3
26	15	29	e75	139	130	403	84	307	253	156	37	6.9
27	15	30	e60	132	130	334	76	480	185	292	41	6.5
28	15	31	e55	113	128	285	72	309	150	249	33	6.4
29	15	31	e50	101	---	264	67	224	121	753	32	6.4
30	15	32	e45	371	---	1,250	62	170	109	1,870	35	5.8
31	15	---	e40	631	---	906	---	135	---	570	34	---
TOTAL	858	766	2,738	3,409	4,083	12,483	9,787	5,304	11,321	5,146	3,494	461.5
MEAN	27.7	25.5	88.3	110	146	403	326	171	377	166	113	15.4
MAX	90	49	401	631	443	2,140	1,330	1,250	3,380	1,870	580	40
MIN	15	13	27	24	67	109	62	27	59	31	32	5.8
CFSM	0.13	0.12	0.42	0.52	0.69	1.92	1.55	0.81	1.80	0.79	0.54	0.07
IN.	0.15	0.14	0.49	0.60	0.72	2.21	1.73	0.94	2.01	0.91	0.62	0.08

e Estimated

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

REVISIONS.--Revised maximum discharges for water years 1997-2002, and revised daily discharges, in cubic feet per second, are given in the following tables. These figures supersede those published in the reports for 1997-2002.

PEAK DISCHARGES FOR 2002 WATER YEAR.--Peak discharges greater than base discharge of 3,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Apr 22	0500	*10,200	*10.70	May 26	2300	3,520	6.67

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.6	e8.2	11	9.9	e16	12	241	405	117	31	13	1.8
2	5.4	e8.5	11	e8.4	e15	13	243	333	91	26	11	1.4
3	5.2	e8.7	11	e8.5	e14	34	219	268	74	23	9.0	1.4
4	5.1	e8.8	11	e8.3	e15	60	179	217	80	19	6.9	1.4
5	4.8	e8.3	11	e8.2	e14	47	148	190	86	17	5.9	1.4
6	4.8	e8.0	11	e8.4	e13	46	130	165	105	14	5.4	1.4
7	4.8	e8.5	11	e8.8	e16	45	114	164	83	12	4.8	1.4
8	4.5	e8.5	11	e8.7	e17	44	100	193	65	11	4.2	1.5
9	4.0	e8.3	12	8.7	e16	42	92	228	55	9.4	3.8	1.2
10	3.8	e8.8	11	9.2	16	38	85	272	48	10	3.8	1.3
11	3.6	e8.7	20	11	15	35	75	237	42	13	3.1	1.3
12	e3.5	e8.7	25	16	15	33	67	205	36	11	3.0	1.4
13	e3.9	e8.7	23	19	15	35	65	190	55	9.2	2.7	1.4
14	e4.0	e8.7	21	20	14	37	65	176	95	18	2.4	1.5
15	e3.9	e8.8	20	19	14	36	82	147	70	22	2.4	1.6
16	e4.5	e9.0	20	18	14	36	103	120	57	16	2.4	1.6
17	e5.0	e9.0	19	17	14	35	126	102	48	14	2.4	1.4
18	e5.8	e9.0	19	16	e17	49	140	190	42	13	2.0	1.4
19	e6.1	e9.0	19	16	e16	82	152	229	39	12	1.9	1.4
20	e6.9	e8.8	18	16	e16	813	229	192	47	11	1.9	1.4
21	e7.5	e8.7	18	15	e15	558	1,200	162	43	9.1	1.9	9.6
22	e7.6	e8.6	17	15	e15	317	5,950	136	36	8.6	1.9	36
23	e8.5	e8.5	17	15	e14	220	1,310	113	31	7.6	1.9	39
24	e8.7	e8.5	16	16	e14	169	586	98	27	31	1.5	13
25	e8.8	e8.5	15	17	e14	137	379	86	23	32	1.4	6.7
26	e8.7	e9.5	14	18	13	122	288	334	26	31	1.4	175
27	e8.5	e10	13	19	12	198	227	592	61	48	1.4	344
28	e8.5	e11	13	19	12	199	893	324	76	36	1.6	164
29	e8.7	12	12	19	---	177	1,340	213	47	28	1.9	104
30	e8.8	12	12	e18	---	153	609	155	36	21	1.9	80
31	e8.8	---	11	e17	---	146	---	136	---	16	1.9	---
TOTAL	188.3	270.3	473	443.1	411	3,968	15,437	6,572	1,741	579.9	110.7	999.9
MEAN	6.07	9.01	15.3	14.3	14.7	128	515	212	58.0	18.7	3.57	33.3
MAX	8.8	12	25	20	17	813	5,950	592	117	48	13	344
MIN	3.5	8.0	11	8.2	12	12	65	86	23	7.6	1.4	1.2
CFSM	0.03	0.04	0.07	0.07	0.07	0.61	2.45	1.01	0.28	0.09	0.02	0.16
IN.	0.03	0.05	0.08	0.08	0.07	0.70	2.73	1.16	0.31	0.10	0.02	0.18

e Estimated

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 1	1930	4,340	7.21	Mar 20	1830	4,740	7.45
Feb 22	1700	6,190	8.40	May 11	0000	4,070	7.04
Feb 23	1100	5,130	7.69	Sep 19	0730	*20,400	*15.22

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63	319	117	1,590	44	367	268	555	147	106	e35	e9.7
2	52	237	103	1,940	44	525	366	693	115	106	e36	e20
3	44	188	92	779	44	809	369	397	106	153	e45	e52
4	36	155	81	552	46	605	336	632	366	127	e88	e28
5	30	137	82	418	45	1,230	307	693	638	99	85	e35
6	25	246	76	338	42	2,320	269	577	433	98	100	e21
7	22	248	63	259	43	1,370	772	460	391	499	e72	e16
8	19	217	66	215	38	763	969	393	449	315	e68	e13
9	17	188	63	183	e32	881	1,510	371	617	270	e66	e11
10	17	161	61	150	e36	787	1,490	1,580	487	220	282	e10
11	51	318	241	126	e34	523	2,420	2,580	369	237	338	e9.8
12	97	876	442	106	e33	424	1,240	881	309	151	335	e9.6
13	76	1,140	705	95	e28	423	681	523	330	104	207	e11
14	66	502	1,180	91	e29	563	482	387	398	92	114	e12
15	56	340	780	85	e30	458	398	311	596	e86	e60	e11
16	681	277	522	69	14	392	344	317	850	e72	e40	e10
17	541	591	411	71	11	354	302	260	1,010	e60	e30	e9.6
18	278	599	337	60	e14	330	274	880	1,480	e54	e23	e10
19	191	415	289	e58	e19	302	348	1,280	895	e52	e20	8,990
20	144	326	634	e56	e35	1,940	340	701	773	e48	e17	1,530
21	112	287	708	e56	57	2,080	331	515	654	e45	e15	644
22	90	332	448	e53	2,430	795	337	425	486	e43	e14	377
23	74	309	343	e52	4,160	509	311	378	379	e42	e13	400
24	62	272	282	e50	1,590	407	281	348	300	e66	e12	301
25	56	234	260	e49	924	347	258	306	229	e52	e11	216
26	79	204	227	e49	593	309	247	276	180	e42	e10	165
27	77	182	195	e50	459	276	211	232	151	e39	e9.8	132
28	75	159	177	e49	396	234	177	234	135	e37	e9.8	130
29	320	141	166	e47	---	210	158	210	120	e36	e10	104
30	1,240	129	155	46	---	228	143	193	111	e35	e11	86
31	498	---	150	45	---	228	---	165	---	e33	e10	---
TOTAL	5,189	9,729	9,456	7,787	11,270	20,989	15,939	17,753	13,504	3,419	2,186.6	13,373.7
MEAN	167	324	305	251	402	677	531	573	450	110	70.5	446
MAX	1,240	1,140	1,180	1,940	4,160	2,320	2,420	2,580	1,480	499	338	8,990
MIN	17	129	61	45	11	210	143	165	106	33	9.8	9.6
CFSM	0.80	1.54	1.45	1.20	1.92	3.22	2.53	2.73	2.14	0.53	0.34	2.12
IN.	0.92	1.72	1.68	1.38	2.00	3.72	2.82	3.14	2.39	0.61	0.39	2.37

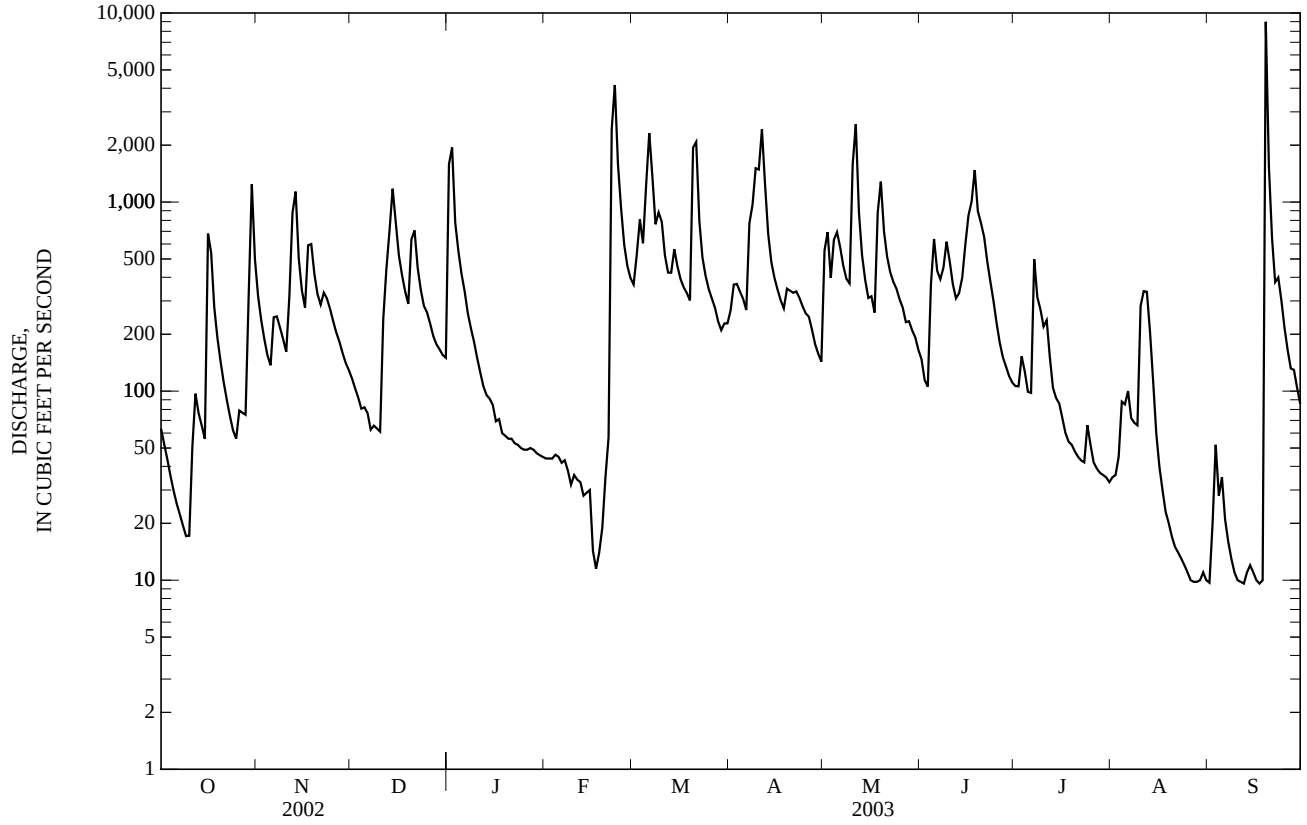
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 2003, BY WATER YEAR (WY)

MEAN	124	144	182	216	285	413	346	271	136	65.4	86.6	91.8
MAX	1,401	1,883	850	1,114	1,182	1,536	1,156	964	906	552	697	1,582
(WY)	(1943)	(1986)	(1974)	(1996)	(1998)	(1936)	(1987)	(1942)	(1972)	(1949)	(1955)	(1996)
MIN	0.76	3.26	3.04	5.13	11.3	38.4	27.7	24.3	6.10	1.15	0.52	0.66
(WY)	(1931)	(1931)	(1966)	(1966)	(1934)	(1981)	(1981)	(1977)	(1977)	(1999)	(1930)	(1930)

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

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1925 - 2003	
ANNUAL TOTAL	54,636.6		130,595.3			
ANNUAL MEAN	150		358		197	
HIGHEST ANNUAL MEAN					463	1996
LOWEST ANNUAL MEAN					58.1	1934
HIGHEST DAILY MEAN	5,950	Apr 22	8,990	Sep 19	26,400	Sep 6, 1996
LOWEST DAILY MEAN	1.2	Sep 9	e9.6	aSep 12	0.20	bAug 28, 1957
ANNUAL SEVEN-DAY MINIMUM	1.4	Sep 5	10	Aug 26	0.27	Sep 3, 1966
MAXIMUM PEAK FLOW			20,400	Sep 19	63,400	Sep 6, 1996
MAXIMUM PEAK STAGE			15.22	Sep 19	c27.86	Sep 6, 1996
INSTANTANEOUS LOW FLOW			5.9	Feb 13	0.20	Aug 28, 1957
ANNUAL RUNOFF (CFSM)	0.71		1.70		0.94	
ANNUAL RUNOFF (INCHES)	9.68		23.13		12.74	
10 PERCENT EXCEEDS	333		779		430	
50 PERCENT EXCEEDS	48		204		62	
90 PERCENT EXCEEDS	2.4		23		4.8	

a Also Sept. 17, 2003.
b Also Aug. 29, Sept. 4, 1957, and Sept. 7-10, 1966.
c From floodmarks.
e Estimated.



01632082 LINVILLE CREEK AT BROADWAY, VA

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

DRAINAGE AREA.--45.5 mi^2.

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

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

REMARKS.--Records good except those for periods with ice effect, Jan. 16-29 and Feb. 8-10, 13-15, 17-20, which are fair. Maximum discharge, 17,800 ft^3/s, from rating curve extended above 1,860 ft^3/s on basis of slope-area measurement at gage height 12.58 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location by the Virginia Department of Environmental Quality - Water Division.

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 12	1545	556	3.70	Jun 18	2145	699	3.95
Dec 20	0745	1,010	4.41	Jun 19	2345	910	4.27
Feb 22	1700	869	4.21	Jun 20	1300	1,440	4.94
Mar 2	1915	910	4.27	Jul 3	0930	931	4.30
Mar 5	1630	1,200	4.66	Jul 7	0215	1,090	4.52
Mar 20	1545	1,960	5.49	Aug 3	1530	903	4.26
Apr 11	0310	1,150	4.59	Sep 1	2100	600	3.78
Jun 14	2015	2,550	6.02	Sep 2	1845	1,460	4.96
Jun 17	2130	561	3.71	Sep 19	0345	*10,500	*10.54
Jun 18	1800	693	3.94	Sep 23	0430	1,030	4.43

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.9	67	29	175	25	177	67	25	32	68	34	95
2	6.3	51	26	188	24	432	59	23	28	71	29	324
3	5.5	40	24	208	23	370	53	21	32	480	186	181
4	5.4	35	21	180	27	307	48	30	78	223	108	136
5	5.4	37	22	155	24	577	46	28	154	151	115	113
6	4.9	64	19	145	22	378	39	24	74	119	129	81
7	5.0	53	17	130	23	270	90	21	159	365	85	67
8	4.8	44	16	123	e20	223	84	20	151	174	73	58
9	4.9	36	14	109	e19	200	240	24	176	167	75	51
10	6.3	33	13	97	e20	177	154	47	106	153	92	47
11	17	88	57	84	20	164	461	60	86	137	113	41
12	21	255	87	75	19	148	175	41	73	103	91	38
13	15	202	170	71	e17	141	125	35	117	87	79	40
14	11	135	235	66	e13	136	105	30	357	84	67	36
15	10	104	168	61	e15	120	93	28	253	80	60	34
16	77	96	123	e50	9.9	112	82	46	227	64	54	32
17	59	224	92	e46	e15	107	71	34	348	55	49	30
18	33	177	80	e43	e25	101	68	274	407	51	46	236
19	25	134	71	e39	e23	91	75	200	383	48	42	3,020
20	20	113	344	e37	e21	683	60	119	732	43	39	424
21	17	108	136	e36	28	291	54	109	370	39	37	290
22	16	129	98	e33	410	170	51	95	271	36	35	226
23	14	100	80	e29	555	124	43	82	207	38	32	506
24	11	82	71	e26	384	104	38	70	166	56	31	261
25	12	70	75	e28	327	91	37	59	138	36	30	198
26	25	61	65	e26	234	82	36	53	120	33	28	165
27	20	53	56	e24	198	74	32	49	104	30	28	146
28	23	43	50	e21	177	65	29	56	88	29	46	174
29	97	38	45	e24	---	61	28	46	77	29	45	124
30	159	34	42	26	---	69	26	39	70	27	34	105
31	96	---	37	26	---	67	---	35	---	26	30	---
TOTAL	834.4	2,706	2,383	2,381	2,717.9	6,112	2,569	1,823	5,584	3,102	1,942	7,279
MEAN	26.9	90.2	76.9	76.8	97.1	197	85.6	58.8	186	100	62.6	243
MAX	159	255	344	208	555	683	461	274	732	480	186	3,020
MIN	4.8	33	13	21	9.9	61	26	20	28	26	28	30
CFSM	0.59	1.98	1.69	1.69	2.13	4.33	1.88	1.29	4.09	2.20	1.38	5.33
IN.	0.68	2.21	1.95	1.95	2.22	5.00	2.10	1.49	4.57	2.54	1.59	5.95

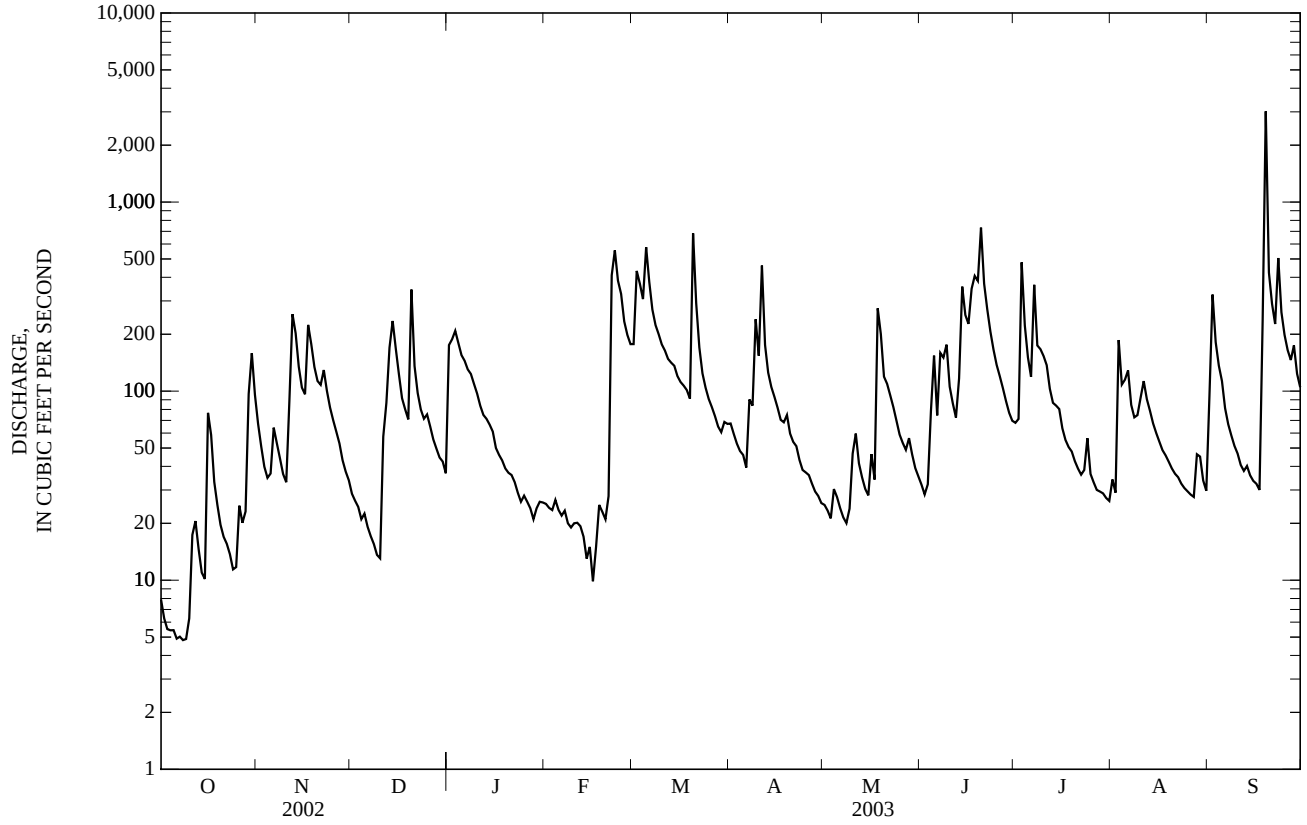
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 2003, BY WATER YEAR (WY)

MEAN	23.0	30.4	31.9	55.3	49.4	73.1	48.8	35.9	32.6	21.9	25.7	43.1
MAX	108	144	115	213	195	206	135	91.0	186	100	138	275
(WY)	(1991)	(1986)	(1997)	(1996)	(1998)	(1994)	(1993)	(1989)	(2003)	(2003)	(1996)	(1996)
MIN	6.48	6.11	5.53	4.75	4.16	6.96	11.5	12.9	6.58	3.62	4.31	5.21
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(1995)	(1986)	(1999)	(1999)	(1999)	(1986)

01632082 LINVILLE CREEK AT BROADWAY, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1985 - 2003	
ANNUAL TOTAL	8,367.5		39,433.3			
ANNUAL MEAN	22.9		108		39.4	
HIGHEST ANNUAL MEAN					108	2003
LOWEST ANNUAL MEAN					8.22	2002
HIGHEST DAILY MEAN	344	Dec 20	3,020	Sep 19	e4,700	Sep 6, 1996
LOWEST DAILY MEAN	2.2	aSep 13	4.8	Oct 8	1.7	Aug 11, 1999
ANNUAL SEVEN-DAY MINIMUM	2.4	Sep 8	5.1	Oct 3	2.3	Aug 7, 1999
MAXIMUM PEAK FLOW			10,500	Sep 19	17,800	Sep 6, 1996
MAXIMUM PEAK STAGE			10.54	Sep 19	13.23	Sep 6, 1996
INSTANTANEOUS LOW FLOW			4.6	bOct 6	1.0	cAug 8, 1999
ANNUAL RUNOFF (CFSM)	0.50		2.37		0.87	
ANNUAL RUNOFF (INCHES)	6.84		32.24		11.75	
10 PERCENT EXCEEDS	66		230		80	
50 PERCENT EXCEEDS	7.1		64		18	
90 PERCENT EXCEEDS	3.8		20		6.8	

a Also Sept. 14, 2002.
b Also Oct. 7-9, 2002.
c Also Aug. 13, 1999.
e Estimated.



01632900 SMITH CREEK NEAR NEW MARKET, VA

LOCATION.--Lat 38°41'36", long 78°38'34", NAD83, Shenandoah County, Hydrologic Unit 02070006, on left bank 25 ft upstream from bridge on State Highway 620, 3.6 mi north of New Market, and 4.4 mi upstream from mouth.

DRAINAGE AREA.--93.2 mi^2.

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

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 881.50 ft NGVD of 1929. Prior to Aug. 2, 1963, on right bank a short distance downstream, at datum 0.71 ft higher.

REMARKS.--Records good except those for period of doubtful gage-height record due to backwater from beaver dam, Oct. 1-16, and periods with ice effect, Dec. 5-9, Jan. 17-19, 22-29, and Feb. 1-20, which are fair. Maximum discharge, 12,400 ft^3/s, from rating curve extended above 2,300 ft^3/s on basis of contracted-opening measurement at gage height 16.38 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 1	1930	1,700	8.19	Jun 15	0130	923	5.93
Feb 23	0130	1,610	7.94	Jun 19	0330	716	5.21
Mar 3	0200	814	5.56	Jun 20	1730	1,010	6.20
Mar 5	2200	1,390	7.36	Jul 3	1500	1,210	6.84
Mar 20	2230	2,050	8.93	Aug 13	0730	686	5.10
Apr 9	1630	887	5.81	Sep 19	0800	*10,300	*16.25
Apr 11	1100	1,430	7.47	Sep 23	1330	3,540	11.55
May 18	2200	652	4.97				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e10	90	54	643	e41	212	186	88	98	104	53	55
2	e9.7	74	50	588	e38	416	182	83	87	106	55	85
3	e9.4	64	47	340	e36	585	155	78	87	664	53	176
4	e8.9	56	44	278	e42	377	138	95	175	447	55	140
5	e8.8	52	e45	211	e40	711	129	97	235	266	62	148
6	e8.0	81	e42	183	e37	837	116	89	139	185	75	105
7	e8.2	76	e38	159	e39	531	241	79	151	187	58	91
8	e7.8	64	e36	146	e35	385	299	74	214	181	81	82
9	e7.4	57	e35	135	e32	355	608	74	362	153	129	77
10	e7.9	51	34	119	e34	276	505	189	219	148	193	72
11	e16	79	74	105	e36	229	1,000	240	167	130	127	68
12	e35	251	138	95	e33	206	516	136	143	112	111	65
13	e32	324	247	89	e30	197	346	107	144	101	245	80
14	e24	170	417	85	e33	223	273	92	224	96	131	78
15	e20	127	323	81	e36	179	233	85	401	92	108	70
16	e140	113	200	74	e28	159	206	134	224	84	97	68
17	123	275	137	e70	e38	149	183	107	296	74	89	61
18	59	311	106	e67	e50	139	168	367	435	70	84	79
19	39	189	90	e64	e45	129	219	401	488	70	78	4,840
20	31	149	348	62	e41	871	176	234	663	65	74	701
21	27	137	309	60	63	920	158	202	620	61	70	384
22	24	141	204	e53	677	435	157	206	384	57	67	298
23	22	117	164	e47	1,080	304	139	176	276	58	64	1,710
24	20	100	141	e43	620	241	125	170	221	141	61	548
25	19	88	144	e46	519	201	119	147	188	76	59	345
26	32	81	137	e42	331	181	119	134	165	62	57	272
27	28	75	118	e40	258	175	110	122	148	56	55	233
28	28	67	107	e38	222	148	99	143	135	54	55	259
29	88	62	99	e45	---	137	94	129	122	54	58	200
30	220	59	92	44	---	158	90	116	111	52	71	173
31	134	---	89	43	---	181	---	105	---	50	56	---
TOTAL	1,247.1	3,580	4,109	4,095	4,514	10,247	7,089	4,499	7,322	4,056	2,631	11,563
MEAN	40.2	119	133	132	161	331	236	145	244	131	84.9	385
MAX	220	324	417	643	1,080	920	1,000	401	663	664	245	4,840
MIN	7.4	51	34	38	28	129	90	74	87	50	53	55
CFSM	0.43	1.28	1.42	1.42	1.73	3.55	2.54	1.56	2.62	1.40	0.91	4.14
IN.	0.50	1.43	1.64	1.63	1.80	4.09	2.83	1.80	2.92	1.62	1.05	4.62

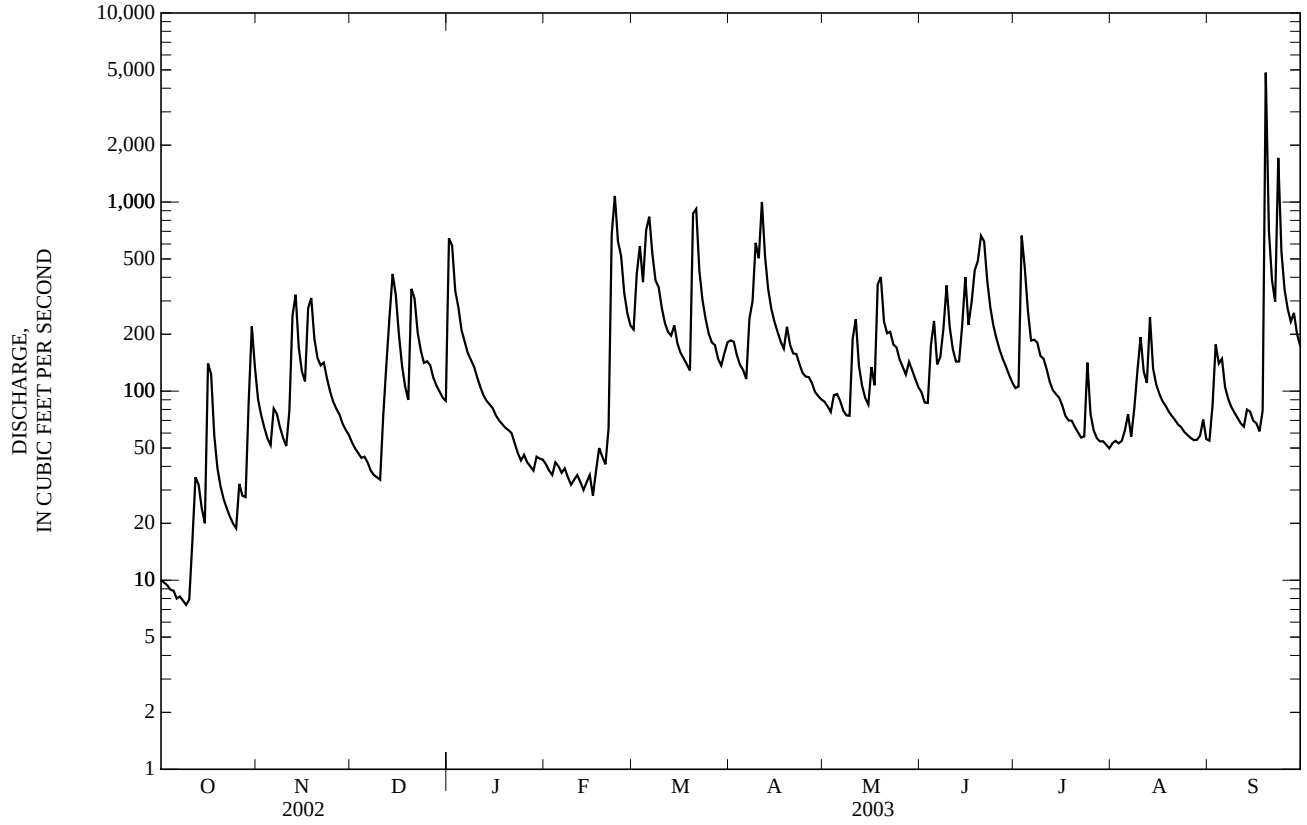
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2003, BY WATER YEAR (WY)

MEAN	51.5	56.5	67.4	98.8	112	153	115	82.6	61.2	36.9	36.4	47.1
MAX	297	324	240	423	447	530	372	238	294	131	139	408
(WY)	(1973)	(1986)	(1997)	(1996)	(1998)	(1994)	(1987)	(1988)	(1972)	(2003)	(1996)	(1996)
MIN	8.56	11.0	8.86	10.1	9.58	18.4	19.4	20.0	12.3	8.64	6.83	9.36
(WY)	(1987)	(1966)	(1966)	(1966)	(2002)	(2002)	(1981)	(1969)	(1999)	(2002)	(2002)	(1986)

01632900 SMITH CREEK NEAR NEW MARKET, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1960 - 2003	
ANNUAL TOTAL	13,952.1		64,952.1			
ANNUAL MEAN	38.2		178		76.4	
HIGHEST ANNUAL MEAN					178	2003
LOWEST ANNUAL MEAN					17.0	2002
HIGHEST DAILY MEAN	417	Dec 14	4,840	Sep 19	5,190	Jan 19, 1996
LOWEST DAILY MEAN	e2.8	Sep 14	e7.4	Oct 9	e2.8	Sep 14, 2002
ANNUAL SEVEN-DAY MINIMUM	e3.3	Sep 8	e8.1	Oct 4	e3.3	Sep 8, 2002
MAXIMUM PEAK FLOW			10,300	Sep 19	12,400	Sep 6, 1996
MAXIMUM PEAK STAGE			16.25	Sep 19	17.62	Sep 6, 1996
INSTANTANEOUS LOW FLOW			(a)	(b)	(a)	(c)
ANNUAL RUNOFF (CFSM)	0.41		1.91		0.82	
ANNUAL RUNOFF (INCHES)	5.57		25.93		11.13	
10 PERCENT EXCEEDS	102		364		154	
50 PERCENT EXCEEDS	16		107		42	
90 PERCENT EXCEEDS	6.3		36		14	

a Not determined.
b Probably occurred Oct. 9, 2002.
b Probably occurred Sept. 14, 2002.
e Estimated.



01633000 NORTH FORK SHENANDOAH RIVER AT MOUNT JACKSON, VA

LOCATION.--Lat 38°44'44", long 78°38'20", NAD83, Shenandoah County, Hydrologic Unit 02070006, on right bank at upstream side of bridge on State Highway 698 at Mount Jackson and 0.4 mi downstream from Mill Creek.

DRAINAGE AREA.--506 mi^2.

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

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

GAGE.--Water-stage recorder. Datum of gage is 838.55 ft NGVD of 1929. Prior to July 1, 1976, nonrecording gage, and July 1, 1976, to Oct. 23, 1981, water-stage recorder, at site 400 ft upstream at same datum.

REMARKS.--Records good except those for period with ice effect, Jan. 23-28, and period of doubtful gage-height record, Feb. 16-18, which are fair. Some diversion during low flow for irrigation at points upstream from station. Virginia Department of Emergency Services gage-height radio transmitter at station. Maximum discharge, 103,000 ft^3/s, Sept. 6, 1996, from rating curve extended above 19,000 ft^3/s on basis of peak runoff for stations at Cootes Store and near Strasburg. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1942 reached a stage of 20.2 ft, from floodmarks, discharge, about 80,000 ft^3/s, from rating curve extended above 18,000 ft^3/s on basis of peak runoff for flood in October, 1942 for stations at Cootes Store and near Strasburg.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 1	2345	6,260	9.45	Mar 20	2145	9,630	11.57
Feb 22	2315	8,460	10.88	Apr 11	1145	6,100	9.34
Mar 6	0200	5,850	9.16	Sep 19	1215	*27,900	*16.36

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	110	756	312	1,780	185	938	761	455	492	415	227	165
2	89	535	285	3,940	185	1,410	863	1,590	441	408	229	253
3	75	411	264	2,070	183	2,430	891	863	418	1,170	296	502
4	66	332	242	1,650	187	1,780	807	1,010	852	980	384	328
5	57	286	247	1,260	188	2,580	735	1,400	1,680	711	360	368
6	52	447	236	1,050	175	4,840	654	1,220	1,150	545	401	276
7	48	534	213	874	179	3,350	1,170	974	988	1,100	350	235
8	42	454	208	767	169	2,190	2,180	809	1,270	876	332	213
9	39	385	199	695	159	2,140	2,830	701	1,630	782	316	197
10	40	331	189	612	162	2,060	3,130	1,820	1,340	699	622	182
11	56	607	306	537	160	1,490	4,690	3,990	1,000	761	664	170
12	166	1,300	1,090	476	154	1,200	3,030	1,950	820	587	734	164
13	160	2,450	1,500	439	143	1,100	1,930	1,220	849	492	683	190
14	129	1,350	2,670	418	147	1,430	1,430	883	1,120	456	464	191
15	108	907	2,160	394	160	1,210	1,160	701	1,380	463	372	180
16	583	698	1,540	352	e140	1,000	984	836	1,890	390	322	171
17	1,370	1,310	1,190	344	e165	877	853	686	1,840	345	289	160
18	649	1,660	955	312	e210	795	757	1,650	2,970	320	263	176
19	393	1,170	798	303	192	724	937	2,790	2,620	312	243	14,000
20	282	903	1,520	297	181	3,410	874	1,800	2,750	293	228	3,920
21	221	754	1,890	283	210	5,170	825	1,360	2,370	274	215	1,740
22	178	860	1,310	262	2,520	2,370	812	1,170	1,650	255	201	1,210
23	150	803	994	e225	6,720	1,600	749	993	1,230	250	188	2,800
24	130	697	799	e215	3,660	1,250	669	913	961	363	178	1,490
25	119	598	745	e220	2,490	1,040	618	802	791	272	171	1,040
26	147	519	682	e205	1,680	913	603	727	682	241	168	849
27	169	463	573	e195	1,280	836	562	647	600	227	164	729
28	157	408	517	e185	1,070	726	501	654	541	219	162	760
29	256	362	485	201	---	675	466	610	489	219	182	627
30	2,020	335	457	191	---	709	443	564	447	211	194	532
31	1,240	---	438	188	---	732	---	518	---	199	170	---
TOTAL	9,301	22,625	25,014	20,940	23,054	52,975	36,914	36,306	37,261	14,835	9,772	33,818
MEAN	300	754	807	675	823	1,709	1,230	1,171	1,242	479	315	1,127
MAX	2,020	2,450	2,670	3,940	6,720	5,170	4,690	3,990	2,970	1,170	734	14,000
MIN	39	286	189	185	140	675	443	455	418	199	162	160
CFSM	0.59	1.49	1.59	1.33	1.63	3.38	2.43	2.31	2.45	0.95	0.62	2.23
IN.	0.68	1.66	1.84	1.54	1.69	3.89	2.71	2.67	2.74	1.09	0.72	2.49

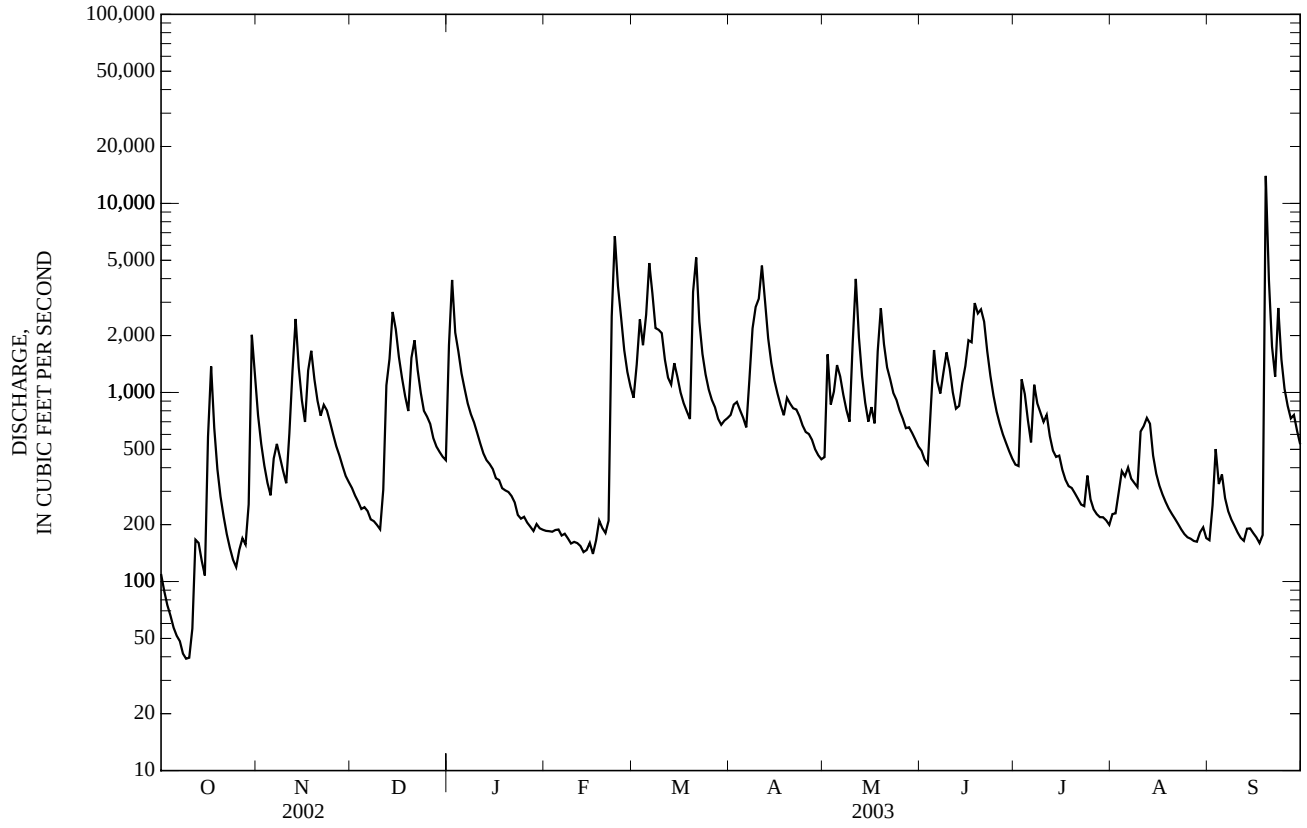
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2003, BY WATER YEAR (WY)

MEAN	232	289	374	476	571	838	643	519	323	170	215	230
MAX	1,580	2,371	1,272	2,283	2,445	2,387	2,193	1,418	1,483	834	1,403	2,804
(WY)	(1980)	(1986)	(1973)	(1996)	(1998)	(1994)	(1987)	(1988)	(1972)	(1949)	(1955)	(1996)
MIN	22.2	26.3	22.7	30.1	29.4	119	79.2	84.3	31.1	8.80	15.0	26.2
(WY)	(1987)	(1966)	(1966)	(1966)	(2002)	(1981)	(1981)	(1969)	(1999)	(1999)	(2002)	(1954)

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

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1944 - 2003	
ANNUAL TOTAL	106,586.7		322,815			
ANNUAL MEAN	292		884		406	
HIGHEST ANNUAL MEAN					935	1996
LOWEST ANNUAL MEAN					136	1981
HIGHEST DAILY MEAN	7,180	Apr 22	14,000	Sep 19	32,200	Sep 6, 1996
LOWEST DAILY MEAN	2.2	Sep 14	39	Oct 9	1.8	Aug 13, 1999
ANNUAL SEVEN-DAY MINIMUM	4.0	Sep 9	48	Oct 5	2.8	Aug 7, 1999
MAXIMUM PEAK FLOW			27,900	Sep 19	103,000	Sep 6, 1996
MAXIMUM PEAK STAGE			16.36	Sep 19	22.17	Sep 6, 1996
INSTANTANEOUS LOW FLOW			37	Oct 10	1.5	aAug 12, 1999
ANNUAL RUNOFF (CFSM)	0.58		1.75		0.80	
ANNUAL RUNOFF (INCHES)	7.84		23.73		10.90	
10 PERCENT EXCEEDS	772		1,910		870	
50 PERCENT EXCEEDS	99		600		186	
90 PERCENT EXCEEDS	14		169		44	

a Also Aug. 13, 1999.
e Estimated.



01634000 NORTH FORK SHENANDOAH RIVER NEAR STRASBURG, VA

LOCATION.--Lat 38°58'36", long 78°20'10", NAD83, Warren County, Hydrologic Unit 02070006, on right bank at upstream side of bridge on State Highway 55, 1.5 mi southeast of Strasburg, 2.2 mi upstream from Cedar Creek, and 10 mi upstream from confluence with South Fork.

DRAINAGE AREA.--768 mi^2.

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

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

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

REMARKS.--Records good except for period with ice effect, Jan. 22 to Feb. 2, which is poor. Large diurnal fluctuation at low and medium flow from unknown cause. Water-level elevations at the site were affected during the 1992-93 water years by construction of a new bridge about 50 ft downstream from the gage. National Weather Service gage-height telemeter at station. Maximum discharge, 114,000 ft^3/s, from rating curve extended above 46,000 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 2	1315	7,040	9.74	Apr 11	2400	7,430	10.06
Feb 23	1300	9,150	11.42	May 11	1530	6,190	9.02
Mar 6	1515	7,270	9.93	Sep 20	0545	*21,800	*19.27
Mar 21	1015	10,900	12.71				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	255	1,340	542	1,270	e360	1,540	1,210	703	800	780	366	302
2	212	915	498	5,190	e370	1,630	1,250	1,090	733	694	394	299
3	190	692	458	3,700	359	2,990	1,340	1,630	673	812	584	569
4	185	562	423	2,780	369	2,980	1,300	1,160	893	1,640	594	1,020
5	160	499	428	2,170	366	2,650	1,200	1,570	1,900	1,190	597	585
6	150	544	410	1,760	361	5,700	1,090	1,760	2,090	935	533	564
7	146	681	414	1,510	359	5,860	1,150	1,520	1,540	1,010	546	476
8	141	722	365	1,320	343	3,990	2,640	1,310	1,690	1,420	519	414
9	108	630	363	1,220	327	3,530	3,040	1,220	2,220	1,220	518	368
10	104	547	372	1,100	320	3,630	4,820	1,460	2,410	1,320	476	351
11	138	528	450	984	325	2,750	5,370	5,340	1,740	1,470	1,140	327
12	164	954	742	883	321	2,140	5,690	3,900	1,440	1,180	1,100	320
13	180	2,450	1,710	798	305	1,840	3,470	2,260	2,140	887	934	382
14	285	2,330	2,810	744	291	2,060	2,490	1,620	2,020	758	855	362
15	231	1,530	3,170	710	309	2,110	1,960	1,280	2,110	707	634	363
16	337	1,180	2,400	664	278	1,750	1,660	1,360	2,120	699	535	361
17	954	1,230	1,870	636	444	1,510	1,460	1,500	2,410	604	480	308
18	1,360	2,130	1,520	617	759	1,360	1,290	1,280	3,390	545	437	421
19	782	1,890	1,290	618	1,230	1,240	1,310	3,290	3,960	515	402	7,270
20	525	1,460	1,210	595	931	1,840	1,430	3,030	3,660	496	388	14,100
21	387	1,230	2,170	525	467	8,250	1,310	2,130	4,530	466	339	3,660
22	330	1,210	2,000	e480	1,070	4,730	1,290	1,810	3,000	449	371	2,180
23	286	1,280	1,560	e440	6,980	2,950	1,290	1,550	2,210	422	313	2,140
24	251	1,130	1,290	e400	6,830	2,200	1,140	1,410	1,710	415	318	3,420
25	226	991	1,140	e390	4,060	1,800	1,040	1,310	1,400	480	307	1,850
26	227	879	1,070	e400	2,970	1,560	985	1,180	1,210	428	292	1,470
27	221	782	963	e390	2,180	1,450	947	1,090	1,050	383	296	1,250
28	259	704	871	e370	1,770	1,290	869	988	922	466	291	1,130
29	287	638	795	e380	---	1,160	790	983	836	541	293	1,120
30	655	584	756	e390	---	1,150	736	906	760	403	327	929
31	2,170	---	725	e370	---	1,230	---	844	---	368	315	---
TOTAL	11,906	32,242	34,785	33,804	35,054	80,870	55,567	52,484	57,567	23,703	15,494	48,311
MEAN	384	1,075	1,122	1,090	1,252	2,609	1,852	1,693	1,919	765	500	1,610
MAX	2,170	2,450	3,170	5,190	6,980	8,250	5,690	5,340	4,530	1,640	1,140	14,100
MIN	104	499	363	370	278	1,150	736	703	673	368	291	299
CFSM	0.50	1.40	1.46	1.42	1.63	3.40	2.41	2.20	2.50	1.00	0.65	2.10
IN.	0.58	1.56	1.68	1.64	1.70	3.92	2.69	2.54	2.79	1.15	0.75	2.34

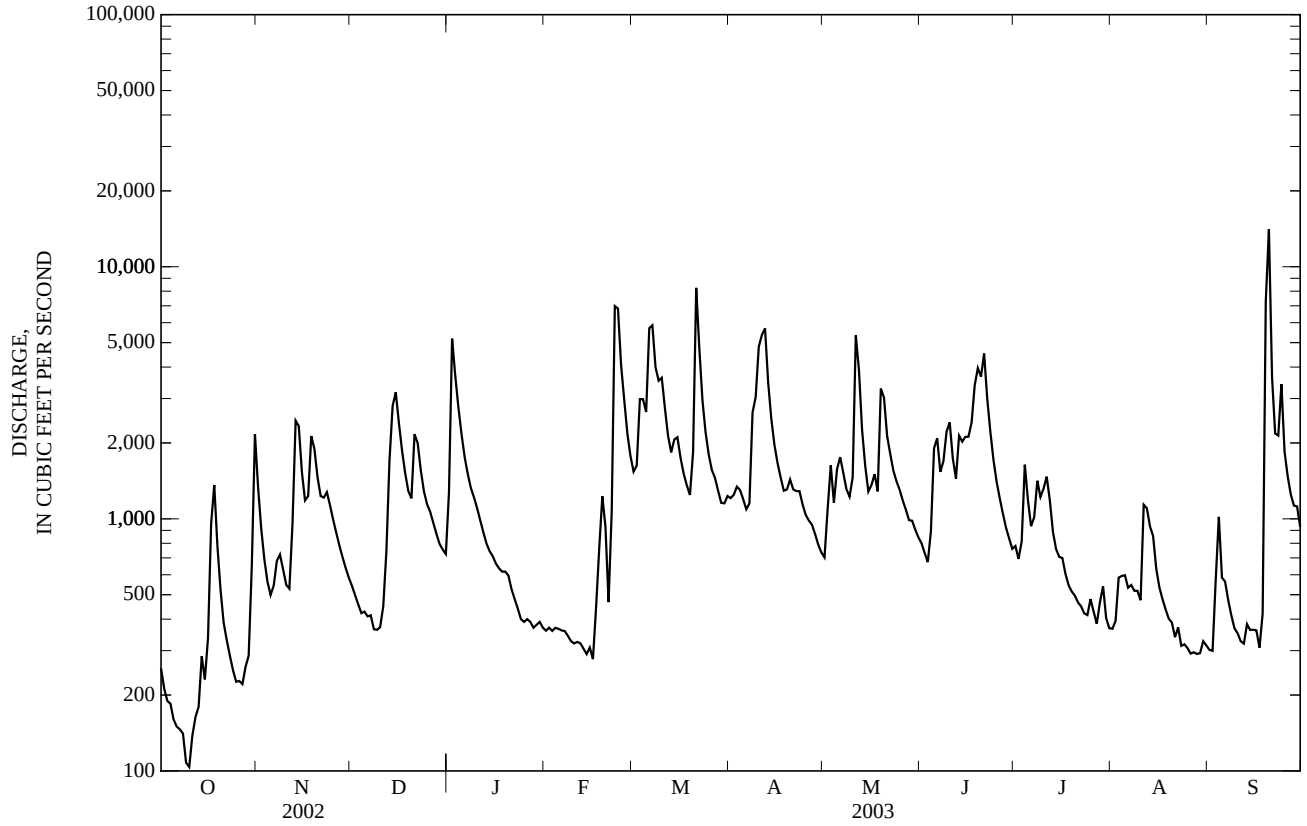
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 2003, BY WATER YEAR (WY)

MEAN	397	419	534	687	863	1,154	983	764	491	299	355	336
MAX	3,488	2,813	1,955	3,394	3,466	5,017	2,876	1,821	2,234	1,169	2,510	3,838
(WY)	(1943)	(1986)	(1973)	(1996)	(1998)	(1936)	(1993)	(1988)	(1972)	(1949)	(1955)	(1996)
MIN	58.9	75.8	82.0	86.4	94.0	183	182	154	84.6	56.6	66.7	67.1
(WY)	(1931)	(1931)	(1932)	(1966)	(1931)	(1931)	(1981)	(1969)	(1999)	(1999)	(1930)	(1986)

01634000 NORTH FORK SHENANDOAH RIVER NEAR STRASBURG, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1925 - 2003	
ANNUAL TOTAL	164,209		481,787			
ANNUAL MEAN	450		1,320		607	
HIGHEST ANNUAL MEAN					1,360	1996
LOWEST ANNUAL MEAN					226	1934
HIGHEST DAILY MEAN	5,930	Apr 23	14,100	Sep 20	60,700	Sep 7, 1996
LOWEST DAILY MEAN	72	aSep 6	104	Oct 10	35	bOct 15, 1985
ANNUAL SEVEN-DAY MINIMUM	77	Sep 9	135	Oct 5	45	Sep 13, 1986
MAXIMUM PEAK FLOW			21,800	Sep 20	114,000	Sep 7, 1996
MAXIMUM PEAK STAGE			19.27	Sep 20	32.27	Sep 7, 1996
INSTANTANEOUS LOW FLOW			93	Oct 9	6.0	Feb 9, 1934
ANNUAL RUNOFF (CFSM)	0.59		1.72		0.79	
ANNUAL RUNOFF (INCHES)	7.95		23.34		10.73	
10 PERCENT EXCEEDS	1,180		2,790		1,280	
50 PERCENT EXCEEDS	215		947		316	
90 PERCENT EXCEEDS	87		317		110	

a Also Sept. 13, 2002.
b Also Sept. 14, 18, 1986.
e Estimated.



01634500 CEDAR CREEK NEAR WINCHESTER, VA

LOCATION.--Lat 39°04'52", long 78°19'46", NAD83, Frederick County, Hydrologic Unit 02070006, on left bank 0.2 mi upstream from Fawcett Run, 0.3 mi upstream from bridge on State Highway 628, 1.3 mi downstream from Froman Run, and 11.4 mi southwest of Winchester.

DRAINAGE AREA.--103 mi^2.

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

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 647.09 ft NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Dec. 6-10 and Jan. 17 to Feb. 17, and period of doubtful gage-height record, Feb. 18-20, which are fair. Maximum discharge, 22,000 ft^3/s, from rating curve extended above 15,000 ft^3/s. Minimum discharge, 1.5 ft^3/s, result of freezeup. Minimum gage height, 1.04 ft, Feb. 19, 1941, result of freezeup. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 17, 1936, reached a stage of about 25 ft, discharge, about 18,000 ft^3/s, from information by local residents.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct 16	1630	1,010	4.69	Mar 20	1830	4,330	10.42
Nov 12	2000	1,240	5.16	Apr 9	1900	1,110	4.91
Dec 13	2200	1,460	5.60	Apr 11	0900	1,810	6.26
Jan 1	2200	*6,840	*13.81	May 10	2000	1,330	5.35
Feb 22	1600	4,760	11.06	May 16	0900	1,320	5.32
Mar 5	2230	1,810	6.25	Jun 13	0130	3,060	8.42
Mar 6	1630	1,860	6.34	Jun 13	2130	3,000	8.32
Mar 9	1830	1,450	5.58	Sep 19	0830	6,240	13.10

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	111	84	1,850	e55	223	258	107	140	79	44	21
2	18	90	73	1,870	e53	327	279	103	107	68	43	23
3	17	77	67	704	e52	461	239	92	100	115	40	38
4	16	68	59	508	e56	331	215	107	392	89	45	166
5	14	63	59	361	e60	637	194	113	285	64	45	63
6	13	165	e63	296	e57	1,510	166	129	187	58	36	38
7	12	119	e59	242	e55	899	415	110	238	188	32	31
8	12	96	e56	233	e52	627	425	140	261	79	33	27
9	11	85	e52	252	e52	1,030	758	195	247	81	30	26
10	13	76	e50	217	e51	723	694	680	179	135	32	25
11	28	171	305	184	e50	429	1,130	681	146	209	90	23
12	58	454	402	160	e48	349	674	361	255	94	53	23
13	34	431	633	148	e45	372	422	259	1,650	76	54	36
14	26	231	926	137	e44	464	321	197	1,010	60	42	44
15	21	173	573	125	e48	331	269	162	467	54	35	37
16	352	148	374	109	e54	276	233	716	325	49	31	30
17	239	543	269	e102	e47	242	203	494	329	42	45	26
18	113	506	211	e86	e57	215	179	533	392	39	41	29
19	77	280	181	e86	e80	186	245	484	329	39	33	3,000
20	61	215	238	e76	e73	1,640	193	350	591	36	28	543
21	51	211	241	e80	124	1,400	186	279	502	34	26	278
22	43	293	206	e72	1,450	692	350	236	366	33	24	186
23	38	209	176	e68	1,570	421	259	209	262	34	22	470
24	34	172	154	e62	804	325	208	224	197	35	21	241
25	32	147	156	e66	525	268	186	232	157	30	20	168
26	52	130	139	e72	369	249	184	214	130	28	19	137
27	48	121	120	e65	298	245	159	205	110	26	20	112
28	39	105	110	e59	253	198	137	195	96	34	21	119
29	65	95	109	e57	---	189	125	171	84	80	20	94
30	283	91	111	e59	---	207	114	151	74	39	20	76
31	156	---	114	e56	---	223	---	137	---	33	21	---
TOTAL	1,997	5,676	6,370	8,462	6,482	15,689	9,420	8,266	9,608	2,060	1,066	6,130
MEAN	64.4	189	205	273	232	506	314	267	320	66.5	34.4	204
MAX	352	543	926	1,870	1,570	1,640	1,130	716	1,650	209	90	3,000
MIN	11	63	50	56	44	186	114	92	74	26	19	21
CFSM	0.63	1.85	2.01	2.68	2.27	4.96	3.08	2.61	3.14	0.65	0.34	2.00
IN.	0.73	2.07	2.32	3.09	2.36	5.72	3.44	3.01	3.50	0.75	0.39	2.24

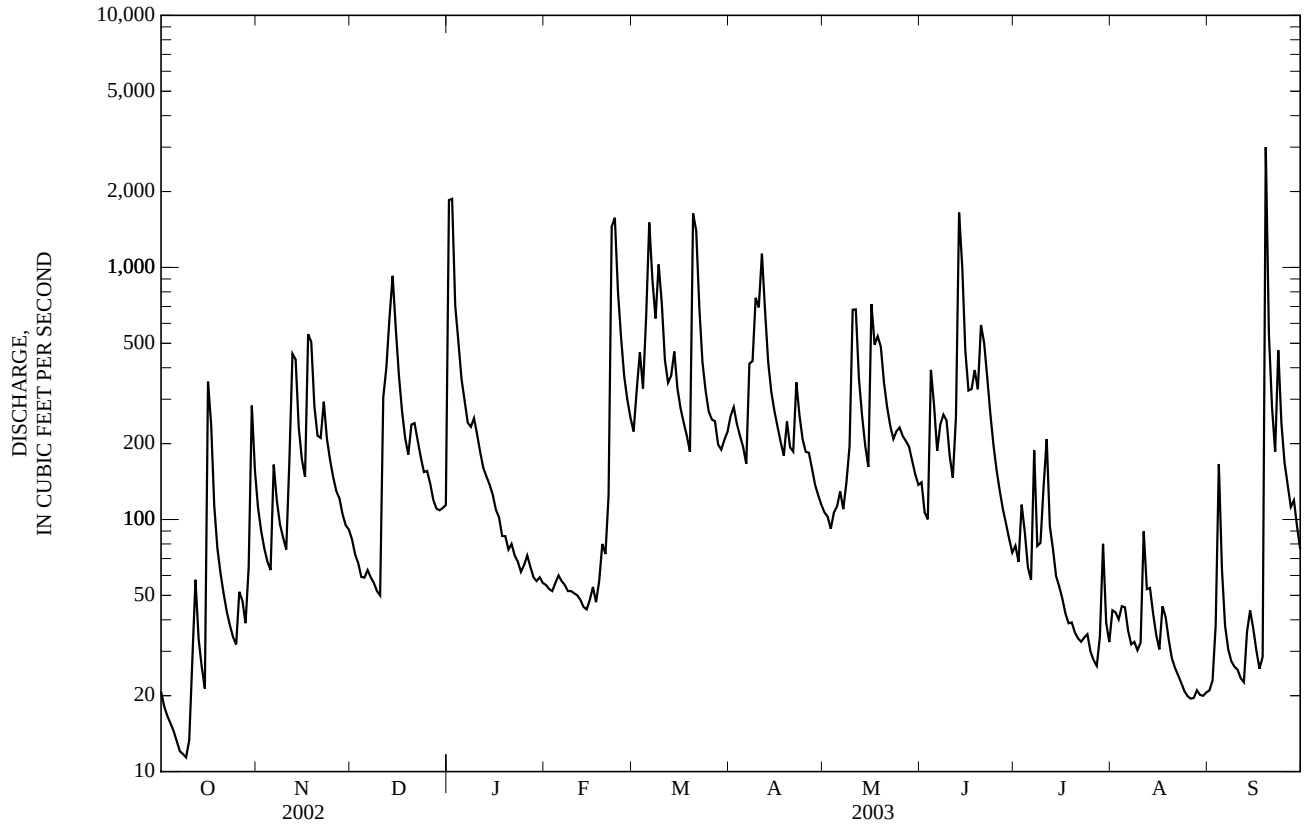
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2003, BY WATER YEAR (WY)

MEAN	59.4	69.0	90.4	114	143	208	175	130	86.0	32.8	38.4	41.8
MAX	777	500	320	545	520	708	600	382	664	181	420	523
(WY)	(1943)	(1986)	(1973)	(1996)	(1998)	(1993)	(1983)	(1988)	(1972)	(1978)	(1955)	(1996)
MIN	6.01	8.64	7.95	10.2	16.4	38.2	37.0	24.5	10.5	6.06	4.52	6.95
(WY)	(1964)	(1966)	(1966)	(1966)	(2002)	(1981)	(1947)	(1969)	(1969)	(1966)	(1957)	(1986)

01634500 CEDAR CREEK NEAR WINCHESTER, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1938 - 2003	
ANNUAL TOTAL	31,259.3		81,226			
ANNUAL MEAN	85.6		223		98.7	
HIGHEST ANNUAL MEAN					223	2003
LOWEST ANNUAL MEAN					28.3	1969
HIGHEST DAILY MEAN	926	Dec 14	3,000	Sep 19	e13,900	Oct 15, 1942
LOWEST DAILY MEAN	7.7	Aug 23	11	Oct 9	2.8	aSep 7, 1964
ANNUAL SEVEN-DAY MINIMUM	7.9	Sep 7	13	Oct 4	3.0	bSep 2, 1966
MAXIMUM PEAK FLOW			6,840	Jan 1	22,000	Oct 15, 1942
MAXIMUM PEAK STAGE			13.81	Jan 1	c27.00	Oct 15, 1942
INSTANTANEOUS LOW FLOW			d7.6	Feb 13	d1.5	Feb 2, 1992
ANNUAL RUNOFF (CFSM)	0.83		2.16		0.96	
ANNUAL RUNOFF (INCHES)	11.29		29.34		13.02	
10 PERCENT EXCEEDS	221		497		212	
50 PERCENT EXCEEDS	35		120		42	
90 PERCENT EXCEEDS	11		30		10	

a Also Sept. 3, 4, 7, 8, 1966.
b Also Sept. 3, 1966.
c From floodmarks.
d Result of freezeup.
e Estimated.



01635090 CEDAR CREEK ABOVE HIGHWAY 11 NEAR MIDDLETOWN, VA

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

DRAINAGE AREA.--155 mi^2.

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

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

REMARKS.--Records good except for period with ice effect, Jan. 17 to Feb. 20, which is fair.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	136	110	1,650	e70	294	374	157	214	133	74	54
2	30	108	96	2,820	e68	392	399	152	172	119	82	61
3	27	92	91	792	e66	639	339	139	155	169	109	641
4	25	81	75	584	e70	447	300	149	567	158	105	550
5	23	74	77	400	e85	709	269	156	499	116	93	144
6	21	164	91	326	e80	1,960	232	185	309	106	80	85
7	20	152	59	273	e76	1,270	514	157	347	399	70	69
8	19	118	79	255	e70	861	665	187	433	153	67	63
9	19	101	75	289	e67	1,280	1,010	245	386	220	64	62
10	19	90	64	260	e66	1,030	1,060	839	287	272	60	62
11	30	166	222	230	e64	616	1,530	984	233	362	144	60
12	68	359	478	199	e62	498	1,030	516	269	186	106	61
13	53	531	656	182	e56	488	663	355	2,210	160	90	79
14	40	273	1,180	173	e58	645	491	269	1,710	127	83	98
15	34	209	748	158	e66	466	402	223	767	113	67	95
16	254	179	483	132	e72	388	344	937	526	104	60	86
17	335	511	351	e125	e62	342	299	704	483	93	73	78
18	149	568	283	e110	e80	307	261	719	620	86	84	103
19	96	327	242	e100	e110	273	360	693	494	85	73	3,130
20	74	261	285	e90	e100	2,060	285	492	794	79	61	564
21	61	234	314	e95	148	2,120	256	376	791	76	56	272
22	52	338	275	e85	1,400	1,080	487	318	580	75	52	192
23	47	257	241	e84	1,940	674	377	278	403	74	50	486
24	43	214	216	e81	1,050	505	297	302	301	75	45	261
25	40	187	217	e78	710	408	263	312	240	67	45	189
26	51	165	206	e81	492	368	260	287	199	61	43	160
27	61	155	181	e80	391	382	231	288	174	58	47	138
28	48	138	166	e70	334	298	199	271	154	64	52	139
29	57	124	163	e68	---	278	183	243	137	134	53	122
30	291	118	167	e75	---	306	170	216	127	80	52	107
31	192	---	168	e72	---	324	---	192	---	68	52	---
TOTAL	2,315	6,430	8,059	10,017	7,913	21,708	13,550	11,341	14,581	4,072	2,192	8,211
MEAN	74.7	214	260	323	283	700	452	366	486	131	70.7	274
MAX	335	568	1,180	2,820	1,940	2,120	1,530	984	2,210	399	144	3,130
MIN	19	74	59	68	56	273	170	139	127	58	43	54
CFSM	0.49	1.40	1.70	2.11	1.85	4.58	2.95	2.39	3.18	0.86	0.46	1.79
IN.	0.56	1.56	1.96	2.44	1.92	5.28	3.29	2.76	3.55	0.99	0.53	2.00

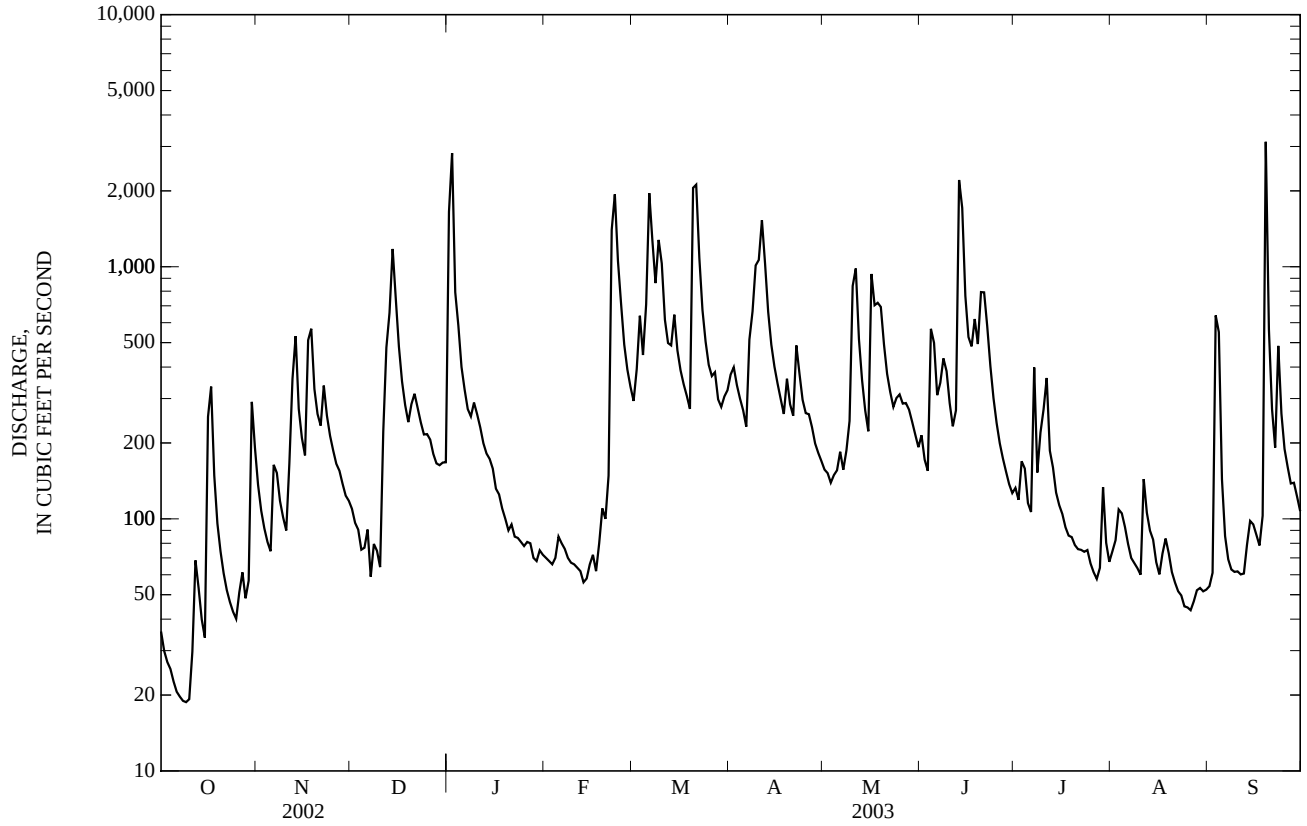
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2003, BY WATER YEAR (WY)

MEAN	48.1	121	112	144	134	374	288	242	221	72.6	50.2	110
MAX	74.7	214	260	323	283	700	452	366	486	131	70.7	274
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	21.6	28.6	23.5	25.0	26.4	65.9	172	149	88.5	40.8	26.5	26.3
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2001)	(2002)	(2002)	(2002)	(2001)

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

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 2001 - 2003	
ANNUAL TOTAL	37,727		110,389			
ANNUAL MEAN	103		302		183	
HIGHEST ANNUAL MEAN					302	2003
LOWEST ANNUAL MEAN					63.5	2002
HIGHEST DAILY MEAN	1,180	Dec 14	3,130	Sep 19	3,130	Sep 19, 2003
LOWEST DAILY MEAN	10	Sep 13	19	aOct 8	10	Sep 13, 2002
ANNUAL SEVEN-DAY MINIMUM	12	Sep 9	21	Oct 4	12	Sep 9, 2002
MAXIMUM PEAK FLOW			9,320	Jan 2	9,320	Jan 2, 2003
MAXIMUM PEAK STAGE			11.94	Jan 2	11.94	Jan 2, 2003
INSTANTANEOUS LOW FLOW			b13	Feb 13	9.0	Sep 13, 2002
ANNUAL RUNOFF (CFSM)	0.68		1.98		1.20	
ANNUAL RUNOFF (INCHES)	9.17		26.84		16.25	
10 PERCENT EXCEEDS	256		664		433	
50 PERCENT EXCEEDS	47		169		75	
90 PERCENT EXCEEDS	20		59		21	

a Also Oct. 9, 10, 2002.
b Result of freezeup.
e Estimated.



01635500 PASSAGE CREEK NEAR BUCKTON, VA

LOCATION.--Lat 38°57'29", long 78°16'00", NAD83, Warren County, Hydrologic Unit 02070006, on right bank 350 ft upstream from bridge on State Highway 55, 1.2 mi south of Buckton railroad station, 1.4 mi upstream from mouth, and 4.2 mi west of Riverton.

DRAINAGE AREA.--87.8 mi^2.

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

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 525.14 ft NGVD of 1929. October 1905 to July 1906, nonrecording gage at site 1 mi downstream at different datum. Apr. 4, 1932, to Oct. 7, 1937, nonrecording gage at site 350 ft downstream at different datum.

REMARKS.--Records good except those for periods with ice effect, Dec. 6-10, Jan. 16, and Feb. 10-14, and periods of no gage-height record, Jan. 17 to Feb. 5 and Feb. 15-21, 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 has been a diversion in some years from Strasburg Reservoir, capacity, 54.6 acre-ft, by town of Strasburg for municipal water supply. Maximum discharge, 23,000 ft^3/s, from rating curve extended above 5,200 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 2	0630	2,360	8.04	May 11	0100	1,020	6.06
Feb 23	0430	2,300	7.96	Jun 13	2300	1,110	6.22
Mar 6	0230	1,410	6.71	Sep 19	1130	*4,990	*10.72
Mar 21	0300	2,320	7.99	Sep 23	1330	1,390	6.68
Apr 11	1430	1,720	7.18				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	95	56	451	e34	204	212	69	77	53	16	7.4
2	8.4	70	49	1,370	e33	377	217	65	63	47	20	8.1
3	7.1	57	45	497	e33	610	175	59	58	179	20	41
4	6.4	48	40	367	e36	362	153	66	324	160	25	71
5	5.9	44	39	251	e40	592	140	79	574	79	25	30
6	4.9	149	e45	207	37	1,160	124	79	239	61	20	20
7	4.8	108	e42	173	35	719	251	69	185	164	18	14
8	4.6	76	e39	159	32	510	361	88	263	68	16	12
9	4.5	64	e36	157	31	645	594	134	418	126	15	11
10	5.3	55	e40	132	e32	495	575	386	226	432	14	11
11	10	64	83	112	e31	306	1,200	697	154	249	19	10
12	49	200	189	98	e30	249	680	286	173	143	21	9.6
13	26	387	406	91	e29	238	395	186	507	95	20	15
14	17	169	645	86	e28	300	280	141	541	74	17	23
15	13	121	444	80	e34	218	225	116	302	65	14	20
16	165	107	305	e68	e32	182	189	232	212	55	12	15
17	194	420	223	e60	e70	160	161	163	209	45	11	13
18	70	458	175	e55	e160	142	139	243	314	37	11	54
19	44	225	151	e49	e100	124	217	347	535	35	10	2,830
20	32	168	255	e46	e80	779	171	215	581	31	9.5	460
21	25	154	283	e50	e180	1,330	148	173	529	26	8.8	187
22	20	203	200	e45	387	543	154	163	314	23	8.8	118
23	17	145	163	e43	1,380	346	134	141	206	20	8.0	871
24	15	115	141	e41	747	265	115	141	148	23	6.7	338
25	14	98	140	e40	574	218	107	133	115	24	6.5	177
26	23	86	128	e42	365	198	107	123	93	18	6.4	130
27	32	80	110	e44	273	204	98	114	77	15	6.1	101
28	23	71	102	e41	225	163	86	114	67	26	6.3	95
29	37	65	99	e38	---	148	79	101	57	34	6.5	81
30	300	62	94	e36	---	163	74	88	49	20	16	63
31	162	---	91	e35	---	177	---	77	---	17	9.3	---
TOTAL	1,350.9	4,164	4,858	4,964	5,068	12,127	7,561	5,088	7,610	2,444	422.9	5,836.1
MEAN	43.6	139	157	160	181	391	252	164	254	78.8	13.6	195
MAX	300	458	645	1,370	1,380	1,330	1,200	697	581	432	25	2,830
MIN	4.5	44	36	35	28	124	74	59	49	15	6.1	7.4
CFSM	0.50	1.58	1.78	1.82	2.06	4.46	2.87	1.87	2.89	0.90	0.16	2.22
IN.	0.57	1.76	2.06	2.10	2.15	5.14	3.20	2.16	3.22	1.04	0.18	2.47

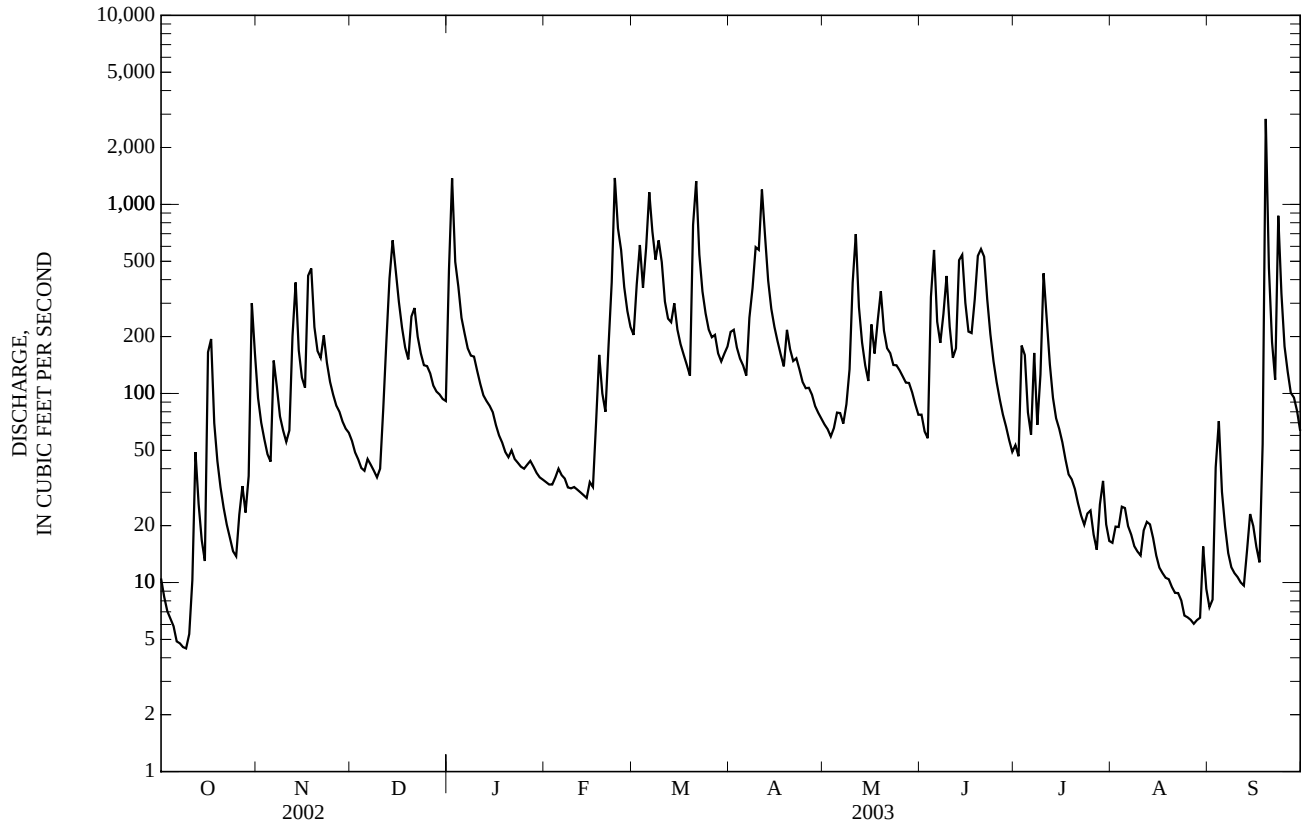
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 2003, BY WATER YEAR (WY)

MEAN	39.0	43.3	66.8	97.1	118	158	136	94.6	53.7	18.8	24.8	30.1
MAX	581	276	235	431	506	573	377	339	609	87.3	437	432
(WY)	(1943)	(1986)	(1973)	(1996)	(1998)	(1994)	(1952)	(1989)	(1972)	(1941)	(1955)	(1996)
MIN	2.85	4.48	4.60	6.25	5.79	20.5	20.9	14.6	5.59	1.87	1.94	2.37
(WY)	(1964)	(1966)	(1966)	(1966)	(1934)	(1959)	(1981)	(1963)	(1999)	(1934)	(1963)	(1936)

01635500 PASSAGE CREEK NEAR BUCKTON, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1933 - 2003	
ANNUAL TOTAL	20,587.2		61,493.9			
ANNUAL MEAN	56.4		168		73.1	
HIGHEST ANNUAL MEAN					168	2003
LOWEST ANNUAL MEAN					20.0	1934
HIGHEST DAILY MEAN	913	May 27	2,830	Sep 19	9,290	Oct 15, 1942
LOWEST DAILY MEAN	1.2	aSep 13	4.5	Oct 9	0.40	Jul 20, 1934
ANNUAL SEVEN-DAY MINIMUM	1.5	bSep 11	5.2	Oct 4	0.50	Jul 15, 1934
MAXIMUM PEAK FLOW			4,990	Sep 19	23,000	Sep 6, 1996
MAXIMUM PEAK STAGE			10.72	Sep 19	15.89	Sep 6, 1996
INSTANTANEOUS LOW FLOW			4.4	cOct 8	d0.10	Aug 5, 1932
ANNUAL RUNOFF (CFSM)	0.64		1.92		0.83	
ANNUAL RUNOFF (INCHES)	8.72		26.05		11.31	
10 PERCENT EXCEEDS	150		411		160	
50 PERCENT EXCEEDS	15		91		26	
90 PERCENT EXCEEDS	3.4		14		4.4	

a Also Sept. 14, 2002.
b Also Sept. 12, 2002.
c Also Oct. 9, 10, 2002.
d Observed.
e Estimated.



0163626650 MANASSAS RUN AT ROUTE 645 NEAR FRONT ROYAL, VA

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

DRAINAGE AREA.--11.2 mi^2.

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

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

REMARKS.--Records good except for period Dec. 12 to May 29, 2003, which is fair, and periods of doubtful gage-height record, June 9-13 and June 21 to July 30, 2002, which are poor.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	e12	11	e1.4	0.35	1.1
2	---	---	---	---	---	---	---	12	8.5	e1.1	0.28	1.5
3	---	---	---	---	---	---	---	8.6	6.2	e1.0	8.2	1.2
4	---	---	---	---	---	---	---	6.5	8.0	e1.1	6.5	0.85
5	---	---	---	---	---	---	---	5.6	7.4	e0.90	6.5	0.65
6	---	---	---	---	---	---	---	4.1	12	e0.80	5.6	0.53
7	---	---	---	---	---	---	---	4.4	6.6	e0.84	2.1	0.50
8	---	---	---	---	---	---	---	3.5	4.6	e0.88	1.3	0.47
9	---	---	---	---	---	---	---	6.0	e3.1	e0.78	0.95	0.44
10	---	---	---	---	---	---	---	5.8	e2.5	e0.82	0.78	0.44
11	---	---	---	---	---	---	---	2.0	e2.1	e0.94	0.63	0.40
12	---	---	---	---	---	---	---	1.4	e1.9	e0.74	0.60	0.35
13	---	---	---	---	---	---	---	1.9	e11	e3.0	0.60	0.30
14	---	---	---	---	---	---	---	2.1	15	14	0.51	0.33
15	---	---	---	---	---	---	---	1.7	18	e3.1	0.84	0.42
16	---	---	---	---	---	---	---	1.2	7.7	e1.6	0.82	1.1
17	---	---	---	---	---	---	---	1.2	5.2	e0.86	0.61	1.4
18	---	---	---	---	---	---	---	9.4	3.8	e0.82	0.53	0.79
19	---	---	---	---	---	---	---	4.2	4.7	e1.5	0.46	0.65
20	---	---	---	---	---	---	---	2.9	3.9	e1.3	0.36	0.57
21	---	---	---	---	---	---	---	2.7	e3.4	e0.95	0.31	0.60
22	---	---	---	---	---	---	---	2.6	e3.0	e0.80	0.29	0.91
23	---	---	---	---	---	---	---	2.4	e2.5	e0.68	0.28	4.4
24	---	---	---	---	---	---	---	2.0	e2.0	e0.64	0.52	1.1
25	---	---	---	---	---	---	---	1.7	e1.7	e0.61	0.45	0.76
26	---	---	---	---	---	---	---	3.1	e2.5	e0.60	0.39	9.7
27	---	---	---	---	---	---	---	57	e3.5	e1.4	0.40	16
28	---	---	---	---	---	---	---	30	e2.9	e1.3	1.3	8.2
29	---	---	---	---	---	---	---	23	e2.2	e0.62	5.1	3.5
30	---	---	---	---	---	---	---	18	e1.8	e0.50	1.9	2.3
31	---	---	---	---	---	---	---	15	---	0.42	1.2	---
TOTAL	---	---	---	---	---	---	---	254.0	168.7	46.00	50.66	61.46
MEAN	---	---	---	---	---	---	---	8.19	5.62	1.48	1.63	2.05
MAX	---	---	---	---	---	---	---	57	18	14	8.2	16
MIN	---	---	---	---	---	---	---	1.2	1.7	0.42	0.28	0.30
CFSM	---	---	---	---	---	---	---	0.73	0.50	0.13	0.15	0.18
IN.	---	---	---	---	---	---	---	0.84	0.56	0.15	0.17	0.20

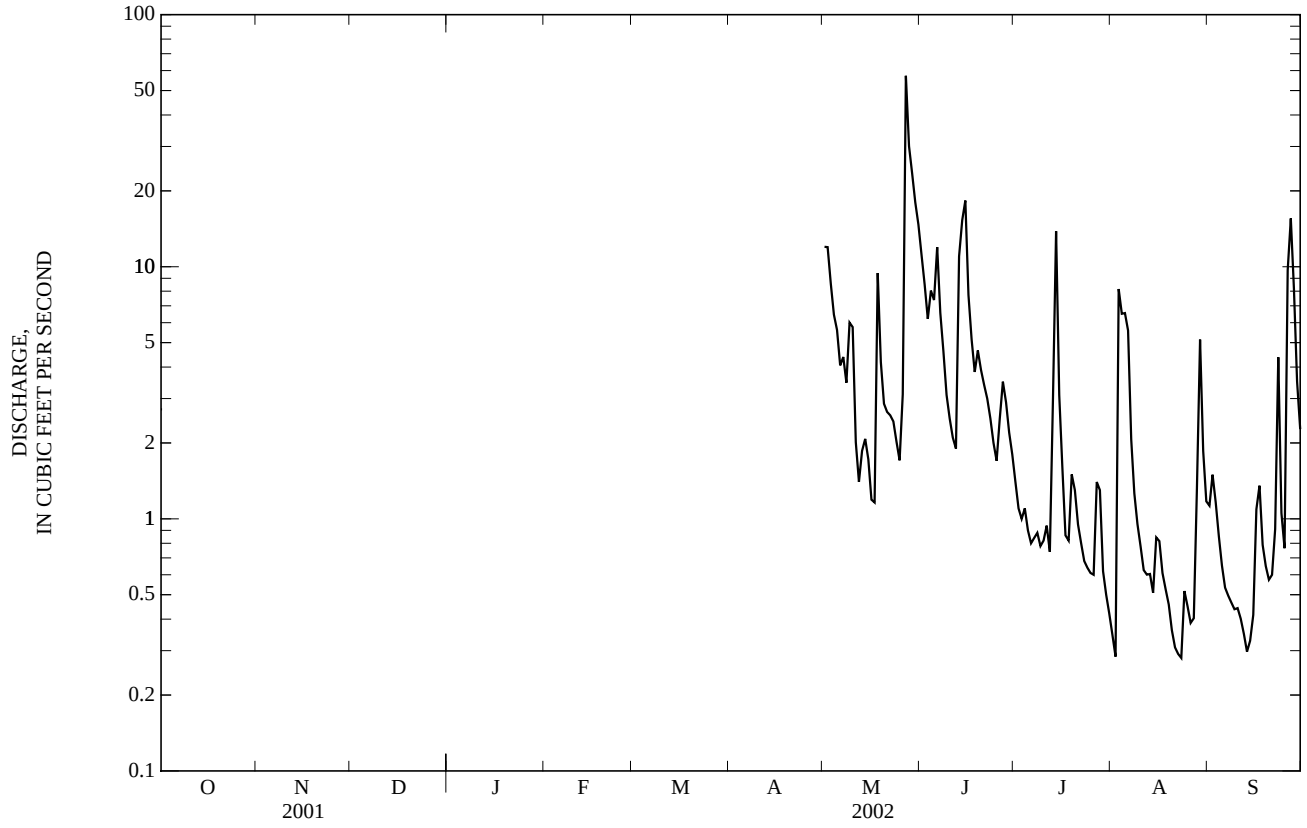
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEAR 2002

MEAN	---	---	---	---	---	---	---	8.19	5.62	1.48	1.63	2.05
MAX	---	---	---	---	---	---	---	8.19	5.62	1.48	1.63	2.05
(WY)	---	---	---	---	---	---	---	(2002)	(2002)	(2002)	(2002)	(2002)
MIN	---	---	---	---	---	---	---	8.19	5.62	1.48	1.63	2.05
(WY)	---	---	---	---	---	---	---	(2002)	(2002)	(2002)	(2002)	(2002)

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

SUMMARY STATISTICS	FOR WATER YEAR 2002	
HIGHEST DAILY MEAN	57	May 27
LOWEST DAILY MEAN	0.28	aAug 2
ANNUAL SEVEN-DAY MINIMUM	0.37	Aug 20
MAXIMUM PEAK FLOW	119	May 27
MAXIMUM PEAK STAGE	3.29	May 27
INSTANTANEOUS LOW FLOW	0.22	bAug 2

a Also Aug. 23, 2002.
b Also Aug. 3, 23, 2002.
e Estimated.



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

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	11	7.0	47	e6.4	23	52	13	20	21	11	5.8
2	1.4	7.2	6.4	74	e6.3	34	49	12	18	21	7.3	8.5
3	1.3	5.1	6.2	62	e6.1	37	45	11	20	67	19	26
4	1.2	3.8	5.2	47	e6.0	30	41	11	37	35	25	62
5	1.2	4.2	6.0	37	e6.0	44	37	11	39	24	18	34
6	1.1	22	6.8	31	e5.9	67	32	11	30	19	13	22
7	0.98	12	5.9	26	e5.8	59	45	10	32	17	12	18
8	0.92	9.3	6.4	25	e5.7	56	42	11	29	17	12	16
9	0.90	7.8	6.5	24	e5.5	74	67	13	31	42	9.2	15
10	1.3	6.7	5.8	20	e5.5	69	63	24	25	39	9.6	14
11	7.6	9.5	15	17	e5.4	56	86	23	24	31	11	12
12	7.9	22	21	15	e5.3	47	72	19	36	22	9.9	14
13	4.5	21	35	15	e5.2	57	61	16	68	17	25	39
14	4.4	14	42	14	e5.0	72	51	14	88	14	18	37
15	3.0	11	29	13	e5.0	61	43	15	69	12	12	27
16	48	13	24	12	e5.5	54	37	44	55	9.8	9.4	22
17	22	42	19	12	e15	50	32	37	56	7.7	9.1	18
18	9.5	29	16	e11	e20	45	30	41	72	6.8	8.0	61
19	5.5	20	15	e11	e13	39	34	38	114	6.4	6.7	189
20	4.1	16	23	e10	e8.8	113	27	32	111	4.9	5.6	72
21	3.0	16	19	e10	e11	119	25	32	107	4.3	4.5	51
22	2.6	15	17	e9.8	85	90	26	29	120	4.2	4.1	44
23	2.3	13	14	e9.6	80	74	22	29	74	4.6	3.8	227
24	1.9	11	13	e9.4	54	62	20	30	60	7.2	2.9	76
25	1.9	10	15	e8.5	39	55	19	29	49	3.5	2.5	52
26	12	9.2	14	e7.5	30	51	20	30	42	2.5	2.4	40
27	5.3	9.0	12	e7.0	26	44	17	28	37	2.2	11	30
28	4.2	8.0	11	e6.8	23	38	15	27	32	14	16	26
29	18	7.6	12	e6.6	---	43	14	25	27	14	9.4	19
30	37	7.7	12	e6.5	---	48	13	24	23	6.4	8.7	15
31	20	---	14	e6.5	---	50	---	22	---	4.9	6.2	---
TOTAL	236.80	393.1	454.2	611.2	495.4	1,761	1,137	711	1,545	501.4	322.3	1,292.3
MEAN	7.64	13.1	14.7	19.7	17.7	56.8	37.9	22.9	51.5	16.2	10.4	43.1
MAX	48	42	42	74	85	119	86	44	120	67	25	227
MIN	0.90	3.8	5.2	6.5	5.0	23	13	10	18	2.2	2.4	5.8
CFSM	0.68	1.17	1.31	1.76	1.58	5.07	3.38	2.05	4.60	1.44	0.93	3.85
IN.	0.79	1.31	1.51	2.03	1.65	5.85	3.78	2.36	5.13	1.67	1.07	4.29

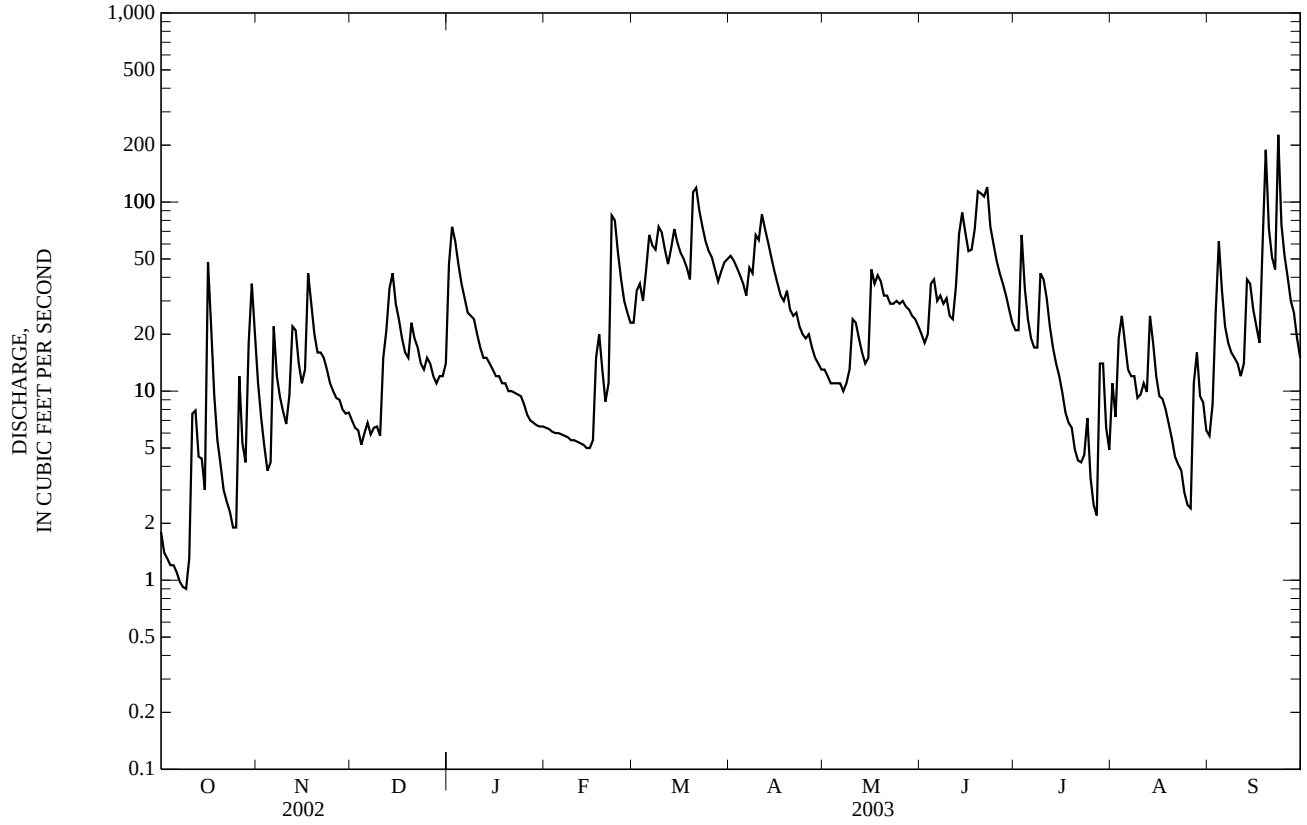
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2003, BY WATER YEAR (WY)

MEAN	7.64	13.1	14.7	19.7	17.7	56.8	37.9	15.6	28.6	8.83	6.02	22.6
MAX	7.64	13.1	14.7	19.7	17.7	56.8	37.9	22.9	51.5	16.2	10.4	43.1
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	7.64	13.1	14.7	19.7	17.7	56.8	37.9	8.19	5.62	1.48	1.63	2.05
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2002)	(2002)	(2002)	(2002)	(2002)

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

SUMMARY STATISTICS	FOR 2003 WATER YEAR		WATER YEARS 2002 - 2003	
ANNUAL TOTAL	9,460.70			
ANNUAL MEAN	25.9		25.9	
HIGHEST ANNUAL MEAN			25.9	2003
LOWEST ANNUAL MEAN			25.9	2003
HIGHEST DAILY MEAN	227	Sep 23	227	Sep 23, 2003
LOWEST DAILY MEAN	0.90	Oct 9	0.28	aAug 2, 2002
ANNUAL SEVEN-DAY MINIMUM	1.1	Oct 3	0.37	Aug 20, 2002
MAXIMUM PEAK FLOW	685	Sep 23	685	Sep 23, 2003
MAXIMUM PEAK STAGE	6.75	Sep 23	6.75	Sep 23, 2003
INSTANTANEOUS LOW FLOW	0.88	bOct 8	0.22	cAug 2, 2002
ANNUAL RUNOFF (CFSM)	2.31		2.31	
ANNUAL RUNOFF (INCHES)	31.42		31.44	
10 PERCENT EXCEEDS	59		59	
50 PERCENT EXCEEDS	17		17	
90 PERCENT EXCEEDS	5.0		5.0	

a Also Aug. 23, 2002.
b Also Oct. 9, 2002.
c Also Aug. 3, 23, 2002.
e Estimated.



01636316 SPOUT RUN AT ROUTE 621 NEAR MILLWOOD, VA

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

DRAINAGE AREA.--21.3 mi^2.

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

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

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

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	---	6.3
2	---	---	---	---	---	---	---	---	---	---	---	6.3
3	---	---	---	---	---	---	---	---	---	---	---	6.2
4	---	---	---	---	---	---	---	---	---	---	---	6.1
5	---	---	---	---	---	---	---	---	---	---	---	5.8
6	---	---	---	---	---	---	---	---	---	---	---	5.8
7	---	---	---	---	---	---	---	---	---	---	---	5.8
8	---	---	---	---	---	---	---	---	---	---	---	5.5
9	---	---	---	---	---	---	---	---	---	---	---	5.5
10	---	---	---	---	---	---	---	---	---	---	---	5.5
11	---	---	---	---	---	---	---	---	---	---	---	5.4
12	---	---	---	---	---	---	---	---	---	---	---	5.2
13	---	---	---	---	---	---	---	---	---	---	---	5.2
14	---	---	---	---	---	---	---	---	---	---	---	5.3
15	---	---	---	---	---	---	---	---	---	---	---	5.5
16	---	---	---	---	---	---	---	---	---	---	---	5.7
17	---	---	---	---	---	---	---	---	---	---	---	5.5
18	---	---	---	---	---	---	---	---	---	---	---	5.3
19	---	---	---	---	---	---	---	---	---	---	---	5.2
20	---	---	---	---	---	---	---	---	---	---	---	5.3
21	---	---	---	---	---	---	---	---	---	---	---	5.6
22	---	---	---	---	---	---	---	---	---	---	5.5	6.1
23	---	---	---	---	---	---	---	---	---	---	5.6	6.5
24	---	---	---	---	---	---	---	---	---	---	5.6	5.6
25	---	---	---	---	---	---	---	---	---	---	5.5	5.5
26	---	---	---	---	---	---	---	---	---	---	5.4	6.8
27	---	---	---	---	---	---	---	---	---	---	5.5	8.8
28	---	---	---	---	---	---	---	---	---	---	6.2	7.9
29	---	---	---	---	---	---	---	---	---	---	7.0	7.1
30	---	---	---	---	---	---	---	---	---	---	6.3	6.9
31	---	---	---	---	---	---	---	---	---	---	6.1	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	179.2
MEAN	---	---	---	---	---	---	---	---	---	---	---	5.97
MAX	---	---	---	---	---	---	---	---	---	---	---	8.8
MIN	---	---	---	---	---	---	---	---	---	---	---	5.2
CFSM	---	---	---	---	---	---	---	---	---	---	---	0.28
IN.	---	---	---	---	---	---	---	---	---	---	---	0.31

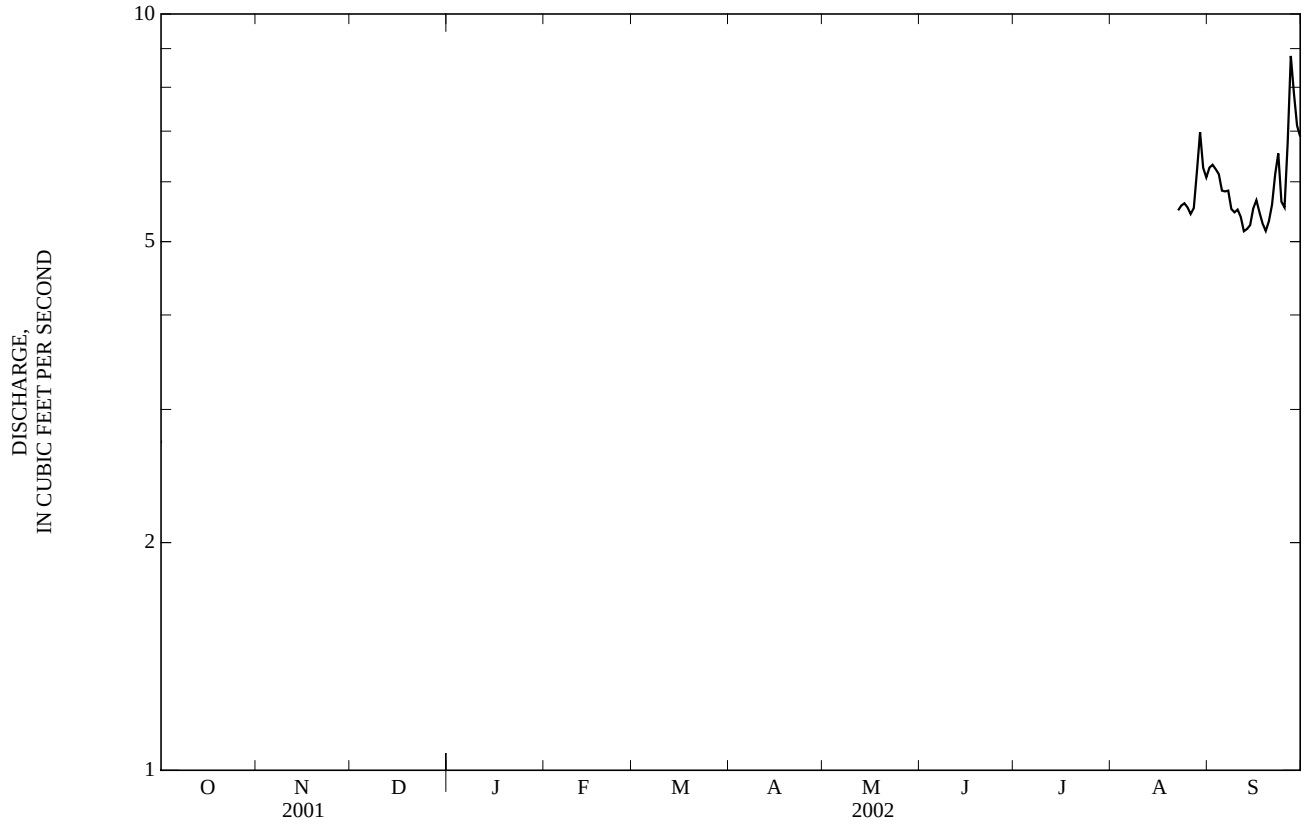
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEAR 2002

MEAN	---	---	---	---	---	---	---	---	---	---	---	5.97
MAX	---	---	---	---	---	---	---	---	---	---	---	5.97
(WY)	---	---	---	---	---	---	---	---	---	---	---	(2002)
MIN	---	---	---	---	---	---	---	---	---	---	---	5.97
(WY)	---	---	---	---	---	---	---	---	---	---	---	(2002)

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

SUMMARY STATISTICS	FOR WATER YEAR 2002	
HIGHEST DAILY MEAN	8.8	Sep 27
LOWEST DAILY MEAN	5.2	aSep 12
ANNUAL SEVEN-DAY MINIMUM	5.4	Sep 8
MAXIMUM PEAK FLOW	9.7	Sep 26
MAXIMUM PEAK STAGE	1.59	Sep 27
INSTANTANEOUS LOW FLOW	4.8	Sep 21

a Also Sept. 13, 19, 2002.



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

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.7	12	11	63	21	38	39	28	46	42	33	25
2	6.5	12	11	139	19	49	39	32	33	34	31	23
3	6.4	11	11	67	18	72	45	24	32	40	35	25
4	6.5	11	11	56	20	56	38	26	59	34	32	48
5	6.5	11	11	48	19	71	34	24	61	31	36	28
6	6.2	14	11	43	18	145	32	24	43	34	30	28
7	6.2	12	10	38	19	123	43	24	48	194	30	26
8	6.2	11	10	38	18	99	45	27	50	52	38	24
9	6.2	11	9.9	39	18	168	81	30	45	63	34	23
10	6.6	11	9.7	34	18	114	71	52	38	72	32	20
11	7.4	11	13	31	18	77	98	46	36	52	30	19
12	7.5	13	28	28	17	65	71	34	40	43	30	20
13	7.2	19	48	29	17	63	53	30	58	41	29	26
14	7.4	13	85	28	17	67	48	27	60	38	29	24
15	7.3	13	52	26	18	54	44	27	49	37	28	23
16	10	15	39	24	18	46	42	87	43	38	29	23
17	10	28	33	25	20	43	38	48	41	38	44	22
18	9.2	26	30	25	18	42	38	45	45	37	32	29
19	8.8	18	29	25	17	42	44	43	39	35	28	312
20	8.6	17	31	26	17	128	37	39	108	36	27	80
21	8.3	17	28	23	18	136	36	35	104	36	25	53
22	8.1	22	25	24	36	90	34	34	230	33	29	45
23	8.1	16	24	22	60	56	31	33	80	35	26	246
24	8.1	15	23	21	60	58	32	43	56	38	23	102
25	8.0	15	25	20	66	53	31	70	48	34	23	72
26	9.0	14	24	19	55	55	32	49	44	33	23	108
27	8.6	14	24	19	45	51	30	41	41	33	23	67
28	8.4	13	23	18	42	44	27	43	37	35	22	61
29	9.2	12	23	20	---	42	26	39	34	37	22	53
30	14	12	24	20	---	41	27	34	33	28	25	47
31	13	---	24	20	---	41	---	40	---	29	23	---
TOTAL	250.2	439	760.6	1,058	747	2,229	1,286	1,178	1,681	1,362	901	1,702
MEAN	8.07	14.6	24.5	34.1	26.7	71.9	42.9	38.0	56.0	43.9	29.1	56.7
MAX	14	28	85	139	66	168	98	87	230	194	44	312
MIN	6.2	11	9.7	18	17	38	26	24	32	28	22	19
CFSM	0.38	0.69	1.15	1.60	1.25	3.38	2.01	1.78	2.63	2.06	1.36	2.66
IN.	0.44	0.77	1.33	1.85	1.30	3.89	2.25	2.06	2.94	2.38	1.57	2.97

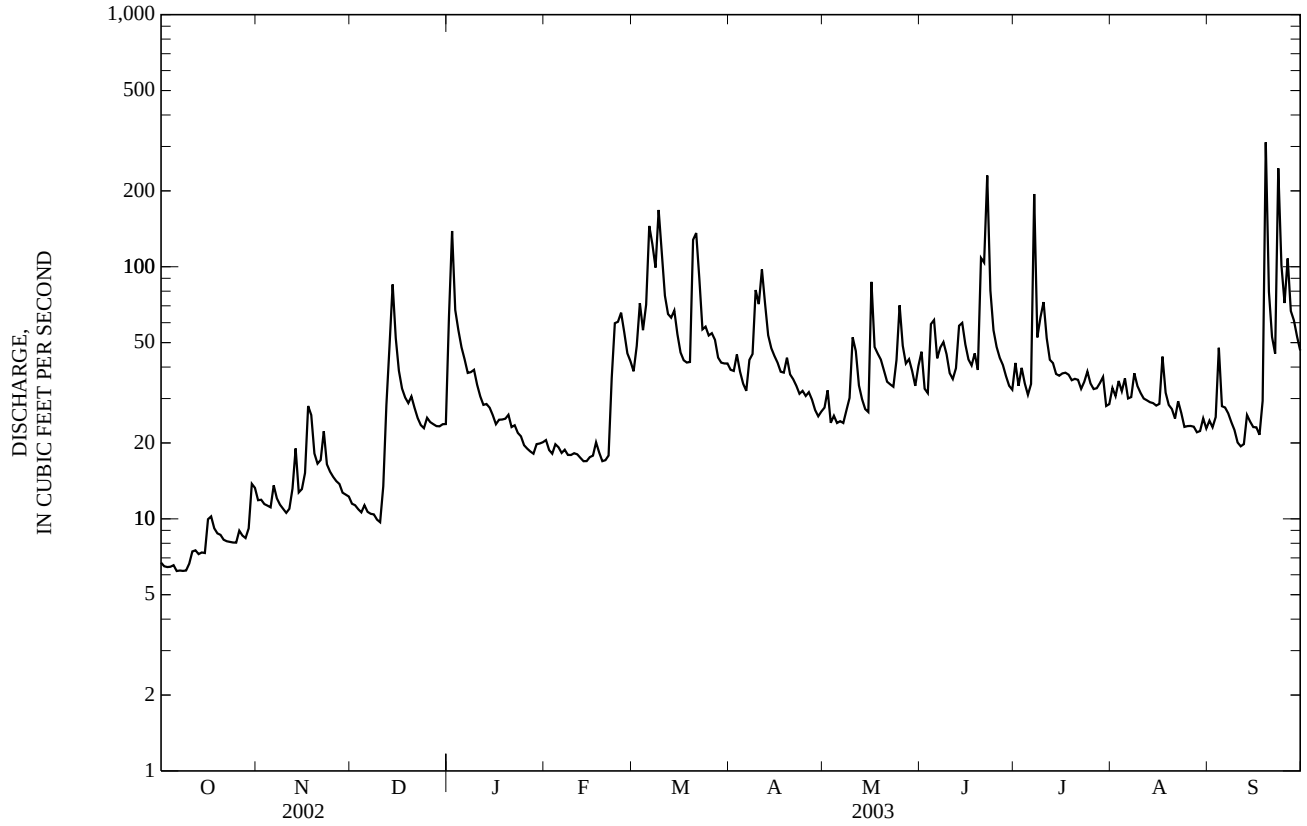
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2003, BY WATER YEAR (WY)

MEAN	8.07	14.6	24.5	34.1	26.7	71.9	42.9	38.0	56.0	43.9	29.1	31.4
MAX	8.07	14.6	24.5	34.1	26.7	71.9	42.9	38.0	56.0	43.9	29.1	56.7
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	8.07	14.6	24.5	34.1	26.7	71.9	42.9	38.0	56.0	43.9	29.1	5.97
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2002)

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

SUMMARY STATISTICS	FOR 2003 WATER YEAR		WATER YEARS 2002 - 2003	
ANNUAL TOTAL	13,593.8			
ANNUAL MEAN	37.2		37.2	
HIGHEST ANNUAL MEAN			37.2	2003
LOWEST ANNUAL MEAN			37.2	2003
HIGHEST DAILY MEAN	312	Sep 19	312	Sep 19, 2003
LOWEST DAILY MEAN	6.2	aOct 6	5.2	bSep 12, 2002
ANNUAL SEVEN-DAY MINIMUM	6.3	Oct 3	5.4	Sep 8, 2002
MAXIMUM PEAK FLOW	547	Sep 19	547	Sep 19, 2003
MAXIMUM PEAK STAGE	4.07	Sep 19	4.07	Sep 19, 2003
INSTANTANEOUS LOW FLOW	6.1	cOct 6	4.8	Sep 21, 2002
ANNUAL RUNOFF (CFSM)	1.75		1.75	
ANNUAL RUNOFF (INCHES)	23.74		23.76	
10 PERCENT EXCEEDS	64		64	
50 PERCENT EXCEEDS	31		31	
90 PERCENT EXCEEDS	11		11	

a Also Oct. 7-9, 2002.
b Also Sept. 13, 19, 2002.
c Also Oct. 7-10, 2002.



01636500 SHENANDOAH RIVER AT MILLVILLE, WV

LOCATION.--Lat 39°16'55", long 77°47'22", NAD27, Jefferson County, Hydrologic Unit 02070007, on left bank 0.4 mi downstream from Cattail Run, 1.0 mi upstream from Millville, 5.0 mi upstream from Harpers Ferry, and at mile 4.7.

DRAINAGE AREA.--3,022 mi^2.

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

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

GAGE.--Water-stage recorder with satellite telemeter. Datum of gage is 293.00 ft above NGVD of 1929. Apr. 15, 1895, to Mar. 31, 1909, nonrecording gage at site 0.8 mi downstream at datum 0.32 ft higher.

REMARKS.--Records good except those for periods of estimated daily discharges (ice effect), which are poor. Some regulation by upstream hydroelectric plants, including that of Potomac Light and Power Company, 0.5 mi upstream from station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1870 reached practically same stage as flood of Mar. 18, 1936, 26.36 ft, discharge, 151,000 ft^3/s.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 3	0100	18,200	9.05
Feb 24	1300	38,900	13.23
Mar 7	0530	20,300	9.55
Mar 22	0130	27,000	11.02
Apr 12	1130	25,700	10.76
May 20	1130	15,200	8.26
Jun 22	0830	19,300	9.31
Sep 20	2000	*66,100	*17.31
Sep 24	0900	35,600	12.65

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,450	4,180	1,950	2,960	1,770	7,700	5,700	3,500	5,050	3,670	1,970	1,570
2	1,160	3,940	1,780	11,500	1,730	7,020	5,810	3,400	4,410	3,480	1,910	1,590
3	885	3,140	1,690	15,700	1,710	9,600	5,800	3,970	4,170	3,540	1,860	1,600
4	766	2,470	1,580	12,000	1,680	13,400	5,670	4,020	4,420	6,040	2,090	4,940
5	711	2,030	1,520	9,890	1,690	11,100	5,390	3,670	6,530	7,750	2,170	3,790
6	665	1,890	1,490	7,980	1,620	14,800	5,070	4,350	7,960	6,050	2,200	2,460
7	592	2,210	1,430	6,690	1,650	19,200	4,870	4,930	8,010	5,560	2,320	2,170
8	537	2,070	1,290	5,670	1,640	15,700	6,050	4,880	7,320	4,720	2,560	2,030
9	498	2,130	e1,200	5,100	1,560	14,000	9,380	4,710	7,890	5,050	2,510	1,820
10	482	2,050	1,260	4,710	1,510	13,700	13,800	4,730	9,070	5,560	2,300	1,710
11	521	1,940	1,430	4,260	1,500	11,000	18,000	8,870	8,160	4,980	2,400	1,540
12	544	2,060	2,300	3,820	1,470	8,830	24,200	12,600	6,850	4,900	4,090	1,570
13	710	3,710	3,650	3,480	1,400	7,660	17,900	9,420	7,730	4,110	4,700	1,680
14	817	6,210	7,080	3,220	1,370	7,770	12,700	7,050	11,400	3,580	4,490	1,940
15	796	6,470	9,210	2,970	1,410	7,780	9,920	5,680	9,240	3,230	3,870	2,010
16	1,010	4,990	9,240	2,780	1,420	6,900	8,110	7,470	8,800	3,470	3,450	2,110
17	2,430	4,690	7,410	2,680	e1,400	6,190	6,950	7,760	9,930	3,590	3,010	1,960
18	2,980	6,250	5,910	2,470	1,350	5,640	6,070	7,110	9,720	3,050	2,750	1,860
19	2,740	7,450	4,950	2,350	1,810	5,170	5,740	8,010	14,400	2,680	2,560	21,100
20	2,060	6,470	4,390	e2,300	2,320	5,330	5,770	14,400	14,400	2,500	2,490	60,600
21	1,620	5,190	4,570	e2,250	2,730	19,300	5,630	11,500	15,800	2,380	2,330	35,400
22	1,460	4,630	7,700	e2,200	2,940	23,200	5,320	9,180	17,600	2,250	2,060	14,800
23	1,240	4,340	7,670	e2,150	16,000	15,000	5,340	8,520	12,200	2,220	2,000	18,100
24	1,120	3,910	6,040	e2,100	37,000	10,900	5,130	7,460	9,160	2,130	1,780	31,800
25	941	3,510	5,050	2,060	26,200	8,660	4,730	7,270	7,220	2,180	1,720	17,800
26	958	3,190	4,450	2,040	17,200	7,260	4,470	6,530	6,000	2,180	1,720	11,200
27	908	2,790	4,100	e2,000	12,000	6,580	4,270	5,930	5,140	2,020	1,580	8,510
28	917	2,530	3,740	e1,950	9,410	5,900	4,040	5,530	4,590	1,920	1,620	7,270
29	961	2,290	3,290	1,940	---	5,260	3,830	5,290	4,160	2,120	1,620	6,960
30	1,310	2,100	2,990	e1,850	---	4,980	3,670	5,010	3,810	2,120	1,530	6,920
31	3,200	---	2,800	1,820	---	5,250	---	4,840	---	1,880	1,520	---
TOTAL	36,989	110,830	123,160	134,890	155,490	310,780	229,330	207,590	251,140	110,910	75,180	278,810
MEAN	1,193	3,694	3,973	4,351	5,553	10,030	7,644	6,696	8,371	3,578	2,425	9,294
MAX	3,200	7,450	9,240	15,700	37,000	23,200	24,200	14,400	17,600	7,750	4,700	60,600
MIN	482	1,890	1,200	1,820	1,350	4,980	3,670	3,400	3,810	1,880	1,520	1,540
CFSM	0.39	1.22	1.31	1.44	1.84	3.32	2.53	2.22	2.77	1.18	0.80	3.08
IN.	0.46	1.36	1.52	1.66	1.91	3.83	2.82	2.56	3.09	1.37	0.93	3.43

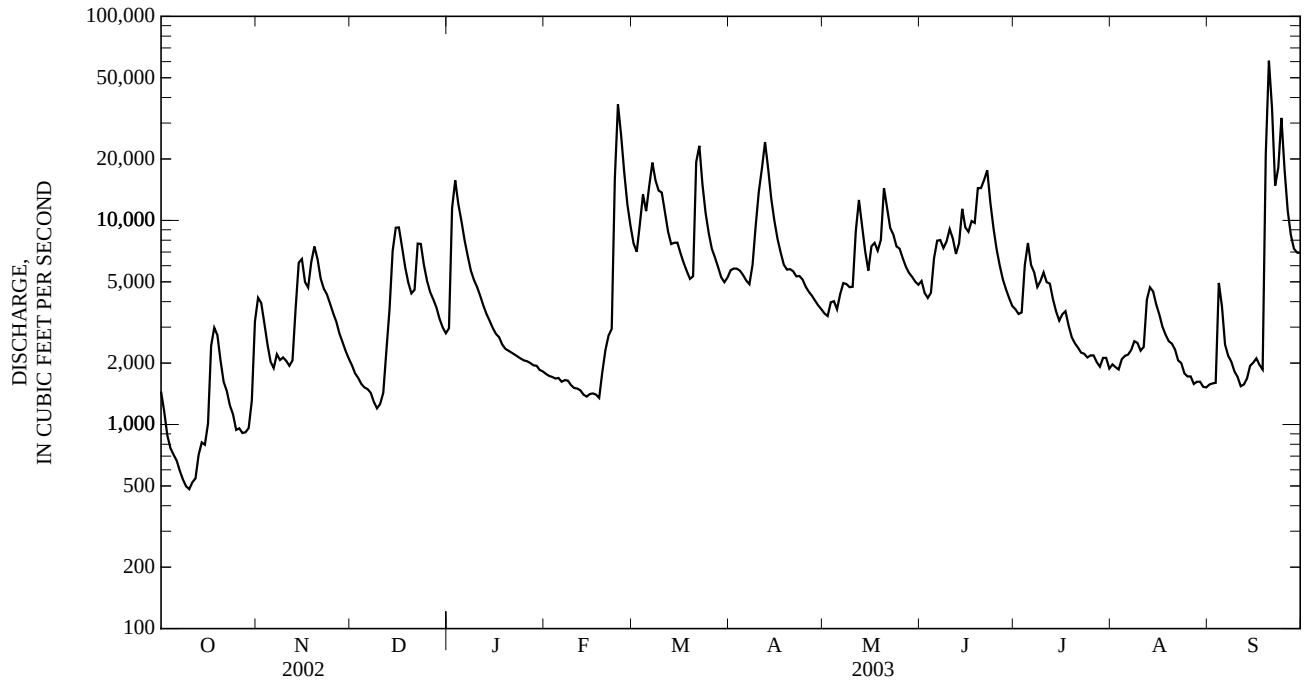
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1895 - 2003, BY WATER YEAR (WY)

MEAN	1,923	1,858	2,471	3,215	3,897	5,058	4,384	3,358	2,445	1,454	1,623	1,547
MAX	16,250	13,350	8,164	13,470	18,100	17,540	12,840	8,701	10,380	4,809	10,390	14,780
(WY)	(1943)	(1986)	(1973)	(1996)	(1998)	(1936)	(1901)	(1901)	(1972)	(1972)	(1955)	(1996)
MIN	343	388	410	475	471	929	992	1,001	643	402	388	411
(WY)	(1931)	(1932)	(1966)	(2002)	(2002)	(1931)	(1981)	(1969)	(1999)	(1966)	(1930)	(1963)

01636500 SHENANDOAH RIVER AT MILLVILLE, WV—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1895 - 2003	
ANNUAL TOTAL	565,360		2,025,099			
ANNUAL MEAN	1,549		5,548		2,763	
HIGHEST ANNUAL MEAN					5,618	1996
LOWEST ANNUAL MEAN					927	2002
HIGHEST DAILY MEAN	13,500	Apr 23	60,600	Sep 20	192,000	Oct 16, 1942
LOWEST DAILY MEAN	302	Aug 26	482	Oct 10	194	Jul 24, 1930
ANNUAL SEVEN-DAY MINIMUM	326	Aug 21	548	Oct 6	240	Sep 7, 1966
MAXIMUM PEAK FLOW			66,100	Sep 20	230,000	Oct 16, 1942
MAXIMUM PEAK STAGE			17.31	Sep 20	(a)32.40	Oct 16, 1942
INSTANTANEOUS LOW FLOW			479	(b)	59	Oct 4, 1930
ANNUAL RUNOFF (CFSM)	0.51		1.84		0.91	
ANNUAL RUNOFF (INCHES)	6.96		24.93		12.42	
10 PERCENT EXCEEDS	4,000		11,500		5,630	
50 PERCENT EXCEEDS	720		3,970		1,610	
90 PERCENT EXCEEDS	389		1,470		608	

a From floodmarks.
b Oct. 9, 10.
e Estimated.



01636690 PINEY RUN NEAR LOVETTSVILLE, VA

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

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--October 2001 to September 2002.

GAGE.--Water stage recorder. Datum of gage is 400 ft NVGD of 1929, from topographic map.

REMARKS.--Records good except those for periods with ice effect, Dec. 7-9 and Jan. 16 to Feb. 21, and periods of partial or no gage-height record, Dec. 28-30 and May 21, 22, which are fair.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.94	5.5	5.0	125	e9.5	21	35	15	67	11	6.8	5.1
2	0.79	4.0	4.7	139	e9.0	34	30	14	35	11	5.5	8.1
3	0.69	3.4	4.6	85	e8.7	41	27	13	45	15	5.0	6.8
4	0.72	3.0	4.6	57	e8.3	28	25	16	161	14	5.4	38
5	0.81	3.0	5.8	42	e7.8	35	25	17	78	14	6.2	13
6	0.80	17	6.4	37	e7.4	73	22	17	52	13	4.8	8.9
7	0.80	7.1	e4.5	31	e6.9	48	52	21	79	20	6.2	8.0
8	0.77	4.8	e4.3	35	e6.5	50	38	28	56	15	8.1	6.6
9	0.82	4.1	e4.0	36	e6.3	110	81	24	55	12	5.2	6.2
10	1.2	3.8	4.8	28	e6.1	74	52	34	37	14	15	5.5
11	3.6	5.0	31	22	e6.0	50	57	29	33	12	7.4	5.1
12	4.6	19	46	18	e5.8	46	43	20	31	9.7	5.4	5.1
13	2.8	20	65	17	e5.8	61	35	17	33	11	4.5	13
14	2.3	8.7	97	16	e5.8	64	31	15	29	8.6	4.2	9.5
15	1.7	6.4	50	15	e5.8	46	29	18	25	8.1	3.9	7.8
16	20	6.5	35	e14	e5.7	43	27	436	22	7.6	3.9	7.5
17	14	37	26	e14	e5.5	39	25	176	23	6.8	19	5.8
18	4.2	41	21	e14	e15	34	24	122	27	6.6	6.0	15
19	2.5	16	18	e13	e13	29	64	77	26	6.8	4.5	90
20	2.0	12	24	e13	e10	125	34	56	36	6.2	4.0	25
21	1.7	16	19	e12	e8.7	103	29	e51	29	5.9	3.8	16
22	1.4	24	15	e11	151	58	30	e46	29	6.0	3.6	14
23	1.4	13	13	e10	128	44	25	41	21	6.9	3.6	281
24	1.2	9.4	12	e11	56	37	22	63	18	6.8	2.9	50
25	1.3	8.1	16	e12	38	33	22	175	16	5.6	2.7	32
26	6.4	7.1	16	e14	30	33	25	72	15	5.2	8.9	39
27	3.7	7.5	12	e15	26	31	21	52	14	4.8	11	23
28	2.5	6.2	e11	e14	24	26	18	54	13	4.7	7.3	30
29	5.7	5.6	e12	e12	---	29	17	43	12	5.7	11	19
30	18	5.6	e15	e11	---	39	16	35	11	4.5	7.6	16
31	9.1	---	15	e10	---	39	---	55	---	4.2	5.2	---
TOTAL	118.44	329.8	617.7	903	616.6	1,523	981	1,852	1,128	282.7	198.6	810.0
MEAN	3.82	11.0	19.9	29.1	22.0	49.1	32.7	59.7	37.6	9.12	6.41	27.0
MAX	20	41	97	139	151	125	81	436	161	20	19	281
MIN	0.69	3.0	4.0	10	5.5	21	16	13	11	4.2	2.7	5.1
CFSM	0.28	0.80	1.45	2.13	1.61	3.59	2.39	4.36	2.74	0.67	0.47	1.97
IN.	0.32	0.90	1.68	2.45	1.67	4.14	2.66	5.03	3.06	0.77	0.54	2.20

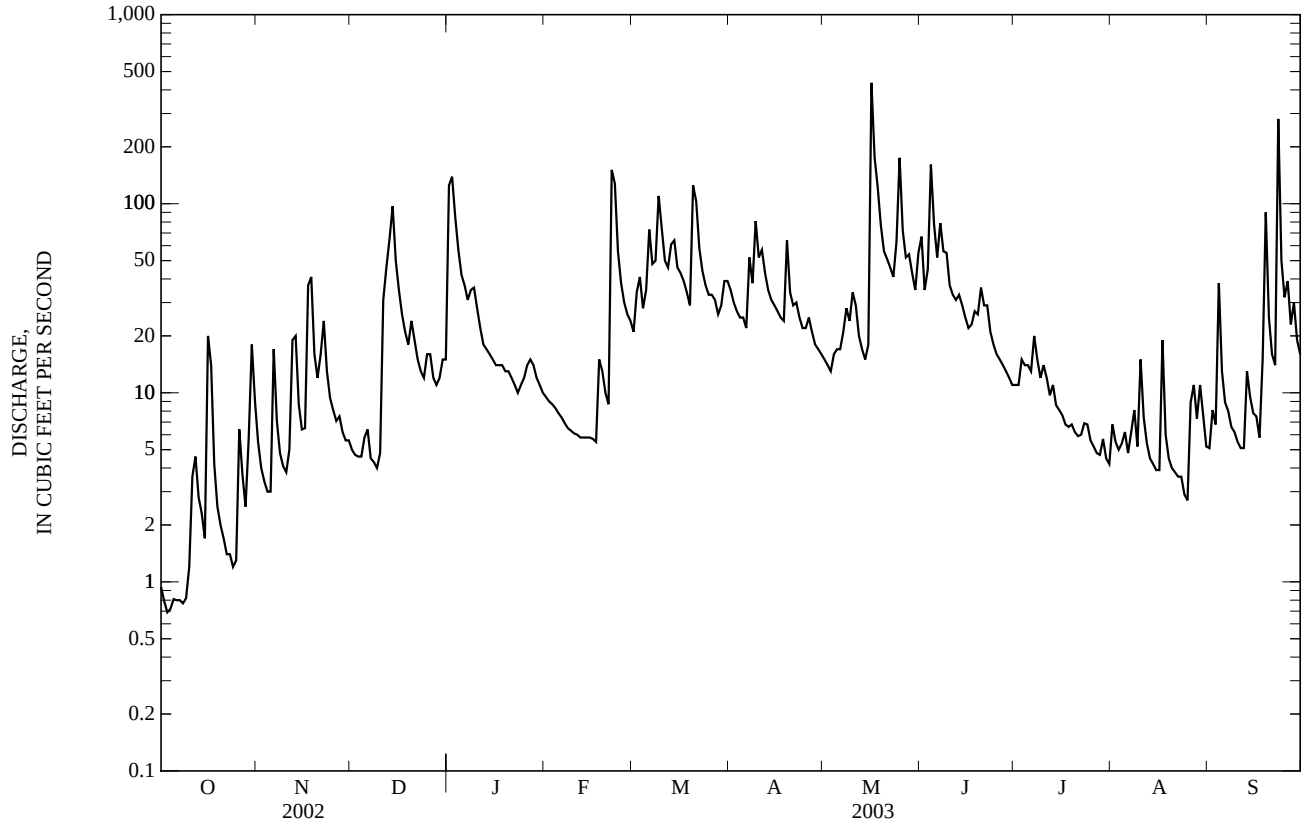
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2003, BY WATER YEAR (WY)

MEAN	2.35	6.17	10.7	15.6	11.9	27.4	19.0	32.9	20.0	5.06	3.30	13.9
MAX	3.82	11.0	19.9	29.1	22.0	49.1	32.7	59.7	37.6	9.12	6.41	27.0
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	0.87	1.34	1.45	2.08	1.83	5.68	5.33	5.99	2.39	1.00	0.20	0.83
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

01636690 PINEY RUN NEAR LOVETTSVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 2002 - 2003	
ANNUAL TOTAL	1,837.68		9,360.84			
ANNUAL MEAN	5.03		25.6		14.0	
HIGHEST ANNUAL MEAN					25.6	2003
LOWEST ANNUAL MEAN					2.42	2002
HIGHEST DAILY MEAN	97	Dec 14	436	May 16	436	May 16, 2003
LOWEST DAILY MEAN	0.03	aAug 22	0.69	Oct 3	0.03	aAug 22, 2002
ANNUAL SEVEN-DAY MINIMUM	0.04	Aug 17	0.77	Oct 2	0.04	Aug 17, 2002
MAXIMUM PEAK FLOW			631	May 16	631	May 16, 2003
MAXIMUM PEAK STAGE			6.98	May 16	6.98	May 16, 2003
INSTANTANEOUS LOW FLOW			0.68	bOct 2	0.02	Aug 22, 2002
ANNUAL RUNOFF (CFSM)	0.37		1.87		1.02	
ANNUAL RUNOFF (INCHES)	4.99		25.42		13.92	
10 PERCENT EXCEEDS	13		55		36	
50 PERCENT EXCEEDS	2.3		15		4.6	
90 PERCENT EXCEEDS	0.25		4.0		0.63	

a Also Aug. 23, 2002.
b Also Oct. 3-5, 2002.
e Estimated.



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

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

DRAINAGE AREA.--31.6 mi^2..

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

GAGE.--Water stage recorder. Elevation of gage is 335 ft NVGD of 1929, from topographic map.

REMARKS.--Records good except those for periods with ice effect, Dec. 4-10 and Jan. 16 tp Feb. 21, wich are poor.

REVISIONS.--The maximum discharges for the water years 2001 and 2002 have been revised to 1,360 ft^3/s, Sept. 25, 2001, gage height, 8.46 ft, and 435 ft^3/s, June 15, 2002, gage height, 5.35 ft, superseding figures published in the report for 2002.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	29	24	460	e20	55	78	28	171	33	58	10
2	1.4	20	21	472	e20	120	62	26	78	31	26	13
3	0.97	16	20	239	e20	181	54	23	82	57	19	15
4	0.73	14	e14	141	e19	96	50	22	269	45	19	273
5	0.53	13	e15	101	e19	127	48	25	201	35	20	62
6	0.38	77	e18	88	e19	331	43	30	107	28	15	35
7	0.26	27	e10	73	e18	179	95	24	214	43	17	26
8	0.15	19	e14	81	e18	198	85	30	150	42	39	22
9	0.19	16	e10	84	e18	322	184	41	136	50	17	19
10	0.27	14	e12	60	e18	163	115	67	89	66	32	17
11	17	18	128	50	e17	113	135	59	102	38	61	15
12	16	54	165	43	e14	100	95	35	141	29	20	15
13	5.0	59	220	41	e12	105	71	29	168	29	14	37
14	2.6	29	267	39	e13	116	61	25	165	23	12	25
15	1.8	22	142	36	e14	83	54	62	111	22	10	24
16	122	27	96	e34	e14	74	50	1,560	83	20	10	18
17	66	181	73	e32	e15	69	45	278	79	18	166	14
18	23	166	62	e29	e35	61	42	241	111	16	31	40
19	14	77	56	e27	e30	52	132	160	104	17	21	355
20	10	61	67	e24	e25	365	67	113	137	14	17	84
21	7.6	61	55	e22	e25	226	52	116	102	14	15	52
22	6.1	75	46	e20	340	130	53	106	88	23	14	43
23	5.0	50	41	e20	331	95	45	87	68	66	13	1,840
24	4.2	42	38	e19	194	77	38	146	56	46	10	129
25	3.9	38	52	e18	128	66	37	254	50	19	9.1	84
26	30	34	51	e18	89	68	43	183	46	14	49	103
27	14	33	44	e17	69	68	38	117	42	13	34	63
28	8.2	29	39	e17	61	53	32	113	38	29	16	58
29	30	27	41	e17	---	52	29	92	35	48	13	44
30	93	26	45	e18	---	93	27	75	32	18	14	36
31	53	---	44	e19	---	93	---	133	---	15	10	---
TOTAL	539.18	1,354	1,930	2,359	1,615	3,931	1,960	4,300	3,255	961	821.1	3,571
MEAN	17.4	45.1	62.3	76.1	57.7	127	65.3	139	108	31.0	26.5	119
MAX	122	181	267	472	340	365	184	1,560	269	66	166	1,840
MIN	0.15	13	10	17	12	52	27	22	32	13	9.1	10
CFSM	0.55	1.43	1.97	2.41	1.83	4.01	2.07	4.39	3.43	0.98	0.84	3.77
IN.	0.63	1.59	2.27	2.78	1.90	4.63	2.31	5.06	3.83	1.13	0.97	4.20

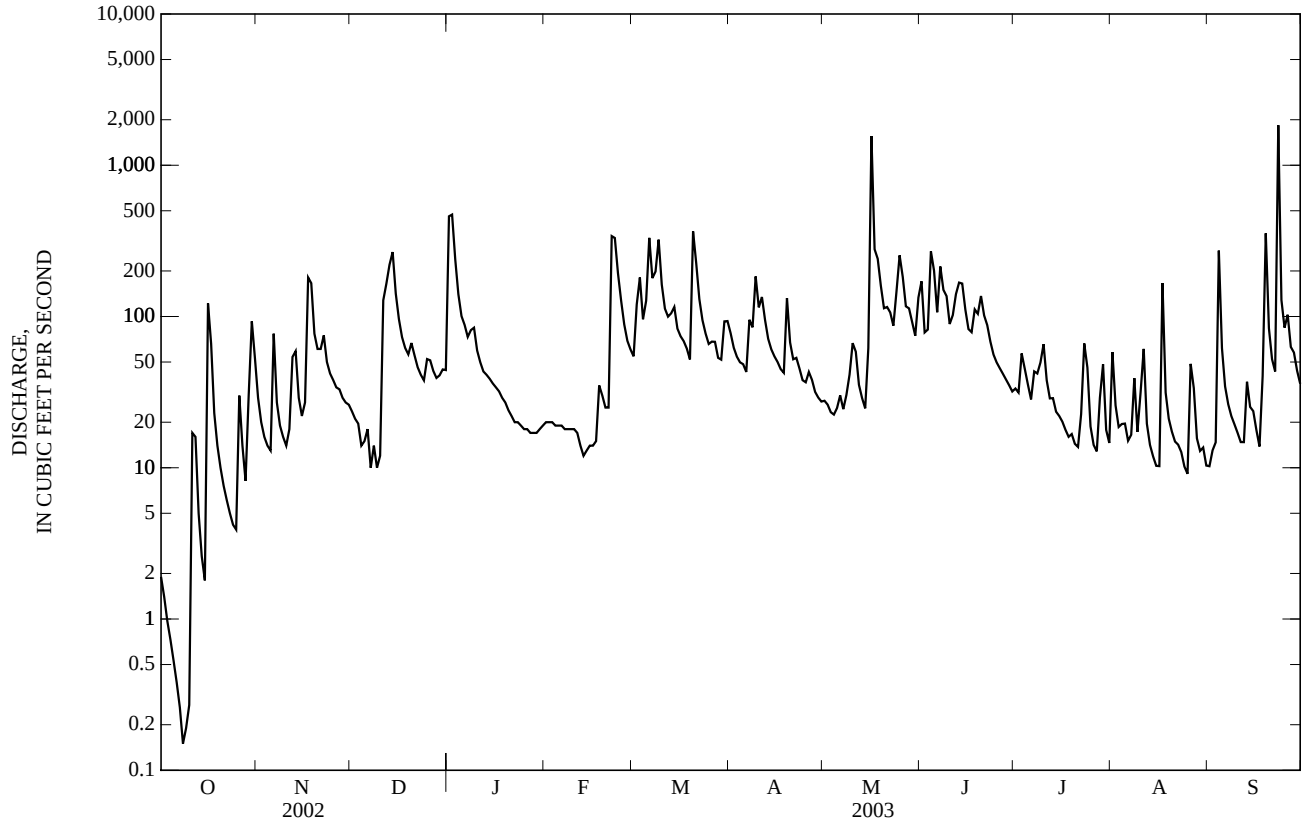
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2003, BY WATER YEAR (WY)

MEAN	11.3	25.1	34.1	41.2	31.9	74.5	41.2	80.5	63.3	22.8	14.1	48.0
MAX	17.4	45.1	62.3	76.1	57.7	127	65.3	139	108	31.0	26.5	119
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	5.22	5.13	5.88	6.35	6.10	22.3	17.1	22.3	18.0	6.88	2.05	7.83
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

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

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 2001 - 2003	
ANNUAL TOTAL	7,137.35		26,596.28			
ANNUAL MEAN	19.6		72.9		41.7	
HIGHEST ANNUAL MEAN					72.9	2003
LOWEST ANNUAL MEAN					10.4	2002
HIGHEST DAILY MEAN	267	Dec 14	1,840	Sep 23	1,840	Sep 23, 2003
LOWEST DAILY MEAN	0.07	Sep 14	0.15	Oct 8	0.07	Sep 14, 2002
ANNUAL SEVEN-DAY MINIMUM	0.18	Sep 14	0.36	Oct 4	0.18	Sep 14, 2002
MAXIMUM PEAK FLOW			5,700	Sep 23	5,700	Sep 23, 2003
MAXIMUM PEAK STAGE			12.10	Sep 23	12.10	Sep 23, 2003
INSTANTANEOUS LOW FLOW			0.04	Oct 10	0.01	Sep 20, 2002
ANNUAL RUNOFF (CFSM)	0.62		2.31		1.32	
ANNUAL RUNOFF (INCHES)	8.40		31.31		17.91	
10 PERCENT EXCEEDS	52		154		101	
50 PERCENT EXCEEDS	8.4		40		15	
90 PERCENT EXCEEDS	0.80		13		2.6	

e Estimated.



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

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

DRAINAGE AREA.--23.1 mi^2.

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

GAGE.--Water stage recorder. Elevation of gage is 330 ft NVGD of 1929, from topographic map.

REMARKS.--Records good except those for period of no gage-height record, Oct. 11-16, which is fair, and periods with ice effect, Dec. 4-10 and Jan. 16 to Feb. 21, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.79	11	11	202	e14	39	60	26	137	22	20	5.0
2	0.52	7.8	9.9	315	e13	68	51	25	68	22	14	8.2
3	0.37	6.6	9.4	153	e13	106	46	23	73	34	11	9.6
4	0.35	5.9	e7.0	95	e13	57	43	24	258	31	12	71
5	0.34	5.6	e6.0	71	e12	73	43	25	150	24	12	23
6	0.33	27	e10	64	e12	245	39	28	94	19	9.0	13
7	0.28	16	e6.0	54	e12	123	64	24	153	24	8.4	9.4
8	0.25	9.7	e5.5	60	e12	134	60	28	107	30	15	8.0
9	0.24	8.3	e5.0	60	e12	252	118	30	115	24	10	7.4
10	0.35	7.5	e8.0	47	e11	126	81	49	76	36	37	6.8
11	e4.2	9.0	46	40	e11	87	88	40	67	24	35	6.1
12	e4.0	17	66	36	e11	77	70	29	64	18	13	6.0
13	e2.5	33	100	34	e11	84	57	26	67	18	9.4	14
14	e1.5	15	179	32	e10	96	51	23	64	15	8.0	13
15	e0.90	11	82	30	e10	71	48	29	57	13	6.8	10
16	e40	12	47	e27	e10	64	44	1,060	49	13	6.4	9.6
17	28	60	37	e25	e10	60	41	294	49	11	61	7.1
18	7.3	75	33	e22	e25	56	38	212	62	10	14	16
19	4.3	43	30	e20	e20	48	91	138	50	11	9.3	164
20	3.2	25	30	e18	e17	248	53	102	77	9.7	7.9	43
21	2.6	23	26	e15	e15	183	44	94	60	8.8	6.9	25
22	2.1	33	21	e12	261	104	46	83	56	11	6.8	22
23	1.8	24	9.7	e10	263	79	39	73	44	16	5.9	933
24	1.6	19	9.0	e13	120	67	35	109	37	17	4.8	83
25	1.6	16	36	e14	76	59	33	268	33	10	4.2	55
26	7.5	15	36	e17	57	58	37	141	32	7.8	18	62
27	7.3	15	19	e20	48	57	33	97	28	7.6	19	42
28	3.9	13	17	e18	43	48	30	99	25	9.1	8.6	43
29	6.0	12	18	e17	---	49	27	80	24	14	6.6	33
30	30	12	19	e16	---	72	26	67	23	8.7	5.8	28
31	19	---	19	e15	---	68	---	125	---	7.6	5.1	---
TOTAL	183.12	587.4	957.5	1,572	1,142	2,958	1,536	3,471	2,199	526.3	410.9	1,776.2
MEAN	5.91	19.6	30.9	50.7	40.8	95.4	51.2	112	73.3	17.0	13.3	59.2
MAX	40	75	179	315	263	252	118	1,060	258	36	61	933
MIN	0.24	5.6	5.0	10	10	39	26	23	23	7.6	4.2	5.0
CFSM	0.26	0.85	1.34	2.20	1.77	4.13	2.22	4.85	3.17	0.73	0.57	2.56
IN.	0.29	0.95	1.54	2.53	1.84	4.76	2.47	5.59	3.54	0.85	0.66	2.86

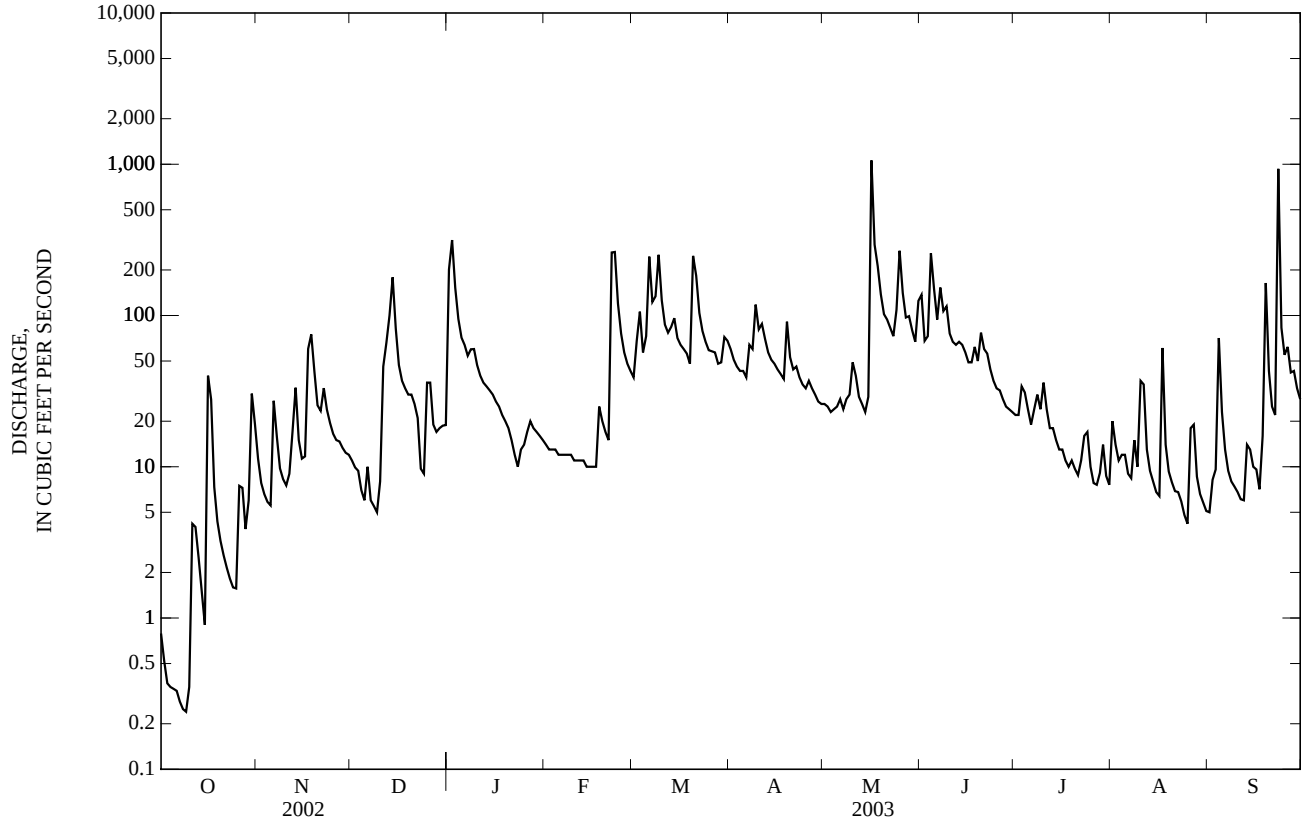
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2003, BY WATER YEAR (WY)

MEAN	3.59	10.8	16.6	26.6	21.7	52.7	29.3	60.3	39.0	9.30	5.82	21.1
MAX	5.91	19.6	30.9	50.7	40.8	95.4	51.2	112	73.3	17.0	13.3	59.2
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	1.27	1.96	2.22	2.56	2.59	10.1	7.41	8.65	4.79	1.63	0.038	1.01
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

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

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 2001 - 2003	
ANNUAL TOTAL	2,908.04		17,319.42			
ANNUAL MEAN	7.97		47.5		25.6	
HIGHEST ANNUAL MEAN					47.5	2003
LOWEST ANNUAL MEAN					3.69	2002
HIGHEST DAILY MEAN	179	Dec 14	1,060	May 16	1,060	May 16, 2003
LOWEST DAILY MEAN	0.00	aAug 9	0.24	Oct 9	0.00	aAug 9, 2002
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 9	0.31	Oct 4	0.00	Aug 9, 2002
MAXIMUM PEAK FLOW			2,150	Sep 23	2,150	Sep 23, 2003
MAXIMUM PEAK STAGE			10.91	Sep 23	10.91	Sep 23, 2003
INSTANTANEOUS LOW FLOW			0.20	bOct 7	0.00	(c)
ANNUAL RUNOFF (CFSM)	0.34		2.05		1.11	
ANNUAL RUNOFF (INCHES)	4.68		27.89		15.04	
10 PERCENT EXCEEDS	19		98		64	
50 PERCENT EXCEEDS	3.8		25		7.3	
90 PERCENT EXCEEDS	0.00		6.0		0.75	

a Also Aug. 10-31 and Sept. 7-20, 2002.
b Also Oct, 8, 9, 2002.
c No flow part or all of many days in August and September 2002.
e Estimated.



01638480 CATOCTIN CREEK AT TAYLORSTOWN, VA

LOCATION.--Lat 39°15'16", long 77°34'35", NAD83, Loudoun County, Hydrologic Unit 02070008, on left bank at downstream side of bridge on State Highway 663 at Taylorstown and 3.2 mi downstream from Milltown Creek.

DRAINAGE AREA.--89.6 mi^2.

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

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

REMARKS.--Records good except those for periods with ice effect, Dec. 6-8, Jan. 17-29, and Feb. 13-15, and periods of doubtful or no gage-height record, Jan. 30 to Feb. 12, Feb. 17-20, May 19, Aug. 18, 19, and Sept. 25-30, which are fair. Maximum discharge, 23,800 ft^3/s, from rating curve extended above 7,400 ft^3/s on basis of contracted-opening measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 1	2245	3,730	10.06	May 25	0515	1,640	7.01
Feb 22	2000	1,900	7.45	May 31	2100	1,730	7.16
Mar 9	1800	1,470	6.72	Jun 4	1000	1,320	6.45
Mar 20	2030	2,620	8.58	Sep 23	1030	*9,800	*15.59
May 16	1030	7,660	13.88				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.4	88	50	757	e46	147	206	97	670	81	92	39
2	7.4	66	46	1,250	e45	231	171	93	328	74	64	46
3	5.8	55	44	560	e44	451	153	85	303	109	49	50
4	5.2	48	39	411	e52	250	143	78	977	124	49	376
5	4.7	44	35	281	e63	274	138	81	824	88	55	183
6	4.3	170	e47	241	e52	822	134	99	587	88	43	103
7	3.8	103	e43	201	e46	485	198	97	775	97	39	78
8	3.6	68	e41	210	e41	474	230	111	561	131	64	66
9	3.2	59	40	243	e38	879	433	122	527	89	45	59
10	4.1	52	39	172	e45	509	388	182	372	145	72	53
11	13	54	177	145	e42	331	391	200	301	106	121	49
12	50	87	393	127	e38	294	329	133	367	82	61	45
13	27	195	468	118	e35	287	255	112	308	80	45	74
14	17	100	998	112	e32	365	219	100	417	67	39	71
15	11	77	548	105	e48	263	196	113	294	57	35	60
16	88	73	277	91	40	227	178	5,030	228	51	32	55
17	169	348	205	e88	e38	205	160	1,200	205	46	327	47
18	69	462	169	e80	e65	190	152	723	269	42	e110	72
19	45	256	152	e70	e55	165	331	e440	243	43	e62	661
20	36	176	162	e65	e50	841	251	358	292	41	53	302
21	29	149	149	e60	85	822	194	316	281	38	48	196
22	24	182	125	e56	779	401	190	310	232	41	44	153
23	21	122	98	e52	975	282	167	252	192	108	45	5,400
24	19	95	88	e50	493	230	145	385	156	86	36	570
25	18	80	119	e47	330	195	136	872	133	53	33	e285
26	59	71	149	e54	237	179	144	514	115	42	85	e220
27	57	67	111	e60	186	189	136	394	104	39	132	e170
28	36	61	99	e57	163	153	119	396	92	38	64	e190
29	38	56	98	e54	---	147	109	338	84	83	50	e140
30	196	54	106	e51	---	209	102	272	78	46	46	e120
31	145	---	104	e48	---	249	---	508	---	39	41	---
TOTAL	1,218.5	3,518	5,219	5,916	4,163	10,746	6,098	14,011	10,315	2,254	2,081	9,933
MEAN	39.3	117	168	191	149	347	203	452	344	72.7	67.1	331
MAX	196	462	998	1,250	975	879	433	5,030	977	145	327	5,400
MIN	3.2	44	35	47	32	147	102	78	78	38	32	39
CFSM	0.44	1.31	1.88	2.13	1.66	3.87	2.27	5.04	3.84	0.81	0.75	3.70
IN.	0.51	1.46	2.17	2.46	1.73	4.46	2.53	5.82	4.28	0.94	0.86	4.12

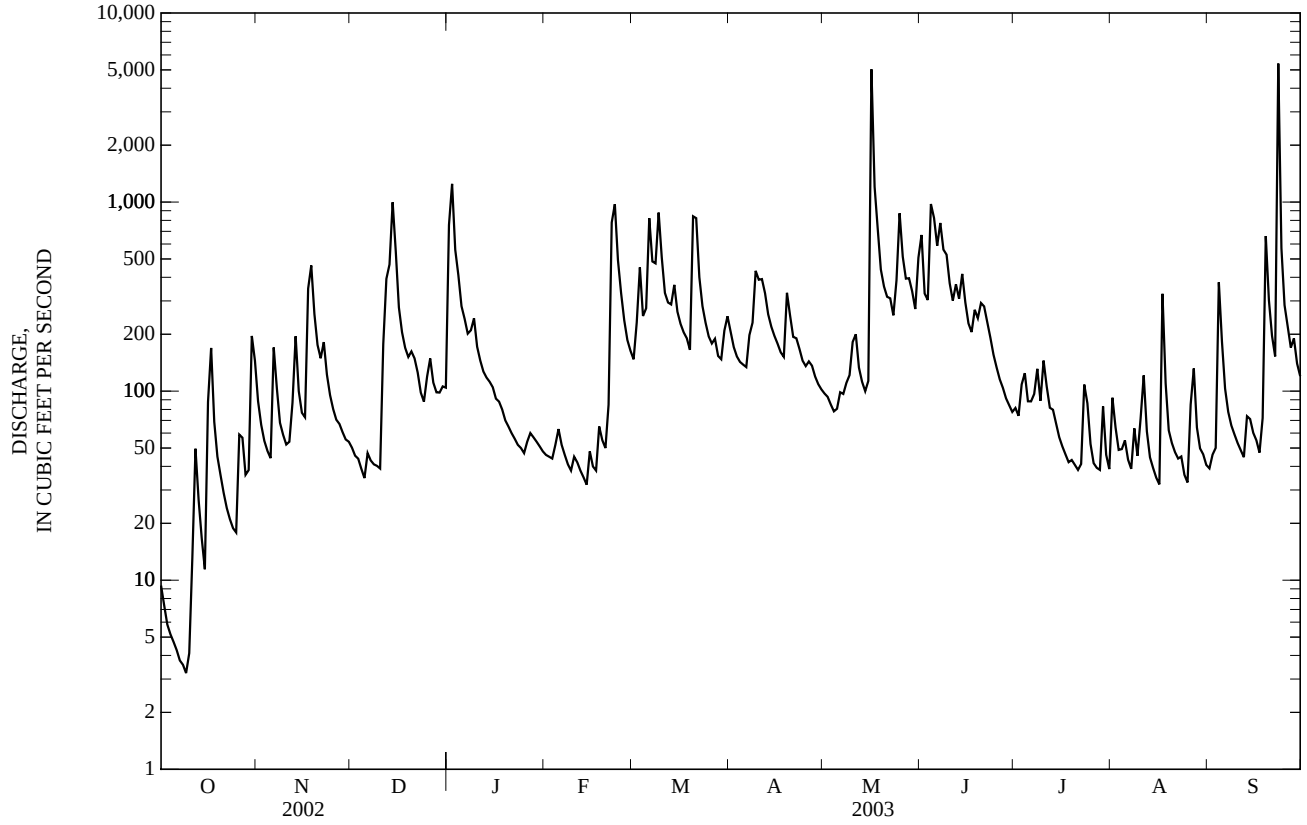
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1971 - 2003, BY WATER YEAR (WY)

MEAN	61.7	59.3	111	131	141	190	158	126	96.3	46.4	31.4	54.1
MAX	414	148	358	488	382	580	476	452	706	284	186	331
(WY)	(1977)	(1997)	(1997)	(1998)	(1998)	(1993)	(1983)	(2003)	(1972)	(1987)	(1984)	(2003)
MIN	2.07	5.16	3.88	10.2	12.8	43.7	37.7	26.6	6.82	1.35	1.25	1.05
(WY)	(1987)	(1992)	(1999)	(1981)	(2002)	(1981)	(2002)	(1999)	(1999)	(1999)	(1999)	(1986)

01638480 CATOCTIN CREEK AT TAYLORSTOWN, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1971 - 2003	
ANNUAL TOTAL	16,523.74		75,472.5			
ANNUAL MEAN	45.3		207		99.9	
HIGHEST ANNUAL MEAN					207	2003
LOWEST ANNUAL MEAN					20.9	2002
HIGHEST DAILY MEAN	998	Dec 14	5,400	Sep 23	e9,530	Jun 22, 1972
LOWEST DAILY MEAN	0.24	aAug 23	3.2	Oct 9	0.09	bAug 14, 1999
ANNUAL SEVEN-DAY MINIMUM	0.29	Aug 17	4.1	Oct 4	0.10	Aug 14, 1999
MAXIMUM PEAK FLOW			9,800	Sep 23	23,800	Jun 22, 1972
MAXIMUM PEAK STAGE			15.59	Sep 23	c23.83	Jun 22, 1972
INSTANTANEOUS LOW FLOW			3.0	Oct 9	0.08	Aug 14, 1999
ANNUAL RUNOFF (CFSM)	0.51		2.31		1.12	
ANNUAL RUNOFF (INCHES)	6.86		31.33		15.15	
10 PERCENT EXCEEDS	108		423		209	
50 PERCENT EXCEEDS	19		105		47	
90 PERCENT EXCEEDS	0.86		39		7.1	

a Also Sept. 19, 20, 2002.
b Also Aug. 19, 20, 1999.
c From floodmarks, site and datum then in use.
e Estimated.



01638500 POTOMAC RIVER AT POINT OF ROCKS, MD

LOCATION.--Lat 39°16'24.9", long 77°32'35.2", Frederick County, Hydrologic Unit 02070008, on left bank at downstream side of bridge on U.S. Highway 15 at Point of Rocks, 0.3 mi downstream from Catoctin Creek (Virginia), 6 mi upstream from Monocacy River, and at mile 159.5.

DRAINAGE AREA.--9,651 mi^2.

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

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

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

REMARKS.--Records good except those for estimated daily discharges (missing record, partial plugged intake), which are fair. Low flow affected slightly from 1913 to July 1981 by Stony River Reservoir; since December 1950 by Savage River Reservoir (see station 01597500); and since July 1981 by Jennings Randolph Lake. Low flow affected extensively at times by run-of-the-river hydroelectric plants. National Weather Service gage-height telemeter at station. U.S. Geological Survey satellite collection platform at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 2, 1889, reached a stage of 40.2 ft, from floodmarks, discharge, about 460,000 ft^3/s from rating curve extended as explained in footnotes.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 35,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 15	1815	44,300	10.01	May 17	1230	56,300	11.79
Jan 3	0615	88,800	16.11	May 20	0900	37,800	8.98
Feb 24	1430	90,100	16.26	Jun 5	0615	62,900	12.72
Mar 7	1800	78,000	14.74	Jun 8	1745	54,200	11.49
Mar 10	1830	66,300	13.18	Jun 14	1345	40,400	9.39
Mar 15	1345	42,400	9.71	Jun 22	1200	58,300	12.08
Mar 22	0300	94,800	16.85	Sep 21	0030	*150,000	*23.12
Apr 12	1930	68,600	13.49	Sep 24	1215	79,100	14.88
May 12	0745	68,600	13.50				

Minimum discharge, 1,480 ft^3/s, Oct. 10.

DISCHARGE, CUBIC FEET PER SECOND , WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4,980	20,700	4,840	11,200	4,810	21,200	17,100	10,000	18,000	9,670	5,540	3,930
2	4,580	15,300	4,430	36,400	4,740	19,000	17,400	10,500	21,100	9,020	4,930	4,130
3	4,070	10,400	4,100	80,500	4,630	21,100	17,500	12,100	19,300	8,590	4,810	6,830
4	3,240	7,670	3,760	53,600	5,000	27,300	17,800	11,200	37,500	10,100	4,630	12,300
5	2,650	5,970	3,440	40,800	4,960	26,700	17,100	10,300	58,000	12,700	4,840	19,300
6	2,200	5,420	3,310	31,800	5,030	30,300	16,500	11,300	42,100	10,900	5,260	16,800
7	2,040	6,110	3,100	26,100	4,990	67,800	16,900	16,800	34,600	10,600	6,090	13,500
8	1,850	9,160	2,670	22,100	4,880	63,700	20,100	17,500	48,500	9,670	6,060	9,780
9	1,620	9,320	2,680	19,500	4,830	51,300	36,400	18,600	46,800	9,320	6,080	8,020
10	1,540	7,670	2,940	18,500	4,590	60,800	46,200	25,000	41,400	10,500	5,660	7,180
11	1,690	7,010	3,330	17,000	4,560	54,600	54,500	46,500	34,800	15,300	5,820	6,100
12	1,860	6,570	5,600	14,900	4,320	38,500	62,700	66,300	27,000	14,500	8,640	5,010
13	2,790	7,980	12,300	14,100	3,980	31,400	57,000	46,900	24,100	13,300	13,000	4,990
14	3,900	e9,610	25,400	13,900	3,660	33,800	41,200	30,200	37,100	11,100	11,800	5,080
15	3,430	e17,300	41,800	12,400	3,720	41,700	32,100	23,800	36,300	9,680	10,100	5,190
16	3,660	e18,000	40,000	11,100	3,880	37,400	27,000	35,700	30,400	8,350	8,530	5,710
17	5,220	e18,700	30,400	10,000	2,500	32,800	23,000	52,400	26,500	8,410	8,580	6,310
18	10,900	e21,400	24,000	9,830	2,040	31,000	19,400	40,700	24,300	7,320	8,040	6,170
19	12,000	e23,900	19,700	8,600	2,570	29,000	17,700	34,300	29,500	6,570	7,050	e13,600
20	10,000	21,600	16,700	8,040	4,230	27,900	16,600	37,200	32,100	6,020	6,460	e79,300
21	7,540	16,500	16,500	7,750	6,120	59,900	16,400	32,900	39,400	5,580	5,760	112,000
22	6,120	14,200	23,300	8,060	9,310	83,200	15,500	26,900	56,000	5,250	4,930	e47,500
23	4,820	13,900	27,500	7,490	24,400	53,200	16,100	23,600	42,700	5,460	4,570	55,000
24	4,160	12,500	21,900	5,850	79,300	38,500	16,100	21,600	29,400	5,460	4,180	72,600
25	3,600	11,000	18,600	5,600	68,900	30,200	15,000	23,100	22,700	5,120	3,780	44,900
26	3,520	9,310	16,300	5,890	43,800	24,900	15,000	20,700	18,400	5,120	3,960	29,600
27	3,500	7,950	14,500	5,930	32,300	21,900	12,800	19,000	15,400	4,800	4,180	22,600
28	4,660	6,760	12,800	5,470	25,600	19,600	12,200	19,300	13,400	4,290	3,990	19,800
29	4,450	6,190	11,100	5,030	---	17,200	11,300	19,100	11,700	4,460	4,140	27,900
30	4,390	5,440	10,100	5,000	---	15,800	10,800	18,400	10,500	4,580	4,020	22,600
31	10,200	---	9,630	4,870	---	16,200	---	17,400	---	4,430	3,910	---
TOTAL	141,180	353,540	436,730	527,310	373,650	1,127,900	715,400	799,300	929,000	256,170	189,340	693,730
MEAN	4,554	11,780	14,090	17,010	13,340	36,380	23,850	25,780	30,970	8,264	6,108	23,120
MAX	12,000	23,900	41,800	80,500	79,300	83,200	62,700	66,300	58,000	15,300	13,000	112,000
MIN	1,540	5,420	2,670	4,870	2,040	15,800	10,800	10,000	10,500	4,290	3,780	3,930
CFSM	0.47	1.22	1.46	1.76	1.38	3.77	2.47	2.67	3.21	0.86	0.63	2.40
IN.	0.54	1.36	1.68	2.03	1.44	4.35	2.76	3.08	3.58	0.99	0.73	2.67

e Estimated

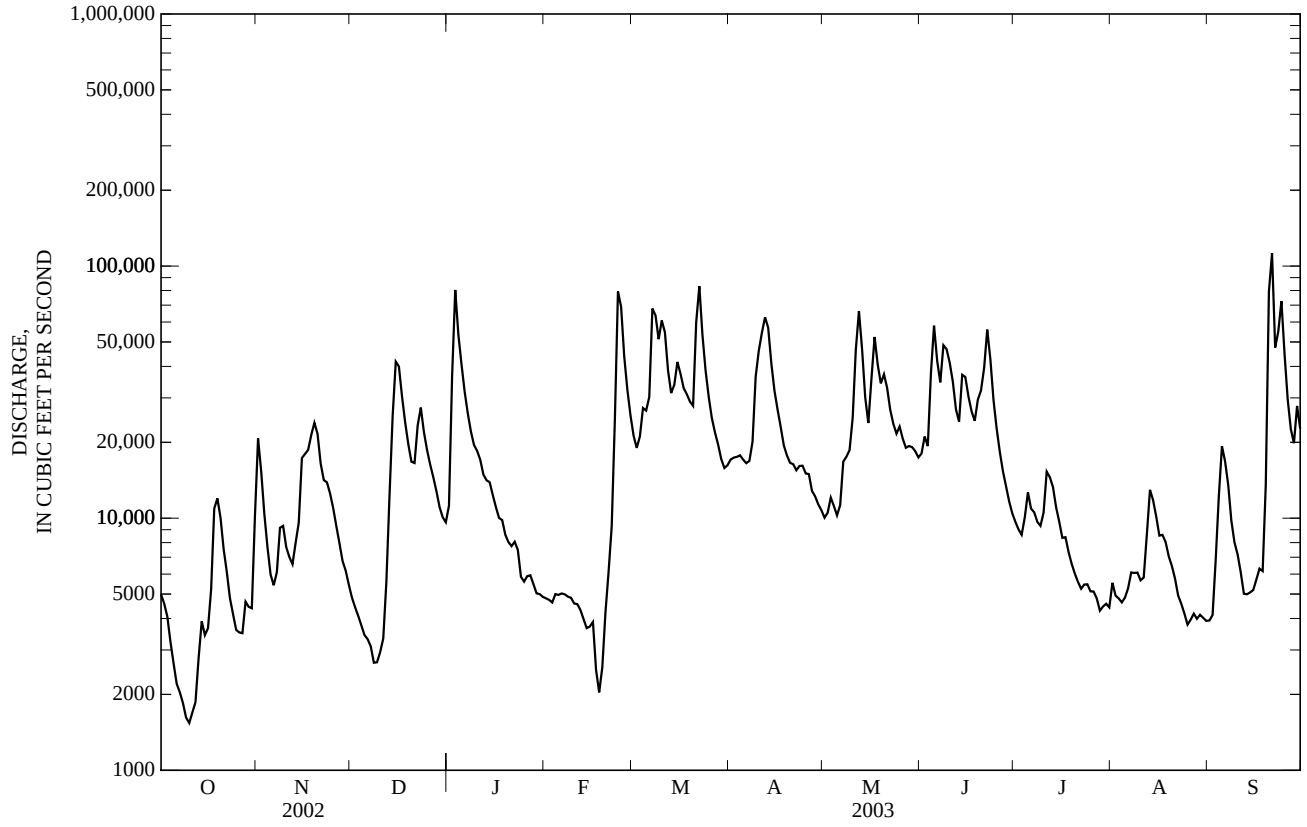
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1895 - 2003, BY WATER YEAR (WY)

MEAN	4,988	5,649	8,529	11,420	14,310	19,770	16,480	12,360	8,136	4,505	4,279	3,942
MAX	37,030	39,000	32,610	42,160	47,870	68,360	43,840	41,970	40,400	16,000	23,580	38,300
(WY)	(1943)	(1986)	(1973)	(1996)	(1998)	(1936)	(1993)	(1924)	(1972)	(1949)	(1955)	(1996)
MIN	706	840	1,253	1,703	1,982	5,400	4,368	3,276	1,932	1,056	771	834
(WY)	(1931)	(1931)	(1966)	(1981)	(2002)	(1931)	(1915)	(1930)	(1969)	(1966)	(1930)	(1930)

01638500 POTOMAC RIVER AT POINT OF ROCKS, MD—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1895 - 2003	
ANNUAL TOTAL	2,258,972		6,543,250			
ANNUAL MEAN	6,189		17,930		9,516	
HIGHEST ANNUAL MEAN					18,750	1996
LOWEST ANNUAL MEAN					4,015	2002
HIGHEST DAILY MEAN	44,300	Apr 24	112,000	Sep 21	434,000	Mar 19, 1936
LOWEST DAILY MEAN	771	Aug 16	1,540	Oct 10	540	Sep 10, 1914
ANNUAL SEVEN-DAY MINIMUM	942	Sep 8	1,830	Oct 6	593	Sep 6, 1966
MAXIMUM PEAK FLOW			150,000	Sep 21	(a)480,000	Mar 19, 1936
MAXIMUM PEAK STAGE			23.12	Sep 21	41.03	Mar 19, 1936
INSTANTANEOUS LOW FLOW			1,480	Oct 10	530	(b)
ANNUAL RUNOFF (CFSM)	0.64		1.86		0.99	
ANNUAL RUNOFF (INCHES)	8.71		25.22		13.40	
10 PERCENT EXCEEDS	16,300		41,300		20,900	
50 PERCENT EXCEEDS	2,860		12,000		5,380	
90 PERCENT EXCEEDS	1,230		4,010		1,680	

a From rating curve extended above 300,000 ft^3/s, on the basis of adjustment of figure of peak flow at station near Washington for inflow and storage, and slope-area measurement of peak flow.
b Sept. 11, 12, 1966.



DAILY MEAN DISCHARGE - 2003 WATER YEAR

01643590 LIMESTONE BRANCH NEAR LEESBURG, VA

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

DRAINAGE AREA.--7.83 mi^2.

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

GAGE.--Water stage recorder. Datum of gage is 235 ft NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good except for period May 16 to July 17, which is poor.

REVISIONS.--The maximum discharges for the water years 2001 and 2002 have been revised to 3,040 ft^3/s, Sept. 24, 2001, gage height, 7.62 ft, and 96 ft^3/s, May 26, 2002, gage height, 1.74 ft, superseding figures published in the report for 2002.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	8.2	4.1	376	7.2	11	15	8.3	25	6.6	7.8	5.3
2	1.4	6.3	3.6	64	6.6	30	13	8.0	18	6.3	5.1	6.9
3	1.2	5.6	3.6	55	5.7	26	11	7.3	21	14	4.6	6.2
4	1.6	5.4	3.5	27	7.2	17	11	6.9	45	8.0	4.7	129
5	1.2	5.2	4.3	19	5.6	25	11	8.0	39	5.9	5.3	16
6	0.90	14	4.2	16	5.0	100	9.1	8.6	27	5.3	4.2	9.8
7	0.91	6.5	3.7	13	5.6	39	16	8.1	79	8.8	4.0	8.5
8	0.98	5.9	3.6	13	4.8	35	16	10	41	7.3	3.7	7.5
9	1.1	5.7	3.4	13	4.5	44	33	12	32	5.8	3.5	6.6
10	1.6	5.7	3.3	10	4.8	24	26	14	22	5.3	3.4	5.9
11	9.0	7.3	18	8.8	4.7	18	27	12	42	4.4	5.5	5.2
12	6.3	12	20	8.0	4.4	15	20	9.4	48	5.9	3.8	5.0
13	4.5	9.7	41	7.8	3.9	16	16	9.6	195	3.9	3.4	9.2
14	3.4	7.3	39	7.4	3.9	15	14	8.1	56	4.0	2.9	6.1
15	3.3	6.3	17	6.5	4.8	11	13	43	30	4.0	3.0	5.8
16	26	10	11	6.1	4.6	10	12	424	17	3.2	3.0	5.3
17	13	32	8.6	6.0	5.4	9.8	11	54	16	3.5	102	5.3
18	8.1	22	7.5	5.3	6.0	8.8	10	49	22	3.7	12	12
19	6.3	12	7.1	5.1	5.3	7.6	15	33	31	4.0	8.5	30
20	5.7	9.7	7.8	5.2	5.3	123	12	23	24	3.8	7.2	11
21	4.9	9.5	6.5	5.1	6.3	49	11	25	21	3.0	6.4	8.3
22	4.4	9.3	5.8	4.7	148	26	11	21	17	4.1	5.6	8.6
23	4.2	6.9	5.2	4.4	76	19	9.5	21	13	21	6.2	976
24	3.7	6.4	5.1	4.3	35	16	8.2	26	12	13	5.5	32
25	3.9	6.1	7.8	4.3	22	13	8.7	74	9.7	5.2	4.9	23
26	8.6	5.6	6.8	4.4	18	14	11	48	7.3	4.3	28	22
27	5.1	5.3	6.3	4.2	14	13	9.8	27	6.3	3.4	10	16
28	4.4	5.0	6.0	4.1	12	11	8.8	24	6.2	8.9	6.7	15
29	10	4.8	5.9	4.5	---	11	8.4	20	5.6	8.2	5.9	12
30	15	4.7	5.9	4.5	---	18	7.9	18	5.6	4.9	5.6	11
31	11	---	6.0	5.0	---	17	---	24	---	4.5	4.8	---
TOTAL	173.29	260.4	281.6	721.7	436.6	792.2	405.4	1,084.3	933.7	194.2	287.2	1,420.5
MEAN	5.59	8.68	9.08	23.3	15.6	25.6	13.5	35.0	31.1	6.26	9.26	47.4
MAX	26	32	41	376	148	123	33	424	195	21	102	976
MIN	0.90	4.7	3.3	4.1	3.9	7.6	7.9	6.9	5.6	3.0	2.9	5.0
CFSM	0.71	1.10	1.16	2.96	1.98	3.25	1.72	4.45	3.96	0.80	1.18	6.02
IN.	0.82	1.23	1.33	3.42	2.07	3.75	1.92	5.13	4.42	0.92	1.36	6.72

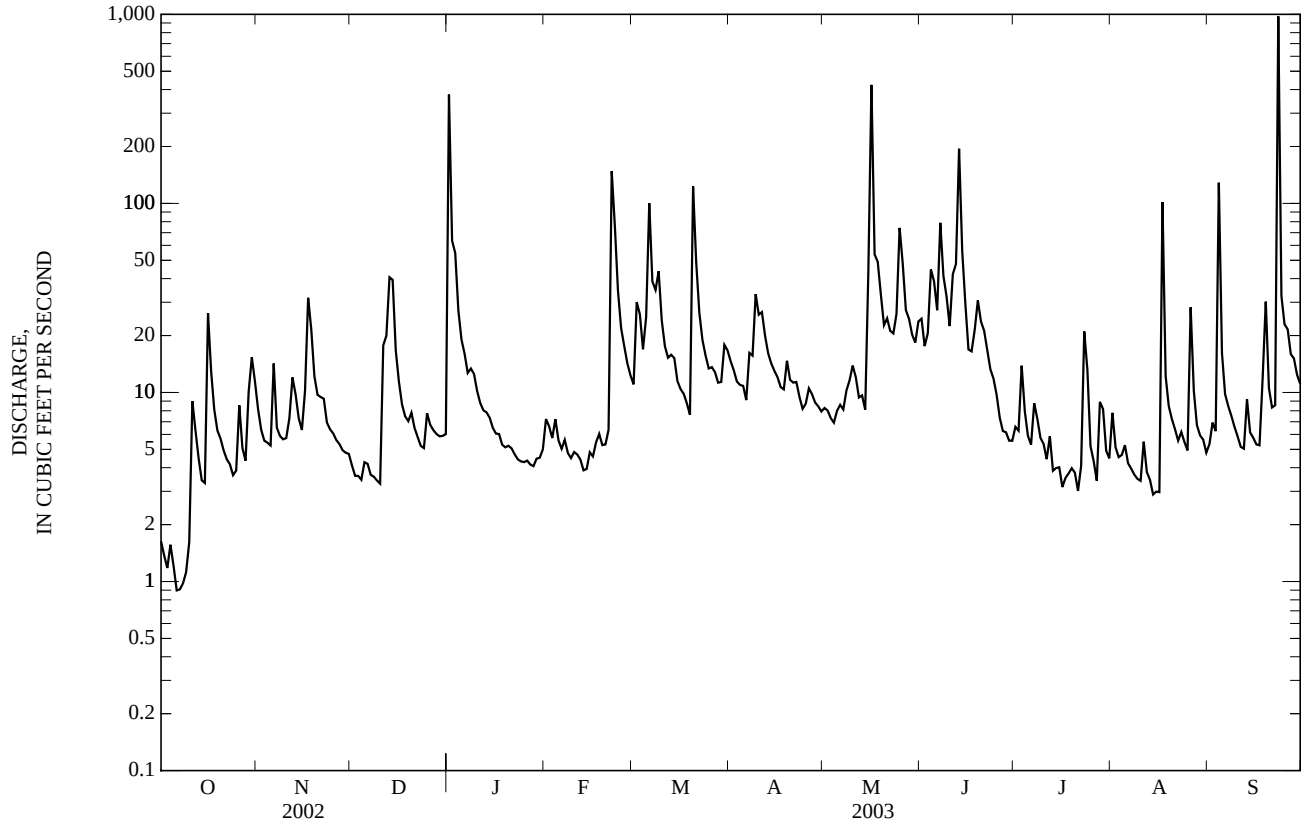
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2003, BY WATER YEAR (WY)

MEAN	3.92	5.52	5.52	12.6	8.64	15.4	8.59	19.5	16.5	3.79	5.06	22.5
MAX	5.59	8.68	9.08	23.3	15.6	25.6	13.5	35.0	31.1	6.26	9.26	47.4
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	2.26	2.35	1.96	1.88	1.68	5.19	3.66	4.01	1.97	1.31	0.85	2.54
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

01643590 LIMESTONE BRANCH NEAR LEESBURG, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 2001 - 2003	
ANNUAL TOTAL	1,418.21		6,991.09			
ANNUAL MEAN	3.89		19.2		10.8	
HIGHEST ANNUAL MEAN					19.2	2003
LOWEST ANNUAL MEAN					2.48	2002
HIGHEST DAILY MEAN	41	Dec 13	976	Sep 23	976	Sep 23, 2003
LOWEST DAILY MEAN	0.68	Aug 21	0.90	Oct 6	0.68	Aug 21, 2002
ANNUAL SEVEN-DAY MINIMUM	0.72	Aug 17	1.1	Oct 3	0.72	Aug 17, 2002
MAXIMUM PEAK FLOW			8,950	Sep 23	8,950	Sep 23, 2003
MAXIMUM PEAK STAGE			a11.19	Sep 23	a11.19	Sep 23, 2003
INSTANTANEOUS LOW FLOW			0.79	Oct 6	0.60	bAug 13, 2002
ANNUAL RUNOFF (CFSM)	0.49		2.44		1.38	
ANNUAL RUNOFF (INCHES)	6.71		33.09		18.70	
10 PERCENT EXCEEDS	8.8		31		20	
50 PERCENT EXCEEDS	2.0		8.1		4.0	
90 PERCENT EXCEEDS	0.86		3.9		1.0	

a From floodmarks.
b Also Aug. 14, 19-22, 2002.



01643700 GOOSE CREEK NEAR MIDDLEBURG, VA

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

DRAINAGE AREA.--123 mi^2.

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

REVISED RECORDS.--WSP 2103: Drainage area.

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

REMARKS.--Records good except those for period of partial gage-height record, Dec. 9, 10, 17, 18, Mar. 30, and period with ice effect, Jan. 17-29, which are fair, and for periods of no gage-height record, Sept. 19, 23-25, 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.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	2045	1,670	7.50	Jun 19	0530	3,460	11.31
Mar 20	2030	2,580	9.54	Jun 20	1645	1,490	7.08
May 16	0545	2,390	9.15	Aug 4	2315	2,100	8.50
Jun 11	2400	1,550	7.21	Sep 4	0045	3,540	11.47
Jun 12	2230	2,390	9.15	Sep 19	---	unknown	unknown
Jun 13	2300	2,300	8.95	Sep 23	---	*23,000	*24.36

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.1	102	67	429	e75	261	385	143	247	164	104	100
2	4.3	79	60	745	e72	391	357	132	216	158	101	116
3	3.0	65	58	637	e70	546	325	123	221	465	88	293
4	2.0	57	51	471	e69	384	293	117	485	238	324	1,460
5	1.5	52	55	349	e80	428	275	122	437	167	611	405
6	1.9	127	68	296	e72	757	242	130	311	144	197	249
7	1.9	88	63	242	e65	664	362	128	416	138	154	195
8	1.9	70	58	233	e60	642	336	158	398	130	145	165
9	1.7	63	e52	231	e58	865	529	165	394	294	123	149
10	2.2	57	e54	184	e57	687	500	275	295	327	167	129
11	16	68	164	159	e56	560	617	295	371	196	311	115
12	68	116	252	139	e55	474	493	223	979	151	141	113
13	30	166	336	132	e55	444	393	189	1,380	127	147	306
14	19	112	641	126	e55	555	334	165	1,160	117	119	211
15	15	93	452	117	e56	444	295	162	702	112	101	182
16	106	96	310	109	e58	385	268	1,910	544	103	91	168
17	137	407	e230	e100	e60	354	241	967	515	92	140	136
18	66	453	e190	e98	e62	316	227	880	596	86	102	229
19	44	236	165	e96	e75	271	316	681	2,090	88	86	e2,200
20	35	178	197	e94	e70	1,050	239	536	1,130	79	79	761
21	29	158	167	e96	e60	1,020	216	491	808	75	72	505
22	24	164	141	e92	750	750	221	434	689	74	70	375
23	21	120	127	e90	1,010	562	193	373	497	155	77	e14,000
24	19	106	117	e88	676	451	173	437	375	178	60	e1,500
25	18	97	158	e86	520	374	168	524	302	90	54	e700
26	54	89	147	e84	390	342	193	504	258	76	52	543
27	50	86	125	e80	322	328	170	404	227	70	88	440
28	36	76	115	e80	288	271	151	384	201	79	231	397
29	48	73	114	e82	---	274	143	334	185	136	301	310
30	211	71	111	e80	---	e380	137	297	168	81	291	262
31	158	---	109	e77	---	401	---	267	---	70	116	---
TOTAL	1,230.5	3,725	4,954	5,922	5,296	15,631	8,792	11,950	16,597	4,460	4,743	26,714
MEAN	39.7	124	160	191	189	504	293	385	553	144	153	890
MAX	211	453	641	745	1,010	1,050	617	1,910	2,090	465	611	14,000
MIN	1.5	52	51	77	55	261	137	117	168	70	52	100
CFSM	0.32	1.01	1.30	1.55	1.54	4.10	2.38	3.13	4.50	1.17	1.24	7.24
IN.	0.37	1.13	1.50	1.79	1.60	4.73	2.66	3.61	5.02	1.35	1.43	8.08

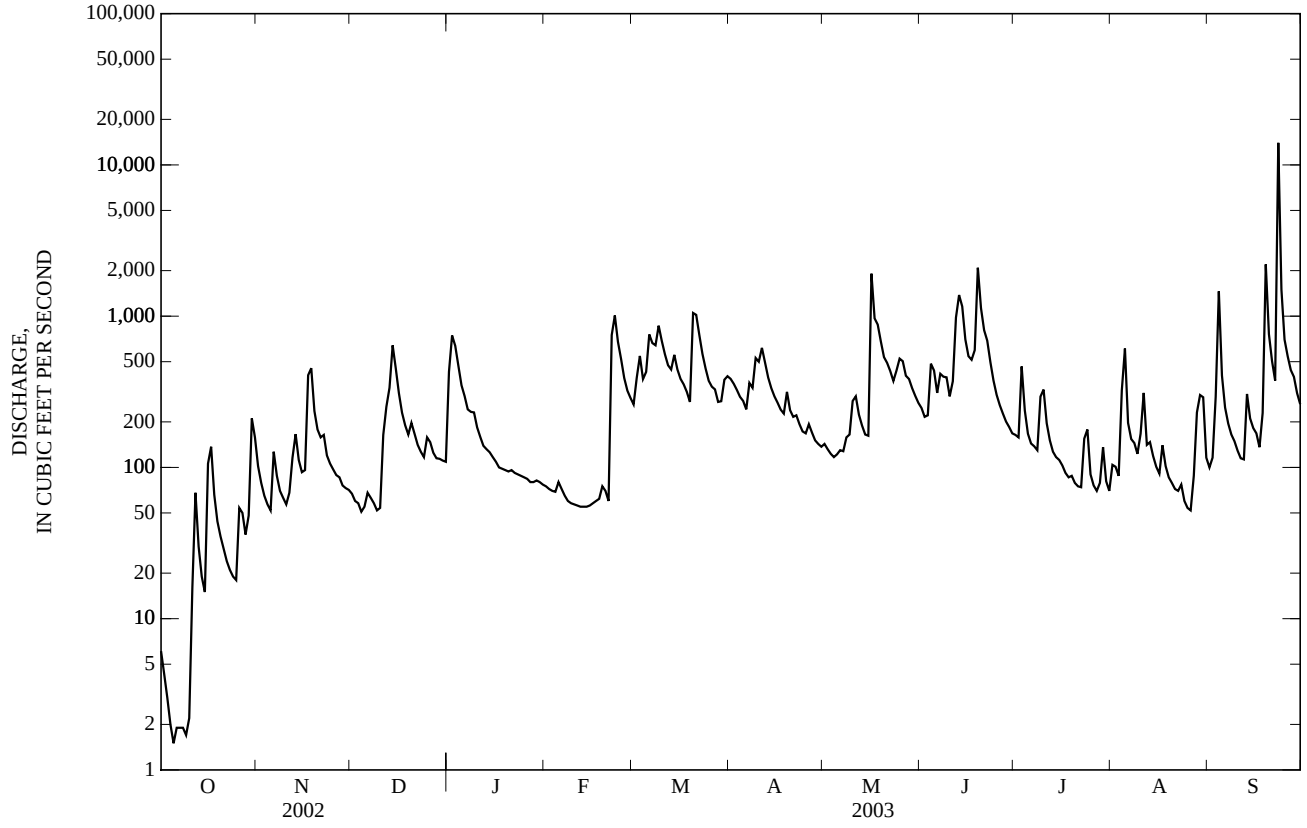
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1967, 1969 - 1996, 2001 - 2003, BY WATER YEAR (WY)

MEAN	82.3	90.1	144	165	198	243	221	167	131	56.4	52.1	79.3
MAX	602	233	455	520	609	722	688	463	645	217	206	890
(WY)	(1980)	(1978)	(1997)	(1996)	(1984)	(1993)	(1983)	(1989)	(1972)	(1972)	(1967)	(2003)
MIN	0.004	3.41	4.17	7.65	10.4	33.3	43.5	26.1	15.2	2.81	0.41	0.000
(WY)	(1992)	(1992)	(1966)	(1966)	(2002)	(2002)	(1981)	(1985)	(1986)	(1966)	(1991)	(1991)

01643700 GOOSE CREEK NEAR MIDDLEBURG, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1966 - 1967, 1969 - 1996, 2001 - 2003	
ANNUAL TOTAL	16,657.41		110,014.5			
ANNUAL MEAN	45.6		301		134	
HIGHEST ANNUAL MEAN					301	2003
LOWEST ANNUAL MEAN					20.8	2002
HIGHEST DAILY MEAN	641	Dec 14	14,000	Sep 23	14,000	Sep 23, 2003
LOWEST DAILY MEAN	0.11	aAug 23	1.5	Oct 5	0.00	(b)
ANNUAL SEVEN-DAY MINIMUM	0.11	Aug 21	1.9	Oct 4	0.00	(b)
MAXIMUM PEAK FLOW			23,000	Sep 23	23,000	Sep 23, 2003
MAXIMUM PEAK STAGE			c24.36	Sep 23	27.46	Jun 22, 1972
INSTANTANEOUS LOW FLOW			1.2	dOct 4	0.00	(f)
ANNUAL RUNOFF (CFSM)	0.37		2.45		1.09	
ANNUAL RUNOFF (INCHES)	5.04		33.27		14.85	
10 PERCENT EXCEEDS	119		561		308	
50 PERCENT EXCEEDS	18		164		70	
90 PERCENT EXCEEDS	0.99		56		5.9	

a Also Aug. 24-27, 2002.
b No flow many days in September 1985, September, October 1986, and September to November 1991.
c From floodmarks.
d Also Oct. 5, 2002.
e Estimated.
f No flow part or all of many days in September 1985, September, October 1986, and September to November 1991.



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

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

DRAINAGE AREA.--38.2 mi^2.

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

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

REMARKS.--Records good except those for periods with ice effect, Dec. 3-10 and Jan. 16 to Feb. 21, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.7	43	29	934	e23	74	91	47	199	50	60	15
2	7.7	35	27	667	e23	159	81	45	102	46	41	18
3	6.6	30	e25	381	e23	225	73	40	105	79	34	19
4	6.0	27	e25	206	e24	126	69	40	375	62	40	366
5	6.1	26	e24	142	e25	154	68	43	323	46	41	58
6	6.1	71	e24	120	e25	488	63	45	159	40	33	35
7	5.4	40	e23	96	e24	265	104	43	346	60	30	28
8	5.4	33	e23	94	e23	268	100	55	230	54	34	24
9	5.7	30	e23	93	e22	456	196	61	190	400	32	21
10	7.0	28	e22	74	e20	242	148	77	125	178	39	20
11	25	34	150	64	e18	159	154	73	140	67	41	18
12	24	61	142	56	e18	133	117	55	369	50	35	18
13	16	63	270	54	e17	136	92	47	625	44	29	34
14	13	45	401	52	e17	144	81	42	431	38	25	30
15	10	38	179	49	e18	108	74	81	240	35	22	26
16	118	45	111	e43	e20	95	68	2,750	158	32	21	26
17	67	182	79	e40	e23	87	62	820	146	29	40	22
18	37	175	65	e36	e30	78	59	400	173	27	27	49
19	27	85	59	e31	e25	69	133	244	305	27	22	603
20	23	66	66	e27	e22	690	87	168	279	25	20	113
21	20	63	55	e25	e27	391	72	169	192	23	18	63
22	17	67	47	e23	773	185	72	147	150	213	19	50
23	16	52	43	e22	587	131	63	125	113	144	17	3,040
24	14	44	40	e22	265	105	56	190	90	97	15	251
25	14	41	55	e22	160	91	55	555	76	44	14	119
26	33	38	51	e22	114	90	59	276	67	34	17	108
27	24	37	44	e21	92	85	55	177	60	30	19	81
28	20	33	41	e21	82	72	50	153	52	42	16	72
29	38	31	41	e21	---	70	48	125	48	56	19	58
30	85	31	42	e22	---	106	46	103	45	35	20	49
31	62	---	42	e22	---	106	---	155	---	29	16	---
TOTAL	767.7	1,594	2,268	3,502	2,540	5,588	2,496	7,351	5,913	2,136	856	5,434
MEAN	24.8	53.1	73.2	113	90.7	180	83.2	237	197	68.9	27.6	181
MAX	118	182	401	934	773	690	196	2,750	625	400	60	3,040
MIN	5.4	26	22	21	17	69	46	40	45	23	14	15
CFSM	0.65	1.39	1.92	2.96	2.37	4.72	2.18	6.21	5.16	1.80	0.72	4.74
IN.	0.75	1.55	2.21	3.41	2.47	5.44	2.43	7.16	5.76	2.08	0.83	5.29

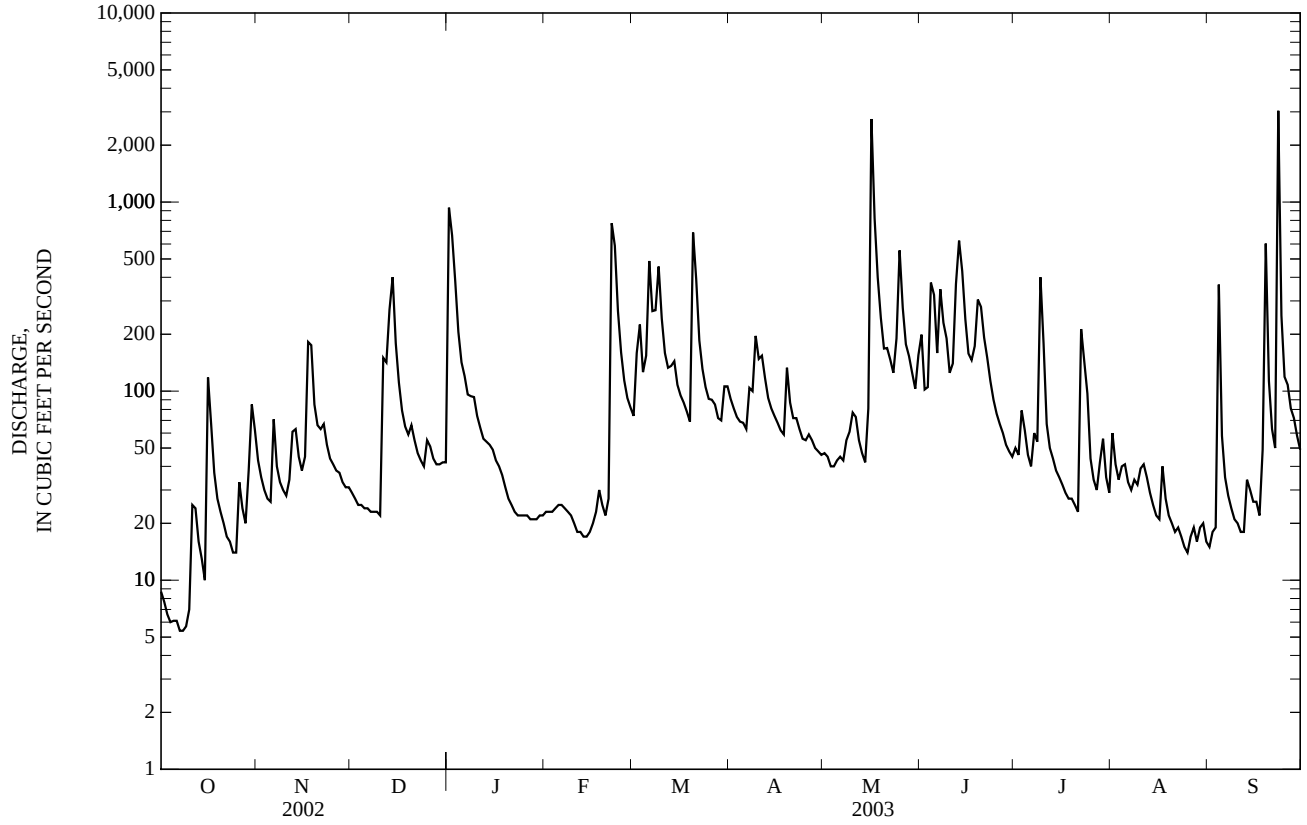
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2003, BY WATER YEAR (WY)

MEAN	15.4	30.2	41.1	60.9	49.5	103	53.3	140	111	39.9	16.4	70.6
MAX	24.8	53.1	73.2	113	90.7	180	83.2	237	197	68.9	27.6	181
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	6.10	7.22	9.04	8.79	8.33	25.8	23.5	42.8	25.6	10.9	3.13	10.0
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

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

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 2001 - 2003	
ANNUAL TOTAL	9,468.2		40,445.7			
ANNUAL MEAN	25.9		111		63.0	
HIGHEST ANNUAL MEAN					111	2003
LOWEST ANNUAL MEAN					15.1	2002
HIGHEST DAILY MEAN	401	Dec 14	3,040	Sep 23	3,040	Sep 23, 2003
LOWEST DAILY MEAN	1.2	Aug 23	5.4	aOct 7	1.2	Aug 23, 2002
ANNUAL SEVEN-DAY MINIMUM	1.5	Aug 18	5.9	Oct 3	1.5	Aug 18, 2002
MAXIMUM PEAK FLOW			13,500	Sep 23	13,500	Sep 23, 2003
MAXIMUM PEAK STAGE			b13.45	Sep 23	b13.45	Sep 23, 2003
INSTANTANEOUS LOW FLOW			4.8	Oct 8	0.85	cAug 20, 2002
ANNUAL RUNOFF (CFSM)	0.68		2.90		1.65	
ANNUAL RUNOFF (INCHES)	9.22		39.39		22.40	
10 PERCENT EXCEEDS	55		227		142	
50 PERCENT EXCEEDS	14		50		22	
90 PERCENT EXCEEDS	4.2		19		4.9	

a Also Oct. 8, 2002.
b From Floodmarks.
c Also Aug. 23, 2002.
e Estimated.



01643880 BEAVERDAM CREEK AT ROUTE 734 NEAR MOUNTVILLE, VA

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

DRAINAGE AREA.--47.2 mi^2.

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

GAGE.--Water stage recorder. Datum of gage is 315 ft NVGD of 1929, from topographic map.

REMARKS.--Records good except those for period of no gage-height record, Sept. 23-30, which is fair, and periods with ice effect, Dec. 3-10 and Jan. 16 to Feb. 21, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	54	36	399	e40	94	136	42	142	46	56	24
2	2.3	44	33	531	e41	189	113	38	91	42	41	26
3	1.8	37	e33	364	e35	273	100	34	96	142	31	73
4	1.6	34	e33	247	e40	160	92	32	327	87	37	945
5	1.5	32	e33	189	e45	202	88	35	303	51	44	164
6	1.3	92	e34	169	e43	488	78	41	151	40	28	95
7	1.3	49	e34	143	e40	299	150	34	253	77	24	71
8	1.3	41	e36	153	e37	290	136	42	206	46	38	55
9	1.2	36	e36	150	e35	436	253	55	182	343	35	47
10	1.9	34	e33	111	e34	267	189	115	129	241	53	40
11	13	40	102	94	e32	186	218	90	138	100	86	34
12	25	79	164	81	e30	160	156	59	380	70	38	33
13	14	90	216	76	e28	166	118	47	672	59	29	89
14	8.5	57	314	74	e26	191	102	40	531	50	24	62
15	6.1	48	177	68	e28	135	92	46	221	45	19	50
16	104	53	125	e66	e29	118	82	3,060	163	40	18	55
17	72	204	95	e63	e30	107	72	607	157	33	41	36
18	39	224	81	e62	e50	94	68	452	196	29	24	76
19	29	107	74	e57	e45	77	153	289	433	29	18	834
20	25	85	91	e49	e40	649	100	209	310	24	15	172
21	21	82	73	e45	e50	441	82	189	211	22	13	113
22	19	95	61	e48	460	261	84	166	181	65	23	90
23	17	62	54	e45	521	186	69	151	132	114	31	e5,000
24	14	54	50	e37	304	153	59	219	104	126	14	e500
25	14	50	69	e36	208	130	55	390	86	48	11	e200
26	40	46	66	e35	148	122	66	278	74	34	11	e150
27	28	45	55	e35	119	119	57	189	63	28	15	e100
28	22	40	51	e34	105	96	48	175	56	35	18	e90
29	36	38	54	e34	---	95	45	141	50	62	126	e80
30	133	38	55	e33	---	155	41	118	44	31	69	e70
31	85	---	54	e34	---	161	---	123	---	25	30	---
TOTAL	781.8	1,990	2,422	3,562	2,643	6,500	3,102	7,506	6,082	2,184	1,060	9,374
MEAN	25.2	66.3	78.1	115	94.4	210	103	242	203	70.5	34.2	312
MAX	133	224	314	531	521	649	253	3,060	672	343	126	5,000
MIN	1.2	32	33	33	26	77	41	32	44	22	11	24
CFSM	0.53	1.41	1.66	2.43	2.00	4.44	2.19	5.13	4.30	1.49	0.72	6.62
IN.	0.62	1.57	1.91	2.81	2.08	5.12	2.44	5.92	4.79	1.72	0.84	7.39

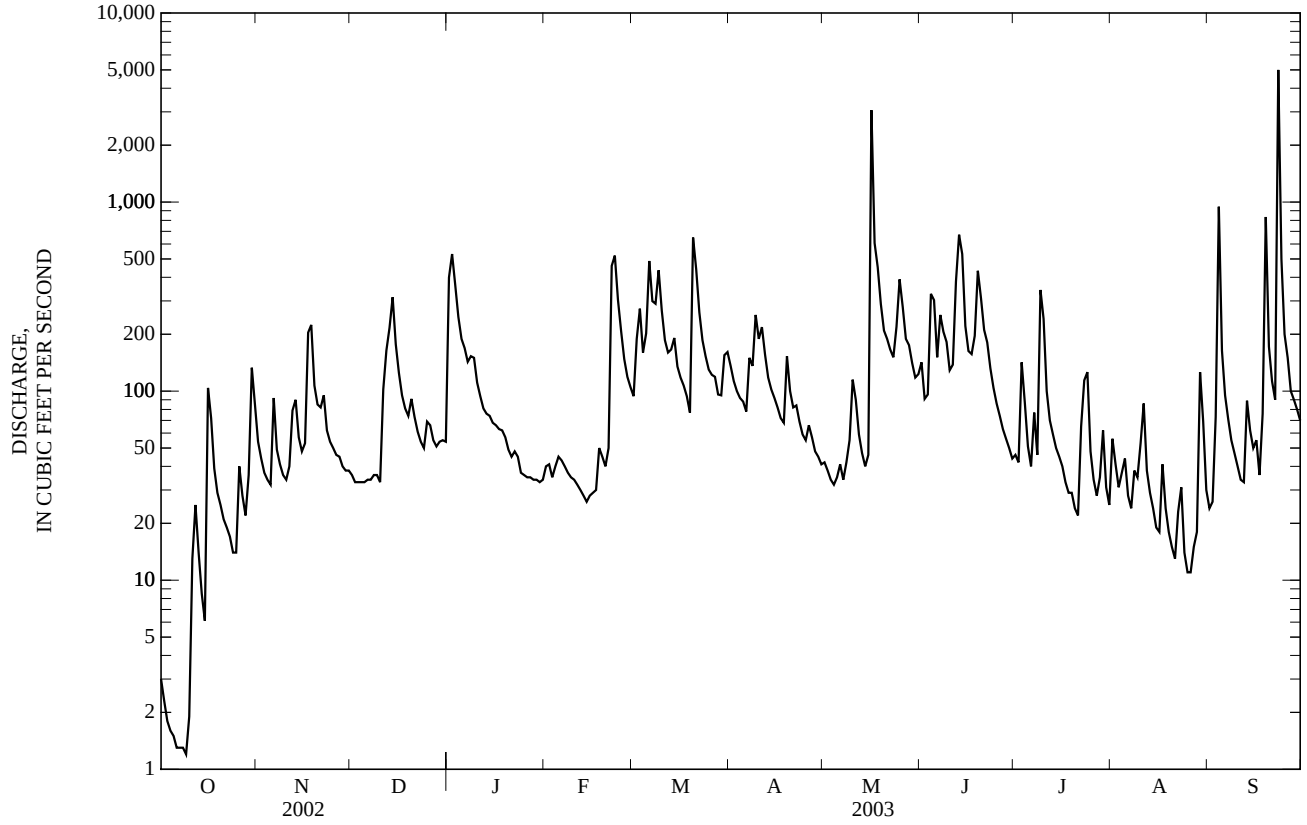
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2003, BY WATER YEAR (WY)

MEAN	13.1	34.8	41.5	60.1	48.9	116	63.3	136	111	37.9	14.6	107
MAX	25.2	66.3	78.1	115	94.4	210	103	242	203	70.5	34.2	312
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	1.02	3.30	4.95	5.38	3.34	21.9	23.3	30.6	20.0	5.37	0.64	2.84
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

01643880 BEAVERDAM CREEK AT ROUTE 734 NEAR MOUNTVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 2001 - 2003	
ANNUAL TOTAL	8,651.00		47,206.8			
ANNUAL MEAN	23.7		129		69.8	
HIGHEST ANNUAL MEAN					129	2003
LOWEST ANNUAL MEAN					10.2	2002
HIGHEST DAILY MEAN	314	Dec 14	e5,000	Sep 23	e5,000	Sep 23, 2003
LOWEST DAILY MEAN	0.02	aAug 26	1.2	Oct 9	0.02	aAug 26, 2002
ANNUAL SEVEN-DAY MINIMUM	0.03	Aug 21	1.4	Oct 3	0.03	Aug 21, 2002
MAXIMUM PEAK FLOW			22,000	Sep 23	22,000	Sep 23, 2003
MAXIMUM PEAK STAGE			b17.00	Sep 23	b17.00	Sep 23, 2003
INSTANTANEOUS LOW FLOW			0.91	Oct 7	0.02	cAug 26, 2002
ANNUAL RUNOFF (CFSM)	0.50		2.74		1.48	
ANNUAL RUNOFF (INCHES)	6.82		37.21		20.09	
10 PERCENT EXCEEDS	62		249		160	
50 PERCENT EXCEEDS	9.3		62		26	
90 PERCENT EXCEEDS	0.37		24		0.76	

a Also Aug. 27, 2002.
b Form floodmarks.
b Also Aug. 27, 28, 2002.
e Estimated.



01644000 GOOSE CREEK NEAR LEESBURG, VA

LOCATION.--Lat 39°01'10", long 77°34'39", NAD83, Loudoun County, Hydrologic Unit 02070008, on left bank 400 ft upstream from bridge on State Highway 621 at Evergreen Mills, 1.4 mi downstream from Little River, 6.7 mi south of Leesburg, and 10.9 mi upstream from mouth.

DRAINAGE AREA.--332 mi^2.

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

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

GAGE.--Water-stage recorder. Datum of gage is 248.93 ft NGVD of 1929. July 12, 1909, to Dec. 31, 1912, nonrecording gage at site 1,000 ft downstream at different datum. Jan. 21, 1930, to Nov. 28, 1938, non-recording gage at site 400 ft downstream at datum 4.20 ft lower than present datum.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Oct. 8, Jan. 30 to Feb. 15, Feb. 18-20, and July 17, 18, and periods with ice effect, Dec. 6, 8-10, and Jan. 16-29, which are fair. National Weather Service gage-height telemeter at station. Maximum discharge, 78,100 ft^3/s, from rating curve extended above 11,000 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May or June 1889 reached a stage of about 29 ft, discharge, about 45,000 ft^3/s, site and datum in use 1930-38, from information by local residents.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 2	0145	7,140	10.83	Jun 14	0545	4,950	7.90
Feb 23	0145	6,560	10.07	Jun 19	1000	6,430	9.89
Mar 21	0230	6,990	10.63	Sep 4	0915	5,570	8.74
May 16	2100	14,200	16.44	Sep 19	1500	7,980	11.82
Jun 13	0545	5,520	8.68	Sep 23	1615	*36,900	*23.32

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	353	214	1,910	e165	661	954	339	806	430	307	217
2	23	259	188	3,900	e160	1,020	841	325	589	415	327	253
3	19	206	177	2,200	e155	1,900	746	294	549	1,250	263	257
4	17	175	146	1,600	e195	1,120	680	274	1,570	819	271	3,240
5	15	158	130	1,080	e230	1,150	634	278	1,500	498	1,260	1,100
6	16	421	e170	931	e200	2,500	577	324	898	413	448	594
7	15	356	146	794	e175	2,080	753	295	1,360	424	314	446
8	e15	246	e144	715	e160	1,750	981	445	1,530	399	299	370
9	14	207	e140	786	e140	2,730	1,450	419	1,180	720	275	323
10	17	184	e135	620	e170	2,280	1,400	651	866	1,580	279	288
11	39	266	372	527	e150	1,440	1,570	839	774	712	579	257
12	117	409	1,120	458	e130	1,230	1,240	562	2,330	487	351	239
13	101	701	1,230	422	e120	1,120	948	451	3,610	403	290	615
14	58	424	2,450	412	e105	1,430	801	389	3,420	347	251	544
15	42	328	1,520	387	e135	1,070	713	529	1,880	325	206	428
16	208	370	973	e345	99	930	647	8,610	1,280	300	182	394
17	548	1,540	725	e315	96	847	580	5,480	1,080	e274	278	314
18	240	1,630	599	e280	e200	760	527	2,950	1,480	e235	262	343
19	151	811	525	e250	e180	663	950	2,140	4,830	238	186	5,820
20	112	603	579	e235	e165	2,330	756	1,440	2,770	224	164	1,800
21	91	502	570	e220	312	4,060	612	1,320	2,160	207	150	1,040
22	75	573	445	e200	2,220	2,120	626	1,380	1,630	204	142	784
23	65	423	402	e185	4,480	1,380	542	1,020	1,210	808	196	20,800
24	56	346	368	e170	2,230	1,090	459	1,320	940	571	138	5,510
25	52	314	488	e160	1,470	909	427	2,410	784	328	117	1,490
26	113	288	572	e190	1,050	815	474	1,720	682	251	116	1,090
27	174	272	448	e175	848	845	451	1,270	601	220	131	864
28	113	249	405	e169	747	679	387	1,100	530	219	392	806
29	113	227	399	e185	---	637	359	955	483	419	227	664
30	590	225	393	e175	---	910	340	812	443	279	903	567
31	613	---	380	e170	---	1,110	---	703	---	222	283	---
TOTAL	3,852	13,066	16,553	20,166	16,487	43,566	22,425	41,044	43,765	14,221	9,587	51,457
MEAN	124	436	534	651	589	1,405	748	1,324	1,459	459	309	1,715
MAX	613	1,630	2,450	3,900	4,480	4,060	1,570	8,610	4,830	1,580	1,260	20,800
MIN	14	158	130	160	96	637	340	274	443	204	116	217
CFSM	0.37	1.31	1.61	1.96	1.77	4.23	2.25	3.99	4.39	1.38	0.93	5.17
IN.	0.43	1.46	1.85	2.26	1.85	4.88	2.51	4.60	4.90	1.59	1.07	5.77

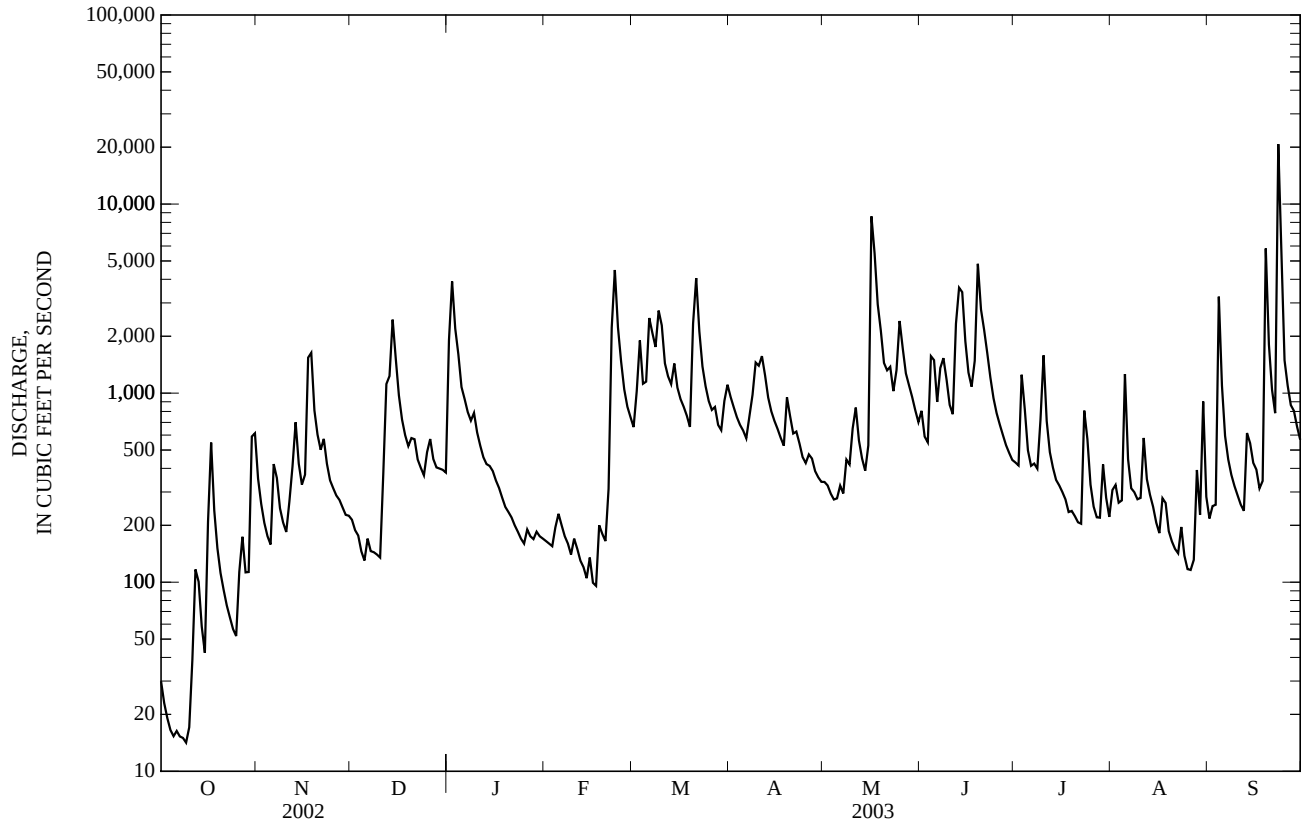
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 1912, 1930 - 2003, BY WATER YEAR (WY)

MEAN	191	218	327	410	505	600	515	375	271	140	154	155
MAX	2,265	1,155	1,316	1,499	1,621	1,892	1,766	1,324	2,887	1,207	1,188	1,715
(WY)	(1943)	(1933)	(1993)	(1996)	(1998)	(1993)	(1983)	(2003)	(1972)	(1956)	(1937)	(2003)
MIN	2.12	3.83	14.8	25.8	26.3	83.6	141	85.5	24.8	6.46	1.86	1.38
(WY)	(1931)	(1931)	(1966)	(1966)	(1931)	(1931)	(1981)	(1969)	(1999)	(1999)	(1930)	(1985)

01644000 GOOSE CREEK NEAR LEESBURG, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1909 - 1912 1930 - 2003	
ANNUAL TOTAL	58,937.4		296,189			
ANNUAL MEAN	161		811		324	
HIGHEST ANNUAL MEAN					811	2003
LOWEST ANNUAL MEAN					55.2	1931
HIGHEST DAILY MEAN	2,450	Dec 14	20,800	Sep 23	e53,600	Jun 22, 1972
LOWEST DAILY MEAN	2.5	Aug 22	14	Oct 9	0.40	aSep 27, 1941
ANNUAL SEVEN-DAY MINIMUM	2.8	Aug 16	16	Oct 4	0.45	Sep 19, 1985
MAXIMUM PEAK FLOW			36,900	Sep 23	78,100	Jun 22, 1972
MAXIMUM PEAK STAGE			23.32	Sep 23	b30.59	Jun 22, 1972
INSTANTANEOUS LOW FLOW			14	Oct 9	(c)	(d)
ANNUAL RUNOFF (CFSM)	0.49		2.44		0.98	
ANNUAL RUNOFF (INCHES)	6.60		33.19		13.26	
10 PERCENT EXCEEDS	422		1,610		711	
50 PERCENT EXCEEDS	70		443		160	
90 PERCENT EXCEEDS	9.3		139		18	

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



01644280 BROAD RUN NEAR LEESBURG, VA

LOCATION.--Lat 39°02'47", long 77°25'57", NAD83, Loudoun County, Hydrologic Unit 02070008, on right bank 15 ft upstream from State Highway 7 and 8 mi southeast of Leesburg.

DRAINAGE AREA.--76.1 mi^2.

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

GAGE.--Water stage recorder. Elevation of gage is 195 ft NVGD of 1929, from topographic map.

REMARKS.--Records good except those for periods of no gage-height record, May 28, June 12-16, July 11, 12, 16, 17, and July 31 to Aug. 12, which are fair.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	100	26	1,650	25	110	143	20	50	21	e20	24
2	18	60	23	2,910	25	577	87	18	36	26	e18	39
3	14	44	20	735	20	846	65	15	57	132	e17	46
4	11	36	19	332	35	275	49	13	520	75	e40	188
5	9.0	37	21	141	45	403	39	14	296	38	e25	111
6	6.7	380	22	112	25	1,080	33	23	32	27	e17	51
7	5.0	120	21	104	24	494	161	27	621	25	e15	33
8	4.6	61	20	100	26	357	201	135	395	30	e14	27
9	4.8	47	19	144	22	654	543	95	51	295	e13	21
10	11	37	19	90	22	323	279	282	24	386	e35	17
11	153	226	372	61	24	135	319	187	46	e800	e90	15
12	148	342	757	43	22	112	162	73	e250	e300	e56	24
13	49	320	943	35	20	118	86	41	e180	88	44	207
14	37	115	1,350	31	18	196	60	30	e110	44	128	108
15	26	74	401	28	21	97	46	534	e60	35	34	65
16	381	498	175	22	25	77	38	5,200	e30	e25	23	76
17	255	1,670	116	20	32	70	32	718	85	e21	467	38
18	112	872	86	17	34	58	29	756	220	19	99	90
19	55	211	73	16	34	45	173	314	2,080	17	41	1,480
20	39	127	225	15	41	1,480	95	132	870	16	28	233
21	30	101	168	14	89	1,890	54	442	357	13	21	102
22	24	125	93	12	1,800	313	81	546	137	20	16	88
23	19	83	69	11	2,640	131	53	164	91	328	18	3,290
24	15	56	55	8.8	846	90	35	198	63	78	15	755
25	14	47	347	8.8	420	70	29	1,090	45	37	11	145
26	213	38	376	8.4	226	65	46	676	36	27	68	91
27	77	36	166	8.3	144	100	45	329	31	20	211	64
28	41	32	110	7.5	118	58	29	e230	27	25	147	99
29	125	28	96	7.7	---	46	23	153	23	97	52	61
30	455	27	83	7.8	---	272	20	91	21	35	30	37
31	250	---	74	8.9	---	343	---	62	---	e25	31	---
TOTAL	2,625.1	5,950	6,345	6,709.2	6,823	10,885	3,055	12,608	6,844	3,125	1,844	7,625
MEAN	84.7	198	205	216	244	351	102	407	228	101	59.5	254
MAX	455	1,670	1,350	2,910	2,640	1,890	543	5,200	2,080	800	467	3,290
MIN	4.6	27	19	7.5	18	45	20	13	21	13	11	15
CFSM	1.11	2.61	2.69	2.84	3.20	4.61	1.34	5.34	3.00	1.32	0.78	3.34
IN.	1.28	2.91	3.10	3.28	3.34	5.32	1.49	6.16	3.35	1.53	0.90	3.73

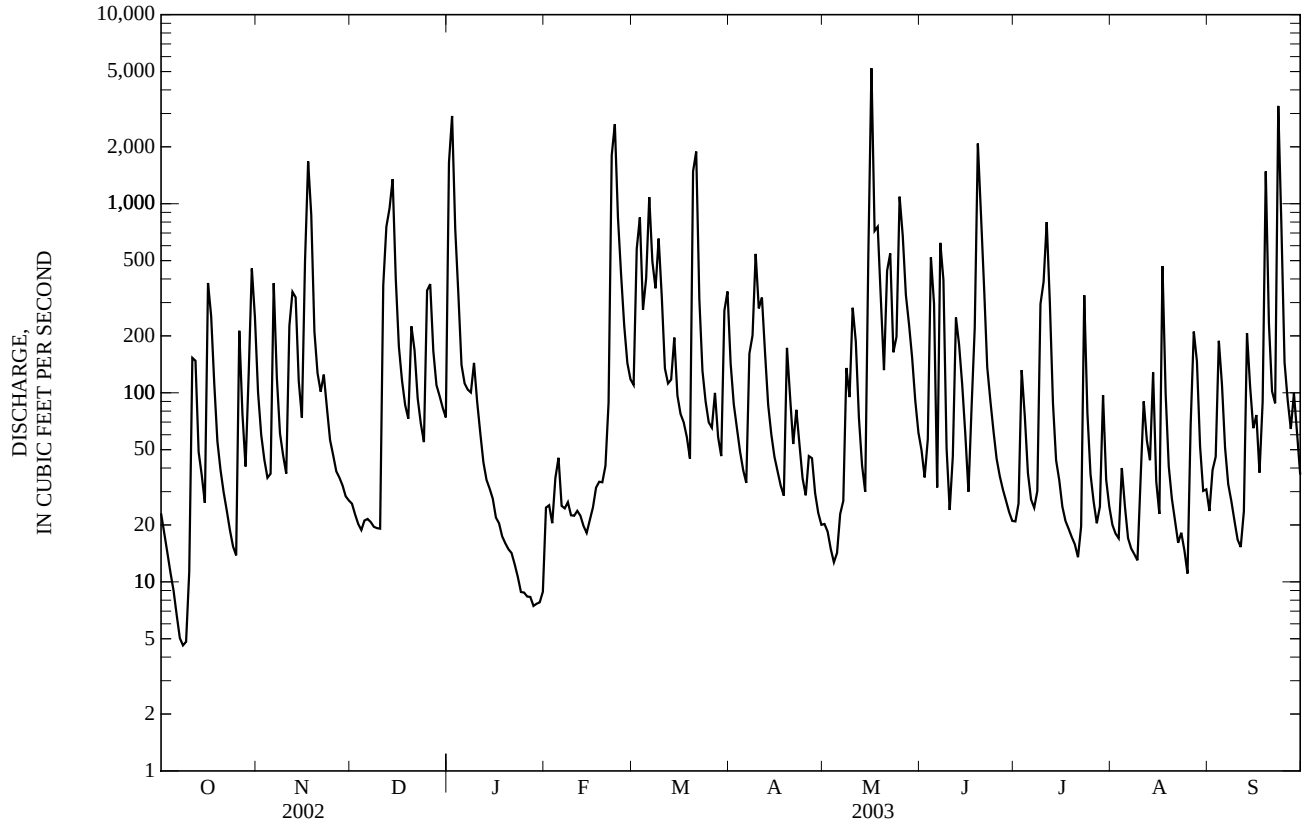
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2003, BY WATER YEAR (WY)

MEAN	50.7	105	113	119	128	214	93.1	254	134	61.0	38.3	141
MAX	84.7	198	205	216	244	351	102	407	228	101	59.5	254
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	16.7	11.6	20.4	22.0	11.8	77.4	84.4	102	40.1	21.2	17.2	28.7
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

01644280 BROAD RUN NEAR LEESBURG, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 2002 - 2003	
ANNUAL TOTAL	27,266.5		74,438.3			
ANNUAL MEAN	74.7		204		121	
HIGHEST ANNUAL MEAN					204	2003
LOWEST ANNUAL MEAN					37.9	2002
HIGHEST DAILY MEAN	1,670	Nov 17	5,200	May 16	5,200	May 16, 2003
LOWEST DAILY MEAN	1.3	Aug 21	4.6	Oct 8	1.3	aAug 21, 2002
ANNUAL SEVEN-DAY MINIMUM	1.6	Aug 17	7.4	Oct 4	1.6	Aug 17, 2002
MAXIMUM PEAK FLOW			6,890	May 16	6,890	May 16, 2003
MAXIMUM PEAK STAGE			10.43	May 16	10.43	May 16, 2003
INSTANTANEOUS LOW FLOW			4.2	Oct 7	1.3	bAug 20, 2002
ANNUAL RUNOFF (CFSM)	0.98		2.68		1.59	
ANNUAL RUNOFF (INCHES)	13.33		36.39		21.59	
10 PERCENT EXCEEDS	179		460		273	
50 PERCENT EXCEEDS	22		58		28	
90 PERCENT EXCEEDS	3.2		17		4.6	

a Also Aug. 22, 2002.
b Also Aug. 21, 22, 2002.
e Estimated.



01646000 DIFFICULT RUN NEAR GREAT FALLS, VA

LOCATION.--Lat 38°58'33", long 77°14'45", NAD83, Fairfax County, Hydrologic Unit 02070008, on right bank 250 ft downstream from bridge on State Highway 193, 300 ft downstream from Rocky Run, 0.7 mi upstream from mouth, and 1.5 mi southeast of Great Falls.

DRAINAGE AREA.--57.9 mi^2.

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

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

GAGE.--Water-stage recorder. Datum of gage is 151.30 ft NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Dec. 5-10 and Jan. 16-18, and periods of doubtful gage-height record, Jan. 19 to Feb. 20, which are fair. Maximum discharge, 32,200 ft^3/s, from rating curve extended above 1,600 ft^3/s on basis of contracted- opening measurement at gage height 13.18 ft and slope-area measurement at gage height 21.40 ft. Minimum gage height, 1.65 ft, Sept. 9, 10, 1966. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 17	0100	1,030	7.07	Jun 19	1100	2,900	10.35
Dec 11	1830	1,000	7.02	Jun 20	0230	1,620	8.31
Jan 1	2330	1,370	7.83	Jun 20	1700	1,250	7.57
Feb 22	2200	2,350	9.56	Jul 11	0500	1,210	7.49
Mar 20	2330	1,730	8.51	Jul 23	0630	1,400	7.88
May 16	1130	1,070	7.17	Aug 11	2100	1,440	7.96
May 26	1000	1,080	7.19	Sep 19	0600	1,270	7.62
Jun 7	2000	1,880	8.78	Sep 23	1100	*4,400	*11.71
Jun 13	0030	1,000	7.01				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.8	41	27	488	e21	80	94	70	138	95	48	44
2	5.9	29	23	561	e21	244	79	56	68	71	48	58
3	5.3	22	22	241	e20	229	72	51	105	176	45	65
4	4.9	20	21	121	e24	110	68	49	194	80	55	97
5	4.5	21	e20	77	e34	190	66	53	122	61	47	61
6	4.0	214	e24	76	e33	346	62	62	75	55	44	45
7	3.4	46	e22	69	e30	162	165	90	928	73	40	41
8	3.2	29	e21	60	e21	119	119	177	422	76	40	38
9	3.0	25	e20	68	e18	173	249	112	156	145	38	36
10	9.8	22	e19	56	e23	125	128	187	94	164	40	34
11	134	214	359	48	e21	88	177	111	106	605	368	33
12	57	201	221	43	e19	83	105	69	365	120	134	73
13	24	116	281	41	e17	83	81	60	348	145	53	262
14	15	54	350	40	e16	102	72	55	180	78	60	74
15	10	37	107	39	e24	73	69	88	117	62	43	53
16	338	221	65	e36	e22	70	67	736	86	57	45	54
17	87	517	50	e35	e20	69	62	157	78	51	306	43
18	48	293	43	e33	e68	66	71	235	221	49	70	170
19	23	80	39	e31	e58	61	173	115	1,350	48	52	748
20	17	58	60	e28	e63	613	86	77	912	46	46	106
21	14	45	49	e26	106	556	73	363	222	43	42	65
22	13	44	39	e25	1,100	144	70	201	130	75	40	53
23	11	35	37	e23	993	98	64	106	102	670	46	1,730
24	9.0	32	34	e22	270	80	60	101	84	83	37	163
25	8.7	30	235	e22	163	73	59	173	75	59	35	86
26	167	29	127	e26	106	80	115	518	68	48	218	66
27	36	29	68	e24	87	98	74	148	64	45	296	58
28	21	28	52	e23	84	70	60	198	62	69	225	62
29	81	27	48	e25	---	69	58	118	59	159	72	55
30	213	27	46	e23	---	254	56	91	56	56	73	48
31	107	---	44	e22	---	161	---	76	---	47	65	---
TOTAL	1,484.5	2,586	2,573	2,452	3,482	4,769	2,754	4,703	6,987	3,611	2,771	4,521
MEAN	47.9	86.2	83.0	79.1	124	154	91.8	152	233	116	89.4	151
MAX	338	517	359	561	1,100	613	249	736	1,350	670	368	1,730
MIN	3.0	20	19	22	16	61	56	49	56	43	35	33
CFSM	0.83	1.49	1.43	1.37	2.15	2.66	1.59	2.62	4.02	2.01	1.54	2.60
IN.	0.95	1.66	1.65	1.58	2.24	3.06	1.77	3.02	4.49	2.32	1.78	2.90

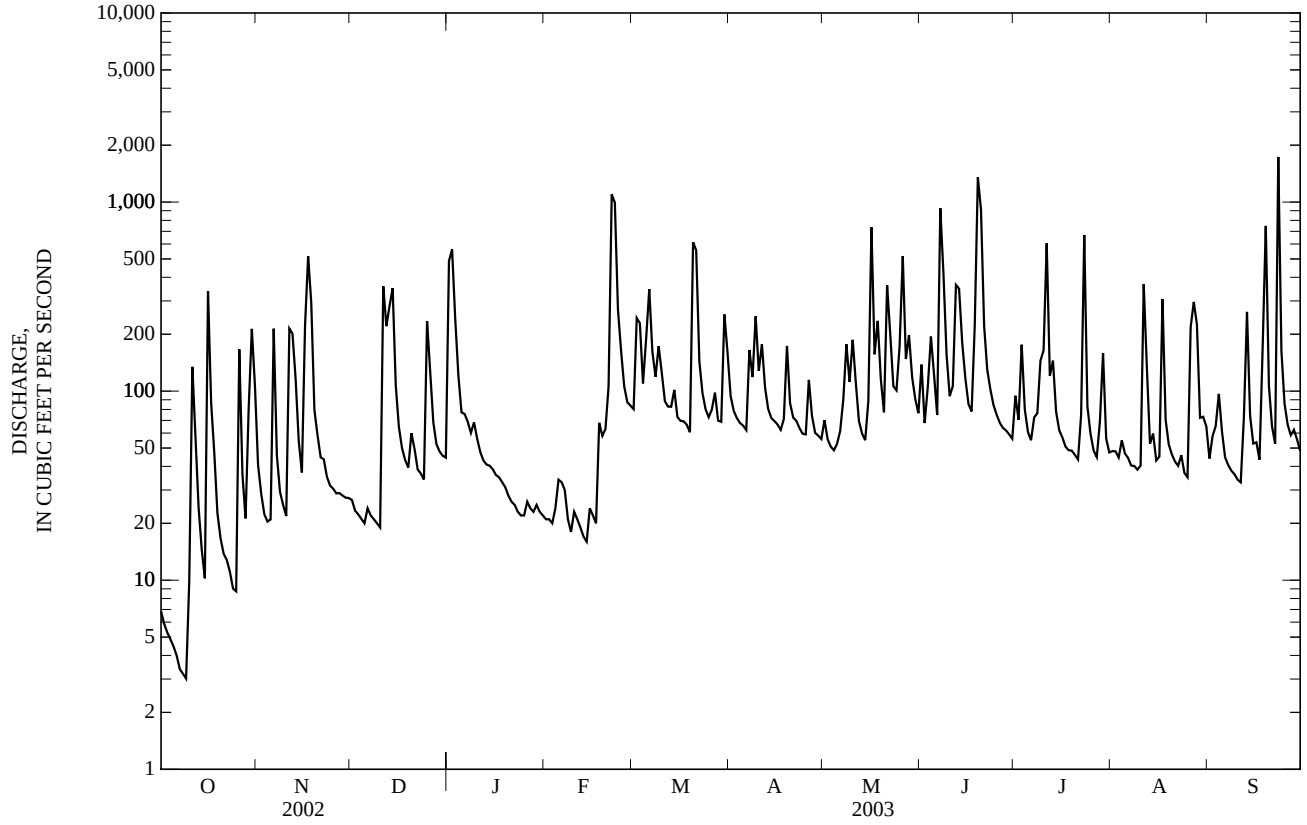
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 2003, BY WATER YEAR (WY)

MEAN	39.5	50.2	59.8	73.7	81.5	90.7	81.9	72.2	69.3	41.8	39.7	39.7
MAX	317	116	165	194	228	227	224	203	1,210	116	143	245
(WY)	(1980)	(1973)	(1997)	(1996)	(1998)	(1993)	(1973)	(1989)	(1972)	(2003)	(1955)	(1975)
MIN	4.69	7.75	11.4	16.5	17.5	33.2	31.5	21.8	10.0	4.52	1.88	5.57
(WY)	(1942)	(1942)	(1966)	(1966)	(2002)	(1981)	(1985)	(1955)	(1986)	(1955)	(1966)	(1986)

01646000 DIFFICULT RUN NEAR GREAT FALLS, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1935 - 2003	
ANNUAL TOTAL	15,595.54		42,693.5			
ANNUAL MEAN	42.7		117		61.5	
HIGHEST ANNUAL MEAN					184	1972
LOWEST ANNUAL MEAN					28.4	1966
HIGHEST DAILY MEAN	578	Apr 28	1,730	Sep 23	e25,000	Jun 22, 1972
LOWEST DAILY MEAN	0.66	Aug 23	3.0	Oct 9	0.10	aSep 7, 1966
ANNUAL SEVEN-DAY MINIMUM	1.0	Aug 18	4.0	Oct 3	0.16	Sep 3, 1966
MAXIMUM PEAK FLOW			4,400	Sep 23	32,200	Jun 22, 1972
MAXIMUM PEAK STAGE			11.71	Sep 23	b21.40	Jun 22, 1972
INSTANTANEOUS LOW FLOW			3.0	Oct 9	0.05	cSep 9, 1966
ANNUAL RUNOFF (CFSM)	0.74		2.02		1.06	
ANNUAL RUNOFF (INCHES)	10.02		27.43		14.44	
10 PERCENT EXCEEDS	84		235		106	
50 PERCENT EXCEEDS	22		65		38	
90 PERCENT EXCEEDS	4.6		22		13	

a Also Sept. 8, 9, 1966.
b From floodmarks.
c Also Sept. 10, 1966
e Estimated.



01646500 POTOMAC RIVER NEAR WASHINGTON, DC

LOCATION.--Lat 38°56'59.2", long 77°07'39.5", Montgomery County, Hydrologic Unit 02070008, on left bank just upstream from Little Falls Dam, 1 mi upstream from District of Columbia boundary line, 1.2 mi upstream from Chain Bridge, 1.8 mi east of Langley, Fairfax County, and at mile 117.4.

DRAINAGE AREA.--11,560 mi^2.

WATER-DISCHARGE RECORDS

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

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

GAGE.--Water-stage recorder and concrete control. Datum of gage is 37.95 ft above National Geodetic Vertical Datum of 1929. Prior to June 7, 1930, nonrecording gage, and June 7, 1930, to Jan. 22, 1965, water-stage recorder at site 1 mi upstream on right bank at same datum.

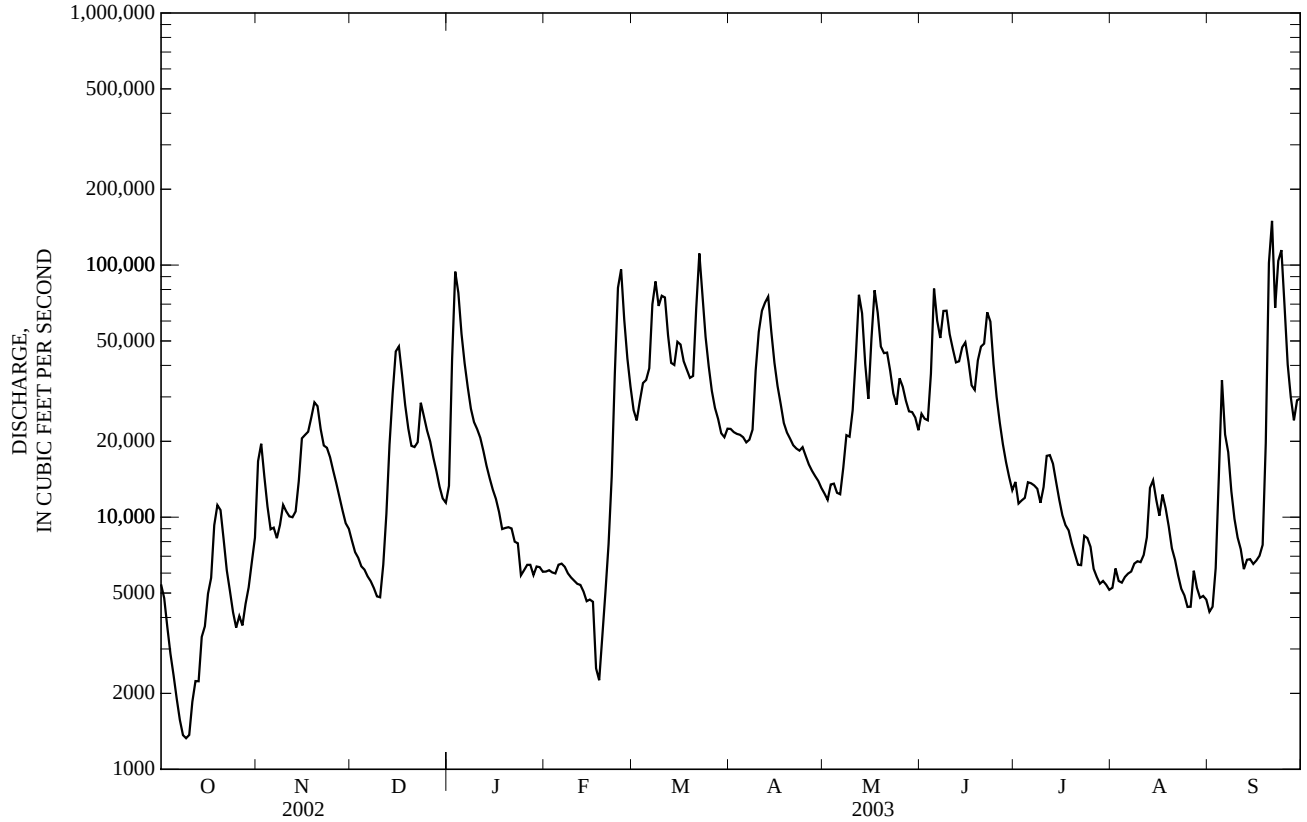
REMARKS.--Water-discharge records good except those for estimated daily discharges (ice effrect), which are fair. Diversions at Great Falls through aqueducts, and since June 1959, from gage pool at Little Falls Dam, for municipal supply of Washington, D.C.; since October 1958, at Rockville Filtration Plant, for municipal supply of city of Rockville; since April 1961, at Potomac Filtration Plant for water supply of Washington Suburban Sanitary District; since October 1961, at Fairfax Water Treatment Plant for water supply of city of Fairfax (from Goose Creek); since April 1964, at Violets Lock to Chesapeake and Ohio Canal; and since October 1985, at Fairfax County Water Authority Treatment Plant for water supply of the county. Low flow affected slightly prior to July 1981 by Stony River Reservoir, since December 1950, by Savage River Reservoir (see station 01597500), and since July 1981, by Jennings Randolph Lake. National Weather Service gage-height telemeter at station. U.S. Geological Survey satellite collection platform at station.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 45,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 16	0130	50,000	6.70	May 17	1915	83,700	8.23
Jan 3	1530	115,000	9.37	May 21	1430	46,000	6.49
Feb 24	2330	109,000	9.16	Jun 5	1000	87,000	8.36
Mar 8	0515	95,300	8.68	Jun 9	0000	75,900	7.91
Mar 11	1745	69,700	7.64	Jun 13	0100	48,700	6.63
Mar 15	1945	51,800	6.79	Jun 14	2200	55,800	6.99
Mar 22	1030	120,000	9.54	Jun 22	1745	70,200	7.66
Apr 13	0230	81,700	8.15	Sep 21	0630	*167,000	*11.44
May 12	1800	80,200	8.09	Sep 23	1200	133,000	9.97

Minimum discharge, 1,260 ft^3/s, Oct. 8, 9.



DAILY MEAN DISCHARGE - 2003 WATER YEAR

01646500 POTOMAC RIVER NEAR WASHINGTON, DC—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5,410	16,700	8,060	13,300	6,090	26,600	22,400	12,400	25,700	13,800	5,250	4,220
2	4,770	19,600	7,270	42,300	6,160	24,200	21,800	11,700	24,600	11,300	6,260	4,410
3	3,670	14,500	6,900	94,200	6,040	28,900	21,400	13,500	24,200	11,600	5,580	6,280
4	2,870	11,000	6,380	77,600	5,980	34,000	21,200	13,600	37,100	11,900	5,500	14,500
5	2,360	8,950	6,190	53,400	6,480	35,000	20,800	12,500	80,700	13,800	5,790	35,000
6	1,910	9,090	5,820	40,800	6,540	39,000	19,800	12,300	60,200	13,600	5,970	21,300
7	1,570	8,260	5,570	32,800	6,350	69,900	20,300	15,700	51,400	13,400	6,090	18,100
8	1,370	9,320	5,230	26,900	5,990	86,100	22,200	21,200	65,800	13,000	6,540	12,700
9	1,330	11,200	4,850	23,800	5,770	68,900	38,200	20,900	65,900	11,400	6,690	9,850
10	1,370	10,500	4,810	22,400	5,600	75,600	54,400	26,600	53,100	13,200	6,630	8,300
11	1,850	10,100	6,480	20,700	5,440	74,400	65,900	43,200	46,500	17,500	7,080	7,470
12	2,240	9,990	10,300	18,300	5,390	52,700	71,000	76,200	41,100	17,600	8,320	6,220
13	2,230	10,500	19,400	16,000	5,070	40,900	75,000	64,400	41,500	16,300	13,100	6,780
14	3,350	13,900	31,000	14,300	4,640	40,200	54,400	40,600	47,200	13,800	14,000	6,810
15	3,690	20,500	45,500	12,900	4,710	49,600	41,000	29,500	49,400	11,700	11,700	6,520
16	4,970	21,200	47,600	11,800	4,620	48,400	33,100	51,000	41,500	10,200	10,100	6,730
17	5,740	21,800	36,800	10,500	2,510	41,500	28,100	79,400	33,300	9,300	12,300	7,030
18	9,300	24,800	27,900	8,970	2,260	38,500	23,600	64,600	32,000	8,860	10,800	7,760
19	11,200	28,500	22,500	9,060	3,370	35,700	21,700	47,500	41,900	7,880	9,180	19,700
20	10,700	27,600	19,200	9,120	5,060	36,300	20,500	44,700	47,500	7,140	7,530	102,000
21	8,160	22,400	19,000	9,020	7,810	67,100	19,300	45,000	48,800	6,470	6,770	150,000
22	6,150	19,200	19,800	7,990	14,500	111,000	18,700	38,000	64,900	6,450	5,870	67,700
23	5,100	18,800	28,400	e7,880	37,200	76,000	18,400	30,900	59,700	8,430	5,200	104,000
24	4,190	17,300	25,100	5,880	81,300	51,900	19,000	27,900	40,500	8,260	4,890	115,000
25	3,650	15,300	22,100	6,160	96,100	39,600	17,500	35,600	30,000	7,630	4,400	68,900
26	4,050	13,600	19,900	e6,470	60,900	31,700	16,200	32,900	23,700	6,240	4,410	40,400
27	3,720	12,000	17,200	e6,470	42,700	27,100	15,300	29,000	19,500	5,790	6,130	29,900
28	4,530	10,600	15,200	5,890	33,000	24,500	14,600	26,300	16,500	5,450	5,240	24,200
29	5,270	9,460	13,200	6,370	---	21,500	13,900	26,100	14,400	5,580	4,790	29,100
30	6,630	8,990	11,900	6,330	---	20,800	13,100	24,800	12,800	5,400	4,870	29,600
31	8,290	---	11,400	6,070	---	22,400	---	22,100	---	5,150	4,710	---
TOTAL	141,640	455,660	530,960	633,680	477,580	1,440,000	862,800	1,040,100	1,241,400	318,130	221,690	970,480
MEAN	4,569	15,190	17,130	20,440	17,060	46,450	28,760	33,550	41,380	10,260	7,151	32,350
MAX	11,200	28,500	47,600	94,200	96,100	111,000	75,000	79,400	80,700	17,600	14,000	150,000
MIN	1,330	8,260	4,810	5,880	2,260	20,800	13,100	11,700	12,800	5,150	4,400	4,220
(†)	646	604	580	584	573	566	573	585	605	646	652	643
MEAN‡	5214	15800	17710	21030	17630	47040	29330	34140	41990	10910	7805	33050
CFSM‡	0.45	1.37	1.53	1.82	1.53	4.07	2.54	2.95	3.63	0.94	0.68	2.86
IN‡	0.52	1.52	1.77	2.10	1.59	4.69	2.83	3.41	4.05	1.09	0.78	3.19

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2003, BY WATER YEAR (WY)

MEAN	5,954	7,202	10,690	13,740	17,030	23,580	20,060	14,700	9,114	4,888	4,781	4,929
MAX	44,100	42,030	37,630	52,890	61,040	76,510	57,850	40,410	46,630	21,040	28,210	44,620
(WY)	(1943)	(1986)	(1997)	(1996)	(1998)	(1936)	(1993)	(1989)	(1972)	(1949)	(1955)	(1996)
MIN	583	700	1,038	1,682	1,882	6,225	5,810	3,921	1,536	599	538	679
(WY)	(1931)	(1931)	(1966)	(1981)	(2002)	(2002)	(1995)	(1969)	(1999)	(1999)	(1966)	(1930)

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1930 - 2003	
ANNUAL TOTAL	2,473,975		8,334,120			
ANNUAL MEAN	6,778		22,830		11,410	
ANNUAL MEAN‡	7,428		23,450		11,859	
HIGHEST ANNUAL MEAN					23,760	1996
HIGHEST ANNUAL MEAN‡					24,370	1996
LOWEST ANNUAL MEAN					4,017	2002
LOWEST ANNUAL MEAN‡					4,664	2002
HIGHEST DAILY MEAN	48,500	Apr 24	150,000	Sep 21	426,000	Mar 19, 1936
LOWEST DAILY MEAN	258	Aug 20	1,330	Oct 9	(a)121	Sep 9, 1966
LOWEST DAILY MEAN‡	995	Sep 13	1,970	Oct 10	(b)601	Sep 10, 1966
ANNUAL SEVEN-DAY MINIMUM	327	Aug 18	1,660	Oct 6	181	Sep 7, 1966
MAXIMUM PEAK FLOW			167,000	Sep 21	484,000	Mar 19, 1936
MAXIMUM PEAK STAGE			11.44	Sep 21	(c)28.10	Mar 19, 1936
INSTANTANEOUS LOW FLOW			1,260	Oct 8	66	Sep 9, 1966
ANNUAL RUNOFF (CFSM)	0.59		1.98		0.99	
ANNUAL RUNOFF (CFSM)‡	0.64		2.03		1.03	
ANNUAL RUNOFF (INCHES)	7.96		26.82		13.42	
ANNUAL RUNOFF (INCHES)‡	8.72		27.54		13.93	
10 PERCENT EXCEEDS	18,900		52,900		25,600	
50 PERCENT EXCEEDS	2,880		14,000		6,450	
90 PERCENT EXCEEDS	658		5,020		1,650	

e Estimated
† Diversions, in cubic feet per second, for municipal supply of Washington, D.C., Washington Suburban Sanitary District, city of Rockville, city of Fairfax (from Goose Creek), Fairfax County, and the Chesapeake and Ohio Canal (insignificant diversion to canal during current water year). Records provided by U.S. Army Corps of Engineers, Washington Suburban Sanitary Commission, city of Rockville, city of Fairfax, and Fairfax County Water Authority.
‡ Adjusted for diversion.
a Minimum daily discharge observed at gaging station, does not include diversion of 489 ft^3/s.
b Includes diversion of 449 ft^3/s for municipal use.
c At previous site, 1 mi upstream at same datum.

01646500 POTOMAC RIVER NEAR WASHINGTON, DC—Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1988 to current year.
WATER TEMPERATURE: October 1988 to current year.

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

REMARKS.-- No missing record. Records good.

EXTREMES FOR PERIOD OF DAILY RECORD--
SPECIFIC CONDUCTANCE: Maximum, 1,260 (road salt) microsiemens/cm, Dec. 11, 2002; minimum, 68 microsiemens/cm, Oct. 23, 1990.
WATER TEMPERATURE (water years 1989-93, 1995-99, 2001-03): Maximum, 33.5°C, July 11, 1993; minimum, 0.0°C, on many day during winter periods.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 1,260 (road salt) microsiemens/cm, Dec. 11; minimum, 108 microsiemens/cm, Sept. 23.
WATER TEMPERATURE: Maximum, 30.1°C, Aug. 23; minimum, 0.0°C, Jan. 18-25, 27.

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

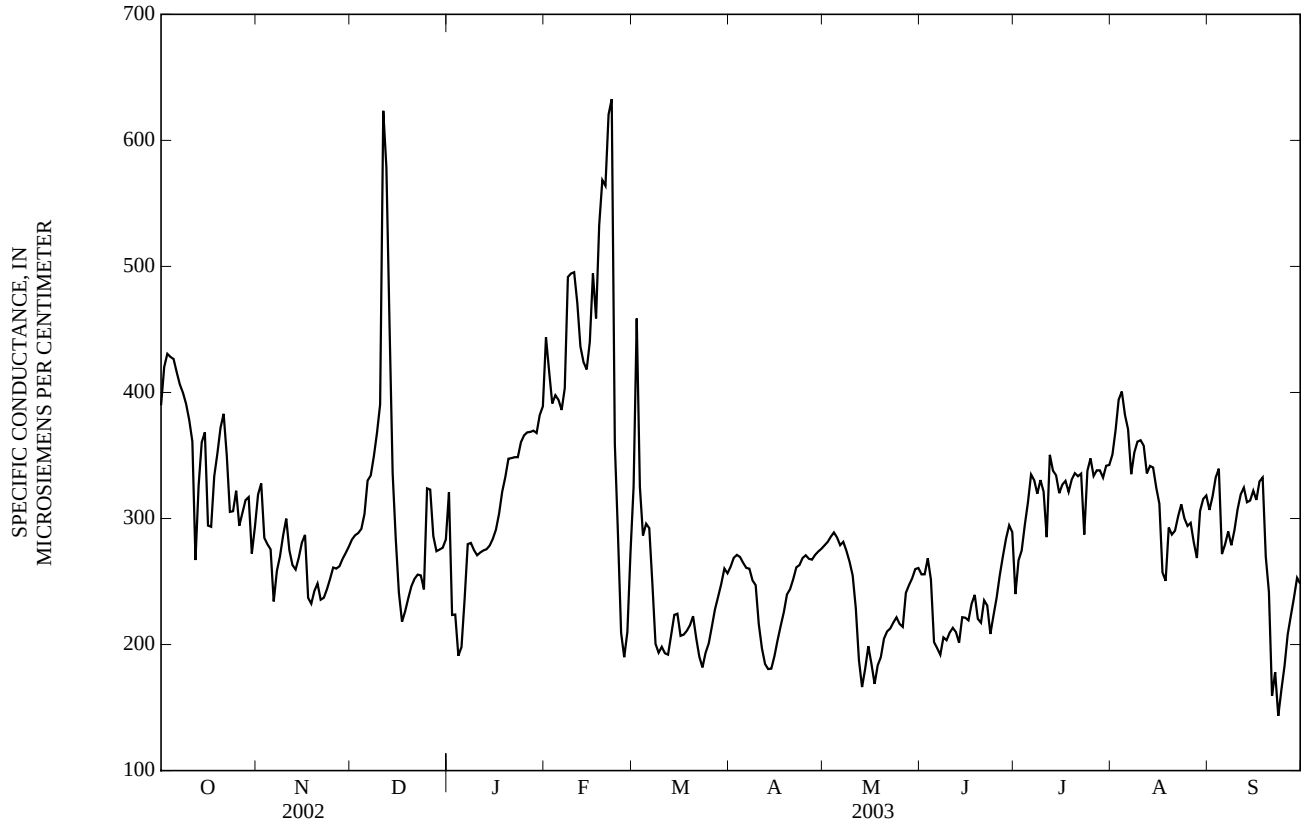
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	400	374	390	325	309	319	286	280	283	431	248	321
2	436	400	420	339	314	328	288	284	287	264	201	223
3	435	426	431	314	276	285	293	285	288	263	187	224
4	440	426	428	281	276	280	303	285	292	197	186	191
5	429	423	427	281	266	276	316	294	303	206	195	198
6	423	405	416	268	201	234	342	316	330	279	206	236
7	410	396	406	263	252	258	343	327	334	293	260	280
8	404	392	400	279	263	270	360	332	350	293	271	281
9	394	383	391	294	279	286	382	340	368	293	267	275
10	384	373	378	306	293	300	400	373	390	273	268	271
11	375	324	361	301	252	275	1,260	377	623	275	271	273
12	324	236	267	276	238	263	756	492	579	278	273	275
13	345	308	326	266	241	260	553	407	455	283	271	276
14	368	345	361	274	265	269	414	317	336	281	275	279
15	370	367	368	296	273	281	318	259	284	287	280	284
16	369	165	294	299	269	287	264	219	241	297	287	291
17	330	211	293	243	212	237	224	215	218	312	293	304
18	352	324	334	241	221	232	233	222	226	341	312	321
19	360	343	352	251	238	243	240	231	237	348	323	333
20	380	359	372	255	237	248	256	239	246	354	337	347
21	385	376	383	237	234	236	256	248	252	350	346	348
22	376	323	350	241	234	237	259	252	256	359	342	349
23	323	297	305	248	240	244	259	243	255	369	341	349
24	316	297	306	256	248	252	251	237	244	369	353	361
25	326	316	322	264	256	261	498	247	324	369	362	366
26	327	255	294	263	258	260	336	312	323	372	365	368
27	313	288	304	266	260	262	312	274	286	372	366	369
28	316	313	315	271	265	268	277	271	274	374	365	370
29	320	290	317	277	270	273	279	273	275	371	364	368
30	290	248	272	281	274	278	280	274	277	391	370	382
31	309	277	293	---	---	---	289	277	283	393	386	389
MONTH	440	165	351	339	201	267	1,260	215	314	431	186	307

01646500 POTOMAC RIVER NEAR WASHINGTON, DC—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	480	388	444	372	307	325	267	257	262	284	275	279
2	448	396	417	557	372	459	272	267	269	286	278	281
3	398	383	391	395	290	325	273	269	271	290	283	286
4	431	385	398	292	282	287	272	266	269	292	286	289
5	417	385	394	321	284	296	268	250	265	289	280	285
6	390	380	386	310	267	292	263	259	261	293	266	279
7	482	375	403	267	230	248	272	251	260	290	273	282
8	523	465	492	230	186	200	253	246	251	280	269	274
9	508	474	494	199	187	194	252	240	247	270	260	266
10	508	480	495	200	197	198	240	210	216	260	244	255
11	488	450	471	200	187	193	212	177	197	244	214	229
12	453	425	436	198	186	192	191	176	185	214	168	188
13	433	414	424	220	198	208	190	175	181	172	164	166
14	428	408	418	225	220	224	186	176	181	192	172	181
15	516	411	440	228	219	224	196	186	191	205	192	199
16	539	437	494	219	203	207	210	195	203	211	165	185
17	483	440	459	210	205	208	220	209	215	196	152	169
18	569	474	533	214	209	211	232	220	226	194	178	184
19	633	541	568	220	212	215	243	232	240	197	184	190
20	604	538	564	247	208	222	246	242	244	211	197	205
21	703	599	621	218	196	205	258	245	252	219	203	210
22	811	404	633	216	173	190	263	258	261	216	207	213
23	444	278	359	190	176	182	265	261	263	220	215	217
24	309	246	288	198	188	193	271	265	269	224	219	222
25	246	184	209	207	195	201	275	267	271	231	207	216
26	205	181	190	230	207	214	276	259	268	233	193	214
27	231	201	210	234	225	228	272	259	267	245	233	241
28	317	231	273	243	231	238	275	267	271	256	243	247
29	---	---	---	253	243	248	276	272	274	258	250	253
30	---	---	---	274	252	260	279	274	276	264	258	260
31	---	---	---	259	252	257	---	---	---	264	258	261
MONTH	811	181	425	557	173	237	279	175	244	293	152	233
		JUNE			JULY			AUGUST			SEPTEMBER	
1	266	244	256	279	181	240	357	344	351	325	301	307
2	265	244	256	285	251	267	413	348	370	328	308	318
3	272	265	268	293	264	275	413	382	394	339	328	333
4	266	221	252	303	291	295	415	388	401	358	321	340
5	221	180	202	328	301	313	395	374	382	321	249	272
6	206	181	197	353	321	335	379	352	371	287	274	280
7	209	148	192	340	293	330	352	330	335	299	279	290
8	212	198	206	330	302	320	360	338	352	284	276	279
9	214	196	203	342	294	330	366	356	361	302	280	291
10	214	203	209	330	299	321	365	358	362	316	300	307
11	215	211	213	336	216	285	368	344	358	327	312	319
12	214	200	210	362	328	351	354	306	336	330	321	325
13	211	189	201	349	312	338	358	325	342	330	303	313
14	227	211	222	346	326	334	349	328	340	323	303	314
15	226	215	221	328	314	320	336	313	325	324	319	322
16	225	213	219	344	316	327	318	298	312	326	297	315
17	241	224	232	342	323	330	298	245	257	341	321	329
18	243	234	239	335	308	321	285	240	251	342	249	333
19	250	182	220	341	323	331	300	274	293	288	224	270
20	234	182	217	345	322	336	299	279	287	283	176	242
21	240	227	235	339	329	334	300	282	290	176	153	159
22	241	208	231	347	289	336	312	295	302	187	165	178
23	213	205	208	316	252	287	319	305	311	190	108	143
24	230	212	223	353	314	338	305	293	300	184	134	164
25	246	230	237	359	326	348	297	292	294	196	177	183
26	264	246	255	339	329	334	301	281	297	215	196	208
27	277	264	270	343	330	338	294	257	281	230	215	223
28	288	277	284	346	329	338	297	245	269	244	229	237
29	298	288	295	346	317	332	317	297	306	259	244	253
30	298	272	289	355	336	342	320	285	315	259	227	248
31	---	---	---	356	337	342	326	285	318	---	---	---
MONTH	298	148	232	362	181	322	415	240	325	358	108	270

01646500 POTOMAC RIVER NEAR WASHINGTON, DC—Continued



DAILY MEAN SPECIFIC CONDUCTANCE - 2003 WATER YEAR

01646500 POTOMAC RIVER NEAR WASHINGTON, DC—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

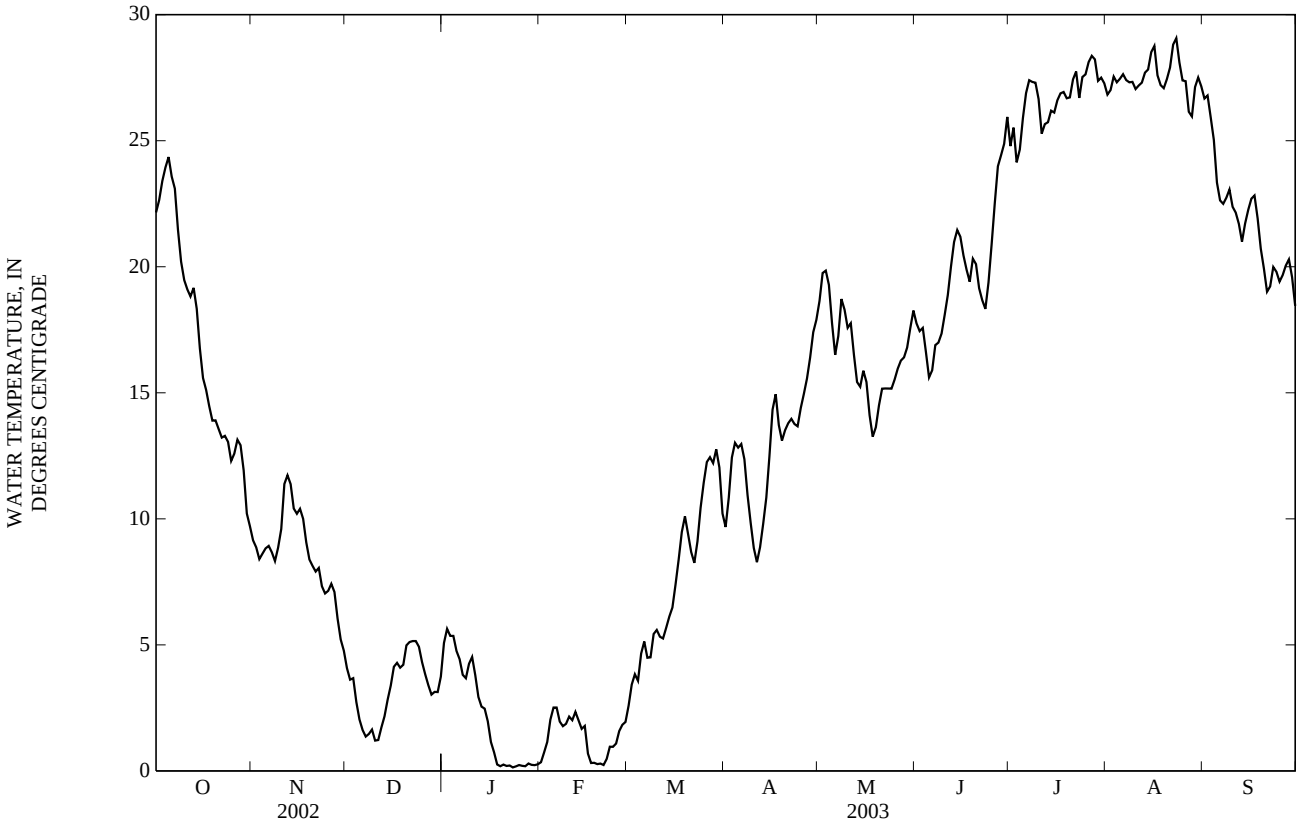
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	23.2	21.2	22.2	9.5	8.9	9.1	4.6	3.7	4.1	6.9	3.8	5.1
2	23.9	21.6	22.6	9.2	8.6	8.9	3.9	3.4	3.6	6.5	5.5	5.6
3	24.3	22.4	23.4	8.7	8.0	8.4	4.0	3.2	3.7	5.7	5.0	5.4
4	24.6	23.4	23.9	9.0	8.4	8.6	3.7	2.2	2.7	5.5	5.0	5.4
5	25.0	23.9	24.4	9.1	8.7	8.8	2.8	1.5	2.0	5.0	4.4	4.8
6	24.3	23.1	23.6	9.3	8.6	8.9	2.7	0.9	1.6	4.5	4.3	4.4
7	23.7	22.7	23.1	9.0	8.2	8.7	2.2	0.6	1.4	4.3	3.6	3.8
8	22.7	20.9	21.5	9.0	7.9	8.3	2.4	0.6	1.5	4.0	3.3	3.7
9	20.9	19.9	20.2	9.4	8.4	8.9	2.9	0.9	1.6	4.8	3.8	4.2
10	20.0	19.2	19.5	10.2	8.9	9.6	1.7	0.6	1.2	4.8	4.2	4.5
11	19.3	18.9	19.1	12.3	10.1	11.4	1.8	0.9	1.2	4.4	3.5	3.8
12	19.3	18.5	18.8	12.0	11.6	11.7	2.3	1.3	1.7	3.5	2.6	2.9
13	19.4	18.9	19.2	11.8	10.7	11.4	2.5	1.7	2.2	2.8	2.1	2.6
14	18.9	17.7	18.3	10.7	10.0	10.4	3.2	2.5	2.8	2.8	2.2	2.5
15	18.0	16.2	16.8	10.6	9.9	10.2	3.8	3.1	3.4	2.5	1.5	2.0
16	16.7	14.9	15.6	10.5	10.3	10.4	4.5	3.8	4.1	1.6	0.8	1.1
17	15.6	14.8	15.1	10.4	9.5	10.0	4.5	4.1	4.3	1.1	0.2	0.7
18	15.0	14.1	14.5	9.5	8.7	9.1	4.3	3.9	4.1	0.5	0.0	0.3
19	14.3	13.7	13.9	8.7	8.1	8.4	4.6	4.0	4.2	0.5	0.0	0.2
20	14.0	13.7	13.9	8.4	7.8	8.1	5.3	4.6	5.0	0.6	0.0	0.3
21	14.0	13.1	13.6	8.2	7.7	7.9	5.4	4.7	5.1	0.4	0.0	0.2
22	13.8	12.8	13.2	8.2	7.7	8.1	5.4	4.8	5.2	0.6	0.0	0.2
23	14.2	12.6	13.3	7.7	7.1	7.3	5.5	4.7	5.2	0.4	0.0	0.1
24	13.6	12.7	13.1	7.3	6.6	7.0	5.3	4.8	4.9	0.5	0.0	0.2
25	12.7	12.1	12.3	7.5	6.7	7.1	4.9	3.7	4.3	0.5	0.0	0.2
26	13.4	12.1	12.6	7.5	7.2	7.4	4.1	3.6	3.8	0.5	0.1	0.2
27	13.8	12.5	13.1	7.4	6.5	7.1	3.7	3.2	3.4	0.4	0.0	0.2
28	13.6	12.6	12.9	6.5	5.5	6.0	3.3	2.7	3.0	0.6	0.1	0.3
29	12.8	10.8	11.9	5.5	4.7	5.2	3.5	2.8	3.1	0.4	0.2	0.2
30	10.8	9.7	10.2	5.1	4.6	4.8	3.4	2.9	3.1	0.6	0.1	0.2
31	10.0	9.5	9.7	---	---	---	4.3	3.3	3.7	0.6	0.1	0.3
MONTH	25.0	9.5	17.0	12.3	4.6	8.6	5.5	0.6	3.3	6.9	0.0	2.1
		FEBRUARY			MARCH			APRIL			MAY	
1	0.7	0.2	0.3	2.9	2.4	2.6	10.4	9.0	9.7	19.2	18.2	18.6
2	1.3	0.3	0.7	4.3	2.8	3.4	12.1	9.9	10.8	20.3	19.2	19.8
3	1.8	0.6	1.1	4.3	3.3	3.8	13.7	11.3	12.4	20.2	19.5	19.8
4	3.0	1.4	2.0	4.1	3.0	3.6	13.6	12.7	13.0	19.8	18.8	19.3
5	3.3	1.8	2.5	5.6	3.9	4.7	13.2	12.5	12.8	18.8	16.8	17.8
6	2.9	2.2	2.5	5.4	4.7	5.1	13.5	12.4	13.0	16.8	16.4	16.5
7	2.4	1.5	2.0	4.8	4.1	4.5	13.7	11.4	12.4	18.4	16.4	17.2
8	2.7	1.1	1.8	4.9	4.1	4.5	11.5	10.2	10.9	19.3	18.2	18.7
9	2.7	1.1	1.9	6.1	4.7	5.4	10.2	9.3	9.8	19.2	17.9	18.3
10	2.4	1.9	2.2	5.9	5.3	5.6	9.3	8.5	8.8	18.0	17.3	17.6
11	2.6	1.5	2.0	5.6	5.1	5.3	8.7	8.1	8.3	18.3	17.3	17.8
12	3.2	1.6	2.3	5.6	4.9	5.3	9.7	8.1	8.9	17.7	15.7	16.5
13	2.8	1.2	2.0	6.3	5.1	5.7	10.4	9.2	9.8	15.7	15.0	15.4
14	2.5	0.9	1.7	6.7	5.5	6.1	11.8	9.9	10.8	16.1	14.5	15.2
15	2.2	1.6	1.8	7.2	5.8	6.5	13.8	11.3	12.5	16.5	15.3	15.9
16	1.7	0.1	0.7	8.1	6.7	7.4	15.4	13.3	14.3	16.2	14.7	15.4
17	0.6	0.2	0.3	8.9	7.8	8.4	15.3	14.6	14.9	14.7	13.6	14.1
18	0.7	0.1	0.3	10.2	8.8	9.5	14.6	13.3	13.7	13.6	13.1	13.3
19	0.9	0.1	0.3	10.5	9.7	10.1	13.6	12.7	13.1	14.5	12.8	13.6
20	0.5	0.1	0.3	10.1	8.7	9.4	14.2	12.8	13.5	15.4	13.7	14.5
21	0.4	0.1	0.2	9.0	8.6	8.7	14.3	13.3	13.8	15.4	14.9	15.2
22	1.2	0.2	0.5	8.7	7.8	8.3	14.2	13.7	14.0	15.2	15.1	15.2
23	1.3	0.6	1.0	9.8	8.3	9.1	14.4	13.1	13.8	15.2	15.1	15.2
24	1.2	0.7	1.0	11.2	9.7	10.4	14.4	12.8	13.7	15.6	14.9	15.2
25	1.5	0.3	1.1	12.3	10.6	11.4	15.0	13.8	14.4	15.9	15.2	15.5
26	1.7	1.4	1.6	12.9	11.6	12.3	15.2	14.8	15.0	16.6	15.5	16.0
27	2.0	1.7	1.8	13.2	11.6	12.4	16.5	14.7	15.6	16.6	16.0	16.3
28	2.4	1.6	1.9	13.0	11.7	12.2	17.5	15.4	16.4	17.0	16.0	16.4
29	---	---	---	13.5	12.3	12.8	17.7	17.0	17.4	17.2	16.4	16.8
30	---	---	---	13.5	10.8	12.0	18.4	17.4	17.9	18.8	16.5	17.6
31	---	---	---	10.8	9.8	10.2	---	---	---	18.8	17.9	18.3
MONTH	3.3	0.1	1.4	13.5	2.4	7.6	18.4	8.1	12.8	20.3	12.8	16.5

01646500 POTOMAC RIVER NEAR WASHINGTON, DC—Continued

TEMPERATURE, WATER, DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	18.4	17.5	17.8	26.5	22.3	24.8	27.2	26.5	26.8	27.5	25.9	26.7
2	18.3	16.6	17.4	26.1	24.3	25.5	27.7	26.5	27.0	27.2	26.3	26.8
3	18.2	17.4	17.6	24.3	23.9	24.1	28.4	26.9	27.5	26.6	25.5	25.9
4	17.4	15.9	16.6	25.6	23.9	24.6	28.0	26.5	27.3	25.5	24.4	25.0
5	15.9	15.4	15.6	26.7	24.8	25.9	28.6	26.8	27.5	24.4	22.8	23.3
6	16.6	15.3	15.9	27.5	26.1	26.9	28.7	26.9	27.6	23.1	22.1	22.6
7	18.1	16.2	16.9	27.8	26.6	27.4	27.9	26.9	27.4	23.0	21.8	22.5
8	17.2	16.8	17.0	27.6	27.0	27.3	27.9	26.7	27.3	22.9	22.4	22.7
9	17.9	16.9	17.4	28.3	26.5	27.3	27.6	26.9	27.3	23.6	22.6	23.1
10	18.8	17.4	18.1	27.1	26.0	26.7	27.9	26.6	27.1	22.9	21.7	22.4
11	19.3	18.4	18.9	26.0	24.2	25.3	27.5	26.9	27.2	23.3	21.5	22.1
12	21.3	19.1	20.0	26.4	25.0	25.7	28.8	26.1	27.3	22.0	20.9	21.7
13	21.6	20.4	21.0	26.6	25.0	25.7	28.1	27.4	27.7	21.7	20.6	21.0
14	22.1	20.8	21.5	26.6	25.6	26.2	28.4	27.2	27.8	22.2	21.3	21.7
15	21.3	20.7	21.2	26.4	25.7	26.1	29.0	28.0	28.5	23.2	21.7	22.3
16	20.7	20.3	20.4	27.2	26.2	26.6	29.3	28.1	28.8	23.8	21.9	22.7
17	20.3	19.4	19.9	27.7	26.3	26.9	28.1	27.0	27.6	23.9	22.1	22.8
18	20.1	19.0	19.4	27.5	26.4	26.9	27.6	26.9	27.2	22.5	20.4	21.9
19	21.1	19.6	20.3	27.4	26.1	26.7	27.7	26.7	27.1	21.0	20.4	20.7
20	20.9	19.7	20.1	27.6	25.9	26.7	28.3	26.7	27.4	20.4	19.2	19.9
21	19.7	18.9	19.1	28.7	26.5	27.4	29.1	27.1	27.9	19.2	18.9	19.0
22	19.0	18.3	18.7	28.7	27.1	27.7	29.9	27.9	28.8	19.6	18.9	19.2
23	19.0	17.7	18.3	27.6	25.9	26.7	30.1	28.4	29.1	20.3	19.5	20.0
24	20.5	18.4	19.4	28.5	26.8	27.5	29.0	27.2	28.1	20.0	19.4	19.8
25	22.3	19.7	20.9	28.7	27.0	27.6	28.5	26.2	27.4	19.7	19.1	19.4
26	24.2	21.4	22.5	29.4	27.1	28.1	28.4	26.3	27.4	20.2	19.2	19.7
27	24.8	23.3	24.0	29.1	27.6	28.4	26.9	25.2	26.1	20.7	19.4	20.0
28	24.9	23.8	24.4	28.8	27.6	28.2	27.4	24.8	26.0	20.6	20.0	20.3
29	25.7	24.1	24.9	28.3	26.6	27.4	28.5	26.1	27.1	20.4	19.0	19.6
30	26.6	25.4	25.9	28.5	26.7	27.5	28.7	26.6	27.5	19.0	18.0	18.4
31	---	---	---	27.9	26.6	27.3	27.7	26.8	27.2	---	---	---
MONTH	26.6	15.3	19.7	29.4	22.3	26.7	30.1	24.8	27.5	27.5	18.0	21.8

01646500 POTOMAC RIVER NEAR WASHINGTON, DC—Continued



DAILY MEAN WATER TEMPERATURE - 2003 WATER YEAR

01646580 POTOMAC RIVER AT CHAIN BRIDGE AT WASHINGTON, DC

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

DRAINAGE AREA.--11,570 mi^2.

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

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

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

REMARKS--Extreme high flows are sampled from the George Mason Memorial Bridge (14th Street) located 6 mi downstream from Chain Bridge. On May 3 and Nov. 17, 1994 samples were collected and analyzed using ultraclean methodologies. Data on trace metals for these dates are available from the University of Delaware. Data on organics for these dates are available from George Mason University.

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

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Sample type	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)
OCT												
08...	1030	Environmental	1,370	769	9.4	105	8.7	392	18.0	21.0	--	--
NOV												
05...	1100	Environmental	8,870	764	12.8	110	7.5	273	11.5	9.0	--	--
DEC												
03...	1015	Environmental	6,870	772	14.0	105	8.1	279	0.0	3.6	--	--
JAN												
08...	1000	Environmental	27,400	751	6.9	52	7.8	222	--	3.3	--	--
22...	1045	Environmental	5,780	763	14.9	102	8.1	324	-4.0	0.0	140	41.0
FEB												
04...	*1145*	*Blank*	--	--	--	--	--	--	--	--	--	--
04...	1230	Environmental	6,230	751	13.2	97	7.9	359	12.0	2.1	--	--
23...	1115	Environmental	37,700	739	--	--	7.9	322	7.5	3.0	--	--
MAR												
04...	1200	Environmental	34,100	771	--	--	7.4	248	6.0	3.2	--	--
10...	1045	Environmental	74,300	765	--	--	7.7	198	1.0	6.0	--	--
18...	1230	Environmental	38,100	758	14.5	128	6.1	212	19.5	9.5	--	--
19...	1215	Environmental	36,100	766	--	--	8.0	215	10.0	10.5	--	--
22...	1015	Environmental	119,000	755	--	--	7.9	186	15.0	9.0	--	--
22...	*1016*	*Replicate*	--	--	--	--	--	--	--	--	--	--
APR												
02...	0945	Environmental	21,700	756	13.9	124	7.4	273	--	10.0	--	--
09...	0945	Environmental	34,600	763	12.3	109	8.1	248	5.5	10.0	100	30.4
09...	*0950*	*Replicate*	--	--	--	--	--	--	--	--	*100*	*30.6*
22...	1015	Environmental	19,000	752	11.2	110	8.1	264	23.0	14.0	120	34.2
22...	*1020*	*Replicate*	--	--	--	--	--	--	--	--	*110*	*33.6*
23...	1045	Environmental	18,100	764	11.5	110	7.7	266	--	13.3	--	--
MAY												
07...	1030	Environmental	14,800	756	12.2	127	7.7	286	26.0	17.0	--	--
14...	0915	Environmental	42,300	758	11.3	112	7.9	178	17.0	14.8	--	--
14...	*0920*	*Replicate*	--	--	--	--	--	--	--	--	--	--
20...	1115	Environmental	44,700	773	12.1	117	6.9	204	--	14.5	--	--
28...	0930	Environmental	26,300	756	--	--	8.0	243	15.0	--	--	--
JUN												
04...	0930	Environmental	28,100	757	9.6	100	7.2	246	16.5	16.8	--	--
04...	*0931*	*Replicate*	--	--	--	--	--	--	--	--	--	--
18...	0945	Environmental	32,600	764	9.0	97	7.9	242	18.5	19.1	--	--
18...	*0946*	*Replicate*	--	--	--	--	--	--	--	--	--	--
25...	*1055*	*Blank*	--	--	--	--	--	--	--	--	--	--
25...	*1056*	*Blank*	--	--	--	--	--	--	--	--	--	--
25...	1100	Environmental	30,100	762	9.6	106	8.0	229	30.0	20.5	--	--
25...	*1101*	*Replicate*	--	--	--	--	--	--	--	--	--	--
JUL												
08...	1000	Environmental	13,000	758	9.8	124	8.1	317	27.5	27.0	--	--
08...	*1002*	*Replicate*	--	--	--	--	--	--	--	--	--	--
16...	0945	Environmental	10,400	758	9.4	--	8.2	306	30.0	26.5	--	--
16...	*0946*	*Replicate*	--	--	--	--	--	--	--	--	--	--
16...	*0950*	*Replicate*	--	--	--	--	--	--	--	--	--	--
16...	*0951*	*Replicate*	--	--	--	--	--	--	--	--	--	--
23...	1100	Environmental	8,780	762	8.3	105	7.9	291	26.0	26.9	--	--
AUG												
04...	1030	Environmental	5,570	759	8.1	104	8.4	354	25.5	27.5	--	--
04...	*1031*	*Replicate*	--	--	--	--	--	--	--	--	--	--
04...	*1032*	*Replicate*	--	--	--	--	--	--	--	--	--	--
05...	1030	Environmental	5,290	762	10.6	134	8.2	376	29.5	27.1	--	--
20...	0915	Environmental	7,540	761	9.9	126	7.9	282	27.0	27.5	--	--
SEP												
03...	0945	Environmental	5,080	761	8.1	100	8.2	329	23.5	26.0	--	--
03...	*0946*	*Replicate*	--	--	--	--	--	--	--	--	--	--
05...	0915	Environmental	38,600	759	8.8	103	7.9	241	24.0	23.0	--	--
09...	1115	Environmental	9,910	771	9.1	105	7.8	286	26.5	23.0	--	--
20...	0900	Environmental	82,900	762	12.4	142	7.9	286	22.5	22.0	--	--
20...	*0905*	*Replicate*	--	--	--	--	--	--	--	--	--	--

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium, water, fltrd, mg/L (00930)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Bicarbonate, wat flt incrm. titr., field, mg/L (00453)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue on evap. at 180degC wat flt mg/L (70300)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)
OCT													
08...	--	--	--	66	81	21.9	--	2.5	56.4	--	<10	--	0.36
NOV													
05...	--	--	--	74	91	11.7	--	6.9	28.5	--	<10	0.26	0.36
DEC													
03...	--	--	--	82	101	12.4	--	6.2	29.5	--	<10	--	0.18
JAN													
08...	--	--	--	58	71	16.0	--	--	24.7	--	--	--	0.35
22...	9.07	2.02	10.1	--	--	15.6	<0.17	6.38	28.5	186	<10	0.16	0.18
FEB													
04...	--	--	--	--	--	--	--	--	--	--	--	--	*<0.10*
04...	--	--	--	105	128	20.8	--	--	32.6	--	--	--	0.20
23...	--	--	--	--	--	--	--	4.1	--	--	136	0.31	0.77
MAR													
04...	--	--	--	66	80	24.3	--	--	20.6	--	--	--	0.65
10...	--	--	--	--	--	--	--	6.8	--	--	94	0.34	0.71
18...	--	--	--	--	--	--	--	--	--	--	--	--	0.29
19...	--	--	--	--	--	--	--	6.4	--	--	23	0.23	0.33
22...	--	--	--	--	--	--	--	5.8	--	--	310	0.36	1.5
22...	--	--	--	--	--	--	--	*5.8*	--	--	*296*	*0.36*	*1.4*
APR													
02...	--	--	--	81	98	13.1	--	--	21.7	--	--	--	0.32
09...	6.60	1.85	8.11	67	82	11.9	0.09	4.35	21.1	267	35	0.18	0.46
09...	*6.56*	*1.78*	*7.98*	--	--	*12.0*	*0.09*	*4.31*	*21.2*	*139*	*37*	*0.14*	*0.36*
22...	7.44	1.88	6.90	76	92	10.7	0.09	5.66	22.2	149	<10	0.16	0.28
22...	*7.31*	*1.89*	*6.76*	--	--	*10.7*	*0.09*	*5.51*	*22.4*	*149*	*14*	*0.17*	*0.27*
23...	--	--	--	--	--	--	--	--	--	--	--	--	0.25
MAY													
07...	--	--	--	85	104	13.2	--	--	21.9	--	--	--	0.45
14...	--	--	--	--	--	--	--	7.2	--	--	85	0.27	0.82
14...	--	--	--	--	--	--	--	*7.4*	--	--	*113*	*0.26*	*0.78*
20...	--	--	--	--	--	--	--	--	--	--	--	--	0.42
28...	--	--	--	--	--	--	--	8.4	--	--	41	0.26	0.51
JUN													
04...	--	--	--	70	85	10.7	--	--	22.6	--	--	--	0.38
04...	--	--	--	--	--	*10.9*	--	--	*22.6*	--	--	--	*0.40*
18...	--	--	--	--	--	--	--	--	--	--	--	--	0.55
18...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	*<0.2*	--	--	*<10*	*<0.10*	*<0.10*
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	8.7	--	--	55	0.25	0.49
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
08...	--	--	--	110	135	13.8	--	--	19.3	--	--	--	0.47
08...	--	--	--	*111*	*136*	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	7.0	--	--	15	0.18	0.47
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	*6.9*	--	--	*18*	*0.21*	*0.42*
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--	--	0.54
AUG													
04...	--	--	--	--	--	--	--	5.7	--	--	<10	0.23	0.55
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
05...	--	--	--	125	152	19.2	--	--	31.8	--	--	--	0.57
20...	--	--	--	--	--	--	--	--	--	--	--	--	0.47
SEP													
03...	--	--	--	--	--	--	--	4.3	--	--	20	0.27	0.36
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	--	6.5	--	--	392	0.48	2.0
09...	--	--	--	78	96	11.1	--	--	34.6	--	--	--	0.44
20...	--	--	--	--	--	--	--	7.1	--	--	506	0.39	2.2
20...	--	--	--	--	--	--	--	--	--	--	--	--	--

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitro-gen, water, fltrd, mg/L (00607)	Organic nitro-gen, water, unfltrd mg/L (00605)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Phos-phorus, water, fltrd, mg/L (00666)	Phos-phorus, water, unfltrd mg/L (00665)	Total nitro-gen, water, fltrd, mg/L (00602)	Total nitro-gen, water, unfltrd mg/L (00600)	Organic carbon, suspnd sedimnt total, mg/L (00689)	Organic carbon, water, fltrd, mg/L (00681)
OCT													
08...	<0.04	0.81	0.82	0.009	--	--	0.03	--	0.055	--	1.2	<0.1	4.1
NOV													
05...	<0.04	--	1.73	E.006	--	--	0.05	0.069	0.088	2.0	2.1	0.4	4.0
DEC													
03...	<0.04	--	2.00	E.005	--	--	0.03	--	0.039	--	2.2	<0.1	2.0
JAN													
08...	0.04	--	1.88	E.004	--	0.31	0.07	--	0.073	--	2.2	0.8	3.4
22...	<0.04	--	2.52	E.006	--	--	0.02	0.023	0.039	2.7	2.7	--	1.8
FEB													
04...	*0.08*	--	*<0.06*	*0.011*	--	--	*<0.02*	--	*<0.004*	--	--	*<0.1*	*0.8*
04...	E.04	2.58	2.59	0.010	--	--	E.01	--	0.029	--	2.8	<0.1	2.1
23...	0.10	1.42	1.43	0.010	0.21	0.67	E.01	0.019	0.19	1.7	2.2	--	--
MAR													
04...	0.12	1.90	1.91	0.011	--	0.52	0.04	--	0.125	--	2.6	1.5	3.6
10...	0.07	1.51	1.52	0.008	0.26	0.63	0.03	0.041	0.166	1.9	2.2	--	--
18...	E.03	1.55	1.55	0.009	--	--	0.02	--	0.065	--	1.8	--	--
19...	E.03	1.55	1.56	0.009	--	--	0.02	0.019	0.060	1.8	1.9	--	2.2
22...	0.06	1.16	1.17	0.008	0.30	1.5	0.02	0.037	0.39	1.5	2.7	--	--
22...	*0.06*	*1.16*	*1.17*	*0.009*	*0.30*	*1.4*	*0.02*	*0.035*	*0.37*	*1.5*	*2.6*	--	--
APR													
02...	<0.04	1.73	1.73	0.008	--	--	E.01	--	0.050	--	2.1	0.5	3.7
09...	<0.04	1.30	1.31	0.009	--	--	E.01	0.014	0.064	1.5	1.8	--	2.2
09...	*<0.04*	*1.31*	*1.32*	*0.009*	--	--	*E.01*	*0.014*	*0.068*	*1.5*	*1.7*	--	*2.3*
22...	<0.04	--	1.55	E.004	--	--	E.01	0.021	0.048	1.7	1.8	--	1.9
22...	*<0.04*	--	*1.56*	*E.004*	--	--	*E.01*	*0.021*	*0.047*	*1.7*	*1.8*	--	*2.0*
23...	<0.04	1.26	1.35	0.086	--	--	<0.02	--	0.044	--	1.6	--	--
MAY													
07...	<0.04	--	1.34	E.007	--	--	<0.02	--	0.049	--	1.8	0.9	3.5
14...	E.04	0.91	0.92	0.010	--	--	0.02	0.032	0.181	1.2	1.7	--	--
14...	*E.04*	*0.91*	*0.91*	*0.009*	--	--	*0.02*	*0.032*	*0.176*	*1.2*	*1.7*	--	--
20...	<0.04	1.13	1.17	0.040	--	--	<0.02	--	0.097	--	1.6	--	--
28...	<0.04	1.45	1.47	0.011	--	--	0.04	0.050	0.119	1.7	2.0	--	--
JUN													
04...	<0.04	0.87	1.03	0.159	--	--	<0.02	--	0.092	--	1.4	1.1	3.2
04...	*<0.04*	*0.87*	*1.03*	*0.162*	--	--	*<0.02*	--	*0.094*	--	*1.4*	*1.2*	*2.6*
18...	<0.04	1.11	1.18	0.064	--	--	<0.02	--	0.126	--	1.7	--	--
18...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	*<0.04*	--	*<0.06*	*<0.008*	--	--	*<0.02*	*<0.004*	*<0.004*	--	--	--	--
25...	--	--	--	--	--	--	--	*<0.01*	--	--	--	--	*E.2*
25...	<0.04	--	1.26	E.006	--	--	0.04	0.049	0.128	1.5	1.8	--	--
25...	--	--	--	--	--	--	--	*0.04*	--	--	--	--	*3.1*
JUL													
08...	<0.04	1.58	1.59	0.009	--	--	<0.02	--	0.061	--	2.1	1.4	3.8
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
16...	<0.04	1.50	1.51	0.008	--	--	0.02	0.027	0.066	1.7	2.0	--	--
16...	--	--	--	--	--	--	--	*0.03*	--	--	--	--	*3.0*
16...	*<0.04*	*1.50*	*1.51*	*0.008*	--	--	*0.02*	*0.027*	*0.065*	*1.7*	*1.9*	--	--
16...	--	--	--	--	--	--	--	*0.03*	--	--	--	--	*3.0*
23...	<0.04	1.15	1.16	0.012	--	--	<0.02	--	0.075	--	1.7	--	--
AUG													
04...	<0.04	1.21	1.23	0.012	--	--	<0.02	0.011	0.056	1.5	1.8	--	--
04...	--	--	--	--	--	--	--	*<0.01*	--	--	--	--	*2.6*
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
05...	<0.04	1.41	1.42	0.014	--	--	<0.02	--	0.053	--	2.0	1.8	3.0
20...	<0.04	0.91	0.94	0.034	--	--	<0.02	--	0.121	--	1.4	--	--
SEP													
03...	E.03	1.16	1.17	0.010	--	--	0.02	0.030	0.052	1.4	1.5	--	--
03...	--	--	--	--	--	--	--	*0.04*	--	--	--	--	*2.5*
05...	<0.41	--	1.24	<0.080	--	--	E.11	0.124	0.63	1.7	3.2	--	--
09...	<0.04	1.40	1.41	0.010	--	--	0.04	--	0.100	--	1.8	1.2	4.2
20...	0.04	1.33	1.34	0.009	0.34	2.2	0.05	0.068	0.70	1.7	3.5	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--	--

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Organic carbon, water, unfltrd mg/L (00680)	Iron, water, fltrd, ug/L (01046)	Manganese, water, fltrd, ug/L (01056)	2,6-Diethylaniline water fltrd 0.7u GF ug/L (82660)	CIAT, water, fltrd, ug/L (04040)	Acetochlor, water, fltrd, ug/L (49260)	Alachlor, water, fltrd, ug/L (46342)	alpha-HCH, water, fltrd, ug/L (34253)	alpha-HCH-d6, surrog, wat flt 0.7u GF percent recovry (91065)	Atrazine, water, fltrd, ug/L (39632)	Azinphosmethyl, water, fltrd 0.7u GF ug/L (82686)	Benfluralin, water, fltrd 0.7u GF ug/L (82673)	Butylate, water, fltrd, ug/L (04028)
OCT													
08...	--	--	--	<0.006	E.034	<0.006	<0.004	<0.005	99.1	0.037	<0.050	<0.010	<0.002
NOV													
05...	--	--	--	<0.006	E.021	0.042	<0.004	<0.005	111	0.038	<0.050	<0.010	<0.002
DEC													
03...	--	--	--	<0.006	E.030	<0.006	<0.004	<0.005	99.0	0.021	<0.050	<0.010	<0.002
JAN													
08...	--	--	--	<0.006	E.019	<0.006	<0.004	<0.005	95.5	0.014	<0.050	<0.010	<0.002
22...	2.0	19	14.8	--	--	--	--	--	--	--	--	--	--
FEB													
04...	--	--	--	*<0.006*	*<0.006*	*<0.006*	*<0.004*	*<0.005*	*103*	*<0.007*	*<0.050*	*<0.010*	*<0.002*
04...	--	--	--	<0.006	E.051	<0.006	<0.004	<0.005	97.3	0.028	<0.050	<0.010	<0.002
23...	9.2	--	--	--	--	--	--	--	--	--	--	--	--
MAR													
04...	--	--	--	<0.006	E.035	<0.006	<0.004	<0.005	95.5	0.021	<0.050	<0.010	<0.002
10...	6.2	--	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	<0.006	E.031	<0.006	<0.004	<0.005	92.9	0.015	<0.050	E.008	<0.002
19...	3.0	--	--	--	--	--	--	--	--	--	--	--	--
22...	15.7	--	--	--	--	--	--	--	--	--	--	--	--
22...	*14.8*	--	--	--	--	--	--	--	--	--	--	--	--
APR													
02...	--	--	--	<0.006	E.044	<0.006	<0.004	<0.005	84.7	0.021	<0.050	<0.010	<0.002
09...	4.4	29	2.3	--	--	--	--	--	--	--	--	--	--
09...	*4.3*	*31*	*2.0*	--	--	--	--	--	--	--	--	--	--
22...	3.1	41	3.2	--	--	--	--	--	--	--	--	--	--
22...	*3.8*	*17*	*1.7*	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	<0.006	E.032	<0.006	<0.004	<0.005	105	0.024	<0.050	<0.010	<0.002
MAY													
07...	--	--	--	<0.006	E.031	<0.006	<0.004	<0.005	99.1	0.096	<0.050	<0.010	<0.002
14...	E7.1	--	--	--	--	--	--	--	--	--	--	--	--
14...	*E7.4*	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	<0.006	E.043	0.021	<0.004	<0.005	102	0.449	<0.050	<0.010	<0.002
28...	5.3	--	--	--	--	--	--	--	--	--	--	--	--
JUN													
04...	--	--	--	<0.006	E.053	0.009	<0.004	<0.005	86.2	0.263	<0.050	<0.010	<0.002
04...	--	--	--	*<0.006*	*E.053*	*0.008*	*<0.004*	*<0.005*	*87.6*	*0.249*	*<0.050*	*<0.010*	*<0.002*
18...	--	--	--	<0.006	E.045	<0.006	<0.004	<0.005	87.4	0.363	<0.050	<0.010	<0.002
18...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	*<0.4*	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	5.9	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
08...	--	--	--	<0.006	E.047	0.006	<0.004	<0.005	92.9	0.558	<0.050	<0.010	<0.002
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
16...	6.2	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
16...	*4.8*	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	<0.006	E.042	<0.006	<0.004	<0.005	103	0.102	<0.050	<0.010	<0.002
AUG													
04...	5.2	--	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
05...	--	--	--	<0.006	E.072	<0.006	<0.004	<0.005	108	0.121	<0.050	<0.010	<0.002
20...	--	--	--	<0.006	E.053	<0.006	<0.004	<0.005	94.6	0.093	<0.050	<0.010	<0.002
SEP													
03...	2.7	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
05...	26.2	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	<0.006	E.029	<0.006	<0.004	<0.005	97.3	0.041	<0.050	<0.010	<0.002
20...	24.4	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--	--

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Carbaryl, water, fltrd 0.7u GF ug/L (82680)	Carbofuran, water, fltrd 0.7u GF ug/L (82674)	Chlorpyrifos water, fltrd, ug/L (38933)	cis-Permethrin water fltrd 0.7u GF ug/L (82687)	Cyanazine, water, fltrd, ug/L (04041)	DCPA, water fltrd 0.7u GF ug/L (82682)	Diazinon, water, fltrd, ug/L (39572)	Diazinon-d10 surrog. wat flt 0.7u GF percent recovry (91063)	Dieldrin, water, fltrd, ug/L (39381)	Disulfoton, water, fltrd 0.7u GF ug/L (82677)	EPTC, water, fltrd 0.7u GF ug/L (82668)	Ethalfluralin, water, fltrd 0.7u GF ug/L (82663)	Ethoprop, water, fltrd 0.7u GF ug/L (82672)
OCT													
08...	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	120	<0.005	<0.02	<0.002	<0.009	<0.005
NOV													
05...	E.010	<0.020	<0.005	<0.006	<0.018	<0.003	0.010	132	<0.005	<0.02	<0.002	<0.009	<0.005
DEC													
03...	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	114	<0.005	<0.02	<0.002	<0.009	<0.005
JAN													
08...	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	119	<0.005	<0.02	<0.002	<0.009	<0.005
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
04...	*<0.041*	*<0.020*	*<0.005*	*<0.006*	*<0.018*	*<0.003*	*<0.005*	*107*	*<0.005*	*<0.02*	*<0.002*	*<0.009*	*<0.005*
04...	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	104	<0.005	<0.02	<0.002	<0.009	<0.005
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR													
04...	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	E.003	115	<0.005	<0.02	<0.002	<0.009	<0.005
10...	--	--	--	--	--	--	--	--	--	--	--	--	--
18...	<0.041	<0.020	<0.005	<0.006	<0.018	E.003	<0.005	115	<0.005	<0.02	<0.040	E.005	<0.005
19...	--	--	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR													
02...	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	116	<0.005	<0.02	<0.025	<0.009	<0.005
09...	--	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
23...	E.006	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	124	<0.005	<0.02	<0.002	<0.009	<0.005
MAY													
07...	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	114	<0.005	<0.02	<0.002	<0.009	<0.005
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	E.032	E.012	<0.005	<0.006	<0.018	<0.003	<0.005	111	<0.005	<0.02	<0.002	<0.009	<0.005
28...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN													
04...	E.008	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	94.6	<0.005	<0.02	<0.002	<0.009	<0.005
04...	*E.009*	*<0.020*	*<0.005*	*<0.006*	*<0.018*	*<0.003*	*<0.005*	*90.2*	*<0.005*	*<0.02*	*<0.002*	*<0.009*	*<0.005*
18...	E.007	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	114	<0.005	<0.02	<0.002	<0.009	<0.005
18...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
08...	E.004	<0.020	<0.005	<0.006	<0.018	<0.003	E.005	106	<0.005	<0.02	<0.002	<0.009	<0.005
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
23...	E.023	<0.020	<0.005	<0.006	<0.018	<0.003	0.025	118	<0.005	<0.02	<0.002	<0.009	<0.005
AUG													
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
05...	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	128	<0.005	<0.02	<0.002	<0.009	<0.005
20...	E.005	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	109	<0.005	<0.02	<0.004	<0.009	<0.005
SEP													
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	--	--	--	--	--	--	--
09...	<0.041	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	110	<0.005	<0.02	<0.002	<0.009	<0.005
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--	--

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Fonofos water, fltrd, ug/L (04095)	Lindane water, fltrd, ug/L (39341)	Linuron water fltrd 0.7u GF ug/L (82666)	Mala-thion, water, fltrd, ug/L (39532)	Methyl para-thion, water, fltrd 0.7u GF ug/L (82667)	Metola-chlor, water, fltrd, ug/L (39415)	Metri-buzin, water, fltrd, ug/L (82630)	Moli-nate, water, fltrd 0.7u GF ug/L (82671)	Naprop-amide, water, fltrd 0.7u GF ug/L (82684)	p,p-' DDE, water, fltrd, ug/L (34653)	Para-thion, water, fltrd, ug/L (39542)	Peb-ulate, water, fltrd 0.7u GF ug/L (82669)	Pendi-meth-alin, water, fltrd 0.7u GF ug/L (82683)
OCT													
08...	<0.003	<0.004	<0.035	<0.027	<0.006	0.013	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022
NOV													
05...	<0.003	<0.004	<0.035	<0.027	<0.006	0.015	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022
DEC													
03...	<0.003	<0.004	<0.035	<0.027	<0.006	E.007	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022
JAN													
08...	<0.003	<0.004	<0.035	<0.027	<0.006	E.012	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
04...	*<0.003*	*<0.004*	*<0.035*	*<0.027*	*<0.006*	*<0.013*	*<0.006*	*<0.002*	*<0.007*	*<0.003*	*<0.010*	*<0.004*	*<0.022*
04...	<0.003	<0.004	<0.035	<0.027	<0.006	0.014	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR													
04...	<0.003	<0.004	<0.035	<0.027	<0.006	0.017	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022
10...	--	--	--	--	--	--	--	--	--	--	--	--	--
18...	<0.003	<0.004	<0.035	<0.027	<0.006	E.010	<0.006	<0.002	<0.007	0.008	<0.010	<0.004	<0.022
19...	--	--	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR													
02...	<0.003	<0.004	<0.035	<0.027	<0.006	E.012	<0.006	<0.004	<0.007	<0.003	<0.010	<0.004	<0.022
09...	--	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
23...	<0.003	<0.004	<0.035	<0.027	<0.006	E.011	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022
MAY													
07...	<0.003	<0.004	<0.035	<0.027	<0.006	0.039	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	<0.003	<0.004	<0.035	<0.027	<0.006	0.140	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	E.006
28...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN													
04...	<0.003	<0.004	<0.035	<0.027	<0.006	0.056	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022
04...	*<0.003*	*<0.004*	*<0.035*	*<0.027*	*<0.006*	*0.055*	*<0.006*	*<0.002*	*<0.007*	*<0.003*	*<0.010*	*<0.004*	*<0.022*
18...	<0.003	<0.004	<0.035	<0.027	<0.006	0.131	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022
18...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
08...	<0.003	<0.004	<0.035	<0.027	<0.006	0.193	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
23...	<0.003	<0.004	<0.035	E.005	<0.006	0.027	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022
AUG													
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
05...	<0.003	<0.004	<0.035	<0.027	<0.006	0.025	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022
20...	<0.003	<0.004	<0.035	<0.027	<0.006	0.045	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022
SEP													
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	--	--	--	--	--	--	--
09...	<0.003	<0.004	<0.035	<0.027	<0.006	0.015	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--	--

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Phorate water fltrd 0.7u GF ug/L (82664)	Prometon, water, fltrd, ug/L (04037)	Pronamide, water, fltrd 0.7u GF ug/L (82676)	Propachlor, water, fltrd, ug/L (04024)	Propanil, water, fltrd 0.7u GF ug/L (82679)	Propargite, water, fltrd 0.7u GF ug/L (82685)	Simazine, water, fltrd, ug/L (04035)	Tebuthiuron water fltrd 0.7u GF ug/L (82670)	Terbacil, water, fltrd 0.7u GF ug/L (82665)	Terbufos, water, fltrd 0.7u GF ug/L (82675)	Thiobencarb water fltrd 0.7u GF ug/L (82681)	Triallate, water, fltrd 0.7u GF ug/L (82678)	Trifluralin, water, fltrd 0.7u GF ug/L (82661)
OCT													
08...	<0.011	0.02	<0.004	<0.010	<0.011	<0.02	0.015	<0.02	<0.034	<0.02	<0.005	<0.002	<0.009
NOV													
05...	<0.011	E.01	<0.004	<0.010	<0.011	<0.02	0.009	<0.02	<0.034	<0.02	<0.005	<0.002	<0.009
DEC													
03...	<0.011	M	<0.004	<0.010	<0.011	<0.02	0.007	<0.02	<0.034	<0.02	<0.005	<0.002	<0.009
JAN													
08...	<0.011	M	<0.004	<0.010	<0.011	<0.02	0.009	<0.02	<0.034	<0.02	<0.005	<0.002	<0.009
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
04...	*<0.011*	*<0.01*	*<0.004*	*<0.010*	*<0.011*	*<0.02*	*<0.005*	*<0.02*	*<0.034*	*<0.02*	*<0.005*	*<0.002*	*<0.009*
04...	<0.011	E.01	<0.004	<0.010	<0.011	<0.02	0.015	<0.02	<0.034	<0.02	<0.005	<0.002	<0.009
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR													
04...	<0.011	M	<0.004	<0.010	<0.011	<0.02	0.015	<0.02	<0.034	<0.02	<0.005	<0.002	<0.009
10...	--	--	--	--	--	--	--	--	--	--	--	--	--
18...	<0.011	<0.01	<0.004	<0.010	<0.011	<0.02	0.009	<0.02	<0.034	<0.02	E.003	E.002	E.007
19...	--	--	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR													
02...	<0.011	M	<0.004	<0.010	<0.011	<0.02	0.011	<0.02	<0.034	<0.02	<0.005	<0.002	<0.009
09...	--	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
23...	<0.011	M	<0.004	<0.010	<0.011	<0.02	0.022	<0.02	<0.034	<0.02	<0.005	<0.002	<0.009
MAY													
07...	<0.011	<0.01	<0.004	<0.010	<0.011	<0.02	0.034	<0.02	<0.034	<0.02	<0.005	<0.002	<0.009
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	<0.011	E.01	<0.004	<0.010	<0.011	<0.02	0.168	E.01	<0.034	<0.02	<0.005	<0.002	<0.009
28...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN													
04...	<0.011	E.01	<0.004	<0.010	<0.011	<0.02	0.076	<0.02	<0.034	<0.02	<0.005	<0.002	<0.009
04...	*<0.011*	*E.01*	*<0.004*	*<0.010*	*<0.011*	*<0.02*	*0.073*	*<0.02*	*<0.034*	*<0.02*	*<0.005*	*<0.002*	*<0.009*
18...	<0.011	E.01	<0.004	<0.010	<0.011	<0.02	0.103	<0.02	<0.034	<0.02	<0.005	<0.002	<0.009
18...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
08...	<0.011	E.01	<0.004	<0.010	<0.011	<0.02	0.118	<0.02	<0.034	<0.02	<0.005	<0.002	<0.009
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
23...	<0.011	0.02	<0.004	<0.010	<0.011	<0.02	0.032	<0.02	<0.034	<0.02	<0.005	<0.002	<0.009
AUG													
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
05...	<0.011	0.02	<0.004	<0.010	<0.011	<0.02	0.031	M	<0.034	<0.02	<0.005	<0.002	<0.009
20...	<0.011	0.02	<0.004	<0.010	<0.011	<0.02	0.036	E.01	<0.034	<0.02	<0.005	<0.002	<0.009
SEP													
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	--	--	--	--	--	--	--
09...	<0.011	E.01	<0.004	<0.010	<0.011	<0.02	0.017	M	<0.034	<0.02	<0.005	<0.002	<0.009
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--	--

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Suspnd. sedi-ment, sieve diametr percent <.063mm (70331)	Sus-pended sedi-ment concen-tration mg/L (80154)	Sus-pended sedi-ment load, tons/d (80155)
OCT			
08...	--	1	4.8
NOV			
05...	--	5	125
DEC			
03...	--	1	26
JAN			
08...	--	25	1,850
22...	--	1	19
FEB			
04...	--	--	--
04...	--	2	27
23...	86	185	18,800
MAR			
04...	--	43	3,950
10...	86	103	20,700
18...	--	32	3,260
19...	--	32	3,090
22...	82	380	122,000
22...	*81*	*383*	--
APR			
02...	--	14	832
09...	--	43	4,040
09...	--	*41*	--
22...	--	15	770
22...	--	*15*	--
23...	--	15	714
MAY			
07...	--	16	631
14...	--	121	13,800
14...	--	*126*	--
20...	--	44	5,360
28...	--	47	3,340
JUN			
04...	--	43	3,290
04...	--	*45*	--
18...	--	70	6,170
18...	--	*68*	--
25...	--	*0.3*	--
25...	--	--	--
25...	--	60	4,860
25...	--	--	--
JUL			
08...	--	15	541
08...	--	--	--
16...	--	14	396
16...	--	--	--
16...	--	*16*	--
16...	--	--	--
23...	--	30	711
AUG			
04...	--	10	149
04...	--	--	--
04...	--	--	--
05...	--	10	140
20...	--	16	332
SEP			
03...	--	11	151
03...	--	--	--
05...	--	390	40,600
09...	--	27	733
20...	77	510	114,000
20...	*82*	*643*	--

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



Photo by U.S. Geological Survey Personnel

Potomac River at Chain Bridge at Washington, D.C. (01646580)

01652500 FOURMILE RUN AT ALEXANDRIA, VA

LOCATION.--Lat 38°50'36", long 77°04'45", NAD83, Arlington County, Hydrologic Unit 02070010, on left bank at upstream side of bridge on Shirlington Road, at Arlington County-Alexandria City line, 0.1 mi upstream from I-395, and 2.5 mi upstream from mouth.

DRAINAGE AREA.--13.8 mi^2.

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

GAGE.--Water-stage recorder. Datum of gage is 28.57 ft NGVD of 1929. May 4, 1951 to Sept. 30, 1969, water stage recorder, Oct. 1, 1969 to Sept. 27, 1973, nonrecording gage, at site 0.4 mi downstream at datum 6.02 lower (annual maximum only). Sept. 28, 1973 to Sept. 26, 1975, water-stage recorder. Sept. 27, 1975 to Sept. 30, 1977, nonrecording gage, at present site and datum (annual maximum only). July 1979 to September 1982, water stage recorder. October 1982 to September 1998, nonrecording gage (annual maximum only). October 1998 to present, water stage recorder.

REMARKS.--Records good except those for periods of no gage-height record, Jan. 4-6, 15-23, and Feb. 9-11, which are poor. Maximum discharge, 14,600 ft^3/s, from rating curve extended above 670 ft^3/s on basis of slope-area measurement of peak flow at gage height, 11.6 ft, site and datum then in use. Several measurements of water temperature were made during the year. Water-quality records for some periods have been collected at this location.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1230	3,740	9.18	Jul 9	1800	2,390	7.79
May 31	1930	2,620	8.03	Jul 11	0105	5,250	10.84
Jun 19	2050	2,620	8.03	Jul 22	2255	3,060	8.48
Jun 20	1220	2,650	8.06	Aug 26	1755	2,210	7.61
Jul 1	0205	2,630	8.04	Sep 18	1940	2,480	7.88
Jul 7	1705	1,840	7.23	Sep 23	0530	*6,040	*11.83

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	13	5.1	320	32	27	14	32	40	217	19	20
2	2.9	11	5.0	50	10	171	12	6.6	14	124	8.9	25
3	1.8	9.7	6.6	93	8.7	36	11	5.8	33	85	25	49
4	1.8	10	4.2	e40	32	22	10	5.5	73	28	15	34
5	1.7	67	6.7	e21	7.4	47	9.8	12	50	22	14	10
6	1.6	80	14	e35	6.3	78	8.6	13	18	19	9.3	7.6
7	1.9	13	9.9	12	26	18	93	99	286	124	8.0	7.2
8	2.2	13	9.9	12	14	14	13	32	31	13	7.8	7.5
9	1.8	14	7.5	20	e7.4	18	93	39	56	164	7.9	7.3
10	22	12	5.0	8.4	e10	10	14	70	17	61	16	6.9
11	111	98	251	6.2	e8.0	8.7	52	12	82	390	35	6.8
12	4.4	129	47	5.3	8.6	8.6	13	8.6	136	28	10	104
13	5.1	22	137	6.2	6.6	18	9.1	7.6	54	19	7.3	69
14	2.5	14	62	6.6	5.1	11	8.6	7.1	24	19	7.4	9.9
15	1.2	11	19	e7.0	49	7.6	8.1	20	12	14	6.9	36
16	209	238	15	e6.6	4.8	8.1	7.9	175	9.8	13	17	12
17	11	159	11	e7.2	6.7	7.4	7.0	16	70	11	67	7.7
18	6.1	40	8.8	e6.6	13	7.5	12	70	56	10	7.1	304
19	3.0	13	8.1	e6.4	36	6.1	15	11	132	9.7	6.6	88
20	2.7	8.5	47	e6.2	70	425	6.7	8.5	221	9.4	6.6	13
21	2.7	6.3	9.7	e6.0	110	58	6.8	97	29	9.5	6.6	9.7
22	2.7	5.6	8.5	e5.6	860	25	14	18	18	140	6.8	91
23	1.3	5.8	7.8	e4.8	196	17	6.4	22	12	63	6.3	610
24	1.4	6.1	14	4.9	55	14	6.1	18	11	11	5.6	18
25	13	6.1	204	5.8	27	11	18	16	10	9.1	6.0	11
26	93	5.8	26	5.8	20	48	53	265	9.9	8.1	138	9.7
27	5.5	11	16	6.5	15	16	7.1	23	9.9	8.2	96	9.1
28	7.8	4.6	14	6.0	26	15	6.2	49	8.8	75	17	9.9
29	117	4.5	11	12	---	34	6.2	17	8.7	18	62	11
30	83	6.2	10	9.8	---	103	9.3	12	9.8	12	70	7.2
31	22	---	10	18	---	23	---	186	---	9.3	11	---
TOTAL	746.0	1,037.2	1,010.8	760.9	1,670.6	1,313.0	550.9	1,373.7	1,541.9	1,743.3	727.1	1,611.5
MEAN	24.1	34.6	32.6	24.5	59.7	42.4	18.4	44.3	51.4	56.2	23.5	53.7
MAX	209	238	251	320	860	425	93	265	286	390	138	610
MIN	1.2	4.5	4.2	4.8	4.8	6.1	6.1	5.5	8.7	8.1	5.6	6.8
CFSM	1.74	2.51	2.36	1.78	4.32	3.07	1.33	3.21	3.72	4.08	1.70	3.89
IN.	2.01	2.80	2.72	2.05	4.50	3.54	1.49	3.70	4.16	4.70	1.96	4.34

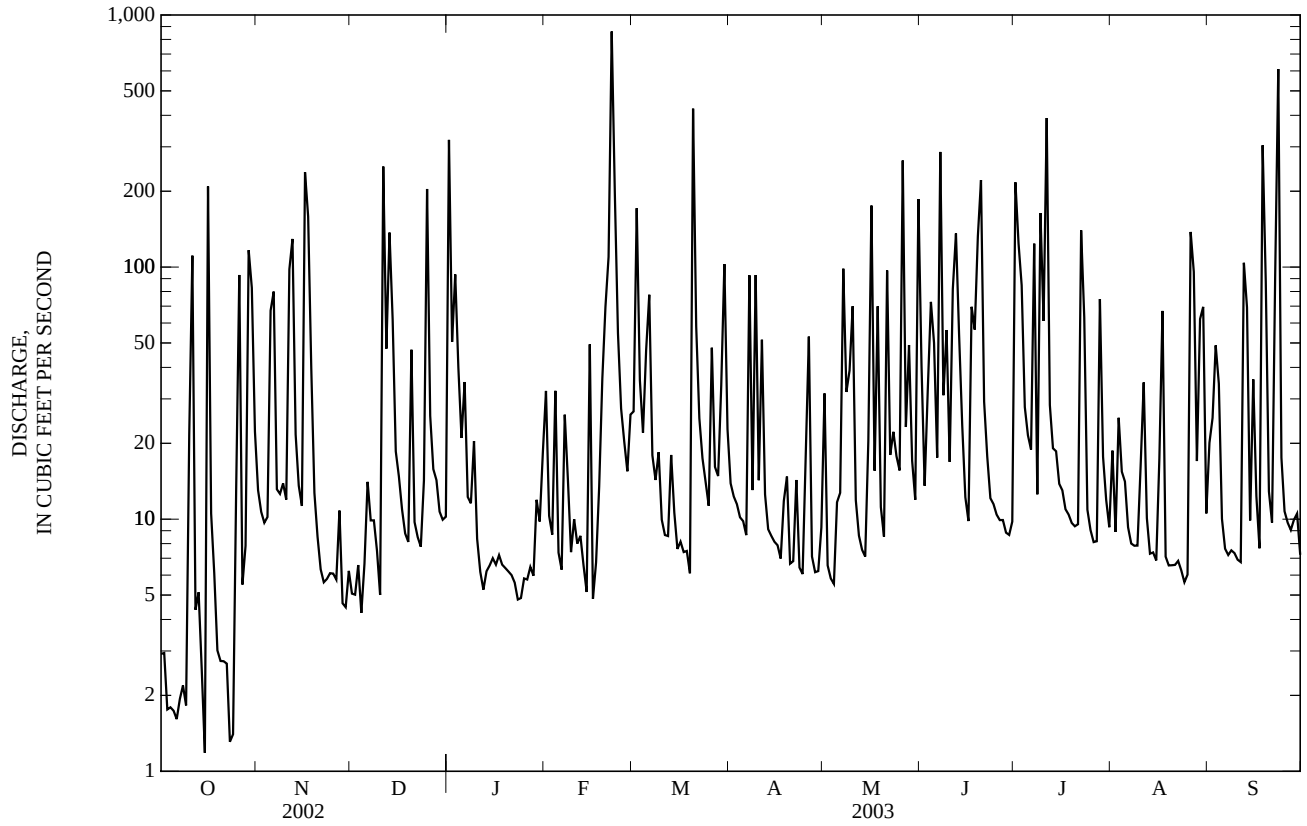
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 1969, 1974 - 1975, 1979 - 1982, 1999 - 2003, BY WATER YEAR (WY)

MEAN	10.9	12.8	15.1	15.3	18.9	23.9	17.7	17.4	17.4	17.1	19.3	19.1
MAX	39.0	36.4	36.9	35.6	59.7	44.3	42.0	52.3	51.4	56.2	64.3	85.0
(WY)	(1980)	(1953)	(1968)	(1964)	(2003)	(1953)	(1952)	(1953)	(2003)	(2003)	(1967)	(1999)
MIN	2.54	2.57	3.07	3.84	4.84	6.05	6.79	6.90	5.22	1.78	2.01	1.94
(WY)	(1964)	(1966)	(1966)	(1981)	(2002)	(1981)	(1967)	(1961)	(1954)	(1957)	(1962)	(1954)

01652500 FOURMILE RUN AT ALEXANDRIA, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1952 - 1969, 1974 - 1975, 1979 - 1982, 1999 - 2003	
ANNUAL TOTAL	6,689.5		14,086.9			
ANNUAL MEAN	18.3		38.6		16.9	
HIGHEST ANNUAL MEAN					38.6	2003
LOWEST ANNUAL MEAN					7.72	1959
HIGHEST DAILY MEAN	287	Apr 28	860	Feb 22	1,060	Sep 14, 1966
LOWEST DAILY MEAN	1.2	Oct 15	1.2	Oct 15	0.70	(a)
ANNUAL SEVEN-DAY MINIMUM	1.8	Oct 3	1.8	Oct 3	0.94	Aug 12, 1957
MAXIMUM PEAK FLOW			6,040	Sep 23	14,600	Jul 22, 1969
MAXIMUM PEAK STAGE			11.83	Sep 23	b17.80	Jun 21, 1972
INSTANTANEOUS LOW FLOW			0.53	Oct 7	0.53	Oct 7, 2002
ANNUAL RUNOFF (CFSM)	1.33		2.80		1.23	
ANNUAL RUNOFF (INCHES)	18.03		37.97		16.67	
10 PERCENT EXCEEDS	39		96		33	
50 PERCENT EXCEEDS	5.1		12		6.0	
90 PERCENT EXCEEDS	2.7		5.8		2.8	

a Many days in August 1957.
b From floodmarks.
e Estimated.



01653000 CAMERON RUN AT ALEXANDRIA, VA

LOCATION.--Lat 38°48'23", long 77°06'35", NAD83, Fairfax County, Hydrologic Unit 02070010, on left downstream side of Norfolk Southern Railway bridge at Alexandria, 800 ft downstream from confluence of Holmes Run and Backlick Run, 0.5 mi east of the U.S. Army Quartermaster Depot, and 3.4 mi upstream from mouth.

DRAINAGE AREA.--33.7 mi^2.

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

GAGE.--Water-stage recorder. Gage reinstalled Nov. 8, 1979. Datum of gage is 31.74 ft NGVD of 1929. Prior to Sept. 20, 1965, at present site at datum 7.78 ft higher. Sept. 20, 1965, to Jan. 19, 1976, at present site at datum 5.44 ft higher. Jan. 20, 1976, to Nov. 8, 1976, at site 1,200 ft downstream at datum 10.00 ft lower. Nov. 9, 1976, to Mar. 31, 1979, at site 0.5 mi downstream at datum 7.22 ft lower.

REMARKS.--Records good except those for periods with ice effect, Jan. 18, 22-27, which are fair, and period of doubtful gage-height record, Mar. 31 to May 9, which is poor. Some regulation by Lake Barcroft, formerly Alexandria Reservoir, on Holmes Run 3.6 mi upstream, usable capacity 2,092 acre-ft. Maximum discharge, 19,900 ft^3/s, from rating curve extended above 2,500 ft^3/s on basis of culvert computations of peak flow for main channel and bypass channels. Several measurements of water temperature were made during the year. Water-quality records for some periods have been collected at this location.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.6	15	11	452	47	54	e30	e66	56	118	27	26
2	4.8	11	10	106	17	238	e25	e20	32	81	15	34
3	4.8	9.2	11	166	14	95	e22	e17	42	88	30	63
4	5.0	8.5	8.1	53	40	51	e21	e15	61	30	34	40
5	4.6	47	12	37	18	90	e20	e14	50	20	17	23
6	4.0	142	20	49	14	137	e19	e14	31	16	19	15
7	4.0	17	15	32	32	55	e150	e35	339	37	12	14
8	4.0	12	16	26	22	42	e40	e16	67	26	11	13
9	3.6	9.8	16	25	17	43	e150	e50	69	135	10	13
10	14	8.2	11	20	19	31	e42	107	37	52	27	18
11	149	131	349	16	18	23	e90	43	45	502	32	11
12	23	165	98	15	16	21	e40	27	117	38	28	86
13	12	43	192	15	13	27	e30	19	70	33	12	66
14	11	19	123	15	13	24	e27	26	58	37	11	24
15	5.9	14	38	14	85	15	e25	32	34	23	9.5	33
16	318	307	25	13	59	15	e24	153	26	20	16	28
17	34	256	18	15	90	15	e22	47	78	17	76	19
18	14	95	15	e14	44	13	e42	91	106	17	17	392
19	10	31	15	14	41	8.5	e80	42	186	16	11	146
20	9.2	21	77	13	84	628	e25	33	305	16	8.8	34
21	7.7	17	23	12	133	165	e23	94	56	14	7.3	26
22	6.1	15	16	e12	1,330	71	e22	51	36	49	16	87
23	6.0	13	15	e11	333	44	e20	43	31	103	17	987
24	5.5	12	19	e10	130	35	e18	48	26	21	8.2	57
25	13	11	259	e11	80	28	e40	36	21	14	6.8	28
26	143	10	51	e11	55	74	e70	320	21	15	154	25
27	14	10	27	e10	42	45	e25	52	24	14	106	18
28	12	9.4	22	11	54	32	e19	65	14	43	46	20
29	132	9.4	19	14	---	63	e17	45	13	37	52	23
30	133	16	16	13	---	167	e16	34	17	15	44	14
31	38	---	16	15	---	e40	---	146	---	12	31	---
TOTAL	1,149.8	1,484.5	1,563.1	1,240	2,860	2,389.5	1,194	1,801	2,068	1,659	911.6	2,383
MEAN	37.1	49.5	50.4	40.0	102	77.1	39.8	58.1	68.9	53.5	29.4	79.4
MAX	318	307	349	452	1,330	628	150	320	339	502	154	987
MIN	3.6	8.2	8.1	10	13	8.5	16	14	13	12	6.8	11
CFSM	1.10	1.47	1.50	1.19	3.03	2.29	1.18	1.72	2.05	1.59	0.87	2.36
IN.	1.27	1.64	1.73	1.37	3.16	2.64	1.32	1.99	2.28	1.83	1.01	2.63

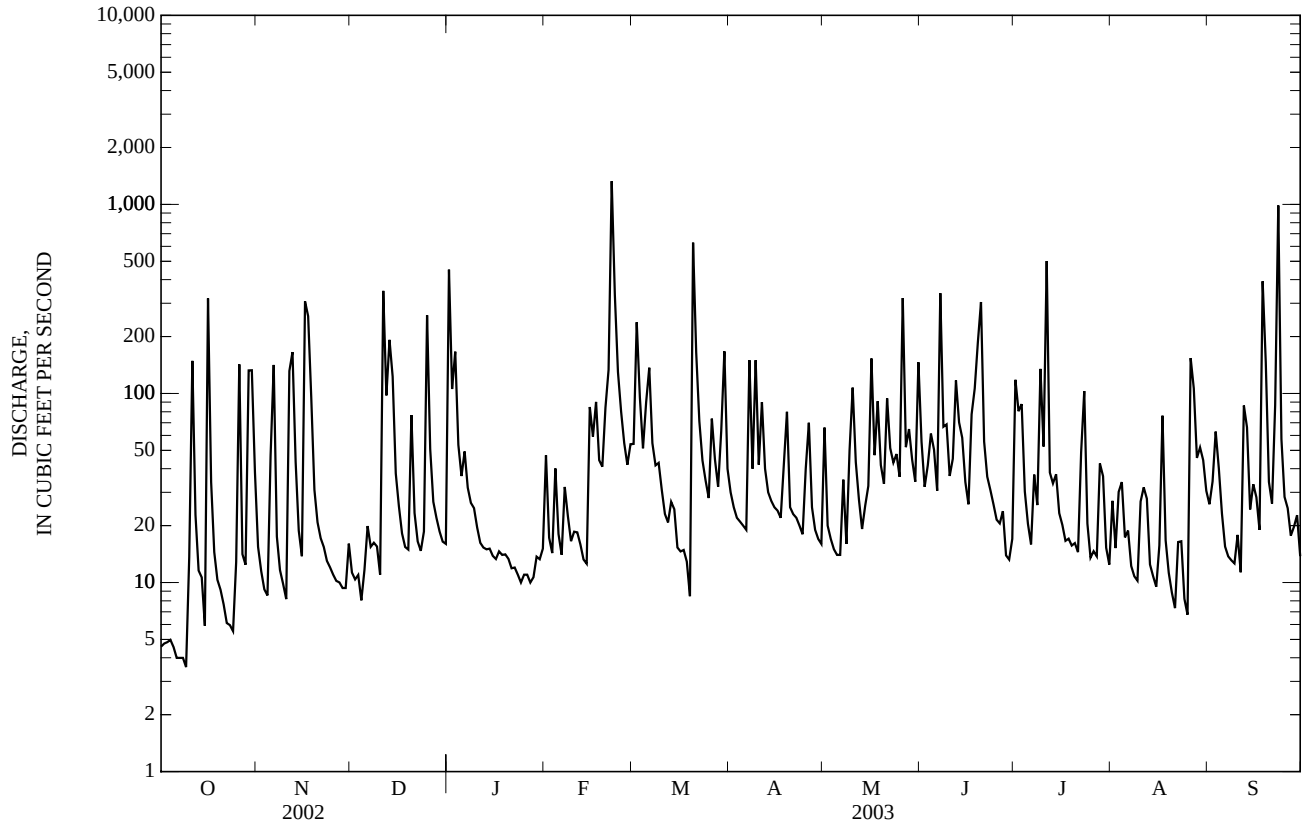
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 1980, 1987 - 2003, BY WATER YEAR (WY)

MEAN	30.6	30.5	38.5	42.8	46.8	55.8	41.3	39.2	37.1	45.7	35.9	33.2
MAX	147	80.5	99.2	157	128	132	81.8	117	265	662	364	172
(WY)	(1984)	(1964)	(1970)	(1978)	(1979)	(1993)	(1970)	(1989)	(1972)	(1981)	(1981)	(1975)
MIN	4.52	4.40	3.47	10.0	9.10	19.9	10.6	8.59	7.93	2.51	3.85	5.31
(WY)	(1964)	(1966)	(1966)	(1966)	(2002)	(1966)	(1969)	(1956)	(1956)	(1957)	(1957)	(1977)

01653000 CAMERON RUN AT ALEXANDRIA, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1956 - 1980, 1987 - 2003	
ANNUAL TOTAL	9,065.3		20,703.5			
ANNUAL MEAN	24.8		56.7		37.2	
HIGHEST ANNUAL MEAN					64.4	1972
LOWEST ANNUAL MEAN					15.6	2002
HIGHEST DAILY MEAN	356	Apr 28	1,330	Feb 22	3,680	Jun 22, 1972
LOWEST DAILY MEAN	1.0	aAug 11	3.6	Oct 9	1.0	aAug 11, 2002
ANNUAL SEVEN-DAY MINIMUM	1.1	Aug 14	4.3	Oct 3	1.1	Aug 14, 2002
MAXIMUM PEAK FLOW			9,330	Sep 23	19,900	Jun 22, 1972
MAXIMUM PEAK STAGE			11.29	Sep 23	18.14	Jun 22, 1972
INSTANTANEOUS LOW FLOW			3.5	Oct 9	1.0	bAug 10, 2002
ANNUAL RUNOFF (CFSM)	0.74		1.68		1.10	
ANNUAL RUNOFF (INCHES)	10.01		22.85		14.98	
10 PERCENT EXCEEDS	51		131		74	
50 PERCENT EXCEEDS	9.4		25		15	
90 PERCENT EXCEEDS	2.8		11		4.8	

a Also Aug. 15-18, 2002.
b Also Aug. 11, 12, 14-19, 2002.
e Estimated.



01654000 ACCOTINK CREEK NEAR ANNANDALE, VA

LOCATION.--Lat 38°48'46", long 77°13'42", NAD83, Fairfax County, Hydrologic Unit 02070010, on left bank 800 ft upstream from bridge on State Highway 620, 0.2 mi upstream from Long Branch, and 2.3 mi southwest of Annandale.

DRAINAGE AREA.--23.5 mi^2.

WATER-DISCHARGE RECORDS

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

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

GAGE.--Water-stage recorder. Datum of gage is 191.24 ft NGVD of 1929 (levels by Stone and Webster Engineering Corporation). Prior to May 12, 1949, nonrecording gage at site 800 ft downstream at datum 0.33 ft lower. May 12, 1949, to June 4, 1970, water-stage recorder at site 800 ft downstream at datum 0.33 ft lower.

REMARKS.--Records good except those for periods with ice effect, Dec. 5, 10, Jan. 17, 18, 27, 28, and Feb. 18-20, and periods of doubtful or no gage-height record, Dec. 6-9, Jan. 19-26, and Jan. 29 to Feb. 17, which are fair. Maximum discharge, 12,000 ft^3/s, from rating curve extended above 6,600 ft^3/s on basis of contracted-opening and flow-over-road measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,400 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1745	3,440	10.54	Jul 23	0315	3,370	10.47
Mar 20	1945	1,760	8.55	Sep 18	2400	2,490	9.52
Jun 20	1615	1,680	8.43	Sep 23	0930	*4,380	*11.40
Jul 11	0500	3,480	10.58				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.43	5.9	5.0	343	e4.4	33	25	73	68	94	10	15
2	0.30	3.9	3.6	75	e4.3	170	21	15	22	64	10	48
3	0.27	3.2	3.3	113	e4.2	72	19	12	53	99	12	45
4	0.19	3.0	3.2	31	e5.0	33	18	12	61	21	36	53
5	0.13	17	e3.2	18	e7.2	89	17	15	52	16	12	17
6	0.09	118	e4.6	32	e6.4	126	15	20	20	14	10	11
7	0.05	7.2	e4.3	19	e5.3	41	107	110	431	39	8.1	9.1
8	0.03	4.5	e4.0	16	e4.6	32	34	78	72	21	8.1	8.3
9	0.02	4.0	e3.8	17	e4.2	45	142	57	56	175	7.8	7.7
10	0.39	3.3	e4.5	12	e5.3	26	37	120	24	93	15	6.9
11	118	93	267	11	e4.7	20	79	38	25	789	63	6.8
12	9.4	121	76	8.5	e4.4	19	28	20	110	27	16	98
13	2.7	22	150	8.2	e4.0	24	21	15	105	17	11	107
14	5.3	7.8	102	8.0	e3.8	32	19	13	61	16	13	17
15	1.7	5.7	21	7.6	e6.0	16	18	53	23	13	7.4	30
16	256	213	12	7.0	e5.2	16	17	219	18	12	12	22
17	15	200	9.3	e6.9	e4.5	15	16	35	39	11	183	16
18	8.7	79	8.1	e6.3	e17	15	30	111	120	10	14	321
19	2.9	12	7.6	e6.0	e15	13	83	29	153	10	9.4	441
20	1.8	7.5	32	e5.5	e32	576	20	20	439	9.6	7.9	26
21	1.6	6.2	9.7	e5.3	92	111	17	153	62	9.4	7.5	15
22	1.7	5.3	7.3	e5.0	1,340	44	17	48	34	36	26	20
23	1.5	4.7	6.7	e4.8	262	26	14	31	25	505	30	1,010
24	1.3	5.0	6.7	e4.6	96	22	13	32	20	22	6.9	34
25	1.9	4.1	177	e4.4	54	19	14	27	18	13	5.9	19
26	134	4.1	35	e6.6	31	44	76	297	16	12	169	15
27	5.6	4.1	15	e6.1	25	29	18	44	16	10	116	13
28	3.2	3.6	11	e5.2	e30	17	14	83	14	66	53	20
29	98	3.7	9.7	e5.0	---	30	13	32	14	52	82	18
30	96	4.5	8.6	e4.8	---	148	13	25	13	12	81	11
31	23	---	8.3	e4.6	---	48	---	118	---	10	24	---
TOTAL	791.20	976.3	1,019.5	807.4	2,077.5	1,951	975	1,955	2,184	2,298.0	1,067.0	2,480.8
MEAN	25.5	32.5	32.9	26.0	74.2	62.9	32.5	63.1	72.8	74.1	34.4	82.7
MAX	256	213	267	343	1,340	576	142	297	439	789	183	1,010
MIN	0.02	3.0	3.2	4.4	3.8	13	13	12	13	9.4	5.9	6.8
CFSM	1.09	1.38	1.40	1.11	3.16	2.68	1.38	2.68	3.10	3.15	1.46	3.52
IN.	1.25	1.55	1.61	1.28	3.29	3.09	1.54	3.09	3.46	3.64	1.69	3.93

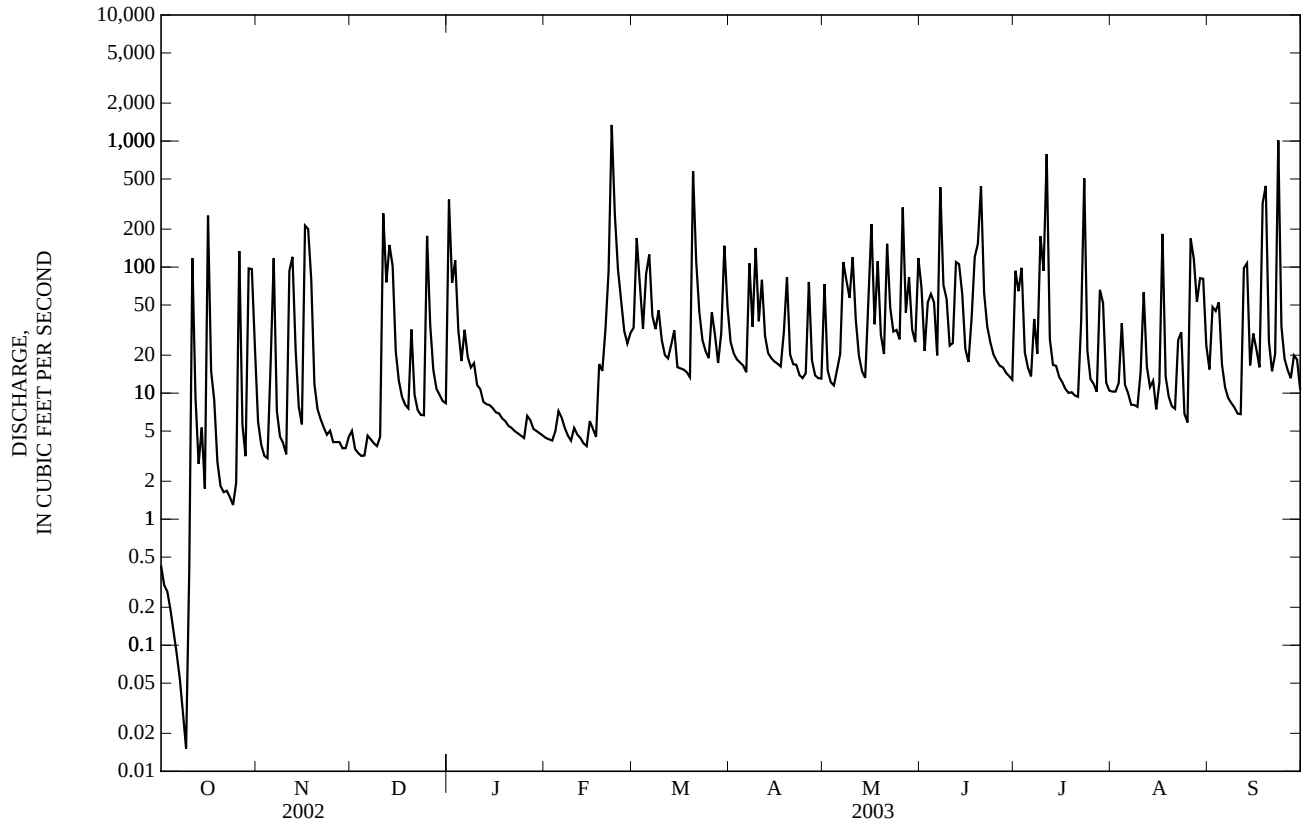
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 2003, BY WATER YEAR (WY)

MEAN	17.8	23.9	28.0	32.4	36.1	42.7	35.1	33.0	26.1	21.3	22.1	23.1
MAX	76.6	70.4	73.8	87.0	113	114	94.5	125	212	74.5	123	120
(WY)	(1980)	(1994)	(1997)	(1996)	(1998)	(1993)	(1983)	(1989)	(1972)	(1969)	(1967)	(1996)
MIN	2.03	3.25	5.48	4.53	3.76	10.6	8.40	8.46	2.83	1.81	1.94	0.45
(WY)	(1955)	(1955)	(1966)	(1981)	(2002)	(1981)	(1985)	(1986)	(1986)	(1955)	(1957)	(1954)

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1948 - 2003	
ANNUAL TOTAL	6,109.43		18,582.70			
ANNUAL MEAN	16.7		50.9		28.4	
HIGHEST ANNUAL MEAN					50.9	2003
LOWEST ANNUAL MEAN					10.8	2002
HIGHEST DAILY MEAN	354	Jun 19	1,340	Feb 22	e3,300	Jun 22, 1972
LOWEST DAILY MEAN	0.00	aAug 12	0.02	Oct 9	0.00	bAug 5, 1999
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 17	0.11	Oct 3	0.00	cAug 5, 1999
MAXIMUM PEAK FLOW			4,380	Sep 23	12,000	Jun 22, 1972
MAXIMUM PEAK STAGE			11.40	Sep 23	d15.96	Jun 22, 1972
INSTANTANEOUS LOW FLOW			0.01	fOct 9	0.00	(g)
ANNUAL RUNOFF (CFSM)	0.71		2.17		1.21	
ANNUAL RUNOFF (INCHES)	9.67		29.42		16.43	
10 PERCENT EXCEEDS	35		114		52	
50 PERCENT EXCEEDS	3.3		17		12	
90 PERCENT EXCEEDS	0.29		4.1		3.2	

a Also Aug. 18-23, 2002.
b Also Aug. 6-13, 1999 and Aug. 12, 18-23, 2002.
c Also Aug. 17, 2002.
d From high-water mark in gage house.
e Estimated.
f Also Oct. 10, 2002.
g No flow part or all of each day Aug. 5-14, 1999 and Aug. 12, 13, 18-24, 2002.



01654000 ACCOTINK CREEK NEAR ANNANDALE, VA--Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: January 2002 to current year.
WATER TEMPERATURE: January 2002 to current year.

INSTRUMENTATION.--Water-quality monitor January 2002 to current year.

REMARKS.--Missing record due to instrument malfunctions. Records good.

EXTREMES FOR PERIOD OF DAILY RECORD--
SPECIFIC CONDUCTANCE: Maximum, 6,450 microsiemens/cm, Dec. 11, 2002 Feb. 9, 10, Mar. 1, 2003; minimum, 54 microsiemens/cm, Oct. 26, 2002.
WATER TEMPERATURE: Maximum, 28.8°C, Aug. 24, 2002; minimum, 0.0°C, on many day during winter periods.

EXTREMES FOR JANUARY 2002 TO SEPTEMBER 2002.--
SPECIFIC CONDUCTANCE: Maximum, 1,530 microsiemens/cm, Feb. 7; minimum, 56 microsiemens/cm, Aug. 28.
WATER TEMPERATURE: Maximum, 28.8°C, Aug. 24; minimum, 1.4°C, Feb. 14.

EXTREMES FOR WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003.--
SPECIFIC CONDUCTANCE: Maximum, 6,450 microsiemens/cm, Dec. 11, Feb. 9, 10, Mar. 1; minimum, 54 microsiemens/cm, Oct. 26.
WATER TEMPERATURE: Maximum, 26.8°C, Aug. 16; minimum, 0.0°C, on many days during winter periods.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Sample type	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Bicarbonate, wat flt incrm. titr., field, mg/L (00453)
OCT												
30...	1215	Environmental	82	760	10.1	87	7.0	95	5.0	8.7	18	22
NOV												
05...	1315	Environmental	2.6	762	11.1	94	7.0	180	9.5	7.9	--	38
DEC												
03...	1245	Environmental	3.4	768	13.2	95	7.4	283	-2.0	2.3	45	54
JAN												
07...	*1110*	*Blank*	--	--	--	--	--	--	--	--	--	--
07...	*1259*	*Blank*	--	--	--	--	--	--	--	--	--	--
07...	1300	Environmental	15	761	11.3	84	7.0	5,130	0.8	2.3	31	38
FEB												
05...	0945	Environmental	--	762	11.9	85	7.2	825	1.0	1.2	29	36
MAR												
05...	1045	Environmental	40	755	13.0	101	7.0	815	9.5	4.4	34	41
APR												
01...	1130	Environmental	25	762	11.9	98	7.0	380	10.0	6.9	34	41
22...	1045	Environmental	17	754	14.8	147	7.7	371	17.0	14.6	--	--
MAY												
14...	0915	Environmental	13	760	8.8	86	6.8	330	16.5	13.9	42	51
21...	1015	Environmental	20	764	9.8	98	6.8	280	--	15.3	--	--
JUN												
03...	1115	Environmental	18	760	9.1	92	7.3	309	19.5	15.5	36	43
17...	1000	Environmental	16	767	8.1	86	7.2	319	17.0	18.6	--	--
17...	*1001*	*Replicate*	--	--	--	--	--	--	--	--	--	--
JUL												
09...	0915	Environmental	13	761	8.4	100	7.0	231	26.0	23.8	35	43
09...	*0916*	*Replicate*	--	--	--	--	--	--	--	--	--	--
09...	1000	Environmental	--	--	--	--	--	--	--	--	--	--
24...	0815	Environmental	22	761	7.8	89	6.7	188	24.0	21.9	--	--
AUG												
06...	*0800*	*Blank*	--	--	--	--	--	--	--	--	--	--
06...	0900	Environmental	10	759	8.2	94	6.9	272	23.5	22.0	39	47
19...	1200	Environmental	9.0	766	8.0	93	6.8	218	26.0	23.1	--	--
SEP												
10...	0915	Environmental	7.1	768	8.4	89	7.2	306	19.0	18.5	46	56
23...	1110	Environmental	3,010	758	8.8	98	6.2	60	--	20.4	--	--

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chloride, water, fltrd, mg/L (00940)	Sulfate water, fltrd, mg/L (00945)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitrogen, water, unfltrd mg/L (00605)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, unfltrd mg/L (00600)	Organic carbon, suspnd sedimnt total, mg/L (00689)	Organic carbon, water, fltrd, mg/L (00681)
OCT													
30...	8.35	5.9	0.57	0.08	0.65	0.66	0.013	0.49	0.05	0.116	1.2	1.3	6.9
NOV													
05...	23.4	10.4	0.23	<0.04	--	0.56	E.004	--	<0.02	0.029	0.79	0.2	4.3
DEC													
03...	49.1	12.1	0.18	<0.04	--	0.77	E.006	--	<0.02	0.020	0.95	0.2	2.9
JAN													
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
07...	*<0.20*	*<0.2*	*<0.10*	*<0.04*	--	*<0.06*	*<0.008*	--	*<0.02*	*<0.004*	--	*<0.1*	*0.8*
07...	1,600	24.4	0.86	0.35	1.22	1.24	0.019	0.51	<0.02	0.033	2.1	0.4	3.3
FEB													
05...	217	12.8	0.53	0.16	1.13	1.16	0.024	0.37	<0.02	0.059	1.7	1.5	4.6
MAR													
05...	208	15.5	0.35	<0.04	1.37	1.38	0.010	--	<0.02	0.043	1.7	0.2	3.6
APR													
01...	76.4	12.9	0.31	<0.04	--	0.98	E.005	--	E.01	0.032	1.3	0.3	4.4
22...	--	--	0.20	<0.04	--	0.55	E.005	--	<0.02	0.019	0.75	--	--
MAY													
14...	59.8	11.0	0.32	E.03	0.90	0.91	0.011	--	<0.02	0.034	1.2	0.3	3.9
21...	--	--	0.85	E.03	0.92	0.94	0.019	--	<0.02	0.156	1.8	--	--
JUN													
03...	51.8	11.8	0.32	<0.04	0.99	1.00	0.010	--	<0.02	0.032	1.3	0.5	3.8
17...	--	--	0.32	<0.04	1.10	1.12	0.017	--	<0.02	0.040	1.4	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
09...	37.3	7.8	0.32	<0.04	0.66	0.69	0.033	--	<0.02	0.035	1.0	0.1	4.8
09...	--	--	*0.33*	*<0.04*	*0.74*	*0.75*	*0.012*	--	*<0.02*	*0.034*	*1.1*	*0.2*	*5.0*
09...	--	--	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	0.60	<0.04	0.84	0.86	0.015	--	<0.02	0.069	1.5	--	--
AUG													
06...	--	--	--	--	--	--	--	--	--	--	--	--	--
06...	45.8	8.9	0.26	<0.04	1.28	1.29	0.015	--	<0.02	0.032	1.6	0.2	4.5
19...	--	--	0.38	<0.04	0.84	0.85	0.017	--	<0.02	0.044	1.2	--	--
SEP													
10...	53.7	8.7	0.33	<0.04	1.02	1.03	0.009	--	<0.02	0.035	1.4	0.2	2.9
23...	--	--	1.1	<0.04	0.45	0.46	0.008	--	0.04	0.31	1.6	--	--

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Pheophytin a, periphyton, mg/m2 (62359)	Chlorophyll a periphyton, chromofluoro, mg/m2 (70957)	2,6-Diethylaniline water fltrd 0.7u GF ug/L (82660)	CIAT, water, fltrd, ug/L (04040)	Acetochlor, water, fltrd, ug/L (49260)	Alachlor, water, fltrd, ug/L (46342)	alpha-HCH, water, fltrd, ug/L (34253)	alpha-HCH-d6, surrog, wat flt 0.7u GF percent recovry (91065)	Atrazine, water, fltrd, ug/L (39632)	Azinphosmethyl, water, fltrd 0.7u GF ug/L (82686)	Benfluralin, water, fltrd 0.7u GF ug/L (82673)	Butylate, water, fltrd, ug/L (04028)	Carbaryl, water, fltrd 0.7u GF ug/L (82680)
OCT													
30...	--	--	<0.006	<0.006	<0.006	<0.004	<0.005	93.6	<0.007	<0.050	<0.010	<0.002	E.033
NOV													
05...	--	--	<0.006	<0.006	<0.006	<0.004	<0.005	105	<0.007	<0.050	<0.010	<0.002	E.034
DEC													
03...	--	--	<0.006	E.004	<0.006	<0.004	<0.005	94.7	E.007	<0.050	<0.010	<0.002	<0.041
JAN													
07...	--	--	*<0.006*	*<0.006*	*<0.006*	*<0.004*	*<0.005*	*104*	*<0.007*	*<0.050*	*<0.010*	*<0.002*	*<0.041*
07...	--	--	*<0.006*	*<0.006*	*<0.006*	*<0.004*	*<0.005*	*92.8*	*<0.007*	*<0.050*	*<0.010*	*<0.002*	*<0.041*
07...	--	--	<0.006	<0.006	<0.006	<0.004	<0.005	103	<0.007	<0.050	<0.010	<0.002	E.004
FEB													
05...	--	--	<0.006	<0.006	<0.006	<0.004	<0.005	97.3	<0.010	<0.050	<0.010	<0.002	<0.041
MAR													
05...	--	--	<0.006	E.002	<0.006	<0.004	<0.005	87.9	E.003	<0.050	<0.010	<0.002	<0.041
APR													
01...	--	--	<0.006	<0.006	<0.006	<0.004	<0.005	96.4	E.003	<0.050	E.004	<0.002	E.042
22...	--	--	<0.006	E.004	<0.006	<0.004	<0.005	107	0.010	<0.050	E.005	<0.002	E.018
MAY													
14...	--	--	<0.006	E.007	<0.006	<0.004	<0.005	101	0.015	<0.050	<0.010	<0.002	E.064
21...	--	--	<0.006	E.009	0.009	0.006	<0.005	109	0.030	<0.050	<0.010	<0.002	E.035
JUN													
03...	--	--	<0.006	E.008	<0.006	<0.004	<0.005	106	0.030	<0.050	<0.010	<0.002	E.248
17...	--	--	<0.006	E.005	<0.006	<0.004	<0.005	105	0.013	<0.050	<0.010	<0.002	E.061
17...	--	--	*<0.006*	*E.005*	*<0.006*	*<0.004*	*<0.005*	*105*	*0.013*	*<0.050*	*<0.010*	*<0.002*	*E.060*
JUL													
09...	--	--	<0.006	E.012	<0.006	<0.004	<0.005	107	0.036	<0.050	<0.010	<0.002	E.042
09...	--	--	*<0.006*	*E.014*	*<0.006*	*<0.004*	*<0.005*	*100*	*0.039*	*<0.050*	*<0.010*	*<0.002*	*E.047*
09...	1.0	1.8	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	<0.006	<0.006	<0.006	<0.004	<0.005	103	0.007	<0.050	<0.010	<0.002	E.527
AUG													
06...	--	--	*<0.006*	*<0.006*	*<0.006*	*<0.004*	*<0.005*	*95.5*	*<0.007*	*<0.050*	*<0.010*	*<0.002*	*<0.041*
06...	--	--	<0.006	<0.006	<0.006	<0.004	<0.005	83.7	<0.007	<0.050	<0.010	<0.002	E.012
19...	--	--	<0.006	<0.006	<0.006	<0.007	<0.005	96.5	<0.007	<0.050	<0.010	<0.002	E.190
SEP													
10...	--	--	<0.006	<0.006	<0.006	<0.004	<0.005	100	0.027	<0.050	<0.010	<0.002	E.007
23...	--	--	<0.006	<0.006	<0.006	<0.004	<0.005	81.4	<0.007	<0.050	<0.010	<0.002	E.264

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Carbo-furan, water, fltrd 0.7u GF ug/L (82674)	Chlor-pyrifos water, fltrd, ug/L (38933)	cis-Per-methrin water fltrd 0.7u GF ug/L (82687)	Cyana-zine, water, fltrd, ug/L (04041)	DCPA, water fltrd 0.7u GF ug/L (82682)	Diazi-non, water, fltrd, ug/L (39572)	Diazi-non-d10 surrog. wat flt 0.7u GF percent recovry (91063)	Diel-drin, water, fltrd, ug/L (39381)	Disul-foton, water, fltrd 0.7u GF ug/L (82677)	EPTC, water, fltrd 0.7u GF ug/L (82668)	Ethal-flur-alin, water, fltrd 0.7u GF ug/L (82663)	Etho-prop, water, fltrd 0.7u GF ug/L (82672)	Fonofos water, fltrd, ug/L (04095)
OCT													
30...	<0.020	<0.005	<0.006	<0.018	<0.003	0.035	128	<0.005	<0.02	<0.002	<0.009	<0.005	<0.003
NOV													
05...	<0.020	<0.005	<0.006	<0.018	<0.003	0.012	136	<0.005	<0.02	<0.002	<0.009	<0.005	<0.003
DEC													
03...	<0.020	<0.005	<0.006	<0.018	<0.003	<0.006	107	<0.005	<0.02	<0.011	<0.009	<0.005	<0.003
JAN													
07...	*<0.020*	*<0.005*	*<0.006*	*<0.018*	*<0.003*	*<0.005*	*112*	*<0.005*	*<0.02*	*<0.002*	*<0.009*	*<0.005*	*<0.003*
07...	*<0.020*	*<0.005*	*<0.006*	*<0.018*	*<0.003*	*<0.005*	*114*	*<0.005*	*<0.02*	*<0.002*	*<0.009*	*<0.005*	*<0.003*
07...	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	124	<0.005	<0.02	<0.002	<0.009	<0.005	<0.003
FEB													
05...	<0.020	<0.005	<0.006	<0.018	<0.003	0.032	113	<0.005	<0.02	<0.002	<0.009	<0.005	<0.003
MAR													
05...	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	113	<0.005	<0.02	<0.002	<0.009	<0.005	<0.003
APR													
01...	<0.020	<0.005	<0.006	<0.018	<0.003	0.054	125	<0.005	<0.02	<0.002	<0.009	<0.005	<0.003
22...	<0.020	<0.005	<0.006	<0.018	<0.003	0.012	127	<0.005	<0.02	<0.020	<0.009	<0.005	<0.003
MAY													
14...	<0.020	<0.005	<0.006	<0.018	<0.003	0.019	107	<0.005	<0.02	<0.050	<0.009	<0.005	<0.003
21...	<0.020	<0.005	<0.006	<0.018	<0.003	0.025	110	<0.005	<0.02	<0.035	<0.009	<0.005	<0.003
JUN													
03...	<0.020	E.004	<0.006	<0.018	<0.003	0.032	124	<0.005	<0.02	<0.025	<0.009	<0.005	<0.003
17...	<0.020	<0.005	<0.006	<0.018	<0.003	0.024	127	<0.005	<0.02	<0.013	<0.009	<0.005	<0.003
17...	*<0.020*	*E.004*	*<0.006*	*<0.018*	*<0.003*	*0.023*	*127*	*<0.005*	*<0.02*	*<0.007*	*<0.009*	*<0.005*	*<0.003*
JUL													
09...	<0.020	<0.005	<0.006	<0.018	<0.003	0.060	125	<0.005	<0.02	<0.002	<0.009	<0.005	<0.003
09...	*<0.020*	*<0.005*	*<0.006*	*<0.018*	*<0.003*	*0.059*	*136*	*<0.005*	*<0.02*	*<0.002*	*<0.009*	*<0.005*	*<0.003*
09...	--	--	--	--	--	--	--	--	--	--	--	--	--
24...	<0.020	<0.005	<0.006	<0.018	<0.003	0.054	114	<0.005	<0.02	<0.002	<0.009	<0.005	<0.003
AUG													
06...	*<0.020*	*<0.005*	*<0.006*	*<0.018*	*<0.003*	*<0.005*	*104*	*<0.005*	*<0.02*	*<0.002*	*<0.009*	*<0.005*	*<0.003*
06...	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	106	<0.005	<0.02	<0.002	<0.009	<0.005	<0.003
19...	<0.020	<0.005	<0.006	<0.018	<0.003	0.009	124	<0.005	<0.02	<0.020	<0.009	<0.005	<0.003
SEP													
10...	<0.020	<0.005	<0.006	<0.018	<0.003	0.006	107	<0.005	<0.02	<0.010	<0.009	<0.005	<0.003
23...	<0.020	<0.005	<0.006	<0.018	0.003	0.033	109	<0.005	<0.02	<0.002	<0.009	<0.005	<0.003

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lindane water, fltrd, ug/L (39341)	Linuron water fltrd 0.7u GF ug/L (82666)	Mala-thion, water, fltrd, ug/L (39532)	Methyl para-thion, water, fltrd 0.7u GF ug/L (82667)	Metola-chlor, water, fltrd, ug/L (39415)	Metri-buzin, water, fltrd, ug/L (82630)	Moli-nate, water, fltrd 0.7u GF ug/L (82671)	Naprop-amide, water, fltrd 0.7u GF ug/L (82684)	p,p-' DDE, water, fltrd, ug/L (34653)	Para-thion, water, fltrd, ug/L (39542)	Peb-ulate, water, fltrd 0.7u GF ug/L (82669)	Pendi-meth-alin, water, fltrd 0.7u GF ug/L (82683)	Phorate water fltrd 0.7u GF ug/L (82664)
OCT													
30...	<0.004	<0.035	<0.027	<0.006	E.005	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022	<0.011
NOV													
05...	<0.004	<0.035	<0.027	<0.006	E.005	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022	<0.011
DEC													
03...	<0.004	<0.035	<0.027	<0.006	E.001	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022	<0.011
JAN													
07...	*<0.004*	*<0.035*	*<0.027*	*<0.006*	*<0.013*	*<0.006*	*<0.002*	*<0.007*	*<0.003*	*<0.010*	*<0.004*	*<0.022*	*<0.011*
07...	*<0.004*	*<0.035*	*<0.027*	*<0.006*	*<0.013*	*<0.006*	*<0.002*	*<0.007*	*<0.003*	*<0.010*	*<0.004*	*<0.022*	*<0.011*
07...	<0.004	<0.035	<0.027	<0.006	<0.013	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022	<0.011
FEB													
05...	<0.004	<0.035	<0.027	<0.006	<0.013	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022	<0.011
MAR													
05...	<0.004	<0.035	<0.027	<0.006	E.003	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022	<0.011
APR													
01...	<0.004	<0.035	<0.027	<0.006	E.004	<0.006	<0.005	<0.007	<0.003	<0.010	<0.004	0.032	<0.011
22...	<0.004	<0.035	<0.027	<0.006	E.008	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	0.023	<0.011
MAY													
14...	<0.004	<0.035	<0.027	<0.006	E.011	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	E.013	<0.011
21...	<0.004	<0.035	E.013	<0.006	0.031	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	0.036	<0.011
JUN													
03...	<0.004	<0.035	<0.027	<0.006	E.010	<0.006	<0.004	<0.007	<0.003	<0.010	<0.004	E.014	<0.011
17...	<0.004	<0.035	<0.027	<0.006	E.011	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022	<0.011
17...	*<0.004*	*<0.035*	*<0.027*	*<0.006*	*E.010*	*<0.006*	*<0.002*	*<0.007*	*<0.003*	*<0.010*	*<0.004*	*<0.022*	*<0.011*
JUL													
09...	<0.004	<0.035	<0.027	<0.006	0.015	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022	<0.011
09...	*<0.004*	*<0.035*	*<0.027*	*<0.006*	*0.016*	*<0.006*	*<0.002*	*<0.007*	*<0.003*	*<0.010*	*<0.004*	*<0.022*	*<0.011*
09...	--	--	--	--	--	--	--	--	--	--	--	--	--
24...	<0.004	<0.035	<0.027	<0.006	E.007	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	E.008	<0.011
AUG													
06...	*<0.004*	*<0.035*	*<0.027*	*<0.006*	*<0.013*	*<0.006*	*<0.002*	*<0.007*	*<0.003*	*<0.010*	*<0.004*	*<0.022*	*<0.011*
06...	<0.004	<0.035	<0.027	<0.006	<0.013	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022	<0.011
19...	<0.004	<0.035	<0.027	<0.006	E.006	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022	<0.011
SEP													
10...	<0.004	<0.035	<0.027	<0.006	E.004	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022	<0.011
23...	<0.004	<0.035	E.018	<0.006	<0.013	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022	<0.011

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Prometon, water, fltrd, ug/L (04037)	Pronamide, water, fltrd 0.7u GF ug/L (82676)	Propachlor, water, fltrd, ug/L (04024)	Propanil, water, fltrd 0.7u GF ug/L (82679)	Propargite, water, fltrd 0.7u GF ug/L (82685)	Simazine, water, fltrd, ug/L (04035)	Tebuthiuron water fltrd 0.7u GF ug/L (82670)	Terbacil, water, fltrd 0.7u GF ug/L (82665)	Terbufos, water, fltrd 0.7u GF ug/L (82675)	Terbuthylazine, water, fltrd, ug/L (04022)	Thiobencarb water fltrd 0.7u GF ug/L (82681)	Triallate, water, fltrd 0.7u GF ug/L (82678)	Trifluralin, water, fltrd 0.7u GF ug/L (82661)
OCT													
30...	0.03	<0.004	<0.010	<0.011	<0.02	<0.007	<0.02	<0.034	<0.02	<0.01	<0.005	<0.002	E.004
NOV													
05...	0.02	<0.004	<0.010	<0.011	<0.02	0.006	<0.02	<0.034	<0.02	<0.01	<0.005	<0.002	<0.009
DEC													
03...	E.01	<0.004	<0.010	<0.011	<0.02	0.010	<0.02	<0.034	<0.02	<0.01	<0.005	<0.002	<0.009
JAN													
07...	*<0.01*	*<0.004*	*<0.010*	*<0.011*	*<0.02*	*<0.005*	*<0.02*	*<0.034*	*<0.02*	*<0.01*	*<0.005*	*<0.002*	*<0.009*
07...	*<0.01*	*<0.004*	*<0.010*	*<0.011*	*<0.02*	*<0.005*	*<0.02*	*<0.034*	*<0.02*	*<0.01*	*<0.005*	*<0.002*	*<0.009*
07...	E.01	<0.004	<0.010	<0.011	<0.02	0.036	<0.02	<0.034	<0.02	<0.01	<0.005	<0.002	<0.009
FEB													
05...	E.01	<0.004	<0.010	<0.011	<0.02	<0.010	<0.02	<0.034	<0.02	<0.01	<0.005	<0.002	<0.009
MAR													
05...	E.01	<0.004	<0.010	<0.011	<0.02	0.013	<0.02	<0.034	<0.02	<0.01	<0.005	<0.002	<0.009
APR													
01...	E.01	<0.004	<0.010	<0.011	<0.02	0.029	<0.02	<0.034	<0.02	<0.01	<0.005	<0.002	E.005
22...	E.01	<0.004	<0.010	<0.011	<0.02	0.039	<0.02	<0.034	<0.02	<0.01	<0.005	<0.002	E.005
MAY													
14...	0.02	<0.004	<0.010	<0.011	<0.02	0.108	<0.02	<0.034	<0.02	<0.01	<0.005	<0.002	<0.009
21...	0.06	<0.004	<0.010	<0.011	<0.02	0.044	<0.02	<0.034	<0.02	<0.01	<0.005	<0.002	E.001
JUN													
03...	0.03	<0.004	<0.010	<0.011	<0.02	0.032	<0.02	<0.034	<0.02	<0.01	<0.005	<0.002	<0.009
17...	0.03	<0.004	<0.010	<0.011	<0.02	0.024	<0.02	<0.034	<0.02	<0.01	<0.005	<0.002	<0.009
17...	*0.02*	*<0.004*	*<0.010*	*<0.011*	*<0.02*	*0.024*	*<0.02*	*<0.034*	*<0.02*	*<0.01*	*<0.005*	*<0.002*	*<0.009*
JUL													
09...	0.04	<0.004	<0.010	<0.011	<0.02	0.016	<0.02	<0.034	<0.02	<0.01	<0.005	<0.002	<0.009
09...	*0.05*	*<0.004*	*<0.010*	*<0.011*	*<0.02*	*0.013*	*<0.02*	*<0.034*	*<0.02*	*<0.01*	*<0.005*	*<0.002*	*<0.009*
09...	--	--	--	--	--	--	--	--	--	--	--	--	--
24...	0.06	<0.004	<0.010	<0.011	<0.02	0.007	<0.02	<0.034	<0.02	<0.01	<0.005	<0.002	<0.009
AUG													
06...	*<0.01*	*<0.004*	*<0.010*	*<0.011*	*<0.02*	*<0.005*	*<0.02*	*<0.034*	*<0.02*	*<0.01*	*<0.005*	*<0.002*	*<0.009*
06...	0.05	<0.004	<0.010	<0.011	<0.02	<0.005	<0.02	<0.034	<0.02	<0.01	<0.005	<0.002	<0.009
19...	0.04	<0.004	<0.010	<0.011	<0.02	<0.007	<0.02	<0.050	<0.02	<0.01	<0.005	<0.002	<0.009
SEP													
10...	0.03	<0.004	<0.010	<0.011	<0.02	2.46	E.01	<0.034	<0.02	<0.01	<0.005	<0.002	<0.009
23...	E.01	<0.004	<0.010	<0.011	<0.02	0.012	<0.02	<0.034	<0.02	<0.01	<0.005	<0.002	<0.009

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Suspended sediment concentration mg/L (80154)	Suspended sediment load, tons/d (80155)
OCT		
30...	24	5.4
NOV		
05...	3	0.02
DEC		
03...	2	0.02
JAN		
07...	--	--
07...	*0.0*	--
07...	6	0.26
FEB		
05...	16	--
MAR		
05...	3	0.37
APR		
01...	5	0.32
22...	5	0.21
MAY		
14...	5	0.16
21...	143	7.7
JUN		
03...	4	0.18
17...	7	0.29
17...	--	--
JUL		
09...	4	0.14
09...	*4*	--
09...	--	--
24...	17	1.0
AUG		
06...	--	--
06...	3	0.09
19...	4	0.09
SEP		
10...	4	0.07
23...	228	1,850

Remark codes used in this table:
< -- Less than
E -- Estimated value

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA—Continued

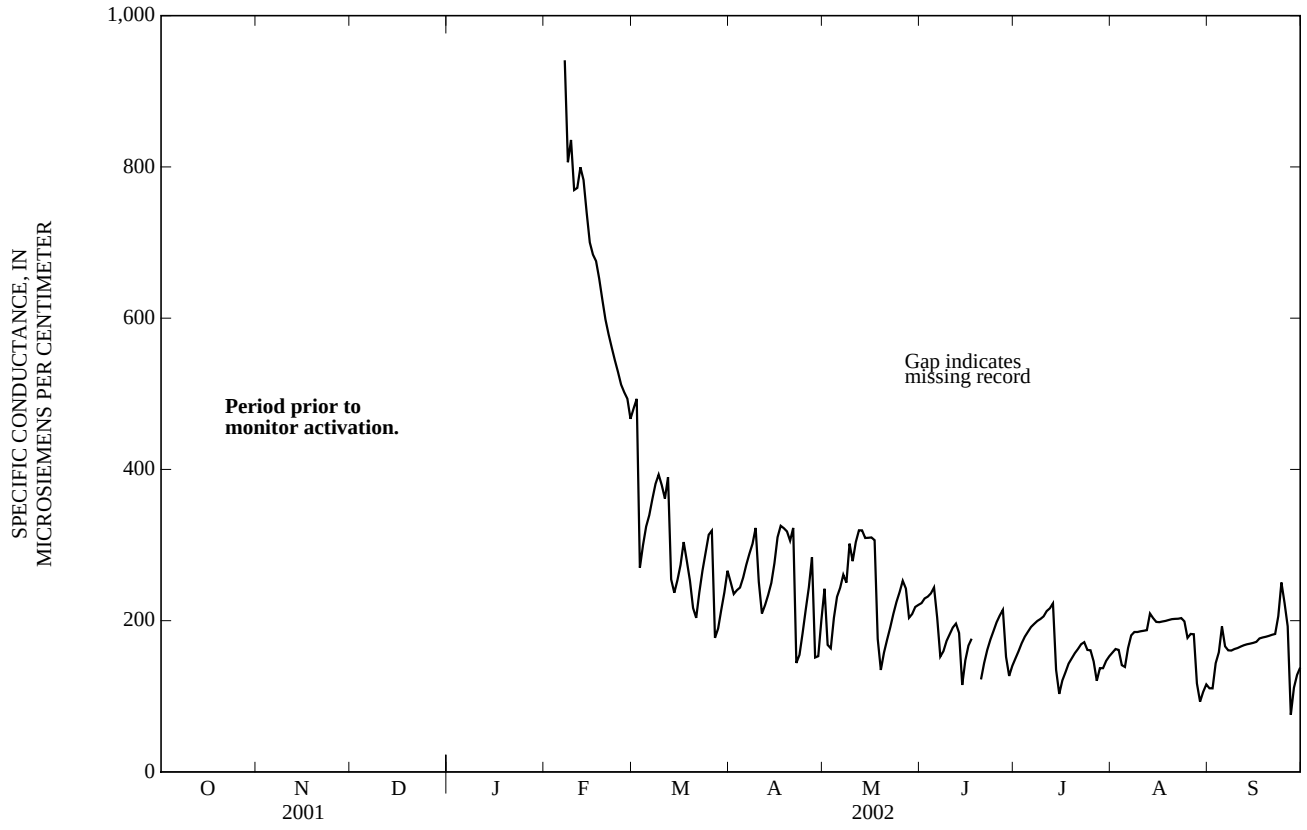
SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
JANUARY 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	501	462	481	279	235	251	261	221	242
2	---	---	---	818	280	493	245	229	235	341	86	168
3	---	---	---	316	258	270	244	238	240	184	124	163
4	---	---	---	315	280	300	252	240	244	239	184	204
5	---	---	---	333	314	324	266	252	257	243	207	232
6	---	---	---	349	332	339	282	266	274	248	241	244
7	1,530	746	941	371	349	361	297	282	288	289	247	261
8	846	745	806	390	371	381	308	297	302	261	246	250
9	849	803	836	399	390	393	454	285	323	398	250	302
10	803	756	769	410	337	379	404	207	251	292	268	279
11	795	759	772	383	337	362	214	207	209	316	292	304
12	803	795	800	547	357	390	229	214	221	322	316	319
13	799	763	783	357	200	255	242	229	234	322	314	319
14	763	715	739	245	225	237	262	242	250	314	308	309
15	715	689	700	264	245	254	302	262	276	312	309	310
16	690	679	684	286	264	274	325	298	310	312	308	310
17	683	662	675	429	286	304	328	322	325	419	234	306
18	662	642	652	333	235	279	328	315	322	278	116	176
19	642	610	625	331	243	253	383	309	318	147	121	135
20	610	587	598	314	169	217	315	296	306	167	147	158
21	587	570	579	223	186	204	350	288	323	183	167	175
22	571	553	561	253	223	238	291	115	144	200	183	191
23	553	539	545	279	253	266	171	137	155	217	200	209
24	540	518	529	302	278	290	196	171	183	231	217	225
25	518	505	512	325	302	314	263	196	215	245	231	238
26	506	497	502	422	206	319	269	223	244	257	245	253
27	503	479	493	250	172	177	300	269	284	282	209	243
28	479	459	467	202	176	190	335	77	151	215	189	204
29	---	---	---	230	202	214	182	111	153	216	201	209
30	---	---	---	250	230	238	221	182	201	221	216	218
31	---	---	---	338	250	266	---	---	---	222	220	221
MONTH	1,530	459	662	818	169	299	454	77	250	419	86	238

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS—CONTINUED
JANUARY 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	228	220	223	155	145	150	159	155	158	124	60	111
2	232	228	229	164	155	160	164	159	163	117	107	111
3	234	230	232	172	164	170	173	134	161	178	117	144
4	241	221	236	181	172	179	181	133	141	202	132	158
5	247	241	244	190	180	185	141	135	139	205	170	192
6	253	186	204	195	190	192	191	141	164	170	163	166
7	192	146	153	199	195	196	183	179	181	163	160	161
8	167	152	160	200	199	200	186	183	185	161	160	161
9	179	167	173	204	182	202	186	184	185	164	160	163
10	186	179	182	208	203	206	187	185	186	166	162	164
11	192	186	191	216	207	213	187	186	187	167	164	166
12	199	191	196	217	216	216	188	187	187	169	166	168
13	217	111	184	224	216	223	229	188	209	169	168	169
14	129	106	115	231	70	135	210	201	203	170	168	170
15	166	98	148	113	91	103	201	197	198	171	170	171
16	173	164	167	128	113	121	199	198	198	174	171	172
17	179	173	176	134	128	132	200	198	199	179	174	177
18	---	---	---	145	134	143	201	199	200	179	177	178
19	---	---	---	152	145	150	202	200	201	179	177	179
20	134	109	122	160	152	157	203	201	202	181	179	180
21	153	134	144	165	158	163	203	201	202	183	180	181
22	168	153	161	171	163	169	203	202	203	183	181	182
23	181	168	175	183	159	172	204	202	203	278	180	206
24	194	181	186	186	154	161	238	120	199	279	226	250
25	203	193	198	162	159	161	183	158	177	226	221	224
26	212	203	207	160	121	146	183	181	182	221	73	193
27	238	182	214	153	73	121	184	181	182	89	60	76
28	216	112	152	148	113	137	184	56	117	127	89	111
29	138	115	127	143	134	137	100	75	93	134	124	128
30	145	136	140	149	143	147	111	100	106	143	134	138
31	---	---	---	155	149	153	120	111	116	---	---	---
MONTH	253	98	180	231	70	165	238	56	175	279	60	165



DAILY MEAN SPECIFIC CONDUCTANCE - JANUARY 2002 TO SEPTEMBER 2002

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA—Continued

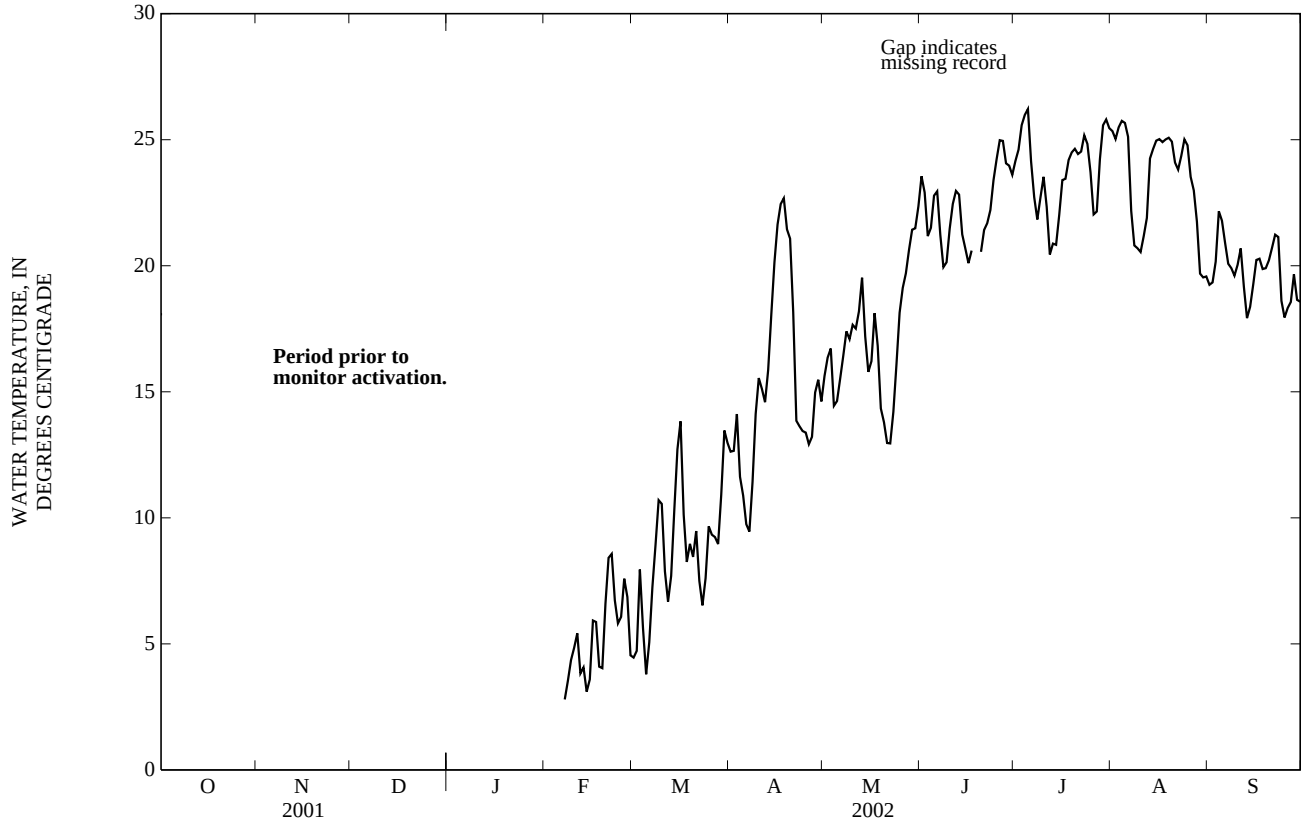
TEMPERATURE, WATER, DEGREES CELSIUS
JANUARY 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	4.8	2.7	3.7
18	---	---	---	---	---	---	---	---	---	4.8	3.4	4.0
19	---	---	---	---	---	---	---	---	---	3.4	1.3	2.0
20	---	---	---	---	---	---	---	---	---	2.8	1.0	1.8
21	---	---	---	---	---	---	---	---	---	3.5	1.5	2.3
22	---	---	---	---	---	---	---	---	---	4.1	1.5	2.7
23	---	---	---	---	---	---	---	---	---	4.9	2.7	3.8
24	---	---	---	---	---	---	---	---	---	6.4	4.2	5.2
25	---	---	---	---	---	---	---	---	---	7.1	4.9	6.1
26	---	---	---	---	---	---	---	---	---	5.9	3.1	4.5
27	---	---	---	---	---	---	---	---	---	6.0	2.6	4.2
28	---	---	---	---	---	---	---	---	---	6.8	3.2	5.0
29	---	---	---	---	---	---	---	---	---	8.4	4.8	6.5
30	---	---	---	---	---	---	---	---	---	10.7	7.2	8.9
31	---	---	---	---	---	---	---	---	---	10.2	9.2	9.5
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
	FEBRUARY			MARCH			APRIL			MAY		
1	12.2	9.0	10.2	6.5	2.1	4.5	15.2	10.9	12.6	17.8	13.9	15.6
2	9.3	6.2	7.6	6.8	3.5	4.7	15.7	9.9	12.7	17.3	15.3	16.4
3	6.2	4.2	5.1	9.0	6.5	7.9	16.4	12.2	14.1	17.9	15.8	16.7
4	5.0	2.3	3.8	7.3	3.5	5.6	13.7	9.8	11.6	15.8	13.0	14.4
5	2.7	0.5	1.7	6.1	2.0	3.8	13.2	9.0	10.9	16.8	12.9	14.6
6	2.8	0.5	1.7	7.9	2.6	5.1	11.7	8.0	9.7	17.0	14.0	15.5
7	3.4	2.3	2.8	10.0	4.8	7.2	12.7	6.6	9.5	17.0	15.8	16.4
8	5.7	1.9	3.5	11.6	6.4	8.9	15.1	8.6	11.4	19.4	16.0	17.4
9	6.1	2.6	4.4	12.4	9.0	10.7	15.9	12.6	14.1	17.8	16.7	17.1
10	5.8	4.1	4.8	12.1	8.3	10.6	17.9	13.8	15.5	19.8	16.2	17.7
11	6.3	4.3	5.4	9.9	6.0	7.9	18.2	12.4	15.1	19.3	16.0	17.5
12	5.2	2.3	3.8	7.3	6.2	6.7	15.8	13.6	14.6	20.6	16.3	18.2
13	5.1	3.1	4.1	8.3	6.9	7.7	17.8	14.3	15.9	20.6	18.5	19.5
14	4.5	1.4	3.1	13.2	8.3	10.3	20.7	16.0	18.1	19.1	16.1	17.2
15	5.1	2.0	3.6	15.6	10.4	12.7	23.3	17.8	20.1	17.8	14.1	15.8
16	7.8	4.3	5.9	14.8	12.7	13.8	24.9	19.2	21.6	18.7	14.0	16.2
17	6.9	4.7	5.9	12.7	8.5	10.1	25.2	20.0	22.4	19.9	16.7	18.1
18	5.7	2.3	4.1	8.6	7.9	8.3	24.4	21.1	22.7	19.6	14.8	16.8
19	5.8	1.9	4.0	10.3	7.9	9.0	23.0	20.1	21.4	15.9	13.0	14.3
20	8.3	5.2	6.6	9.1	8.2	8.4	22.3	20.0	21.1	15.6	12.3	13.8
21	10.1	6.7	8.4	12.2	7.6	9.5	20.7	15.5	18.2	14.6	11.4	13.0
22	10.0	7.4	8.6	9.6	5.9	7.5	15.5	12.5	13.9	15.5	10.7	13.0
23	8.1	5.1	6.7	9.6	4.2	6.5	15.6	12.0	13.6	17.0	11.9	14.2
24	7.7	3.6	5.8	10.7	5.2	7.6	16.2	11.3	13.4	19.0	13.7	16.1
25	7.8	3.9	6.1	12.9	7.4	9.7	14.5	12.8	13.4	19.6	16.8	18.1
26	9.5	5.5	7.6	9.9	9.1	9.3	15.2	11.2	12.9	21.0	17.5	19.1
27	8.6	4.6	6.9	9.9	8.5	9.2	15.2	11.3	13.2	21.2	18.4	19.7
28	6.4	2.6	4.5	11.9	6.5	9.0	16.4	13.6	15.0	22.3	19.2	20.6
29	---	---	---	14.0	8.8	10.9	16.3	14.5	15.5	23.4	19.9	21.4
30	---	---	---	16.0	11.6	13.5	16.8	12.8	14.6	23.7	19.6	21.5
31	---	---	---	14.0	11.8	13.0	---	---	---	24.6	20.4	22.4
MONTH	10.1	1.4	5.3	16.0	2.0	8.7	25.2	6.6	15.3	24.6	10.7	17.0

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS—CONTINUED
JANUARY 2002 TO SEPTEMBER 2002

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	25.4	22.0	23.5	26.1	22.6	24.2	25.8	24.9	25.3	20.0	18.8	19.2
2	24.3	21.6	22.9	26.4	23.3	24.6	25.6	24.6	25.0	20.1	18.8	19.3
3	22.7	19.8	21.2	26.7	24.7	25.6	27.1	25.1	25.5	22.4	18.5	20.2
4	23.7	20.0	21.5	26.8	25.5	26.0	27.7	24.1	25.7	23.9	20.9	22.2
5	24.6	21.7	22.8	26.6	25.9	26.2	26.7	24.8	25.7	23.2	20.6	21.8
6	24.4	22.0	23.0	26.1	23.3	24.2	26.1	23.5	25.1	22.0	20.2	20.9
7	22.0	20.1	21.2	24.1	22.0	22.7	23.5	21.0	22.2	21.4	19.4	20.1
8	21.7	18.3	19.9	22.8	21.2	21.8	22.3	20.0	20.8	20.5	19.4	19.9
9	22.6	18.2	20.1	23.2	22.2	22.7	21.4	20.1	20.7	20.3	19.1	19.6
10	23.9	19.8	21.5	23.8	23.2	23.5	21.2	20.0	20.5	20.7	19.6	20.0
11	23.8	21.4	22.5	23.8	21.7	22.3	21.7	20.8	21.2	21.0	20.3	20.7
12	23.7	22.2	23.0	21.7	19.7	20.4	22.4	21.6	21.9	20.3	18.7	19.2
13	23.7	21.8	22.8	21.1	20.6	20.9	26.4	22.4	24.3	18.8	17.4	17.9
14	22.2	20.8	21.2	21.1	20.0	20.8	25.5	24.1	24.6	18.7	18.1	18.4
15	21.7	19.4	20.7	24.2	20.4	22.0	25.2	24.7	25.0	19.8	18.7	19.3
16	21.6	18.7	20.1	25.7	21.6	23.4	25.2	24.8	25.0	20.6	19.8	20.2
17	22.6	18.8	20.6	25.0	22.2	23.5	25.1	24.6	24.9	20.8	20.0	20.3
18	---	---	---	24.9	23.7	24.2	25.3	24.7	25.0	20.4	19.5	19.9
19	---	---	---	25.0	24.1	24.5	25.4	24.8	25.1	20.1	19.7	19.9
20	22.4	19.1	20.6	25.0	24.3	24.6	25.3	24.6	24.9	20.5	20.0	20.2
21	23.5	19.7	21.4	24.9	24.0	24.4	24.9	23.7	24.1	21.0	20.5	20.7
22	24.1	19.6	21.7	24.8	24.2	24.5	24.2	23.5	23.8	21.5	21.0	21.2
23	24.5	20.1	22.2	26.5	24.8	25.2	24.8	24.1	24.4	21.6	19.9	21.1
24	25.5	21.5	23.4	25.6	24.1	24.8	28.8	24.4	25.0	19.9	17.6	18.6
25	26.3	22.4	24.2	24.6	23.2	23.7	26.0	23.7	24.8	19.0	17.4	17.9
26	26.4	23.7	25.0	23.6	21.2	22.0	24.9	22.9	23.5	19.3	17.9	18.3
27	27.0	23.9	25.0	24.9	21.1	22.2	23.5	22.6	23.0	19.5	17.9	18.6
28	25.2	23.5	24.1	26.0	22.8	24.2	23.1	20.5	21.7	20.7	19.0	19.7
29	25.5	22.7	24.0	27.6	24.1	25.6	20.5	19.3	19.7	19.8	17.6	18.6
30	25.5	21.8	23.6	27.0	25.1	25.8	20.5	18.6	19.5	19.4	18.0	18.6
31	---	---	---	26.3	25.0	25.5	20.1	18.9	19.6	---	---	---
MONTH	27.0	18.2	22.3	27.6	19.7	23.7	28.8	18.6	23.5	23.9	17.4	19.8



DAILY MEAN WATER TEMPERATURE - JANUARY 2002 TO SEPTEMBER 2002

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA—Continued

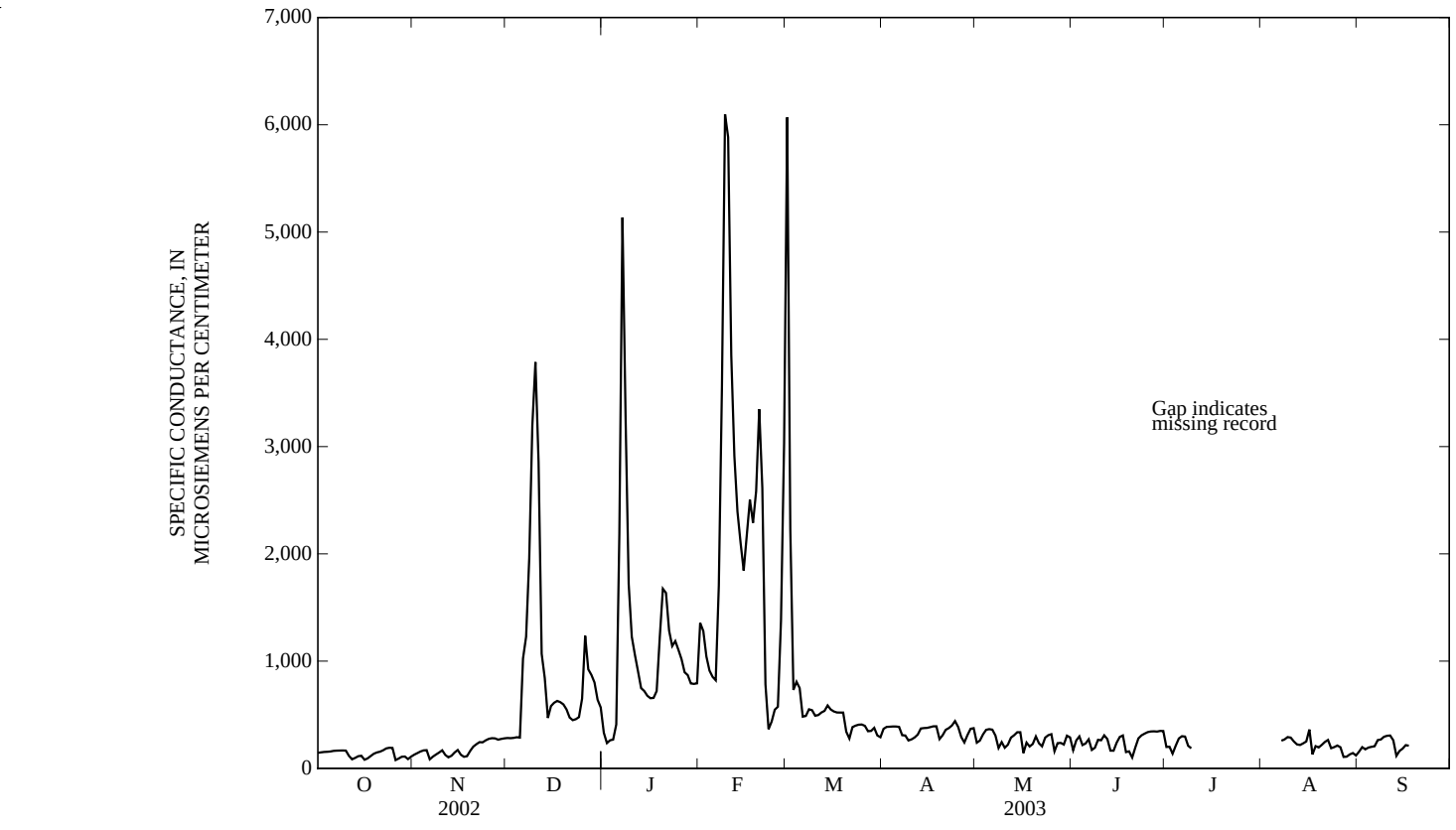
SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	146	143	145	135	120	127	285	281	283	644	152	332
2	151	146	149	151	135	142	283	281	282	298	162	236
3	154	150	153	161	151	157	289	283	284	338	208	262
4	156	154	154	173	161	168	293	286	290	304	228	268
5	160	156	157	180	116	170	357	274	287	1,130	304	409
6	164	159	163	156	65	84	1,700	357	1,020	4,790	1,130	2,190
7	166	164	165	119	96	109	1,650	923	1,230	6,050	4,220	5,140
8	167	166	166	139	119	129	2,960	1,100	1,960	4,220	2,350	3,270
9	167	166	167	157	139	147	3,490	2,890	3,200	2,350	1,360	1,720
10	167	122	165	176	157	169	3,890	3,490	3,790	1,360	1,150	1,230
11	213	70	116	175	89	125	6,450	932	2,860	1,150	994	1,060
12	91	76	84	144	86	103	1,190	961	1,070	994	793	905
13	103	91	98	135	99	118	1,200	402	842	793	713	748
14	125	103	114	160	135	148	563	396	470	734	697	721
15	121	114	117	183	160	171	596	563	581	697	658	677
16	120	58	80	187	71	127	626	589	611	666	628	654
17	103	81	93	132	71	108	636	625	629	711	616	657
18	123	103	115	142	86	114	628	606	617	745	697	721
19	144	123	137	184	142	163	606	583	596	1,730	737	1,220
20	152	144	148	215	184	203	821	464	549	1,800	1,600	1,670
21	161	152	156	235	215	225	489	439	474	1,850	1,320	1,640
22	176	161	169	251	235	244	459	433	450	1,320	1,210	1,280
23	191	176	186	254	208	243	465	448	458	1,210	1,100	1,140
24	193	191	192	269	241	261	562	462	478	1,240	1,120	1,190
25	194	84	191	280	269	275	1,400	422	649	1,120	1,090	1,100
26	167	54	77	284	280	281	1,450	1,030	1,240	1,100	920	1,020
27	101	81	92	285	269	280	1,030	874	923	920	874	896
28	120	101	108	271	266	268	891	852	872	887	826	869
29	133	64	110	277	271	274	881	701	801	826	768	792
30	104	64	86	282	277	280	701	599	640	845	732	788
31	120	94	110	---	---	---	599	546	568	1,210	690	793
MONTH	213	54	134	285	65	180	6,450	274	936	6,050	152	1,150
		FEBRUARY			MARCH			APRIL			MAY	
1	1,540	945	1,360	6,450	4,330	6,070	381	335	369	354	171	239
2	1,480	1,120	1,280	5,150	726	2,240	393	378	387	284	240	259
3	1,120	957	1,040	777	692	732	394	379	388	349	284	317
4	1,260	804	912	826	777	808	395	386	390	366	349	359
5	903	828	853	822	526	749	392	387	390	374	360	366
6	843	792	821	526	445	482	389	385	387	377	350	361
7	3,310	781	1,700	524	470	489	424	213	309	350	132	306
8	5,050	1,710	3,560	568	524	551	344	235	307	238	156	190
9	6,450	5,050	6,100	563	517	542	389	186	260	312	201	245
10	6,450	4,580	5,880	537	480	491	324	216	270	296	143	192
11	4,580	3,130	3,850	508	485	497	396	255	288	258	178	221
12	3,130	2,640	2,910	548	506	521	354	269	315	306	258	287
13	2,640	2,240	2,390	555	526	536	380	354	372	328	299	309
14	2,240	1,920	2,100	634	519	587	382	364	376	345	328	337
15	2,400	1,480	1,840	579	520	549	382	372	377	421	181	337
16	2,360	2,100	2,180	541	519	531	393	381	384	199	110	143
17	2,600	2,280	2,500	539	511	521	405	387	392	282	199	240
18	2,530	2,150	2,290	524	516	520	427	369	392	285	144	204
19	3,170	2,180	2,580	524	516	520	402	235	273	277	178	227
20	3,670	2,990	3,350	571	138	342	337	288	308	310	277	298
21	2,990	1,800	2,610	351	186	278	372	337	359	350	124	234
22	1,800	233	784	403	346	385	385	372	376	250	150	205
23	445	314	366	407	385	398	522	374	400	318	250	287
24	557	343	436	414	387	407	536	391	441	314	302	309
25	582	522	547	412	407	409	402	380	386	335	307	319
26	780	521	575	459	332	396	397	206	292	358	96	160
27	2,030	780	1,380	373	331	346	271	221	241	277	184	235
28	4,330	2,030	3,030	375	333	349	367	271	311	307	163	237
29	---	---	---	454	338	378	382	364	369	267	176	222
30	---	---	---	418	221	307	448	354	375	321	267	305
31	---	---	---	335	245	290	---	---	---	365	98	289
MONTH	6,450	233	2,120	6,450	138	717	536	186	349	421	96	266

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	221	103	169	369	158	199	---	---	---	199	136	156
2	292	221	260	245	148	202	---	---	---	237	167	198
3	375	254	298	172	105	137	---	---	---	192	165	177
4	254	187	217	251	172	212	---	---	---	229	180	194
5	294	223	232	295	251	278	---	---	---	207	191	201
6	298	233	271	304	250	300	---	---	---	220	198	206
7	346	76	172	323	166	296	262	254	258	302	220	264
8	250	116	192	234	164	210	281	261	270	280	263	269
9	292	243	266	234	67	187	300	281	292	303	280	294
10	291	248	262	---	---	---	304	223	287	306	302	304
11	373	225	308	---	---	---	313	105	251	308	305	306
12	326	114	273	---	---	---	238	163	224	347	93	262
13	227	91	165	---	---	---	228	215	218	143	90	116
14	247	104	165	---	---	---	247	213	233	178	143	162
15	267	204	240	---	---	---	260	238	251	231	119	184
16	313	267	293	---	---	---	600	257	362	233	160	217
17	353	162	307	---	---	---	320	74	131	233	188	211
18	224	113	152	---	---	---	328	147	207	---	---	---
19	270	78	159	---	---	---	217	181	195	---	---	---
20	138	65	101	---	---	---	234	205	219	---	---	---
21	250	130	195	---	---	---	261	234	247	---	---	---
22	330	250	280	---	---	---	447	150	265	---	---	---
23	406	295	308	---	---	---	223	146	188	---	---	---
24	334	306	324	---	---	---	206	191	198	---	---	---
25	341	333	338	---	---	---	222	206	213	---	---	---
26	346	341	344	---	---	---	305	74	197	---	---	---
27	358	341	345	---	---	---	132	70	107	---	---	---
28	347	340	343	---	---	---	129	81	109	---	---	---
29	351	347	349	---	---	---	156	98	130	---	---	---
30	350	345	348	---	---	---	182	86	143	---	---	---
31	---	---	---	---	---	---	136	111	120	---	---	---
MONTH	406	65	256	---	---	---	600	70	213	---	---	---



DAILY MEAN SPECIFIC CONDUCTANCE - 2003 WATER YEAR

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

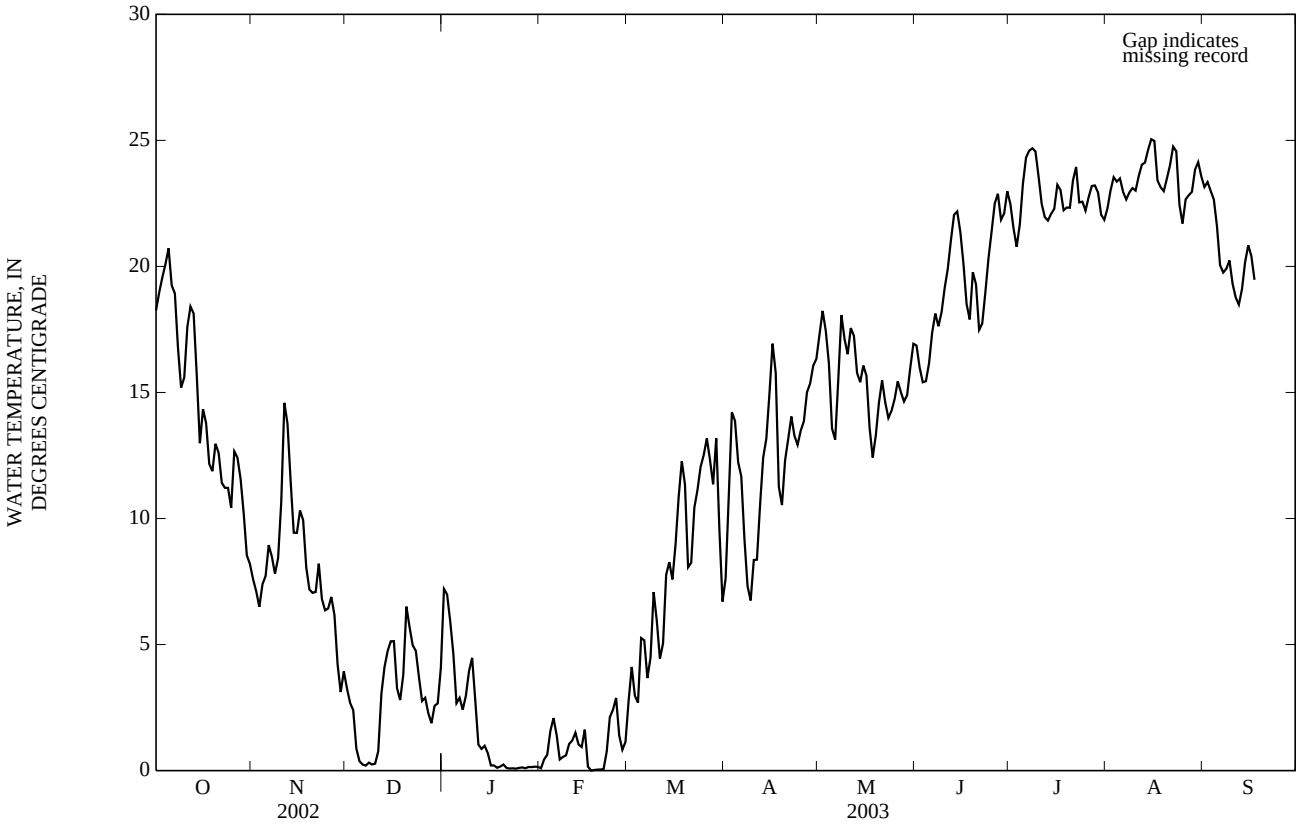
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	19.2	17.7	18.3	8.5	6.6	7.6	4.1	2.4	3.3	8.4	5.0	7.2
2	19.3	18.7	19.0	7.9	6.4	7.1	3.8	1.5	2.7	7.8	6.5	7.0
3	19.8	19.3	19.6	7.6	5.5	6.5	3.4	1.2	2.4	6.5	5.1	5.9
4	20.5	19.8	20.1	8.6	6.5	7.4	1.2	0.4	0.9	5.2	3.7	4.6
5	21.0	20.5	20.7	8.5	7.1	7.7	1.0	0.1	0.4	3.7	2.1	2.7
6	20.7	18.7	19.2	9.5	8.2	8.9	0.6	0.0	0.2	3.5	2.2	2.9
7	19.1	18.5	18.9	8.9	7.7	8.5	0.6	0.0	0.2	3.2	1.7	2.4
8	18.5	15.7	16.8	9.1	6.7	7.8	0.7	0.0	0.3	4.1	2.1	3.0
9	15.7	14.9	15.2	9.7	7.2	8.4	0.6	0.0	0.2	5.3	2.8	3.9
10	17.0	15.4	15.6	12.2	9.3	10.7	0.7	0.0	0.3	5.2	4.0	4.5
11	18.5	16.5	17.6	15.9	12.2	14.6	1.9	0.1	0.8	4.1	1.8	2.8
12	18.8	18.1	18.4	15.2	12.5	13.8	4.4	1.9	3.0	1.8	0.3	1.0
13	18.4	17.5	18.1	12.5	9.8	11.5	4.5	4.0	4.1	2.0	0.0	0.9
14	17.5	14.0	15.7	10.6	8.3	9.4	5.3	4.0	4.7	1.5	0.4	1.0
15	14.0	12.1	13.0	10.4	8.6	9.4	5.8	4.4	5.1	1.5	0.0	0.7
16	14.8	13.5	14.3	11.0	9.4	10.3	6.0	4.2	5.1	0.5	0.0	0.2
17	14.4	13.1	13.8	10.7	8.8	9.9	4.2	2.6	3.3	0.6	0.0	0.2
18	13.1	11.2	12.2	8.8	7.4	8.1	3.5	2.4	2.8	0.4	0.0	0.1
19	12.9	11.1	11.9	7.9	6.3	7.2	4.9	2.9	3.8	0.6	0.0	0.2
20	13.2	12.8	13.0	8.3	5.9	7.1	7.8	4.9	6.5	0.8	0.0	0.2
21	13.3	12.1	12.6	7.7	6.4	7.1	6.5	4.9	5.7	0.5	0.0	0.1
22	12.3	10.5	11.4	8.7	7.5	8.2	5.9	4.0	5.0	0.4	0.0	0.1
23	12.3	10.2	11.2	7.5	5.9	6.8	5.6	3.9	4.8	0.4	0.0	0.1
24	11.9	10.7	11.2	7.5	5.2	6.4	4.3	2.8	3.7	0.3	0.0	0.1
25	12.5	9.9	10.4	7.7	5.2	6.4	3.1	2.2	2.8	0.4	0.0	0.1
26	13.4	11.3	12.7	7.3	6.5	6.9	3.7	2.4	2.9	0.4	0.0	0.1
27	13.2	11.6	12.4	6.8	5.0	6.2	3.1	1.7	2.3	0.4	0.0	0.1
28	12.1	11.3	11.6	5.0	3.5	4.2	2.7	0.9	1.9	0.5	0.0	0.1
29	11.3	8.9	10.2	3.7	2.4	3.1	3.6	1.7	2.6	0.3	0.1	0.1
30	8.9	8.2	8.5	4.9	3.2	3.9	3.6	1.6	2.7	0.3	0.1	0.2
31	8.6	7.7	8.2	---	---	---	5.2	3.1	4.1	0.3	0.0	0.1
MONTH	21.0	7.7	14.6	15.9	2.4	8.0	7.8	0.0	2.9	8.4	0.0	1.7
		FEBRUARY			MARCH			APRIL			MAY	
1	0.2	0.0	0.1	3.4	2.1	2.8	13.5	5.6	7.6	18.9	16.0	17.3
2	1.3	0.1	0.4	5.3	3.2	4.1	14.0	7.9	10.9	19.5	16.9	18.2
3	1.4	0.0	0.6	4.1	1.9	3.0	17.1	11.4	14.2	18.7	16.4	17.4
4	2.5	0.8	1.6	4.4	1.2	2.7	15.3	13.0	13.9	17.3	15.3	16.1
5	3.5	1.3	2.1	7.1	3.5	5.3	13.1	11.6	12.2	15.3	12.8	13.6
6	2.4	0.6	1.4	6.2	4.0	5.2	13.9	9.7	11.7	13.8	12.6	13.1
7	1.0	0.0	0.4	4.7	2.7	3.7	11.9	7.6	9.2	19.9	13.1	15.5
8	1.9	0.0	0.5	6.5	2.4	4.5	7.6	7.1	7.3	18.8	17.5	18.1
9	1.8	0.0	0.6	9.3	5.6	7.1	7.1	6.4	6.7	17.8	16.6	17.1
10	1.5	0.8	1.1	7.5	4.6	6.0	10.4	6.9	8.4	16.9	15.9	16.5
11	2.4	0.0	1.2	5.8	3.4	4.4	9.1	8.1	8.4	18.8	16.6	17.6
12	3.2	0.6	1.5	6.5	3.3	5.0	13.6	8.2	10.5	18.3	16.3	17.2
13	2.6	0.0	1.0	9.9	5.7	7.8	15.0	10.1	12.4	16.5	15.2	15.8
14	2.0	0.0	0.9	9.8	7.0	8.3	15.8	10.6	13.2	17.3	13.6	15.4
15	2.0	1.3	1.6	9.8	5.5	7.6	17.8	12.2	14.9	17.4	14.8	16.1
16	1.3	0.0	0.2	10.4	7.2	9.0	19.0	14.8	16.9	17.5	14.6	15.7
17	0.0	0.0	0.0	11.6	10.1	10.9	18.1	13.3	15.8	14.6	12.8	13.6
18	0.1	0.0	0.0	14.0	10.9	12.3	13.3	10.0	11.3	12.8	12.1	12.4
19	0.2	0.0	0.0	12.5	10.0	11.4	11.9	9.6	10.5	15.1	11.6	13.3
20	0.2	0.0	0.0	10.0	7.1	8.1	14.6	10.0	12.3	16.3	12.8	14.6
21	0.2	0.0	0.1	9.3	7.4	8.2	14.3	11.8	13.2	16.1	14.9	15.5
22	1.8	0.0	0.8	12.4	8.5	10.4	18.0	13.2	14.0	15.3	14.2	14.6
23	2.9	1.2	2.1	12.5	9.6	11.1	15.6	11.5	13.3	14.2	13.8	14.0
24	3.8	1.2	2.4	14.3	10.1	12.0	15.2	10.5	12.9	15.0	13.7	14.3
25	3.5	2.1	2.9	14.9	10.2	12.5	14.9	11.9	13.5	15.1	14.4	14.7
26	2.1	0.9	1.4	15.5	11.9	13.2	14.3	13.3	13.9	16.0	14.9	15.4
27	1.3	0.2	0.8	14.6	10.2	12.3	17.4	13.1	15.0	15.6	14.5	15.0
28	2.2	0.2	1.1	12.1	10.5	11.4	17.9	12.8	15.4	15.3	14.1	14.6
29	---	---	---	15.4	11.5	13.2	17.5	14.6	16.1	15.5	14.2	14.9
30	---	---	---	13.8	6.1	9.6	17.8	14.6	16.3	17.9	14.2	16.0
31	---	---	---	8.6	5.1	6.7	---	---	---	18.1	16.2	16.9
MONTH	3.8	0.0	1.0	15.5	1.2	8.1	19.0	5.6	12.4	19.9	11.6	15.5

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	17.9	16.1	16.9	23.4	21.7	22.5	22.7	22.0	22.3	24.4	22.2	23.1
2	17.5	14.5	16.0	22.3	21.0	21.5	24.1	22.3	23.0	23.8	23.0	23.3
3	16.3	15.0	15.4	21.2	20.6	20.8	24.6	22.9	23.5	23.2	22.7	23.0
4	15.8	15.1	15.4	23.4	20.1	21.7	24.0	22.9	23.4	22.9	22.4	22.7
5	17.7	14.8	16.2	25.0	21.7	23.3	24.6	22.9	23.5	22.4	20.8	21.6
6	19.1	15.8	17.4	26.0	22.9	24.3	24.3	21.8	23.0	21.0	19.0	20.0
7	19.6	17.1	18.1	26.1	23.3	24.6	23.0	22.3	22.7	21.1	18.5	19.8
8	18.5	17.2	17.6	25.7	23.9	24.7	24.0	22.0	22.9	20.7	19.0	19.9
9	19.5	17.1	18.2	26.2	23.4	24.6	23.4	22.8	23.1	21.3	19.6	20.2
10	20.8	17.6	19.1	24.8	23.0	23.6	23.7	22.4	23.0	20.6	18.4	19.3
11	21.3	19.0	19.9	23.0	22.0	22.5	24.5	22.8	23.6	20.5	17.6	18.8
12	23.1	19.6	21.1	23.2	20.7	22.0	25.2	23.1	24.0	18.9	18.2	18.5
13	22.8	21.4	22.1	23.2	20.6	21.8	25.2	23.3	24.1	20.0	18.4	19.1
14	23.3	21.3	22.2	23.4	20.9	22.1	26.2	23.4	24.6	20.7	19.7	20.2
15	21.8	20.9	21.4	23.6	21.0	22.3	26.6	24.0	25.0	22.0	19.9	20.8
16	20.9	19.5	20.1	24.8	22.1	23.2	26.8	24.2	25.0	21.5	19.6	20.4
17	19.5	17.6	18.5	24.6	21.7	23.0	24.5	22.5	23.4	20.9	18.0	19.5
18	18.7	17.3	17.9	23.1	21.2	22.2	24.1	22.4	23.1	---	---	---
19	21.5	18.2	19.8	23.7	21.5	22.3	24.2	21.9	23.0	---	---	---
20	21.4	18.3	19.3	23.9	20.9	22.3	24.9	22.4	23.5	---	---	---
21	18.3	17.1	17.5	25.1	22.1	23.4	25.7	22.9	24.0	---	---	---
22	18.9	16.7	17.7	25.0	23.0	23.9	26.4	23.7	24.8	---	---	---
23	20.7	17.4	19.0	23.1	22.0	22.5	25.8	23.4	24.6	---	---	---
24	22.1	18.7	20.3	23.5	21.8	22.6	23.8	21.3	22.5	---	---	---
25	23.2	19.7	21.4	23.7	20.9	22.2	23.7	20.3	21.7	---	---	---
26	24.3	20.9	22.5	24.5	21.2	22.7	24.4	21.6	22.7	---	---	---
27	24.0	21.9	22.9	24.1	22.4	23.2	23.6	22.3	22.8	---	---	---
28	23.0	20.8	21.9	23.6	22.5	23.2	23.9	22.0	23.0	---	---	---
29	23.5	20.7	22.1	23.8	22.4	22.9	24.9	22.9	23.8	---	---	---
30	24.5	21.6	23.0	22.7	21.4	22.0	25.6	23.0	24.1	---	---	---
31	---	---	---	22.4	21.3	21.8	24.8	22.8	23.6	---	---	---
MONTH	24.5	14.5	19.4	26.2	20.1	22.8	26.8	20.3	23.5	---	---	---

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA—Continued



DAILY MEAN WATER TEMPERATURE - 2003 WATER YEAR

01656000 CEDAR RUN NEAR CATLETT, VA

LOCATION.--Lat 38°38'12", long 77°37'30", NAD83, Fauquier County, Hydrologic Unit 02070010, on right bank 100 ft downstream from bridge on State Highway 806, 0.9 mi downstream from Licking Run, and 1.4 mi southeast of Catlett.

DRAINAGE AREA.--93.4 mi^2.

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

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

GAGE.--Water-stage recorder. Datum of gage is 199.15 ft NGVD of 1929. July 1950 to December 1986, water-stage recorder at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Dec 5-10, Jan. 14-19, and Jan. 22 to Feb. 14, and period of doubtful gage-height record, Feb. 15-20, which are fair. Maximum discharge, 32,500 ft^3/s, from rating curve extended above 7,000 ft^3/s, on basis of contracted-opening measurement of peak flow. No flow at times in many years. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 1	2300	2,830	10.26	Jun 20	1730	2,080	9.04
Feb 22	2330	4,210	12.06	Jul 11	1230	2,500	9.76
Mar 21	0030	3,310	10.94	Sep 19	1130	3,290	10.91
May 16	1000	*5,040	*12.98	Sep 23	1100	3,390	11.05

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	31	25	1,050	e30	198	196	56	92	37	60	45
2	0.71	18	21	1,290	e28	713	147	45	67	35	53	51
3	0.50	13	18	601	e27	736	117	38	64	267	33	168
4	0.49	11	17	347	e40	377	98	28	175	127	28	104
5	0.97	10	e16	211	e48	624	87	26	176	69	25	86
6	0.73	144	e25	177	e41	816	77	29	93	51	21	49
7	0.75	45	e22	151	e37	472	196	175	926	38	17	34
8	0.70	23	e18	151	e32	314	226	395	485	31	14	26
9	0.59	16	e17	191	e29	329	571	247	286	35	41	21
10	0.85	12	e16	151	e33	251	346	330	159	107	35	18
11	4.6	225	194	106	e30	181	619	271	113	1,400	25	18
12	18	353	340	83	e27	158	307	142	486	261	19	25
13	5.4	199	453	71	e26	154	183	86	500	110	13	245
14	2.7	91	828	e69	e23	164	135	60	349	70	11	97
15	2.6	62	377	e63	e70	124	115	193	714	54	9.0	63
16	34	304	204	e57	e58	107	99	3,250	225	42	7.5	50
17	42	960	135	e53	e48	99	79	866	221	32	11	34
18	15	631	107	e51	e165	91	68	1,020	604	27	14	130
19	9.8	228	87	e47	e140	78	185	595	458	24	9.8	2,160
20	4.2	142	197	42	e250	1,280	156	299	998	20	7.4	416
21	3.0	105	169	39	279	1,380	107	536	504	16	6.1	170
22	2.1	99	108	e37	1,820	415	92	392	233	14	5.9	109
23	1.6	77	84	e33	2,530	234	74	289	146	21	12	2,130
24	1.3	56	71	e29	1,110	173	58	376	105	19	7.9	541
25	1.2	49	464	e26	712	139	51	237	80	13	4.7	207
26	19	42	332	e22	353	123	67	786	66	10	3.4	128
27	14	37	174	e20	244	154	66	317	72	7.9	3.6	95
28	7.6	32	124	e19	205	114	51	262	98	8.4	26	103
29	38	28	104	e23	---	104	43	187	61	51	18	77
30	228	27	87	e21	---	326	37	153	47	23	171	59
31	93	---	78	e20	---	337	---	114	---	14	109	---
TOTAL	554.79	4,070	4,912	5,251	8,435	10,765	4,653	11,800	8,603	3,034.3	821.3	7,459
MEAN	17.9	136	158	169	301	347	155	381	287	97.9	26.5	249
MAX	228	960	828	1,290	2,530	1,380	619	3,250	998	1,400	171	2,160
MIN	0.49	10	16	19	23	78	37	26	47	7.9	3.4	18
CFSM	0.19	1.45	1.70	1.81	3.23	3.72	1.66	4.08	3.07	1.05	0.28	2.66
IN.	0.22	1.62	1.96	2.09	3.36	4.29	1.85	4.70	3.43	1.21	0.33	2.97

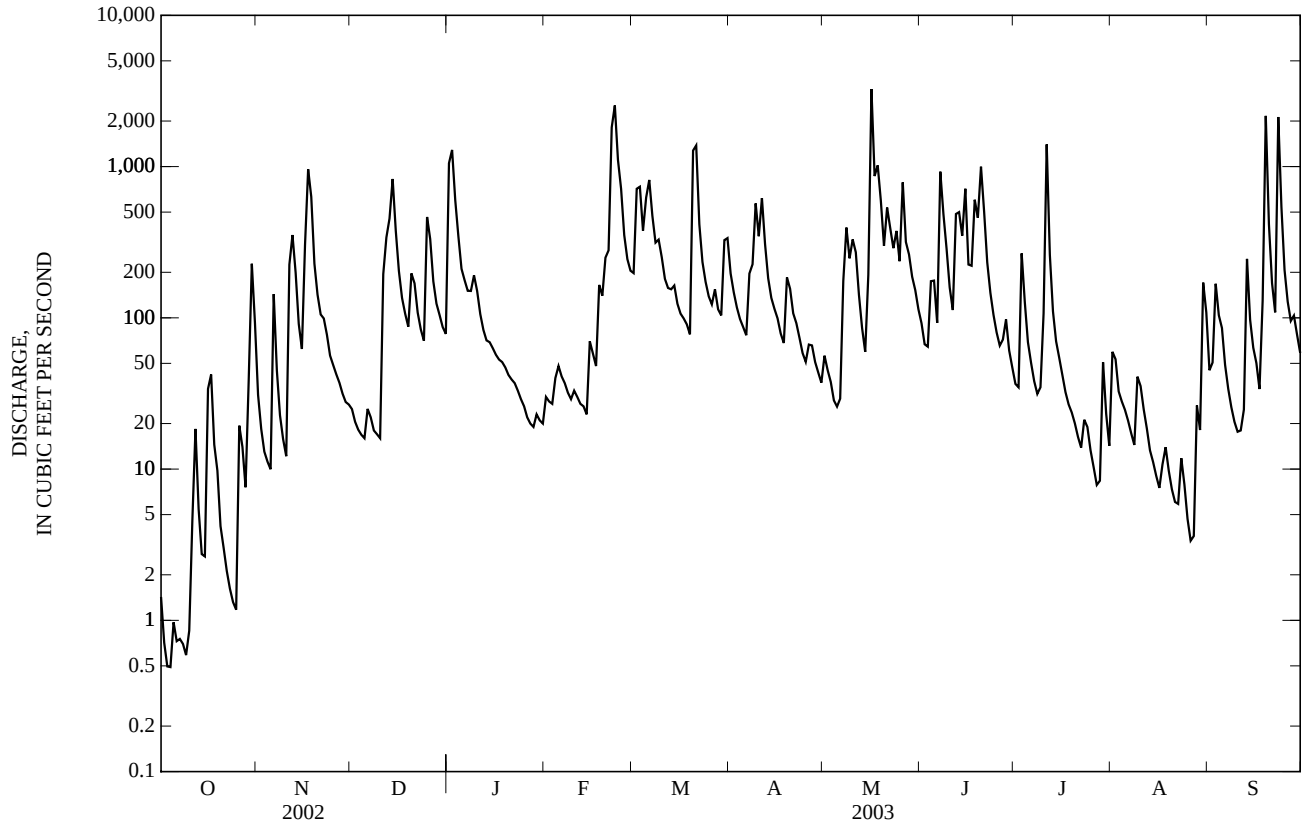
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 1986, 1990 - 2003, BY WATER YEAR (WY)

MEAN	43.8	61.8	106	141	164	177	122	78.6	73.4	30.6	43.2	42.5
MAX	450	248	379	467	501	531	544	381	917	323	407	388
(WY)	(1980)	(1973)	(1993)	(1978)	(1998)	(1993)	(1983)	(2003)	(1972)	(1956)	(1955)	(1975)
MIN	0.40	3.15	3.53	4.64	6.09	22.3	19.6	9.41	1.38	0.74	0.58	0.37
(WY)	(1987)	(1966)	(1966)	(1981)	(2002)	(1981)	(1985)	(1956)	(1999)	(1963)	(1966)	(1954)

01656000 CEDAR RUN NEAR CATLETT, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1951 - 1986 1990 - 2003	
ANNUAL TOTAL	14,873.63		70,358.39			
ANNUAL MEAN	40.7		193		90.1	
HIGHEST ANNUAL MEAN					193	2003
LOWEST ANNUAL MEAN					16.5	2002
HIGHEST DAILY MEAN	960	Nov 17	3,250	May 16	e18,500	Jun 22, 1972
LOWEST DAILY MEAN	0.02	Aug 16	0.49	Oct 4	0.00	(a)
ANNUAL SEVEN-DAY MINIMUM	0.07	Aug 10	0.68	Oct 3	0.00	(b)
MAXIMUM PEAK FLOW			5,040	May 16	32,500	Jun 22, 1972
MAXIMUM PEAK STAGE			12.98	May 16	c27.66	Jun 22, 1972
INSTANTANEOUS LOW FLOW			0.34	dOct 3	0.00	(f)
ANNUAL RUNOFF (CFSM)	0.44		2.06		0.96	
ANNUAL RUNOFF (INCHES)	5.92		28.02		13.10	
10 PERCENT EXCEEDS	95		477		191	
50 PERCENT EXCEEDS	9.7		77		27	
90 PERCENT EXCEEDS	0.74		11		2.0	

a Many days in 1954, 1957, 1959, 1963-64, 1966, 1983, and 1993.
b Many days in 1954, 1957, 1959, 1963-64, 1966, and 1983.
c From floodmarks.
d Also Oct. 4, 2002.
e Estimated.
f Many days in 1954, 1957, 1959, 1963-64, 1991, and 1993.



01656102 GOSLIN RUN NEAR ADEN, VA

LOCATION.--Lat 38°36'40", long 77°33'03", NAD83, Prince William County, Hydrologic Unit 02070010, on left bank at upstream side of bridge on Quantico Marine Corps Base Road MCB-8, 3.5 mi south of Aden, and 0.5 mi above mouth.

DRAINAGE AREA.--4.64 mi^2.

WATER-DISCHARGE RECORDS

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

GAGE.--Water stage recorder. Datum of gage is 180 ft NGVD of 1929, from topographic map.

REMARKS.-- Records fair except those for discharges greater than 75 ft^3/s, which are poor. Water-quality records for some prior periods have been collected at this site.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	1.9	2.1	125	2.5	11	17	7.5	5.8	1.9	0.49	0.89
2	0.00	1.5	2.1	56	2.2	44	11	4.5	4.4	4.0	0.44	1.7
3	0.00	1.1	2.0	38	1.9	38	8.2	3.4	4.8	35	0.36	4.3
4	0.00	1.0	1.9	20	2.9	21	6.9	2.7	7.2	14	0.51	2.7
5	0.00	0.95	2.5	12	2.7	47	6.1	2.5	9.1	5.3	0.76	2.1
6	0.00	6.4	2.4	9.5	2.0	65	5.2	2.8	4.9	3.3	4.8	1.2
7	0.00	2.6	2.2	7.8	2.5	34	15	15	96	2.5	1.3	0.83
8	0.00	1.4	2.3	7.3	2.2	23	14	35	38	2.0	0.86	0.65
9	0.00	1.2	2.5	7.3	2.1	28	45	16	36	2.1	1.1	0.63
10	0.00	2.2	2.5	5.5	2.3	19	25	23	12	3.0	0.85	0.50
11	0.00	13	18	4.4	2.3	13	60	18	7.7	2.8	0.91	0.41
12	0.00	31	18	3.7	2.2	11	24	9.8	7.2	1.7	4.5	3.2
13	0.00	13	31	3.6	2.3	12	14	6.4	5.6	1.8	1.5	20
14	0.00	5.5	55	3.3	2.2	11	9.6	4.8	23	1.4	1.00	5.1
15	0.00	3.6	23	3.0	9.3	8.3	8.0	5.4	32	1.2	0.71	3.2
16	0.32	37	12	2.6	11	7.5	6.9	86	10	0.96	0.66	2.2
17	1.2	82	7.3	2.6	21	7.4	5.6	21	15	0.71	0.58	1.5
18	0.36	36	5.5	2.3	14	6.5	5.2	47	65	0.60	0.48	33
19	0.16	11	4.8	2.2	10	5.4	23	24	27	0.64	0.63	95
20	0.06	6.9	7.1	2.3	12	321	11	12	123	0.52	0.52	3.7
21	0.02	5.3	6.0	2.1	17	77	8.2	35	42	0.45	0.41	0.98
22	0.01	4.4	4.6	1.9	612	20	7.0	27	18	0.41	0.42	0.53
23	0.00	3.6	3.9	1.6	135	11	5.2	19	9.3	0.47	0.43	104
24	0.00	3.0	3.6	1.4	54	8.8	4.3	17	5.9	0.39	0.25	8.8
25	0.00	2.7	43	1.4	34	7.7	4.0	12	4.2	0.30	0.14	4.3
26	0.03	2.4	25	1.4	21	8.6	6.4	76	3.3	0.25	0.12	3.2
27	0.52	2.3	13	1.2	15	10	5.1	26	4.5	0.22	0.27	2.6
28	0.61	2.1	8.8	1.2	12	7.3	3.9	21	3.6	0.35	1.5	2.9
29	3.6	2.0	6.9	1.4	---	6.8	3.4	14	2.6	1.4	0.80	2.1
30	9.6	2.1	5.5	1.3	---	30	3.1	10	3.6	0.58	2.6	1.7
31	3.8	---	4.9	1.5	---	29	---	7.3	---	0.45	1.7	---
TOTAL	20.29	289.15	329.4	334.8	1,009.6	949.3	371.3	611.1	630.7	90.70	31.60	313.92
MEAN	0.65	9.64	10.6	10.8	36.1	30.6	12.4	19.7	21.0	2.93	1.02	10.5
MAX	9.6	82	55	125	612	321	60	86	123	35	4.8	104
MIN	0.00	0.95	1.9	1.2	1.9	5.4	3.1	2.5	2.6	0.22	0.12	0.41
CFSM	0.14	2.08	2.29	2.33	7.77	6.60	2.67	4.25	4.53	0.63	0.22	2.26
IN.	0.16	2.32	2.64	2.68	8.09	7.61	2.98	4.90	5.06	0.73	0.25	2.52

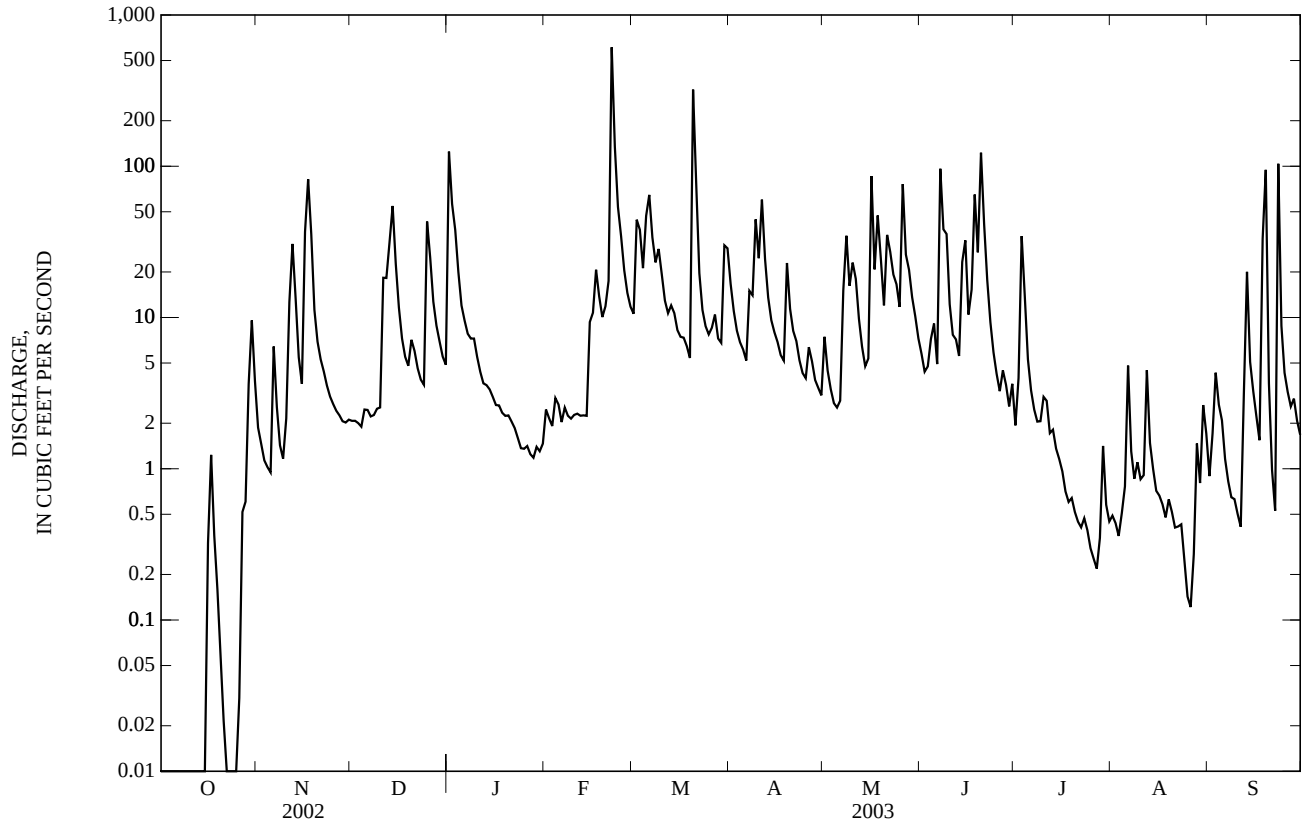
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2003, BY WATER YEAR (WY)

MEAN	0.65	9.64	10.6	10.8	36.1	30.6	12.4	19.7	10.7	1.46	0.51	5.23
MAX	0.65	9.64	10.6	10.8	36.1	30.6	12.4	19.7	21.0	2.93	1.02	10.5
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	0.65	9.64	10.6	10.8	36.1	30.6	12.4	19.7	0.31	0.000	0.001	0.000
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2002)	(2002)	(2002)	(2002)

01656102 GOSLIN RUN NEAR ADEN, VA—Continued

SUMMARY STATISTICS	FOR 2003 WATER YEAR		WATER YEARS 2002 - 2003	
ANNUAL TOTAL	4,981.86			
ANNUAL MEAN	13.6		13.6	
HIGHEST ANNUAL MEAN			13.6	2003
LOWEST ANNUAL MEAN			13.6	2003
HIGHEST DAILY MEAN	612	Feb 22	612	Feb 22, 2003
LOWEST DAILY MEAN	0.00	aOct 1	0.00	(b)
ANNUAL SEVEN-DAY MINIMUM	0.00	Oct 1	0.00	(b)
MAXIMUM PEAK FLOW	2,200	Feb 22	2,200	Feb 22, 2003
MAXIMUM PEAK STAGE	8.96	Feb 22	8.96	Feb 22, 2003
INSTANTANEOUS LOW FLOW	0.00	cOct 1	0.00	(d)
ANNUAL RUNOFF (CFSM)	2.94		2.94	
ANNUAL RUNOFF (INCHES)	39.94		39.97	
10 PERCENT EXCEEDS	32		32	
50 PERCENT EXCEEDS	3.9		3.9	
90 PERCENT EXCEEDS	0.41		0.41	

a Also Oct. 2-15, 23-25, 2002.
b Many days in June to October 2002.
c Also no flow part or all of each day Oct. 2-16, 22-26.
d No flow part or all of many days June to October, 2002.



01656102 GOSLIN RUN NEAR ADEN, VA—Continued

SUSPENDED-SEDIMENT
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Day	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	0	0.00	7	0.04	16	0.09	165	136	5	0.03	8	0.23
2	0	0.00	7	0.03	14	0.08	52	11	5	0.03	35	5.4
3	0	0.00	5	0.02	7	0.04	24	2.6	5	0.03	23	2.6
4	0	0.00	3	0.00	6	0.03	14	0.80	10	0.09	9	0.51
5	0	0.00	2	0.00	6	0.04	11	0.35	14	0.10	36	7.2
6	0	0.00	7	0.12	6	0.04	10	0.26	12	0.07	46	8.4
7	0	0.00	9	0.06	6	0.03	9	0.20	11	0.08	13	1.3
8	0	0.00	6	0.02	6	0.04	9	0.18	12	0.07	3	0.17
9	0	0.00	6	0.02	6	0.04	5	0.10	13	0.08	12	0.93
10	0	0.00	5	0.03	6	0.04	4	0.06	14	0.08	13	0.72
11	0	0.00	17	0.83	22	2.0	4	0.05	11	0.07	9	0.32
12	0	0.00	24	3.1	35	1.7	4	0.04	7	0.04	3	0.08
13	0	0.00	9	0.39	40	5.4	3	0.03	9	0.06	4	0.12
14	0	0.00	5	0.08	28	5.0	3	0.03	9	0.06	7	0.20
15	0	0.00	4	0.04	6	0.44	3	0.02	34	1.0	7	0.15
16	1	0.00	73	27	4	0.12	3	0.02	14	0.40	7	0.13
17	11	0.04	67	22	6	0.11	3	0.02	30	1.7	7	0.14
18	6	0.00	14	1.8	7	0.11	3	0.02	34	1.3	7	0.13
19	8	0.00	7	0.20	2	0.03	3	0.02	32	0.87	5	0.07
20	6	0.00	7	0.12	4	0.08	3	0.02	29	0.93	359	683
21	6	0.00	6	0.09	2	0.04	3	0.02	43	2.5	72	23
22	3	0.00	6	0.07	2	0.02	3	0.02	554	1,370	12	0.70
23	0	0.00	4	0.04	1	0.00	3	0.01	208	86	5	0.14
24	0	0.00	6	0.05	4	0.04	4	0.01	45	6.8	4	0.10
25	0	0.00	2	0.02	42	7.0	4	0.01	27	2.6	4	0.09
26	5	0.00	2	0.02	9	0.74	4	0.01	10	0.56	5	0.14
27	5	0.00	1	0.00	6	0.19	4	0.01	9	0.35	7	0.19
28	4	0.00	5	0.03	5	0.12	4	0.01	9	0.27	5	0.10
29	20	0.49	9	0.05	4	0.08	4	0.01	---	---	4	0.07
30	17	0.53	12	0.07	4	0.06	4	0.01	---	---	45	5.5
31	9	0.09	---	---	3	0.04	4	0.02	---	---	49	4.0
TOTAL	---	1.15	---	56.34	---	23.79	---	151.96	---	1,476.17	---	745.83

01656102 GOSLIN RUN NEAR ADEN, VA—Continued

SUSPENDED-SEDIMENT—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Day	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	21	0.98	16	0.36	8	0.13	8	0.04	5	0.00	8	0.02
2	8	0.25	10	0.12	7	0.09	23	0.56	3	0.00	8	0.03
3	4	0.08	8	0.08	9	0.11	47	4.7	6	0.00	20	0.39
4	4	0.08	5	0.04	9	0.17	11	0.47	5	0.00	15	0.11
5	4	0.07	5	0.03	11	0.30	5	0.08	10	0.04	11	0.06
6	4	0.06	5	0.04	7	0.09	5	0.04	55	1.0	10	0.03
7	25	1.5	99	18	172	72	5	0.03	14	0.05	7	0.02
8	39	1.5	50	9.1	72	8.8	7	0.04	6	0.01	5	0.00
9	46	6.3	17	0.80	31	3.6	6	0.03	7	0.02	5	0.00
10	11	0.81	11	0.76	13	0.44	9	0.07	5	0.01	3	0.00
11	37	7.5	7	0.33	6	0.12	9	0.07	5	0.01	5	0.00
12	7	0.49	6	0.17	8	0.16	8	0.04	19	0.27	25	1.6
13	12	0.43	6	0.11	10	0.15	8	0.04	8	0.03	51	5.3
14	13	0.33	6	0.08	97	18	8	0.03	6	0.02	7	0.10
15	6	0.13	15	0.45	34	4.3	9	0.03	5	0.01	5	0.04
16	4	0.07	101	45	8	0.24	7	0.02	8	0.01	5	0.03
17	5	0.07	10	0.57	17	1.8	6	0.01	9	0.01	6	0.03
18	10	0.14	44	6.9	44	12	7	0.01	8	0.01	63	52
19	16	1.2	31	2.5	15	1.1	7	0.01	6	0.01	155	109
20	7	0.22	6	0.20	112	72	7	0.01	4	0.00	12	0.13
21	4	0.09	27	4.2	47	5.9	6	0.00	5	0.00	7	0.02
22	17	0.32	18	1.4	15	0.77	4	0.00	6	0.00	7	0.00
23	20	0.28	8	0.40	7	0.17	6	0.00	5	0.00	156	106
24	15	0.17	4	0.20	7	0.11	10	0.01	6	0.00	10	0.26
25	10	0.11	3	0.10	6	0.06	9	0.00	3	0.00	6	0.07
26	7	0.13	61	20	6	0.05	9	0.00	5	0.00	8	0.07
27	10	0.13	12	0.86	28	0.57	8	0.00	6	0.00	8	0.05
28	14	0.15	6	0.36	16	0.17	8	0.00	10	0.04	7	0.05
29	15	0.14	4	0.15	8	0.06	7	0.03	8	0.02	4	0.02
30	14	0.11	4	0.10	11	0.11	6	0.00	73	1.1	4	0.02
31	---	---	7	0.13	---	---	5	0.00	26	0.14	---	---
TOTAL	---	23.84	---	113.54	---	203.57	---	6.37	---	2.81	---	275.45
YEAR	3,080.82											

01656102 GOSLIN RUN NEAR ADEN, VA—Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Sample type	Gage height, feet (00065)	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Ammonia + org-N, water, fltrd, mg/L as N (00623)
OCT												
28...	1100	Environmental	2.98	0.49	760	9.3	85	6.9	86	12.0	11.4	0.15
NOV												
13...	1230	Environmental	3.35	11	755	8.7	80	6.2	60	8.5	11.4	0.26
DEC												
16...	1100	Environmental	3.34	12	751	12.1	96	6.5	54	4.0	5.6	0.15
JAN												
14...	1215	Environmental	3.04	3.4	760	14.9	106	6.6	55	1.5	1.8	E.09
FEB												
24...	1000	Environmental	3.92	45	760	11.6	85	7.2	42	1.5	1.7	0.14
MAR												
12...	0945	Environmental	3.36	11	758	10.8	85	6.4	47	4.0	4.4	0.10
20...	1458	Blank	--	--	--	--	--	--	--	--	--	<0.10
20...	1500	Environmental	6.53	671	753	9.8	82	5.8	37	8.0	7.5	0.28
20...	1502	Replicate	6.53	671	--	--	--	--	--	--	--	E.28c
APR												
16...	1200	Environmental	3.24	7.0	755	11.2	101	6.4	49	25.5	15.8	0.14
MAY												
14...	1100	Environmental	3.14	5.0	755	9.4	90	6.6	52	18.0	13.8	0.18
JUN												
25...	1100	Environmental	3.14	4.8	759	7.6	85	6.2	51	31.0	20.0	0.19
JUL												
22...	1115	Environmental	2.81	0.38	753	8.0	99	6.3	61	21.5	23.8	0.19
AUG												
12...	1030	Environmental	3.12	4.6	759	7.5	88	7.2	50	28.0	22.8	0.26
SEP												
10...	1330	Environmental	2.83	0.49	760	6.4	67	7.0	71	24.0	18.2	0.18
23...	1230	Environmental	4.72	106	753	6.7	74	6.7	38	22.5	20.3	0.43
23...	1235	Replicate	4.72	106	--	--	--	--	--	--	--	0.48
23...	1240	Blank	--	--	--	--	--	--	--	--	--	<0.10

01656102 GOSLIN RUN NEAR ADEN, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Phos-phorus, water, fltrd, mg/L (00666)	Phos-phorus, water, unfltrd mg/L (00665)	E coli, m-TEC MF, water, col/ 100 mL (31633)	Fecal coli-form, M-FC 0.7u MF col/ 100 mL (31625)	Sus-pended sedi-ment concen-tration mg/L (80154)
OCT										
28...	0.18	<0.04	<0.06	<0.008	<0.02	0.006	0.016	22	31	4
NOV										
13...	0.31	<0.04	<0.06	<0.008	<0.02	0.010	0.029	200	290	8
DEC										
16...	0.19	<0.04	E.05	<0.008	<0.02	0.006	0.014	62	64	5
JAN										
14...	E.09	<0.04	E.05	<0.008	<0.02	E.004	0.008	34	27	2
FEB										
24...	0.24	E.02	0.12	<0.008	<0.02	0.006	0.024	50	168	29
MAR										
12...	E.10	<0.04	E.04	<0.008	<0.02	0.007	0.018	E11k	E5k	2
20...	E.06	<0.04	<0.06	<0.008	<0.02	<0.004	<0.004	--	--	--
20...	1.1	E.02	0.08	<0.008	<0.02	0.014	0.25	--	--	1,150
20...	1.3	E.03	0.07	<0.008	<0.02	0.013	0.26	--	--	--
APR										
16...	0.18	<0.04	<0.06	<0.008	<0.02	0.005	0.013	20	E14k	4
MAY										
14...	0.28	<0.04	<0.06	<0.008	<0.02	0.011	0.021	110	134	6
JUN										
25...	0.25	<0.04	E.03	<0.008	<0.02	0.008	0.020	510	350	6
JUL										
22...	0.31	<0.04	E.04	<0.008	<0.02	0.006	0.017	240	278	4
AUG										
12...	0.43	<0.04	<0.06	<0.008	<0.02	0.008	0.040	E2400k	E2530k	20
SEP										
10...	0.26	<0.04	E.04n	<0.008	<0.02	0.010	0.014	140	109	2
23...	0.68	<0.04	E.04n	<0.008	<0.02	0.017	0.081	--	--	131
23...	0.62	<0.04	E.03n	<0.008	<0.02	0.017	0.081	--	--	--
23...	<0.10	<0.04	<0.06	<0.008	<0.02	<0.004	<0.004	--	--	--

Remark codes used in this table:
< -- Less than
E -- Estimated value

Value qualifier codes used in this table:
c -- See laboratory comment
k -- Counts outside acceptable range
n -- Below the NDV

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA

LOCATION.--Lat 38°35'14", long 77°25'43", NAD83, Prince William County, Hydrologic Unit 02070011, on left bank at upstream side of bridge on State Highway 619, 3.4 mi south of Independent Hill, 5.6 mi west of Dumfries, and 6.5 mi upstream from mouth.

DRAINAGE AREA.--7.64 mi^2.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 238.88 ft NGVD of 1929.

REMARKS.--Records good.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 1	2315	342	5.63	Jun 7	1730	200	4.56
Feb 22	1700	*1,180	*8.19	Jun 20	1645	311	5.46
Mar 20	1900	572	6.65	Sep 19	0415	440	6.11
May 8	0030	471	6.25	Sep 23	1030	444	6.13
May 16	0545	387	5.86				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.07	0.82	2.5	97	4.5	9.1	13	16	6.3	3.1	1.3	1.8
2	0.07	0.52	2.5	47	3.9	35	9.9	8.0	5.1	5.2	1.3	4.4
3	0.07	0.40	2.5	25	3.4	29	8.3	5.7	5.3	60	1.1	6.8
4	0.07	0.52	2.6	13	4.7	15	7.4	4.9	8.0	23	1.7	4.3
5	0.08	0.72	3.3	7.5	4.6	33	6.9	4.8	10	7.8	1.7	3.3
6	0.07	6.3	3.3	6.5	3.1	49	6.2	5.9	5.8	5.1	5.0	1.9
7	0.06	1.4	3.3	6.2	3.5	24	19	49	60	3.8	1.7	1.4
8	0.06	0.53	3.4	5.6	3.1	16	15	96	23	3.0	1.4	1.1
9	0.06	0.41	3.7	6.2	3.1	19	37	17	27	2.9	1.3	1.1
10	0.07	0.57	3.9	4.9	3.2	14	19	20	10	4.2	3.4	1.0
11	0.13	8.0	23	4.0	3.2	10	43	15	7.5	4.0	1.8	0.98
12	0.14	22	19	3.4	3.2	9.2	18	8.0	8.0	2.5	2.5	5.5
13	0.14	11	26	3.3	3.1	10	12	5.8	7.9	2.5	1.6	17
14	0.17	3.9	41	3.2	3.0	9.5	9.3	4.5	13	2.5	1.3	4.5
15	0.18	2.6	15	3.0	13	7.6	8.5	6.8	22	2.1	1.1	2.9
16	1.3	29	7.7	2.9	16	7.3	7.8	133	8.5	1.9	1.0	2.1
17	0.86	68	5.2	2.9	25	7.4	7.0	19	11	1.7	2.7	1.4
18	0.35	29	4.1	2.7	14	6.9	6.8	36	55	1.3	1.3	12
19	0.29	7.4	3.7	2.5	8.5	6.2	39	17	22	1.6	0.98	111
20	0.27	4.5	6.2	2.5	9.9	196	14	9.5	86	1.5	0.91	7.5
21	0.22	3.7	6.2	2.5	16	64	10	29	26	1.2	0.78	3.9
22	0.18	3.6	4.5	2.5	393	19	8.8	23	12	1.1	0.74	3.1
23	0.16	2.8	3.8	2.4	123	12	7.5	13	7.6	1.4	0.66	149
24	0.15	2.6	3.8	2.3	36	9.6	6.6	12	5.7	1.3	0.63	12
25	0.16	2.6	27	2.3	24	8.1	6.4	9.8	4.6	1.1	0.63	6.3
26	0.31	2.4	17	2.4	15	8.5	12	75	3.9	0.96	0.59	4.3
27	0.38	2.4	8.8	2.2	11	12	9.5	18	18	0.82	0.63	3.3
28	0.43	2.5	6.2	2.0	10	8.3	7.1	20	9.5	1.7	1.6	3.9
29	1.2	2.4	5.2	2.4	---	9.1	6.1	14	5.2	5.0	1.1	2.9
30	9.2	2.3	4.3	2.4	---	25	5.7	10	3.9	1.7	5.0	2.3
31	4.1	---	3.9	2.6	---	21	---	7.6	---	1.3	4.2	---
TOTAL	21.00	224.89	272.6	275.3	764.0	709.8	386.8	713.3	497.8	157.28	51.65	382.98
MEAN	0.68	7.50	8.79	8.88	27.3	22.9	12.9	23.0	16.6	5.07	1.67	12.8
MAX	9.2	68	41	97	393	196	43	133	86	60	5.0	149
MIN	0.06	0.40	2.5	2.0	3.0	6.2	5.7	4.5	3.9	0.82	0.59	0.98
CFSM	0.09	0.98	1.15	1.16	3.57	3.00	1.69	3.01	2.17	0.66	0.22	1.67
IN.	0.10	1.10	1.33	1.34	3.72	3.46	1.88	3.47	2.42	0.77	0.25	1.86

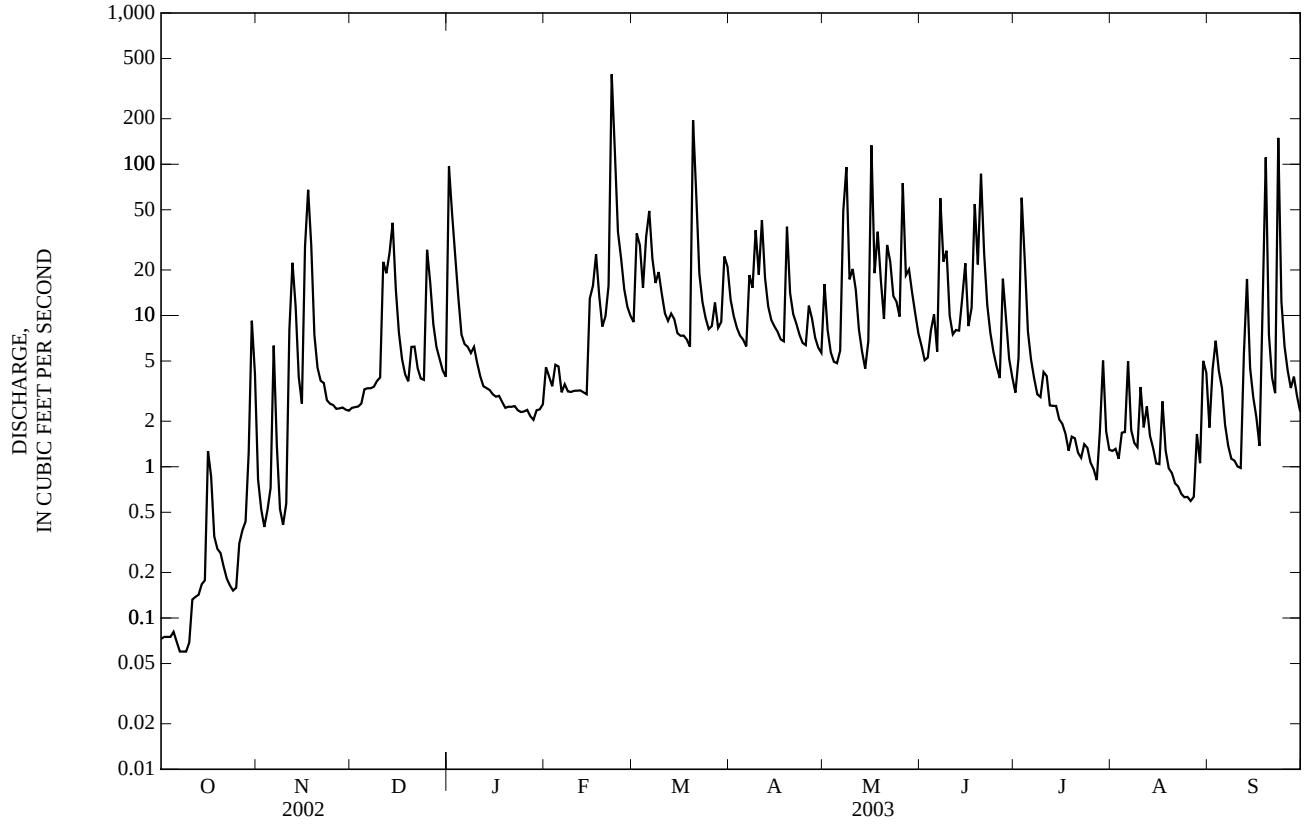
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2003, BY WATER YEAR (WY)

MEAN	3.07	5.56	7.70	9.90	11.9	13.9	11.4	8.17	4.89	2.66	2.50	3.26
MAX	23.9	19.2	24.4	31.2	54.0	35.0	33.0	42.8	48.8	15.1	24.5	37.2
(WY)	(1980)	(1953)	(1997)	(1996)	(1998)	(1994)	(1983)	(1989)	(1972)	(1975)	(1955)	(1975)
MIN	0.070	0.23	0.58	1.01	1.30	1.77	2.90	1.38	0.23	0.055	0.010	0.000
(WY)	(1989)	(1999)	(1966)	(1981)	(2002)	(1981)	(1969)	(1999)	(1999)	(1963)	(1963)	(1964)

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1951 - 2003	
ANNUAL TOTAL	931.18		4,457.40			
ANNUAL MEAN	2.55		12.2		7.03	
HIGHEST ANNUAL MEAN					13.5	1998
LOWEST ANNUAL MEAN					1.29	2002
HIGHEST DAILY MEAN	68	Nov 17	393	Feb 22	770	Jun 22, 1972
LOWEST DAILY MEAN	0.00	aAug 14	0.06	bOct 7	0.00	(c)
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 14	0.07	Oct 3	0.00	(c)
MAXIMUM PEAK FLOW			1,180	Feb 22	4,160	May 6, 1989
MAXIMUM PEAK STAGE			8.19	Feb 22	11.62	May 6, 1989
INSTANTANEOUS LOW FLOW			0.06	dOct 1	0.00	(c)
ANNUAL RUNOFF (CFSM)	0.33		1.60		0.92	
ANNUAL RUNOFF (INCHES)	4.53		21.70		12.51	
10 PERCENT EXCEEDS	4.5		25		14	
50 PERCENT EXCEEDS	1.1		4.7		2.6	
90 PERCENT EXCEEDS	0.04		0.65		0.20	

a Also many other days in August and September 2002.
b Also Oct. 8, 9, 2002.
c No flow at times many years.
d Also Oct. 6-10, 2002.



01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA—Continued

SUSPENDED-SEDIMENT
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Day	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	6	0.00	14	0.03	14	0.09	79	43	6	0.08	6	0.14
2	6	0.00	9	0.01	13	0.09	51	9.1	7	0.07	39	5.6
3	5	0.00	5	0.00	11	0.08	25	1.6	7	0.07	27	2.8
4	8	0.00	5	0.00	10	0.07	12	0.44	10	0.14	15	0.60
5	6	0.00	4	0.00	9	0.08	14	0.28	8	0.10	18	2.3
6	7	0.00	8	0.17	9	0.08	7	0.12	7	0.06	35	4.7
7	6	0.00	6	0.02	8	0.07	7	0.12	6	0.06	12	0.81
8	6	0.00	6	0.00	7	0.06	3	0.05	5	0.05	4	0.16
9	6	0.00	6	0.00	6	0.06	2	0.03	5	0.04	4	0.20
10	7	0.00	7	0.01	5	0.05	2	0.03	4	0.04	3	0.11
11	5	0.00	26	0.93	69	8.9	3	0.03	4	0.03	2	0.07
12	7	0.00	55	5.3	41	2.3	3	0.03	3	0.03	3	0.08
13	7	0.00	17	0.63	8	0.68	3	0.03	3	0.02	4	0.12
14	6	0.00	12	0.13	32	4.9	3	0.03	2	0.02	3	0.09
15	4	0.00	8	0.05	6	0.27	4	0.03	26	1.1	4	0.09
16	6	0.03	15	3.4	4	0.09	4	0.03	18	1.0	3	0.06
17	10	0.02	106	32	5	0.07	5	0.04	38	2.7	3	0.06
18	9	0.00	21	2.2	4	0.05	5	0.04	20	0.75	4	0.07
19	6	0.00	10	0.20	3	0.03	6	0.04	14	0.31	3	0.05
20	6	0.00	9	0.11	4	0.06	6	0.04	6	0.15	187	198
21	5	0.00	12	0.12	4	0.07	7	0.05	9	0.41	78	18
22	3	0.00	10	0.10	2	0.02	8	0.05	147	266	15	0.78
23	3	0.00	8	0.06	3	0.03	8	0.05	96	31	8	0.27
24	6	0.00	9	0.07	5	0.05	9	0.05	31	3.1	4	0.11
25	4	0.00	9	0.06	13	1.4	9	0.06	29	1.9	4	0.08
26	2	0.00	9	0.06	9	0.41	10	0.06	7	0.31	3	0.10
27	4	0.00	11	0.07	5	0.12	10	0.06	4	0.13	7	0.23
28	5	0.00	11	0.08	4	0.07	11	0.06	5	0.13	5	0.10
29	5	0.02	12	0.08	2	0.02	11	0.07	---	---	3	0.08
30	59	1.6	13	0.08	8	0.09	12	0.07	---	---	23	2.4
31	17	0.21	---	---	3	0.04	9	0.06	---	---	9	0.59
TOTAL	---	1.88	---	45.97	---	20.40	---	55.75	---	309.80	---	238.85

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA—Continued

SUSPENDED-SEDIMENT—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Day	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	4	0.14	27	1.5	7	0.12	4	0.03	4	0.01	10	0.05
2	5	0.14	12	0.26	7	0.09	10	0.44	2	0.00	11	0.15
3	6	0.13	13	0.20	5	0.08	65	11	4	0.01	47	1.2
4	6	0.11	13	0.17	5	0.11	24	2.0	5	0.02	14	0.16
5	4	0.07	10	0.12	8	0.22	6	0.12	5	0.02	7	0.06
6	4	0.06	10	0.15	7	0.10	5	0.07	5	0.07	5	0.03
7	19	1.5	32	18	75	22	3	0.04	5	0.02	5	0.02
8	15	0.67	97	56	21	1.6	4	0.04	5	0.02	5	0.02
9	34	4.1	24	1.2	17	1.4	6	0.05	5	0.02	4	0.01
10	10	0.52	15	0.86	8	0.22	6	0.07	7	0.06	4	0.01
11	35	4.9	14	0.56	8	0.16	6	0.06	6	0.03	3	0.00
12	8	0.42	13	0.29	7	0.15	5	0.03	6	0.04	16	1.0
13	4	0.11	9	0.15	6	0.13	5	0.04	6	0.02	71	5.3
14	4	0.11	7	0.09	6	0.38	6	0.04	5	0.02	8	0.10
15	4	0.08	14	0.83	14	0.98	6	0.03	5	0.01	5	0.04
16	4	0.09	92	56	6	0.13	3	0.02	5	0.01	4	0.02
17	3	0.06	14	0.73	15	0.86	4	0.02	5	0.03	4	0.01
18	3	0.06	30	3.6	67	16	4	0.01	4	0.01	21	5.0
19	54	7.3	19	0.92	16	0.93	4	0.02	4	0.01	139	96
20	6	0.24	8	0.21	69	34	4	0.02	4	0.00	13	0.27
21	8	0.23	23	2.9	24	1.9	7	0.02	5	0.01	6	0.07
22	10	0.24	15	1.0	7	0.24	5	0.01	4	0.00	4	0.04
23	12	0.24	10	0.37	5	0.10	4	0.01	4	0.00	62	38
24	13	0.23	9	0.29	4	0.07	4	0.02	5	0.00	13	0.48
25	10	0.18	8	0.20	5	0.06	5	0.01	3	0.00	8	0.13
26	15	0.53	67	20	5	0.05	4	0.01	3	0.00	4	0.05
27	13	0.35	10	0.49	85	10	4	0.00	3	0.00	3	0.02
28	12	0.24	7	0.41	24	0.79	5	0.04	4	0.02	4	0.04
29	13	0.21	8	0.31	6	0.08	11	0.16	3	0.00	4	0.03
30	10	0.15	8	0.22	4	0.05	7	0.03	29	1.5	4	0.02
31	---	---	8	0.15	---	---	5	0.02	30	0.44	---	---
TOTAL	---	23.41	---	168.18	---	93.00	---	14.48	---	2.40	---	148.33
YEAR	1,122.45											

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1951, 1953, 1955-56, 1969, 1973-75, 1983-85, 1994 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Sample type	Gage height, feet (00065)	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Ammonia + org-N, water, fltrd, mg/L as N (00623)
OCT												
28...	1000	Environmental	1.49	0.38	760	8.2	86	6.8	119	12.5	11.7	0.23
NOV												
13...	1045	Environmental	1.86	11	755	8.4	77	6.3	70	9.0	11.4	0.45
DEC												
16...	0900	Environmental	1.76	8.2	751	12.1	95	7.0	76	4.0	4.9	0.26
JAN												
14...	1030	Environmental	1.53	3.1	760	13.4	94	6.5	99	1.0	1.0	0.17
FEB												
24...	0930	Environmental	2.50	32	760	11.0	87	7.5	55	1.5	2.2	0.20
MAR												
12...	1045	Environmental	1.76	9.1	758	10.4	79	6.8	64	3.5	3.9	0.11
20...	1358	Blank	--	--	--	--	--	--	--	--	--	<0.10
20...	1400	Environmental	4.69	198	754	9.4	80	5.9	74	9.5	7.3	0.30
20...	1402	Replicate	4.69	198	--	--	--	--	--	--	--	0.30
APR												
16...	1045	Environmental	1.71	7.9	755	10.6	107	6.6	56	24.0	15.3	0.14
MAY												
14...	1000	Environmental	1.62	4.5	755	9.2	88	6.3	58	16.5	13.4	0.23
JUN												
25...	1000	Environmental	1.62	4.8	759	7.6	88	6.2	55	30.0	20.1	0.24
JUL												
22...	1000	Environmental	1.42	1.1	753	8.5	90	6.0	64	19.0	23.1	0.20
AUG												
12...	0930	Environmental	1.54	2.9	759	6.7	79	6.9	65	27.0	21.9	0.20
SEP												
10...	1230	Environmental	1.41	1.0	760	6.5	70	6.7	75	20.5	19.4	0.20
23...	1030	Environmental	6.13	444	753	6.4	70	6.9	36	20.5	19.9	0.55
23...	1035	Replicate	6.13	444	--	--	--	--	--	--	--	0.62
23...	1040	Blank	--	--	--	--	--	--	--	--	--	<0.10

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Phos-phorus, water, fltrd, mg/L (00666)	Phos-phorus, water, unfltrd mg/L (00665)	E coli, m-TEC MF, water, col/ 100 mL (31633)	Fecal coli-form, M-FC 0.7u MF col/ 100 mL (31625)	Sus-pended sedi-ment concen-tration mg/L (80154)
OCT										
28...	0.32	<0.04	<0.06	<0.008	<0.02	0.011	0.028	41	56	4
NOV										
13...	0.51	<0.04	E.05	<0.008	<0.02	0.013	0.046	81	115	12
DEC										
16...	0.30	<0.04	E.05	<0.008	<0.02	0.022	0.023	46	40	4
JAN										
14...	0.16	<0.04	E.05	<0.008	<0.02	0.009	0.019	E4k	E2k	3
FEB										
24...	0.30	E.02	0.07	<0.008	<0.02	0.009	0.033	30	77	25
MAR										
12...	E.06	<0.04	E.04	<0.008	<0.02	E.003	0.011	E7k	E6k	3
20...	<0.10	<0.04	<0.06	<0.008	<0.02	<0.004	E.002	--	--	--
20...	1.2	0.06	0.09	<0.008	<0.02	0.016	0.25	--	--	509
20...	1.1	0.07	0.10	<0.008	<0.02	0.015	0.23	--	--	--
APR										
16...	0.21	<0.04	<0.06	<0.008	<0.02	0.011	0.026	22	E14k	6
MAY										
14...	0.30	E.03	<0.06	<0.008	E.01	0.018	0.033	240	219	7
JUN										
25...	0.35	<0.04	E.04	<0.008	<0.02	0.013	0.029	160	102	5
JUL										
22...	0.29	<0.04	E.04	<0.008	<0.02	0.006	0.031	45	104	4
AUG										
12...	0.30	<0.04	<0.06	<0.008	<0.02	0.006	0.030	E1500k	E442k	7
SEP										
10...	0.26	<0.04	<0.06	<0.008	<0.02	0.008	0.025	45	46	4
23...	0.72	<0.04	<0.06	<0.008	<0.02	0.025	0.098	--	--	96
23...	0.70	<0.04	E.03n	<0.008	<0.02	0.024	0.098	--	--	--
23...	<0.10	<0.04	<0.06	<0.008	<0.02	<0.004	<0.004	--	--	--

Remark codes used in this table:
< -- Less than
E -- Estimated value

Value qualifier codes used in this table:
k -- Counts outside acceptable range
n -- Below the NDV

01659000 NORTH BRANCH CHOPAWAMSIC CREEK NEAR INDEPENDENT HILL, VA

LOCATION.--Lat 38°33'58", long 77°25'48", NAD83, Prince William County, Hydrologic unit 02070011, on left bank, 10 ft downstream from Highway MCB-1, 1.0 mi upstream from Chopawamsic Creek, and 4.8 mi south of Independent Hill.

DRAINAGE AREA.--5.79 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1951 to June 1957, March 2000 to current year.

GAGE.--Water stage recorder. Datum of gage is 230 ft NGVD of 1929, from topographic map. May 1951 to June 1957, at site 1,000 ft uptream at different datum.

REMARKS.--No estimated daily discharges. Records good except those for discharges greater than 100 ft^3/s, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	3.6	2.3	48	4.0	7.6	11	8.5	5.9	2.9	1.7	2.1
2	0.00	3.0	2.3	36	3.8	25	8.3	5.7	4.8	4.2	1.8	3.2
3	0.00	2.3	2.2	19	3.5	23	6.9	4.4	5.1	45	1.8	3.9
4	0.00	2.4	2.1	10	4.4	12	6.1	4.0	7.3	19	2.4	4.0
5	0.00	2.7	2.4	6.0	4.2	23	5.6	3.9	9.6	7.1	2.7	3.0
6	0.00	6.6	2.4	4.9	3.5	36	5.0	4.7	5.7	4.5	2.9	2.0
7	0.00	5.0	2.2	4.6	3.9	20	14	14	33	3.6	2.0	1.6
8	0.00	3.7	2.2	4.2	3.5	14	12	41	20	3.2	1.7	1.5
9	0.00	3.2	2.4	4.6	3.5	15	26	13	21	3.1	1.7	1.3
10	0.00	3.0	2.3	3.8	4.0	12	15	16	8.8	3.8	5.2	1.2
11	0.30	7.2	14	3.2	3.8	9.1	27	13	6.0	3.7	2.3	1.1
12	0.12	17	13	2.9	3.9	8.1	14	6.6	6.1	2.7	4.0	3.3
13	0.04	8.8	17	2.9	4.0	8.8	9.0	4.6	5.8	2.6	2.4	11
14	0.00	3.9	32	2.9	3.9	8.5	7.4	3.6	7.7	3.2	1.9	3.9
15	0.00	2.7	12	2.7	10	6.7	6.8	4.6	19	2.5	1.6	2.7
16	1.0	18	6.4	2.5	8.0	6.3	6.3	68	8.1	2.2	1.7	2.1
17	0.62	53	4.3	2.6	8.0	6.4	5.6	17	8.9	2.1	2.0	1.6
18	0.53	25	3.5	2.4	6.7	5.7	5.6	27	37	1.8	1.7	6.4
19	0.30	6.6	3.2	2.4	6.3	5.1	25	16	20	1.8	1.5	34
20	0.20	4.2	5.3	2.5	8.3	99	11	8.8	40	1.8	1.4	5.8
21	0.10	3.4	4.9	2.4	12	52	8.4	20	21	1.6	1.3	3.4
22	0.04	3.1	3.7	2.2	190	16	7.2	20	10	1.7	1.3	2.8
23	0.06	2.7	3.2	2.2	88	10	6.0	12	6.4	1.8	1.3	80
24	0.06	2.6	3.0	2.1	29	8.0	5.3	11	4.6	1.7	1.1	11
25	0.03	2.5	21	2.1	19	6.9	5.3	9.8	3.8	1.5	1.0	5.1
26	0.48	2.4	13	2.2	12	6.8	9.7	60	3.4	1.4	1.1	3.7
27	0.26	2.4	6.9	2.2	9.4	9.4	8.1	19	7.8	1.3	1.2	3.1
28	0.42	2.4	5.0	2.0	8.4	6.8	5.7	16	6.2	1.9	1.6	3.4
29	1.4	2.4	4.3	2.4	---	7.6	5.0	12	3.8	3.4	1.6	2.8
30	6.1	2.4	3.7	2.5	---	18	4.5	9.3	3.2	2.1	2.3	2.3
31	5.9	---	3.5	2.7	---	18	---	6.9	---	1.8	3.1	---
TOTAL	17.96	208.2	205.7	193.1	469.0	510.8	292.8	480.4	350.0	141.0	61.3	213.3
MEAN	0.58	6.94	6.64	6.23	16.8	16.5	9.76	15.5	11.7	4.55	1.98	7.11
MAX	6.1	53	32	48	190	99	27	68	40	45	5.2	80
MIN	0.00	2.3	2.1	2.0	3.5	5.1	4.5	3.6	3.2	1.3	1.0	1.1
CFSM	0.10	1.20	1.15	1.08	2.89	2.85	1.69	2.68	2.01	0.79	0.34	1.23
IN.	0.12	1.34	1.32	1.24	3.01	3.28	1.88	3.09	2.25	0.91	0.39	1.37

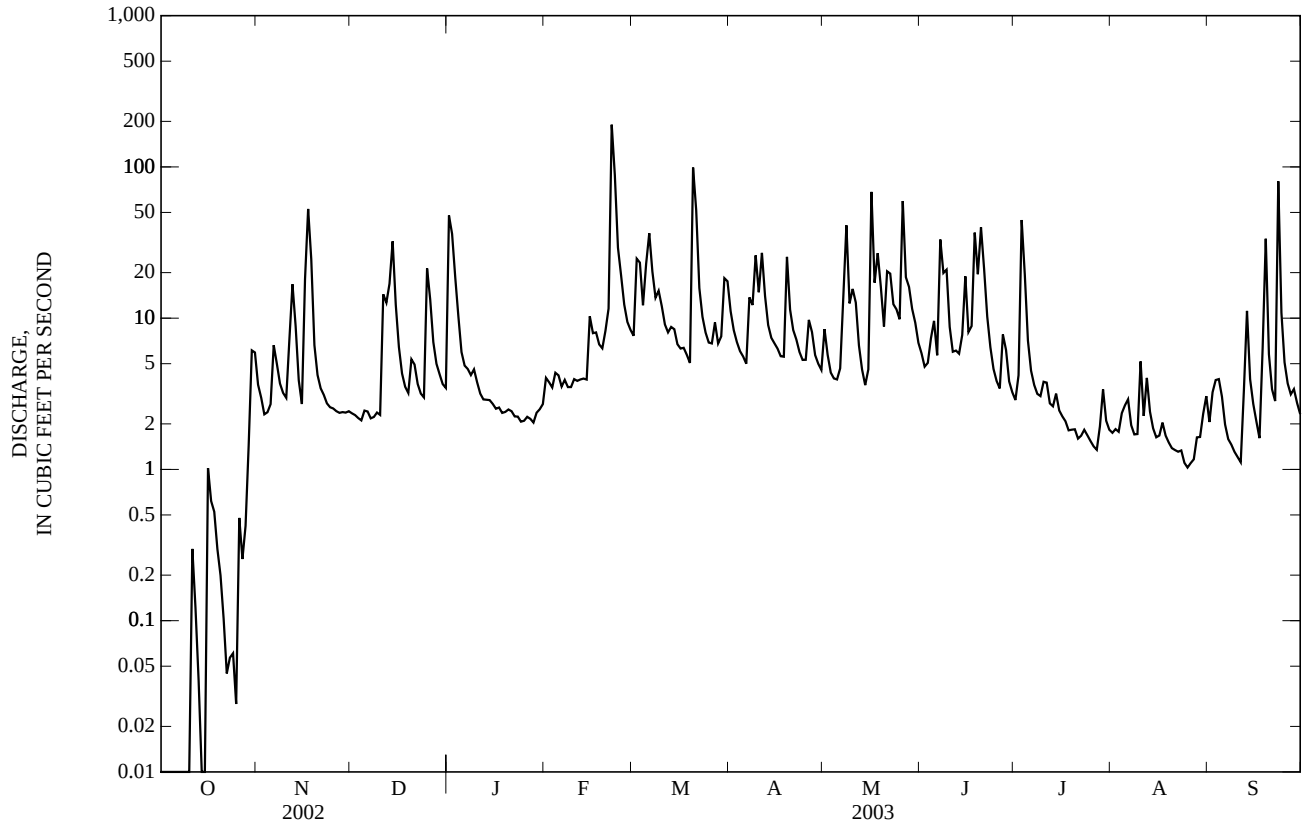
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2003, BY WATER YEAR (WY)

MEAN	1.20	3.96	4.58	5.52	6.95	10.3	8.66	5.14	4.39	2.37	2.59	1.79
MAX	3.25	11.9	10.9	11.4	16.7	17.0	19.0	15.5	12.5	5.69	16.2	7.11
(WY)	(1957)	(1953)	(1952)	(1953)	(2003)	(1953)	(1952)	(2003)	(1951)	(2001)	(1955)	(2003)
MIN	0.30	0.51	1.22	1.05	1.51	4.82	3.69	1.17	0.58	0.19	0.033	0.036
(WY)	(1955)	(1955)	(2002)	(1955)	(2002)	(2002)	(1955)	(2002)	(1954)	(1955)	(2002)	(1954)

01659000 NORTH BRANCH CHOPAWAMSIC CREEK NEAR INDEPENDENT HILL, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1951 - 2003	
ANNUAL TOTAL	902.65		3,143.56			
ANNUAL MEAN	2.47		8.61		4.65	
HIGHEST ANNUAL MEAN					8.61	2003
LOWEST ANNUAL MEAN					1.47	2002
HIGHEST DAILY MEAN	53	Nov 17	190	Feb 22	190	Feb 22, 2003
LOWEST DAILY MEAN	0.00	aAug 14	0.00	bOct 1	0.00	(c)
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 14	0.00	Oct 1	0.00	(c)
MAXIMUM PEAK FLOW			415	Feb 22	415	Feb 22, 2003
MAXIMUM PEAK STAGE			7.90	Feb 22	d8.04	Nov 21, 1952
INSTANTANEOUS LOW FLOW			0.00	fOct 1	0.00	(g)
ANNUAL RUNOFF (CFSM)	0.43		1.49		0.80	
ANNUAL RUNOFF (INCHES)	5.80		20.20		10.91	
10 PERCENT EXCEEDS	6.2		19		9.0	
50 PERCENT EXCEEDS	1.1		4.0		1.9	
90 PERCENT EXCEEDS	0.01		1.3		0.22	

a Many days in August to October 2002.
b Also Oct. 2-10, 14, 15, 2002.
c Many days in October 1954 and August to October 2002.
d At datum then in use.
f Also no flow part or all of each day Oct. 2-10, 14, 15, 2002.
g No flow part or all of many days in October 1954, September 2000, and June to October 2002.



01659000 NORTH BRANCH CHOPAWAMSIC CREEK NEAR INDEPENDENT HILL, VA—Continued

SUSPENDED-SEDIMENT
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Day	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)	Mean concentration (mg/l)	Load (tons/day)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	0.0	0.00	12	0.12	4	0.03	39	9.3	2	0.03	22	0.45
2	0.0	0.00	11	0.09	6	0.04	41	5.3	3	0.03	38	3.2
3	0.0	0.00	11	0.07	8	0.05	13	0.64	4	0.04	24	1.6
4	0.0	0.00	10	0.06	8	0.04	9	0.26	8	0.09	18	0.60
5	0.0	0.00	7	0.05	7	0.05	8	0.14	6	0.07	37	2.8
6	0.0	0.00	9	0.16	7	0.04	8	0.11	6	0.06	22	2.2
7	0.0	0.00	7	0.09	7	0.04	8	0.10	6	0.06	14	0.79
8	0.0	0.00	6	0.06	6	0.04	7	0.08	6	0.05	8	0.30
9	0.0	0.00	4	0.04	6	0.04	6	0.08	6	0.05	10	0.40
10	0.0	0.00	4	0.03	5	0.03	3	0.03	5	0.06	8	0.26
11	10	0.01	7	0.17	19	1.3	2	0.02	5	0.06	4	0.10
12	11	0.00	40	2.6	15	0.56	2	0.02	5	0.06	4	0.09
13	5	0.00	18	0.50	18	1.2	2	0.02	5	0.06	4	0.09
14	0.0	0.00	14	0.14	22	2.2	2	0.02	5	0.05	2	0.06
15	0.0	0.00	12	0.09	7	0.26	2	0.01	23	0.76	4	0.07
16	5	0.02	36	6.0	4	0.07	2	0.01	19	0.43	4	0.07
17	7	0.01	82	18	5	0.06	2	0.01	13	0.28	4	0.08
18	5	0.00	32	2.7	5	0.05	2	0.01	10	0.18	7	0.11
19	6	0.00	13	0.24	5	0.04	2	0.01	7	0.12	7	0.10
20	7	0.00	10	0.12	7	0.11	2	0.01	8	0.19	113	60
21	5	0.00	6	0.06	19	0.25	2	0.01	40	1.3	40	9.0
22	6	0.00	7	0.06	9	0.09	2	0.01	193	131	8	0.35
23	5	0.00	9	0.07	4	0.03	2	0.01	55	14	7	0.21
24	6	0.00	8	0.05	1	0.01	2	0.01	37	2.9	6	0.13
25	5	0.00	5	0.04	13	1.2	2	0.01	27	1.4	5	0.09
26	5	0.00	6	0.04	8	0.36	2	0.01	27	0.90	5	0.09
27	6	0.00	9	0.06	5	0.10	2	0.01	26	0.67	5	0.14
28	5	0.00	8	0.05	6	0.08	2	0.01	18	0.41	7	0.12
29	7	0.03	6	0.04	6	0.07	2	0.01	---	---	7	0.15
30	12	0.19	4	0.03	7	0.07	2	0.01	---	---	17	1.1
31	13	0.21	---	---	7	0.06	2	0.01	---	---	12	0.60
TOTAL	---	0.47	---	31.83	---	8.57	---	16.29	---	155.31	---	85.35

01659000 NORTH BRANCH CHOPAWAMSIC CREEK NEAR INDEPENDENT HILL, VA—Continued

SUSPENDED-SEDIMENT—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

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)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	6	0.18	10	0.25	9	0.14	12	0.09	8	0.04	8	0.04
2	3	0.08	6	0.09	8	0.10	9	0.11	7	0.03	7	0.06
3	4	0.07	5	0.06	7	0.09	53	9.2	9	0.04	8	0.08
4	4	0.07	5	0.05	9	0.18	19	1.1	10	0.06	8	0.09
5	5	0.08	5	0.05	9	0.24	14	0.27	8	0.06	8	0.06
6	4	0.05	4	0.05	12	0.18	14	0.17	7	0.05	5	0.03
7	19	1.1	34	6.0	44	7.0	10	0.09	8	0.04	6	0.02
8	9	0.31	76	16	16	0.97	13	0.11	8	0.04	8	0.03
9	15	1.3	13	0.44	14	0.89	12	0.10	7	0.04	6	0.02
10	8	0.32	11	0.46	12	0.29	9	0.09	6	0.09	6	0.02
11	8	0.69	5	0.19	12	0.19	9	0.10	8	0.05	6	0.02
12	5	0.18	4	0.07	10	0.17	10	0.08	9	0.10	7	0.08
13	2	0.06	6	0.08	10	0.16	8	0.06	9	0.06	9	0.28
14	2	0.04	9	0.09	16	0.54	9	0.07	8	0.04	7	0.08
15	3	0.06	14	0.42	24	1.6	9	0.06	9	0.04	7	0.05
16	4	0.06	67	18	12	0.27	10	0.06	9	0.04	7	0.04
17	4	0.05	10	0.48	12	0.34	13	0.07	10	0.05	6	0.03
18	3	0.05	15	1.4	32	4.3	12	0.06	8	0.04	26	2.9
19	9	0.79	10	0.45	13	0.70	7	0.04	6	0.03	97	15
20	5	0.15	7	0.17	31	5.8	9	0.04	7	0.03	15	0.24
21	5	0.11	17	1.5	11	0.65	9	0.04	7	0.03	11	0.10
22	5	0.09	11	0.60	11	0.30	9	0.04	9	0.03	8	0.06
23	4	0.07	11	0.35	10	0.16	10	0.05	8	0.03	91	34
24	4	0.06	10	0.30	10	0.12	10	0.04	7	0.02	18	0.55
25	4	0.06	7	0.19	7	0.07	9	0.04	6	0.02	11	0.15
26	9	0.25	46	10	8	0.07	11	0.04	8	0.02	10	0.10
27	7	0.16	14	0.72	26	1.1	10	0.04	6	0.02	12	0.10
28	6	0.09	10	0.43	13	0.23	12	0.06	7	0.03	11	0.10
29	5	0.07	10	0.32	11	0.11	9	0.08	8	0.03	9	0.07
30	4	0.05	13	0.32	13	0.12	9	0.05	8	0.05	7	0.04
31	---	---	9	0.16	---	---	7	0.03	7	0.06	---	---
TOTAL	---	6.70	---	59.69	---	27.08	---	12.48	---	1.31	---	54.44
YEAR	459.52											

01659000 NORTH BRANCH CHOPAWAMSIC CREEK NEAR INDEPENDENT HILL, VA—Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Sample type	Gage height, feet (00065)	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Ammonia + org-N, water, fltrd, mg/L as N (00623)
OCT												
28...	0840	Environmental	3.11	0.22	760	6.0	87	6.5	56	13.5	12.4	0.23
NOV												
13...	0915	Environmental	3.61	8.8	755	8.5	77	6.3	57	9.5	11.2	0.42
DEC												
16...	1300	Environmental	3.48	6.2	751	10.0	100	6.7	47	4.5	5.7	0.18
JAN												
14...	0900	Environmental	3.34	2.8	760	13.7	96	6.4	48	-1.0	1.0	0.12
FEB												
24...	0815	Environmental	4.11	28	760	11.7	85	7.6	37	1.0	0.9	0.23
MAR												
12...	0830	Environmental	3.45	8.1	758	10.3	77	7.1	43	3.0	3.1	E.09
20...	1228	Blank	--	--	--	--	--	--	--	--	--	<0.10
20...	1230	Environmental	4.36	39	754	9.6	82	6.9	38	9.5	7.6	0.20
20...	1231	Replicate	4.36	39	--	--	--	--	--	--	--	0.18
APR												
16...	0830	Environmental	3.36	6.3	755	10.5	100	6.4	39	23.0	14.3	0.11
MAY												
14...	0900	Environmental	3.24	3.6	755	9.2	87	6.4	43	14.5	12.9	0.20
JUN												
25...	0830	Environmental	3.22	3.9	759	7.3	81	7.1	41	17.5	19.2	0.19
JUL												
22...	0830	Environmental	3.06	1.8	753	8.5	99	6.4	45	17.5	22.8	0.14
AUG												
12...	0805	Environmental	3.24	4.2	759	9.0	101	6.7	44	26.5	21.1	0.21
SEP												
10...	0815	Environmental	3.00	1.2	760	5.6	58	6.8	51	16.5	16.9	0.14
23...	0840	Environmental	6.35	198	753	6.6	72	7.3	33	20.5	19.7	0.47
23...	0845	Replicate	6.35	198	--	--	--	--	--	--	--	0.44
23...	0850	Blank	--	--	--	--	--	--	--	--	--	<0.10

01659000 NORTH BRANCH CHOPAWAMSIC CREEK NEAR INDEPENDENT HILL, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Phos-phorus, water, fltrd, mg/L (00666)	Phos-phorus, water, unfltrd mg/L (00665)	Sus-pended sedi-ment concen-tration mg/L (80154)
OCT								
28...	0.20	<0.04	<0.06	<0.008	<0.02	0.010	0.026	4
NOV								
13...	0.49	<0.04	<0.06	<0.008	<0.02	0.014	0.041	11
DEC								
16...	0.24	<0.04	<0.06	<0.008	<0.02	0.006	0.017	4
JAN								
14...	0.15	<0.04	<0.06	<0.008	<0.02	0.006	0.012	2
FEB								
24...	0.33	E.02	E.03	<0.008	<0.02	0.007	0.025	34
MAR								
12...	0.11	<0.04	<0.06	<0.008	<0.02	0.006	0.013	2
20...	E.06	<0.04	<0.06	<0.008	<0.02	<0.004	<0.004	--
20...	0.48	<0.04	<0.06	<0.008	<0.02	0.008	0.081	161
20...	0.43	<0.04	<0.06	<0.008	<0.02	0.008	0.080	--
APR								
16...	0.17	<0.04	<0.06	<0.008	<0.02	0.007	0.016	3
MAY								
14...	0.30	<0.04	<0.06	<0.008	<0.02	0.009	0.023	8
JUN								
25...	0.36	<0.04	<0.06	<0.008	<0.02	0.011	0.025	6
JUL								
22...	0.30	<0.04	<0.06	<0.008	<0.02	0.006	0.023	5
AUG								
12...	0.31	<0.04	<0.06	<0.008	<0.02	0.011	0.038	11
SEP								
10...	0.20	<0.04	<0.06	<0.008	<0.02	0.010	0.024	5
23...	1.1	<0.04	<0.06	<0.008	<0.02	0.016	0.153	273
23...	1.0	<0.04	<0.06	<0.008	<0.02	0.016	0.153	--
23...	<0.10	<0.04	<0.06	<0.008	<0.02	<0.004	0.007	--

Remark codes used in this table:
< -- Less than
E -- Estimated value

01659500 MIDDLE BRANCH CHOPAWAMSIC CREEK NEAR GARRISONVILLE, VA

LOCATION.--Lat. 38°33'26", long 77°25'31", NAD83, Stafford County, Hydrologic Unit 02070011, on left bank 300 feet upstream from culvert on Highway MCB-1, 0.4 mi upstream from confluence with North Branch Chopawamsic Creek, and 5.8 mi north of Garrisonville.

DRAINAGE AREA.--4.51 mi^2.

PERIOD OF RECORD.--October 1951 to September 1956, September 1989 to September 1992 (annual maximum only), March 2000 to September 2000, October 2001 to current year.

GAGE.--Water stage recorder. Datum of gage is 192.97 ft NGVD of 1929.. Oct. 1951 to Sep. 1956, at same site and different datum.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Mar. 20 to May 13, July 30, 31, and Sept. 30, and for discharges greater than 100 ft^3/s, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	1.2	0.59	22	2.6	4.7	e7.3	e6.2	4.9	2.7	1.5	1.7
2	0.00	0.95	0.59	27	2.2	13	e5.5	e3.9	4.2	3.5	1.5	2.5
3	0.00	0.83	0.59	15	2.0	14	e4.3	e2.6	4.4	45	1.5	2.6
4	0.00	0.72	0.59	9.2	2.4	8.0	e3.9	e2.3	5.8	22	2.1	2.5
5	0.00	0.91	0.71	4.4	2.2	12	e3.5	e2.2	7.0	7.3	2.3	2.4
6	0.00	1.7	0.75	3.8	1.9	20	e3.2	e2.7	5.1	5.1	3.6	1.8
7	0.00	3.0	0.75	3.5	2.2	12	e9.5	e13	13	3.9	1.9	1.5
8	0.00	2.5	0.77	3.1	2.0	8.7	e8.9	e28	17	3.4	1.9	1.4
9	0.00	2.0	0.81	2.9	1.8	9.5	e17	e11	12	3.2	1.8	1.4
10	0.00	1.7	0.78	2.6	2.0	8.2	e12	e13	8.6	3.4	4.9	1.3
11	0.01	3.1	6.9	2.3	2.0	6.3	e18	e9.2	5.2	3.8	2.5	1.2
12	0.01	5.8	7.8	2.1	2.0	5.5	e11	e6.1	4.7	3.0	3.0	2.1
13	0.01	4.1	8.7	2.0	2.0	5.8	e8.6	e4.6	4.6	2.9	2.2	6.9
14	0.01	1.8	21	2.0	1.9	5.2	e6.6	4.5	7.5	3.2	1.9	3.2
15	0.01	1.1	8.8	1.9	4.5	6.2	e5.2	4.3	18	2.6	1.7	2.3
16	0.21	6.4	4.4	1.8	4.5	4.6	e4.6	34	7.5	2.4	1.7	2.0
17	0.13	29	2.7	1.8	4.1	4.0	e4.2	15	7.0	2.1	1.9	1.6
18	0.07	14	2.2	1.7	3.2	3.8	e4.0	16	23	2.0	1.6	2.8
19	0.04	4.4	1.9	1.6	2.9	3.3	e18	13	12	2.1	1.5	20
20	0.04	2.1	3.7	1.7	3.7	e82	e8.8	7.7	14	2.0	1.4	5.2
21	0.05	1.4	3.7	1.7	5.2	e53	e6.0	10	13	1.8	1.4	3.5
22	0.05	1.2	2.7	1.7	177	e14	e4.8	13	7.5	1.6	1.4	3.2
23	0.04	0.95	2.5	1.6	60	e7.3	e3.9	9.0	5.3	1.7	1.6	39
24	0.04	0.87	2.3	1.5	18	e5.5	e3.2	8.5	4.3	1.6	1.3	7.9
25	0.06	0.79	12	1.6	12	e4.4	e3.1	7.1	3.6	1.4	1.3	4.0
26	0.15	0.71	8.6	1.7	7.9	e4.5	e6.0	29	3.2	1.4	1.2	2.8
27	0.09	0.64	4.1	1.6	6.2	e6.1	e5.0	16	4.4	1.4	1.3	2.3
28	0.15	0.60	2.9	1.5	5.4	e4.5	e3.8	12	5.2	1.6	2.1	2.5
29	0.29	0.59	2.3	1.8	---	e5.2	e3.0	9.1	3.6	2.6	1.6	2.0
30	0.73	0.59	1.9	1.8	---	e12	e2.8	7.7	2.9	e1.7	2.1	e1.6
31	1.4	---	1.7	1.8	---	e11	---	5.7	---	e1.6	2.0	---
TOTAL	3.59	95.65	119.73	130.7	343.8	364.3	205.7	326.4	238.5	144.0	59.7	135.2
MEAN	0.12	3.19	3.86	4.22	12.3	11.8	6.86	10.5	7.95	4.65	1.93	4.51
MAX	1.4	29	21	27	177	82	18	34	23	45	4.9	39
MIN	0.00	0.59	0.59	1.5	1.8	3.3	2.8	2.2	2.9	1.4	1.2	1.2
CFSM	0.03	0.71	0.86	0.93	2.72	2.61	1.52	2.33	1.76	1.03	0.43	1.00
IN.	0.03	0.79	0.99	1.08	2.84	3.00	1.70	2.69	1.97	1.19	0.49	1.12

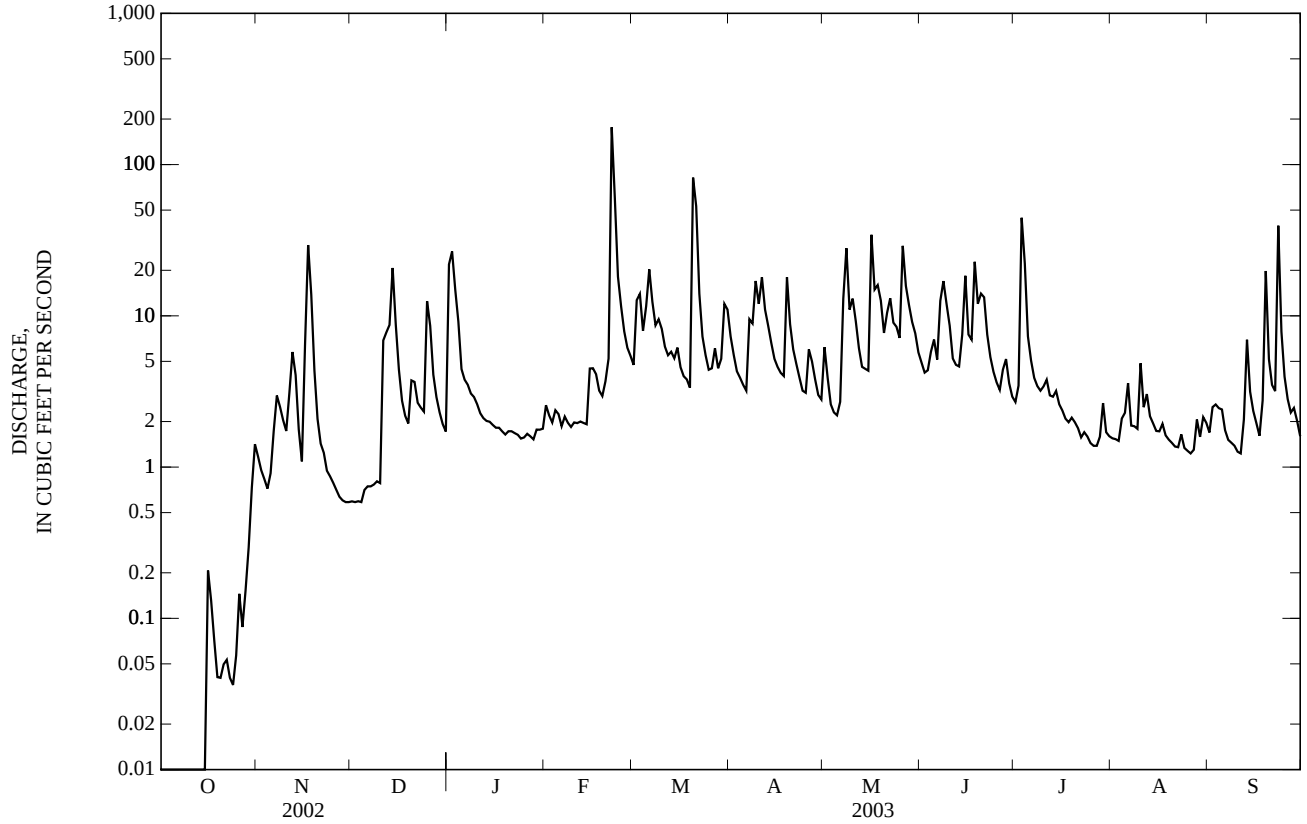
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 1956, 2000, 2002 - 2003, BY WATER YEAR (WY)

MEAN	0.79	2.41	2.90	3.57	4.98	6.73	6.33	3.97	2.70	1.60	2.47	1.31
MAX	2.17	6.48	6.10	6.91	12.3	11.8	11.7	10.5	7.95	4.65	13.5	4.51
(WY)	(1956)	(1953)	(1952)	(1952)	(2003)	(2003)	(1952)	(2003)	(2003)	(2003)	(1955)	(2003)
MIN	0.093	0.27	0.75	0.92	0.81	1.42	1.83	1.00	0.71	0.25	0.026	0.012
(WY)	(1955)	(1955)	(2002)	(1955)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

01659500 MIDDLE BRANCH CHOPAWAMSIC CREEK NEAR GARRISONVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1952 - 1956 2000 2002 - 2003	
ANNUAL TOTAL	431.23		2,167.27			
ANNUAL MEAN	1.18		5.94		3.24	
HIGHEST ANNUAL MEAN					5.94	2003
LOWEST ANNUAL MEAN					0.72	2002
HIGHEST DAILY MEAN	29	Nov 17	177	Feb 22	177	Feb 22, 2003
LOWEST DAILY MEAN	0.00	aAug 11	0.00	bOct 1	0.00	aAug 11, 2002
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 11	0.00	Oct 1	0.00	Aug 11, 2002
MAXIMUM PEAK FLOW			512	Feb 22	512	Feb 22, 2003
MAXIMUM PEAK STAGE			4.51	Feb 22	4.51	Feb 22, 2003
INSTANTANEOUS LOW FLOW			0.00	(c)	0.00	(d)
ANNUAL RUNOFF (CFSM)	0.26		1.32		0.72	
ANNUAL RUNOFF (INCHES)	3.56		17.88		9.76	
10 PERCENT EXCEEDS	2.3		13		6.6	
50 PERCENT EXCEEDS	0.74		2.9		1.5	
90 PERCENT EXCEEDS	0.00		0.62		0.21	

a Also many other days August to October 2002.
b Also Oct. 2-10, 2002.
c No flow part or all of each day Oct. 1-10, 2002.
d No flow part or all of many days August to October 2002.
e Estimated.



01660000 SOUTH BRANCH CHOPAWAMSIC CREEK NEAR GARRISONVILLE, VA

LOCATION.--Lat 38°32'22", long 77°25'30", NAD83, Stafford County, Hydrologic Unit 02070011, on left bank, 10 ft downstream from Highway MCB-1, 1.8 mi upstream from Chopawamsic Creek, and 4.3 mi north of Garrisonville.

DRAINAGE AREA.--2.56 mi^2.

PERIOD OF RECORD.--May 1951 to June 1957, September 1989 to September 1992 (annual maximum only), March 2000 to current year.

GAGE.--Water stage recorder. Datum of gage is 207.01 ft NGVD of 1929. May 1951 to September 1992, at site 200 ft downstream at different datum.

REMARKS.--Records poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.5	0.33	1.4	13	1.5	3.9	3.8	2.1	4.8	1.7	e0.92	1.2
2	3.3	0.30	1.2	6.5	1.2	19	3.3	1.6	3.8	3.6	e0.93	1.7
3	3.3	0.30	1.2	5.7	1.1	8.9	2.9	1.2	4.5	88	e0.98	1.7
4	3.2	0.30	0.99	3.3	1.6	5.8	2.6	0.98	4.6	17	e1.3	1.5
5	3.2	0.34	1.4	2.4	1.2	11	2.5	1.1	4.4	4.7	e2.5	1.2
6	3.1	1.3	1.3	2.2	1.0	12	2.1	1.3	3.7	2.7	e1.3	0.89
7	3.1	0.42	1.2	2.0	1.2	7.3	6.8	4.8	12	2.5	e1.0	0.78
8	2.7	0.33	1.1	2.0	1.1	5.9	4.8	6.9	8.0	2.5	e0.94	0.70
9	2.7	0.31	1.3	1.8	1.1	6.4	12	4.8	9.3	2.3	e1.7	0.71
10	2.7	0.36	1.4	1.5	1.2	5.3	6.4	5.8	5.0	2.1	e2.2	0.59
11	3.1	2.0	8.3	1.4	1.2	4.4	15	4.4	3.9	2.1	e1.2	1.0
12	2.7	3.8	4.4	1.2	1.2	4.0	6.3	2.7	3.9	1.7	e1.6	5.9
13	2.6	1.7	6.8	1.1	1.2	4.3	4.1	1.9	3.8	1.7	e1.2	6.3
14	2.5	0.82	9.3	1.1	1.1	3.6	3.3	1.6	17	2.2	e1.0	1.9
15	2.6	0.63	3.9	1.1	3.0	3.1	3.0	6.9	16	1.7	0.94	2.7
16	3.8	8.3	2.1	0.97	2.4	3.1	2.9	49	8.0	2.3	0.95	1.7
17	0.67	11	1.4	1.0	2.9	3.1	2.5	11	10	1.2	0.98	1.2
18	0.41	5.3	1.2	0.94	2.0	3.0	2.7	15	19	0.99	0.94	18
19	0.32	2.3	1.1	0.94	2.0	2.8	10	8.6	11	0.99	0.91	20
20	0.29	2.0	4.6	1.0	2.5	57	4.4	5.9	14	0.99	0.82	3.2
21	0.27	1.7	2.1	0.97	3.7	17	3.5	9.8	16	1.0	0.80	1.9
22	0.24	1.7	1.5	0.92	98	7.2	3.1	8.3	6.8	e1.1	0.72	2.6
23	0.22	1.4	1.5	0.87	22	5.0	2.6	7.0	4.3	e1.0	0.68	54
24	0.20	1.2	1.6	0.85	9.1	4.0	2.5	6.2	2.9	e0.90	0.64	3.9
25	0.18	1.1	12	0.88	6.3	3.3	2.7	5.4	2.6	e0.82	0.59	2.1
26	0.23	0.95	4.1	0.93	4.9	3.5	3.7	31	2.1	e0.78	0.56	1.1
27	0.17	1.1	2.3	0.88	4.9	3.6	3.0	10	2.5	e0.84	0.80	0.77
28	0.16	1.2	1.9	0.87	4.4	2.9	2.5	9.0	2.3	e1.8	1.3	0.82
29	0.79	1.2	1.7	1.1	---	3.0	2.2	7.2	1.9	e1.3	0.93	0.60
30	1.4	1.3	1.5	0.98	---	6.7	1.8	6.1	1.9	e1.0	2.8	0.41
31	0.65	---	1.4	1.1	---	5.4	---	5.4	---	e0.94	1.5	---
TOTAL	54.30	54.99	87.19	61.50	185.0	235.5	129.0	242.98	210.0	154.45	35.63	141.07
MEAN	1.75	1.83	2.81	1.98	6.61	7.60	4.30	7.84	7.00	4.98	1.15	4.70
MAX	3.8	11	12	13	98	57	15	49	19	88	2.8	54
MIN	0.16	0.30	0.99	0.85	1.0	2.8	1.8	0.98	1.9	0.78	0.56	0.41
CFSM	0.68	0.72	1.10	0.77	2.58	2.97	1.68	3.06	2.73	1.95	0.45	1.84
IN.	0.79	0.80	1.27	0.89	2.69	3.42	1.87	3.53	3.05	2.24	0.52	2.05

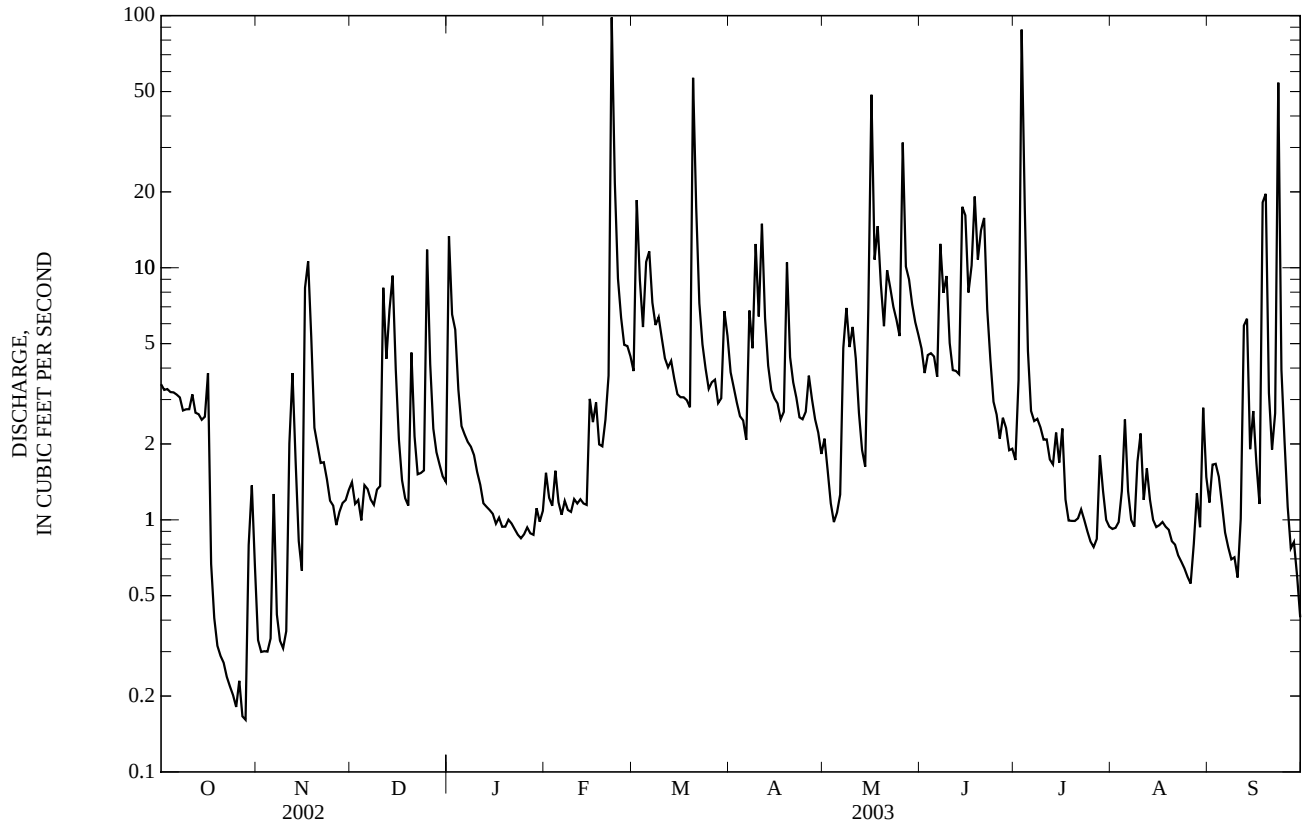
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 1957, 2000 - 2003, BY WATER YEAR (WY)

MEAN	1.45	2.01	1.85	2.36	2.94	4.85	3.65	2.34	2.02	1.68	1.63	1.88
MAX	4.01	5.42	3.71	4.34	6.61	9.37	7.48	7.84	7.00	4.98	6.58	5.85
(WY)	(2002)	(1953)	(1952)	(1952)	(2003)	(1953)	(1952)	(2003)	(2003)	(2003)	(1955)	(2002)
MIN	0.23	0.40	0.52	0.88	0.98	0.87	1.03	0.75	0.43	0.087	0.34	0.027
(WY)	(1955)	(1955)	(2002)	(1955)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(1953)	(1954)

01660000 SOUTH BRANCH CHOPAWAMSIC CREEK NEAR GARRISONVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1951 - 1957 2000 - 2003	
ANNUAL TOTAL	707.77		1,591.61			
ANNUAL MEAN	1.94		4.36		2.40	
HIGHEST ANNUAL MEAN					4.36	2003
LOWEST ANNUAL MEAN					1.29	1954
HIGHEST DAILY MEAN	12	Dec 25	98	Feb 22	98	Feb 22, 2003
LOWEST DAILY MEAN	0.06	aJul 22	0.16	Oct 28	0.02	bSep 1, 1954
ANNUAL SEVEN-DAY MINIMUM	0.07	Jul 18	0.20	Oct 22	0.02	Sep 1, 1954
MAXIMUM PEAK FLOW			309	Feb 22	438	Jul 26, 2001
MAXIMUM PEAK STAGE			6.28	Feb 22	7.07	cMar 15, 1953
INSTANTANEOUS LOW FLOW			0.12	Oct 28	0.00	Jul 3, 1956
ANNUAL RUNOFF (CFSM)	0.76		1.70		0.94	
ANNUAL RUNOFF (INCHES)	10.28		23.13		12.74	
10 PERCENT EXCEEDS	5.8		8.9		5.0	
50 PERCENT EXCEEDS	0.82		2.1		1.1	
90 PERCENT EXCEEDS	0.13		0.79		0.27	

a Also July 23, 24, 30, 2002.
b Many days in September and October 1954, and July 3, 1956.
c At site and datum then in use.
e Estimated.



01660400 AQUIA CREEK NEAR GARRISONVILLE, VA

LOCATION.--Lat 38°29'25", long 77°26'01", NAD83, Stafford County. Hydrologic Unit 02070011, on right bank at bridge on State Highway 641, 1.1 mi northwest of Garrisonville, and 3.0 mi upstream from Beaverdam Run.

DRAINAGE AREA.--34.9 mi^2.

PERIOD OF RECORD.--September 1971 to September 1997, November 1999 to current year.

GAGE.--Water-stage recorder. Datum of gage is 120 ft NGVD of 1929, from topographic map.

REMARKS.--Records good except those for periods of doubtful gage-height record, Mar. 11, 12, 24, 25, which are fair. Maximum discharge, 11,600 ft^3/s, from rating curve extended above 1,600 ft^3/s on basis of contracted-opening measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location by the Virginia Department of Environmental Quality - Water Division.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 1	2130	625	3.78	Jul 3	1830	785	4.20
Feb 22	2330	*1,690	*6.09	Aug 5	2245	907	4.50
Mar 20	1730	1,180	5.10	Aug 9	2400	654	3.86
May 26	0745	639	3.82	Sep 18	2345	1,030	4.79
Jun 14	2130	950	4.60	Sep 23	0830	1,060	4.84

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.45	11	7.5	209	21	50	74	31	44	20	9.9	17
2	0.38	6.2	6.5	235	18	266	55	31	36	37	10	88
3	0.33	4.7	6.3	110	15	179	45	25	34	364	12	76
4	0.28	3.4	6.0	66	21	79	41	23	45	140	22	40
5	0.22	3.7	7.7	39	21	135	39	23	47	53	113	29
6	0.17	29	8.3	33	15	205	38	26	40	38	82	17
7	0.27	12	8.2	30	17	114	90	27	142	30	25	14
8	0.25	7.5	7.9	26	18	69	86	57	124	27	16	12
9	0.19	5.8	8.8	25	19	69	173	40	110	24	29	10
10	0.21	5.1	8.4	21	16	56	107	56	59	23	103	8.8
11	7.0	26	109	18	16	e44	204	59	45	37	21	8.4
12	4.2	82	80	16	16	e40	95	38	38	24	14	34
13	1.5	63	85	16	16	38	59	26	36	19	11	130
14	0.80	23	173	15	16	37	49	22	210	23	10	41
15	0.46	14	79	14	48	31	45	27	303	20	9.1	27
16	27	100	39	15	36	30	42	201	75	17	15	19
17	12	285	25	13	39	31	37	71	77	15	16	15
18	3.5	137	23	15	39	29	37	144	229	13	12	126
19	1.5	40	17	14	31	26	109	93	97	12	9.8	493
20	1.4	26	53	13	40	531	62	52	135	12	8.7	72
21	1.4	20	37	13	62	394	49	84	109	11	7.9	40
22	0.96	15	24	13	908	134	44	116	61	10	7.3	29
23	0.67	12	19	13	628	73	39	75	44	10	6.6	532
24	0.54	10	17	12	188	e55	34	73	33	9.9	6.0	100
25	0.56	10	208	13	130	e46	33	80	29	9.1	5.2	47
26	7.6	9.0	95	16	77	43	39	372	25	8.2	4.7	32
27	2.8	8.3	40	14	59	57	44	122	33	8.3	6.2	27
28	2.9	7.9	29	13	52	43	32	108	56	10	17	27
29	15	7.6	24	17	---	44	28	82	30	27	9.0	24
30	38	8.1	22	14	---	153	28	62	23	15	63	19
31	23	---	19	13	---	136	---	49	---	9.3	44	---
TOTAL	155.54	992.3	1,292.6	1,094	2,582	3,237	1,857	2,295	2,369	1,075.8	725.4	2,154.2
MEAN	5.02	33.1	41.7	35.3	92.2	104	61.9	74.0	79.0	34.7	23.4	71.8
MAX	38	285	208	235	908	531	204	372	303	364	113	532
MIN	0.17	3.4	6.0	12	15	26	28	22	23	8.2	4.7	8.4
CFSM	0.14	0.95	1.19	1.01	2.64	2.99	1.77	2.12	2.26	0.99	0.67	2.06
IN.	0.17	1.06	1.38	1.17	2.75	3.45	1.98	2.45	2.53	1.15	0.77	2.30

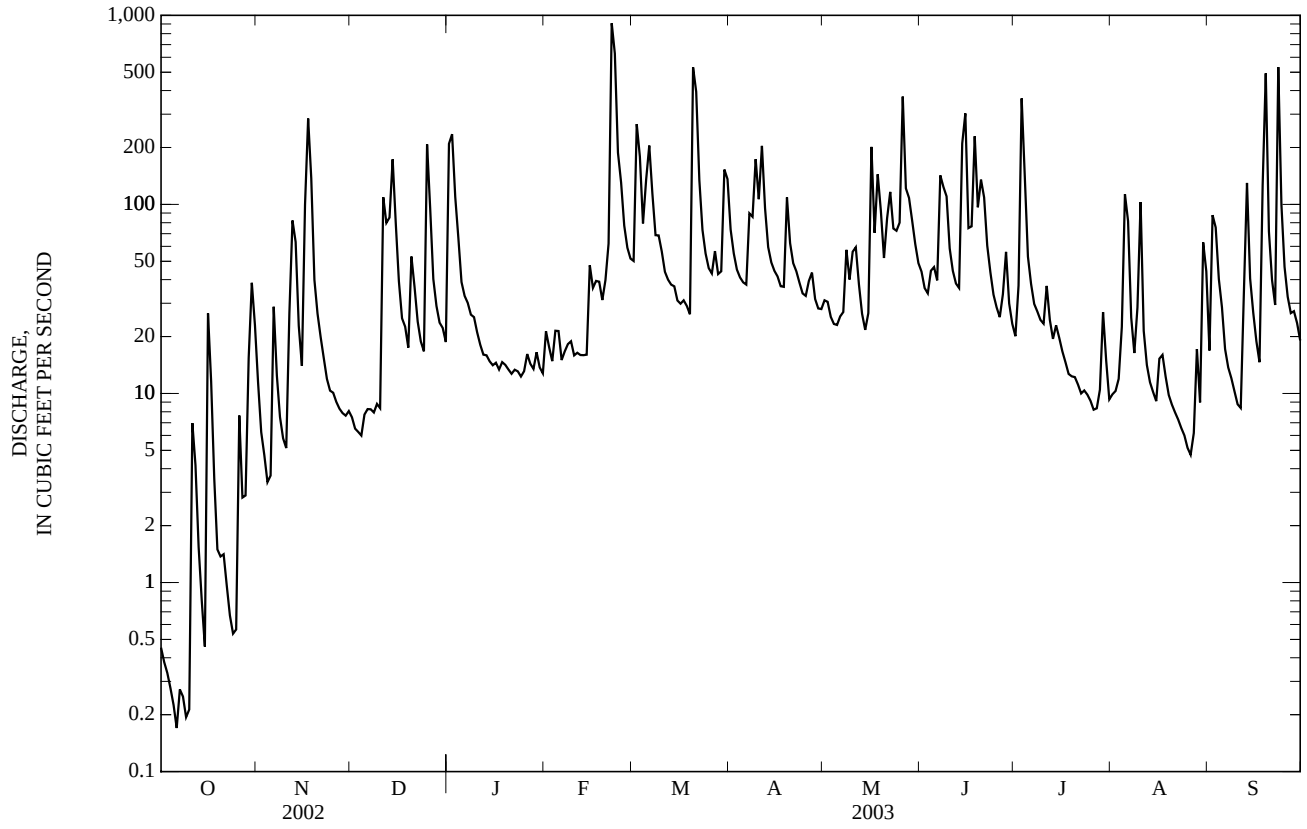
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1971 - 1997, 2000 - 2003, BY WATER YEAR (WY)

MEAN	21.9	30.5	41.2	49.2	51.9	61.1	53.2	39.0	26.5	16.4	12.1	19.5
MAX	138	91.3	105	118	124	175	141	144	234	103	65.8	174
(WY)	(1980)	(1973)	(1975)	(1978)	(1979)	(1994)	(1973)	(1989)	(1972)	(1975)	(1984)	(1975)
MIN	0.42	1.95	4.70	3.93	5.80	8.71	11.6	10.8	2.84	1.38	0.15	0.058
(WY)	(1981)	(1992)	(2002)	(1981)	(2002)	(1981)	(1981)	(1986)	(1986)	(2002)	(1983)	(1980)

01660400 AQUIA CREEK NEAR GARRISONVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1971 - 1997 2000 - 2003	
ANNUAL TOTAL	5,006.90		19,829.84			
ANNUAL MEAN	13.7		54.3		35.4	
HIGHEST ANNUAL MEAN					58.6	1972
LOWEST ANNUAL MEAN					7.77	2002
HIGHEST DAILY MEAN	285	Nov 17	908	Feb 22	3,900	Jun 22, 1972
LOWEST DAILY MEAN	0.01	Aug 20	0.17	Oct 6	0.00	(a)
ANNUAL SEVEN-DAY MINIMUM	0.03	Aug 14	0.23	Oct 4	0.01	Sep 11, 1980
MAXIMUM PEAK FLOW			1,690	Feb 22	11,600	Jun 22, 1972
MAXIMUM PEAK STAGE			6.09	Feb 22	16.32	Jun 22, 1972
INSTANTANEOUS LOW FLOW			0.16	Oct 6	0.00	(b)
ANNUAL RUNOFF (CFSM)	0.39		1.56		1.01	
ANNUAL RUNOFF (INCHES)	5.34		21.14		13.78	
10 PERCENT EXCEEDS	29		123		70	
50 PERCENT EXCEEDS	5.4		27		18	
90 PERCENT EXCEEDS	0.32		6.4		1.4	

a No flow many days in September 1980, August 1983, August, September 1988, and September 1991.
b No flow part or all of many days in September 1980, August 1983, August, September 1988, and September 1991.
e Estimated.



01660500 BEAVERDAM RUN NEAR GARRISONVILLE, VA

LOCATION.--Lat 38°30'25", long 77°25'44", NAD83, Stafford County, Hydrologic unit 02070011, on right bank, 3.4 miles upstream from mouth and 2.2 miles north of Garrisonville.

DRAINAGE AREA.--12.7 mi^2.

PERIOD OF RECORD.--May 1951 to June 1957, March 1997 to current year.

GAGE.--Water stage recorder. Datum of gage is 150.43 ft NGVD of 1929. May 1951 to June 1957, at site 500 ft. upstream at same datum.

REMARKS.--Records good. Flow regulated by Lunga Reservoir 2.5 mi upstream, capacity 420 acre-ft. Statistics of monthly mean data and summary statistics for water years 1951 - 1957 (unregulated flow) are available in 1998 data book.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.24	1.3	1.7	31	5.9	33	38	17	29	11	2.5	2.9
2	0.16	1.2	1.7	59	5.8	53	32	17	21	14	2.4	4.5
3	0.28	1.3	1.7	54	6.6	57	27	15	20	61	3.3	5.3
4	0.22	1.3	1.9	45	8.9	46	23	13	21	66	4.7	5.5
5	0.16	2.0	2.8	34	9.0	46	20	12	22	46	12	6.4
6	0.11	4.6	2.2	28	7.8	64	18	12	21	32	9.1	4.8
7	0.04	1.8	2.0	23	12	61	25	13	32	23	4.3	3.8
8	0.34	1.8	2.2	19	11	49	32	26	48	18	3.9	3.4
9	0.14	1.9	2.4	17	9.4	43	48	27	50	14	5.0	2.9
10	0.17	1.8	2.4	15	9.0	36	50	32	41	12	21	2.9
11	1.8	5.2	10	13	9.0	30	69	33	33	12	7.5	2.7
12	0.18	7.5	4.6	11	8.9	26	60	28	28	10	6.3	6.8
13	0.08	3.7	5.8	e9.2	7.7	24	45	22	24	9.0	5.0	15
14	0.06	1.7	9.5	e8.0	7.0	22	35	18	31	9.8	4.5	11
15	0.09	1.5	4.0	7.1	13	19	29	17	49	8.0	3.9	9.5
16	4.1	9.3	2.5	6.1	26	18	24	62	41	7.1	3.8	8.1
17	0.59	12	2.0	6.2	57	18	20	55	36	6.7	3.7	6.1
18	0.06	6.5	1.6	5.5	30	17	18	58	58	5.2	3.1	15
19	0.09	1.8	1.7	5.2	18	15	37	56	54	4.8	2.9	52
20	0.08	1.4	5.2	4.6	16	71	35	42	56	4.1	2.6	38
21	0.16	1.2	2.7	4.5	18	127	30	43	58	3.7	2.5	26
22	0.11	1.1	1.7	4.5	127	91	27	53	46	3.2	2.4	21
23	0.16	1.2	1.5	5.2	202	63	24	47	35	3.8	2.5	92
24	0.14	1.3	1.7	7.0	136	46	20	42	27	3.1	2.4	73
25	0.23	1.5	15	3.2	95	34	18	37	21	2.9	2.4	47
26	1.5	1.5	21	3.1	67	29	20	76	18	2.7	2.4	31
27	0.42	1.4	18	3.2	51	28	21	69	20	2.6	2.8	21
28	1.1	1.5	16	3.0	42	24	19	59	20	3.4	3.6	17
29	3.1	1.6	14	2.7	---	23	18	47	16	3.8	2.4	12
30	4.9	1.9	12	3.3	---	35	16	40	14	2.3	5.7	7.9
31	2.3	---	11	3.9	---	44	---	32	---	2.2	4.4	---
TOTAL	23.11	83.8	182.5	444.5	1,016.0	1,292	898	1,120	990	407.4	145.0	554.5
MEAN	0.75	2.79	5.89	14.3	36.3	41.7	29.9	36.1	33.0	13.1	4.68	18.5
MAX	4.9	12	21	59	202	127	69	76	58	66	21	92
MIN	0.04	1.1	1.5	2.7	5.8	15	16	12	14	2.2	2.4	2.7
CFSM	0.06	0.22	0.46	1.13	2.86	3.28	2.36	2.84	2.60	1.03	0.37	1.46
IN.	0.07	0.25	0.53	1.30	2.98	3.78	2.63	3.28	2.90	1.19	0.42	1.62

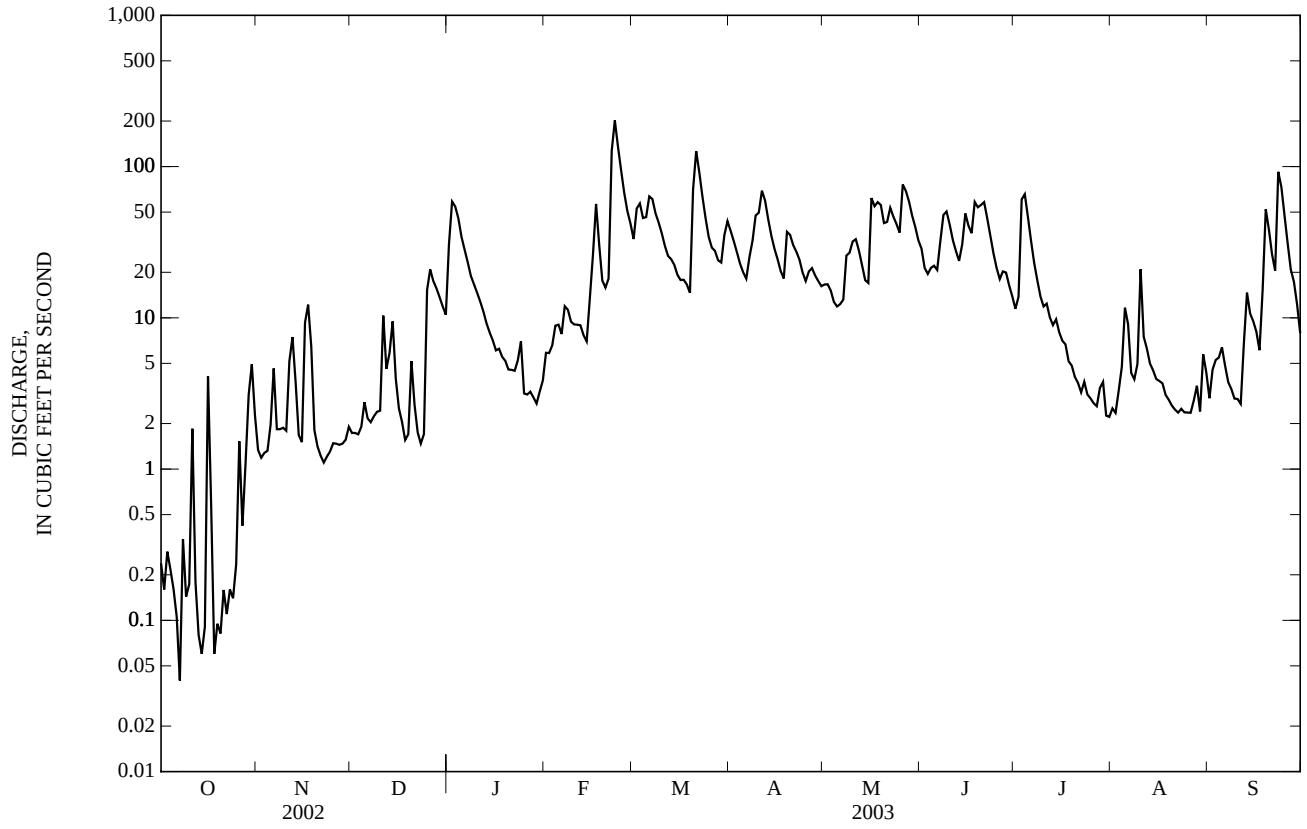
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 2003, BY WATER YEAR (WY)

MEAN	2.74	3.93	4.23	8.91	20.7	19.8	13.4	12.2	9.92	5.03	3.21	5.49
MAX	6.29	10.4	7.54	23.4	70.8	46.4	29.9	36.1	33.0	13.1	7.32	18.5
(WY)	(1999)	(1998)	(1998)	(1998)	(1998)	(1998)	(2003)	(2003)	(2003)	(2003)	(1998)	(2003)
MIN	0.75	0.83	0.89	0.91	0.88	1.87	1.70	1.30	1.28	0.61	0.53	0.28
(WY)	(2003)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2000)	(2002)	(2002)	(2002)	(2002)

01660500 BEAVERDAM RUN NEAR GARRISONVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1997 - 2003	
ANNUAL TOTAL	575.15		7,156.81			
ANNUAL MEAN	1.58		19.6		9.13	
HIGHEST ANNUAL MEAN					20.5	1998
LOWEST ANNUAL MEAN					0.99	2002
HIGHEST DAILY MEAN	21	Dec 26	202	Feb 23	250	Feb 5, 1998
LOWEST DAILY MEAN	0.04	Oct 7	0.04	Oct 7	0.04	Oct 7, 2002
ANNUAL SEVEN-DAY MINIMUM	0.11	Oct 18	0.11	Oct 18	0.11	Oct 18, 2002
MAXIMUM PEAK FLOW			232	Feb 23	a276	Feb 5, 1998
MAXIMUM PEAK STAGE			2.50	Feb 23	a2.74	Feb 5, 1998
INSTANTANEOUS LOW FLOW			0.04	bOct 6	c0.04	(d)
ANNUAL RUNOFF (CFSM)	0.12		1.54		0.72	
ANNUAL RUNOFF (INCHES)	1.68		20.96		9.77	
10 PERCENT EXCEEDS	2.8		50		24	
50 PERCENT EXCEEDS	0.98		11		3.3	
90 PERCENT EXCEEDS	0.16		1.5		0.76	

a Prior to regulation, 1951-57, maximum peak flow, 1,370 ft^3/s, Aug. 15, 1955, gage height, 7.03 ft.
b Also many other days in October 2002.
c Prior to regulation, 1951-57, instantaneous low flow, 0.01 ft^3/s, many days in 1954 and 1955.
d Many days in August to October 2002.
e Estimated.



01662800 BATTLE RUN NEAR LAUREL MILLS, VA

LOCATION.--Lat 38°39'20", long 78°04'26", NAD83, Rappahannock County, Hydrologic Unit 02080103, on left bank just downstream from bridge on State Highway 729, 0.8 mi upstream from mouth, and 1.0 mi northwest of Laurel Mills.

DRAINAGE AREA.--27.6 mi^2.

PERIOD OF RECORD.--April 1958 to July 1995. October 1997 to current year..

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

GAGE.--Water-stage recorder. Datum of gage is 374.62 ft NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Dec. 4-7 and Jan. 16-28, and period of no gage-height record, Jan. 29-31, which are fair. Maximum discharge, 9,120 ft^3/s, from rating curve extended above 2,500 ft^3/s on basis of velocity-area study and slope-area measurement of peak flow. No flow many days in September 1966. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 310 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1530	713	6.82	Jun 19	2330	317	4.50
Mar 20	1700	760	7.06	Jul 9	1930	832	7.41
Jun 12	1800	449	5.36	Sep 19	0200	1,950	10.67
Jun 14	2230	451	5.37	Sep 23	0500	*7,130	*12.20

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.51	22	13	119	19	51	64	34	34	32	27	22
2	0.41	17	13	112	17	106	56	29	30	37	21	29
3	0.41	14	12	95	17	122	50	26	37	72	20	38
4	0.42	12	e12	68	19	89	45	25	83	46	30	44
5	0.48	12	e14	54	17	118	42	27	56	35	26	37
6	0.42	29	e13	48	15	179	37	27	44	31	19	29
7	0.37	19	e11	41	17	137	65	26	74	29	20	25
8	0.37	16	12	41	16	112	57	32	68	29	24	22
9	0.38	14	12	39	16	114	105	33	86	131	22	21
10	0.66	13	11	34	16	96	89	40	59	85	28	20
11	7.3	29	38	30	15	76	162	40	50	74	72	18
12	11	52	40	27	15	64	107	31	93	41	34	20
13	3.8	47	65	27	15	61	84	27	96	33	75	42
14	2.7	31	133	26	14	61	69	25	145	39	35	31
15	2.1	25	77	24	16	50	61	33	141	45	28	51
16	28	32	52	e23	34	46	55	102	102	31	24	43
17	21	131	39	e22	59	42	50	79	115	27	22	29
18	9.8	80	33	e20	50	39	48	133	133	24	20	78
19	6.6	49	30	e18	29	35	64	109	125	24	19	646
20	5.3	37	37	e19	23	289	49	77	174	21	17	124
21	4.5	33	30	e18	27	209	45	72	118	20	16	74
22	3.9	31	27	e17	301	118	45	63	117	19	23	56
23	3.4	24	24	e16	285	88	39	59	82	45	27	1,090
24	3.1	22	23	e15	162	71	36	63	66	25	16	178
25	3.1	20	42	e23	115	60	36	54	56	20	14	107
26	16	18	39	e19	85	58	41	60	49	18	13	77
27	8.7	17	33	e17	66	52	35	52	47	17	21	63
28	7.3	16	30	e18	57	45	31	51	43	17	33	74
29	22	15	28	e17	---	52	30	46	39	19	39	47
30	61	15	26	e16	---	79	29	42	34	18	48	41
31	33	---	25	e16	---	74	---	38	---	22	24	---
TOTAL	268.03	892	994	1,079	1,537	2,793	1,726	1,555	2,396	1,126	857	3,176
MEAN	8.65	29.7	32.1	34.8	54.9	90.1	57.5	50.2	79.9	36.3	27.6	106
MAX	61	131	133	119	301	289	162	133	174	131	75	1,090
MIN	0.37	12	11	15	14	35	29	25	30	17	13	18
CFSM	0.31	1.08	1.16	1.26	1.99	3.26	2.08	1.82	2.89	1.32	1.00	3.84
IN.	0.36	1.20	1.34	1.45	2.07	3.76	2.33	2.10	3.23	1.52	1.16	4.28

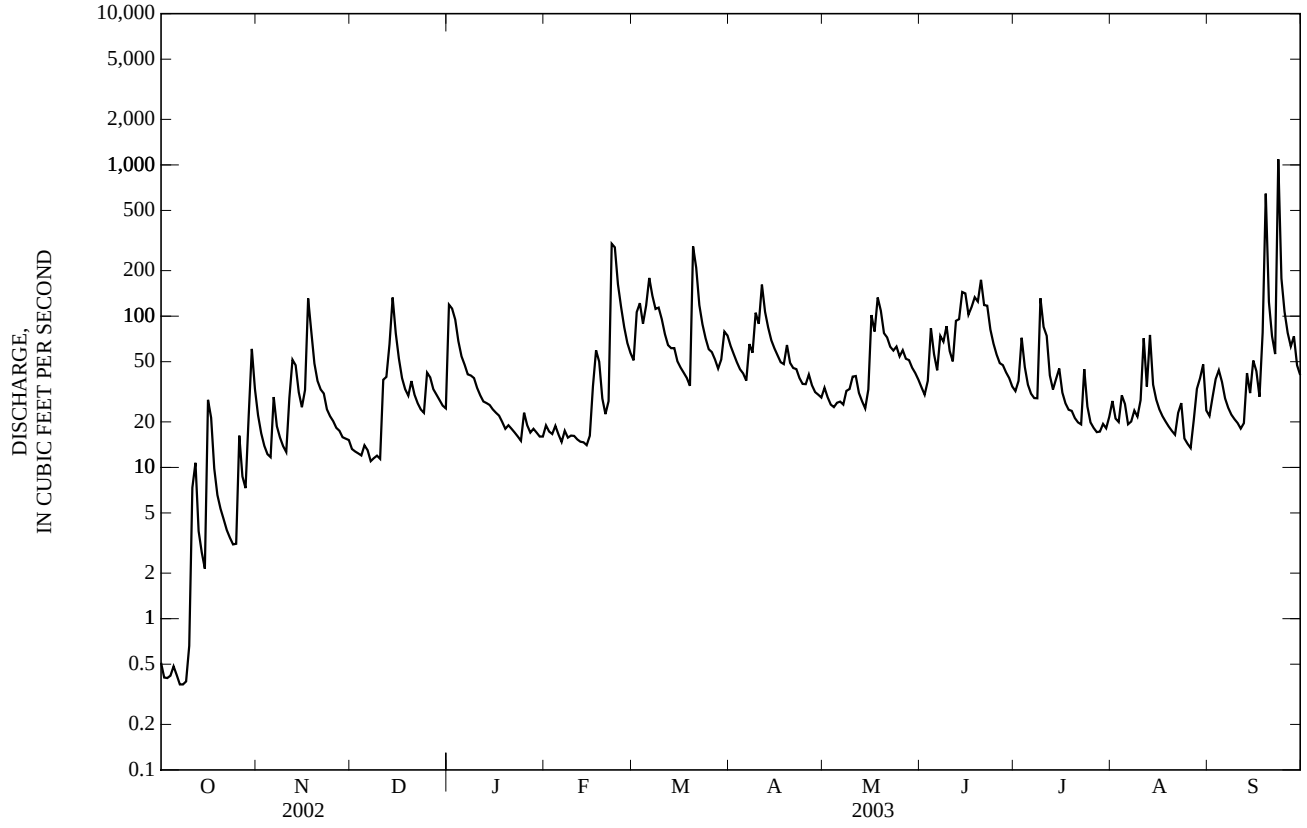
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 1995, 1997 - 2003, BY WATER YEAR (WY)

MEAN	16.5	22.4	25.5	32.9	39.7	48.1	40.5	32.3	23.1	11.7	11.9	14.9
MAX	119	106	79.9	116	132	144	150	85.9	91.8	39.9	73.8	106
(WY)	(1980)	(1986)	(1993)	(1978)	(1998)	(1993)	(1983)	(1988)	(1972)	(1972)	(1994)	(2003)
MIN	0.92	1.94	1.82	1.45	4.42	12.5	9.31	7.19	1.68	0.96	0.42	0.50
(WY)	(1992)	(1999)	(1966)	(1966)	(2002)	(1981)	(1981)	(1999)	(1999)	(1999)	(1966)	(2002)

01662800 BATTLE RUN NEAR LAUREL MILLS, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1958 - 1995 1997 - 2003	
ANNUAL TOTAL	4,469.37		18,399.03			
ANNUAL MEAN	12.2		50.4		26.6	
HIGHEST ANNUAL MEAN					50.4	2003
LOWEST ANNUAL MEAN					7.82	2002
HIGHEST DAILY MEAN	232	May 27	1,090	Sep 23	2,000	Oct 9, 1976
LOWEST DAILY MEAN	0.06	aSep 13	0.37	bOct 7	0.00	cSep 3, 1966
ANNUAL SEVEN-DAY MINIMUM	0.10	Sep 9	0.41	Oct 3	0.00	dSep 6, 1966
MAXIMUM PEAK FLOW			7,130	Sep 23	9,120	fOct 9, 1976
MAXIMUM PEAK STAGE			12.20	Sep 23	g14.40	Jun 27, 1995
INSTANTANEOUS LOW FLOW			0.34	bOct 7	0.00	Sep 3, 1966
ANNUAL RUNOFF (CFSM)	0.44		1.83		0.96	
ANNUAL RUNOFF (INCHES)	6.02		24.80		13.09	
10 PERCENT EXCEEDS	29		105		55	
50 PERCENT EXCEEDS	6.2		33		15	
90 PERCENT EXCEEDS	0.34		13		2.5	

a Also Sept. 21, 2002.
b Also Oct. 8, 2002.
c Also Sept. 6-13, 1966.
d Also Sept. 7, 1966.
e Estimated.
f Also June 27, 1995.
g From high-water mark in gage house. Result of backwater from bridge collapse.



01663500 HAZEL RIVER AT RIXEYVILLE, VA

LOCATION.--Lat 38°35'30", long 77°57'54", NAD83, Culpeper County, Hydrologic Unit 02080103, on right bank, 40 ft upstream from bridge on State Highway 229, 0.5 mi upstream from Waterford Run, 1.2 mi northeast of Rixeyville, 2.8 mi downstream from Thornton River, and 9.1 mi upstream from mouth.

DRAINAGE AREA.--287 mi^2.

PERIOD OF RECORD.--August 1942 to September 1992, October 2001 to current year.

REVISED RECORDS.--WSP 971: 1942. WSP 1922: 1957-58. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 288.30 ft NGVD of 1929. Prior to Sept. 30, 1992, water-stage recorder at site on right downstream side of bridge, Oct. 1, 2001 to current, at present site and at same datum.

REMARKS.--Records good except those for periods of no gage-height record, Dec. 14-16, 19, period with ice effect, Jan. 16-29, and discharges greater than 3,300 ft^3/s, which are fair. Maximum discharge, 60,000 ft^3/s, from rating curve extended above 27,000 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 26, 1937 reached a stage of 28.4 ft, from floodmarks, discharge, 43,500 ft^3/s, from information by local residents.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,300 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	2030	5,990	13.56	Sep 19	1330	11,100	19.14
Mar 20	2300	7,990	15.88	Sep 23	1415	*11,400	*19.42

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	342	172	880	280	663	829	448	526	418	247	176
2	21	254	158	1,940	272	852	799	410	465	411	264	285
3	19	203	151	1,280	240	1,260	736	370	451	1,570	228	576
4	17	174	136	1,030	249	922	683	352	830	1,200	447	406
5	15	155	135	813	273	1,020	645	357	755	807	338	404
6	13	292	194	715	227	1,710	593	381	594	667	257	279
7	13	270	144	630	242	1,550	754	349	766	652	217	226
8	13	203	178	575	229	1,230	870	362	916	584	321	198
9	11	177	155	588	205	1,230	1,180	387	968	573	238	183
10	12	160	149	516	234	1,230	1,180	477	791	731	339	170
11	22	323	242	458	224	1,010	1,730	565	675	965	831	156
12	191	475	648	411	216	885	1,420	457	677	538	464	154
13	122	670	546	384	194	827	1,130	393	829	434	1,050	628
14	73	422	e1,280	371	204	942	947	354	847	385	441	581
15	59	332	e860	349	221	831	833	356	1,210	498	310	479
16	213	329	e670	e320	133	755	745	1,400	855	367	253	464
17	538	1,120	524	e290	345	704	672	1,220	887	320	225	310
18	224	1,060	438	e265	585	661	623	1,870	1,430	288	225	361
19	143	676	382	e240	544	612	861	1,850	1,250	292	192	8,210
20	110	528	e460	e290	435	2,860	691	1,280	2,120	270	178	2,410
21	90	437	504	e260	440	3,700	626	1,090	1,420	252	163	1,330
22	75	420	414	e230	2,370	1,870	604	1,010	1,190	237	159	965
23	65	341	374	e215	3,080	1,350	547	894	903	306	334	6,370
24	58	291	342	e185	1,910	1,090	499	980	740	268	169	2,450
25	53	262	458	e240	1,420	915	479	864	638	234	142	1,460
26	110	238	564	e225	1,040	820	559	885	562	206	132	1,090
27	196	223	421	e215	855	770	514	798	519	194	124	880
28	130	201	373	e195	754	667	453	769	517	200	224	841
29	168	189	343	e215	---	711	428	684	443	275	221	670
30	675	184	311	215	---	923	408	646	405	222	419	580
31	568	---	294	218	---	970	---	567	---	199	235	---
TOTAL	4,046	10,951	12,020	14,758	17,421	35,540	23,038	22,825	25,179	14,563	9,387	33,292
MEAN	131	365	388	476	622	1,146	768	736	839	470	303	1,110
MAX	675	1,120	1,280	1,940	3,080	3,700	1,730	1,870	2,120	1,570	1,050	8,210
MIN	11	155	135	185	133	612	408	349	405	194	124	154
CFSM	0.45	1.27	1.35	1.66	2.17	3.99	2.68	2.57	2.92	1.64	1.06	3.87
IN.	0.52	1.42	1.56	1.91	2.26	4.61	2.99	2.96	3.26	1.89	1.22	4.32

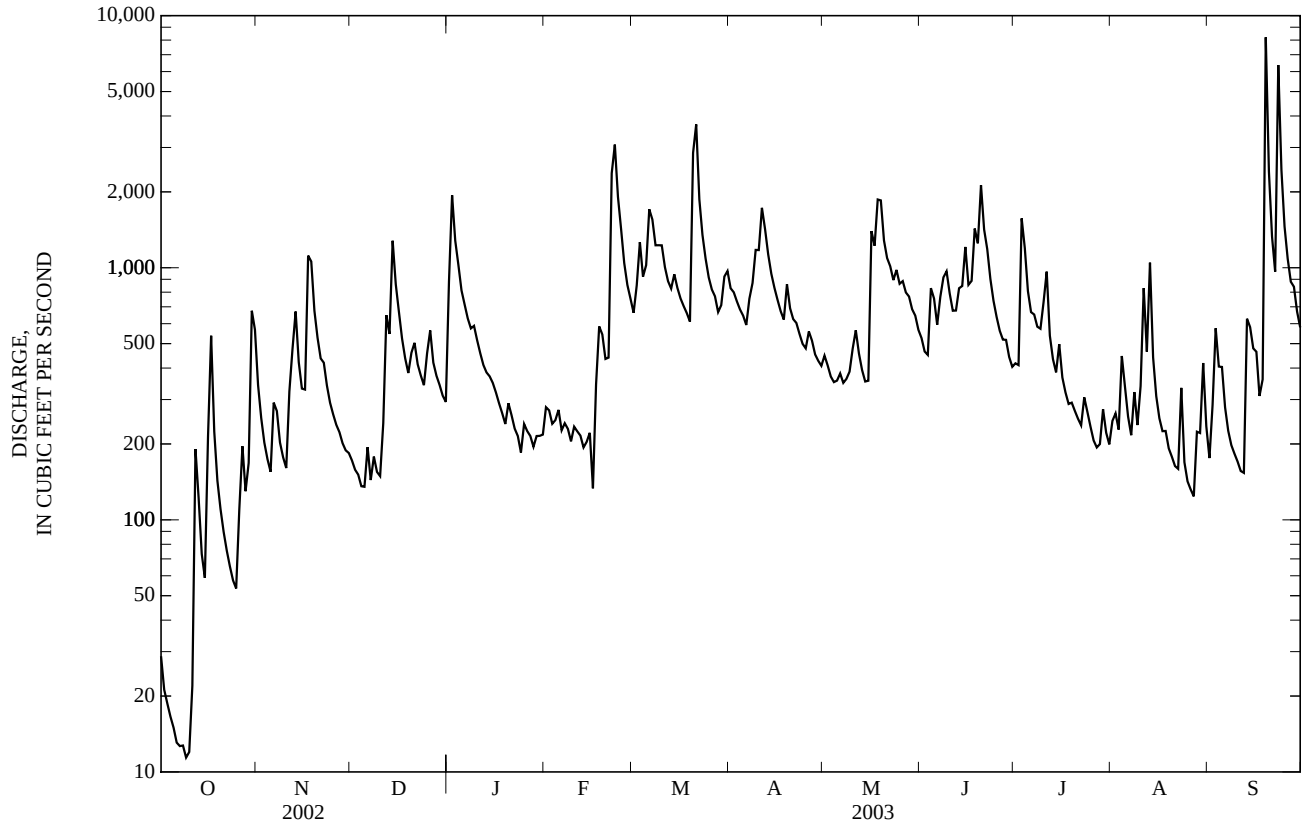
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 1992, 2002 - 2003, BY WATER YEAR (WY)

MEAN	275	299	334	376	465	552	524	418	292	168	183	193
MAX	2,587	1,874	1,168	1,137	1,397	1,191	1,787	910	1,483	706	1,539	1,504
(WY)	(1943)	(1986)	(1951)	(1978)	(1984)	(1975)	(1983)	(1988)	(1972)	(1949)	(1955)	(1979)
MIN	14.8	36.3	34.6	59.0	75.6	148	134	101	41.8	15.8	5.85	11.2
(WY)	(1964)	(1966)	(1966)	(1981)	(2002)	(1981)	(1981)	(1977)	(1977)	(1966)	(1966)	(1985)

01663500 HAZEL RIVER AT RIXEYVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1943 - 1992 2002 - 2003	
ANNUAL TOTAL	59,646.8		223,020			
ANNUAL MEAN	163		611		339	
HIGHEST ANNUAL MEAN					633	1979
LOWEST ANNUAL MEAN					109	2002
HIGHEST DAILY MEAN	1,280	Dec 14	8,210	Sep 19	34,600	Oct 15, 1942
LOWEST DAILY MEAN	1.1	aSep 21	11	Oct 9	1.1	bSep 10, 1966
ANNUAL SEVEN-DAY MINIMUM	1.6	Sep 19	13	Oct 4	1.4	Sep 7, 1966
MAXIMUM PEAK FLOW			11,400	Sep 23	60,000	Oct 15, 1942
MAXIMUM PEAK STAGE			19.42	Sep 23	31.80	Oct 15, 1942
INSTANTANEOUS LOW FLOW			11	cOct 9	0.70	Sep 22, 2002
ANNUAL RUNOFF (CFSM)	0.57		2.13		1.18	
ANNUAL RUNOFF (INCHES)	7.73		28.91		16.05	
10 PERCENT EXCEEDS	383		1,200		694	
50 PERCENT EXCEEDS	101		437		209	
90 PERCENT EXCEEDS	9.0		157		42	

a Also Sept. 22, 2002.
b Also Sept. 11, 12, 1966 and Sept. 21, 22, 2002.
c Also Oct. 10, 2002.
e Estimated.



01664000 RAPPAHANNOCK RIVER AT REMINGTON, VA

LOCATION.--Lat 38°31'50", long 77°48'49", NAD83, Fauquier County, Hydrologic Unit 02080103, on left bank 80 ft upstream from bridge on alternate U.S. Highway 29, at Remington, 0.3 mi upstream from Tinpot Run, 0.4 mi downstream from Ruffans Run, and 2.5 mi downstream from Hazel River.

DRAINAGE AREA.--620 mi^2.

PERIOD OF RECORD.--October 1942 to current year.

REVISED RECORDS.--WSP 1171: 1944. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 252.53 ft NGVD of 1929. Prior to Nov. 21, 1951, nonrecording gage at bridge 80 ft downstream at same datum.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Oct. 24, Feb. 22-24, May 1, July 8, 10, 11, 29, Aug. 3-6, Aug. 23 to Sept. 1, and Sept. 3-30, and for period with ice effect, Jan. 16-25, which are fair. National Weather Service gage-height telemeter at station. Maximum discharge, 90,000 ft^3/s, from rating curve extended above 43,000 ft^3/s on basis of slope-area measurement of peak flow. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum flood since at least 1828, that of Oct. 16, 1942.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 2	0630	6,780	11.67	Sep 20	0045	15,400	17.64
Mar 21	0830	12,300	15.95	Sep 24	0200	*15,900	*17.93
Jun 20	2215	6,670	11.57				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	630	335	1,550	518	1,320	1,700	e773	1,060	805	740	e570
2	43	420	312	4,970	471	1,870	1,560	759	931	810	608	592
3	29	317	299	2,750	424	3,060	1,390	678	869	1,980	e530	1,450
4	21	261	250	2,290	432	2,030	1,270	623	1,490	2,010	e810	1,130
5	19	229	253	1,670	493	2,180	1,190	615	1,670	1,310	e920	1,200
6	17	446	332	1,440	405	3,460	1,110	676	1,230	1,070	e700	785
7	16	628	281	1,260	403	3,240	1,230	655	1,570	1,070	514	607
8	15	396	352	1,120	411	2,420	1,780	897	2,270	e970	612	516
9	15	311	320	1,180	347	2,450	2,330	1,030	1,840	906	525	e455
10	16	272	268	1,050	397	2,530	2,480	1,120	1,570	e1,560	768	e410
11	21	534	445	906	394	1,960	3,230	1,410	1,310	e2,800	1,150	e380
12	143	1,040	1,360	801	375	1,720	2,690	1,100	1,440	1,270	912	e370
13	269	1,360	1,250	722	347	1,560	2,010	880	2,200	931	1,310	1,170
14	145	872	2,820	709	345	1,740	1,660	761	2,350	787	842	1,110
15	102	643	2,150	665	402	1,570	1,460	801	3,510	1,140	609	944
16	134	653	1,480	e540	298	1,410	1,320	3,990	1,880	782	550	867
17	887	2,290	1,120	e520	163	1,310	1,200	2,940	1,680	664	506	652
18	420	2,490	919	e480	637	1,230	1,100	3,520	2,800	578	460	682
19	229	1,430	793	e440	835	1,140	1,580	3,720	2,750	563	403	e10,600
20	156	1,060	962	e550	750	3,600	1,360	2,350	4,340	535	371	e8,300
21	122	857	1,120	e520	795	9,730	1,170	2,020	3,700	503	348	2,570
22	93	819	865	e430	e3,500	3,890	1,120	2,140	2,540	479	330	1,840
23	79	689	757	e400	e9,500	2,570	1,040	1,730	1,930	844	583	e8,450
24	e65	557	687	e320	e4,700	2,030	920	1,940	1,550	679	e380	11,100
25	59	495	1,020	e370	3,100	1,700	877	1,690	1,320	556	e300	2,930
26	79	455	1,310	470	2,130	1,500	968	1,990	1,170	447	e280	2,050
27	282	416	943	643	1,690	1,490	953	1,700	1,120	402	e266	1,650
28	204	383	806	670	1,480	1,270	821	1,540	1,120	377	e450	1,580
29	203	364	728	737	---	1,220	764	1,390	939	e500	e750	1,330
30	945	353	655	626	---	1,710	736	1,310	851	481	e1,150	1,140
31	1,070	---	612	538	---	2,080	---	1,140	---	397	e770	---
TOTAL	5,962	21,670	25,804	31,337	35,742	70,990	43,019	47,888	55,000	28,206	19,447	67,430
MEAN	192	722	832	1,011	1,276	2,290	1,434	1,545	1,833	910	627	2,248
MAX	1,070	2,490	2,820	4,970	9,500	9,730	3,230	3,990	4,340	2,800	1,310	11,100
MIN	15	229	250	320	163	1,140	736	615	851	377	266	370
CFSM	0.31	1.17	1.34	1.63	2.06	3.69	2.31	2.49	2.96	1.47	1.01	3.63
IN.	0.36	1.30	1.55	1.88	2.14	4.26	2.58	2.87	3.30	1.69	1.17	4.05

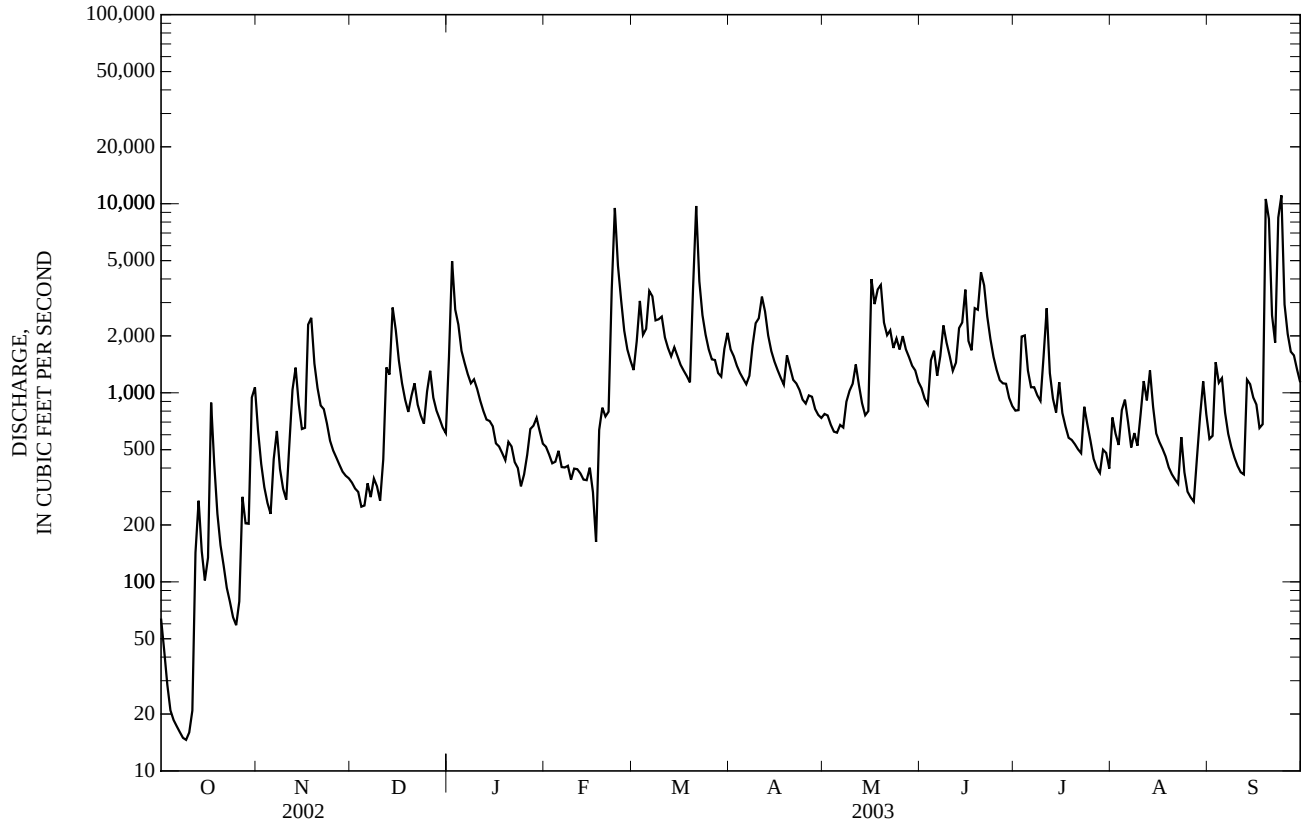
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 2003, BY WATER YEAR (WY)

MEAN	479	565	705	843	988	1,195	1,038	831	605	342	364	394
MAX	4,895	2,575	2,172	2,480	3,496	3,751	3,784	2,177	3,520	974	2,926	2,815
(WY)	(1943)	(1986)	(1951)	(1998)	(1998)	(1993)	(1983)	(1989)	(1972)	(1949)	(1955)	(1996)
MIN	27.3	61.8	61.1	78.3	143	292	248	198	54.1	30.1	13.2	15.4
(WY)	(1987)	(1966)	(1966)	(1966)	(2002)	(1981)	(1981)	(1977)	(1999)	(1966)	(1966)	(1985)

01664000 RAPPAHANNOCK RIVER AT REMINGTON, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1943 - 2003	
ANNUAL TOTAL	112,488.1		452,495			
ANNUAL MEAN	308		1,240		694	
HIGHEST ANNUAL MEAN					1,240	2003
LOWEST ANNUAL MEAN					195	2002
HIGHEST DAILY MEAN	2,820	Dec 14	11,100	Sep 24	64,000	Oct 16, 1942
LOWEST DAILY MEAN	5.5	Aug 17	15	aOct 8	2.9	Sep 12, 1966
ANNUAL SEVEN-DAY MINIMUM	6.4	Aug 22	17	Oct 4	3.2	Sep 7, 1966
MAXIMUM PEAK FLOW			15,900	Sep 24	90,000	Oct 16, 1942
MAXIMUM PEAK STAGE			17.93	Sep 24	b30.00	Oct 16, 1942
INSTANTANEOUS LOW FLOW			14	Oct 9	1.1	Sep 10, 1966
ANNUAL RUNOFF (CFSM)	0.50		2.00		1.12	
ANNUAL RUNOFF (INCHES)	6.75		27.15		15.21	
10 PERCENT EXCEEDS	771		2,460		1,400	
50 PERCENT EXCEEDS	177		872		414	
90 PERCENT EXCEEDS	15		282		73	

a Also Oct. 9, 2002.
b From floodmarks.
e Estimated.



01665500 RAPIDAN RIVER NEAR RUCKERSVILLE, VA

LOCATION.--Lat 38°16'50", long 78°20'24", NAD83, Madison County, Hydrologic Unit 02080103, on left bank 10 ft downstream from bridge on U.S. Highway 29, 0.2 mi downstream from Elk Run, 1.7 mi upstream from White Run, 3.6 mi northeast of Ruckersville, and at mile 63.5.

DRAINAGE AREA.--114 mi^2.

PERIOD OF RECORD.--September 1942 to June 1995, October, 1998 to current year.

REVISED RECORDS.--WSP 1171: 1944-45(M). WSP 1382: 1943(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 439.44 ft NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Dec. 6, 9, and Jan. 17-20, 22-25, 28, which are fair. Diversion 0.4 mi upstream from station since 1973 by Rapidan Service Authority for municipal water supply of Greene County and town of Stanardsville averaged about 0.72 ft^3/s. Maximum discharge, 106,000 ft^3/s, from rating curve extended above 8,700 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,400 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 1	1845	2,560	5.86	Jun 20	1145	1,490	4.76
Feb 22	1345	8,310	8.98	Aug 11	0245	3,010	6.11
Feb 23	1500	2,560	5.86	Sep 19	0400	*20,100	*13.26
Mar 20	1645	5,520	7.65	Sep 23	0645	7,180	8.47
May 18	1145	1,860	5.14				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	137	86	796	83	262	433	204	236	165	77	92
2	11	111	81	911	78	371	404	204	208	208	98	124
3	8.1	95	76	620	76	377	366	184	212	655	102	122
4	7.4	82	71	460	84	305	336	198	251	368	188	121
5	6.7	79	82	365	85	308	310	195	222	276	133	122
6	5.9	129	e70	309	76	406	279	188	196	243	120	101
7	5.1	105	e63	265	81	416	352	179	405	214	109	93
8	4.8	91	e66	239	76	362	330	170	342	188	113	87
9	4.9	82	67	221	71	327	533	176	312	171	120	83
10	5.3	76	63	198	76	300	512	211	260	163	132	79
11	24	183	153	177	74	270	776	229	266	157	878	75
12	65	339	200	160	72	245	573	198	373	135	284	73
13	40	298	260	150	68	240	475	182	382	122	284	179
14	27	209	483	141	70	239	407	171	418	127	211	242
15	20	170	309	133	97	227	358	299	417	111	185	248
16	106	186	242	123	83	216	321	735	342	105	156	232
17	131	407	201	e120	115	206	289	501	538	96	140	191
18	71	378	174	e110	135	198	274	1,230	751	90	125	459
19	52	280	159	e100	112	187	324	998	696	90	129	9,810
20	43	230	229	e112	115	2,130	268	677	868	84	110	1,830
21	38	203	219	100	172	1,520	255	566	588	79	101	888
22	33	186	201	e91	2,770	786	254	466	432	78	95	609
23	30	156	184	e86	1,940	552	229	418	345	100	89	3,120
24	26	141	172	e79	1,040	439	213	396	286	78	83	1,340
25	27	128	213	e110	634	372	208	355	244	70	79	807
26	52	118	201	105	433	333	234	352	213	66	76	571
27	55	110	172	90	343	302	209	316	198	63	72	444
28	51	102	159	e86	292	275	193	331	175	62	77	406
29	85	97	147	79	---	389	186	311	159	65	87	314
30	234	93	137	76	---	525	179	304	144	63	123	268
31	186	---	128	78	---	485	---	263	---	60	115	---
TOTAL	1,466.2	5,001	5,068	6,690	9,351	13,570	10,080	11,207	10,479	4,552	4,691	23,130
MEAN	47.3	167	163	216	334	438	336	362	349	147	151	771
MAX	234	407	483	911	2,770	2,130	776	1,230	868	655	878	9,810
MIN	4.8	76	63	76	68	187	179	170	144	60	72	73
CFSM	0.41	1.46	1.43	1.89	2.93	3.84	2.95	3.17	3.06	1.29	1.33	6.76
IN.	0.48	1.63	1.65	2.18	3.05	4.43	3.29	3.66	3.42	1.49	1.53	7.55

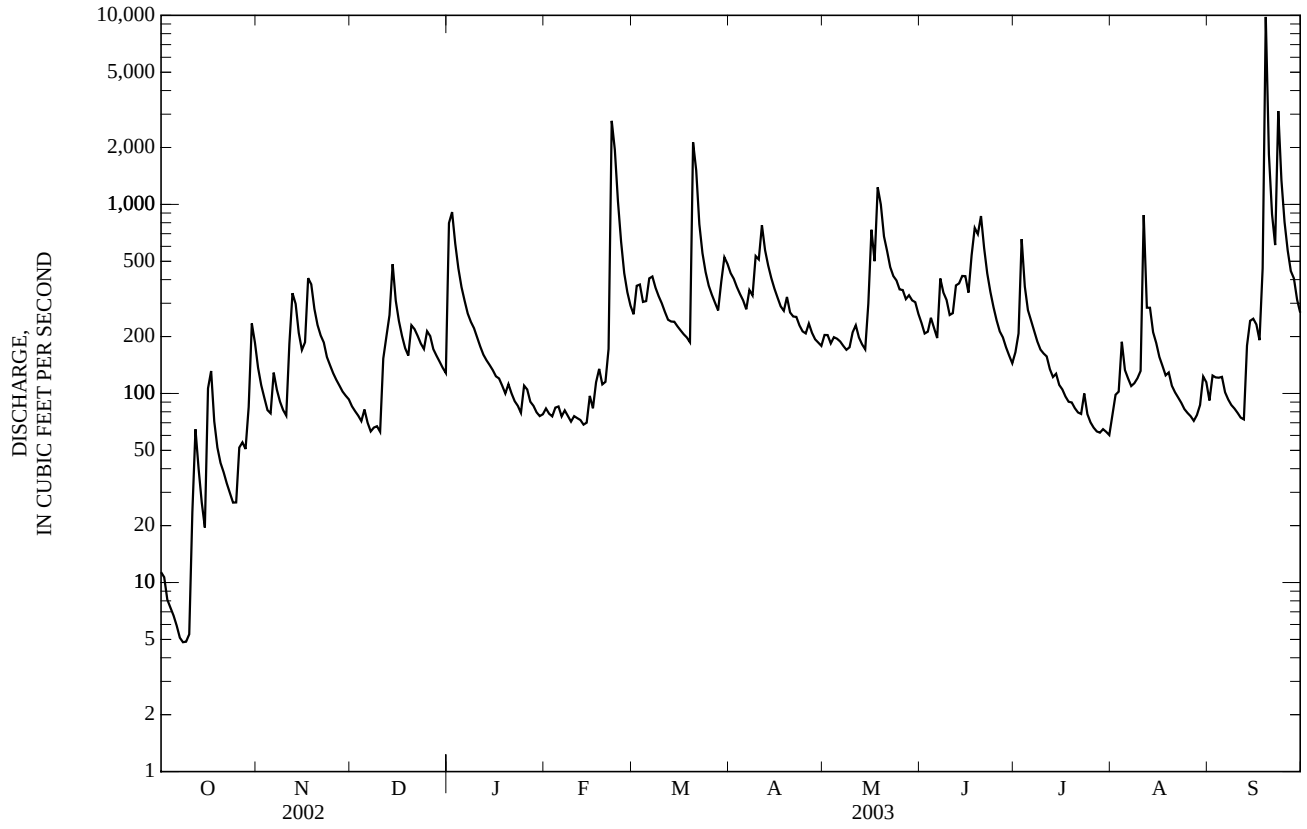
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 1995, 1999 - 2003, BY WATER YEAR (WY)

MEAN	127	135	156	170	193	243	225	176	164	78.1	90.5	98.6
MAX	976	798	465	483	485	570	692	376	1,675	378	760	771
(WY)	(1943)	(1986)	(1951)	(1978)	(1984)	(1993)	(1983)	(1978)	(1995)	(1949)	(1955)	(2003)
MIN	9.44	23.7	20.4	21.0	41.5	79.7	72.8	48.0	23.3	6.99	4.99	5.83
(WY)	(1964)	(1999)	(1966)	(1981)	(2002)	(1981)	(1981)	(1977)	(1977)	(1977)	(2002)	(1954)

01665500 RAPIDAN RIVER NEAR RUCKERSVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1943 - 1995, 1999 - 2003	
ANNUAL TOTAL	26,701.13		105,285.2			
ANNUAL MEAN	73.2		288		153	
HIGHEST ANNUAL MEAN					337	1949
LOWEST ANNUAL MEAN					50.2	2002
HIGHEST DAILY MEAN	568	Apr 22	9,810	Sep 19	e29,400	Jun 27, 1995
LOWEST DAILY MEAN	0.45	Sep 13	4.8	Oct 8	0.45	Sep 13, 2002
ANNUAL SEVEN-DAY MINIMUM	1.1	Sep 9	5.7	Oct 4	1.1	Sep 9, 2002
MAXIMUM PEAK FLOW			20,100	Sep 19	106,000	Jun 27, 1995
MAXIMUM PEAK STAGE			13.26	Sep 19	a31.30	Jun 27, 1995
INSTANTANEOUS LOW FLOW			3.7	bOct 8	0.21	Sep 13, 2002
ANNUAL RUNOFF (CFSM)	0.64		2.53		1.34	
ANNUAL RUNOFF (INCHES)	8.71		34.36		18.23	
10 PERCENT EXCEEDS	179		505		308	
50 PERCENT EXCEEDS	46		184		95	
90 PERCENT EXCEEDS	3.6		69		20	

a From floodmarks.
b Also Oct. 9, 2002.
e Estimated.



01666500 ROBINSON RIVER NEAR LOCUST DALE, VA

LOCATION.--Lat 38°19'30", long 78°05'44", NAD83, Madison County, Hydrologic Unit 02080103, on right bank 100 ft upstream from bridge on State Highway 614, 1.1 mi upstream from Great Run, 1.7 mi upstream from mouth, 2.0 mi southeast of Locust Dale, and 3.4 mi downstream from Crooked Run.

DRAINAGE AREA.--179 mi^2.

PERIOD OF RECORD.--July 1943 to current year. Prior to October 1965, published as Robertson River near Locust Dale.

REVISED RECORDS.--WSP 1171: 1948(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 283.70 ft NGVD of 1929.

REMARKS.--Records good except those for periods of doubtful gage-height record, Oct. 6, 7, Feb. 26 to Mar. 19, and Mar. 22-31, and periods with ice effect, Dec. 6-9 and Jan. 19-26, 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.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 15, 1942, reached a stage of 23.9 ft, from floodmarks, discharge, about 44,000 ft^3/s.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 1	2230	2,470	9.49	Jul 3	0900	2,160	8.71
Feb 22	1730	7,900	15.79	Aug 30	0100	2,220	8.88
Mar 20	2000	8,350	16.07	Sep 2	2200	2,510	9.57
Jun 15	0130	2,790	10.25	Sep 19	1100	*13,900	*18.85
Jun 20	0200	1,970	8.24	Sep 23	1000	7,310	15.41
Jun 20	1630	2,030	8.39				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	168	103	836	127	e400	501	299	261	291	223	251
2	12	124	98	1,100	118	e600	483	258	232	261	173	564
3	11	103	95	639	114	e730	453	237	224	1,420	146	629
4	8.6	91	91	494	125	e525	424	245	293	678	342	342
5	7.8	83	94	394	135	e475	400	247	312	453	191	303
6	e6.9	157	e93	345	119	e600	371	245	245	402	176	242
7	e6.4	129	e85	301	129	e570	449	232	630	366	176	214
8	5.7	104	e96	275	123	e500	466	225	522	320	220	196
9	6.0	94	e92	270	115	e450	650	219	423	285	159	186
10	6.3	86	89	241	121	e410	603	260	344	264	278	175
11	15	239	175	217	121	e375	806	304	298	363	472	167
12	71	472	334	197	119	e350	639	256	672	251	262	164
13	47	434	333	186	112	e325	537	234	545	221	561	532
14	34	251	771	178	112	e310	468	218	403	299	261	425
15	26	190	479	170	148	e295	424	216	1,120	211	200	355
16	108	259	340	156	105	e280	386	600	501	195	177	315
17	230	830	260	e152	210	e270	352	496	547	177	189	255
18	97	677	218	e145	268	e255	328	1,060	852	166	162	561
19	67	388	191	e130	184	e245	474	934	857	166	251	9,900
20	57	297	323	e140	170	3,320	375	625	1,520	156	162	1,960
21	46	242	297	e132	218	2,670	346	539	845	151	145	1,060
22	41	226	238	e120	2,990	e1,300	336	500	612	146	135	882
23	36	185	211	e115	2,630	e840	309	451	477	151	136	3,500
24	33	163	193	e105	1,520	e600	290	478	396	140	118	1,300
25	30	148	318	e155	1,160	e500	280	422	339	130	113	836
26	55	137	322	e135	e700	e430	305	487	293	123	110	645
27	77	127	233	120	e550	e460	285	404	278	118	108	532
28	62	116	204	125	e470	e410	263	403	269	121	158	502
29	97	111	186	118	---	e380	254	350	234	148	213	403
30	358	108	169	110	---	e585	248	325	217	130	787	347
31	293	---	159	111	---	e545	---	286	---	120	351	---
TOTAL	1,965.7	6,739	6,890	7,912	13,013	20,005	12,505	12,055	14,761	8,423	7,155	27,743
MEAN	63.4	225	222	255	465	645	417	389	492	272	231	925
MAX	358	830	771	1,100	2,990	3,320	806	1,060	1,520	1,420	787	9,900
MIN	5.7	83	85	105	105	245	248	216	217	118	108	164
CFSM	0.35	1.25	1.24	1.43	2.60	3.61	2.33	2.17	2.75	1.52	1.29	5.17
IN.	0.41	1.40	1.43	1.64	2.70	4.16	2.60	2.51	3.07	1.75	1.49	5.77

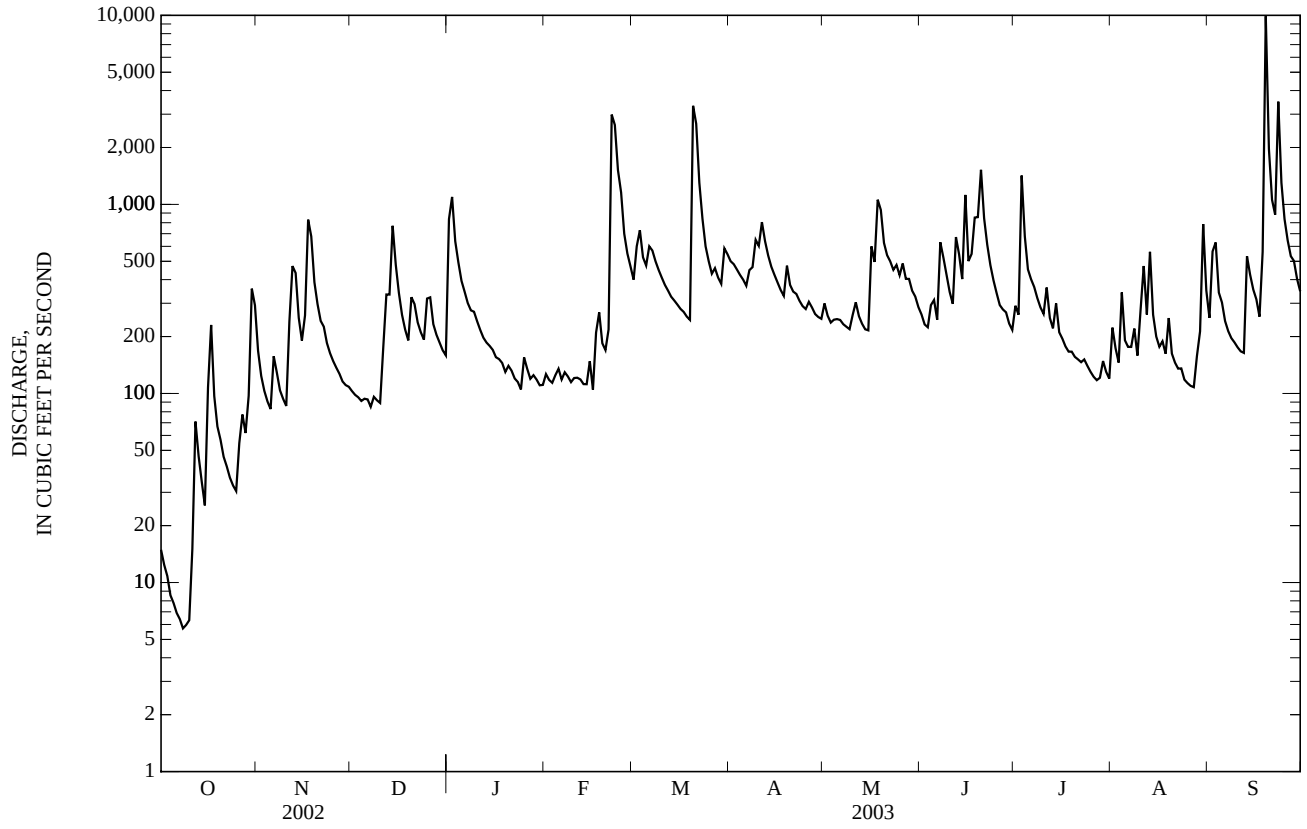
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2003, BY WATER YEAR (WY)

MEAN	166	210	227	266	299	347	305	247	211	127	136	172
MAX	783	1,350	624	752	1,254	980	989	625	1,154	522	1,063	1,119
(WY)	(1991)	(1986)	(1973)	(1978)	(1998)	(1993)	(1983)	(1989)	(1995)	(1949)	(1955)	(1996)
MIN	18.5	35.1	32.0	47.5	52.5	105	89.3	70.9	33.4	21.3	7.34	8.05
(WY)	(1964)	(1966)	(1966)	(1966)	(2002)	(1981)	(1981)	(1977)	(1999)	(1944)	(2002)	(1954)

01666500 ROBINSON RIVER NEAR LOCUST DALE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1944 - 2003	
ANNUAL TOTAL	33,498.9		139,166.7			
ANNUAL MEAN	91.8		381		226	
HIGHEST ANNUAL MEAN					445	1973
LOWEST ANNUAL MEAN					61.6	2002
HIGHEST DAILY MEAN	830	Nov 17	9,900	Sep 19	14,700	Jun 22, 1972
LOWEST DAILY MEAN	2.0	aAug 26	5.7	Oct 8	1.8	bSep 13, 1954
ANNUAL SEVEN-DAY MINIMUM	2.5	Aug 21	6.8	Oct 4	2.5	Aug 21, 2002
MAXIMUM PEAK FLOW			13,900	Sep 19	25,400	Jun 27, 1995
MAXIMUM PEAK STAGE			18.85	Sep 19	c23.92	Sep 6, 1996
INSTANTANEOUS LOW FLOW			4.7	Oct 8	1.2	dSep 7, 1954
ANNUAL RUNOFF (CFSM)	0.51		2.13		1.26	
ANNUAL RUNOFF (INCHES)	6.96		28.92		17.12	
10 PERCENT EXCEEDS	207		641		427	
50 PERCENT EXCEEDS	60		254		145	
90 PERCENT EXCEEDS	5.6		96		39	

a Also Sept. 15, 16, 2002.
b Also Sept. 27, 1954.
c Backwater from debris.
d Also Sept. 12, 1954.
e Estimated.



01667500 RAPIDAN RIVER NEAR CULPEPER, VA

LOCATION.--Lat 38°21'01", long 77°58'30", NAD83, Culpeper County, Hydrologic Unit 02080103, on left bank 0.7 mi upstream from Cedar Run and bridge on U.S. Highway 522, 8.5 mi south of Culpeper, and at mile 29.6.

DRAINAGE AREA.--472 mi^2.

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

REVISED RECORDS.--WSP 741: 1931. WSP 801: 1934(M), 1936(M). WSP 1081: 1943-46. WSP 1171: 1932(M), 1933-35. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 241.36 ft NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Dec. 7, 8, and Jan. 17-24, 27-29, and periods of no gage-height record, July 19-21 and Aug. 5-8, which are fair. Prior to 1977, diurnal fluctuation at low flow caused by mill at Rapidan, and since July 1986, by powerplant at same site. National Weather Service gage-height telemeter at station. Maximum discharge, 59,300 ft^3/s, from rating curve extended above 43,000 ft^3/s on basis of slope-area measurement at gage height 30.26 ft. Several measure- ments of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 2	0130	6,770	8.12	Jun 20	1930	5,170	6.66
Feb 23	0330	14,500	14.27	Jul 3	1300	5,600	7.06
Mar 21	0200	13,000	13.13	Sep 19	2100	*20,700	*18.51
May 18	1930	4,660	6.17	Sep 23	1545	10,800	11.42
Jun 15	0530	5,600	7.06				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	335	244	1,920	303	1,080	1,280	628	783	713	540	390
2	28	228	226	3,800	296	1,670	1,150	627	659	690	431	568
3	21	176	215	1,900	272	1,920	1,030	568	603	3,750	362	1,750
4	20	145	200	1,520	283	1,350	936	531	770	2,220	1,130	631
5	16	128	189	1,160	324	1,270	860	534	897	1,520	e622	585
6	13	244	248	997	281	1,620	792	539	680	1,180	e480	429
7	8.7	281	e185	867	288	1,530	905	538	1,820	988	e450	354
8	9.3	190	e200	774	290	1,310	1,260	530	2,110	927	e570	317
9	10	153	212	744	260	1,180	1,590	524	1,400	794	426	291
10	10	137	197	660	273	1,100	1,760	541	1,070	766	780	270
11	17	414	308	583	283	986	2,360	739	878	802	1,500	251
12	74	1,180	870	524	280	907	1,860	688	1,290	710	1,000	244
13	111	1,370	759	482	266	841	1,490	586	1,390	576	1,130	975
14	78	678	1,860	462	258	838	1,250	521	1,050	628	682	926
15	54	479	1,300	436	361	797	1,100	483	3,130	643	506	821
16	66	628	886	397	386	751	982	1,370	1,530	506	420	715
17	380	2,080	682	e375	893	720	896	1,320	1,580	457	437	565
18	199	1,830	564	e345	1,310	680	823	2,650	2,480	420	385	944
19	105	1,020	495	e315	808	645	1,080	2,730	2,120	e408	522	16,600
20	72	772	736	e350	484	4,440	964	1,800	3,810	e385	374	8,540
21	61	627	838	e320	642	7,540	821	1,560	2,670	e340	304	2,420
22	49	572	631	e290	5,550	2,430	784	1,540	1,860	384	275	1,880
23	41	480	554	e270	9,920	1,870	747	1,280	1,460	359	268	6,920
24	36	409	498	e245	3,900	1,500	698	1,400	1,190	360	229	3,540
25	33	370	844	340	2,540	1,260	665	1,190	1,010	322	210	2,200
26	47	338	939	305	1,780	1,110	658	1,700	870	296	200	1,750
27	95	312	643	e300	1,380	1,100	670	1,300	769	283	196	1,430
28	86	286	546	e285	1,180	931	647	1,290	923	276	260	1,480
29	103	267	493	e270	---	858	602	1,080	696	281	239	1,130
30	481	258	441	260	---	1,330	568	1,030	604	290	1,120	933
31	586	---	410	258	---	1,680	---	860	---	290	607	---
TOTAL	2,945.0	16,387	17,413	21,754	35,091	47,244	31,228	32,677	42,102	22,564	16,655	59,849
MEAN	95.0	546	562	702	1,253	1,524	1,041	1,054	1,403	728	537	1,995
MAX	586	2,080	1,860	3,800	9,920	7,540	2,360	2,730	3,810	3,750	1,500	16,600
MIN	8.7	128	185	245	258	645	568	483	603	276	196	244
CFSM	0.20	1.16	1.19	1.49	2.66	3.23	2.21	2.23	2.97	1.54	1.14	4.23
IN.	0.23	1.29	1.37	1.71	2.77	3.72	2.46	2.58	3.32	1.78	1.31	4.72

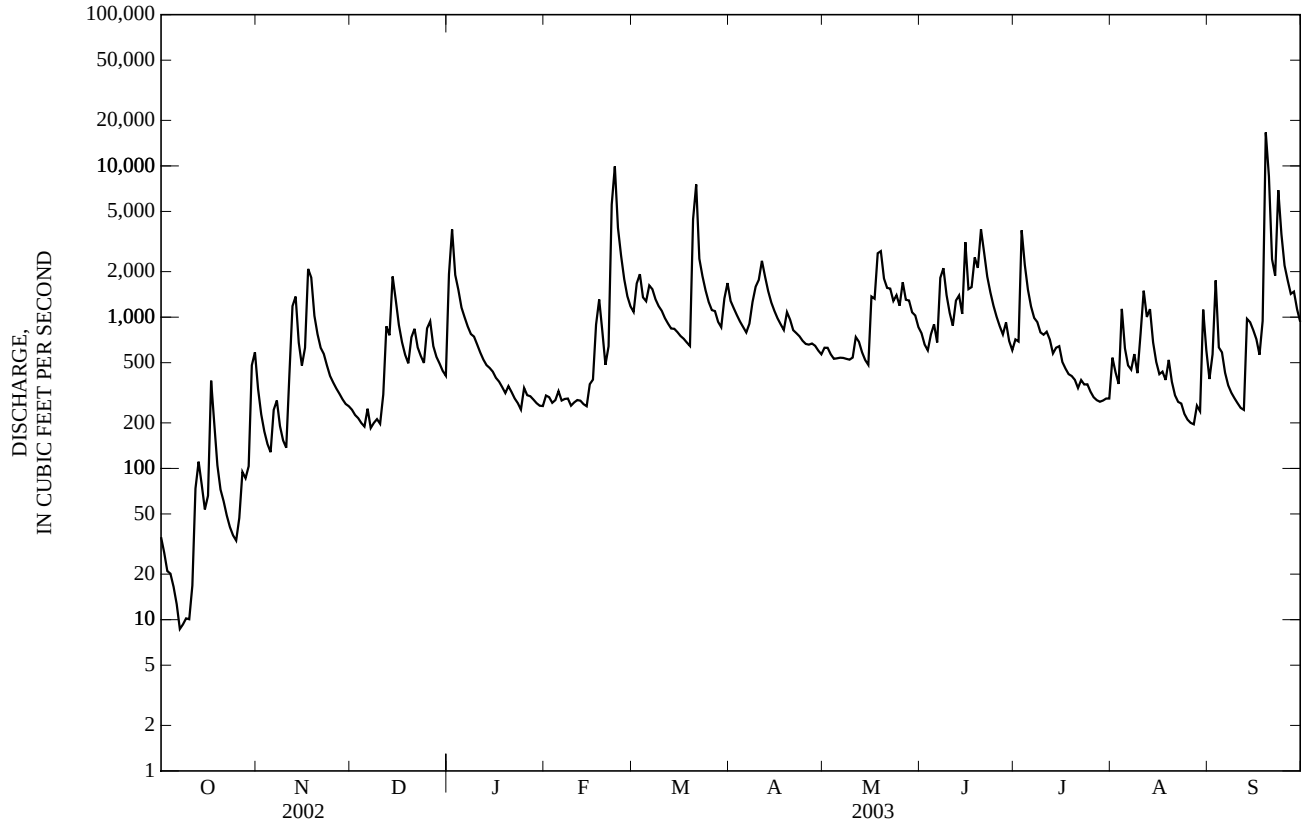
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2003, BY WATER YEAR (WY)

MEAN	412	459	544	659	733	846	772	575	490	303	328	381
MAX	3,163	2,690	1,653	1,924	3,048	2,236	2,615	1,734	2,901	1,206	2,323	2,908
(WY)	(1943)	(1986)	(1949)	(1998)	(1998)	(1993)	(1937)	(1998)	(1995)	(1949)	(1955)	(1996)
MIN	8.10	29.4	62.4	93.6	91.5	179	210	166	83.1	45.0	12.6	14.0
(WY)	(1931)	(1931)	(1931)	(1966)	(1931)	(1931)	(1981)	(1956)	(1999)	(1999)	(2002)	(1954)

01667500 RAPIDAN RIVER NEAR CULPEPER, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1931 - 2003	
ANNUAL TOTAL	75,915.7		345,909.0			
ANNUAL MEAN	208		948		540	
HIGHEST ANNUAL MEAN					1,099	1973
LOWEST ANNUAL MEAN					132	2002
HIGHEST DAILY MEAN	2,080	Nov 17	16,600	Sep 19	e43,500	Jun 28, 1995
LOWEST DAILY MEAN	1.5	Sep 18	8.7	Oct 7	1.5	Sep 18, 2002
ANNUAL SEVEN-DAY MINIMUM	2.1	aSep 14	12	Oct 5	2.1	aSep 14, 2002
MAXIMUM PEAK FLOW			20,700	Sep 19	59,300	Jun 28, 1995
MAXIMUM PEAK STAGE			18.51	Sep 19	b30.40	Jun 28, 1995
INSTANTANEOUS LOW FLOW			8.0	Oct 7	1.2	Sep 17, 2002
ANNUAL RUNOFF (CFSM)	0.44		2.01		1.14	
ANNUAL RUNOFF (INCHES)	5.98		27.26		15.56	
10 PERCENT EXCEEDS	487		1,810		1,070	
50 PERCENT EXCEEDS	124		631		335	
90 PERCENT EXCEEDS	10		197		82	

a Also Sept. 15, 2002.
b From high-water mark in gage house.
e Estimated.



01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA

LOCATION.--Lat 38°18'30", long 77°31'46", NAD83, Spotsylvania County, Hydrologic Unit 02080104, on right bank, along State Highway 618 (River Road), 3.1 mi upstream from Dominion Virginia Power dam, 0.7 mi downstream from Motts Run, and 5.3 mi upstream from Fredericksburg.

DRAINAGE AREA.--1,596 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1907 to current year. Monthly discharge only for some periods, published in WSP 1302.

REVISED RECORDS.--WSP 801: 1924(M). WSP 951: 1937(M). WSP 1302: 1907-12, 1913(M), 1916(M), 1918(M), 1920- 21(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 70 ft NGVD of 1929, from topographic map. Prior to Jan. 15, 1922, nonrecording gage, and Jan. 15, 1922, to Aug. 2, 1966, water-stage recorder at site 1.5 mi downstream, at datum 1.00 ft higher. Aug. 2, 1966 to Oct. 17, 2000, at same site, at datum of 55.18 ft. Oct. 17, 2000 to current year, at present site and datum.

REMARKS.--Records fair except those for periods with ice effect, Dec. 5-10 and Jan. 17-28, which are poor. Maximum discharge, 140,000 ft^3/s, from rating curve extended above 76,000 ft^3/s on basis of flow-over-dam and slope-area measurements at gage heights 26.1 ft and 26.9 ft, site and datum then use.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1889 was probably several feet lower than that of Oct. 16, 1942.

REVISIONS.--The maximum discharges reported for water year 2001 have been revised to 22,300 ft^3/s, Mar. 22, 2001, gage height, 8.98 ft, and 21,200 ft^3/s, Mar. 30, 2001, gage height, 8.71 ft, superseding figures published in the report for 2001.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 16,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 2	0900	20,700	8.58	Jun 21	0200	16,500	7.48
Feb 23	1245	37,700	12.40	Sep 20	1045	*38,300	*12.53
Mar 21	1145	32,800	11.39	Sep 24	0300	28,000	10.32

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	234	2,000	697	3,780	901	3,490	4,800	1,610	2,370	1,860	923	1,740
2	177	1,210	648	17,200	1,110	6,270	3,770	1,910	2,100	2,120	1,960	1,740
3	135	878	594	8,420	1,050	10,300	3,310	1,530	1,880	4,760	1,200	5,000
4	108	712	554	6,980	1,020	6,320	2,940	1,330	2,180	e5,800	1,320	3,150
5	91	625	e510	4,590	1,190	5,720	2,680	1,290	3,420	e4,200	2,320	3,020
6	75	762	e500	3,760	1,130	8,570	2,460	1,350	2,790	e3,400	2,130	2,200
7	66	1,620	e508	3,260	992	7,770	2,620	1,370	4,560	e2,800	1,400	1,530
8	63	1,160	e500	2,840	1,010	5,690	5,300	1,630	11,600	2,520	1,140	1,200
9	58	832	e512	2,900	932	4,920	5,950	2,100	7,150	2,150	1,510	1,030
10	55	699	e520	2,670	890	4,870	8,150	2,220	5,930	2,480	1,170	926
11	89	784	814	2,270	983	3,960	8,550	3,150	4,400	5,170	1,990	824
12	94	4,120	3,430	1,990	989	3,400	8,060	2,600	4,710	3,360	3,590	815
13	116	6,330	3,550	1,750	970	3,080	5,370	1,920	5,010	2,080	2,560	3,420
14	427	3,120	8,060	1,630	887	3,130	4,070	1,540	4,670	1,740	2,620	4,100
15	314	2,020	6,970	1,550	1,200	3,080	3,450	1,350	11,500	2,110	1,660	2,910
16	334	1,930	4,060	1,380	2,000	2,740	3,030	6,430	5,520	1,770	1,330	2,460
17	649	9,050	2,890	e1,240	686	2,560	2,700	7,610	4,140	1,380	1,570	2,160
18	1,610	9,810	2,310	e1,160	1,000	2,420	2,430	7,450	8,590	1,150	1,170	2,050
19	791	4,890	2,010	e1,040	2,010	2,260	3,300	11,700	6,790	1,050	1,070	25,900
20	515	3,040	2,080	e1,080	2,200	8,140	3,910	6,080	9,460	1,060	1,140	32,800
21	387	2,320	3,600	e1,170	2,460	29,100	2,780	4,870	12,400	1,000	874	8,370
22	327	1,980	2,540	e1,080	13,300	11,600	2,510	6,560	6,270	914	759	5,120
23	284	1,780	2,070	e900	34,500	7,140	2,340	4,290	4,710	925	765	16,100
24	248	1,390	1,810	e800	17,500	5,070	2,050	4,970	3,620	1,530	1,050	23,600
25	221	1,160	3,600	e730	11,000	3,950	1,870	4,230	3,040	1,020	680	8,240
26	258	1,010	5,950	e800	7,310	e3,740	1,920	8,650	2,650	820	583	5,120
27	246	919	3,140	e860	5,010	e3,920	2,160	6,340	2,380	700	549	4,060
28	555	841	2,340	e820	3,960	e3,300	1,850	4,690	2,600	674	597	3,810
29	519	771	2,030	786	---	2,670	1,600	3,760	2,320	977	1,150	3,440
30	1,150	726	1,790	898	---	4,290	1,510	3,110	2,020	1,110	2,070	2,700
31	3,050	---	1,600	837	---	7,490	---	2,720	---	816	2,890	---
TOTAL	13,246	68,489	72,187	81,171	118,190	180,960	107,440	120,360	150,780	63,446	45,740	179,535
MEAN	427	2,283	2,329	2,618	4,221	5,837	3,581	3,883	5,026	2,047	1,475	5,984
MAX	3,050	9,810	8,060	17,200	34,500	29,100	8,550	11,700	12,400	5,800	3,590	32,800
MIN	55	625	500	730	686	2,260	1,510	1,290	1,880	674	549	815
CFSM	0.27	1.43	1.46	1.64	2.64	3.66	2.24	2.43	3.15	1.28	0.92	3.75
IN.	0.31	1.60	1.68	1.89	2.75	4.22	2.50	2.81	3.51	1.48	1.07	4.18

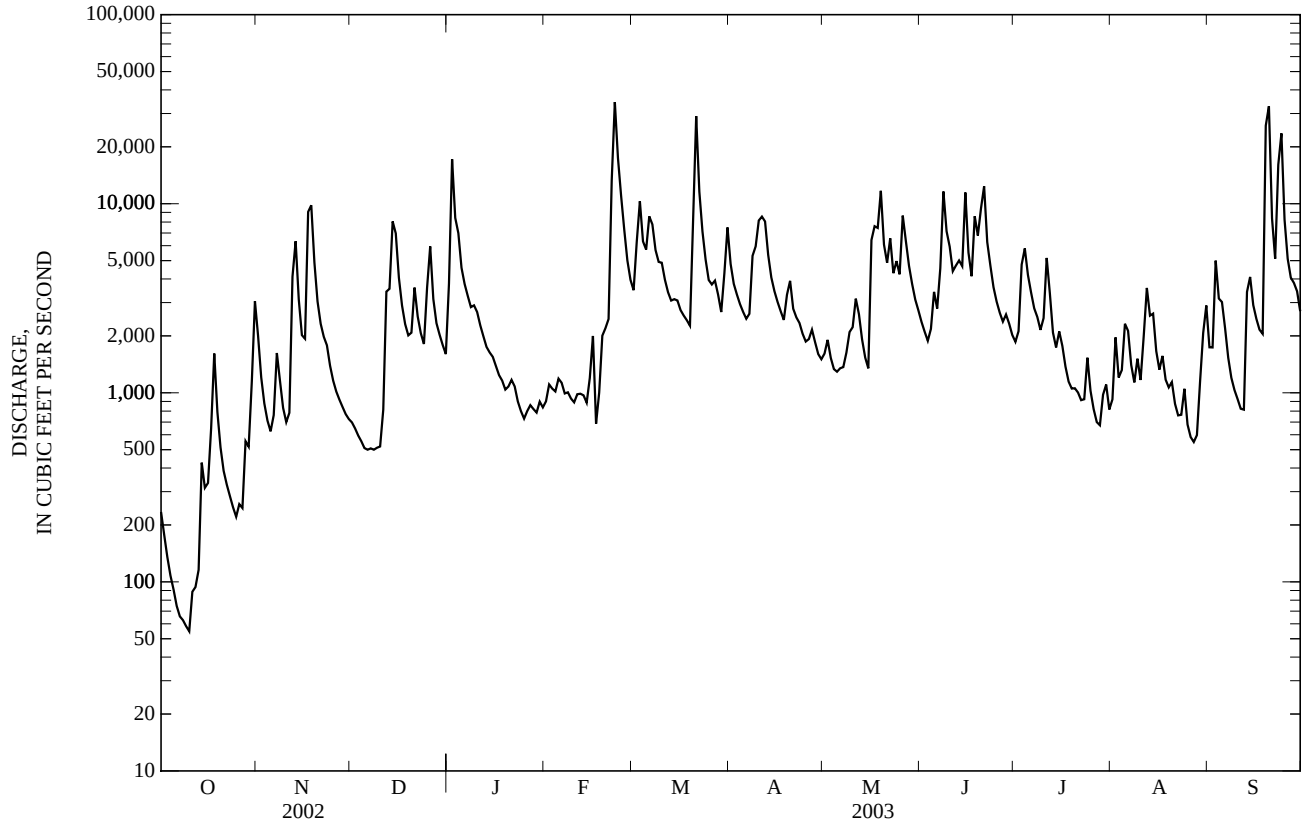
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1907 - 2003, BY WATER YEAR (WY)

MEAN	1,131	1,308	1,655	2,182	2,485	2,713	2,478	1,903	1,443	911	1,001	991
MAX	11,090	6,522	5,357	6,472	8,880	8,505	9,484	10,310	7,112	3,368	7,190	6,924
(WY)	(1943)	(1986)	(1949)	(1996)	(1998)	(1993)	(1983)	(1924)	(1972)	(1949)	(1955)	(1996)
MIN	15.3	75.4	147	268	224	526	587	492	179	78.6	21.1	46.5
(WY)	(1931)	(1931)	(1931)	(1966)	(1931)	(1931)	(1981)	(1956)	(1999)	(1930)	(1930)	(1930)

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1907 - 2003	
ANNUAL TOTAL	287,246		1,201,544			
ANNUAL MEAN	787		3,292		1,679	
HIGHEST ANNUAL MEAN					3,292	2003
LOWEST ANNUAL MEAN					440	1931
HIGHEST DAILY MEAN	9,810	Nov 18	34,500	Feb 23	127,000	Oct 16, 1942
LOWEST DAILY MEAN	12	Aug 22	55	Oct 10	5.0	aOct 11, 1930
ANNUAL SEVEN-DAY MINIMUM	13	Aug 19	71	Oct 5	8.3	Oct 9, 1930
MAXIMUM PEAK FLOW			38,300	Sep 20	140,000	Oct 16, 1942
MAXIMUM PEAK STAGE			12.53	Sep 20	b26.90	Oct 16, 1942
INSTANTANEOUS LOW FLOW			51	Oct 10	5.0	Oct 11, 1930
ANNUAL RUNOFF (CFSM)	0.49		2.06		1.05	
ANNUAL RUNOFF (INCHES)	6.70		28.01		14.29	
10 PERCENT EXCEEDS	1,940		7,140		3,330	
50 PERCENT EXCEEDS	401		2,100		978	
90 PERCENT EXCEEDS	49		596		230	

a Also Oct. 12, 1930.
b From floodmarks, site and datum then in use.
e Estimated.



01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1929-30, 1956, 1967-74, 1978 to 1999, 2001 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1955 to September 1956, April 1968 to August 1974. October 1991 to September 1993.
WATER TEMPERATURE: October 1955 to September 1956, April 1968 to August 1974.

REMARKS.--Missing gage height values indicate periods that were affected by ice; for these samples only the mean daily discharge is reported.

COOPERATION.--Water samples were collected by the U.S. Geological Survey and analyzed by either the U.S. Geological Survey (Agency Code 80020) or by the Virginia Division of Consolidated Laboratory Services (VDCLS, Agency Code 85116), using analytical methods approved by the U.S. Geological Survey. Analyses performed by VDCLS are reported to U.S. Geological Survey rounding specifications. Results of chemical analyses provided by VDCLS were quality-assured and approved by the U.S. Geological Survey.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Sample type	Agency analyzing sample, code (00028)	Gage height, feet (00065)	Instantaneous discharge, cfs (00061)	Turbidity, NTU (00076)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
OCT												
02...	1120	Environmental	85116	1.69	175	0.80	760	8.6	101	7.9	225	25.0
15...	1350	Environmental	85116	1.90	296	1.8	757	12.6	128	7.9	162	16.0
18...	0900	Environmental	85116	2.83	1,790	20	761	8.1	77	7.1	127	8.0
31...	0945	Environmental	85116	3.37	3,250	85	760	10.3	91	5.7	132	12.0
NOV												
05...	1215	Environmental	85116	2.22	601	2.5	761	11.9	103	6.9	95	11.0
13...	1110	Blank	85116	--	--	0.50	--	--	--	--	--	--
13...	1115	Environmental	85116	4.44	6,770	190	756	8.9	84	6.3	97	11.0
14...	1115	Environmental	85116	3.32	3,100	67	758	12.1	109	6.6	97	16.0
19...	1045	Environmental	85116	3.87	4,740	49	762	12.0	101	6.6	93	8.5
DEC												
03...	1115	Environmental	85116	2.27	601	6.6	767	13.3	97	6.4	98	-2.0
13...	0945	Environmental	85116	3.49	3,530	40	762	--	--	6.9	109	0.0
13...	1000	Replicate	85116	3.50	3,560	41	--	--	--	--	--	--
18...	1000	Environmental	85116	3.04	2,260	12	770	14.2	106	6.8	91	4.0
JAN												
03...	1215	Environmental	85116	4.76	7,700	72	753	10.6	88	6.4	74	5.0
07...	1000	Environmental	85116	3.42	3,310	17	762	13.2	95	7.1	84	-2.0
07...	1015	Replicate	85116	3.42	3,310	16	--	--	--	--	--	--
22...	0945	Environmental	85116	--	1,080	4.9	759	14.5	100	6.2	96	-6.0
22...	1000	Replicate	80020	--	1,080	--	--	--	--	--	--	--
FEB												
05...	0900	Environmental	85116	2.60	1,150	3.5	759	13.9	99	7.3	100	-1.0
23...	1300	Environmental	85116	12.38	37,600	240	737	13.6	98	6.1	68	5.0
23...	1305	Replicate	80020	12.38	37,500	--	--	--	--	--	--	--
24...	1100	Environmental	85116	7.82	17,700	75	763	13.2	96	6.6	73	5.5
MAR												
11...	0930	Environmental	85116	3.69	3,930	35	761	12.4	100	7.4	73	7.0
21...	1100	Environmental	85116	11.34	32,600	450	753	11.4	95	6.0	63	11.0
APR												
03...	1000	Environmental	85116	3.51	3,340	15	754	11.6	110	7.3	78	25.0
MAY												
27...	1030	Environmental	85116	4.58	6,400	39	761	11.2	116	6.1	85	15.0
JUN												
09...	1210	Blank	85116	--	--	0.25	--	--	--	--	--	--
09...	1215	Environmental	85116	4.75	7,110	39	752	8.9	99	7.4	84	--
12...	1045	Environmental	85116	3.94	4,320	13	754	8.6	99	7.5	85	24.5
JUL												
02...	1115	Environmental	85116	3.16	2,160	3.2	755	8.2	99	7.6	87	23.0
AUG												
13...	1100	Environmental	85116	3.10	2,020	71	762	7.5	90	7.3	80	26.0
SEP												
11...	1200	Environmental	85116	2.55	819	4.0	762	9.8	110	8.1	98	21.5
19...	1230	Environmental	85116	10.55	29,000	300	754	7.8	86	6.9	68	23.5
22...	1045	Environmental	85116	4.22	5,120	55	760	10.4	115	7.1	71	23.5
23...	1230	Environmental	85116	8.16	19,000	130	752	8.6	97	7.0	74	23.5

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Temperature, water, deg C (00010)	Silica, water, fltrd, mg/L (00955)	Residue fixed non-filterable, mg/L (00540)	Residue total at 105 deg. C, suspended, mg/L (00530)	Residue volatile, suspended, mg/L (00535)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)
OCT													
02...	23.0	4.00	3	3	3	--	--	0.004	M	0.004	0.002	0.009	0.009
15...	16.1	4.30	3	3	3	--	--	0.004	M	0.004	0.002	0.006	0.011
18...	12.9	8.00	19	24	5	--	--	0.016	0.49	0.491	0.003	0.015	0.030
31...	10.0	10.1	78	95	17	--	--	0.060	0.89	0.893	0.006	0.033	0.045
NOV													
05...	9.0	10.6	<3	<3	<3	--	--	<0.004	0.85	0.850	<0.002	0.014	0.033
13...	--	<0.100	<3	<3	<3	--	--	<0.004	<0.004	<0.004	<0.002	0.004	0.007
13...	12.4	9.90	151	180	29	--	--	0.032	0.88	0.883	0.008	0.034	0.058
14...	10.4	10.8	44	53	9	--	--	0.030	0.92	0.922	0.004	0.024	0.042
19...	8.2	10.8	40	47	7	--	--	0.028	1.02	1.02	0.003	0.029	0.043
DEC													
03...	2.3	11.8	<3	3	<3	--	--	<0.004	1.00	1.00	<0.002	0.016	0.022
13...	1.4	10.1	30	38	8	--	--	0.092	0.91	0.912	0.004	0.035	0.057
13...	--	10.1	31	38	7	--	--	0.093	0.89	0.894	0.004	0.034	0.046
18...	3.5	12.2	8	10	<3	--	--	0.007	1.17	1.18	<0.002	0.016	0.026
JAN													
03...	6.8	9.30	105	122	17	--	--	0.041	0.86	0.862	0.004	0.016	0.038
07...	2.0	11.6	13	16	3	--	--	0.022	1.07	1.07	0.002	0.011	0.024
07...	--	11.7	14	17	3	--	--	0.022	1.06	1.06	0.002	0.011	0.017
22...	0.1	12.6	3	3	3	--	--	0.019	1.14	1.14	0.002	0.013	0.017
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
05...	1.2	10.8	<3	3	<3	--	--	0.013	0.98	0.981	<0.002	0.009	0.015
23...	0.5	5.00	353	398	45	--	--	0.193	0.71	0.713	0.004	0.015	0.075
23...	--	5.0	252	300	48	0.46	1.7	0.169	--	0.681	--	0.013	<0.04
24...	2.2	7.20	144	163	19	--	--	0.128	0.99	0.991	0.005	0.028	0.048
MAR													
11...	6.0	10.4	36	41	5	--	--	0.009	0.81	0.814	<0.002	0.012	0.016
21...	7.2	5.80	354	379	25	--	--	0.182	0.57	0.573	0.006	0.042	--
APR													
03...	12.5	10.2	11	13	<3	--	--	0.004	0.65	0.651	<0.002	0.010	0.013
MAY													
27...	16.8	7.90	51	58	7	--	--	0.016	0.54	0.544	0.004	0.030	0.029
JUN													
09...	--	<0.100	<3	<3	<3	--	--	0.004	<0.004	<0.004	<0.002	0.002	0.010
09...	19.8	11.5	46	55	9	--	--	0.022	0.59	0.593	0.003	0.027	0.052
12...	22.1	13.0	12	16	4	--	--	<0.004	0.62	0.620	<0.002	0.015	0.027
JUL													
02...	24.4	12.2	3	4	<3	--	--	<0.004	0.58	0.582	<0.002	0.014	0.017
AUG													
13...	24.9	9.50	50	60	10	--	--	0.062	0.56	0.563	0.004	0.035	0.066
SEP													
11...	21.1	12.6	<3	3	<3	--	--	<0.004	0.45	0.448	0.002	0.017	0.026
19...	19.5	6.90	424	488	64	--	--	0.042	0.43	0.434	0.007	0.032	0.065
22...	20.1	12.7	57	65	8	--	--	0.021	0.67	0.671	<0.002	0.019	0.034
23...	20.6	11.0	232	255	23	--	--	<0.004	0.50	0.499	0.002	0.023	0.048

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Phosphorus, suspnd sedimnt total, mg/L (00667)	Total nitrogen, suspnd sedimnt total, mg/L (00601)	Total carbon, suspnd sedimnt total, mg/L (00694)	Inorganic carbon, suspnd sedimnt total, mg/L (00688)	Organic carbon, water, fltrd, mg/L (00681)	Pheophytin a, phytoplankton, ug/L (62360)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)
OCT											
02...	--	0.29	0.004	--	0.3	--	--	--	--	--	M
15...	--	0.24	0.004	0.03	0.2	--	--	--	--	--	M
18...	--	0.71	0.044	0.22	1.6	--	--	--	--	95	22
31...	--	1.2	0.150	0.71	5.5	--	--	--	--	94	95
NOV											
05...	--	0.99	0.005	0.03	0.1	--	--	--	--	75	1
13...	--	0.11	0.001	0.01	M	--	--	--	--	--	--
13...	--	1.6	0.251	1.2	10.2	--	--	--	--	93	209
14...	--	1.4	0.109	0.35	3.0	--	--	--	--	92	57
19...	--	1.4	--	0.29	2.5	--	--	--	--	96	53
DEC											
03...	--	1.1	0.010	0.02	0.2	--	--	--	--	--	4
13...	--	1.5	0.078	0.28	2.3	--	--	--	--	94	43
13...	--	1.4	0.076	0.24	2.3	--	--	--	--	96	43
18...	--	1.4	0.028	0.08	0.7	--	--	--	--	--	12
JAN											
03...	--	1.5	0.143	0.53	5.5	--	--	--	--	90	150
07...	--	1.3	0.021	0.10	0.8	--	--	--	--	--	20
07...	--	1.3	0.025	0.10	0.8	--	--	--	--	--	--
22...	--	1.3	0.011	0.02	0.2	--	--	--	--	--	2
22...	--	--	--	--	--	--	--	--	--	--	4
FEB											
05...	--	1.1	0.015	0.04	0.3	--	--	--	--	--	5
23...	--	1.4	0.825	1.3	12.6	--	--	--	--	50	749
23...	0.63	1.1	--	--	--	--	--	--	--	--	--
24...	--	1.5	0.204	0.14	1.2	--	--	--	--	72	259
MAR											
11...	--	0.87	0.050	0.15	1.4	--	--	--	--	--	85
21...	--	1.3	0.374	1.1	10.0	--	--	--	--	48	788
APR											
03...	--	0.76	0.022	0.08	0.7	--	--	--	--	--	12
MAY											
27...	--	0.57	0.080	0.30	2.7	--	--	3.2	1.1	58	96
JUN											
09...	--	0.04	0.010	0.02	0.2	--	--	<0.5	<0.5	43	2
09...	--	0.88	0.068	0.29	3.9	--	--	<0.5	1.7	80	72
12...	--	0.79	0.028	0.08	0.9	--	--	<0.5	1.1	--	16
JUL											
02...	--	0.73	0.013	--	0.3	--	--	<0.5	1.5	--	40
AUG											
13...	--	0.94	0.109	0.18	1.5	<0.02	5.5	2.7	2.2	--	65
SEP											
11...	--	0.64	0.026	<0.01	0.2	M	2.2	<0.5	<0.5	--	3
19...	--	1.2	0.504	1.4	13.5	M	8.1	12.7	7.1	79	633
22...	--	0.76	0.047	0.23	2.2	<0.02	2.6	1.2	1.8	82	81
23...	--	0.82	0.094	0.84	8.6	0.1	5.7	2.8	3.5	68	324

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

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01669000 PISCATAWAY CREEK NEAR TAPPAHANNOCK, VA

LOCATION.--Lat 37°52'37", long 76°54'02", NAD83, Essex County, Hydrologic Unit 02080104, on right bank at upstream side of bridge on State Highway 691, 0.6 mi south of Hensley Fork, 2.3 mi downstream from Sturgeon Swamp, and 4.2 mi southwest of Tappahannock.

DRAINAGE AREA.--28.0 mi^2.

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

REVISED RECORDS.--WSP 2103: Drainage area. WDR VA-79-1: 1970-76(P), 1978(P).

GAGE.--Water-stage recorder. Datum of gage is 0.50 ft NGVD of 1929. Prior to May 2, 2001, at same site, at datum 2.00 ft higher.

REMARKS.--Records good except those for periods of doubtful gage-height record, Oct. 3-10, 19-26, Nov. 2-6, 8-12, 15-17, Nov. 20 to Dec. 3, and Mar. 9-19, and period with ice effect, Jan. 17-30, which are fair. Maximum discharge, 2,380 ft^3/s, from rating curve extended above 1,400 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 26	1915	550	6.75	Sep 18	2400	*783	*7.52

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.80	22	e8.8	20	18	40	50	36	68	29	62	38
2	0.88	e18	e8.5	24	18	42	45	33	60	29	52	37
3	e0.57	e15	e8.0	22	17	42	42	31	53	55	53	36
4	e0.38	e12	8.3	22	17	37	40	30	50	80	56	46
5	e0.30	e14	9.6	19	17	39	38	30	53	55	54	52
6	e0.24	e19	11	17	17	47	38	35	51	36	62	44
7	e0.18	25	12	17	19	53	68	33	60	28	66	37
8	e0.14	e23	12	17	20	41	109	36	89	24	59	33
9	e0.12	e19	12	17	20	e34	92	45	71	24	54	32
10	e0.50	e16	12	17	e19	e28	101	43	63	31	53	32
11	2.3	e13	14	16	e17	e26	104	55	51	32	56	31
12	4.9	e20	18	16	e16	e23	85	41	44	32	60	43
13	7.5	45	18	16	e15	e23	62	32	42	24	67	141
14	7.6	38	20	16	e14	e24	54	27	41	23	51	122
15	7.0	e27	18	16	24	e26	50	23	48	30	42	63
16	11	e19	16	16	27	e24	47	22	53	32	38	49
17	12	e24	15	e15	e27	e23	44	25	48	26	39	44
18	12	43	15	e13	e24	e23	44	36	59	22	39	119
19	e10	35	15	e12	e23	e22	57	61	69	25	37	552
20	e8.0	e23	16	e14	e28	92	54	45	80	34	34	219
21	e7.0	e18	17	e13	34	161	46	35	65	36	33	86
22	e5.8	e14	17	e12	51	76	42	57	53	37	32	60
23	e5.5	e13	16	e11	70	55	40	74	44	51	39	100
24	e6.4	e11	16	e11	49	48	42	68	38	63	36	183
25	e5.6	e10	22	e12	37	46	40	67	36	50	30	97
26	e12	e9.7	25	e11	33	40	42	365	31	37	29	68
27	21	e9.4	20	e10	34	39	49	250	29	31	28	59
28	19	e9.0	18	e12	41	39	43	123	28	30	29	55
29	19	e8.6	17	e13	---	40	37	94	28	41	30	51
30	24	e9.2	17	e15	---	59	34	80	29	66	30	47
31	26	---	17	18	---	66	---	68	---	88	36	---
TOTAL	237.71	581.9	469.2	480	746	1,378	1,639	2,000	1,534	1,201	1,386	2,576
MEAN	7.67	19.4	15.1	15.5	26.6	44.5	54.6	64.5	51.1	38.7	44.7	85.9
MAX	26	45	25	24	70	161	109	365	89	88	67	552
MIN	0.12	8.6	8.0	10	14	22	34	22	28	22	28	31
CFSM	0.27	0.69	0.54	0.55	0.95	1.59	1.95	2.30	1.83	1.38	1.60	3.07
IN.	0.32	0.77	0.62	0.64	0.99	1.83	2.18	2.66	2.04	1.60	1.84	3.42

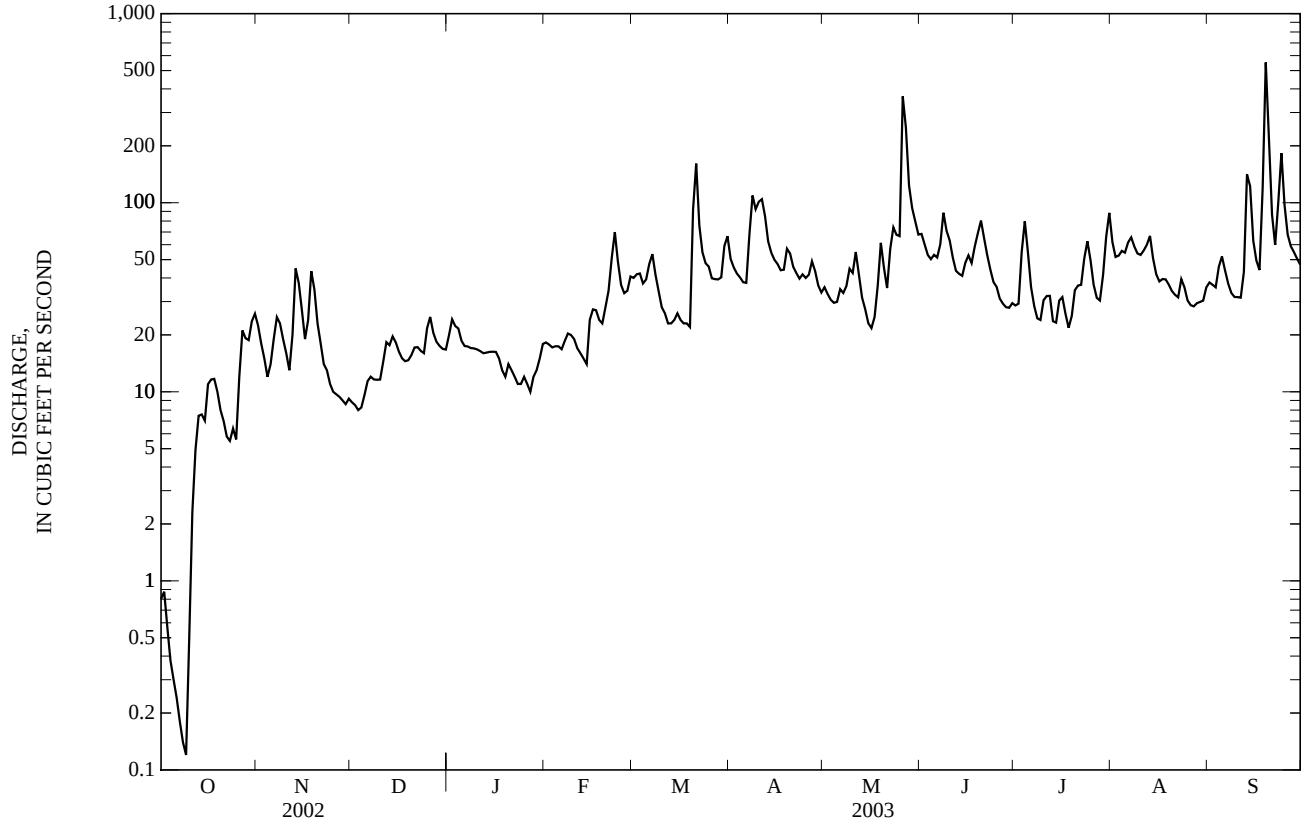
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 2003, BY WATER YEAR (WY)

MEAN	18.4	26.1	29.8	36.6	43.4	51.9	48.1	36.3	25.1	17.7	17.4	17.0
MAX	63.4	74.1	74.7	88.4	124	118	109	87.0	111	105	88.0	85.9
(WY)	(1980)	(1980)	(1997)	(1978)	(1998)	(1994)	(1958)	(1958)	(1972)	(1975)	(1955)	(2003)
MIN	1.30	6.30	9.20	7.93	14.0	13.5	13.4	5.19	1.12	0.74	0.18	0.28
(WY)	(1955)	(1955)	(1966)	(1955)	(1955)	(1981)	(1985)	(1999)	(1999)	(2002)	(2002)	(1954)

01669000 PISCATAWAY CREEK NEAR TAPPAHANNOCK, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1952 - 2003	
ANNUAL TOTAL	3,796.14		14,228.81			
ANNUAL MEAN	10.4		39.0		30.6	
HIGHEST ANNUAL MEAN					56.8	1958
LOWEST ANNUAL MEAN					9.24	2002
HIGHEST DAILY MEAN	45	Nov 13	552	Sep 19	1,080	Aug 13, 1955
LOWEST DAILY MEAN	0.00	aAug 9	e0.12	Oct 9	0.00	bAug 11, 1999
ANNUAL SEVEN-DAY MINIMUM	0.00	cAug 9	e0.27	Oct 4	0.00	cAug 9, 2002
MAXIMUM PEAK FLOW			783	Sep 18	2,380	Aug 20, 1969
MAXIMUM PEAK STAGE			d7.52	Sep 18	f7.52	gAug 20, 1969
INSTANTANEOUS LOW FLOW			(h)		0.00	(j)
ANNUAL RUNOFF (CFSM)	0.37		1.39		1.09	
ANNUAL RUNOFF (INCHES)	5.04		18.90		14.83	
10 PERCENT EXCEEDS	23		67		62	
50 PERCENT EXCEEDS	10		32		22	
90 PERCENT EXCEEDS	0.13		11		4.9	

a Also Aug. 10 to Sept. 1, 2002.
b Also Aug. 12, 13, 1999 and Aug. 9 to Sept. 1, 2002.
c Many days in August 2002.
d Backwater from beaver dam.
e Estimated.
f From high-water mark in well.
g Also Sept. 18, 2003.
h Not determined.
j No flow part or all of many days in August 1999 and July to September 2002.



01669520 DRAGON SWAMP AT MASCOT, VA

LOCATION.--Lat 37°38'02", long 76°41'47", NAD83, King and Queen County, Hydrologic Unit 02080102, on right bank at up stream side of bridge on State Highway 603, 0.8 mi east of Mascot, 2.1 mi downstream from Church Swamp, and 3.3 mi west of Warner.

DRAINAGE AREA.--108 mi^2.

PERIOD OF RECORD.--August 1981 to current year.

GAGE.--Water-stage recorder. Datum of gage is 21.60 ft NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 18, 20, 22-25, and period of no gage-height record, July 24, 25, which are fair. Maximum discharge, 6,600 ft^3/s, from rating curve extended above 2,150 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 24	1400	1,030	7.04	Aug 3	2230	725	6.56
Mar 23	0500	769	6.63	Sep 5	0215	660	6.45
Apr 11	2345	912	6.86	Sep 13	0815	1,400	7.57
May 29	0200	1,220	7.31	Sep 20	2330	*2,410	*9.02

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	118	53	175	134	370	250	148	539	84	208	141
2	1.2	107	49	215	138	357	230	140	408	94	261	139
3	1.1	89	46	258	139	392	235	137	326	143	567	129
4	0.97	82	42	288	144	373	219	133	282	156	668	290
5	0.88	79	54	293	136	388	196	126	309	152	524	562
6	0.77	131	80	255	124	444	180	120	328	141	431	267
7	0.74	137	80	223	141	424	239	114	332	130	371	186
8	0.67	131	84	201	148	412	402	119	464	115	387	169
9	0.59	108	97	180	147	382	545	127	430	110	382	145
10	0.73	91	98	158	139	305	761	150	461	117	537	122
11	8.1	82	107	145	136	247	863	212	507	112	519	108
12	25	90	127	129	132	215	865	218	492	118	431	342
13	26	117	145	116	124	196	689	209	420	145	360	1,300
14	19	137	172	107	116	187	524	189	320	175	308	1,010
15	14	150	186	103	135	181	373	164	265	170	273	818
16	27	144	188	106	165	177	292	150	238	153	260	665
17	40	214	175	93	186	180	252	140	220	129	254	494
18	37	278	160	e90	181	177	227	155	212	104	225	577
19	34	255	147	81	191	172	224	186	250	98	210	1,650
20	31	218	144	e77	243	213	216	177	330	89	219	2,070
21	32	197	139	88	301	338	210	171	309	77	197	2,140
22	31	197	134	e85	426	538	202	225	273	75	167	1,400
23	26	184	125	e79	794	726	191	265	256	167	144	986
24	23	159	139	e70	1,000	473	182	290	237	e180	125	720
25	20	132	184	e64	908	304	176	302	217	e195	110	526
26	39	110	214	67	620	238	179	557	194	202	99	382
27	40	92	208	72	409	212	176	790	169	257	90	298
28	41	77	205	68	386	194	168	1,030	142	306	81	264
29	56	66	218	75	---	187	162	1,160	123	317	74	252
30	92	59	200	92	---	233	155	919	100	274	68	239
31	122	---	172	115	---	267	---	686	---	232	103	---
TOTAL	792.15	4,031	4,172	4,168	7,843	9,502	9,583	9,509	9,153	4,817	8,653	18,391
MEAN	25.6	134	135	134	280	307	319	307	305	155	279	613
MAX	122	278	218	293	1,000	726	865	1,160	539	317	668	2,140
MIN	0.59	59	42	64	116	172	155	114	100	75	68	108
CFSM	0.24	1.24	1.25	1.24	2.59	2.84	2.96	2.84	2.83	1.44	2.58	5.68
IN.	0.27	1.39	1.44	1.44	2.70	3.27	3.30	3.28	3.15	1.66	2.98	6.33

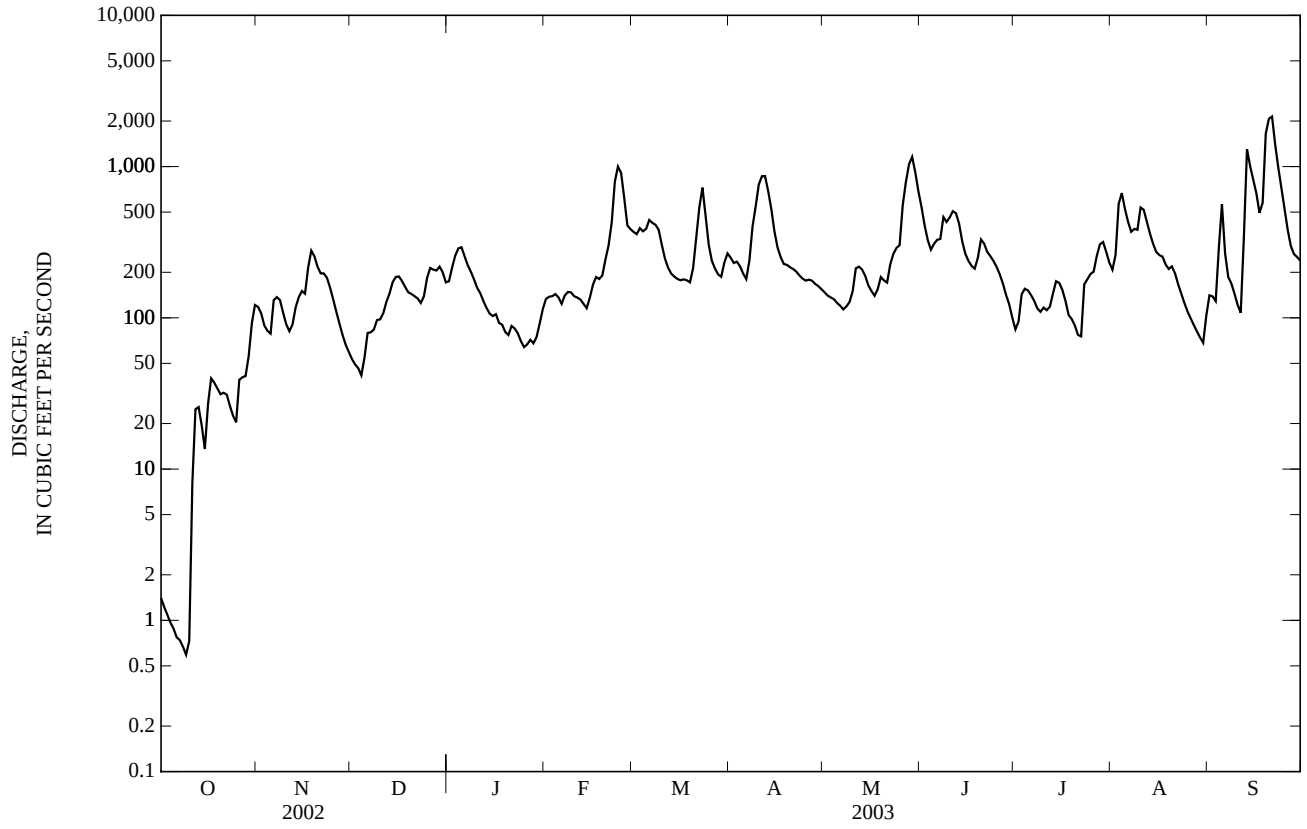
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 2003, BY WATER YEAR (WY)

MEAN	58.9	84.9	113	151	189	227	187	130	82.7	54.2	72.5	103
MAX	293	290	331	340	608	567	450	307	305	155	279	696
(WY)	(1997)	(1986)	(1997)	(1993)	(1998)	(1994)	(1983)	(2003)	(2003)	(2003)	(2003)	(1999)
MIN	0.80	9.22	39.5	45.9	44.3	45.7	31.2	22.5	2.38	0.20	0.23	0.79
(WY)	(1999)	(1999)	(1989)	(1989)	(2002)	(2002)	(1985)	(1999)	(1999)	(2002)	(2002)	(1997)

01669520 DRAGON SWAMP AT MASCOT, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1982 - 2003	
ANNUAL TOTAL	17,658.46		90,614.15			
ANNUAL MEAN	48.4		248		121	
HIGHEST ANNUAL MEAN					248	2003
LOWEST ANNUAL MEAN					31.7	2002
HIGHEST DAILY MEAN	278	Nov 18	2,140	Sep 21	6,050	Sep 17, 1999
LOWEST DAILY MEAN	0.00	aJul 18	0.59	Oct 9	0.00	aJul 18, 2002
ANNUAL SEVEN-DAY MINIMUM	0.00	bJul 18	0.76	Oct 4	0.00	bJul 18, 2002
MAXIMUM PEAK FLOW			2,410	Sep 20	6,600	Sep 17, 1999
MAXIMUM PEAK STAGE			9.02	Sep 20	13.21	Sep 17, 1999
INSTANTANEOUS LOW FLOW			0.55	cOct 9	0.00	(d)
ANNUAL RUNOFF (CFSM)	0.45		2.30		1.12	
ANNUAL RUNOFF (INCHES)	6.08		31.21		15.18	
10 PERCENT EXCEEDS	132		521		260	
50 PERCENT EXCEEDS	32		177		80	
90 PERCENT EXCEEDS	0.02		65		6.5	

a Also July 19-25, and Aug. 6-28, 2002.
b Also July 19, and Aug 6-22, 2002.
c Also Oct. 10, 2002.
d No flow part or all of many days in August 1998 and July, August 2002.
e Estimated.



01671020 NORTH ANNA RIVER AT HART CORNER, NEAR DOSWELL, VA

LOCATION.--Lat 37°51'01", long 77°25'40", NAD83, Hanover County, Hydrologic Unit 02080106, on right bank at downstream side of bridge on State Highway 30, 0.3 mi west of Hart Corner, 2.1 mi east of Doswell, and 5.4 mi upstream from confluence with South Anna River.

DRAINAGE AREA.--463 mi^2.

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

GAGE.--Water-stage recorder. Elevation of gage is 43 ft NGVD of 1929, from topographic map.

REMARKS.--Records good except those for periods of doubtful gage-height record, Dec. 4, Jan. 12, 13, 16, 18, 19, 22-28, Feb. 8, 9, 13, 16-18, 26, 27, and Mar. 4, which are fair. Flow regulated since January 1972 by Lake Anna, capacity, 373,000 acre-ft, 27.7 mi upstream. At a point 0.8 mi upstream from station, there is diversion for municipal water supply by Hanover County Department of Public Utilities since June 1975. Maximum discharge, 12,000 ft^3/s, from rating curve extended above 10,100 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1969 reached a stage of 28.02 ft, from floodmark, discharge not determined.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	129	57	176	81	1,500	943	287	777	407	259	69
2	36	96	61	538	90	1,930	773	286	714	428	270	66
3	36	81	58	556	88	1,950	717	284	677	1,190	131	66
4	37	71	e55	327	93	e980	676	270	654	1,800	109	68
5	37	67	66	238	231	802	663	264	734	1,710	170	72
6	36	85	80	182	279	1,350	642	252	715	550	244	73
7	38	88	77	158	332	1,290	896	209	609	283	237	72
8	37	82	69	141	e710	725	1,700	269	1,790	424	258	68
9	38	73	64	130	e295	676	1,530	268	1,250	514	288	65
10	40	68	65	115	279	639	2,080	280	1,240	417	265	63
11	78	115	94	198	271	602	2,370	812	733	272	245	61
12	76	274	208	e266	276	368	2,380	421	687	244	239	82
13	54	617	246	e263	e280	277	1,120	310	488	181	230	187
14	47	382	375	258	274	306	788	264	482	135	134	160
15	43	212	373	152	419	329	720	246	2,350	131	79	143
16	70	165	265	e82	e1,200	324	549	320	3,580	187	101	209
17	87	488	187	82	e1,280	324	418	305	1,350	230	91	227
18	72	706	138	e75	e1,050	328	388	546	2,250	233	199	451
19	58	436	113	e65	664	317	404	2,000	1,600	260	158	5,180
20	51	244	159	82	421	1,310	822	873	1,900	355	100	6,940
21	51	159	333	77	814	5,380	683	886	3,000	279	86	3,940
22	50	122	219	e110	1,920	5,600	661	2,350	1,610	225	82	1,290
23	46	102	184	e290	6,810	2,120	568	1,980	748	129	76	3,020
24	45	89	162	e317	6,150	965	362	1,050	706	112	70	5,140
25	44	86	331	e276	5,370	750	317	1,350	1,260	164	65	3,480
26	73	81	621	e143	e3,330	703	306	2,760	276	231	64	2,210
27	64	75	404	e66	e1,510	700	308	3,260	183	130	63	1,600
28	60	73	246	e76	1,000	687	291	2,990	1,090	86	61	459
29	68	63	195	70	---	685	282	1,830	353	374	64	347
30	121	62	179	68	---	867	276	1,050	409	321	59	315
31	170	---	170	72	---	1,990	---	840	---	275	67	---
TOTAL	1,800	5,391	5,854	5,649	35,517	36,774	24,633	29,112	34,215	12,277	4,564	36,123
MEAN	58.1	180	189	182	1,268	1,186	821	939	1,140	396	147	1,204
MAX	170	706	621	556	6,810	5,600	2,380	3,260	3,580	1,800	288	6,940
MIN	36	62	55	65	81	277	276	209	183	86	59	61
(†)	144	126	153	167	126	162	162	164	171	30.8	169	173
MEAN‡	62.7	217	194	188	1,273	1,191	826	944	1,146	397	153	1,210
CFSM‡	.14	.47	.42	.41	2.75	2.57	1.78	2.04	2.48	.86	.33	2.61
IN.‡	.16	.52	.48	.47	2.86	2.97	1.99	2.35	2.76	.99	.38	2.92

CAL YR 2002 MEAN‡ 81.4 CFSM‡ .18 IN.‡ 2.39
WTR YR 2003 MEAN‡ 640 CFSM‡ 1.38 IN.‡ 18.77

† Total diversion, equivalent in cubic feet per second, per month, provided by Hanover County Department of Public Utilities.
‡ Adjusted for diversion.

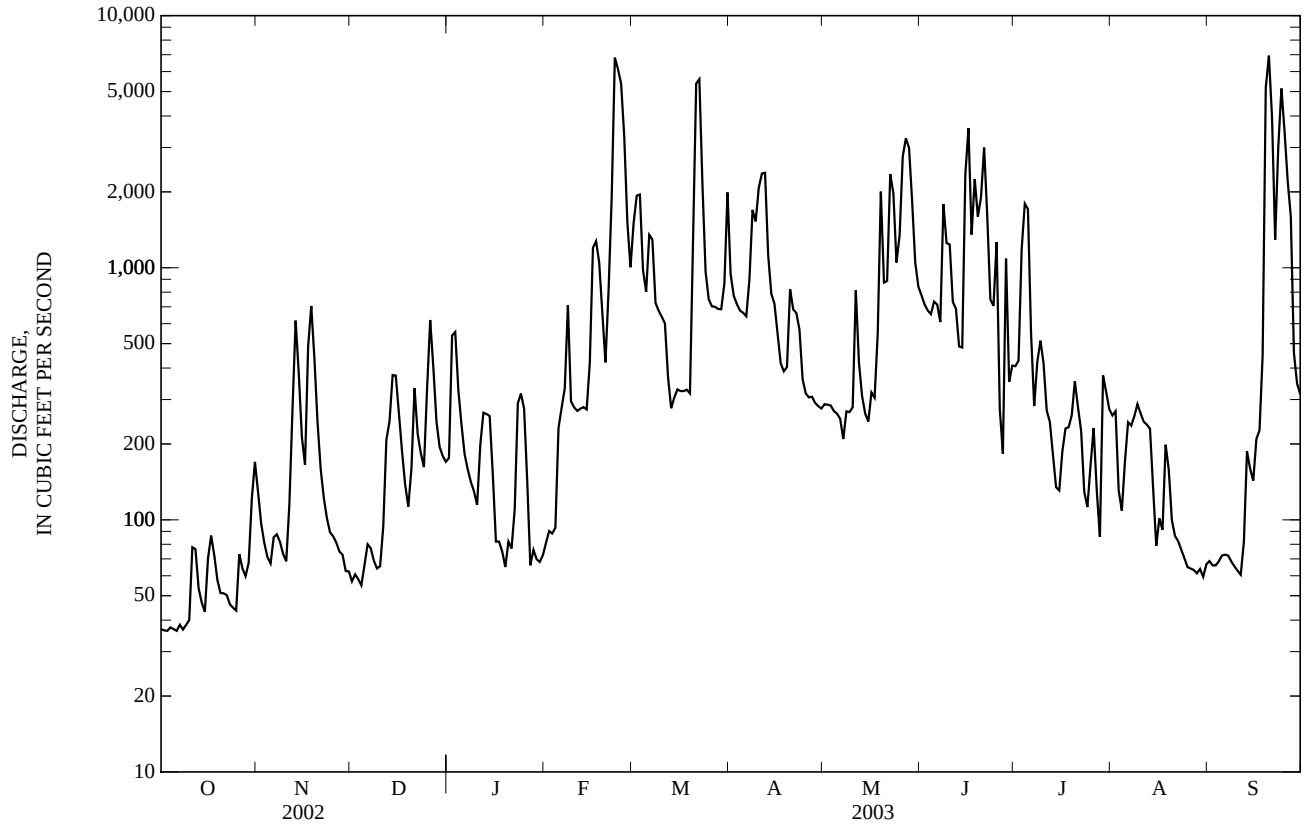
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2003, BY WATER YEAR (WY)

MEAN	194	298	356	501	676	804	631	430	273	163	149	183
MAX	1,428	1,561	1,320	1,389	2,660	2,345	1,887	1,217	1,140	591	614	1,204
(WY)	(1980)	(1986)	(1997)	(1998)	(1998)	(1994)	(1983)	(1990)	(2003)	(1984)	(1984)	(2003)
MIN	41.7	39.9	47.4	57.5	58.6	72.5	82.7	61.9	37.9	36.5	37.3	39.5
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(1999)	(2002)	(2002)	(2002)	(2002)

01671020 NORTH ANNA RIVER AT HART CORNER, NEAR DOSWELL, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1980 - 2003	
ANNUAL TOTAL	27,849		231,909			
ANNUAL MEAN	76.3		635		387	
HIGHEST ANNUAL MEAN					731	1998
LOWEST ANNUAL MEAN					51.4	2002
HIGHEST DAILY MEAN	706	Nov 18	6,940	Sep 20	10,900	Mar 30, 1994
LOWEST DAILY MEAN	27	Jul 12	36	aOct 2	27	Jul 12, 2002
ANNUAL SEVEN-DAY MINIMUM	33	bJul 31	37	cOct 1	33	bJul 31, 2002
MAXIMUM PEAK FLOW			9,150	Feb 24	12,000	Mar 29, 1994
MAXIMUM PEAK STAGE			20.01	Feb 24	21.80	Mar 29, 1994
INSTANTANEOUS LOW FLOW			35	dOct 3	25	fJul 12, 2002
ANNUAL RUNOFF (CFSM)	0.16		1.37		0.83	
ANNUAL RUNOFF (INCHES)	2.24		18.63		11.34	
10 PERCENT EXCEEDS	128		1,700		819	
50 PERCENT EXCEEDS	54		272		135	
90 PERCENT EXCEEDS	35		65		53	

a Also Oct. 3, 6, 2002.
b Also Aug. 1, 2002.
c Also Oct. 2, 3, 2002.
d Also Oct. 6, 2002.
e Estimated.
f Also July 13, 2002.



01671100 LITTLE RIVER NEAR DOSWELL, VA

LOCATION.--Lat 37°52'22", long 77°30'47", NAD83, Hanover County, Hydrologic Unit 02080106, on left bank at downstream side of bridge on State Highway 685, 0.8 mi southwest of Verdon, 2.9 mi west of Doswell, and 9.6 mi upstream from mouth.

DRAINAGE AREA.--107 mi^2.

PERIOD OF RECORD.--October 1961 to September 1999, October 2000 to current year.

REVISED RECORDS.--WDR VA-70-1: 1969.

GAGE.--Water-stage recorder. Datum of gage is 132.30 ft NGVD of 1929 (levels by La Prade Bros., Engineers).

REMARKS.--Records good except those for periods with ice effect, Jan. 18, 19, 21-28, which are fair. Maximum discharge, 12,000 ft^3/s, from rating curve extended above 7,600 ft^3/s on basis of contracted-opening measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 23	2000	*2,670	*6.58	May 27	1545	847	4.73
Mar 21	2000	2,160	6.16	Sep 20	0800	1,930	5.96
Apr 12	0745	977	4.92	Sep 25	0045	1,030	4.99

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.51	135	28	69	45	195	376	84	236	53	54	8.6
2	0.45	105	24	248	58	304	225	89	186	58	44	14
3	0.42	68	21	351	59	473	168	98	160	100	42	17
4	0.41	43	19	215	63	345	141	86	142	153	48	16
5	0.43	31	22	158	77	223	127	77	143	196	44	17
6	0.38	34	24	122	77	209	116	70	181	179	48	14
7	0.22	33	27	104	78	217	178	65	189	118	69	14
8	0.16	36	29	93	75	191	494	65	257	83	78	13
9	0.12	38	32	83	70	153	543	64	354	65	66	12
10	0.09	32	32	74	62	125	608	78	353	53	76	11
11	3.4	43	44	65	61	105	713	112	307	46	101	9.9
12	3.5	118	104	55	60	94	916	133	234	39	67	13
13	2.4	354	155	49	61	88	477	110	223	34	46	43
14	3.7	415	233	44	63	96	246	82	183	37	37	76
15	2.2	228	272	41	89	107	183	65	247	36	31	87
16	8.0	139	205	39	167	106	156	101	355	38	30	61
17	21	262	138	36	175	97	137	93	366	36	29	40
18	19	453	97	e32	168	92	124	150	284	33	36	90
19	26	385	73	e29	146	84	127	324	238	54	43	935
20	22	220	79	32	144	332	145	353	275	88	41	1,730
21	17	140	271	e31	208	1,680	162	286	364	83	33	901
22	12	100	168	e29	565	1,490	153	417	352	56	26	329
23	8.0	78	99	e28	1,990	489	129	512	291	55	21	432
24	6.2	62	76	e26	1,970	235	113	473	192	48	17	748
25	4.3	50	131	e29	774	169	101	405	133	44	14	856
26	7.9	40	379	e27	318	141	101	632	104	39	12	368
27	13	34	297	e24	212	135	108	821	85	31	11	197
28	17	27	161	e26	190	130	107	638	74	30	9.2	130
29	25	23	108	28	---	127	99	456	65	53	8.0	100
30	52	25	83	32	---	172	88	403	58	58	7.0	87
31	99	---	70	36	---	375	---	327	---	67	7.2	---
TOTAL	375.79	3,751	3,501	2,255	8,025	8,779	7,361	7,669	6,631	2,063	1,195.4	7,369.5
MEAN	12.1	125	113	72.7	287	283	245	247	221	66.5	38.6	246
MAX	99	453	379	351	1,990	1,680	916	821	366	196	101	1,730
MIN	0.09	23	19	24	45	84	88	64	58	30	7.0	8.6
CFSM	0.11	1.17	1.06	0.68	2.68	2.65	2.29	2.31	2.07	0.62	0.36	2.30
IN.	0.13	1.30	1.22	0.78	2.79	3.05	2.56	2.67	2.31	0.72	0.42	2.56

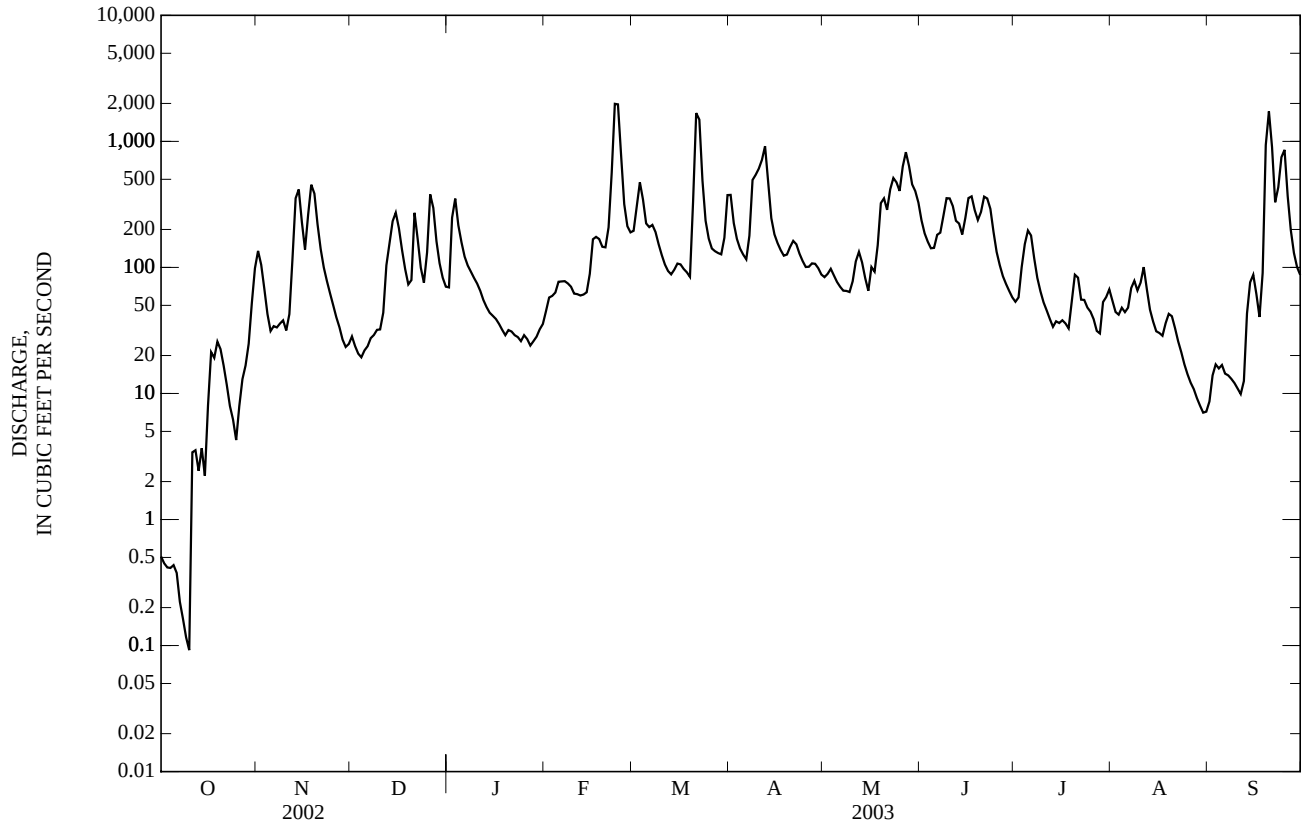
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1999, 2001 - 2003, BY WATER YEAR (WY)

MEAN	51.5	72.9	99.2	143	163	194	144	101	67.8	38.5	46.8	40.5
MAX	264	340	278	491	590	583	391	311	532	288	653	404
(WY)	(1980)	(1973)	(1997)	(1978)	(1998)	(1994)	(1993)	(1990)	(1972)	(1975)	(1969)	(1975)
MIN	1.03	2.12	14.8	20.5	16.9	31.9	39.9	18.1	4.14	1.23	1.04	0.70
(WY)	(1969)	(2002)	(2002)	(1981)	(2002)	(2002)	(2002)	(1999)	(1999)	(2002)	(1999)	(1968)

01671100 LITTLE RIVER NEAR DOSWELL, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1962 - 1999 2001 - 2003	
ANNUAL TOTAL	12,396.44		58,975.69			
ANNUAL MEAN	34.0		162		96.6	
HIGHEST ANNUAL MEAN					181	1998
LOWEST ANNUAL MEAN					14.6	2002
HIGHEST DAILY MEAN	453	Nov 18	1,990	Feb 23	9,800	Aug 21, 1969
LOWEST DAILY MEAN	0.05	Aug 23	0.09	Oct 10	0.05	Aug 23, 2002
ANNUAL SEVEN-DAY MINIMUM	0.14	Aug 17	0.26	Oct 4	0.14	Aug 17, 2002
MAXIMUM PEAK FLOW			2,670	Feb 23	12,000	Aug 21, 1969
MAXIMUM PEAK STAGE			6.58	Feb 23	11.09	Aug 21, 1969
INSTANTANEOUS LOW FLOW			0.09	aOct 10	0.04	bAug 23, 2002
ANNUAL RUNOFF (CFSM)	0.32		1.51		0.90	
ANNUAL RUNOFF (INCHES)	4.31		20.50		12.26	
10 PERCENT EXCEEDS	78		367		194	
50 PERCENT EXCEEDS	16		83		48	
90 PERCENT EXCEEDS	0.44		14		5.4	

a Also Oct. 11, 2002.
b Also Aug. 24, 2002.
e Estimated.



01672500 SOUTH ANNA RIVER NEAR ASHLAND, VA

LOCATION.--Lat 37°47'49", long 77°32'56", NAD83, Hanover County, Hydrologic Unit 02080106, on left bank at downstream side of bridge on State Highway 54, 4.5 mi northewst of Ashland, and 7.6 mi upstream from Newfound River.

DRAINAGE AREA.--394 mi^2.

PERIOD OF RECORD.--October 1930 to September 1997, October 1998 to September 2002 (annual maximum only), June to September 2003.

REVISED RECORDS.--WSP 801: 1935(M). WSP 1502: 1935, 1939. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 83.74 ft NGVD of 1929. Prior to Jan. 6, 1997, water-stage recorder at site on right downstream side of old bridge on State Highway 54, Jan. 6 to Sept. 30, 1997, at site on right bank, 160 ft downstream, at same datum, June 27, 2003 to current year, at present site, at same datum.

REMARKS.--No estimated daily discharges. Records good. Since 1966, diversion 150 ft upstream from station for town of Ashland water supply has averaged less than 0.6 ft^3/s. Capicity of diversion pickup is about 1.5 ft^3/s. Maximum discharge, 17,100 ft^3/s, from rating curve extended above 12,600 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in Aug. 15, 1928 reached a stage of about 24 ft, discharge, about 14,500 ft^3/s.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Sep 19	0230	*6,230	*16.36	Sep 23	1100	5,820	15.89

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	248	206	182
2	---	---	---	---	---	---	---	---	---	235	209	153
3	---	---	---	---	---	---	---	---	---	476	171	140
4	---	---	---	---	---	---	---	---	---	1,160	270	175
5	---	---	---	---	---	---	---	---	---	1,510	259	289
6	---	---	---	---	---	---	---	---	---	702	358	225
7	---	---	---	---	---	---	---	---	---	433	235	202
8	---	---	---	---	---	---	---	---	---	319	238	154
9	---	---	---	---	---	---	---	---	---	258	315	130
10	---	---	---	---	---	---	---	---	---	233	399	116
11	---	---	---	---	---	---	---	---	---	220	348	107
12	---	---	---	---	---	---	---	---	---	202	245	120
13	---	---	---	---	---	---	---	---	---	188	208	398
14	---	---	---	---	---	---	---	---	---	371	180	333
15	---	---	---	---	---	---	---	---	---	423	149	320
16	---	---	---	---	---	---	---	---	---	222	310	241
17	---	---	---	---	---	---	---	---	---	176	1,280	188
18	---	---	---	---	---	---	---	---	---	149	817	977
19	---	---	---	---	---	---	---	---	---	150	414	4,910
20	---	---	---	---	---	---	---	---	---	148	262	3,750
21	---	---	---	---	---	---	---	---	---	156	207	2,960
22	---	---	---	---	---	---	---	---	---	184	172	3,700
23	---	---	---	---	---	---	---	---	---	185	150	4,330
24	---	---	---	---	---	---	---	---	---	190	129	2,790
25	---	---	---	---	---	---	---	---	---	184	111	2,470
26	---	---	---	---	---	---	---	---	---	148	103	1,960
27	---	---	---	---	---	---	---	---	---	126	92	703
28	---	---	---	---	---	---	---	---	250	114	89	515
29	---	---	---	---	---	---	---	---	263	208	84	456
30	---	---	---	---	---	---	---	---	299	187	84	473
31	---	---	---	---	---	---	---	---	---	187	211	---
TOTAL	---	---	---	---	---	---	---	---	---	9,692	8,305	33,467
MEAN	---	---	---	---	---	---	---	---	---	313	268	1,116
MAX	---	---	---	---	---	---	---	---	---	1,510	1,280	4,910
MIN	---	---	---	---	---	---	---	---	---	114	84	107
CFSM	---	---	---	---	---	---	---	---	---	0.79	0.68	2.83
IN.	---	---	---	---	---	---	---	---	---	0.92	0.78	3.16

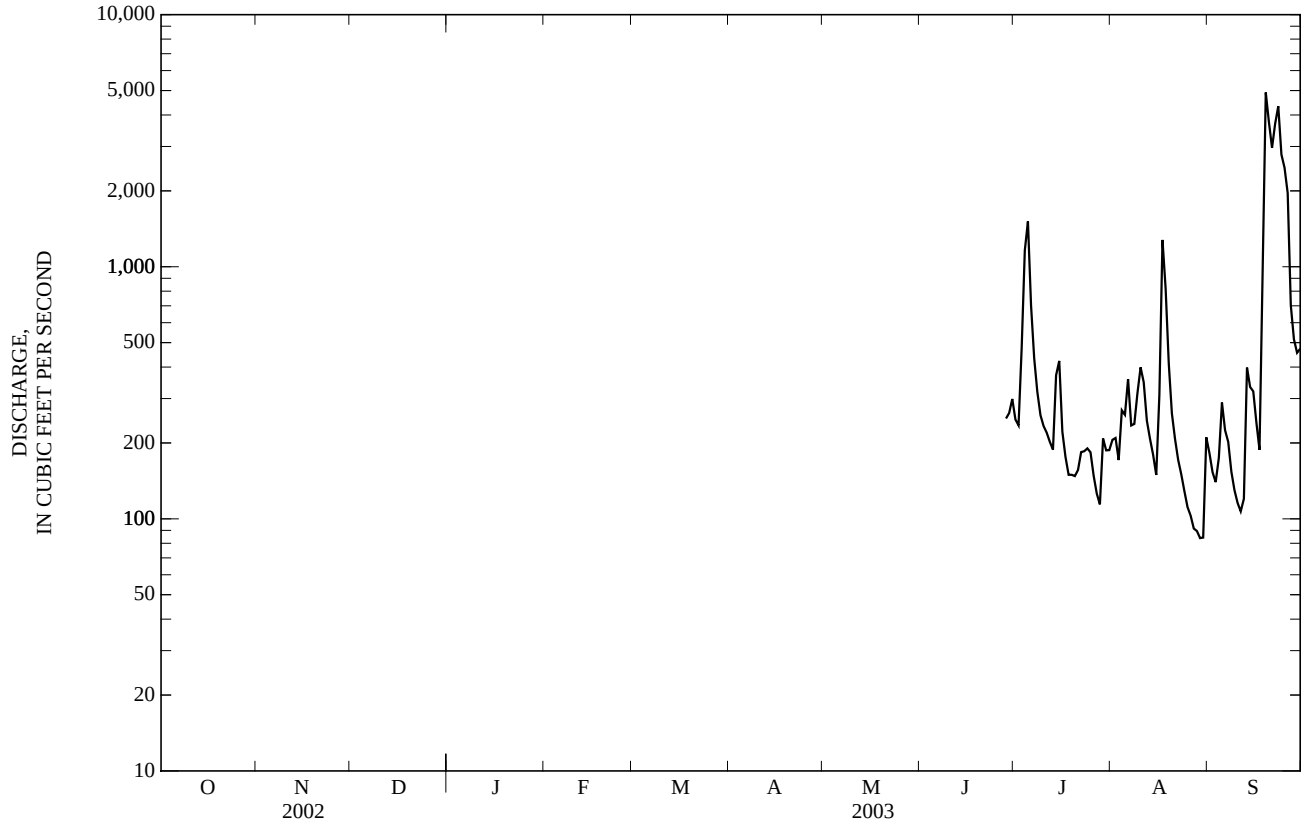
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 1997, 2003, BY WATER YEAR (WY)

MEAN	227	271	390	535	579	652	571	354	242	195	236	186
MAX	1,434	1,389	1,375	1,850	1,436	1,774	1,968	963	1,998	820	2,349	1,116
(WY)	(1973)	(1986)	(1949)	(1978)	(1979)	(1994)	(1937)	(1990)	(1972)	(1945)	(1969)	(2003)
MIN	10.5	25.7	50.2	67.7	87.5	117	166	95.1	56.7	24.5	12.2	6.53
(WY)	(1931)	(1931)	(1931)	(1966)	(1931)	(1981)	(1985)	(1969)	(1977)	(1977)	(1932)	(1932)

01672500 SOUTH ANNA RIVER NEAR ASHLAND, VA—Continued

SUMMARY STATISTICS	FOR 2003 WATER YEAR		WATER YEARS 1931 - 1997 2003	
ANNUAL MEAN			368	
HIGHEST ANNUAL MEAN			689	1973
LOWEST ANNUAL MEAN			107	1981
HIGHEST DAILY MEAN	4,910	Sep 19	16,000	Aug 23, 1969
LOWEST DAILY MEAN	84	aAug 29	2.3	Sep 13, 1966
ANNUAL SEVEN-DAY MINIMUM	99	Aug 24	4.4	Sep 16, 1932
MAXIMUM PEAK FLOW	6,230	Sep 19	17,100	Aug 23, 1969
MAXIMUM PEAK STAGE	16.36	Sep 19	24.99	Aug 23, 1969
INSTANTANEOUS LOW FLOW	76	Aug 30	0.10	Sep 12, 1966
ANNUAL RUNOFF (CFSM)			0.93	
ANNUAL RUNOFF (INCHES)			12.70	
10 PERCENT EXCEEDS			804	
50 PERCENT EXCEEDS			193	
90 PERCENT EXCEEDS			46	

a Also Aug. 30, 2003.



01673000 PAMUNKEY RIVER NEAR HANOVER, VA

LOCATION.--Lat 37°46'04", long 77°19'56", NAD83, Hanover County, Hydrologic Unit 02080106, on right bank 100 ft down- stream from bridge on State Highway 614, 0.3 mi upstream from Mechumps Creek, 2.0 mi east of Hanover, and 7.0 mi upstream from Millpond Creek.

DRAINAGE AREA.--1,081 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1941 to current year. Monthly discharge only for some periods, published in WSP 1302.

REVISED RECORDS.--WSP 1302: 1944(M). WSP 1382: 1949. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 14.72 ft NGVD of 1929. Prior to Oct. 15 1976, nonrecording gage at same site and datum.

REMARKS.--Records fair. Some regulation since January 1972 by Lake Anna, capacity, 373,000 acre-ft, and occasional diurnal fluctuation at low flow caused by mill upstream from station. Statistics of monthly mean data and summary statistics for water years 1942 - 1971 (unregulated flow) are available in previous data books, water years 1991 - 1998. Unknown amount of diversion for irrigation upstream from gage. Maximum discharge, 40,300 ft^3/s, from rating curve extended above 22,000 ft^3/s.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1928 reached a stage of 32.6 ft, from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	830	284	639	e375	4,440	3,950	682	2,790	790	602	424
2	53	605	271	1,260	e400	3,310	2,570	729	1,910	772	731	372
3	52	419	e260	2,460	e430	4,370	1,770	858	1,530	1,200	562	349
4	51	303	e250	2,380	477	4,240	1,460	723	1,320	2,580	476	355
5	51	245	252	1,550	581	2,750	1,300	637	1,340	3,490	545	472
6	49	264	e300	1,100	749	2,250	1,220	610	1,520	2,780	713	484
7	46	340	e305	880	784	3,170	1,590	552	1,520	1,090	670	425
8	47	347	e320	759	1,000	2,170	3,790	593	2,260	875	633	386
9	44	319	e335	687	841	1,750	4,530	607	3,250	843	951	330
10	44	287	e325	618	692	1,530	4,920	598	3,730	822	916	290
11	59	290	356	570	674	1,390	5,490	1,170	2,670	660	844	267
12	113	1,040	730	e525	684	1,180	6,430	1,220	1,740	531	709	277
13	96	e2,640	e1,200	e500	705	948	6,350	858	1,630	489	730	768
14	89	e3,020	1,760	e470	700	1,050	4,460	681	1,470	862	585	831
15	115	e1,990	e2,160	e430	783	1,130	2,250	555	2,140	801	395	685
16	123	953	e1,950	e400	1,600	1,050	1,510	744	4,190	572	437	603
17	198	1,460	e1,210	e375	1,990	1,010	1,200	777	5,080	524	1,050	547
18	206	2,890	e860	e350	2,140	979	1,030	836	4,540	473	1,580	644
19	183	3,090	e650	e340	1,500	957	1,020	2,940	3,890	542	1,150	4,920
20	162	1,990	597	e340	1,260	1,840	1,350	3,650	3,780	735	701	9,250
21	139	1,080	e1,100	e340	1,690	5,860	1,670	2,510	4,230	720	551	11,200
22	129	759	e1,400	e340	3,220	10,800	1,390	3,470	4,880	582	472	8,380
23	112	605	e970	e330	6,100	10,700	1,240	4,700	4,360	707	419	7,110
24	97	508	721	e325	12,900	7,720	965	4,850	2,230	693	374	8,840
25	90	438	951	e310	14,400	5,430	819	3,820	1,830	507	335	8,570
26	122	392	2,090	e300	12,100	2,560	794	4,590	1,280	520	306	7,270
27	202	358	2,530	e300	9,800	1,510	821	6,070	696	448	287	5,800
28	245	326	1,510	e300	6,530	1,370	812	7,210	954	322	265	3,500
29	226	302	953	e310	---	1,330	744	7,160	1,220	471	257	1,380
30	377	292	765	e325	---	1,850	686	6,110	724	787	256	988
31	782	---	670	e345	---	3,500	---	4,350	---	641	332	---
TOTAL	4,358	28,382	28,035	20,158	85,105	94,144	68,131	74,860	74,704	27,829	18,834	85,717
MEAN	141	946	904	650	3,039	3,037	2,271	2,415	2,490	898	608	2,857
MAX	782	3,090	2,530	2,460	14,400	10,800	6,430	7,210	5,080	3,490	1,580	11,200
MIN	44	245	250	300	375	948	686	552	696	322	256	267
CFSM	0.13	0.88	0.84	0.60	2.81	2.81	2.10	2.23	2.30	0.83	0.56	2.64
IN.	0.15	0.98	0.96	0.69	2.93	3.24	2.34	2.58	2.57	0.96	0.65	2.95

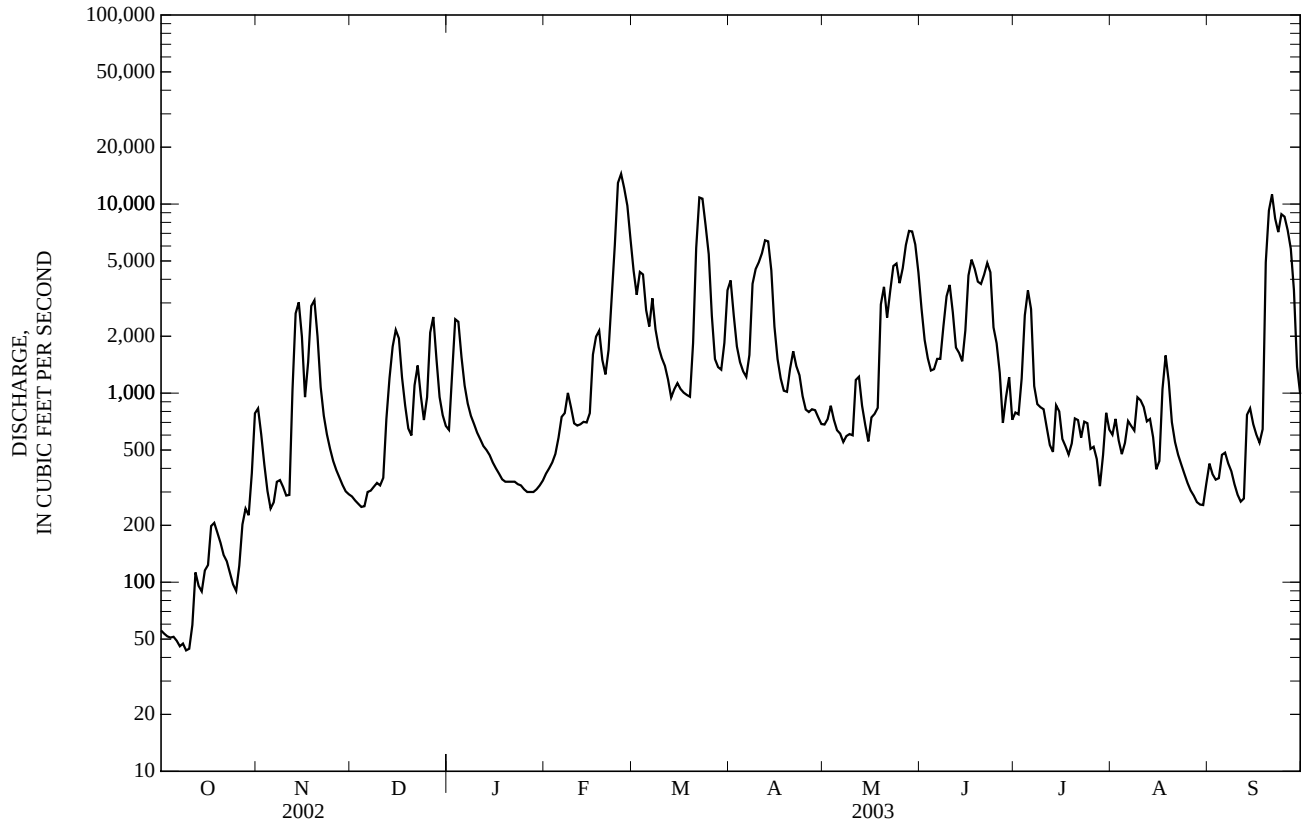
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 2003, BY WATER YEAR (WY)

MEAN	651	801	1,188	1,551	1,786	2,029	1,715	1,141	813	510	416	560
MAX	3,461	3,505	3,450	4,334	7,118	5,430	5,009	2,821	4,293	2,747	2,025	2,939
(WY)	(1980)	(1986)	(1997)	(1978)	(1998)	(1994)	(1984)	(1978)	(1972)	(1975)	(1985)	(1975)
MIN	63.7	67.1	131	190	160	248	293	197	72.2	48.9	89.5	60.2
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(1981)	(2002)	(1999)	(2002)	(2002)	(1999)	(1998)

01673000 PAMUNKEY RIVER NEAR HANOVER, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1972 - 2003	
ANNUAL TOTAL	106,346		610,257			
ANNUAL MEAN	291		1,672		1,093	
HIGHEST ANNUAL MEAN					1,859	1998
LOWEST ANNUAL MEAN					147	2002
HIGHEST DAILY MEAN	3,090	Nov 19	14,400	Feb 25	25,000	Jun 23, 1972
LOWEST DAILY MEAN	24	Jul 23	44	aOct 9	24	Jul 23, 2002
ANNUAL SEVEN-DAY MINIMUM	33	Aug 10	47	Oct 4	33	Aug 10, 2002
MAXIMUM PEAK FLOW			15,000	Feb 25	b29,900	Jun 23, 1972
MAXIMUM PEAK STAGE			23.06	Feb 25	b29.22	Jun 23, 1972
INSTANTANEOUS LOW FLOW			41	Oct 9	c20	Jul 23, 2002
ANNUAL RUNOFF (CFSM)	0.27		1.55		1.01	
ANNUAL RUNOFF (INCHES)	3.66		21.00		13.74	
10 PERCENT EXCEEDS	657		4,450		2,550	
50 PERCENT EXCEEDS	153		784		569	
90 PERCENT EXCEEDS	44		265		111	

a Also Oct. 10, 2002.
b Prior to regulation, 1942-71, maximum peak flow, 40,300 ft^3/s, Aug. 23, 1969, gage height, 31.12 ft, from flood marks.
c Prior to regulation, 1942-71, instantaneous low flow, 12 ft^3/s, Sept. 12, 1966.
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, October 1991 to September 1994.
WATER TEMPERATURE: October 1945 to September 1946, April 1968 to January 1976.

REMARKS.--Missing gage height values indicate periods that were affected by ice; for these samples only the mean daily discharge is reported.

COOPERATION.--Water samples were collected by the U.S. Geological Survey and analyzed by either the U.S. Geological Survey (Agency Code 80020) or by the Virginia Division of Consolidated Laboratory Services (VDCLS, Agency Code 85116), using analytical methods approved by the U.S. Geological Survey. Analyses performed by VDCLS are reported to U.S. Geological Survey rounding specifications. Results of chemical analyses provided by VDCLS were quality-assured and approved by the U.S. Geological Survey.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Sample type	Agency analyzing sample, code (00028)	Gage height, feet (00065)	Instantaneous discharge, cfs (00061)	Turbidity, NTU (00076)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
OCT												
22...	0725	Blank	85116	--	--	0.37	--	--	--	--	--	--
22...	0730	Environmental	85116	2.82	132	4.2	760	9.4	89	7.4	237	14.5
31...	1150	Blank	85116	--	--	0.20	--	--	--	--	--	--
31...	1155	Environmental	85116	6.16	805	31	760	9.5	85	5.8	124	12.0
NOV												
13...	1345	Environmental	85116	12.56	2,830	130	756	8.9	86	6.3	88	12.0
14...	1500	Environmental	85116	13.05	3,060	91	758	10.1	93	6.2	79	20.0
19...	1530	Environmental	85116	12.99	3,030	51	761	11.6	100	6.4	77	16.5
DEC												
13...	1145	Environmental	85116	7.69	1,210	26	761	14.8	109	6.1	111	4.0
13...	1200	Replicate	85116	7.72	1,220	28	--	--	--	--	--	--
17...	0845	Environmental	85116	7.81	1,250	31	765	11.2	85	6.2	91	-1.0
20...	1030	Environmental	85116	5.22	581	13	745	11.2	91	6.3	102	17.0
JAN												
03...	1400	Environmental	85116	12.02	2,610	71	753	10.5	89	6.8	71	6.5
09...	0900	Environmental	85116	5.74	703	16	740	10.3	81	5.8	107	14.0
09...	0915	Replicate	85116	5.74	703	18	--	--	--	--	--	--
23...	0945	Environmental	85116	--	330	6.3	757	14.6	100	6.6	138	E-8.0
23...	1000	Replicate	85116	--	330	9.0	--	--	--	--	--	--
FEB												
20...	0930	Environmental	85116	7.88	1,270	15	769	14.4	106	7.0	109	7.5
23...	0930	Environmental	85116	17.30	5,260	100	737	12.7	95	6.6	78	9.5
24...	1645	Environmental	85116	22.70	14,000	40	760	12.2	93	6.3	59	15.5
MAR												
10...	1215	Environmental	85116	8.58	1,530	13	760	11.3	98	7.2	87	10.5
10...	1220	Replicate	80020	8.58	1,530	--	--	--	--	--	--	--
21...	1030	Environmental	85116	17.46	5,370	120	750	10.4	91	6.5	62	13.0
26...	1100	Environmental	85116	11.81	2,530	20	752	10.1	98	6.8	83	25.0
26...	1105	Replicate	80020	11.79	2,520	--	--	--	--	--	--	--
APR												
01...	0845	Environmental	85116	15.33	4,160	34	760	10.9	97	7.0	71	6.5
23...	1100	Environmental	85116	8.17	1,260	11	755	8.8	87	7.0	83	16.5
23...	1105	Replicate	80020	8.17	1,260	--	--	--	--	--	--	--
MAY												
28...	1140	Blank	85116	--	--	0.22	--	--	--	--	--	--
28...	1145	Environmental	85116	19.55	7,280	15	749	7.5	80	6.7	64	22.0
JUN												
02...	1045	Environmental	85116	10.13	1,910	12	756	8.0	86	6.9	81	20.0
02...	1100	Replicate	85116	10.11	1,910	12	--	--	--	--	--	--
16...	1200	Environmental	85116	15.42	4,210	18	759	7.3	86	6.8	75	25.5
24...	1030	Environmental	85116	10.90	2,180	11	757	7.4	85	6.8	86	26.0
JUL												
10...	0915	Environmental	85116	6.63	843	8.8	755	6.5	82	7.0	97	26.0
AUG												
11...	0930	Environmental	85116	6.64	846	10	759	6.9	83	7.0	101	25.5
18...	1130	Environmental	85116	8.86	1,560	170	758	7.9	94	6.7	59	28.0
SEP												
09...	1325	Blank	85116	--	--	0.85	--	--	--	--	--	--
09...	1330	Environmental	85116	3.78	316	15	760	8.0	92	7.2	166	23.0
16...	0930	Environmental	85116	5.52	604	25	765	7.5	84	7.1	120	17.5
20...	0945	Environmental	85116	21.41	8,860	55	756	5.4	61	6.3	50	27.5
25...	1530	Environmental	85116	21.16	8,410	14	753	5.4	63	6.5	63	29.5

01673000 PAMUNKEY RIVER NEAR HANOVER, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Temperature, water, deg C (00010)	Silica, water, fltrd, mg/L (00955)	Residue fixed non-filterable, mg/L (00540)	Residue total at 105 deg. C, suspended, mg/L (00530)	Residue volatile, suspended, mg/L (00535)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)
OCT													
22...	--	<0.100	<3	<3	<3	--	--	0.006	<0.004	<0.004	<0.002	0.003	0.007
22...	13.1	13.9	<3	<3	<3	--	--	0.020	0.33	0.331	<0.002	0.095	0.119
31...	--	<0.100	<3	<3	<3	--	--	0.017	<0.004	<0.004	<0.002	0.004	0.001
31...	10.3	13.4	27	33	6	--	--	0.025	0.32	0.318	<0.002	0.049	0.068
NOV													
13...	13.2	11.3	149	177	28	--	--	<0.004	0.16	0.159	<0.002	0.021	0.041
14...	11.6	12.4	106	127	20	--	--	<0.004	0.09	0.090	<0.002	0.012	0.027
19...	8.9	12.0	53	64	11	--	--	0.006	0.17	0.167	<0.002	0.015	0.025
DEC													
13...	2.6	13.7	29	37	8	--	--	0.033	0.39	0.386	<0.002	0.023	0.038
13...	--	13.5	27	34	7	--	--	0.034	0.39	0.388	<0.002	0.024	0.039
17...	3.8	12.5	22	26	4	--	--	0.018	0.35	0.354	<0.002	0.019	0.040
20...	5.8	13.9	7	9	<3	--	--	0.037	0.39	0.396	0.002	0.024	0.037
JAN													
03...	7.5	11.7	73	85	12	--	--	0.022	0.21	0.208	0.002	0.016	0.034
09...	4.0	12.9	5	6	<3	--	--	0.018	0.28	0.283	0.002	0.033	0.041
09...	--	12.9	6	8	<3	--	--	0.019	0.30	0.296	<0.002	0.030	0.041
23...	0.0	13.8	<3	4	<3	--	--	0.025	0.52	0.519	<0.002	0.049	0.064
23...	--	13.7	3	5	<3	--	--	0.026	0.53	0.531	<0.002	0.048	0.066
FEB													
20...	3.1	11.0	18	22	4	--	--	0.021	0.32	0.323	<0.002	0.015	0.023
23...	2.2	6.90	125	142	17	--	--	0.070	0.36	0.363	0.002	0.014	0.029
24...	3.8	7.00	27	33	6	--	--	0.036	0.22	0.222	0.002	0.009	0.027
MAR													
10...	8.8	9.70	12	13	<3	--	--	0.006	0.32	0.317	<0.002	0.015	0.017
10...	--	9.8	--	14	<10	0.25	0.32	<0.015	--	0.299	--	0.007	<0.04
21...	8.6	6.80	86	97	11	--	--	0.055	0.26	0.260	0.002	0.023	0.039
26...	13.5	9.20	18	20	<3	--	--	0.010	0.35	0.353	<0.002	0.014	0.032
26...	--	9.2	--	20	<10	0.27	0.37	<0.015	--	0.343	--	0.010	<0.04
APR													
01...	9.9	8.80	31	36	5	--	--	0.015	0.20	0.196	<0.002	0.011	0.023
23...	14.8	9.50	10	11	<3	--	--	0.011	0.23	0.235	<0.002	0.020	0.027
23...	--	9.7	--	11	<10	0.27	0.41	E.008	--	0.221	--	0.013	E.03
MAY													
28...	--	<0.100	<3	<3	<3	--	--	<0.004	<0.004	<0.004	<0.002	0.003	0.001
28...	17.1	8.70	11	13	<3	--	--	0.038	0.18	0.183	0.002	0.014	0.029
JUN													
02...	18.5	11.4	12	15	3	--	--	0.022	0.27	0.274	<0.002	0.020	0.040
02...	--	11.5	9	16	7	--	--	0.022	0.28	0.276	<0.002	0.019	0.047
16...	23.0	8.20	34	40	6	--	--	0.032	0.23	0.234	0.004	0.016	0.029
24...	21.9	11.5	12	19	7	--	--	0.034	0.25	0.250	<0.002	0.019	0.041
JUL													
10...	26.5	11.5	8	10	<3	--	--	0.026	0.31	0.312	<0.002	0.028	0.032
AUG													
11...	24.6	13.1	11	13	<3	--	--	0.024	0.35	0.347	<0.002	0.029	0.026
18...	23.8	8.00	170	197	27	--	--	0.035	0.32	0.321	0.004	0.020	0.051
SEP													
09...	--	<0.100	<3	<3	<3	--	--	<0.004	<0.004	<0.004	<0.002	0.003	--
09...	22.0	10.8	<3	3	<3	--	--	0.009	0.40	0.397	<0.002	0.057	--
16...	21.0	14.7	18	21	3	--	--	0.024	0.31	0.329	0.016	0.043	0.072
20...	20.9	6.50	32	39	7	--	--	0.009	0.19	0.192	<0.002	0.015	0.040
25...	21.9	8.60	6	8	<3	--	--	<0.004	M	0.004	<0.002	0.007	0.043

01673000 PAMUNKEY RIVER NEAR HANOVER, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Phosphorus, suspnd sedimnt total, mg/L (00667)	Total nitrogen, suspnd sedimnt total, mg/L (00601)	Total carbon, suspnd sedimnt total, mg/L (00694)	Inorganic carbon, suspnd sedimnt total, mg/L (00688)	Organic carbon, water, fltrd, mg/L (00681)	Pheophytin a, phytoplankton, ug/L (62360)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)
OCT											
22...	--	0.06	0.001	0.01	M	--	--	--	--	--	--
22...	--	0.74	0.010	0.02	0.2	--	--	--	--	--	3
31...	--	0.04	0.001	0.01	M	--	--	--	--	--	--
31...	--	0.73	0.078	0.23	1.9	--	--	--	--	96	38
NOV											
13...	--	0.62	0.227	0.79	7.8	--	--	--	--	83	189
14...	--	0.54	0.122	0.61	6.1	--	--	--	--	76	157
19...	--	0.59	--	0.22	2.2	--	--	--	--	73	86
DEC											
13...	--	0.70	0.069	0.23	2.1	--	--	--	--	85	46
13...	--	0.71	0.070	0.24	2.2	--	--	--	--	81	51
17...	--	0.73	0.038	0.17	1.6	--	--	--	--	93	26
20...	--	0.72	0.026	0.09	0.7	--	--	--	--	--	12
JAN											
03...	--	0.57	0.081	0.36	4.1	--	--	--	--	83	107
09...	--	0.69	0.025	0.08	0.7	--	--	--	--	--	9
09...	--	0.68	0.025	0.09	0.7	--	--	--	--	--	9
23...	--	0.78	0.023	0.05	0.4	--	--	--	--	--	7
23...	--	0.78	0.023	0.04	0.5	--	--	--	--	--	8
FEB											
20...	--	0.60	0.035	0.11	1.0	--	--	--	--	--	24
23...	--	0.78	0.154	0.53	5.3	--	--	--	--	68	212
24...	--	0.58	0.053	0.19	1.6	--	--	--	--	44	80
MAR											
10...	--	0.57	0.025	0.09	0.7	--	--	--	--	--	19
10...	0.06	0.54	--	--	--	--	--	--	--	--	--
21...	--	0.69	0.095	0.39	3.8	--	--	--	--	71	140
26...	--	0.65	0.032	0.13	1.0	--	--	--	--	96	26
26...	0.07	0.62	--	--	--	--	--	--	--	--	--
APR											
01...	--	0.54	0.041	0.18	1.6	--	--	--	--	79	42
23...	--	0.51	0.021	0.09	0.8	--	--	<0.5	<0.5	--	12
23...	0.05	0.49	--	--	--	--	--	--	--	--	--
MAY											
28...	--	<0.004	0.001	0.01	0.1	--	--	<0.5	<0.5	--	0.0
28...	--	0.57	0.030	0.13	1.1	--	--	1.1	<0.5	53	28
JUN											
02...	--	0.60	0.027	0.06	1.0	--	--	<0.5	1.2	9	192
02...	--	0.59	0.028	0.09	1.0	--	--	<0.5	1.3	15	117
16...	--	0.59	0.036	0.14	1.4	--	--	<0.5	0.6	--	46
24...	--	0.70	0.030	0.14	1.2	--	--	1.0	<0.5	92	22
JUL											
10...	--	0.64	0.010	0.10	1.0	<0.02	5.0	<0.5	1.0	--	11
AUG											
11...	--	0.57	0.054	0.06	0.6	0.1	6.4	0.7	<0.5	--	12
18...	--	0.81	0.173	1.8	10.1	<0.02	9.0	6.6	2.1	95	208
SEP											
09...	--	--	--	<0.01	0.1	<0.02	<2.0	<0.5	<0.5	--	0.0
09...	--	--	--	<0.01	0.3	M	5.3	<0.5	<0.5	--	4
16...	--	0.71	0.075	0.02	0.6	<0.02	5.3	1.7	0.7	75	23
20...	--	0.67	0.073	0.35	2.8	0.2	10.0	1.7	2.1	76	54
25...	--	0.71	0.036	0.13	1.2	M	8.6	<0.5	1.3	76	13

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

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01673550 TOTOPOTOMOY CREEK NEAR STUDLEY, VA

LOCATION.--Lat 37°39'46", long 77°15'28", NAD83, Hanover County, Hydrologic Unit 02080106, on right bank at downstream side of bridge on State Highway 606, 2.0 mi southeast of Studley, 2.4 mi downstream from Hawes millrace, and 4.1 mi upstream from mouth.

DRAINAGE AREA.--26.2 mi^2.

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 38.36 ft NGVD of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 17-28, which is fair. Maximum discharge, 1,620 ft^3/s, from rating curve extended above 783 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 160 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 23	1630	224	5.56	Jul 22	2230	326	6.47
Mar 21	0730	505	7.60	Jul 24	0500	247	5.69
Apr 8	1230	230	5.56	Jul 30	1630	302	6.24
Apr 10	0830	210	5.33	Aug 1	1830	176	4.88
Apr 12	0030	235	5.61	Sep 13	2130	175	4.87
May 26	1500	681	8.03	Sep 19	0900	*1,170	*8.87
Jul 19	2330	185	4.99	Sep 24	0630	462	7.42

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	29	8.2	24	17	51	61	35	109	29	97	61
2	0.65	17	7.8	62	16	50	47	40	89	33	86	45
3	0.52	13	7.7	37	15	61	40	31	58	62	71	31
4	0.37	12	7.5	25	15	36	36	27	58	60	57	51
5	0.34	13	11	22	16	35	33	26	71	39	58	80
6	0.26	20	16	20	16	56	31	28	61	31	78	65
7	0.22	36	17	20	19	57	89	28	63	28	69	38
8	0.18	24	14	19	24	36	196	29	98	26	53	33
9	0.12	17	13	18	22	29	144	30	82	26	50	30
10	0.14	14	13	17	19	26	178	48	67	27	77	29
11	3.4	13	20	15	19	26	194	95	50	29	61	28
12	12	21	54	14	17	23	158	50	47	27	47	52
13	17	81	33	13	15	24	75	31	49	24	41	141
14	12	60	40	13	14	25	57	26	50	56	56	134
15	7.0	25	33	14	20	27	50	24	62	128	44	62
16	11	18	22	14	36	23	45	26	74	45	81	44
17	22	23	18	e13	30	22	43	30	99	30	123	37
18	23	62	15	e12	25	22	39	45	101	30	69	149
19	13	50	15	e11	22	21	41	91	95	118	45	798
20	8.2	23	16	e13	31	110	41	58	100	98	40	351
21	6.4	17	18	e12	63	365	37	39	82	39	36	137
22	5.8	14	18	e11	128	116	35	64	66	74	34	80
23	5.8	13	15	e10	207	58	33	78	49	206	32	130
24	7.7	11	15	e9.7	102	48	31	75	41	188	30	350
25	4.8	10	35	e11	45	40	31	105	37	108	29	162
26	10	9.4	60	e10	34	37	38	559	34	55	28	77
27	19	9.1	27	e9.4	36	35	41	376	31	40	26	61
28	19	8.6	20	e11	51	33	33	183	30	37	27	54
29	20	8.3	18	12	---	34	29	125	31	50	27	50
30	33	8.4	16	14	---	82	28	93	31	162	27	45
31	49	---	16	16	---	123	---	85	---	169	37	---
TOTAL	312.90	679.8	639.2	522.1	1,074	1,731	1,934	2,580	1,915	2,074	1,636	3,405
MEAN	10.1	22.7	20.6	16.8	38.4	55.8	64.5	83.2	63.8	66.9	52.8	114
MAX	49	81	60	62	207	365	196	559	109	206	123	798
MIN	0.12	8.3	7.5	9.4	14	21	28	24	30	24	26	28
CFSM	0.39	0.86	0.79	0.64	1.46	2.13	2.46	3.18	2.44	2.55	2.01	4.33
IN.	0.44	0.97	0.91	0.74	1.52	2.46	2.75	3.66	2.72	2.94	2.32	4.83

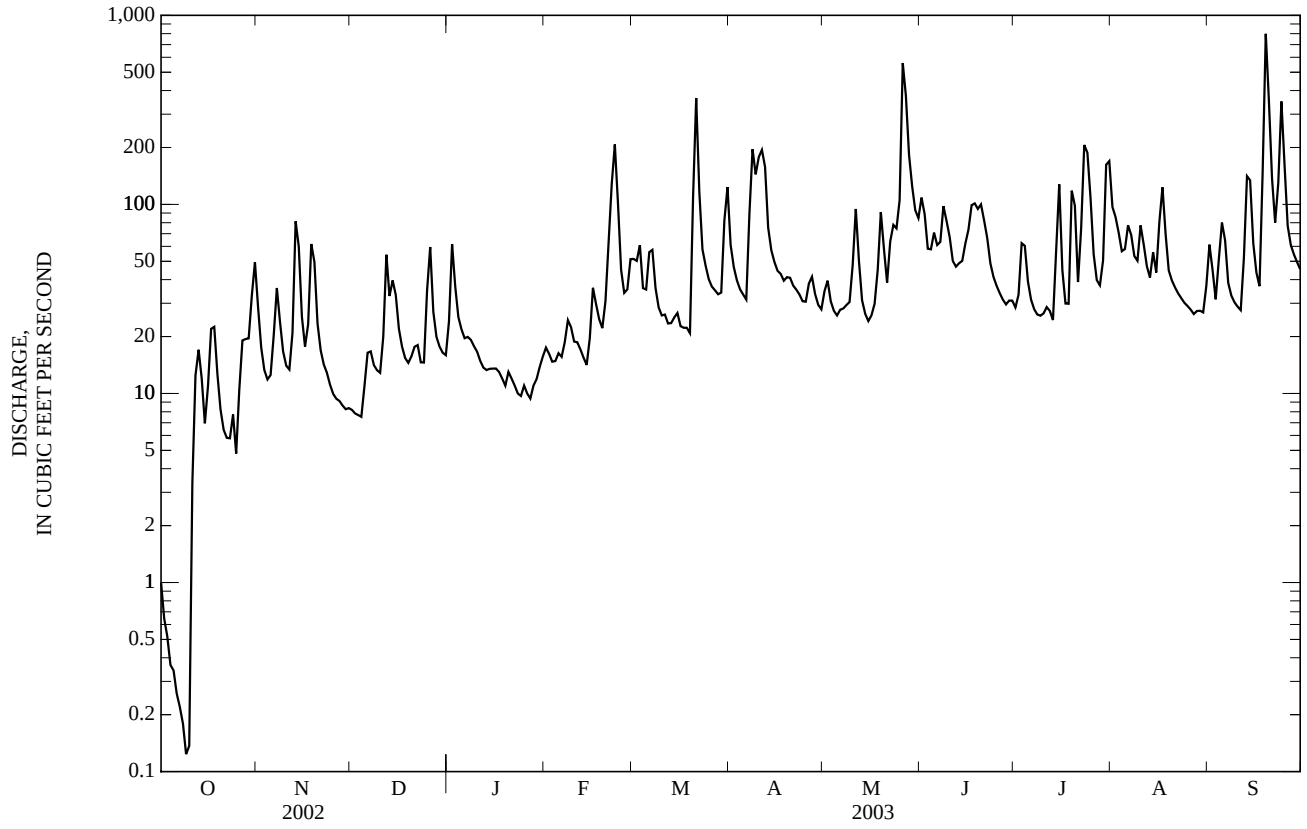
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 2003, BY WATER YEAR (WY)

MEAN	13.6	21.7	24.3	33.5	36.4	48.1	40.9	29.8	18.9	14.1	15.1	17.2
MAX	54.0	80.8	56.0	114	103	127	106	83.2	63.8	66.9	52.8	114
(WY)	(1980)	(1986)	(1997)	(1978)	(1998)	(1984)	(1984)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	2.72	4.04	9.00	10.3	9.91	12.7	12.3	8.46	2.75	0.20	0.92	1.18
(WY)	(2002)	(2002)	(2002)	(1981)	(2002)	(1981)	(1985)	(1985)	(2002)	(2002)	(1995)	(1997)

01673550 TOTOPOTOMOY CREEK NEAR STUDLEY, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1978 - 2003	
ANNUAL TOTAL	3,935.91		18,503.00			
ANNUAL MEAN	10.8		50.7		26.1	
HIGHEST ANNUAL MEAN					50.7	2003
LOWEST ANNUAL MEAN					7.64	2002
HIGHEST DAILY MEAN	83	May 10	798	Sep 19	913	Sep 16, 1999
LOWEST DAILY MEAN	e0.00	Jul 13	0.12	Oct 9	e0.00	aJul 13, 2002
ANNUAL SEVEN-DAY MINIMUM	e0.00	Jul 13	0.23	Oct 4	e0.00	bJul 13, 2002
MAXIMUM PEAK FLOW			1,170	Sep 19	1,620	Sep 16, 1999
MAXIMUM PEAK STAGE			8.87	Sep 19	9.46	Sep 16, 1999
INSTANTANEOUS LOW FLOW			0.10	Oct 10	c0.00	dJul 13, 2002
ANNUAL RUNOFF (CFSM)	0.41		1.93		1.00	
ANNUAL RUNOFF (INCHES)	5.59		26.27		13.52	
10 PERCENT EXCEEDS	23		100		52	
50 PERCENT EXCEEDS	8.7		33		16	
90 PERCENT EXCEEDS	0.01		11		3.9	

a Also July 14-25 and Aug. 7-28, 2002.
b Also July 14-19 and Aug. 7-22, 2002.
c Observed.
d Probably no flow part or all of each day July 13-25 and Aug. 7-28, 2002.
e Estimated.



01673638 COHOKE MILL CREEK NEAR LESTER MANOR, VA

LOCATION.--Lat 37°37'36," long 76°57'46", NAD83, King William County, Hydrologic unit 02080106, on right bank at downstream side of culvert on State Highway 626, 3.2 mi northeast of Lester Manor and 4.7 mi above mouth.

DRAINAGE AREA.--9.07 mi^2.

PERIOD OF RECORD.--October 1998 to current year.

GAGE.--Water stage recorder. Elevation of gage is 40 ft NGVD of 1929, from topographic map.

REMARKS.--Records poor due to backwater from beaver dams.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	e1.0	4.0	20	7.6	18	18	9.9	24	5.2	27	15
2	0.00	e0.75	3.8	24	6.8	18	15	9.2	15	7.8	70	12
3	0.00	e0.60	3.7	14	6.3	16	12	9.7	9.6	14	29	12
4	0.00	e0.90	3.8	11	6.3	9.5	11	10	12	10	34	27
5	0.00	e1.3	6.7	7.7	6.1	18	11	9.9	28	7.7	30	30
6	0.00	6.3	7.1	6.9	6.0	27	12	12	14	5.9	40	16
7	0.00	e3.2	5.9	7.4	9.4	20	53	12	17	4.8	29	13
8	0.00	e2.3	5.2	6.4	8.7	11	46	15	41	5.7	32	12
9	0.00	2.0	4.9	6.1	7.2	8.1	61	18	23	5.5	33	11
10	0.00	1.9	4.8	5.6	7.3	6.0	46	30	12	5.6	37	11
11	0.53	2.6	8.0	6.0	7.1	5.7	65	34	8.8	6.0	24	11
12	e0.20	5.8	9.3	6.2	6.5	5.7	38	e17	14	5.2	21	24
13	e0.10	11	7.9	5.6	6.2	5.8	26	e11	12	4.3	19	99
14	e0.07	5.9	11	5.5	6.4	6.2	23	e8.0	12	6.4	17	27
15	e0.05	3.8	7.8	5.4	10	6.0	21	7.3	36	6.4	16	19
16	e0.80	4.2	6.6	5.3	13	6.2	19	7.2	22	5.5	18	17
17	e0.40	13	6.0	5.6	9.7	6.5	17	6.9	8.6	4.8	18	15
18	e0.25	15	6.1	5.5	8.3	6.3	18	17	12	4.8	23	156
19	e0.15	7.4	6.3	5.3	8.3	5.5	24	21	43	24	25	294
20	e0.12	5.0	11	5.6	12	53	20	10	33	17	17	42
21	e0.30	4.3	11	6.2	21	59	15	8.7	25	12	15	24
22	e0.20	4.9	7.1	5.6	50	31	14	25	20	10	14	19
23	e0.16	4.4	6.2	5.1	57	23	12	23	19	79	14	24
24	e0.13	4.5	6.9	4.8	26	20	11	19	16	24	13	21
25	e0.10	3.4	18	4.9	14	17	12	14	9.9	16	12	16
26	e1.0	3.4	15	5.0	11	15	19	158	6.4	12	12	15
27	e0.45	3.7	8.7	5.1	13	17	26	54	6.0	10	12	14
28	e0.25	3.5	7.2	4.9	27	15	15	34	7.9	11	11	15
29	e0.60	3.7	6.6	5.6	---	17	12	29	9.4	34	11	14
30	e3.0	3.9	6.4	7.0	---	28	11	23	5.7	30	11	13
31	e1.5	---	6.1	8.2	---	24	---	18	---	45	18	---
TOTAL	10.36	133.65	229.1	227.5	378.2	524.5	703	680.8	522.3	439.6	702	1,038
MEAN	0.33	4.46	7.39	7.34	13.5	16.9	23.4	22.0	17.4	14.2	22.6	34.6
MAX	3.0	15	18	24	57	59	65	158	43	79	70	294
MIN	0.00	0.60	3.7	4.8	6.0	5.5	11	6.9	5.7	4.3	11	11
CFSM	0.04	0.49	0.81	0.81	1.49	1.87	2.58	2.42	1.92	1.56	2.50	3.81
IN.	0.04	0.55	0.94	0.93	1.55	2.15	2.88	2.79	2.14	1.80	2.88	4.26

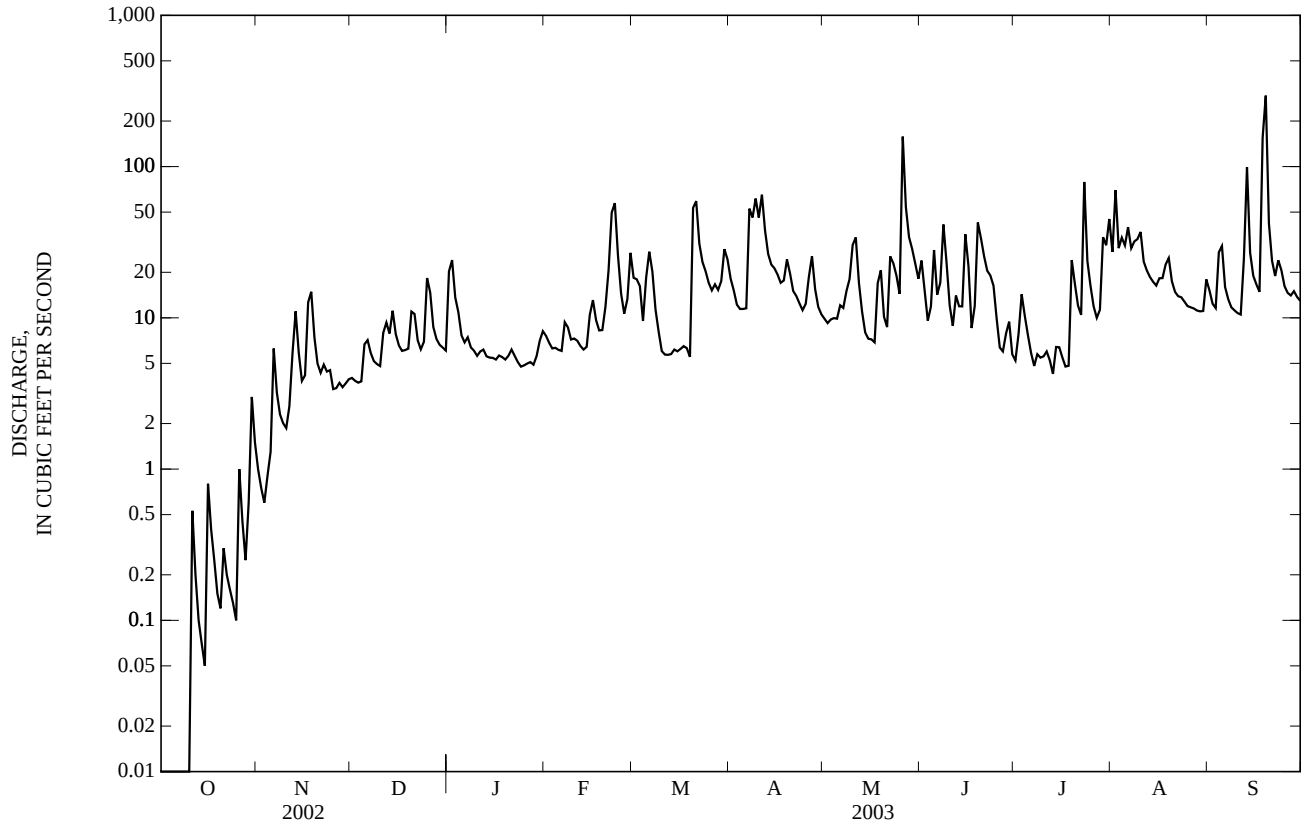
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1999 - 2003, BY WATER YEAR (WY)

MEAN	3.22	4.55	6.03	7.40	8.10	10.3	10.4	8.27	6.19	5.05	7.87	13.5
MAX	5.75	6.73	7.39	10.8	13.5	16.9	23.4	22.0	17.4	14.2	22.6	34.6
(WY)	(2001)	(2001)	(2003)	(1999)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	0.33	2.90	4.19	5.77	4.53	3.15	4.51	3.46	0.017	0.000	0.000	0.000
(WY)	(2003)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(1999)	(2002)	(2002)	(2002)	(2002)

01673638 COHOKE MILL CREEK NEAR LESTER MANOR, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1999 - 2003	
ANNUAL TOTAL	1,056.94		5,589.01			
ANNUAL MEAN	2.90		15.3		7.56	
HIGHEST ANNUAL MEAN					15.3	2003
LOWEST ANNUAL MEAN					2.74	2002
HIGHEST DAILY MEAN	18	Dec 25	294	Sep 19	415	Sep 16, 1999
LOWEST DAILY MEAN	0.00	aJun 1	b0.00	Oct 1	a0.00	Jun 1, 2002
ANNUAL SEVEN-DAY MINIMUM	0.00	Jun 17	0.00	Oct 1	0.00	Jun 17, 2002
MAXIMUM PEAK FLOW			826	Sep 19	1,430	Sep 16, 1999
MAXIMUM PEAK STAGE			9.28	Sep 19	c10.30	Sep 16, 1999
INSTANTANEOUS LOW FLOW			b0.00	Oct 1	d0.00	May 29, 2002
ANNUAL RUNOFF (CFSM)	0.32		1.69		0.83	
ANNUAL RUNOFF (INCHES)	4.33		22.92		11.33	
10 PERCENT EXCEEDS	7.1		29		14	
50 PERCENT EXCEEDS	2.0		11		5.3	
90 PERCENT EXCEEDS	0.00		2.0		0.34	

a No flow part or all of many days in June to October 2002.
b No flow part or all of each day Oct. 1-11.
c From floodmarks.
d No flow part or all of many days in May to October 2002.
e Estimated.



01673800 PO RIVER NEAR SPOTSYLVANIA, VA

LOCATION.--Lat 38°10'17", long 77°35'41", NAD83, Spotsylvania County, Hydrologic Unit 02080105, on right bank at upstream side of bridge on State Highway 208, 1.6 mi north of Snell, 2.0 mi south of Spotsylvania, 4.8 mi downstream from Gladys Run, and 4.9 mi upstream from U.S. Highway 1.

DRAINAGE AREA.--77.4 mi^2.

PERIOD OF RECORD.--October 1962 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 183.76 ft above sea level. Prior to Sep. 30, 1964, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Dec. 5-7 and Jan. 18-20, 22-24, 26-28, and period of no gage-height record, Apr. 8 to June 9, which are fair. Maximum discharge, 10,900 ft^3/s, from rating curve extended above 3,400 ft^3/s. Maximum discharge, 10,900 ft^3/s, from rating curve extended above 3,400 ft^3/s. Several measurements of water temperature were made during the year.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 900 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 2	2300	1,180	8.21	Apr 12	---	1,340	8.69
Feb 23	1600	*3,800	*13.11	Sep 20	0300	2,810	11.68
Mar 21	1700	2,630	11.38	Sep 24	0900	1,580	9.31

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.08	45	12	166	35	130	249	e66	e175	28	18	0.27
2	0.07	24	11	885	43	320	178	e74	e130	29	17	1.5
3	0.07	13	10	599	37	600	143	e82	e105	205	16	4.2
4	0.07	9.2	8.9	266	52	240	122	e70	e90	290	15	12
5	0.07	6.8	e10	144	94	180	110	e59	e86	109	21	15
6	0.06	30	e11	100	56	237	101	e52	e125	57	20	9.9
7	0.05	63	e12	84	49	191	161	e51	e140	39	21	6.7
8	0.04	32	13	73	48	134	e345	e46	e215	36	22	4.0
9	0.05	20	14	64	43	110	e400	e43	e170	36	39	2.3
10	0.05	12	16	54	42	93	e460	e66	112	30	26	1.3
11	0.11	23	44	44	46	78	e550	e100	66	29	22	0.79
12	0.16	157	243	37	47	72	e900	e120	52	27	20	1.5
13	0.18	372	175	33	48	69	e400	e84	45	22	16	65
14	0.16	115	344	33	47	66	e210	e64	48	22	14	62
15	0.13	55	277	32	107	60	e155	e50	405	22	11	28
16	8.3	53	130	30	210	58	e130	e80	218	19	10	16
17	17	359	77	28	131	62	e120	e75	120	15	8.6	11
18	19	550	52	e26	115	64	e110	e125	208	12	7.1	118
19	7.8	199	42	e22	89	58	e115	e235	202	10	6.3	1,090
20	1.7	74	57	e24	102	358	e125	e285	262	9.0	6.3	1,740
21	0.82	48	212	26	173	1,880	e140	e240	521	8.9	6.2	130
22	0.30	36	101	e23	715	820	e110	e300	171	8.7	5.6	70
23	0.20	27	60	e21	2,930	224	e100	e410	95	9.5	4.5	504
24	0.25	20	47	e18	1,550	167	e90	e365	64	12	3.3	1,200
25	0.19	16	222	19	448	137	e84	e335	48	12	2.2	154
26	3.3	14	569	e18	256	122	e81	e450	40	9.1	1.2	81
27	16	13	162	e17	170	152	e89	e730	33	6.7	0.65	57
28	10	12	91	e18	136	140	e83	e480	43	6.5	0.25	54
29	11	11	67	19	---	121	e76	e370	47	60	4.4	48
30	66	12	53	23	---	223	e71	e310	36	47	1.3	36
31	86	---	45	25	---	453	---	e250	---	23	0.28	---
TOTAL	249.21	2,421.0	3,187.9	2,971	7,819	7,619	6,008	6,067	4,072	1,249.4	366.18	5,523.46
MEAN	8.04	80.7	103	95.8	279	246	200	196	136	40.3	11.8	184
MAX	86	550	569	885	2,930	1,880	900	730	521	290	39	1,740
MIN	0.04	6.8	8.9	17	35	58	71	43	33	6.5	0.25	0.27
CFSM	0.10	1.04	1.33	1.24	3.61	3.18	2.59	2.53	1.75	0.52	0.15	2.38
IN.	0.12	1.16	1.53	1.43	3.76	3.66	2.89	2.92	1.96	0.60	0.18	2.65

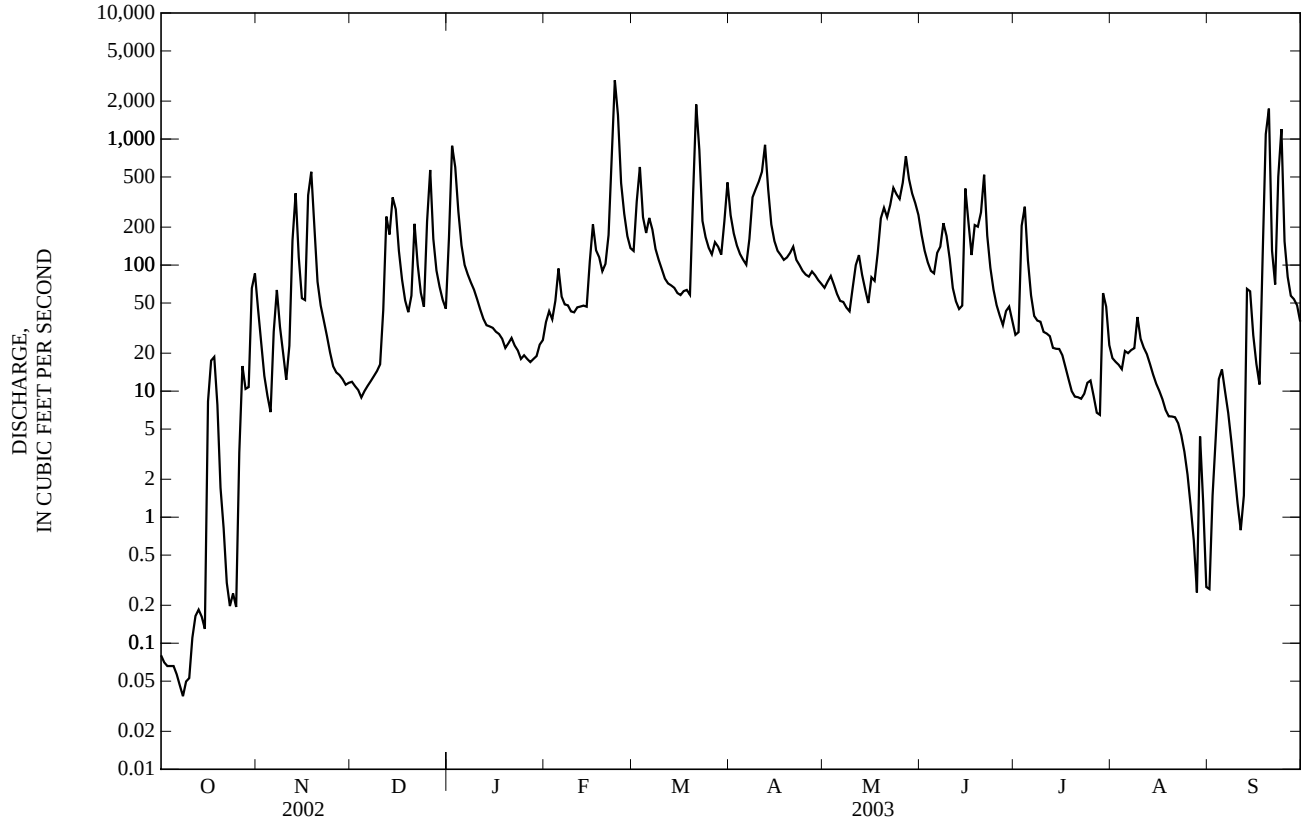
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2003, BY WATER YEAR (WY)

MEAN	40.5	61.6	81.9	112	133	153	114	76.4	52.9	28.6	23.2	28.7
MAX	275	278	210	326	560	566	397	221	490	145	207	268
(WY)	(1980)	(1994)	(1997)	(1978)	(1998)	(1994)	(1983)	(1972)	(1972)	(1984)	(1969)	(1975)
MIN	0.24	0.85	5.90	10.4	9.05	25.2	27.1	8.63	1.67	0.10	0.25	0.21
(WY)	(1992)	(1992)	(1999)	(1981)	(2002)	(1981)	(1981)	(1999)	(1999)	(2002)	(1963)	(2002)

01673800 PO RIVER NEAR SPOTSYLVANIA, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1963 - 2003	
ANNUAL TOTAL	9,779.88		47,553.15			
ANNUAL MEAN	26.8		130		75.2	
HIGHEST ANNUAL MEAN					164	1972
LOWEST ANNUAL MEAN					11.8	2002
HIGHEST DAILY MEAN	569	Dec 26	2,930	Feb 23	8,160	Jun 22, 1972
LOWEST DAILY MEAN	0.00	aAug 20	0.04	Oct 8	0.00	aAug 20, 2002
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 20	0.06	Oct 4	0.00	Aug 20, 2002
MAXIMUM PEAK FLOW			3,800	Feb 23	10,900	Jun 22, 1972
MAXIMUM PEAK STAGE			13.11	Feb 23	19.03	Jun 22, 1972
INSTANTANEOUS LOW FLOW			0.04	bOct 7	0.00	cAug 19, 2002
ANNUAL RUNOFF (CFSM)	0.35		1.68		0.97	
ANNUAL RUNOFF (INCHES)	4.70		22.86		13.20	
10 PERCENT EXCEEDS	57		314		148	
50 PERCENT EXCEEDS	8.6		52		33	
90 PERCENT EXCEEDS	0.05		4.1		2.2	

a Also Aug. 21-27, 2002.
b Also Oct. 8, 9, 2002.
c Also part or all of each day Aug. 20-28, 2002.
e Estimated.



01674000 MATTAPONI RIVER NEAR BOWLING GREEN, VA

LOCATION.--Lat 38°03'42", long 77°23'09", NAD83, Caroline County, Hydrologic Unit 02080105, on right bank 0.1 mi upstream from bridge on State Highway 605, 2.2 mi northwest of Bowling Green, 2.4 mi upstream from South River, and 7.1 mi downstream from confluence of Matta and Poni Rivers.

DRAINAGE AREA.--257 mi^2.

PERIOD OF RECORD.--September 1942 to current year.

REVISED RECORDS.--WSP 1382: 1943, 1945(M), 1948(M), 1949, 1953(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 85.14 ft NGVD of 1929. Prior to Aug. 17, 1978, gage located on left bank at same datum.

REMARKS.--Records good except those for period of doubtful gage-height record, Nov. 21 to Dec. 9, and period with ice effect, Jan. 16-28, which are fair. Some diurnal fluctuation from gristmill upstream on Po River. Maximum discharge, 13,400 ft^3/s, from rating curve extended above 8,100 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1928 reached a stage of 19.5 ft based on relative difference in stage between this flood and flood of Oct. 17, 1942, at Milford 4 mi downstream, discharge, 15,000 ft^3/s, from rating curve extended above 8,100 ft^3/s.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 24	1300	*5,520	*13.60	Sep 21	1200	2,930	10.90
Mar 22	1600	3,780	11.89	Sep 25	1700	2,330	10.10
May 28	1900	2,030	9.66				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.01	0.00	e46	197	100	616	884	162	525	122	102	14
2	0.01	0.00	e52	349	121	611	883	178	393	111	114	13
3	0.00	0.00	e45	789	129	837	611	192	292	216	92	18
4	0.00	0.00	e40	1,620	133	1,410	443	163	242	341	85	33
5	0.00	0.00	e36	1,040	179	1,130	351	140	270	479	83	61
6	0.00	0.00	e40	679	206	783	299	134	296	465	80	61
7	0.00	0.00	e43	431	175	691	330	135	277	269	70	46
8	0.00	0.00	e48	315	157	664	524	140	413	184	67	37
9	0.00	0.00	e53	260	151	518	801	141	524	153	70	31
10	0.00	0.00	53	216	155	391	927	144	652	129	90	25
11	0.00	0.00	73	182	144	314	1,120	172	587	109	88	21
12	0.00	0.06	204	152	146	265	1,150	177	384	94	73	22
13	0.00	5.7	323	132	145	230	1,130	154	285	82	61	90
14	0.00	120	479	123	142	211	819	123	229	81	56	170
15	0.00	388	568	119	177	195	539	102	311	85	54	173
16	0.00	341	666	e102	367	181	400	173	490	75	44	106
17	0.00	303	495	e95	541	176	329	249	765	66	40	67
18	0.00	391	273	e87	599	180	281	306	678	54	35	76
19	0.00	669	190	e77	590	175	281	510	560	67	32	461
20	0.00	825	202	e82	467	302	316	751	623	70	29	1,300
21	0.00	e450	367	e88	439	1,050	333	838	759	60	27	2,800
22	0.00	e285	361	e76	664	3,510	308	601	943	49	24	1,720
23	0.00	e180	336	e70	2,460	2,670	269	579	926	56	23	887
24	0.00	e150	233	e66	5,380	1,120	233	686	557	57	20	921
25	0.00	e110	273	e72	4,080	666	204	706	315	52	17	2,160
26	0.00	e90	465	e67	1,980	455	207	818	214	47	15	1,710
27	0.00	e78	787	e60	1,110	379	218	979	166	39	14	837
28	0.00	e65	895	e66	773	356	218	1,820	170	37	13	483
29	0.00	e53	505	70	---	346	193	1,590	156	118	12	305
30	0.00	e42	292	79	---	413	172	1,060	146	141	11	230
31	0.00	---	215	84	---	604	---	738	---	136	14	---
TOTAL	0.02	4,545.76	8,658	7,845	21,710	21,449	14,773	14,661	13,148	4,044	1,555	14,878
MEAN	0.001	152	279	253	775	692	492	473	438	130	50.2	496
MAX	0.01	825	895	1,620	5,380	3,510	1,150	1,820	943	479	114	2,800
MIN	0.00	0.00	36	60	100	175	172	102	146	37	11	13
CFSM	0.00	0.59	1.09	0.98	3.02	2.69	1.92	1.84	1.71	0.51	0.20	1.93
IN.	0.00	0.66	1.25	1.14	3.14	3.10	2.14	2.12	1.90	0.59	0.23	2.15

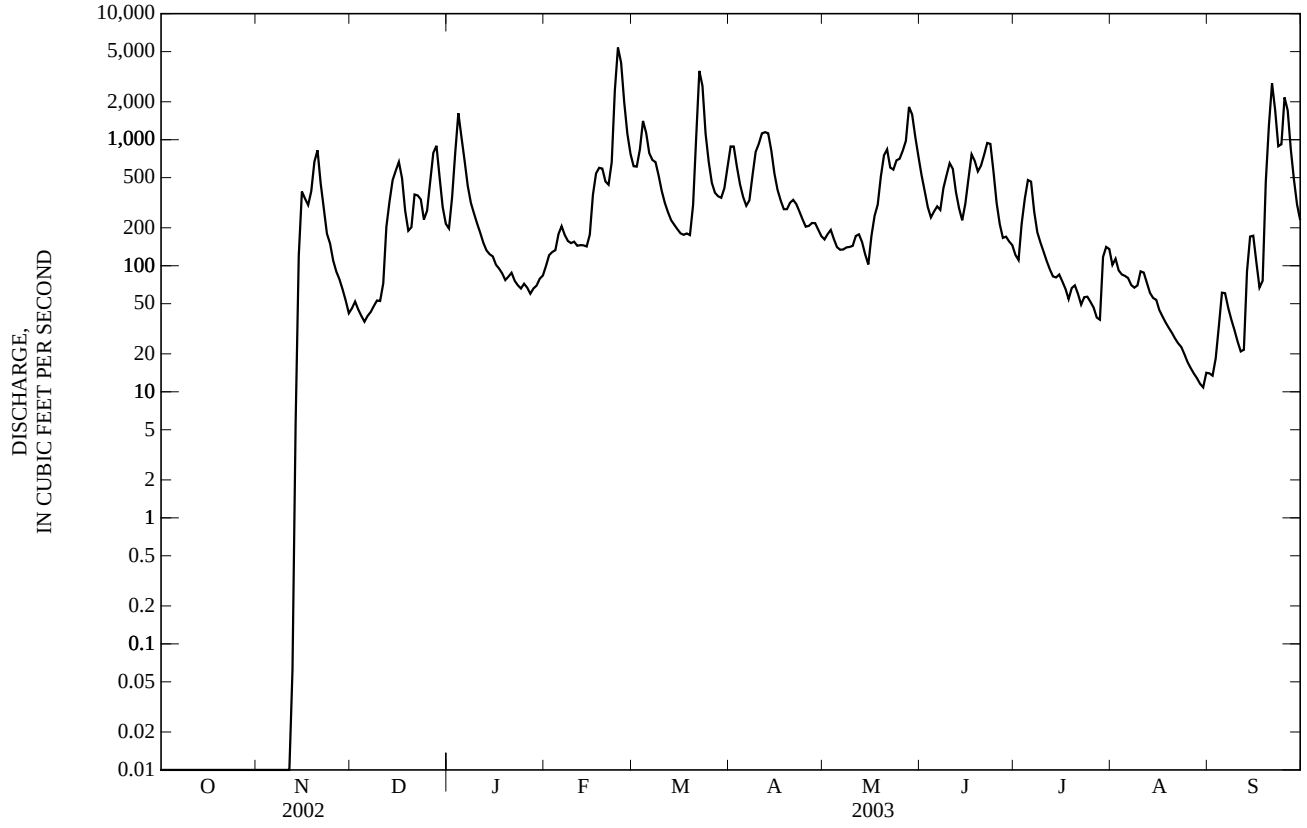
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 2003, BY WATER YEAR (WY)

MEAN	117	162	259	348	401	472	376	249	141	101	110	85.0
MAX	860	721	1,041	1,174	1,706	1,540	1,164	707	1,111	853	939	714
(WY)	(1943)	(1973)	(1949)	(1978)	(1998)	(1994)	(1983)	(1972)	(1972)	(1945)	(1955)	(1975)
MIN	0.001	1.13	15.2	34.7	26.2	56.4	69.2	22.9	5.26	0.45	0.000	0.43
(WY)	(2003)	(2002)	(2002)	(1981)	(2002)	(2002)	(2002)	(1999)	(1999)	(2002)	(2002)	(1954)

01674000 MATTAPONI RIVER NEAR BOWLING GREEN, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1943 - 2003	
ANNUAL TOTAL	21,185.10		127,266.78			
ANNUAL MEAN	58.0		349		234	
HIGHEST ANNUAL MEAN					516	1972
LOWEST ANNUAL MEAN					23.3	2002
HIGHEST DAILY MEAN	895	Dec 28	5,380	Feb 24	12,200	Jun 23, 1972
LOWEST DAILY MEAN	0.00	aJul 31	0.00	bOct 3	0.00	(c)
ANNUAL SEVEN-DAY MINIMUM	0.00	dJul 31	0.00	fOct 3	0.00	(g)
MAXIMUM PEAK FLOW			5,520	Feb 24	13,400	Jun 23, 1972
MAXIMUM PEAK STAGE			13.60	Feb 24	h18.95	Jun 23, 1972
INSTANTANEOUS LOW FLOW			0.00	bOct 3	0.00	(j)
ANNUAL RUNOFF (CFSM)	0.23		1.36		0.91	
ANNUAL RUNOFF (INCHES)	3.07		18.42		12.39	
10 PERCENT EXCEEDS	116		830		534	
50 PERCENT EXCEEDS	20		172		118	
90 PERCENT EXCEEDS	0.00		0.00		9.6	

a Also Aug. 1-31 and Oct. 3 to Nov. 11, 2002.
b Also Oct. 4 to Nov. 11, 2002.
c Also many days in September, October 1954, September 1966, and July, August, October, November 2002.
d Also many days in August, October, and November 2002.
e Estimated.
f Also many days in October and November 2002.
g Many days in September, October 1954, and August, October, November 2002.
h From floodmark in well.
j Many days in September, October 1954, September 1966, and July to September, October, November 2002.



01674500 MATTAPONI RIVER NEAR BEULAHVILLE, VA

LOCATION.--Lat 37°53'16", long 77°09'47", NAD83, King William County, Hydrologic Unit 02080105, on right bank, 10 ft upstream from bridge on State Highway 628, 2.4 mi north of Beulahville, and 3.3 mi downstream from Maracossic Creek.

DRAINAGE AREA.--601 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1941 to September 1987, October 1989 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 12.43 ft NGVD of 1929 (levels by Virginia Department of Transportation). Prior to Oct. 14, 1942, nonrecording gage. Oct. 14, 1942, to Aug. 8, 1974, water-stage recorder on right bank at site 0.6 mi upstream at same datum. Aug. 8 1974, water-stage recorder on left bank 80 ft downstream from previous site, at same datum. Sept. 8, 1987, to Aug. 31, 1989, nonrecording gage on downstream side of bridge at same datum. Sept. 1, 1989, to Mar. 31, 1994, water-stage recorder on upstream side of bridge at same datum. Apr. 1, 1994, to Sept. 28, 1995, nonrecording gage on downstream side of bridge at same datum. Sept. 29, 1995, water-stage recorder at present site and datum.

REMARKS.--Records good except those for period with ice effect, Jan. 16-30, and discharges greater than 1,000 ft^3/s, which are fair. Diurnal fluctuation at times during low flow caused by gristmill on Po River. Maximum discharge, 16,900 ft^3/s, from rating curve extended above 11,760 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.3	210	151	606	269	3,290	1,380	530	2,330	407	411	117
2	2.9	256	148	727	301	2,530	1,410	495	2,020	380	445	119
3	3.0	236	143	789	334	2,080	1,460	476	1,610	491	454	124
4	3.0	179	137	907	356	1,800	1,510	481	1,080	715	399	146
5	4.7	135	140	1,070	381	1,730	1,380	451	778	832	370	171
6	4.6	130	167	1,280	408	1,880	1,020	419	736	842	359	183
7	7.3	132	190	1,460	446	2,050	894	410	807	810	328	195
8	9.6	122	191	1,480	447	2,000	1,230	420	942	667	309	179
9	12	121	198	979	401	1,780	1,480	451	1,030	510	351	158
10	14	113	196	615	389	1,520	1,780	500	1,130	451	493	141
11	7.7	130	230	510	393	1,270	1,980	580	1,190	386	579	128
12	26	248	415	438	385	966	2,150	623	1,210	331	507	130
13	40	441	548	385	376	799	2,230	570	1,170	290	457	339
14	35	557	741	353	374	753	2,220	480	1,020	281	346	455
15	28	647	841	331	409	685	2,150	385	939	282	281	502
16	26	666	909	e286	531	638	1,960	364	914	286	286	457
17	61	718	959	e280	647	615	1,590	446	1,020	267	366	360
18	66	773	960	e272	749	597	1,090	651	1,250	233	294	357
19	47	851	761	e260	787	578	917	909	1,510	228	248	1,220
20	34	926	521	e245	840	763	894	1,050	1,710	244	229	1,930
21	48	988	491	e250	930	1,510	875	1,160	1,770	309	218	2,030
22	48	1,020	615	e240	1,140	1,980	841	1,380	1,770	283	198	2,020
23	43	723	763	e228	1,630	2,170	792	1,610	1,730	261	181	2,430
24	38	396	723	e220	2,110	2,640	711	1,690	1,710	271	162	3,390
25	33	302	680	e232	2,540	3,150	640	1,650	1,680	270	148	3,680
26	41	255	790	e218	3,850	2,880	638	1,780	1,420	241	135	2,960
27	73	222	870	e210	4,720	2,240	662	1,930	761	207	124	2,440
28	56	208	985	e216	4,260	1,530	647	2,030	504	187	114	2,370
29	53	182	1,100	e220	---	1,040	610	2,150	456	246	108	2,280
30	100	161	1,170	e224	---	1,060	564	2,260	437	341	103	1,820
31	182	---	975	238	---	1,300	---	2,390	---	446	105	---
TOTAL	1,150.1	12,048	17,708	15,769	30,403	49,824	37,705	30,721	36,634	11,995	9,108	32,831
MEAN	37.1	402	571	509	1,086	1,607	1,257	991	1,221	387	294	1,094
MAX	182	1,020	1,170	1,480	4,720	3,290	2,230	2,390	2,330	842	579	3,680
MIN	2.9	113	137	210	269	578	564	364	437	187	103	117
CFSM	0.06	0.67	0.95	0.85	1.81	2.67	2.09	1.65	2.03	0.64	0.49	1.82
IN.	0.07	0.75	1.10	0.98	1.88	3.08	2.33	1.90	2.27	0.74	0.56	2.03

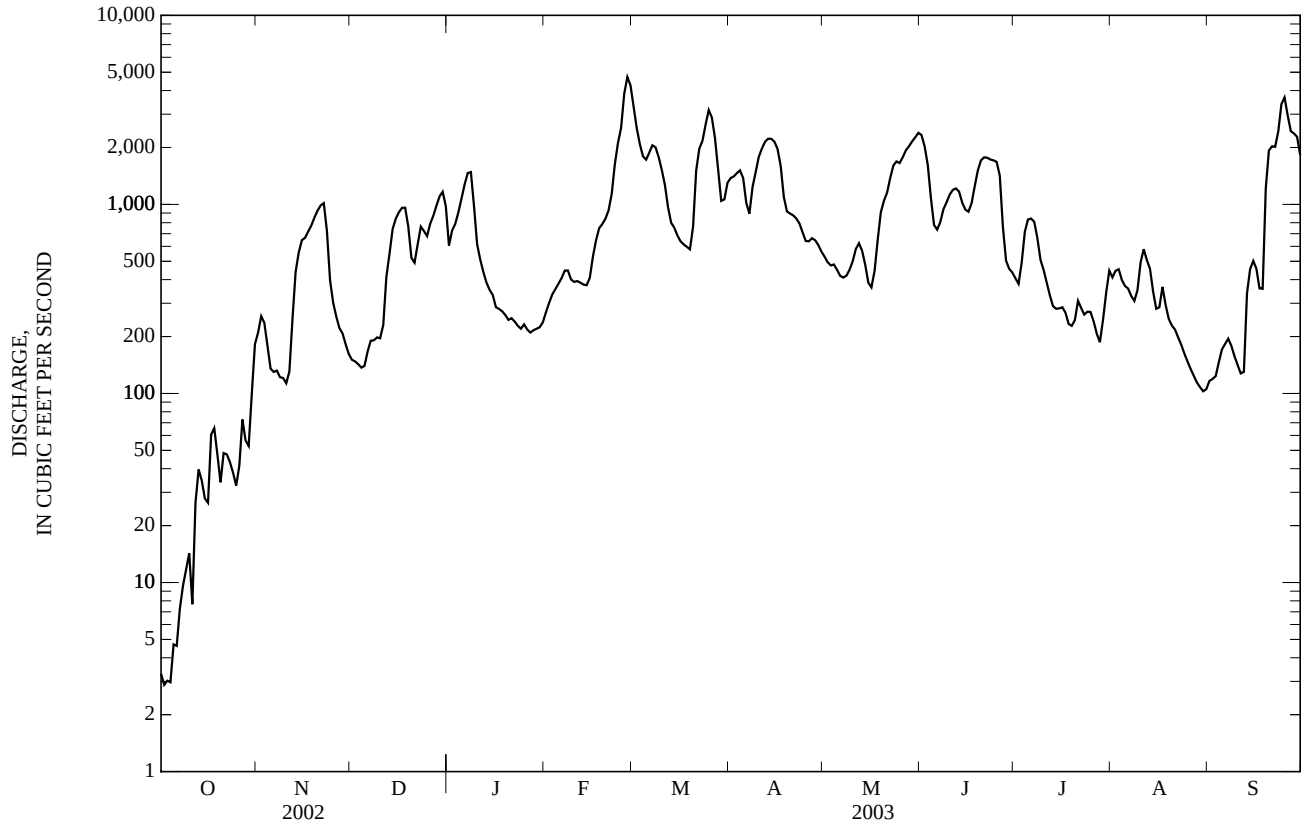
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1987, 1989 - 2003, BY WATER YEAR (WY)

MEAN	301	410	605	778	905	1,066	947	638	409	282	314	240
MAX	1,801	1,461	2,115	2,418	3,100	2,483	3,291	1,912	3,217	2,119	2,409	1,287
(WY)	(1980)	(1973)	(1949)	(1978)	(1998)	(1979)	(1984)	(1978)	(1972)	(1945)	(1969)	(1975)
MIN	19.5	36.3	86.4	131	104	168	183	88.5	22.1	10.8	3.59	9.90
(WY)	(2002)	(2002)	(2002)	(1981)	(2002)	(2002)	(2002)	(1999)	(1999)	(2002)	(2002)	(2002)

01674500 MATTAPONI RIVER NEAR BEULAHVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1942 - 1987 1989 - 2003	
ANNUAL TOTAL	56,418.31		285,896.1			
ANNUAL MEAN	155		783		572	
HIGHEST ANNUAL MEAN					1,210	1972
LOWEST ANNUAL MEAN					81.9	2002
HIGHEST DAILY MEAN	1,170	Dec 30	4,720	Feb 27	16,200	Jun 25, 1972
LOWEST DAILY MEAN	0.25	Aug 27	2.9	Oct 2	0.25	Aug 27, 2002
ANNUAL SEVEN-DAY MINIMUM	0.34	Aug 21	4.1	Oct 1	0.34	Aug 21, 2002
MAXIMUM PEAK FLOW			4,780	Feb 27	16,900	Jun 25, 1972
MAXIMUM PEAK STAGE			16.61	Feb 27	24.09	Aug 23, 1969
INSTANTANEOUS LOW FLOW			2.7	aOct 2	0.22	bAug 24, 2002
ANNUAL RUNOFF (CFSM)	0.26		1.30		0.95	
ANNUAL RUNOFF (INCHES)	3.49		17.70		12.94	
10 PERCENT EXCEEDS	404		1,970		1,310	
50 PERCENT EXCEEDS	90		493		356	
90 PERCENT EXCEEDS	2.9		118		58	

a Also Oct. 3, 2002.
b Also Aug. 25, 27, 2002.
e Estimated.



01674500 MATTAPONI RIVER NEAR BEULAHVILLE, VA—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968, 1969, 1979 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1991 to September 1994.
WATER TEMPERATURE: October 1991 to September 1994.

REMARKS.--Missing gage height values indicate periods that were affected by ice; for these samples only the mean daily discharge is reported.

COOPERATION.--Water samples were collected by the U.S. Geological Survey and analyzed by either the U.S. Geological Survey (Agency Code 80020) or by the Virginia Division of Consolidated Laboratory Services (VDCLS, Agency Code 85116), using analytical methods approved by the U.S. Geological Survey. Analyses performed by VDCLS are reported to U.S. Geological Survey rounding specifications. Results of chemical analyses provided by VDCLS were quality-assured and approved by the U.S. Geological Survey.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Sample type	Agency analyzing sample, code (00028)	Gage height, feet (00065)	Instantaneous discharge, cfs (00061)	Turbidity, NTU (00076)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
OCT												
22...	0925	Blank	85116	--	--	0.20	--	--	--	--	--	--
22...	0930	Environmental	85116	2.11	48	2.5	761	8.7	82	6.9	68	15.5
NOV												
14...	1345	Environmental	85116	6.56	567	11	758	9.8	89	5.6	98	17.0
15...	1045	Environmental	85116	7.03	646	14	758	9.8	88	4.8	98	14.0
19...	1340	Blank	85116	--	--	1.1	--	--	--	--	--	--
19...	1345	Environmental	85116	8.06	854	10	761	10.1	87	5.7	86	15.0
DEC												
13...	0945	Environmental	85116	6.32	529	5.2	761	14.8	107	5.6	90	1.5
17...	1000	Environmental	85116	8.48	951	14	765	11.0	82	5.5	84	1.0
17...	1015	Replicate	85116	8.52	961	14	--	--	--	--	--	--
18...	1345	Environmental	85116	8.54	961	11	771	11.9	89	5.7	78	7.0
20...	0930	Environmental	85116	6.28	523	6.0	746	11.5	92	5.3	83	17.0
JAN												
07...	1300	Environmental	85116	10.46	1,480	21	760	10.8	81	6.0	61	3.0
13...	1045	Environmental	85116	5.40	387	8.0	759	13.1	95	5.6	70	4.0
13...	1100	Replicate	85116	5.40	387	7.7	--	--	--	--	--	--
23...	1130	Environmental	85116	--	228	6.4	757	14.4	99	5.6	82	-5.0
23...	1145	Replicate	85116	--	228	4.7	--	--	--	--	--	--
FEB												
20...	1100	Environmental	85116	7.98	836	10	769	14.5	100	6.2	84	7.5
24...	1415	Environmental	85116	12.44	2,150	15	760	12.3	90	5.4	75	13.5
26...	1100	Environmental	85116	15.47	3,850	18	765	13.7	99	5.7	66	-1.5
26...	1105	Replicate	80020	15.47	3,850	--	--	--	--	--	--	--
28...	0945	Environmental	85116	16.12	4,360	16	758	13.3	96	5.8	52	1.0
28...	1000	Replicate	85116	16.13	4,370	18	--	--	--	--	--	--
MAR												
03...	1100	Environmental	85116	12.29	2,090	8.0	759	12.6	96	5.9	70	0.5
11...	1130	Environmental	85116	9.52	1,270	6.7	764	10.9	91	6.3	71	8.0
11...	1135	Replicate	80020	9.53	1,270	--	--	--	--	--	--	--
24...	1010	Blank	85116	--	--	0.30	--	--	--	--	--	--
24...	1015	Environmental	85116	13.42	2,580	--	757	8.8	81	5.8	58	24.0
26...	1315	Environmental	85116	14.01	2,860	0.40	750	7.9	77	5.8	55	27.0
APR												
01...	1000	Environmental	85116	10.03	1,380	8.6	760	10.0	89	6.3	59	5.5
10...	1615	Environmental	85116	11.61	1,830	7.9	752	9.7	85	6.0	53	10.0
10...	1630	Replicate	85116	11.60	1,830	11	--	--	--	--	--	--
23...	1330	Environmental	85116	7.51	788	7.5	755	8.6	87	6.5	58	25.0
23...	1335	Replicate	80020	7.52	789	--	--	--	--	--	--	--
MAY												
27...	1345	Environmental	85116	11.91	1,940	7.7	761	7.1	73	5.2	51	17.0
JUN												
02...	1330	Environmental	85116	12.08	2,000	4.9	756	6.8	72	6.3	55	24.0
16...	1400	Environmental	85116	8.26	906	8.4	759	6.4	75	6.4	59	22.0
24...	1215	Environmental	85116	11.23	1,710	6.2	757	6.5	72	6.3	53	29.0
24...	1220	Replicate	80020	11.23	1,710	--	--	--	--	--	--	--
JUL												
10...	1215	Environmental	85116	5.82	451	6.2	755	6.1	76	6.6	66	28.0
AUG												
12...	1215	Environmental	85116	6.10	495	11	759	6.8	82	6.4	53	32.0
SEP												
09...	1010	Blank	85116	--	--	0.65	--	--	--	--	--	--
09...	1015	Environmental	85116	3.44	158	5.6	760	7.7	87	6.8	64	24.0
16...	1115	Environmental	85116	5.90	464	20	760	7.5	85	6.6	59	21.5
19...	1645	Environmental	85116	10.14	1,390	43	760	5.1	57	5.9	46	29.5
24...	1515	Environmental	85116	15.08	3,560	12	760	4.5	51	5.8	43	23.0

01674500 MATTAPONI RIVER NEAR BEULAHVILLE, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Temperature, water, deg C (00010)	Silica, water, fltrd, mg/L (00955)	Residue fixed non-filterable, mg/L (00540)	Residue total at 105 deg. C, suspended, mg/L (00530)	Residue volatile, suspended, mg/L (00535)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)
OCT													
22...	--	6.80	<3	<3	<3	--	--	<0.004	<0.004	<0.004	<0.002	0.004	0.005
22...	12.6	6.90	<3	<3	<3	--	--	0.007	0.03	0.031	<0.002	0.010	0.018
NOV													
14...	10.8	11.1	13	17	4	--	--	<0.004	0.04	0.036	<0.002	0.005	0.011
15...	10.4	12.2	16	21	5	--	--	<0.004	0.05	0.050	<0.002	0.010	0.021
19...	--	<0.100	<3	<3	<3	--	--	<0.004	<0.004	<0.004	<0.002	0.002	<0.001
19...	8.7	11.4	14	18	4	--	--	0.009	0.10	0.096	<0.002	0.008	0.014
DEC													
13...	1.9	10.1	7	11	4	--	--	0.030	0.24	0.242	<0.002	0.011	0.007
17...	3.1	11.9	10	12	<3	--	--	0.005	0.21	0.212	<0.002	0.008	0.023
17...	--	11.9	10	12	<3	--	--	0.005	0.21	0.212	<0.002	0.008	0.023
18...	3.5	12.1	9	12	3	--	--	0.006	0.20	0.201	<0.002	0.008	0.025
20...	5.1	11.9	4	5	<3	--	--	0.020	0.24	0.246	<0.002	0.008	0.022
JAN													
07...	3.5	9.40	8	10	<3	--	--	0.014	0.15	0.152	0.002	0.009	0.022
13...	1.9	9.50	3	3	3	--	--	0.020	0.27	0.270	0.002	0.005	0.013
13...	--	9.70	<3	3	<3	--	--	0.021	0.27	0.269	<0.002	0.005	0.013
23...	0.0	10.2	<3	<3	<3	--	--	0.030	0.41	0.415	<0.002	0.006	0.017
23...	--	10.2	<3	<3	<3	--	--	0.030	0.42	0.416	<0.002	0.005	0.016
FEB													
20...	0.7	9.00	10	12	<3	--	--	0.022	0.26	0.259	<0.002	0.006	0.014
24...	2.5	6.10	6	8	<3	--	--	0.032	0.30	0.300	<0.002	0.011	0.019
26...	2.1	5.70	11	13	<3	--	--	0.030	0.27	0.270	<0.002	0.010	0.032
26...	--	6.1	--	<10	<10	0.36	0.43	0.026	--	0.270	--	0.009	<0.04
28...	1.5	5.90	5	7	<3	--	--	0.017	0.25	0.249	<0.002	0.009	0.031
28...	--	5.90	6	7	<3	--	--	0.017	0.24	0.246	<0.002	0.009	0.039
MAR													
03...	3.7	6.90	3	4	<3	--	--	0.015	0.28	0.281	<0.002	0.006	0.012
11...	7.3	6.50	6	8	<3	--	--	0.007	0.17	0.168	<0.002	0.005	0.010
11...	--	6.2	--	12	<10	0.25	0.31	<0.015	--	0.163	--	<0.007	<0.04
24...	--	<0.100	<3	<3	<3	--	--	<0.004	<0.004	<0.004	<0.002	0.003	0.004
24...	11.2	5.40	4	6	<3	--	--	0.008	0.11	0.110	<0.002	0.011	0.028
26...	13.8	5.70	<3	<3	<3	--	--	<0.004	0.06	0.064	<0.002	0.012	0.028
APR													
01...	9.8	5.40	7	10	3	--	--	0.016	0.14	0.145	<0.002	0.008	0.021
10...	9.3	5.00	4	6	<3	--	--	0.014	0.15	0.147	<0.002	0.010	0.022
10...	--	4.90	5	7	<3	--	--	0.021	0.17	0.170	<0.002	0.016	0.014
23...	15.3	5.10	7	9	<3	--	--	0.022	0.16	0.162	<0.002	0.009	0.023
23...	--	5.5	--	<10	<10	0.34	0.49	0.016	--	0.150	--	E.006	E.02
MAY													
27...	16.6	10.5	4	5	<3	--	--	0.051	0.13	0.127	<0.002	0.015	0.033
JUN													
02...	17.5	8.00	3	4	<3	--	--	0.054	0.11	0.110	<0.002	0.014	0.044
16...	23.2	8.00	7	11	4	--	--	0.063	0.15	0.152	0.002	0.020	0.038
24...	20.6	8.80	<3	6	4	--	--	0.050	0.10	0.104	<0.002	0.020	0.049
24...	--	9.6	--	<10	<10	0.58	0.71	0.039	--	0.109	--	0.019	E.03
JUL													
10...	25.6	11.5	4	7	3	--	--	0.052	0.25	0.252	<0.002	0.019	0.055
AUG													
12...	24.7	8.60	10	13	3	--	--	0.018	0.16	0.161	<0.002	0.010	0.050
SEP													
09...	--	<0.100	<3	<3	<3	--	--	<0.004	<0.004	<0.004	<0.002	0.003	--
09...	21.0	8.10	<3	3	<3	--	--	0.007	0.20	0.204	<0.002	0.009	--
16...	21.2	9.10	10	14	4	--	--	0.010	0.12	0.115	<0.002	0.007	0.046
19...	20.8	6.50	31	40	9	--	--	0.019	0.10	0.102	<0.002	0.009	0.037
24...	21.1	7.20	5	8	3	--	--	<0.004	M	0.004	<0.002	0.007	0.043

01674500 MATTAPONI RIVER NEAR BEULAHVILLE, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Phosphorus, suspnd sedimnt total, mg/L (00667)	Total nitrogen, suspnd sedimnt total, mg/L (00601)	Total carbon, suspnd sedimnt total, mg/L (00694)	Inorganic carbon, suspnd sedimnt total, mg/L (00688)	Organic carbon, water, fltrd, mg/L (00681)	Pheophytin a, phytoplankton, ug/L (62360)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)
OCT											
22...	--	0.09	0.001	0.01	M	--	--	--	--	--	--
22...	--	0.33	0.009	0.02	0.3	--	--	--	--	--	2
NOV											
14...	--	0.35	0.035	0.21	2.1	--	--	--	--	64	19
15...	--	0.43	0.045	0.20	2.0	--	--	--	--	84	20
19...	--	<0.004	--	0.01	M	--	--	--	--	--	--
19...	--	0.49	--	0.17	1.9	--	--	--	--	42	20
DEC											
13...	--	0.50	0.023	0.10	1.2	--	--	--	--	33	15
17...	--	0.54	0.023	0.13	1.3	--	--	--	--	51	20
17...	--	0.54	0.023	0.13	1.3	--	--	--	--	36	20
18...	--	0.56	0.024	0.10	1.2	--	--	--	--	28	32
20...	--	0.56	0.015	0.08	0.8	--	--	--	--	--	10
JAN											
07...	--	0.58	0.023	0.12	1.2	--	--	--	--	53	21
13...	--	0.53	0.011	0.05	0.6	--	--	--	--	--	4
13...	--	0.53	0.012	0.06	0.6	--	--	--	--	--	5
23...	--	0.67	0.010	0.04	0.5	--	--	--	--	--	4
23...	--	0.68	0.010	0.06	0.5	--	--	--	--	--	4
FEB											
20...	--	0.54	0.021	0.09	1.0	--	--	--	--	--	22
24...	--	0.61	0.028	0.11	1.0	--	--	--	--	24	56
26...	--	0.66	0.031	0.15	1.1	--	--	--	--	52	29
26...	0.06	0.63	--	--	--	--	--	--	--	--	--
28...	--	0.60	0.024	0.12	1.0	--	--	--	--	5	218
28...	--	0.59	0.023	0.13	1.1	--	--	--	--	6	147
MAR											
03...	--	0.55	0.015	0.08	0.8	--	--	--	--	71	10
11...	--	0.40	0.016	0.08	0.7	--	--	--	--	--	13
11...	<0.04	0.41	--	--	--	--	--	--	--	--	--
24...	--	<0.004	0.001	0.01	0.1	--	--	--	--	25	1
24...	--	0.53	0.030	0.18	1.4	--	--	--	--	84	18
26...	--	0.51	0.019	0.12	1.0	--	--	--	--	79	10
APR											
01...	--	0.51	0.024	0.12	1.2	--	--	--	--	60	13
10...	--	0.51	0.020	0.11	1.5	--	--	--	--	79	10
10...	--	0.45	0.027	0.09	1.5	--	--	--	--	83	10
23...	--	0.53	0.023	0.10	1.1	--	--	<0.5	<0.5	--	8
23...	E.04	0.49	--	--	--	--	--	--	--	--	--
MAY											
27...	--	0.58	0.035	0.12	1.3	--	--	<0.5	0.6	80	8
JUN											
02...	--	0.61	0.032	0.10	1.4	--	--	<0.5	1.0	78	7
16...	--	0.74	0.054	0.18	2.5	--	--	<0.5	<0.5	--	15
24...	--	0.72	0.029	0.11	1.4	--	--	<0.5	0.5	77	7
24...	0.09	0.69	--	--	--	--	--	--	--	--	--
JUL											
10...	--	0.81	0.019	0.07	0.6	<0.02	10.2	<0.5	0.5	--	8
AUG											
12...	--	0.65	0.024	--	--	<0.02	9.0	<0.5	0.8	--	13
SEP											
09...	--	--	--	<0.01	0.1	<0.02	<2.0	<0.5	<0.5	--	0.0
09...	--	--	--	<0.01	0.5	<0.02	6.9	<0.5	<0.5	--	2
16...	--	0.50	0.016	0.10	1.5	M	7.3	0.9	1.3	70	15
19...	--	0.58	0.080	0.34	3.1	0.2	10.1	2.3	1.7	64	55
24...	--	0.71	0.028	0.25	2.4	<0.02	15.0	<0.5	1.0	81	15

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

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JAMES RIVER BASIN

02011400 JACKSON RIVER NEAR BACOVA, VA

LOCATION.--Lat 38°02'32", long 79°52'53", NAD83, Bath County, Hydrologic Unit 02080201, on left bank 0.1 mi downstream from ford, 1.8 mi upstream from Back Creek, and 2.2 mi southwest of Bacova.

DRAINAGE AREA.--158 mi^2.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,639.20 ft NGVD of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 19-28, which is fair. U.S. Army Corps of Engineers satellite water temperature, precipitation and gage-height telemeter at station. Maximum discharge, 30,000 ft^3/s, from rating curve extended above 1,300 ft^3/s on basis of slope-area measurements at gage heights 8.88 ft, 11.40 ft, 13.88 ft, and 22.25 ft. Minimum gage height, 2.42 ft, Aug. 18, 19, 1988.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1972, reached a stage of 11.40 ft, discharge, 4,800 ft^3/s, and flood of Dec. 26, 1973, reached a stage of 13.88 ft, discharge, 7,560 ft^3/s, from rating curve extended as explained above.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 20	1600	1,610	7.57	Jun 16	1430	1,780	7.85
Feb 23	1100	*3,840	*10.52	Sep 19	1030	2,700	9.17
May 18	1600	1,840	7.96				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	183	112	335	57	365	210	180	268	123	64	49
2	32	142	98	682	56	620	295	191	216	142	65	56
3	29	112	92	530	56	704	271	207	234	256	61	76
4	27	98	82	442	69	538	249	515	939	168	67	147
5	26	114	86	352	89	657	232	537	989	137	67	172
6	24	472	80	298	73	1,140	202	558	618	121	71	109
7	23	296	72	248	70	1,030	423	452	567	114	64	85
8	22	206	72	223	65	712	589	363	601	110	80	72
9	21	163	67	211	60	658	909	304	594	118	162	63
10	22	139	62	184	63	600	858	583	465	144	134	58
11	25	400	165	160	60	471	1,170	788	380	145	89	53
12	28	530	276	140	57	387	824	547	352	119	304	49
13	27	610	307	128	52	378	606	421	676	114	131	49
14	26	379	525	122	56	442	468	326	604	319	131	53
15	26	272	379	114	77	372	378	279	595	391	97	59
16	95	226	298	103	78	321	322	255	1,120	266	90	71
17	171	344	248	103	63	294	279	220	1,070	193	89	58
18	100	314	211	102	82	271	254	1,160	1,070	157	77	62
19	70	250	187	e98	81	240	280	936	823	142	68	1,660
20	57	218	993	e92	78	498	237	591	694	124	63	695
21	51	230	908	e84	108	812	228	591	547	110	59	393
22	44	348	564	e81	1,670	570	243	639	437	102	56	312
23	39	281	409	e80	3,030	438	219	514	344	95	53	854
24	36	229	327	e78	1,310	352	197	440	282	87	49	491
25	34	192	310	e76	792	293	187	354	236	79	47	336
26	57	168	250	e78	550	259	200	320	203	73	45	255
27	73	162	199	e74	422	230	243	268	181	69	44	213
28	63	141	175	e70	345	198	205	250	164	67	46	245
29	146	127	161	66	---	192	186	264	149	71	60	185
30	465	121	151	62	---	204	174	235	134	66	51	155
31	267	---	145	57	---	195	---	243	---	63	50	---
TOTAL	2,163	7,467	8,011	5,473	9,569	14,441	11,138	13,531	15,552	4,285	2,534	7,135
MEAN	69.8	249	258	177	342	466	371	436	518	138	81.7	238
MAX	465	610	993	682	3,030	1,140	1,170	1,160	1,120	391	304	1,660
MIN	21	98	62	57	52	192	174	180	134	63	44	49
CFSM	0.44	1.58	1.64	1.12	2.16	2.95	2.35	2.76	3.28	0.87	0.52	1.51
IN.	0.51	1.76	1.89	1.29	2.25	3.40	2.62	3.19	3.66	1.01	0.60	1.68

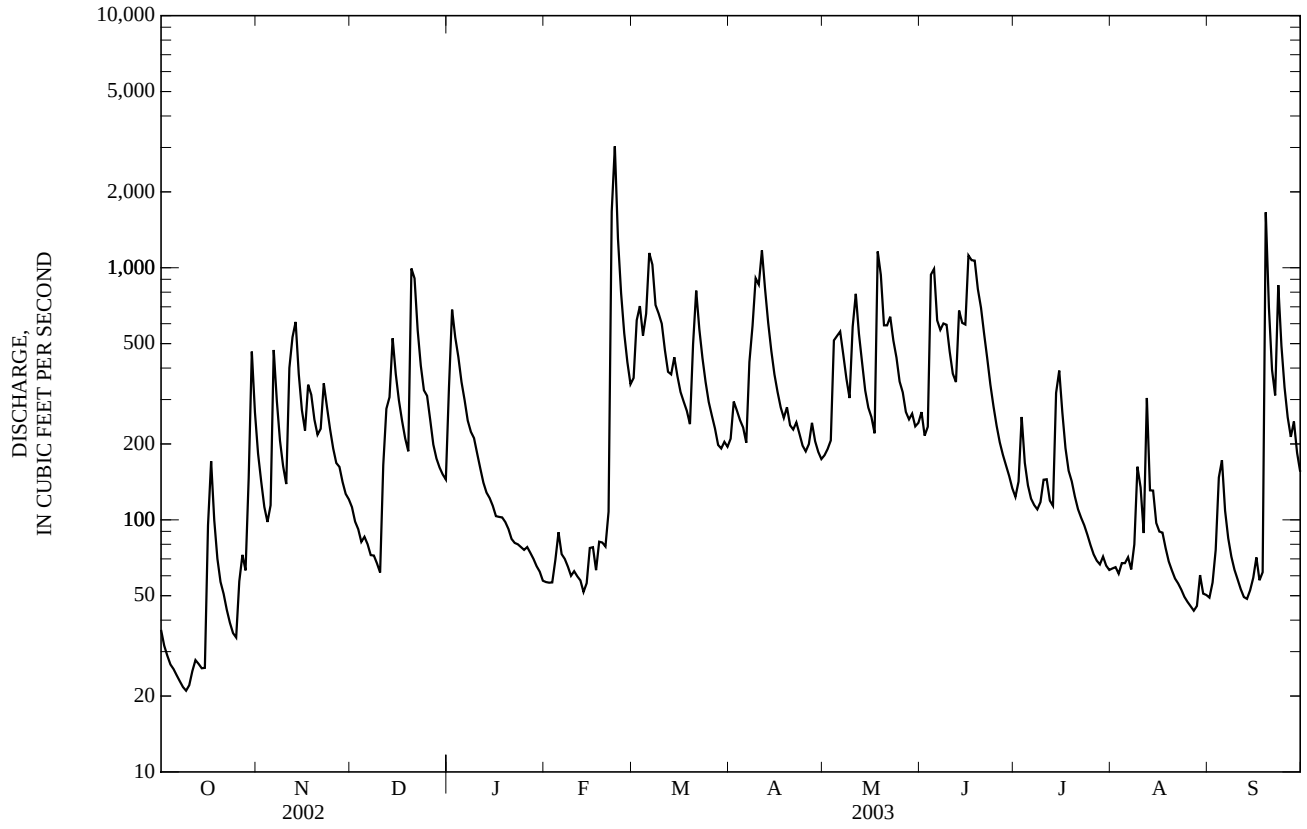
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 2003, BY WATER YEAR (WY)

MEAN	78.3	121	157	227	247	356	279	229	140	62.1	57.3	70.2
MAX	367	762	419	703	604	767	814	508	518	138	282	342
(WY)	(1980)	(1986)	(1997)	(1996)	(1998)	(1993)	(1987)	(1989)	(2003)	(2003)	(1984)	(1979)
MIN	19.6	16.7	25.4	31.6	34.7	68.0	70.3	52.9	27.6	19.1	20.6	20.1
(WY)	(2002)	(2002)	(1999)	(1981)	(2002)	(1981)	(1999)	(1999)	(1999)	(1999)	(1988)	(1998)

JAMES RIVER BASIN—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1975 - 2003	
ANNUAL TOTAL	47,745		101,299			
ANNUAL MEAN	131		278		168	
HIGHEST ANNUAL MEAN					278	2003
LOWEST ANNUAL MEAN					66.9	1999
HIGHEST DAILY MEAN	1,800	Apr 22	3,030	Feb 23	8,820	Jan 19, 1996
LOWEST DAILY MEAN	13	aSep 9	21	Oct 9	13	bAug 13, 1999
ANNUAL SEVEN-DAY MINIMUM	13	Sep 8	23	Oct 5	13	Sep 8, 2002
MAXIMUM PEAK FLOW			3,840	Feb 23	30,000	Nov 4, 1985
MAXIMUM PEAK STAGE			10.52	Feb 23	c22.25	Nov 4, 1985
INSTANTANEOUS LOW FLOW			21	dOct 8	12	fSep 11, 2002
ANNUAL RUNOFF (CFSM)	0.83		1.76		1.06	
ANNUAL RUNOFF (INCHES)	11.24		23.85		14.47	
10 PERCENT EXCEEDS	312		608		363	
50 PERCENT EXCEEDS	52		187		85	
90 PERCENT EXCEEDS	18		56		27	

a Also Sept. 10-14, 2002.
b Also Sept. 26, 1999 and Sept. 9-14, 2002.
c From floodmark.
d Also Oct. 9, 10, 2002.
e Estimated.
f Also Sept. 12-14, 2002.



02011400 JACKSON RIVER NEAR BACOVA, VA—Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: March 1978 to September 1981, October 1982 to current year.

INSTRUMENTATION.--Water-temperature recorder March 1978 to September 1981, and since October 1982.

REMARKS.--Interruption in record due to instrument malfunction. Some record in prior years fragmentary due to instrument malfunction. Records represent water temperature at sensor within 0.5°C. Temperature at the sensor was compared with the average for the river by temperature cross section on Oct. 3, 2000. No variation of temperature was found within the cross section.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum recorded, 31.1°C, July 6, 1999; minimum recorded, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 26.0°C, Aug. 23, 26-29; minimum, 0.0°C, on many days during winter.

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	19.7	16.9	18.2	8.5	6.7	7.7	3.9	2.1	2.8	7.4	4.9	6.2
2	20.9	18.1	19.3	7.8	5.7	6.6	2.5	0.4	1.6	7.4	6.7	7.0
3	22.1	18.9	20.4	7.4	4.9	6.3	3.2	1.8	2.3	6.7	5.7	6.4
4	21.7	20.1	21.0	8.1	6.7	7.5	2.1	0.4	0.9	5.7	3.2	4.4
5	22.5	19.7	21.0	8.1	7.1	7.4	0.4	0.0	0.1	3.5	2.8	3.2
6	20.5	16.9	18.8	8.5	7.4	8.1	1.8	0.0	0.7	4.6	3.2	4.0
7	18.5	15.8	17.4	7.8	6.7	7.6	0.4	0.0	0.0	3.2	1.8	2.4
8	16.1	13.9	15.1	8.8	6.4	7.3	0.0	0.0	0.0	4.9	1.8	3.3
9	15.8	14.3	14.9	9.2	6.4	7.7	0.7	0.0	0.0	6.7	3.9	5.1
10	15.4	14.6	15.1	11.7	7.8	9.7	1.4	0.0	0.7	5.3	3.2	4.5
11	16.5	15.0	15.7	12.8	11.3	12.0	3.5	1.4	2.2	3.2	0.7	2.1
12	18.5	16.1	17.1	11.3	9.9	10.7	4.9	3.5	4.0	1.1	0.0	0.2
13	17.7	16.1	17.1	9.9	8.1	9.3	4.2	3.5	3.9	1.4	0.0	0.4
14	16.1	13.9	14.9	8.8	7.4	8.0	4.9	4.2	4.7	1.4	0.0	0.8
15	14.3	12.1	12.8	9.2	7.4	8.1	5.3	3.9	4.5	1.1	0.0	0.3
16	13.1	11.7	12.3	9.2	8.1	8.9	6.0	4.2	5.0	0.0	0.0	0.0
17	12.4	10.6	11.7	9.2	7.4	8.6	4.6	3.2	4.0	0.0	0.0	0.0
18	11.7	9.2	10.3	7.8	6.4	7.1	5.7	4.2	4.8	0.0	0.0	0.0
19	11.0	9.2	10.2	6.7	5.7	6.2	6.7	4.6	5.7	0.0	0.0	0.0
20	12.4	11.0	11.9	7.8	6.4	6.8	7.8	6.4	7.1	0.0	0.0	0.0
21	12.4	12.1	12.3	7.4	6.4	7.0	6.4	4.9	5.2	0.7	0.0	0.0
22	13.9	11.7	12.5	7.8	6.0	7.4	6.0	4.6	5.3	0.0	0.0	0.0
23	13.5	11.0	12.2	6.0	4.9	5.5	5.7	4.6	5.0	0.0	0.0	0.0
24	12.4	11.0	11.3	7.4	4.9	5.9	4.9	4.2	4.7	0.0	0.0	0.0
25	11.0	10.6	10.9	8.1	5.3	6.5	4.6	3.5	4.3	0.0	0.0	0.0
26	13.9	10.6	12.1	7.1	6.0	6.5	3.9	2.5	3.1	0.0	0.0	0.0
27	13.9	11.7	12.8	6.7	4.9	6.0	3.5	1.8	2.4	0.0	0.0	0.0
28	12.4	11.3	11.9	4.9	3.2	4.0	2.8	1.1	2.0	0.0	0.0	0.0
29	11.3	9.9	10.5	4.9	2.5	3.5	4.6	1.8	3.1	0.0	0.0	0.0
30	10.2	9.2	9.6	5.3	3.2	4.2	4.6	2.5	3.6	0.0	0.0	0.0
31	9.5	8.5	9.2	---	---	---	5.7	2.8	4.3	0.4	0.0	0.0
MONTH	22.5	8.5	14.2	12.8	2.5	7.3	7.8	0.0	3.2	7.4	0.0	1.6

02011400 JACKSON RIVER NEAR BACOVA, VA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	0.7	0.0	0.2	7.8	5.3	6.2	9.9	4.2	6.8	17.7	13.5	15.4
2	2.1	0.4	1.3	6.4	5.3	5.8	13.5	7.8	10.3	19.7	14.6	16.8
3	3.5	1.4	2.6	5.3	3.5	4.5	15.0	9.9	12.3	17.3	13.5	15.8
4	4.2	2.8	3.7	5.7	2.8	4.5	13.9	11.0	12.5	13.5	12.1	12.7
5	3.5	0.7	2.1	7.8	5.3	6.5	15.0	11.3	12.7	12.1	10.2	11.1
6	2.1	0.4	1.1	7.1	5.7	6.3	14.3	9.9	11.8	13.1	10.2	11.6
7	1.8	0.4	1.0	6.0	3.9	5.0	12.1	7.8	9.3	15.0	12.8	13.8
8	1.4	0.0	0.5	7.1	3.9	5.6	8.1	7.4	7.8	17.7	13.9	15.5
9	1.4	0.0	0.4	8.1	5.7	7.0	8.5	7.4	8.0	17.3	14.6	15.9
10	1.8	0.4	0.9	7.1	4.6	5.4	8.1	7.4	7.8	15.8	13.9	15.0
11	1.4	0.0	0.7	6.4	4.2	5.1	8.5	6.7	7.7	15.4	13.1	14.2
12	2.1	0.0	0.9	6.7	4.6	5.8	11.3	7.4	9.3	15.0	12.4	13.7
13	1.1	0.0	0.2	10.6	6.7	8.6	12.1	8.5	10.3	14.3	11.3	12.6
14	0.7	0.0	0.1	9.9	7.8	8.8	12.8	9.2	11.1	15.4	11.3	13.3
15	1.4	0.0	0.8	9.2	6.4	7.8	14.6	10.6	12.5	14.3	12.8	13.5
16	0.4	0.0	0.0	10.2	8.1	9.2	15.4	11.7	13.2	16.9	12.4	14.4
17	0.0	0.0	0.0	12.1	8.8	10.2	15.4	12.1	13.5	15.4	12.8	14.0
18	0.0	0.0	0.0	11.7	10.2	10.7	13.1	9.9	11.2	12.8	11.3	11.6
19	0.7	0.0	0.1	11.0	9.2	10.2	12.4	9.2	10.7	12.8	11.0	11.7
20	1.4	0.0	0.5	9.2	8.1	8.3	14.3	11.7	12.7	15.0	12.1	13.5
21	1.4	0.4	0.8	10.6	7.8	9.1	15.0	11.7	13.1	14.6	13.1	14.1
22	2.1	0.7	1.4	11.7	9.5	10.5	14.3	11.7	13.2	13.1	12.1	12.3
23	3.2	1.8	2.6	9.9	8.5	9.4	14.3	9.9	11.9	12.4	11.7	12.1
24	4.9	2.5	3.7	11.3	7.4	9.2	14.3	9.5	11.8	15.0	12.1	13.3
25	4.6	3.5	3.8	12.8	8.5	10.5	12.1	11.0	11.4	15.0	12.4	13.5
26	3.9	3.2	3.3	11.0	8.8	10.2	13.1	11.0	11.8	16.1	13.5	14.5
27	3.2	2.8	3.1	11.7	7.8	9.5	16.1	11.0	13.3	14.6	13.1	13.9
28	6.4	2.8	4.5	11.7	8.5	9.9	17.3	11.3	14.2	14.6	12.4	13.5
29	---	---	---	13.1	11.0	11.9	16.5	12.8	14.4	14.3	12.8	13.5
30	---	---	---	11.0	6.0	8.1	16.1	12.4	14.2	16.5	12.4	14.2
31	---	---	---	---	---	---	---	---	---	15.4	13.9	14.6
MONTH	6.4	0.0	1.4	13.1	2.8	8.0	17.3	4.2	11.4	19.7	10.2	13.7
		JUNE			JULY			AUGUST			SEPTEMBER	
1	16.1	12.8	14.0	21.3	18.9	20.0	21.7	19.3	20.3	24.6	20.9	22.7
2	16.9	11.7	14.2	19.7	17.7	18.5	24.6	20.1	22.1	24.6	22.1	23.4
3	15.0	13.1	13.9	19.3	16.5	17.7	25.1	21.7	23.0	23.3	21.7	22.5
4	15.0	12.8	13.6	21.7	16.9	19.3	24.2	21.3	22.6	22.1	19.7	20.8
5	15.0	12.8	14.1	23.8	18.9	21.4	24.6	20.9	22.6	21.7	18.1	19.7
6	16.1	12.8	14.5	23.8	20.1	21.9	23.8	20.9	22.5	20.9	16.9	19.0
7	15.4	14.3	14.9	24.6	20.5	22.4	22.9	21.3	21.7	20.5	17.3	19.1
8	15.8	14.3	14.8	25.1	20.9	22.9	22.1	20.1	20.9	21.3	18.1	19.6
9	16.9	13.9	15.5	23.8	21.3	22.5	22.5	19.3	20.6	20.1	17.7	19.0
10	16.5	14.3	15.6	23.8	20.5	22.0	23.8	19.3	21.2	20.9	16.9	18.6
11	17.7	15.4	16.3	23.8	20.1	21.6	25.1	20.9	22.9	20.5	16.1	18.5
12	18.5	15.8	17.0	22.1	18.9	20.7	23.3	19.3	20.8	18.9	16.5	17.9
13	17.3	15.8	16.7	22.9	18.5	20.5	22.5	20.1	21.2	18.9	17.3	18.2
14	18.1	15.4	16.7	20.9	18.1	19.5	25.1	20.5	22.5	21.3	18.1	19.5
15	17.7	16.1	16.5	19.7	17.7	18.9	25.1	21.7	23.3	20.5	18.1	19.3
16	16.1	14.3	15.0	22.5	18.9	20.2	24.2	21.7	23.0	20.5	16.5	18.2
17	14.3	13.5	13.6	23.3	18.9	21.0	24.6	21.3	22.9	20.1	16.1	18.1
18	15.8	13.1	14.4	22.1	18.9	20.7	25.1	20.9	22.7	18.1	15.8	16.5
19	15.8	14.6	15.3	21.7	18.5	20.0	24.6	21.7	23.1	15.8	15.0	15.5
20	16.5	14.6	15.5	23.3	17.7	20.5	25.1	21.3	23.1	16.1	14.6	15.4
21	15.4	13.5	14.1	23.8	18.9	21.5	25.5	21.7	23.6	17.7	15.8	16.5
22	17.3	13.1	14.9	23.8	20.5	22.1	25.5	22.5	24.1	16.9	16.5	16.8
23	18.9	15.0	16.7	22.9	20.1	21.6	26.0	22.1	23.8	16.5	15.0	15.8
24	20.1	15.8	17.7	22.5	19.3	20.9	24.6	20.5	22.6	15.8	13.5	14.7
25	21.7	16.9	19.1	23.8	18.5	21.0	25.1	20.5	22.8	16.1	13.9	15.0
26	22.5	18.1	20.1	24.2	19.3	21.9	26.0	21.3	23.5	18.1	15.0	16.2
27	20.5	18.5	19.5	24.6	20.9	22.7	26.0	22.1	24.0	18.1	15.8	16.6
28	18.5	16.5	17.7	24.2	21.7	23.0	26.0	22.5	24.0	16.5	14.6	16.0
29	22.5	16.5	19.1	22.9	21.7	22.1	26.0	22.1	23.8	14.6	12.4	13.6
30	22.5	17.7	20.2	21.7	20.5	21.2	25.1	22.5	23.7	13.9	11.0	12.3
31	---	---	---	20.9	19.7	20.2	23.3	21.7	22.5	---	---	---
MONTH	22.5	11.7	16.0	25.1	16.5	21.0	26.0	19.3	22.6	24.6	11.0	17.8
YEAR	26.0	0.0	11.6									

02011460 BACK CREEK NEAR SUNRISE, VA

LOCATION.--Lat 38°14'43", long 79°46'07", NAD83, Bath County, Hydrologic Unit 02080201, on right bank 900 ft upstream from bridge on State Highway 600, 0.8 mi upstream from Gap Run, and 4.8 mi northeast of Sunrise.

DRAINAGE AREA.--60.1 mi^2.

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

REVISED RECORDS.--WDR VA-85-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,200.02 ft NGVD of 1929 (levels by Virginia Department of Transportation). Jul. 2 to Sep. 6, 1990, nonrecording gage at present site and datum.

REMARKS.--Records good except for period with ice effect, Jan. 16-28, which is poor. Virginia Power gage-height transmitter at station, receiver at Back Creek Dam. Maximum discharge, 17,500 ft^3/s, from rating curve extended above 3,800 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct 29	2330	913	3.49
Dec 20	1030	1,830	4.47
Feb 22	1345	*2,710	*5.14
Feb 23	0730	2,370	4.90
May 10	2130	1,040	3.66
Jun 4	0745	1,390	4.05
Sep 19	0545	1,660	4.32

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	128	66	284	20	138	82	84	121	41	14	8.9
2	16	91	57	535	20	290	214	89	121	45	13	17
3	14	70	52	298	22	326	188	90	150	65	12	30
4	13	61	43	208	58	240	142	197	1,020	47	12	76
5	11	70	48	161	95	332	113	249	511	39	17	78
6	9.5	530	44	131	75	674	90	260	275	34	15	46
7	8.5	255	35	105	67	553	239	206	258	38	15	33
8	7.7	145	37	96	53	329	387	156	329	52	18	23
9	7.2	105	32	92	54	338	531	162	326	78	18	17
10	7.6	85	30	87	47	333	462	641	240	98	15	14
11	10	95	109	77	40	230	439	695	170	73	16	12
12	13	249	201	64	38	177	402	352	172	55	75	11
13	12	412	214	62	39	277	277	226	351	46	41	11
14	12	221	365	59	32	462	195	159	313	62	30	12
15	11	140	237	50	35	277	149	127	246	160	21	16
16	148	109	170	e45	19	222	122	105	278	96	18	27
17	181	157	136	e44	29	223	102	90	416	69	18	17
18	88	183	114	e41	41	200	96	310	529	54	15	18
19	58	147	100	e38	35	157	106	409	332	48	13	932
20	43	121	1,110	e35	38	348	107	247	234	40	12	309
21	33	130	562	e33	67	589	107	212	176	34	11	154
22	26	261	283	e32	1,390	318	126	215	144	30	10	115
23	21	208	183	e29	1,640	211	121	192	117	27	9.5	490
24	18	145	140	e27	554	158	105	160	95	23	8.8	230
25	17	111	122	e25	293	126	94	130	81	19	8.2	134
26	62	92	96	e23	204	109	96	112	71	16	7.7	93
27	74	89	78	e22	158	93	137	94	64	14	7.3	75
28	69	79	71	e21	129	80	113	89	58	13	7.3	79
29	251	76	68	21	---	76	96	96	52	14	7.3	64
30	552	75	66	22	---	76	83	100	45	13	7.2	52
31	218	---	70	20	---	71	---	107	---	13	7.8	---
TOTAL	2,031.5	4,640	4,939	2,787	5,292	8,033	5,521	6,361	7,295	1,456	500.1	3,193.9
MEAN	65.5	155	159	89.9	189	259	184	205	243	47.0	16.1	106
MAX	552	530	1,110	535	1,640	674	531	695	1,020	160	75	932
MIN	7.2	61	30	20	19	71	82	84	45	13	7.2	8.9
CFSM	1.09	2.57	2.65	1.50	3.14	4.31	3.06	3.41	4.05	0.78	0.27	1.77
IN.	1.26	2.87	3.06	1.73	3.28	4.97	3.42	3.94	4.52	0.90	0.31	1.98

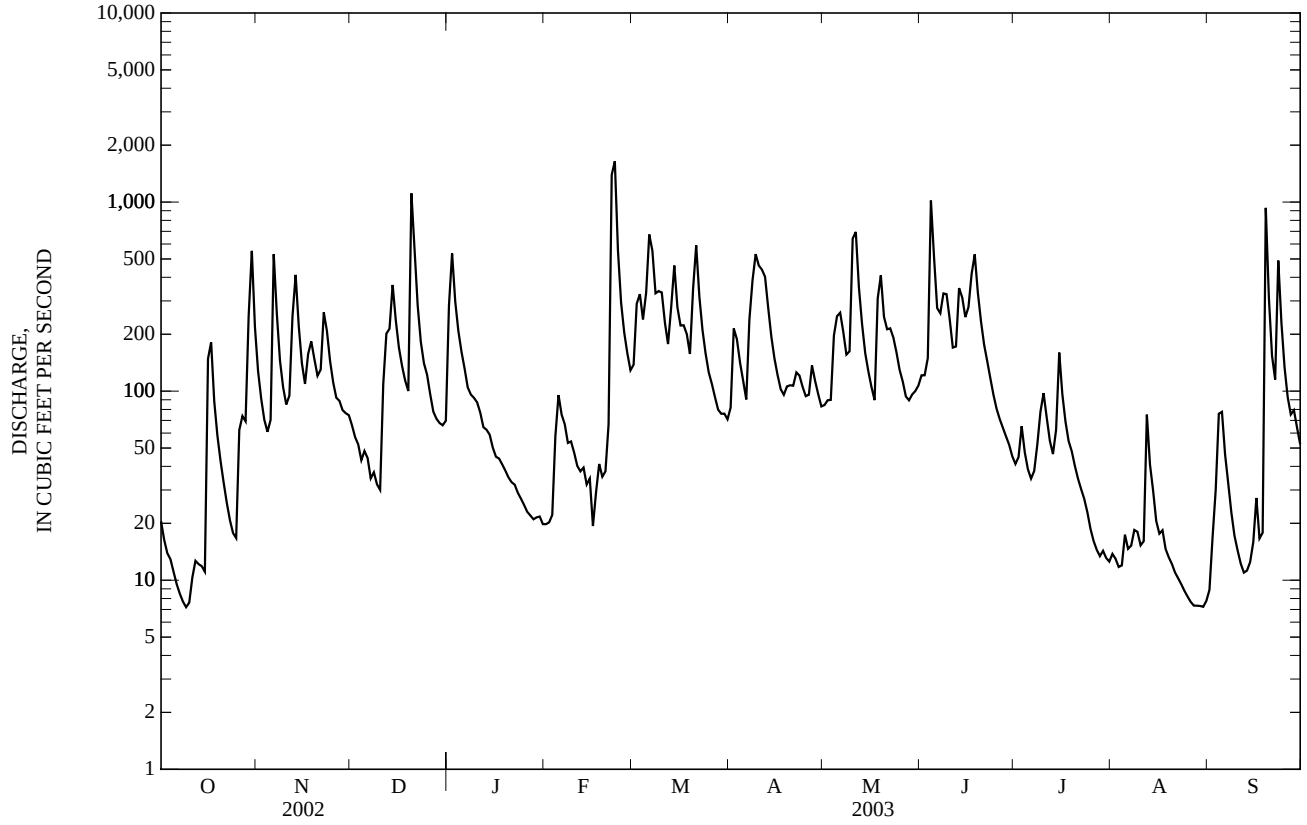
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 2003, BY WATER YEAR (WY)

MEAN	40.4	78.3	103	135	143	198	140	129	66.8	27.8	25.3	28.3
MAX	256	512	249	426	326	394	330	391	243	69.5	88.9	180
(WY)	(1977)	(1986)	(1997)	(1996)	(1994)	(1993)	(1987)	(1996)	(2003)	(1994)	(1996)	(1996)
MIN	3.46	4.03	6.23	8.49	23.6	54.5	41.9	31.8	9.42	2.47	4.41	2.48
(WY)	(1999)	(1999)	(1999)	(1981)	(2002)	(1988)	(1999)	(1991)	(1999)	(1999)	(1987)	(1983)

02011460 BACK CREEK NEAR SUNRISE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1974 - 2003	
ANNUAL TOTAL	30,721.0		52,049.5			
ANNUAL MEAN	84.2		143		92.8	
HIGHEST ANNUAL MEAN					155	1996
LOWEST ANNUAL MEAN					39.1	1999
HIGHEST DAILY MEAN	1,480	Apr 28	1,640	Feb 23	6,280	Nov 4, 1985
LOWEST DAILY MEAN	1.2	Sep 13	7.2	aOct 9	0.87	Aug 12, 1999
ANNUAL SEVEN-DAY MINIMUM	1.6	Sep 8	7.5	Aug 25	1.0	Aug 6, 1999
MAXIMUM PEAK FLOW			2,710	Feb 22	17,500	Nov 4, 1985
MAXIMUM PEAK STAGE			5.14	Feb 22	10.01	Nov 4, 1985
INSTANTANEOUS LOW FLOW			6.9	bOct 9	0.73	cAug 12, 1999
ANNUAL RUNOFF (CFSM)	1.40		2.37		1.54	
ANNUAL RUNOFF (INCHES)	19.02		32.22		20.98	
10 PERCENT EXCEEDS	183		329		211	
50 PERCENT EXCEEDS	33		87		43	
90 PERCENT EXCEEDS	5.0		14		5.9	

a Also Aug. 30, 2003.
b Also Oct. 10, 2002 and Aug. 29, 30, 2003.
c Also Aug. 13, 1999.
e Estimated.



02011470 BACK CREEK AT SUNRISE, VA

LOCATION.--Lat 38°11'25", long 79°48'42", NAD83, Bath County, Hydrologic Unit 02080201, on left bank 75 ft upstream from bridge on State Highway 600 at Sunrise, 180 ft upstream from Beaver Run, 0.5 mi downstream from Back Creek Dam, and 7.6 mi northeast of Mountain Grove.

DRAINAGE AREA.--76.1 mi^2.

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Water-stage recorder. Concrete control since Oct. 24, 1984. Datum of gage is 1,968.52 ft NGVD of 1929 (Virginia Power bench mark). Nov. 5, 1992, to Jan. 5, 1993, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since October 1984 by Back Creek Lake 0.5 mi upstream, amount unknown. Virginia Power gage-height transmitter at station, receiver at Back Creek Dam. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Maximum discharge, 5,690 ft^3/s, from rating curve extended above 960 ft^3/s on basis of release from Back Creek Lake at peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	142	59	287	30	183	100	121	172	27	17	15
2	15	128	43	845	26	376	244	121	159	29	16	15
3	15	95	38	429	20	492	286	124	214	63	15	16
4	16	62	41	273	63	381	263	242	1,590	62	15	28
5	16	81	67	224	75	304	150	382	856	57	15	100
6	15	799	104	149	81	838	120	386	333	40	15	94
7	15	319	80	142	102	1,060	335	302	339	20	16	78
8	15	204	31	127	98	423	572	212	448	40	17	23
9	15	148	20	116	79	385	746	219	431	111	17	21
10	16	106	21	110	70	497	751	879	316	148	16	20
11	17	118	137	108	42	318	659	947	259	101	19	16
12	16	366	330	72	38	174	617	543	228	39	107	16
13	15	646	282	56	28	276	402	269	486	29	77	15
14	14	324	498	58	29	719	239	204	447	80	40	15
15	15	180	329	58	64	377	224	183	372	201	31	16
16	26	157	188	67	103	299	152	130	473	183	24	30
17	38	203	160	76	61	290	134	111	712	91	22	72
18	46	241	185	80	176	287	134	438	887	66	18	107
19	100	261	196	41	142	226	150	756	478	67	29	1,370
20	65	153	1,570	21	75	422	149	363	299	33	35	396
21	60	171	827	18	119	993	134	354	236	29	36	206
22	36	288	395	18	1,910	491	125	255	222	37	62	147
23	20	304	217	18	2,340	207	162	262	112	36	72	733
24	17	238	179	19	857	171	170	253	119	24	36	293
25	19	131	193	19	449	175	176	149	99	18	15	195
26	65	131	149	18	293	182	128	130	60	17	15	99
27	78	98	100	30	255	146	116	124	59	15	16	59
28	102	139	87	44	176	127	113	128	90	15	16	132
29	166	120	104	46	---	98	122	136	58	15	16	91
30	926	83	103	46	---	81	116	137	28	15	16	76
31	393	---	84	30	---	86	---	154	---	16	15	---
TOTAL	2,387	6,436	6,817	3,645	7,801	11,084	7,789	9,014	10,582	1,724	876	4,494
MEAN	77.0	215	220	118	279	358	260	291	353	55.6	28.3	150
MAX	926	799	1,570	845	2,340	1,060	751	947	1,590	201	107	1,370
MIN	14	62	20	18	20	81	100	111	28	15	15	15

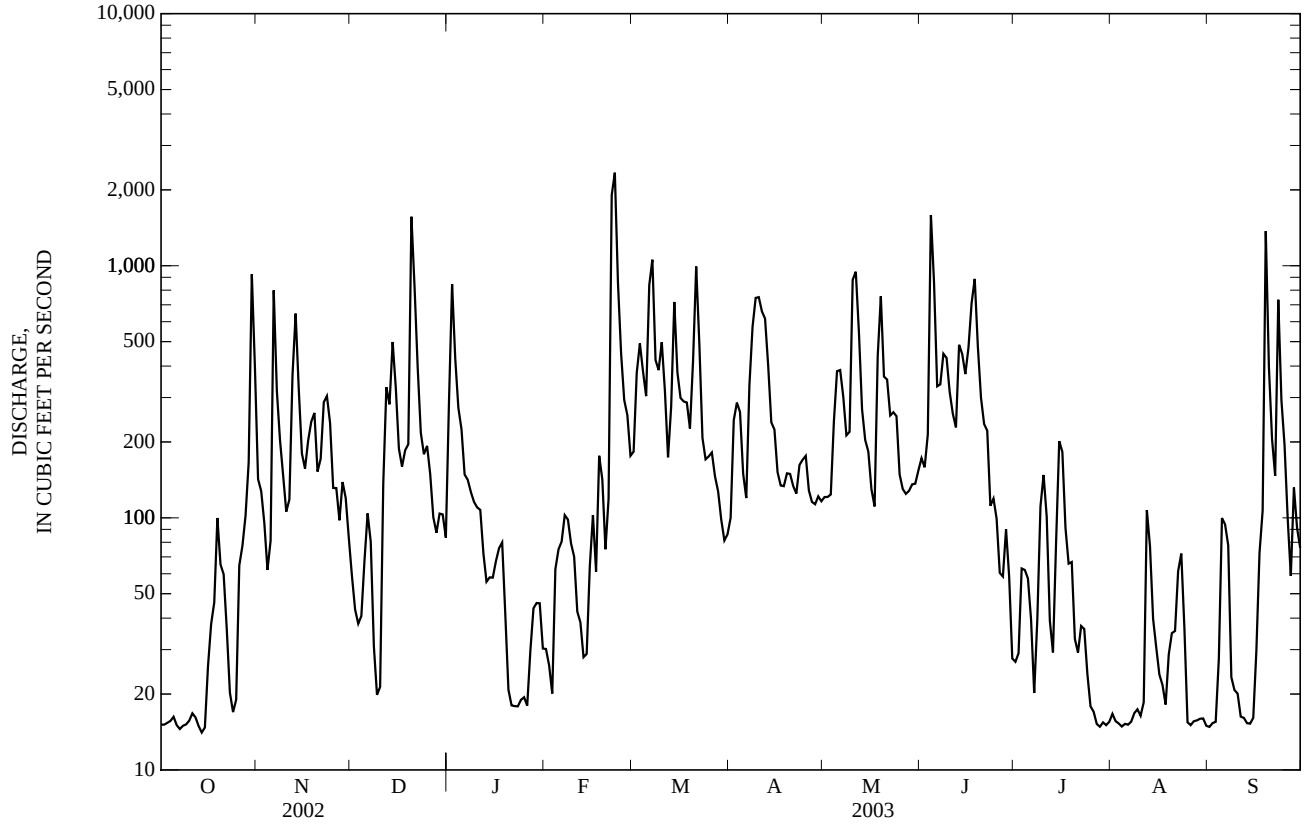
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 2003, BY WATER YEAR (WY)

MEAN	34.0	78.4	116	170	168	252	182	178	91.3	36.0	33.4	41.3
MAX	150	371	285	504	416	616	496	399	353	83.0	96.1	230
(WY)	(1990)	(1986)	(1997)	(1996)	(1994)	(1993)	(1987)	(1989)	(2003)	(1994)	(1996)	(1996)
MIN	9.31	3.83	2.51	11.4	16.5	61.4	51.1	37.5	12.3	10.0	12.1	11.5
(WY)	(1985)	(1999)	(1999)	(2002)	(2002)	(1988)	(1986)	(1991)	(1999)	(1999)	(1999)	(1985)

02011470 BACK CREEK AT SUNRISE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1985 - 2003	
ANNUAL TOTAL	40,741.2		72,649			
ANNUAL MEAN	112		199		115	
HIGHEST ANNUAL MEAN					199	2003
LOWEST ANNUAL MEAN					47.9	1999
HIGHEST DAILY MEAN	1,990	Apr 22	2,340	Feb 23	4,890	Jan 19, 1996
LOWEST DAILY MEAN	8.5	Jan 18	14	Oct 14	1.7	aDec 5, 1998
ANNUAL SEVEN-DAY MINIMUM	8.6	Jan 15	15	Oct 1	1.9	Nov 30, 1998
MAXIMUM PEAK FLOW			3,410	Feb 22	5,690	Jan 19, 1996
MAXIMUM PEAK STAGE			9.19	Feb 22	11.99	Jan 19, 1996
INSTANTANEOUS LOW FLOW			10	Aug 26	1.7	bDec 5, 1998
10 PERCENT EXCEEDS	277		448		260	
50 PERCENT EXCEEDS	19		113		39	
90 PERCENT EXCEEDS	14		16		13	

a Also Dec. 6, 1998.
b Also Dec. 6, 7, 1998.



02011490 LITTLE BACK CREEK NEAR SUNRISE, VA

LOCATION.--Lat 38°12'52", long 79°50'15", NAD83, Bath County, Hydrologic Unit 02080201, in George Washington National Forest, on right bank 600 ft downstream from Long Spring Run, 1.2 mi downstream from Little Back Creek Dam, and 8.5 mi northeast of Mountain Grove.

DRAINAGE AREA.--4.91 mi^2.

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Water-stage recorder. Concrete control with rectangular weir plate. Datum of gage is 2,638.48 ft NGVD of 1929 (Virginia Power bench mark). Nov. 5, 1992, to Jan. 5, 1993, nonrecording gage at present site and datum.

REMARKS.--Records good except those for periods of no gage-height record, Jan. 14 to Feb. 20 and June 28, which are fair. Flow regulated since January 1985 by Little Back Creek Lake 1.2 mi upstream, amount unknown. Maximum discharge, 580 ft^3/s, from rating curve extended above 30 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	7.3	4.6	10	e2.6	5.7	5.4	3.8	10	2.7	2.6	2.5
2	2.8	5.5	4.3	19	e2.4	9.8	12	3.7	10	3.4	2.4	3.8
3	2.7	4.7	4.1	12	e2.6	12	11	3.9	9.6	3.6	2.5	5.4
4	2.6	4.5	3.9	8.9	e3.6	9.3	8.8	8.7	37	3.0	2.7	12
5	2.5	5.8	3.9	7.4	e4.8	10	7.1	13	19	2.8	3.0	12
6	2.3	21	3.7	6.4	e4.4	22	5.8	13	10	2.7	2.7	6.9
7	2.4	13	3.4	5.4	e4.2	19	8.7	11	9.1	2.8	2.6	4.8
8	2.4	8.1	3.4	4.8	e3.8	12	15	8.2	12	3.2	3.0	3.9
9	2.4	6.2	3.4	4.6	e3.6	11	22	6.7	14	3.6	3.3	3.3
10	2.5	5.3	3.4	4.6	e3.6	11	18	11	11	4.3	3.5	2.9
11	2.5	7.1	6.6	4.5	e3.6	8.8	17	18	8.2	3.8	3.6	2.7
12	2.3	15	9.9	4.3	e3.5	6.9	14	12	7.6	3.4	4.8	2.6
13	2.4	20	9.2	4.3	e3.3	7.8	11	8.7	14	4.0	4.0	2.5
14	2.6	11	14	e4.0	e3.2	13	8.3	6.8	15	9.2	3.3	2.8
15	2.7	7.6	10	e3.8	e3.6	10	6.9	5.7	34	7.2	3.0	3.0
16	7.5	6.4	7.9	e3.6	e4.0	8.3	6.0	4.9	33	5.3	2.8	2.8
17	9.3	7.7	6.8	e3.5	e3.6	8.2	5.4	4.4	23	4.4	5.0	2.5
18	5.5	8.9	5.9	e3.4	e3.0	7.7	5.2	24	18	3.8	4.7	3.9
19	4.0	8.0	5.3	e3.3	e2.9	6.8	5.5	25	13	3.6	3.9	62
20	3.5	7.0	38	e3.4	e3.4	14	5.9	12	9.3	3.1	3.4	18
21	3.4	7.2	22	e3.4	4.4	23	6.1	9.5	7.5	3.0	3.2	9.2
22	3.2	11	11	e3.2	65	12	6.6	8.6	6.3	2.8	2.9	8.0
23	2.9	10	7.8	e3.2	67	8.8	6.8	8.2	5.4	2.8	2.7	23
24	2.8	7.8	6.6	e3.0	20	7.1	6.4	7.3	4.6	2.7	2.5	13
25	2.9	6.6	5.8	e2.8	11	6.0	5.8	6.1	4.1	2.6	2.6	7.5
26	5.1	5.7	5.0	e2.8	7.9	5.4	5.3	5.5	3.7	2.7	2.5	5.7
27	5.4	5.4	4.3	e2.9	6.6	4.8	4.7	5.0	3.4	2.6	2.7	5.2
28	5.2	5.1	3.9	e2.8	5.7	4.4	4.4	4.9	e3.0	2.7	2.6	6.4
29	11	4.9	3.8	e2.7	---	4.4	4.3	5.1	2.8	2.8	2.5	6.2
30	23	4.9	3.9	e2.6	---	4.7	4.0	5.2	2.8	2.6	2.4	5.4
31	11	---	4.2	e2.6	---	4.6	---	6.4	---	2.6	2.4	---
TOTAL	143.7	248.7	230.0	153.2	257.3	298.5	253.4	276.3	360.4	109.8	95.8	249.9
MEAN	4.64	8.29	7.42	4.94	9.19	9.63	8.45	8.91	12.0	3.54	3.09	8.33
MAX	23	21	38	19	67	23	22	25	37	9.2	5.0	62
MIN	2.3	4.5	3.4	2.6	2.4	4.4	4.0	3.7	2.8	2.6	2.4	2.5

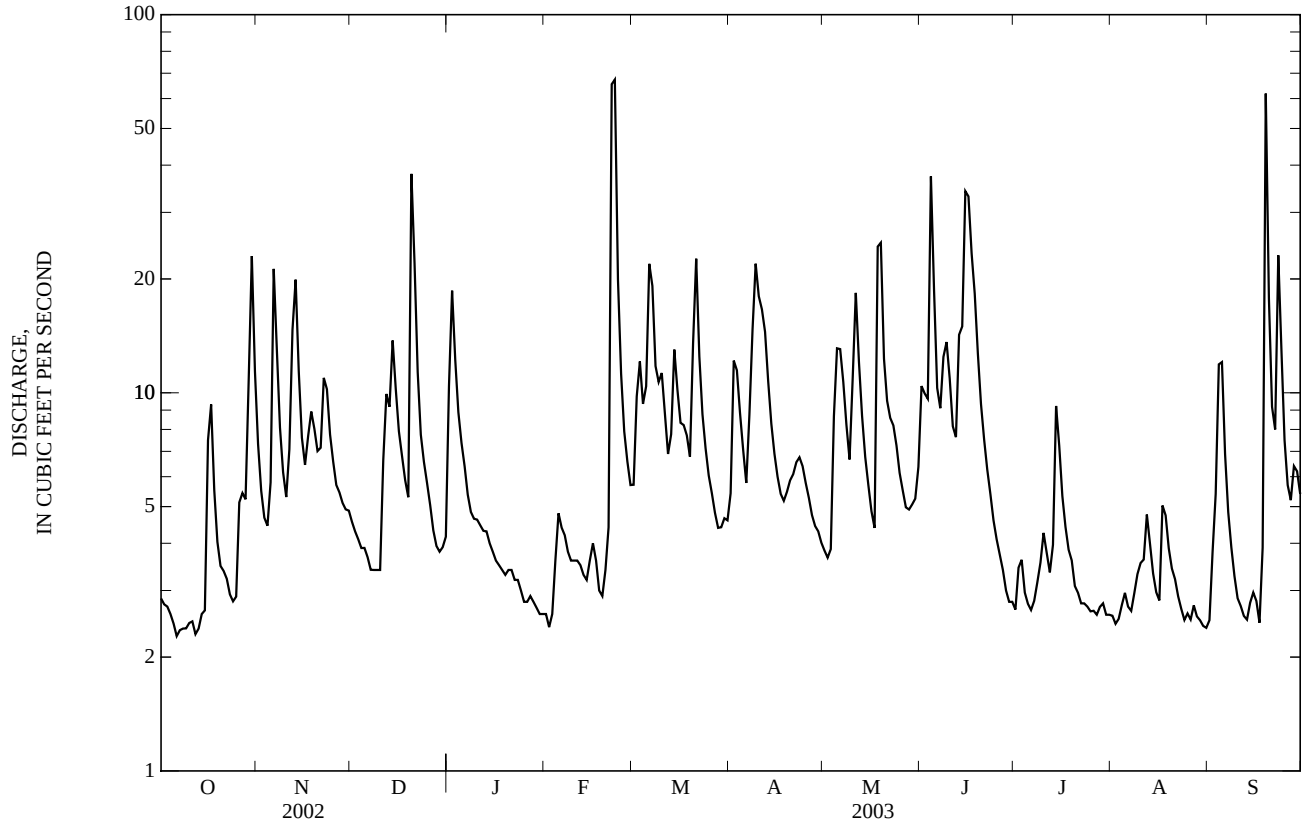
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 2003, BY WATER YEAR (WY)

MEAN	3.42	4.87	5.61	6.97	6.94	8.46	6.89	6.83	4.66	3.47	3.37	3.54
MAX	7.46	12.6	9.65	15.7	12.9	16.4	13.1	14.8	12.0	4.95	5.13	8.33
(WY)	(1990)	(1986)	(1997)	(1996)	(1994)	(1993)	(1987)	(1985)	(2003)	(1994)	(1989)	(2003)
MIN	2.00	1.94	1.99	3.07	3.20	3.91	2.78	3.09	2.08	1.99	2.22	2.28
(WY)	(2000)	(1999)	(1999)	(2002)	(2002)	(1985)	(1999)	(1999)	(1999)	(1999)	(1999)	(1985)

02011490 LITTLE BACK CREEK NEAR SUNRISE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1985 - 2003	
ANNUAL TOTAL	1,854.9		2,677.0			
ANNUAL MEAN	5.08		7.33		5.41	
HIGHEST ANNUAL MEAN					7.33	2003
LOWEST ANNUAL MEAN					3.34	1999
HIGHEST DAILY MEAN	38	Dec 20	67	Feb 23	158	Nov 4, 1985
LOWEST DAILY MEAN	1.9	aJan 1	2.3	bOct 6	0.90	Oct 13, 1984
ANNUAL SEVEN-DAY MINIMUM	2.0	Jan 1	2.4	Oct 6	1.2	Jan 24, 1985
MAXIMUM PEAK FLOW			125	Feb 22	580	Nov 4, 1985
MAXIMUM PEAK STAGE			3.09	Feb 22	4.06	Nov 4, 1985
INSTANTANEOUS LOW FLOW			2.2	cOct 6	d0.73	Oct 9, 1999
10 PERCENT EXCEEDS	9.9		13		9.4	
50 PERCENT EXCEEDS	3.4		5.0		3.8	
90 PERCENT EXCEEDS	2.3		2.7		2.4	

a Also Jan. 5, 10, 2002.
b Also Oct. 12, 2002.
c Also Oct. 7, 2002.
d Result of regulation.
e Estimated.



02011500 BACK CREEK NEAR MOUNTAIN GROVE, VA

LOCATION.--Lat 38°04'10", long 79°53'49", NAD83, Bath County, Hydrologic Unit 02080201, on left bank 0.3 mi downstream from Cummings Run, 0.8 mi downstream from bridge on State Highway 39, and 2.1 mi south of Mountain Grove.

DRAINAGE AREA.--134 mi^2.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,701.45 ft NGVD of 1929.

REMARKS.--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. Statistics of monthly mean data and summary statistics for water years 1952-1984 (unregulated flow) are available in previous data books, water years 1991-1998. Diversion 10.5 mi upstream from station by Virginia Power for recreation lakes, net averages 0.5 ft^3/s. U.S. Army Corps of Engineers satellite water temperature and gage-height telemeter at station. Maximum discharge, 18,400 ft^3/s, from rating curve extended above 14,000 ft^3/s on basis of slope-area measurement of peak flow.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	235	109	373	55	322	161	156	274	61	37	32
2	35	195	96	1,060	53	602	428	161	250	69	36	32
3	33	147	82	673	48	777	466	166	283	112	34	34
4	31	108	79	472	62	616	398	380	1,650	105	33	73
5	30	136	94	379	107	590	275	551	1,060	98	34	160
6	28	1,050	119	275	91	1,070	193	647	540	88	32	134
7	25	559	110	220	119	1,270	462	515	490	99	34	117
8	24	326	77	199	117	668	832	374	626	75	38	60
9	24	242	54	175	99	553	1,140	317	652	135	62	45
10	25	165	54	164	95	646	1,060	717	513	196	84	40
11	28	253	228	153	74	488	1,120	979	408	199	81	35
12	26	611	533	127	68	311	893	685	332	133	169	32
13	25	978	526	102	58	318	634	411	566	100	135	31
14	22	548	804	101	56	768	408	304	576	345	79	33
15	22	322	577	97	88	515	351	257	541	298	66	38
16	115	251	375	99	161	415	260	204	881	280	68	41
17	159	341	285	105	129	395	208	163	1,070	163	65	69
18	93	390	277	106	176	389	195	1,260	1,120	109	59	119
19	126	411	293	102	211	315	240	1,300	755	106	98	1,760
20	102	257	1,870	71	112	538	235	683	522	82	81	705
21	84	260	1,160	54	205	1,190	227	577	399	64	65	360
22	69	452	632	50	3,210	730	201	503	351	63	70	244
23	48	455	370	51	3,530	409	228	449	208	65	85	1,050
24	37	383	306	55	1,240	294	234	417	178	62	68	535
25	36	215	295	52	745	271	238	272	151	44	35	336
26	93	196	243	49	507	264	202	217	114	41	30	184
27	131	161	187	47	425	220	186	190	95	38	29	123
28	137	189	144	65	288	177	170	186	121	35	31	228
29	286	176	160	70	---	155	170	199	107	37	29	181
30	1,030	142	156	69	---	135	162	202	68	35	33	137
31	630	---	148	60	---	130	---	220	---	35	33	---
TOTAL	3,592	10,154	10,443	5,675	12,129	15,541	11,977	13,662	14,901	3,372	1,833	6,968
MEAN	116	338	337	183	433	501	399	441	497	109	59.1	232
MAX	1,030	1,050	1,870	1,060	3,530	1,270	1,140	1,300	1,650	345	169	1,760
MIN	22	108	54	47	48	130	161	156	68	35	29	31

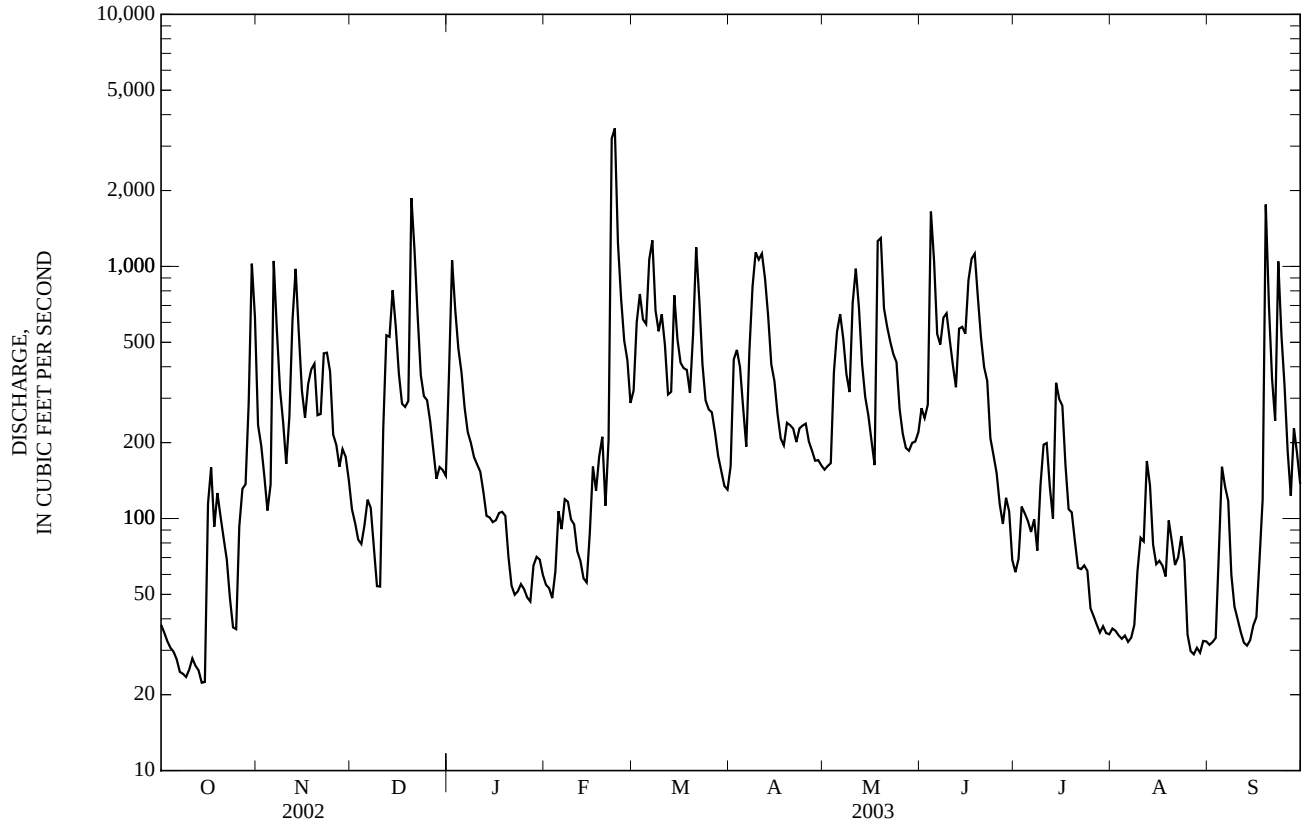
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 2003, BY WATER YEAR (WY)

MEAN	52.8	134	188	274	275	383	282	260	134	56.3	49.3	60.9
MAX	246	696	392	818	608	833	824	528	497	134	127	300
(WY)	(1990)	(1986)	(1997)	(1996)	(1998)	(1993)	(1987)	(1996)	(2003)	(2001)	(2000)	(1996)
MIN	18.9	11.4	12.6	37.0	41.2	92.8	77.6	62.9	18.2	14.0	17.9	16.5
(WY)	(1999)	(1999)	(1999)	(2002)	(2002)	(1988)	(1999)	(1991)	(1999)	(1999)	(1987)	(1985)

02011500 BACK CREEK NEAR MOUNTAIN GROVE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1985 - 2003	
ANNUAL TOTAL	62,230		110,247			
ANNUAL MEAN	170		302		179	
HIGHEST ANNUAL MEAN					302	2003
LOWEST ANNUAL MEAN					81.3	1999
HIGHEST DAILY MEAN	2,540	Apr 22	3,530	Feb 23	9,940	Jan 19, 1996
LOWEST DAILY MEAN	14	Sep 9	22	aOct 14	8.4	Nov 23, 1998
ANNUAL SEVEN-DAY MINIMUM	15	Sep 3	25	Oct 9	9.1	Nov 23, 1998
MAXIMUM PEAK FLOW			6,400	Feb 22	b18,400	Jan 19, 1996
MAXIMUM PEAK STAGE			8.41	Feb 22	b12.41	Jan 19, 1996
INSTANTANEOUS LOW FLOW			18	Oct 14	c,d5.3	Dec 30, 1998
10 PERCENT EXCEEDS	462		684		422	
50 PERCENT EXCEEDS	53		175		74	
90 PERCENT EXCEEDS	17		36		20	

a Also Oct. 15, 2002.
b Prior to regulation, 1951-84, maximum peak flow, 12,700 ft^3/s, Mar. 7, 1967, gage height, 10.77 ft.
c Prior to regulation, 1951-84, instantaneous low flow, 1.5 ft^3/s, Aug. 18, 1967.
d Result of freezeup.



02011500 BACK CREEK NEAR MOUNTAIN GROVE, VA—Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: June 1978 to current year.

INSTRUMENTATION.--Water-temperature recorder since June 1978.

REMARKS.--Interruption in record due to little or no streamflow past the temperature sensor on Oct. 14, 15, and instrument malfunction July 22, 24, 25. Some record in prior years fragmentary due to instrument malfunction. Records represent water temperature at sensor within 0.5°C. Temperature at the sensor was compared with the average for the creek by temperature cross section on Oct. 3, 2000. A maximum variation of 1.0°C was found within the cross section.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum recorded, 33.5°C, Aug. 14, 1988; minimum recorded, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 27.8°C, Aug. 2; minimum, 0.0°C, on several days during winter.

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	18.9	16.5	17.7	12.4	10.6	11.6	6.0	3.9	4.7	6.7	5.7	6.2
2	21.3	17.3	19.2	12.8	9.9	11.0	5.3	2.8	4.0	7.1	6.4	6.6
3	21.3	17.7	19.6	12.4	9.2	10.8	5.3	3.5	4.5	6.7	5.3	6.2
4	20.9	18.9	19.8	11.3	10.2	10.9	3.5	1.8	2.7	5.7	4.2	5.0
5	23.8	18.9	20.5	11.0	9.5	10.1	4.6	0.7	2.6	4.9	4.2	4.5
6	20.9	15.8	17.9	13.1	9.5	12.0	6.0	3.9	4.8	5.3	3.5	4.8
7	18.1	15.4	16.3	12.1	11.0	11.8	4.9	2.1	3.5	4.6	2.1	3.2
8	16.1	12.1	14.2	13.5	9.9	11.4	3.9	2.1	3.2	6.4	3.9	4.8
9	15.4	13.1	14.3	13.5	10.6	11.7	3.5	1.1	2.3	7.1	4.2	5.3
10	15.4	14.3	15.0	14.6	11.0	12.8	4.2	1.4	2.6	4.9	3.2	4.2
11	16.5	15.0	15.7	13.9	12.1	13.2	5.7	3.5	4.3	3.5	1.8	2.5
12	19.7	16.1	17.6	12.1	11.7	11.7	7.4	5.7	6.6	2.8	0.4	1.5
13	18.1	16.1	17.1	12.8	11.0	12.1	6.4	6.0	6.4	3.2	0.0	1.5
14	---	---	---	12.8	10.6	11.5	7.1	6.4	6.8	2.5	0.7	1.8
15	---	---	---	12.4	9.9	11.1	7.4	6.0	6.5	1.8	0.4	1.1
16	13.9	11.7	12.5	11.7	11.3	11.5	7.4	5.3	6.5	1.1	0.0	0.3
17	13.5	11.7	13.0	11.3	9.5	10.8	6.7	4.6	5.5	2.1	0.4	1.1
18	13.5	10.2	11.8	11.0	8.8	9.8	7.1	5.7	6.3	0.7	0.0	0.0
19	15.4	11.7	13.5	11.0	9.5	10.1	8.1	6.4	7.2	1.1	0.0	0.1
20	15.8	15.0	15.5	11.3	9.2	10	7.8	7.1	7.5	2.1	0.0	0.9
21	15.4	14.3	14.7	10.6	9.2	9.9	7.4	6.0	6.7	3.2	0.4	1.6
22	16.1	13.5	14.5	10.6	8.8	9.9	7.4	6.0	6.5	0.4	0.0	0.0
23	14.6	11.7	13.1	10.2	8.5	9.1	7.1	4.9	5.8	0.0	0.0	0.0
24	12.8	11.7	11.9	11.3	8.8	9.6	6.0	5.3	5.7	0.4	0.0	0.0
25	12.1	11.7	11.8	10.6	7.4	8.9	6.0	4.2	5.4	0.0	0.0	0.0
26	14.6	11.7	13.0	9.2	8.5	8.8	5.7	3.5	4.5	0.0	0.0	0.0
27	15.8	13.5	14.5	8.8	6.7	7.9	5.3	2.8	3.9	0.4	0.0	0.0
28	14.3	13.1	13.6	8.5	6.4	7.1	4.2	1.8	3.1	0.0	0.0	0.0
29	14.3	12.4	13.3	8.5	6.4	7.2	6.4	3.5	4.6	0.0	0.0	0.0
30	15.4	12.4	14.3	8.5	6.0	7.3	6.0	3.2	4.6	1.4	0.0	0.4
31	15.4	12.4	14.3	---	---	---	6.4	3.9	5.1	2.8	1.4	2.0
MONTH	23.8	10.2	15.2	14.6	6.0	10.4	8.1	0.7	5.0	7.1	0.0	2.1

02011500 BACK CREEK NEAR MOUNTAIN GROVE, VA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	3.5	2.1	2.7	6.7	2.8	4.5	11.0	3.9	7.0	16.5	11.7	13.8
2	4.9	1.8	3.2	4.9	3.5	4.1	12.1	5.7	8.4	18.9	11.7	14.7
3	4.2	1.8	3.1	5.3	2.5	3.5	12.8	6.7	9.1	15.4	11.7	13.1
4	4.2	2.1	3.5	6.0	2.1	3.6	11.0	7.1	8.9	12.4	11.3	11.9
5	3.2	0.4	1.7	6.7	3.5	4.8	12.8	7.8	9.9	11.3	10.6	10.9
6	1.8	0.4	1.2	5.3	3.5	4.5	12.4	6.7	9.4	13.5	10.6	11.7
7	3.2	1.1	2.0	5.3	3.2	4.0	9.9	7.1	7.8	14.6	11.3	12.6
8	2.8	0.0	1.2	7.1	2.8	4.5	8.5	7.4	7.8	16.9	11.7	13.8
9	2.5	0.0	0.8	7.4	3.5	4.9	8.5	7.4	7.8	15.8	11.7	13.6
10	2.8	1.1	1.9	6.0	2.8	4.0	8.5	7.1	7.8	13.5	12.4	12.8
11	1.8	0.4	1.1	6.7	3.2	4.3	8.5	7.1	7.7	15.0	12.4	13.2
12	2.5	0.0	1.1	6.7	2.8	4.6	11.3	7.1	8.6	14.3	12.1	12.7
13	0.7	0.0	0.1	9.2	4.6	6.2	12.1	7.1	9.0	15.8	11.3	12.9
14	1.8	0.0	0.5	7.4	4.2	5.4	13.1	7.1	9.6	17.3	10.6	13.3
15	1.8	0.7	1.2	8.5	3.9	5.7	14.3	7.8	10.4	13.9	11.7	12.7
16	0.7	0.0	0.0	7.8	5.3	6.3	14.6	8.1	10.9	18.1	12.1	14.5
17	0.0	0.0	0.0	9.5	5.3	7.1	14.6	8.8	11.4	15.0	12.4	13.0
18	1.4	0.0	0.6	8.1	6.0	6.9	11.0	8.5	9.2	12.4	11.0	11.4
19	4.2	1.4	2.7	8.1	6.4	7.1	12.8	8.8	10.4	13.5	11.3	12.1
20	6.0	1.8	3.7	7.1	6.0	6.4	13.1	9.9	11.1	15.4	11.3	13.2
21	3.9	2.5	3.0	8.5	6.4	7.1	13.5	9.2	11.2	13.9	12.8	13.2
22	3.2	0.7	2.1	9.9	6.4	7.6	12.1	9.5	10.7	12.8	12.1	12.5
23	3.5	2.8	3.2	8.5	6.0	7.0	14.3	8.5	10.7	13.5	12.1	12.7
24	4.6	2.5	3.3	11.3	5.3	7.8	14.3	7.4	10.4	15.8	12.4	13.7
25	3.5	2.5	2.9	12.1	5.7	8.4	10.6	9.2	10	16.9	11.3	13.6
26	2.8	2.1	2.5	8.8	6.4	7.5	12.4	9.9	10.9	16.1	12.8	14.3
27	2.8	2.1	2.3	11.7	4.9	8.0	16.5	9.2	12.3	14.6	12.4	13.3
28	6.0	2.1	3.6	10.6	6.0	8.2	17.3	8.5	12.6	15.4	12.1	13.6
29	---	---	---	10.6	8.5	9.5	14.6	9.9	12.1	14.6	12.8	13.6
30	---	---	---	8.5	4.2	5.6	15.0	9.9	12.5	17.7	12.1	14.6
31	---	---	---	7.1	3.5	5.3	---	---	---	15.4	13.1	14.1
MONTH	6.0	0.0	2.0	12.1	2.1	5.9	17.3	3.9	9.9	18.9	10.6	13.1
		JUNE			JULY			AUGUST			SEPTEMBER	
1	16.5	12.4	14.0	21.3	18.9	20.0	22.9	19.3	20.6	25.5	20.5	22.6
2	18.1	11.3	14.3	19.3	17.7	18.4	27.8	20.1	23.0	24.2	21.3	22.6
3	14.6	12.8	13.3	20.9	16.9	18.4	26.9	21.3	23.2	23.3	20.9	22.0
4	14.6	13.5	13.9	22.9	17.7	20.1	26.4	20.5	22.7	21.7	18.9	20.5
5	16.1	13.1	14.2	24.6	18.5	21.5	26.4	20.5	22.8	22.5	18.1	20.1
6	18.1	12.4	14.8	24.6	19.3	21.4	25.1	20.1	22.4	22.5	18.1	20.2
7	15.0	13.9	14.4	23.3	18.1	20.3	22.1	20.5	21.2	22.5	18.9	20.6
8	16.9	14.3	15.0	24.6	18.9	21.2	23.3	19.3	20.9	22.5	18.5	20.4
9	17.3	13.9	15.1	22.5	19.7	21.1	24.2	19.7	20.9	20.5	17.3	18.9
10	18.1	13.1	15.2	22.5	18.9	20.6	24.6	18.9	21.2	20.9	16.9	18.8
11	18.5	14.3	15.8	22.5	18.5	20.1	24.6	19.7	21.6	21.7	15.8	18.5
12	18.9	15.0	16.4	20.9	16.9	19.0	23.8	19.3	21.3	19.3	15.8	17.8
13	17.3	15.4	16.2	22.5	16.9	19.3	23.3	20.1	21.6	19.3	17.3	18.5
14	18.9	15.4	16.6	20.1	15.8	17.9	25.5	20.1	22.4	22.5	18.5	20.1
15	16.9	15.4	16.1	22.5	16.9	19.4	26.4	21.7	23.5	20.5	18.1	19.3
16	15.4	14.3	14.9	24.2	18.9	21.0	24.6	20.9	22.4	21.7	16.1	18.5
17	15.0	14.3	14.6	24.6	18.5	21.0	25.1	19.7	21.9	20.9	15.8	18.4
18	16.5	14.6	15.4	21.7	18.1	20.3	24.6	19.3	21.6	19.7	17.3	18.3
19	16.9	15.0	15.9	22.9	18.5	20.5	22.5	19.3	20.9	20.1	16.1	18.8
20	18.9	15.0	16.2	24.2	17.7	20.8	24.6	19.7	21.8	20.5	18.9	19.6
21	15.8	13.9	14.8	24.6	18.9	21.6	25.1	20.5	22.6	21.7	19.3	20.1
22	20.1	13.9	16.4	---	---	---	25.5	21.3	23.4	19.7	18.1	19.1
23	20.9	13.9	17.1	23.8	19.7	21.5	26.0	21.3	23.3	19.7	17.7	18.8
24	22.1	14.6	18.1	---	---	---	24.2	18.9	21.8	20.1	17.3	18.4
25	23.3	15.4	19.0	---	---	---	26.0	19.3	22.3	20.5	17.3	18.5
26	23.3	16.9	20.0	25.5	18.1	21.7	26.9	20.1	23.1	20.9	17.7	19.2
27	20.9	18.1	19.2	25.5	19.7	22.4	26.9	20.5	23.5	20.1	17.3	18.5
28	18.9	16.1	17.8	25.1	20.5	22.6	26.0	20.9	22.9	18.9	16.5	17.8
29	23.3	17.3	19.9	22.9	20.9	21.9	26.0	21.3	23.3	16.5	14.6	15.7
30	23.3	17.3	20.3	22.9	20.1	21.2	24.2	21.7	23.0	16.5	13.1	14.8
31	---	---	---	21.3	19.7	20.2	22.5	21.3	21.8	---	---	---
MONTH	23.3	11.3	16.2	25.5	15.8	20.6	27.8	18.9	22.2	25.5	13.1	19.2
YEAR	27.8	0.0	11.8									

02011795 LAKE MOOMAW NEAR HOT SPRINGS, VA

LOCATION.--Lat 37°57'04", long 79°59'20", NAD83, Alleghany County, Hydrologic Unit 02080201, in control tower at 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 mi^2.

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

GAGE.--Water-stage recorder. Datum of gage is at NGVD of 1929 (U.S. Army Corps of Engineers bench mark).

REMARKS.--Lake is formed by rolled rockfill dam with an impervious compacted earth (clay) core. Spillway with crest at elevation 1,667.5 ft is in a divide about 2.5 mi south of the dam, ungated, and 2,450 ft long with a base width of 100 ft. Except for flood flows, all discharge will be through a diversion tunnel with the invert of the entrance being in an intake tower 260 ft high. Elevation of invert is 1,430.5 ft. Portals in the tower at nine levels permit oxygenated water from the surface and cold water from the bottom of the lake to be mixed for water-quality control. Sluice gates in the tower control flood flow releases. Storage began Dec. 10, 1979. Total capacity at top of dam, elevation 1,684.5 ft, is 502,600 acre-ft of which 81,100 acre-ft is above spillway crest. Capacity at maximum conservation pool, elevation 1,582.0 ft, is 123,700 acre-ft; capacity at minimum conservation pool, elevation 1,554.0 ft, is 63,000 acre-ft. Lake is used for flood control, low-water augmentation for water-quality control, and recreation. U.S. Army Corps of Engineers satellite precipitation and elevation telemeter at station.

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

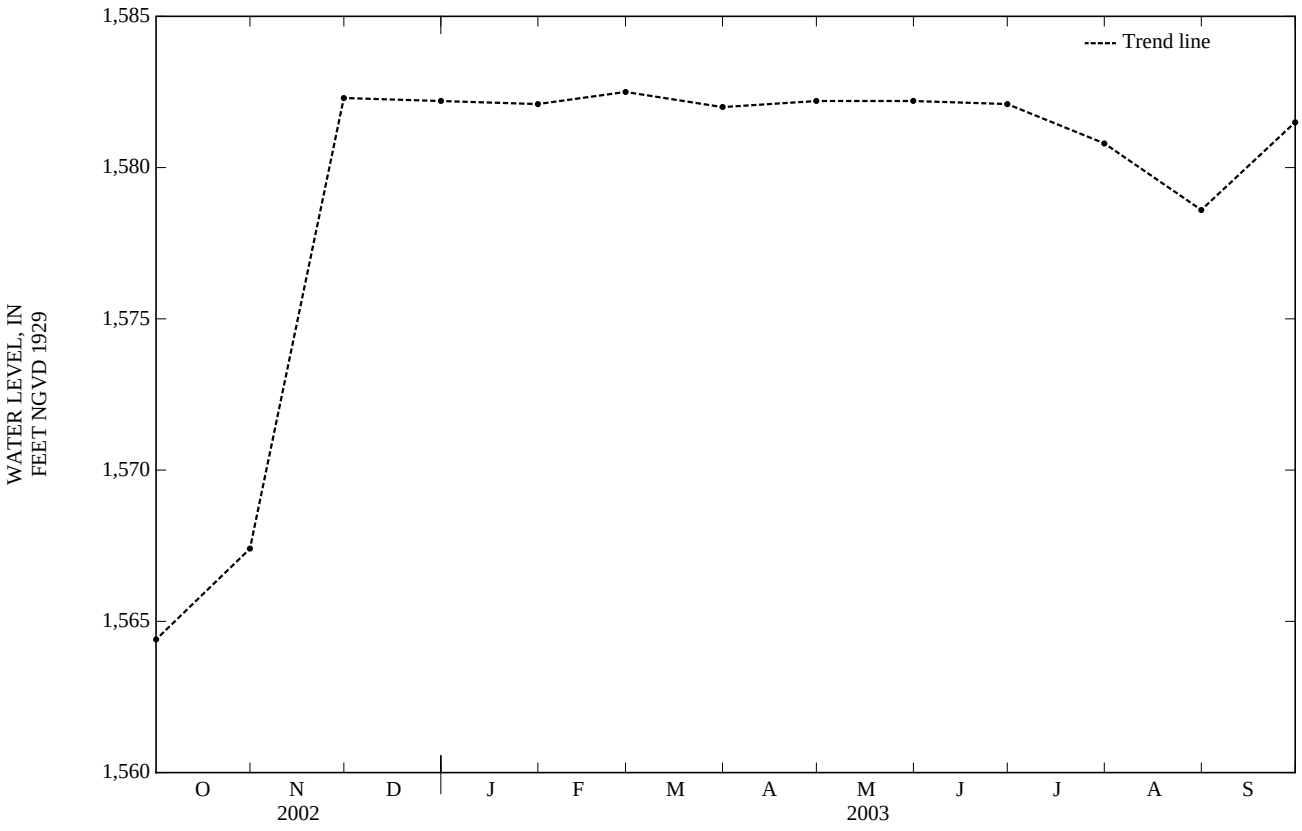
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 168,400 acre-ft, Jan. 20, 1996, elevation, 1,598.4 ft; minimum, (after first filling to minimum conservation pool), 71,900 acre-ft, Nov. 30, Dec. 1, 1991, elevation, 1,558.8 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 152,200, acre-ft, Feb. 24, elevation, 1,592.7 ft; minimum, 81,100 acre-ft, Oct. 15-16, elevation, 1,582.2 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,564.4	83,200	
Oc.t 31	1,567.4	89,500	+6,300
Nov. 30	1,582.3	124,500	+35,000
Dec. 31	1,585.2	124,300	-200
CAL YR 2002			+44,400
Jan. 31	1,582.1	124,000	-300
Feb. 28	1,582.5	125,000	+1,000
Mar. 31	1,582.0	123,700	-1,300
Apr. 30	1,582.2	124,200	+500
May 31	1,582.2	124,200	0
June 30	1,582.1	124,000	-200
July 31	1,580.8	120,700	-3,300
Aug. 31	1,578.6	115,300	-5,400
Sept. 30	1,581.5	122,500	+7,200
WTR YR 2003			+39,300

02011795 LAKE MOOMAW NEAR HOT SPRINGS, VA—Continued



02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA

LOCATION.--Lat 37°56'54", long 79°56'57", NAD83, Alleghany County, Hydrologic Unit 02080201, on right bank 0.4 mi upstream from Cedar Creek, 0.5 mi downstream from Gathright Dam and Lake Moomaw, and 7.3 mi southwest of Hot Springs.

DRAINAGE AREA.--345 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1973 to current year.

REVISED RECORDS.--WDR VA-81-1: 1980.

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft NGVD of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Dec. 20, 1973, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods of no gage-height record, Oct. 30, May 1-5, and July 6-9, which are fair. Flow regulated since December 1979 by Lake Moomaw (station 02011795) 0.5 mi upstream; since October 1984 by Back Creek Lake 28.5 mi upstream, amount unknown; and since January 1985 by Little Back Creek Lake 31.6 mi upstream, amount unknown. Statistics of monthly mean data and summary statistics for water years 1974-1979 (unregulated flow) are available in previous data books, water years 1991-1998. U.S. Army Corps of Engineers satellite water-temperature and gage-height telemeter at station. Maximum discharge, 29,000 ft^3/s, from rating curve extended above 9,200 ft^3/s on basis of slope-area measurement of peak flow.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1972, reached a stage of 17.20 ft, from floodmark.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	171	150	324	366	167	1,050	398	e364	584	274	279	261
2	149	149	257	887	167	1,060	686	e315	706	242	278	249
3	149	149	189	1,790	167	1,110	896	e315	711	356	278	250
4	149	149	169	2,260	167	1,140	762	e662	998	416	278	252
5	149	150	167	1,390	167	1,840	681	e1,070	2,530	415	278	251
6	149	150	167	694	167	3,120	682	1,140	1,860	e277	278	250
7	149	149	167	529	167	3,710	684	1,140	168	e268	278	250
8	149	149	167	473	167	2,340	969	1,140	1,890	e268	278	250
9	149	149	211	408	167	1,070	779	1,140	2,670	e268	277	249
10	149	149	300	364	195	1,060	169	1,140	2,250	352	277	249
11	149	152	300	364	214	1,000	1,710	1,140	1,670	412	277	250
12	149	151	820	364	214	735	4,310	1,780	1,030	412	278	250
13	149	151	1,140	324	214	579	4,250	2,060	1,030	412	278	249
14	149	150	1,500	296	214	960	2,560	1,200	1,100	412	278	250
15	149	149	1,750	296	214	1,140	1,130	672	606	412	278	250
16	149	149	1,340	248	396	1,140	834	561	176	412	278	249
17	149	150	696	214	518	887	668	562	168	413	278	250
18	149	148	513	214	518	724	668	354	164	412	278	251
19	149	150	514	214	693	527	547	1,780	744	413	277	257
20	149	150	871	214	529	170	463	2,950	3,050	413	277	256
21	149	149	2,180	212	324	1,430	463	2,280	5,150	412	279	347
22	149	149	3,020	186	176	2,520	463	1,190	4,340	412	281	468
23	149	149	1,750	167	956	1,830	463	1,760	2,220	334	281	1,590
24	149	151	1,120	167	3,740	949	463	2,550	839	273	281	2,670
25	149	150	1,130	167	5,700	730	463	1,140	487	275	281	1,620
26	149	149	757	167	6,280	598	463	704	333	282	281	508
27	149	252	427	167	4,540	540	463	704	274	281	281	509
28	149	324	366	167	2,030	472	463	540	274	283	281	509
29	150	323	365	167	---	440	463	412	274	285	281	509
30	e151	323	364	167	---	443	463	412	274	283	281	442
31	151	---	364	167	---	444	---	412	---	282	281	---
TOTAL	4,646	5,112	23,405	13,810	29,168	35,758	28,476	33,589	38,570	10,661	8,645	14,195
MEAN	150	170	755	445	1,042	1,153	949	1,084	1,286	344	279	473
MAX	171	324	3,020	2,260	6,280	3,710	4,310	2,950	5,150	416	281	2,670
MIN	149	148	167	167	167	170	169	315	164	242	277	249
(†)	+3,176	+17,646	-101	-151	+504	-655	+252	0	-101	-1,664	-2,722	+3,630
MEAN‡	252	759	752	441	1,060	1,132	958	1,084	1,282	290	191	594
CFSM‡	.73	2.20	2.18	1.28	3.07	3.28	2.78	3.14	3.72	.84	.55	1.72
IN.‡	.84	2.46	2.51	1.47	3.20	3.78	3.10	3.62	4.15	.97	.64	1.92

CAL YR 2002 MEAN‡ 390 CFSM‡ 1.13 IN.‡ 15.35
WTR YR 2003 MEAN‡ 728 CFSM‡ 2.11 IN.‡ 28.65

† Total change in contents, equivalent in cubic feet per second, per month, in Lake Moomaw; provided by U.S. Army Corps of Engineers.
‡ Adjusted for monthly change in contents.

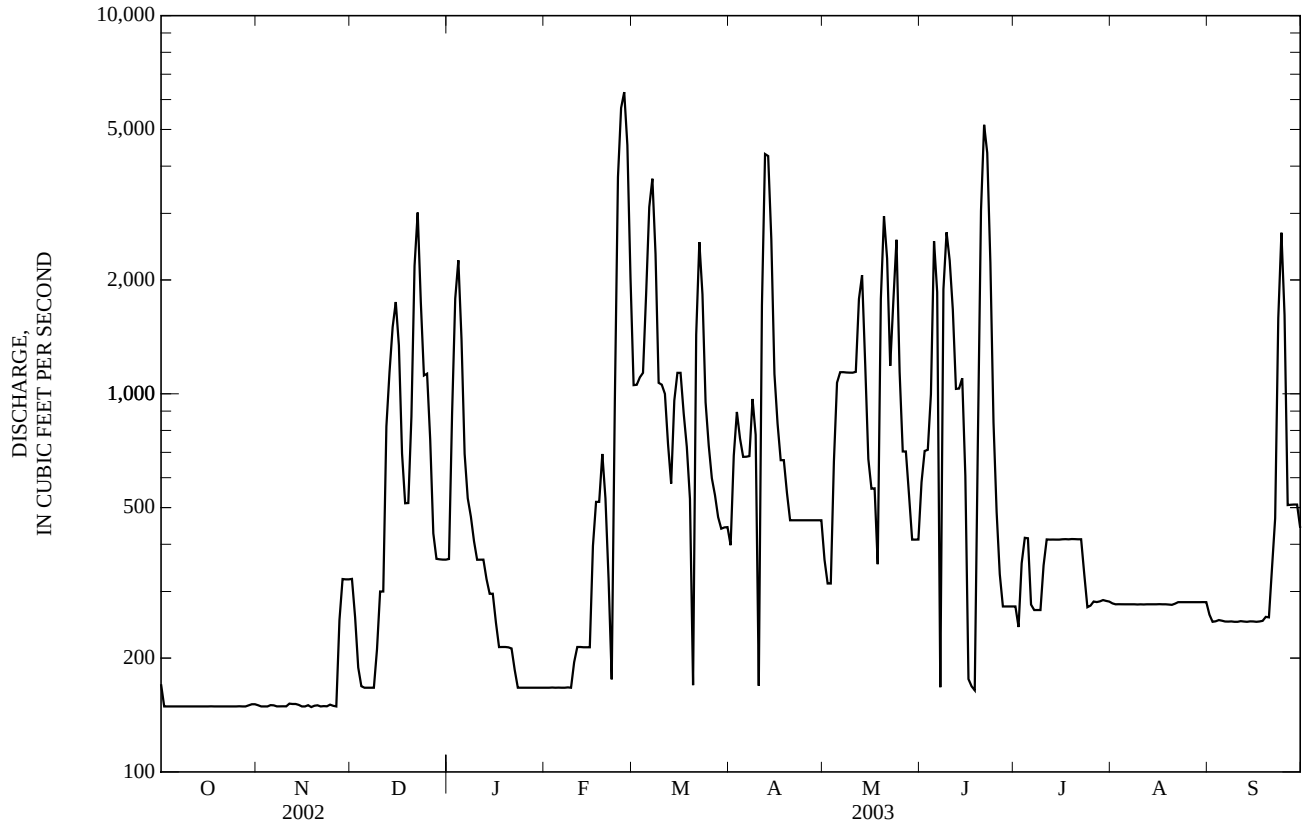
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2003, BY WATER YEAR (WY)

MEAN	224	277	278	433	602	859	720	609	446	278	278	265
MAX	829	1,235	1,061	1,555	1,466	1,881	2,052	1,477	1,286	398	644	661
(WY)	(1980)	(1986)	(1997)	(1996)	(1998)	(1993)	(1987)	(1989)	(2003)	(1995)	(1984)	(1996)
MIN	70.8	64.1	60.8	74.5	114	74.4	172	226	202	123	71.4	57.5
(WY)	(1981)	(1982)	(1982)	(1981)	(1981)	(1981)	(1981)	(1999)	(1980)	(1980)	(1981)	(1981)

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1980 - 2003	
ANNUAL TOTAL	119,921		246,035			
ANNUAL MEAN	329		674		438	
HIGHEST ANNUAL MEAN					674	2003
LOWEST ANNUAL MEAN					196	1981
HIGHEST DAILY MEAN	4,230	Apr 30	6,280	Feb 26	8,670	Nov 7, 1985
LOWEST DAILY MEAN	123	aMar 19	148	Nov 18	47	Sep 2, 1981
ANNUAL SEVEN-DAY MINIMUM	124	Mar 19	149	Oct 2	53	Aug 29, 1981
MAXIMUM PEAK FLOW			6,420	Feb 25	b10,400	Nov 7, 1985
MAXIMUM PEAK STAGE			13.97	Feb 25	b15.29	Nov 7, 1985
INSTANTANEOUS LOW FLOW			39	Dec 9	c,d5.2	May 6, 1980
ANNUAL RUNOFF (CFSM)	0.95		1.95		1.27	
ANNUAL RUNOFF (INCHES)	12.93		26.53		17.24	
10 PERCENT EXCEEDS	461		1,750		879	
50 PERCENT EXCEEDS	211		324		263	
90 PERCENT EXCEEDS	124		149		150	

a Also Apr. 8, 2002.
b Prior to regulation, 1974-79, maximum peak flow, 29,000 ft^3/s, Dec. 26, 1973, result of cofferdam failure during construction of Gathright Dam, gage height, 18.77 ft.
c Prior to regulation, 1974-79, instantaneous low flow, 3.0 ft^3/s, July 12, 1979, result of gate closure at Gathright Dam.
d Result of regulation.
e Estimated.



02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1979 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1978 to current year.

INSTRUMENTATION.--Water-quality monitor October 1978 to September 2001. Water-temperature recorder since October 2001.

REMARKS.--Interruption in record due to instrument malfunction. Some record in prior years fragmentary due to instrument malfunction. The intake tower at Gathright Dam permits selective withdrawal of water from one or more reservoir depths. Records represent water tempertature within 0.5°C. Temperature at the sensor was compared with the average for the river by temperature cross section on Oct. 25, 2000. No variation of water temperature was found within the cross section. Daily records of specific conductance, pH, and dissolved oxygen were also collected from October 1978 to September 2001.

EXTREMES FOR PERIOD OF RECORD.--
WATER TEMPERATURE (water years 1979, 1981-02): Maximum recorded, 28.0°C, Aug. 1, 2, 1979; minimum recorded, 0.0°C, Feb. 16-19, 1979.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 17.4°C, Sept. 30; minimum, 2.7°C, Feb. 18, 19, 23-25.

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	14.6	14.2	14.3	14.6	14.1	14.4	9.8	9.6	9.7	6.3	6.2	6.2
2	14.7	14.2	14.4	14.3	14.0	14.1	9.8	9.5	9.6	6.3	6.0	6.1
3	14.8	14.2	14.4	14.3	13.9	14.0	9.5	9.2	9.4	6.1	6.0	6.0
4	15.0	14.2	14.4	14.2	13.9	14.0	9.4	9.0	9.2	6.1	5.9	6.0
5	14.8	14.2	14.4	13.9	13.6	13.8	9.3	8.9	9.1	5.9	5.8	5.8
6	14.6	14.1	14.3	13.6	12.9	13.3	9.0	8.6	8.8	5.9	5.6	5.8
7	14.5	14.1	14.3	13.0	12.6	12.8	8.7	8.5	8.6	5.6	5.5	5.6
8	14.6	14.0	14.2	12.8	12.5	12.6	8.8	8.5	8.6	5.7	5.6	5.6
9	14.5	14.2	14.3	12.9	12.5	12.6	8.5	7.9	8.2	5.8	5.6	5.7
10	14.4	14.2	14.3	13.0	12.6	12.8	7.9	7.8	7.8	5.7	5.5	5.6
11	14.5	14.2	14.3	13.0	12.7	12.8	7.8	7.7	7.8	5.5	5.3	5.4
12	14.7	14.2	14.4	12.7	12.4	12.6	7.7	7.4	7.5	5.3	5.2	5.2
13	14.6	14.2	14.3	12.5	12.1	12.3	7.4	7.3	7.3	5.3	5.1	5.2
14	14.4	14.0	14.2	12.4	12.0	12.2	7.4	7.3	7.4	5.3	5.1	5.2
15	14.3	14.0	14.1	12.2	12.0	12.1	7.4	7.2	7.3	5.1	4.8	5.0
16	14.5	14.1	14.2	12.2	12.1	12.1	7.3	7.2	7.2	5.1	4.8	4.9
17	14.3	13.9	14.1	12.1	11.8	12.0	7.3	7.1	7.2	4.9	4.6	4.8
18	14.3	13.9	14.0	12.1	11.7	11.9	7.1	7.0	7.0	4.6	4.4	4.5
19	14.4	13.9	14.1	12.1	11.9	12.0	7.1	6.9	7.0	4.6	4.4	4.5
20	14.4	14.1	14.2	12.0	11.7	11.8	7.0	6.8	6.9	4.6	4.4	4.5
21	14.6	14.1	14.3	11.8	11.7	11.8	6.9	6.8	6.9	4.6	4.3	4.4
22	14.7	14.4	14.5	11.7	11.3	11.5	6.8	6.7	6.8	4.4	4.1	4.2
23	14.5	14.3	14.4	11.4	11.1	11.2	6.7	6.6	6.6	4.2	3.6	3.9
24	14.5	14.3	14.4	11.3	11.0	11.2	6.6	6.5	6.6	3.9	3.5	3.7
25	14.4	14.3	14.4	11.1	10.8	11.0	6.6	6.4	6.5	3.6	3.4	3.5
26	14.7	14.3	14.5	11.0	10.7	10.8	6.4	6.3	6.3	3.9	3.3	3.6
27	14.6	14.3	14.4	10.7	10.4	10.6	6.4	6.2	6.3	3.4	3.1	3.3
28	14.4	14.3	14.4	10.4	10.2	10.3	6.3	6.2	6.2	3.6	3.3	3.5
29	---	---	---	---	---	---	6.3	6.2	6.2	3.8	3.5	3.7
30	---	---	---	---	---	---	6.3	6.1	6.2	3.8	3.5	3.6
31	---	---	---	---	---	---	6.2	6.1	6.1	3.8	3.5	3.7
MONTH	15.0	13.9	14.3	14.6	10.2	12.3	9.8	6.1	7.5	6.3	3.1	4.8

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	3.8	3.5	3.6	3.0	2.8	2.9	6.7	6.0	6.3	---	---	---
2	3.8	3.5	3.6	3.0	2.9	2.9	6.9	5.9	6.4	---	---	---
3	3.8	3.4	3.6	3.0	2.8	2.9	7.2	5.9	6.6	---	---	---
4	3.7	3.3	3.5	3.1	2.9	3.0	7.3	6.4	6.9	---	---	---
5	3.4	3.2	3.3	3.1	3.0	3.0	7.8	6.6	7.1	---	---	---
6	3.6	3.2	3.4	3.3	3.1	3.2	7.5	6.6	7.0	9.7	9.3	9.5
7	3.8	3.4	3.5	3.3	3.3	3.3	7.5	6.6	7.2	10.0	9.4	9.6
8	3.6	3.3	3.4	3.5	3.3	3.4	7.5	6.7	7.0	10.8	9.4	9.9
9	3.8	3.3	3.5	3.6	3.4	3.5	---	---	---	10.4	9.7	9.9
10	3.8	3.5	3.6	3.6	3.4	3.5	---	---	---	10.4	9.8	10.2
11	3.6	3.3	3.5	3.8	3.6	3.7	7.8	5.7	6.8	10.7	9.8	10.3
12	3.4	3.2	3.3	4.1	3.7	3.9	6.3	5.8	6.0	11.3	7.7	9.6
13	3.4	3.1	3.2	4.3	3.9	4.1	6.5	6.2	6.4	10.3	8.9	9.4
14	3.4	3.2	3.3	4.4	4.2	4.3	7.8	6.5	7.1	11.5	8.1	10.1
15	3.4	3.2	3.3	4.5	4.2	4.4	8.1	7.6	7.9	11.6	11.2	11.3
16	3.3	3.0	3.1	4.8	4.5	4.6	8.2	7.7	8.0	11.7	11.2	11.4
17	3.1	2.8	2.9	4.9	4.6	4.7	8.3	7.7	8.0	11.7	11.3	11.5
18	2.9	2.7	2.8	5.3	4.8	5.0	8.6	8.0	8.3	11.8	11.4	11.6
19	2.9	2.7	2.8	5.4	4.8	5.1	8.7	8.2	8.4	11.4	8.0	10.2
20	3.1	2.8	2.9	6.2	5.4	6.0	8.7	8.0	8.3	10.3	9.6	9.9
21	3.4	2.9	3.1	6.2	5.0	5.5	8.7	8.0	8.4	10.3	9.9	10.1
22	4.3	3.3	3.7	5.4	4.8	5.1	9.2	8.2	8.7	12.1	10.2	11.1
23	4.0	2.7	3.3	5.7	4.8	5.2	9.3	8.6	9.0	11.8	8.7	10.8
24	2.8	2.7	2.8	6.2	5.5	5.9	9.1	8.6	8.8	11.0	10.1	10.5
25	2.8	2.7	2.7	6.5	5.6	6.1	9.0	8.6	8.8	12.6	10.1	11.4
26	2.8	2.8	2.8	6.6	5.6	6.1	9.1	8.7	8.9	12.6	12.2	12.4
27	2.8	2.8	2.8	6.9	5.8	6.3	9.4	8.8	9.0	12.5	12.2	12.3
28	3.0	2.8	2.8	6.6	5.9	6.2	9.6	8.8	9.2	13.1	12.3	12.6
29	---	---	---	6.9	5.7	6.3	9.7	8.8	9.2	12.6	12.4	12.5
30	---	---	---	7.1	6.4	6.7	9.6	9.1	9.4	12.9	12.4	12.6
31	---	---	---	---	---	---	---	---	---	13.1	12.5	12.8
MONTH	4.3	2.7	3.2	7.1	2.8	4.6	9.7	5.7	7.8	13.1	7.7	10.9
		JUNE			JULY			AUGUST			SEPTEMBER	
1	13.6	12.9	13.2	15.0	14.5	14.7	15.7	15.4	15.5	16.2	15.7	15.8
2	---	---	---	14.9	14.6	14.7	16.1	15.4	15.6	16.0	15.6	15.7
3	---	---	---	14.9	14.6	14.7	16.1	15.4	15.6	15.9	15.6	15.7
4	13.1	12.9	13.0	15.0	14.6	14.8	15.9	15.4	15.6	15.8	15.6	15.7
5	13.0	10.6	12.3	15.2	14.7	14.8	16.1	15.5	15.6	16.0	15.6	15.7
6	14.1	11.7	12.9	---	---	---	16.1	15.4	15.6	16.0	15.6	15.7
7	13.7	13.3	13.5	---	---	---	15.7	15.4	15.5	16.0	15.6	15.7
8	13.6	10.9	12.7	---	---	---	15.9	15.4	15.5	16.1	15.6	15.8
9	14.3	12.4	13.0	---	---	---	15.9	15.4	15.6	16.0	15.6	15.7
10	13.5	13.1	13.3	15.3	14.9	15.1	16.0	15.5	15.6	16.1	15.6	15.8
11	14.8	13.3	13.9	15.5	14.8	15.1	16.0	15.5	15.7	16.1	15.6	15.8
12	14.8	14.4	14.5	15.5	14.9	15.1	16.0	15.5	15.7	16.1	15.7	15.8
13	14.8	14.4	14.6	15.6	15.0	15.2	16.0	15.6	15.7	15.9	15.8	15.8
14	15.0	14.6	14.8	15.5	15.1	15.2	16.1	15.6	15.7	16.1	15.8	15.9
15	15.2	14.6	14.9	15.5	15.1	15.3	16.1	15.5	15.7	16.0	15.8	15.9
16	14.8	14.4	14.6	15.7	15.1	15.3	16.1	15.6	15.7	16.2	15.8	15.9
17	14.5	14.4	14.4	15.6	15.0	15.2	16.1	15.6	15.8	16.2	15.8	15.9
18	15.1	14.3	14.5	15.5	15.0	15.2	16.2	15.6	15.8	16.0	15.8	15.9
19	14.5	14.2	14.4	15.5	15.1	15.2	16.1	15.6	15.8	16.1	15.7	15.9
20	14.5	13.1	14.0	15.6	15.1	15.3	16.1	15.6	15.7	16.3	15.9	16.0
21	14.5	14.0	14.2	15.6	15.2	15.3	16.1	15.4	15.7	16.2	16.0	16.1
22	14.8	14.4	14.6	15.6	15.2	15.3	15.9	15.5	15.6	16.2	16.1	16.2
23	15.9	14.3	15.2	15.8	15.3	15.4	15.9	15.5	15.6	16.5	16.1	16.3
24	16.2	14.0	15.1	15.8	15.3	15.5	15.9	15.5	15.6	17.1	16.5	16.8
25	15.0	14.0	14.5	16.0	15.2	15.5	16.0	15.5	15.7	17.3	16.9	17.1
26	15.2	14.4	14.7	15.9	15.2	15.4	16.0	15.5	15.7	17.0	16.8	16.9
27	14.9	14.5	14.6	15.9	15.2	15.5	16.0	15.6	15.7	17.1	16.8	17.0
28	14.8	14.5	14.6	15.8	15.3	15.5	16.1	15.6	15.7	17.2	16.9	17.1
29	15.3	14.5	14.7	15.6	15.3	15.4	16.1	15.6	15.8	17.2	17.0	17.1
30	15.3	14.5	14.7	15.7	15.3	15.5	16.1	15.7	15.8	17.4	17.2	17.2
31	---	---	---	15.5	15.4	15.4	16.0	15.7	15.8	---	---	---
MONTH	16.2	10.6	14.1	16.0	14.5	15.2	16.2	15.4	15.7	17.4	15.6	16.1
YEAR	17.4	2.7	10.5									

02012800 JACKSON RIVER AT FILTRATION PLANT, AT COVINGTON, VA

LOCATION.--Lat 37°48'39", long 79°59'19", NAD83, Covington City, Hydrologic Unit 02080201, on left bank 50 ft upstream from Dry Run and 1.7 mi upstream from Dunlap Creek and bridge on U.S. Highway 60.

DRAINAGE AREA.--439 mi^2.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: June 1978 to current year.

INSTRUMENTATION.--Water-temperature recorder since June 1978.

REMARKS.--Some record in prior years fragmentary due to instrument malfunction. Records represent water temperature at sensor within 0.5°C. U.S. Army Corps of Engineers satellite water-temperature telemeter at station. Temperature at the sensor was compared with the average for the river by temperature cross section on Oct. 1, 1991. A maximum variation of 0.5°C was found within the cross section.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum recorded, 30.5°C, July 21, 1980; minimum recorded, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 21.1°C, Aug. 21; minimum, 0.6°C, Jan. 23, 24, Feb. 16, 17.

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	18.3	17.1	17.7	11.4	10.4	10.9	7.7	6.5	6.9	7.5	6.6	7.0
2	19.7	17.4	18.4	11.0	9.5	10.2	6.9	5.7	6.4	7.5	6.7	7.2
3	20.5	18.5	19.3	10.9	9.4	10.2	7.2	6.3	6.8	6.7	6.0	6.4
4	20.4	18.8	19.5	11.6	10.7	11.1	6.3	3.9	5.1	6.0	5.4	5.8
5	21.0	18.8	19.7	11.3	10.6	10.9	4.8	3.0	3.9	5.5	5.3	5.4
6	19.0	17.2	18.1	11.7	10.6	11.0	5.9	4.8	5.3	5.8	5.0	5.5
7	17.8	16.3	17.1	10.9	9.5	10.3	4.9	3.6	4.3	5.0	4.0	4.6
8	16.3	14.9	15.6	13.0	8.8	10.1	5.4	4.0	4.7	6.0	4.7	5.4
9	16.6	15.3	15.8	13.9	8.2	10.7	5.3	4.3	4.8	6.6	5.3	6.0
10	16.5	15.8	16.1	16.9	11.3	14.2	6.2	4.7	5.4	6.3	5.0	5.5
11	17.0	15.9	16.4	15.5	13.3	14.2	6.3	6.0	6.2	5.0	3.8	4.3
12	18.5	16.6	17.4	13.3	11.8	12.4	7.1	6.1	6.5	3.9	2.7	3.4
13	18.1	16.8	17.5	11.8	10.7	11.3	6.7	6.4	6.6	4.0	2.7	3.5
14	16.8	14.8	15.8	10.9	9.6	10.4	7.0	6.6	6.8	4.0	3.4	3.7
15	14.8	13.7	14.2	10.9	9.6	10.3	7.4	6.6	6.9	3.8	2.9	3.4
16	14.7	13.5	14.0	11.2	10.9	11.1	7.5	6.5	7.0	2.9	2.2	2.6
17	14.5	13.2	14.0	11.2	9.8	10.7	6.8	6.2	6.5	3.4	2.2	2.8
18	14.1	12.1	13.0	9.8	9.0	9.5	6.9	6.3	6.7	2.2	1.0	1.6
19	13.8	12.7	13.2	9.4	8.5	8.7	8.0	6.4	7.0	2.6	1.5	2.0
20	15.1	13.6	14.4	9.5	8.8	9.0	8.0	6.7	7.6	3.8	2.2	3.1
21	14.9	14.0	14.5	9.7	9.0	9.3	7.0	6.2	6.6	4.4	3.4	3.7
22	15.1	13.7	14.2	9.7	8.4	9.3	7.2	6.4	6.7	3.4	2.2	2.6
23	15.1	13.5	14.1	8.4	7.5	8.1	6.9	6.3	6.5	2.2	0.6	1.4
24	13.7	13.3	13.5	9.1	7.7	8.4	6.5	6.3	6.4	0.9	0.6	0.7
25	13.3	13.0	13.2	9.2	8.0	8.7	6.5	5.8	6.3	1.9	0.7	1.2
26	15.1	13.2	14.1	9.0	8.6	8.7	6.1	5.4	5.8	2.7	1.6	2.1
27	15.6	14.2	14.9	8.8	7.4	8.2	5.5	4.5	5.1	2.1	0.9	1.4
28	14.6	13.6	14.1	7.9	7.0	7.5	5.3	4.1	4.8	2.1	0.8	1.4
29	13.6	12.3	13.0	8.3	6.8	7.6	6.2	4.9	5.6	3.9	2.1	3.2
30	12.5	12.1	12.3	8.5	7.7	8.2	6.1	4.8	5.6	4.0	3.5	3.8
31	12.2	11.4	11.9	---	---	---	6.7	5.1	5.9	3.8	3.3	3.6
MONTH	21.0	11.4	15.4	16.9	6.8	10.0	8.0	3.0	6.0	7.5	0.6	3.7

02012800 JACKSON RIVER AT FILTRATION PLANT, AT COVINGTON, VA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	4.8	3.7	4.1	5.7	3.9	4.7	9.6	6.3	7.8	13.3	11.0	12.4
2	5.5	3.7	4.5	5.1	4.3	4.6	11.3	7.9	9.6	15.0	12.2	13.5
3	4.9	3.9	4.5	5.2	3.8	4.4	10.9	7.3	9.1	14.8	12.6	13.5
4	5.1	3.7	4.6	5.5	3.2	4.3	10.3	7.7	9.1	13.2	11.3	12.2
5	3.9	2.4	3.2	5.4	4.3	4.7	11.0	8.4	9.7	11.3	10.2	10.6
6	3.1	2.4	2.8	5.2	4.2	4.6	10.5	7.9	9.2	12.0	10.2	11.0
7	3.4	2.2	2.7	5.0	3.9	4.3	10.1	7.8	8.3	12.5	10.5	11.4
8	3.5	1.9	2.6	5.7	3.8	4.7	8.5	7.9	8.1	13.7	10.8	12.1
9	3.0	1.3	2.2	6.8	4.6	5.5	8.5	7.7	8.0	13.0	11.1	12.0
10	3.7	2.8	3.2	5.8	4.1	4.9	9.2	8.3	8.7	12.4	11.4	11.9
11	3.4	2.5	3.0	6.0	4.0	4.9	9.5	7.0	8.3	13.5	11.7	12.4
12	4.2	2.7	3.3	6.4	4.0	5.2	8.5	6.7	7.4	13.1	10.5	11.6
13	3.2	1.4	2.5	7.9	5.5	6.7	8.8	6.9	7.7	12.2	10.1	10.9
14	3.0	2.5	2.8	7.4	5.6	6.6	9.4	7.1	8.2	12.8	9.6	11.0
15	3.5	2.7	3.2	6.9	4.7	5.8	11.6	8.3	9.8	12.8	11.8	12.3
16	2.7	0.6	1.1	6.9	5.8	6.3	12.1	8.6	10.2	14.7	12.0	13.2
17	3.2	0.6	2.0	8.4	5.9	7.0	12.2	9.4	10.9	14.5	12.4	12.8
18	3.3	2.6	3.0	7.9	6.4	7.2	11.1	8.8	9.4	12.5	12.1	12.2
19	4.2	2.7	3.5	7.8	6.8	7.3	11.4	9.1	10	12.6	10.6	11.8
20	5.0	3.0	4.0	7.9	6.8	7.2	11.8	10.0	10.9	12.1	10.5	11.2
21	4.9	3.6	4.0	10.2	6.5	8.3	11.8	9.6	10.8	11.6	11.1	11.4
22	4.7	3.0	3.6	7.8	6.2	6.8	11.8	10.2	11.0	11.9	11.2	11.5
23	5.5	3.6	4.9	7.3	5.9	6.6	12.7	9.3	11.0	13.3	10.7	12.3
24	4.3	3.2	3.7	9.3	6.1	7.7	12.2	9.1	10.9	13.0	11.1	11.8
25	3.8	3.1	3.4	10.0	6.6	8.3	12.0	9.7	10.3	13.7	10.9	11.9
26	3.7	3.6	3.7	9.3	7.3	8.0	11.4	9.9	10.6	14.4	12.8	13.6
27	3.6	3.2	3.4	9.9	6.5	8.2	13.7	9.9	11.8	13.8	12.6	13.2
28	4.5	3.3	3.8	9.6	7.1	8.5	13.7	9.8	12.1	14.3	12.6	13.4
29	---	---	---	9.9	8.7	9.3	13.6	10.4	11.7	14.3	13.1	13.7
30	---	---	---	9.0	6.4	7.1	13.2	10.6	12.0	15.4	12.8	14.0
31	---	---	---	7.6	5.9	6.9	---	---	---	15.0	13.3	14.1
MONTH	5.5	0.6	3.3	10.2	3.2	6.3	13.7	6.3	9.8	15.4	9.6	12.3
		JUNE			JULY			AUGUST			SEPTEMBER	
1	15.7	13.1	14.4	18.6	17.2	17.6	18.7	16.9	17.6	20.2	18.0	19.1
2	15.8	12.6	14.3	17.2	16.4	16.6	20.5	17.8	19.1	20.8	19.1	20.0
3	15.1	13.2	13.6	17.4	15.9	16.6	20.3	19.1	19.7	20.2	18.9	19.4
4	15.2	13.4	14.1	18.7	15.8	17.3	20.2	18.4	19.2	18.9	18.0	18.5
5	14.9	12.8	13.7	19.4	16.4	18.0	20.3	18.6	19.5	20.0	17.7	18.7
6	14.9	12.5	13.6	19.0	16.5	17.9	20.4	18.7	19.7	19.2	17.6	18.5
7	15.4	14.7	15.1	19.4	16.5	18.1	20.0	18.1	18.9	18.6	17.5	18.0
8	16.9	13.4	15.1	20.5	18.0	19.3	19.4	17.6	18.4	19.3	17.5	18.2
9	16.2	13.4	14.2	20.0	18.7	19.2	19.8	18.3	19.1	18.6	17.5	18.0
10	15.4	13.5	14.3	19.9	17.6	18.8	20.3	18.4	19.4	19.2	16.9	17.9
11	15.7	13.8	14.7	19.5	16.8	18.3	20.8	18.9	20.0	19.0	16.9	17.9
12	16.8	15.0	15.8	18.9	16.5	17.9	20.5	18.7	19.8	18.2	17.0	17.5
13	16.8	15.2	15.8	19.4	16.4	18.0	20.1	18.8	19.3	17.7	17.3	17.5
14	17.3	15.1	16.1	19.4	16.6	18.2	20.9	18.7	19.8	19.2	17.5	18.2
15	16.6	15.2	15.8	19.5	16.9	18.4	20.9	19.4	20.3	18.9	17.3	18.2
16	16.6	15.0	16.0	19.8	17.1	18.6	20.5	19.1	19.9	18.9	16.6	17.6
17	15.0	14.4	14.6	20.1	16.9	18.8	20.4	18.9	19.7	18.7	16.9	17.8
18	16.4	14.3	15.3	19.7	16.8	18.3	20.2	18.7	19.6	17.8	16.4	17.0
19	16.1	15.1	15.6	19.1	16.7	18.0	20.8	19.5	20.1	16.9	16.3	16.6
20	16.0	14.4	15.1	19.8	16.6	18.2	20.5	19.0	19.8	17.9	15.9	16.8
21	15.0	14.2	14.6	19.6	16.8	18.5	21.1	19.3	20.1	18.3	16.8	17.7
22	16.1	14.6	15.2	19.4	17.1	18.4	20.6	19.5	20.2	18.2	17.0	17.3
23	17.1	14.8	15.8	18.8	16.8	18.0	20.2	18.8	19.6	17.6	16.5	17.0
24	18.8	15.4	17.0	19.4	17.5	18.5	20.0	18.3	19.2	17.9	16.4	17.0
25	18.8	15.0	17.0	19.8	17.3	18.7	20.4	18.5	19.5	18.5	16.9	17.5
26	19.2	16.0	17.8	20.2	18.0	19.2	20.7	18.8	19.9	18.6	16.9	17.7
27	19.0	17.1	17.6	20.5	18.4	19.5	20.9	19.4	20.1	18.5	16.7	17.8
28	17.1	16.1	16.5	20.2	18.9	19.6	20.7	19.5	20.1	18.1	16.7	17.4
29	19.8	16.1	17.8	19.6	18.0	18.6	20.7	19.0	19.9	16.9	15.5	16.1
30	19.3	17.2	18.3	18.1	17.3	17.6	20.4	19.1	19.8	16.9	14.8	15.9
31	---	---	---	17.9	17.2	17.5	20.0	18.6	19.1	---	---	---
MONTH	19.8	12.5	15.5	20.5	15.8	18.3	21.1	16.9	19.6	20.8	14.8	17.8
YEAR	21.1	0.6	11.5									

02013000 DUNLAP CREEK NEAR COVINGTON, VA

LOCATION.--Lat 37°48'10", long 80°02'49", NAD83, Alleghany County, Hydrologic Unit 02080201, on right bank 20 ft downstream from bridge on U.S. Highway 60, 2.2 mi downstream from Ogle Creek, and 3.0 mi west of Covington.

DRAINAGE AREA.--164 mi^2.

PERIOD OF RECORD.--October 1928 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 972: 1929-30, 1932-34, 1942. WSP 1303: 1929-35(M), 1937-38(M), 1941-48(M). WSP 2104: Drainage area. WDR VA-74-1: 1969(M), 1972, 1973(P).

GAGE.--Water-stage recorder. Datum of gage is 1,294.70 ft NGVD of 1929. Prior to Dec. 8, 1949, nonrecording gage at same site and datum.

REMARKS.--Records good. Occasional diurnal fluctuation caused by dam 7.9 mi upstream from station. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Maximum discharge, 27,400 ft^3/s, from rating curve extended above 4,500 ft^3/s on basis of step-backwater computations and contracted-opening measurement at gage height 15.65 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1913 reached a stage of 18 ft, from information by local residents.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1830	*11,400	*11.59	May 18	1700	6,900	9.51
Apr 9	1000	2,770	6.16	Jun 16	1630	3,520	6.89
Apr 11	0600	3,560	6.93	Jul 3	0730	4,520	7.88

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	176	100	405	46	415	156	203	327	63	40	35
2	30	104	83	866	46	740	531	534	263	232	39	35
3	27	73	72	651	48	739	421	318	227	3,100	40	39
4	26	60	63	588	59	522	313	385	250	915	42	99
5	25	61	65	469	109	491	254	356	278	482	52	98
6	23	426	59	366	118	686	200	749	235	336	47	57
7	22	287	50	288	115	513	449	532	225	269	42	45
8	20	165	47	252	102	354	722	373	264	214	41	41
9	19	112	46	228	86	287	2,200	304	700	188	41	39
10	19	87	44	204	98	236	1,210	705	404	188	42	38
11	23	315	287	179	91	189	2,550	644	309	161	41	38
12	23	744	579	155	85	160	1,070	442	329	134	39	38
13	22	889	747	139	75	142	628	316	439	116	40	38
14	21	432	1,080	134	79	135	434	230	432	103	39	38
15	22	272	641	120	344	115	338	200	283	e92	39	40
16	157	210	442	105	892	106	276	438	1,880	82	46	39
17	174	622	355	104	503	103	227	396	1,550	72	47	38
18	82	614	292	87	334	99	188	4,740	1,190	66	42	51
19	50	398	248	95	247	90	167	2,740	891	65	49	632
20	39	280	782	84	233	422	144	993	697	62	39	290
21	36	254	811	78	549	889	138	668	507	55	37	154
22	35	427	471	67	6,080	518	148	544	375	51	36	124
23	33	382	322	57	5,330	359	133	458	271	52	36	657
24	30	279	341	56	1,640	271	123	385	193	48	36	320
25	27	213	743	56	959	214	119	307	145	45	36	189
26	35	170	535	52	637	182	118	314	115	43	36	127
27	41	150	387	47	469	154	106	291	99	40	34	102
28	54	128	306	46	379	125	89	339	88	39	33	246
29	342	115	254	48	---	114	81	375	79	40	33	195
30	674	109	212	49	---	129	79	394	67	41	33	135
31	330	---	191	47	---	126	---	342	---	41	35	---
TOTAL	2,497	8,554	10,655	6,122	19,753	9,625	13,612	20,015	13,112	7,435	1,232	4,017
MEAN	80.5	285	344	197	705	310	454	646	437	240	39.7	134
MAX	674	889	1,080	866	6,080	889	2,550	4,740	1,880	3,100	52	657
MIN	19	60	44	46	46	90	79	200	67	39	33	35
CFSM	0.49	1.74	2.10	1.20	4.30	1.89	2.77	3.94	2.67	1.46	0.24	0.82
IN.	0.57	1.94	2.42	1.39	4.48	2.18	3.09	4.54	2.97	1.69	0.28	0.91

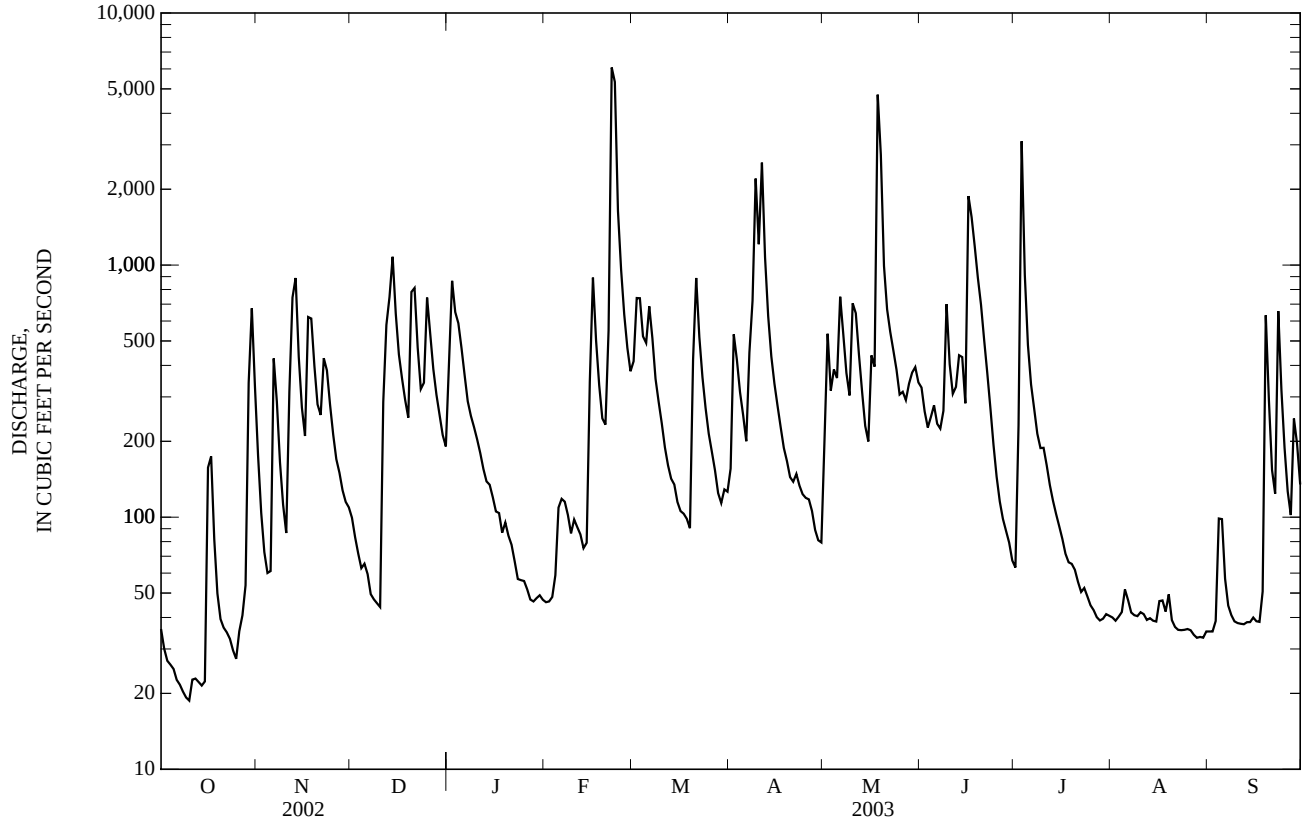
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2003, BY WATER YEAR (WY)

MEAN	64.5	106	167	241	308	396	285	221	107	50.7	55.7	40.1
MAX	431	659	694	770	821	1,053	1,071	646	584	358	514	336
(WY)	(1990)	(1986)	(1974)	(1996)	(1998)	(1993)	(1987)	(2003)	(1972)	(1972)	(1984)	(1989)
MIN	13.4	14.8	21.4	24.2	21.5	59.1	54.7	43.7	24.2	13.6	12.5	11.0
(WY)	(1942)	(2002)	(2002)	(1981)	(1934)	(1988)	(1986)	(1930)	(1999)	(1999)	(1932)	(1970)

02013000 DUNLAP CREEK NEAR COVINGTON, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1929 - 2003	
ANNUAL TOTAL	48,628.2		116,629			
ANNUAL MEAN	133		320		169	
HIGHEST ANNUAL MEAN					320	a1973
LOWEST ANNUAL MEAN					67.3	1941
HIGHEST DAILY MEAN	2,330	Apr 22	6,080	Feb 22	10,400	Jan 19, 1996
LOWEST DAILY MEAN	8.9	bSep 10	19	cOct 9	7.0	Sep 9, 1966
ANNUAL SEVEN-DAY MINIMUM	9.1	Sep 7	21	Oct 8	7.6	Sep 6, 1966
MAXIMUM PEAK FLOW			11,400	Feb 22	27,400	Jun 21, 1972
MAXIMUM PEAK STAGE			11.59	Feb 22	15.65	Jun 21, 1972
INSTANTANEOUS LOW FLOW			18	cOct 9	2.0	Jul 4, 1970
ANNUAL RUNOFF (CFSM)	0.81		1.95		1.03	
ANNUAL RUNOFF (INCHES)	11.03		26.45		14.03	
10 PERCENT EXCEEDS	389		670		370	
50 PERCENT EXCEEDS	37		154		66	
90 PERCENT EXCEEDS	13		38		18	

a Also 2003.
b Also Sept. 11, 2002.
c Also Oct. 10, 2002.
e Estimated.



02013100 JACKSON RIVER BELOW DUNLAP CREEK, AT COVINGTON, VA

LOCATION.--Lat 37°47'19", long 80°00'02", NAD83, Covington City, Hydrologic Unit 02080201, on left bank in city recreation park and 0.5 mi downstream from Dunlap Creek.

DRAINAGE AREA.--614 mi^2.

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

REVISED RECORDS.--WDR VA-76-1: 1975(M).

GAGE.--Water-stage recorder. Datum of gage is 1,206.53 ft NGVD of 1929.

REMARKS.--No estimated daily dishcarges. Records good. Small diurnal fluctuation at low flow caused by Westvaco plant 0.8 mi upstream and occasionally by dam on Dunlap Creek 12.7 mi upstream. Flow regulated since December 1979 by Lake Moomaw (station 02011795) 19.9 mi upstream; since October 1984 by Back Creek Lake 47.9 mi upstream, amount unknown; and since January 1985 by Little Back Creek Lake 51.0 mi upstream, amount unknown. Statistics of monthly mean data and summary statistics for water years 1975-1979 (unregulated flow) are available in previous data books, water years 1991-1998. Diversion by Westvaco plant averages 47 ft^3/s for industrial use of which approximately 42 ft^3/s is returned upstream from station. Diversion 2.0 mi upstream from station for city of Covington water supply averages less than 4.0 ft^3/s. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Virginia Department of Emergency Services gage-height radio transmitter at station. Maximum discharge, 31,300 ft^3/s, from rating curve extended above 19,000 ft^3/s. Several measurements of water temperature were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1972, reached a stage of 24.36 ft, discharge, 34,000 ft^3/s, from floodmarks, and flood of Dec. 27, 1973, reached a stage of 22.09 ft, from floodmarks, discharge, 28,300 ft^3/s, from rating curve extended above 19,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	254	435	476	867	252	1,710	699	692	965	499	403	322
2	205	338	427	1,840	252	2,240	1,320	960	1,060	597	393	308
3	197	287	334	2,430	251	2,270	1,550	733	1,030	4,000	389	314
4	194	267	291	3,050	266	1,970	1,310	1,130	1,300	1,660	391	482
5	192	274	302	2,320	304	2,380	1,100	1,570	2,700	1,100	406	475
6	188	810	283	1,240	319	4,130	1,030	2,210	3,050	913	395	370
7	189	586	268	977	320	4,740	1,410	1,900	591	805	384	339
8	189	416	264	836	305	3,600	1,990	1,690	1,610	639	378	323
9	188	341	260	774	283	1,610	4,210	1,580	4,210	602	378	317
10	186	304	371	674	306	1,490	2,040	2,200	2,990	641	390	309
11	194	661	712	635	335	1,380	4,810	2,070	2,530	743	375	303
12	188	1,200	1,360	599	330	1,130	6,040	2,170	1,770	687	414	300
13	185	1,390	2,080	553	321	852	5,760	2,770	2,110	662	382	303
14	182	745	2,780	499	328	1,080	3,750	1,770	2,160	673	371	316
15	187	534	2,570	482	645	1,360	1,720	1,040	1,480	645	362	314
16	411	464	2,040	437	1,470	1,340	1,410	1,110	4,020	628	377	317
17	476	949	1,290	377	1,140	1,190	1,040	1,060	3,140	614	374	309
18	307	983	910	345	932	913	998	6,510	2,330	606	359	362
19	252	686	854	348	929	863	896	5,180	2,100	609	364	2,950
20	229	542	1,880	345	910	800	726	4,910	3,620	598	344	939
21	227	510	2,920	337	1,080	2,320	718	3,380	5,870	587	337	647
22	219	745	3,640	318	7,880	3,460	733	2,510	5,300	593	337	689
23	209	670	2,580	269	8,820	2,790	709	1,750	3,240	553	336	2,520
24	203	539	1,590	251	6,070	1,450	690	3,580	1,440	429	333	3,240
25	205	457	2,090	265	7,040	1,150	684	1,840	934	421	329	2,400
26	227	406	1,600	259	7,170	929	687	1,190	720	424	325	760
27	231	415	976	249	5,880	829	666	1,120	580	417	324	740
28	248	512	788	248	3,150	730	636	1,080	556	409	336	910
29	548	497	727	254	---	666	631	947	534	429	339	814
30	1,240	491	676	255	---	706	631	991	509	416	329	711
31	660	---	644	253	---	688	---	919	---	411	335	---
TOTAL	8,810	17,454	37,983	22,586	57,288	52,766	50,594	62,562	64,449	23,010	11,289	23,403
MEAN	284	582	1,225	729	2,046	1,702	1,686	2,018	2,148	742	364	780
MAX	1,240	1,390	3,640	3,050	8,820	4,740	6,040	6,510	5,870	4,000	414	3,240
MIN	182	267	260	248	251	666	631	692	509	409	324	300
(†)	+3,176	+17,646	-101	-151	+504	-655	+252	0	-101	-1,664	-2,722	+3,630
MEAN‡	387	1,170	1,222	724	2,064	1,681	1,695	2,018	2,145	689	276	901
CFSM‡	.63	1.91	1.99	1.18	3.36	2.74	2.76	3.29	3.49	1.12	.45	1.47
IN.‡	.73	2.13	2.30	1.36	3.50	3.16	3.08	3.79	3.90	1.29	.52	1.64

CAL YR 2002 MEAN‡ 576 CFSM‡ .94 IN.‡ 12.74
WTR YR 2003 MEAN‡ 1,238 CFSM‡ 2.02 IN.‡ 27.38

† Total change in contents, equivalent in cubic feet per second, per month, in Lake Moomaw; provided by U.S. Army Corps of Engineers.
‡ Adjusted for monthly change in contents.

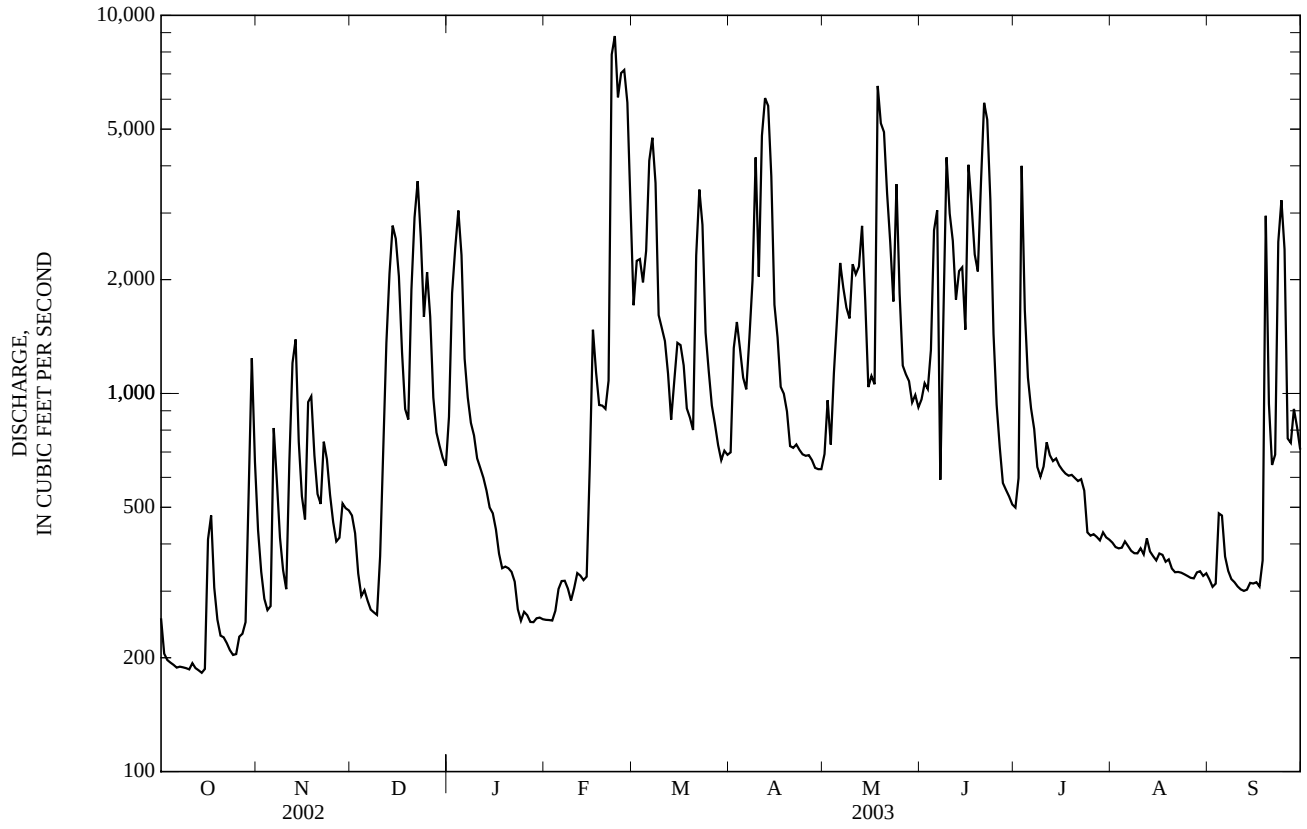
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2003, BY WATER YEAR (WY)

MEAN	331	471	527	784	1,074	1,439	1,179	972	646	370	374	365
MAX	1,302	2,363	1,685	2,644	2,702	3,189	3,540	2,223	2,148	742	1,285	938
(WY)	(1980)	(1986)	(1997)	(1996)	(1998)	(1993)	(1987)	(1989)	(2003)	(2003)	(1984)	(1989)
MIN	111	114	130	119	176	211	356	397	303	190	117	87.3
(WY)	(1981)	(1982)	(1981)	(1981)	(2002)	(1981)	(1986)	(1991)	(1980)	(1981)	(1981)	(1981)

02013100 JACKSON RIVER BELOW DUNLAP CREEK, AT COVINGTON, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1980 - 2003	
ANNUAL TOTAL	187,901		432,194			
ANNUAL MEAN	515		1,184		709	
HIGHEST ANNUAL MEAN					1,184	2003
LOWEST ANNUAL MEAN					348	1981
HIGHEST DAILY MEAN	4,740	Apr 30	8,820	Feb 23	15,100	Jan 19, 1996
LOWEST DAILY MEAN	156	Jan 21	182	Oct 14	67	aSep 3, 1981
ANNUAL SEVEN-DAY MINIMUM	165	Feb 23	187	Oct 9	71	Sep 25, 1981
MAXIMUM PEAK FLOW			14,300	Feb 22	b31,300	Nov 4, 1985
MAXIMUM PEAK STAGE			14.97	Feb 22	b23.31	Nov 4, 1985
INSTANTANEOUS LOW FLOW			171	cOct 14	d,f41	Jan 5, 1981
ANNUAL RUNOFF (CFSM)	0.84		1.93		1.15	
ANNUAL RUNOFF (INCHES)	11.38		26.19		15.69	
10 PERCENT EXCEEDS	1,000		2,840		1,560	
50 PERCENT EXCEEDS	308		673		356	
90 PERCENT EXCEEDS	188		262		210	

a Also Sept. 27-29, 1981.
b Prior to regulation, 1975-79, maximum peak flow, 23,200 ft^3/s, Apr. 5, 1977, gage height, 19.85 ft.
c Also Oct. 15, 2002.
d Prior to regulation, 1975-79, instantaneous low flow, 80 ft^3/s, Nov. 9, 1978.
f Result of freezeup.



02014000 POTTS CREEK NEAR COVINGTON, VA

LOCATION.--Lat 37°43'44", long 80°02'32", NAD83, Alleghany County, Hydrologic Unit 02080201, on left bank at downstream side of bridge on State Highway 18, 0.8 mi downstream from Blue Spring Creek, and 5.2 mi southwest of Covington.

DRAINAGE AREA.--153 mi^2.

PERIOD OF RECORD.--October 1928 to September 1956, October 1965 to current year.

REVISED RECORDS.--WSP 1723: 1935, 1936(M), 1940(M), 1942(M), 1948-49(M), 1951-52(M), 1954(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,273.93 ft NGVD of 1929. Prior to Sept. 30, 1956, nonrecording gage at site 1.3 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 15,400 ft^3/s, from rating curve extended above 12,000 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,400 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	2230	*7,070	*9.71	Jul 3	0800	4,230	7.80
Apr 11	0600	3,290	7.04	Sep 19	0130	2,640	6.44
May 18	2000	4,410	7.94				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	150	103	290	73	477	245	236	650	142	71	47
2	25	115	90	572	72	546	471	217	484	378	68	47
3	23	94	82	529	73	524	452	206	410	2,890	64	46
4	22	84	75	490	85	456	391	365	593	1,130	79	68
5	22	86	77	398	121	436	345	395	530	612	77	78
6	21	253	78	341	120	444	293	676	423	425	81	61
7	21	209	57	289	120	414	396	544	420	332	73	51
8	22	158	68	257	109	362	493	442	475	275	109	48
9	21	131	65	236	87	322	1,830	388	576	236	96	46
10	22	111	60	213	113	281	1,330	419	428	224	419	45
11	26	154	143	189	99	247	2,450	397	363	188	222	44
12	28	327	291	164	95	225	1,260	322	937	163	156	43
13	28	447	342	151	79	207	823	268	642	146	127	43
14	28	297	531	155	88	196	601	228	557	135	106	47
15	28	224	370	140	199	178	477	234	471	125	90	48
16	74	203	301	115	567	170	400	504	1,230	115	85	45
17	91	423	274	135	369	165	342	408	1,160	105	98	43
18	59	396	238	102	289	159	307	2,700	941	98	84	135
19	42	298	210	115	236	151	341	2,800	999	95	117	1,080
20	34	242	624	114	235	382	338	1,220	887	90	82	316
21	35	222	669	111	371	645	316	867	691	84	74	189
22	38	286	459	90	3,350	477	332	700	540	82	68	146
23	37	256	349	83	4,740	387	302	569	416	83	63	236
24	34	216	373	73	1,850	326	273	485	330	79	59	193
25	31	186	647	80	1,050	280	258	403	270	76	55	154
26	40	163	432	79	731	251	249	406	228	71	52	129
27	44	148	334	70	562	230	229	397	199	67	50	261
28	72	133	285	66	473	202	201	547	182	65	48	319
29	181	119	248	73	---	195	185	481	170	65	46	191
30	329	111	215	79	---	212	188	510	149	71	50	145
31	223	---	194	75	---	215	---	464	---	72	51	---
TOTAL	1,729	6,242	8,284	5,874	16,356	9,762	16,118	18,798	16,351	8,719	2,920	4,344
MEAN	55.8	208	267	189	584	315	537	606	545	281	94.2	145
MAX	329	447	669	572	4,740	645	2,450	2,800	1,230	2,890	419	1,080
MIN	21	84	57	66	72	151	185	206	149	65	46	43
CFSM	0.36	1.36	1.75	1.24	3.82	2.06	3.51	3.96	3.56	1.84	0.62	0.95
IN.	0.42	1.52	2.01	1.43	3.98	2.37	3.92	4.57	3.98	2.12	0.71	1.06

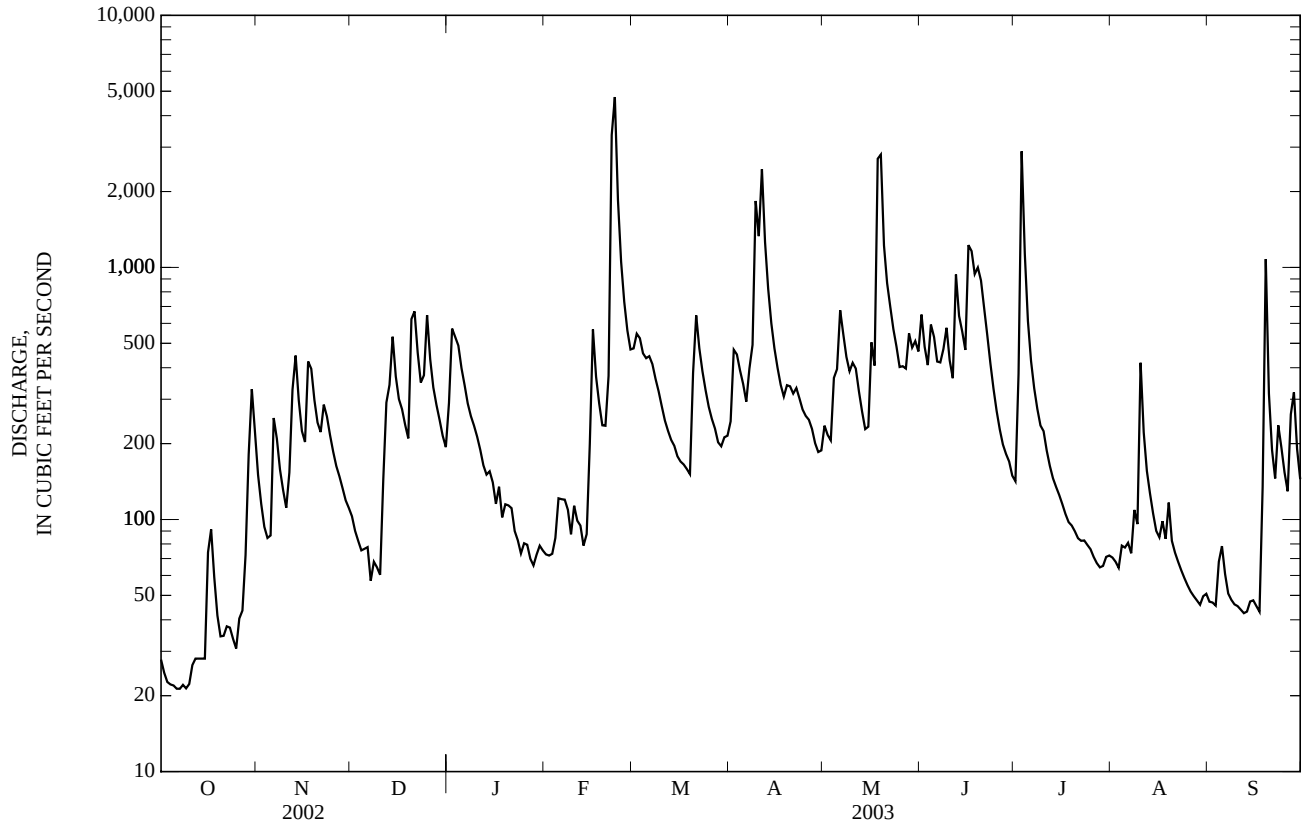
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1956, 1966 - 2003, BY WATER YEAR (WY)

MEAN	91.8	124	170	239	297	371	291	230	139	68.7	65.4	61.4
MAX	548	766	643	788	725	1,078	1,184	606	650	288	461	516
(WY)	(1990)	(1986)	(1949)	(1937)	(1998)	(1955)	(1987)	(2003)	(1972)	(1938)	(1940)	(1989)
MIN	20.7	23.8	24.7	29.8	26.9	75.7	80.5	51.4	29.4	22.1	21.9	18.4
(WY)	(1940)	(1940)	(1940)	(1956)	(1934)	(1988)	(1986)	(1934)	(1934)	(1966)	(1930)	(1968)

02014000 POTTS CREEK NEAR COVINGTON, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1929 - 1956 1966 - 2003	
ANNUAL TOTAL	41,444		115,497			
ANNUAL MEAN	114		316		178	
HIGHEST ANNUAL MEAN					320	1973
LOWEST ANNUAL MEAN					76.5	2002
HIGHEST DAILY MEAN	1,620	May 3	4,740	Feb 23	8,870	Jun 21, 1972
LOWEST DAILY MEAN	19	Aug 15	21	aOct 6	15	Dec 17, 1930
ANNUAL SEVEN-DAY MINIMUM	20	Aug 11	22	Oct 4	15	Dec 17, 1930
MAXIMUM PEAK FLOW			7,070	Feb 22	15,400	Nov 4, 1985
MAXIMUM PEAK STAGE			9.71	Feb 22	13.46	Nov 4, 1985
INSTANTANEOUS LOW FLOW			20	bOct 5	c13	Nov 29, 1930
ANNUAL RUNOFF (CFSM)	0.74		2.07		1.17	
ANNUAL RUNOFF (INCHES)	10.08		28.08		15.84	
10 PERCENT EXCEEDS	291		574		396	
50 PERCENT EXCEEDS	53		202		85	
90 PERCENT EXCEEDS	23		48		27	

a Also Oct. 7, 9, 2002.
b Also Oct. 6-9, 2002.
c Minimum observed.



02015700 BULLPASTURE RIVER AT WILLIAMSVILLE, VA

LOCATION.--Lat 38°11'43", long 79°34'13", NAD83, Bath County, Hydrologic Unit 02080201, on left bank 15 ft downstream from bridge on State Highway 614 at Williamsville and 0.62 mi upstream from mouth.

DRAINAGE AREA.--110 mi^2.

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

REVISED RECORDS.--WSP 2104: Drainage area. WRD VA-62-1: 1961. WRD VA-96-1: 1985(M).

GAGE.--Water-stage recorder. Datum of gage is 1,610.14 ft NGVD of 1929. Prior to July 12, 1974, at site 700 ft upstream at datum 11.84 ft higher.

REMARKS.--Records good except those for periods with ice effect, Dec. 6-8, Jan. 14, 15, 17-23, 26-29, and Feb. 5-7, 12-14, 17, and period of no gage-height record, July 13-23, which are fair. Maximum discharge, 22,900 ft^3/s, from rating curve extended above 3,300 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location by the Virginia Department of Environmental Quality - Water Division.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 20	0900	2,830	5.61	Sep 19	0530	*8,400	*8.57
Jun 4	0815	2,020	4.94	Sep 23	0230	2,050	4.96

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	204	109	435	61	247	213	163	182	110	76	61
2	50	156	96	560	61	519	291	148	148	120	71	161
3	44	127	92	439	63	604	252	143	258	272	68	193
4	41	113	79	360	83	420	222	484	1,450	155	87	262
5	40	132	84	287	e68	719	201	451	792	122	82	232
6	37	557	e79	244	e62	1,170	170	411	442	106	111	143
7	35	282	e64	200	e60	877	559	333	543	98	98	113
8	34	203	e67	191	58	566	544	276	608	122	143	97
9	33	163	71	180	55	556	914	388	538	126	168	86
10	34	141	69	156	63	481	738	752	373	155	181	78
11	47	588	171	137	58	354	991	694	306	138	199	71
12	65	659	237	116	e55	299	651	432	400	112	186	67
13	51	576	304	115	e46	331	446	344	1,040	e90	169	68
14	58	341	443	e100	e54	366	347	270	730	e450	220	68
15	49	254	310	e90	61	290	291	233	677	e560	142	69
16	226	216	274	83	49	252	254	214	903	e350	120	90
17	257	334	232	e78	e53	232	224	187	957	e240	117	66
18	142	283	199	e72	65	208	224	555	936	e165	98	75
19	104	232	180	e77	65	183	290	515	639	e135	86	3,400
20	84	201	1,610	e70	67	559	235	367	595	e120	79	719
21	74	239	834	e65	85	692	228	363	433	e110	73	375
22	65	368	451	e61	654	418	237	317	347	e100	70	295
23	58	274	317	e58	960	313	205	287	281	e97	66	1,000
24	53	219	254	55	949	254	182	263	231	93	62	425
25	51	183	243	67	627	212	174	226	197	83	60	297
26	125	163	190	e60	390	189	183	213	173	77	58	235
27	103	159	159	e55	301	170	229	186	155	73	56	265
28	101	135	145	e52	254	150	193	184	142	71	62	411
29	334	123	138	e59	---	169	179	184	130	72	66	234
30	643	119	133	63	---	189	167	181	118	69	59	187
31	298	---	129	60	---	185	---	175	---	68	57	---
TOTAL	3,393	7,744	7,763	4,645	5,427	12,174	10,034	9,939	14,724	4,659	3,190	9,843
MEAN	109	258	250	150	194	393	334	321	491	150	103	328
MAX	643	659	1,610	560	960	1,170	991	752	1,450	560	220	3,400
MIN	33	113	64	52	46	150	167	143	118	68	56	61
CFSM	1.00	2.35	2.28	1.36	1.76	3.57	3.04	2.91	4.46	1.37	0.94	2.98
IN.	1.15	2.62	2.63	1.57	1.84	4.12	3.39	3.36	4.98	1.58	1.08	3.33

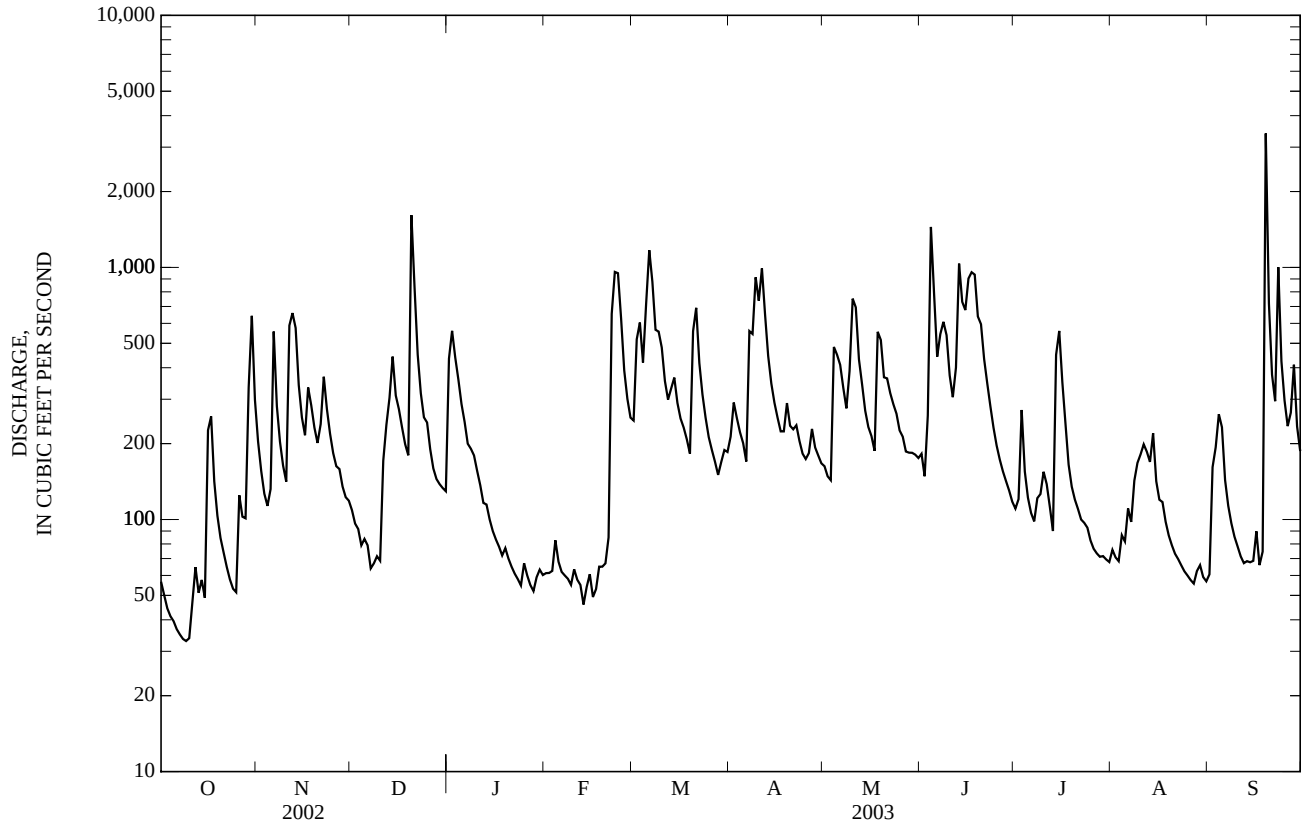
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2003, BY WATER YEAR (WY)

MEAN	82.1	120	159	190	216	307	227	193	125	67.3	65.5	74.3
MAX	295	784	543	631	498	655	663	448	491	245	272	432
(WY)	(1977)	(1986)	(1974)	(1996)	(1982)	(1993)	(1987)	(1996)	(2003)	(1972)	(1969)	(1996)
MIN	30.1	33.6	31.9	34.7	58.4	62.2	68.0	65.4	34.8	26.8	27.7	28.5
(WY)	(1989)	(2002)	(1966)	(1981)	(2002)	(1981)	(1999)	(1977)	(1999)	(1999)	(1964)	(1968)

02015700 BULLPASTURE RIVER AT WILLIAMSVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1960 - 2003	
ANNUAL TOTAL	50,491		93,535			
ANNUAL MEAN	138		256		152	
HIGHEST ANNUAL MEAN					256	2003
LOWEST ANNUAL MEAN					71.1	1999
HIGHEST DAILY MEAN	2,150	Apr 22	3,400	Sep 19	e8,700	Nov 4, 1985
LOWEST DAILY MEAN	22	aSep 9	33	Oct 9	22	aSep 9, 2002
ANNUAL SEVEN-DAY MINIMUM	22	bSep 7	36	Oct 4	22	bSep 7, 2002
MAXIMUM PEAK FLOW			8,400	Sep 19	22,900	Nov 4, 1985
MAXIMUM PEAK STAGE			8.57	Sep 19	c12.79	Nov 4, 1985
INSTANTANEOUS LOW FLOW			32	Oct 9	d19	Jan 4, 1981
ANNUAL RUNOFF (CFSM)	1.26		2.33		1.38	
ANNUAL RUNOFF (INCHES)	17.08		31.63		18.77	
10 PERCENT EXCEEDS	289		562		305	
50 PERCENT EXCEEDS	71		180		81	
90 PERCENT EXCEEDS	30		60		34	

a Also Sept. 10-13, 2002.
b Also Sept. 8, 2002.
c From floodmarks.
d Result of freezeup.
e Estimated.



02016000 COWPASTURE RIVER NEAR CLIFTON FORGE, VA

LOCATION.--Lat 37°47'30", long 79°45'34", NAD83, Alleghany County, Hydrologic Unit 02080201, on left bank 100 ft downstream from bridge on State Highway 633, 2.5 mi upstream from confluence with Jackson River, and 4.0 mi southeast of Clifton Forge.

DRAINAGE AREA.--461 mi^2.

PERIOD OF RECORD.--March 1925 to current year. Records for May 1907 to August 1908, published in WSP 242, are unreliable and should not be used.

REVISED RECORDS.--WSP 952: 1925-41. WSP 2104: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 1,006.93 ft NGVD of 1929 (levels by U.S. Army Corps of Engineers).Prior to October 1934, nonrecording gage at site 100 ft upstream at present datum.

REMARKS.--No estimated daily discharges. Records good. Low flow affected by springs and by occasional regulation from unknown source. Maximum discharge, 40,900 ft^3/s, from rating curve extended above 13,000 ft^3/s on basis of slope-area measurements at gage heights 15.70 ft and 19.15 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1913 reached a stage of 20.8 ft, from floodmarks, discharge, about 45,000 ft^3/s, from rating curve extended above 13,000 ft^3/s on basis of records for other stations in James River Basin.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 21	0000	7,520	8.55	Jun 5	0345	6,340	7.89
Feb 23	0700	14,700	11.80	Jun 16	2045	8,110	8.86
Apr 11	0930	5,040	7.09	Sep 20	0145	*17,100	*12.68
May 18	2100	8,320	8.97				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	192	792	321	710	171	1,110	766	485	704	306	173	175
2	153	539	292	2,370	168	1,500	1,050	448	618	301	173	163
3	131	407	261	1,860	168	2,510	1,110	433	567	841	194	274
4	119	331	241	1,750	183	1,860	922	841	2,880	865	224	662
5	111	318	239	1,300	196	1,660	793	1,910	4,590	559	302	772
6	104	1,510	230	1,030	205	2,990	686	1,890	2,180	429	259	557
7	98	1,400	215	840	189	3,430	1,080	1,460	1,660	356	285	374
8	94	805	196	700	176	2,130	2,520	1,110	2,010	317	286	292
9	90	571	201	647	162	1,700	3,430	875	2,590	292	399	243
10	89	451	196	580	165	1,520	3,610	1,100	1,750	319	810	213
11	94	693	399	500	174	1,240	4,460	1,910	1,260	438	543	190
12	97	2,170	1,180	429	170	996	3,040	1,390	1,380	492	1,280	173
13	104	3,120	1,260	374	161	861	1,950	998	2,100	381	1,270	165
14	110	1,570	2,290	368	159	914	1,380	793	2,500	735	825	163
15	100	981	1,750	350	318	910	1,070	652	1,600	1,770	639	162
16	176	789	1,220	306	697	770	890	625	4,030	1,240	467	156
17	710	1,410	993	300	391	685	763	550	4,250	712	390	169
18	585	1,570	814	269	377	635	660	3,780	3,790	504	341	174
19	348	1,080	681	256	343	584	642	4,700	2,790	406	285	5,970
20	249	822	2,480	296	349	1,520	644	2,150	1,990	349	243	5,680
21	207	691	4,430	273	682	3,850	588	1,560	1,810	300	217	1,480
22	178	1,040	1,880	247	7,460	2,120	784	1,510	1,360	271	199	940
23	154	1,160	1,230	200	12,800	1,390	721	1,240	1,070	256	185	3,170
24	138	877	1,010	147	6,000	1,050	612	1,100	831	236	170	2,200
25	129	691	1,140	212	3,000	849	563	929	656	218	158	1,210
26	160	568	950	223	1,900	717	543	839	546	197	150	846
27	269	492	733	212	1,380	627	534	742	470	183	144	846
28	299	441	613	196	1,130	546	545	655	419	172	140	1,930
29	378	377	542	192	---	509	503	681	380	218	431	1,240
30	2,180	343	486	182	---	601	483	757	340	199	253	804
31	1,420	---	447	179	---	696	---	694	---	176	191	---
TOTAL	9,266	28,009	28,920	17,498	39,274	42,480	37,342	38,807	53,121	14,038	11,626	31,393
MEAN	299	934	933	564	1,403	1,370	1,245	1,252	1,771	453	375	1,046
MAX	2,180	3,120	4,430	2,370	12,800	3,850	4,460	4,700	4,590	1,770	1,280	5,970
MIN	89	318	196	147	159	509	483	433	340	172	140	156
CFSM	0.65	2.03	2.02	1.22	3.04	2.97	2.70	2.72	3.84	0.98	0.81	2.27
IN.	0.75	2.26	2.33	1.41	3.17	3.43	3.01	3.13	4.29	1.13	0.94	2.53

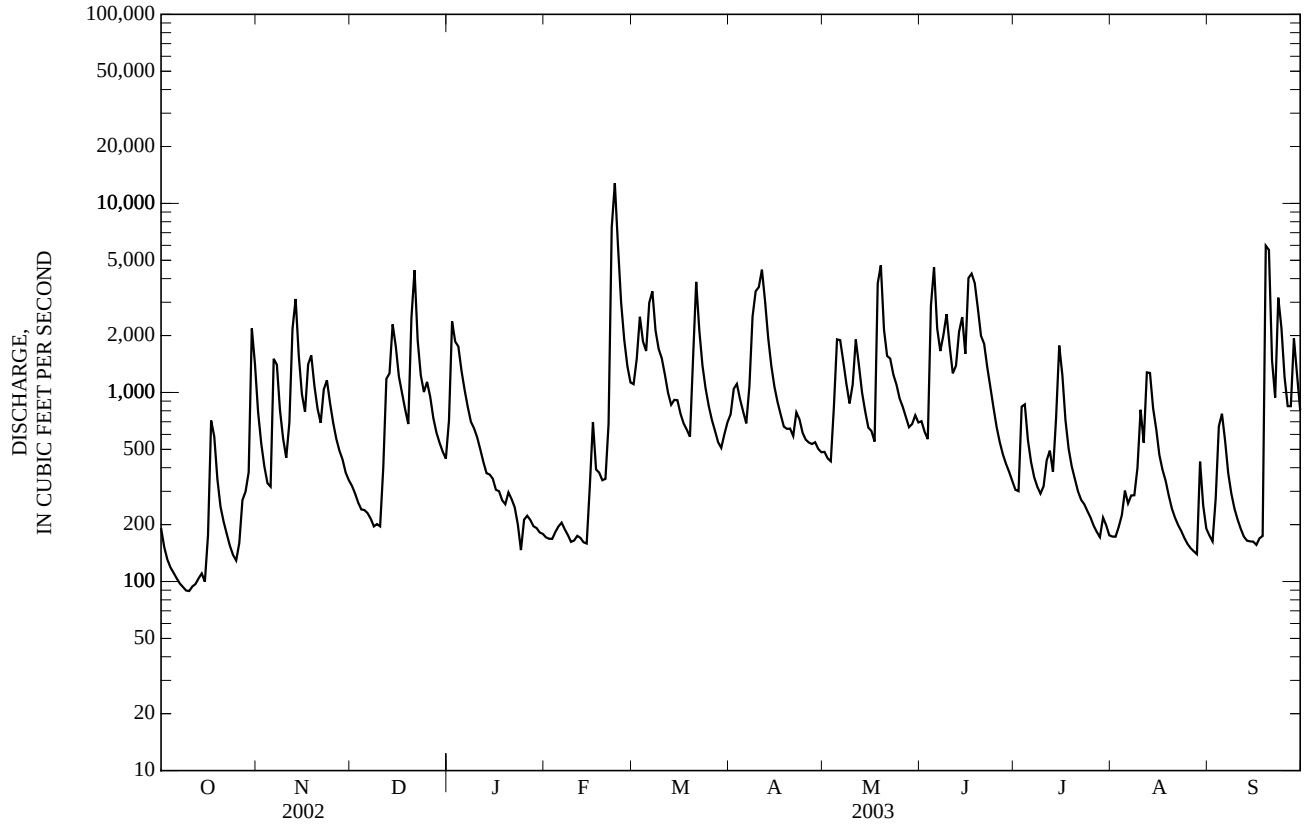
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 2003, BY WATER YEAR (WY)

MEAN	270	375	558	726	861	1,098	845	653	397	219	230	224
MAX	1,474	2,745	1,883	2,253	1,911	2,531	2,878	2,342	1,771	1,213	1,531	1,510
(WY)	(1938)	(1986)	(1974)	(1996)	(1998)	(1993)	(1987)	(1989)	(2003)	(1972)	(1969)	(1996)
MIN	45.4	62.8	82.9	95.3	89.9	203	235	147	98.1	64.9	64.9	60.3
(WY)	(1931)	(1932)	(1966)	(1981)	(1934)	(1981)	(1995)	(1930)	(1964)	(1930)	(1930)	(1932)

02016000 COWPASTURE RIVER NEAR CLIFTON FORGE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1926 - 2003	
ANNUAL TOTAL	150,653		351,774			
ANNUAL MEAN	413		964		536	
HIGHEST ANNUAL MEAN					964	2003
LOWEST ANNUAL MEAN					248	1981
HIGHEST DAILY MEAN	6,160	Apr 22	12,800	Feb 23	33,900	Nov 5, 1985
LOWEST DAILY MEAN	46	aSep 12	89	Oct 10	40	Sep 1, 1932
ANNUAL SEVEN-DAY MINIMUM	48	Sep 8	95	Oct 6	43	Oct 8, 1930
MAXIMUM PEAK FLOW			17,100	Sep 20	40,900	Nov 5, 1985
MAXIMUM PEAK STAGE			12.68	Sep 20	19.15	Nov 5, 1985
INSTANTANEOUS LOW FLOW			89	bOct 9	38	Sep 2, 1932
ANNUAL RUNOFF (CFSM)	0.90		2.09		1.16	
ANNUAL RUNOFF (INCHES)	12.16		28.39		15.81	
10 PERCENT EXCEEDS	986		2,140		1,160	
50 PERCENT EXCEEDS	173		612		258	
90 PERCENT EXCEEDS	68		170		86	

a Also Sept. 13, 2002.
b Also Oct. 10, 11, 2002.



02016500 JAMES RIVER AT LICK RUN, VA

LOCATION.--Lat 37°46'25", long 79°47'04", NAD83, Botetourt County, Hydrologic Unit 02080201, on right bank at community of Lick Run, 1,000 ft downstream from bridge on U.S. Highway 220, 0.9 mi downstream from confluence of Cowpasture and Jackson Rivers, 1.8 mi south of Iron Gate, and at mile 342.3.

DRAINAGE AREA.--1,373 mi^2.

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

REVISED RECORDS.--WSP 852: 1936-37. WSP 972: 1927, 1930(M), 1932(M), 1935-36. WSP 1303: 1927-28(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 978.30 ft NGVD of 1929 (levels by U.S. Army Corps of Engineers). Prior to Oct. 26, 1928, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since December 1979 by Lake Moomaw (station 02011795) 43.7 mi upstream from station; since October 1984 by Back Creek Lake 71.7 mi upstream; and since January 1985 by Little Back Creek Lake 74.8 mi upstream, amount unknown. Statistics of monthly mean data and summary statistics for water years 1925 - 1979 (unregulated flow) are available in previous data books, water years 1991 - 1998. National Weather Service gage-height telemeter at station. Maximum discharge, 87,500 ft^3/s, from rating curve extended above 66,000 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1877 reached a stage of about 33 ft, discharge, about 120,000 ft^3/s. Flood in March 1913 reached a stage of 30.4 ft, from floodmarks, discharge, about 98,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	567	1,710	1,050	2,080	582	3,770	2,070	1,630	2,650	1,100	703	624
2	446	1,240	982	5,450	577	4,800	3,020	1,870	2,590	1,300	682	586
3	381	983	806	5,430	577	5,970	3,620	1,710	2,400	8,000	722	657
4	353	835	695	6,180	617	4,900	3,140	2,460	5,090	4,830	782	1,480
5	334	806	711	5,000	679	4,620	2,650	4,160	7,940	2,880	904	1,760
6	311	2,720	670	3,190	741	7,650	2,370	5,180	6,870	2,170	851	1,230
7	303	2,650	613	2,570	734	8,970	3,100	4,470	3,370	1,880	862	935
8	294	1,680	567	2,150	693	7,050	5,480	3,690	3,890	1,540	870	806
9	287	1,290	583	2,010	636	4,060	10,100	3,190	8,400	1,440	1,060	687
10	291	1,080	639	1,770	658	3,720	8,240	4,060	5,890	1,460	1,720	629
11	327	1,520	1,270	1,600	703	3,300	11,800	4,800	4,880	1,590	1,340	586
12	328	3,770	2,990	1,450	721	2,830	10,900	4,000	4,670	1,580	1,980	560
13	321	5,840	3,870	1,320	681	2,270	9,180	4,500	5,270	1,390	1,990	550
14	326	3,130	6,310	1,240	677	2,360	6,590	3,300	6,340	1,880	1,460	590
15	307	2,080	5,330	1,180	1,060	2,760	3,780	2,320	4,520	2,680	1,230	567
16	601	1,720	4,100	1,060	3,300	2,560	3,210	2,520	9,250	2,240	1,050	567
17	1,700	3,050	3,030	983	2,410	2,420	2,510	2,330	11,100	1,640	979	561
18	1,300	3,600	2,280	839	1,950	1,990	2,280	12,500	8,490	1,380	913	584
19	834	2,530	2,010	837	1,730	1,910	2,210	15,400	6,780	1,260	873	9,760
20	606	1,940	4,810	903	1,850	2,900	2,010	9,620	6,740	1,170	782	7,880
21	538	1,680	9,040	877	2,390	7,110	1,910	6,550	8,850	1,100	696	2,900
22	495	2,290	6,840	801	18,900	6,610	2,160	5,810	7,950	1,060	657	2,190
23	452	2,430	5,150	697	30,600	5,270	2,030	3,530	5,610	1,060	628	6,030
24	418	1,930	3,300	538	15,400	3,340	1,860	5,920	3,110	883	603	6,270
25	401	1,590	4,620	630	11,700	2,700	1,770	3,830	2,230	791	583	4,630
26	507	1,360	3,770	660	10,300	2,230	1,760	2,970	1,810	740	565	2,260
27	639	1,210	2,540	606	8,620	2,010	1,720	2,700	1,510	712	553	2,390
28	721	1,240	2,060	557	5,660	1,790	1,660	2,790	1,380	687	636	4,300
29	1,180	1,160	1,840	609	---	1,690	1,590	2,550	1,280	770	1,020	2,900
30	4,270	1,100	1,670	601	---	1,860	1,550	2,720	1,180	760	731	2,150
31	2,810	---	1,540	597	---	1,980	---	2,540	---	711	643	---
TOTAL	22,648	60,164	85,686	54,415	125,146	117,400	116,270	135,620	152,040	52,684	29,068	67,619
MEAN	731	2,005	2,764	1,755	4,470	3,787	3,876	4,375	5,068	1,699	938	2,254
MAX	4,270	5,840	9,040	6,180	30,600	8,970	11,800	15,400	11,100	8,000	1,990	9,760
MIN	287	806	567	538	577	1,690	1,550	1,630	1,180	687	553	550
(†)	+3,176	+17,646	-101	-151	+504	-655	+252	0	-101	-1,664	-2,722	+3,630
MEAN‡	833	2,594	2,761	1,750	4,488	3,766	3,884	4,375	5,065	1,646	850	2,375
CFSM‡	.61	1.89	2.01	1.27	3.27	2.74	2.83	3.19	3.69	1.20	.62	1.73
IN.‡	.70	2.11	2.32	1.47	3.40	3.16	3.16	3.67	4.12	1.38	.71	1.93

CAL YR	2002	MEAN‡	1,290	CFSM‡	.94	IN.‡ 12.76
WTR YR	2003	MEAN‡	2,845	CFSM‡	2.07	IN.‡ 28.14

† Total change in contents, equivalent in cubic feet per second, per month, in Lake Moomaw; provided by U.S. Army Corps of Engineers.
‡ Adjusted for monthly change in contents.

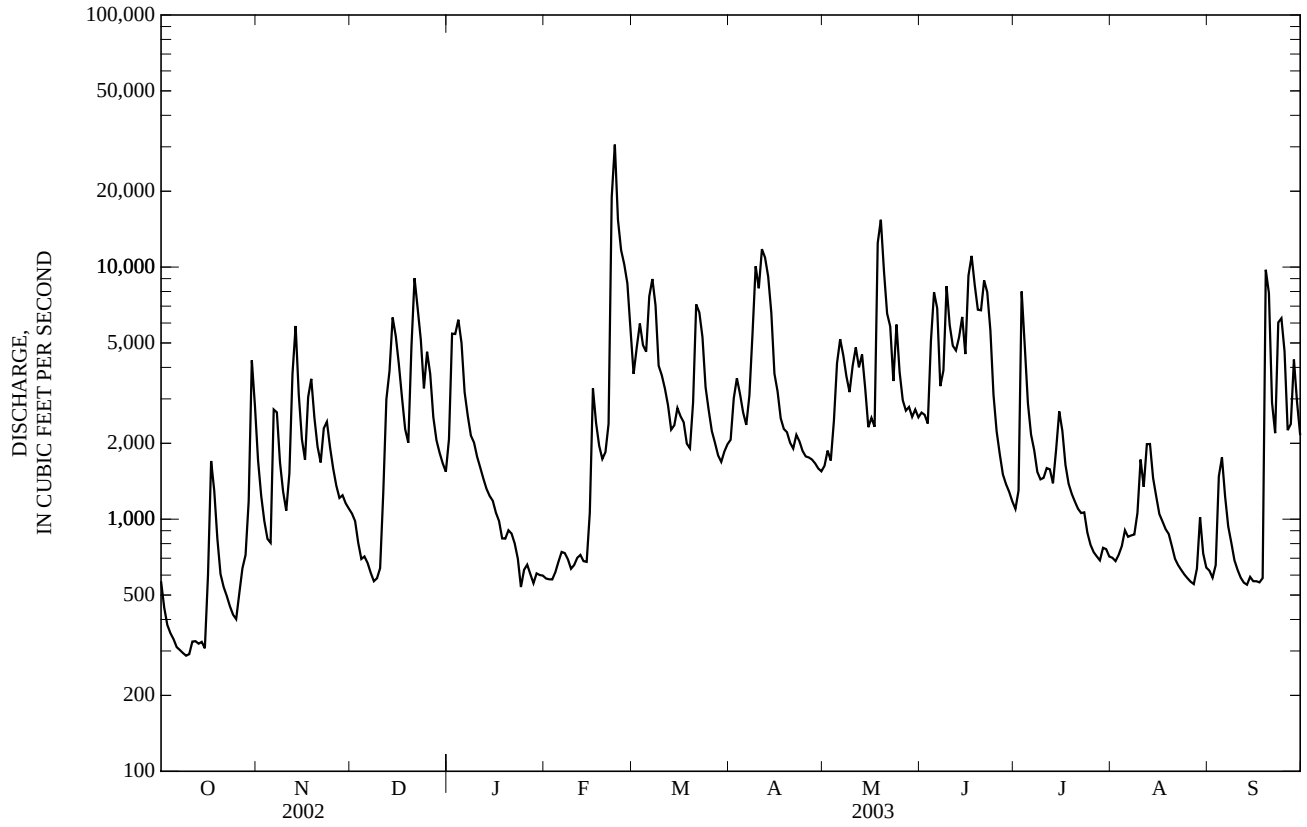
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2003, BY WATER YEAR (WY)

MEAN	765	1,251	1,446	2,002	2,542	3,387	2,857	2,242	1,477	735	708	793
MAX	3,495	7,206	4,206	5,302	6,425	8,083	9,349	5,639	5,068	1,699	2,704	2,839
(WY)	(1990)	(1986)	(1997)	(1996)	(1998)	(1993)	(1987)	(1989)	(2003)	(2003)	(1984)	(1996)
MIN	270	325	328	268	429	623	755	940	526	479	264	269
(WY)	(1981)	(2002)	(1981)	(1981)	(2002)	(1981)	(1986)	(1991)	(2002)	(1981)	(1981)	(1981)

02016500 JAMES RIVER AT LICK RUN, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1980 - 2003	
ANNUAL TOTAL	448,390		1,018,760			
ANNUAL MEAN	1,228		2,791		1,678	
HIGHEST ANNUAL MEAN					2,791	2003
LOWEST ANNUAL MEAN					789	1981
HIGHEST DAILY MEAN	12,000	Apr 22	30,600	Feb 23	67,500	Nov 5, 1985
LOWEST DAILY MEAN	250	Sep 12	287	Oct 9	180	Jan 5, 1981
ANNUAL SEVEN-DAY MINIMUM	260	Sep 8	306	Oct 6	202	Sep 28, 1981
MAXIMUM PEAK FLOW			37,600	Feb 22	a87,500	Nov 5, 1985
MAXIMUM PEAK STAGE			19.92	Feb 22	a30.22	Nov 5, 1985
INSTANTANEOUS LOW FLOW			281	bOct 9	c,d133	Jan 6, 1981
ANNUAL RUNOFF (CFSM)	0.89		2.03		1.22	
ANNUAL RUNOFF (INCHES)	12.15		27.60		16.61	
10 PERCENT EXCEEDS	2,760		6,420		3,660	
50 PERCENT EXCEEDS	601		1,840		820	
90 PERCENT EXCEEDS	334		584		392	

a Prior to regulation, 1925-79, maximum peak flow, 66,600 ft^3/s, Mar. 18, 1936, gage height, 27.01 ft.
b Also Oct. 10, 2002.
c Prior to regulation, 1925-79, instantaneous low flow, 148 ft^3/s, Sept. 7, 1966.
d Result of freezeup.



02017500 JOHNS CREEK AT NEW CASTLE, VA

LOCATION.--Lat 37°30'22", long 80°06'24", NAD83, Craig County, Hydrologic Unit 02080201, on right bank 20 ft downstream from bridge on State Highway 615 at New Castle and 1,700 ft upstream from mouth.

DRAINAGE AREA.--104 mi^2.

PERIOD OF RECORD.--April 1926 to current year.

REVISED RECORDS.--WSP 972: 1935-36(M), 1940(M). WSP 1203: 1928, 1935. WSP 1303: 1927(M), 1928, 1929-34(M), 1935. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,254.30 ft NGVD of 1929. Prior to Jun. 7, 1937, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Dec. 4-7, 9, 10, and Jan. 16-25, 27, 28, and period of doubtful gage-height record, Feb. 6-13, which are fair. Maximum discharge, 8,000 ft^3/s, from rating curve extended above 3,200 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,100 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1915	*5,620	*11.05	Jul 3	0700	3,200	9.38
May 18	1645	4,480	10.29				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	151	71	198	44	473	159	172	472	108	46	26
2	12	118	63	384	44	504	234	155	362	585	44	32
3	11	88	57	397	43	437	224	164	328	2,140	39	27
4	10	68	e49	395	49	376	211	590	432	890	43	32
5	10	60	e45	347	55	361	196	446	401	573	53	50
6	9.7	177	e55	309	e50	339	171	644	328	423	60	40
7	9.5	149	e48	266	e53	303	216	465	415	404	49	33
8	9.4	119	53	236	e48	277	301	392	526	360	54	30
9	9.5	98	e44	205	e45	251	1,010	326	475	314	115	28
10	9.8	81	e42	179	e49	220	803	280	381	280	200	26
11	12	136	110	154	e52	187	1,480	243	422	225	289	24
12	13	349	269	133	e50	166	768	205	986	179	171	23
13	12	378	360	120	e47	146	569	173	625	142	143	24
14	10	259	500	111	57	132	453	147	495	110	124	29
15	10	198	343	99	212	115	380	140	486	89	109	25
16	32	210	274	e84	576	107	323	293	946	74	116	24
17	41	516	247	e75	380	100	274	276	889	62	147	23
18	36	361	210	e66	293	94	244	2,040	861	54	145	26
19	28	266	181	e69	240	88	308	1,520	1,340	52	126	93
20	23	211	732	e72	242	321	293	783	833	49	104	57
21	24	193	562	e65	415	443	273	663	608	44	85	45
22	24	232	422	e60	3,380	338	272	569	494	40	67	40
23	21	222	339	e53	2,380	283	240	471	417	40	55	76
24	18	195	437	e45	1,200	240	213	399	361	40	47	66
25	18	170	633	e52	909	207	197	332	298	35	41	56
26	32	146	414	55	669	185	184	306	243	32	36	49
27	35	124	325	e52	530	163	161	304	192	30	33	45
28	67	105	269	e41	469	141	138	347	152	28	30	48
29	152	88	224	49	---	128	123	325	127	35	29	42
30	302	80	190	46	---	138	117	327	103	54	28	37
31	206	---	167	45	---	134	---	389	---	47	26	---
TOTAL	1,219.9	5,548	7,735	4,462	12,581	7,397	10,535	13,886	14,998	7,538	2,654	1,176
MEAN	39.4	185	250	144	449	239	351	448	500	243	85.6	39.2
MAX	302	516	732	397	3,380	504	1,480	2,040	1,340	2,140	289	93
MIN	9.4	60	42	41	43	88	117	140	103	28	26	23
CFSM	0.38	1.78	2.40	1.38	4.32	2.29	3.38	4.31	4.81	2.34	0.82	0.38
IN.	0.44	1.98	2.77	1.60	4.50	2.65	3.77	4.97	5.36	2.70	0.95	0.42

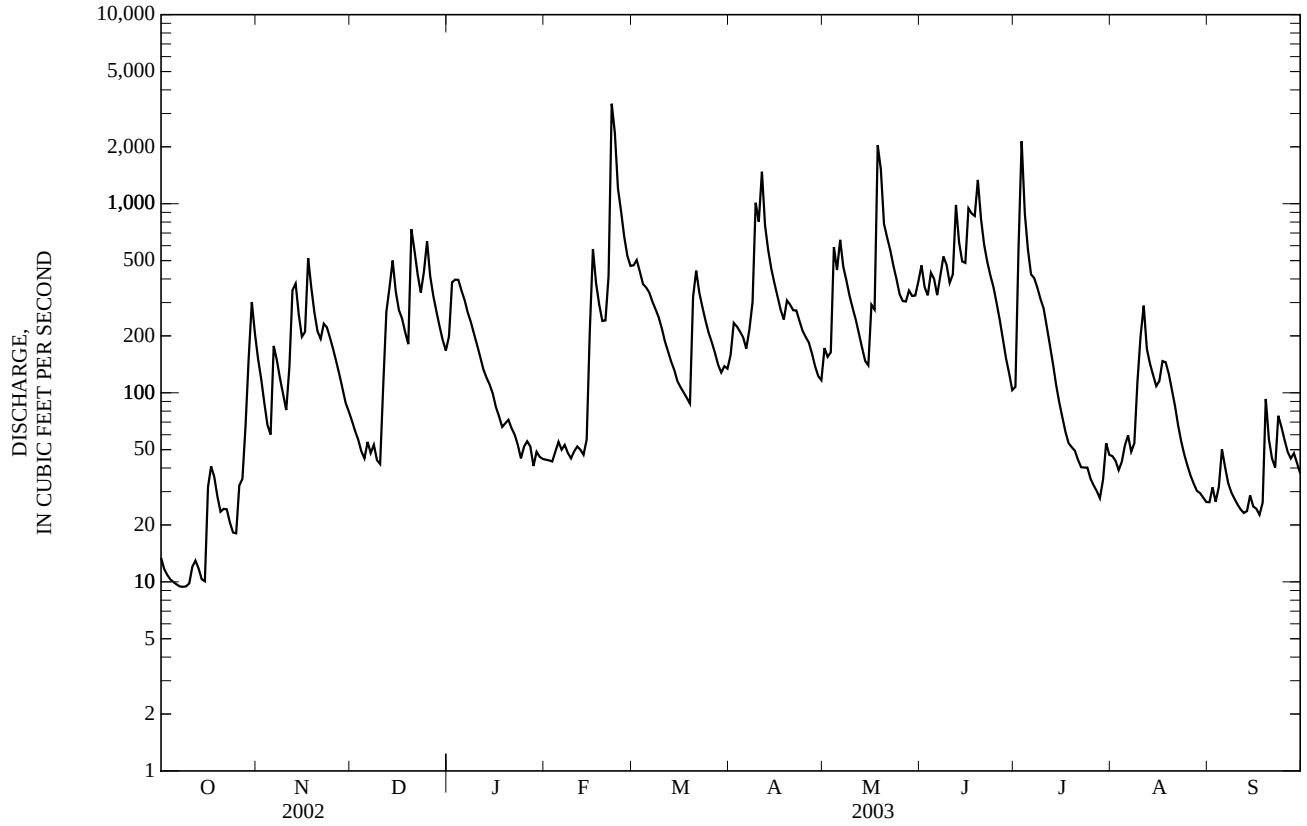
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1927 - 2003, BY WATER YEAR (WY)

MEAN	55.3	87.1	131	183	223	272	223	165	92.8	42.1	42.5	39.6
MAX	396	445	514	546	542	730	820	448	500	291	364	353
(WY)	(1930)	(1986)	(1949)	(1996)	(1998)	(1955)	(1987)	(2003)	(2003)	(1941)	(1940)	(1989)
MIN	9.81	12.3	15.7	16.2	18.0	51.9	47.8	33.5	14.3	8.90	9.04	8.99
(WY)	(1992)	(2002)	(1940)	(1956)	(1934)	(1988)	(1995)	(1930)	(2002)	(1930)	(2002)	(2002)

02017500 JOHNS CREEK AT NEW CASTLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1927 - 2003	
ANNUAL TOTAL	31,858.7		89,729.9			
ANNUAL MEAN	87.3		246		129	
HIGHEST ANNUAL MEAN					246	2003
LOWEST ANNUAL MEAN					51.1	2002
HIGHEST DAILY MEAN	1,210	May 3	3,380	Feb 22	6,040	Jun 21, 1972
LOWEST DAILY MEAN	5.2	aSep 12	9.4	Oct 8	5.2	aSep 12, 2002
ANNUAL SEVEN-DAY MINIMUM	5.6	Sep 8	9.7	Oct 4	5.6	Sep 8, 2002
MAXIMUM PEAK FLOW			5,620	Feb 22	8,000	Jan 23, 1935
MAXIMUM PEAK STAGE			11.05	Feb 22	12.48	Jun 21, 1972
INSTANTANEOUS LOW FLOW			9.2	Oct 7	5.1	bSep 11, 2002
ANNUAL RUNOFF (CFSM)	0.84		2.36		1.24	
ANNUAL RUNOFF (INCHES)	11.40		32.10		16.89	
10 PERCENT EXCEEDS	244		509		301	
50 PERCENT EXCEEDS	29		149		58	
90 PERCENT EXCEEDS	8.2		29		13	

a Also Sept. 13, 2002.
b Also Sept. 12,2002.
e Estimated.



02018000 CRAIG CREEK AT PARR, VA

LOCATION.--Lat 37°39'57", long 79°54'41", NAD83, Botetourt County, Hydrologic Unit 02080201, on right bank 12 ft upstream from abandoned railway bridge, 700 ft downstream from Stony Run, 0.2 mi northeast of Horton, 0.4 mi northwest of Parr, and at mile 12.0.

DRAINAGE AREA.--329 mi^2.

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

REVISED RECORDS.--WSP 852: 1937. WSP 892: 1935-36. WSP 1303: 1929-30(M), 1932-35(M), 1937-38(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 992.50 ft NGVD of 1929 (levels by U.S. Army Corps of Engineers). Prior to June 7, 1937, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods of no gage-height record, Oct. 14, 15, Feb. 17, 18, Aug. 29 to Sept. 2, and Sept. 27-29, which are fair. Maximum discharge, 58,500 ft^3/s, from rating curve extended above 11,000 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 23	0530	*19,200	*15.94	Jun 17	0145	5,610	9.85
Apr 9	1845	4,510	9.06	Jun 19	0730	6,370	10.35
Apr 11	1245	6,620	10.51	Jul 3	1715	7,170	10.85
May 19	0615	9,950	12.39				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	62	473	217	552	138	1,250	510	456	1,530	296	162	e105
2	55	327	197	1,170	136	1,440	869	517	1,180	473	155	e102
3	49	254	182	1,160	135	1,470	922	484	947	5,430	151	97
4	44	211	169	1,260	141	1,200	778	1,430	1,060	3,180	181	101
5	41	187	174	1,080	152	1,060	666	1,540	1,230	1,780	150	124
6	39	422	170	916	154	1,000	567	1,910	1,010	1,190	154	140
7	37	572	155	747	160	903	547	1,640	926	1,170	187	118
8	35	408	142	622	163	781	930	1,230	1,760	977	170	102
9	34	315	143	545	154	694	3,510	990	2,150	784	173	92
10	35	260	144	470	153	603	3,120	937	1,670	692	354	85
11	41	265	187	401	164	513	5,130	828	1,170	733	494	80
12	45	907	641	351	162	450	3,040	654	2,040	610	404	75
13	48	1,860	957	310	161	416	1,960	522	2,730	448	313	74
14	e48	1,010	1,860	295	156	412	1,420	434	1,940	389	273	77
15	e46	650	1,340	275	230	394	1,120	413	1,560	325	245	85
16	56	557	969	247	1,930	368	939	578	3,010	286	221	80
17	134	1,740	790	247	e900	352	782	712	4,160	252	530	73
18	147	1,710	666	246	e800	330	660	3,620	3,020	226	366	73
19	112	1,030	546	307	701	312	691	7,090	5,470	206	303	815
20	90	721	1,760	272	610	735	725	2,980	3,320	195	253	681
21	83	560	2,590	213	1,260	2,390	689	2,060	2,130	182	215	341
22	75	610	1,450	194	5,440	1,410	675	2,040	1,560	172	183	248
23	75	674	1,050	189	12,500	1,030	607	1,650	1,190	162	157	303
24	67	571	904	340	4,170	817	527	1,380	951	159	137	499
25	64	466	2,340	253	2,660	661	479	1,130	757	149	124	339
26	77	392	1,610	224	1,920	561	464	1,000	597	138	113	267
27	151	339	1,100	163	1,460	496	435	929	484	132	103	e225
28	188	296	865	135	1,240	426	401	1,550	415	126	96	e600
29	401	260	687	159	---	413	369	1,260	373	125	e92	e350
30	1,220	236	559	149	---	422	345	1,270	329	154	e100	262
31	894	---	470	144	---	467	---	1,110	---	186	e110	---
TOTAL	4,493	18,283	25,034	13,636	37,950	23,776	33,877	44,344	50,669	21,327	6,669	6,613
MEAN	145	609	808	440	1,355	767	1,129	1,430	1,689	688	215	220
MAX	1,220	1,860	2,590	1,260	12,500	2,390	5,130	7,090	5,470	5,430	530	815
MIN	34	187	142	135	135	312	345	413	329	125	92	73
CFSM	0.44	1.85	2.45	1.34	4.12	2.33	3.43	4.35	5.13	2.09	0.65	0.67
IN.	0.51	2.07	2.83	1.54	4.29	2.69	3.83	5.01	5.73	2.41	0.75	0.75

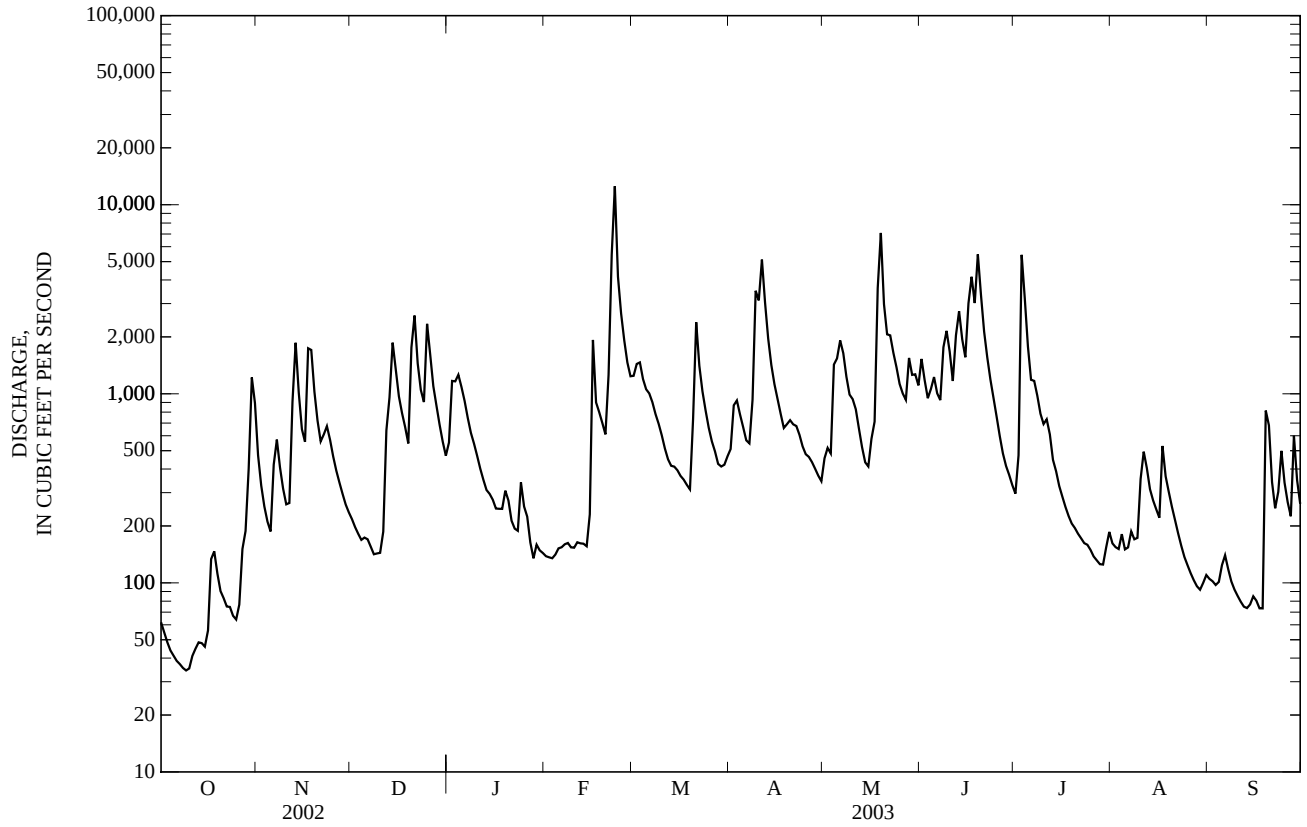
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 2003, BY WATER YEAR (WY)

MEAN	185	278	385	546	658	783	654	471	281	140	158	143
MAX	1,093	2,112	1,519	1,642	1,757	2,116	2,427	1,430	1,689	979	1,290	974
(WY)	(1938)	(1986)	(1949)	(1937)	(1998)	(1993)	(1987)	(2003)	(2003)	(1941)	(1940)	(1928)
MIN	34.9	41.0	48.9	51.2	55.6	141	143	93.2	51.4	33.5	33.9	34.1
(WY)	(1931)	(2002)	(1966)	(1956)	(1934)	(1988)	(1995)	(1930)	(2002)	(1966)	(2002)	(1968)

02018000 CRAIG CREEK AT PARR, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1925 - 2003	
ANNUAL TOTAL	94,673		286,671			
ANNUAL MEAN	259		785		390	
HIGHEST ANNUAL MEAN					785	2003
LOWEST ANNUAL MEAN					140	2002
HIGHEST DAILY MEAN	2,590	Dec 21	12,500	Feb 23	21,000	Nov 4, 1985
LOWEST DAILY MEAN	23	aSep 11	34	Oct 9	23	aSep 11, 2002
ANNUAL SEVEN-DAY MINIMUM	24	Sep 8	37	Oct 5	24	Sep 8, 2002
MAXIMUM PEAK FLOW			19,200	Feb 23	58,500	Nov 4, 1985
MAXIMUM PEAK STAGE			15.94	Feb 23	b24.76	Nov 4, 1985
INSTANTANEOUS LOW FLOW			34	cOct 8	d20	fDec 21, 1980
ANNUAL RUNOFF (CFSM)	0.79		2.39		1.18	
ANNUAL RUNOFF (INCHES)	10.70		32.41		16.10	
10 PERCENT EXCEEDS	701		1,760		870	
50 PERCENT EXCEEDS	84		435		180	
90 PERCENT EXCEEDS	32		99		49	

a Also Sept. 12-14, 2002.
b From floodmarks.
c Also Oct. 9, 10, 2002.
d Result of freezeup.
e Estimated.
f Also probably occurred Dec. 25, 1980, and Jan. 4, 1981.



02018500 CATAWBA CREEK NEAR CATAWBA, VA

LOCATION.--Lat 37°28'05", long 80°00'19", NAD83, Botetourt County, Hydrologic Unit 02080201, on right bank 80 ft upstream from bridge on State Highway 779, 1.0 mi downstream from Little Catawba Creek, 1.9 mi west of Haymakertown, and 8.2 mi northeast of Catawba.

DRAINAGE AREA.--34.3 mi^2.

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

REVISED RECORDS.--WSP 1303: 1944-45(M). WSP 2104: Drainage area. WDR VA-72-1: 1954, 1955(P), 1957-58(P), 1959, 1960-62(P), 1963, 1964(M), 1965-67(P), 1968(M), 1969, 1970(M), 1971.

GAGE.--Water-stage recorder. Datum of gage is 1,299.96 ft NGVD of 1929. Prior to Aug. 1, 1953, nonrecording gage at site 80 ft downstream at same datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 17-24 and Feb. 8-10, which are fair. At a point 5.3 mi upstream from station, there has been transmountain diversion through a tunnel into Roanoke River Basin for municipal water supply of city of Roanoke since December 1974. From October 1953 to October 1976, monthly means adjusted for pumpage by Citadel Cement Corporation. Statistics of monthly mean data and summary statistics for water years 1944-1952 (unregulated flow) are available in previous data books, water years 1991-1998. Maximum discharge, 21,200 ft^3/s, from rating curve extended above 1,700 ft^3/s on basis of slope-area measurements at gage heights 10.35 ft and 19.19 ft. Minimum discharge, 0.28 ft^3/s, Aug. 21, 1987, gage height, 0.99 ft, cause unknown. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 13.26 ft, from information by observer.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	6.7	6.2	34	5.2	109	85	86	147	39	27	15
2	2.0	4.5	5.0	37	4.7	141	119	67	125	185	23	16
3	1.4	3.2	5.5	37	4.5	125	97	66	112	375	22	15
4	1.4	2.8	4.2	36	5.2	102	82	198	134	173	23	19
5	1.5	3.4	5.1	30	5.0	94	72	167	116	124	119	18
6	1.5	9.7	3.7	31	4.8	85	62	192	103	86	85	15
7	1.5	9.1	3.3	29	5.1	71	84	144	141	76	46	14
8	1.5	6.6	3.4	24	e4.5	64	117	118	175	64	40	13
9	1.9	5.0	4.6	21	e4.2	59	422	97	243	58	72	13
10	2.7	6.9	4.7	17	e4.7	54	389	85	163	131	48	12
11	3.1	19	8.6	13	5.0	50	590	77	137	164	61	12
12	2.1	34	17	12	4.9	46	265	67	140	83	43	11
13	1.7	30	30	14	4.7	44	178	61	135	65	36	12
14	2.2	23	38	11	5.1	42	137	57	146	56	32	16
15	2.5	16	28	9.0	13	39	115	69	166	48	27	13
16	6.4	21	24	8.2	33	39	99	94	674	43	63	12
17	4.4	46	21	e7.3	24	37	89	86	415	39	47	11
18	2.8	34	17	e6.2	18	36	85	880	352	35	33	18
19	1.9	24	14	e6.5	15	34	82	565	488	33	28	74
20	1.7	18	56	e7.0	18	216	77	294	257	31	24	35
21	3.1	16	39	e6.4	42	200	76	265	166	29	22	25
22	3.2	13	32	e6.0	1,230	123	74	343	123	28	22	23
23	2.6	13	25	e5.5	666	94	67	256	96	27	21	49
24	2.2	12	36	e5.0	244	77	63	207	78	25	20	33
25	2.8	10	50	5.7	139	66	61	162	67	23	19	27
26	13	9.9	38	5.3	130	61	59	146	57	22	17	24
27	13	8.4	33	4.6	112	56	55	211	52	21	16	23
28	11	6.6	27	4.5	102	50	51	220	48	20	16	28
29	18	6.1	23	5.2	---	50	49	188	43	33	17	23
30	26	6.1	19	5.5	---	59	56	160	40	36	16	21
31	18	---	16	5.4	---	63	---	158	---	30	15	---
TOTAL	158.8	424.0	637.3	449.3	2,853.6	2,386	3,857	5,786	5,139	2,202	1,100	640
MEAN	5.12	14.1	20.6	14.5	102	77.0	129	187	171	71.0	35.5	21.3
MAX	26	46	56	37	1,230	216	590	880	674	375	119	74
MIN	1.4	2.8	3.3	4.5	4.2	34	49	57	40	20	15	11
(†)	201	672	1,110	576	656	0	0	0	0	0	0	0
MEAN‡	11.6	36.5	56.4	33.1	125	77.0	129	187	171	71.0	35.5	21.3
CFSM‡	.34	1.06	1.64	.97	3.64	2.24	3.76	5.45	4.99	2.07	1.03	.62
IN.‡	.39	1.19	1.90	1.11	3.80	2.59	4.20	6.29	5.56	2.39	1.19	.69

CAL YR 2002 MEAN‡ 13.2 CFSM‡ .38 IN.‡ 5.23
WTR YR 2003 MEAN‡ 79.0 CFSM‡ 2.30 IN.‡ 31.3

† Total diversion, equivalent in cubic feet per second, per month, provided by City of Roanoke.
‡ Adjusted for diversion.

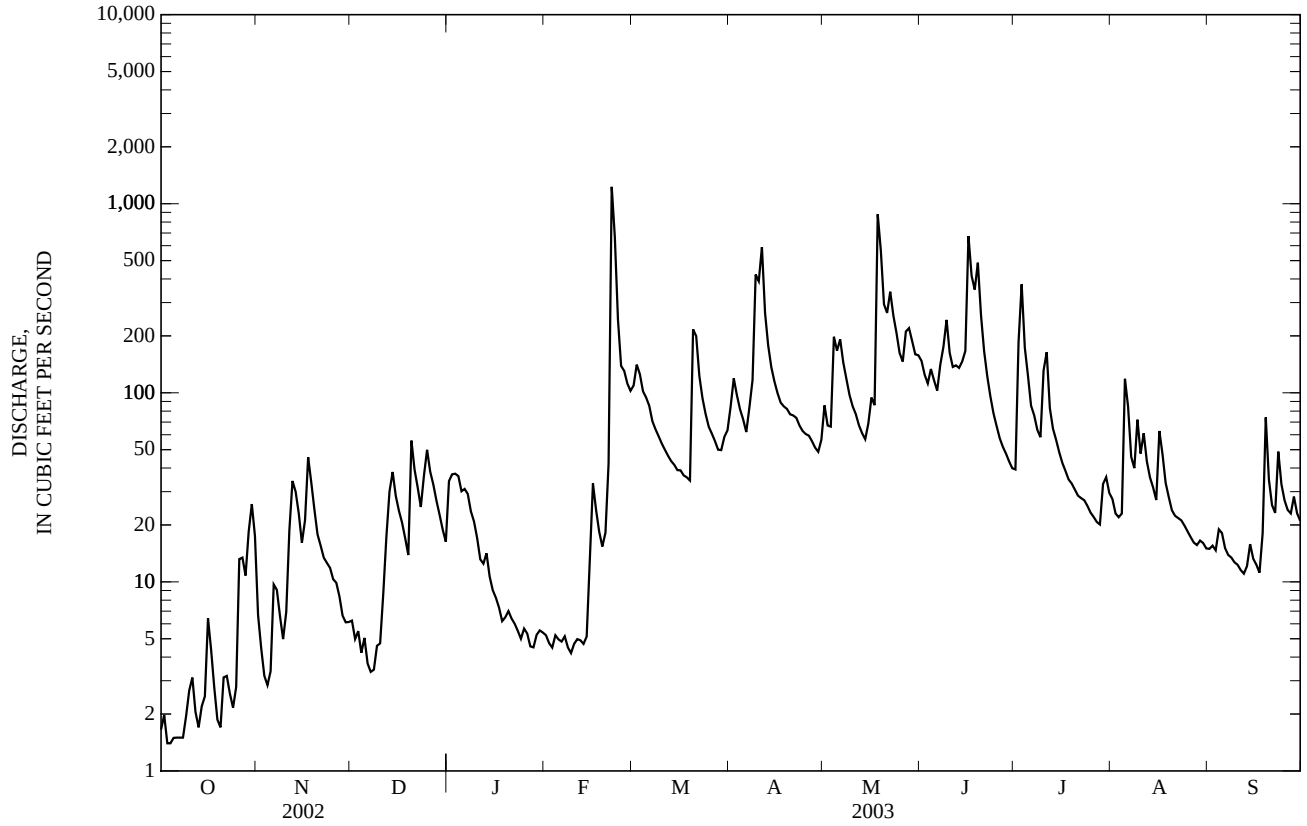
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 2003, BY WATER YEAR (WY)

MEAN	13.8	28.8	20.9	35.0	52.9	76.8	71.2	42.9	33.7	12.7	11.7	16.9
MAX	82.2	390	105	131	221	278	337	187	171	71.0	75.5	105
(WY)	(1990)	(1986)	(1997)	(1996)	(1998)	(1993)	(1987)	(2003)	(2003)	(2003)	(1985)	(1979)
MIN	3.41	2.01	3.16	3.45	2.07	4.51	3.79	4.88	2.29	2.10	1.06	1.53
(WY)	(1999)	(1982)	(1982)	(1981)	(2002)	(2002)	(2002)	(1999)	(1999)	(2002)	(2002)	(2002)

02018500 CATAWBA CREEK NEAR CATAWBA, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1975 - 2003	
ANNUAL TOTAL	2,106.71		25,633.0			
ANNUAL MEAN	5.77		70.2		34.6	
HIGHEST ANNUAL MEAN					70.2	2003
LOWEST ANNUAL MEAN					3.95	2002
HIGHEST DAILY MEAN	56	Dec 20	1,230	Feb 22	7,400	Nov 4, 1985
LOWEST DAILY MEAN	0.25	Sep 13	1.4	aOct 3	0.25	Sep 13, 2002
ANNUAL SEVEN-DAY MINIMUM	0.36	Sep 8	1.5	Oct 3	0.36	Sep 8, 2002
MAXIMUM PEAK FLOW			3,420	Feb 22	21,200	Nov 4, 1985
MAXIMUM PEAK STAGE			7.68	Feb 22	b19.19	Nov 4, 1985
INSTANTANEOUS LOW FLOW			1.4	cOct 1	0.24	dSep 12, 2002
10 PERCENT EXCEEDS	15		163		70	
50 PERCENT EXCEEDS	2.9		32		11	
90 PERCENT EXCEEDS	1.2		4.6		3.8	

a Also Oct. 4, 2002.
b From high-water mark.
c Also Oct. 2-5, 2002 and Feb. 13, 2003.
d Also Sept. 13, 14, 2002.
e Estimated.



02019500 JAMES RIVER AT BUCHANAN, VA

LOCATION.--Lat 37°31'50", long 79°40'44", NAD83, Botetourt County, Hydrologic Unit 02080201, on left bank 300 ft upstream from bridge on U.S. Highway 11 at Buchanan, 1,000 ft upstream from Purgatory Creek, 1.5 mi downstream from Looney Creek, and at mile 306.4.

DRAINAGE AREA.--2,075 mi^2.

PERIOD OF RECORD.--February 1898 to current year. Monthly discharge only for some periods, published in WSP 1303. Records for August 1895 to Feb. 11, 1898, published in WSP 11, 15, and 27 are in error and should not be used. Gage-height records collected at this site since 1893 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 602: 1917-24. WSP 972: 1935-36. WSP 1303: 1898-1916, 1917-20(M), 1922(M), 1924(M). WSP 1383: 1927. WSP 2104: Drainage area. WDR VA-72-1: 1913(M). See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 802.90 ft NGVD of 1929. Prior to July 1, 1927, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since December 1979 by Lake Moomaw (station 02011795) 79.6 mi upstream; since October 1984 by Back Creek Lake 107.6 mi upstream, amount unknown; and since January 1985 by Little Back Creek Lake 110.7 mi upstream, amount unknown. Statistics of monthly mean data and summary statistics for water years 1898 - 1979 (unregulated flow) are available in previous data books, water years 1991 - 1998. National Weather Service gage-height telemeter at station. Maximum discharge, 179,000 ft^3/s, from rating curve extended above 110,000 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1877 reached a stage of 34.9 ft, from floodmark, discharge, about 142,000 ft^3/s, from rating curve extended above 110,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	819	2,980	1,490	2,710	877	6,400	3,320	2,430	5,250	1,850	1,160	967
2	686	2,060	1,400	6,590	855	6,910	4,090	2,660	4,840	2,050	1,120	1,020
3	561	1,580	1,270	7,630	847	8,580	5,330	2,690	4,190	12,100	1,160	946
4	505	1,320	1,100	8,510	876	7,570	4,750	4,260	5,340	12,900	1,450	1,780
5	473	1,160	1,080	7,510	932	6,410	4,070	6,340	10,900	6,300	1,700	2,680
6	446	2,540	1,050	5,270	1,010	8,510	3,610	8,150	9,540	4,320	1,610	2,020
7	425	4,230	966	4,080	1,050	10,900	3,590	7,660	6,080	3,610	1,400	1,500
8	414	2,790	898	3,410	1,020	9,440	6,830	5,930	6,470	3,200	1,370	1,240
9	407	2,060	891	3,070	960	6,060	16,200	4,930	11,100	2,730	1,520	1,090
10	404	1,670	893	2,780	920	4,870	17,300	6,040	9,650	2,700	2,430	998
11	436	1,780	1,160	2,460	985	4,410	21,700	7,010	7,250	2,890	2,770	928
12	470	4,400	3,440	2,210	1,020	3,840	19,000	5,850	7,420	2,800	2,440	881
13	461	9,140	5,110	1,990	988	3,270	14,100	5,520	9,780	2,410	3,060	859
14	449	5,790	8,770	1,850	952	2,990	10,300	4,680	11,200	2,280	2,320	893
15	448	3,600	8,430	1,760	1,150	3,330	6,790	3,500	8,350	2,900	1,990	899
16	502	2,940	6,320	1,620	4,730	3,240	5,130	3,400	11,300	3,420	1,710	880
17	1,330	4,930	4,760	1,520	5,000	3,090	4,200	3,630	23,900	2,390	1,790	855
18	1,840	6,990	3,680	1,350	3,500	2,740	3,670	15,700	15,900	1,990	1,760	909
19	1,230	4,690	3,110	1,200	2,890	2,500	3,470	36,900	20,400	1,800	1,540	8,390
20	914	3,440	4,120	1,290	2,770	3,810	3,350	17,200	14,500	1,680	1,440	13,000
21	777	2,810	13,900	1,340	3,570	11,200	3,100	11,300	13,400	1,570	1,270	4,400
22	715	3,000	9,720	1,210	24,200	9,870	3,190	11,200	11,800	1,490	1,170	3,030
23	654	3,690	7,640	1,120	64,800	7,780	3,180	7,560	8,760	1,480	1,100	6,000
24	606	3,120	5,010	843	31,300	5,510	2,890	8,080	5,630	1,370	1,030	8,260
25	579	2,580	7,640	834	18,000	4,170	2,700	6,670	4,010	1,180	970	6,040
26	686	2,190	7,130	988	14,900	3,530	2,620	5,140	3,220	1,120	930	3,810
27	822	1,920	4,750	952	12,500	3,130	2,610	4,740	2,720	1,070	897	2,720
28	1,070	1,780	3,670	851	8,900	2,790	2,460	5,640	2,380	1,040	882	7,580
29	1,610	1,710	3,140	904	---	2,580	2,310	5,280	2,190	1,050	1,030	4,680
30	4,970	1,580	2,780	911	---	2,720	2,230	5,490	2,010	1,180	1,330	3,280
31	5,160	---	2,490	897	---	3,260	---	4,980	---	1,180	989	---
TOTAL	30,869	94,470	127,808	79,660	211,502	165,410	188,090	230,560	259,480	90,050	47,338	92,535
MEAN	996	3,149	4,123	2,570	7,554	5,336	6,270	7,437	8,649	2,905	1,527	3,084
MAX	5,160	9,140	13,900	8,510	64,800	11,200	21,700	36,900	23,900	12,900	3,060	13,000
MIN	404	1,160	891	834	847	2,500	2,230	2,430	2,010	1,040	882	855
(†)	+3,176	+17,646	-101	-151	+504	-655	+252	0	-101	-1,664	-2,722	+3,630
MEAN‡	1,098	3,737	4,120	2,565	7,572	5,315	6,278	7,437	8,646	2,851	1,439	3,206
CFSM‡	.53	1.80	1.99	1.24	3.65	2.56	3.03	3.58	4.17	1.37	.69	1.55
IN.‡	.61	2.01	2.29	1.43	3.80	2.95	3.38	4.13	4.65	1.58	.80	1.72

CAL YR	2002	MEAN‡	1,733	CFSM‡	.84	IN.‡ 11.34
WTR YR	2003	MEAN‡	4,487	CFSM‡	2.16	IN.‡ 29.36

† Total change in contents, equivalent in cubic feet per second, per month, in Lake Moomaw; provided by U.S. Army Corps of Engineers.
‡ Adjusted for monthly change in contents.

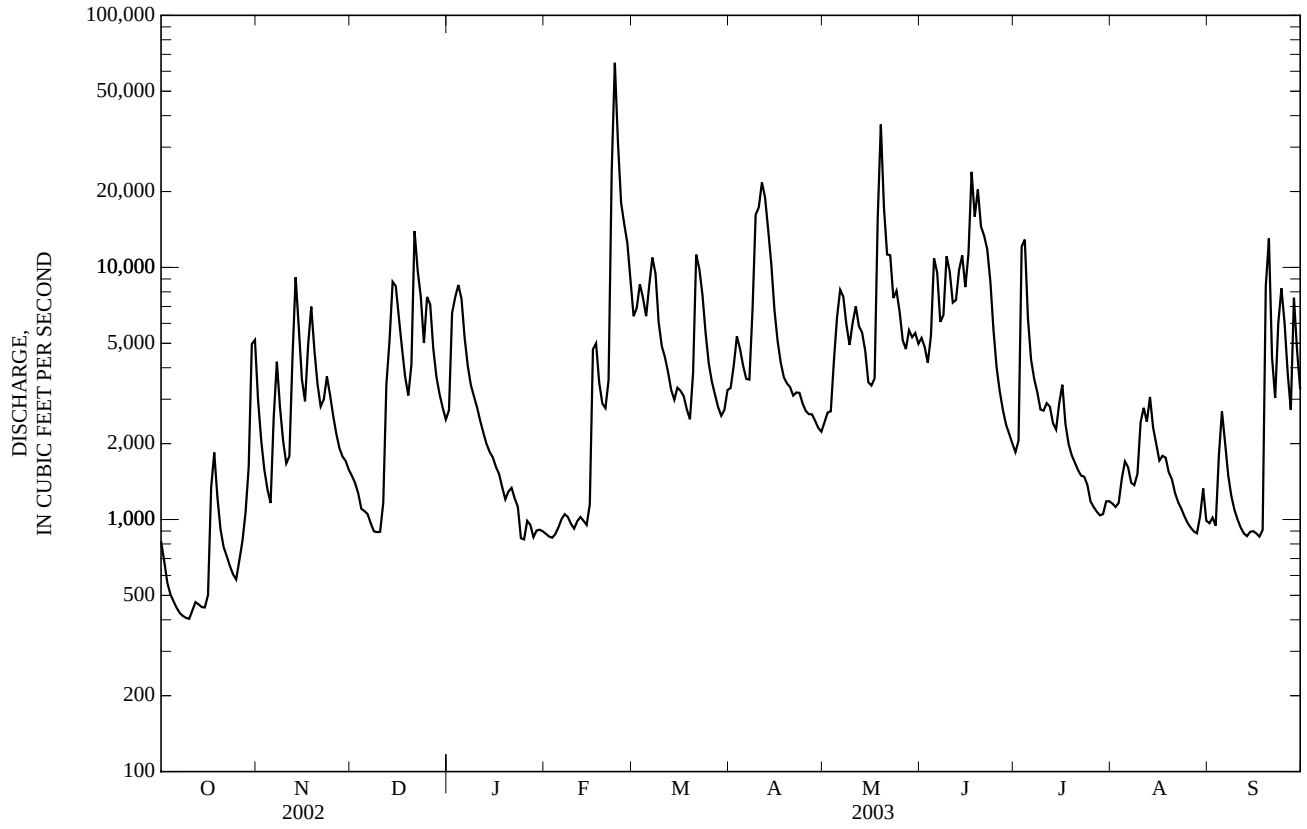
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2003, BY WATER YEAR (WY)

MEAN	1,154	1,845	2,189	3,243	3,971	5,017	4,502	3,335	2,272	1,101	1,046	1,193
MAX	5,679	10,190	6,450	10,310	11,270	12,790	16,170	8,908	8,649	2,905	3,834	4,288
(WY)	(1990)	(1986)	(1997)	(1996)	(1998)	(1993)	(1987)	(1989)	(2003)	(2003)	(1984)	(1996)
MIN	419	452	453	396	604	922	1,081	1,457	626	553	338	361
(WY)	(1981)	(2002)	(1981)	(1981)	(2002)	(1981)	(1995)	(2000)	(1999)	(1999)	(1981)	(1981)

02019500 JAMES RIVER AT BUCHANAN, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1980 - 2003	
ANNUAL TOTAL	610,119		1,617,772			
ANNUAL MEAN	1,672		4,432		2,563	
HIGHEST ANNUAL MEAN					4,432	2003
LOWEST ANNUAL MEAN					1,092	1981
HIGHEST DAILY MEAN	14,400	Apr 23	64,800	Feb 23	102,000	Nov 5, 1985
LOWEST DAILY MEAN	321	Sep 13	404	Oct 10	257	Oct 1, 1981
ANNUAL SEVEN-DAY MINIMUM	333	Sep 8	429	Oct 6	268	Sep 29, 1981
MAXIMUM PEAK FLOW			72,000	Feb 23	a179,000	Nov 5, 1985
MAXIMUM PEAK STAGE			24.03	Feb 23	a,b38.84	Nov 5, 1985
INSTANTANEOUS LOW FLOW			398	Oct 10	c,d230	fJan 11, 1981
ANNUAL RUNOFF (CFSM)	0.81		2.14		1.24	
ANNUAL RUNOFF (INCHES)	10.94		29.00		16.78	
10 PERCENT EXCEEDS	4,270		9,680		5,610	
50 PERCENT EXCEEDS	771		2,790		1,240	
90 PERCENT EXCEEDS	438		892		535	

a Prior to regulation, 1898-1979, maximum peak flow, 115,000 ft^3/s, Mar. 27, 1913, gage height, 31.00 ft, from floodmarks.
b From floodmarks.
c Prior to regulation, 1898-1979, instantaneous low flow, 202 ft^3/s, Sept. 8, 1966.
d Result of freezeup.
f Also Jan. 12, 1981.



02020500 CALFPASTURE RIVER ABOVE MILL CREEK, AT GOSHEN, VA

LOCATION.--Lat 37°59'16", long 79°29'37", NAD83, Rockbridge County, Hydrologic Unit 02080202, on left bank 20 ft upstream from bridge on State Highway 42, at Goshen and 400 ft upstream from Mill Creek.

DRAINAGE AREA.--144 mi^2.

PERIOD OF RECORD.--October 1938 to September 1996. October 1998 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,382.84 ft NGVD of 1929. Prior to Oct. 1, 1998, at datum 2.0 ft higher.

REMARKS.--Records good except those for periods with ice effect, Dec. 6-8, Jan. 16-20, 22-28, and Feb. 6-17, and periods of doubtful or no gage-height record, Mar. 14-19, Mar. 23 to Apr. 7, and July 18-23, which are fair. Virginia Department of Emergency Services gage-height radio transmitter at station. Maximum discharge, 56,300 ft^3/s, from rating curve extended above 9,200 ft^3/s on basis of slope-area measurement at gage heights 12.78 ft and 20.23 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 20	1445	3,530	7.41	Jul 15	0400	2,730	6.66
Feb 22	2130	*6,590	*9.51	Sep 19	1330	4,860	8.43

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	256	92	190	37	307	e280	141	175	63	35	28
2	19	170	81	664	36	523	e348	124	151	69	34	26
3	16	124	73	615	36	1,060	e365	118	148	139	38	46
4	13	99	65	547	40	700	e285	540	1,100	140	77	90
5	12	86	69	407	45	637	e240	863	1,830	111	60	87
6	10	505	e58	317	e39	1,290	e220	635	888	88	64	84
7	9.0	457	e50	248	e35	1,260	e400	454	562	73	74	67
8	8.1	270	e53	208	e33	704	e820	339	619	66	119	54
9	7.5	187	49	185	e31	481	e1,200	268	927	69	125	46
10	7.6	142	45	160	e35	420	e1,000	751	654	77	109	41
11	9.2	251	127	138	e33	340	e1,400	1,020	422	100	98	36
12	9.3	873	328	122	e30	273	e900	616	352	116	622	32
13	7.9	1,340	444	116	e28	235	e670	385	480	97	442	31
14	6.7	604	796	101	e35	e300	e410	275	812	1,210	248	31
15	6.6	343	652	89	e40	e260	e320	215	587	1,510	181	29
16	34	254	453	e86	e34	e235	e250	203	1,040	538	141	27
17	126	491	344	e80	e45	e215	e210	168	1,190	277	115	26
18	122	690	277	e72	67	e190	180	842	1,660	e190	97	28
19	78	458	229	e80	64	e165	171	1,380	1,000	e130	80	2,680
20	55	324	1,850	e68	62	382	152	756	724	e100	68	1,190
21	46	259	1,500	64	88	1,260	149	498	815	e86	59	502
22	37	319	679	e63	2,600	547	223	399	543	e75	52	279
23	30	360	389	e60	3,640	e400	215	349	352	e68	46	1,100
24	26	300	286	e57	1,760	e300	189	312	246	61	42	838
25	24	237	255	e67	1,060	e260	172	264	181	53	38	407
26	32	191	211	e60	634	e210	167	232	141	47	34	241
27	49	161	167	e52	425	e190	158	194	114	42	32	170
28	68	135	144	e46	335	e180	155	172	97	39	32	367
29	101	115	131	42	---	e170	150	161	84	44	34	321
30	692	102	120	39	---	e200	142	168	72	36	29	218
31	438	---	112	38	---	e215	---	162	---	35	31	---
TOTAL	2,124.9	10,103	10,129	5,081	11,347	13,909	11,541	13,004	17,966	5,749	3,256	9,122
MEAN	68.5	337	327	164	405	449	385	419	599	185	105	304
MAX	692	1,340	1,850	664	3,640	1,290	1,400	1,380	1,830	1,510	622	2,680
MIN	6.6	86	45	38	28	165	142	118	72	35	29	26
CFSM	0.48	2.34	2.27	1.14	2.81	3.12	2.67	2.91	4.16	1.29	0.73	2.11
IN.	0.55	2.61	2.62	1.31	2.93	3.59	2.98	3.36	4.64	1.49	0.84	2.36

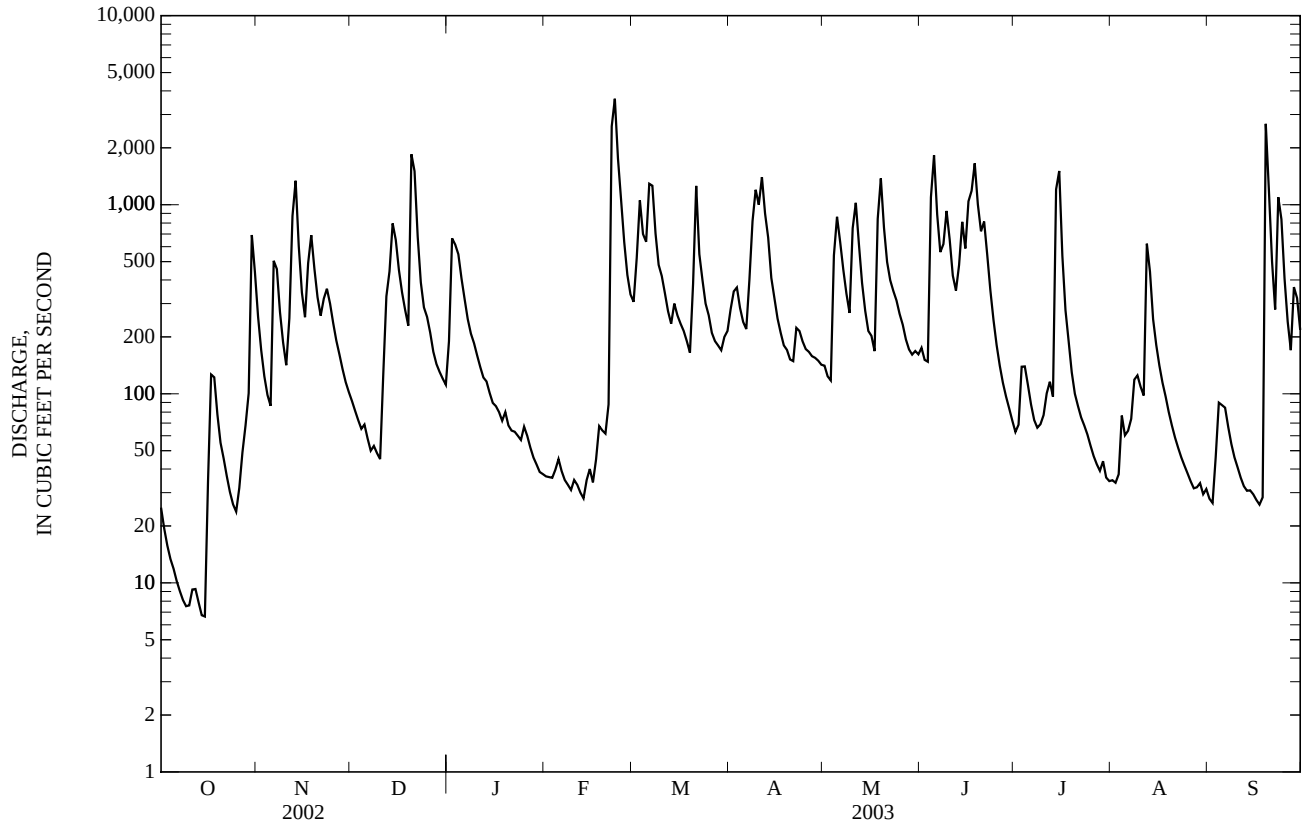
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1996, 1999 - 2003, BY WATER YEAR (WY)

MEAN	73.0	124	186	224	260	357	266	223	139	48.7	57.1	62.8
MAX	469	1,540	768	931	651	849	992	638	600	352	458	799
(WY)	(1977)	(1986)	(1974)	(1996)	(1994)	(1993)	(1987)	(1942)	(1982)	(1972)	(1940)	(1996)
MIN	3.90	5.52	8.38	7.82	22.4	50.9	47.3	29.0	10.2	3.77	2.73	2.08
(WY)	(1942)	(2002)	(1999)	(1981)	(2002)	(1981)	(1995)	(1977)	(1964)	(1966)	(1999)	(1970)

02020500 CALFPASTURE RIVER ABOVE MILL CREEK, AT GOSHEN, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1939 - 1996 1999 - 2003		
ANNUAL TOTAL	45,037.96		113,331.9				
ANNUAL MEAN	123		310		168		
HIGHEST ANNUAL MEAN					310		2003
LOWEST ANNUAL MEAN					64.1		2002
HIGHEST DAILY MEAN	2,470	Apr 22	3,640	Feb 23	21,900	Nov 5, 1985	
LOWEST DAILY MEAN	0.41	Sep 14	6.6	Oct 15	a0.00	bSep 5, 1957	
ANNUAL SEVEN-DAY MINIMUM	0.67	Sep 9	7.8	Oct 9	0.67	Sep 9, 2002	
MAXIMUM PEAK FLOW			6,590	Feb 22	56,300	Nov 4, 1985	
MAXIMUM PEAK STAGE			9.51	Feb 22	20.23	Nov 4, 1985	
INSTANTANEOUS LOW FLOW			6.5	cOct 14	a0.00	bSep 5, 1957	
ANNUAL RUNOFF (CFSM)	0.86		2.16		1.17		
ANNUAL RUNOFF (INCHES)	11.63		29.28		15.84		
10 PERCENT EXCEEDS	322		813		379		
50 PERCENT EXCEEDS	28		161		62		
90 PERCENT EXCEEDS	3.3		33		7.5		

a Result of diversion.
b Also Sept. 6, 1957, and Sept. 28, 1959.
c Also Oct. 15, 2002.
e Estimated.



02021500 MAURY RIVER AT ROCKBRIDGE BATHS, VA

LOCATION.--Lat 37°54'26", long 79°25'19", NAD83, Rockbridge County, Hydrologic Unit 02080202, on right bank at Rockbridge Baths, 1,200 ft upstream from bridge on State Highway 39, and 1.0 mi upstream from Hays Creek.

DRAINAGE AREA.--329 mi^2.

PERIOD OF RECORD.--October 1928 to current year. Monthly discharge only for some periods, published in WSP 1303. Prior to October 1945, published as North River at Rockbridge Baths.

REVISED RECORDS.--WSP 972: 1929-40, 1941(M). WSP 1002: 1930(m). WSP 1553: 1931(m).

GAGE.--Water-stage recorder. Datum of gage is 1,100.33 ft NGVD of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Records good except those for periods with ice effect, Dec. 4-6 and Jan. 12 to Feb. 15, which are fair. Since 1966, some regulation at times by Lake Merriweather on Little Calfpasture River. National Weather Service gage-height telemeter at station. Maximum discharge, 87,700 ft^3/s, from rating curve extended above 16,000 ft^3/s on basis of slope-area measurement at peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 20	1845	4,950	6.66	May 18	2130	4,700	6.46
Feb 22	2115	*12,600	*9.34	Sep 19	1430	6,840	7.53

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	423	191	670	e92	948	554	419	584	172	92	65
2	39	276	168	1,500	e90	1,450	833	374	488	200	82	60
3	33	203	153	1,410	e90	2,160	909	344	455	584	85	56
4	30	166	e130	1,300	e95	1,610	781	772	1,900	481	223	167
5	29	148	e125	1,030	e95	1,500	679	1,600	3,440	334	207	205
6	27	739	e120	839	e95	2,220	576	1,350	1,880	247	195	170
7	25	775	122	675	e90	2,160	1,030	1,080	1,520	200	180	133
8	23	481	117	580	e90	1,490	2,030	855	1,640	177	213	109
9	22	327	113	525	e90	1,160	2,710	680	2,280	181	294	92
10	22	248	108	444	e87	989	2,860	1,020	1,550	212	519	75
11	27	431	287	375	e85	830	3,420	1,500	1,080	246	383	64
12	28	1,390	794	e300	e80	693	2,450	1,110	1,520	245	1,080	57
13	26	2,140	977	e270	e75	606	1,640	797	1,470	204	904	55
14	23	1,070	1,570	e250	e70	580	1,150	599	2,190	1,470	511	56
15	21	668	1,290	e220	e100	552	875	484	1,420	2,020	370	55
16	50	541	963	e190	277	490	752	519	2,080	972	295	109
17	166	1,160	755	e180	235	447	641	428	2,490	519	238	323
18	175	1,380	618	e170	234	413	558	2,510	2,800	357	197	387
19	119	954	522	e160	208	378	534	3,280	2,180	270	163	4,160
20	88	692	2,460	e150	200	1,240	465	1,870	1,660	217	138	1,790
21	70	562	2,500	e140	352	3,130	435	1,410	1,630	178	119	997
22	60	698	1,320	e130	5,770	1,820	779	1,190	1,310	153	105	685
23	53	729	897	e125	8,430	1,230	818	1,020	881	145	93	2,830
24	47	609	709	e120	3,900	926	663	853	569	131	76	1,730
25	43	489	716	e115	2,440	739	583	703	484	113	66	936
26	54	393	619	e105	1,690	631	552	696	392	99	60	685
27	69	332	499	e100	1,260	550	491	601	314	84	56	782
28	103	276	426	e100	1,010	457	432	561	261	70	63	1,000
29	138	235	383	e96	---	428	395	550	228	156	112	722
30	899	211	347	e95	---	483	370	582	196	112	84	599
31	691	---	319	e94	---	516	---	526	---	90	77	---
TOTAL	3,249	18,746	20,318	12,458	27,330	32,826	30,965	30,283	40,892	10,639	7,280	19,154
MEAN	105	625	655	402	976	1,059	1,032	977	1,363	343	235	638
MAX	899	2,140	2,500	1,500	8,430	3,130	3,420	3,280	3,440	2,020	1,080	4,160
MIN	21	148	108	94	70	378	370	344	196	70	56	55
CFSM	0.32	1.90	1.99	1.22	2.97	3.22	3.14	2.97	4.14	1.04	0.71	1.94
IN.	0.37	2.12	2.30	1.41	3.09	3.71	3.50	3.42	4.62	1.20	0.82	2.17

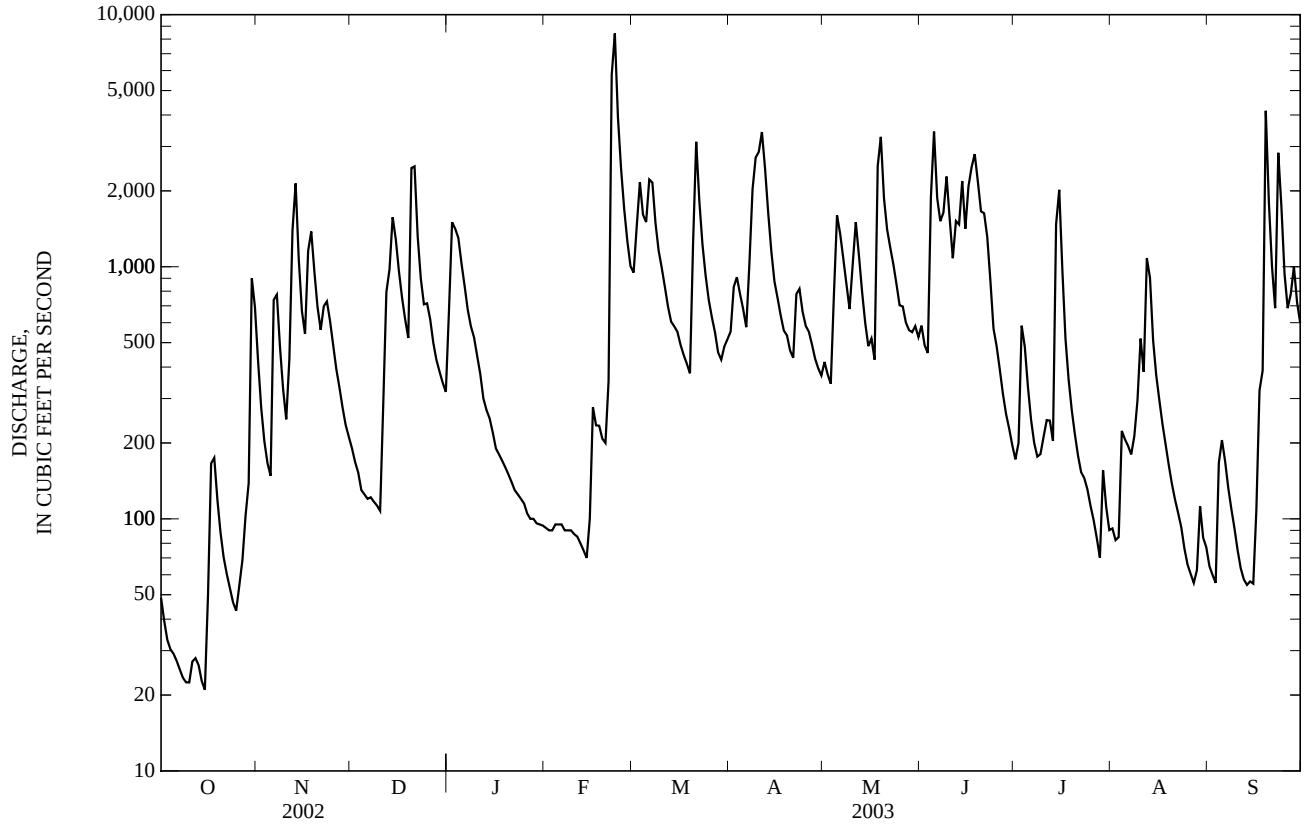
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2003, BY WATER YEAR (WY)

MEAN	187	269	400	539	611	838	624	472	280	120	135	140
MAX	1,254	2,689	1,450	1,895	1,530	2,017	2,245	1,463	1,374	807	1,016	1,388
(WY)	(1980)	(1986)	(1974)	(1998)	(1998)	(1936)	(1987)	(1989)	(1995)	(1972)	(1969)	(1996)
MIN	16.5	20.9	26.6	32.3	50.9	117	122	81.0	34.7	14.6	14.9	16.1
(WY)	(1931)	(2002)	(1966)	(1981)	(1934)	(1981)	(1995)	(1930)	(1964)	(1966)	(1964)	(1930)

02021500 MAURY RIVER AT ROCKBRIDGE BATHS, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1929 - 2003	
ANNUAL TOTAL	88,170.9		254,140			
ANNUAL MEAN	242		696		384	
HIGHEST ANNUAL MEAN					696	2003
LOWEST ANNUAL MEAN					132	2002
HIGHEST DAILY MEAN	4,530	Apr 22	8,430	Feb 23	41,500	Nov 5, 1985
LOWEST DAILY MEAN	9.6	aSep 12	21	Oct 15	7.1	Sep 10, 1966
ANNUAL SEVEN-DAY MINIMUM	10	Sep 8	24	Oct 9	8.2	Sep 7, 1966
MAXIMUM PEAK FLOW			12,600	Feb 22	87,700	Nov 5, 1985
MAXIMUM PEAK STAGE			9.34	Feb 22	b19.19	Nov 5, 1985
INSTANTANEOUS LOW FLOW			21	Oct 15	5.8	Sep 10, 1966
ANNUAL RUNOFF (CFSM)	0.73		2.12		1.17	
ANNUAL RUNOFF (INCHES)	9.97		28.74		15.84	
10 PERCENT EXCEEDS	691		1,650		899	
50 PERCENT EXCEEDS	64		431		153	
90 PERCENT EXCEEDS	16		70		30	

a Also Sept. 13, 2002.
b From floodmarks.
e Estimated.



02022500 KERRS CREEK NEAR LEXINGTON, VA

LOCATION.--Lat 37°49'32", long 79°26'35", NAD83, Rockbridge County, Hydrologic Unit 02080202, on right bank 100 ft upstream from bridge on Interstate Highway 64, 1.4 mi upstream from mouth, and 2.9 mi north of Lexington.

DRAINAGE AREA.--35.0 mi^2.

PERIOD OF RECORD.--October 1926 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 1203: 1927-29, 1930-34(M), 1935-40, 1941(M), 1942, 1943-48(M), 1949. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 980.32 ft NGVD of 1929 (levels by U.S. Army Corps of Engineers). Jan. 27, 1927, to Sept. 30, 1953, nonrecording gage at site 1,000 ft downstream at different datum.

REMARKS.--Records good except those for periods with ice effect, Dec. 7, 8, and Jan. 17-19, 21-24, 28, which are fair. Maximum discharge, 23,000 ft^3/s, from rating curve extended above 800 ft^3/s on basis of contracted-opening and slope-area measurements of peak flow. Minimum discharge, 0.90 ft^3/s, July 22, 1966, result of temporary dam upstream. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1215	*3,980	*9.41	Aug 8	1930	1,050	6.41
Feb 23	0815	1,070	6.45	Sep 19	0215	1,520	7.17
Mar 20	1245	627	5.54	Sep 23	0115	1,760	7.51
May 18	1200	831	5.99				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.7	11	11	134	11	82	51	24	45	26	15	15
2	4.5	9.7	11	117	11	156	63	21	37	42	14	14
3	4.4	8.0	11	124	11	138	53	23	68	88	14	12
4	4.4	7.6	9.9	95	13	97	46	92	205	46	16	37
5	4.3	8.7	12	68	12	96	41	76	184	35	29	29
6	3.9	36	10	53	11	112	33	74	105	30	17	20
7	3.8	17	e8.2	42	12	88	98	57	206	27	15	17
8	3.7	13	e8.5	37	11	66	98	45	179	25	87	16
9	3.7	11	9.4	32	9.9	53	337	36	243	26	28	14
10	3.3	9.6	8.6	28	11	44	210	34	129	26	27	13
11	4.7	16	31	24	11	37	306	31	98	27	26	12
12	4.6	81	42	22	10	33	164	25	84	22	20	12
13	3.7	55	75	21	9.4	31	112	22	104	23	19	12
14	3.4	28	110	20	9.9	28	84	20	88	22	18	13
15	3.3	21	63	19	30	25	67	22	67	20	16	12
16	12	34	44	18	49	24	56	26	185	19	15	11
17	9.5	125	33	e17	34	23	47	22	189	18	14	11
18	5.8	70	28	e14	25	22	44	470	173	17	13	18
19	4.5	40	24	e15	21	21	40	287	168	17	13	379
20	4.0	29	94	15	25	277	34	143	144	16	12	73
21	4.6	27	64	e14	78	190	33	115	112	15	12	42
22	4.5	36	42	e13	1,330	108	44	91	87	16	12	48
23	4.0	28	32	e12	729	75	35	79	68	16	11	392
24	3.8	23	39	e11	261	58	32	68	56	15	11	93
25	4.2	21	74	13	168	47	31	56	47	14	11	57
26	7.8	18	54	12	119	41	30	56	41	13	10	42
27	6.4	16	38	11	91	35	27	53	37	13	10	55
28	7.3	14	32	e11	79	31	24	51	33	13	23	94
29	15	13	29	12	---	30	23	56	30	15	31	47
30	27	13	25	12	---	44	22	53	28	14	17	37
31	15	---	23	11	---	45	---	52	---	13	19	---
TOTAL	195.8	839.6	1,095.6	1,047	3,192.2	2,157	2,285	2,280	3,240	729	595	1,647
MEAN	6.32	28.0	35.3	33.8	114	69.6	76.2	73.5	108	23.5	19.2	54.9
MAX	27	125	110	134	1,330	277	337	470	243	88	87	392
MIN	3.3	7.6	8.2	11	9.4	21	22	20	28	13	10	11
CFSM	0.18	0.80	1.01	0.96	3.26	1.99	2.18	2.10	3.09	0.67	0.55	1.57
IN.	0.21	0.89	1.16	1.11	3.39	2.29	2.43	2.42	3.44	0.77	0.63	1.75

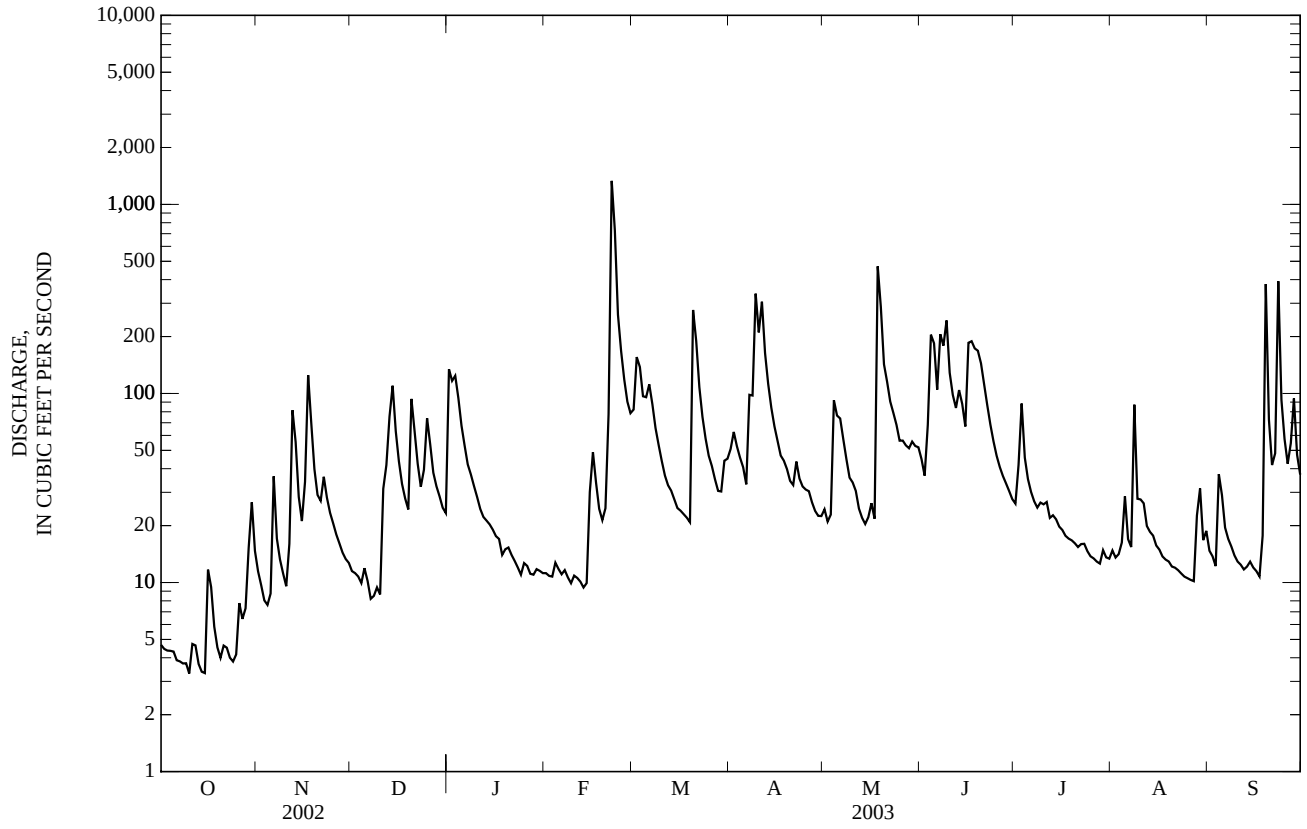
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1927 - 2003, BY WATER YEAR (WY)

MEAN	22.2	23.5	32.0	45.2	54.4	72.3	57.5	38.7	28.3	17.4	23.0	19.4
MAX	141	209	129	163	150	357	306	159	194	99.5	162	188
(WY)	(1938)	(1986)	(1949)	(1937)	(1998)	(1936)	(1987)	(1989)	(1995)	(1972)	(1969)	(1950)
MIN	5.24	6.34	5.88	5.15	5.46	11.6	10.3	12.0	6.42	5.56	4.11	4.36
(WY)	(1964)	(2002)	(1966)	(1966)	(2002)	(2002)	(1942)	(1956)	(2002)	(1966)	(2002)	(2002)

02022500 KERRS CREEK NEAR LEXINGTON, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1927 - 2003	
ANNUAL TOTAL	5,353.9		19,303.2			
ANNUAL MEAN	14.7		52.9		36.1	
HIGHEST ANNUAL MEAN					75.5	1936
LOWEST ANNUAL MEAN					10.4	2002
HIGHEST DAILY MEAN	336	Apr 22	1,330	Feb 22	e4,840	Mar 17, 1936
LOWEST DAILY MEAN	3.3	aOct 10	3.3	aOct 10	3.3	aOct 10, 2002
ANNUAL SEVEN-DAY MINIMUM	3.5	bSep 1	3.8	Oct 9	3.5	bSep 1, 2002
MAXIMUM PEAK FLOW			3,980	Feb 22	23,000	Sep 10, 1950
MAXIMUM PEAK STAGE			9.41	Feb 22	c15.44	Jun 28, 1995
INSTANTANEOUS LOW FLOW			2.7	Oct 10	d0.90	Jul 22, 1966
ANNUAL RUNOFF (CFSM)	0.42		1.51		1.03	
ANNUAL RUNOFF (INCHES)	5.69		20.52		14.00	
10 PERCENT EXCEEDS	32		112		68	
50 PERCENT EXCEEDS	7.3		27		17	
90 PERCENT EXCEEDS	3.8		9.7		7.4	

a Also Oct. 15, 2002.
b Also Sept. 2-8, 2002.
c From high-water mark in gage house.
d Result of temporary dam upstream.
e Estimated.



02024000 MAURY RIVER NEAR BUENA VISTA, VA

LOCATION.--Lat 37°45'45", long 79°23'29", NAD83, Rockbridge County, Hydrologic Unit 02080202, on right bank 0.5 mi downstream from South River and 2.8 mi northwest of Buena Vista.

DRAINAGE AREA.--646 mi^2.

PERIOD OF RECORD.--October 1938 to current year. Monthly discharge only for some periods, published in WSP 1303. Prior to October 1945, published as North River near Buena Vista.

REVISED RECORDS.--WSP 952: 1940-41. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 846.58 ft NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Dec. 5, 6, and Jan. 13-28, which are fair. Since 1966, some regulation at times by Lake Merriweather on Little Calfpasture River. Maximum discharge, 105,000 ft^3/s, from rating curve extended above 17,000 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 18, 1936, reached a stage of about 22 ft, from information by local residents.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1930	17,100	13.20	Sep 19	0315	*23,000	*15.36
May 18	2130	6,800	7.89	Sep 23	0615	9,180	9.41
Jun 5	0415	6,750	7.85				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	103	598	320	1,020	219	1,730	1,120	722	1,230	537	257	228
2	88	390	292	2,440	218	2,280	1,410	662	1,070	637	272	244
3	80	299	268	2,350	214	3,260	1,560	606	1,000	1,130	282	227
4	74	248	247	2,180	233	2,610	1,380	867	2,180	1,080	557	510
5	72	233	e240	1,790	252	2,290	1,220	2,000	5,220	837	840	647
6	69	679	e230	1,490	238	2,940	1,060	1,790	2,930	669	573	423
7	68	1,120	222	1,230	239	3,060	1,310	1,500	2,780	564	535	337
8	66	692	215	1,040	230	2,300	2,730	1,230	2,730	497	889	283
9	65	465	216	940	209	1,820	4,010	1,010	3,690	481	1,250	245
10	68	358	205	828	216	1,570	4,490	1,100	2,760	e580	1,710	221
11	86	599	295	711	217	1,360	5,330	1,840	2,110	546	1,250	200
12	91	1,620	1,020	594	209	1,170	4,130	1,490	2,390	531	1,380	184
13	84	3,170	1,340	e500	195	1,040	2,930	1,110	2,270	467	1,580	187
14	75	1,710	2,300	e470	200	961	2,210	876	3,150	1,500	1,100	188
15	71	1,060	2,020	e410	290	917	1,710	741	2,470	2,420	802	177
16	109	934	1,550	e390	561	852	1,510	813	3,030	1,490	697	170
17	191	1,800	1,220	e350	458	787	1,310	704	3,920	836	660	257
18	234	2,280	1,000	e320	466	731	1,150	3,360	3,950	630	613	760
19	190	1,630	852	e330	415	684	1,100	5,240	3,540	509	488	11,500
20	150	1,180	2,420	e320	404	2,090	977	3,110	2,850	434	416	4,020
21	139	925	3,890	e300	668	4,670	906	2,360	2,760	373	367	2,250
22	127	983	2,150	e280	8,940	3,040	1,120	2,050	2,320	360	335	1,740
23	114	1,060	1,500	e260	12,700	2,120	1,280	1,770	1,820	358	307	7,190
24	105	916	1,240	e250	6,300	1,670	1,090	1,580	1,310	318	280	3,870
25	102	752	1,330	e250	4,000	1,380	966	1,310	1,130	285	256	2,280
26	131	611	1,190	e230	2,900	1,190	929	1,310	978	255	240	1,730
27	133	517	969	e220	2,230	1,070	856	1,190	860	237	227	1,520
28	165	447	841	e210	1,860	923	759	1,150	763	221	215	2,460
29	228	384	744	236	---	879	699	1,230	680	320	330	1,640
30	889	349	667	231	---	1,040	660	1,410	592	319	279	1,360
31	997	---	601	222	---	1,120	---	1,300	---	258	315	---
TOTAL	5,164	28,009	31,594	22,392	45,281	53,554	51,912	47,431	68,483	19,679	19,302	47,048
MEAN	167	934	1,019	722	1,617	1,728	1,730	1,530	2,283	635	623	1,568
MAX	997	3,170	3,890	2,440	12,700	4,670	5,330	5,240	5,220	2,420	1,710	11,500
MIN	65	233	205	210	195	684	660	606	592	221	215	170
CFSM	0.26	1.45	1.58	1.12	2.50	2.67	2.68	2.37	3.53	0.98	0.96	2.43
IN.	0.30	1.61	1.82	1.29	2.61	3.08	2.99	2.73	3.94	1.13	1.11	2.71

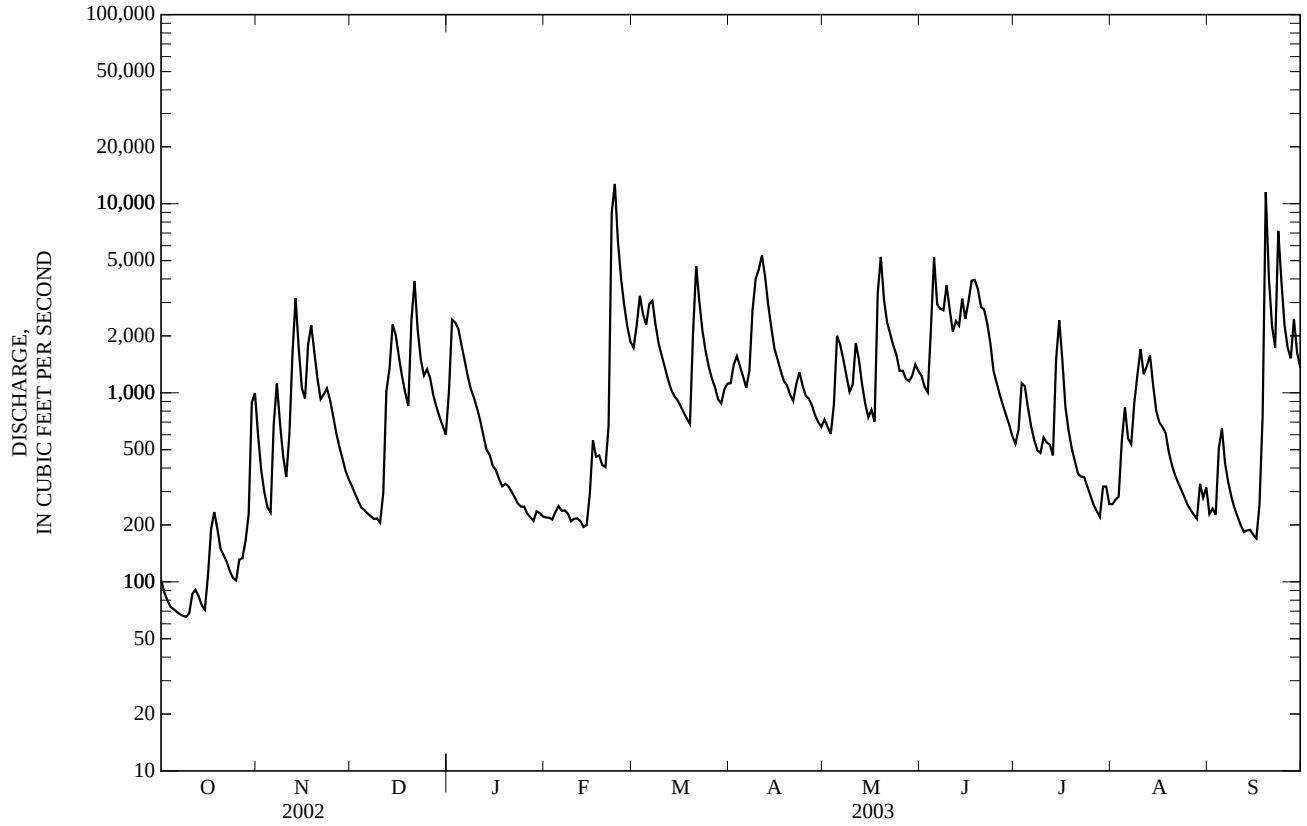
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2003, BY WATER YEAR (WY)

MEAN	351	464	684	884	1,050	1,348	1,060	818	559	277	319	308
MAX	1,997	3,400	2,430	2,891	3,140	3,187	3,672	2,373	2,647	1,351	3,060	2,087
(WY)	(1980)	(1986)	(1949)	(1998)	(1998)	(1993)	(1987)	(1989)	(1995)	(1972)	(1969)	(1996)
MIN	66.0	79.6	76.4	100	111	240	276	224	81.1	53.7	47.9	59.2
(WY)	(2002)	(2002)	(1966)	(1981)	(2002)	(1981)	(1995)	(1941)	(2002)	(1966)	(2002)	(2002)

02024000 MAURY RIVER NEAR BUENA VISTA, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1939 - 2003	
ANNUAL TOTAL	133,619		439,849			
ANNUAL MEAN	366		1,205		675	
HIGHEST ANNUAL MEAN					1,205	2003
LOWEST ANNUAL MEAN					210	2002
HIGHEST DAILY MEAN	4,600	Apr 22	12,700	Feb 23	56,000	Aug 20, 1969
LOWEST DAILY MEAN	38	aSep 12	65	Oct 9	22	Oct 10, 1941
ANNUAL SEVEN-DAY MINIMUM	40	Sep 8	69	Oct 4	40	Sep 8, 2002
MAXIMUM PEAK FLOW			23,000	Sep 19	105,000	Aug 20, 1969
MAXIMUM PEAK STAGE			15.36	Sep 19	31.23	Aug 20, 1969
INSTANTANEOUS LOW FLOW			62	Oct 9	b20	Oct 10, 1941
ANNUAL RUNOFF (CFSM)	0.57		1.87		1.04	
ANNUAL RUNOFF (INCHES)	7.69		25.33		14.19	
10 PERCENT EXCEEDS	975		2,740		1,510	
50 PERCENT EXCEEDS	130		836		340	
90 PERCENT EXCEEDS	48		207		105	

a Also Sept. 13, 2002.
b Occurred during filling of small reservoir 2 mi upstream, otherwise, minimum discharge, 36 ft^3/s, Sept. 12-14, 2002.
e Estimated.



02024915 PEDLAR RIVER AT FOREST ROAD NEAR BUENA VISTA , VA

LOCATION.--Lat 37°41'51", long 79°16'42", NAD83, Amherst County, Hydrologic Unit Code 02080203, on right bank at bridge on Forest Road, 0.6 mi upstream from Lynchburg Reservoir and 5 mi southeast of Buena Vista.

DRAINAGE AREA.--27.1 mi^2.

PERIOD OF RECORD.--November 2002 to September 2003.

GAGE.--Water stage recorder. Datum of gage is 1,135 ft NGVD of 1929, from topographic map.

REMARKS.--Records good except those for periods with ice effect, Jan. 19-30 and Feb. 7-12, which are fair, and for period of doubtful gage-height record, Sept. 2-15, which is poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	15	80	18	75	95	45	101	41	23	21
2	---	---	14	99	17	89	104	40	85	54	20	e19
3	---	---	13	89	17	103	94	39	84	59	43	e17
4	---	---	11	75	26	91	85	50	93	49	66	e45
5	---	---	14	67	24	99	79	46	135	42	81	e35
6	---	---	16	61	19	126	70	54	101	37	48	e24
7	---	---	11	54	e18	117	93	48	139	35	55	e21
8	---	12	12	51	e14	98	93	44	161	36	59	e20
9	---	9.6	13	47	e13	86	213	41	164	38	51	e18
10	---	8.3	11	42	e13	75	195	40	131	42	64	e17
11	---	31	26	38	e14	68	217	41	112	41	71	e16
12	---	77	33	33	e14	63	176	36	111	33	57	e15
13	---	70	38	34	15	59	141	33	126	30	49	e17
14	---	45	62	31	17	56	118	32	103	29	46	e20
15	---	35	52	28	31	52	103	35	97	28	41	e18
16	---	54	44	30	38	50	91	45	106	26	36	17
17	---	90	38	29	33	48	82	38	110	24	33	14
18	---	75	34	23	32	45	77	199	103	22	31	51
19	---	57	32	e19	29	42	73	218	105	22	29	605
20	---	46	67	e17	32	160	66	143	102	21	27	224
21	---	40	67	e16	41	190	64	119	91	19	24	139
22	---	36	58	e16	327	134	60	99	81	22	23	109
23	---	31	50	e14	395	106	56	96	72	29	23	327
24	---	27	52	e14	241	88	52	89	64	21	19	210
25	---	24	64	e15	165	77	52	81	59	17	18	151
26	---	22	59	e15	124	74	52	88	55	15	16	117
27	---	20	52	e16	100	70	48	88	51	14	15	116
28	---	19	47	e16	84	63	44	91	49	13	18	155
29	---	17	43	e17	---	78	43	114	46	16	19	105
30	---	17	39	e18	---	94	42	129	43	18	17	85
31	---	---	36	18	---	93	---	120	---	17	28	---
TOTAL	---	---	1,123	1,122	1,911	2,669	2,778	2,381	2,880	910	1,150	2,748
MEAN	---	---	36.2	36.2	68.2	86.1	92.6	76.8	96.0	29.4	37.1	91.6
MAX	---	---	67	99	395	190	217	218	164	59	81	605
MIN	---	---	11	14	13	42	42	32	43	13	15	14
CFSM	---	---	1.34	1.34	2.52	3.18	3.42	2.83	3.54	1.08	1.37	3.38
IN.	---	---	1.54	1.54	2.62	3.66	3.81	3.27	3.95	1.25	1.58	3.77

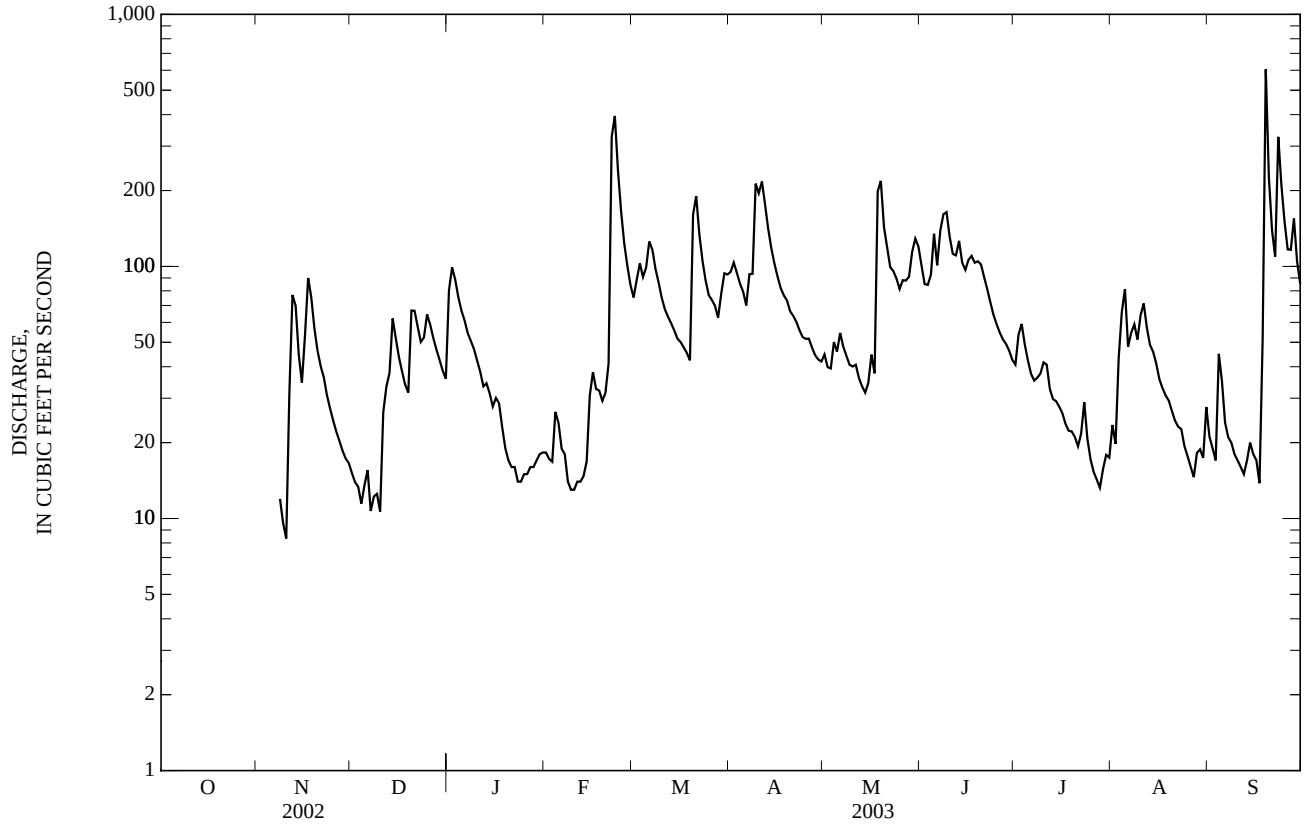
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEAR 2003

MEAN	---	---	36.2	36.2	68.2	86.1	92.6	76.8	96.0	29.4	37.1	91.6
MAX	---	---	36.2	36.2	68.2	86.1	92.6	76.8	96.0	29.4	37.1	91.6
(WY)	---	---	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	---	---	36.2	36.2	68.2	86.1	92.6	76.8	96.0	29.4	37.1	91.6
(WY)	---	---	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)

02024915 PEDLAR RIVER AT FOREST ROAD NEAR BUENA VISTA , VA—Continued

SUMMARY STATISTICS	FOR 2003 WATER YEAR	
HIGHEST DAILY MEAN	605	Sep 19
LOWEST DAILY MEAN	8.3	Nov 10
ANNUAL SEVEN-DAY MINIMUM	13	Dec 4
MAXIMUM PEAK FLOW	1,180	Sep 19
MAXIMUM PEAK STAGE	7.27	Sep 19
INSTANTANEOUS LOW FLOW	7.6	Nov 10

e Estimated.



02025500 JAMES RIVER AT HOLCOMB ROCK, VA

LOCATION.--Lat 37°30'05", long 79°15'45", NAD83, Bedford County, Hydrologic Unit 02080203, on right bank at Holcomb Rock, 0.9 mi downstream from Pedlar River, and at mile 268.6.

DRAINAGE AREA.--3,259 mi^2.

PERIOD OF RECORD.--January 1900 to September 1915 (gage heights only), October 1926 to current year. Monthly discharge only for some periods, published in WSP 1303. Published as "at Salt Creek" December 1926 to June 1931 and as "at Holcombs Rock" June 1931 to September 1990.

REVISED RECORDS.--WSP 972: 1913(M), 1932-33, 1935(M), 1936. WSP 1303: 1928(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 548.53 ft NGVD of 1929. January 1900 to September 1915, nonrecording gage in powerhouse of Owens Illinois Glass Company 1,000 ft upstream at different datum. December 1926 to June 1931, water-stage recorder at site 2 mi downstream at different datum.

REMARKS.--Records fair except for period of doubtful gage-height record, Feb. 22 to Mar. 28, which is poor. Some diurnal fluctuation caused by powerplants upstream from station. Flow regulated since December 1979 by Lake Moomaw (station 02011795) 117.4 mi upstream; since October 1984 by Back Creek Lake 145.4 mi upstream; and since January 1985 by Little Back Creek Lake 148.5 mi upstream, amount unknown. Statistics of monthly mean data and summary statistics for water years 1927 - 1979 (unregulated flow) are available in previous data books, water years 1991 - 1998. National Weather Service gage-height telemeter at station. Maximum discharge, 207,000 ft^3/s, from rating curve extended above 73,000 ft^3/s on basis of records for other stations in James River Basin. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1913 reached a stage of 31.3 ft, from floodmarks, discharge, 118,000 ft^3/s, from rating curve extended as explained above.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 25,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 23	---	*78,600	*25.43	Jun 17	1100	32,300	16.34
Apr 11	2300	31,500	16.13	Sep 19	0845	37,300	17.56
May 19	0615	43,900	19.08				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,160	4,330	1,800	4,090	1,250	e9,000	5,280	3,290	8,010	2,860	1,920	1,700
2	883	2,720	1,710	8,590	1,230	e8,500	5,830	3,340	7,490	3,080	1,850	1,760
3	835	2,020	1,620	11,000	1,220	e10,000	7,550	3,530	6,530	7,750	1,890	1,850
4	784	1,680	1,470	11,000	1,260	e10,000	7,170	4,560	7,030	16,400	2,430	1,940
5	762	1,470	1,460	10,300	1,290	e9,000	6,240	7,960	16,300	8,980	4,430	3,890
6	728	1,950	1,400	8,180	1,310	e9,800	5,460	9,930	13,700	6,230	3,060	3,150
7	551	5,260	1,280	6,200	1,400	e12,000	5,290	10,200	11,600	5,020	2,630	2,460
8	512	4,030	1,240	5,170	1,330	e12,000	8,930	8,180	11,000	4,540	2,750	2,110
9	e500	2,710	1,220	4,440	1,330	e9,600	e18,200	6,770	14,600	3,850	2,980	1,890
10	e470	2,120	1,220	3,980	1,300	e7,000	24,200	7,030	14,800	3,710	4,370	1,740
11	e490	2,130	1,390	3,390	1,280	e6,000	26,000	9,160	11,100	3,880	6,600	1,640
12	e680	4,910	3,100	2,960	1,320	e5,200	25,500	8,400	10,600	3,790	4,540	1,560
13	e590	11,500	6,230	2,650	1,310	e4,400	18,100	7,040	12,200	3,370	5,300	1,530
14	e540	9,400	10,200	2,410	1,270	e4,000	14,100	6,520	14,700	3,360	4,420	1,590
15	e540	5,640	11,400	2,310	1,390	e4,000	10,600	6,050	12,300	5,240	3,440	1,590
16	e600	4,350	8,810	2,150	3,410	e4,200	7,930	5,580	12,400	5,340	2,970	1,530
17	e800	6,360	6,890	2,010	6,600	e3,900	6,790	5,290	26,700	3,840	2,750	1,510
18	1,890	9,920	5,420	1,830	4,710	e3,800	5,800	14,300	20,200	2,960	2,840	1,890
19	1,620	7,720	4,330	1,600	3,670	e3,500	5,400	41,900	23,500	2,680	2,540	23,100
20	1,250	5,500	5,020	1,670	3,240	e6,000	5,100	23,400	19,100	2,470	2,320	20,700
21	1,090	4,210	15,800	1,740	4,120	e12,000	4,570	15,800	16,100	2,350	2,170	9,140
22	978	3,740	12,600	1,660	e20,000	e14,000	4,490	14,200	14,800	2,190	2,000	6,060
23	913	4,680	9,940	1,530	e68,100	e10,000	4,930	11,800	12,100	2,300	1,880	15,500
24	849	4,370	7,490	1,180	e51,000	e8,000	4,440	10,200	8,820	2,140	1,780	14,900
25	835	3,500	8,390	1,230	e22,500	e6,800	4,060	10,100	6,380	1,930	1,700	10,500
26	1,030	2,900	9,700	1,310	e17,000	e5,500	3,830	8,500	5,170	1,780	1,630	e7,300
27	1,030	2,470	7,080	1,330	e14,500	e5,000	3,730	7,650	4,320	1,730	e1,580	5,210
28	1,180	2,180	5,360	1,240	e12,000	e4,500	3,470	8,440	3,730	1,690	e1,550	9,760
29	1,750	2,090	4,430	1,270	---	3,910	3,220	8,380	3,380	1,720	1,770	7,890
30	3,970	1,940	3,790	1,290	---	4,320	3,050	8,970	3,090	1,910	2,020	5,740
31	7,290	---	3,340	1,300	---	5,280	---	8,200	---	1,870	1,910	---
TOTAL	37,100	127,800	165,130	111,010	250,340	221,210	259,260	304,670	351,750	120,960	86,020	171,130
MEAN	1,197	4,260	5,327	3,581	8,941	7,136	8,642	9,828	11,720	3,902	2,775	5,704
MAX	7,290	11,500	15,800	11,000	68,100	14,000	26,000	41,900	26,700	16,400	6,600	23,100
MIN	470	1,470	1,220	1,180	1,220	3,500	3,050	3,290	3,090	1,690	1,550	1,510
(†)	+3,176	+17,646	-101	-151	+504	-655	+252	0	-101	-1,664	-2,722	+3,630
MEAN‡	1,299	4,848	5,324	3,576	8,959	7,115	8,650	9,828	11,722	3,848	2,687	5,825
CFSM‡	.40	1.49	1.63	1.10	2.75	2.18	2.65	3.02	3.60	1.18	.82	1.79
IN.‡	.46	1.66	1.88	1.27	2.86	2.52	2.96	3.48	4.01	1.36	.95	1.99

CAL YR 2002 MEAN‡ 2,150 CFSM‡ .66 IN.‡ 8.96
WTR YR 2003 MEAN‡ 6,099 CFSM‡ 1.87 IN.‡ 25.39

† Total change in contents, equivalent in cubic feet per second, per month, in Lake Moomaw; provided by U.S. Army Corps of Engineers.
‡ Adjusted for monthly change in contents.

02025500 JAMES RIVER AT HOLCOMB ROCK, VA—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

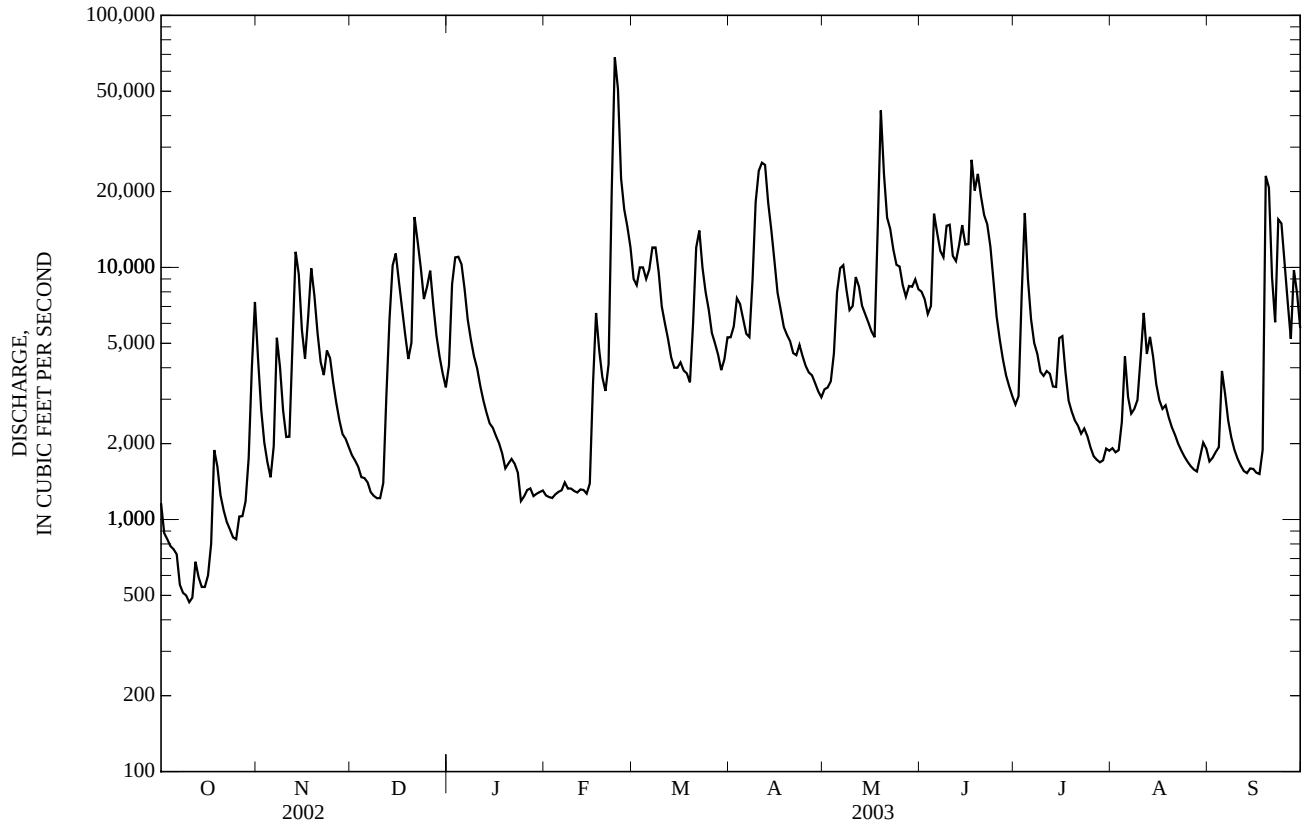
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2003, BY WATER YEAR (WY)

MEAN	1,786	2,787	3,177	4,501	5,422	6,903	6,358	4,545	3,274	1,588	1,492	1,815
MAX	7,966	17,270	9,246	13,540	16,260	16,910	21,670	12,380	11,720	4,562	5,640	7,233
(WY)	(1980)	(1986)	(1997)	(1996)	(1998)	(1993)	(1987)	(1989)	(2003)	(1995)	(1984)	(1996)
MIN	630	635	839	730	851	1,472	1,616	1,959	796	750	581	637
(WY)	(2002)	(2002)	(2002)	(1981)	(2002)	(1981)	(1995)	(2000)	(2002)	(1999)	(2002)	(2002)

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1980 - 2003	
ANNUAL TOTAL	762,352		2,206,380			
ANNUAL MEAN	2,089		6,045		3,625	
HIGHEST ANNUAL MEAN					6,045	2003
LOWEST ANNUAL MEAN					1,361	2002
HIGHEST DAILY MEAN	18,700	Apr 23	68,100	Feb 23	180,000	Nov 5, 1985
LOWEST DAILY MEAN	360	Sep 13	470	Oct 10	244	Aug 28, 1981
ANNUAL SEVEN-DAY MINIMUM	409	Sep 9	540	Oct 8	401	Aug 26, 1981
MAXIMUM PEAK FLOW			78,600	Feb 23	a207,000	Nov 5, 1985
MAXIMUM PEAK STAGE			b25.43	Feb 23	a,b42.15	Nov 5, 1985
INSTANTANEOUS LOW FLOW			c319	Oct 7	d,c20	Oct 29, 1987
ANNUAL RUNOFF (CFSM)	0.64		1.85		1.11	
ANNUAL RUNOFF (INCHES)	8.70		25.18		15.11	
10 PERCENT EXCEEDS	5,380		12,500		7,990	
50 PERCENT EXCEEDS	1,010		4,030		1,840	
90 PERCENT EXCEEDS	531		1,270		791	

a Prior to regulation, 1927-79, maximum peak flow, 150,000 ft^3/s, Aug. 20, 1969, gage height, 35.50 ft.
b From high-water mark in gage house.
c Result of regulation.
d Prior to regulation, 1927-79, instantaneous low flow, 71 ft^3/s, Oct. 24, 1963.
e Estimated.



02026000 JAMES RIVER AT BENT CREEK, VA

LOCATION.--Lat 37°32'11", long 78°49'46", NAD83, Nelson County, Hydrologic Unit 02080203, on left bank at town of Bent Creek, 150 ft downstream from Bent Creek, 525 ft upstream from bridge on U.S. Highway 60, 1.3 mi southeast of Gladstone, and at mile 227.8.

DRAINAGE AREA.--3,683 mi^2.

PERIOD OF RECORD.--October 1924 to current year. Monthly discharge only for some periods, published in WSP 1303. Prior to 1926, published as "at Bent Creek, near Gladstone."

REVISED RECORDS.--WSP 742: 1931(m). WSP 972: 1935-36. WSP 1066: 1940. WSP 1203: 1942. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 381.39 ft NGVD of 1929. Prior to Sept. 12, 1930, nonrecording gage at same site and datum.

REMARKS.--Records poor. Large diurnal fluctuation caused by powerplants upstream from station. Flow regulated since December 1979 by Lake Moomaw (station 02011795) 158.3 mi upstream; since October 1984 by Back Creek Lake 186.3 mi upstream; and since January 1985 by Little Back Creek Lake 189.4 mi upstream, amount unknown. Statistics of monthly mean data and summary statistics for water years 1925 - 1979 (unregulated flow) are available in previous data books, water years 1991 - 1998. National Weather Service gage-height telemeter at station. Maximum discharge, 226,000 ft^3/s, from rating curve extended above 177,000 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 26,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 23	2215	*79,800	*17.97	Jun 17	1715	32,300	11.38
Apr 12	0345	31,200	11.19	Sep 19	1500	38,300	12.39
May 19	1600	49,100	14.06				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,510	5,860	2,280	4,300	1,600	10,600	5,950	4,210	9,030	4,750	2,760	2,240
2	1,080	3,950	2,190	7,190	1,750	9,670	6,120	4,300	8,370	6,060	2,610	2,110
3	e1,000	2,990	2,060	10,900	1,460	12,000	7,380	4,450	7,490	10,200	2,540	2,160
4	e1,050	2,340	1,960	10,900	1,660	12,400	7,860	4,960	7,330	18,400	3,180	2,520
5	e900	2,050	1,950	10,800	1,760	10,400	7,010	7,120	14,100	12,100	3,930	3,260
6	e780	2,260	1,880	9,130	1,720	10,300	6,170	9,740	15,200	8,880	4,190	3,980
7	e680	4,140	1,760	6,930	1,860	13,200	6,150	10,700	14,900	8,400	3,340	3,280
8	e700	5,280	1,560	5,790	1,920	13,300	8,060	9,130	13,100	6,460	3,240	2,590
9	e600	3,850	1,620	5,030	1,620	10,800	17,700	7,580	14,900	5,460	3,900	2,250
10	e500	2,990	1,560	4,660	1,760	7,840	25,700	6,930	17,000	5,370	4,070	2,260
11	e540	4,480	1,880	4,070	1,770	7,090	25,300	9,000	12,700	5,410	6,710	2,100
12	e750	5,570	2,670	3,720	1,800	6,400	27,900	9,190	11,700	5,400	5,970	2,020
13	e650	11,000	5,760	3,320	1,800	5,690	19,600	7,540	12,700	5,210	5,100	2,030
14	e590	11,500	9,740	3,050	1,590	4,960	15,500	7,310	14,900	4,650	5,560	1,890
15	e590	7,110	12,200	2,900	1,810	4,650	12,100	6,090	14,000	5,420	4,300	1,920
16	e700	5,300	9,920	2,810	2,950	5,050	8,880	7,120	11,700	6,960	3,880	1,880
17	e900	6,680	7,780	2,600	6,480	4,730	7,670	5,770	24,800	6,010	3,560	1,850
18	2,080	10,000	6,200	2,360	5,500	4,510	6,530	13,500	22,500	4,840	3,460	2,260
19	1,870	9,190	4,990	2,260	4,510	4,080	6,160	43,200	23,300	3,880	3,180	23,900
20	1,220	6,630	5,030	2,010	4,240	8,480	5,720	28,400	22,100	3,520	3,020	23,000
21	1,250	5,130	12,200	2,140	5,010	16,300	5,400	17,800	17,400	3,330	2,590	12,300
22	1,110	4,370	14,100	2,290	22,000	16,300	5,110	14,700	16,300	3,160	2,590	7,340
23	900	4,640	10,600	2,040	73,400	12,400	5,430	13,400	13,900	3,380	2,420	14,400
24	850	5,050	8,590	2,000	57,100	9,930	5,240	10,400	10,900	2,940	2,300	16,300
25	814	4,300	8,360	1,810	25,400	7,570	4,870	11,500	8,070	2,760	2,210	12,000
26	1,020	3,690	10,500	1,670	19,200	6,420	4,730	11,700	6,670	2,660	2,130	9,070
27	1,150	3,350	8,250	1,700	16,100	5,680	4,610	9,270	5,800	2,390	2,110	6,340
28	1,170	2,910	6,170	1,540	13,500	5,120	4,430	9,980	5,280	2,480	2,050	8,280
29	1,940	2,510	5,140	1,570	---	4,640	4,080	9,370	4,920	2,530	2,530	10,100
30	3,570	2,500	4,490	1,630	---	5,040	3,940	9,750	4,840	2,600	2,230	6,990
31	7,580	---	3,970	1,680	---	6,090	---	9,200	---	2,510	2,470	---
TOTAL	40,044	151,620	177,360	124,800	281,270	261,640	281,300	333,310	385,900	168,120	104,130	192,620
MEAN	1,292	5,054	5,721	4,026	10,050	8,440	9,377	10,750	12,860	5,423	3,359	6,421
MAX	7,580	11,500	14,100	10,900	73,400	16,300	27,900	43,200	24,800	18,400	6,710	23,900
MIN	500	2,050	1,560	1,540	1,460	4,080	3,940	4,210	4,840	2,390	2,050	1,850
(†)	+3,176	+17,646	-101	-151	+504	-655	+252	0	-101	-1,664	-2,722	+3,630
MEAN‡	1,394	5,642	5,718	4,020	10,063	8,419	9,385	10,750	12,860	5,370	3,271	6,542
CFSM‡	.38	1.53	1.55	1.09	2.73	2.29	2.55	2.92	3.49	1.46	.89	1.78
IN.‡	.44	1.71	1.79	1.26	2.85	2.64	2.84	3.37	3.90	1.68	1.02	1.98

CAL YR	2002	MEAN‡	2,416	CFSM‡	.66	IN.‡ 8.91
WTR YR	2003	MEAN‡	6,909	CFSM‡	1.88	IN.‡ 25.47

† Total change in contents, equivalent in cubic feet per second, per month, in Lake Moomaw; provided by U.S. Army Corps of Engineers.
‡ Adjusted for monthly change in contents.

02026000 JAMES RIVER AT BENT CREEK, VA—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

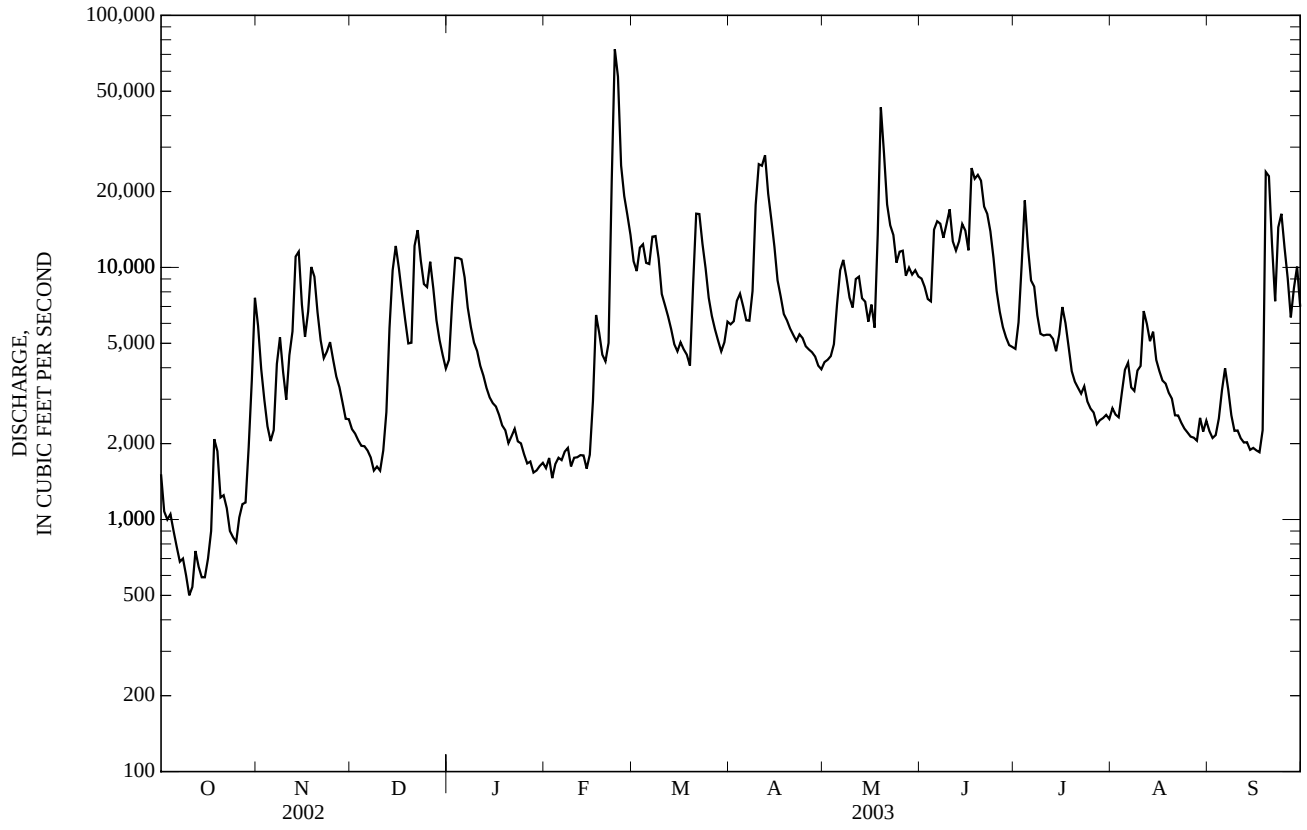
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2003, BY WATER YEAR (WY)

MEAN	2,163	3,114	3,789	5,073	6,192	7,777	7,145	5,244	3,845	2,015	1,851	2,331
MAX	9,173	16,910	10,380	11,680	17,200	18,860	24,090	13,990	12,860	5,423	6,027	9,873
(WY)	(1980)	(1986)	(1997)	(1991)	(1998)	(1993)	(1987)	(1989)	(2003)	(2003)	(1984)	(1996)
MIN	716	750	987	858	1,125	1,626	1,842	2,286	963	904	632	727
(WY)	(2002)	(2002)	(1981)	(1981)	(2002)	(1981)	(1995)	(2000)	(2002)	(1999)	(2002)	(2002)

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1980 - 2003	
ANNUAL TOTAL	859,397		2,502,114			
ANNUAL MEAN	2,355		6,855		4,198	
HIGHEST ANNUAL MEAN					6,855	2003
LOWEST ANNUAL MEAN					1,562	2002
HIGHEST DAILY MEAN	17,000	Apr 23	73,400	Feb 23	142,000	Nov 5, 1985
LOWEST DAILY MEAN	a409	Sep 12	500	Oct 10	a409	Sep 12, 2002
ANNUAL SEVEN-DAY MINIMUM	460	Sep 8	603	Oct 9	460	Sep 8, 2002
MAXIMUM PEAK FLOW			79,800	Feb 23	b226,000	Nov 5, 1985
MAXIMUM PEAK STAGE			17.97	Feb 23	b,c30.76	Nov 5, 1985
INSTANTANEOUS LOW FLOW			a357	Oct 9	d,a338	Oct 17, 2001
ANNUAL RUNOFF (CFSM)	0.64		1.86		1.14	
ANNUAL RUNOFF (INCHES)	8.68		25.27		15.49	
10 PERCENT EXCEEDS	5,760		14,000		9,110	
50 PERCENT EXCEEDS	1,250		5,010		2,370	
90 PERCENT EXCEEDS	591		1,650		932	

a Result of regulation.
b Prior to regulation, 1925-79, maximum peak flow, 176,000 ft^3/s, June 21, 1972, gage height, 27.13 ft, from floodmark.
c From floodmarks.
d Prior to regulation, 1925-79, instantaneous low flow, 222 ft^3/s, Oct. 13, 14, 1930.
e Estimated.



02027000 TYE RIVER NEAR LOVINGSTON, VA

LOCATION.--Lat 37°42'56", long 78°58'54", NAD83, Nelson County, Hydrologic Unit 02080203, on right bank at downstream side of bridge on State Highway 158, 3.5 mi downstream from Hat Creek, 4.8 mi upstream from Piney River, and 6.8 mi southwest of Lovingston.

DRAINAGE AREA.--92.8 mi^2.

PERIOD OF RECORD.--August 1938 to current year.

REVISED RECORDS.--WSP 892: 1938. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 578.39 ft NGVD 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, Oct. 6-17 and Mar. 20, and periods with ice effect, Dec. 6, 7, and Jan. 17-26, which are fair. Maximum discharge, 80,000 ft^3/s, from rating curve extended above 7,600 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1515	4,010	6.52	Sep 19	0400	*12,400	*13.24
Aug 9	2330	3,030	5.44	Sep 23	0545	2,680	5.02

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.2	89	60	498	56	342	310	136	296	127	78	128
2	7.1	73	56	601	55	408	315	117	251	206	99	153
3	6.2	62	54	441	54	445	294	111	248	429	129	159
4	5.8	57	50	343	70	378	267	134	275	331	331	180
5	5.6	58	58	288	70	376	247	126	344	260	641	189
6	e4.7	108	e50	248	58	469	232	133	248	357	300	142
7	e4.2	86	e45	213	63	501	302	122	754	251	259	125
8	e3.6	73	49	192	58	430	285	115	757	190	216	116
9	e3.4	66	52	170	54	374	629	110	854	168	537	107
10	e4.6	60	48	153	61	334	662	111	578	168	931	99
11	e15	131	88	135	57	296	1,060	115	471	150	920	93
12	e25	279	111	121	58	267	790	100	437	125	503	88
13	e16	305	129	114	52	246	593	94	441	116	418	105
14	e11	200	203	108	58	230	462	88	384	128	351	112
15	e9.2	153	180	99	92	214	394	183	355	111	279	98
16	70	186	154	90	132	204	334	236	398	104	281	91
17	e52	310	133	e85	93	192	294	161	425	92	363	85
18	31	305	120	e75	92	176	274	957	412	87	320	522
19	24	235	110	e72	77	165	261	821	406	85	298	5,380
20	21	189	285	e76	92	e800	230	486	411	81	248	1,380
21	23	160	276	e70	147	919	217	403	371	79	213	820
22	23	142	227	e67	1,830	631	203	339	319	80	191	586
23	20	119	192	e63	1,830	459	181	330	272	87	174	1,770
24	17	104	186	e61	1,130	372	164	307	237	76	155	1,100
25	19	95	240	e68	804	319	162	283	209	68	141	741
26	67	86	199	e60	586	281	169	340	185	63	128	597
27	54	79	168	58	450	265	153	354	167	59	115	463
28	52	73	151	55	370	235	135	352	155	56	118	438
29	90	68	137	57	---	279	123	371	144	85	176	338
30	182	65	125	58	---	350	119	373	132	74	118	281
31	120	---	119	56	---	325	---	340	---	68	131	---
TOTAL	994.6	4,016	4,055	4,795	8,549	11,282	9,861	8,248	10,936	4,361	9,162	16,486
MEAN	32.1	134	131	155	305	364	329	266	365	141	296	550
MAX	182	310	285	601	1,830	919	1,060	957	854	429	931	5,380
MIN	3.4	57	45	55	52	165	119	88	132	56	78	85
CFSM	0.35	1.44	1.41	1.67	3.29	3.92	3.54	2.87	3.93	1.52	3.18	5.92
IN.	0.40	1.61	1.63	1.92	3.43	4.52	3.95	3.31	4.38	1.75	3.67	6.61

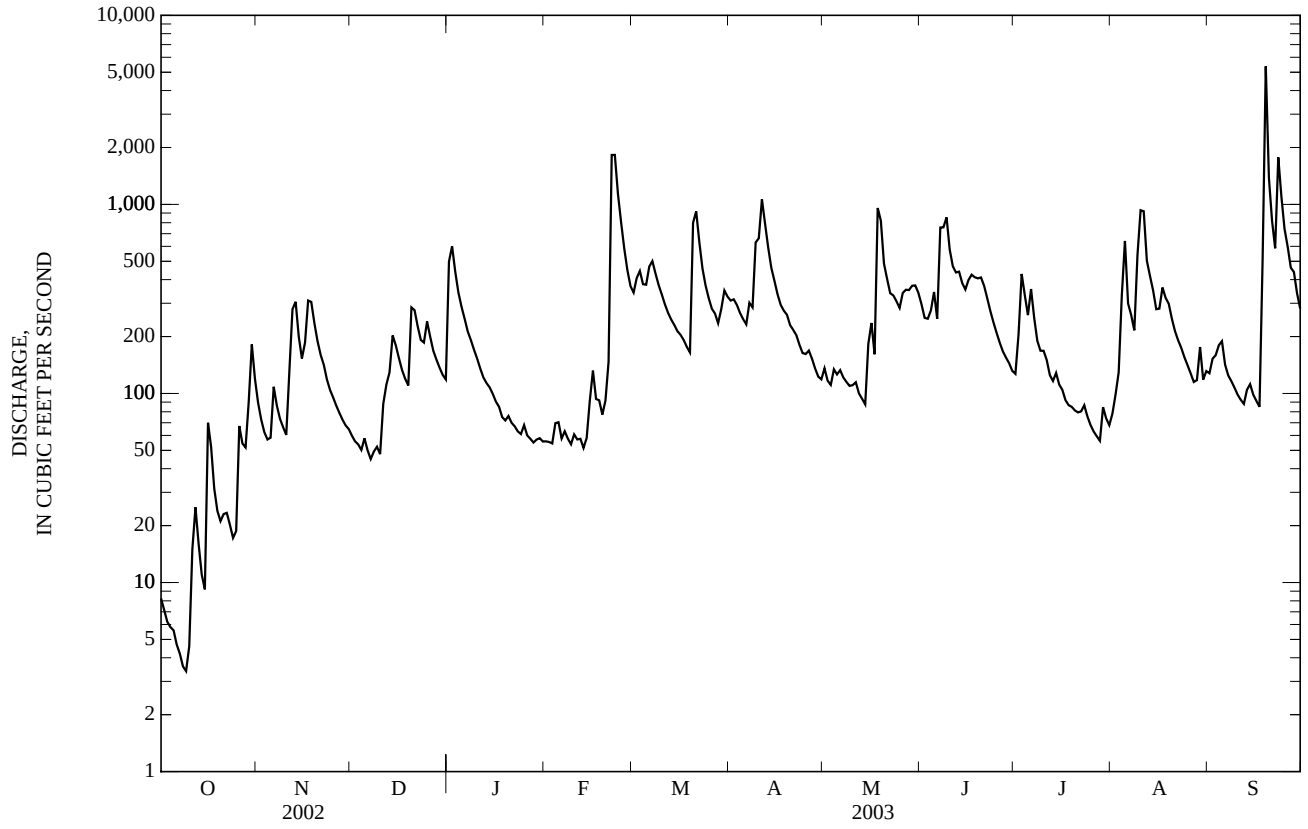
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2003, BY WATER YEAR (WY)

MEAN	101	130	166	188	215	259	236	179	136	77.2	105	100
MAX	550	765	499	568	773	568	692	492	676	382	1,541	556
(WY)	(1943)	(1986)	(1997)	(1998)	(1998)	(1993)	(1987)	(1989)	(1972)	(1972)	(1969)	(1979)
MIN	8.69	15.3	23.7	14.7	34.1	64.0	63.1	53.1	19.2	8.46	1.56	6.46
(WY)	(1942)	(1942)	(1981)	(1981)	(2002)	(1981)	(1966)	(1941)	(2002)	(2002)	(2002)	(2002)

02027000 TYE RIVER NEAR LOVINGSTON, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1939 - 2003	
ANNUAL TOTAL	22,971.91		92,745.6			
ANNUAL MEAN	62.9		254		157	
HIGHEST ANNUAL MEAN					280	1973
LOWEST ANNUAL MEAN					44.5	2002
HIGHEST DAILY MEAN	516	Apr 22	5,380	Sep 19	e32,600	Aug 20, 1969
LOWEST DAILY MEAN	0.53	eAug 25	e3.4	Oct 9	e0.53	Aug 25, 2002
ANNUAL SEVEN-DAY MINIMUM	0.61	eAug 20	e4.6	Oct 4	e0.61	Aug 20, 2002
MAXIMUM PEAK FLOW			12,400	Sep 19	80,000	Aug 20, 1969
MAXIMUM PEAK STAGE			13.24	Sep 19	a29.00	Aug 20, 1969
INSTANTANEOUS LOW FLOW			(b)	(c)	0.50	dSep 10, 1966
ANNUAL RUNOFF (CFSM)	0.68		2.74		1.70	
ANNUAL RUNOFF (INCHES)	9.21		37.18		23.03	
10 PERCENT EXCEEDS	159		491		321	
50 PERCENT EXCEEDS	35		159		100	
90 PERCENT EXCEEDS	2.5		55		22	

a From floodmarks.
b Not determined.
c Probably occurred Oct. 9, 2002.
d Also Sept. 11, 1966.
e Estimated.



02027500 PINEY RIVER AT PINEY RIVER, VA

LOCATION.--Lat 37°42'09", long 79°01'39", NAD83, Nelson County, Hydrologic Unit 02080203, on left bank at upstream side of bridge on State Highway 151, 0.2 mi southwest of Piney River Post Office, 1.7 mi downstream from Indian Creek, and 2.5 mi southeast of Lowesville.

DRAINAGE AREA.--47.6 mi^2.

PERIOD OF RECORD.--July 1949 to current year.

REVISED RECORDS.--WSP 2104: Drainage area. WDR VA-72-1: 1971(M).

GAGE.--Water-stage recorder. Datum of gage is 631.58 ft NGVD of 1929. Prior to May 27, 1969, water-stage recorder, and Nov. 4, 1969, to Feb. 26, 1970, nonrecording gage at site 20 ft downstream from former highway bridge at same datum. Feb. 26, 1970, to Sept. 20, 1973, on right bank 20 ft upstream from bridge at same datum. Sept. 20, 1973 to Apr. 29, 1999, at same site, at datum 2.00 ft higher.

REMARKS.--Records good except those for period of no gage-height record, Oct. 25, 26, and periods with ice effect, Dec. 6, 8, and Jan. 16-28, which are fair. Periodic dewatering of upstream quarries adds small amount of inflow at times. Maximum discharge, 38,000 ft^3/s, from rating curve extended above 6,000 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1949 reached a stage of 9.9 ft, from floodmarks.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1300	1,800	6.80	Jun 9	0030	691	4.79
May 18	1600	708	4.83	Sep 19	0300	*2,340	*7.54
Jun 4	2315	691	4.79	Sep 23	0515	1,010	5.48
Jun 7	1630	671	4.74				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.1	83	47	232	36	199	159	84	198	71	40	39
2	5.3	65	44	317	35	217	160	71	175	109	40	57
3	4.8	55	42	289	34	218	155	69	173	142	51	53
4	4.6	50	39	244	43	207	151	84	203	107	78	55
5	4.2	51	44	213	39	212	144	84	257	91	80	55
6	3.5	68	e36	187	35	247	131	92	204	79	70	47
7	3.1	58	e32	161	37	275	158	91	470	72	89	44
8	2.6	57	e34	143	34	251	151	91	565	67	82	42
9	2.6	54	35	126	32	223	289	88	503	65	86	39
10	2.9	51	32	110	35	198	326	86	381	65	141	37
11	9.1	93	62	97	34	177	388	82	322	59	272	35
12	16	161	64	86	34	158	341	74	286	53	213	34
13	9.3	195	81	79	32	144	293	68	266	50	191	38
14	6.6	160	119	73	34	132	252	64	233	58	157	43
15	6.0	130	116	68	56	121	220	115	220	50	130	38
16	16	148	111	e60	61	114	192	118	223	46	110	36
17	29	195	99	e55	57	106	169	98	232	43	96	34
18	19	194	89	e49	51	100	155	486	243	41	86	101
19	15	174	83	e44	50	92	147	524	251	40	76	1,270
20	12	148	168	e47	59	314	129	376	246	39	68	501
21	15	129	172	e44	87	395	118	310	218	40	62	331
22	15	110	165	e42	888	319	109	255	193	39	57	257
23	13	93	147	e41	962	265	101	240	169	40	53	734
24	13	82	150	e38	625	224	94	220	148	38	49	498
25	e14	74	180	e41	429	193	92	204	131	35	46	357
26	e52	67	145	e38	328	176	92	229	114	32	43	272
27	44	61	125	e37	268	156	83	233	102	29	41	223
28	46	57	112	e36	224	139	78	223	93	26	44	200
29	77	54	101	39	---	149	74	236	85	29	44	156
30	143	51	91	38	---	168	73	227	77	30	38	134
31	109	---	84	37	---	161	---	222	---	29	42	---
TOTAL	718.7	2,968	2,849	3,111	4,639	6,050	5,024	5,444	6,981	1,714	2,675	5,760
MEAN	23.2	98.9	91.9	100	166	195	167	176	233	55.3	86.3	192
MAX	143	195	180	317	962	395	388	524	565	142	272	1,270
MIN	2.6	50	32	36	32	92	73	64	77	26	38	34
CFSM	0.49	2.08	1.93	2.11	3.48	4.10	3.52	3.69	4.89	1.16	1.81	4.03
IN.	0.56	2.32	2.23	2.43	3.63	4.73	3.93	4.25	5.46	1.34	2.09	4.50

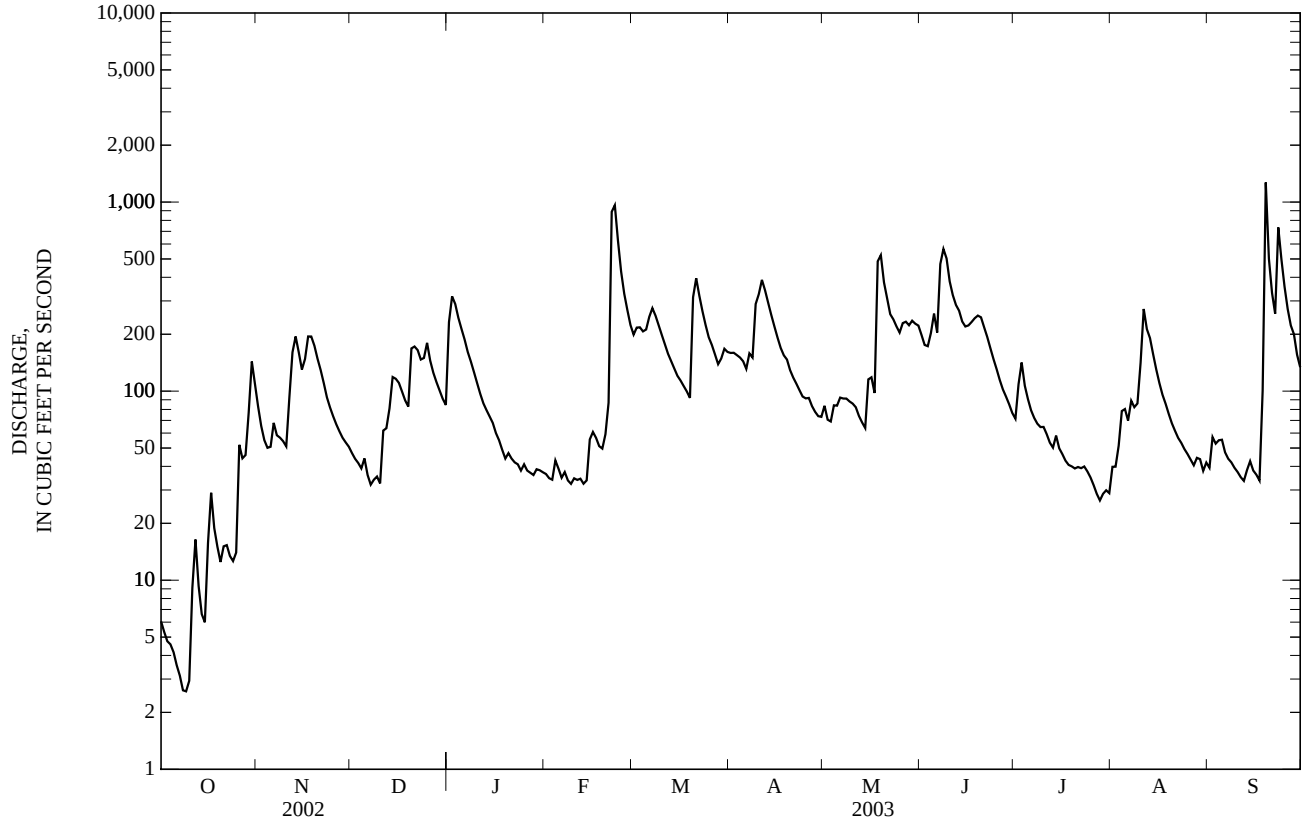
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 2003, BY WATER YEAR (WY)

MEAN	63.0	87.3	104	114	127	157	144	109	89.3	39.0	57.4	54.3
MAX	313	644	297	339	347	311	417	352	541	213	1,239	388
(WY)	(1991)	(1986)	(1997)	(1998)	(1998)	(1993)	(1987)	(1989)	(1972)	(1972)	(1969)	(1996)
MIN	4.75	7.75	10.3	7.94	26.5	37.8	38.4	35.8	14.6	8.93	2.51	3.75
(WY)	(1964)	(1999)	(1999)	(1981)	(2002)	(1981)	(1966)	(1963)	(1999)	(1999)	(2002)	(1998)

02027500 PINEY RIVER AT PINEY RIVER, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1950 - 2003	
ANNUAL TOTAL	15,737.70		47,933.7			
ANNUAL MEAN	43.1		131		95.2	
HIGHEST ANNUAL MEAN					188	1969
LOWEST ANNUAL MEAN					29.3	2002
HIGHEST DAILY MEAN	200	Apr 23	1,270	Sep 19	25,000	Aug 20, 1969
LOWEST DAILY MEAN	0.31	Sep 14	2.6	aOct 8	0.31	Sep 14, 2002
ANNUAL SEVEN-DAY MINIMUM	0.66	Sep 9	3.4	Oct 4	0.66	Sep 9, 2002
MAXIMUM PEAK FLOW			2,340	Sep 19	38,000	Aug 20, 1969
MAXIMUM PEAK STAGE			7.54	Sep 19	b13.80	Aug 20, 1969
INSTANTANEOUS LOW FLOW			2.3	cOct 8	0.29	Sep 14, 2002
ANNUAL RUNOFF (CFSM)	0.91		2.76		2.00	
ANNUAL RUNOFF (INCHES)	12.30		37.46		27.18	
10 PERCENT EXCEEDS	101		265		200	
50 PERCENT EXCEEDS	28		86		59	
90 PERCENT EXCEEDS	2.4		34		11	

a Also Oct. 9, 2002.
b From floodmarks.
c Also Oct. 9, 10, 2002.
e Estimated.



02028500 ROCKFISH RIVER NEAR GREENFIELD, VA

LOCATION.--Lat 37°52'11", long 78°49'24", NAD83, Nelson County, Hydrologic Unit 02080203, on left bank 50 ft downstream from bridge on State Highway 634, 2.8 mi downstream from confluence of North and South Forks, and 4.1 mi south of Greenfield.

DRAINAGE AREA.--94.6 mi^2.

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

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 530.29 ft NGVD of 1929. Prior to Aug. 21, 1943, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Dec. 6, 7, Jan. 17-19, 24-29, and Feb. 16-18, which are fair. Maximum discharge, 70,000 ft^3/s, from rating curve extended above 8,500 ft^3/s on basis of contracted-opening measurement at gage height 18.11 ft, slope-area measurements at gage heights 17.2 ft, 23.4 ft, and 31.2 ft, and peak runoff comparison with nearby stations. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 15, 1942, reached a stage of 23.4 ft, from floodmarks, discharge, about 30,000 ft^3/s.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1500	3,810	8.06	Aug 11	0300	1,680	5.16
Mar 20	1700	1,580	4.99	Sep 19	0445	*8,610	*12.32
Aug 9	2245	1,860	5.47	Sep 23	0645	1,850	5.45

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.1	66	51	445	57	310	298	210	295	149	78	111
2	3.4	50	48	496	55	470	286	159	238	245	82	124
3	2.7	43	46	410	53	492	268	146	226	925	164	113
4	2.3	39	41	310	63	400	246	157	227	629	389	134
5	2.0	37	50	255	59	388	225	145	258	402	231	124
6	2.0	95	e46	227	52	454	197	142	197	292	164	98
7	1.9	68	e41	191	60	453	306	129	484	236	155	90
8	1.7	57	45	176	54	388	283	119	558	196	150	86
9	1.7	50	52	157	51	335	571	308	656	175	392	81
10	1.9	45	45	140	57	290	586	404	490	167	763	75
11	9.0	123	108	120	54	253	817	323	416	148	971	70
12	18	336	122	107	55	227	637	246	392	125	532	69
13	11	283	149	103	50	206	507	197	363	113	580	120
14	9.5	178	261	98	51	190	410	167	315	113	424	130
15	7.4	136	191	90	80	174	340	303	300	105	328	104
16	72	194	160	82	e120	166	290	579	323	97	297	90
17	52	388	132	e76	e98	156	251	397	361	85	312	80
18	28	357	119	e72	e102	146	235	937	406	81	266	513
19	21	236	111	e69	89	135	241	845	400	78	233	3,920
20	17	184	227	72	92	753	205	591	460	75	200	1,010
21	18	154	214	71	146	766	190	499	409	72	177	656
22	18	133	187	64	1,520	534	176	430	352	84	160	517
23	14	110	161	61	1,320	407	159	435	301	96	145	1,160
24	13	100	153	e58	893	328	146	411	263	72	129	780
25	13	90	204	e63	673	277	144	370	232	65	121	583
26	44	83	177	e56	502	256	161	424	207	60	111	462
27	33	74	148	e53	402	233	140	410	187	55	102	392
28	33	64	131	e51	333	199	127	402	172	52	105	453
29	54	61	124	e53	---	220	120	416	163	112	146	313
30	156	61	114	55	---	363	116	402	158	77	105	267
31	95	---	107	55	---	338	---	351	---	69	101	---
TOTAL	759.6	3,895	3,765	4,336	7,141	10,307	8,678	11,054	9,809	5,250	8,113	12,725
MEAN	24.5	130	121	140	255	332	289	357	327	169	262	424
MAX	156	388	261	496	1,520	766	817	937	656	925	971	3,920
MIN	1.7	37	41	51	50	135	116	119	158	52	78	69
CFSM	0.26	1.37	1.28	1.48	2.70	3.51	3.06	3.77	3.46	1.79	2.77	4.48
IN.	0.30	1.53	1.48	1.71	2.81	4.05	3.41	4.35	3.86	2.06	3.19	5.00

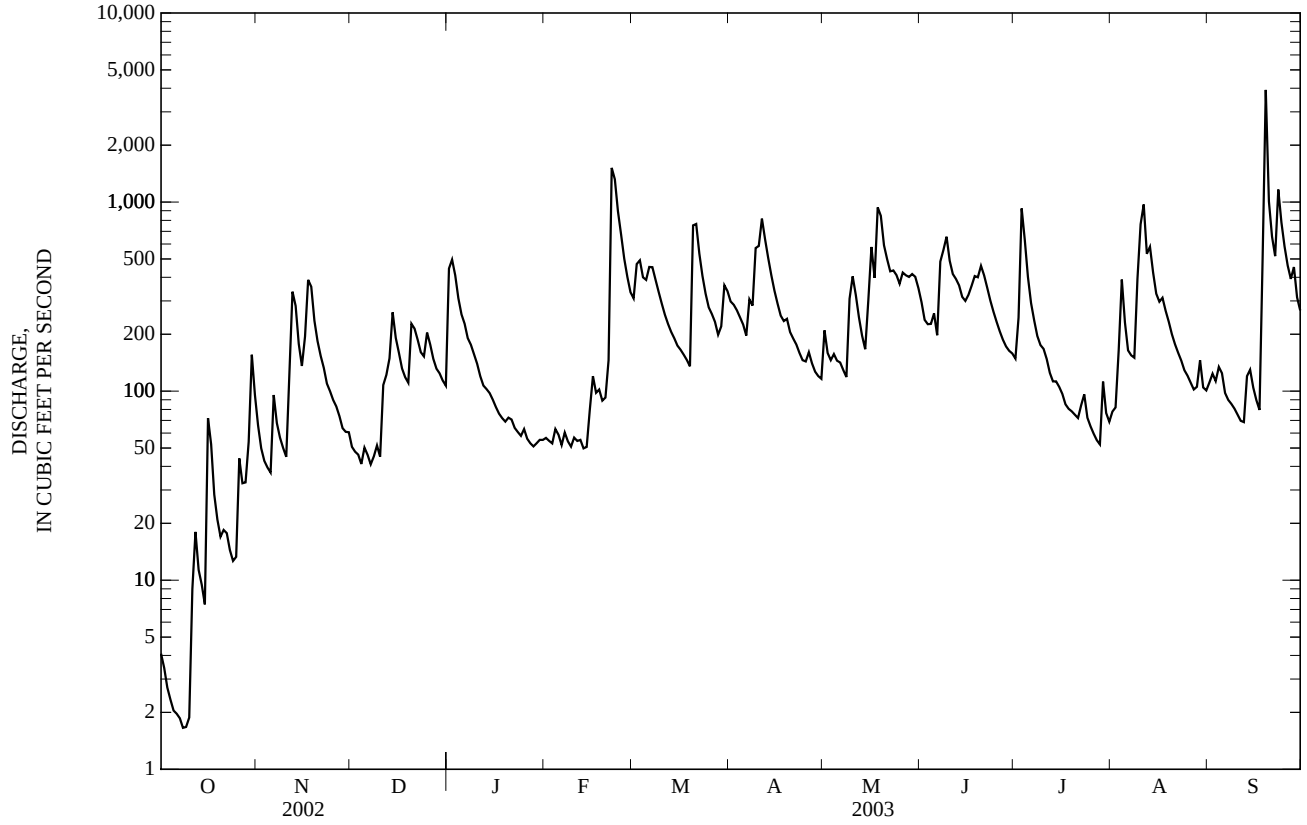
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 2003, BY WATER YEAR (WY)

MEAN	91.0	121	145	166	192	242	217	159	122	72.0	84.8	89.7
MAX	394	733	445	480	723	629	698	369	696	327	1,246	506
(WY)	(1991)	(1986)	(1951)	(1996)	(1998)	(1993)	(1983)	(1990)	(1995)	(1972)	(1969)	(1979)
MIN	7.35	10.0	18.5	22.2	23.4	55.9	52.5	39.5	6.53	2.60	0.74	2.52
(WY)	(2002)	(2002)	(1966)	(2002)	(2002)	(1981)	(1981)	(2002)	(2002)	(2002)	(2002)	(2002)

02028500 ROCKFISH RIVER NEAR GREENFIELD, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1943 - 2003	
ANNUAL TOTAL	15,492.69		85,832.6			
ANNUAL MEAN	42.4		235		142	
HIGHEST ANNUAL MEAN					290	1973
LOWEST ANNUAL MEAN					22.5	2002
HIGHEST DAILY MEAN	388	Nov 17	3,920	Sep 19	e28,800	Aug 20, 1969
LOWEST DAILY MEAN	0.07	Sep 14	1.7	aOct 8	0.07	Sep 14, 2002
ANNUAL SEVEN-DAY MINIMUM	0.12	Sep 11	1.9	Oct 4	0.12	Sep 11, 2002
MAXIMUM PEAK FLOW			8,610	Sep 19	70,000	Aug 20, 1969
MAXIMUM PEAK STAGE			12.32	Sep 19	b31.20	Aug 20, 1969
INSTANTANEOUS LOW FLOW			1.4	Oct 9	0.07	cAug 14, 2002
ANNUAL RUNOFF (CFSM)	0.45		2.49		1.50	
ANNUAL RUNOFF (INCHES)	6.09		33.75		20.36	
10 PERCENT EXCEEDS	112		491		300	
50 PERCENT EXCEEDS	23		156		84	
90 PERCENT EXCEEDS	0.48		47		17	

a Also Oct. 9, 2002.
b From floodmarks.
c Also Aug. 15, 18, 26-28 and Sept. 13-15, 2002.
e Estimated.



02029000 JAMES RIVER AT SCOTTSVILLE, VA

LOCATION.--Lat 37°47'51", long 78°29'29", NAD83, Albemarle County, Hydrologic Unit 02080203, on left bank 900 ft downstream from bridge on State Highway 20 at Scottsville, 6.8 mi upstream from Hardware River, and at mile 188.6.

DRAINAGE AREA.--4,584 mi^2.

PERIOD OF RECORD.--October 1924 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 727: 1931(m). WSP 972: 1936(M), 1940(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 253.18 ft NGVD of 1929. Prior to Nov. 28, 1928, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Large diurnal fluctuation caused by powerplants upstream from station. Flow regulated since December 1979 by Lake Moomaw (station 02011795) 197.5 mi upstream; since October 1984 by Back Creek Lake 225.5 mi upstream; and since January 1985 by Little Back Creek Lake 228.6 mi upstream, amount unknown. Statistics of monthly mean data and summary statistics for water years 1925 - 1979 (unregulated flow) are available in previous data books, water years 1991 - 1998. National Weather Service gage-height telemeter at station. Maximum discharge, 301,000 ft^3/s, from rating curve extended above 120,000 ft^3/s on basis of slope-conveyance study. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1870 reached a stage of 30.7 ft, discharge, about 215,000 ft^3/s, and flood in November 1877 reached a stage of 27.9 ft, discharge, about 160,000 ft^3/s, from information by local resident. Flood in March 1913 reached a stage of 25.16 ft, from floodmarks, discharge, 121,000 ft^3/s.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 35,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 24	0700	*92,800	*22.58	May 19	2215	54,400	17.93
Apr 12	1230	36,800	14.79	Sep 19	1145	64,100	19.31

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,870	8,440	2,700	6,030	2,170	14,600	8,440	5,210	11,900	4,890	3,370	3,110
2	1,520	5,610	2,440	9,380	2,060	13,600	8,040	5,360	10,800	5,620	3,120	2,760
3	1,210	4,200	2,260	12,700	2,150	15,400	8,580	5,180	9,820	20,200	2,890	2,810
4	1,010	2,940	2,180	13,800	2,020	16,400	9,980	5,510	9,280	22,200	4,070	3,380
5	1,060	2,440	2,180	13,400	2,360	14,400	9,160	6,650	13,100	17,400	4,680	4,150
6	821	2,580	2,150	11,900	2,310	13,100	8,180	10,300	20,200	11,100	6,100	5,200
7	755	3,210	1,950	9,510	2,400	15,600	7,960	11,900	19,300	10,300	4,950	4,690
8	739	6,230	1,850	7,810	2,530	17,200	9,560	11,200	21,900	7,620	4,440	3,590
9	668	5,260	1,670	6,810	2,210	14,700	18,700	9,520	21,900	6,830	4,420	3,160
10	528	4,090	1,660	6,110	2,160	11,100	31,000	8,750	22,600	6,010	8,230	2,730
11	589	4,360	2,020	5,660	2,300	9,310	32,300	9,620	17,700	5,960	9,200	2,570
12	751	8,070	3,420	4,910	2,310	8,510	34,500	11,100	15,700	5,800	9,410	2,270
13	924	13,100	4,910	4,630	2,300	7,680	26,700	9,450	15,500	5,590	7,290	2,440
14	768	14,700	10,600	4,150	2,290	6,970	21,100	8,310	17,800	5,230	7,600	2,480
15	666	10,100	13,900	3,820	2,310	6,260	16,500	7,640	18,200	5,020	6,350	2,530
16	776	7,170	12,700	3,630	3,590	6,280	12,600	9,170	14,900	6,760	5,360	2,370
17	1,080	8,510	10,100	3,450	5,280	6,370	10,300	7,650	21,600	6,720	5,330	2,340
18	1,420	11,800	8,120	3,190	7,910	5,980	8,880	14,600	29,000	5,320	4,910	2,430
19	2,510	12,400	6,750	2,880	6,150	5,750	8,260	44,100	25,300	4,600	4,750	46,000
20	1,810	9,160	6,240	2,760	5,670	12,000	7,680	42,000	27,800	3,880	4,180	32,600
21	1,530	7,110	9,310	2,710	6,690	24,100	7,270	24,600	22,200	3,760	3,600	21,200
22	1,450	5,850	18,300	2,740	23,700	22,800	6,760	19,200	20,000	3,470	3,270	11,500
23	1,280	5,280	13,400	2,850	80,200	17,500	6,570	18,700	17,400	3,640	3,220	17,000
24	1,050	5,990	10,900	2,320	83,600	13,800	6,780	15,300	13,900	3,570	2,680	24,200
25	1,000	5,590	10,200	2,250	38,400	10,900	6,340	15,400	10,500	2,910	2,660	17,700
26	1,220	4,780	12,900	2,220	26,100	8,960	6,140	19,200	8,270	2,930	2,510	12,800
27	1,660	4,140	11,200	2,140	21,600	8,020	6,030	14,800	7,090	2,390	2,410	9,910
28	1,580	3,750	8,540	2,180	18,300	7,140	5,650	15,200	6,230	2,460	2,410	8,090
29	2,030	3,110	6,950	2,010	---	6,600	5,280	13,000	5,640	2,600	3,620	13,400
30	4,140	2,840	6,050	2,050	---	7,020	5,040	13,100	5,240	2,750	3,310	9,510
31	6,690	---	5,410	2,120	---	8,910	---	12,500	---	2,790	3,040	---
TOTAL	45,105	192,810	212,960	162,120	361,070	356,960	360,280	424,220	480,770	200,320	143,380	278,920
MEAN	1,455	6,427	6,870	5,230	12,900	11,510	12,010	13,680	16,030	6,462	4,625	9,297
MAX	6,690	14,700	18,300	13,800	83,600	24,100	34,500	44,100	29,000	22,200	9,410	46,000
MIN	528	2,440	1,660	2,010	2,020	5,750	5,040	5,180	5,240	2,390	2,410	2,270
(†)	+3,176	+17,646	-101	-151	+504	-655	+252	0	-101	-1,664	-2,722	+3,630
MEAN‡	1,557	7,015	6,866	5,225	12,913	11,494	12,018	13,680	16,022	6,408	4,537	9,418
CFSM‡	.34	1.53	1.50	1.14	2.82	2.51	2.62	2.98	3.50	1.40	.99	2.29
IN.‡	.39	1.71	1.73	1.31	2.93	2.89	2.93	3.44	3.90	1.61	1.14	2.29

CAL YR 2002 MEAN‡ 2,887 CFSM‡ .63 IN.‡ 8.55
WTR YR 2003 MEAN‡ 8,873 CFSM‡ 1.94 IN.‡ 26.28

† Total change in contents, equivalent in cubic feet per second, per month, in Lake Moomaw; provided by U.S. Army Corps of Engineers.
‡ Adjusted for monthly change in contents.

02029000 JAMES RIVER AT SCOTTSVILLE, VA—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

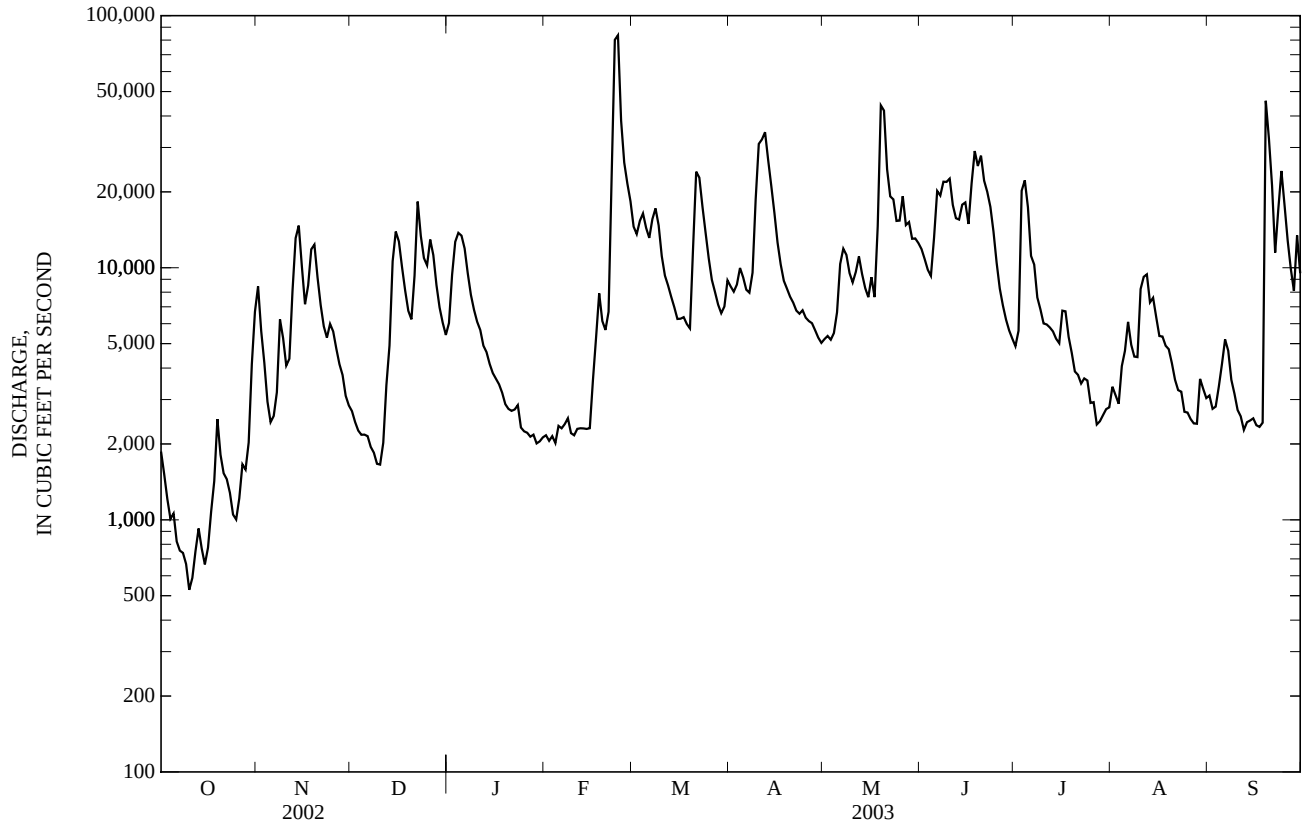
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2003, BY WATER YEAR (WY)

MEAN	2,765	4,117	4,808	6,556	7,794	9,729	9,171	6,673	4,850	2,572	2,375	3,083
MAX	11,990	25,090	13,450	18,230	22,960	23,820	28,930	18,230	16,030	6,941	7,934	13,180
(WY)	(1980)	(1986)	(1997)	(1996)	(1998)	(1993)	(1987)	(1989)	(2003)	(1995)	(1984)	(1996)
MIN	875	883	1,318	1,165	1,274	1,961	2,493	3,309	1,028	981	800	754
(WY)	(2002)	(2002)	(1981)	(1981)	(2002)	(1981)	(1995)	(2000)	(2002)	(1999)	(2002)	(2002)

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1980 - 2003	
ANNUAL TOTAL	1,031,317		3,218,915			
ANNUAL MEAN	2,826		8,819		5,357	
HIGHEST ANNUAL MEAN					8,819	2003
LOWEST ANNUAL MEAN					1,852	2002
HIGHEST DAILY MEAN	18,300	Dec 22	83,600	Feb 24	199,000	Nov 6, 1985
LOWEST DAILY MEAN	452	Sep 14	528	Oct 10	452	Sep 14, 2002
ANNUAL SEVEN-DAY MINIMUM	499	Sep 9	693	Oct 6	499	Sep 9, 2002
MAXIMUM PEAK FLOW			92,800	Feb 24	a243,000	Nov 6, 1985
MAXIMUM PEAK STAGE			22.58	Feb 24	a31.77	Nov 6, 1985
INSTANTANEOUS LOW FLOW			446	Oct 11	b418	cSep 13, 2002
ANNUAL RUNOFF (CFSM)	0.62		1.92		1.17	
ANNUAL RUNOFF (INCHES)	8.37		26.12		15.88	
10 PERCENT EXCEEDS	7,200		18,700		11,500	
50 PERCENT EXCEEDS	1,490		6,150		3,060	
90 PERCENT EXCEEDS	669		2,060		1,110	

a Prior to regulation, 1925-79, maximum peak flow, 301,000 ft^3/s, June 22, 1972, gage height, 34.02 ft, from floodmarks.
b Prior to regulation, 1925-79, instantaneous low flow, 302 ft^3/s, Oct. 1, 1930, probably lower during period of doubtful record in September 1966.
c Also Sept. 14, 2002.



02030000 HARDWARE RIVER BELOW BRIERY CREEK, NEAR SCOTTSVILLE, VA

LOCATION.--Lat 37°48'46", long 78°27'19", NAD83, Fluvanna County, Hydrologic Unit 02080203, on left bank 75 ft upstream from bridge on State Highway 637, 0.8 mi downstream from Briery Creek, 2.4 mi northeast of Scottsville, and 10.8 mi upstream from mouth.

DRAINAGE AREA.--116 mi^2.

PERIOD OF RECORD.--October 1938 to September 1995, October 1996 to current year. Monthly discharge only for some periods, published in WSP 1303. Published as "below Briery Run" prior to October 1990.

REVISED RECORDS.--WSP 952: 1941(M). WSP 1002: 1940, 1943. WSP 1032: 1940, 1944.

GAGE.--Water-stage recorder. Datum of gage is 294.96 ft NGVD of 1929.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Oct. 21-23, 25, and June 30 to July 1, and periods with ice effect, Dec. 6-8, Jan. 17-29, and Feb. 16, 17, which are fair. Maximum discharge, 52,000 ft^3/s, from rating curve extended above 18,000 ft^3/s on basis of slope-area measurements at gage heights 23.8 ft and 31.0 ft. Several measurements of water temperature were made during the year.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	2145	4,500	14.00	Aug 11	1345	1,660	9.04
Mar 20	1345	1,650	9.05	Sep 19	1145	9,520	17.20
May 26	0830	1,820	9.49	Sep 23	1115	1,630	9.00
Jul 3	1145	*9,760	*17.36				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.6	51	36	427	62	239	228	130	260	e93	238	138
2	3.6	36	34	673	58	442	196	108	212	130	161	186
3	3.0	28	33	304	55	427	172	99	183	5,560	173	179
4	2.7	25	30	227	64	282	156	97	201	1,760	445	197
5	2.7	25	37	160	68	249	147	94	217	492	255	226
6	2.2	68	e42	131	58	251	136	100	169	331	207	169
7	1.5	64	e33	115	64	217	256	93	644	318	205	149
8	1.6	40	e35	107	62	191	278	91	585	246	227	142
9	1.7	32	42	98	56	176	564	313	722	234	179	141
10	1.8	27	40	89	63	158	457	562	327	223	576	133
11	5.1	75	128	80	67	143	598	337	248	222	950	125
12	17	428	224	75	73	136	373	211	247	184	422	117
13	14	334	202	72	68	131	279	157	238	171	360	226
14	7.6	110	441	72	65	123	230	127	219	178	254	209
15	6.1	74	255	69	128	116	203	128	185	167	210	164
16	19	89	144	65	e150	115	183	380	182	155	190	144
17	77	447	98	e64	e115	114	168	230	205	142	181	142
18	30	346	82	e62	119	111	162	713	236	137	178	413
19	16	140	72	e60	111	107	200	693	233	153	167	6,510
20	11	92	184	e69	149	896	174	374	328	158	149	1,050
21	e10	75	182	e60	305	1,020	161	332	316	137	144	446
22	e9.8	67	107	e55	2,170	401	153	332	209	141	142	340
23	e9.2	60	87	e52	2,260	268	142	402	163	159	133	1,110
24	8.6	52	82	e47	725	215	121	418	132	126	118	484
25	e8.4	49	298	e50	501	182	119	345	118	110	114	337
26	36	46	253	e53	352	167	139	1,030	111	99	110	277
27	42	43	143	e49	280	173	129	497	106	94	106	259
28	27	40	109	e46	240	150	116	438	106	92	120	299
29	39	39	95	e48	---	149	112	345	100	169	354	224
30	136	39	82	54	---	274	109	361	e98	127	171	196
31	103	---	75	56	---	324	---	286	---	108	141	---
TOTAL	657.2	3,041	3,705	3,589	8,488	7,947	6,461	9,823	7,300	12,416	7,380	14,732
MEAN	21.2	101	120	116	303	256	215	317	243	401	238	491
MAX	136	447	441	673	2,260	1,020	598	1,030	722	5,560	950	6,510
MIN	1.5	25	30	46	55	107	109	91	98	92	106	117
CFSM	0.18	0.87	1.03	1.00	2.61	2.21	1.86	2.73	2.10	3.45	2.05	4.23
IN.	0.21	0.98	1.19	1.15	2.72	2.55	2.07	3.15	2.34	3.98	2.37	4.72

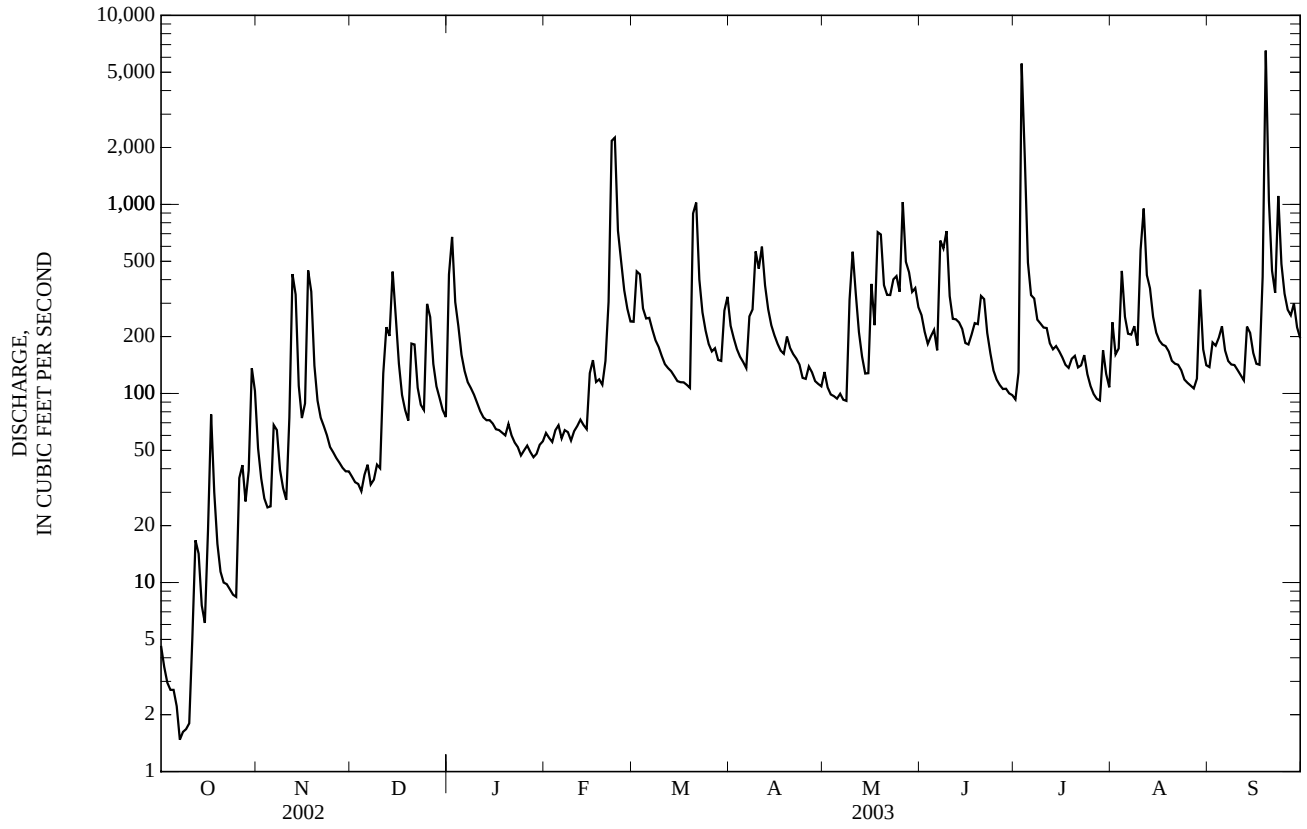
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1995, 1997 - 2003, BY WATER YEAR (WY)

MEAN	86.8	97.2	129	151	184	213	180	136	107	79.6	95.9	88.0
MAX	370	514	514	448	664	613	604	398	560	401	1,155	750
(WY)	(1977)	(1986)	(1949)	(1998)	(1998)	(1993)	(1983)	(1989)	(1972)	(2003)	(1969)	(1944)
MIN	11.3	12.0	20.5	24.1	23.3	35.1	39.5	21.9	4.27	1.69	0.46	2.66
(WY)	(2002)	(2002)	(1966)	(2002)	(2002)	(1981)	(1981)	(2002)	(2002)	(2002)	(2002)	(2002)

02030000 HARDWARE RIVER BELOW BRIERY CREEK, NEAR SCOTTSVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1939 - 1995 1997 - 2003	
ANNUAL TOTAL	12,254.44		85,539.2			
ANNUAL MEAN	33.6		234		129	
HIGHEST ANNUAL MEAN					249	1973
LOWEST ANNUAL MEAN					17.4	2002
HIGHEST DAILY MEAN	447	Nov 17	6,510	Sep 19	28,400	Aug 20, 1969
LOWEST DAILY MEAN	0.00	Aug 27	1.5	Oct 7	0.00	Aug 27, 2002
ANNUAL SEVEN-DAY MINIMUM	0.01	Aug 21	2.0	Oct 4	0.01	Aug 21, 2002
MAXIMUM PEAK FLOW			9,760	Jul 3	52,000	Aug 20, 1969
MAXIMUM PEAK STAGE			17.36	Jul 3	a31.00	Aug 20, 1969
INSTANTANEOUS LOW FLOW			1.3	Oct 7	0.00	bAug 26, 2002
ANNUAL RUNOFF (CFSM)	0.29		2.02		1.11	
ANNUAL RUNOFF (INCHES)	3.93		27.43		15.07	
10 PERCENT EXCEEDS	75		424		237	
50 PERCENT EXCEEDS	21		142		80	
90 PERCENT EXCEEDS	0.48		36		24	

a From floodmarks.
b Also part or all of each day Aug. 27, 28, 2002.
e Estimated.



02031000 MECHUMS RIVER NEAR WHITE HALL, VA

LOCATION.--Lat 38°06'09", long 78°35'34", NAD83, Albemarle County, Hydrologic Unit 02080204, on right bank 20 ft downstream from bridge on State Highway 614, 1.5 mi downstream from Rocky Run, 4.0 mi southeast of White Hall, and 4.9 mi upstream from confluence with Moormans River.

DRAINAGE AREA.--95.4 mi^2.

PERIOD OF RECORD.--October 1942 to September 1951, October 1979 to current year. Prior to September 1951, published as Mechum River near Ivy.

GAGE.--Water-stage recorder. Datum of gage is 429.75 ft NGVD of 1929. Oct. 1, 1942, to Sept. 30, 1951, on right bank 20 ft downstream from former highway bridge at different datum.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Oct. 3-8, 10, 13-17, 20, 23-26, Mar. 26-28, Apr. 27, 28, May 11, 24-27, and June 18, 19, and periods with ice effect, Dec. 6, 7, Jan. 17-25, 27-29, and Feb. 16-18, which are fair. Maximum discharge, 20,000 ft^3/s, from rating curve extended above 8,000 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 6, 1979, reached a stage of 24.5 ft, from floodmarks, discharge, about 13,500 ft^3/s, from rating curve extended above 8,300 ft^3/s.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1830	4,740	14.90	Aug 3	1815	1,450	8.49
Mar 20	1745	2,040	10.48	Sep 19	0700	*9,620	*19.43
Jul 3	1015	2,360	9.93	Sep 23	0815	1,930	9.27

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.91	24	30	309	45	191	198	120	217	77	85	66
2	0.60	17	28	307	42	337	180	98	170	112	71	105
3	e0.50	14	28	214	40	386	168	87	160	1,420	394	93
4	e0.40	13	26	172	44	271	159	92	170	543	363	93
5	e0.35	13	30	141	45	245	143	90	202	299	208	94
6	e0.33	41	e35	125	39	280	126	91	155	200	137	71
7	e0.24	31	e28	108	45	244	193	86	253	155	110	64
8	e0.18	21	30	96	43	211	212	82	284	133	108	61
9	0.11	17	34	86	39	184	403	176	450	142	140	59
10	e0.10	15	30	76	42	162	387	324	249	153	267	56
11	2.4	51	104	67	42	146	584	e270	194	126	541	53
12	11	224	136	61	42	134	388	191	184	103	243	52
13	e7.0	190	142	58	38	124	292	150	173	92	177	128
14	e4.0	91	300	57	38	115	236	128	155	86	141	116
15	e2.8	62	178	54	55	107	204	148	182	85	118	91
16	e25	90	129	53	e74	104	176	519	163	79	110	76
17	e22	267	100	e48	e72	102	158	279	202	73	153	66
18	14	225	83	e47	e82	100	151	617	e265	69	126	322
19	9.2	127	73	e45	70	94	168	572	e230	69	111	4,630
20	e6.3	91	117	e50	73	800	150	374	317	82	97	759
21	6.9	74	116	e44	129	606	144	326	326	68	88	396
22	7.2	63	94	e42	1,820	335	144	291	216	68	81	280
23	e5.8	51	81	e40	1,150	247	131	283	171	81	75	947
24	e5.0	45	76	e37	604	204	117	e280	143	73	70	488
25	e4.6	41	110	e39	451	172	115	e245	125	66	66	346
26	e17	38	116	39	318	e140	125	e265	113	59	63	262
27	14	36	90	e37	245	e145	e110	e250	101	55	60	231
28	11	34	78	e35	210	e121	e93	248	94	54	60	281
29	15	32	70	e38	---	139	88	249	87	78	92	197
30	68	32	62	38	---	205	85	291	81	67	66	171
31	41	---	59	42	---	246	---	235	---	61	72	---
TOTAL	302.92	2,070	2,613	2,605	5,937	6,897	5,828	7,457	5,832	4,828	4,493	10,654
MEAN	9.77	69.0	84.3	84.0	212	222	194	241	194	156	145	355
MAX	68	267	300	309	1,820	800	584	617	450	1,420	541	4,630
MIN	0.10	13	26	35	38	94	85	82	81	54	60	52
CFSM	0.10	0.72	0.88	0.88	2.22	2.33	2.04	2.52	2.04	1.63	1.52	3.72
IN.	0.12	0.81	1.02	1.02	2.32	2.69	2.27	2.91	2.27	1.88	1.75	4.15

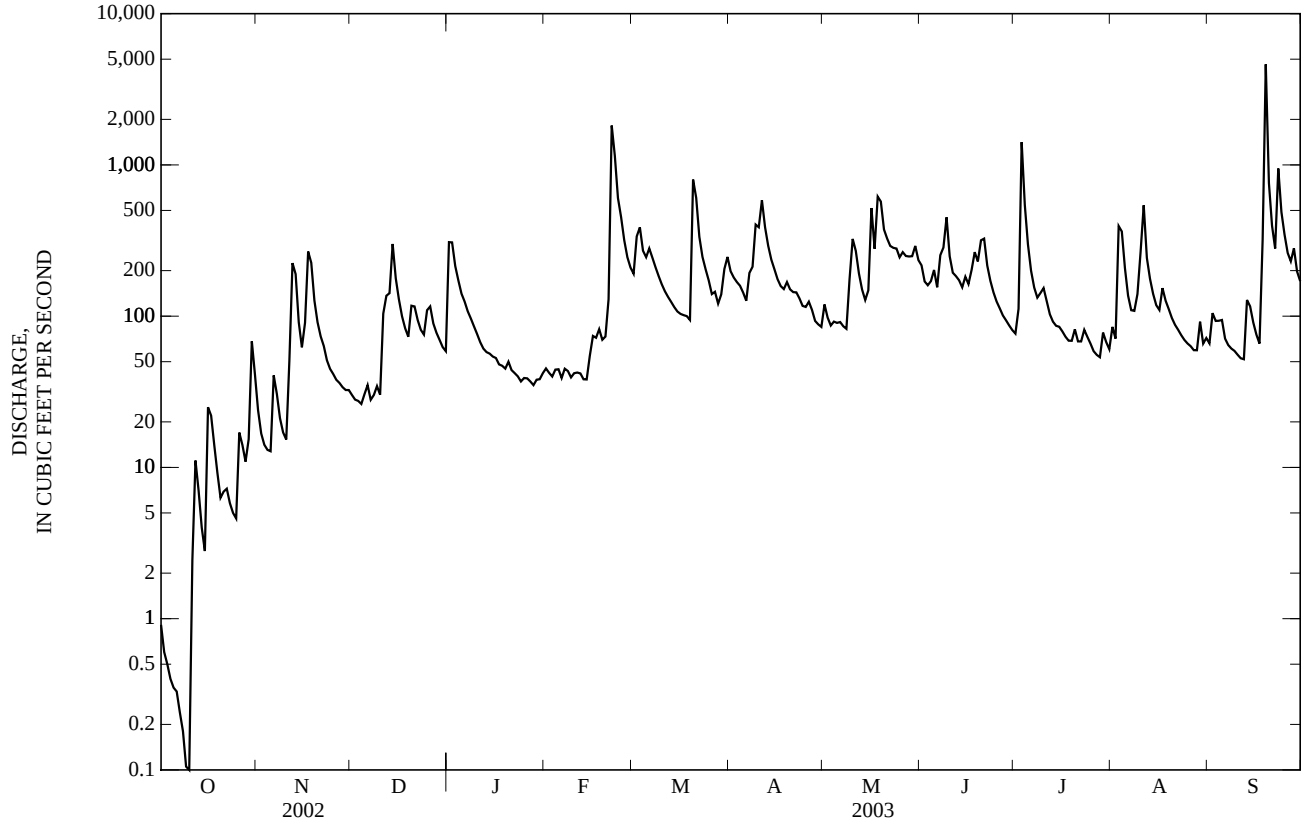
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 1951, 1979 - 2003, BY WATER YEAR (WY)

MEAN	80.2	95.6	110	123	143	163	163	118	89.7	61.1	55.2	91.1
MAX	606	636	329	425	550	473	703	289	322	192	245	422
(WY)	(1943)	(1986)	(1949)	(1996)	(1998)	(1993)	(1983)	(1989)	(1995)	(1991)	(1949)	(1987)
MIN	8.65	13.1	17.2	16.2	14.6	34.5	37.1	24.4	5.95	1.98	0.29	0.34
(WY)	(1944)	(2002)	(2002)	(2002)	(2002)	(2002)	(1981)	(2002)	(2002)	(2002)	(2002)	(2002)

02031000 MECHUMS RIVER NEAR WHITE HALL, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1943 - 1951, 1979 - 2003	
ANNUAL TOTAL	9,208.72		59,516.92			
ANNUAL MEAN	25.2		163		107	
HIGHEST ANNUAL MEAN					178	1996
LOWEST ANNUAL MEAN					15.0	2002
HIGHEST DAILY MEAN	300	Dec 14	4,630	Sep 19	10,600	Oct 15, 1942
LOWEST DAILY MEAN	0.00	aAug 24	e0.10	Oct 10	0.00	aAug 24, 2002
ANNUAL SEVEN-DAY MINIMUM	0.00	bSep 4	e0.24	Oct 4	0.00	bSep 4, 2002
MAXIMUM PEAK FLOW			9,620	Sep 19	20,000	Oct 15, 1942
MAXIMUM PEAK STAGE			19.43	Sep 19	c30.30	Oct 15, 1942
INSTANTANEOUS LOW FLOW			(d)	(f)	0.00	gAug 18, 2002
ANNUAL RUNOFF (CFSM)	0.26		1.71		1.13	
ANNUAL RUNOFF (INCHES)	3.59		23.21		15.31	
10 PERCENT EXCEEDS	62		308		196	
50 PERCENT EXCEEDS	15		100		66	
90 PERCENT EXCEEDS	0.09		25		18	

a Also Aug. 25-27 and Sept. 4-25, 2002.
b Many days in September 2002.
c From floodmarks, datum then in use.
d Not determined.
e Estimated.
f Probably occurred Oct. 10, 2002.
g Also no flow part or all of each day Aug. 23-28 and Sept. 3-26, 2002.



02032640 NORTH FORK RIVANNA RIVER NEAR EARLYSVILLE, VA

LOCATION.--Lat 38°09'48", long 78°25'29", NAD83, Albemarle County, Hydrologic Unit 02080204, on right bank at downstream side of bridge on State Highway 606, 0.4 mi upstream from mouth of Jacobs Run, 1.9 mi downstream from mouth of Marsh Run, and 2.1 mi southeast of Advance Mills.

DRAINAGE AREA.--108 mi^2.

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

GAGE.--Water-stage recorder. Elevation of gage is 365 ft NGVD of 1929, from topographic map.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Oct. 3-10, 17, 18, Nov. 8-10, 27, Jan. 3-15, Mar. 5-15, and Mar. 26 to Apr. 1, and periods with ice effect, Dec. 5-8, Jan. 17-19, 22-29, and Feb. 16-19, which are fair. Maximum discharge, 30,100 ft^3/s, from rating curve extended above 2,150 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in April 1992 reached a stage of 19.92 ft, from floodmark, by the Virginia Department of Highways.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 1	1945	3,920	9.48	Aug 11	0445	2,140	7.05
Feb 22	1630	7,230	13.16	Sep 19	0530	*8,340	*14.24
Mar 20	1730	3,900	9.46	Sep 23	0645	3,740	9.26
Jun 20	2100	2,580	7.71				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	63	45	976	60	260	e300	136	179	88	63	58
2	2.1	43	42	1,060	56	447	319	121	147	128	61	70
3	e2.0	34	40	e490	52	467	281	106	148	840	149	63
4	e2.0	29	37	e320	62	348	240	111	187	434	336	70
5	e1.9	27	e43	e235	63	e300	204	115	183	267	155	69
6	e1.9	81	e47	e195	54	e380	170	115	139	189	157	52
7	e1.8	66	e41	e170	61	e325	274	107	397	148	117	46
8	e1.8	e43	e44	e150	58	e285	290	100	388	133	113	44
9	e1.7	e35	42	e140	52	e245	589	97	299	126	134	41
10	e1.7	e31	46	e120	58	e220	537	172	212	122	246	37
11	3.1	155	178	e100	58	e195	931	171	171	108	899	33
12	10	468	219	e90	56	e180	566	136	317	88	355	32
13	10	357	298	e85	51	e165	389	116	479	77	364	79
14	7.3	184	626	e80	51	e150	300	98	425	120	194	121
15	5.5	126	355	e74	90	e145	246	155	329	82	142	121
16	64	150	232	77	e155	142	208	637	284	74	120	83
17	e69	465	168	e73	e110	133	176	353	388	65	112	63
18	e30	410	135	e70	e120	124	158	1,070	653	59	100	517
19	18	238	116	e62	e90	114	195	869	511	58	146	4,470
20	13	166	192	65	112	1,530	162	510	933	75	94	934
21	11	134	186	63	228	1,130	150	436	770	60	78	517
22	11	119	157	e58	2,940	581	155	364	441	59	72	358
23	8.8	93	134	e53	1,890	391	135	315	303	67	66	1,820
24	7.9	79	121	e50	996	300	121	310	225	57	59	774
25	7.6	70	169	e52	671	247	116	293	176	50	55	477
26	17	62	162	e56	460	e205	139	302	147	45	53	331
27	19	e60	127	e50	355	e175	124	262	153	43	49	257
28	17	55	111	e47	296	e144	109	261	137	46	47	279
29	31	51	100	e45	---	e200	102	240	108	53	49	183
30	147	49	90	48	---	e290	100	253	96	48	47	146
31	110	---	85	52	---	e380	---	207	---	44	53	---
TOTAL	636.5	3,943	4,388	5,206	9,305	10,198	7,786	8,538	9,325	3,853	4,685	12,145
MEAN	20.5	131	142	168	332	329	260	275	311	124	151	405
MAX	147	468	626	1,060	2,940	1,530	931	1,070	933	840	899	4,470
MIN	1.7	27	37	45	51	114	100	97	96	43	47	32
CFSM	0.19	1.22	1.31	1.55	3.07	3.04	2.40	2.55	2.87	1.15	1.40	3.74
IN.	0.22	1.36	1.51	1.79	3.20	3.51	2.68	2.94	3.21	1.33	1.61	4.18

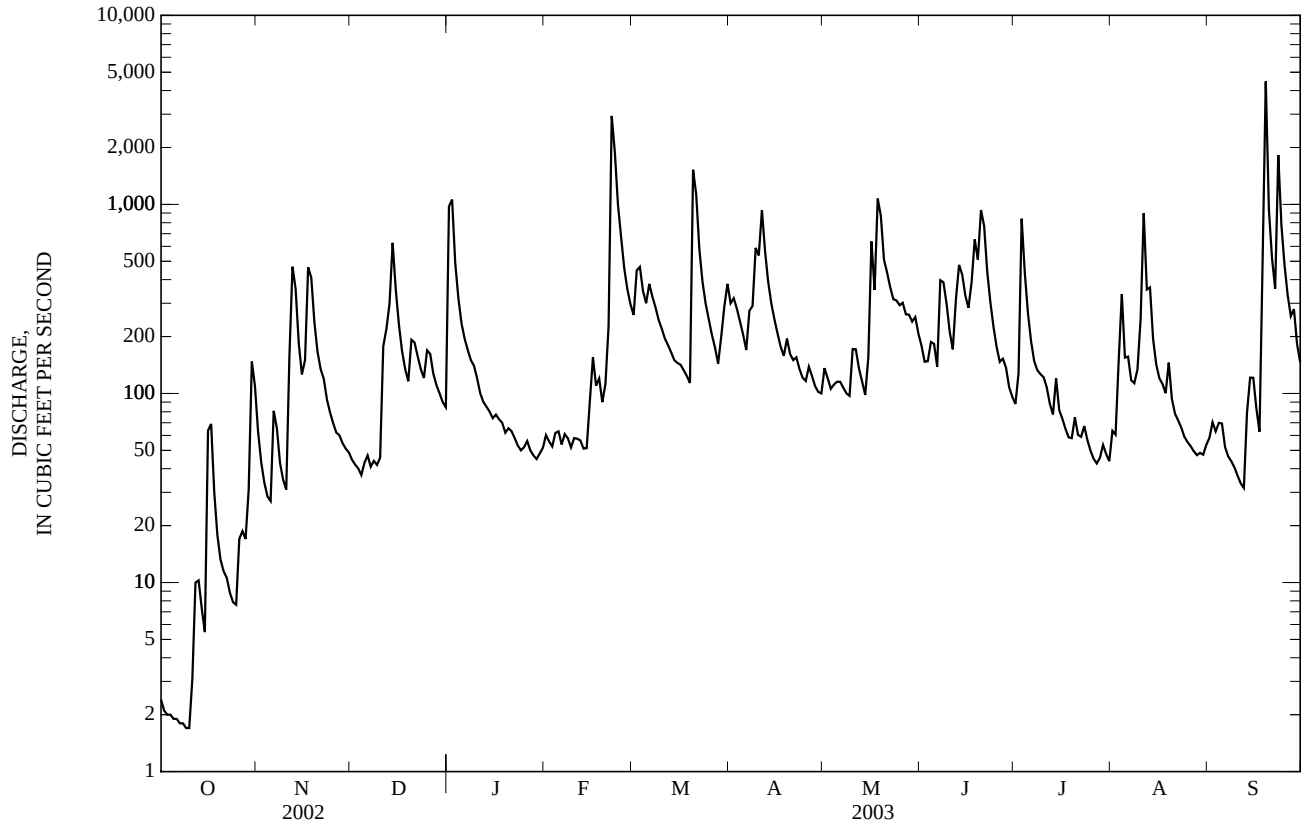
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 2003, BY WATER YEAR (WY)

MEAN	57.6	105	125	225	198	213	152	131	125	68.1	48.4	177
MAX	195	233	367	574	624	406	260	421	316	195	151	682
(WY)	(1996)	(1998)	(1997)	(1996)	(1998)	(1994)	(2003)	(1998)	(1995)	(1995)	(2003)	(1996)
MIN	12.8	16.7	27.7	28.2	26.8	74.3	60.1	47.4	11.4	9.62	1.63	1.40
(WY)	(2002)	(1999)	(1999)	(2002)	(2002)	(2002)	(1995)	(1999)	(1999)	(1999)	(2002)	(2002)

02032640 NORTH FORK RIVANNA RIVER NEAR EARLYSVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1994 - 2003	
ANNUAL TOTAL	19,808.56		80,008.5			
ANNUAL MEAN	54.3		219		135	
HIGHEST ANNUAL MEAN					246	1996
LOWEST ANNUAL MEAN					34.9	2002
HIGHEST DAILY MEAN	696	Apr 22	4,470	Sep 19	e11,000	Sep 6, 1996
LOWEST DAILY MEAN	0.28	Sep 14	e1.7	aOct 9	0.28	Sep 14, 2002
ANNUAL SEVEN-DAY MINIMUM	0.40	Sep 9	e1.8	Oct 4	0.40	Sep 9, 2002
MAXIMUM PEAK FLOW			8,340	Sep 19	30,100	Sep 6, 1996
MAXIMUM PEAK STAGE			14.24	Sep 19	b23.56	Sep 6, 1996
INSTANTANEOUS LOW FLOW			(c)	(d)	0.25	Sep 14, 2002
ANNUAL RUNOFF (CFSM)	0.50		2.03		1.25	
ANNUAL RUNOFF (INCHES)	6.81		27.52		16.93	
10 PERCENT EXCEEDS	131		462		278	
50 PERCENT EXCEEDS	27		122		63	
90 PERCENT EXCEEDS	1.2		39		12	

a Also Oct. 10, 2002.
b From floodmarks.
c Not determined.
d Probably occurred Oct. 7, 2002.
e Estimated.



02034000 RIVANNA RIVER AT PALMYRA, VA

LOCATION.--Lat 37°51'29", long 78°15'57", NAD83, Fluvanna County, Hydrologic Unit 02080204, on left bank 10 ft upstream from bridge on U.S. Highway 15 at Palmyra, 0.5 mi upstream from Cunningham Creek, and 15 mi upstream from mouth.

DRAINAGE AREA.--664 mi^2.

PERIOD OF RECORD.--October 1933 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 802: 1936(M). WSP 852: 1937. WSP 892: 1934-35. WSP 1303: 1945-46(M). WSP 1503: 1956. WSP 2104: Drainage area. WDR VA-72-1: 1969(M).

GAGE.--Water-stage recorder. Datum of gage is 210.39 ft NGVD of 1929. Prior to Oct. 24, 1942, water-stage recorder at site 200 ft downstream at same datum. Oct. 24, 1942, to Dec. 18, 1947, nonrecording gage 10 ft downstream at same datum.

REMARKS.--Records good except those for periods with ice effect, Dec. 4 and Jan. 20-29, and period of no gage-height record, Apr. 16, 17, which are fair. Some diurnal fluctuation at times mostly at low and medium flow caused by South Fork Rivanna River Reservoir, diversions for water supply and discharge from wastewater treatment plants upstream at Charlottesville. National Weather Service gage-height telemeter at station. Maximum discharge, 86,000 ft^3/s, from rating curve extended above 76,000 ft^3/s on basis of contracted-opening measurement of peak flow and velocity-area study. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan 2	0500	8,200	13.21	Jun 21	0130	7,200	11.98
Feb 23	0530	24,000	23.78	Jul 3	2000	18,000	21.32
Mar 21	0400	16,600	20.68	Sep 19	2330	*30,000	*25.91
May 19	0100	7,250	12.04	Sep 23	1815	10,600	16.19

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	385	234	1,460	353	1,380	1,720	1,040	1,460	761	707	437
2	26	230	212	5,460	340	1,990	1,510	904	1,210	837	617	610
3	31	191	199	2,180	313	2,610	1,370	763	1,070	11,600	582	1,110
4	32	162	e180	1,550	282	1,860	1,250	672	1,200	6,490	3,040	740
5	26	151	189	1,160	428	1,580	1,150	665	1,310	2,100	1,270	764
6	24	271	224	971	344	1,770	1,040	723	1,140	1,340	986	576
7	20	408	233	871	299	1,840	1,260	700	2,440	1,260	746	460
8	18	273	205	805	362	1,570	1,750	677	3,500	945	820	412
9	19	215	223	736	325	1,370	2,700	668	2,840	863	766	392
10	18	186	211	637	324	1,200	3,170	1,370	1,860	858	1,440	366
11	26	264	413	549	363	1,130	4,470	1,550	1,380	784	2,420	336
12	153	1,180	1,100	500	375	1,060	3,130	1,190	1,350	678	1,720	319
13	83	2,010	993	470	361	967	2,090	961	1,470	596	1,440	634
14	53	925	2,250	450	334	912	1,630	837	1,630	829	1,040	765
15	48	652	1,630	442	507	852	1,400	775	2,300	648	829	700
16	99	615	1,130	390	789	820	e1,320	2,440	1,580	550	652	643
17	303	2,070	876	379	644	794	e1,150	1,890	1,470	499	1,130	541
18	179	2,160	724	366	682	762	1,050	3,420	2,180	451	929	976
19	105	1,180	602	331	628	715	1,240	5,540	2,090	430	748	23,200
20	76	852	786	e350	719	5,650	1,140	2,850	2,990	462	660	15,600
21	64	681	1,030	e335	1,040	11,200	1,030	2,210	5,150	482	564	2,410
22	62	586	820	e310	8,410	3,150	990	2,340	2,410	467	492	1,590
23	55	495	718	e280	19,400	1,970	936	1,960	1,740	510	429	6,770
24	47	416	630	e255	6,260	1,540	859	2,050	1,400	492	431	4,140
25	45	319	999	e270	3,570	1,330	818	1,740	1,200	408	394	2,000
26	113	320	1,120	e290	2,350	1,210	860	3,900	1,060	357	372	1,420
27	147	332	830	e275	1,740	1,210	871	2,290	1,170	329	356	1,130
28	96	241	680	e255	1,500	1,060	792	2,080	1,220	314	354	1,350
29	100	246	601	e260	---	987	741	1,660	897	464	678	1,050
30	371	238	542	277	---	1,660	716	1,890	819	488	487	828
31	584	---	496	311	---	2,360	---	1,510	---	406	550	---
TOTAL	3,059	18,254	21,080	23,175	53,042	58,509	44,153	53,265	53,536	37,698	27,649	72,269
MEAN	98.7	608	680	748	1,894	1,887	1,472	1,718	1,785	1,216	892	2,409
MAX	584	2,160	2,250	5,460	19,400	11,200	4,470	5,540	5,150	11,600	3,040	23,200
MIN	18	151	180	255	282	715	716	665	819	314	354	319
CFSM	0.15	0.92	1.02	1.13	2.85	2.84	2.22	2.59	2.69	1.83	1.34	3.63
IN.	0.17	1.02	1.18	1.30	2.97	3.28	2.47	2.98	3.00	2.11	1.55	4.05

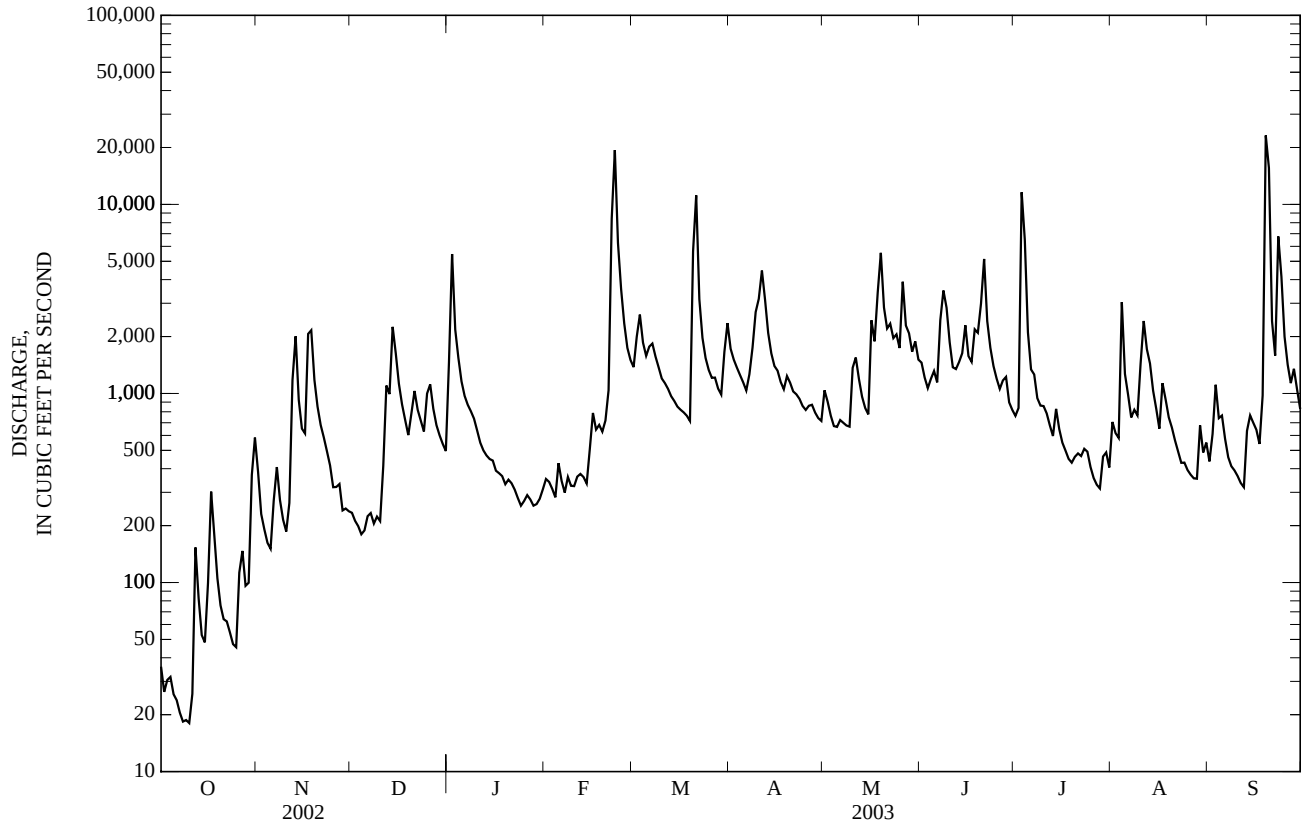
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 2003, BY WATER YEAR (WY)

MEAN	539	571	742	919	1,034	1,190	1,037	761	595	396	455	490
MAX	3,535	3,521	2,667	2,620	3,468	3,415	3,662	2,472	4,473	1,524	3,404	2,915
(WY)	(1943)	(1986)	(1949)	(1936)	(1998)	(1993)	(1937)	(1989)	(1972)	(1975)	(1969)	(1979)
MIN	46.4	64.7	88.9	104	103	225	214	204	95.9	39.0	20.2	19.1
(WY)	(1942)	(2002)	(1966)	(1966)	(2002)	(1981)	(1981)	(2002)	(1999)	(1966)	(1966)	(1954)

02034000 RIVANNA RIVER AT PALMYRA, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1935 - 2003	
ANNUAL TOTAL	81,560		465,689			
ANNUAL MEAN	223		1,276		726	
HIGHEST ANNUAL MEAN					1,401	1973
LOWEST ANNUAL MEAN					129	2002
HIGHEST DAILY MEAN	2,250	Dec 14	23,200	Sep 19	68,000	Jun 22, 1972
LOWEST DAILY MEAN	18	aSep 12	18	bOct 8	5.2	cSep 9, 1966
ANNUAL SEVEN-DAY MINIMUM	18	Sep 10	22	Oct 5	5.6	Sep 7, 1966
MAXIMUM PEAK FLOW			30,000	Sep 19	86,000	Aug 20, 1969
MAXIMUM PEAK STAGE			25.91	Sep 19	39.85	Aug 20, 1969
INSTANTANEOUS LOW FLOW			17	dOct 7	5.2	cSep 9, 1966
ANNUAL RUNOFF (CFSM)	0.34		1.92		1.09	
ANNUAL RUNOFF (INCHES)	4.57		26.09		14.85	
10 PERCENT EXCEEDS	568		2,320		1,400	
50 PERCENT EXCEEDS	110		784		411	
90 PERCENT EXCEEDS	24		209		104	

a Also Sept. 13-15 and Oct. 8, 10, 2002.
b Also Oct. 10, 2002.
c Also Sept. 10, 11, 1966.
d Also Oct. 8, 9, 2002.
e Estimated.



02035000 JAMES RIVER AT CARTERSVILLE, VA

LOCATION.--Lat 37°40'16", long 78°05'09", NAD83, Goochland County, Hydrologic Unit 02080205, on left bank 200 ft downstream from bridge on State Highway 45 at Cartersville, 1.8 mi downstream from Willis River, and at mile 156.4.

DRAINAGE AREA.--6,257 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1898 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 972: 1936(M). WSP 1203: 1901-2(M), 1923-25(M), 1928(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 163.90 ft NGVD of 1929. Prior to June 4, 1927, nonrecording gage at same site and datum.

REMARKS.--Records fair. Moderate diurnal fluctuation caused by powerplants upstream from station. Since 1982, low flows during summer months are augmented by releases from Lake Moomaw, station 02011795. National Weather Service gage-height telemeter at station. Maximum discharge, 362,000 ft^3/s, from rating curve extended above 160,000 ft^3/s on basis of slope-conveyance study.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 40,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 24	0615	*104,000	*24.47	Jul 4	0145	53,900	16.90
Mar 21	1015	59,200	17.95	Sep 20	0500	89,700	22.87
Apr 11	1830	47,100	15.49	Sep 24	0445	47,000	15.48
May 20	0645	63,200	18.72				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,630	9,850	3,470	6,840	2,970	20,400	13,400	7,020	16,600	6,520	3,970	4,360
2	1,970	7,090	3,250	18,800	3,050	20,400	11,700	7,570	15,000	6,380	5,090	4,050
3	1,560	4,720	2,980	17,300	2,920	22,400	11,100	6,940	13,300	28,200	4,260	4,270
4	1,240	3,690	2,810	19,000	2,810	22,100	12,200	6,750	12,300	45,800	6,780	4,680
5	1,000	2,980	2,890	e18,500	3,500	20,100	12,000	7,380	14,200	28,700	7,640	5,920
6	1,030	3,150	2,770	e16,800	3,470	18,300	10,700	10,600	24,400	17,600	7,640	6,160
7	807	3,970	2,860	12,900	3,290	19,400	11,000	13,500	22,100	15,400	7,320	6,330
8	769	5,120	2,590	10,200	3,370	21,500	15,600	14,100	33,900	12,200	6,480	5,280
9	724	6,600	2,390	8,660	3,500	19,600	21,300	12,300	28,900	9,760	6,100	4,270
10	723	5,040	2,360	7,670	2,880	15,900	39,600	14,000	28,900	8,590	9,520	3,720
11	744	5,120	2,640	7,000	3,120	12,400	44,900	13,100	24,200	8,310	11,700	3,460
12	826	12,200	5,650	6,200	3,330	11,300	45,000	14,100	20,800	7,730	15,100	3,150
13	1,110	20,000	6,870	5,670	3,470	10,200	37,500	12,700	19,300	7,260	11,000	3,450
14	1,190	18,300	14,900	5,190	3,290	9,440	28,000	10,400	21,600	8,020	9,840	4,470
15	1,010	14,500	19,100	4,840	3,470	8,350	22,100	9,840	23,300	7,450	9,220	4,020
16	971	9,690	17,900	4,500	5,860	7,740	17,500	10,600	20,100	7,500	7,420	3,830
17	1,280	12,100	13,700	4,350	6,500	8,090	13,700	13,000	20,100	8,600	7,220	3,500
18	1,790	17,700	10,700	4,030	10,300	7,730	12,000	15,600	36,400	7,370	7,540	3,900
19	1,990	16,400	8,600	3,710	8,910	7,310	11,300	51,100	30,300	6,390	6,520	53,700
20	2,770	12,800	7,760	3,650	8,070	17,600	10,800	58,800	34,000	5,370	5,970	81,800
21	1,870	9,400	10,200	3,380	10,500	54,600	9,710	35,700	e27,900	5,120	5,320	40,300
22	1,750	7,490	19,500	3,430	26,300	37,300	9,020	29,000	26,200	4,750	4,580	20,500
23	1,680	6,420	17,000	3,420	86,500	27,100	8,460	25,700	22,400	4,810	4,200	26,700
24	1,470	6,300	13,500	3,130	101,000	20,400	8,490	24,300	e18,400	5,030	4,060	40,300
25	1,290	6,550	14,500	2,780	71,800	16,100	8,110	23,700	e14,600	4,530	3,530	27,700
26	1,560	5,740	18,100	2,870	37,200	12,700	7,820	30,100	e11,700	3,810	3,420	20,100
27	1,920	5,030	16,000	2,610	28,800	11,200	7,800	26,600	e10,200	3,800	3,220	15,900
28	2,210	4,580	11,900	2,430	24,300	9,800	7,360	25,500	8,830	3,220	3,180	12,300
29	2,300	4,150	9,010	2,790	---	8,760	6,860	20,500	7,680	3,410	3,580	15,600
30	4,560	3,510	7,660	2,650	---	9,570	6,430	19,800	7,010	3,820	5,460	14,200
31	7,080	---	6,770	2,740	---	15,100	---	18,400	---	3,930	4,190	---
TOTAL	53,824	250,190	280,330	218,040	474,480	522,890	481,460	588,700	614,620	299,380	201,070	447,920
MEAN	1,736	8,340	9,043	7,034	16,950	16,870	16,050	18,990	20,490	9,657	6,486	14,930
MAX	7,080	20,000	19,500	19,000	101,000	54,600	45,000	58,800	36,400	45,800	15,100	81,800
MIN	723	2,980	2,360	2,430	2,810	7,310	6,430	6,750	7,010	3,220	3,180	3,150
CFSM	0.28	1.33	1.45	1.12	2.71	2.70	2.56	3.04	3.27	1.54	1.04	2.39
IN.	0.32	1.49	1.67	1.30	2.82	3.11	2.86	3.50	3.65	1.78	1.20	2.66

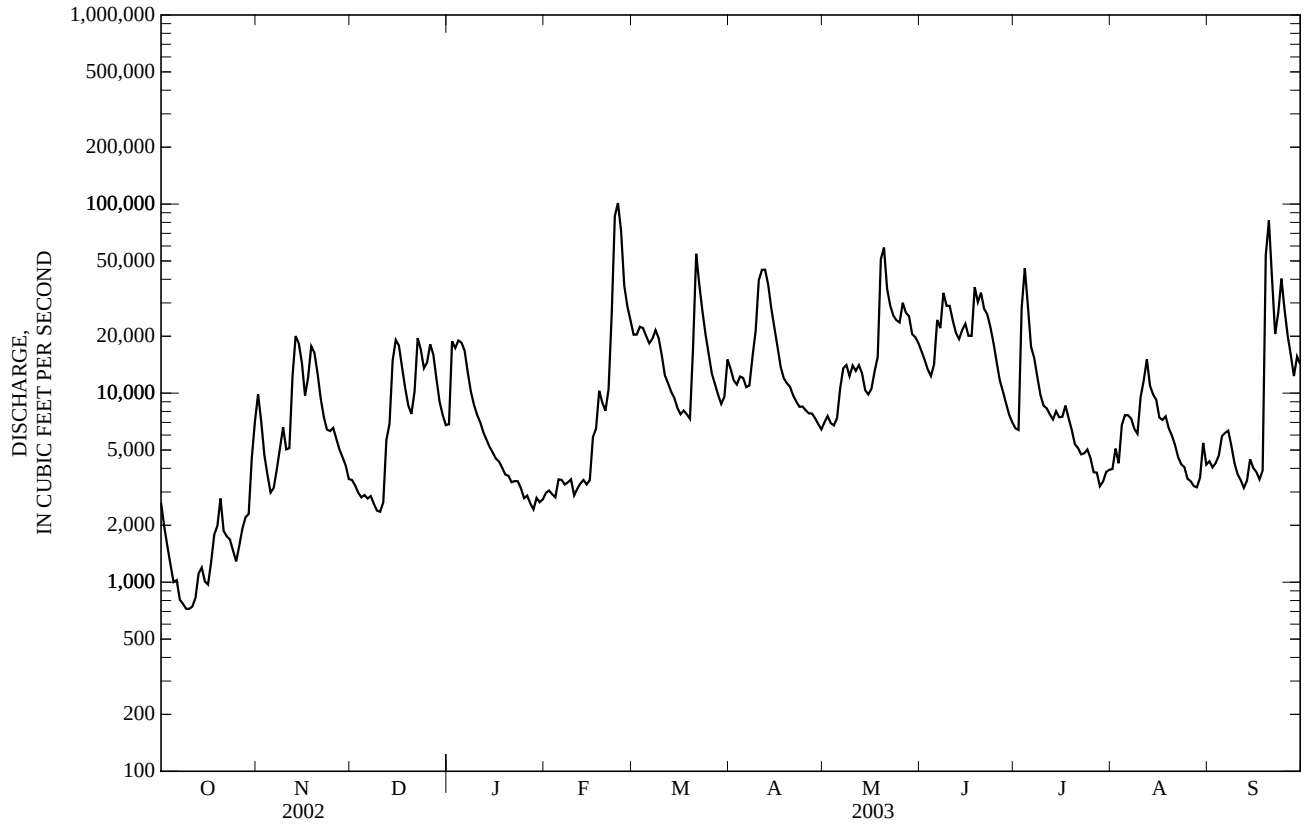
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1899 - 2003, BY WATER YEAR (WY)

MEAN	4,160	4,718	6,908	9,416	10,780	13,000	11,030	8,005	6,101	3,796	3,973	3,641
MAX	20,830	28,210	25,990	26,480	33,750	31,810	33,500	23,530	30,330	15,070	20,490	18,140
(WY)	(1907)	(1986)	(1949)	(1936)	(1998)	(1993)	(1987)	(1989)	(1972)	(1919)	(1969)	(1996)
MIN	528	924	1,054	1,353	1,528	2,646	3,286	2,710	1,162	605	652	561
(WY)	(1931)	(1931)	(1966)	(1956)	(2002)	(1981)	(1995)	(1930)	(2002)	(1966)	(1930)	(1930)

02035000 JAMES RIVER AT CARTERSVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1899 - 2003	
ANNUAL TOTAL	1,253,980		4,432,904			
ANNUAL MEAN	3,436		12,140		7,108	
HIGHEST ANNUAL MEAN					12,410	1973
LOWEST ANNUAL MEAN					2,126	2002
HIGHEST DAILY MEAN	23,400	Apr 24	101,000	Feb 24	280,000	Jun 22, 1972
LOWEST DAILY MEAN	447	Sep 15	a723	Oct 10	330	Sep 14, 1966
ANNUAL SEVEN-DAY MINIMUM	497	Sep 11	803	Oct 6	386	Sep 8, 1966
MAXIMUM PEAK FLOW			104,000	Feb 24	362,000	Jun 22, 1972
MAXIMUM PEAK STAGE			24.47	Feb 24	b37.87	Jun 22, 1972
INSTANTANEOUS LOW FLOW			a695	cOct 8	316	Sep 13, 1966
ANNUAL RUNOFF (CFSM)	0.55		1.94		1.14	
ANNUAL RUNOFF (INCHES)	7.46		26.36		15.43	
10 PERCENT EXCEEDS	8,950		26,200		15,000	
50 PERCENT EXCEEDS	1,720		7,800		4,400	
90 PERCENT EXCEEDS	678		2,760		1,420	

a May have been affected by regulation.
b From floodmarks.
c Also Oct. 10, 2002.
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, October 1991 to September 1994.
WATER TEMPERATURE: April 1968 to January 1976, October 1980 to May 1981, October 1991 to September 1994.
SUSPENDED-SEDIMENT DISCHARGE: October 1980 to May 1981.

COOPERATION.--Water samples were collected by the U.S. Geological Survey and analyzed by either the U.S. Geological Survey (Agency Code 80020) or by the Virginia Division of Consolidated Laboratory Services (VDCLS, Agency Code 85116), using analytical methods approved by the U.S. Geological Survey. Analyses performed by VDCLS are reported to U.S. Geological Survey rounding specifications. Results of chemical analyses provided by VDCLS were quality-assured and approved by the U.S. Geological Survey.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Sample type	Agency analyzing sample, code (00028)	Gage height, feet (00065)	Instantaneous discharge, cfs (00061)	Turbidity, NTU (00076)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
OCT												
01...	0930	Environmental	85116	2.85	2,740	1.0	759	7.3	85	7.8	507	--
08...	0935	Blank	85116	--	--	0.30	--	--	--	--	--	--
08...	0940	Environmental	85116	1.21	777	1.0	761	7.3	86	8.0	644	14.0
21...	0830	Environmental	85116	2.26	1,930	1.2	756	8.4	86	8.1	300	14.3
30...	1010	Blank	85116	--	--	0.20	--	--	--	--	--	--
30...	1015	Environmental	85116	3.64	3,960	12	751	8.2	77	7.5	317	7.0
NOV												
01...	1245	Environmental	85116	6.66	10,900	44	755	6.6	61	7.2	221	16.0
05...	0900	Environmental	85116	2.85	3,040	2.9	762	12.2	111	8.1	260	8.5
13...	1045	Environmental	85116	9.73	21,000	130	754	9.2	88	7.0	104	14.0
14...	1115	Environmental	85116	8.97	18,400	85	759	12.2	113	7.3	123	16.0
14...	1130	Replicate	85116	8.97	18,400	94	--	--	--	--	--	--
20...	0945	Environmental	85116	7.15	13,100	22	762	10.4	90	6.6	151	9.0
DEC												
02...	0915	Environmental	85116	2.48	3,380	5.6	758	11.9	93	7.7	171	5.0
16...	1015	Environmental	85116	8.51	18,200	45	750	13.5	106	7.3	193	11.0
30...	1015	Environmental	85116	4.78	7,750	6.5	763	12.8	98	7.5	132	7.5
JAN												
06...	1400	Environmental	85116	7.49	15,200	19	753	13.0	104	7.4	128	8.0
06...	1405	Replicate	80020	7.49	15,200	--	--	--	--	--	--	--
13...	1400	Environmental	85116	3.70	5,650	7.0	751	13.7	104	7.8	144	12.0
13...	1415	Replicate	85116	3.70	5,650	5.2	--	--	--	--	--	--
21...	0815	Environmental	85116	2.38	3,330	2.4	758	10.9	79	6.4	192	-1.0
FEB												
04...	1000	Environmental	85116	2.02	2,700	1.9	741	12.6	100	8.0	227	13.0
19...	1030	Environmental	85116	5.08	8,980	15	762	14.6	105	8.0	265	5.0
23...	1415	Environmental	85116	23.17	92,100	220	743	12.3	95	7.2	100	7.5
24...	1345	Environmental	85116	24.32	102,000	270	751	12.0	94	7.6	101	16.5
27...	1025	Blank	85116	--	--	2.0	--	--	--	--	--	--
27...	1030	Environmental	85116	11.28	28,900	40	757	12.0	92	7.7	114	-1.5
MAR												
04...	0945	Environmental	85116	9.45	22,200	23	757	13.7	110	7.8	134	0.5
12...	1030	Environmental	85116	5.90	11,300	8.3	755	12.1	101	7.8	125	13.0
21...	1400	Environmental	85116	17.74	58,100	180	741	10.9	97	7.0	72	20.0
APR												
10...	1030	Environmental	85116	13.94	40,000	75	751	10.2	91	7.6	119	7.5
10...	1045	Replicate	85116	13.94	40,000	65	--	--	--	--	--	--
24...	1015	Environmental	85116	4.82	8,590	5.8	754	9.4	95	8.1	167	16.5
MAY												
27...	1345	Environmental	85116	9.88	23,700	70	752	9.1	95	7.4	104	17.0
JUN												
10...	1100	Environmental	85116	11.01	27,900	59	755	8.8	96	7.6	120	28.5
19...	1015	Environmental	85116	11.52	29,900	130	747	9.1	99	7.6	114	24.0
19...	1020	Replicate	80020	11.52	29,900	--	--	--	--	--	--	--
JUL												
15...	1030	Environmental	85116	4.26	7,440	5.3	756	8.0	100	8.3	153	26.0
AUG												
26...	1015	Environmental	85116	2.14	3,350	4.4	758	7.3	92	8.2	180	32.0
SEP												
19...	1200	Environmental	85116	18.36	61,300	300	747	7.4	82	7.1	85	31.5
25...	1230	Environmental	85116	10.87	27,300	240	748	--	--	6.7	133	28.0

02035000 JAMES RIVER AT CARTERSVILLE, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Temperature, water, deg C (00010)	Silica, water, fltrd, mg/L (00955)	Residue fixed non-filterable, mg/L (00540)	Residue total at 105 deg. C, suspended, mg/L (00530)	Residue volatile, suspended, mg/L (00535)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)
OCT													
01...	22.7	1.30	3	3	3	--	--	0.004	0.07	0.065	0.002	0.072	0.074
08...	--	<0.100	6	8	<3	--	--	<0.004	<0.004	<0.004	<0.002	0.004	0.015
08...	23.0	0.500	3	3	3	--	--	0.004	0.01	0.006	0.002	0.098	0.102
21...	15.9	3.20	3	3	3	--	--	0.004	0.11	0.108	0.002	0.085	0.108
30...	--	<0.100	<3	<3	<3	--	--	<0.004	<0.004	<0.004	<0.002	0.003	0.005
30...	11.5	6.80	11	13	<3	--	--	0.006	0.16	0.164	<0.002	0.072	0.083
NOV													
01...	11.1	7.00	47	61	14	--	--	0.005	0.35	0.351	<0.002	0.055	0.068
05...	11.2	6.80	<3	<3	<3	--	--	<0.004	0.30	0.300	<0.002	0.065	0.089
13...	12.9	8.00	117	139	22	--	--	<0.004	0.32	0.319	<0.002	0.023	0.037
14...	11.7	7.70	81	98	17	--	--	0.014	0.38	0.378	0.002	0.025	0.039
14...	--	7.80	77	93	16	--	--	0.014	0.38	0.379	<0.002	0.025	0.039
20...	9.0	8.90	19	24	5	--	--	0.084	0.89	0.892	0.006	0.016	0.034
DEC													
02...	4.7	8.20	<3	<3	<3	--	--	<0.004	0.45	0.445	<0.002	0.035	0.060
16...	4.7	6.50	41	50	9	--	--	0.012	0.33	0.325	<0.002	0.025	0.042
30...	4.0	7.90	6	8	<3	--	--	0.014	0.39	0.385	<0.002	0.022	0.031
JAN													
06...	5.6	7.80	20	24	4	--	--	0.027	0.38	0.381	0.003	0.030	0.031
06...	--	7.4	--	21	<10	0.14	0.28	0.028	--	0.369	--	0.026	E.03
13...	3.4	7.60	3	4	3	--	--	0.006	0.41	0.409	0.002	0.020	0.022
13...	--	7.20	3	4	<3	--	--	0.006	0.41	0.408	<0.002	0.020	0.023
21...	2.0	6.60	<3	3	<3	--	--	0.008	0.36	0.372	0.008	0.034	0.042
FEB													
04...	4.5	4.80	<3	<3	<3	--	--	0.004	0.29	0.294	0.003	0.031	0.041
19...	1.8	3.70	19	24	5	--	--	<0.004	0.20	0.203	0.002	0.038	0.047
23...	3.6	4.90	427	487	60	--	--	0.097	0.34	0.347	0.002	0.010	0.031
24...	4.5	2.60	431	499	68	--	--	0.172	0.40	0.403	0.004	0.014	0.026
27...	--	<0.100	7	9	<3	--	--	0.005	<0.004	<0.004	<0.002	<0.002	0.010
27...	3.9	7.10	32	53	21	--	--	0.032	0.60	0.604	0.003	0.015	0.028
MAR													
04...	5.6	7.70	27	31	4	--	--	0.015	0.57	0.576	0.002	0.015	0.023
12...	7.2	7.20	15	16	<3	--	--	0.007	0.44	0.442	<0.002	0.022	0.027
21...	9.0	5.90	170	184	14	--	--	0.054	0.28	0.280	0.002	0.019	0.036
APR													
10...	9.7	6.20	103	116	13	--	--	0.027	0.20	0.198	<0.002	0.024	0.030
10...	--	6.50	98	108	10	--	--	0.028	0.20	0.198	<0.002	0.023	0.031
24...	15.4	6.70	8	9	<3	--	--	<0.004	0.31	0.310	<0.002	0.024	0.026
MAY													
27...	17.0	8.50	83	96	13	--	--	0.014	0.25	0.246	<0.002	0.020	0.026
JUN													
10...	18.9	8.40	88	101	13	--	--	0.013	0.27	0.268	<0.002	0.023	0.032
19...	18.5	--	121	138	17	--	--	--	--	--	--	--	0.036
19...	--	8.2	110	132	22	0.17	0.81	<0.015	--	0.226	--	0.022	E.02n
JUL													
15...	26.2	8.00	12	16	4	--	--	<0.004	0.08	0.079	<0.002	0.016	0.022
AUG													
26...	27.2	8.30	3	4	<3	--	--	0.008	0.12	0.117	<0.002	0.032	0.035
SEP													
19...	19.8	5.80	377	434	57	--	--	0.029	0.27	0.268	<0.002	0.021	0.041
25...	21.0	8.40	123	138	15	--	--	0.013	0.35	0.350	<0.002	0.034	0.043

02035000 JAMES RIVER AT CARTERSVILLE, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Phosphorus, suspnd sedimnt total, mg/L (00667)	Total nitrogen, suspnd sedimnt total, mg/L (00601)	Total carbon, suspnd sedimnt total, mg/L (00694)	Inorganic carbon, suspnd sedimnt total, mg/L (00688)	Organic carbon, water, fltrd, mg/L (00681)	Pheophytin a, phytoplankton, ug/L (62360)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)
OCT											
01...	--	0.32	0.007	--	0.3	--	--	--	--	40	1
08...	--	0.07	0.003	0.01	0.1	--	--	--	--	--	--
08...	--	0.28	0.006	0.03	0.2	--	--	--	--	--	M
21...	--	0.32	0.006	0.04	0.2	--	--	--	--	--	1
30...	--	0.03	0.002	0.01	M	--	--	--	--	--	--
30...	--	0.45	0.018	0.08	0.8	--	--	--	--	96	13
NOV											
01...	--	0.60	0.135	0.57	4.8	--	--	--	--	90	61
05...	--	0.50	0.008	0.04	0.3	--	--	--	--	--	1
13...	--	0.68	0.173	0.74	7.2	--	--	--	--	87	155
14...	--	0.70	0.170	0.60	5.5	--	--	--	--	88	108
14...	--	0.69	0.162	0.51	4.6	--	--	--	--	97	109
20...	--	0.59	--	0.17	1.6	--	--	--	--	90	24
DEC											
02...	--	0.60	0.009	0.02	0.2	--	--	--	--	--	3
16...	--	0.51	0.086	0.31	2.9	--	--	--	--	39	117
30...	--	0.57	0.018	0.07	0.7	--	--	--	--	--	8
JAN											
06...	--	0.52	0.037	0.15	1.5	--	--	--	--	64	39
06...	0.07	0.50	--	--	--	--	--	--	--	--	--
13...	--	0.52	0.013	0.05	0.4	--	--	--	--	--	4
13...	--	0.52	0.013	0.03	0.4	--	--	--	--	--	4
21...	--	0.49	0.015	0.04	0.4	--	--	--	--	--	3
FEB											
04...	--	0.43	0.015	0.05	0.4	--	--	--	--	--	3
19...	--	0.36	0.054	0.26	1.9	--	--	--	--	81	23
23...	--	0.65	0.653	1.9	19.7	--	--	--	--	67	745
24...	--	0.73	0.491	1.7	17.5	--	--	--	--	78	586
27...	--	0.04	0.001	0.03	0.2	--	--	--	--	--	--
27...	--	0.75	0.089	0.34	3.5	--	--	--	--	68	113
MAR											
04...	--	0.72	0.045	0.14	1.4	--	--	--	--	63	53
12...	--	0.52	0.027	0.10	0.9	--	--	--	--	--	21
21...	--	0.67	0.183	0.80	5.6	--	--	--	--	63	298
APR											
10...	--	0.44	0.089	0.32	4.0	--	--	--	--	60	149
10...	--	0.45	0.086	0.32	3.9	--	--	--	--	62	145
24...	--	0.41	0.020	0.09	0.7	--	--	<0.5	2.0	--	9
MAY											
27...	--	0.47	0.081	0.35	3.9	--	--	3.6	0.7	85	112
JUN											
10...	--	0.45	0.106	0.32	3.3	--	--	0.6	1.6	65	142
19...	--	0.44	0.114	--	4.9	--	--	1.9	2.1	--	270
19...	0.20	0.40	--	--	--	--	--	--	--	--	--
JUL											
15...	--	0.26	0.016	0.16	1.0	<0.02	2.9	4.8	9.5	--	17
AUG											
26...	--	0.27	0.011	0.04	0.4	<0.02	2.3	<0.5	<0.5	--	13
SEP											
19...	--	0.60	0.475	1.2	12.2	0.1	7.0	12.3	10.1	63	653
25...	--	0.67	0.142	0.50	5.3	0.1	4.6	2.3	1.0	68	196

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

Value qualifier codes used in this table:
n -- Below the NDV

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02036500 FINE CREEK AT FINE CREEK MILLS, VA

LOCATION.--Lat 37°35'53", long 77°49'11", NAD83, Powhatan County, Hydrologic Unit 02080205, on right bank 75 ft downstream from bridge on State Highway 711 at Fine Creek Mills, 0.8 mi upstream from mouth, and 6.7 mi northeast of Powhatan.

DRAINAGE AREA.--22.1 mi^2.

PERIOD OF RECORD.--July 1944 to current year.

REVISED RECORDS.--WSP 1203: 1948. WSP 1303: 1945(M). WSP 1383: 1954. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 156.59 ft NGVD of 1929. Prior to Oct. 28, 1953, nonrecording gage and crest-stage gage at site 75 ft upstream at same datum.

REMARKS.--Records good except those for period with ice effect, Jan. 17-29, and period of doubtful gage-height record, Sept. 18, 19, which are fair. Maximum discharge, 4,180 ft^3/s, from rating curve extended above 2,600 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 13	0900	267	3.08	May 27	0015	389	3.42
Feb 23	0600	621	3.90	Jul 14	1730	626	3.91
Mar 21	0300	711	4.08	Sep 19	1030	*1,160	*4.89
Apr 8	0745	210	2.97	Sep 23	2145	763	4.18
Apr 10	0045	227	3.02				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.40	34	5.4	21	18	54	36	27	41	6.7	21	11
2	0.40	22	4.8	49	19	75	28	26	30	25	23	7.7
3	0.40	13	4.7	37	15	73	24	19	24	95	32	6.9
4	0.40	9.6	4.4	29	16	42	21	14	24	141	166	28
5	0.39	9.4	5.6	21	16	37	19	13	29	57	123	62
6	0.33	21	9.0	18	13	50	17	18	29	27	55	28
7	0.30	20	9.8	17	15	47	80	17	29	22	32	14
8	0.24	15	9.5	15	19	32	163	17	40	16	30	9.6
9	0.24	11	9.4	13	15	26	158	19	34	13	52	8.4
10	0.33	8.0	8.4	12	15	21	171	22	26	12	36	7.5
11	1.8	26	17	11	16	18	153	23	22	14	27	6.6
12	1.7	132	34	9.6	17	17	101	19	27	12	21	13
13	1.6	214	41	9.2	15	16	50	13	32	9.8	17	52
14	0.97	85	87	9.2	13	18	34	10	30	306	15	40
15	0.54	36	72	9.2	22	15	30	8.8	24	226	12	23
16	11	33	37	8.4	39	14	25	14	20	74	11	16
17	8.1	107	23	e8.3	35	14	21	15	22	37	10	11
18	4.4	136	16	e7.8	30	14	19	67	27	23	8.8	e99
19	2.1	71	14	e7.2	26	14	44	138	33	16	8.2	e813
20	1.4	34	27	e8.0	34	203	40	58	35	13	7.7	286
21	1.4	23	58	e8.5	66	452	28	36	40	10	7.1	109
22	1.5	18	32	e7.5	230	132	24	81	29	13	6.3	58
23	1.2	13	21	e6.3	451	59	20	98	22	31	6.0	402
24	0.86	11	18	e5.3	177	35	17	91	17	35	5.0	380
25	0.72	9.3	68	e5.8	79	26	16	65	13	26	4.4	133
26	9.8	8.4	106	e6.6	43	22	21	227	11	18	4.1	71
27	9.1	7.7	48	e6.0	35	22	20	216	9.3	13	3.9	44
28	12	6.8	29	e6.2	46	19	16	136	7.5	9.3	3.7	32
29	20	6.3	22	e7.3	---	19	14	91	7.1	8.2	3.7	24
30	39	5.7	17	9.5	---	44	13	61	6.5	14	20	19
31	41	---	14	12	---	63	---	43	---	16	27	---
TOTAL	173.62	1,146.2	872.0	400.9	1,535	1,693	1,423	1,702.8	740.4	1,339.0	798.9	2,814.7
MEAN	5.60	38.2	28.1	12.9	54.8	54.6	47.4	54.9	24.7	43.2	25.8	93.8
MAX	41	214	106	49	451	452	171	227	41	306	166	813
MIN	0.24	5.7	4.4	5.3	13	14	13	8.8	6.5	6.7	3.7	6.6
CFSM	0.25	1.73	1.27	0.59	2.48	2.47	2.15	2.49	1.12	1.95	1.17	4.25
IN.	0.29	1.93	1.47	0.67	2.58	2.85	2.40	2.87	1.25	2.25	1.34	4.74

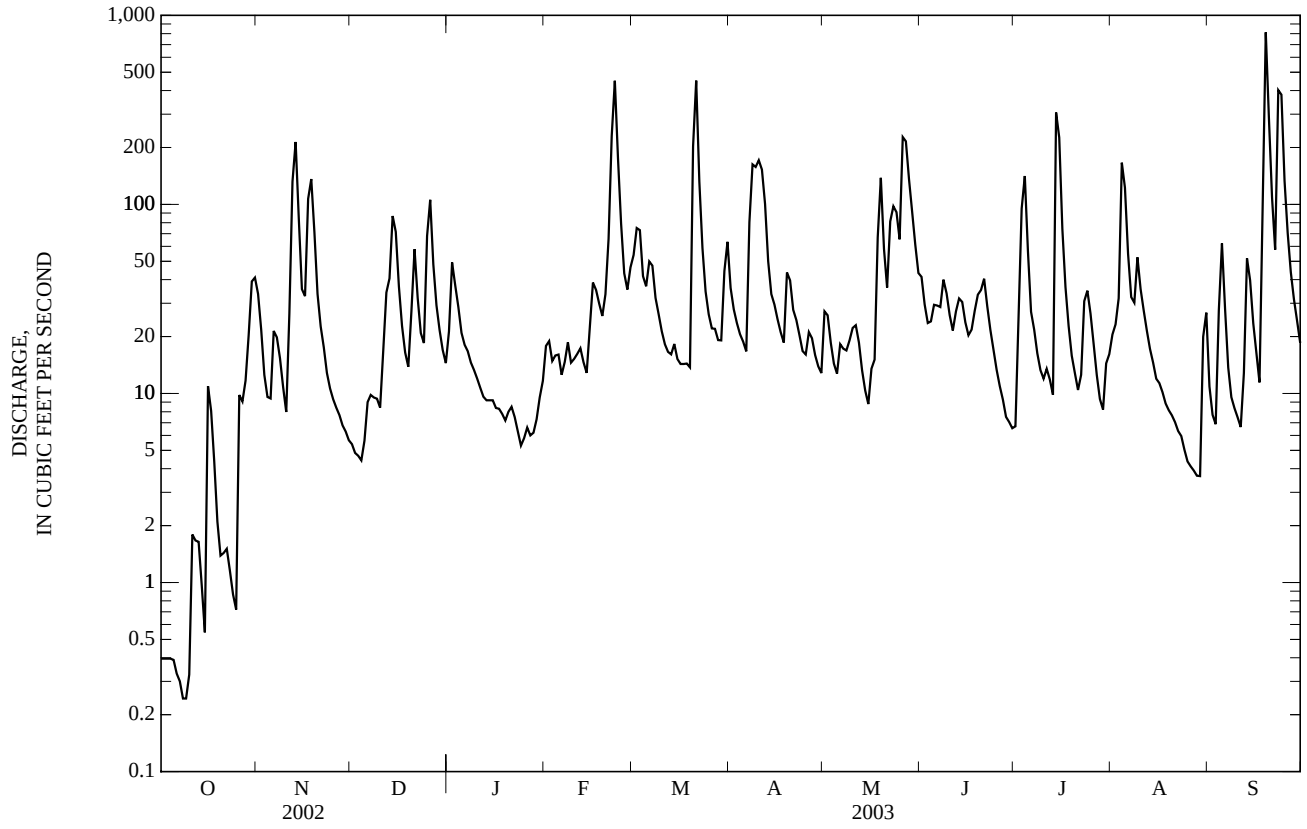
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2003, BY WATER YEAR (WY)

MEAN	13.8	17.1	21.1	26.6	31.1	35.0	29.4	20.5	11.7	8.42	11.1	10.0
MAX	119	104	53.9	92.5	92.7	99.1	84.1	54.9	60.8	43.2	83.3	93.8
(WY)	(1973)	(1986)	(1949)	(1978)	(1979)	(1994)	(1983)	(2003)	(1972)	(2003)	(1955)	(2003)
MIN	0.47	2.46	3.86	6.38	3.93	9.21	5.58	3.21	0.77	0.43	0.55	0.31
(WY)	(1969)	(2002)	(2002)	(1955)	(2002)	(2002)	(2002)	(1991)	(2002)	(2002)	(2002)	(1968)

02036500 FINE CREEK AT FINE CREEK MILLS, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1945 - 2003	
ANNUAL TOTAL	3,282.28		14,639.52			
ANNUAL MEAN	8.99		40.1		19.6	
HIGHEST ANNUAL MEAN					40.7	1973
LOWEST ANNUAL MEAN					3.67	2002
HIGHEST DAILY MEAN	214	Nov 13	813	Sep 19	1,880	Oct 21, 1961
LOWEST DAILY MEAN	0.01	aAug 7	0.24	bOct 8	0.01	aAug 7, 2002
ANNUAL SEVEN-DAY MINIMUM	0.02	Aug 5	0.32	Oct 4	0.02	Aug 5, 2002
MAXIMUM PEAK FLOW			1,160	Sep 19	4,180	Oct 6, 1972
MAXIMUM PEAK STAGE			4.89	Sep 19	9.02	Oct 6, 1972
INSTANTANEOUS LOW FLOW			0.24	cOct 7	0.00	dAug 10, 2002
ANNUAL RUNOFF (CFSM)	0.41		1.81		0.89	
ANNUAL RUNOFF (INCHES)	5.52		24.64		12.05	
10 PERCENT EXCEEDS	20		89		38	
50 PERCENT EXCEEDS	2.9		19		11	
90 PERCENT EXCEEDS	0.24		5.8		2.1	

a Also Aug. 8-11, 14, 2002.
b Also Oct. 9, 2002.
c Also Oct. 8-10, 2002.
d Also part or all of each day Aug. 11-15, 2002.
e Estimated.



02037000 JAMES RIVER AND KANAWHA CANAL NEAR RICHMOND, VA

LOCATION.--Lat 37°33'53", long 77°34'27", NAD83, Henrico County, Hydrologic Unit 02080205, on left bank 75 ft downstream from Canal bridge, 400 ft downstream from head gates, 1,200 ft north of north end of Bosher Dam on James River, 1.6 mi upstream from Huguenot Memorial Bridge, and 2.0 mi west of Richmond city limits.

PERIOD OF RECORD.--September 1936 to current year.

GAGE.--Water-stage recorder. Datum of gage is 106.07 ft NGVD of 1929. Prior to Oct. 1, 1938, at datum 3.06 ft higher.

REMARKS.--No estimated daily discharges. Records 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. Beginning with the 1969 water year, the descriptive statement that above 2,540 ft^3/s, gage height, 14.5 ft, there is interchange of flow with the James River and that discharge above 2,540 ft^3/s is included in discharge for the James River near Richmond (station 02037500) has been used. Daily discharges in excess of 2,540 ft^3/s for water years 1937-68 should be used with caution until historical records of canal construction and modifications can be reviewed. Figures given show flow in canal only. No flow at times when head gates were closed. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	17	1.9	1.9	82	82	14	89	51	52	99	99
2	28	1.9	1.9	1.9	82	82	14	89	51	52	99	99
3	28	1.9	1.9	1.9	82	82	14	89	51	52	99	99
4	28	1.9	1.9	1.9	82	82	14	89	51	52	99	99
5	28	1.9	1.9	1.9	82	82	14	89	51	52	99	99
6	28	1.9	1.9	1.9	82	82	14	89	30	52	99	99
7	28	1.9	1.9	1.9	82	82	14	89	17	52	99	99
8	28	1.9	1.9	43	82	82	14	81	17	52	99	99
9	28	1.9	1.9	82	82	82	14	51	17	35	99	99
10	28	1.9	1.9	82	82	82	14	51	17	10	99	99
11	28	1.9	1.9	82	82	82	14	51	17	10	99	99
12	28	1.9	1.9	82	82	82	14	51	17	10	99	99
13	28	1.9	1.9	82	82	82	14	51	17	10	99	99
14	28	1.9	1.9	82	82	82	14	51	17	10	99	99
15	28	1.9	1.9	82	82	82	14	51	17	10	99	51
16	28	1.9	1.9	82	82	82	14	51	17	10	99	0.30
17	28	1.9	1.9	82	82	82	14	51	17	10	99	0.30
18	28	1.9	1.9	82	82	82	14	51	17	10	99	0.30
19	28	1.9	1.9	82	82	82	14	51	17	10	99	0.30
20	28	1.9	1.9	82	82	82	14	51	17	10	99	0.30
21	28	1.9	1.9	82	82	82	14	51	17	10	99	0.30
22	28	1.9	1.9	82	82	82	46	51	17	10	99	0.30
23	28	1.9	1.9	82	82	82	89	51	17	10	99	0.30
24	28	1.9	1.9	82	709	82	89	51	17	10	99	0.30
25	28	1.9	1.9	82	1,090	82	89	51	37	10	99	0.30
26	28	1.9	1.9	82	82	44	89	51	52	10	99	0.30
27	28	1.9	1.9	82	82	14	89	51	52	10	99	0.30
28	28	1.9	1.9	82	82	14	89	51	52	66	99	0.30
29	28	1.9	1.9	82	---	14	89	51	52	99	99	0.30
30	28	1.9	1.9	82	---	14	89	51	52	99	99	0.30
31	28	---	1.9	82	---	14	---	51	---	99	99	---
TOTAL	868	72.1	58.9	1,942.3	3,931	2,164	1,052	1,877	888	994	3,069	1,441.50
MEAN	28.0	2.40	1.90	62.7	140	69.8	35.1	60.5	29.6	32.1	99.0	48.0
MAX	28	17	1.9	82	1,090	82	89	89	52	99	99	99
MIN	28	1.9	1.9	1.9	82	14	14	51	17	10	99	0.30

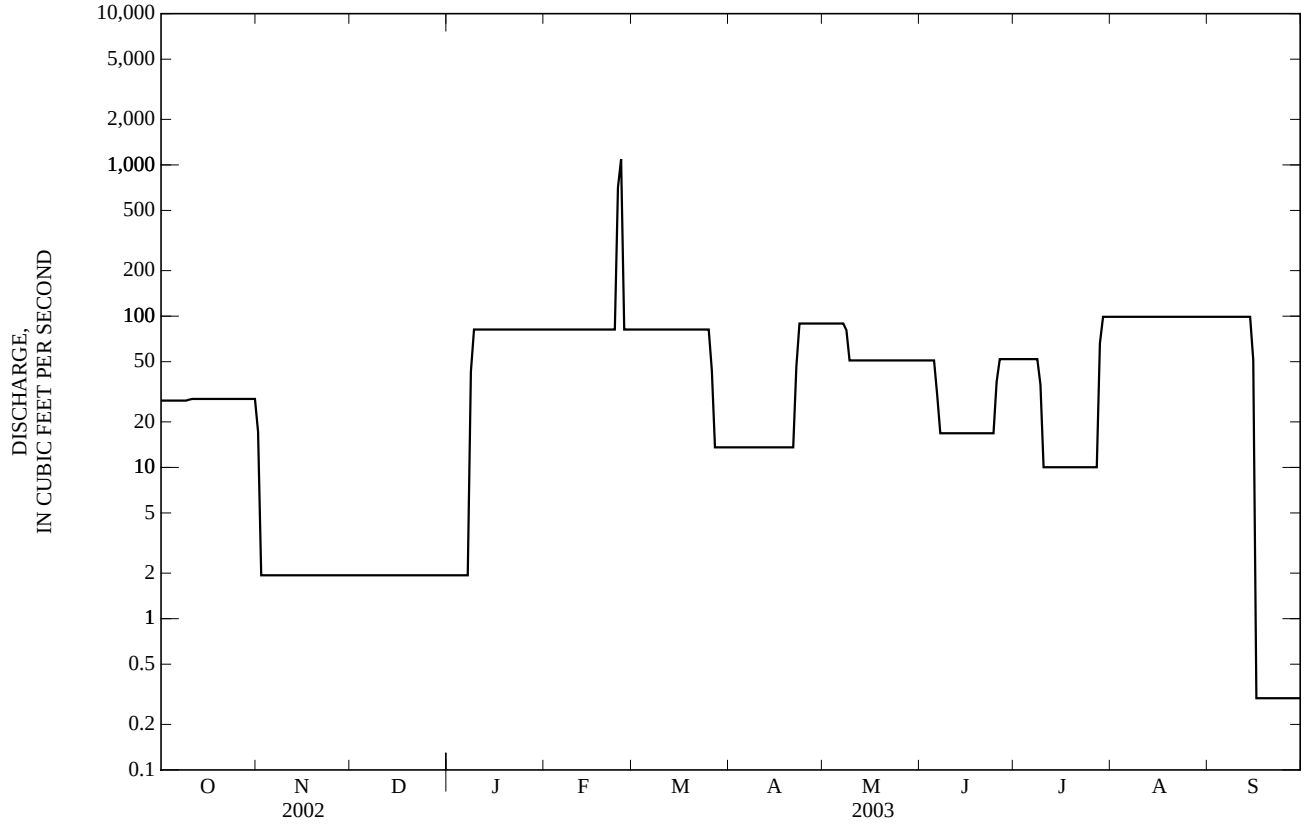
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 2003, BY WATER YEAR (WY)

MEAN	555	582	603	622	636	624	638	621	630	571	558	534
MAX	1,078	1,014	1,220	1,145	1,086	1,094	1,108	1,086	1,061	956	1,108	937
(WY)	(1949)	(1948)	(1949)	(1949)	(1979)	(1951)	(1951)	(1952)	(1951)	(1940)	(1940)	(1949)
MIN	a0.60	a0.60	a0.60	a0.60	a0.60	a0.60	a0.60	a0.60	a0.60	a0.60	a0.60	a0.60
(WY)	(b1981)	(b1980)	(b1980)	(b1980)	(b1980)	(b1980)	(b1980)	(b1980)	(b1980)	(b1980)	(b1980)	(b1980)

02037000 JAMES RIVER AND KANAWHA CANAL NEAR RICHMOND, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1937 - 2003	
ANNUAL TOTAL	17,604.6		18,357.80			
ANNUAL MEAN	48.2		50.3		598	
HIGHEST ANNUAL MEAN					1,023	1949
LOWEST ANNUAL MEAN					1.48	1980
HIGHEST DAILY MEAN	153	Jun 27	1,090	Feb 25	c3,860	Aug 18, 1940
LOWEST DAILY MEAN	1.9	dNov 2	0.30	fSep 16	(g)	(h)
ANNUAL SEVEN-DAY MINIMUM	1.9	jNov 2	0.30	kSep 16	c0.30	kSep 16, 2003
MAXIMUM PEAK FLOW			(l)		(l)	
MAXIMUM PEAK STAGE			14.88	Feb 25	m29.10	Jun 23, 1972
INSTANTANEOUS LOW FLOW			c0.30	fSep 16	(g)	(h)
10 PERCENT EXCEEDS	144		99		980	
50 PERCENT EXCEEDS	28		51		785	
90 PERCENT EXCEEDS	1.9		1.9		15	

a Estimated, leakage through head gates.
b Also 1983.
c See REMARKS.
d Also Nov. 3 to Dec. 31, 2002.
f Also Sept. 17-30, 2003.
g Probably no flow at times when headgates were closed.
h Many days in some years.
j Also many days in November and December 2002.
k Also Sept. 17-23, 2002.
l Interchange of flow with James River makes maximum discharge indeterminate.
m From floodmarks.



02037500 JAMES RIVER NEAR RICHMOND, VA

LOCATION.--Lat 37°33'48", long 77°32'49", NAD83, Henrico County, Hydrologic Unit 02080205, on left bank 0.2 mi upstream from Huguenot Memorial Bridge, 0.5 mi southwest of Richmond city limits, 1.7 mi downstream from Bosher Dam, 3.3 mi upstream from Powhite Creek, and at mile 116.6.

DRAINAGE AREA.--6,758 mi^2.

PERIOD OF RECORD.--October 1934 to current year. Gage-height records collected in vicinity of Mayós Bridge, at mile 109.5, 1876-1956, and at mile 108.7 since 1957, are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 972: 1936(M). WSP 1433: 1951(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Control is Williams Island dams which divert flow for city of Richmond water supply. Datum of gage is 98.82 ft NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 23, 24, 27, 28, which are fair. City of Richmond takes from 40 ft^3/s to 90 ft^3/s for water supply from river downstream from gage except during periods of low flow when supply is obtained from James River and Kanawha Canal. Flow regulated by powerplants upstream from station. Above 18.2 ft stage, there is interchange of flow with James River and Kanawha Canal. Records of daily discharge include diversion by city of Richmond but do not include flow in James River and Kanawha Canal (station 02037000) which diverts around station. National Weather Service gage-height telemeter at station. Maximum discharge, 313,000 ft^3/s, includes canal flow. Minimum daily discharge of James River and James River and Kanawha Canal combined, 214 ft^3/s, Oct. 5, 1941, caused by recharging of the pool above Bosher Dam after the canal gates were closed. Since 1982, low flows during summer months are augmented by releases from Lake Moomaw, station 02011795. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 25	0145	*113,000	*18.73	Jul 4	1215	51,700	13.28
Mar 21	2000	61,000	14.42	Sep 20	2230	90,900	17.08
May 20	1800	61,700	14.50	Sep 24	1215	50,700	13.15

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,260	9,020	3,630	7,100	3,000	22,400	15,500	6,890	18,100	6,830	4,290	4,270
2	2,230	9,950	3,600	14,500	3,280	20,500	13,000	7,840	16,400	6,430	5,310	4,220
3	1,850	6,670	3,360	19,200	3,250	22,800	11,700	7,570	14,400	12,800	5,000	3,960
4	1,510	4,920	3,170	19,600	3,230	22,500	11,900	6,920	13,000	47,900	5,380	4,650
5	1,200	3,900	3,220	18,200	3,290	21,100	12,700	7,040	13,300	35,600	8,940	5,600
6	1,010	3,760	3,190	16,900	3,830	19,400	11,600	8,420	20,600	21,200	7,430	6,150
7	984	4,090	3,130	14,700	3,780	19,000	12,200	12,500	23,400	15,500	8,060	6,350
8	862	4,610	3,110	11,800	3,710	21,000	17,800	14,000	31,600	14,600	6,890	5,720
9	790	6,440	2,930	9,870	3,720	20,700	19,700	12,900	29,400	10,700	6,630	4,680
10	717	6,140	2,740	8,570	3,740	17,500	38,000	13,500	30,500	9,410	6,390	4,050
11	898	5,310	2,950	7,570	3,270	13,600	46,000	13,700	27,100	8,410	11,300	3,500
12	971	10,300	4,480	6,880	3,550	11,700	47,400	13,800	21,900	8,140	14,400	3,500
13	900	24,200	7,640	6,010	3,680	10,700	42,300	13,600	20,500	7,560	12,500	4,230
14	1,070	21,800	12,200	5,660	3,700	9,930	31,100	11,300	21,100	9,470	10,300	4,640
15	1,160	18,700	20,000	5,150	3,810	9,100	24,600	10,000	22,800	10,000	9,810	4,830
16	1,320	13,100	19,900	4,790	5,600	8,140	19,500	9,530	22,100	7,500	8,250	4,280
17	1,280	12,600	16,200	4,520	7,230	8,030	15,400	13,300	18,600	8,420	7,090	3,930
18	1,350	20,500	12,600	4,310	8,450	8,150	13,000	12,200	31,800	8,280	7,710	4,670
19	1,800	19,800	10,100	3,950	10,500	7,650	11,900	38,900	32,700	6,960	7,030	38,100
20	2,060	16,400	8,710	3,660	8,600	12,100	11,800	59,400	33,000	6,110	6,330	82,500
21	2,670	12,000	9,950	3,710	10,200	52,800	10,700	45,500	37,500	5,230	5,510	69,700
22	1,890	9,170	15,100	3,470	19,300	47,100	9,860	32,800	29,600	5,180	4,860	27,600
23	1,720	7,430	20,000	e3,400	67,300	31,200	9,070	27,500	24,400	6,120	4,350	27,400
24	1,660	6,520	15,400	e3,150	103,000	23,100	8,510	27,000	20,600	6,370	4,090	46,800
25	1,460	6,900	14,800	3,070	106,000	18,100	8,550	23,500	16,400	5,520	3,650	33,200
26	1,500	6,490	19,700	2,880	54,800	14,400	8,220	31,700	12,600	4,380	3,410	23,500
27	1,850	5,660	18,400	e2,800	31,400	12,200	8,130	34,000	10,400	3,980	3,230	17,600
28	2,310	5,050	14,400	e2,500	26,100	11,000	7,940	26,900	9,230	3,620	3,110	13,600
29	2,850	4,610	10,900	2,590	---	9,740	7,310	23,900	8,450	3,330	3,140	13,300
30	3,920	4,100	8,830	2,910	---	9,900	6,810	20,600	7,400	3,880	4,440	16,000
31	7,360	---	7,590	2,850	---	14,500	---	20,000	---	4,130	4,950	---
TOTAL	55,412	290,140	301,930	226,270	511,320	550,040	512,200	606,710	638,880	313,560	203,780	492,530
MEAN	1,787	9,671	9,740	7,299	18,260	17,740	17,070	19,570	21,300	10,110	6,574	16,420
MAX	7,360	24,200	20,000	19,600	106,000	52,800	47,400	59,400	37,500	47,900	14,400	82,500
MIN	717	3,760	2,740	2,500	3,000	7,650	6,810	6,890	7,400	3,330	3,110	3,500
(†)	868	72.1	58.9	1,942	3,931	2,164	1,052	1,877	888	994	3,069	1,442
MEAN‡	1,815	9,674	9,742	7,362	18,402	17,813	17,108	19,632	21,326	10,147	6,673	16,466
CFSM‡	.27	1.43	1.44	1.09	2.72	2.64	2.53	2.90	3.16	1.50	.99	2.44
IN.‡	.31	1.60	1.66	1.26	2.84	3.04	2.83	3.35	3.52	1.73	1.14	2.72

CAL YR 2002 MEAN‡ 3,640 CFSM‡ .54 IN.‡ 7.31
WTR YR 2003 MEAN‡ 12,935 CFSM‡ 1.91 IN.‡ 25.99

† Total diversion in cubic feet per second, per month, by James River and Kanawha Canal.
‡ Adjusted for diversion.

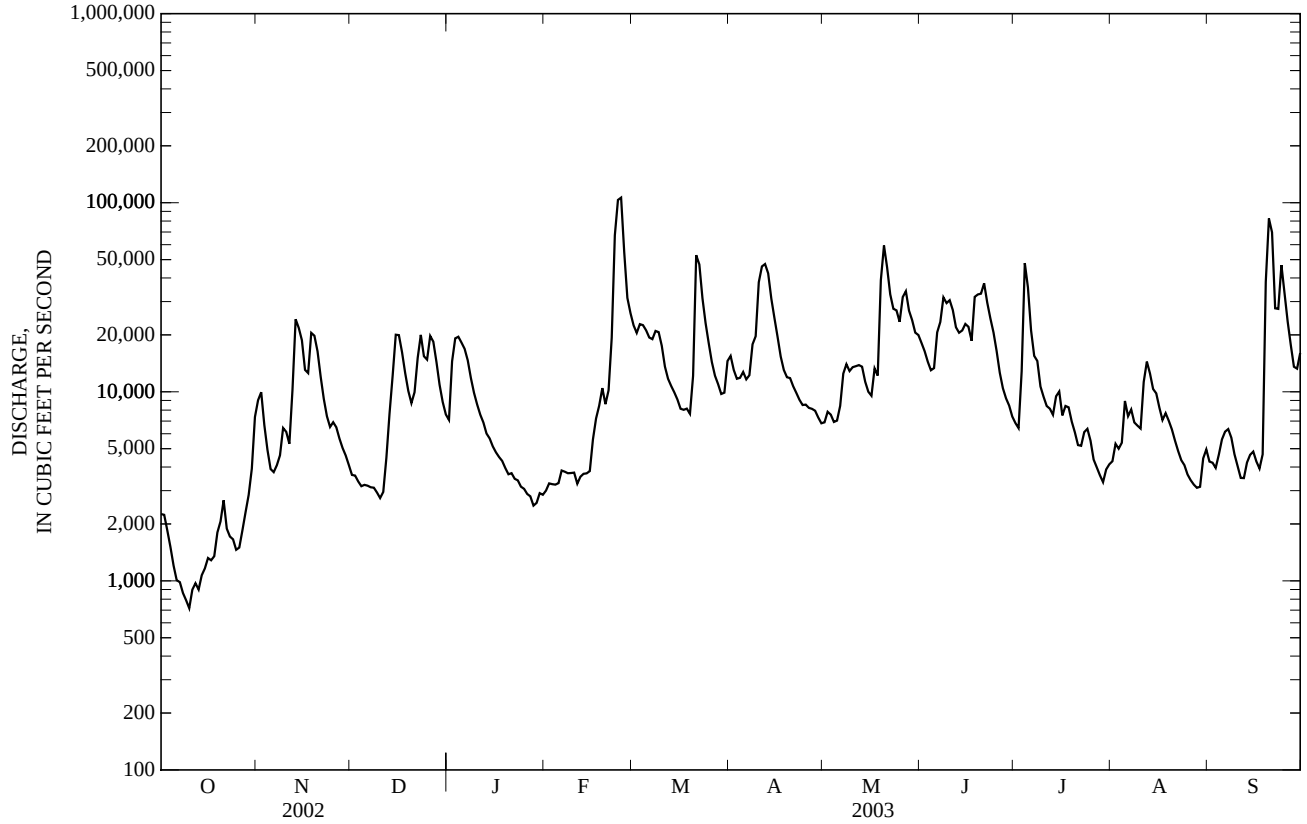
02037500 JAMES RIVER NEAR RICHMOND, VA—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 2003, BY WATER YEAR (WY)												
MEAN	3,935	4,641	6,684	8,977	10,750	12,750	10,880	7,878	5,670	3,216	3,601	3,388
MAX	19,090	30,480	26,480	25,300	34,960	32,740	35,900	24,280	30,910	11,300	21,710	18,390
(WY)	(1938)	(1986)	(1949)	(1937)	(1998)	(1993)	(1987)	(1989)	(1972)	(1972)	(1969)	(1996)
MIN	177	338	450	837	1,652	2,988	2,766	2,137	904	76.1	149	125
(WY)	(1942)	(1942)	(1966)	(1966)	(2002)	(1981)	(1966)	(1941)	(1964)	(1966)	(1966)	(1963)

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1937 - 2003	
ANNUAL TOTAL	1,310,946		4,702,772			
ANNUAL MEAN	3,592		12,880		6,843	
HIGHEST ANNUAL MEAN					13,540	1973
LOWEST ANNUAL MEAN					2,110	2002
HIGHEST DAILY MEAN	24,200	Nov 13	106,000	Feb 25	a296,000	Jun 23, 1972
LOWEST DAILY MEAN	328	Sep 14	717	Oct 10	b10	cSep 8, 1966
ANNUAL SEVEN-DAY MINIMUM	392	Sep 12	875	Oct 7	b10	dSep 8, 1966
MAXIMUM PEAK FLOW			113,000	Feb 25	a313,000	Jun 23, 1972
MAXIMUM PEAK STAGE			18.73	Feb 25	28.62	Jun 23, 1972
INSTANTANEOUS LOW FLOW			706	Oct 10	(f)	(g)
ANNUAL RUNOFF (CFSM)	0.53		1.91		1.01	
ANNUAL RUNOFF (INCHES)	7.22		25.89		13.76	
10 PERCENT EXCEEDS	9,650		27,400		15,000	
50 PERCENT EXCEEDS	1,800		8,450		4,070	
90 PERCENT EXCEEDS	568		2,920		950	

a Includes canal flow.
b Result of diversion by Bosher Dam construction.
c Also Sept. 9-15, 1966, Sept. 30, Oct. 5, 6, 1968, and Oct. 8-10, 1970.
d Also Sept. 9, 1966.
e Estimated.
f Not determined.
g Probably occurred Sept. 8-15, 1966.



02038850 HOLIDAY CREEK NEAR ANDERSONVILLE, VA

LOCATION.--Lat 37°24'56", long 78°38'09", NAD83, Appomattox County, Hydrologic Unit 02080207, on right bank 350 ft downstream from culvert on State Highway 614, 1.0 mi upstream from Holiday Lake, and 5.2 mi southwest of Andersonville.

DRAINAGE AREA.--8.53 mi^2.

PERIOD OF RECORD.--April 1966 to current year.

REVISED RECORDS.--WDR VA-72-1: 1967-71(M), 1966-69(P), 1971(P). WDR VA-98-1: 1997.

GAGE.--Water-stage recorder. Datum of gage is 472.97 ft NGVD of 1929.

REMARKS.--Records good except those for period with ice effect, Jan. 12 to Feb. 21, and period of doubtful gage-height record, Sept. 24-30, which are poor. Maximum discharge, 9,640 ft^3/s, from rating curve extended above 4,200 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 12	1345	159	2.36	Jul 3	0145	234	2.85
Feb 22	1315	607	4.79	Jul 3	1900	183	2.51
Mar 20	1345	543	4.52	Sep 19	0045	*1,450	*7.40
May 18	1545	227	2.80	Sep 23	0645	175	2.46

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.43	2.9	2.2	12	e4.3	11	12	9.2	14	5.1	6.0	4.4
2	0.43	2.2	2.1	12	e4.3	27	9.3	6.8	9.5	18	5.7	3.9
3	0.42	2.0	2.1	10	e3.8	17	8.0	7.4	9.5	119	9.3	4.0
4	0.40	2.1	2.1	8.5	e6.0	10	7.3	7.5	11	49	14	5.9
5	0.39	2.8	6.3	6.3	e6.7	11	7.0	6.5	30	18	6.9	5.1
6	0.36	8.7	3.2	5.5	e4.4	12	6.2	6.4	11	11	5.5	4.1
7	0.35	4.0	2.6	4.7	e4.8	9.8	43	5.8	49	9.2	8.2	4.0
8	0.35	2.9	2.8	4.5	e4.3	8.1	23	5.4	39	7.5	9.2	3.9
9	0.35	2.4	3.1	4.3	e3.9	7.2	101	5.0	18	7.5	7.3	3.9
10	0.40	2.2	2.6	3.9	e4.5	6.4	49	5.1	11	7.9	6.3	3.7
11	3.9	34	8.7	3.6	e4.8	6.0	71	5.3	11	8.5	5.6	3.4
12	1.8	66	9.1	e3.4	e5.4	5.7	26	4.6	22	6.3	5.0	3.6
13	0.83	20	24	e3.3	e5.4	5.7	15	4.2	17	5.9	6.3	9.8
14	0.68	6.5	31	e3.2	e4.7	5.4	11	4.0	12	6.5	6.6	6.8
15	0.62	4.4	14	e3.1	e9.1	5.1	9.6	4.3	9.9	5.9	5.0	5.2
16	3.4	11	8.0	e3.0	e15	7.4	8.7	5.4	10	5.5	8.0	4.4
17	2.2	47	5.8	e3.4	e11	8.7	8.0	5.7	15	5.2	11	3.9
18	1.0	21	4.8	e3.0	e6.6	6.7	7.9	111	14	5.0	6.7	139
19	0.83	7.4	4.4	e3.2	e7.3	6.0	9.2	56	13	5.0	5.5	303
20	0.77	5.1	11	e3.1	e18	214	8.1	22	12	4.9	5.0	30
21	0.92	4.2	8.5	e3.0	e37	66	7.8	25	11	5.5	4.7	14
22	0.95	3.7	5.6	e2.9	212	26	7.3	26	8.5	5.6	4.4	11
23	0.81	3.2	4.6	e2.8	81	14	6.7	29	7.1	6.2	4.2	70
24	0.75	2.9	6.7	e2.7	41	9.9	6.3	21	6.3	6.0	3.9	e178
25	0.80	2.7	64	e4.0	20	8.3	6.7	25	5.8	4.9	3.7	e49
26	3.9	2.5	20	e3.8	9.9	7.7	9.5	40	5.5	4.5	3.6	e30
27	1.9	2.4	8.4	e3.3	8.9	7.4	8.0	56	5.3	4.3	3.8	e23
28	3.0	2.3	6.1	e3.0	9.2	6.7	6.5	60	5.3	7.0	5.9	e21
29	7.1	2.3	5.1	e3.2	---	7.1	6.0	26	5.3	6.9	6.7	e17
30	13	2.3	4.5	e3.7	---	22	6.0	21	4.9	7.7	4.6	e12
31	5.2	---	4.2	e4.0	---	19	---	16	---	6.1	4.3	---
TOTAL	58.24	283.1	287.6	140.4	553.3	584.3	511.1	632.6	402.9	375.6	192.9	977.0
MEAN	1.88	9.44	9.28	4.53	19.8	18.8	17.0	20.4	13.4	12.1	6.22	32.6
MAX	13	66	64	12	212	214	101	111	49	119	14	303
MIN	0.35	2.0	2.1	2.7	3.8	5.1	6.0	4.0	4.9	4.3	3.6	3.4
CFSM	0.22	1.11	1.09	0.53	2.32	2.21	2.00	2.39	1.57	1.42	0.73	3.82
IN.	0.25	1.23	1.25	0.61	2.41	2.55	2.23	2.76	1.76	1.64	0.84	4.26

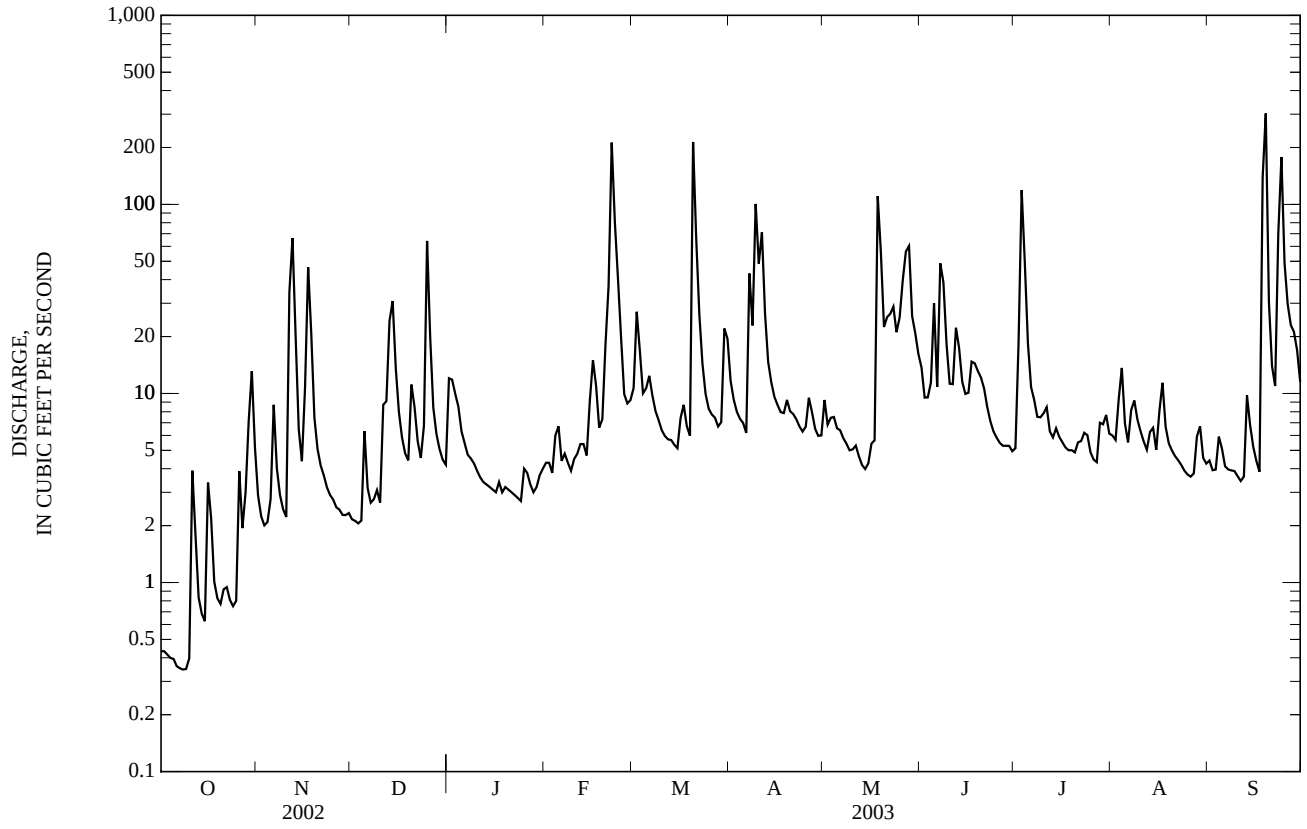
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 2003, BY WATER YEAR (WY)

MEAN	5.65	7.22	8.37	10.5	12.3	13.8	11.5	9.65	7.98	4.55	4.33	6.64
MAX	25.6	32.3	25.6	30.5	36.9	37.9	32.6	36.0	70.2	15.3	24.9	36.8
(WY)	(1972)	(1986)	(1974)	(1978)	(1998)	(1994)	(1973)	(1971)	(1972)	(1972)	(1973)	(1996)
MIN	0.47	0.83	1.45	2.04	2.05	4.12	3.15	2.64	0.56	0.36	0.13	0.32
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(1981)	(2002)	(2002)	(2002)	(2002)	(2002)	(2001)

02038850 HOLIDAY CREEK NEAR ANDERSONVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1966 - 2003	
ANNUAL TOTAL	1,110.32		4,999.04			
ANNUAL MEAN	3.04		13.7		8.56	
HIGHEST ANNUAL MEAN					18.6	1973
LOWEST ANNUAL MEAN					1.55	2002
HIGHEST DAILY MEAN	66	Nov 12	303	Sep 19	1,740	Jun 21, 1972
LOWEST DAILY MEAN	0.03	aAug 6	0.35	bOct 7	0.03	aAug 6, 2002
ANNUAL SEVEN-DAY MINIMUM	0.03	Aug 6	0.37	Oct 4	0.03	Aug 6, 2002
MAXIMUM PEAK FLOW			1,450	Sep 19	9,640	Jun 21, 1972
MAXIMUM PEAK STAGE			7.40	Sep 19	14.64	Jun 21, 1972
INSTANTANEOUS LOW FLOW			0.34	cOct 6	d0.02	Aug 7, 2002
ANNUAL RUNOFF (CFSM)	0.36		1.61		1.00	
ANNUAL RUNOFF (INCHES)	4.84		21.80		13.64	
10 PERCENT EXCEEDS	6.0		26		15	
50 PERCENT EXCEEDS	1.6		6.3		5.1	
90 PERCENT EXCEEDS	0.23		2.4		1.7	

a Also Aug. 7-25, 2002.
b Also Oct. 8, 9, 2002.
c Also Oct. 7-9, 2002.
d Also Aug. 8, 10, 12, 23, 2002.
e Estimated.



02039000 BUFFALO CREEK NEAR HAMPDEN SYDNEY, VA

LOCATION.--Lat 37°15'26", long 78°29'11", NAD83, Prince Edward County, Hydrologic Unit 02080207, on left bank 100 ft upstream from bridge on State Highway 658, 0.8 mi upstream from Locket Creek, 2.0 mi northwest of Hampden Sydney, and 6.0 mi southwest of Farmville.

DRAINAGE AREA.--69.7 mi^2.

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

REVISED RECORDS.--WSP 1303: 1948-50(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 339.19 ft NGVD of 1929 (levels by Virginia Department of Transportation). Prior to Aug. 19, 1953, nonrecording gage at same site and datum.

REMARKS.-Records good except for period with ice effect, Jan. 16-28, which is fair. Maximum discharge, 9,160 ft^3/s, from rating curve extended above 1,600 ft^3/s on basis of slope-area measurement at gage height 11.96 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location by the Virginia Department of Environmental Quality - Water Division.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of about 15 ft, from information by local resident.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 13	0100	918	6.62	May 19	0400	1,020	6.81
Feb 22	2400	1,400	7.40	May 26	1430	831	6.45
Mar 20	1800	3,750	9.65	Jun 1	0900	506	5.68
Apr 8	0030	731	6.24	Sep 19	0530	*5,660	*10.82
Apr 9	1600	967	6.71	Sep 23	1200	4,420	10.10
Apr 11	0900	749	6.28				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.8	80	28	101	38	143	125	93	382	50	112	34
2	5.2	57	26	105	40	219	94	77	179	108	103	33
3	4.8	47	26	90	38	221	77	64	110	206	82	32
4	4.5	45	24	84	56	131	67	64	104	320	73	69
5	4.2	46	51	70	64	109	61	57	155	193	65	77
6	3.6	157	45	63	52	145	56	56	114	148	58	58
7	3.3	123	36	57	54	156	244	53	168	99	54	47
8	3.4	73	28	54	52	111	456	51	397	77	53	43
9	2.8	56	28	50	48	90	669	48	205	66	55	40
10	3.0	48	27	48	51	76	478	46	128	65	55	39
11	90	99	63	45	54	67	577	45	97	62	50	37
12	151	321	111	43	55	61	327	43	151	55	46	36
13	80	618	144	41	52	57	199	40	137	51	46	51
14	113	249	361	41	47	61	133	39	110	48	45	52
15	54	130	234	40	66	56	101	38	91	47	43	49
16	65	107	136	e36	145	59	85	49	85	45	41	44
17	64	258	93	e38	110	74	74	48	116	43	50	40
18	42	382	72	e35	81	67	69	232	146	41	52	152
19	33	177	62	e37	84	59	79	744	161	41	56	2,700
20	27	98	74	e34	144	1,530	72	317	189	40	46	590
21	30	70	81	e32	188	1,060	68	179	128	43	43	387
22	31	57	67	e30	449	528	65	143	95	64	40	245
23	27	47	58	e28	810	368	59	165	77	93	38	2,110
24	23	42	79	e27	344	248	55	172	66	161	37	813
25	22	39	315	e37	197	162	54	278	60	96	35	500
26	36	36	346	e34	128	109	60	698	55	67	34	366
27	35	34	161	e30	105	84	60	397	52	55	33	255
28	57	32	105	e28	120	70	54	357	57	53	38	164
29	118	31	81	31	---	68	50	227	53	62	36	111
30	188	30	67	34	---	119	49	169	50	128	33	82
31	152	---	60	35	---	178	---	149	---	134	32	---
TOTAL	1,478.6	3,589	3,089	1,458	3,672	6,486	4,617	5,138	3,918	2,761	1,584	9,256
MEAN	47.7	120	99.6	47.0	131	209	154	166	131	89.1	51.1	309
MAX	188	618	361	105	810	1,530	669	744	397	320	112	2,700
MIN	2.8	30	24	27	38	56	49	38	50	40	32	32
CFSM	0.68	1.72	1.43	0.67	1.88	3.00	2.21	2.38	1.87	1.28	0.73	4.43
IN.	0.79	1.92	1.65	0.78	1.96	3.46	2.46	2.74	2.09	1.47	0.85	4.94

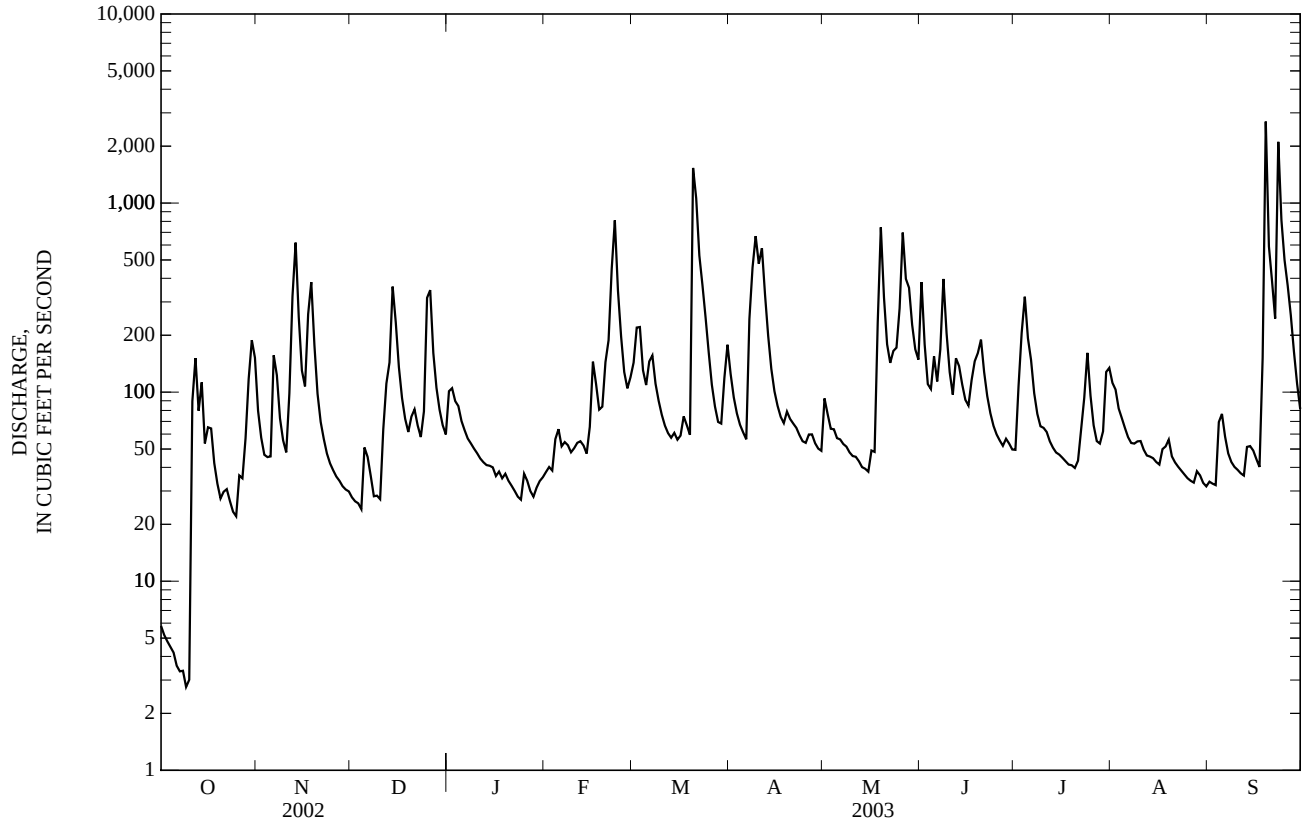
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 2003, BY WATER YEAR (WY)

MEAN	48.4	62.9	70.5	88.7	98.1	113	91.7	66.5	50.6	39.0	39.6	44.8
MAX	365	315	157	313	295	324	256	173	294	129	260	309
(WY)	(1972)	(1986)	(1997)	(1978)	(1979)	(1993)	(1983)	(1978)	(1972)	(1989)	(1955)	(2003)
MIN	9.94	14.4	18.7	25.3	29.4	37.5	25.1	23.4	8.60	5.60	2.44	6.34
(WY)	(1971)	(2002)	(1966)	(1966)	(2002)	(1981)	(2002)	(1969)	(2002)	(2002)	(2002)	(2002)

02039000 BUFFALO CREEK NEAR HAMPDEN SYDNEY, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1947 - 2003	
ANNUAL TOTAL	14,273.88		47,046.6			
ANNUAL MEAN	39.1		129		67.6	
HIGHEST ANNUAL MEAN					134	1972
LOWEST ANNUAL MEAN					21.2	2002
HIGHEST DAILY MEAN	618	Nov 13	2,700	Sep 19	4,940	Aug 18, 1955
LOWEST DAILY MEAN	0.13	Aug 23	2.8	Oct 9	0.13	Aug 23, 2002
ANNUAL SEVEN-DAY MINIMUM	0.22	Aug 11	3.5	Oct 4	0.22	Aug 11, 2002
MAXIMUM PEAK FLOW			5,660	Sep 19	9,160	Jun 21, 1972
MAXIMUM PEAK STAGE			10.82	Sep 19	12.38	Jun 21, 1972
INSTANTANEOUS LOW FLOW			2.4	Oct 8	0.09	Aug 24, 2002
ANNUAL RUNOFF (CFSM)	0.56		1.85		0.97	
ANNUAL RUNOFF (INCHES)	7.62		25.11		13.18	
10 PERCENT EXCEEDS	80		251		119	
50 PERCENT EXCEEDS	24		64		42	
90 PERCENT EXCEEDS	2.9		33		17	

e Estimated.



02039500 APPOMATTOX RIVER AT FARMVILLE, VA

LOCATION.--Lat 37°18'26", long 78°23'19", NAD83, Cumberland County, Hydrologic Unit 02080207, on left bank at downstream side of bridge on State Highway 45 at north town limits of Farmville and 1.1 mi downstream from Buffalo Creek.

DRAINAGE AREA.--303 mi^2.

PERIOD OF RECORD.--March 1926 to current year.

REVISED RECORDS.--WSP 972: 1927-37, 1938(M). WSP 1303: 1927(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 281.93 ft NGVD of 1929. Prior to Nov. 29, 1928, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Dec. 7, 8, and Jan. 14, 15, 19-29, which are fair. Maximum discharge, 33,100 ft^3/s, from rating curve extended above 12,000 ft^3/s on basis of contracted-opening measurement of peak flow. Diurnal fluctuation at low flow caused by Prince Edward Mill 0.2 mi upstream. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,900 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 13	1300	2,690	13.55	May 28	1815	3,280	14.34
Feb 23	1545	6,660	17.44	Jun 6	0030	2,310	12.80
Mar 21	1030	8,630	18.82	Jun 8	1415	1,960	12.02
Apr 8	1000	2,090	12.31	Jul 4	1400	5,100	16.23
Apr 10	0430	4,260	15.45	Sep 19	2230	*9,800	*19.58
May 19	1715	5,140	16.27	Sep 23	2315	7,030	17.70
May 26	1400	2,850	13.78				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	305	102	296	140	656	602	275	852	168	368	125
2	21	172	95	542	153	932	410	287	722	373	330	128
3	20	122	91	412	152	966	331	229	434	1,560	267	125
4	18	109	88	419	184	580	291	233	413	4,760	684	196
5	18	122	89	328	272	436	268	229	1,650	1,810	427	286
6	17	395	138	270	217	585	248	204	1,280	655	263	200
7	16	471	e126	236	208	689	969	195	766	485	233	157
8	16	251	e112	210	211	456	1,860	185	1,740	361	218	142
9	15	160	109	197	189	359	2,330	170	1,030	280	224	139
10	15	123	106	181	196	301	3,460	162	593	254	274	136
11	120	474	219	164	222	254	2,530	161	410	244	213	130
12	236	1,800	532	151	244	232	1,730	155	497	217	188	126
13	230	2,450	692	144	238	217	826	140	736	187	227	168
14	157	968	1,520	e140	210	219	559	129	511	184	218	216
15	146	493	1,020	e135	257	205	421	128	381	181	190	183
16	130	373	573	131	626	195	352	143	334	164	172	161
17	174	1,140	367	140	460	244	306	163	374	152	418	150
18	159	1,550	278	125	377	240	276	882	631	144	297	429
19	91	775	232	e140	346	210	318	4,140	622	139	223	6,900
20	68	421	278	e130	632	2,840	300	2,280	654	133	195	6,150
21	67	289	420	e125	1,210	7,670	268	732	538	129	168	1,190
22	68	231	299	e120	2,240	2,610	251	945	387	190	157	705
23	62	191	231	e115	5,830	1,010	226	842	305	289	149	4,150
24	56	161	261	e110	2,640	742	205	943	256	463	142	4,520
25	51	145	1,170	e135	847	567	194	1,150	224	333	136	1,270
26	75	134	1,560	e128	558	415	215	2,660	203	206	131	811
27	91	124	691	e120	450	341	247	2,020	189	166	127	643
28	131	114	405	e115	527	287	210	2,750	184	158	132	571
29	259	108	304	e127	---	268	185	1,570	184	309	135	493
30	567	105	254	129	---	494	175	900	175	346	128	340
31	620	---	221	135	---	994	---	654	---	470	122	---
TOTAL	3,738	14,276	12,583	5,850	19,836	26,214	20,563	25,656	17,275	15,510	7,156	30,940
MEAN	121	476	406	189	708	846	685	828	576	500	231	1,031
MAX	620	2,450	1,560	542	5,830	7,670	3,460	4,140	1,740	4,760	684	6,900
MIN	15	105	88	110	140	195	175	128	175	129	122	125
CFSM	0.40	1.57	1.34	0.62	2.34	2.79	2.26	2.73	1.90	1.65	0.76	3.40
IN.	0.46	1.75	1.54	0.72	2.44	3.22	2.52	3.15	2.12	1.90	0.88	3.80

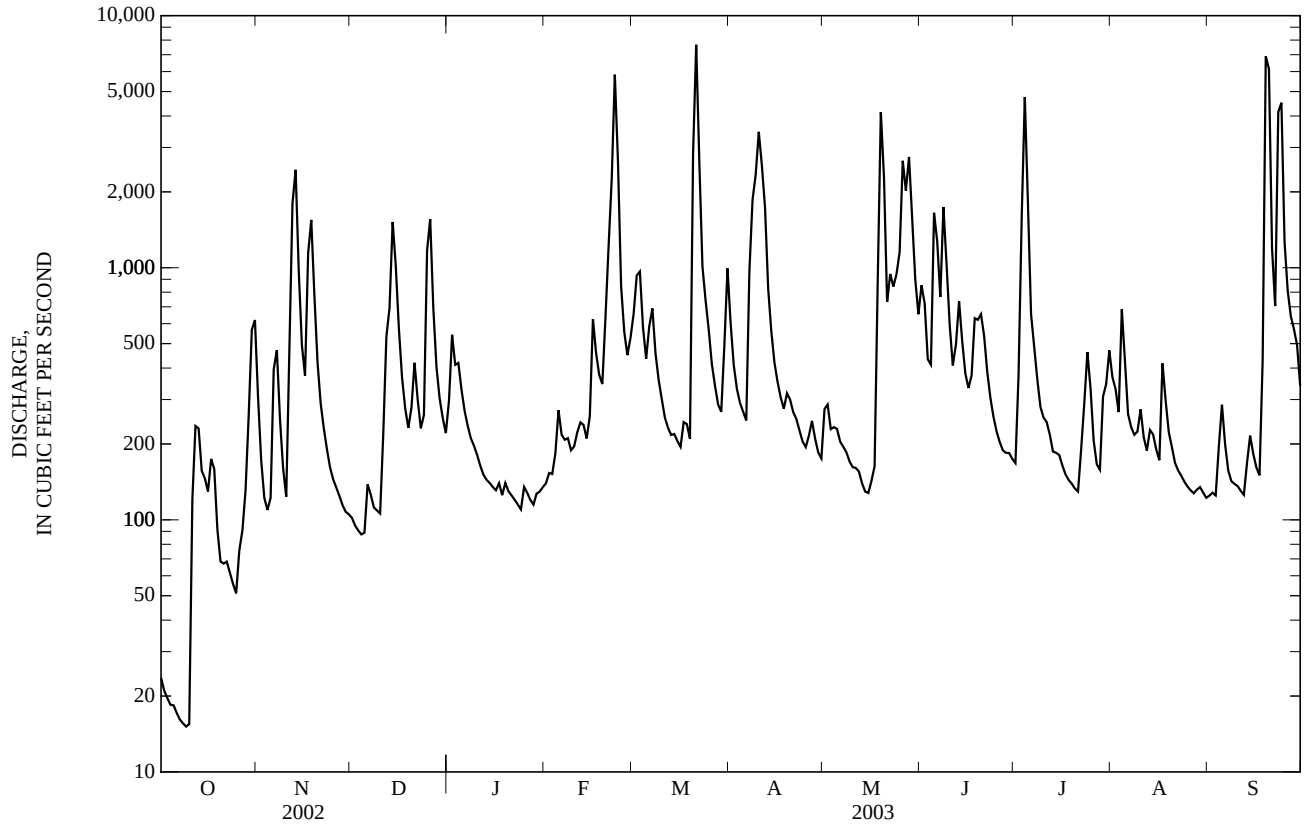
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 2003, BY WATER YEAR (WY)

MEAN	188	243	300	395	437	484	406	278	210	162	190	202
MAX	1,190	1,287	961	1,430	1,402	1,518	1,155	872	1,866	518	1,783	1,140
(WY)	(1972)	(1986)	(1997)	(1978)	(1979)	(1993)	(1983)	(1978)	(1972)	(1972)	(1940)	(1996)
MIN	30.3	45.5	61.6	96.3	97.1	126	105	95.2	27.5	18.6	11.8	16.7
(WY)	(1931)	(2002)	(1966)	(1966)	(2002)	(1981)	(2002)	(1969)	(2002)	(2002)	(2002)	(1968)

02039500 APPOMATTOX RIVER AT FARMVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1926 - 2003	
ANNUAL TOTAL	52,751.60		199,597			
ANNUAL MEAN	145		547		291	
HIGHEST ANNUAL MEAN					584	1972
LOWEST ANNUAL MEAN					74.0	2002
HIGHEST DAILY MEAN	2,450	Nov 13	7,670	Mar 21	28,000	Jun 22, 1972
LOWEST DAILY MEAN	0.07	aAug 22	15	bOct 9	0.07	aAug 22, 2002
ANNUAL SEVEN-DAY MINIMUM	0.09	Aug 19	16	Oct 4	0.09	Aug 19, 2002
MAXIMUM PEAK FLOW			9,800	Sep 19	33,100	Jun 22, 1972
MAXIMUM PEAK STAGE			19.58	Sep 19	c29.70	Jun 22, 1972
INSTANTANEOUS LOW FLOW			15	dOct 7	0.07	fAug 21, 2002
ANNUAL RUNOFF (CFSM)	0.48		1.80		0.96	
ANNUAL RUNOFF (INCHES)	6.48		24.50		13.07	
10 PERCENT EXCEEDS	268		1,160		528	
50 PERCENT EXCEEDS	82		244		165	
90 PERCENT EXCEEDS	14		120		61	

a Also Aug. 23-25, 2002.
b Also Oct. 10, 2002.
c From floodmarks.
d Also Oct. 8-10, 2002.
e Estimated.
f Also Aug. 22-26, 2002.



02040000 APPOMATTOX RIVER AT MATTOAX, VA

LOCATION.--Lat 37°25'18", long 77°51'32", NAD83, Amelia County, Hydrologic Unit 02080207, on right bank 75 ft upstream from Norfolk Southern Railway bridge at Mattoax, 0.3 mi upstream from Skinquarter Creek, and 3.7 mi upstream from Flat Creek.

DRAINAGE AREA.--726 mi^2.

PERIOD OF RECORD.--August 1900 to December 1905, March 1926 to current year.

REVISED RECORDS.--WSP 892: 1938. WSP 972: 1928, 1932, 1934-38. WSP 1303: 1901(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 174.51 ft NGVD of 1929. August 1900 to December 1905, non-recording gage at same site, different datum. March 1926 to October 1936, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Nov. 21 to Dec. 2, Jan. 27-30, Feb. 2, 3, 17, 18, July 15-21, 27-29, Aug. 5-10, 12-17, 19-22, Aug. 30 to Sept. 3, and Sept. 9-14, 16, 17, 26-30, and periods with ice effect, Jan. 18, 20, 22, 23, 25, which are fair. National Weather Service gage-height telemeter at station. Maximum discharge, 35,000 ft^3/s, from rating curve extended above 20,000 ft^3/s on basis of records for stations at Farmville and near Petersburg. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 26	2000	5,960	21.93	May 23	1200	4,880	20.14
Mar 24	0900	9,900	25.19	May 30	0430	5,330	20.96
Apr 13	0730	6,440	22.54	Sep 23	1730	*13,500	*27.33

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	1,460	e320	718	358	1,690	2,250	685	3,900	400	1,260	e290
2	38	791	e301	1,860	e370	2,260	1,490	917	2,420	491	1,680	e280
3	34	510	289	1,970	e386	2,760	1,010	951	1,940	947	1,390	e300
4	29	404	277	1,330	404	2,570	833	784	1,190	1,990	2,200	414
5	26	365	281	1,050	463	1,540	731	615	1,310	2,610	e1,320	685
6	23	637	290	859	540	1,390	673	579	2,180	3,040	e900	847
7	21	1,310	330	729	521	1,900	1,440	517	2,450	3,140	e650	640
8	20	1,190	330	650	533	1,750	3,380	479	2,260	1,130	e580	481
9	18	756	309	587	572	1,160	4,180	468	2,740	794	e520	e390
10	18	559	303	541	548	920	4,780	743	2,720	638	e560	e340
11	39	558	350	500	560	778	5,430	591	1,390	644	775	e315
12	85	1,990	743	462	585	684	6,000	470	1,150	585	e600	e295
13	433	3,320	1,410	434	571	626	6,340	405	1,230	502	e460	e330
14	369	3,460	2,660	413	526	622	5,750	352	1,340	648	e620	e430
15	258	3,670	2,940	401	517	615	4,100	319	1,030	e510	e570	560
16	302	2,730	2,860	386	881	566	1,280	332	830	e488	e500	e400
17	288	2,010	1,520	373	e1,300	539	996	354	784	524	e430	e350
18	381	3,020	885	e362	e1,000	544	851	1,290	926	e498	725	1,100
19	337	3,160	705	356	792	554	895	3,530	1,500	e445	e500	6,220
20	245	2,830	736	e350	889	2,230	919	3,680	1,670	e400	e450	6,240
21	180	e1,000	1,330	389	2,100	4,980	819	3,810	1,810	e370	e400	7,610
22	149	e750	1,270	e342	3,620	5,440	737	4,390	1,260	427	e370	9,960
23	144	e630	861	e327	4,820	7,760	680	4,830	902	876	355	12,400
24	140	e530	685	320	5,010	9,630	604	4,060	715	1,360	332	11,000
25	142	e475	1,460	e261	5,340	7,310	547	2,910	603	1,290	315	8,030
26	195	e430	2,980	343	5,820	3,850	551	4,800	529	861	300	e7,400
27	243	e405	3,210	e346	5,340	1,190	566	4,940	477	e560	295	e6,000
28	261	e385	3,010	e290	1,910	956	561	4,980	449	e420	300	e4,600
29	392	e365	1,120	e296	---	820	508	5,190	425	e390	317	e2,500
30	1,030	e350	809	e330	---	972	457	5,290	417	1,290	e300	e950
31	1,670	---	691	340	---	1,890	---	5,010	---	1,480	e275	---
TOTAL	7,554	40,050	35,265	17,915	46,276	70,496	59,358	68,271	42,547	29,748	20,249	91,357
MEAN	244	1,335	1,138	578	1,653	2,274	1,979	2,202	1,418	960	653	3,045
MAX	1,670	3,670	3,210	1,970	5,820	9,630	6,340	5,290	3,900	3,140	2,200	12,400
MIN	18	350	277	261	358	539	457	319	417	370	275	280
CFSM	0.34	1.84	1.57	0.80	2.28	3.13	2.73	3.03	1.95	1.32	0.90	4.19
IN.	0.39	2.05	1.81	0.92	2.37	3.61	3.04	3.50	2.18	1.52	1.04	4.68

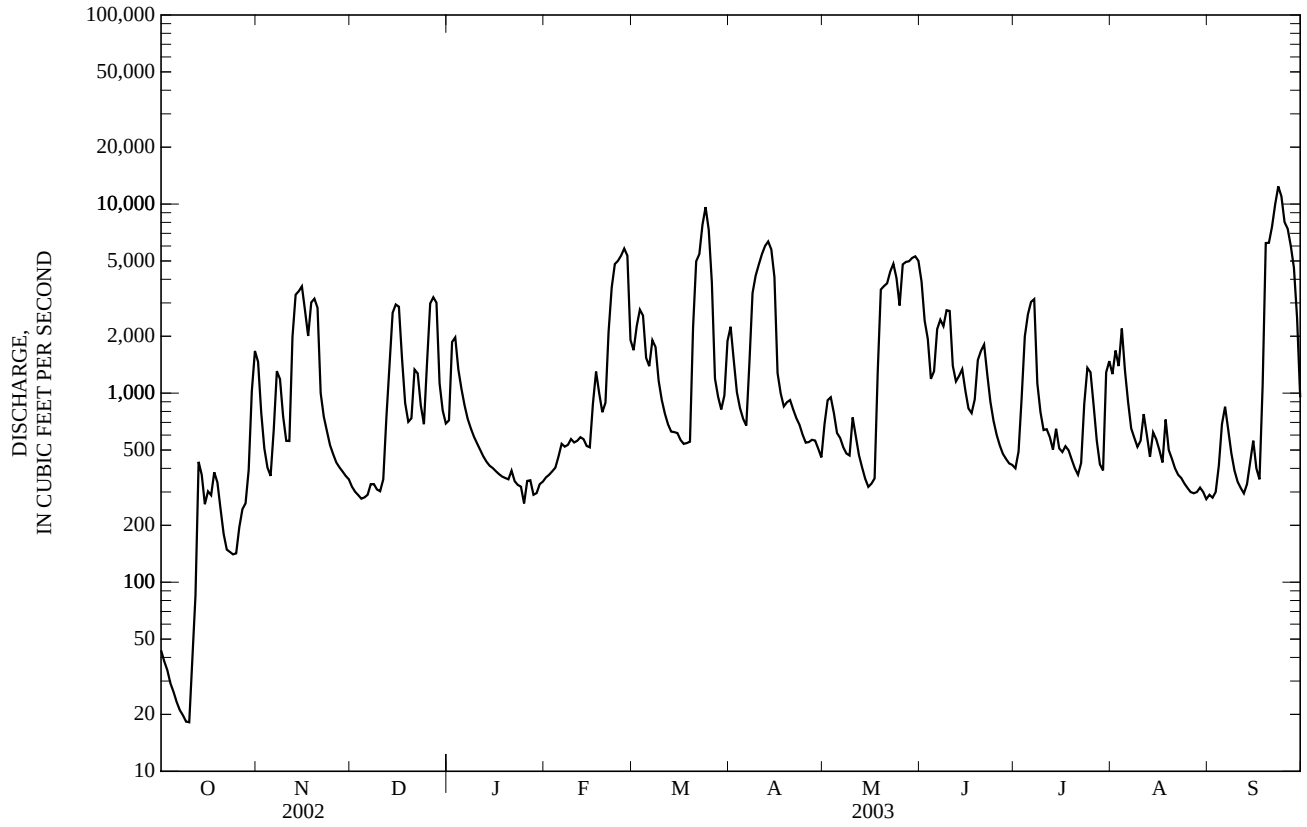
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 2003, BY WATER YEAR (WY)

MEAN	456	539	727	997	1,121	1,240	1,060	673	490	373	419	421
MAX	3,932	2,728	2,620	3,650	3,605	3,566	2,975	2,202	4,369	1,918	4,566	3,045
(WY)	(1972)	(1986)	(1994)	(1978)	(1998)	(1993)	(1983)	(2003)	(1972)	(1938)	(1940)	(2003)
MIN	32.7	79.1	123	207	200	309	246	208	50.2	25.7	15.0	30.0
(WY)	(1931)	(2002)	(1966)	(1966)	(2002)	(1981)	(2002)	(1926)	(2002)	(2002)	(2002)	(1932)

02040000 APPOMATTOX RIVER AT MATTOAX, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1926 - 2003	
ANNUAL TOTAL	130,707.6		529,086			
ANNUAL MEAN	358		1,450		709	
HIGHEST ANNUAL MEAN					1,553	1972
LOWEST ANNUAL MEAN					154	2002
HIGHEST DAILY MEAN	3,670	Nov 15	12,400	Sep 23	34,300	Aug 18, 1940
LOWEST DAILY MEAN	2.6	Aug 25	18	aOct 9	2.6	Aug 25, 2002
ANNUAL SEVEN-DAY MINIMUM	4.0	Aug 21	22	Oct 4	4.0	Aug 21, 2002
MAXIMUM PEAK FLOW			13,500	Sep 23	35,000	Aug 18, 1940
MAXIMUM PEAK STAGE			27.33	Sep 23	b35.30	Aug 18, 1940
INSTANTANEOUS LOW FLOW			17	Oct 10	2.4	cAug 25, 2002
ANNUAL RUNOFF (CFSM)	0.49		2.00		0.98	
ANNUAL RUNOFF (INCHES)	6.70		27.11		13.27	
10 PERCENT EXCEEDS	770		3,960		1,590	
50 PERCENT EXCEEDS	184		680		379	
90 PERCENT EXCEEDS	20		300		114	

a Also Oct. 10, 2002.
b From floodmark in gage house.
c Also Aug. 26, 2002.
e Estimated.



02041000 DEEP CREEK NEAR MANNBORO, VA

LOCATION.--Lat 37°17'00", long 77°52'11", NAD83, Amelia County, Hydrologic Unit 02080207, on left bank 300 ft upstream from bridge on State Highway 153, 0.9 mi upstream from Sweathouse Creek, 3.4 mi northwest of Mannboro, and 7.5 mi southeast of Amelia.

DRAINAGE AREA.--158 mi^2.

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

REVISED RECORDS.--WSP 1203: 1948 (calendar year figures only). WSP 2104: Drainage area. WDR VA-79-1: 1973-76(P), 1978.

GAGE.--Water-stage recorder. Datum of gage is 177.20 ft NGVD of 1929. Prior to Sep. 2, 1949, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Dec. 1, 2, May 19, May 26 to June 2, and Sept. 19-30, and period with ice effect, Jan. 17-28, which are fair. Maximum discharge, 15,000 ft^3/s, from rating curve extended above 3,900 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some periods have been collected at this location.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 14.8 ft, from information by local resident.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 23	2100	2,090	8.48	May 19	---	Unknown	Unknown
Mar 21	1300	6,730	12.68	May 23	1700	1,250	7.21
Apr 8	1630	2,330	8.78	May 26	---	11,000	15.66
Apr 10	0930	2,580	9.06	Sep 19	---	*13,100	*16.87

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	295	e45	174	122	469	490	147	e860	109	265	45
2	1.4	149	e42	381	133	516	264	260	e790	218	178	43
3	1.2	91	41	570	134	577	207	381	426	236	147	41
4	1.0	71	39	313	132	465	178	287	247	240	341	72
5	0.92	67	40	220	151	280	161	208	259	187	857	131
6	0.72	160	47	178	149	277	151	172	304	134	545	150
7	0.50	274	61	159	171	322	404	153	282	118	242	111
8	0.35	273	60	147	275	310	1,750	143	302	135	270	78
9	0.33	146	60	134	288	233	1,620	217	373	109	277	65
10	0.29	97	59	122	208	194	2,240	712	369	114	323	59
11	1.6	80	85	109	196	169	1,570	838	267	105	298	53
12	12	146	210	97	185	152	1,470	328	300	91	200	51
13	27	374	306	88	156	142	712	204	377	78	144	86
14	42	716	462	86	133	145	332	154	369	70	120	107
15	44	357	785	83	136	148	246	126	268	66	104	107
16	61	169	438	78	239	140	208	152	190	64	93	88
17	98	215	205	e75	276	132	182	180	171	61	86	70
18	117	406	150	e70	259	130	163	544	193	57	79	252
19	76	687	124	e63	217	124	204	e2,320	315	56	119	e8,320
20	48	328	120	e70	272	633	231	2,010	507	117	121	e6,520
21	36	170	139	e77	469	5,160	197	942	602	124	104	e2,760
22	32	129	153	e73	819	2,210	173	762	331	88	85	e600
23	27	104	132	e67	1,630	766	156	1,140	219	170	74	e620
24	24	86	122	e56	1,550	382	140	1,070	165	194	67	e690
25	22	74	317	e64	595	260	129	931	137	180	63	e450
26	24	65	847	e60	282	209	151	e6,020	117	117	60	e300
27	28	59	834	e58	233	185	171	e5,540	104	86	55	e220
28	36	54	278	e62	320	168	156	e1,400	100	71	52	e180
29	126	51	196	65	---	158	132	e900	103	70	51	e155
30	256	49	163	77	---	211	115	e740	107	146	49	e130
31	362	---	142	95	---	440	---	e650	---	316	46	---
TOTAL	1,507.91	5,942	6,702	3,971	9,730	15,707	14,303	29,631	9,154	3,927	5,515	22,554
MEAN	48.6	198	216	128	348	507	477	956	305	127	178	752
MAX	362	716	847	570	1,630	5,160	2,240	6,020	860	316	857	8,320
MIN	0.29	49	39	56	122	124	115	126	100	56	46	41
CFSM	0.31	1.25	1.37	0.81	2.20	3.21	3.02	6.05	1.93	0.80	1.13	4.76
IN.	0.36	1.40	1.58	0.93	2.29	3.70	3.37	6.98	2.16	0.92	1.30	5.31

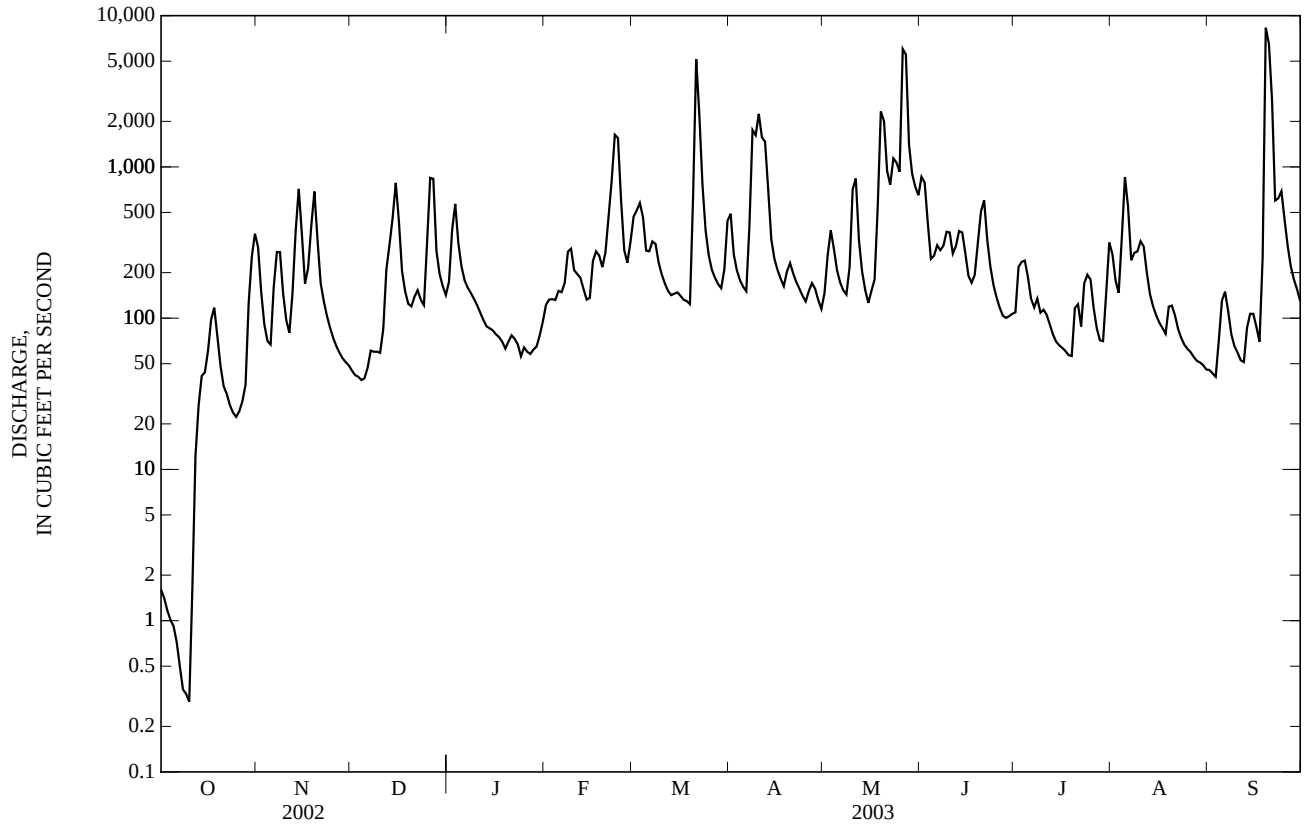
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 2003, BY WATER YEAR (WY)

MEAN	97.5	134	150	212	248	281	217	142	85.3	65.6	58.2	88.1
MAX	859	821	453	800	793	718	632	956	449	301	309	1,002
(WY)	(1973)	(1986)	(1997)	(1978)	(1979)	(1993)	(1987)	(2003)	(1972)	(1975)	(1978)	(1979)
MIN	3.55	14.6	26.4	48.5	46.5	74.8	51.2	36.4	2.71	0.52	0.52	2.19
(WY)	(1971)	(1999)	(1966)	(1966)	(2002)	(1981)	(1985)	(1985)	(2002)	(2002)	(2002)	(1968)

02041000 DEEP CREEK NEAR MANNBORO, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1947 - 2003	
ANNUAL TOTAL	23,677.12		128,643.91			
ANNUAL MEAN	64.9		352		148	
HIGHEST ANNUAL MEAN					352	2003
LOWEST ANNUAL MEAN					30.5	2002
HIGHEST DAILY MEAN	847	Dec 26	8,320	Sep 19	12,000	Oct 6, 1972
LOWEST DAILY MEAN	0.00	aAug 25	0.29	Oct 10	0.00	aAug 25, 2002
ANNUAL SEVEN-DAY MINIMUM	0.06	Aug 21	0.59	Oct 4	0.06	Aug 21, 2002
MAXIMUM PEAK FLOW			e13,100	Sep 19	15,000	Oct 6, 1972
MAXIMUM PEAK STAGE			b16.87	Sep 19	c24.04	Oct 6, 1972
INSTANTANEOUS LOW FLOW			0.28	dOct 9	0.00	(f)
ANNUAL RUNOFF (CFSM)	0.41		2.23		0.93	
ANNUAL RUNOFF (INCHES)	5.57		30.29		12.70	
10 PERCENT EXCEEDS	149		699		284	
50 PERCENT EXCEEDS	34		153		73	
90 PERCENT EXCEEDS	0.42		50		15	

a Also Aug. 26, 27, 2002.
b From high-water mark in gage house.
c From floodmarks.
d Also Oct. 10, 2002.
e Estimated.
f Also part or all of each day Aug. 25-28, 2002.



02041650 APPOMATTOX RIVER AT MATOACA, VA

LOCATION.--Lat 37°13'31", long 77°28'31", NAD83, Chesterfield County, Hydrologic Unit 02080207, on left bank at upstream side of bridge on State Highway 600, 0.2 mi south of Matoaca, 2.0 mi upstream from Rohoic Creek, 2.8 mi downstream from Lake Chesdin, 3.5 mi west of Petersburg, and at mile 15.9

DRAINAGE AREA.--1,344 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is 68.30 ft NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 20-24, 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 37.0 ft^3/s is diverted for industrial and municipal use. Records do not include flow of Upper Appomattox Canal of city of Petersburg which diverts around station. National Weather Service gage-height telemeter at station.

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

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	2,020	426	1,540	913	6,130	3,900	1,090	8,790	644	2,910	280
2	36	2,000	378	2,010	933	4,220	3,520	1,350	8,270	1,150	2,350	250
3	36	1,370	439	3,250	910	4,450	2,410	2,120	6,410	2,230	2,220	364
4	36	886	300	3,370	1,000	4,570	1,840	2,420	4,240	2,530	2,480	1,220
5	35	444	339	2,510	971	3,950	1,540	1,910	2,860	2,840	3,930	1,600
6	35	1,120	486	1,950	1,090	2,970	1,320	1,500	2,900	3,020	3,860	1,460
7	36	1,370	637	1,680	1,260	3,120	1,960	1,270	3,470	3,290	3,000	1,270
8	36	1,880	524	1,430	1,440	3,230	5,890	1,120	4,330	3,080	2,080	930
9	37	1,820	531	1,300	1,600	2,830	8,620	1,000	4,370	1,800	1,900	392
10	36	1,340	497	1,220	1,590	2,090	9,710	1,560	4,370	1,380	2,790	454
11	41	1,020	724	917	1,490	1,670	10,700	2,700	3,650	1,130	2,710	330
12	41	946	1,140	816	1,450	1,440	10,500	2,240	2,650	860	1,950	547
13	36	2,860	1,710	753	1,360	1,260	9,960	1,500	2,580	641	1,550	1,010
14	31	4,530	3,450	703	1,260	1,140	9,400	1,030	2,580	718	1,210	1,060
15	31	4,900	4,480	712	1,250	1,130	8,760	936	2,420	745	992	817
16	76	4,790	4,940	624	1,500	1,090	7,470	873	1,910	570	602	713
17	77	3,820	4,210	740	2,050	988	3,240	870	1,580	523	609	723
18	75	4,010	2,490	536	2,200	888	1,870	1,750	1,540	472	782	1,710
19	76	4,720	1,650	496	2,000	861	1,710	7,240	2,000	469	912	15,900
20	76	4,730	1,410	e540	2,040	2,630	1,930	8,380	3,430	433	769	18,500
21	85	3,730	1,540	e640	2,720	9,050	1,830	8,360	3,850	537	564	18,000
22	100	1,870	1,870	e570	5,140	10,700	1,610	8,150	3,430	566	522	14,200
23	102	1,490	1,870	e520	7,310	11,000	1,400	8,070	2,350	1,160	446	11,900
24	117	1,280	1,540	e430	7,930	10,000	1,210	8,250	1,730	1,700	242	12,500
25	125	1,080	1,530	353	8,110	9,800	1,090	8,180	1,330	1,890	246	16,000
26	138	606	3,500	485	7,800	10,200	1,140	21,200	1,140	1,740	554	15,500
27	131	676	4,940	e470	7,470	8,770	1,150	18,600	864	1,280	370	12,000
28	149	490	4,870	e450	7,630	3,590	1,120	15,100	776	744	303	10,000
29	174	520	3,850	507	---	1,810	1,080	11,400	706	483	367	8,810
30	183	498	2,280	763	---	2,070	734	9,450	662	1,180	260	6,750
31	311	---	1,590	740	---	3,320	---	8,520	---	2,920	319	---
TOTAL	2,534	62,816	60,141	33,025	82,417	130,967	118,614	168,139	91,188	42,725	43,799	175,190
MEAN	81.7	2,094	1,940	1,065	2,943	4,225	3,954	5,424	3,040	1,378	1,413	5,840
MAX	311	4,900	4,940	3,370	8,110	11,000	10,700	21,200	8,790	3,290	3,930	18,500
MIN	31	444	300	353	910	861	734	870	662	433	242	250
(†)	1,141	932	1,003	1,038	992	1,048	1,141	1,156	1,127	1,279	1,335	1,307

CAL YR 2002 TOTAL 210,430 MEAN 577 MAX 4,940 MIN 18 (†) 14,402
WTR YR 2003 TOTAL 1,011,555 MEAN 2,771 MAX 21,200 MIN 31 (†) 13,497

† Total diversion, in cubic feet per second, at Lake Chesdin, provided by Appomattox Water Authority.

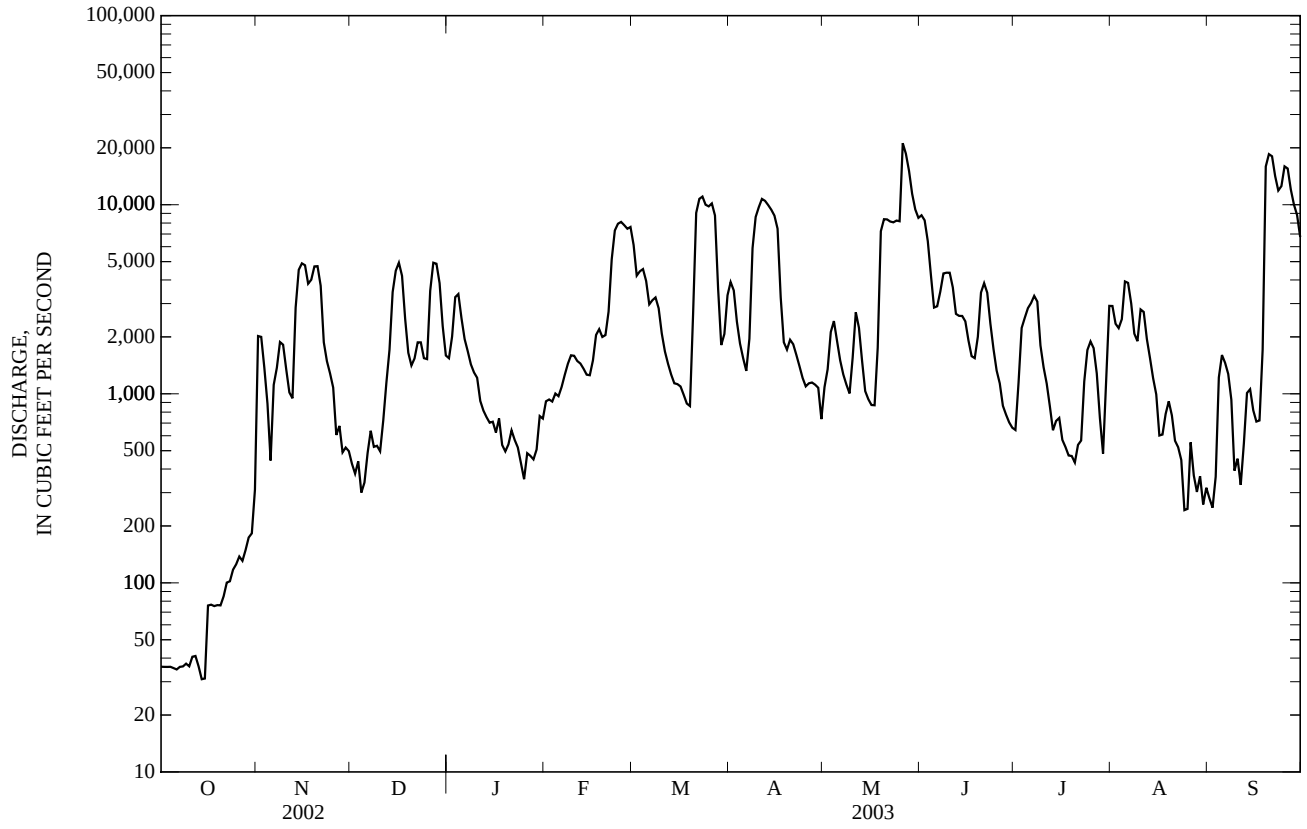
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 2003, BY WATER YEAR (WY)

MEAN	971	1,039	1,348	1,931	2,175	2,533	2,113	1,389	937	553	487	863
MAX	6,869	5,648	3,857	5,868	6,532	6,098	5,003	5,424	5,293	2,123	1,818	5,840
(WY)	(1973)	(1986)	(1997)	(1978)	(1998)	(1993)	(1983)	(2003)	(1972)	(1995)	(1978)	(2003)
MIN	52.2	50.4	157	384	347	478	498	411	91.0	41.0	26.0	33.1
(WY)	(2002)	(2002)	(2002)	(1981)	(2002)	(1981)	(1985)	(1985)	(2002)	(2002)	(2002)	(2002)

02041650 APPOMATTOX RIVER AT MATOACA, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1970 - 2003	
ANNUAL TOTAL	210,430		1,011,555			
ANNUAL MEAN	577		2,771		1,357	
HIGHEST ANNUAL MEAN					2,771	2003
LOWEST ANNUAL MEAN					255	2002
HIGHEST DAILY MEAN	4,940	aDec 16	21,200	May 26	39,400	Oct 7, 1972
LOWEST DAILY MEAN	b18	Aug 26	b31	cOct 14	b18	Aug 26, 2002
ANNUAL SEVEN-DAY MINIMUM	b19	Aug 20	b36	dOct 1	b19	Aug 20, 2002
MAXIMUM PEAK FLOW			25,900	May 26	40,800	Oct 7, 1972
MAXIMUM PEAK STAGE			14.61	May 26	18.39	Oct 7, 1972
INSTANTANEOUS LOW FLOW			b29	Oct 14	b17	fAug 26, 2002
ANNUAL RUNOFF (CFSM)	0.43		2.06		1.01	
ANNUAL RUNOFF (INCHES)	5.82		28.00		13.72	
10 PERCENT EXCEEDS	1,520		8,210		3,330	
50 PERCENT EXCEEDS	254		1,490		662	
90 PERCENT EXCEEDS	29		302		135	

a Also Dec. 27, 2002.
b Result of regulation.
c Also Oct. 15, 2002.
d Also Oct. 2-4, 2002.
e Estimated.
f Also Aug. 27, 2002.



02041650 APPOMATTOX RIVER AT MATOACA, VA—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years l978 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1991 to September 1993.
WATER TEMPERATURE: October 1991 to September 1993.

REMARKS.--Missing gage height values indicate periods that were affected by ice; for these samples only the mean daily discharge is reported.

COOPERATION.--Water samples were collected by the U.S. Geological Survey and analyzed by either the U.S. Geological Survey (Agency Code 80020) or by the Virginia Division of Consolidated Laboratory Services (VDCLS, Agency Code 85116), using analytical methods approved by the U.S. Geological Survey. Analyses performed by VDCLS are reported to U.S. Geological Survey rounding specifications. Results of chemical analyses provided by VDCLS were quality-assured and approved by the U.S. Geological Survey.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Sample type	Agency analyzing sample, code (00028)	Gage height, feet (00065)	Instantaneous discharge, cfs (00061)	Turbidity, NTU (00076)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
OCT												
08...	1220	Environmental	85116	1.29	36	1.2	762	12.2	139	8.5	135	18.5
21...	1100	Environmental	85116	1.66	85	1.2	758	8.9	91	7.7	128	15.0
NOV												
01...	0945	Environmental	85116	4.64	2,000	20	760	9.4	94	6.8	118	8.0
05...	1515	Environmental	85116	2.68	425	8.6	758	10.4	98	6.1	114	9.5
06...	1140	Blank	85116	--	--	0.30	--	--	--	--	--	--
06...	1145	Environmental	85116	3.73	1,180	12	743	11.0	104	7.2	112	11.5
13...	1415	Environmental	85116	5.79	3,310	22	759	11.5	108	7.0	102	15.5
14...	1445	Environmental	85116	6.69	4,670	14	760	12.4	115	7.1	95	15.5
20...	1245	Environmental	85116	6.72	4,720	16	763	11.1	101	6.5	78	15.0
20...	1300	Replicate	85116	6.71	4,710	24	--	--	--	--	--	--
DEC												
02...	1145	Environmental	85116	2.61	393	15	759	11.9	100	7.1	77	7.0
16...	1300	Environmental	85116	6.90	5,030	23	753	13.9	107	6.8	89	12.0
30...	1315	Environmental	85116	4.75	2,120	30	763	13.4	104	6.7	67	14.0
JAN												
09...	1115	Environmental	85116	3.81	1,300	29	740	10.2	86	6.5	71	18.0
21...	1100	Environmental	85116	--	640	15	760	13.3	101	6.7	73	-1.0
FEB												
04...	1230	Environmental	85116	3.41	986	9.4	746	13.2	105	7.7	82	16.0
04...	1245	Replicate	85116	3.49	1,040	7.6	--	--	--	--	--	--
19...	1315	Environmental	85116	4.62	2,000	7.3	765	13.8	104	7.5	84	11.0
19...	1320	Replicate	80020	4.61	1,990	--	--	--	--	--	--	--
24...	1030	Environmental	85116	8.71	8,110	40	759	13.9	108	7.0	80	11.5
MAR												
04...	1245	Environmental	85116	6.66	4,550	29	758	13.2	104	6.9	67	14.0
12...	1330	Environmental	85116	4.10	1,430	14	755	11.9	107	7.4	72	24.0
21...	1515	Environmental	85116	9.48	9,980	18	751	11.5	105	6.7	76	18.5
24...	1330	Environmental	85116	9.45	9,940	21	754	11.1	101	6.6	50	23.0
APR												
10...	1340	Blank	85116	--	--	0.30	--	--	--	--	--	--
10...	1345	Environmental	85116	9.36	9,750	34	749	11.2	101	6.9	58	9.0
24...	1315	Environmental	85116	3.90	1,200	16	754	10.4	108	7.6	64	24.0
MAY												
27...	1015	Environmental	85116	12.54	18,300	46	755	9.7	103	6.4	38	18.0
29...	1245	Environmental	85116	10.14	11,300	38	745	9.3	100	6.5	45	22.0
29...	1300	Replicate	85116	10.11	11,200	37	--	--	--	--	--	--
JUN												
19...	1400	Environmental	85116	4.85	2,060	7.8	749	8.3	100	7.2	75	26.0
JUL												
15...	1345	Environmental	85116	3.31	741	6.1	757	8.2	105	7.5	75	29.0
AUG												
26...	1300	Environmental	85116	2.16	208	4.5	759	8.9	116	7.9	72	31.0
SEP												
19...	1600	Environmental	85116	12.04	16,700	24	747	9.1	107	7.2	75	29.5
25...	1100	Environmental	85116	11.88	16,100	28	753	8.7	101	6.6	52	29.5

02041650 APPOMATTOX RIVER AT MATOACA, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Temperature, water, deg C (00010)	Silica, water, fltrd, mg/L (00955)	Residue fixed non-filterable, mg/L (00540)	Residue total at 105 deg. C, suspended, mg/L (00530)	Residue volatile, suspended, mg/L (00535)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)
OCT													
08...	21.7	16.2	3	3	3	--	--	0.004	0.67	0.672	0.004	0.014	0.014
21...	16.2	14.8	3	3	3	--	--	0.015	0.36	0.364	0.008	0.014	0.018
NOV													
01...	15.1	16.4	23	30	7	--	--	0.238	--	--	--	0.014	0.026
05...	12.2	--	3	4	<3	--	--	0.069	0.29	0.294	0.007	0.014	0.028
06...	--	<0.100	<3	<3	<3	--	--	<0.004	<0.004	<0.004	<0.002	0.002	0.001
06...	11.8	--	7	9	<3	--	--	0.068	0.30	0.306	0.006	0.015	0.027
13...	12.2	17.2	20	26	6	--	--	0.038	0.27	0.274	0.003	0.010	0.025
14...	11.8	17.5	11	14	3	--	--	0.033	0.26	0.257	<0.002	0.011	0.024
20...	10.8	15.0	7	9	<3	--	--	0.032	0.14	0.138	<0.002	0.013	0.032
20...	--	14.9	7	10	3	--	--	0.054	0.14	0.140	<0.002	0.014	0.032
DEC													
02...	7.6	15.0	3	4	<3	--	--	0.040	0.17	0.169	<0.002	0.011	0.040
16...	4.0	16.8	5	7	<3	--	--	0.019	0.26	0.257	<0.002	0.011	0.027
30...	4.9	13.3	13	16	3	--	--	0.013	0.20	0.196	<0.002	0.011	0.030
JAN													
09...	6.7	13.9	9	11	<3	--	--	0.020	0.16	0.161	0.002	0.011	0.024
21...	3.6	13.4	3	4	<3	--	--	0.015	0.20	0.196	<0.002	0.007	0.024
FEB													
04...	4.7	14.2	5	6	<3	--	--	0.006	0.20	0.201	<0.002	0.006	0.016
04...	--	14.4	3	4	<3	--	--	0.006	0.20	0.200	<0.002	0.005	0.012
19...	3.5	14.0	5	6	<3	--	--	<0.004	0.20	0.198	<0.002	0.006	0.014
19...	--	13.9	--	<10	<10	0.23	0.34	<0.015	--	0.184	--	<0.007	E.02
24...	4.4	12.0	14	17	3	--	--	0.034	0.26	0.265	0.002	0.012	0.024
MAR													
04...	5.1	10.5	9	12	3	--	--	0.022	0.23	0.229	0.002	0.008	0.024
12...	9.9	11.4	6	7	<3	--	--	0.007	0.17	0.174	<0.002	0.007	0.022
21...	10.8	11.6	12	15	3	--	--	0.017	0.12	0.124	<0.002	0.009	0.023
24...	10.6	7.60	22	26	4	--	--	0.036	0.20	0.206	0.002	0.014	0.042
APR													
10...	--	<0.100	<3	<3	<3	--	--	<0.004	<0.004	<0.004	<0.002	0.004	0.003
10...	10.2	8.90	18	22	4	--	--	0.034	0.15	0.146	<0.002	0.018	0.034
24...	17.0	9.60	5	8	3	--	--	0.009	0.03	0.034	<0.002	0.006	0.016
MAY													
27...	17.8	6.60	33	39	6	--	--	0.028	0.07	0.072	<0.002	0.010	0.026
29...	18.0	7.60	18	22	4	--	--	0.042	0.09	0.094	0.002	0.016	0.037
29...	--	7.70	14	17	3	--	--	0.047	0.09	0.094	<0.002	0.016	0.039
JUN													
19...	23.9	14.8	5	8	3	--	--	0.066	0.13	0.132	0.004	0.021	0.036
JUL													
15...	27.8	15.0	<3	3	<3	--	--	0.051	0.13	0.140	0.006	0.015	0.034
AUG													
26...	29.0	18.1	<3	<3	<3	--	--	0.019	0.26	0.267	0.004	0.020	0.037
SEP													
19...	22.2	15.7	14	18	4	--	--	0.039	0.12	0.119	<0.002	0.010	0.033
25...	21.7	8.90	9	12	3	--	--	0.036	0.05	0.052	<0.002	0.013	0.045

02041650 APPOMATTOX RIVER AT MATOACA, VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Phosphorus, suspnd sedimnt total, mg/L (00667)	Total nitrogen, suspnd sedimnt total, mg/L (00601)	Total carbon, suspnd sedimnt total, mg/L (00694)	Inorganic carbon, suspnd sedimnt total, mg/L (00688)	Organic carbon, water, fltrd, mg/L (00681)	Pheophytin a, phytoplankton, ug/L (62360)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)
OCT											
08...	--	0.91	0.004	0.04	0.3	--	--	--	--	--	1
21...	--	0.66	0.004	0.03	0.2	--	--	--	--	--	1
NOV											
01...	--	0.70	0.057	0.23	1.8	--	--	--	--	75	34
05...	--	0.71	0.008	0.07	0.5	--	--	--	--	--	5
06...	--	<0.004	0.001	0.01	M	--	--	--	--	--	--
06...	--	0.71	0.018	0.09	0.7	--	--	--	--	88	8
13...	--	0.67	0.051	0.23	1.9	--	--	--	--	65	31
14...	--	0.64	0.030	0.13	1.0	--	--	--	--	62	17
20...	--	0.64	--	0.10	0.8	--	--	--	--	--	--
20...	--	0.62	--	0.10	0.9	--	--	--	--	80	14
DEC											
02...	--	0.62	0.015	0.03	0.4	--	--	--	--	--	7
16...	--	0.55	0.021	0.07	0.8	--	--	--	--	67	12
30...	--	0.57	0.035	0.11	1.1	--	--	--	--	96	15
JAN											
09...	--	0.51	0.030	0.11	1.0	--	--	--	--	--	12
21...	--	0.50	0.020	0.09	0.7	--	--	--	--	--	10
FEB											
04...	--	0.44	0.016	0.09	0.6	--	--	--	--	--	3
04...	--	0.41	0.015	0.10	0.6	--	--	--	--	--	4
19...	--	0.44	0.020	0.09	0.6	--	--	--	--	60	10
19...	0.06	0.41	--	--	--	--	--	--	--	--	--
24...	--	0.55	0.046	0.15	1.2	--	--	--	--	67	39
MAR											
04...	--	0.54	0.030	0.15	1.1	--	--	--	--	87	13
12...	--	0.41	0.023	0.10	0.7	--	--	--	--	--	11
21...	--	0.34	0.025	0.12	1.0	--	--	--	--	47	32
24...	--	0.65	0.048	0.30	2.3	--	--	--	--	89	39
APR											
10...	--	0.01	0.001	0.01	0.5	--	--	--	--	80	1
10...	--	0.56	0.048	0.18	2.1	--	--	--	--	85	27
24...	--	0.32	0.023	0.15	1.0	--	--	<0.5	5.1	--	6
MAY											
27...	--	0.53	0.056	0.25	2.3	--	--	2.0	0.7	84	55
29...	--	0.60	0.046	0.18	1.6	--	--	1.8	0.7	84	33
29...	--	0.61	0.041	0.17	1.6	--	--	0.7	1.4	84	31
JUN											
19...	--	0.58	0.019	0.09	0.9	--	--	5.9	2.3	--	8
JUL											
15...	--	0.58	0.007	0.05	0.3	<0.02	6.9	2.7	<0.5	--	5
AUG											
26...	--	0.68	0.005	0.02	0.3	<0.02	7.7	<0.5	<0.5	--	2
SEP											
19...	--	0.48	0.039	0.21	1.5	M	6.2	6.1	6.0	71	33
25...	--	0.59	0.033	0.16	1.3	0.1	9.8	<0.5	1.2	80	22

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

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02042500 CHICKAHOMINY RIVER NEAR PROVIDENCE FORGE, VA

LOCATION.--Lat 37°26'11", long 77°03'39", NAD83, New Kent County, Hydrologic Unit 02080206, on left bank 100 ft downstream from bridge on State Highway 618, 1.1 mi southwest of Providence Forge, and 1.7 mi downstream from Schiminoe Creek.

DRAINAGE AREA.--252 mi^2.

PERIOD OF RECORD.--January 1942 to current year.

REVISED RECORDS.--WSP 1553: 1956. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 6.07 ft NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good. Maximum discharge, 7,710 ft^3/s, from rating curve extended above 5,520 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

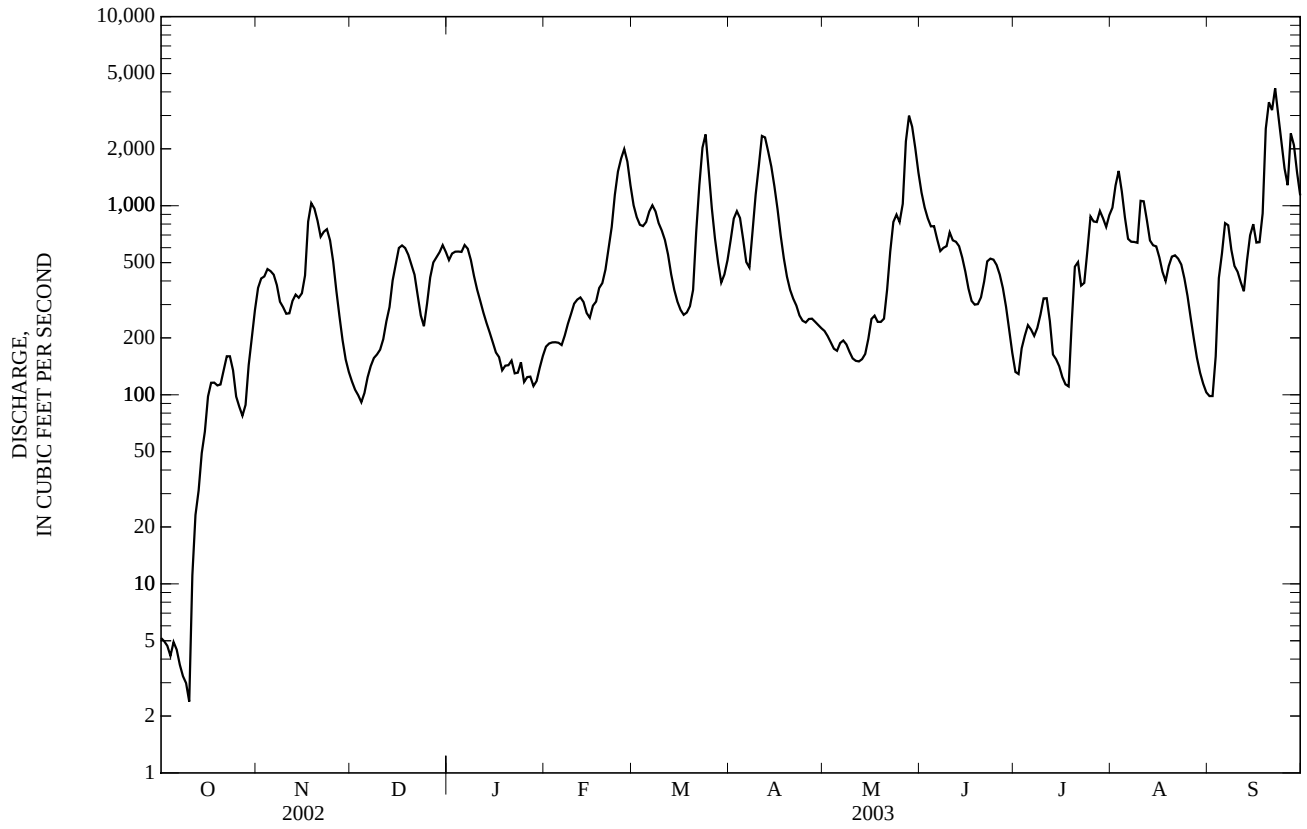
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.2	368	118	516	180	1,000	656	217	1,170	132	977	99
2	5.0	412	106	559	187	870	855	204	979	129	1,280	98
3	4.7	423	99	571	189	793	936	189	857	176	1,530	160
4	4.2	462	91	572	190	780	861	175	778	205	1,190	415
5	4.9	451	102	570	188	820	664	171	780	234	866	560
6	4.5	432	124	620	183	933	504	188	665	221	668	809
7	3.7	380	142	592	206	1,010	471	194	576	205	645	788
8	3.2	311	157	516	237	933	732	185	599	226	643	585
9	3.0	291	163	425	268	809	1,150	168	611	265	637	480
10	2.4	268	173	360	303	740	1,620	156	723	323	1,060	447
11	11	270	197	313	319	659	2,340	151	656	324	1,060	394
12	23	314	245	272	327	551	2,300	150	645	245	840	353
13	31	339	291	240	310	434	1,940	154	611	163	655	512
14	49	326	403	214	271	359	1,610	164	532	154	618	698
15	64	344	491	189	255	311	1,260	198	448	142	609	799
16	98	428	598	167	296	281	958	252	365	124	533	638
17	116	824	617	158	311	265	694	262	314	114	447	642
18	116	1,030	597	135	367	272	528	243	300	111	399	911
19	112	966	550	143	390	294	421	243	302	241	480	2,550
20	113	833	487	143	459	359	359	253	328	476	538	3,530
21	135	686	432	152	595	727	323	359	397	503	547	3,200
22	160	728	335	130	773	1,280	297	571	508	378	525	4,180
23	160	751	262	131	1,140	2,030	263	821	525	391	488	3,010
24	135	656	230	148	1,520	2,380	246	898	518	579	412	2,180
25	98	507	304	117	1,780	1,530	241	820	486	877	333	1,570
26	86	357	418	124	1,990	967	252	1,020	432	826	256	1,280
27	78	260	501	125	1,710	671	253	2,190	367	820	199	2,410
28	88	194	534	111	1,280	499	243	3,000	292	939	157	2,090
29	143	154	568	118	---	392	234	2,620	221	858	131	1,500
30	201	132	619	139	---	433	225	2,020	167	773	114	1,140
31	281	---	569	160	---	515	---	1,500	---	890	103	---
TOTAL	2,338.8	13,897	10,523	8,730	16,224	23,897	23,436	19,736	16,152	12,044	18,940	38,028
MEAN	75.4	463	339	282	579	771	781	637	538	389	611	1,268
MAX	281	1,030	619	620	1,990	2,380	2,340	3,000	1,170	939	1,530	4,180
MIN	2.4	132	91	111	180	265	225	150	167	111	103	98
CFSM	0.30	1.84	1.35	1.12	2.30	3.06	3.10	2.53	2.14	1.54	2.42	5.03
IN.	0.35	2.05	1.55	1.29	2.39	3.53	3.46	2.91	2.38	1.78	2.80	5.61

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 2003, BY WATER YEAR (WY)

MEAN	141	204	279	370	420	474	387	240	169	147	165	143
MAX	794	768	1,043	1,214	1,198	1,055	1,152	676	757	1,081	1,445	1,268
(WY)	(1980)	(1986)	(1958)	(1978)	(1998)	(1998)	(1984)	(1978)	(1972)	(1945)	(1955)	(2003)
MIN	2.99	4.67	28.0	58.7	86.9	108	102	34.9	5.85	0.56	2.92	0.17
(WY)	(2002)	(2002)	(1966)	(1955)	(2002)	(1981)	(1995)	(1985)	(2002)	(2002)	(2002)	(1997)

02042500 CHICKAHOMINY RIVER NEAR PROVIDENCE FORGE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1942 - 2003	
ANNUAL TOTAL	49,463.16		203,945.8			
ANNUAL MEAN	136		559		263	
HIGHEST ANNUAL MEAN					559	2003
LOWEST ANNUAL MEAN					67.6	2002
HIGHEST DAILY MEAN	1,030	Nov 18	4,180	Sep 22	6,680	Aug 15, 1955
LOWEST DAILY MEAN	0.05	Jul 22	2.4	Oct 10	0.05	Jul 22, 2002
ANNUAL SEVEN-DAY MINIMUM	0.07	Jul 17	3.7	Oct 4	0.07	Jul 17, 2002
MAXIMUM PEAK FLOW			4,510	Sep 22	7,710	Aug 15, 1955
MAXIMUM PEAK STAGE			10.62	Sep 22	11.67	Aug 15, 1955
INSTANTANEOUS LOW FLOW			1.3	Oct 10	0.04	Jul 22, 2002
ANNUAL RUNOFF (CFSM)	0.54		2.22		1.04	
ANNUAL RUNOFF (INCHES)	7.30		30.11		14.17	
10 PERCENT EXCEEDS	345		1,140		603	
50 PERCENT EXCEEDS	82		390		167	
90 PERCENT EXCEEDS	0.22		118		20	



0204278995 BAPTIST RUN AT ROUTE 637 NEAR YORKTOWN, VA

LOCATION.--Lat 37°12'48," long 76°31'45", NAD83, York County, Hydrologic unit 02080107, on left bank at downstream side of culvert on State Highway 637, 1.9 mi southwest of Yorktown, and 0.7 mi upstream from Beaverdam Creek.

DRAINAGE AREA.--2.02 mi^2.

PERIOD OF RECORD.--November 2002 to September 2003.

GAGE.--Water stage recorder. Elevation of gage is 55 ft NGVD of 1929, from topographic map.

REMARKS.--Records good.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	0.74	1.9	2.5	4.4	3.1	4.1	5.0	1.2	2.3	3.5
2	---	---	0.71	1.6	1.9	6.1	2.9	4.0	2.7	1.3	4.0	2.4
3	---	---	0.69	1.3	1.5	4.7	2.6	4.4	e2.4	1.4	4.2	3.8
4	---	---	0.66	1.2	1.5	3.9	2.5	4.1	e2.2	1.2	3.0	7.5
5	---	---	5.4	1.0	1.3	9.1	2.4	4.0	e2.0	1.1	3.1	4.7
6	---	---	2.8	1.1	1.1	7.7	2.3	4.0	1.8	1.0	12	2.9
7	---	---	1.9	1.6	4.1	5.2	9.9	3.8	6.8	0.99	14	2.5
8	---	---	1.6	1.3	2.3	4.2	7.5	3.6	7.3	0.97	30	2.2
9	---	---	1.3	1.1	1.7	3.8	34	3.6	3.8	0.96	25	2.1
10	---	---	1.2	0.99	2.2	3.6	17	3.6	2.9	0.95	8.4	2.0
11	---	---	1.5	0.87	2.1	3.4	33	3.5	2.4	0.91	7.0	1.9
12	---	---	1.6	0.82	1.6	3.5	15	3.4	2.2	0.87	5.8	14
13	---	---	2.4	0.83	1.4	3.5	9.7	3.3	2.0	0.98	4.8	13
14	---	---	3.3	0.80	1.2	3.4	7.8	3.3	1.9	1.4	4.2	5.7
15	---	1.3	1.9	0.80	2.5	2.9	6.8	3.3	1.9	1.0	3.8	4.1
16	---	2.1	1.5	0.77	3.6	2.9	6.4	3.2	2.0	0.96	3.5	3.4
17	---	7.7	1.3	0.88	17	3.2	5.9	3.1	1.9	0.91	6.7	2.8
18	---	4.5	1.1	0.80	6.0	3.0	6.0	3.5	1.8	0.91	5.7	26
19	---	2.2	1.1	0.80	4.4	2.6	6.1	3.3	1.8	26	3.8	57
20	---	1.6	1.2	0.90	3.7	5.0	5.5	3.1	1.8	4.2	3.2	11
21	---	1.4	1.1	1.1	3.4	4.6	5.2	3.2	1.6	3.0	2.8	5.9
22	---	2.4	1.0	0.87	6.6	3.6	5.0	5.1	1.6	2.7	2.5	4.6
23	---	1.5	0.93	0.80	6.7	3.1	4.8	4.4	1.5	3.0	2.3	14
24	---	1.1	1.3	0.80	4.1	2.9	4.6	3.6	1.4	2.7	2.2	8.0
25	---	0.99	4.8	0.75	3.5	2.7	4.6	3.1	1.4	2.5	2.1	5.0
26	---	0.88	2.4	0.79	3.3	2.5	4.6	3.4	1.3	2.4	2.0	4.3
27	---	0.85	1.7	0.75	4.2	2.6	4.4	2.9	1.3	2.4	1.9	4.1
28	---	0.81	1.4	0.78	7.4	2.4	4.3	2.8	1.3	2.2	1.8	4.3
29	---	0.79	1.3	1.2	---	2.7	4.2	2.7	1.2	4.7	1.8	3.8
30	---	0.79	1.1	2.9	---	4.9	4.2	2.6	1.2	3.0	2.4	3.4
31	---	---	1.1	4.7	---	3.9	---	5.2	---	2.6	7.6	---
TOTAL	---	---	52.03	36.80	102.8	122.0	232.3	111.2	70.4	80.41	183.9	229.9
MEAN	---	---	1.68	1.19	3.67	3.94	7.74	3.59	2.35	2.59	5.93	7.66
MAX	---	---	5.4	4.7	17	9.1	34	5.2	7.3	26	30	57
MIN	---	---	0.66	0.75	1.1	2.4	2.3	2.6	1.2	0.87	1.8	1.9
CFSM	---	---	0.83	0.59	1.82	1.95	3.83	1.78	1.16	1.28	2.94	3.79
IN.	---	---	0.96	0.68	1.89	2.25	4.28	2.05	1.30	1.48	3.39	4.23

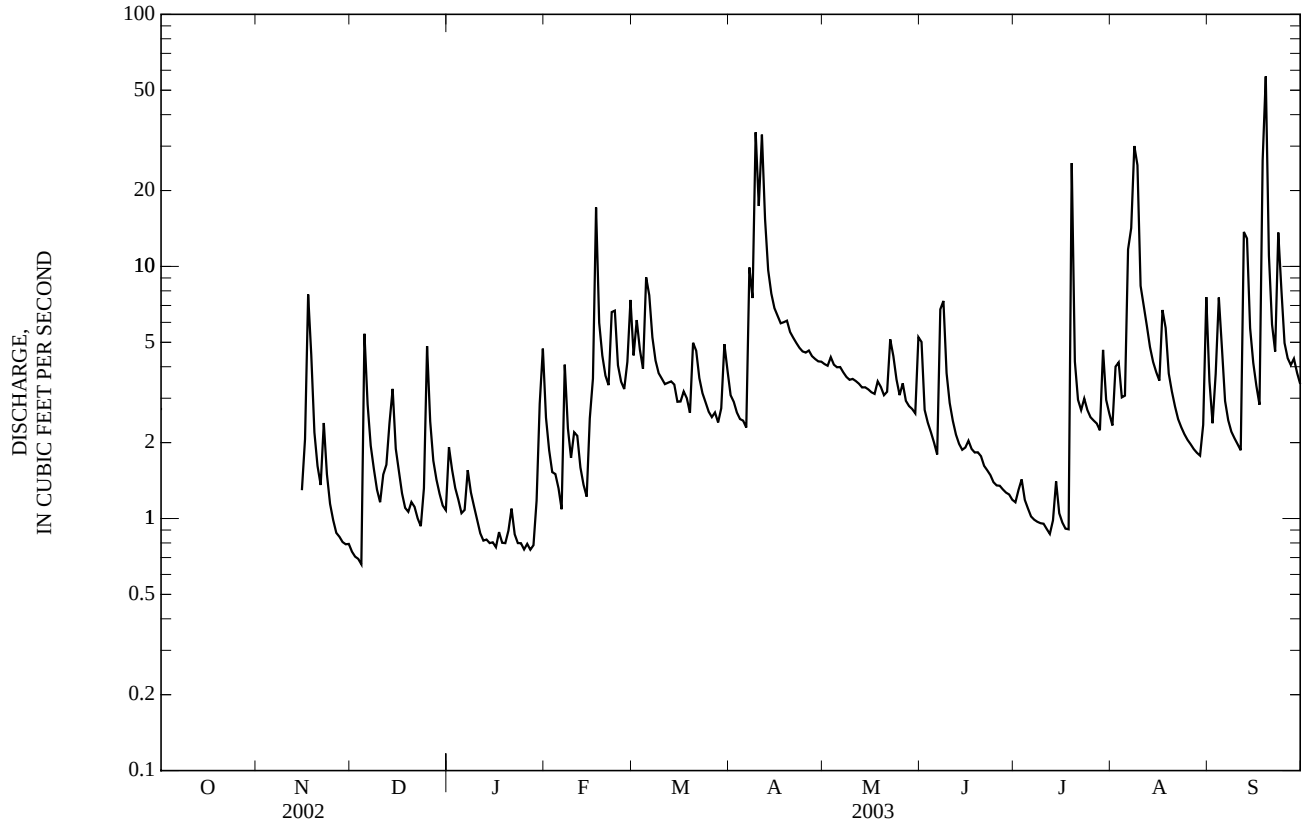
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2003, BY WATER YEAR (WY)

MEAN	---	---	1.68	1.19	3.67	3.94	7.74	3.59	2.35	2.59	5.93	7.66
MAX	---	---	1.68	1.19	3.67	3.94	7.74	3.59	2.35	2.59	5.93	7.66
(WY)	---	---	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	---	---	1.68	1.19	3.67	3.94	7.74	3.59	2.35	2.59	5.93	7.66
(WY)	---	---	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)

0204278995 BAPTIST RUN AT ROUTE 637 NEAR YORKTOWN, VA—Continued

SUMMARY STATISTICS	FOR WATER YEAR 2003		
HIGHEST DAILY MEAN	57	Sep	19
LOWEST DAILY MEAN	0.66	Dec	4
ANNUAL SEVEN-DAY MINIMUM	0.74	Nov	28
MAXIMUM PEAK FLOW	90	Sep	19
MAXIMUM PEAK STAGE	4.87	Sep	19
INSTANTANEOUS LOW FLOW	0.45	aJan	23

a Result of freeze-up, upstream from gage.
e Estimated.



0204278995 BAPTIST RUN AT ROUTE 637 NEAR YORKTOWN,VA—Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--November 2002 to September 2003.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Sample type	Gage height, feet (00065)	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Ammonia + org-N, water, fltrd, mg/L as N (00623)
DEC												
18...	1130	Environmental	1.90	1.1	770	11.1	90	7.6	358	5.9	6.9	0.11
JAN												
27...	1010	Environmental	1.83	0.75	767	14.1	98	7.9	402	--	0.7	E.06
FEB												
22...	0700	Environmental	2.24	4.1	752	9.6	82	7.3	290	8.4	8.6	0.20
22...	0800	Environmental	2.26	4.3	751	9.1	80	7.4	289	--	8.6	--
22...	0825	Environmental	2.39	6.0	751	9.0	79	7.5	289	--	8.8	--
22...	0830	Environmental	2.43	6.5	751	9.0	78	7.5	288	8.5	8.9	0.18
22...	0850	Environmental	2.51	7.8	751	9.1	79	7.5	274	--	8.9	--
22...	0915	Environmental	2.56	8.5	751	9.3	81	7.5	226	--	8.7	0.22
22...	0930	Environmental	2.56	8.5	750	9.4	82	7.4	204	--	8.5	--
22...	0945	Environmental	2.54	8.2	750	9.4	82	7.3	199	--	8.3	--
22...	1000	Environmental	2.52	7.9	750	9.4	81	7.3	199	--	8.3	--
22...	1015	Environmental	2.50	7.6	750	9.4	81	7.3	196	--	8.2	--
22...	1030	Environmental	2.49	7.4	750	9.4	81	7.3	195	--	8.2	--
22...	1045	Environmental	2.48	7.3	750	9.4	82	7.3	195	--	8.3	0.21
22...	1100	Environmental	2.46	7.0	750	9.3	81	7.3	197	--	8.4	--
22...	1115	Environmental	2.44	6.7	750	9.3	81	7.3	201	--	8.5	--
22...	1130	Environmental	2.43	6.5	749	9.3	81	7.3	204	--	8.6	--
22...	1245	Environmental	2.38	5.8	747	9.1	81	7.3	222	--	9.3	--
22...	1300	Environmental	2.37	5.7	747	9.1	81	7.3	225	--	9.5	--
22...	1430	Environmental	2.35	5.4	747	9.0	81	--	229	--	9.8	--
22...	1445	Environmental	2.34	5.3	747	8.9	80	7.4	229	--	9.6	0.20
22...	1515	Environmental	2.41	6.2	747	8.9	79	7.3	266	--	9.4	--
22...	1530	Environmental	2.41	6.2	747	8.8	78	7.3	268	--	9.3	--
22...	1600	Environmental	2.42	6.4	747	8.8	78	7.3	269	--	9.3	--
22...	1615	Environmental	2.42	6.4	747	8.8	78	7.3	270	--	9.2	--
22...	1630	Environmental	2.42	6.4	747	8.8	78	7.3	270	--	9.2	0.21
24...	1130	Environmental	2.24	4.1	764	11.0	96	7.1	376	7.8	9.2	0.20
26...	0930	Environmental	2.15	3.1	765	11.4	94	7.6	400	0.6	7.1	0.14
MAR												
20...	1145	Environmental	2.10	3.2	759	9.9	91	7.6	308	--	11.2	0.15
20...	1500	Environmental	2.32	5.8	756	9.2	86	7.4	275	--	12.0	0.22
20...	1615	Environmental	2.57	9.7	755	9.4	87	7.3	242	15.5	11.8	0.27
20...	1730	Environmental	2.62	10	755	9.4	87	7.2	225	--	11.8	0.30
20...	1735	Replicate	2.62	10	--	--	--	--	--	--	--	0.31
21...	0015	Environmental	2.32	5.8	755	8.9	85	7.3	259	--	12.6	0.24
21...	0630	Environmental	2.25	4.9	755	9.0	--	7.3	--	--	12.6	0.25
21...	1130	Environmental	2.22	4.6	754	10.0	--	7.4	--	17.7	14.1	0.23
JUN												
04...	1325	Environmental	--	--	752	8.4	87	7.4	346	--	16.4	0.15
JUL												
02...	1045	Environmental	1.81	1.3	761	8.7	90	7.7	369	22.0	17.0	E.08
SEP												
04...	1745	Environmental	2.20	4.7	757	7.8	89	7.4	228	--	21.5	0.34
04...	1800	Environmental	2.22	4.9	757	7.7	88	7.3	227	--	21.4	--
04...	1815	Environmental	2.24	5.2	757	7.7	87	7.3	230	--	21.4	--
04...	1900	Environmental	2.26	5.4	757	7.6	85	7.2	233	--	21.2	--
04...	1915	Environmental	2.27	5.6	756	7.5	84	7.2	235	--	21.0	--
04...	2045	Environmental	2.70	12	758	7.5	87	7.2	130	--	22.4	--
04...	2100	Environmental	2.70	12	758	7.4	86	7.1	123	--	22.7	0.59
04...	2115	Environmental	2.69	12	758	7.4	85	7.1	124	--	22.8	--
04...	2130	Environmental	2.67	12	758	7.3	85	7.1	123	--	22.9	--
04...	2145	Environmental	2.65	12	758	7.3	86	7.0	125	--	23.0	0.53
04...	2200	Environmental	2.63	11	758	7.3	85	7.0	127	--	23.0	--
04...	2215	Environmental	2.60	11	758	7.3	85	7.0	130	--	22.9	--
04...	2230	Environmental	2.56	9.9	758	7.3	85	7.0	136	--	22.8	0.45
04...	2235	Replicate	2.56	9.9	--	--	--	--	--	--	--	0.51
04...	2245	Environmental	2.54	9.7	758	7.3	85	7.0	138	--	22.8	--
04...	2300	Environmental	2.51	9.2	758	7.3	84	7.1	145	--	22.6	--
04...	2315	Environmental	2.49	8.8	758	7.3	84	7.1	148	--	22.5	0.44
04...	2330	Environmental	2.47	8.5	758	7.3	84	7.1	151	--	22.5	--
04...	2345	Environmental	2.44	8.0	758	7.3	84	7.1	156	--	22.3	--
05...	0000	Environmental	2.43	7.9	758	7.3	84	7.1	160	--	22.2	--
05...	0015	Environmental	2.42	7.7	758	7.3	84	7.1	163	--	22.1	0.55

0204278995 BAPTIST RUN AT ROUTE 637 NEAR YORKTOWN,VA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Phos-phorus, water, fltrd, mg/L (00666)	Phos-phorus, water, unfltrd mg/L (00665)	Chloro-phyll a phyto-plank-ton, fluoro, ug/L (70953)
DEC								
18...	0.12	E.008	0.040	<0.002	0.012	0.015	0.166	1.8
JAN								
27...	E.09	<0.015	0.036	<0.002	0.010	0.012	0.024	--
FEB								
22...	0.24	E.012	0.157	<0.002	0.016	0.023	0.046	4.3
22...	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--
22...	0.46	E.010	0.132	<0.002	0.018	0.023	0.078	5.7
22...	--	--	--	--	--	--	--	--
22...	0.56	E.008	0.104	<0.002	0.012	0.018	0.085	6.8
22...	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--
22...	0.45	<0.015	0.208	E.002	0.008	0.013	0.073	6.6
22...	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--
22...	0.42	<0.015	0.160	E.002	0.011	0.017	0.065	7.4
22...	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--
22...	0.36	<0.015	0.143	<0.002	0.011	0.017	0.058	4.8
24...	0.22	<0.015	0.108	<0.002	0.016	0.022	0.043	5.6
26...	0.21	0.015	0.129	<0.002	0.019	0.023	0.038	2.7
MAR								
20...	0.26	0.023	0.088	<0.002	0.022	0.028	0.058	--
20...	0.57	E.013	0.073	<0.002	0.016	0.023	0.114	--
20...	1.1	E.012	0.092	E.002	0.012	0.020	0.21	--
20...	0.89	0.015	0.115	E.002	0.009	0.015	0.151	--
20...	0.99	0.015	0.115	E.002	0.008	0.015	0.185	--
21...	0.46	E.012	0.090	E.002	0.013	0.021	0.073	--
21...	0.39	E.014	0.093	<0.002	0.016	0.023	0.060	--
21...	0.35	E.011	0.079	<0.002	0.017	0.023	0.052	--
JUN								
04...	0.30	0.032	0.140	E.002	0.022	0.031	0.068	--
JUL								
02...	0.36	0.025	0.189	<0.002	0.037	0.045	0.106	--
SEP								
04...	0.82	0.016	0.073	0.003	0.011	0.029	0.165	--
04...	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--
04...	1.7	<0.015	0.086	0.005	<0.007	0.029	0.27oc	--
04...	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--
04...	1.0	<0.015	0.090	0.005	<0.007	0.027	0.177	--
04...	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--
04...	0.97	<0.015	0.091	0.005	<0.007	0.027	0.129	--
04...	0.88	<0.015	0.090	0.004	E.005n	0.026	0.131	--
04...	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--
04...	1.0	<0.015	0.082	0.003	0.010	0.025	0.146	--
04...	--	--	--	--	--	--	--	--
04...	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	--	--
05...	0.86	<0.015	0.077	0.003	0.009	0.026	0.115	--

Remark codes used in this table:
< -- Less than
E -- Estimated value

Value qualifier codes used in this table:
c -- See laboratory comment
n -- Below the NDV
o -- Result determined by alternate method

02044500 NOTTOWAY RIVER NEAR RAWLINGS, VA

LOCATION.--Lat 36°59'01", long 77°47'59", NAD83, Brunswick County, Hydrologic Unit 03010201, on right bank at downstream side of bridge on State Highway 612 at Harpers Bridge, 0.1 mi upstream from Beaver Pond Creek, and 2.6 mi northwest of Rawlings.

DRAINAGE AREA.--309 mi^2.

PERIOD OF RECORD.--October 1950 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 184.88 ft NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 19, 20, 25, and periods of no gage-height record, May 27 to June 3 and Sept. 3, 4, which are fair. Maximum discharge, 29,900 ft^3/s, from rating curve extended above 16,000 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some periods have been collected at this location.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 20.8 ft, discharge, about 19,000 ft^3/s, from information by local resident.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 24	0745	2,740	7.53	May 26	2000	*28,100	*22.65
Mar 21	2230	8,980	13.66	Aug 10	0915	3,010	7.97
Apr 10	1045	4,560	10.11	Sep 20	0100	14,300	16.77
May 20	0800	3,590	8.92	Sep 25	0130	4,390	9.95

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.9	412	100	298	255	968	904	783	e730	950	286	137
2	6.2	216	92	820	252	1,060	600	1,680	e840	1,010	341	141
3	5.2	149	90	1,020	251	1,220	480	688	e640	2,040	338	e130
4	4.6	128	86	532	234	780	407	620	494	1,310	351	e295
5	4.4	128	103	392	241	587	364	494	508	679	1,110	513
6	4.2	287	126	317	259	603	337	398	516	440	589	385
7	4.2	891	129	281	302	715	722	356	562	477	753	234
8	7.2	433	122	255	568	603	2,350	322	1,310	400	808	187
9	4.4	229	119	237	529	469	3,660	310	1,180	319	1,000	172
10	3.1	166	120	221	375	392	4,330	343	863	486	2,640	164
11	7.4	140	141	202	347	339	3,190	337	567	425	1,150	152
12	144	161	338	186	331	312	2,340	300	472	301	579	148
13	287	739	542	176	276	296	1,130	251	813	251	477	196
14	136	1,040	1,180	172	240	303	682	219	775	325	355	219
15	99	413	1,410	170	248	283	530	205	494	278	295	210
16	127	261	603	164	530	265	451	249	410	234	259	187
17	276	274	351	165	721	265	397	286	397	215	238	163
18	222	883	261	161	473	260	354	494	471	204	223	782
19	123	969	217	e135	383	248	422	2,270	953	222	255	11,300
20	81	416	207	e145	535	1,200	459	3,300	1,780	288	258	11,200
21	71	279	252	165	921	5,730	388	1,230	1,150	250	219	3,120
22	76	223	286	161	1,280	6,250	348	1,330	626	208	197	624
23	78	184	208	154	2,210	1,440	315	1,890	458	373	182	741
24	71	158	206	132	2,510	667	282	1,490	368	474	169	2,390
25	60	142	996	e130	871	520	270	1,090	315	320	156	3,160
26	55	132	1,820	138	550	435	339	15,700	283	246	149	638
27	61	123	1,110	139	493	391	347	e17,000	263	210	145	422
28	84	114	492	123	886	359	298	e3,940	296	188	138	354
29	132	107	362	139	---	344	262	e1,600	388	183	132	310
30	559	104	297	181	---	734	240	e1,100	326	235	129	275
31	799	---	261	243	---	1,290	---	e850	---	301	130	---
TOTAL	3,599.8	9,901	12,627	7,754	17,071	29,328	27,198	61,125	19,248	13,842	14,051	38,949
MEAN	116	330	407	250	610	946	907	1,972	642	447	453	1,298
MAX	799	1,040	1,820	1,020	2,510	6,250	4,330	17,000	1,780	2,040	2,640	11,300
MIN	3.1	104	86	123	234	248	240	205	263	183	129	130
CFSM	0.38	1.07	1.32	0.81	1.97	3.06	2.93	6.38	2.08	1.45	1.47	4.20
IN.	0.43	1.19	1.52	0.93	2.06	3.53	3.27	7.36	2.32	1.67	1.69	4.69

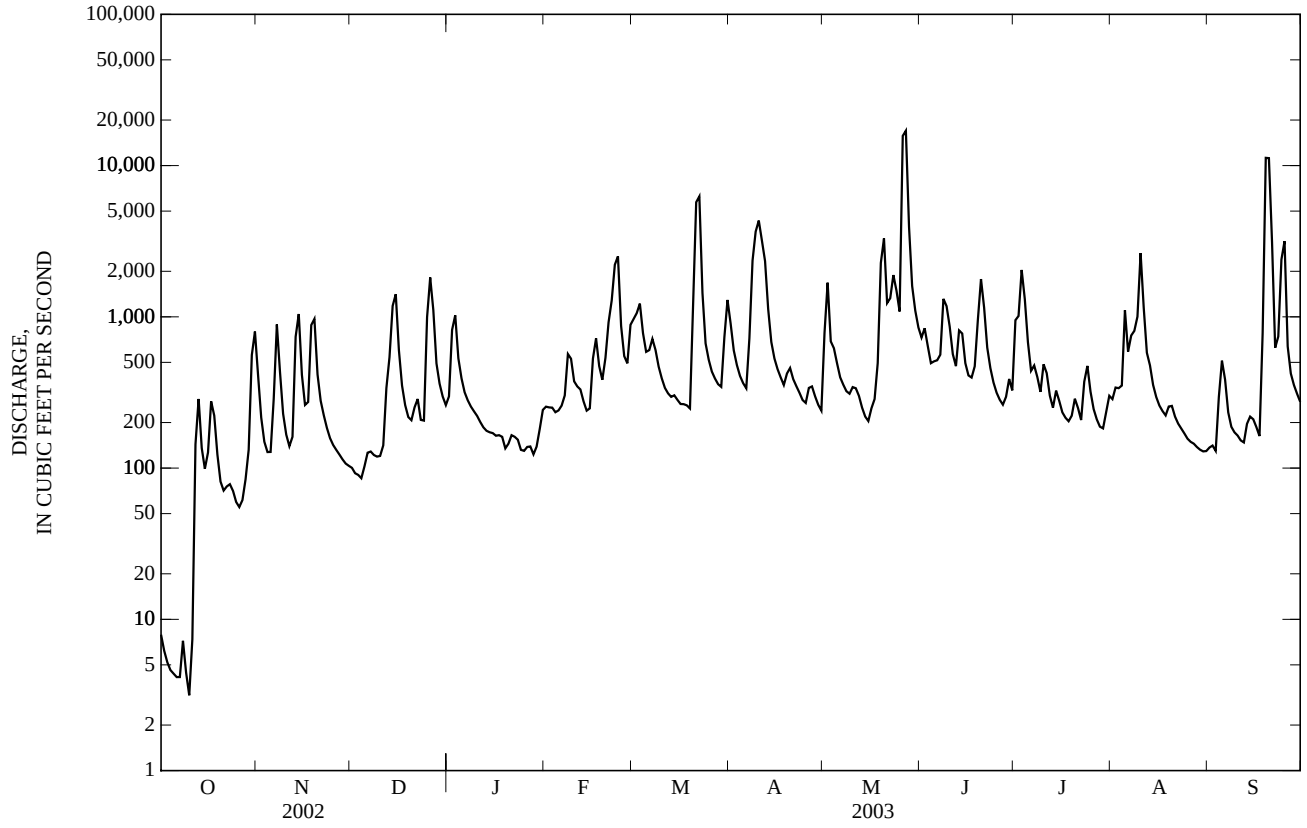
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2003, BY WATER YEAR (WY)

MEAN	219	240	287	406	485	558	470	327	221	153	132	182
MAX	2,024	1,560	893	1,289	1,248	1,350	1,201	1,972	1,359	965	650	1,436
(WY)	(1973)	(1986)	(1958)	(1978)	(1979)	(1998)	(1987)	(2003)	(1972)	(1975)	(1955)	(1979)
MIN	13.0	39.4	58.1	95.0	90.2	126	119	98.3	16.6	15.2	2.35	3.62
(WY)	(1964)	(2002)	(2002)	(1966)	(2002)	(1981)	(2002)	(1991)	(2002)	(2002)	(2002)	(1954)

02044500 NOTTOWAY RIVER NEAR RAWLINGS, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1951 - 2003	
ANNUAL TOTAL	48,832.70		254,693.8			
ANNUAL MEAN	134		698		306	
HIGHEST ANNUAL MEAN					698	2003
LOWEST ANNUAL MEAN					71.6	2002
HIGHEST DAILY MEAN	1,820	Dec 26	17,000	May 27	27,400	Oct 6, 1972
LOWEST DAILY MEAN	0.58	Aug 14	3.1	Oct 10	0.40	Oct 14, 1954
ANNUAL SEVEN-DAY MINIMUM	0.68	Aug 9	4.6	Oct 4	0.68	Aug 9, 2002
MAXIMUM PEAK FLOW			28,100	May 26	29,900	Oct 6, 1972
MAXIMUM PEAK STAGE			22.65	May 26	23.25	Oct 6, 1972
INSTANTANEOUS LOW FLOW			2.8	Oct 10	0.40	aOct 14, 1954
ANNUAL RUNOFF (CFSM)	0.43		2.26		0.99	
ANNUAL RUNOFF (INCHES)	5.88		30.66		13.44	
10 PERCENT EXCEEDS	281		1,210		580	
50 PERCENT EXCEEDS	77		317		170	
90 PERCENT EXCEEDS	4.0		127		42	

a Also Oct. 15, 1954.
e Estimated.



02045500 NOTTOWAY RIVER NEAR STONY CREEK, VA

LOCATION.--Lat 36°54'01", long 77°23'59", NAD83, Sussex County, Hydrologic Unit 03010201, on left bank 15 ft downstream from bridge on U.S. Highway 301, 1.8 mi upstream from Island Swamp, 3.3 mi south of town of Stony Creek, and 4.4 mi upstream from Stony Creek.

DRAINAGE AREA.--579 mi^2.

PERIOD OF RECORD.--October 1929 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 802: 1935(M). WSP 972: 1931(M), 1932, 1934-35, 1939. WSP 2104: Drainage area. WDR VA-74-1: 1972.

GAGE.--Water-stage recorder. Datum of gage is 58.42 ft NGVD of 1929. Prior to Oct. 11, 1934, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 18-21, 24-26, which are fair. Diurnal fluctuation at low flow caused by Baskerville Mill, 33 mi upstream. Maximum discharge, 25,200 ft^3/s, from rating curve extended above 13,000 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 24	0330	3,990	14.22	Jun 9	0100	3,650	13.72
Mar 23	2200	6,810	17.20	Jun 16	1830	3,810	14.12
Apr 11	2130	6,900	17.28	Jul 3	2300	3,620	13.65
May 21	1630	3,750	13.76	Aug 11	1300	4,300	15.34
May 24	1330	4,510	14.91	Sep 21	0900	*13,400	*20.35
May 28	2300	*13,400	*20.35	Sep 26	1130	3,790	14.15

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	1,060	171	757	1,010	2,620	2,810	442	1,440	811	448	165
2	15	568	162	1,660	753	2,360	1,510	1,400	1,500	1,830	440	176
3	14	325	148	1,770	620	2,820	1,020	1,740	1,240	3,310	571	175
4	13	227	143	1,390	559	2,100	815	922	938	3,440	518	253
5	13	191	189	908	500	1,390	692	851	889	2,010	647	646
6	11	424	272	725	475	1,410	611	680	874	1,060	1,310	820
7	10	1,010	365	628	727	1,520	1,230	588	856	818	819	556
8	9.4	1,190	357	572	1,110	1,320	3,790	537	2,870	909	1,700	359
9	9.0	609	317	522	1,080	1,030	4,620	497	3,460	718	1,660	279
10	9.1	368	305	480	880	834	6,520	691	2,440	731	3,290	242
11	20	267	325	432	840	701	6,830	687	1,480	919	4,230	220
12	69	240	684	389	742	625	6,620	565	1,090	684	2,620	215
13	160	569	960	361	642	579	4,920	448	1,040	505	1,200	295
14	400	1,550	2,140	343	542	563	2,040	349	1,360	422	854	410
15	185	1,260	2,340	334	530	547	1,180	288	1,080	510	650	385
16	127	651	1,830	323	1,070	501	956	280	3,070	425	531	342
17	175	649	944	323	1,360	479	823	377	2,130	397	469	279
18	398	1,250	637	e310	1,160	481	722	531	1,380	407	450	912
19	303	1,700	496	e285	936	457	754	2,860	1,250	807	534	7,910
20	161	1,230	439	e265	1,150	1,120	933	3,580	2,490	670	659	12,700
21	108	690	786	e320	1,590	4,430	829	3,700	2,570	519	475	13,200
22	88	573	627	335	2,280	5,630	702	2,600	1,530	416	375	10,800
23	96	447	535	311	3,690	6,440	620	3,550	1,000	450	326	4,700
24	91	355	473	e245	3,940	5,210	537	4,350	781	865	287	2,710
25	86	292	2,060	e280	3,450	1,400	479	3,360	639	793	253	3,100
26	75	255	3,110	e260	1,490	876	635	2,750	547	532	224	3,610
27	64	232	2,810	278	1,060	768	1,430	4,530	480	398	205	1,500
28	63	210	1,420	257	2,470	681	854	11,300	518	324	192	838
29	91	191	860	269	---	615	594	11,700	661	276	178	704
30	353	179	689	373	---	1,560	479	5,860	619	269	165	591
31	1,120	---	591	1,080	---	3,270	---	2,050	---	356	161	---
TOTAL	4,350.5	18,762	27,185	16,785	36,656	54,337	56,555	74,063	42,222	26,581	26,441	69,092
MEAN	140	625	877	541	1,309	1,753	1,885	2,389	1,407	857	853	2,303
MAX	1,120	1,700	3,110	1,770	3,940	6,440	6,830	11,700	3,460	3,440	4,230	13,200
MIN	9.0	179	143	245	475	457	479	280	480	269	161	165
CFSM	0.24	1.08	1.51	0.94	2.26	3.03	3.26	4.13	2.43	1.48	1.47	3.98
IN.	0.28	1.21	1.75	1.08	2.36	3.49	3.63	4.76	2.71	1.71	1.70	4.44

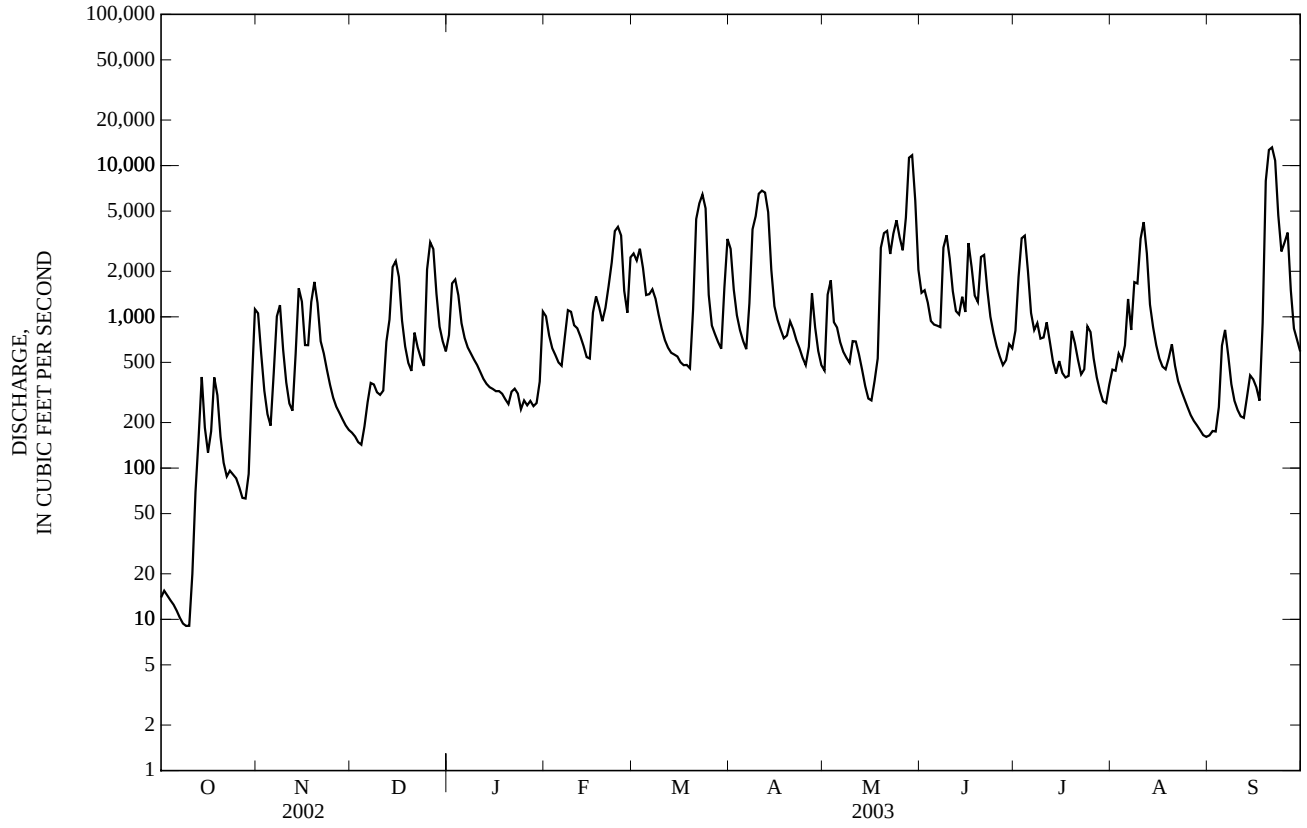
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2003, BY WATER YEAR (WY)

MEAN	304	399	513	807	929	1,038	874	554	353	348	301	331
MAX	2,666	2,800	1,783	2,578	2,355	2,827	2,261	2,389	1,612	2,423	3,057	2,802
(WY)	(1973)	(1986)	(1958)	(1936)	(1979)	(1998)	(1987)	(2003)	(1938)	(1938)	(1940)	(1999)
MIN	14.0	43.1	65.7	109	174	196	192	129	30.1	26.1	13.5	9.40
(WY)	(1931)	(1942)	(1966)	(1966)	(2002)	(1981)	(1966)	(1942)	(2002)	(2002)	(2002)	(1932)

02045500 NOTTOWAY RIVER NEAR STONY CREEK, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1931 - 2003	
ANNUAL TOTAL	94,373.7		453,029.5			
ANNUAL MEAN	259		1,241		561	
HIGHEST ANNUAL MEAN					1,241	2003
LOWEST ANNUAL MEAN					134	2002
HIGHEST DAILY MEAN	3,110	Dec 26	13,200	Sep 21	24,000	Aug 17, 1940
LOWEST DAILY MEAN	1.5	Aug 25	9.0	Oct 9	1.5	Aug 25, 2002
ANNUAL SEVEN-DAY MINIMUM	3.2	Aug 21	11	Oct 4	3.2	Aug 21, 2002
MAXIMUM PEAK FLOW			13,400	aMay 28	25,200	Aug 17, 1940
MAXIMUM PEAK STAGE			20.35	aMay 28	23.66	Aug 17, 1940
INSTANTANEOUS LOW FLOW			8.5	Oct 10	1.3	Aug 25, 2002
ANNUAL RUNOFF (CFSM)	0.45		2.14		0.97	
ANNUAL RUNOFF (INCHES)	6.06		29.11		13.15	
10 PERCENT EXCEEDS	633		3,080		1,180	
50 PERCENT EXCEEDS	128		649		300	
90 PERCENT EXCEEDS	9.6		183		59	

a Also Sept. 21, 2003.
e Estimated.



02046000 STONY CREEK NEAR DINWIDDIE, VA

LOCATION.--Lat 37°04'02", long 77°36'09", NAD83, Dinwiddie County, Hydrologic Unit 03010201, on right bank at upstream side of upstream bridge on U.S. Highway 1, 1.2 mi southwest of Dinwiddie, 1.7 mi downstream from Chamberlains Bed Creek, and 5.7 mi downstream from confluence of White Oak and Butterwood Creeks.

DRAINAGE AREA.--112 mi^2.

PERIOD OF RECORD.--September 1946 to current year. Published as "at Dinwiddie" September 1946 to September 1947 and October 1949 to September 1950.

REVISED RECORDS.--WSP 1303: 1947(M). WSP 1433: 1951(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 129.94 ft NGVD of 1929. Prior to June 12, 1957, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Oct. 2-9 and Sept. 19, and periods with ice effect, Dec. 4 and Jan. 17-27, which are fair. Maximum discharge, 11,400 ft^3/s, from rating curve extended above 5,800 ft^3/s on basis of contracted-opening measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar 21	0800	2,360	11.20	May 26	2015	8,880	18.79
Mar 30	1930	1,260	8.78	Jun 8	0500	1,240	8.72
Apr 9	2345	1,990	10.50	Jun 19	2145	1,540	9.52
May 19	0815	1,920	10.35	Sep 19	---	*9,640	*19.41

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.21	38	34	387	138	456	553	148	529	105	93	34
2	e0.17	20	32	387	108	445	317	326	417	217	90	32
3	e0.15	15	30	208	86	391	221	286	269	619	78	34
4	e0.14	16	e22	153	76	247	173	223	217	456	67	235
5	e0.13	21	24	113	72	239	147	161	203	219	64	252
6	e0.14	175	31	116	62	281	130	132	175	140	78	151
7	e0.28	142	37	97	148	324	498	117	289	141	84	97
8	e0.18	64	39	84	205	230	997	110	999	111	181	69
9	e0.10	41	42	75	136	175	1,390	152	578	105	512	57
10	0.44	30	40	65	113	139	1,660	693	371	185	397	50
11	1.3	25	70	57	120	115	1,130	545	250	186	687	44
12	3.1	32	156	51	97	104	728	325	377	119	304	58
13	3.8	185	135	48	80	96	410	185	563	84	140	336
14	1.8	134	464	46	69	102	270	130	408	78	102	243
15	1.0	74	261	44	78	94	206	109	364	66	83	145
16	5.0	51	151	42	227	89	173	164	456	58	72	99
17	15	101	103	e41	179	88	146	196	334	53	67	73
18	7.9	332	78	e38	136	84	130	534	356	48	62	913
19	5.8	173	64	e35	125	79	187	1,740	796	105	75	e8,400
20	3.7	109	67	e40	223	646	207	1,030	962	312	63	3,350
21	3.6	81	67	e45	350	2,120	166	453	501	225	56	906
22	5.7	64	56	e41	668	1,120	142	607	271	103	51	368
23	5.3	51	49	e37	1,000	423	124	715	181	138	47	393
24	3.6	41	60	e31	788	255	110	905	139	245	43	417
25	2.7	36	500	e36	359	188	103	634	116	164	40	320
26	2.6	31	455	e34	197	155	182	5,050	99	106	38	216
27	2.8	28	235	e32	178	137	170	4,490	84	77	36	153
28	3.6	38	137	33	559	120	131	1,090	175	62	34	125
29	29	39	100	37	---	118	110	560	147	55	32	105
30	152	37	81	64	---	928	96	390	111	105	31	90
31	95	---	70	118	---	949	---	308	---	116	34	---
TOTAL	356.24	2,224	3,690	2,635	6,577	10,937	11,007	22,508	10,737	4,803	3,741	17,765
MEAN	11.5	74.1	119	85.0	235	353	367	726	358	155	121	592
MAX	152	332	500	387	1,000	2,120	1,660	5,050	999	619	687	8,400
MIN	0.10	15	22	31	62	79	96	109	84	48	31	32
CFSM	0.10	0.66	1.06	0.76	2.10	3.15	3.28	6.48	3.20	1.38	1.08	5.29
IN.	0.12	0.74	1.23	0.88	2.18	3.63	3.66	7.48	3.57	1.60	1.24	5.90

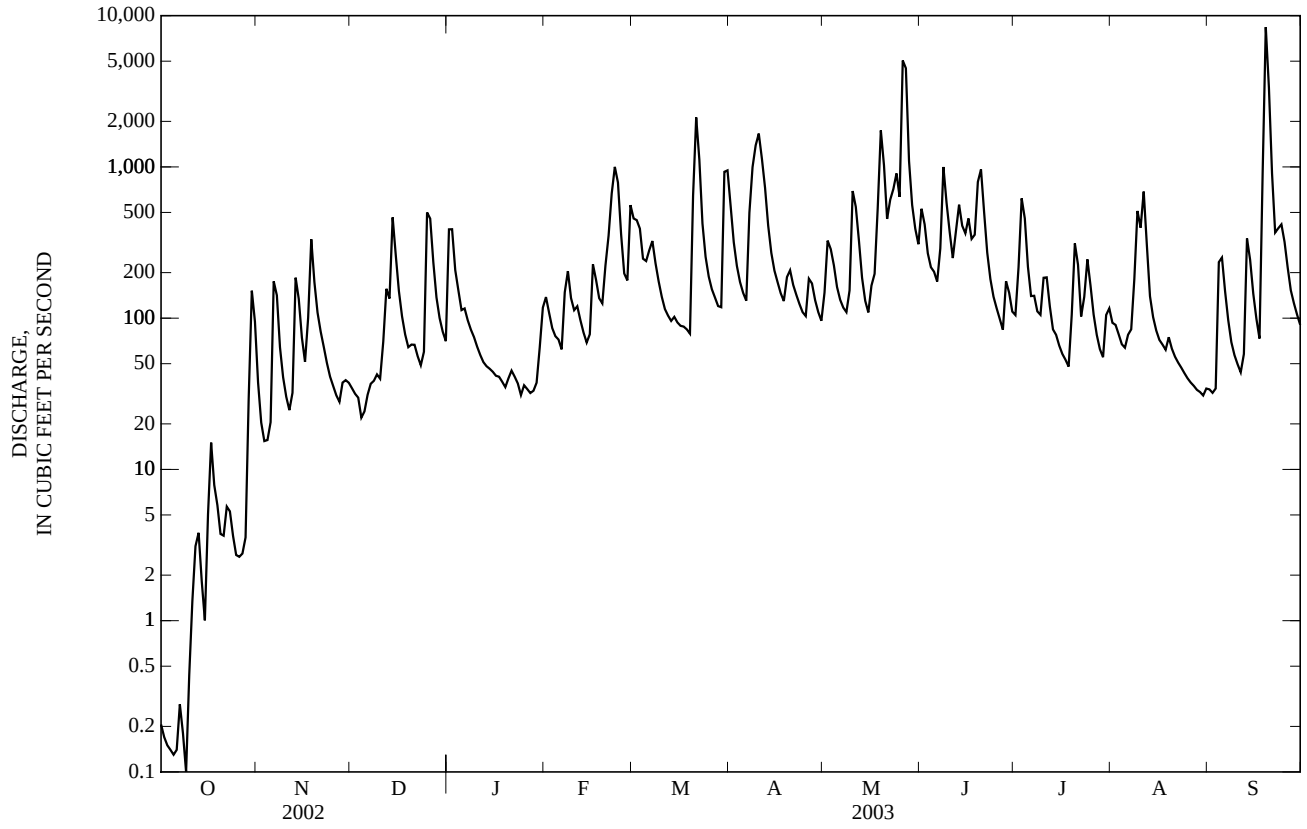
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 2003, BY WATER YEAR (WY)

MEAN	65.6	83.5	103	161	192	216	168	104	64.8	47.8	45.0	66.0
MAX	554	510	426	549	541	551	379	726	358	560	288	774
(WY)	(1973)	(1986)	(1958)	(1978)	(1979)	(1998)	(2000)	(2003)	(2003)	(1975)	(1955)	(1979)
MIN	0.12	2.99	5.68	15.5	21.3	27.7	27.0	20.9	5.36	2.02	0.97	0.18
(WY)	(1955)	(1966)	(1966)	(1966)	(2002)	(1981)	(1966)	(1991)	(2002)	(2002)	(1963)	(1954)

02046000 STONY CREEK NEAR DINWIDDIE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1947 - 2003	
ANNUAL TOTAL	11,545.15		96,980.24			
ANNUAL MEAN	31.6		266		109	
HIGHEST ANNUAL MEAN					266	2003
LOWEST ANNUAL MEAN					15.5	2002
HIGHEST DAILY MEAN	500	Dec 25	e8,400	Sep 19	e8,400	Sep 19, 2003
LOWEST DAILY MEAN	0.00	aAug 13	e0.10	Oct 9	0.00	aAug 13, 2002
ANNUAL SEVEN-DAY MINIMUM	0.03	Aug 11	e0.16	Oct 3	0.03	Aug 11, 2002
MAXIMUM PEAK FLOW			9,640	Sep 19	11,400	Oct 6, 1972
MAXIMUM PEAK STAGE			b19.41	Sep 19	b20.84	Oct 6, 1972
INSTANTANEOUS LOW FLOW			(c)	(d)	0.00	(f)
ANNUAL RUNOFF (CFSM)	0.28		2.37		0.98	
ANNUAL RUNOFF (INCHES)	3.83		32.21		13.26	
10 PERCENT EXCEEDS	79		555		241	
50 PERCENT EXCEEDS	13		115		48	
90 PERCENT EXCEEDS	0.34		29		4.9	

a Also Aug. 14, 15, 2002.
b From high-water mark in gage house.
c Not determined.
d Probably occured Oct. 9, 2002.
e Estimated.
f No flow part or all of each day Oct. 13, 1954 and Aug. 12-17, 2002.



02047000 NOTTOWAY RIVER NEAR SEBRELL, VA

LOCATION.--Lat 36°46'14", long 77°09'58", NAD83, Southampton County, Hydrologic Unit 03010201, on right bank at bridge on State Highway 653, 1 mi downstream from Three Creek, 2.5 mi southwest of Sebrell, and 5.5 mi upstream from Assamoosick Swamp.

DRAINAGE AREA.--1,421 mi^2.

PERIOD OF RECORD.--September 1941 to current year.

REVISED RECORDS.--WSP 1333: 1942, 1944, 1948-49. WSP 2104: Drainage area. WDR-91-1: 1982(m).

GAGE.--Water-stage recorder. Datum of gage is 5.94 ft NGVD of 1929. Prior to Aug. 23, 1950, nonrecording gage on right bank at site 1,000 ft upstream at same datum. Aug. 23, 1950 to Oct. 1, 1996, water-stage recorder at above site and datum. Nonrecording gage Oct. 1, 1996 to Apr. 9, 1997 at present site and datum. Apr. 9, 1997 to current year, water-stage recorder at present site and datum.

REMARKS.--Records good except those for periods of partial gage-height record, Feb. 4, 5, and June 11-13, and discharges greater than 3,000 ft^3/s, which are fair. Maximum discharge, 36,000 ft^3/s, from rating curve extended above 25,000 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

REVISIONS.--The maximum discharges for the water years 2000 and 2001 have been revised to 9,910 ft^3/s, Sept. 8, 2000, gage height, 19.71 ft, and 6,110 ft^3/s, Apr. 5, 2001, gage height, 16.73 ft, superseding figures published in reports for 2000 and 2001.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	1,390	766	3,300	2,200	6,200	3,370	2,060	10,800	1,250	529	465
2	45	1,630	713	2,430	2,810	5,720	4,080	1,650	9,090	1,390	650	484
3	43	1,370	654	2,500	2,990	5,760	5,170	1,700	7,050	2,150	746	460
4	43	996	602	2,850	e2,700	6,100	5,650	2,150	5,240	2,650	861	559
5	43	765	672	3,130	e2,400	6,270	5,150	2,380	3,980	3,160	888	809
6	41	764	985	3,240	1,970	6,310	4,170	2,280	3,160	4,250	867	1,360
7	39	1,150	1,280	2,920	1,780	6,150	3,320	2,040	2,540	4,920	1,410	1,800
8	35	1,720	1,470	2,260	2,020	5,700	3,320	1,760	2,190	4,420	2,080	1,910
9	34	2,020	1,520	1,830	2,440	5,250	4,370	1,560	2,290	3,390	2,330	1,440
10	34	1,840	1,480	1,580	2,730	4,870	6,560	1,500	2,720	2,360	2,620	894
11	52	1,360	1,410	1,410	2,760	4,410	8,730	1,730	e4,200	1,620	2,750	644
12	294	1,060	1,450	1,250	2,660	3,830	10,500	2,110	e5,400	1,490	2,950	617
13	591	1,140	1,770	1,110	2,500	3,190	11,400	2,230	e5,000	1,360	3,460	1,300
14	680	1,580	2,400	1,010	2,160	2,590	11,100	2,040	4,020	1,170	4,170	1,780
15	666	2,150	3,030	948	1,850	2,180	9,990	1,540	3,200	1,010	4,110	2,080
16	625	2,490	3,580	899	1,880	1,980	8,520	1,150	2,900	938	3,200	2,170
17	497	2,540	3,980	872	2,270	1,840	6,810	964	2,830	891	2,000	1,930
18	438	2,660	4,220	858	2,710	1,710	5,110	1,080	3,000	768	1,310	1,830
19	498	3,050	3,960	835	3,100	1,630	3,830	1,830	3,590	717	1,200	4,830
20	561	3,380	2,970	802	3,360	1,650	2,990	2,530	4,030	780	1,310	8,190
21	455	3,580	2,110	841	3,420	2,150	2,560	3,240	3,890	981	1,740	10,700
22	372	3,450	1,940	863	3,490	3,020	2,430	4,430	3,740	939	1,910	16,500
23	326	2,850	1,910	864	3,890	4,300	2,280	6,180	4,050	875	1,640	20,400
24	292	2,220	1,750	783	4,510	6,130	2,040	7,290	4,310	780	1,280	18,400
25	275	1,750	2,010	723	5,180	7,460	1,780	7,510	3,770	981	969	14,900
26	256	1,420	2,860	753	5,940	7,860	1,640	7,550	2,830	1,180	751	11,800
27	237	1,180	3,660	723	6,540	7,270	1,990	7,520	1,940	998	603	9,160
28	215	1,020	4,250	666	6,680	5,830	2,370	7,170	1,280	766	501	7,360
29	211	909	4,810	668	---	4,280	2,750	6,920	1,100	615	433	6,070
30	326	826	5,020	809	---	3,360	2,610	8,630	1,230	531	389	4,910
31	707	---	4,440	1,360	---	3,070	---	10,900	---	481	400	---
TOTAL	8,978	54,260	73,672	45,087	88,940	138,070	146,590	113,624	115,370	49,811	50,057	155,752
MEAN	290	1,809	2,377	1,454	3,176	4,454	4,886	3,665	3,846	1,607	1,615	5,192
MAX	707	3,580	5,020	3,300	6,680	7,860	11,400	10,900	10,800	4,920	4,170	20,400
MIN	34	764	602	666	1,780	1,630	1,640	964	1,100	481	389	460
CFSM	0.20	1.27	1.67	1.02	2.24	3.13	3.44	2.58	2.71	1.13	1.14	3.65
IN.	0.24	1.42	1.93	1.18	2.33	3.61	3.84	2.97	3.02	1.30	1.31	4.08

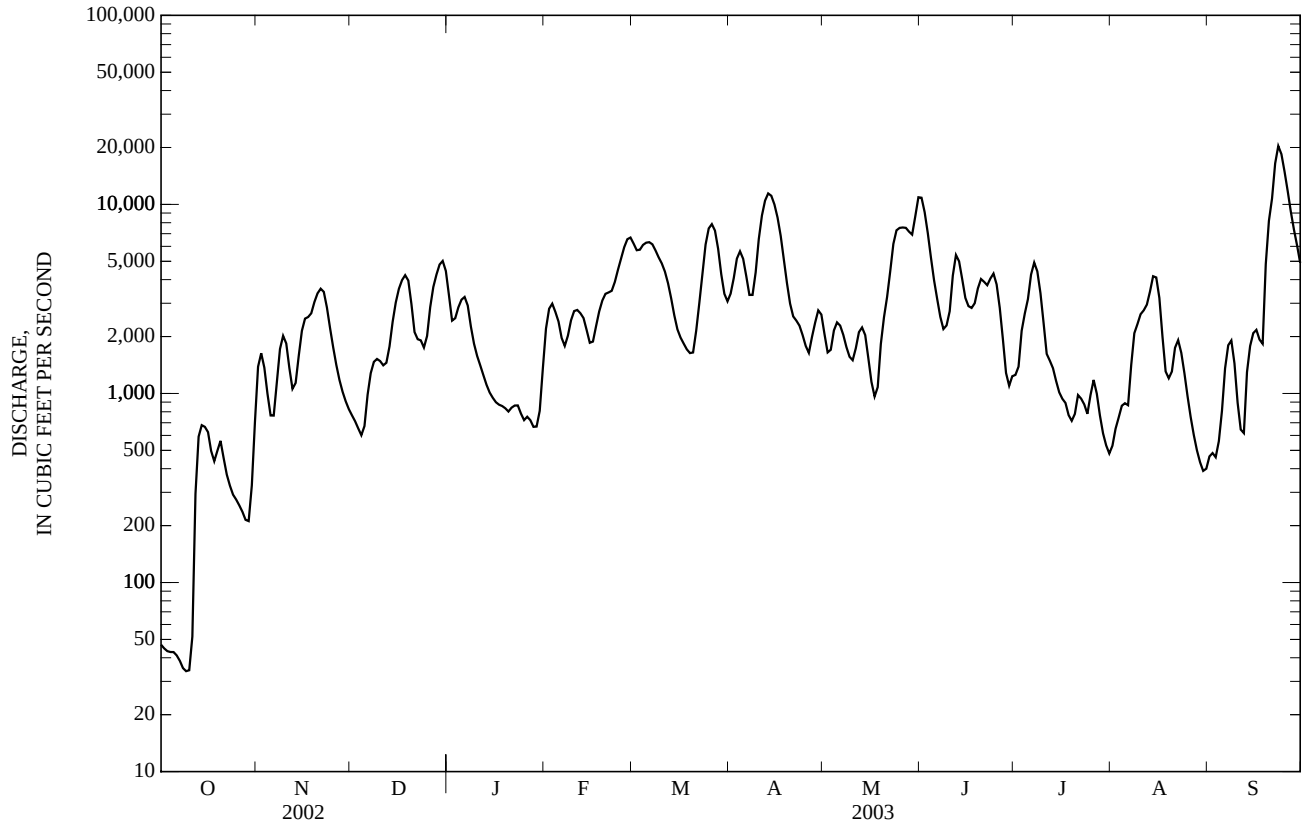
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2003, BY WATER YEAR (WY)

MEAN	656	858	1,314	2,010	2,471	2,772	2,147	1,331	813	720	627	771
MAX	4,491	4,854	4,310	6,115	6,255	6,531	5,127	5,180	3,846	5,782	2,831	9,191
(WY)	(1973)	(1986)	(1958)	(1978)	(1998)	(1998)	(1987)	(1978)	(2003)	(1975)	(1955)	(1999)
MIN	27.4	59.5	98.8	196	466	389	427	300	54.8	37.8	35.7	27.8
(WY)	(1955)	(1942)	(1966)	(1966)	(2002)	(1981)	(1966)	(1942)	(2002)	(2002)	(2002)	(1954)

02047000 NOTTOWAY RIVER NEAR SEBRELL, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1941 - 2003	
ANNUAL TOTAL	244,770		1,040,211			
ANNUAL MEAN	671		2,850		1,368	
HIGHEST ANNUAL MEAN					2,850	2003
LOWEST ANNUAL MEAN					316	2002
HIGHEST DAILY MEAN	5,020	Dec 30	20,400	Sep 23	34,500	Sep 19, 1999
LOWEST DAILY MEAN	e13	Aug 26	34	aOct 9	e13	Aug 26, 2002
ANNUAL SEVEN-DAY MINIMUM	17	Aug 9	38	Oct 4	15	Oct 8, 1954
MAXIMUM PEAK FLOW			20,800	Sep 23	36,000	(b)
MAXIMUM PEAK STAGE			24.71	Sep 23	c26.98	(b)
INSTANTANEOUS LOW FLOW			33	aOct 9	d12	Oct 23, 1941
ANNUAL RUNOFF (CFSM)	0.47		2.01		0.96	
ANNUAL RUNOFF (INCHES)	6.41		27.23		13.08	
10 PERCENT EXCEEDS	1,830		6,190		3,380	
50 PERCENT EXCEEDS	326		2,040		736	
90 PERCENT EXCEEDS	30		560		99	

a Also Oct. 10, 2002.
b Occurred Sept. 19 or 20, 1999.
c From high-water mark in gage house.
d Observed, may have gone lower Aug. 26, 2002.
e Estimated.



02047500 BLACKWATER RIVER NEAR DENDRON, VA

LOCATION.--Lat 37°01'31", long 76°52'29", NAD83, Surry County, Hydrologic Unit 03010202, on left bank 10 ft upstream from Walls Bridge on State Highway 617, 1.2 mi downstream from Cypress Swamp, and 3.5 mi southeast of Dendron.

DRAINAGE AREA.--294 mi^2.

PERIOD OF RECORD.--October 1941 to December 1986, July 1988 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 30.99 ft NGVD of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Aug. 13, 1980, at site 25 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Maximum discharge, 12,300 ft^3/s, from rating curve extended above 5,000 ft^3/s. No flow at times most years. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 13.1 ft, from U.S. Army Corps of Engineers floodmarks, discharge, 10,000 ft^3/s, from rating curve extended above 4,900 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	186	241	665	525	1,460	1,320	354	1,060	165	156	192
2	1.0	218	198	622	657	1,420	1,200	308	890	177	162	184
3	0.55	172	151	565	639	1,400	1,110	299	785	177	159	183
4	0.16	145	129	498	604	1,450	1,150	282	640	153	212	207
5	0.00	124	194	437	570	1,480	1,050	262	519	160	280	536
6	0.00	199	282	407	550	1,510	885	252	434	200	461	1,020
7	0.00	297	308	462	592	1,550	823	235	390	223	1,060	991
8	0.00	345	339	527	617	1,450	1,000	221	530	240	2,290	864
9	0.00	407	330	530	613	1,290	1,660	195	609	283	2,300	849
10	0.00	366	298	491	603	1,120	2,570	182	621	299	1,860	864
11	2.4	348	296	436	600	996	3,120	180	590	249	1,420	753
12	26	341	300	380	584	898	3,280	168	493	171	1,030	697
13	28	387	333	342	576	802	3,000	143	544	113	1,010	1,340
14	21	412	483	312	543	722	2,460	124	580	95	1,160	1,950
15	31	477	596	287	531	653	1,960	100	557	90	1,060	1,860
16	46	572	689	259	570	597	1,560	88	568	91	859	1,670
17	53	624	690	244	697	544	1,230	82	541	94	702	1,590
18	48	671	683	228	771	503	969	98	580	80	565	1,700
19	45	732	682	224	787	467	803	131	596	96	391	3,470
20	39	786	657	217	790	484	681	141	647	96	290	5,330
21	40	729	594	219	862	636	583	153	716	101	249	5,250
22	41	684	514	199	989	895	507	232	815	95	210	5,350
23	36	663	441	199	1,240	1,100	436	379	790	115	147	5,130
24	32	635	394	187	1,510	1,260	390	565	740	147	110	4,340
25	30	579	428	176	1,650	1,470	369	767	724	186	88	3,380
26	33	514	501	176	1,730	1,350	372	1,030	662	193	75	2,550
27	29	444	674	171	1,680	1,100	439	1,160	536	170	64	1,890
28	31	375	742	165	1,570	873	517	1,130	382	133	57	1,400
29	50	322	703	190	---	716	497	1,010	290	117	78	1,070
30	93	280	688	259	---	753	416	1,020	199	115	78	855
31	134	---	684	387	---	1,030	---	1,120	---	133	144	---
TOTAL	892.01	13,034	14,242	10,461	23,650	31,979	36,357	12,411	18,028	4,757	18,727	57,465
MEAN	28.8	434	459	337	845	1,032	1,212	400	601	153	604	1,916
MAX	134	786	742	665	1,730	1,550	3,280	1,160	1,060	299	2,300	5,350
MIN	0.00	124	129	165	525	467	369	82	199	80	57	183
CFSM	0.10	1.48	1.56	1.15	2.87	3.51	4.12	1.36	2.04	0.52	2.05	6.52
IN.	0.11	1.65	1.80	1.32	2.99	4.05	4.60	1.57	2.28	0.60	2.37	7.27

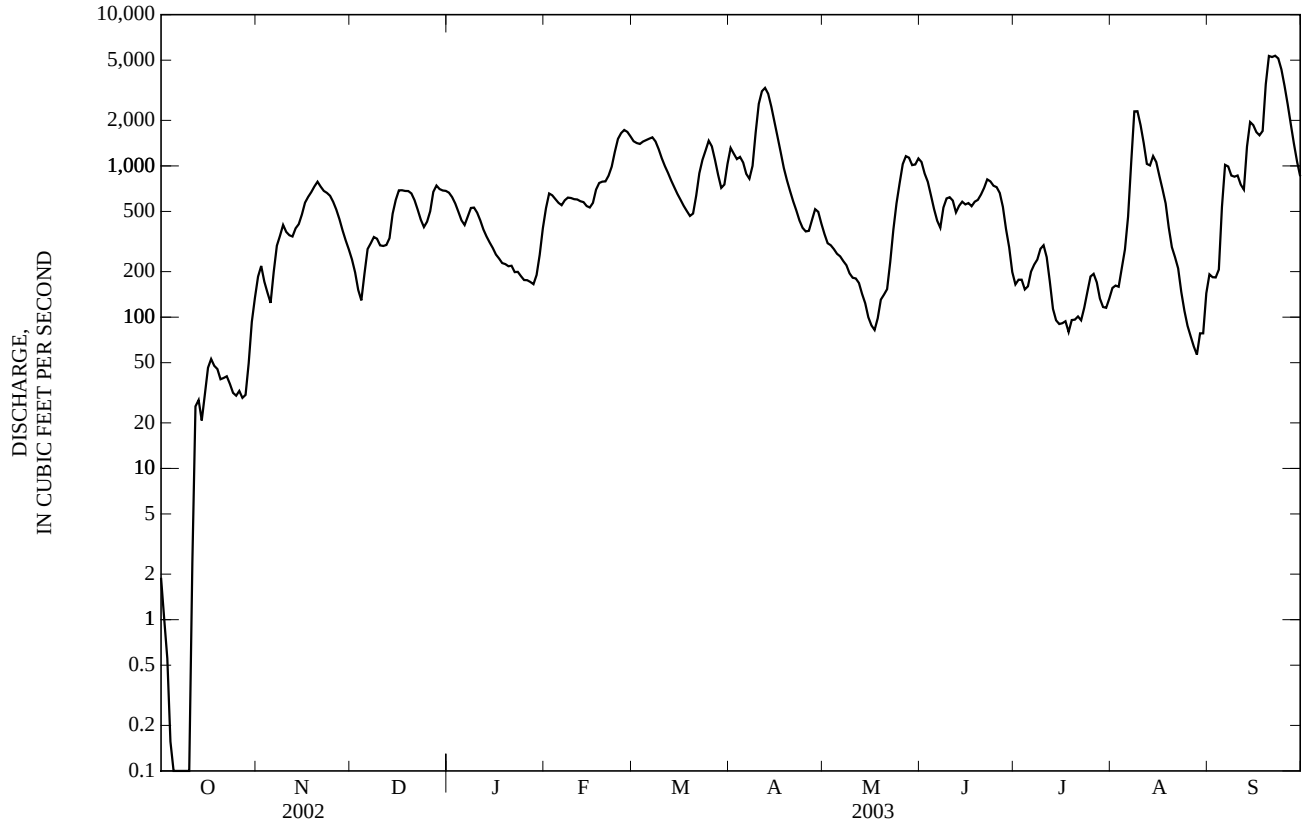
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1986, 1989 - 2003, BY WATER YEAR (WY)

MEAN	152	201	310	482	572	647	465	257	147	139	171	214
MAX	1,128	1,108	1,240	1,473	1,732	1,501	1,271	879	988	1,364	912	2,355
(WY)	(1973)	(1980)	(1958)	(1978)	(1998)	(1975)	(1989)	(1958)	(1963)	(1945)	(1969)	(1999)
MIN	0.000	0.000	2.65	21.1	70.8	79.5	87.2	25.8	0.018	0.32	0.000	0.000
(WY)	(a)	(b)	(1981)	(1981)	(1942)	(1981)	(1981)	(1991)	(1999)	(1957)	(c)	(d)

02047500 BLACKWATER RIVER NEAR DENDRON, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1942 - 1986 1989 - 2003	
ANNUAL TOTAL	48,142.89		242,003.01			
ANNUAL MEAN	132		663		313	
HIGHEST ANNUAL MEAN					663	2003
LOWEST ANNUAL MEAN					55.1	2002
HIGHEST DAILY MEAN	786	Nov 20	5,350	Sep 22	e11,400	Sep 18, 1999
LOWEST DAILY MEAN	0.00	fJun 6	0.00	gOct 5	0.00	(h)
ANNUAL SEVEN-DAY MINIMUM	0.00	jJun 9	0.02	Oct 4	0.00	(h)
MAXIMUM PEAK FLOW			5,460	Sep 20	12,300	Sep 17, 1999
MAXIMUM PEAK STAGE			10.57	Sep 20	k17.11	Sep 17, 1999
INSTANTANEOUS LOW FLOW			0.00	lOct 4	0.00	(h)
ANNUAL RUNOFF (CFSM)	0.45		2.26		1.06	
ANNUAL RUNOFF (INCHES)	6.09		30.62		14.45	
10 PERCENT EXCEEDS	416		1,450		786	
50 PERCENT EXCEEDS	64		493		160	
90 PERCENT EXCEEDS	0.00		86		1.3	

a Monthly mean flow is 0.0 ft^3/s in 1955, 1969, 1981, 1984, 1994, 1998, 1999, 2001.
b Monthly mean flow is 0.0 ft^3/s in 1955, 1981, 1999, 2001.
c Monthly mean flow is 0.0 ft^3/s in 1976, 1980, 1993.
d Monthly mean flow is 0.0 ft^3/s in 1944, 1954, 1980, 1983, 1993, 1995, 1997.
f Also June 8 to July 26, Aug. 7 to Sept. 2, Sept. 8-22, and Oct. 5-10, 2002.
g Also Oct. 6-10, 2002.
h No flow at times most years.
j Also many days June to September 2002.
k From floodmarks.
l Also Oct. 5-11, 2002.



02049500 BLACKWATER RIVER NEAR FRANKLIN, VA

LOCATION.--Lat 36°45'46", long 76°53'54", NAD83, Southampton County, Hydrologic Unit 03010202, on right bank 0.4 mi south of Burdette, 0.5 mi upstream from Black Creek, 3.3 mi downstream from Corrowaugh Swamp, and 6.0 mi north of Franklin.

DRAINAGE AREA.--617 mi^2.

PERIOD OF RECORD.--August 1944 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1.56 ft NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good except those for periods of tidal effect below 20 ft^3/s, which are poor. Low flow reversed by tide some years. Diversion upstream from station by city of Norfolk for municipal water supply most years. Maximum discharge, 23,000 ft^3/s, from rating curve extended above 12,800 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of about 22 ft, discharge, 21,000 ft^3/s, from rating curve extended above 9,400 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	172	778	1,240	1,030	2,970	1,500	994	1,400	653	239	87
2	7.1	218	705	1,260	1,280	3,130	1,600	839	1,360	525	299	136
3	6.4	247	634	1,280	1,440	3,140	1,720	775	1,390	453	414	231
4	6.0	274	566	1,260	1,480	3,010	1,740	715	1,330	437	417	365
5	6.4	309	598	1,210	1,450	2,800	1,650	685	1,190	433	410	526
6	5.9	347	808	1,140	1,390	2,750	1,540	696	1,020	375	426	659
7	5.6	442	928	1,070	1,370	2,990	1,560	644	859	302	433	667
8	5.4	486	1,000	1,000	1,480	3,090	2,150	614	800	238	753	727
9	4.9	543	1,040	950	1,570	3,000	2,890	606	970	203	2,220	946
10	4.9	584	1,020	927	1,620	2,760	4,020	601	1,330	193	3,360	1,030
11	8.9	599	967	927	1,640	2,460	4,800	562	1,420	194	3,610	956
12	21	594	913	921	1,600	2,170	5,380	491	1,410	206	3,380	970
13	42	658	882	891	1,510	1,910	5,610	408	1,310	223	2,920	1,460
14	74	779	985	841	1,420	1,710	5,440	327	1,110	293	2,440	2,120
15	73	891	1,120	781	1,350	1,540	4,960	264	993	407	2,090	2,760
16	68	1,000	1,230	719	1,410	1,390	4,340	220	1,820	366	1,970	3,060
17	63	1,190	1,290	671	1,830	1,280	3,670	185	2,720	270	1,840	2,930
18	59	1,460	1,300	625	2,410	1,200	3,000	195	2,620	189	1,750	2,890
19	53	1,680	1,260	563	2,630	1,120	2,370	377	2,270	152	1,790	5,220
20	48	1,790	1,220	560	2,560	1,070	1,930	505	2,110	155	1,730	7,090
21	46	1,750	1,200	567	2,320	1,110	1,600	576	2,250	168	1,450	7,790
22	57	1,630	1,180	539	2,100	1,200	1,370	603	2,220	163	1,070	7,740
23	45	1,510	1,130	524	2,060	1,320	1,180	951	1,920	143	732	7,390
24	39	1,390	1,080	501	2,200	1,430	996	1,620	1,600	120	532	7,060
25	35	1,290	1,170	486	2,380	1,510	842	1,930	1,350	103	405	6,740
26	32	1,190	1,310	463	2,460	1,580	733	1,870	1,150	94	309	6,250
27	30	1,100	1,400	436	2,490	1,670	689	1,760	978	92	232	5,600
28	27	1,020	1,390	386	2,680	1,720	901	1,650	877	98	173	4,900
29	31	938	1,340	406	---	1,660	1,260	1,600	975	109	128	4,190
30	39	858	1,290	471	---	1,570	1,180	1,570	821	122	96	3,540
31	114	---	1,260	720	---	1,510	---	1,480	---	158	76	---
TOTAL	1,064.5	26,939	32,994	24,335	51,160	61,770	72,621	26,313	43,573	7,637	37,694	96,030
MEAN	34.3	898	1,064	785	1,827	1,993	2,421	849	1,452	246	1,216	3,201
MAX	114	1,790	1,400	1,280	2,680	3,140	5,610	1,930	2,720	653	3,610	7,790
MIN	4.9	172	566	386	1,030	1,070	689	185	800	92	76	87
(†)	19.5	17.5	0	0	0	0	0	0	0	0	0	0
MEAN‡	53.8	915	1,064	785	1,827	1,993	2,421	849	1,452	246	1,216	3,201
CFSM‡	.09	1.48	1.72	1.27	2.96	3.23	3.92	1.38	2.35	0.40	1.97	5.19
IN.‡	.10	1.65	1.99	1.47	3.08	3.72	4.38	1.59	2.63	0.46	2.27	5.79

CAL YR 2002 MEAN‡ 348 CFSM‡ 0.56 IN.‡ 7.66
WTR YR 2003 MEAN‡ 1,324 CFSM‡ 2.15 IN.‡ 29.14

† Average daily diversion, in cubic feet per second, by city of Norfolk.
‡ Adjusted for diversion.

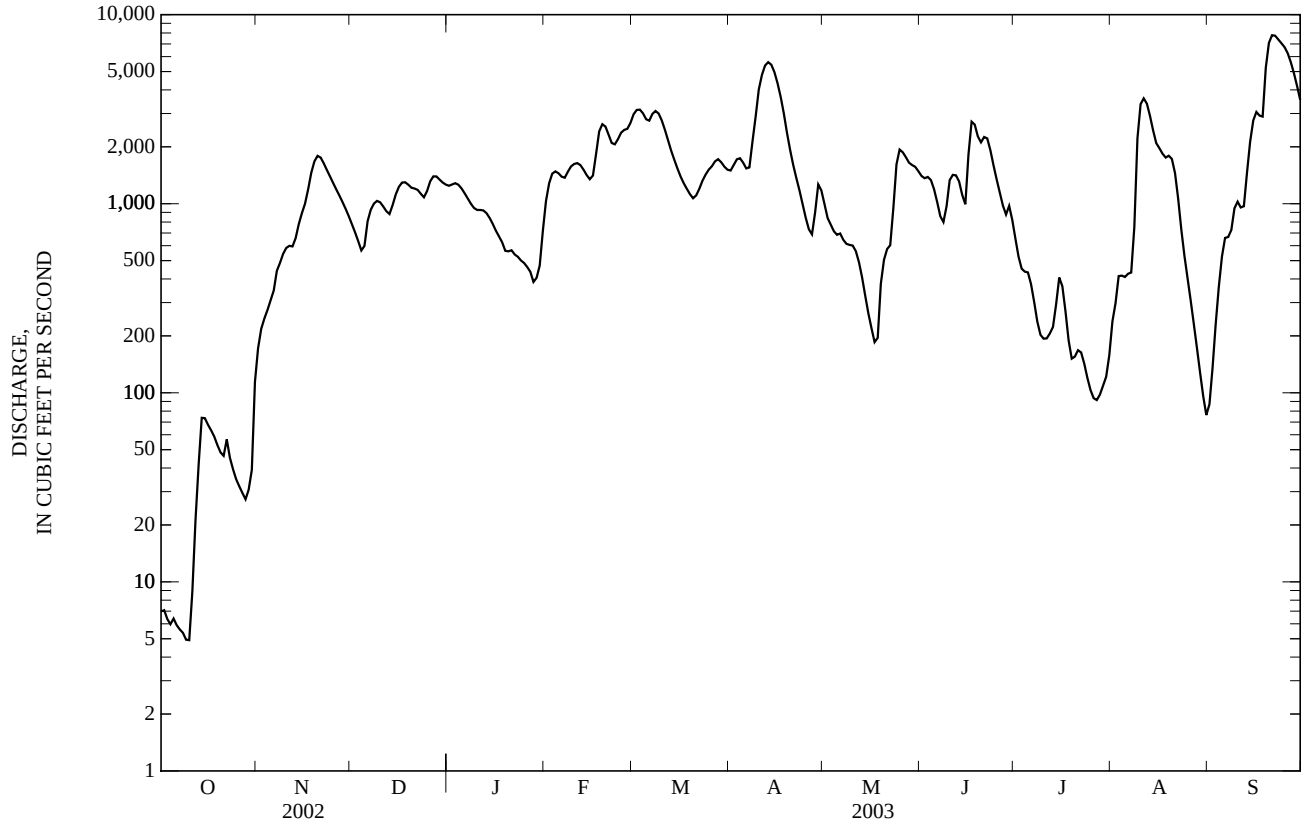
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2003, BY WATER YEAR (WY)

MEAN	298	368	618	980	1,182	1,267	942	545	360	285	363	436
MAX	1,795	1,713	2,082	2,271	3,520	2,915	2,783	1,890	1,925	2,003	1,481	5,923
(WY)	(1973)	(1980)	(1958)	(1978)	(1998)	(1989)	(1989)	(1958)	(1963)	(1945)	(1969)	(1999)
MIN	0.94	1.69	2.12	12.5	152	158	107	51.4	5.61	3.02	2.08	2.16
(WY)	(1988)	(1981)	(1981)	(1981)	(1981)	(1981)	(1995)	(1985)	(1999)	(1986)	(1995)	(1995)

02049500 BLACKWATER RIVER NEAR FRANKLIN, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1944 - 2003	
ANNUAL TOTAL	122,974.38		482,130.5			
ANNUAL MEAN	337		1,321		634	
HIGHEST ANNUAL MEAN					1,321	2003
LOWEST ANNUAL MEAN					133	1981
HIGHEST DAILY MEAN	1,790	Nov 20	7,790	Sep 21	e22,000	Sep 18, 1999
LOWEST DAILY MEAN	0.00	Jul 13	4.9	Oct 9	0.00	Jul 13, 2002
ANNUAL SEVEN-DAY MINIMUM	0.35	Jul 7	5.6	Oct 4	0.26	Oct 10, 1987
MAXIMUM PEAK FLOW			7,840	Sep 21	23,000	(a)
MAXIMUM PEAK STAGE			16.79	Sep 21	b26.27	(a)
INSTANTANEOUS LOW FLOW			(c)		(c)	
ANNUAL RUNOFF (CFSM)	0.55		2.14		1.03	
ANNUAL RUNOFF (INCHES)	7.41		29.07		13.97	
10 PERCENT EXCEEDS	1,020		2,840		1,620	
50 PERCENT EXCEEDS	131		1,020		376	
90 PERCENT EXCEEDS	2.2		101		8.2	

a Probably occurred Sept. 18, 1999.
b From floodmarks.
c Not determined, tidally affected most years during periods of extreme low flows; minimum measured flow, 2.4 ft^3/s (reverse flow), Sept. 17, 1952.



02051000 NORTH MEHERRIN RIVER NEAR LUNENBURG, VA

LOCATION.--Lat 36°59'51", long 78°20'59", NAD83, Lunenburg County, Hydrologic Unit 03010204, on right bank at upstream side of bridge on State Highway 40, 0.5 mi downstream from Tusekiah Creek, 4.6 mi upstream from Juniper Creek, and 5.2 mi northwest of Lunenburg.

DRAINAGE AREA.--55.6 mi^2.

PERIOD OF RECORD.--August 1946 to September 1980, October 1981 to current year.

REVISED RECORDS.--WSP 1303: 1947(M), 1949(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 333.7 ft NGVD of 1929 (levels by U.S. Army Corps of Engineers). Prior to July 5, 1951, nonrecording gage at same site and datum. July 5, 1951, to July 11, 1980, water-stage recorder at site 20 ft downstream at same datum.

REMARKS.--Records good except those for periods with ice effect, Dec. 7-9 and Jan. 17-28, which are fair. Maximum discharge, 14,400 ft^3/s, from rating curve extended above 2,320 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 48 ft, from information by local resident.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar 20	1615	5,240	21.29	Sep 19	0300	*7,180	*23.86
Apr 7	1400	2,560	13.87	Sep 23	1045	6,310	22.84
May 26	0615	4,810	20.51				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.22	27	12	289	35	167	62	586	151	33	63	9.8
2	0.15	17	11	203	56	336	49	83	57	461	54	10
3	0.14	13	11	80	40	121	42	147	46	288	31	8.5
4	0.16	16	10	62	56	67	38	75	54	144	194	73
5	0.14	24	16	46	60	63	37	52	115	58	48	65
6	0.12	407	17	39	36	150	32	49	54	39	30	22
7	0.11	59	e12	34	127	87	983	40	205	31	71	15
8	0.10	30	e13	31	119	58	246	40	177	26	106	13
9	0.09	20	e15	29	61	49	1,070	32	166	33	115	12
10	0.08	16	17	26	53	40	434	28	67	40	151	11
11	300	19	98	23	63	36	560	27	48	25	50	9.9
12	58	444	144	20	46	34	139	23	58	20	46	9.2
13	25	212	371	20	36	32	83	19	71	19	31	16
14	212	65	350	20	32	31	61	17	48	20	26	18
15	22	39	113	19	125	28	52	17	39	19	21	15
16	72	39	62	18	208	29	45	29	36	17	19	13
17	44	409	43	e18	75	35	39	25	41	16	17	10
18	15	227	34	e15	55	31	37	688	56	15	16	623
19	7.7	65	30	e14	95	28	56	458	238	15	15	2,530
20	5.4	43	158	e17	213	2,780	45	94	96	14	15	77
21	8.0	34	100	e15	207	418	39	110	57	13	14	42
22	10	28	51	e14	678	124	37	280	41	14	13	29
23	6.9	23	38	e13	331	73	31	243	33	43	12	2,460
24	5.1	20	204	e12	102	57	28	137	26	44	11	137
25	4.2	18	731	e13	65	48	28	163	24	21	9.5	59
26	16	17	152	e15	51	42	35	2,080	21	16	9.1	41
27	15	15	68	e14	55	39	34	293	19	13	8.8	32
28	41	14	50	e13	132	34	26	252	88	12	8.3	31
29	177	14	41	17	---	35	23	101	34	11	8.0	26
30	217	13	35	24	---	196	22	83	25	20	7.3	21
31	62	---	31	27	---	134	---	88	---	19	7.8	---
TOTAL	1,324.61	2,387	3,038	1,200	3,212	5,402	4,413	6,359	2,191	1,559	1,227.8	6,438.4
MEAN	42.7	79.6	98.0	38.7	115	174	147	205	73.0	50.3	39.6	215
MAX	300	444	731	289	678	2,780	1,070	2,080	238	461	194	2,530
MIN	0.08	13	10	12	32	28	22	17	19	11	7.3	8.5
CFSM	0.77	1.43	1.76	0.70	2.06	3.13	2.65	3.69	1.31	0.90	0.71	3.86
IN.	0.89	1.60	2.03	0.80	2.15	3.61	2.95	4.25	1.47	1.04	0.82	4.31

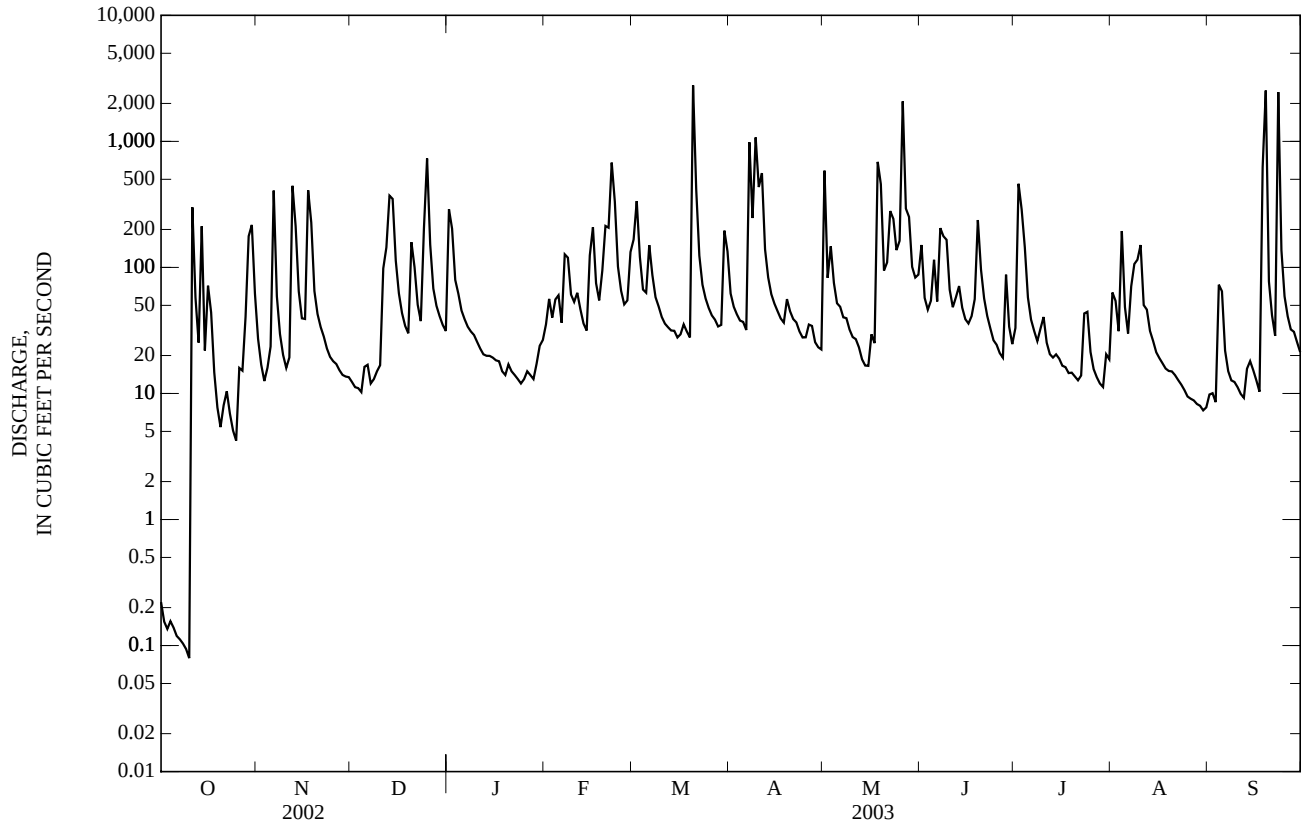
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1980, 1982 - 2003, BY WATER YEAR (WY)

MEAN	32.0	44.2	52.2	69.5	87.9	97.2	77.8	48.0	28.2	20.2	18.6	30.3
MAX	442	299	186	194	249	293	223	205	154	98.6	138	292
(WY)	(1972)	(1986)	(1949)	(1978)	(1979)	(1975)	(1978)	(2003)	(1968)	(1975)	(1955)	(1979)
MIN	0.60	1.68	3.19	10.3	10.1	32.8	15.3	11.2	2.16	2.72	0.077	0.16
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(1985)	(1995)	(1964)	(2002)	(1957)	(2002)	(1954)

02051000 NORTH MEHERRIN RIVER NEAR LUNENBURG, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1947 - 1980 1982 - 2003	
ANNUAL TOTAL	10,239.50		38,751.81			
ANNUAL MEAN	28.1		106		50.3	
HIGHEST ANNUAL MEAN					106	2003
LOWEST ANNUAL MEAN					10.0	2002
HIGHEST DAILY MEAN	731	Dec 25	2,780	Mar 20	6,710	Oct 23, 1971
LOWEST DAILY MEAN	0.00	aAug 14	0.08	Oct 10	0.00	(b)
ANNUAL SEVEN-DAY MINIMUM	0.01	Aug 12	0.11	Oct 4	0.00	(b)
MAXIMUM PEAK FLOW			7,180	Sep 19	14,400	Oct 23, 1971
MAXIMUM PEAK STAGE			23.86	Sep 19	28.30	Oct 23, 1971
INSTANTANEOUS LOW FLOW			0.07	Oct 10	0.00	(b)
ANNUAL RUNOFF (CFSM)	0.50		1.91		0.90	
ANNUAL RUNOFF (INCHES)	6.85		25.93		12.29	
10 PERCENT EXCEEDS	56		212		92	
50 PERCENT EXCEEDS	8.0		36		20	
90 PERCENT EXCEEDS	0.12		12		3.6	

a Also Aug. 15, 23-25, 2002.
b Many days in September and October 1954, and August 2002.
e Estimated.



02051500 MEHERRIN RIVER NEAR LAWRENCEVILLE, VA

LOCATION.--Lat 36°43'01", long 77°49'54", NAD83, Brunswick County, Hydrologic Unit 03010204, on right bank 5 ft upstream from Gholson Bridge on State Highway 715, 0.6 mi upstream from Allen Creek, and 3.0 mi southeast of Lawrenceville.

DRAINAGE AREA.--552 mi^2.

PERIOD OF RECORD.--October 1928 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 972: 1932(M), 1935. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 136.56 ft NGVD of 1929. Prior to Nov. 17, 1931, nonrecording gage at site 50 ft upstream at same datum. Nov. 17, 1931 to May 1, 2001, water-stage recorder at above site, at same datum. May 1, 2001 to current year, water-stage recorder at present site, at same datum.

REMARKS.--Records good except those for periods of doubtful gage-height record, Mar. 21-23, Apr. 9-12, and May 27-29, which are fair. Maximum discharge, 38,000 ft^3/s, from rating curve extended above 13,000 ft^3/s on basis of velocity-area studies and records for Nottoway River near Stony Creek. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 26	1115	5,150	16.80	May 28	---	*16,500	*30.25
Feb 24	0245	5,390	17.27	Jun 8	2045	4,970	16.43
Mar 22	---	unknown	unknown	Aug 11	0745	5,300	17.10
Apr 11	---	7,520	20.95	Sep 20	2100	14,700	28.73
May 20	0300	5,120	16.73	Sep 25	0515	5,610	17.69

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	673	123	582	753	2,360	1,530	1,010	1,980	456	227	192
2	17	344	113	2,650	607	2,470	919	2,640	1,390	1,060	322	198
3	16	219	107	1,410	506	3,010	727	884	789	3,720	354	180
4	16	170	100	871	427	1,330	618	801	703	2,440	380	359
5	15	154	128	700	392	922	556	663	903	1,090	816	1,070
6	14	814	190	553	475	1,020	515	562	921	666	454	766
7	14	1,990	216	475	624	1,500	1,560	533	812	561	1,310	369
8	13	672	187	411	1,530	996	5,330	504	4,160	497	2,570	260
9	12	372	199	374	1,060	735	e6,550	444	3,650	401	977	222
10	12	264	197	343	672	623	e7,300	401	1,890	445	3,590	202
11	29	210	250	307	637	538	e7,490	371	1,060	501	4,290	186
12	2,350	211	1,140	275	618	484	e6,950	356	771	365	946	173
13	1,010	2,280	1,420	255	484	455	2,380	319	1,420	291	840	225
14	258	1,560	3,550	245	402	434	1,110	276	1,180	299	618	227
15	449	650	2,590	246	400	393	878	253	797	299	485	229
16	381	424	952	229	1,520	369	760	298	1,600	278	404	218
17	769	446	609	228	1,550	371	696	374	773	342	357	188
18	504	2,280	467	214	844	389	637	479	761	267	360	766
19	214	1,440	392	177	745	373	732	3,560	1,070	229	334	7,810
20	119	641	434	267	1,500	1,690	786	3,830	1,990	212	283	13,300
21	101	443	610	271	1,790	e7,000	675	1,020	1,160	205	254	11,900
22	132	352	654	212	2,020	e8,600	610	1,710	872	198	237	3,770
23	201	287	418	210	4,470	e6,100	558	4,160	637	323	224	1,260
24	141	234	442	169	3,970	1,100	510	3,170	519	492	206	4,460
25	100	200	3,360	198	1,170	798	481	1,560	449	382	184	4,160
26	85	181	4,870	246	789	691	656	3,270	405	299	173	875
27	80	164	1,540	221	767	625	1,150	e11,300	374	229	169	650
28	101	148	762	201	2,310	558	564	e14,300	412	199	167	543
29	165	136	590	211	---	528	467	e6,620	585	183	155	480
30	1,140	129	485	312	---	1,280	419	1,340	440	181	149	422
31	1,640	---	418	885	---	2,960	---	938	---	226	156	---
TOTAL	10,116	18,088	27,513	13,948	33,032	50,702	54,114	67,946	34,473	17,336	21,991	55,660
MEAN	326	603	888	450	1,180	1,636	1,804	2,192	1,149	559	709	1,855
MAX	2,350	2,280	4,870	2,650	4,470	8,600	7,490	14,300	4,160	3,720	4,290	13,300
MIN	12	129	100	169	392	369	419	253	374	181	149	173
CFSM	0.59	1.09	1.61	0.82	2.14	2.96	3.27	3.97	2.08	1.01	1.29	3.36
IN.	0.68	1.22	1.85	0.94	2.23	3.42	3.65	4.58	2.32	1.17	1.48	3.75

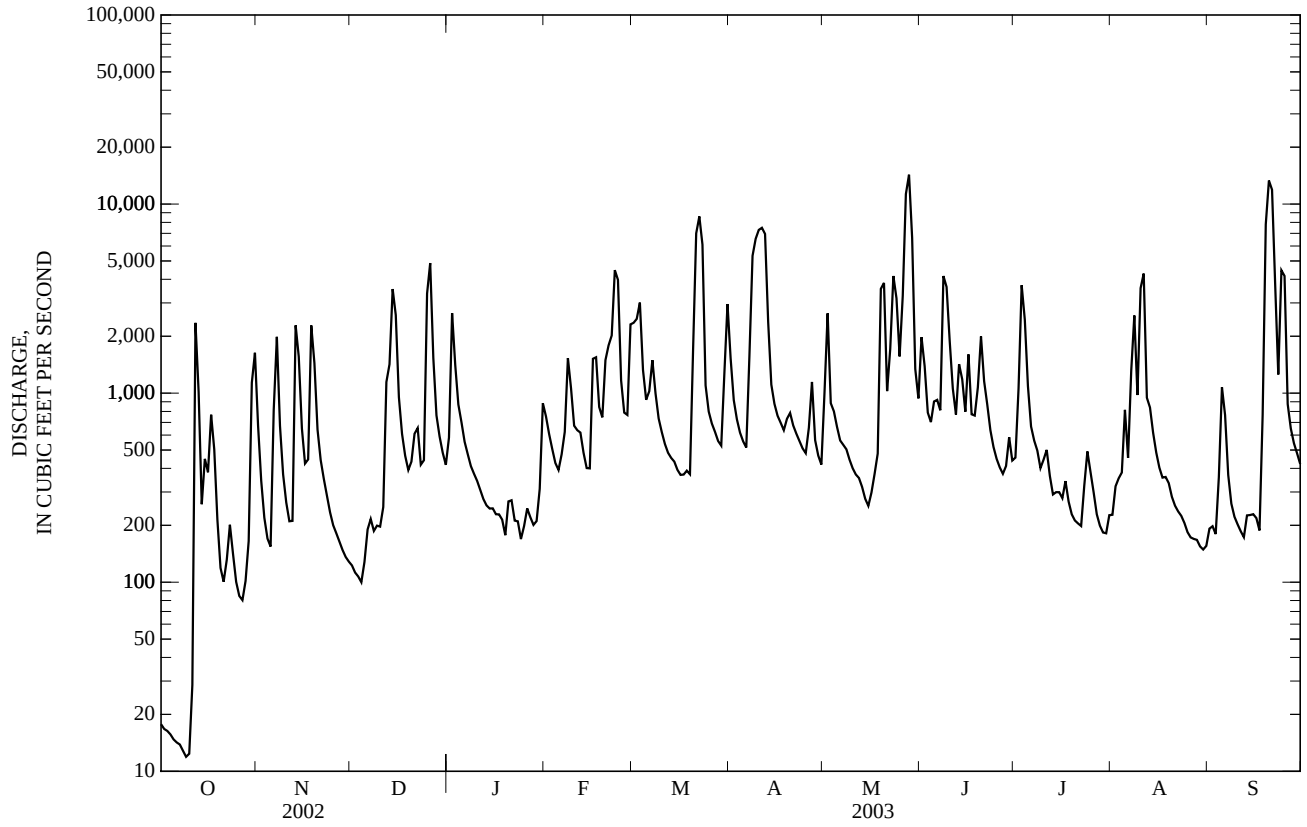
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2003, BY WATER YEAR (WY)

MEAN	299	369	463	718	825	924	761	475	331	309	291	291
MAX	2,266	2,853	1,340	2,391	1,904	2,707	2,067	2,192	1,555	2,358	4,199	2,627
(WY)	(1972)	(1986)	(1997)	(1936)	(1998)	(1998)	(1987)	(2003)	(1938)	(1945)	(1940)	(1999)
MIN	17.1	44.1	64.6	88.8	139	190	162	128	43.1	22.8	10.7	9.70
(WY)	(1931)	(1934)	(1966)	(1934)	(2002)	(1981)	(1966)	(1942)	(2002)	(2002)	(2002)	(1954)

02051500 MEHERRIN RIVER NEAR LAWRENCEVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1929 - 2003	
ANNUAL TOTAL	91,974.1		404,919			
ANNUAL MEAN	252		1,109		503	
HIGHEST ANNUAL MEAN					1,109	2003
LOWEST ANNUAL MEAN					111	2002
HIGHEST DAILY MEAN	4,870	Dec 26	14,300	May 28	35,300	Aug 17, 1940
LOWEST DAILY MEAN	2.2	aAug 23	12	bOct 9	2.2	aAug 23, 2002
ANNUAL SEVEN-DAY MINIMUM	2.6	Aug 19	14	Oct 4	2.6	Aug 19, 2002
MAXIMUM PEAK FLOW			16,500	May 28	38,000	Aug 17, 1940
MAXIMUM PEAK STAGE			c30.25	May 28	42.00	Aug 17, 1940
INSTANTANEOUS LOW FLOW			11	Oct 9	2.0	Aug 25, 2002
ANNUAL RUNOFF (CFSM)	0.46		2.01		0.91	
ANNUAL RUNOFF (INCHES)	6.20		27.29		12.38	
10 PERCENT EXCEEDS	507		2,610		974	
50 PERCENT EXCEEDS	112		501		248	
90 PERCENT EXCEEDS	13		170		64	

a Also Aug. 24, 25, 2002.
b Also Oct. 10, 2002.
c From floodmarks.
e Estimated.



02052000 MEHERRIN RIVER AT EMPORIA, VA

LOCATION.--Lat 36°41'25", long 77°32'26", NAD83, Emporia City, Hydrologic Unit 03010204, on left bank at downstream side of bridge on U.S. Highway 301 and 1.2 mi upstream from Falling Run.

DRAINAGE AREA.--747 mi^2.

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

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 67.17 ft NGVD of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Records good except those for periods with ice effect, Jan. 17, 18, 23, and period of doubtful gage-height record, May 12-18, which are fair. Prior to November 1965 and since April 1986, low and medium flow regulated by powerplant 0.8 mi upstream from station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 31.5 ft, from floodmarks, discharge, about 40,000 ft^3/s, from rating curve extended above 18,000 ft^3/s on basis of record for station near Lawrenceville.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	1,490	206	684	1,580	4,400	4,050	442	2,620	411	228	195
2	22	574	191	2,270	1,060	3,970	1,940	3,050	3,170	1,080	281	214
3	16	317	138	3,470	729	4,850	1,190	2,260	1,610	3,600	355	217
4	3.8	222	214	1,600	601	3,820	919	1,010	1,060	5,320	356	379
5	3.9	253	262	1,110	490	2,020	768	890	1,400	3,050	691	796
6	6.7	455	389	780	525	1,850	699	643	1,540	1,410	696	1,520
7	9.9	2,490	443	595	828	2,380	1,400	571	1,210	728	637	555
8	12	1,710	392	492	1,590	2,160	6,140	582	3,580	693	3,990	357
9	12	549	363	455	2,030	1,400	9,430	524	6,700	529	2,710	287
10	13	386	352	403	1,200	1,100	10,300	458	4,920	463	3,610	268
11	68	303	416	353	840	853	11,300	403	2,850	547	6,680	243
12	1,080	279	950	312	818	661	11,000	e380	1,580	480	4,590	162
13	3,050	1,330	2,020	280	632	731	8,020	e350	1,250	360	1,760	259
14	657	3,480	3,630	275	667	668	3,080	e510	2,320	334	1,130	297
15	325	1,510	5,130	265	532	584	1,560	e320	1,320	341	749	361
16	502	659	2,720	251	1,210	548	1,140	e360	2,180	330	570	272
17	742	703	1,120	e240	2,900	531	952	e440	1,860	462	473	231
18	815	1,810	598	e215	1,830	548	781	e460	1,260	309	429	1,250
19	348	3,280	420	154	1,230	533	902	3,210	1,220	279	435	12,100
20	185	1,450	399	227	1,680	1,350	1,050	6,100	2,530	247	413	13,000
21	166	718	643	321	2,790	6,510	985	3,930	2,650	226	395	15,600
22	157	546	833	243	3,090	9,640	773	2,370	1,510	214	314	12,100
23	192	429	531	e215	4,990	12,500	708	5,520	1,000	275	307	4,630
24	212	352	474	100	6,710	6,350	569	6,430	685	515	192	4,730
25	182	298	2,810	165	4,410	1,840	513	4,510	524	518	239	6,560
26	107	275	6,110	212	1,880	1,060	620	3,420	459	379	226	3,880
27	89	255	5,450	310	1,320	838	2,310	6,720	392	279	216	1,480
28	101	233	2,050	126	3,230	752	1,880	13,900	467	219	208	797
29	173	218	1,060	210	---	682	736	15,100	572	191	201	683
30	555	213	657	464	---	1,280	519	7,230	607	180	193	526
31	2,220	---	527	1,460	---	4,070	---	2,380	---	197	191	---
TOTAL	12,047.3	26,787	41,498	18,257	51,392	80,479	86,234	94,473	55,046	24,166	33,465	83,949
MEAN	389	893	1,339	589	1,835	2,596	2,874	3,048	1,835	780	1,080	2,798
MAX	3,050	3,480	6,110	3,470	6,710	12,500	11,300	15,100	6,700	5,320	6,680	15,600
MIN	3.8	213	138	100	490	531	513	320	392	180	191	162
CFSM	0.52	1.20	1.79	0.79	2.46	3.48	3.85	4.08	2.46	1.04	1.45	3.75
IN.	0.60	1.33	2.07	0.91	2.56	4.01	4.29	4.70	2.74	1.20	1.67	4.18

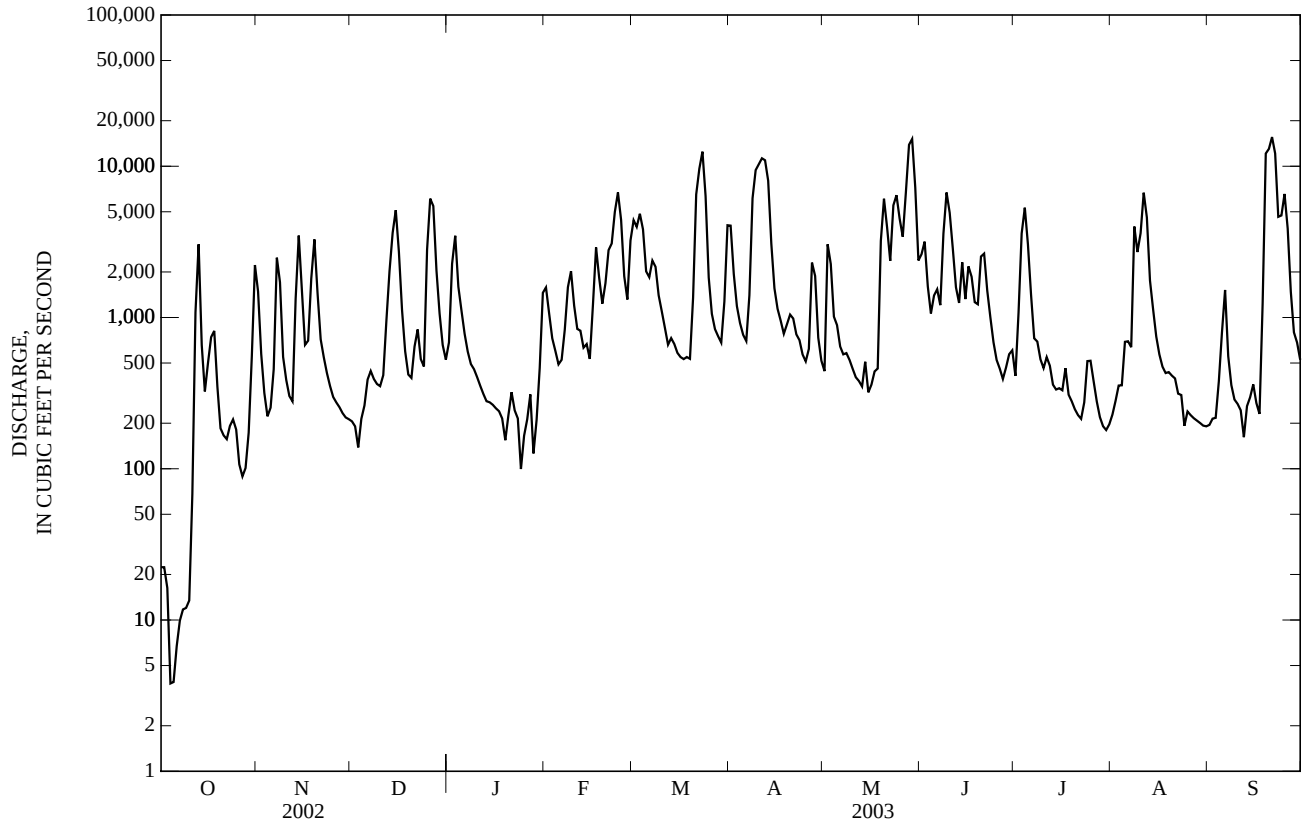
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 2003, BY WATER YEAR (WY)

MEAN	411	519	663	1,033	1,220	1,371	1,091	691	454	343	304	403
MAX	3,057	3,711	1,772	3,063	2,749	3,631	3,077	3,048	1,835	2,647	1,536	4,372
(WY)	(1973)	(1986)	(1973)	(1978)	(1998)	(1998)	(1987)	(2003)	(2003)	(1975)	(1955)	(1999)
MIN	37.7	57.0	86.2	159	225	261	221	256	28.0	30.7	19.4	18.7
(WY)	(1969)	(2002)	(2002)	(1966)	(2002)	(1981)	(1995)	(1995)	(2002)	(2002)	(2002)	(1954)

02052000 MEHERRIN RIVER AT EMPORIA, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1952 - 2003	
ANNUAL TOTAL	134,900.3		607,793.3			
ANNUAL MEAN	370		1,665		706	
HIGHEST ANNUAL MEAN					1,665	2003
LOWEST ANNUAL MEAN					165	2002
HIGHEST DAILY MEAN	6,110	Dec 26	15,600	Sep 21	20,700	Oct 8, 1972
LOWEST DAILY MEAN	a3.6	Jun 21	a3.8	Oct 4	a3.6	Jun 21, 2002
ANNUAL SEVEN-DAY MINIMUM	a6.4	Aug 11	a8.8	Oct 4	a6.4	Aug 11, 2002
MAXIMUM PEAK FLOW			17,200	May 29	21,100	Oct 8, 1972
MAXIMUM PEAK STAGE			25.56	May 29	27.38	Oct 8, 1972
INSTANTANEOUS LOW FLOW			a3.6	bOct 4	a3.2	cJun 20, 2002
ANNUAL RUNOFF (CFSM)	0.49		2.23		0.94	
ANNUAL RUNOFF (INCHES)	6.72		30.27		12.84	
10 PERCENT EXCEEDS	806		4,450		1,460	
50 PERCENT EXCEEDS	164		659		350	
90 PERCENT EXCEEDS	8.5		207		68	

a Result of regulation.
b Also Oct. 5, 2002.
c Also June 21, 2002.
e Estimated.



02053800 SOUTH FORK ROANOKE RIVER NEAR SHAWSVILLE, VA

LOCATION.--Lat 37°08'24", long 80°15'59", NAD83, Montgomery County, Hydrologic Unit 03010101, on right bank 95 ft downstream from bridge on State Highway 637, 0.3 mi downstream from Georges Run, 1.3 mi downstream from Elliott Creek, and 2.0 mi southwest of Shawsville.

DRAINAGE AREA.--110 mi^2.

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

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,361.87 ft NGVD of 1929. Prior to Aug. 26, 1974, water-stage recorder, and Aug. 26, 1974, to July 24, 1975, nonrecording gage at site 95 ft upstream at same datum.

REMARKS.--Records good except those for periods with ice effect, Dec. 4-10, Jan. 23-25, 27, 28, and Feb. 7-9, and period of no gage-height record, Jan. 17-20, which are fair. Virginia Department of Emergency Services gage-height radio transmitter at station. Maximum discharge, 14,200 ft^3/s, from rating curve extended above 3,700 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location by the Virginia Department of Environmental Quality - Water Division.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 30, 1959, reached a stage of 9.89 ft, from information by local resident.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 800 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1330	*7,090	*8.66	Jul 3	0030	1,480	3.64
Mar 20	1700	1,000	2.94	Jul 6	1830	2,530	4.90
Apr 10	2200	3,460	5.86	Sep 19	0100	3,220	5.62
Jun 19	0930	1,480	3.64				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	54	42	99	47	263	203	139	181	280	142	77
2	15	44	39	113	47	315	393	118	149	776	122	80
3	15	38	38	118	48	301	331	111	140	1,060	115	72
4	14	34	e37	121	59	251	258	158	150	559	113	111
5	14	35	e41	113	60	232	226	144	135	383	227	105
6	14	67	e40	104	54	232	185	148	117	740	181	78
7	14	56	e32	89	e50	207	278	137	236	871	150	72
8	14	46	e36	86	e47	188	351	129	384	424	134	69
9	14	41	e35	83	e43	173	686	115	329	301	209	65
10	14	35	e34	76	57	152	1,500	105	241	264	251	63
11	19	167	55	66	52	137	1,790	99	188	217	205	61
12	23	324	85	56	51	126	769	91	208	186	158	59
13	18	258	149	63	47	118	490	84	166	168	138	60
14	16	130	230	61	53	113	360	80	164	171	125	62
15	16	91	158	54	202	104	288	91	217	149	111	59
16	60	144	125	50	507	111	245	125	532	139	183	59
17	53	421	116	e49	255	115	212	97	574	129	195	58
18	29	251	100	e44	167	105	208	242	454	122	140	259
19	24	146	90	e47	132	101	219	470	1,050	115	117	1,260
20	23	107	171	e51	153	599	190	292	686	111	104	281
21	24	91	184	53	294	647	182	242	425	106	99	158
22	24	83	135	48	3,030	389	171	237	304	112	92	122
23	21	70	107	e43	1,930	280	152	236	233	142	86	189
24	18	62	174	e39	822	222	139	228	187	122	81	133
25	18	57	307	e44	492	182	135	195	157	102	77	114
26	27	53	203	47	350	165	136	188	138	94	71	99
27	28	50	145	e46	282	153	130	193	125	90	71	109
28	48	47	119	e49	249	132	116	228	127	86	76	205
29	88	45	103	47	---	141	110	226	116	170	91	133
30	113	43	89	52	---	171	113	207	176	170	80	112
31	82	---	80	47	---	164	---	185	---	135	81	---
TOTAL	917	3,090	3,299	2,058	9,580	6,589	10,566	5,340	8,289	8,494	4,025	4,384
MEAN	29.6	103	106	66.4	342	213	352	172	276	274	130	146
MAX	113	421	307	121	3,030	647	1,790	470	1,050	1,060	251	1,260
MIN	14	34	32	39	43	101	110	80	116	86	71	58
CFSM	0.27	0.94	0.97	0.60	3.11	1.93	3.20	1.57	2.51	2.49	1.18	1.33
IN.	0.31	1.04	1.12	0.70	3.24	2.23	3.57	1.81	2.80	2.87	1.36	1.48

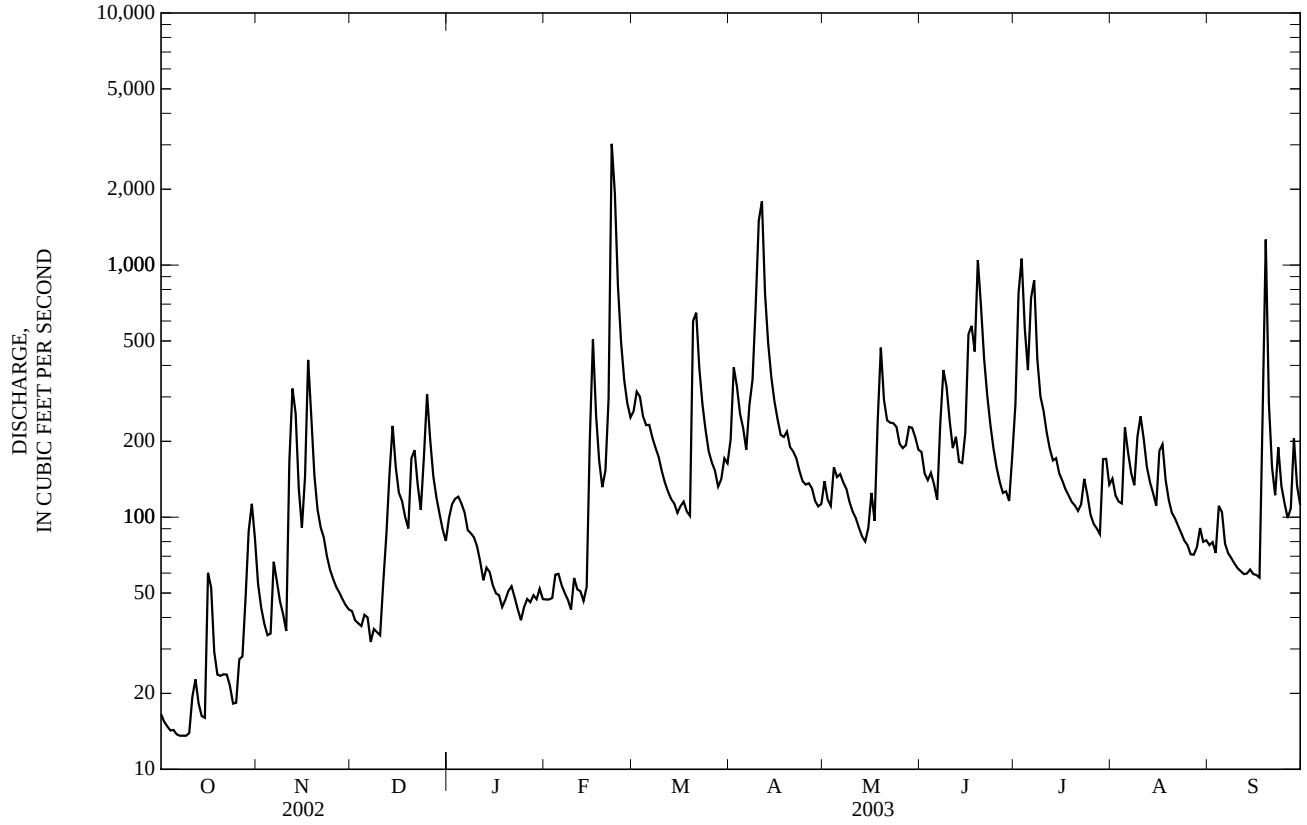
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2003, BY WATER YEAR (WY)

MEAN	69.1	87.4	95.7	131	165	205	183	135	102	61.4	53.3	63.7
MAX	294	407	232	299	523	571	750	334	483	274	174	347
(WY)	(1972)	(1986)	(1973)	(1996)	(1998)	(1993)	(1987)	(1978)	(1972)	(2003)	(1994)	(1989)
MIN	18.4	21.5	22.1	18.9	29.4	55.6	51.0	50.7	24.0	18.6	12.4	17.2
(WY)	(2002)	(2002)	(1966)	(1966)	(2002)	(1981)	(1966)	(1963)	(1999)	(2002)	(2002)	(2002)

02053800 SOUTH FORK ROANOKE RIVER NEAR SHAWSVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1961 - 2003	
ANNUAL TOTAL	19,528.8		66,631			
ANNUAL MEAN	53.5		183		112	
HIGHEST ANNUAL MEAN					205	1972
LOWEST ANNUAL MEAN					38.8	2002
HIGHEST DAILY MEAN	1,260	May 3	3,030	Feb 22	6,840	Jun 21, 1972
LOWEST DAILY MEAN	7.0	Aug 14	14	aOct 4	7.0	Aug 14, 2002
ANNUAL SEVEN-DAY MINIMUM	7.5	Aug 8	14	Oct 4	7.5	Aug 8, 2002
MAXIMUM PEAK FLOW			7,090	Feb 22	14,200	Jun 21, 1972
MAXIMUM PEAK STAGE			8.66	Feb 22	b11.12	Jun 21, 1972
INSTANTANEOUS LOW FLOW			14	cOct 3	6.3	Aug 12, 2002
ANNUAL RUNOFF (CFSM)	0.49		1.66		1.02	
ANNUAL RUNOFF (INCHES)	6.60		22.53		13.86	
10 PERCENT EXCEEDS	107		326		217	
50 PERCENT EXCEEDS	29		118		68	
90 PERCENT EXCEEDS	14		39		27	

a Also Oct. 5-10, 2002.
b From high-water mark in gage house.
c also Oct. 4-10, 2002.
e Estimated.



02054500 ROANOKE RIVER AT LAFAYETTE, VA

LOCATION.--Lat 37°14'11", long 80°12'33", NAD83, Montgomery County, Hydrologic Unit 03010101, on right bank 120 ft upstream from bridge on State Highway 626 (corrected) at Lafayette, 0.4 mi downstream from confluence of North and South Forks, and 1.1 mi upstream from Cove Hollow.

DRAINAGE AREA.--257 mi^2.

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

REVISED RECORDS.--WSP 1333: 1944-47(M), 1948-49.

GAGE.--Water-stage recorder. Datum of gage is 1,174.47 ft NGVD of 1929. Prior to July 30, 1949, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 17-20, 23-28, which are fair. Occasional diurnal fluctuation caused by meat-processing plant upstream from station. Virginia Department of Emergency Services gage-height radio transmitter at station. Maximum discharge, 24,500 ft^3/s, from rating curve extended above 12,000 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 12.2 ft, from information by local residents, discharge, 19,000 ft^3/s, from rating curve extended above 12,000 ft^3/s.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1700	*15,800	*12.69	Jul 3	0100	4,470	7.00
Apr 11	0000	6,570	8.46				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	141	98	266	101	758	428	437	707	552	246	136
2	32	102	92	306	101	879	693	331	533	1,800	200	140
3	31	86	89	360	103	795	604	358	478	3,060	188	126
4	30	77	87	400	119	654	485	1,070	626	1,350	180	172
5	28	77	93	353	131	599	428	688	543	882	302	211
6	26	155	98	318	116	559	355	633	442	1,100	295	142
7	26	141	80	272	121	484	540	532	774	1,520	250	127
8	25	108	84	255	114	436	749	466	1,270	802	365	120
9	25	94	88	238	95	391	2,060	389	1,570	638	424	113
10	26	84	87	215	125	347	2,880	338	898	579	416	109
11	34	354	150	189	117	309	4,010	306	674	619	408	104
12	44	810	345	163	120	283	1,780	274	654	455	363	100
13	38	727	631	157	110	261	1,130	243	601	431	296	102
14	32	394	802	161	124	244	867	224	705	414	259	107
15	31	262	553	147	516	223	725	257	1,190	339	220	102
16	69	461	415	131	1,490	222	631	501	2,090	297	772	101
17	126	1,150	358	e120	720	225	559	355	2,100	266	620	95
18	71	701	300	e102	505	208	543	1,660	1,470	241	407	118
19	54	441	256	e115	408	197	580	1,800	2,280	227	308	1,570
20	48	315	566	e125	533	1,280	516	965	1,620	209	256	441
21	49	268	590	128	887	1,440	496	818	1,030	196	228	261
22	50	304	413	117	7,190	825	468	798	775	197	208	204
23	45	258	316	e90	4,330	607	415	731	616	257	187	332
24	41	212	618	e72	1,930	479	374	661	506	228	174	244
25	41	178	988	e88	1,180	393	360	561	422	184	158	198
26	72	154	632	e97	880	354	361	533	364	165	148	175
27	74	137	467	e87	729	328	331	668	325	155	140	163
28	91	120	376	e79	696	279	295	828	317	144	136	341
29	225	110	319	105	---	274	276	710	290	290	163	238
30	371	105	272	113	---	343	270	632	279	315	145	194
31	243	---	242	103	---	371	---	674	---	226	145	---
TOTAL	2,134	8,526	10,505	5,472	23,591	15,047	24,209	19,441	26,149	18,138	8,607	6,586
MEAN	68.8	284	339	177	843	485	807	627	872	585	278	220
MAX	371	1,150	988	400	7,190	1,440	4,010	1,800	2,280	3,060	772	1,570
MIN	25	77	80	72	95	197	270	224	279	144	136	95
CFSM	0.27	1.11	1.32	0.69	3.28	1.89	3.14	2.44	3.39	2.28	1.08	0.85
IN.	0.31	1.23	1.52	0.79	3.41	2.18	3.50	2.81	3.78	2.63	1.25	0.95

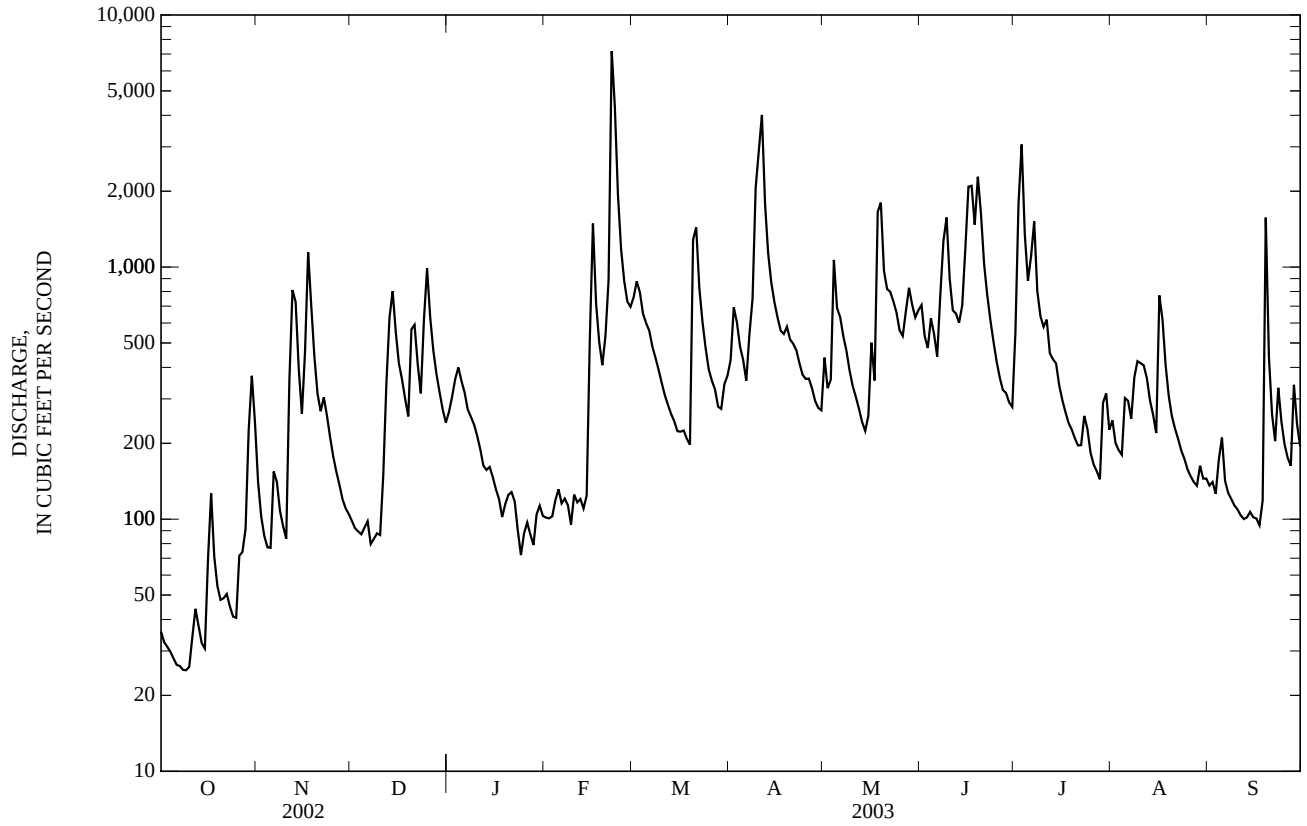
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2003, BY WATER YEAR (WY)

MEAN	131	166	221	299	392	458	412	289	192	120	112	122
MAX	603	770	913	682	1,214	1,309	1,497	716	872	590	551	570
(WY)	(1977)	(1978)	(1949)	(1947)	(1998)	(1993)	(1987)	(1978)	(2003)	(1949)	(1948)	(1989)
MIN	32.8	32.3	44.7	52.0	47.9	103	102	99.1	48.0	43.0	23.4	29.4
(WY)	(2002)	(2002)	(2002)	(1981)	(2002)	(1981)	(1966)	(1963)	(1999)	(2002)	(2002)	(1954)

02054500 ROANOKE RIVER AT LAFAYETTE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1944 - 2003	
ANNUAL TOTAL	44,730		168,405			
ANNUAL MEAN	123		461		242	
HIGHEST ANNUAL MEAN					461	2003
LOWEST ANNUAL MEAN					73.8	2002
HIGHEST DAILY MEAN	2,320	May 3	7,190	Feb 22	11,700	Jun 21, 1972
LOWEST DAILY MEAN	14	aSep 12	25	bOct 8	c10	dJan 14, 1959
ANNUAL SEVEN-DAY MINIMUM	15	Sep 8	27	Oct 4	c11	Jan 14, 1959
MAXIMUM PEAK FLOW			15,800	Feb 22	24,500	Jun 21, 1972
MAXIMUM PEAK STAGE			12.69	Feb 22	f15.60	Jun 21, 1972
INSTANTANEOUS LOW FLOW			24	Oct 9	c8.0	gJan 19, 1959
ANNUAL RUNOFF (CFSM)	0.48		1.80		0.94	
ANNUAL RUNOFF (INCHES)	6.47		24.38		12.79	
10 PERCENT EXCEEDS	300		881		495	
50 PERCENT EXCEEDS	58		295		130	
90 PERCENT EXCEEDS	25		87		49	

a Also Sept. 13, 2002.
b Also Oct. 9, 2002.
c Result of freezeup.
d Also Jan. 15, 18, 19, 1959.
e Estimated.
f From high-water mark in gage house.
g Also Jan. 3, 2001.



02054530 ROANOKE RIVER AT GLENVAR, VA

LOCATION.--Lat 37°16'04", long 80°08'22", NAD83, Roanoke County, Hydrologic Unit 03010101, on left bank 150 ft downstream from bridge on State Highway 1154, 0.2 mi downstream from mouth of Callahan Branch, 0.3 mi south of Glenvar, and 2.5 mi upstream from mouth of Mill Creek.

DRAINAGE AREA.--284 mi^2.

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

GAGE.--Water-stage recorder. Elevation of gage is 1,100 ft NGVD of 1929, from topographic map.

REMARKS.--Records good except those for periods with ice effect, Jan. 17-20, 23-26, which are fair. About 11.1 ft^3/s is withdrawn upstream for municipal use by Roanoke County. Roanoke County gage-height transmitter at station. Maximum discharge, 19,800 ft^3/s, from rating curve extended above 10,900 ft^3/s. Several observations of water temperature were made during the year.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1972, reached a stage of about 20.2 ft, from information by local resident, discharge, about 25,000 ft^3/s, from rating curve extended above 10,900 ft^3/s.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1930	*19,600	*17.61	Jun 19	1230	3,540	7.55
Apr 11	0130	10,100	12.16	Jul 3	0230	5,720	9.38
Jun 17	0000	3,690	7.69				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	108	81	214	106	704	440	400	758	548	262	145
2	38	92	74	294	106	839	681	334	539	1,830	223	142
3	35	81	81	334	106	774	619	339	473	4,000	206	126
4	35	84	81	395	115	630	506	1,210	602	1,620	199	146
5	33	78	84	330	136	568	464	730	534	993	300	216
6	31	113	97	329	111	525	407	646	440	1,010	345	142
7	31	98	79	284	107	468	527	532	710	1,800	298	128
8	30	72	94	250	104	439	750	464	1,390	866	342	121
9	30	83	90	225	87	408	2,270	397	1,780	664	467	115
10	31	79	78	201	117	363	3,410	352	997	583	451	111
11	37	254	109	175	104	323	6,050	318	686	632	421	106
12	47	775	274	147	106	299	2,180	289	669	465	402	103
13	44	776	545	144	101	281	1,300	258	588	427	331	112
14	38	361	849	174	106	270	912	238	582	426	278	120
15	36	225	535	160	366	261	716	249	1,350	356	230	116
16	55	338	389	142	1,870	260	608	488	2,180	315	747	115
17	85	1,290	333	e130	840	259	532	367	2,520	286	675	110
18	77	721	276	e110	539	234	508	1,710	1,740	258	427	113
19	63	410	231	e122	417	226	548	2,200	2,670	243	314	1,580
20	55	283	494	e132	521	1,330	492	1,100	1,960	230	244	470
21	55	226	598	134	981	1,720	470	843	1,200	213	214	291
22	55	252	399	125	9,620	920	450	819	850	205	194	222
23	52	218	302	e105	6,600	651	405	744	649	266	173	318
24	47	173	560	e85	2,200	514	361	675	531	247	158	257
25	46	141	1,250	e98	1,230	426	338	561	453	201	143	211
26	68	118	683	e110	849	383	340	525	400	182	135	185
27	80	102	473	102	672	365	318	634	364	169	128	170
28	73	85	351	95	616	316	284	921	350	160	123	328
29	131	88	286	112	---	305	265	748	337	265	141	257
30	258	90	249	116	---	369	259	648	295	335	129	206
31	194	---	216	109	---	399	---	664	---	245	143	---
TOTAL	1,931	7,814	10,241	5,483	28,833	15,829	27,410	20,403	28,597	20,040	8,843	6,782
MEAN	62.3	260	330	177	1,030	511	914	658	953	646	285	226
MAX	258	1,290	1,250	395	9,620	1,720	6,050	2,200	2,670	4,000	747	1,580
MIN	30	72	74	85	87	226	259	238	295	160	123	103
CFSM	0.22	0.92	1.16	0.62	3.63	1.80	3.22	2.32	3.36	2.28	1.00	0.80
IN.	0.25	1.02	1.34	0.72	3.78	2.07	3.59	2.67	3.75	2.62	1.16	0.89

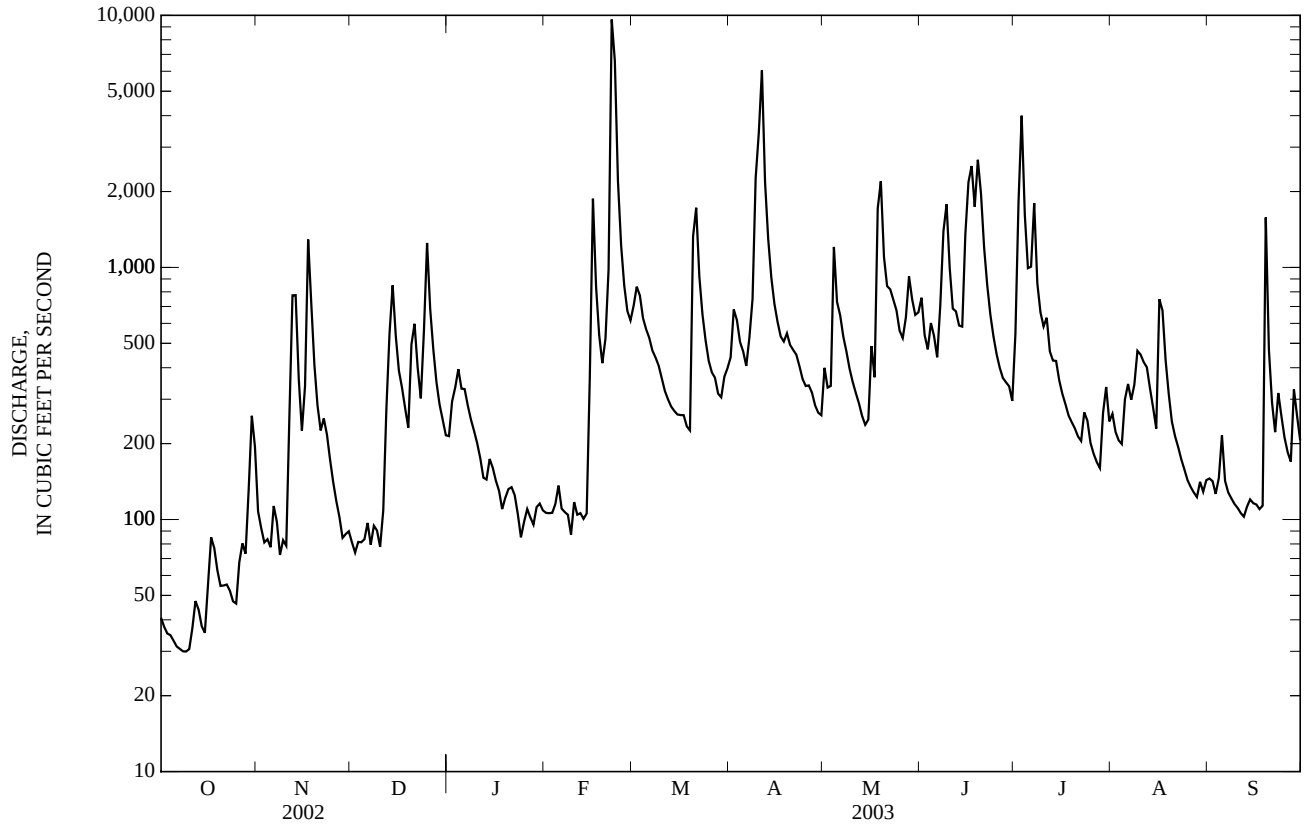
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2003, BY WATER YEAR (WY)

MEAN	77.0	129	212	367	507	546	433	328	299	160	126	142
MAX	170	355	715	784	1,400	1,667	914	658	953	646	295	586
(WY)	(1997)	(1997)	(1997)	(1996)	(1998)	(1993)	(2003)	(2003)	(2003)	(2003)	(1996)	(1996)
MIN	40.1	48.0	58.3	62.8	61.8	124	99.5	125	54.9	46.1	26.1	33.7
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(1999)	(2002)	(2002)	(2002)	(2002)

02054530 ROANOKE RIVER AT GLENVAR, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1992 - 2003	
ANNUAL TOTAL	43,841		182,206			
ANNUAL MEAN	120		499		270	
HIGHEST ANNUAL MEAN					499	2003
LOWEST ANNUAL MEAN					77.7	2002
HIGHEST DAILY MEAN	3,190	May 3	9,620	Feb 22	9,620	Feb 22, 2003
LOWEST DAILY MEAN	15	Sep 13	30	aOct 8	15	Sep 13, 2002
ANNUAL SEVEN-DAY MINIMUM	18	Sep 8	32	bOct 4	18	Sep 8, 2002
MAXIMUM PEAK FLOW			19,600	Feb 22	19,800	Apr 21, 1992
MAXIMUM PEAK STAGE			17.61	Feb 22	17.73	Apr 21, 1992
INSTANTANEOUS LOW FLOW			29	cOct 8	15	dSep 12, 2002
ANNUAL RUNOFF (CFSM)	0.42		1.76		0.95	
ANNUAL RUNOFF (INCHES)	5.74		23.87		12.90	
10 PERCENT EXCEEDS	253		945		545	
50 PERCENT EXCEEDS	64		291		115	
90 PERCENT EXCEEDS	31		81		53	

a Also Oct. 9, 2002.
b Also Oct. 5, 2002.
c Also Oct. 9, 10, 2002.
d Also Sept. 13, 14, 2002.
e Estimated.



02055000 ROANOKE RIVER AT ROANOKE, VA

LOCATION.--Lat 37°15'30", long 79°56'19", NAD83, Roanoke City, Hydrologic Unit 03010101, on left bank 50 ft downstream from Walnut Avenue bridge, 3.2 mi upstream from Tinker Creek, and at mile 360.6.

DRAINAGE AREA.--395 mi^2.

PERIOD OF RECORD.--February 1899 to current year. Monthly discharge only for some periods, published in WSP 1303. Records for July 1896 to January 1899 published in WSP 11, 15, 27, and 20th Annual Report, Part 4, are unreliable, due to doubtful gage-height record, and should not be used.

REVISED RECORDS.--WSP 972: 1928, 1930, 1933. WSP 1433: 1899-1904, 1914-17(M), 1918-24, 1925-27(M), 1929-34(M), 1935, 1936-39(M). WSP 2104: Drainage area. WDR VA-72-1: 1928(M), 1940(M). See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 906.84 ft NGVD of 1929 (levels by U.S. Army Corps of Engineers). Prior to June 7, 1937, nonrecording gage on downstream side of highway bridge 50 ft upstream at same datum.

REMARKS.--Records good except for period of doubtful gage-height record, Nov. 22-25, which is fair. Prior to 1949, diurnal fluctuation at low flow caused by powerplants upstream from station. Since March 1994, water withdrawn upstream for municipal use by the city of Roanoke, amount unknown. American Electric Power and Virginia Department of Emergency Services gage-height radio transmitters at station. Maximum discharge, 32,300 ft^3/s, from rating curve extended above 26,000 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 23	0030	*17,400	*15.57	Jun 16	1745	4,140	6.50
Mar 20	2315	2,880	5.21	Jun 19	1500	3,590	5.96
Apr 9	1315	3,140	5.49	Jul 3	0430	5,010	7.30
Apr 11	0400	8,190	9.78	Jul 7	0200	2,710	5.01
May 18	1845	4,160	6.52	Sep 19	0915	2,570	4.85

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	251	138	462	155	961	617	504	1,000	630	373	236
2	47	186	126	513	149	1,070	859	462	722	1,810	365	222
3	42	163	120	587	144	1,040	847	597	630	3,960	360	198
4	39	153	125	667	167	869	693	1,790	770	1,950	320	274
5	38	190	138	576	175	785	623	1,190	708	1,310	522	295
6	36	228	143	536	161	710	551	999	598	987	554	227
7	35	225	129	461	159	627	711	800	770	1,840	453	193
8	33	174	134	396	152	603	1,050	661	1,580	1,030	397	181
9	33	158	150	348	135	600	2,650	591	2,070	826	846	169
10	34	151	131	316	154	598	3,180	536	1,320	727	762	159
11	73	374	222	277	155	592	5,850	478	927	814	573	152
12	55	1,020	397	243	149	573	2,480	432	875	621	536	144
13	60	1,180	754	214	151	541	1,580	380	860	658	458	156
14	51	626	1,260	242	148	505	1,140	352	791	602	389	196
15	49	463	827	232	345	477	907	670	1,380	542	334	171
16	240	595	606	215	1,890	478	773	641	2,780	481	709	161
17	133	1,590	540	218	1,160	477	662	600	3,010	439	900	154
18	120	1,100	450	192	772	441	651	2,820	2,210	400	580	244
19	103	658	374	184	606	420	691	2,880	3,040	378	446	1,380
20	91	563	674	196	672	1,420	614	1,550	2,280	362	358	721
21	115	450	909	192	1,220	2,180	600	1,260	1,490	340	318	445
22	91	e420	618	185	7,770	1,270	600	1,510	1,100	360	293	361
23	86	e360	504	173	7,770	902	588	1,190	850	386	282	533
24	78	e290	742	125	2,620	714	550	1,030	689	363	257	431
25	90	e240	1,690	152	1,620	596	511	848	605	316	231	344
26	188	212	1,030	162	1,190	533	564	830	578	292	217	299
27	137	184	698	149	970	473	485	923	526	276	207	303
28	219	159	570	133	880	419	426	1,310	492	260	199	421
29	301	143	470	150	---	414	394	1,040	483	360	212	378
30	486	151	387	168	---	582	405	895	436	500	207	296
31	402	---	335	170	---	596	---	855	---	393	207	---
TOTAL	3,562	12,657	15,391	8,834	31,639	22,466	32,252	30,624	35,570	24,213	12,865	9,444
MEAN	115	422	496	285	1,130	725	1,075	988	1,186	781	415	315
MAX	486	1,590	1,690	667	7,770	2,180	5,850	2,880	3,040	3,960	900	1,380
MIN	33	143	120	125	135	414	394	352	436	260	199	144
CFSM	0.29	1.07	1.26	0.72	2.86	1.83	2.72	2.50	3.00	1.98	1.05	0.80
IN.	0.34	1.19	1.45	0.83	2.98	2.12	3.04	2.88	3.35	2.28	1.21	0.89

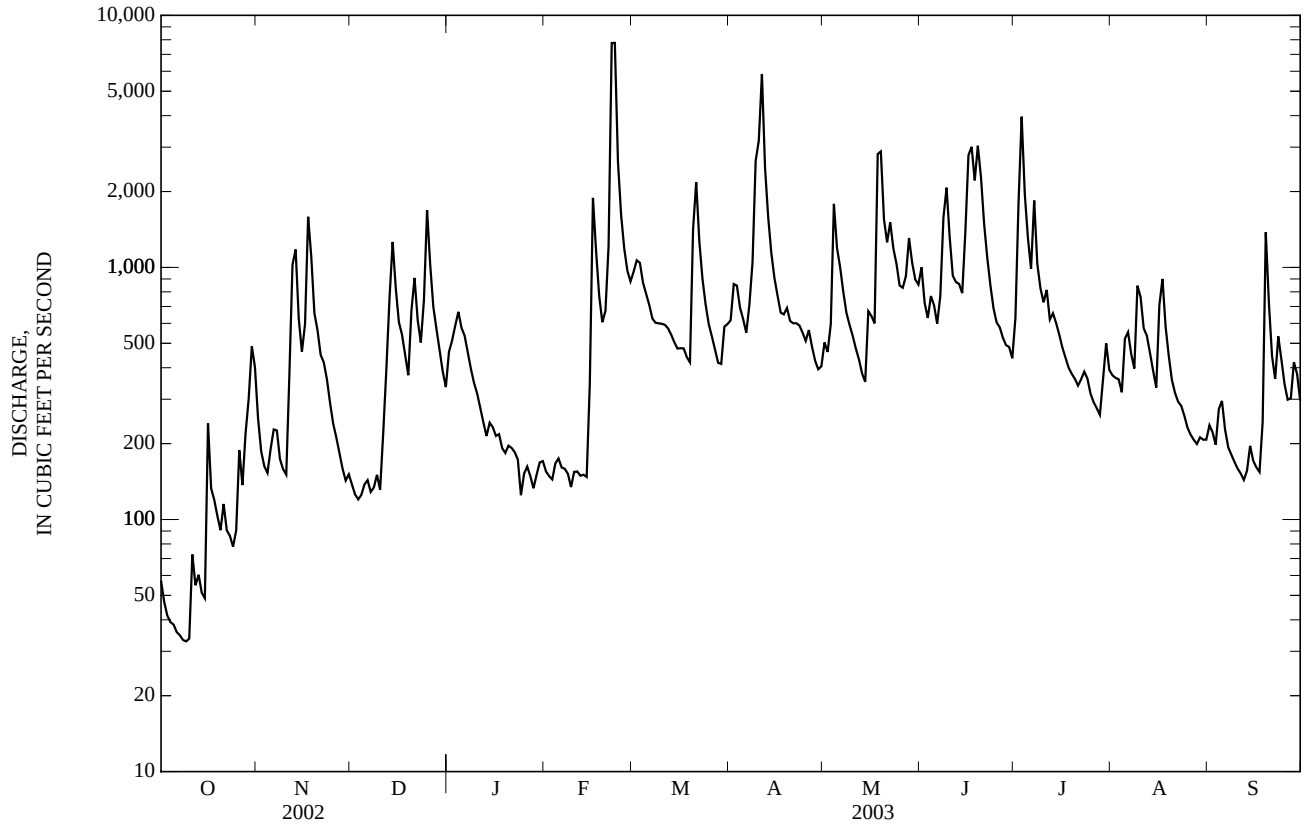
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1899 - 2003, BY WATER YEAR (WY)

MEAN	226	243	343	466	564	681	583	424	309	221	223	201
MAX	1,080	1,626	1,425	1,353	1,912	2,521	2,558	1,466	1,206	1,190	2,140	1,569
(WY)	(1907)	(1986)	(1902)	(1937)	(1998)	(1899)	(1987)	(1901)	(1972)	(1905)	(1940)	(1928)
MIN	47.9	43.8	55.2	65.5	52.5	119	108	112	73.8	45.6	39.4	42.6
(WY)	(1992)	(1932)	(1918)	(1981)	(1934)	(1981)	(1942)	(1941)	(2002)	(1930)	(2002)	(1930)

02055000 ROANOKE RIVER AT ROANOKE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1899 - 2003	
ANNUAL TOTAL	65,047		239,517			
ANNUAL MEAN	178		656		371	
HIGHEST ANNUAL MEAN					836	1901
LOWEST ANNUAL MEAN					110	2002
HIGHEST DAILY MEAN	2,160	May 3	7,770	Feb 22	18,200	Aug 15, 1940
LOWEST DAILY MEAN	16	Sep 13	33	aOct 8	16	Sep 13, 2002
ANNUAL SEVEN-DAY MINIMUM	19	Sep 7	35	Oct 4	19	Sep 7, 2002
MAXIMUM PEAK FLOW			17,400	Feb 23	32,300	Nov 4, 1985
MAXIMUM PEAK STAGE			15.57	Feb 23	b23.35	Nov 4, 1985
INSTANTANEOUS LOW FLOW			31	Oct 10	c0.00	dDec 23, 1909
ANNUAL RUNOFF (CFSM)	0.45		1.66		0.94	
ANNUAL RUNOFF (INCHES)	6.13		22.56		12.75	
10 PERCENT EXCEEDS	450		1,290		745	
50 PERCENT EXCEEDS	91		462		206	
90 PERCENT EXCEEDS	36		141		73	

a Also Oct. 9, 2002.
b From floodmark.
c Practically no flow; retarded by freezing.
d Also Dec. 19, 1963.
e Estimated.



02055100 TINKER CREEK NEAR DALEVILLE, VA

LOCATION.--Lat 37°25'03", long 79°56'07", NAD83, Botetourt County, Hydrologic Unit 03010101, on left bank 1,100 ft downstream from Norfolk Southern Railway bridge, 0.2 mi downstream from unnamed tributary, 0.5 mi south of Glebe Mills, and 1.3 mi northwest of Daleville.

DRAINAGE AREA.--11.7 mi^2.

PERIOD OF RECORD.--April 1956 to current year.

REVISED RECORDS.--WSP 1904: 1958-60(P). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,217.47 ft NGVD of 1929 (Norfolk Southern Railway bench mark).

REMARKS.--Records good except for period with ice effect, Jan. 24-25, which is fair. Withdrawal of water 1,000 ft downstream of gage by city of Roanoke for Carvins Cove Reservoir. Virginia Department of Emergency Services radio transmitter at station. Maximum discharge, 10,400 ft^3/s, from rating curve extended above 130 ft^3/s on basis of contracted-opening measurement at gage height 9.82 ft and slope-area measurements at gage heights 8.52 ft, 9.82 ft, and 13.36 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1940 reached a stage of 9.0 ft, from information by local resident.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1200	1,310	7.03	Jun 18	2345	443	4.57
Apr 10	2245	424	4.49	Jul 10	2015	397	4.37
May 18	0230	365	4.22	Aug 5	0400	612	5.22
May 18	1615	*1,840	*7.89	Aug 5	1645	397	4.37
Jun 16	1115	695	5.50				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.83	9.7	6.8	25	8.2	41	33	33	46	27	22	13
2	0.80	8.0	6.7	23	8.0	42	33	26	41	77	19	13
3	0.84	6.6	6.7	30	7.7	38	29	28	41	79	22	13
4	0.95	6.1	6.5	27	8.6	35	27	38	63	51	26	17
5	1.4	8.0	8.4	24	7.6	33	26	36	55	44	192	15
6	1.4	16	7.4	21	7.4	31	24	39	42	37	56	14
7	1.5	12	6.6	19	8.2	28	30	32	62	34	38	13
8	1.6	10	6.5	18	7.5	27	38	29	57	32	33	13
9	1.6	8.8	6.7	17	7.2	25	89	26	53	31	40	12
10	1.8	8.1	6.4	16	7.5	23	105	24	44	72	44	12
11	3.1	15	11	15	7.5	22	117	23	40	55	56	11
12	2.7	27	16	14	7.4	22	60	21	42	36	35	11
13	2.4	21	27	13	6.8	21	48	20	46	36	31	12
14	2.5	15	31	13	7.0	20	42	19	55	34	28	13
15	2.5	12	23	13	15	19	39	22	60	30	26	12
16	8.4	23	20	12	23	19	36	24	231	28	26	11
17	4.8	33	17	12	18	19	33	26	110	25	24	19
18	3.2	23	15	12	15	18	33	396	113	23	22	35
19	2.5	18	14	11	13	18	32	125	169	23	20	30
20	2.1	15	30	11	16	57	29	72	80	22	19	15
21	2.7	14	23	11	31	46	28	76	58	20	18	12
22	2.6	13	19	11	347	37	26	80	49	20	18	13
23	2.1	11	16	10	133	33	24	67	42	20	17	25
24	1.9	10	34	e8.4	61	28	22	57	38	18	16	18
25	3.8	9.0	41	e8.8	48	26	22	49	36	17	15	16
26	12	8.4	29	9.0	43	24	22	49	33	16	15	14
27	6.5	7.8	23	8.6	39	23	21	70	30	16	14	14
28	10	7.3	21	7.9	39	22	20	63	28	15	14	15
29	16	7.1	18	8.5	---	23	19	63	26	25	13	13
30	18	7.0	17	8.7	---	29	32	56	25	27	13	12
31	13	---	16	8.7	---	32	---	53	---	23	13	---
TOTAL	135.52	389.9	529.7	446.6	947.6	881	1,139	1,742	1,815	1,013	945	456
MEAN	4.37	13.0	17.1	14.4	33.8	28.4	38.0	56.2	60.5	32.7	30.5	15.2
MAX	18	33	41	30	347	57	117	396	231	79	192	35
MIN	0.80	6.1	6.4	7.9	6.8	18	19	19	25	15	13	11
CFSM	0.37	1.11	1.46	1.23	2.89	2.43	3.25	4.80	5.17	2.79	2.61	1.30
IN.	0.43	1.24	1.68	1.42	3.01	2.80	3.62	5.54	5.77	3.22	3.00	1.45

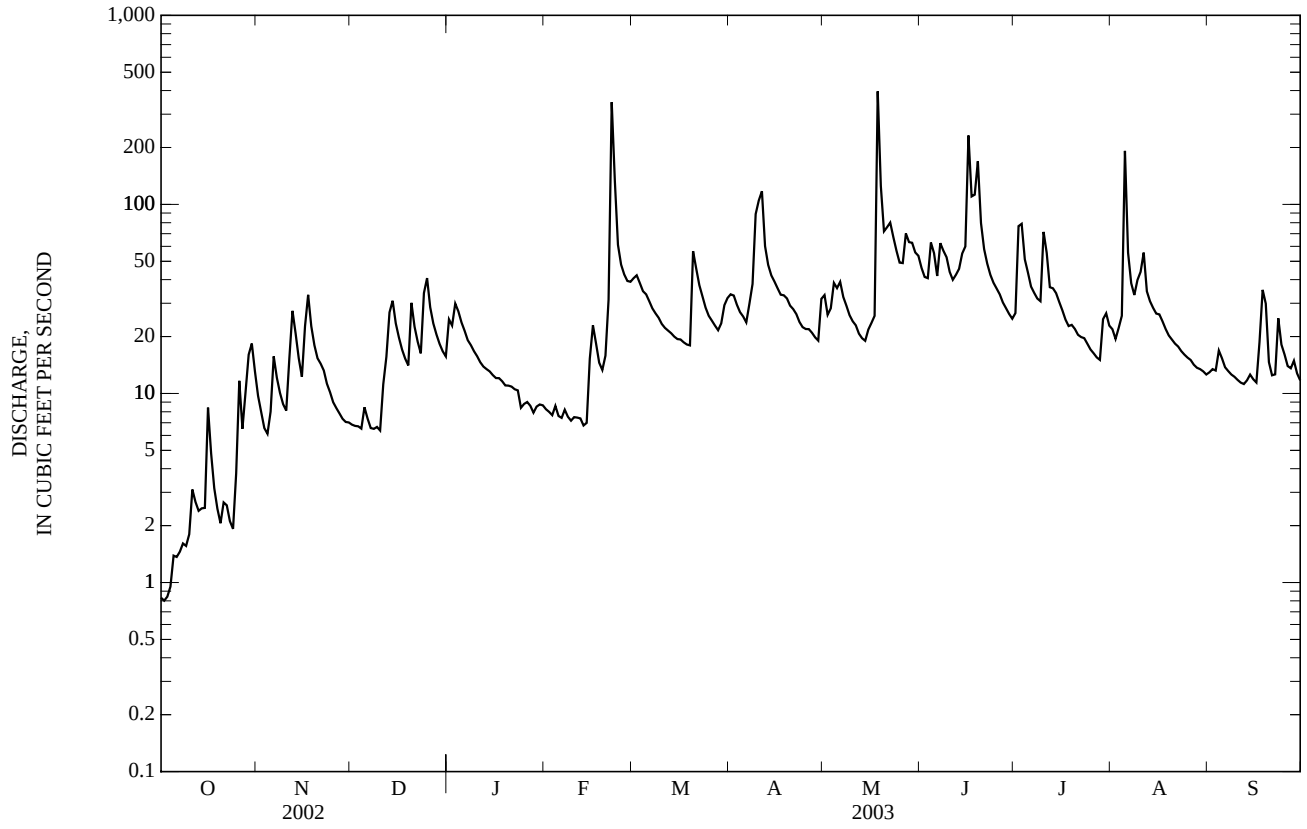
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2003, BY WATER YEAR (WY)

MEAN	7.94	10.6	10.4	13.9	18.6	22.1	19.7	13.2	9.57	6.98	6.61	7.14
MAX	34.2	118	32.6	35.9	82.6	69.3	87.9	56.2	60.5	32.7	30.5	50.4
(WY)	(1980)	(1986)	(1973)	(1996)	(1998)	(1993)	(1987)	(2003)	(2003)	(2003)	(2003)	(1979)
MIN	2.09	1.37	1.65	1.78	1.88	3.16	2.55	3.07	1.29	0.90	0.59	1.07
(WY)	(1987)	(2002)	(2002)	(1966)	(2002)	(1981)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

02055100 TINKER CREEK NEAR DALEVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1956 - 2003	
ANNUAL TOTAL	1,612.30		10,440.32			
ANNUAL MEAN	4.42		28.6		12.2	
HIGHEST ANNUAL MEAN					28.6	2003
LOWEST ANNUAL MEAN					1.96	2002
HIGHEST DAILY MEAN	41	Dec 25	396	May 18	2,560	Nov 4, 1985
LOWEST DAILY MEAN	0.41	aAug 7	0.80	Oct 2	0.41	aAug 7, 2002
ANNUAL SEVEN-DAY MINIMUM	0.42	Aug 7	1.1	Oct 1	0.42	Aug 7, 2002
MAXIMUM PEAK FLOW			1,840	May 18	10,400	Nov 4, 1985
MAXIMUM PEAK STAGE			7.89	May 18	b13.36	Nov 4, 1985
INSTANTANEOUS LOW FLOW			0.80	cOct 1	d0.20	Jan 24, 1961
ANNUAL RUNOFF (CFSM)	0.38		2.44		1.04	
ANNUAL RUNOFF (INCHES)	5.13		33.19		14.19	
10 PERCENT EXCEEDS	13		55		24	
50 PERCENT EXCEEDS	2.0		21		6.8	
90 PERCENT EXCEEDS	0.65		6.9		2.4	

a Also Aug. 10, 13, 14, 2002.
b From floodmarks.
c Also Oct. 2, 3, 2002.
d Result of freezeup.
e Estimated.



02056000 ROANOKE RIVER AT NIAGARA, VA

LOCATION.--Lat 37°15'18", long 79°52'17", NAD83, Roanoke County, Hydrologic Unit 03010101, on right bank 200 ft downstream from powerplant of American Electric Power at Niagara, 2 mi downstream from Tinker Creek, 2.1 mi southeast of Vinton, and at mile 355.3.

DRAINAGE AREA.--512 mi^2.

PERIOD OF RECORD.--July 1926 to current year.

REVISED RECORDS.--WSP 972: 1927(M), 1929(M), 1934(M), 1937(M). WSP 1303: 1928, 1930, 1933-38, 1940. WSP 2104: Drainage area. WDR VA-72-1: 1928(M), 1930(M), 1933(M), 1935-36(M), 1938(M), 1940, 1944-45(M), 1948-49(M), 1951(M), 1955(M), 1960(M), 1967(M), 1969(M).

GAGE.--Water-stage recorder. Datum of gage is 820.15 ft NGVD of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--No estimated daily discharges. Records good. Flow regulated by dam and powerplant 200 ft upstream from station. Maximum discharge, 52,300 ft^3/s, from rating curve extended above 12,000 ft^3/s on basis of slope-area measurements at gage heights 18.98 ft and 25.30 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1545	*21,800	*16.71	Jun 9	0130	3,520	7.72
Mar 20	2245	4,250	8.37	Jun 13	1700	4,430	8.52
Apr 9	1300	4,980	8.96	Jun 16	1330	9,010	11.53
Apr 11	0430	13,800	13.78	Jun 19	1630	5,760	9.54
May 15	1530	4,670	8.71	Jul 3	0530	7,270	10.54
May 18	1915	10,300	12.20	Aug 9	0400	3,860	8.03
May 22	0130	3,800	7.98	Aug 10	0145	6,560	10.09

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	113	303	209	695	224	1,290	929	666	1,460	846	487	351
2	106	232	200	679	224	1,410	1,150	610	1,080	2,620	498	340
3	106	208	192	815	221	1,380	1,140	750	969	5,780	755	313
4	97	210	204	872	272	1,180	955	2,350	1,140	2,760	491	488
5	94	264	228	731	252	1,100	869	1,630	1,080	1,970	1,370	426
6	93	342	216	658	250	976	761	1,420	886	1,580	1,420	351
7	89	279	210	584	262	858	1,040	1,140	1,160	2,380	972	307
8	91	223	217	517	231	784	1,430	967	2,080	1,370	743	291
9	87	205	242	467	219	730	4,250	824	2,950	1,110	1,930	276
10	90	206	212	427	245	678	4,820	694	1,820	999	2,490	279
11	164	524	372	385	240	603	9,630	617	1,310	1,310	1,470	265
12	111	1,320	518	348	227	556	3,700	553	1,290	929	989	257
13	111	1,420	971	316	237	522	2,230	488	1,780	937	781	278
14	110	718	1,560	341	244	491	1,600	450	1,470	827	656	314
15	118	517	1,030	332	476	477	1,260	1,490	2,120	690	564	282
16	448	763	755	309	2,420	479	1,070	1,050	5,520	643	901	265
17	208	1,910	635	311	1,360	466	933	832	5,130	569	1,150	267
18	173	1,330	552	283	919	430	940	6,030	3,500	513	775	551
19	144	796	477	268	742	406	1,000	5,400	5,220	491	627	1,910
20	132	592	823	283	874	2,150	858	2,560	3,560	482	516	841
21	185	485	1,070	280	1,540	2,980	810	2,040	2,220	439	462	535
22	133	460	737	268	12,300	1,700	791	2,680	1,600	503	443	492
23	134	420	578	257	11,400	1,210	709	1,980	1,230	525	417	825
24	130	365	1,000	208	3,610	971	641	1,640	1,010	476	401	563
25	170	324	2,070	235	2,170	808	605	1,320	863	413	358	464
26	346	287	1,270	249	1,610	711	690	1,370	760	395	338	409
27	189	259	878	234	1,330	675	615	1,570	699	365	325	447
28	372	231	692	219	1,220	596	528	2,020	653	343	326	580
29	479	212	577	248	---	616	497	1,660	633	481	312	497
30	641	223	504	253	---	937	539	1,440	573	707	324	402
31	486	---	448	237	---	929	---	1,350	---	545	306	---
TOTAL	5,950	15,628	19,647	12,309	45,319	29,099	46,990	49,591	55,766	33,998	23,597	13,866
MEAN	192	521	634	397	1,619	939	1,566	1,600	1,859	1,097	761	462
MAX	641	1,910	2,070	872	12,300	2,980	9,630	6,030	5,520	5,780	2,490	1,910
MIN	87	205	192	208	219	406	497	450	573	343	306	257
CFSM	0.37	1.02	1.24	0.78	3.16	1.83	3.06	3.12	3.63	2.14	1.49	0.90
IN.	0.43	1.14	1.43	0.89	3.29	2.11	3.41	3.60	4.05	2.47	1.71	1.01

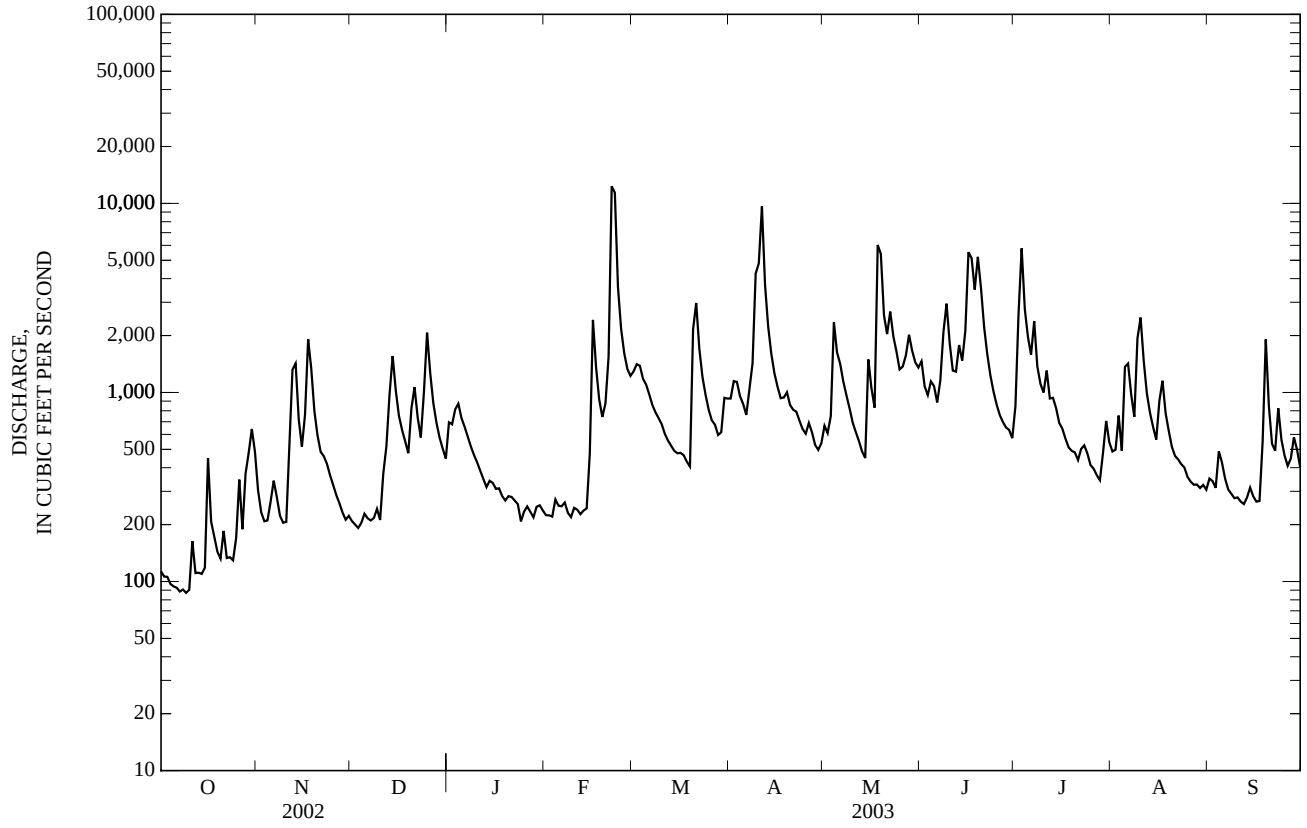
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1927 - 2003, BY WATER YEAR (WY)

MEAN	342	362	465	620	773	897	825	574	431	299	340	317
MAX	1,722	2,100	2,065	1,941	2,805	2,846	3,661	1,600	1,859	1,396	2,456	2,051
(WY)	(1938)	(1986)	(1949)	(1937)	(1998)	(1993)	(1987)	(2003)	(2003)	(1949)	(1940)	(1928)
MIN	86.0	101	115	110	117	210	157	193	135	109	92.2	84.0
(WY)	(1931)	(1942)	(1966)	(1966)	(1934)	(1981)	(1942)	(1930)	(1999)	(1930)	(1956)	(1954)

02056000 ROANOKE RIVER AT NIAGARA, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1927 - 2003	
ANNUAL TOTAL	94,061		351,760			
ANNUAL MEAN	258		964		519	
HIGHEST ANNUAL MEAN					984	1949
LOWEST ANNUAL MEAN					176	2002
HIGHEST DAILY MEAN	3,110	May 3	12,300	Feb 22	19,700	Nov 4, 1985
LOWEST DAILY MEAN	79	Aug 14	87	Oct 9	8.0	Oct 9, 1954
ANNUAL SEVEN-DAY MINIMUM	82	Aug 8	92	Oct 4	67	Jan 28, 1966
MAXIMUM PEAK FLOW			21,800	Feb 22	52,300	Nov 4, 1985
MAXIMUM PEAK STAGE			16.71	Feb 22	a25.30	Nov 4, 1985
INSTANTANEOUS LOW FLOW			50	Sep 11	1.0	bOct 16, 1956
ANNUAL RUNOFF (CFSM)	0.50		1.88		1.01	
ANNUAL RUNOFF (INCHES)	6.83		25.56		13.77	
10 PERCENT EXCEEDS	509		1,950		985	
50 PERCENT EXCEEDS	162		592		305	
90 PERCENT EXCEEDS	97		212		135	

a From floodmark.
b Also Oct. 20, 1956, and Nov. 25, 26, 1990.



02056650 BACK CREEK NEAR DUNDEE, VA

LOCATION.--Lat 37°13'40", long 79°52'05", NAD83, Roanoke County, Hydrologic Unit 03010101, on right bank 65 ft upstream from bridge on State Highway 660, 0.9 mi upstream from Horseshoe Branch, 1.1 mi southeast of Dundee, 2.8 mi west of Hardy Post Office, and at mile 2.4.

DRAINAGE AREA.--56.8 mi^2.

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

GAGE.--Water-stage recorder. Datum of gage is 822.67 ft NGVD of 1929. Prior to Apr. 4, 1975, nonrecording gage, and Apr. 4, 1975, to Nov. 4, 1985, water-stage recorder, at site 80 ft downstream at same datum.

REMARKS.--Records good except those for periods of no gage-height record, Nov. 12-14 and July 22-24, and period with ice effect, Jan. 19-22, which are fair. Maximum discharge, 20,000 ft^3/s, from rating curve extended above 5,900 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods of May 30, 1971, and Jun. 21, 1972, reached a stage of 17.5 ft and 20.0 ft, respectively, from information by local resident.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1530	*3,770	*11.03	Jul 1	2145	648	5.47
Mar 20	1415	620	5.40	Jul 3	0000	1,500	7.37
Apr 10	2230	1,630	7.62	Jul 6	2000	1,500	7.37
Jun 16	0330	852	5.95	Aug 3	0300	660	5.50
Jun 16	1230	2,420	9.03	Aug 9	0515	852	5.95
Jun 19	0915	894	6.04				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.3	36	18	98	25	136	155	76	234	122	82	44
2	6.2	26	17	100	24	150	145	66	158	499	69	47
3	5.6	22	17	117	23	134	124	80	141	696	225	39
4	5.2	20	16	104	28	115	107	278	136	286	85	64
5	4.9	20	20	85	30	112	100	151	114	201	178	60
6	4.2	42	24	73	26	109	84	127	98	401	207	43
7	3.9	29	16	61	28	95	164	107	159	366	122	40
8	3.6	24	19	56	26	87	173	95	184	196	106	39
9	3.6	22	23	50	23	80	411	83	264	163	415	37
10	3.6	20	21	45	28	72	787	75	170	150	187	35
11	5.3	118	53	40	27	66	932	70	136	120	134	34
12	9.8	e190	83	35	28	63	407	62	165	103	100	32
13	7.1	e170	159	35	25	60	264	56	195	107	83	34
14	5.3	e96	193	34	27	57	197	53	222	95	76	38
15	4.8	59	108	31	69	53	161	68	230	86	68	35
16	63	81	79	29	250	57	139	84	993	79	110	34
17	38	206	65	32	119	58	122	64	531	73	92	33
18	18	119	54	24	82	54	126	209	380	69	74	76
19	13	78	47	e23	73	51	152	273	539	66	65	239
20	10	60	69	e24	103	351	126	175	340	63	60	79
21	11	50	67	e23	187	280	117	158	234	61	57	58
22	12	44	58	e22	1,480	175	107	306	183	e60	54	59
23	9.6	36	50	20	793	130	95	246	149	e74	51	168
24	8.0	32	127	19	362	106	86	207	126	e70	51	80
25	8.3	29	187	25	225	91	84	162	111	59	46	62
26	23	27	109	24	164	82	94	346	100	56	44	54
27	18	25	82	20	136	76	90	252	92	53	42	52
28	33	23	67	20	130	68	75	279	89	51	40	78
29	76	21	57	25	---	79	71	209	84	70	42	51
30	105	20	49	26	---	138	71	178	76	84	46	46
31	58	---	44	24	---	155	---	234	---	73	45	---
TOTAL	584.3	1,745	1,998	1,344	4,541	3,340	5,766	4,829	6,633	4,652	3,056	1,790
MEAN	18.8	58.2	64.5	43.4	162	108	192	156	221	150	98.6	59.7
MAX	105	206	193	117	1,480	351	932	346	993	696	415	239
MIN	3.6	20	16	19	23	51	71	53	76	51	40	32
CFSM	0.33	1.02	1.13	0.76	2.86	1.90	3.38	2.74	3.89	2.64	1.74	1.05
IN.	0.38	1.14	1.31	0.88	2.97	2.19	3.78	3.16	4.34	3.05	2.00	1.17

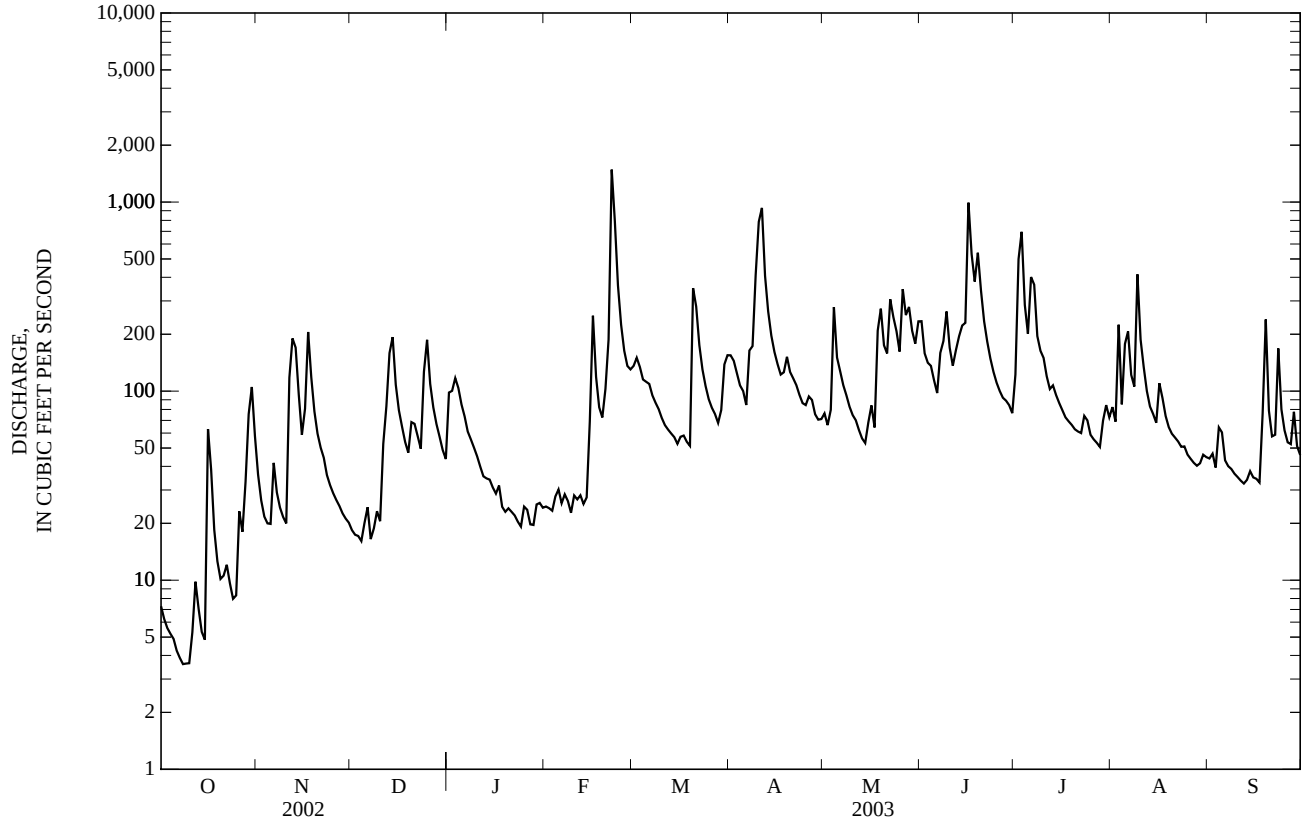
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 2003, BY WATER YEAR (WY)

MEAN	31.8	45.7	45.9	64.9	80.9	105	109	66.9	54.9	31.0	27.4	40.3
MAX	154	292	117	146	317	265	396	190	221	150	121	314
(WY)	(1977)	(1986)	(1987)	(1996)	(1998)	(1993)	(1987)	(1978)	(2003)	(2003)	(1985)	(1979)
MIN	5.61	6.58	11.4	11.6	12.6	20.5	22.4	20.8	6.16	6.96	3.47	5.03
(WY)	(1992)	(1982)	(1999)	(1981)	(2002)	(1981)	(1981)	(1981)	(2002)	(1981)	(1981)	(1998)

02056650 BACK CREEK NEAR DUNDEE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1974 - 2003	
ANNUAL TOTAL	8,774.47		40,278.3			
ANNUAL MEAN	24.0		110		58.5	
HIGHEST ANNUAL MEAN					110	2003
LOWEST ANNUAL MEAN					14.2	2002
HIGHEST DAILY MEAN	260	May 3	1,480	Feb 22	4,000	Nov 4, 1985
LOWEST DAILY MEAN	0.32	Aug 14	3.6	aOct 8	0.32	Aug 14, 2002
ANNUAL SEVEN-DAY MINIMUM	0.59	Aug 8	4.1	Oct 4	0.59	Aug 8, 2002
MAXIMUM PEAK FLOW			3,770	Feb 22	20,000	Nov 4, 1985
MAXIMUM PEAK STAGE			11.03	Feb 22	b25.10	Nov 4, 1985
INSTANTANEOUS LOW FLOW			3.5	aOct 8	0.24	cAug 14, 2002
ANNUAL RUNOFF (CFSM)	0.42		1.94		1.03	
ANNUAL RUNOFF (INCHES)	5.75		26.38		14.00	
10 PERCENT EXCEEDS	57		225		114	
50 PERCENT EXCEEDS	13		72		31	
90 PERCENT EXCEEDS	2.6		20		8.9	

a Also Oct. 9, 10, 2002.
b From floodmark, present site.
c Also Aug. 15, 2002.
e Estimated.



02056900 BLACKWATER RIVER NEAR ROCKY MOUNT, VA

LOCATION.--Lat 37°02'43", long 79°50'39", NAD83, Franklin County, Hydrologic Unit 03010101, on right bank 45 ft downstream from bridge on State Highway 122, 3.0 mi northeast of Rocky Mount, and 4.1 mi upstream from Maggodee Creek.

DRAINAGE AREA.--115 mi^2.

PERIOD OF RECORD.--October 1976 to current year.

GAGE.--Water-stage recorder. Datum of gage is 876.45 ft NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Dec. 7-9 and Jan. 16-19, 23, 29, which are fair. American Electric Power gage-height transmitter at station with recorder at Roanoke. Maximum discharge, 20,800 ft^3/s, from rating curve extended above 7,000 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location by the Virginia Department of Environmental Quality - Water Division.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1645	*5,000	*11.85	Jun 19	1100	1,830	6.55
Mar 20	1430	1,560	6.01	Aug 9	0230	1,700	6.29
Apr 10	2200	2,600	7.95	Aug 9	1115	3,300	9.15

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	86	58	159	70	316	230	155	210	147	159	128
2	30	67	55	214	72	284	220	142	180	439	147	178
3	26	57	54	225	70	244	202	138	173	800	276	137
4	25	53	54	208	75	213	184	268	195	375	155	197
5	22	53	58	168	85	202	173	200	167	271	152	171
6	22	91	76	153	73	214	165	192	149	244	385	131
7	20	78	e62	135	79	191	247	174	424	227	189	120
8	19	63	e64	125	75	173	261	163	503	191	178	114
9	19	56	e60	116	67	163	568	152	316	179	1,570	107
10	19	53	59	108	72	152	1,170	158	238	189	468	103
11	26	434	115	99	74	143	1,370	229	207	186	326	98
12	35	577	171	93	76	138	657	150	385	150	233	94
13	29	381	247	89	73	132	460	130	255	148	192	95
14	24	176	397	87	71	127	362	122	256	143	348	105
15	22	130	202	84	107	119	301	125	224	139	191	99
16	70	148	150	e75	452	128	260	155	335	131	440	96
17	132	397	128	e69	233	147	232	134	582	123	317	88
18	57	223	113	e62	164	127	234	270	526	117	211	106
19	43	157	102	e80	147	121	315	552	1,160	118	175	540
20	37	131	161	95	204	839	247	297	644	112	159	190
21	36	115	149	77	383	518	224	242	437	108	155	144
22	41	106	121	71	2,310	316	211	416	344	111	150	133
23	36	91	107	e62	1,290	239	191	383	280	261	135	643
24	33	83	175	e49	649	202	176	346	239	169	146	241
25	31	77	370	e57	416	180	170	282	210	122	126	175
26	35	73	207	e64	319	168	188	437	190	109	117	151
27	40	69	158	e59	272	163	210	378	178	103	111	142
28	40	65	139	e53	289	148	168	360	171	97	106	219
29	92	63	125	e70	---	162	156	286	164	99	111	145
30	185	61	112	77	---	238	151	257	150	136	134	129
31	139	---	104	73	---	278	---	221	---	135	140	---
TOTAL	1,419	4,214	4,153	3,156	8,267	6,785	9,703	7,514	9,492	5,879	7,702	5,019
MEAN	45.8	140	134	102	295	219	323	242	316	190	248	167
MAX	185	577	397	225	2,310	839	1,370	552	1,160	800	1,570	643
MIN	19	53	54	49	67	119	151	122	149	97	106	88
CFSM	0.40	1.22	1.16	0.89	2.57	1.90	2.81	2.11	2.75	1.65	2.16	1.45
IN.	0.46	1.36	1.34	1.02	2.67	2.19	3.14	2.43	3.07	1.90	2.49	1.62

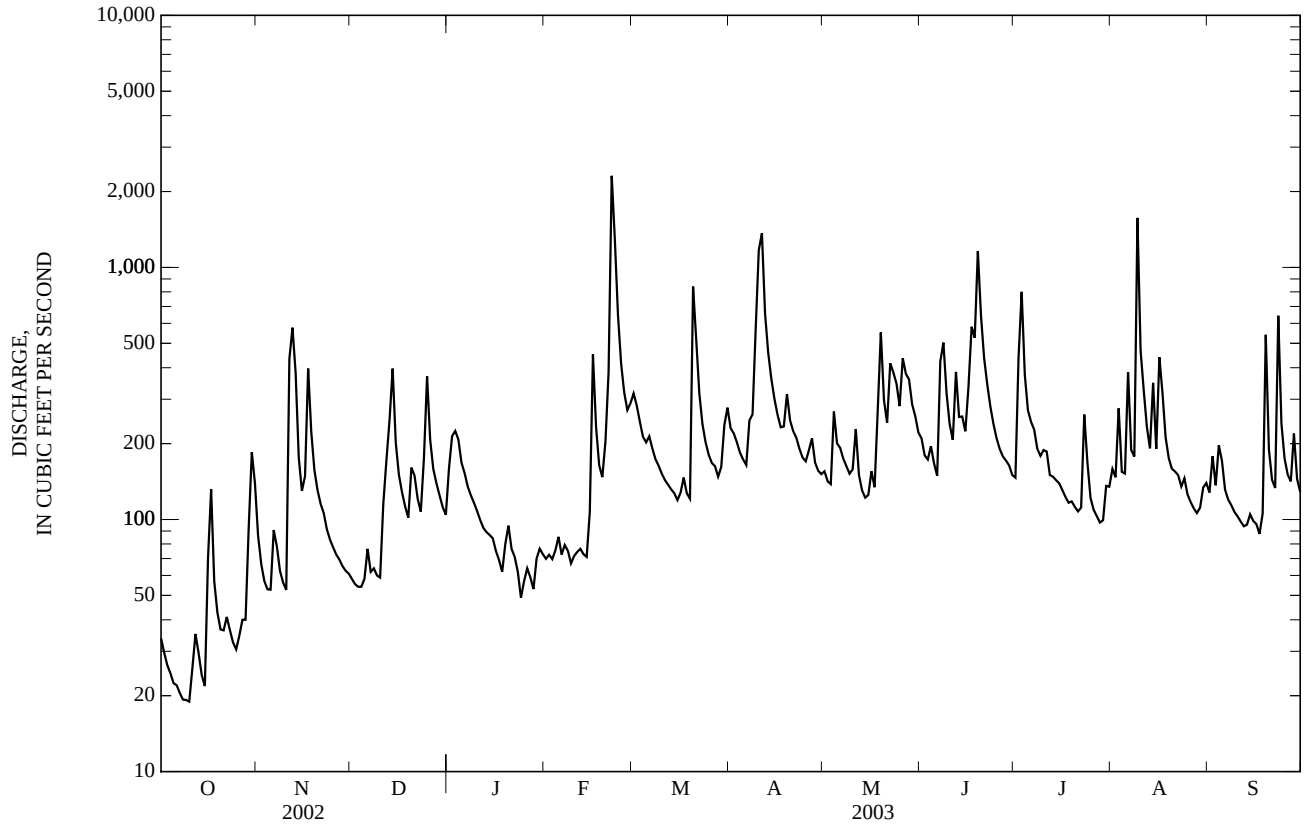
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 2003, BY WATER YEAR (WY)

MEAN	91.9	109	107	148	164	216	230	138	124	81.9	71.6	93.2
MAX	544	584	272	349	495	585	821	346	416	261	248	375
(WY)	(1977)	(1986)	(1997)	(1996)	(1998)	(1993)	(1987)	(1978)	(1992)	(1989)	(2003)	(1979)
MIN	17.3	21.9	34.2	42.0	39.6	60.1	56.2	53.6	17.1	24.6	12.4	23.0
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(1981)	(2002)	(1981)	(2002)	(1977)	(1981)	(1983)

02056900 BLACKWATER RIVER NEAR ROCKY MOUNT, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1977 - 2003	
ANNUAL TOTAL	21,071.0		73,303			
ANNUAL MEAN	57.7		201		131	
HIGHEST ANNUAL MEAN					234	1987
LOWEST ANNUAL MEAN					37.1	2002
HIGHEST DAILY MEAN	577	Nov 12	2,310	Feb 22	5,410	Nov 5, 1985
LOWEST DAILY MEAN	3.8	Aug 14	19	aOct 8	3.8	Aug 14, 2002
ANNUAL SEVEN-DAY MINIMUM	4.6	Aug 9	21	bOct 4	4.6	Aug 9, 2002
MAXIMUM PEAK FLOW			5,000	Feb 22	20,800	Nov 5, 1985
MAXIMUM PEAK STAGE			11.85	Feb 22	21.92	Nov 5, 1985
INSTANTANEOUS LOW FLOW			17	cOct 8	3.2	dAug 13, 2002
ANNUAL RUNOFF (CFSM)	0.50		1.75		1.14	
ANNUAL RUNOFF (INCHES)	6.82		23.71		15.45	
10 PERCENT EXCEEDS	125		383		230	
50 PERCENT EXCEEDS	38		150		83	
90 PERCENT EXCEEDS	11		57		31	

a Also Oct. 9, 10, 2002.
b Also Oct. 5, 2002.
c Also Oct. 9-11, 2002.
d Also Aug. 14, 2002.
e Estimated.



02057400 SMITH MOUNTAIN LAKE NEAR PENHOOK, VA

LOCATION.--Lat 37°02'29", long 79°31'19", NAD83, Pittsylvania County, Hydrologic Unit 03010101, at dam on Roanoke (Staunton) River 6.5 mi northeast of Penhook and at mile 314.0.

DRAINAGE AREA.--1,024 mi^2.

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

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to July 19, 1965, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by concrete dam. Two ungated spillways, one near each end of dam, with crests at elevation 795 ft, are each 105 ft long. Initial filling began in September 1963 during construction; water in reservoir first reached minimum power pool, elevation, 787 ft, in May 1965. Total capacity at maximum pool elevation, 811 ft, is 1,517,000 acre-ft of which 375,000 acre-ft is above the spillway crest; 157,800 acre-ft is normally used for power between elevation 787 ft, minimum power pool, and the spillway crest. Capacity at invert of lowest penstock, elevation, 601 ft, is 100 acre-ft. Figures given herein represent total contents. Reservoir is part of the Smith Mountain Combination Project (pumped storage) which is used for hydroelectric power, flood control, low-water regulation for pollution abatement and water supply, water releases for downstream fish spawning, and recreation.

COOPERATION.--Records were provided by the American Electric Power.

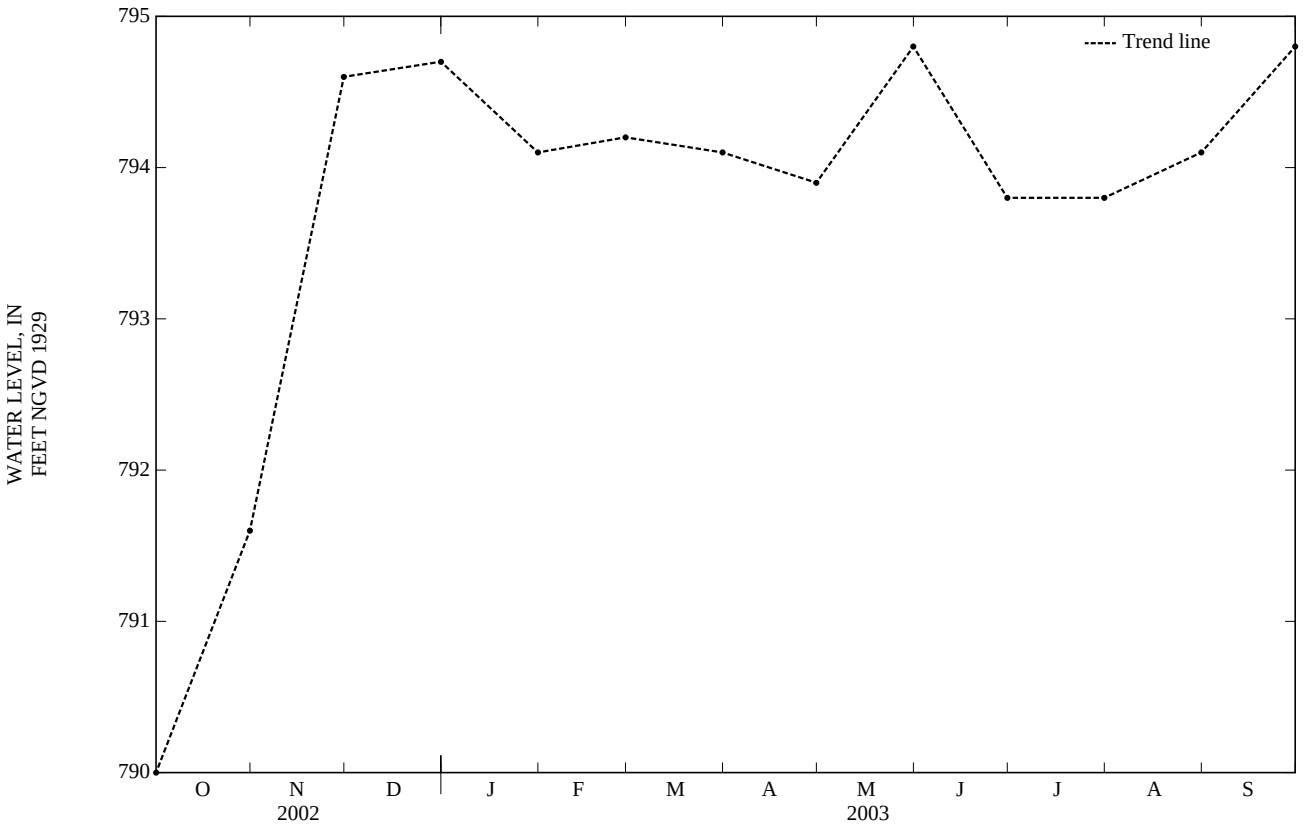
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,250,200 acre-ft, Apr. 27, 1978, elevation, 799.8 ft; minimum (after first filling to minimum power pool), 995,400 acre-ft, Jan. 23, 1970, elevation, 787.6 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,169,000 acre-ft, Feb. 23, elevation, 796.2 ft; minimum, 1,046,100 acre-ft, Nov. 4, elevation, 790.3 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	790.0	1,040,000	
Oct. 31	791.6	1,072,600	+32,600
Nov. 30	794.6	1,133,800	+61,200
Dec. 31	794.7	1,135,900	+2,100
CAL YR 2002			+91,800
Jan. 31	794.1	1,123,600	-12,300
Feb. 28	794.2	1,125,700	+2,100
Mar. 31	794.1	1,123,600	-2,100
Apr. 30	793.9	1,119,600	-4,000
May 31	794.8	1,137,900	+18,300
June 30	793.8	1,117,500	-20,400
July 31	793.8	1,117,500	0
Aug. 31	794.1	1,123,600	+6,100
Sept. 30	794.8	1,137,900	+14,300
WTR YR 2003			+97,900

02057400 SMITH MOUNTAIN LAKE NEAR PENHOOK, VA—Continued



02058400 PIGG RIVER NEAR SANDY LEVEL, VA

LOCATION.--Lat 36°56'46", long 79°31'29", NAD83, Pittsylvania County, Hydrologic Unit 03010101, on left bank 300 ft downstream from Harpen Creek, 0.5 mi upstream from bridge on State Highway 40, and 1.1 mi south of Sandy Level.

DRAINAGE AREA.--350 mi^2.

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

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 617.00 ft NGVD of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Nov. 18, 1963, nonrecording gage at same site and datum.

REMARKS.--Records good except for period with ice effect, Jan. 18-27, which is poor. American Electric Power gage-height transmitter at station, recorder at Roanoke. Maximum discharge, 65,600 ft^3/s, from rating curve extended above 25,500 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 23	0130	10,000	16.23	Jun 7	2330	4,120	8.20
Mar 20	2245	*12,600	*18.61	Jul 3	0830	4,010	8.01
Apr 10	2345	7,170	12.81	Sep 23	0730	6,500	11.86

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	78	279	166	466	228	899	621	546	567	447	553	400
2	71	199	160	576	225	812	542	488	474	625	475	372
3	67	165	158	534	218	679	478	432	448	2,680	764	332
4	64	156	157	595	241	545	438	659	572	929	579	478
5	62	158	183	440	290	495	420	624	826	607	680	567
6	60	352	230	368	252	508	405	539	517	574	919	402
7	58	322	180	324	266	505	960	496	1,740	879	638	350
8	57	228	202	300	255	438	1,080	461	2,390	548	681	338
9	57	184	190	285	227	418	2,820	434	1,020	496	1,660	328
10	57	164	183	268	229	388	3,570	426	689	508	1,420	316
11	115	1,080	319	250	251	365	4,000	501	558	548	1,490	307
12	180	2,180	562	238	269	356	1,210	461	932	456	772	299
13	131	1,520	797	227	268	349	796	398	1,360	587	562	313
14	99	544	1,620	225	255	345	646	373	791	603	500	371
15	81	363	687	225	321	331	580	371	605	511	451	362
16	170	446	455	215	1,330	345	548	429	923	477	639	369
17	390	1,610	361	216	738	420	523	434	1,420	485	627	327
18	223	800	310	e190	481	379	520	502	1,470	420	502	370
19	141	457	280	e180	440	351	666	1,030	1,970	400	424	1,590
20	116	352	389	e190	654	6,810	629	639	1,420	397	388	611
21	112	304	497	e180	1,150	4,500	557	513	800	388	377	425
22	113	276	351	e175	4,300	984	530	558	627	408	386	380
23	112	244	297	e170	5,330	668	492	715	551	503	356	4,650
24	101	221	428	e160	1,140	556	462	700	502	661	501	1,030
25	95	209	1,610	e160	723	495	449	1,830	466	458	387	574
26	125	200	842	e165	591	454	476	1,250	442	399	346	464
27	141	192	498	e170	558	435	514	1,420	425	384	333	415
28	150	183	383	180	666	406	465	1,400	411	371	320	394
29	275	175	335	213	---	398	432	791	412	390	327	383
30	547	172	301	218	---	642	435	838	417	427	336	342
31	479	---	280	226	---	944	---	596	---	439	445	---
TOTAL	4,527	13,735	13,411	8,329	21,896	26,220	26,264	20,854	25,745	18,005	18,838	17,859
MEAN	146	458	433	269	782	846	875	673	858	581	608	595
MAX	547	2,180	1,620	595	5,330	6,810	4,000	1,830	2,390	2,680	1,660	4,650
MIN	57	156	157	160	218	331	405	371	411	371	320	299
CFSM	0.42	1.31	1.24	0.77	2.23	2.42	2.50	1.92	2.45	1.66	1.74	1.70
IN.	0.48	1.46	1.43	0.89	2.33	2.79	2.79	2.22	2.74	1.91	2.00	1.90

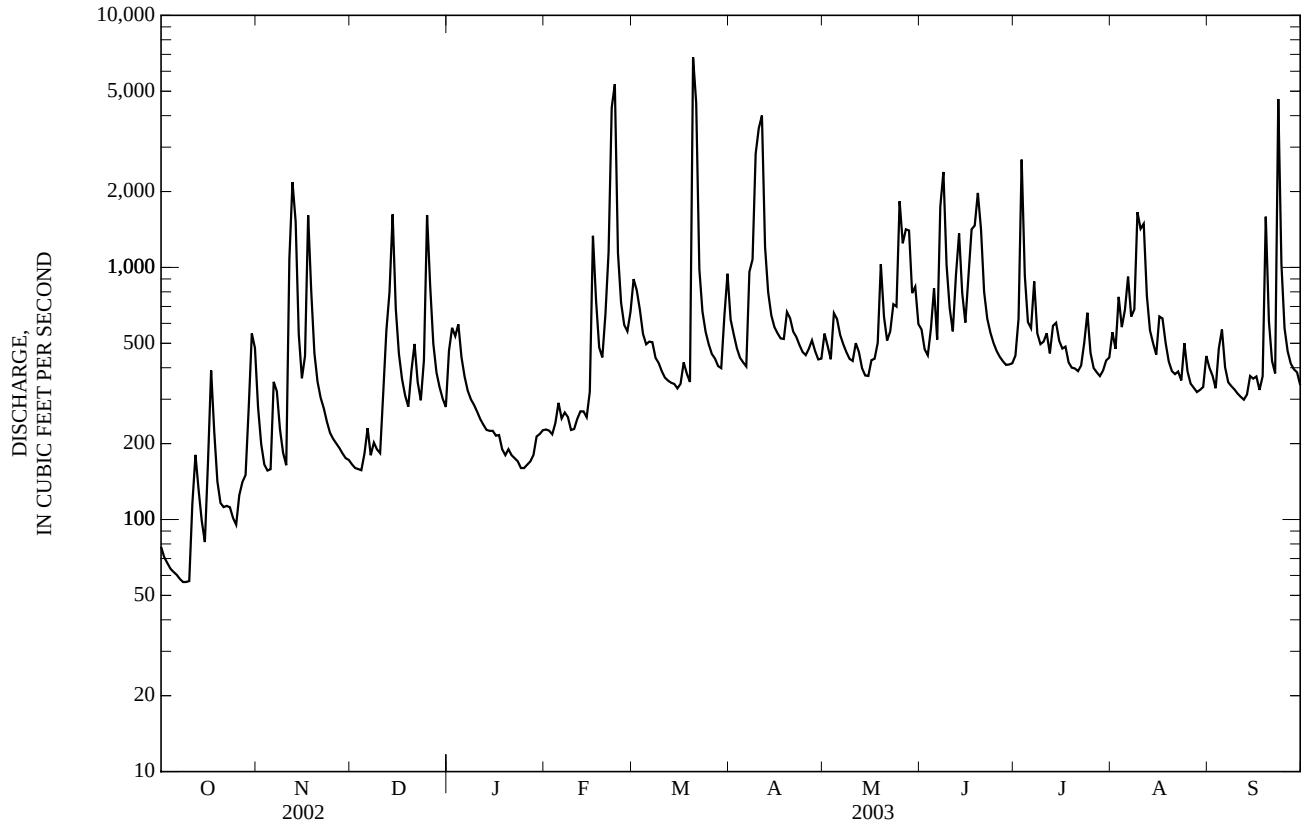
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2003, BY WATER YEAR (WY)

MEAN	283	304	346	460	493	585	534	404	336	257	240	304
MAX	1,220	995	836	1,054	1,086	1,578	2,265	989	1,200	814	867	1,864
(WY)	(1991)	(1986)	(1974)	(1978)	(1998)	(1993)	(1987)	(1978)	(1972)	(1972)	(1985)	(1987)
MIN	74.3	96.5	136	157	148	203	172	165	83.7	73.2	36.2	70.0
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(1981)	(2002)	(1981)	(2002)	(2002)	(2002)	(1968)

02058400 PIGG RIVER NEAR SANDY LEVEL, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1963 - 2003	
ANNUAL TOTAL	70,991		215,683			
ANNUAL MEAN	194		591		379	
HIGHEST ANNUAL MEAN					709	1987
LOWEST ANNUAL MEAN					133	2002
HIGHEST DAILY MEAN	2,180	Nov 12	6,810	Mar 20	34,900	Sep 8, 1987
LOWEST DAILY MEAN	17	Aug 16	57	aOct 8	17	Aug 16, 2002
ANNUAL SEVEN-DAY MINIMUM	19	Aug 11	59	Oct 4	19	Aug 11, 2002
MAXIMUM PEAK FLOW			12,600	Mar 20	65,600	Sep 8, 1987
MAXIMUM PEAK STAGE			18.61	Mar 20	b31.12	Sep 8, 1987
INSTANTANEOUS LOW FLOW			57	cOct 7	d17	Aug 16, 2002
ANNUAL RUNOFF (CFSM)	0.56		1.69		1.08	
ANNUAL RUNOFF (INCHES)	7.55		22.92		14.73	
10 PERCENT EXCEEDS	362		1,030		597	
50 PERCENT EXCEEDS	135		432		251	
90 PERCENT EXCEEDS	42		170		119	

a Also Oct. 9, 10, 2002.
b From floodmarks.
c Also Oct. 8-10, 2002.
d Also Aug. 17, 2002.
e Estimated.



02059400 LEESVILLE LAKE NEAR LEESVILLE, VA

LOCATION.--Lat 37°05'36", long 79°24'08", NAD83, Campbell County, Hydrologic Unit 03010101, at Leesville Dam on Roanoke (Staunton) River, 2.0 mi south of Leesville, 3.5 mi upstream from Goose Creek, and at mile 296.

DRAINAGE AREA.--1,505 mi^2.

PERIOD OF RECORD.--September 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to June 6, 1963, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by concrete dam. Spillway, with crest at elevation 578.0 ft, is equipped with 4 radial gates 35 ft high by 50 ft wide. Storage began on Sept. 29, 1962, during construction, and water in reservoir first reached minimum power pool, elevation, 600.0 ft, on Mar. 5, 1963. Total capacity at maximum pool elevation, 614 ft, is 98,180 acre-ft of which 78,670 acre-ft is above the spillway crest elevation; 38,200 acre-ft is normally used for power between elevations 600.0 ft, minimum power pool, and 613.0 ft. Capacity at invert of lowest penstock, elevation, 579.75 ft, is 21,010 acre-ft. Figures given herein represent total contents. Reservoir is part of the Smith Mountain Combination Project (see station 02057400).

COOPERATION.--Records were provided by the American Electric Power.

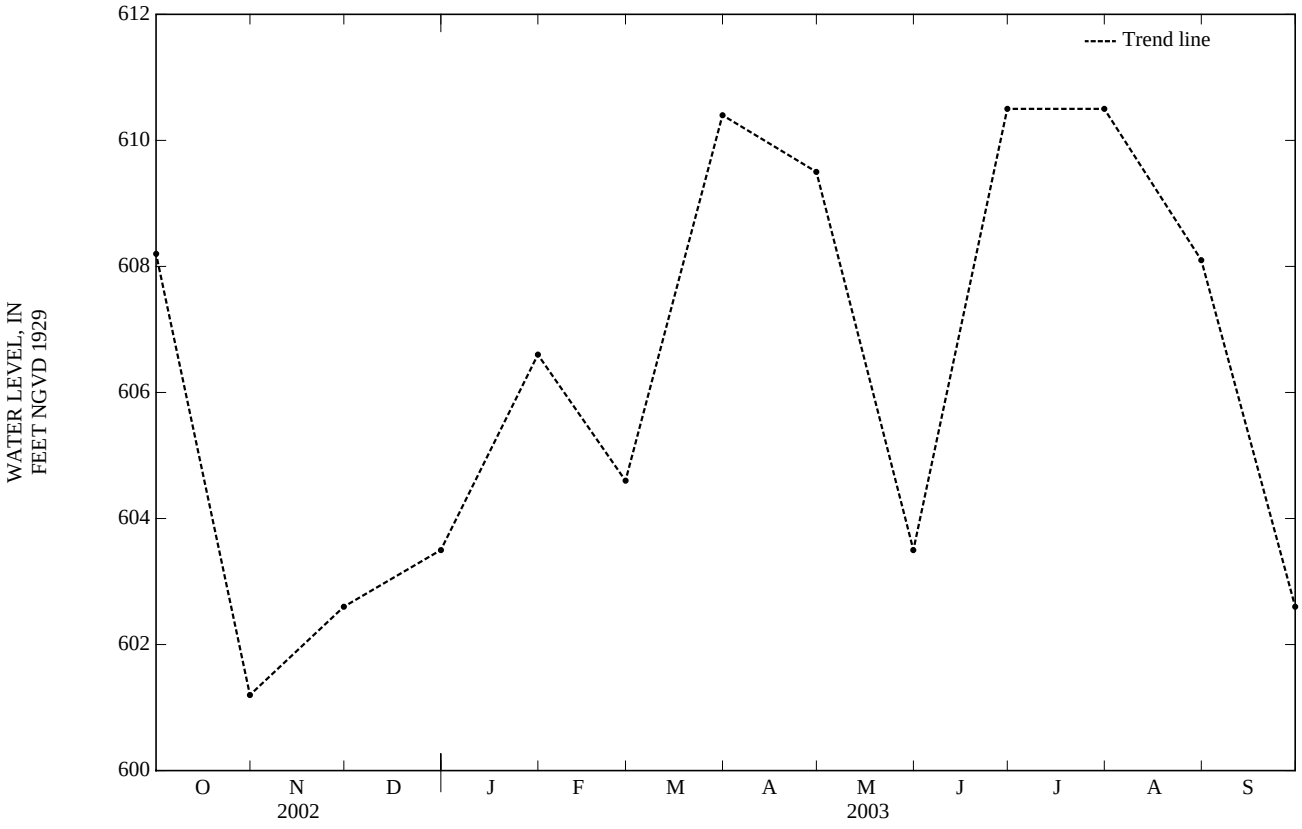
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 98,180 acre-ft, Feb. 1, 1965, elevation, 614.0 ft; minimum (after first filling to minimum power pool), 39,880 acre-ft, Mar. 19, 1963, elevation, 592.0 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 94,320 acre-ft, May 9, elevation, 612.8 ft; minimum, 54,900 acre-ft, Feb. 20, elevation, 599.0 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	608.2	80,010	
Oct. 31	601.2	60,420	-19,590
Nov. 30	602.6	64,170	+3,750
Dec. 31	603.5	66,580	+2,410
CAL YR 2002			+4,020
Jan. 31	606.6	75,300	+8,720
Feb. 28	604.6	69,530	-5,770
Mar. 31	610.4	86,590	+17,060
Apr. 30	609.5	83,830	-2,760
May 31	603.5	66,580	-17,250
June 30	610.5	86,910	+20,330
July 31	610.5	86,910	0
Aug. 31	608.1	79,710	-7,200
Sept. 30	602.6	64,170	-15,540
WTR YR 2003			-15,840

02059400 LEESVILLE LAKE NEAR LEESVILLE, VA—Continued



02059500 GOOSE CREEK NEAR HUDDLESTON, VA

LOCATION.--Lat 37°10'24", long 79°31'13", NAD83, Bedford County, Hydrologic Unit 03010101, on left bank 0.3 mi upstream from Haden Bridge on State Highway 732, 0.4 mi upstream from Rockcastle Creek, and 3.5 mi northwest of Huddleston.

DRAINAGE AREA.--188 mi^2.

PERIOD OF RECORD.--March 1925 to August 1928 (gage heights only), September 1930 to current year.

REVISED RECORDS.--WSP 892: 1933, 1935(M), 1939. WSP 972: 1931-32(M), 1934(M), 1935-38, 1940, 1941(M). WSP 1082: 1940(P). WSP 1142: 1938-40(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 592.91 ft NGVD of 1929. Mar. 15, 1925, to Aug. 4, 1928, nonrecording gage at site 1,300 ft downstream at different datum.

REMARKS.--Records good except those for period with ice effect, Jan. 16-29, and periods of doubtful or no gage-height record, Feb. 4-11, Mar. 22-24, July 6-8, 21-24, Aug. 5-8, 16-21, and Aug. 30 to Sept. 5, which are fair. Prior to October 1954, diurnal fluctuation at low flow caused by mill upstream from station. American Electric Power gage-height transmitter at station with recorder at Roanoke. Maximum discharge, 53,200 ft^3/s, from rating curve extended above 11,000 ft^3/s on basis of slope-area measurements at gage heights 19.25 ft, 24.1 ft, 24.89 ft, and 37.49 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,300 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1515	15,800	16.02	Jun 16	1630	5,310	8.28
Mar 20	1515	7,900	10.41	Jun 17	1200	2,380	5.35
Apr 11	0230	3,040	6.08	Aug 9	0715	11,500	13.12
May 18	2000	7,330	9.97	Aug 10	0145	7,430	10.04
Jun 9	0330	3,610	6.68	Aug 10	2345	6,760	9.51
Jun 13	2230	4,950	7.95	Sep 23	0715	2,930	5.96
Jun 14	2215	*24,400	*21.11				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	64	48	249	78	443	353	234	444	201	200	e185
2	16	48	46	287	79	429	338	174	289	970	192	e165
3	16	40	46	249	70	389	292	155	250	1,010	227	e200
4	15	38	43	239	e87	310	230	232	287	511	176	e250
5	14	39	52	189	e105	294	210	204	289	457	e220	e300
6	14	88	75	166	e83	299	189	224	223	e415	e175	171
7	14	75	59	142	e94	251	326	205	820	e445	e150	153
8	13	56	62	129	e89	221	409	186	693	e455	e230	142
9	13	46	64	122	e75	211	1,490	172	1,150	350	2,970	141
10	13	43	63	114	e82	197	1,120	230	467	346	2,420	137
11	21	454	155	104	e85	179	1,840	193	336	357	1,500	131
12	28	684	225	95	92	173	698	160	442	249	533	125
13	24	450	335	90	90	165	480	139	985	222	355	128
14	20	178	572	96	87	161	357	128	4,850	209	280	140
15	17	117	289	90	140	147	291	126	2,390	197	233	137
16	36	127	197	e82	377	148	253	202	2,160	188	e215	140
17	64	418	155	e73	209	148	224	170	1,870	177	e270	122
18	36	282	132	e60	169	143	212	2,330	918	165	e300	171
19	25	164	118	e70	149	141	236	2,120	1,070	168	e235	1,250
20	22	124	223	e84	237	3,110	209	641	655	168	e200	429
21	24	105	205	e78	523	1,080	192	470	486	e158	e180	237
22	25	93	156	e72	6,220	e525	185	516	381	e175	170	193
23	25	78	132	e59	2,210	e350	169	481	305	e445	168	1,310
24	21	70	280	e50	820	e275	160	414	255	e188	187	508
25	20	65	605	e60	519	226	157	317	221	142	156	301
26	47	61	323	e69	385	201	209	632	206	127	149	230
27	58	58	206	e60	326	196	238	614	193	120	144	197
28	42	55	164	e55	341	170	173	654	188	123	143	249
29	83	53	141	e67	---	172	157	475	180	160	141	188
30	145	52	124	75	---	357	184	463	184	193	e160	163
31	114	---	113	77	---	518	---	419	---	189	e230	---
TOTAL	1,042	4,225	5,408	3,452	13,821	11,629	11,581	13,680	23,187	9,280	12,909	8,193
MEAN	33.6	141	174	111	494	375	386	441	773	299	416	273
MAX	145	684	605	287	6,220	3,110	1,840	2,330	4,850	1,010	2,970	1,310
MIN	13	38	43	50	70	141	157	126	180	120	141	122
CFSM	0.18	0.75	0.93	0.59	2.63	2.00	2.05	2.35	4.11	1.59	2.21	1.45
IN.	0.21	0.84	1.07	0.68	2.73	2.30	2.29	2.71	4.59	1.84	2.55	1.62

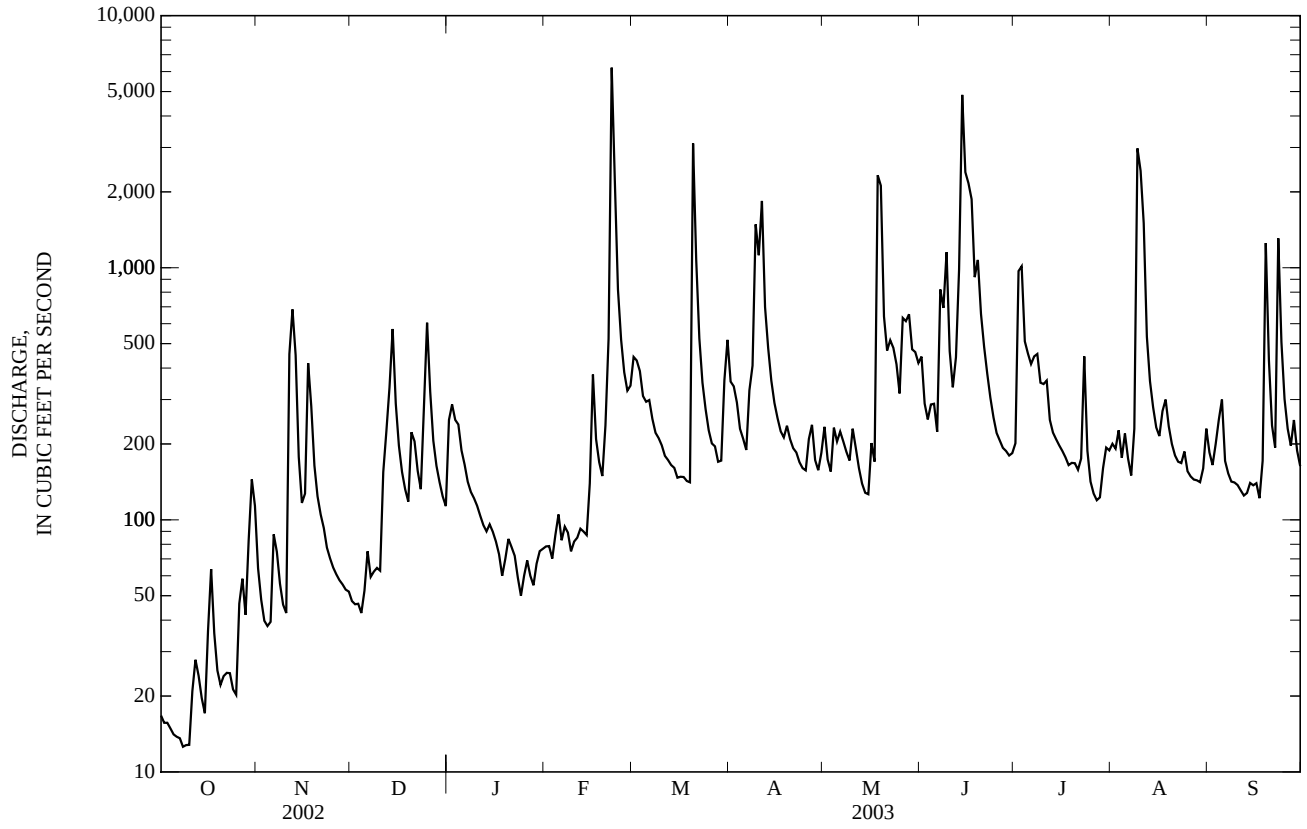
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2003, BY WATER YEAR (WY)

MEAN	128	133	169	223	247	284	260	198	157	115	132	129
MAX	719	642	616	772	821	909	1,320	780	802	466	822	1,229
(WY)	(1938)	(1986)	(1949)	(1936)	(1998)	(1975)	(1987)	(1989)	(1995)	(1949)	(1940)	(1987)
MIN	23.3	30.8	45.2	46.6	46.6	79.4	55.7	56.8	23.4	26.3	11.0	15.4
(WY)	(2002)	(2002)	(1966)	(1966)	(2002)	(2002)	(2002)	(1981)	(2002)	(1966)	(2002)	(2002)

02059500 GOOSE CREEK NEAR HUDDLESTON, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1931 - 2003	
ANNUAL TOTAL	21,972.6		118,407			
ANNUAL MEAN	60.2		324		181	
HIGHEST ANNUAL MEAN					393	1987
LOWEST ANNUAL MEAN					39.4	2002
HIGHEST DAILY MEAN	684	Nov 12	6,220	Feb 22	e26,000	Sep 8, 1987
LOWEST DAILY MEAN	6.0	Sep 13	13	aOct 8	6.0	bAug 28, 1932
ANNUAL SEVEN-DAY MINIMUM	7.2	Sep 8	14	Oct 4	7.2	Sep 8, 2002
MAXIMUM PEAK FLOW			24,400	Jun 14	53,200	Sep 8, 1987
MAXIMUM PEAK STAGE			21.11	Jun 14	c37.49	Sep 8, 1987
INSTANTANEOUS LOW FLOW			12	dOct 9	3.0	fAug 31, 1932
ANNUAL RUNOFF (CFSM)	0.32		1.73		0.96	
ANNUAL RUNOFF (INCHES)	4.35		23.43		13.08	
10 PERCENT EXCEEDS	121		549		320	
50 PERCENT EXCEEDS	42		184		110	
90 PERCENT EXCEEDS	13		49		46	

a Also Oct. 9, 10, 2002.
b Also Sept. 13, 2002.
c From floodmarks.
d Also Oct. 10, 2002.
e Estimated.
f Also Jan. 30, 1934, result of freezeup.



02060500 ROANOKE (STAUNTON) RIVER AT ALTAVISTA, VA

LOCATION.--Lat 37°06'17", long 79°17'43", NAD83, Pittsylvania County, Hydrologic Unit 03010101, on right bank 12 ft upstream from bridge on alternate U.S. Highway 29, 0.3 mi south of Altavista, 0.3 mi downstream from Sycamore Creek, 3.5 mi upstream from Big Otter River, and at mile 286.5.

DRAINAGE AREA.--1,789 mi^2.

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

REVISED RECORDS.--WSP 892: 1938(M). WSP 972: 1931-33. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 503.10 ft NGVD of 1929. Prior to Feb. 21, 1951, on left bank 50 ft downstream at same datum.

REMARKS.--Records good except for period of no gage-height record, July 1, 2, which is fair. Flow regulated since 1962 by Leesville Lake (station 02059400) 9.5 mi upstream and since 1963 by Smith Mountain Lake (station 02057400) 27.5 mi upstream. Statistics of monthly mean data and summary statistics for water years 1931 - 1962 (unregulated flow) are available in previous data books, water years 1991 - 1998. U.S. Army Corps of Engineers satellite gage-height telemeter at station. American Electric Power gage-height transmitter at station with recorder at Roanoke. Hadson Power Company gage-height telemeter at station. Maximum discharge, 105,000 ft^3/s, from rating curve extended above 52,000 ft^3/s on basis of unit hydrograph and flood-routing studies by U.S. Army Corps of Engineers and records for other stations in Roanoke River Basin. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	408	523	864	2,160	910	3,740	3,100	1,780	4,340	e2,700	2,180	1,810
2	407	473	818	3,050	905	3,520	3,570	1,790	3,830	e6,000	2,160	1,690
3	410	451	702	2,810	902	3,310	3,890	1,850	2,960	10,200	2,920	1,640
4	404	453	709	4,590	918	3,130	3,570	2,690	2,920	7,650	4,600	1,790
5	455	453	698	1,930	940	3,040	2,680	4,790	3,000	4,450	4,140	2,000
6	457	523	738	1,450	950	2,870	2,640	4,260	3,120	3,290	3,120	2,020
7	482	548	719	1,510	1,030	2,570	3,210	3,130	6,030	4,330	3,230	1,960
8	452	492	716	1,360	1,090	2,210	6,990	2,610	9,830	4,260	3,800	1,660
9	446	465	727	1,210	1,060	2,140	12,300	2,190	9,810	3,480	8,290	1,500
10	448	450	728	1,190	1,110	1,940	13,500	2,060	5,580	3,160	11,300	1,230
11	493	1,170	830	1,310	1,210	1,890	15,300	2,340	3,310	2,890	12,100	1,150
12	437	1,650	1,300	1,700	1,440	1,630	13,100	2,240	3,490	2,770	7,980	1,140
13	425	1,440	2,460	1,380	1,510	1,520	5,940	2,170	4,660	2,720	2,810	1,150
14	423	812	6,560	1,040	1,460	1,320	3,380	1,940	6,440	2,930	2,450	1,170
15	418	668	5,000	1,010	1,430	1,220	3,310	1,690	11,300	2,990	2,120	1,210
16	471	671	2,220	928	6,260	1,200	3,190	1,850	10,000	2,330	1,540	1,440
17	485	1,360	1,820	916	5,660	1,240	2,950	1,990	11,300	2,090	1,850	1,880
18	464	1,500	1,570	870	3,120	1,360	2,700	6,460	10,200	1,910	2,810	3,660
19	425	1,110	1,400	878	2,370	1,470	2,950	12,700	10,500	1,840	3,110	6,220
20	421	1,040	1,580	896	3,920	8,420	3,000	9,830	9,860	1,650	2,950	4,690
21	429	1,380	2,900	899	7,070	14,100	2,950	6,310	6,310	1,390	2,600	2,310
22	426	1,630	2,100	885	13,600	13,700	2,960	5,280	4,290	1,480	2,210	1,480
23	426	1,460	1,510	888	18,000	4,650	2,630	4,780	3,170	2,390	2,020	5,550
24	418	1,020	1,790	826	16,900	2,800	2,250	4,040	2,450	2,470	1,790	5,140
25	418	893	7,410	840	14,700	2,770	2,260	4,100	2,130	2,310	1,670	4,720
26	481	886	5,370	877	6,230	2,660	2,130	4,690	2,070	1,800	1,450	4,610
27	528	886	2,000	879	4,130	2,420	2,220	5,520	1,580	1,640	1,290	3,060
28	502	876	1,690	881	3,630	2,060	1,890	5,780	1,560	1,420	1,210	1,530
29	511	869	1,570	892	---	1,880	1,970	5,290	2,000	1,450	1,170	1,540
30	626	869	1,510	905	---	2,080	1,780	5,310	1,980	1,780	1,280	1,090
31	640	---	1,530	904	---	2,750	---	4,940	---	2,020	1,740	---
TOTAL	14,236	27,021	61,539	41,864	122,455	101,610	134,310	126,400	160,020	93,790	103,890	72,040
MEAN	459	901	1,985	1,350	4,373	3,278	4,477	4,077	5,334	3,025	3,351	2,401
MAX	640	1,650	7,410	4,590	18,000	14,100	15,300	12,700	11,300	10,200	12,100	6,220
MIN	404	450	698	826	902	1,200	1,780	1,690	1,560	1,390	1,170	1,090
(†)	+6,564	+32,741	+2,274	-1,805	-1,850	+7,542	-3,408	+529	-30	0	-555	-626
MEAN‡	671	1,992	2,058	1,292	4,307	3,521	4,363	4,094	5,333	3,025	3,333	2,380
CFSM‡	.38	1.11	1.15	.72	2.41	1.97	2.44	2.29	2.98	1.69	1.86	1.33
IN.‡	.43	1.24	1.33	.83	2.51	2.27	2.72	2.64	3.33	1.95	2.15	1.48

CAL YR 2002 MEAN‡ 858 CFSM‡ .48 IN.‡ 6.51
WTR YR 2003 MEAN‡ 3,015 CFSM‡ 1.69 IN.‡ 22.88

† Total change in contents, equivalent in cubic feet per second, per month, in Smith Mountain and Leesville Lakes; provided by American Electric Power.
‡ Adjusted for change in contents.

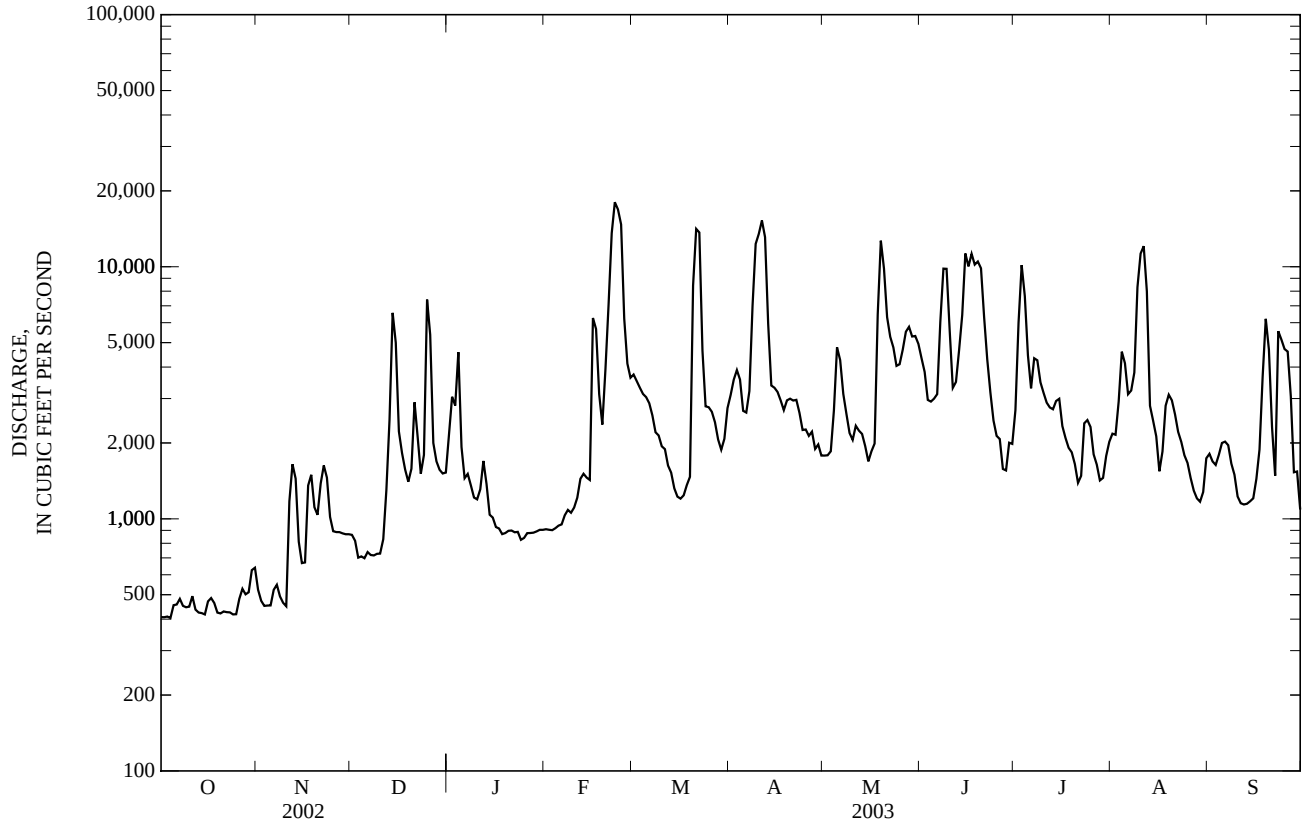
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2003, BY WATER YEAR (WY)

MEAN	1,111	1,253	1,357	2,008	2,242	2,729	2,493	1,950	1,563	1,110	1,061	1,218
MAX	4,811	6,190	3,622	4,643	7,119	7,795	10,930	4,716	5,684	3,363	3,351	5,246
(WY)	(1991)	(1986)	(1997)	(1978)	(1998)	(1993)	(1987)	(1978)	(1972)	(1972)	(2003)	(1987)
MIN	189	396	351	455	421	338	604	484	220	504	311	438
(WY)	(1964)	(1982)	(1964)	(2002)	(2002)	(1981)	(1964)	(1964)	(1964)	(1981)	(1963)	(2002)

02060500 ROANOKE (STAUNTON) RIVER AT ALTAVISTA, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1963 - 2003	
ANNUAL TOTAL	264,992		1,059,175			
ANNUAL MEAN	726		2,902		1,671	
HIGHEST ANNUAL MEAN					2,903	1987
LOWEST ANNUAL MEAN					583	2002
HIGHEST DAILY MEAN	7,410	Dec 25	18,000	Feb 23	46,700	Sep 8, 1987
LOWEST DAILY MEAN	393	Sep 30	404	Oct 4	39	Jul 10, 1966
ANNUAL SEVEN-DAY MINIMUM	409	Sep 28	423	Oct 19	116	Sep 2, 1965
MAXIMUM PEAK FLOW			20,300	Feb 22	a62,100	Sep 8, 1987
MAXIMUM PEAK STAGE			20.03	Feb 22	a34.45	Sep 8, 1987
INSTANTANEOUS LOW FLOW			377	Oct 4	b13	Jan 30, 1966
ANNUAL RUNOFF (CFSM)	0.41		1.62		0.93	
ANNUAL RUNOFF (INCHES)	5.51		22.02		12.69	
10 PERCENT EXCEEDS	1,320		6,240		3,320	
50 PERCENT EXCEEDS	493		1,940		995	
90 PERCENT EXCEEDS	418		523		289	

a Prior to regulation, 1931-62, maximum peak flow, 105,000 ft^3/s, Aug. 15, 1940, gage height, 40.08 ft, from floodmarks.
b Prior to regulation, 1931-62, instantaneous low flow, 94 ft^3/s, Jan. 31, 1934.
e Estimated.



02061500 BIG OTTER RIVER NEAR EVINGTON, VA

LOCATION.--Lat 37°12'31", long 79°18'13", NAD83, Campbell County, Hydrologic Unit 03010101, on right bank 60 ft upstream from bridge on State Highway 682, 2.0 mi southwest of Evington, and 2.1 mi upstream from Flat Creek.

DRAINAGE AREA.--320 mi^2.

PERIOD OF RECORD.--October 1936 to current year. Monthly discharge only for some periods, published in WSP 1303. Prior to October 1965, published as Otter River near Evington.

REVISED RECORDS.--WSP 852: 1937. WSP 892: 1938-39(M). WSP 972: 1937-39. WSP 1032: 1940. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 544.02 ft NGVD of 1929.

REMARKS.--Records good except those for periods with ice effect, Jan. 16-19, 22-28, and periods of doubtful gage-height record, June 25, 26, 29, 30, which are fair. Maximum discharge, 65,600 ft^3/s, from rating curve extended above 24,000 ft^3/s on basis of slope-area measurements of 24.96 ft and 29.93 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in October 1937 and August 1939 reached a stage of 23.1 ft, discharge, 27,500 ft^3/s, from rating curve extended above 7,000 ft^3/s on basis of unit hydrograph and flood-routing studies by U.S. Army Corps of Engineers, and records for other stations in Roanoke River Basin.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	2030	*16,300	*19.44	Jun 7	1930	4,950	10.80
Mar 20	1900	6,050	13.20	Aug 11	0615	5,840	12.69
Apr 11	0430	4,840	10.81	Sep 19	0830	4,400	9.60
May 18	2245	7,890	15.47				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	135	112	687	154	699	549	394	905	418	371	318
2	12	96	107	771	155	792	500	325	664	1,640	325	279
3	11	79	107	604	145	693	462	288	615	2,030	300	350
4	11	73	103	555	173	563	422	421	729	881	341	445
5	10	72	103	441	211	555	398	383	1,040	643	403	562
6	9.1	209	153	393	164	599	376	412	709	781	325	334
7	8.4	180	113	335	180	528	545	376	2,510	720	281	280
8	10	115	118	304	175	468	659	346	2,120	684	321	258
9	11	93	132	280	147	433	2,360	350	2,440	605	1,670	238
10	10	83	129	250	169	392	1,510	606	1,160	722	1,730	222
11	17	1,110	266	227	172	367	3,040	527	872	584	3,220	209
12	28	1,500	503	208	179	351	1,180	422	1,100	443	1,010	199
13	35	965	524	196	174	336	845	360	1,010	398	698	207
14	27	439	971	203	167	317	693	313	1,640	377	595	261
15	21	297	558	190	256	292	609	295	1,760	363	480	246
16	28	306	391	e165	683	284	551	597	1,640	343	422	221
17	86	825	308	e150	427	280	538	427	2,390	317	541	205
18	57	602	259	e130	351	267	480	3,600	1,600	300	562	297
19	35	387	230	e155	299	255	505	3,580	1,940	410	402	2,850
20	27	303	470	187	486	3,090	458	1,340	1,370	304	357	958
21	25	251	463	166	922	1,920	422	1,070	1,040	281	330	624
22	25	230	321	e145	6,910	882	407	1,080	837	293	306	509
23	28	192	271	e120	3,960	659	366	1,060	719	426	288	1,900
24	25	171	412	e100	1,290	555	346	942	633	317	368	957
25	22	157	1,100	e120	857	488	340	790	e569	268	275	691
26	90	147	714	e135	690	444	410	1,820	e514	247	252	575
27	116	137	457	e118	607	434	431	1,390	477	240	234	502
28	66	128	365	e110	605	391	343	1,400	451	237	222	534
29	157	123	311	155	---	397	315	942	e433	279	344	432
30	358	120	270	149	---	622	302	902	e407	331	270	384
31	282	---	243	152	---	766	---	814	---	336	517	---
TOTAL	1,663.5	9,525	10,584	7,901	20,708	19,119	20,362	27,572	34,294	16,218	17,760	16,047
MEAN	53.7	318	341	255	740	617	679	889	1,143	523	573	535
MAX	358	1,500	1,100	771	6,910	3,090	3,040	3,600	2,510	2,030	3,220	2,850
MIN	8.4	72	103	100	145	255	302	288	407	237	222	199
CFSM	0.17	0.99	1.07	0.80	2.31	1.93	2.12	2.78	3.57	1.63	1.79	1.67
IN.	0.19	1.11	1.23	0.92	2.41	2.22	2.37	3.21	3.99	1.89	2.06	1.87

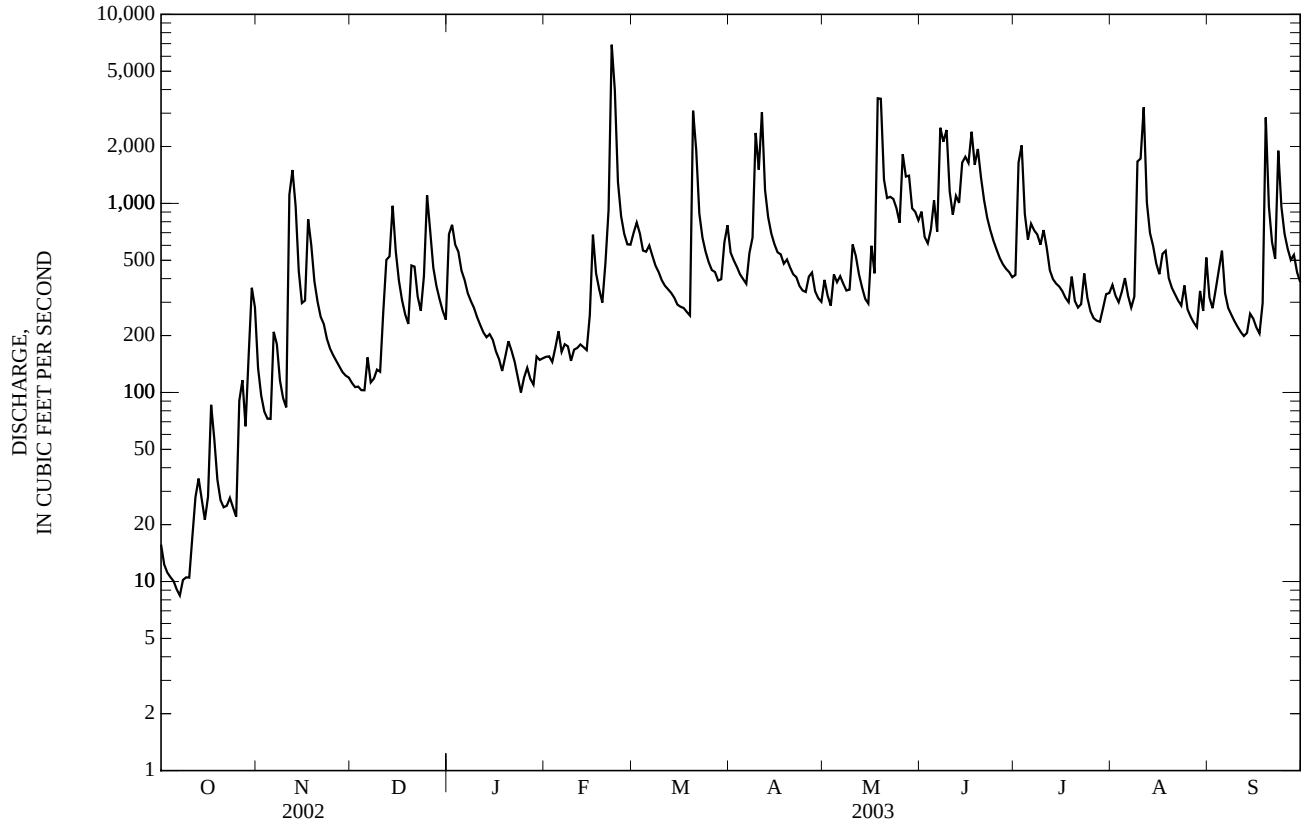
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 2003, BY WATER YEAR (WY)

MEAN	222	250	328	404	483	532	479	375	314	212	235	209
MAX	1,163	1,200	1,192	1,045	1,165	1,332	2,062	1,335	2,124	925	1,412	1,150
(WY)	(1991)	(1986)	(1949)	(1998)	(1998)	(1993)	(1987)	(1989)	(1995)	(1949)	(1940)	(1996)
MIN	31.9	41.2	68.6	95.7	97.0	148	102	106	38.0	27.9	4.96	10.8
(WY)	(2002)	(2002)	(1966)	(1966)	(2002)	(2002)	(2002)	(1981)	(2002)	(1966)	(2002)	(2002)

02061500 BIG OTTER RIVER NEAR EVINGTON, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1937 - 2003	
ANNUAL TOTAL	41,397.06		201,753.5			
ANNUAL MEAN	113		553		336	
HIGHEST ANNUAL MEAN					635	1949
LOWEST ANNUAL MEAN					67.2	2002
HIGHEST DAILY MEAN	1,500	Nov 12	6,910	Feb 22	35,700	Jun 23, 1995
LOWEST DAILY MEAN	0.64	Sep 14	8.4	Oct 7	0.64	Sep 14, 2002
ANNUAL SEVEN-DAY MINIMUM	1.3	Sep 9	9.9	Oct 4	1.3	Sep 9, 2002
MAXIMUM PEAK FLOW			16,300	Feb 22	65,600	Jun 23, 1995
MAXIMUM PEAK STAGE			19.44	Feb 22	29.93	Jun 23, 1995
INSTANTANEOUS LOW FLOW			7.8	Oct 7	0.63	aSep 13, 2002
ANNUAL RUNOFF (CFSM)	0.35		1.73		1.05	
ANNUAL RUNOFF (INCHES)	4.81		23.45		14.26	
10 PERCENT EXCEEDS	254		1,100		621	
50 PERCENT EXCEEDS	83		365		213	
90 PERCENT EXCEEDS	4.9		105		76	

a Also Sept. 14, 2002.
e Estimated.



02062500 ROANOKE (STAUNTON) RIVER AT BROOKNEAL, VA

LOCATION.--Lat 37°02'29", long 78°57'01", NAD83, Campbell County, Hydrologic Unit 03010102, on left bank 1,600 ft upstream from bridge on U.S. Highway 501 at Brookneal, 2.9 mi upstream from Falling River, and at mile 255.9.

DRAINAGE AREA.--2,415 mi^2.

PERIOD OF RECORD.--April 1923 to current year.

REVISED RECORDS.--WSP 892: 1928(M). WSP 972: 1928-34. WSP 1303: 1924-27(M), 1929(M), 1941(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 351.96 ft NGVD of 1929. Apr. 30, 1923, to Aug. 29, 1929, nonrecording gage, Aug. 30, 1929, to Aug. 15, 1940, water-stage recorder, and Aug. 16 to Oct. 1, 1940, nonrecording gage at site 1,800 ft downstream at same datum. Oct. 2, 1940, to Sept. 30, 1941, nonrecording gage at site 1,600 ft downstream at same datum.

REMARKS.--Records good except those for periods of no gage-height record, Jan. 18-21, Feb. 27, 28, and June 8, 9, which are fair. Flow regulated since 1962 by Leesville Lake (station 02059400) 40.1 mi upstream and since 1963 by Smith Mountain Lake (station 02057400) 58.1 mi upstream. Statistics of monthly mean data and summary statistics for water years 1924 - 1962 (unregulated flow) are available in previous data books, water years 1991 - 1998. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 130,000 ft^3/s, at present site, from gage-height relation curve, from rating curve extended above 55,000 ft^3/s on basis of slope-area measurement by Geological Survey, unit hydrograph and flood-routing studies by U.S. Army Corps of Engineers, and records for other stations in Roanoke River Basin. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	366	1,100	1,050	2,320	1,210	5,050	4,270	2,700	6,840	3,360	2,910	2,390
2	364	795	1,030	4,380	1,220	5,120	4,580	2,610	5,630	9,620	2,960	2,130
3	353	657	928	3,910	1,190	4,700	4,970	2,510	4,530	15,100	3,350	2,130
4	342	620	844	5,070	1,270	4,210	4,900	2,650	4,400	12,500	6,480	2,630
5	330	633	923	3,900	1,390	3,980	3,800	5,410	4,740	7,680	6,240	2,910
6	398	1,040	890	2,180	1,310	4,090	3,540	5,660	4,560	5,340	4,200	2,710
7	412	1,100	955	2,030	1,360	3,810	4,450	4,360	6,120	5,290	4,070	2,550
8	450	925	883	2,040	1,450	3,160	7,630	3,560	e13,000	6,050	4,410	2,230
9	406	751	915	1,740	1,420	2,920	18,500	3,150	e14,400	5,140	6,820	2,040
10	405	673	924	1,620	1,400	2,660	19,500	3,590	9,710	4,680	13,300	1,690
11	598	1,180	1,220	1,690	1,550	2,490	25,200	3,850	5,510	4,210	15,400	1,530
12	644	4,510	2,010	1,800	1,740	2,240	18,300	3,290	5,450	3,940	11,600	1,460
13	486	4,970	2,950	2,170	1,930	1,990	11,000	3,000	7,180	3,690	5,520	1,480
14	481	2,020	7,260	1,430	1,910	1,870	5,040	2,830	8,360	4,450	3,640	1,560
15	437	1,330	7,630	1,380	1,950	1,630	4,660	2,350	12,900	3,920	3,290	1,610
16	576	1,190	3,770	1,270	5,170	1,570	4,490	2,580	12,100	3,590	2,430	1,620
17	741	2,840	2,630	1,220	7,840	1,550	4,260	2,880	14,600	2,900	2,370	2,000
18	687	3,340	2,240	e1,160	4,460	1,620	3,870	6,030	13,900	2,670	3,270	3,230
19	574	2,090	1,940	e1,100	3,160	1,660	3,950	19,600	13,500	2,600	3,910	12,300
20	469	1,660	2,040	e1,150	4,130	12,000	4,140	13,900	13,100	2,410	3,630	8,270
21	475	1,620	3,510	e1,210	7,850	23,700	4,010	10,100	9,950	2,110	3,540	4,390
22	467	2,020	3,320	1,160	17,200	18,300	3,970	7,220	6,520	2,020	2,840	2,580
23	452	2,010	2,220	1,180	33,300	9,560	3,810	7,600	4,860	2,530	2,700	8,320
24	439	1,600	2,180	1,060	23,600	4,230	3,170	6,370	3,820	3,520	2,390	8,180
25	427	1,210	8,000	1,090	20,700	3,860	3,080	7,980	3,200	3,130	2,190	6,300
26	511	1,150	8,730	1,150	9,600	3,740	3,070	8,550	3,000	2,560	2,020	5,870
27	646	1,120	3,680	1,130	e5,800	3,540	3,250	9,360	2,800	2,330	1,700	5,240
28	833	1,100	2,460	1,080	e5,000	3,130	2,930	10,600	1,960	2,030	1,600	2,720
29	876	1,070	2,220	1,130	---	2,750	2,590	7,760	2,690	2,000	1,510	2,580
30	1,290	1,060	2,070	1,200	---	3,110	2,580	7,490	2,720	2,620	1,600	1,960
31	1,510	---	1,990	1,190	---	4,410	---	7,300	---	2,710	1,950	---
TOTAL	17,445	47,384	83,412	56,140	170,110	148,650	193,510	186,840	222,050	136,700	133,840	106,610
MEAN	563	1,579	2,691	1,811	6,075	4,795	6,450	6,027	7,402	4,410	4,317	3,554
MAX	1,510	4,970	8,730	5,070	33,300	23,700	25,200	19,600	14,600	15,100	15,400	12,300
MIN	330	620	844	1,060	1,190	1,550	2,580	2,350	1,960	2,000	1,510	1,460
(†)	+6,564	+32,741	+2,274	-1,805	-1,850	+7,542	-3,408	+529	-30	0	-555	-626
MEAN‡	724	2,671	2,764	1,753	6,009	5,038	6,337	6,094	7,401	4,410	4,300	3,533
CFSM‡	.32	1.11	1.14	.73	2.49	2.09	2.62	2.50	3.06	1.83	1.78	1.46
IN.‡	.37	1.23	1.32	.84	2.59	2.41	2.93	2.89	3.42	2.11	2.05	1.63

CAL YR 2002 MEAN‡ 1,120 CFSM‡ .46 IN.‡ 6.30
WTR YR 2003 MEAN‡ 4,230 CFSM‡ 1.75 IN.‡ 23.78

† Total change in contents, equivalent in cubic feet per second, per month, in Smith Mountain and Leesville Lakes; provided by American Electric Power.
‡Adjusted for change in contents.

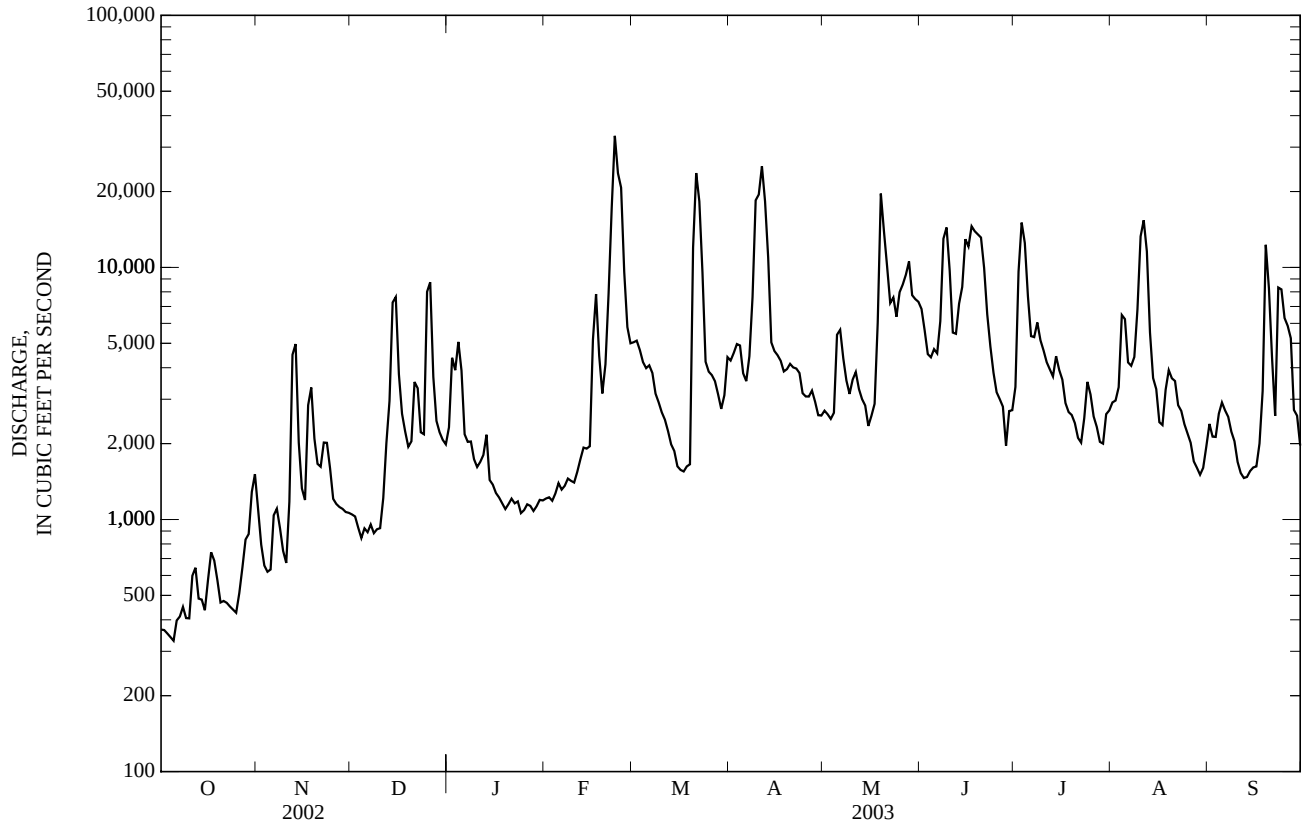
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2003, BY WATER YEAR (WY)

MEAN	1,539	1,746	1,997	2,879	3,231	3,912	3,545	2,715	2,187	1,523	1,429	1,708
MAX	6,446	8,961	5,625	7,695	9,536	11,760	14,410	7,039	7,522	4,775	4,675	8,822
(WY)	(1991)	(1986)	(1997)	(1978)	(1998)	(1993)	(1987)	(1978)	(1995)	(1972)	(1985)	(1996)
MIN	325	549	637	695	642	561	921	836	405	536	411	401
(WY)	(1964)	(2002)	(1964)	(2002)	(2002)	(1981)	(1981)	(1964)	(1964)	(2002)	(1964)	(2002)

02062500 ROANOKE (STAUNTON) RIVER AT BROOKNEAL, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1963 - 2003	
ANNUAL TOTAL	360,614		1,502,691			
ANNUAL MEAN	988		4,117		2,362	
HIGHEST ANNUAL MEAN					4,440	1973
LOWEST ANNUAL MEAN					741	2002
HIGHEST DAILY MEAN	8,730	Dec 26	33,300	Feb 23	65,600	Sep 9, 1987
LOWEST DAILY MEAN	330	Oct 5	330	Oct 5	140	Jul 25, 1966
ANNUAL SEVEN-DAY MINIMUM	350	Sep 9	366	Oct 1	203	Sep 4, 1965
MAXIMUM PEAK FLOW			37,100	Feb 23	a85,800	Sep 9, 1987
MAXIMUM PEAK STAGE			28.62	Feb 23	a39.80	Sep 9, 1987
INSTANTANEOUS LOW FLOW			304	Oct 5	b,c136	dJul 25, 1966
ANNUAL RUNOFF (CFSM)	0.41		1.70		0.98	
ANNUAL RUNOFF (INCHES)	5.55		23.15		13.29	
10 PERCENT EXCEEDS	2,000		8,980		4,620	
50 PERCENT EXCEEDS	662		2,710		1,390	
90 PERCENT EXCEEDS	405		880		550	

a Prior to regulation, 1924-62, maximum peak flow, 130,00 ft^3/s, Aug. 15, 1940, gage height, 46.50 ft.
b Prior to regulation, 1924-62, instantaneous low flow, probably less than 191 ft^3/s, probably occurred Sept. 1, 2, 1932.
c Lowest recorded discharge; may have been lower during period of no gage-height record, July 25, 26, 1966.
d Also July 26, 1966.
e Estimated.



02064000 FALLING RIVER NEAR NARUNA, VA

LOCATION.-- Lat 37°07'37", long 78°57'35", NAD83, Campbell County, Hydrologic Unit 03010102, on left bank at upstream side of bridge on State Highway 643, 2.7 mi northeast of Naruna, and 3.2 mi upstream from Little Falling River.

DRAINAGE AREA.--173 mi^2.

PERIOD OF RECORD.--July 1929 to January 1935, September 1941 to current year.

REVISED RECORDS.--WSP 1333: 1930, 1931-34(M), 1935. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 412.32 ft NGVD of 1929. Prior to Jan. 15, 1935, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Dec. 5, 7, and Jan. 17-19, 22-28, and periods of doubtful gage-height record, June 23-25, 29, 30, Aug. 6, 7, 11, 19-27, and Sept. 25, 26, which are fair. Small diurnal fluctuation caused by gristmill at Spring Mills. Maximum discharge, 62,800 ft^3/s, from rating curve extended above 7,100 ft^3/s on basis of slope-area measurements at gage heights 23.9 ft, 26.5 ft, 29.2 ft, and 36.1 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 26.5 ft, from floodmarks, discharge, 22,000 ft^3/s, by slope-area measurement.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,300 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 23	0100	6,560	16.47	Jun 7	2130	3,430	11.62
Mar 20	2100	6,400	16.28	Jul 3	0400	*7,760	*17.82
Apr 9	1000	3,570	11.90	Aug 3	2145	3,050	10.79
Apr 11	0230	3,300	11.34	Sep 19	0400	5,770	15.48
May 25	1045	2,450	9.46	Sep 23	1300	3,740	12.22
May 27	1900	3,300	11.34				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	72	34	216	94	381	241	186	357	125	191	66
2	11	48	32	296	99	524	192	141	217	428	136	62
3	11	40	32	258	88	376	162	125	192	5,100	791	165
4	11	40	31	263	141	249	143	156	270	1,190	1,030	421
5	10	43	e40	186	162	231	134	135	662	511	428	177
6	9.6	226	52	157	110	371	123	133	273	353	e246	89
7	8.9	117	e42	134	122	304	534	127	1,360	277	e182	74
8	8.7	66	40	121	116	220	521	127	1,170	197	207	68
9	8.4	52	41	113	99	187	2,730	116	480	164	372	67
10	8.8	45	40	102	113	151	1,100	159	301	197	199	64
11	47	555	203	93	126	132	1,700	138	240	161	e146	60
12	65	997	304	86	136	123	530	120	398	130	136	58
13	27	580	441	82	119	120	341	100	569	141	136	80
14	18	199	721	83	107	128	262	93	320	279	194	97
15	14	110	365	79	204	110	223	100	251	135	131	79
16	62	187	227	75	421	111	197	141	266	120	122	125
17	100	836	158	e72	255	121	175	124	365	114	161	72
18	36	484	123	e66	206	109	158	1,040	386	108	112	338
19	24	210	106	e70	224	96	166	1,050	421	117	e96	3,630
20	20	130	282	75	473	3,350	158	347	339	118	e87	550
21	23	97	285	73	715	1,920	150	241	259	114	e83	311
22	25	79	166	e72	2,960	508	144	349	211	111	e81	223
23	22	62	124	e62	2,660	306	130	436	e177	159	e78	1,710
24	19	53	263	e64	557	230	124	351	e146	212	e74	514
25	19	49	1,030	e72	341	188	128	1,020	e129	112	e70	e280
26	34	46	487	e68	250	163	169	884	123	95	e66	e222
27	41	43	263	e64	227	152	168	1,390	121	88	e63	243
28	46	39	195	e66	321	134	131	1,180	124	89	62	690
29	125	37	159	72	---	135	123	444	e118	119	61	261
30	338	37	134	80	---	314	122	365	e108	324	60	194
31	178	---	119	81	---	404	---	317	---	169	58	---
TOTAL	1,382.4	5,579	6,539	3,401	11,446	11,848	11,179	11,635	10,353	11,557	5,859	10,990
MEAN	44.6	186	211	110	409	382	373	375	345	373	189	366
MAX	338	997	1,030	296	2,960	3,350	2,730	1,390	1,360	5,100	1,030	3,630
MIN	8.4	37	31	62	88	96	122	93	108	88	58	58
CFSM	0.26	1.07	1.22	0.63	2.36	2.21	2.15	2.17	1.99	2.15	1.09	2.12
IN.	0.30	1.20	1.41	0.73	2.46	2.55	2.40	2.50	2.23	2.49	1.26	2.36

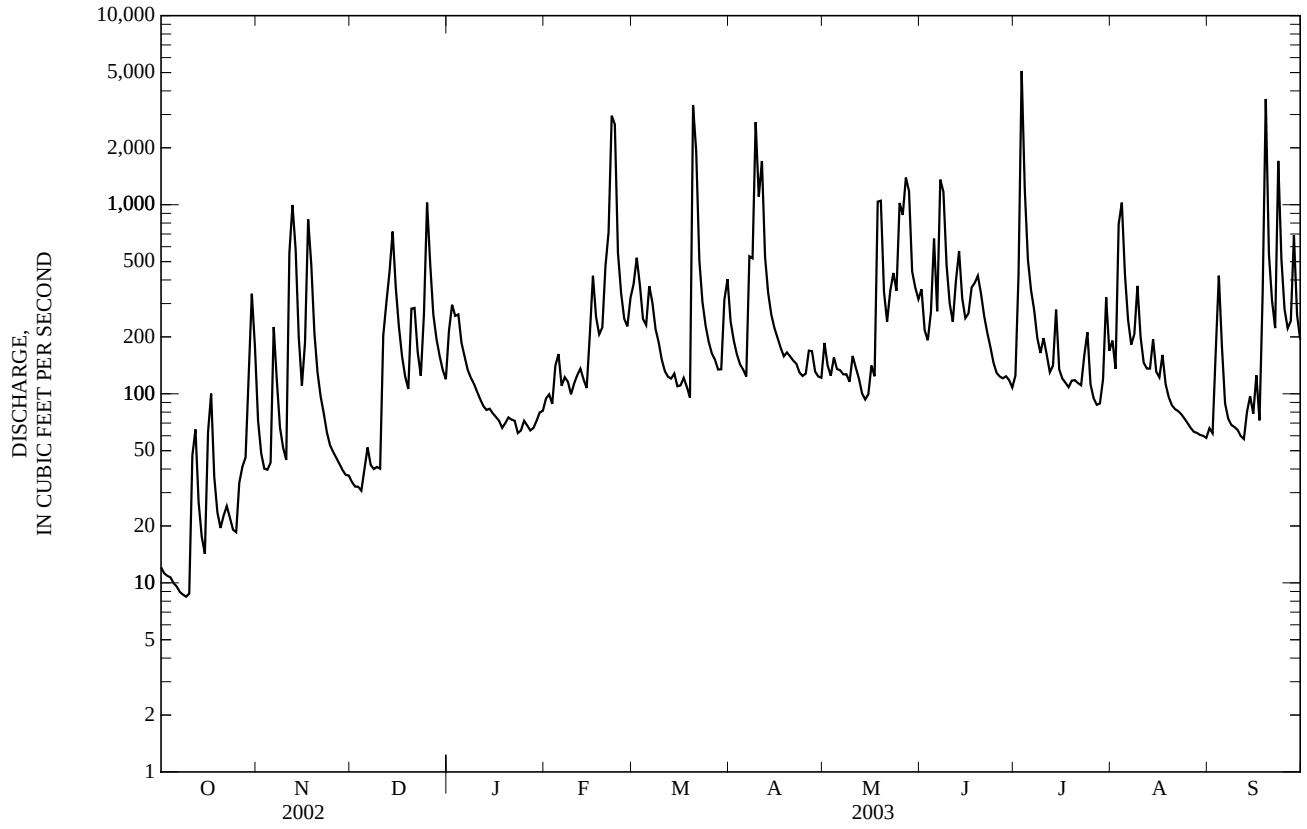
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1934, 1942 - 2003, BY WATER YEAR (WY)

MEAN	100	123	157	197	232	260	215	164	123	92.3	81.5	124
MAX	399	639	487	636	683	844	552	606	898	373	400	1,475
(WY)	(1973)	(1986)	(1997)	(1978)	(1979)	(1975)	(1987)	(1971)	(1972)	(2003)	(1985)	(1996)
MIN	18.9	28.5	44.0	47.9	53.9	62.9	60.2	50.7	18.4	12.9	8.95	10.6
(WY)	(2002)	(2002)	(1966)	(1966)	(2002)	(1981)	(1966)	(1981)	(2002)	(2002)	(2002)	(2002)

02064000 FALLING RIVER NEAR NARUNA, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1930 - 1934 1942 - 2003	
ANNUAL TOTAL	26,208.6		101,768.4			
ANNUAL MEAN	71.8		279		155	
HIGHEST ANNUAL MEAN					322	1996
LOWEST ANNUAL MEAN					42.6	2002
HIGHEST DAILY MEAN	1,030	Dec 25	5,100	Jul 3	e20,000	Sep 6, 1996
LOWEST DAILY MEAN	e1.0	Aug 15	8.4	Oct 9	e1.0	Aug 15, 2002
ANNUAL SEVEN-DAY MINIMUM	1.4	Aug 12	9.3	Oct 4	1.4	Aug 12, 2002
MAXIMUM PEAK FLOW			7,760	Jul 3	62,800	Sep 6, 1996
MAXIMUM PEAK STAGE			17.82	Jul 3	a36.14	Sep 6, 1996
INSTANTANEOUS LOW FLOW			8.2	Oct 9	(b)	(c)
ANNUAL RUNOFF (CFSM)	0.42		1.61		0.90	
ANNUAL RUNOFF (INCHES)	5.64		21.88		12.20	
10 PERCENT EXCEEDS	138		522		266	
50 PERCENT EXCEEDS	43		136		92	
90 PERCENT EXCEEDS	7.8		42		36	

a From high-water mark on gage house.
b Not determined.
c Probably occurred Aug. 15, 2002.
e Estimated.



02065500 CUB CREEK AT PHENIX, VA

LOCATION.--Lat 37°04'46", long 78°45'49", NAD83, Charlotte County, Hydrologic Unit 03010102, on right bank 50 ft upstream from bridge on State Highway 40, 0.9 mi west of Phenix, 1.9 mi downstream from Rough Creek, and 6.4 mi upstream from Louse Creek.

DRAINAGE AREA.--98.0 mi^2.

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

REVISED RECORDS.--WSP 1333: 1947(M), 1948, 1949(M). WSP 2104: Drainage area. WDR VA-76-1: 1975.

GAGE.--Water-stage recorder. Datum of gage is 370.19 ft NGVD of 1929. Prior to Jul. 14, 1950, nonrecording gage at same site and datum.

REMARKS.--Records good except those for periods with ice effect, Jan. 16-19, 22-31, which are fair. Maximum discharge, 15,200 ft^3/s, from rating curve extended above 5,400 ft^3/s on basis of contracted-opening measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of August 1940 reached a stage of 17.5 ft, from floodmarks, discharge not determined.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 23	1130	2,820	11.23	May 28	1915	1,060	7.37
Mar 21	0745	3,830	12.60	Jul 4	1345	2,410	10.58
Apr 10	0445	1,320	8.33	Sep 19	1630	*6,170	*15.12
May 19	1730	1,260	8.10	Sep 23	2400	2,690	11.03
May 26	0915	1,670	9.22				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.6	79	59	93	71	180	149	154	296	102	186	97
2	7.1	52	57	148	76	214	119	105	189	211	160	95
3	7.0	42	57	120	71	218	106	88	152	888	141	96
4	6.9	41	55	124	82	135	98	99	171	2,060	247	198
5	6.8	46	60	100	106	122	94	89	249	681	334	273
6	6.6	153	74	91	79	153	90	87	600	211	151	136
7	6.4	136	63	83	81	189	200	84	235	167	134	116
8	6.2	70	64	79	81	126	481	84	433	147	132	109
9	6.3	52	66	77	72	110	541	78	420	138	200	107
10	6.6	46	62	73	77	99	1,050	75	185	148	424	104
11	29	97	82	69	82	91	746	76	154	133	152	100
12	81	370	139	66	87	87	582	72	271	124	129	98
13	35	701	151	62	84	85	197	65	349	134	129	119
14	28	351	297	66	79	96	142	62	261	160	135	136
15	25	116	288	64	96	86	124	63	170	126	120	118
16	32	104	140	e61	191	85	116	88	159	118	114	108
17	83	225	110	e58	134	100	107	78	192	115	226	100
18	41	358	95	e55	113	90	101	205	258	111	316	144
19	27	219	87	e56	114	84	107	860	271	109	146	3,300
20	23	116	98	69	164	618	103	610	317	107	127	1,630
21	24	96	127	64	262	2,790	98	177	188	106	118	231
22	30	87	97	e54	421	646	96	198	151	111	113	127
23	27	79	86	e50	1,920	197	89	221	135	165	108	1,280
24	23	72	103	e46	652	137	84	244	124	195	104	1,410
25	20	69	284	e55	178	117	84	272	117	130	100	261
26	30	67	461	e52	129	107	97	1,230	112	114	99	136
27	41	65	197	e48	120	100	103	761	109	108	97	118
28	40	61	111	e46	142	94	86	677	107	105	96	126
29	96	61	96	e54	---	95	81	578	106	120	94	115
30	164	61	86	e60	---	139	85	254	103	223	93	97
31	195	---	80	e65	---	246	---	202	---	343	92	---
TOTAL	1,161.5	4,092	3,832	2,208	5,764	7,636	6,156	7,936	6,584	7,710	4,817	11,085
MEAN	37.5	136	124	71.2	206	246	205	256	219	249	155	370
MAX	195	701	461	148	1,920	2,790	1,050	1,230	600	2,060	424	3,300
MIN	6.2	41	55	46	71	84	81	62	103	102	92	95
CFSM	0.38	1.39	1.26	0.73	2.10	2.51	2.09	2.61	2.24	2.54	1.59	3.77
IN.	0.44	1.55	1.45	0.84	2.19	2.90	2.34	3.01	2.50	2.93	1.83	4.21

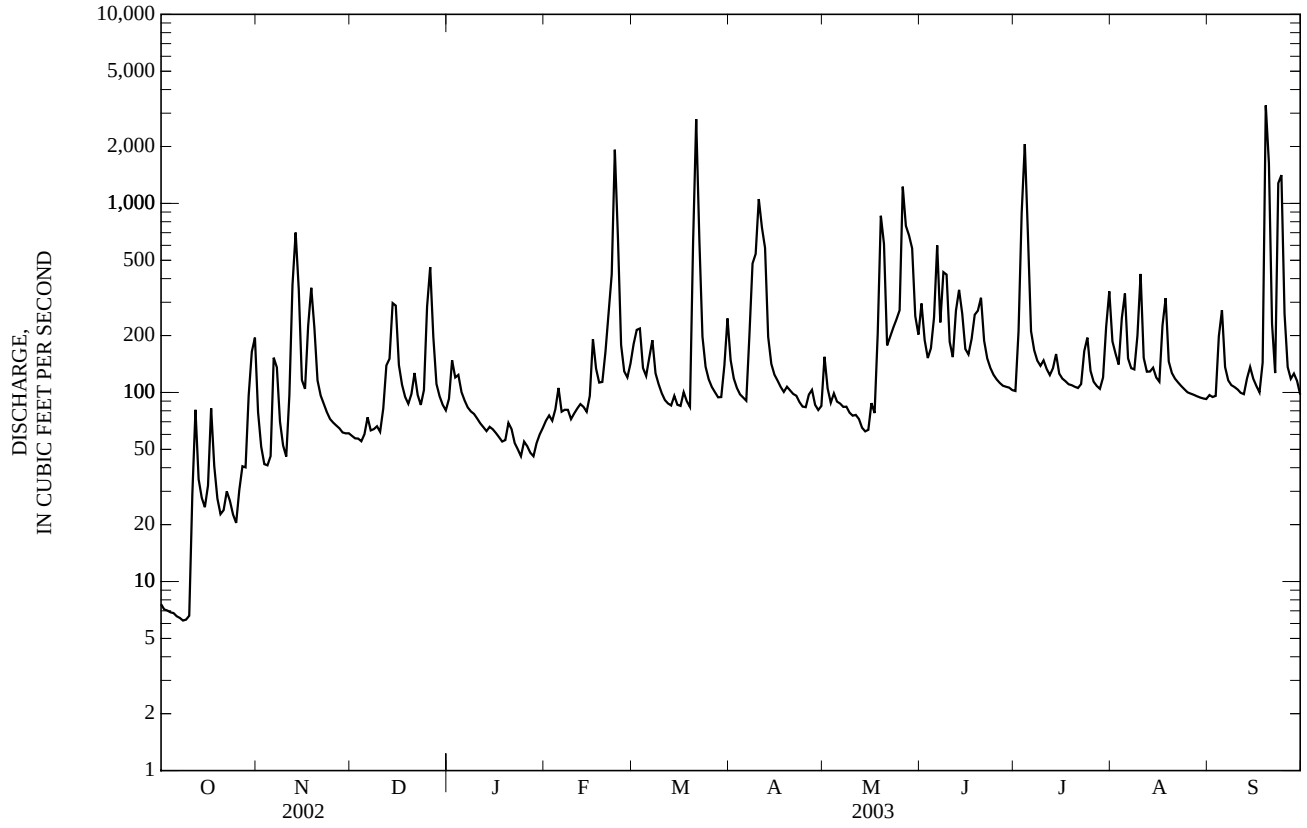
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 2003, BY WATER YEAR (WY)

MEAN	66.1	89.8	101	129	145	162	142	104	78.2	58.8	53.6	72.7
MAX	293	429	279	478	447	443	354	261	518	249	257	572
(WY)	(1972)	(1986)	(1997)	(1978)	(1979)	(1975)	(1983)	(1971)	(1972)	(2003)	(1985)	(1996)
MIN	14.0	22.6	27.9	35.1	43.2	51.7	50.4	37.8	14.6	8.21	5.29	8.03
(WY)	(1971)	(2002)	(1966)	(1966)	(2002)	(1981)	(1966)	(1981)	(2002)	(2002)	(2002)	(1968)

02065500 CUB CREEK AT PHENIX, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1947 - 2003	
ANNUAL TOTAL	18,765.39		68,981.5			
ANNUAL MEAN	51.4		189		99.9	
HIGHEST ANNUAL MEAN					189	2003
LOWEST ANNUAL MEAN					32.9	2002
HIGHEST DAILY MEAN	701	Nov 13	3,300	Sep 19	6,920	Sep 6, 1996
LOWEST DAILY MEAN	0.00	Aug 23	6.2	Oct 8	0.00	Aug 23, 2002
ANNUAL SEVEN-DAY MINIMUM	0.02	Aug 19	6.5	Oct 4	0.02	Aug 19, 2002
MAXIMUM PEAK FLOW			6,170	Sep 19	15,200	Sep 6, 1996
MAXIMUM PEAK STAGE			15.12	Sep 19	21.89	Sep 6, 1996
INSTANTANEOUS LOW FLOW			5.8	Oct 8	0.00	aAug 22, 2002
ANNUAL RUNOFF (CFSM)	0.52		1.93		1.02	
ANNUAL RUNOFF (INCHES)	7.12		26.18		13.85	
10 PERCENT EXCEEDS	98		324		172	
50 PERCENT EXCEEDS	36		107		64	
90 PERCENT EXCEEDS	4.8		52		25	

a Also no flow part or all each day Aug. 23, 24, 2002.
e Estimated.



02066000 ROANOKE (STAUNTON) RIVER AT RANDOLPH, VA

LOCATION.--Lat 36°54'55", long 78°44'27", NAD83, Halifax County, Hydrologic Unit 03010102, on right bank 6 ft downstream from bridge on State Highway 746, 2.8 mi northwest of Randolph, 3.6 mi upstream from Roanoke Creek, and at mile 227.3.

DRAINAGE AREA.--2,977 mi^2.

PERIOD OF RECORD.--August 1900 to September 1906, October 1927 to September 1930, October 1950 to current year. Monthly discharge only for some periods, published in WSP 1303. Prior to October 1902, published as Staunton River at Randolph. Gage heights collected since 1905 at this site or at former site are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 1203: 1928-30. WSP 1303: 1901-6. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 307.59 ft NGVD of 1929. Aug. 27, 1900, to Oct. 13, 1902, nonrecording gage at site 3.2 mi downstream at datum about 5.9 ft lower. Oct. 14, 1902, to Aug. 11, 1906, and Oct. 1, 1927, to Mar. 31, 1930, nonrecording gage at site of original gage at datum 3.93 ft lower than present datum.

REMARKS.--Records good except for period of no gage-height record, Feb. 16-18, which is fair. Flow regulated since 1962 by Leesville Lake (station 02059400) 68.7 mi upstream and since 1963 by Smith Mountain Lake (station 02057400) 86.7 mi upstream. Statistics of monthly mean data and summary statistics for water years 1901 - 1906, 1928 - 1930, 1951 - 1962 (unregulated flow) are available in previous data books, water years 1991 - 1998. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 97,000 ft^3/s, from graph based on gage readings, site and datum then in use. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 16, 1940, reached a stage of 41.6 ft, present site and datum, discharge, 150,000 ft^3/s, from information by U.S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	446	1,650	1,230	2,430	1,500	6,580	5,230	3,480	8,880	3,090	3,540	2,490
2	416	1,100	1,200	4,560	1,560	7,100	4,920	3,310	6,810	8,220	3,470	2,520
3	411	852	1,170	5,030	1,540	6,700	5,160	2,910	5,580	16,200	3,260	2,300
4	402	762	1,060	5,060	1,520	5,500	5,260	2,890	4,920	21,300	7,400	3,100
5	393	754	1,080	5,770	1,840	4,900	4,690	4,250	5,660	13,500	7,390	4,480
6	389	1,550	1,120	3,180	1,780	4,990	3,890	5,960	5,850	7,130	5,650	3,560
7	418	1,730	1,120	2,480	1,710	5,240	5,510	5,150	5,920	5,460	4,470	3,010
8	425	1,320	1,120	2,390	1,800	4,340	8,940	4,120	16,500	6,310	4,460	2,780
9	446	1,020	1,090	2,220	1,800	3,750	16,900	3,590	17,300	5,740	5,370	2,400
10	426	866	1,110	1,980	1,750	3,510	25,400	3,940	14,800	5,100	13,300	2,210
11	1,520	879	1,250	1,870	1,860	3,150	28,300	4,610	7,670	4,710	15,300	1,850
12	1,330	5,340	2,360	1,940	1,990	2,980	29,600	3,920	6,520	4,230	15,800	1,710
13	773	8,570	3,350	2,230	2,230	2,660	22,300	3,400	8,070	3,980	8,640	1,710
14	622	4,690	7,850	2,050	2,270	2,540	9,870	3,130	8,590	4,780	4,370	1,850
15	545	2,480	10,100	1,610	2,330	2,290	6,490	2,790	11,900	4,400	3,900	1,920
16	573	1,750	6,270	1,550	e5,600	2,100	6,030	2,610	14,400	4,100	3,310	1,900
17	897	3,540	3,660	1,450	e9,200	2,110	5,580	3,110	14,400	3,390	2,650	2,000
18	868	5,810	2,920	1,390	e6,000	2,100	5,060	4,140	16,600	3,020	3,350	2,560
19	711	3,940	2,470	1,310	4,530	2,180	4,730	19,200	15,200	2,750	4,190	14,300
20	594	2,510	2,340	1,340	4,460	9,550	4,830	23,500	16,500	2,730	4,120	18,300
21	545	2,030	3,420	1,420	7,870	27,800	4,650	15,400	13,600	2,420	3,920	9,210
22	548	2,130	4,360	1,390	13,100	30,000	4,470	9,050	8,540	2,180	3,490	4,330
23	538	2,360	3,130	1,360	26,300	21,700	4,330	9,040	6,350	2,330	3,070	13,600
24	516	2,120	2,600	1,280	34,800	8,110	3,810	8,020	5,150	4,140	2,810	17,700
25	499	1,640	7,250	1,270	29,500	4,940	3,410	8,090	4,340	3,640	2,570	10,200
26	537	1,400	12,900	1,350	21,900	4,560	3,450	13,800	3,850	3,180	2,360	6,990
27	621	1,350	7,140	1,340	9,290	4,230	3,520	12,100	3,590	2,540	2,120	6,320
28	769	1,300	3,600	1,280	6,210	3,840	3,490	15,000	2,980	2,330	1,900	4,770
29	1,190	1,270	2,890	1,310	---	3,420	2,970	10,800	2,740	2,080	1,780	3,370
30	1,630	1,240	2,560	1,420	---	3,710	2,920	8,830	3,180	2,760	1,770	2,930
31	2,170	---	2,380	1,480	---	5,250	---	8,040	---	3,650	1,850	---
TOTAL	22,168	67,953	106,100	66,740	206,240	201,830	245,710	228,180	266,390	161,390	151,580	156,370
MEAN	715	2,265	3,423	2,153	7,366	6,511	8,190	7,361	8,880	5,206	4,890	5,212
MAX	2,170	8,570	12,900	5,770	34,800	30,000	29,600	23,500	17,300	21,300	15,800	18,300
MIN	389	754	1,060	1,270	1,500	2,100	2,920	2,610	2,740	2,080	1,770	1,710
(†)	+6,564	+32,741	+2,274	-1,805	-1,850	+7,542	-3,408	+529	-30	0	-555	-626
MEAN‡	927	3,356	3,496	2,905	7,300	6,754	8,077	7,378	8,879	5,206	4,872	5,191
CFSM‡	.31	1.13	1.17	.70	2.45	2.27	2.71	2.48	2.98	1.75	1.64	1.74
IN.‡	.36	1.26	1.35	.81	2.55	2.62	3.03	2.86	3.33	2.02	1.89	1.95

CAL YR 2002 MEAN‡ 1,339 CFSM‡ .45 IN.‡ 6.11
WTR YR 2003 MEAN‡ 5,266 CFSM‡ 1.77 IN.‡ 24.02

† Total change in contents, equivalent in cubic feet per second, per month, in Smith Mountain and Leesville Lakes; provided by American Electric Power.
‡ Adjusted for change in contents.

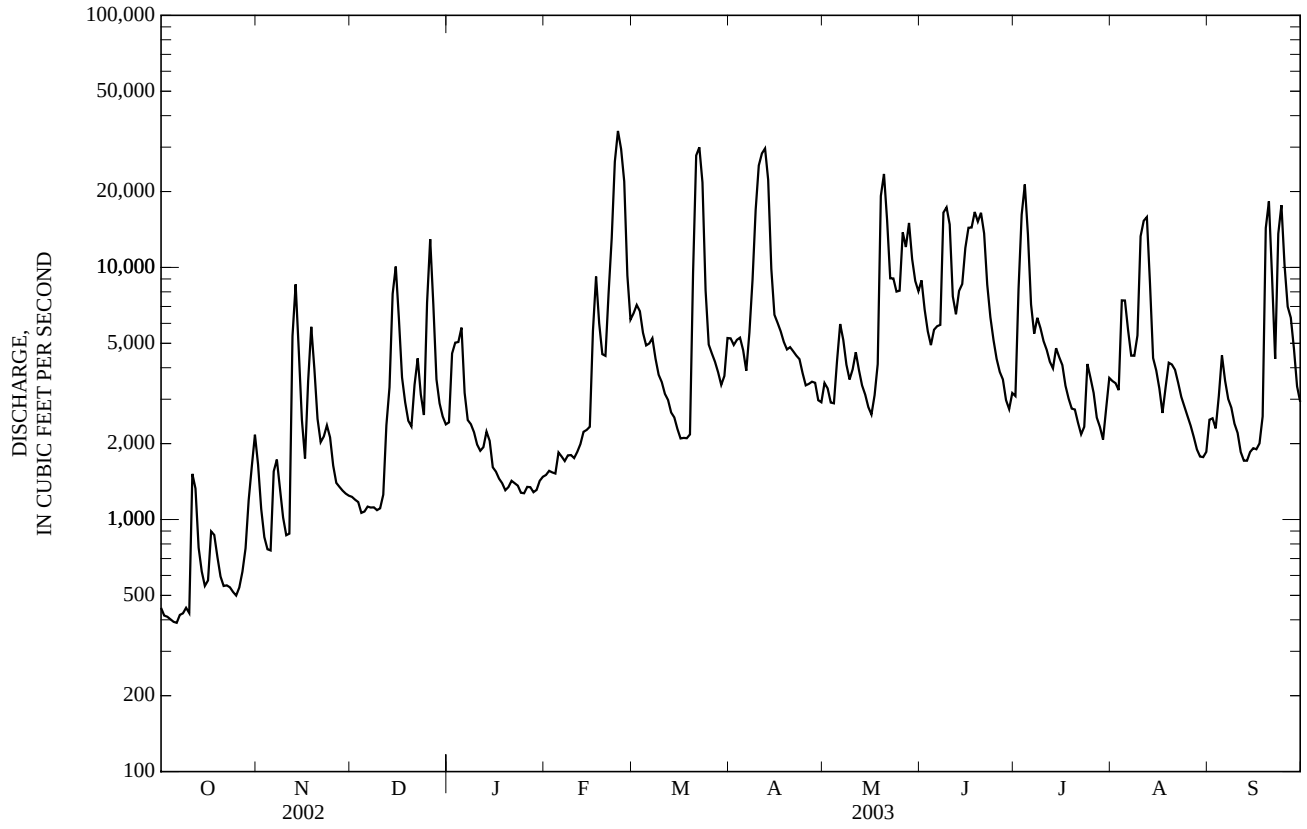
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2003, BY WATER YEAR (WY)

MEAN	1,951	2,204	2,488	3,577	4,011	4,866	4,324	3,379	2,662	1,869	1,690	2,138
MAX	7,906	11,230	6,887	9,532	12,230	13,970	17,570	10,060	10,260	5,635	5,988	11,350
(WY)	(1991)	(1986)	(1997)	(1978)	(1998)	(1975)	(1987)	(1978)	(1972)	(1972)	(1985)	(1996)
MIN	428	658	809	857	781	769	1,082	1,038	491	613	493	458
(WY)	(1964)	(2002)	(2002)	(2002)	(2002)	(1981)	(2002)	(1964)	(1964)	(2002)	(1964)	(2002)

02066000 ROANOKE (STAUNTON) RIVER AT RANDOLPH, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1963 - 2003	
ANNUAL TOTAL	440,314		1,880,651			
ANNUAL MEAN	1,206		5,152		2,923	
HIGHEST ANNUAL MEAN					5,152	2003
LOWEST ANNUAL MEAN					852	2002
HIGHEST DAILY MEAN	12,900	Dec 26	34,800	Feb 24	78,700	Sep 8, 1996
LOWEST DAILY MEAN	389	Oct 6	389	Oct 6	179	aSep 8, 1965
ANNUAL SEVEN-DAY MINIMUM	406	Sep 10	408	Oct 2	238	Sep 5, 1965
MAXIMUM PEAK FLOW			36,400	Feb 24	b89,300	Sep 7, 1996
MAXIMUM PEAK STAGE			27.18	Feb 24	b34.94	Sep 7, 1996
INSTANTANEOUS LOW FLOW			380	Oct 6	c176	dSep 8, 1965
ANNUAL RUNOFF (CFSM)	0.41		1.73		0.98	
ANNUAL RUNOFF (INCHES)	5.50		23.50		13.34	
10 PERCENT EXCEEDS	2,350		13,200		5,620	
50 PERCENT EXCEEDS	808		3,390		1,740	
90 PERCENT EXCEEDS	435		1,110		808	

a Also July 7, 1970.
b Prior to regulation, 1901-06, 1928-30, 1951-62, maximum peak flow, 97,000 ft^3/s, Dec. 31, 1901, gage height, 35.00 ft.
c Prior to regulation, 1901-06, 1928-30, 1951-62, instantaneous low flow, 256 ft^3/s, Sept. 16, 1954.
d Also Sept. 9, 1965.
e Estimated.



02067800; 02067820 TALBOTT AND TOWNES RESERVOIRS NEAR KIBLER, VA

LOCATION.--Talbott Dam: Lat 36°40'39", long 80°23'51", NAD83, Patrick County, Hydrologic Unit 03010103, on Dan River 4.5 mi northeast of Kibler. Townes Dam: Lat 36°41'10", long 80°25'49", NAD83, Patrick County, Hydrologic Unit 03010103, on Dan River about 4 mi north of Kibler.

DRAINAGE AREA.--Talbott Dam, 20.2 mi^2; Townes Dam, 32.9 mi^2.

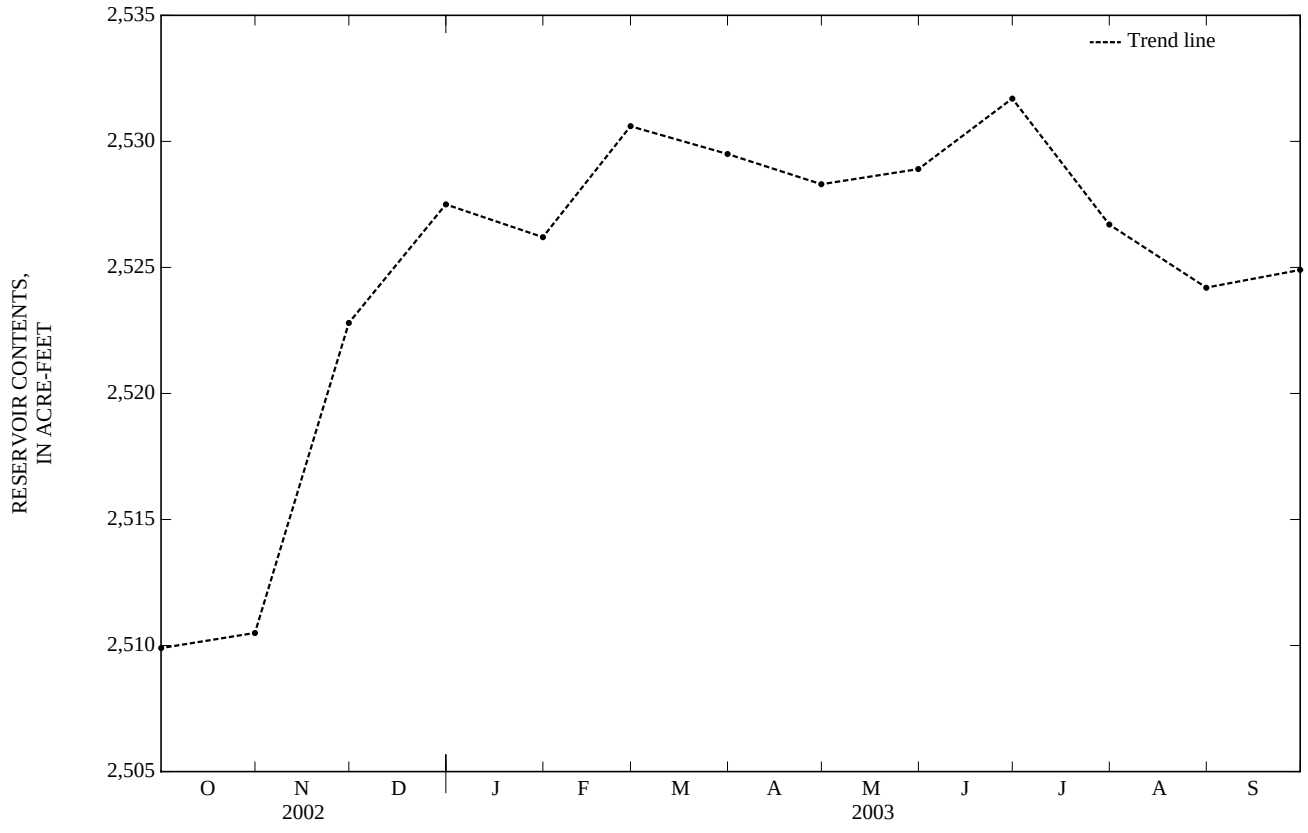
PERIOD OF RECORD.--February 1939 to December 1945, January 1948 to September 1960 (published in WSP 1723), and October 1960 to current year.

REMARKS.--The two reservoirs are operated as a unit for storage of water for Pinnacles hydroelectric plant. Total capacity of Talbott Reservoir, 8,040 acre-ft, and Townes Reservoir, 1,380 acre-ft. Storage began in Talbott Reservoir on Feb. 13, 1939, and in Townes Reservoir several months earlier.

COOPERATION.--Records were provided by the city of Danville.

TALBOTT RESERVOIR, MONTHEND CONTENTS AT 2400, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

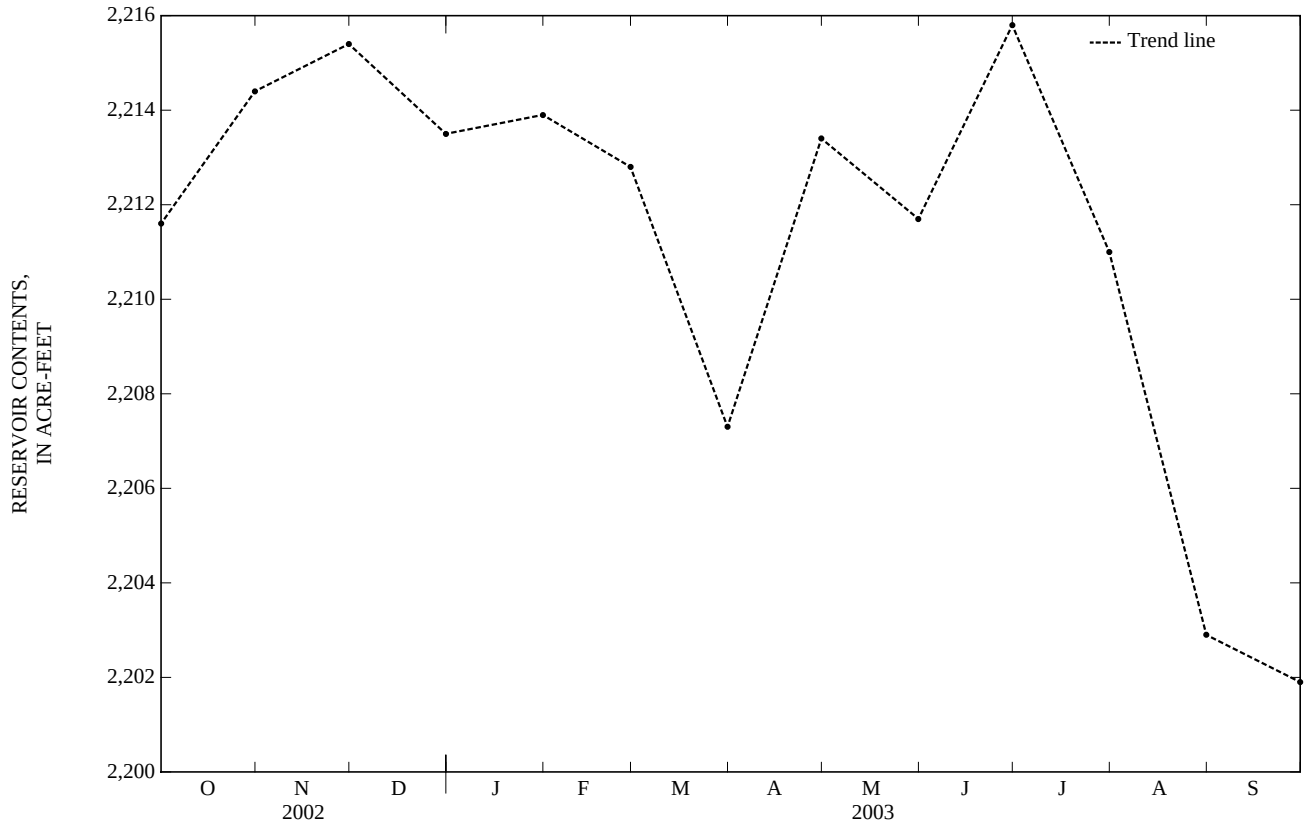
Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
September 30	2,509.9	4,545	
October 31	2,510.5	4,617	+72
November 30	2,522.8	6,196	+1,579
December 31	2,527.5	6,892	+696
CAL YR 2002			+2,537
January 31	2,526.2	6,699	-193
February 28	2,530.6	7,355	+657
March 31	2,529.5	7,190	-165
April 30	2,528.3	7,013	-177
May 31	2,528.9	7,101	+87
June 30	2,531.7	7,518	+418
July 31	2,526.7	6,772	-746
August 31	2,524.2	6,403	-370
September 30	2,524.9	6,506	+103
WTR YR 2003			+1,961



02067800; 02067820 TALBOTT AND TOWNES RESERVOIRS NEAR KIBLER, VA

TOWNES RESERVOIR, MONTHEND CONTENTS AT 2400, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
September 30	2,211.6	1,058	
October 31	2,214.4	1,143	+85
November 30	2,215.4	1,175	+32
December 31	2,213.5	1,116	-60
CAL YR 2002			+74
January 31	2,213.9	1,172	+11
February 28	2,212.8	1,093	-34
March 31	2,207.3	941	-152
April 30	2,213.4	1,111	+170
May 31	2,211.7	1,061	-51
June 30	2,215.8	1,187	+126
July 31	2,211.0	1,040	-147
August 31	2,202.9	820	-220
September 30	2,201.9	792	-28
WTR YR 2003			-266



02068500 DAN RIVER NEAR FRANCISCO, NC

LOCATION.--Lat 36°30'53", long 80°18'10", Stokes County, Hydrologic Unit 03010103, on left bank 200 ft upstream from bridge on State Highway 704, 700 ft downstream of remains of Georges Mill, 0.2 mi downstream of Elk Creek, 3 mi east of Francisco, and 7.9 mi downstream of Little Dan River.

DRAINAGE AREA.--129 mi^2.

PERIOD OF RECORD.--August 1924 to September 1987, December 1991 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 1303: 1938-50 (monthly runoff). WSP 1433: 1925-26, 1928-29, 1931, 1942, 1948. WDR NC-80-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 831.99 ft above NGVD of 1929. Prior to Nov. 15, 1929, nonrecording gage at same site and datum. Satellite telemetry at station.

REMARKS.--Records good except those for estimated daily discharges and those for discharges above 1,000 ft^3/s, which are fair. Since 1938, considerable diurnal fluctuation and regulation by Talbott and Townes Reservoirs (stations 02067800 and 02067820, respectively) and Pinnacles Hydroelectric Plant in Virginia, 28 mi upstream.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1916 reached a stage of about 15 ft, from information by local residents, discharge, 16,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	62	100	91	179	110	205	291	307	320	457	446	292
2	60	92	92	198	120	210	238	276	276	717	365	241
3	62	88	110	237	117	199	187	267	183	665	519	268
4	61	87	112	230	145	169	189	422	338	570	482	529
5	60	94	125	213	141	170	246	372	485	527	458	289
6	59	148	101	202	127	223	298	381	358	496	471	253
7	60	118	114	200	127	227	357	362	1,130	461	e2,000	247
8	60	106	119	192	126	187	383	343	1,210	417	e1,000	232
9	59	101	120	186	120	187	e640	327	1,480	450	663	225
10	60	92	115	184	131	188	e1,400	258	694	501	791	222
11	87	349	200	177	130	173	e1,000	260	501	384	905	218
12	82	503	184	e174	133	161	724	277	814	377	567	216
13	66	330	269	e170	171	135	598	179	1,030	395	540	228
14	64	180	351	e168	172	129	540	172	1,520	366	619	230
15	65	154	185	e164	206	130	511	175	898	398	454	217
16	166	219	156	e160	291	313	491	197	1,060	336	410	236
17	116	428	143	e158	263	300	479	209	951	323	377	234
18	97	304	134	e156	181	246	559	271	826	314	351	232
19	74	219	129	e152	193	277	665	286	1,280	431	331	208
20	70	161	247	e148	203	1,610	556	167	973	443	335	160
21	73	149	271	e146	204	684	509	290	731	357	364	157
22	73	143	203	e144	1,540	452	505	281	669	372	412	160
23	78	118	156	e142	788	384	483	256	626	496	361	478
24	78	111	221	e138	365	342	473	242	557	455	311	200
25	79	108	312	e136	239	317	475	376	467	336	274	226
26	92	105	185	e134	211	298	595	365	414	335	257	219
27	84	99	169	e132	228	283	467	231	440	356	247	224
28	95	96	171	e126	223	273	295	193	487	330	239	267
29	125	96	193	125	---	234	251	188	440	314	243	215
30	142	95	172	124	---	305	248	188	423	342	250	202
31	120	---	153	114	---	313	---	193	---	447	270	---
TOTAL	2,529	4,993	5,303	5,109	7,005	9,324	14,653	8,311	21,581	13,168	15,312	7,325
MEAN	81.6	166	171	165	250	301	488	268	719	425	494	244
MAX	166	503	351	237	1,540	1,610	1,400	422	1,520	717	2,000	529
MIN	59	87	91	114	110	129	187	167	183	314	239	157
†	+3	+27	+10	-3	+11	-5	0	+1	+9	-15	-10	+1

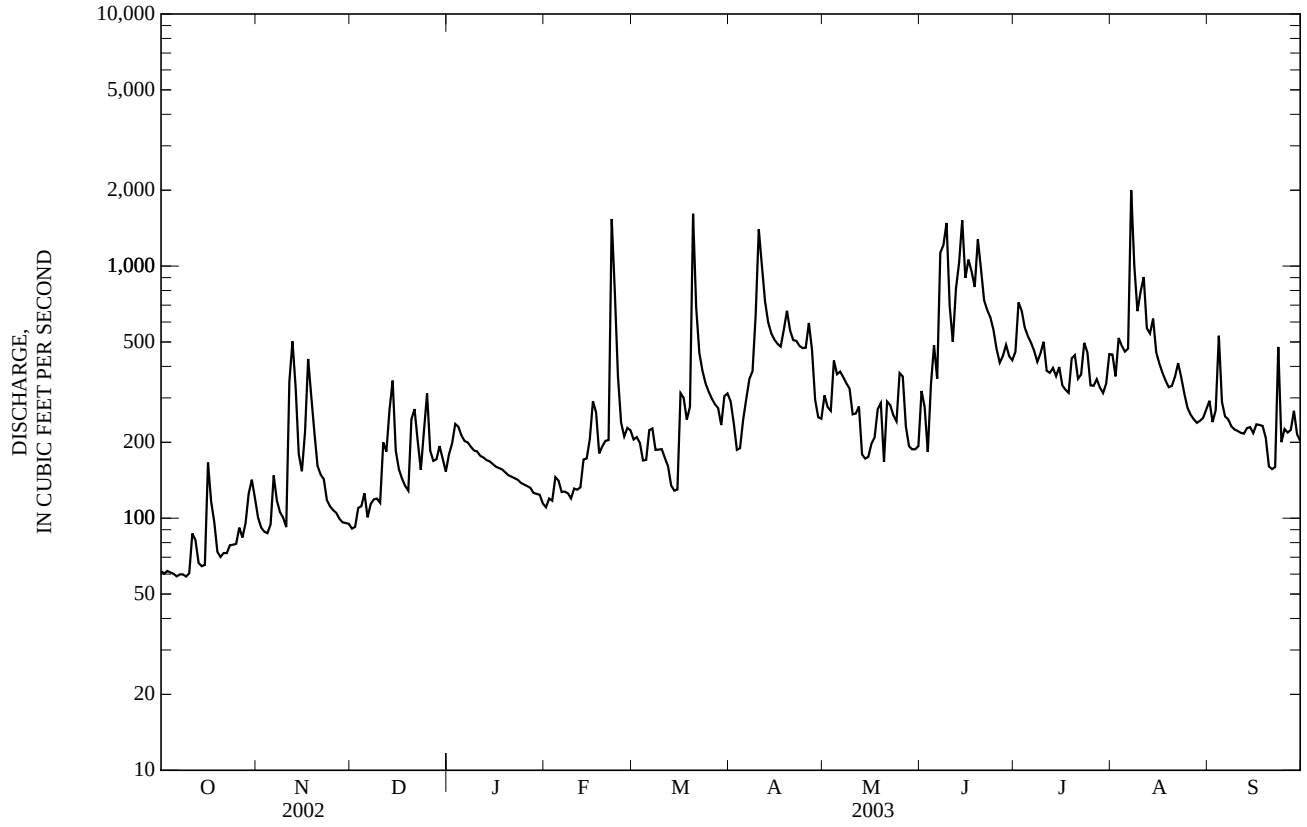
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2003,*@ BY WATER YEAR (WY)

MEAN	147	154	175	197	220	259	268	218	202	168	169	148
MAX	543	327	479	424	463	571	677	405	719	425	514	630
(WY)	(1938)	(1980)	(1997)	(1978)	(1960)	(1993)	(1980)	(1949)	(2003)	(2003)	(1940)	(1979)
MIN	49.7	61.3	77.5	76.2	94.9	94.2	119	95.3	77.9	54.8	52.5	50.4
(WY)	(1964)	(1954)	(1998)	(1956)	(1956)	(1981)	(2002)	(2000)	(2002)	(1986)	(1981)	(1968)

02068500 DAN RIVER NEAR FRANCISCO, NC—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1938 - 2003*@	
ANNUAL TOTAL	39,453		114,613	‡316		(UNADJUSTED)
ANNUAL MEAN	108		314		194	
HIGHEST ANNUAL MEAN					314	2003
LOWEST ANNUAL MEAN					93.6	2002
HIGHEST DAILY MEAN	503	Nov 12	2,000	Aug 7	6,830	Sep 22, 1979
LOWEST DAILY MEAN	45	Sep 12	59	Oct 6	21	Sep 4, 1999
ANNUAL SEVEN-DAY MINIMUM	47	Sep 7	60	Oct 4	28	Aug 24, 1981
MAXIMUM PEAK FLOW			6,830	Aug 7	21,200	Aug 17, 1985
MAXIMUM PEAK STAGE			9.22	Aug 7	19.50	Aug 17, 1985
INSTANTANEOUS LOW FLOW			57	Oct 4	7.1	Sep 8, 1932
10 PERCENT EXCEEDS	164		568		320	
50 PERCENT EXCEEDS	99		234		154	
90 PERCENT EXCEEDS	58		98		80	

e Estimated.
† Change in contents, equivalent in cubic feet per second, in Talbott and Townes Reservoirs provided by city of Danville, Virginia.
* Regulated period only (1938-2003). See REMARKS.
@ See PERIOD OF RECORD.
‡ Adjusted for change in contents.



02069700 SOUTH MAYO RIVER NEAR NETTLERIDGE, VA

LOCATION.--Lat 36°34'15", long 80°07'46", NAD83, Patrick County, Hydrologic Unit 03010103, on right bank 60 ft downstream from bridge on State Highway 700, 1.2 mi southeast of Nettleridge, 1.4 mi downstream from Russell Creek, and 3.6 mi upstream from Spoon Creek.

DRAINAGE AREA.--84.6 mi^2.

PERIOD OF RECORD.--October 1962 to current year.

REVISED RECORDS.--WSP 2104: Drainage area. WDR VA-74-1: 1972(M).

GAGE.--Water-stage recorder. Datum of gage is 871.60 ft NGVD of 1929. Prior to Oct. 9, 1964, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Dec. 10-12, Jan. 20-29, Feb. 11, Mar. 23-26, Apr. 26-30, May 5, 6, June 7, 8, and June 20 to July 1, and period with ice effect, Jan. 17-19, which are fair. Maximum discharge, 20,600 ft^3/s, from rating curve extended above 2,900 ft^3/s on basis of contracted-opening measurements at gage heights 18.32 ft and 22.00 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location by the Virginia Department of Environmental Quality - Water Division.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1815	*2,280	*9.15	Jun 14	0515	1,390	7.31
Mar 20	1300	2,230	9.06	Aug 7	0900	1,580	7.72
Apr 10	2100	2,060	8.72	Sep 23	0500	1,480	7.51
Jun 9	0415	1,380	7.27				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	57	42	121	68	192	167	188	132	e185	202	202
2	30	48	41	124	66	189	152	161	115	483	160	153
3	29	43	40	155	65	164	140	157	131	521	271	142
4	26	41	41	145	90	145	133	240	256	311	241	305
5	24	44	57	121	84	136	133	e180	584	292	263	207
6	23	95	53	107	73	164	119	e190	266	359	209	155
7	22	60	48	98	78	136	234	176	e540	313	781	143
8	22	50	46	94	73	124	189	163	e650	227	546	135
9	22	46	48	90	69	117	488	156	1,000	212	370	128
10	22	44	e50	85	73	111	1,300	145	540	231	434	123
11	46	183	e170	78	e74	106	935	140	369	199	681	117
12	45	248	e145	76	73	103	451	132	529	181	341	115
13	31	175	215	74	70	100	317	125	485	202	304	115
14	28	101	237	74	71	98	260	121	992	451	244	116
15	27	80	134	71	99	95	228	123	580	252	247	114
16	175	135	106	70	227	205	210	136	688	e225	298	111
17	89	307	94	e68	141	175	194	125	738	e200	230	106
18	54	144	86	e63	114	147	248	135	624	e175	205	128
19	42	101	81	e76	130	134	337	138	706	294	188	192
20	38	81	174	e72	153	1,400	254	125	e470	308	179	116
21	38	75	126	e67	157	613	227	121	e350	e190	182	109
22	39	66	102	e62	957	357	209	143	e285	e160	313	110
23	35	59	92	e58	744	e255	187	156	e255	e176	196	598
24	32	56	150	e53	334	e220	174	134	e230	243	173	185
25	32	54	220	e60	230	e185	173	239	e210	171	160	145
26	42	52	142	e57	186	e157	e197	308	e200	154	147	132
27	37	51	113	e61	190	145	e220	200	e195	146	137	126
28	44	49	101	e59	216	136	e190	171	e185	142	133	144
29	77	47	94	e64	---	146	e180	156	e180	138	135	121
30	100	46	87	73	---	255	e175	143	e175	161	198	116
31	75	---	81	69	---	208	---	142	---	230	188	---
TOTAL	1,376	2,638	3,216	2,545	4,905	6,718	8,421	4,969	12,660	7,532	8,356	4,709
MEAN	44.4	87.9	104	82.1	175	217	281	160	422	243	270	157
MAX	175	307	237	155	957	1,400	1,300	308	1,000	521	781	598
MIN	22	41	40	53	65	95	119	121	115	138	133	106
CFSM	0.52	1.04	1.23	0.97	2.07	2.56	3.32	1.89	4.99	2.87	3.19	1.86
IN.	0.61	1.16	1.41	1.12	2.16	2.95	3.70	2.18	5.57	3.31	3.67	2.07

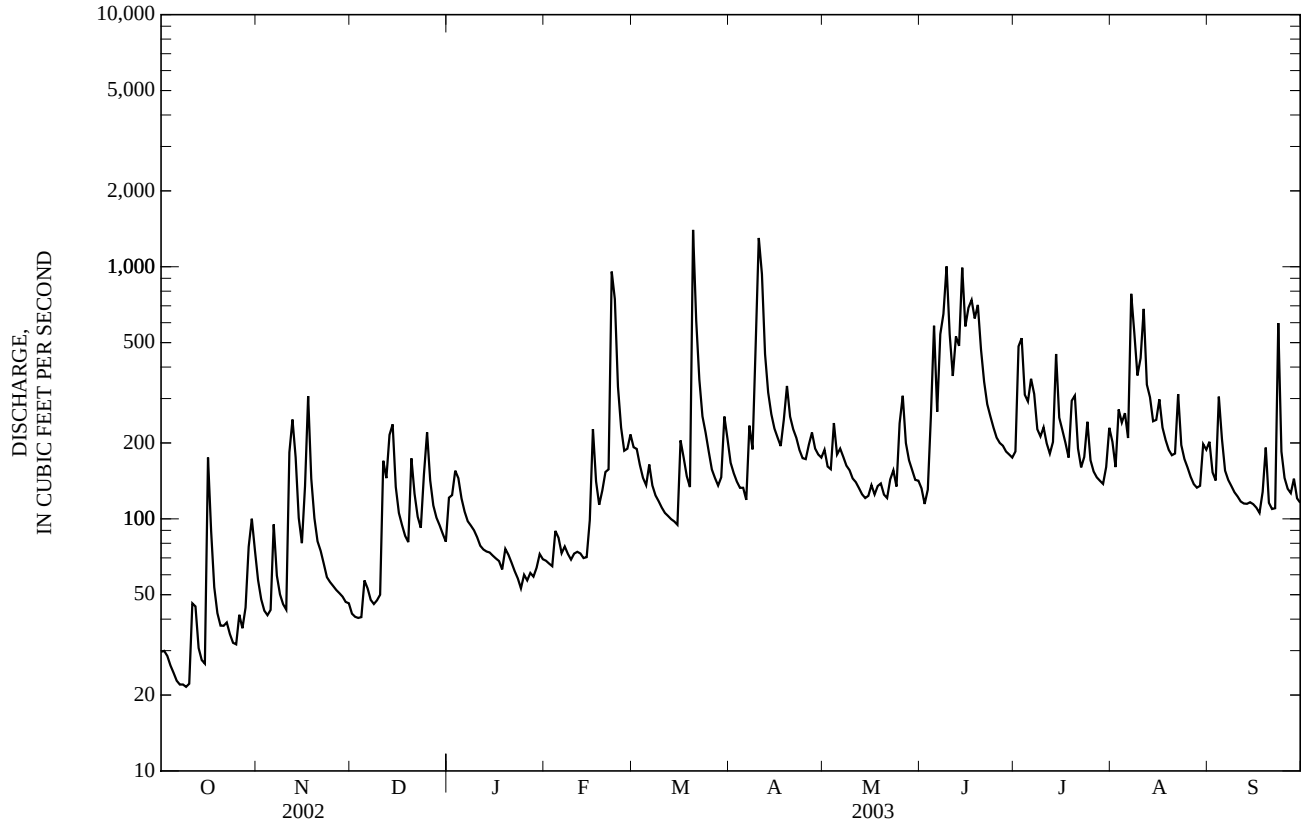
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2003, BY WATER YEAR (WY)

MEAN	94.8	101	113	136	148	181	177	144	129	106	97.4	90.6
MAX	304	339	240	261	352	423	497	295	435	303	407	417
(WY)	(1990)	(1986)	(1997)	(1993)	(1990)	(1993)	(1987)	(1990)	(1972)	(1989)	(1985)	(1979)
MIN	30.4	30.2	43.0	48.6	50.7	65.0	64.4	56.5	28.2	25.9	17.2	30.4
(WY)	(2002)	(2002)	(2001)	(1981)	(2001)	(1981)	(2002)	(1981)	(2002)	(2002)	(2002)	(2002)

02069700 SOUTH MAYO RIVER NEAR NETTLERIDGE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1963 - 2003	
ANNUAL TOTAL	20,270.6		68,045			
ANNUAL MEAN	55.5		186		126	
HIGHEST ANNUAL MEAN					206	1990
LOWEST ANNUAL MEAN					44.9	2002
HIGHEST DAILY MEAN	395	Mar 18	1,400	Mar 20	6,820	Jun 21, 1972
LOWEST DAILY MEAN	8.7	Aug 15	22	aOct 7	8.7	Aug 15, 2002
ANNUAL SEVEN-DAY MINIMUM	10	Aug 9	23	Oct 4	10	Aug 9, 2002
MAXIMUM PEAK FLOW			2,280	Feb 22	20,600	Sep 22, 1979
MAXIMUM PEAK STAGE			9.15	Feb 22	22.00	Sep 22, 1979
INSTANTANEOUS LOW FLOW			21	bOct 7	8.3	Aug 15, 2002
ANNUAL RUNOFF (CFSM)	0.66		2.20		1.49	
ANNUAL RUNOFF (INCHES)	8.91		29.92		20.29	
10 PERCENT EXCEEDS	100		339		212	
50 PERCENT EXCEEDS	46		143		95	
90 PERCENT EXCEEDS	19		47		46	

a Also Oct. 8-10, 2002.
b Also Oct. 9, 10, 2002.
e Estimated.



02070000 NORTH MAYO RIVER NEAR SPENCER, VA

LOCATION.--Lat 36°34'05", long 79°59'14", NAD83, Henry County, Hydrologic Unit 03010103, on left bank 800 ft downstream from bridge on State Highway 629 at Moores Mill, 2.1 mi downstream from Horse Pasture Creek, and 3.8 mi southeast of Spencer.

DRAINAGE AREA.--108 mi^2.

PERIOD OF RECORD.--October 1928 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 1303: 1929-32(M), 1934(M).

GAGE.--Water-stage recorder. Datum of gage is 730.94 ft NGVD of 1929 (levels by U.S. Army Corps of Engineers). Prior to Jan. 23, 1936, nonrecording gage at site 800 ft upstream at datum 1.50 ft higher. July 25 to Sept. 27, 1936, nonrecording gage at present site and datum.

REMARKS.--Records good except those for periods with ice effect, Dec. 6-8 and Jan. 17-20, 23-28, and periods of no gage-height record, Feb. 11 and Sept. 12-15, which are fair. Maximum discharge, 17,200 ft^3/s, from rating curve extended above 7,200 ft^3/s on basis of slope-area measurement at gage height 13.41 ft and velocity-area study. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,400 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	2145	3,030	6.93	Jul 7	0215	1,920	5.53
Mar 20	1430	*5,250	*9.04	Jul 14	1130	4,350	8.28
Apr 10	2330	2,200	5.91	Jul 17	0215	1,830	5.41
Jun 5	0800	1,680	5.19	Aug 11	0045	2,330	6.09
Jun 9	0845	1,920	5.54	Sep 23	0945	2,940	6.82
Jun 16	1545	1,800	5.37				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	78	55	122	74	243	183	176	147	161	247	165
2	28	64	55	156	73	220	161	145	129	437	188	149
3	26	57	55	177	70	179	147	136	133	693	241	145
4	25	55	55	168	81	150	139	175	193	279	287	263
5	24	56	64	129	92	138	135	154	814	222	269	233
6	23	114	e68	113	77	151	129	159	289	447	224	165
7	22	81	e62	100	82	137	366	144	534	738	340	155
8	22	66	e57	96	78	123	296	135	720	257	297	149
9	22	60	59	92	72	117	676	132	1,220	216	323	143
10	22	57	58	87	78	111	1,250	124	381	220	495	139
11	49	93	168	82	e82	106	1,060	122	263	191	1,100	136
12	59	337	185	79	83	103	384	118	557	176	400	e133
13	36	287	359	77	79	104	272	110	400	299	264	e132
14	30	131	467	76	77	107	227	108	456	2,590	231	e137
15	28	98	196	75	96	99	205	111	336	483	212	e134
16	130	174	139	73	320	246	190	124	978	426	257	131
17	131	465	114	e70	176	226	177	115	740	766	287	124
18	65	190	99	e67	133	160	188	130	508	294	209	142
19	51	125	92	e86	134	137	284	145	530	250	185	256
20	46	102	185	e77	201	3,530	219	125	384	235	179	147
21	46	90	158	72	257	882	193	116	290	209	173	134
22	48	82	115	68	1,350	387	181	158	249	205	173	132
23	44	74	99	e65	1,050	233	165	195	224	210	170	1,320
24	41	69	165	e57	303	195	155	167	206	464	167	267
25	39	67	401	e63	204	173	153	314	194	217	159	181
26	49	65	201	e70	169	160	178	545	183	191	154	161
27	49	62	139	e64	169	148	190	291	176	179	150	151
28	47	60	117	e60	228	140	154	262	170	172	149	149
29	103	58	104	77	---	142	146	192	167	168	147	136
30	154	57	96	75	---	268	140	170	162	186	155	132
31	118	---	90	76	---	263	---	157	---	196	173	---
TOTAL	1,607	3,374	4,277	2,749	5,888	9,378	8,343	5,255	11,733	11,777	8,005	5,941
MEAN	51.8	112	138	88.7	210	303	278	170	391	380	258	198
MAX	154	465	467	177	1,350	3,530	1,250	545	1,220	2,590	1,100	1,320
MIN	22	55	55	57	70	99	129	108	129	161	147	124
CFSM	0.48	1.04	1.28	0.82	1.95	2.80	2.58	1.57	3.62	3.52	2.39	1.83
IN.	0.55	1.16	1.47	0.95	2.03	3.23	2.87	1.81	4.04	4.06	2.76	2.05

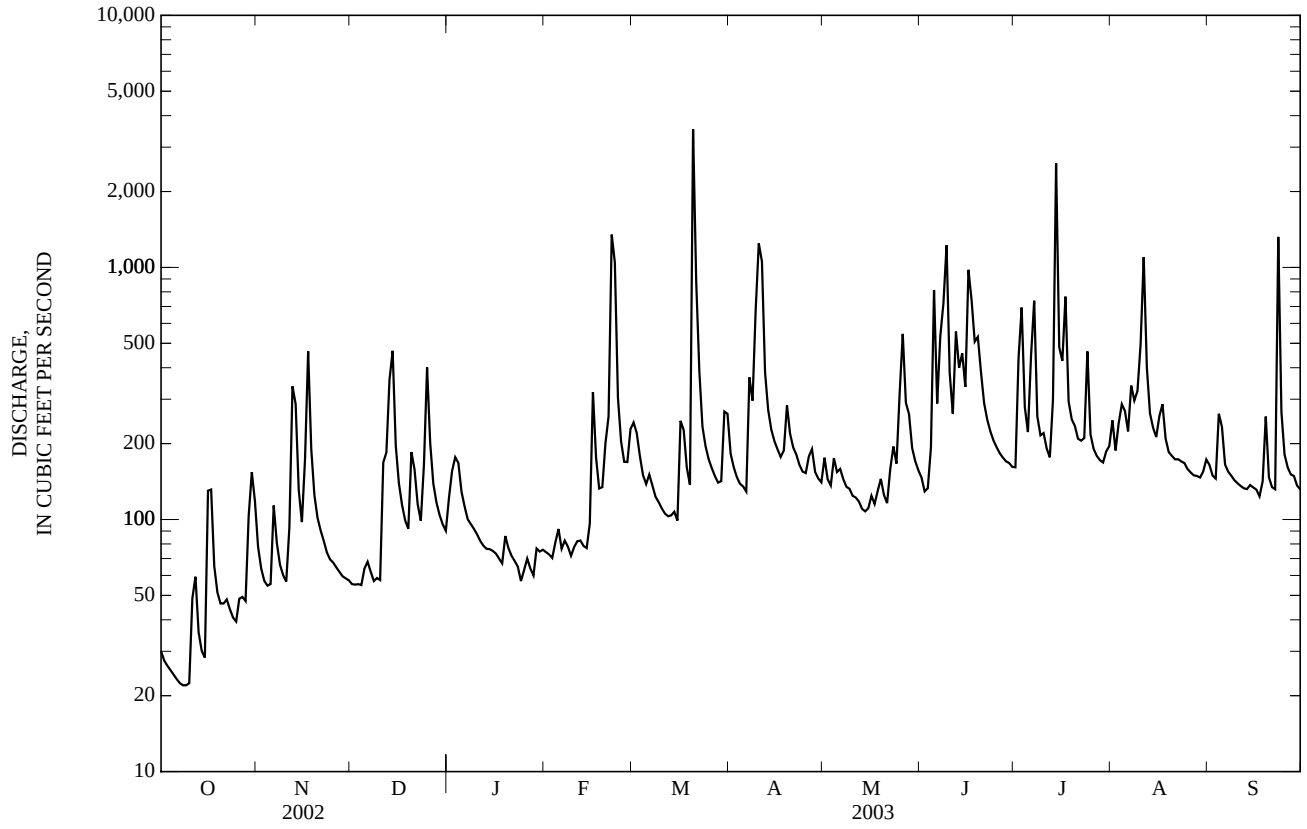
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1935, 1937 - 2003, BY WATER YEAR (WY)

MEAN	110	104	121	143	155	181	164	134	124	106	98.3	103
MAX	498	392	256	368	364	479	523	329	470	380	446	462
(WY)	(1938)	(1986)	(1997)	(1937)	(1960)	(1993)	(1987)	(1972)	(1972)	(2003)	(1985)	(1987)
MIN	25.4	30.5	43.5	40.6	49.6	85.5	56.9	55.5	21.1	21.5	12.4	25.7
(WY)	(2002)	(2002)	(1956)	(1956)	(1931)	(1981)	(2002)	(2002)	(2002)	(2002)	(2002)	(1954)

02070000 NORTH MAYO RIVER NEAR SPENCER, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1929 - 1935 1937 - 2003	
ANNUAL TOTAL	21,920.7		78,327			
ANNUAL MEAN	60.1		215		129	
HIGHEST ANNUAL MEAN					218	1987
LOWEST ANNUAL MEAN					43.5	2002
HIGHEST DAILY MEAN	730	Mar 18	3,530	Mar 20	7,460	Aug 18, 1985
LOWEST DAILY MEAN	5.9	aAug 15	22	bOct 7	5.9	aAug 15, 2002
ANNUAL SEVEN-DAY MINIMUM	6.4	Aug 10	23	Oct 4	6.4	Aug 10, 2002
MAXIMUM PEAK FLOW			5,250	Mar 20	17,200	Oct 9, 1947
MAXIMUM PEAK STAGE			9.04	Mar 20	15.80	Oct 9, 1947
INSTANTANEOUS LOW FLOW			22	bOct 7	5.6	aAug 15, 2002
ANNUAL RUNOFF (CFSM)	0.56		1.99		1.19	
ANNUAL RUNOFF (INCHES)	7.55		26.98		16.17	
10 PERCENT EXCEEDS	115		385		200	
50 PERCENT EXCEEDS	48		150		94	
90 PERCENT EXCEEDS	13		58		49	

a Also Aug. 16, 2002.
b Also Oct. 8-10, 2002.
e Estimated.



02071530 SMITH RIVER AT SMITH RIVER CHURCH NEAR WOOLWINE, VA

LOCATION.--Lat 36°46'42", long 80°14'57", NAD83, Patrick County, Hydrologic Unit 03010103, on left bank 10 ft downstream from bridge on State Highway 708, 1l9 miles southeast of Woolwine, and 29 miles upstream from Philpott Dam.

DRAINAGE AREA.--26.7 mi^2.

PERIOD OF RECORD.--October 1994 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,210 ft NGVD of 1929, from topographic map.

REMARKS.--Records good except for period of doubtful gage-height record, Jan. 18-20, which is fair. Several observations of water temperature were made during the year.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,100 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1215	*1,480	*8.27	Jun 8	2300	1,150	7.41

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	30	26	65	33	100	84	91	67	109	68	61
2	14	27	26	58	32	103	79	85	64	286	64	54
3	14	26	26	74	32	94	76	84	74	205	63	52
4	13	25	26	61	44	87	73	100	98	138	60	59
5	13	29	30	53	34	83	74	92	98	117	110	54
6	13	35	28	48	31	88	69	91	79	109	67	50
7	13	28	27	44	33	80	113	84	251	100	91	49
8	13	26	27	42	29	75	104	80	252	93	163	48
9	13	25	27	40	29	72	162	76	302	96	132	46
10	13	25	26	40	30	69	476	80	159	90	179	48
11	19	195	52	38	30	68	288	76	145	83	157	44
12	15	142	44	37	29	66	185	70	216	86	111	44
13	13	83	73	36	28	65	148	67	179	84	95	44
14	13	55	62	36	30	63	130	66	155	83	92	47
15	14	44	44	35	57	62	119	71	132	76	84	45
16	78	74	39	34	76	126	110	73	155	73	80	42
17	31	98	37	34	52	100	105	72	212	70	73	40
18	22	63	34	e34	44	87	195	87	178	68	69	53
19	19	51	33	e33	48	83	204	84	294	67	66	56
20	17	44	75	e35	59	300	150	76	181	65	64	44
21	18	41	50	34	75	164	133	73	148	62	71	42
22	17	37	43	33	512	123	122	80	130	64	70	64
23	16	34	40	34	272	107	112	91	118	64	63	113
24	15	33	62	35	155	97	106	85	109	61	60	56
25	17	31	63	34	121	90	103	80	102	58	58	49
26	22	30	50	30	106	87	115	94	96	56	55	46
27	18	29	44	28	101	82	105	91	92	54	53	48
28	26	28	41	26	105	78	98	82	90	53	53	51
29	43	27	39	28	---	80	93	77	88	60	60	44
30	64	27	38	35	---	106	93	71	91	68	56	43
31	39	---	36	33	---	91	---	74	---	78	63	---
TOTAL	671	1,442	1,268	1,227	2,227	2,976	4,024	2,503	4,355	2,776	2,550	1,536
MEAN	21.6	48.1	40.9	39.6	79.5	96.0	134	80.7	145	89.5	82.3	51.2
MAX	78	195	75	74	512	300	476	100	302	286	179	113
MIN	13	25	26	26	28	62	69	66	64	53	53	40
CFSM	0.81	1.80	1.53	1.48	2.98	3.60	5.02	3.02	5.44	3.35	3.08	1.92
IN.	0.93	2.01	1.77	1.71	3.10	4.15	5.61	3.49	6.07	3.87	3.55	2.14

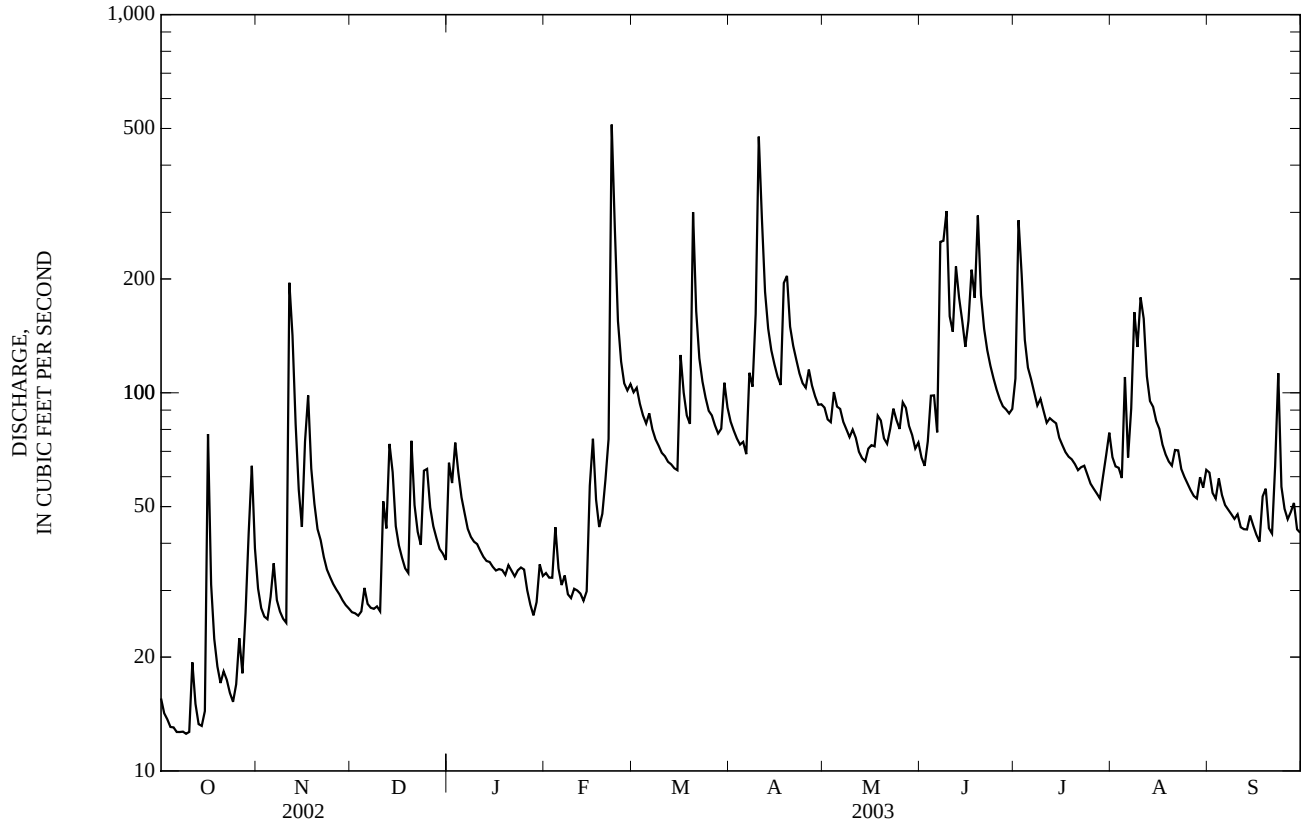
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 2003, BY WATER YEAR (WY)

MEAN	22.7	28.5	35.6	50.3	55.2	61.3	57.9	47.1	43.5	27.8	27.8	27.4
MAX	49.8	54.3	95.2	86.9	120	96.0	134	80.7	145	89.5	82.3	70.0
(WY)	(1997)	(1997)	(1997)	(1995)	(1998)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(1996)
MIN	12.3	13.2	17.6	22.2	21.7	35.0	30.7	23.8	12.9	10.9	6.85	13.2
(WY)	(2001)	(2002)	(1998)	(2001)	(2002)	(1999)	(1999)	(2002)	(2002)	(2002)	(2002)	(1995)

02071530 SMITH RIVER AT SMITH RIVER CHURCH NEAR WOOLWINE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1995 - 2003	
ANNUAL TOTAL	9,451.0		27,555			
ANNUAL MEAN	25.9		75.5		40.3	
HIGHEST ANNUAL MEAN					75.5	2003
LOWEST ANNUAL MEAN					20.7	2002
HIGHEST DAILY MEAN	195	Nov 11	512	Feb 22	669	Dec 1, 1996
LOWEST DAILY MEAN	3.8	Aug 10	13	aOct 4	3.8	Aug 10, 2002
ANNUAL SEVEN-DAY MINIMUM	4.7	Aug 19	13	Oct 4	4.7	Aug 19, 2002
MAXIMUM PEAK FLOW			1,480	Feb 22	1,480	Feb 22, 2003
MAXIMUM PEAK STAGE			8.27	Feb 22	8.45	Aug 12, 1996
INSTANTANEOUS LOW FLOW			12	bOct 6	2.7	Aug 11, 2002
ANNUAL RUNOFF (CFSM)	0.97		2.83		1.51	
ANNUAL RUNOFF (INCHES)	13.17		38.39		20.52	
10 PERCENT EXCEEDS	47		132		76	
50 PERCENT EXCEEDS	21		64		28	
90 PERCENT EXCEEDS	7.7		26		13	

a Also Oct. 5-10, 13, 14, 2002.
b Also Oct. 7-10, 2002.
e Estimated.



02071900 PHILPOTT LAKE NEAR PHILPOTT, VA

LOCATION.--Lat 36°46'52", long 80°01'39", NAD83, Henry County, Hydrologic Unit 03010103, at Philpott Dam on Smith River, 1.5 mi west of Philpott, 12.0 mi upstream from Reed Creek, and at mile 44.3.

DRAINAGE AREA.--216 mi^2.

PERIOD OF RECORD.--August 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929.

REMARKS.--Reservoir is formed by concrete dam. Spillway, with crest at elevation 985 ft, is ungated and 120 ft long. Storage began August 1950 during construction; initial filling started in December 1951; water in reservoir first reached rule-curve elevation in July 1953. Total capacity at maximum flood-control pool elevation, 998 ft, is 247,400 acre-ft of which 47,000 acre-ft is above the spillway crest; 34,200 acre-ft is controlled flood storage between elevations 974 ft, maximum power pool, and 985 ft; 57,800 acre-ft is available for power between elevations 951 ft, minimum power pool, and 974 ft; and 108,400 acre-ft is inactive and dead storage below elevation 951 ft. Usable capacity is 92,000 acre-ft between elevations 951 ft and 985 ft. Figures given herein represent total contents. Reservoir is used for flood control, hydroelectric power, water supply, low-water regulation for pollution abatement and industrial water supply, and recreation.

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

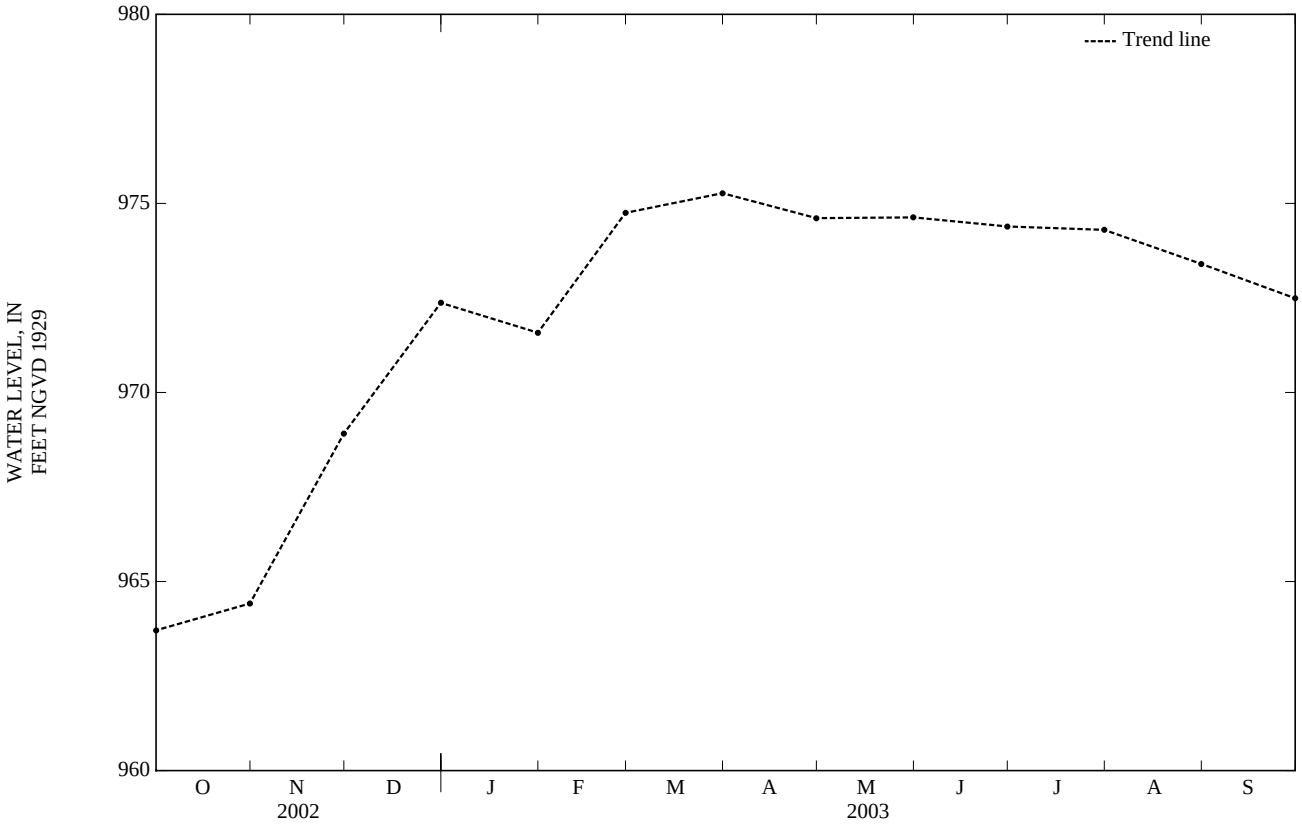
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 191,700 acre-ft, June 22, 1972, elevation, 983.06 ft; minimum (after first filling to rule curve), 64,540 acre-ft, Sept. 26, 1956, elevation, 927.59 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 177,490 acre-ft, Apr. 11, elevation 977.80 ft; minimum, 137,240 acre-ft, Oct. 10, elevation, 963.35 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	963.71	138,150	
Oct. 31	964.42	139,960	+1,810
Nov. 30	968.91	151,850	+11,890
Dec. 31	972.37	161,500	+9,650
CAL YR 2002			+30,170
Jan. 31	971.58	159,260	-2,240
Feb. 28	974.75	168,380	+9,120
Mar. 31	975.27	169,910	+1,530
Apr. 30	974.61	167,970	-1,940
May 31	974.63	168,030	+60
June 30	974.39	167,330	-700
July 31	974.30	167,070	-260
Aug. 31	973.40	164,460	-2,610
Sept. 30	972.49	161,840	-2,620
WTR YR 2003			+23,690

02071900 PHILPOTT LAKE NEAR PHILPOTT, VA—Continued



02072000 SMITH RIVER NEAR PHILPOTT, VA

LOCATION.--Lat 36°46'50", long 80°01'29", NAD83, Franklin County, Hydrologic Unit 03010103, on left bank 900 ft down-stream from Philpott Dam, l.3 mi southwest of Philpott (corrected), 11.6 mi upstream from Reed Creek, and at mile 44.1.

DRAINAGE AREA.--216 mi^2.

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

REVISED RECORDS.--WSP 1553: 1953(M), 1955-56(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 804.27 ft NGVD of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Oct. 8, 1952, at site 1.9 mi downstream at different datum.

REMARKS.--No estimated daily discharges, records good. Since August 1950, flow regulated by Philpott Lake (station 02071900) 0.2 mi upstream. Statistics of monthly mean data and summary statistics for water years 1947 - 1950 (unregulated flow) are available in previous data books, water years 1991 - 1998. Maximum discharge, 17,000 ft^3/s, at site then in use, from rating curve extended above 9,700 ft^3/s on basis of slope-area measurements at gage heights 18.2 ft and 20.3 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	93	80	53	507	55	74	328	808	66	521	505	393
2	90	53	105	493	55	64	332	808	816	751	64	393
3	78	53	52	492	225	638	656	67	820	842	63	392
4	79	78	48	50	227	630	645	67	822	1,390	610	393
5	52	80	44	50	229	630	65	371	820	1,400	610	391
6	53	79	178	217	230	632	65	1,020	821	1,410	607	67
7	97	82	52	210	238	632	655	1,020	68	1,080	608	67
8	95	80	52	321	65	65	654	1,020	67	521	607	496
9	81	53	76	328	64	65	651	1,020	647	510	65	498
10	80	53	83	328	237	590	1,060	66	1,350	512	60	497
11	80	81	78	47	237	631	1,310	67	1,160	511	872	498
12	53	78	78	47	237	644	1,320	493	1,380	71	1,350	500
13	53	79	68	287	236	634	1,340	496	1,380	69	1,350	68
14	80	77	53	292	261	688	1,340	493	74	512	1,350	67
15	81	80	52	292	68	66	1,340	498	68	508	1,350	393
16	83	53	78	292	67	65	1,340	490	657	507	73	394
17	80	53	78	292	95	415	1,350	67	1,380	507	65	394
18	80	77	77	47	122	415	1,350	67	1,380	507	715	395
19	53	91	78	47	132	415	72	234	1,380	67	713	419
20	53	75	78	292	122	61	65	233	1,370	68	714	67
21	80	77	52	292	120	691	486	813	1,380	507	712	68
22	77	79	52	292	69	1,320	530	809	1,380	529	712	287
23	79	53	78	288	489	1,320	1,320	810	1,390	536	65	287
24	74	50	77	295	1,340	1,330	1,320	66	792	509	65	293
25	80	79	79	47	1,350	707	1,320	67	1,370	509	605	292
26	53	78	84	47	1,350	409	73	335	1,400	67	605	292
27	53	78	86	217	1,360	409	67	335	1,410	67	605	69
28	80	78	52	218	1,360	388	646	595	76	507	607	69
29	85	76	52	218	---	66	647	911	69	505	610	790
30	81	51	547	232	---	67	965	920	413	506	66	792
31	81	---	492	224	---	327	---	66	---	507	67	---
TOTAL	2,317	2,134	3,112	7,301	10,640	15,088	23,312	15,132	26,206	17,013	17,070	10,021
MEAN	74.7	71.1	100	236	380	487	777	488	874	549	551	334
MAX	97	91	547	507	1,360	1,330	1,350	1,020	1,410	1,410	1,350	792
MIN	52	50	44	47	55	61	65	66	66	67	60	67
(†)	+913	+5,994	+4,865	-1,129	+4,598	+771	-978	+30	-353	-131	-1,316	-1,321
MEAN‡	104	271	257	199	544	512	744	489	862	545	508	290
CFSM‡	.48	1.25	1.19	.92	2.52	2.37	3.44	2.26	3.99	2.52	2.35	1.34
IN.‡	.56	1.40	1.37	1.06	2.62	2.73	3.84	2.61	4.45	2.91	2.71	1.50

CAL YR 2002 MEAN‡ 132 CFSM‡ .61 IN.‡ 8.30
WTR YR 2003 MEAN‡ 442 CFSM‡ 2.05 IN.‡ 27.78

† Total change in contents, equivalent in cubic feet per second, per month, in Philpott Lake; provided by U.S. Army Corps of Engineers.
‡ Adjusted for change in contents.

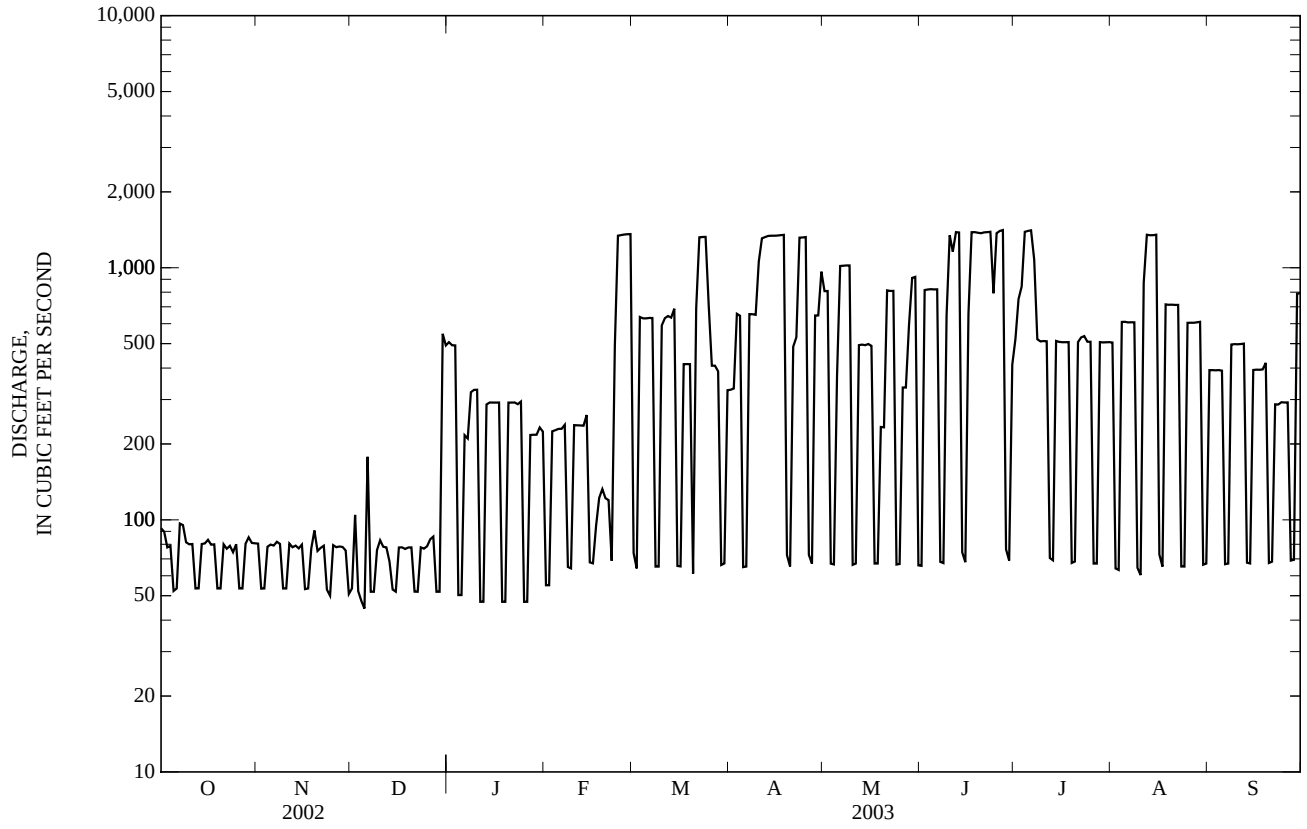
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2003, BY WATER YEAR (WY)

MEAN	228	219	240	266	264	327	376	302	283	241	257	253
MAX	755	835	586	526	718	946	1,194	796	874	646	551	724
(WY)	(1990)	(1986)	(1997)	(1991)	(1973)	(1993)	(1983)	(1978)	(2003)	(1972)	(2003)	(1979)
MIN	74.7	70.5	88.0	71.1	58.2	60.5	69.2	61.3	67.2	77.6	74.8	71.2
(WY)	(2003)	(1953)	(1996)	(1953)	(1953)	(1953)	(1969)	(1964)	(1964)	(2002)	(2002)	(2002)

02072000 SMITH RIVER NEAR PHILPOTT, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1951 - 2003	
ANNUAL TOTAL	32,990		149,346			
ANNUAL MEAN	90.4		409		271	
HIGHEST ANNUAL MEAN					441	1973
LOWEST ANNUAL MEAN					113	2002
HIGHEST DAILY MEAN	547	Dec 30	1,410	aJun 27	5,710	Apr 24, 1992
LOWEST DAILY MEAN	44	Dec 5	44	Dec 5	b20	Mar 24, 1984
ANNUAL SEVEN-DAY MINIMUM	61	Nov 29	61	Nov 29	42	Mar 2, 1953
MAXIMUM PEAK FLOW			1,550	Dec 6	c9,500	Dec 7, 1950
MAXIMUM PEAK STAGE			5.27	Dec 6	c15.00	Dec 7, 1950
INSTANTANEOUS LOW FLOW			19	dNov 8	f,g2.3	Dec 16, 1985
ANNUAL RUNOFF (CFSM)	0.42		1.89		1.26	
ANNUAL RUNOFF (INCHES)	5.68		25.72		17.06	
10 PERCENT EXCEEDS	117		1,320		647	
50 PERCENT EXCEEDS	81		238		203	
90 PERCENT EXCEEDS	53		53		46	

a Also July 6, 2003.
b Result of turbines being shut down for repair at Philpott Dam.
c Prior to regulation, 1947-50, maximum peak flow, 17,000 ft^3/s, June 29, 1949, gage height, 20.30 ft.
d Also Nov. 29 and Dec. 2, 2002.
f Prior to regulation, 1947-50, instantaneous low flow, 21 ft^3/s, Aug. 15, 1950.
g Result of repair at dam but may have been less during periods of estimated record.



02072500 SMITH RIVER AT BASSETT, VA

LOCATION.--Lat 36°46'12", long 80°00'03", NAD83, Henry County, Hydrologic Unit 03010103, on left bank 25 ft upstream from bridge on State Highway 666 at north edge of North Bassett, 1.0 mi northwest of Bassett, 3.0 mi downstream from Town Creek, 5.6 mi upstream from Reed Creek, 6.2 mi downstream from Philpott Dam, and at mile 38.1.

DRAINAGE AREA.--259 mi^2.

PERIOD OF RECORD.--April 1939 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 753.09 ft NGVD of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--No estimated daily discharges. Records good. Since August 1950, flow regulated by Philpott Lake (station 02071900) 6.2 mi upstream. Diversion upstream from station by Henry County Public Service Authority, since 1985, has averaged less than 1.0 ft^3/s. Statistics of monthly mean data and summary statistics for water years 1940 - 1950 (unregulated flow) are available in previous data books, water years 1991 - 1998. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 19, 1937, reached a stage of about 22.9 ft, from information by local residents, discharge, 38,000 ft^3/s, from rating curve extended above 23,000 ft^3/s on basis of backwater studies and records for station at Martinsville.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	110	113	81	578	100	308	409	962	137	571	586	467
2	107	85	130	545	90	185	402	902	862	901	141	459
3	96	80	80	562	239	719	669	212	896	973	137	485
4	95	102	79	159	266	709	719	296	915	1,480	653	510
5	69	110	81	115	267	706	187	464	898	1,470	809	476
6	69	129	192	252	275	713	115	1,110	890	1,510	741	126
7	105	119	90	247	270	704	798	1,130	290	1,290	689	118
8	107	110	82	336	92	152	789	1,120	240	571	766	561
9	96	84	106	355	90	124	985	1,120	670	567	301	563
10	95	82	110	352	265	629	1,570	206	1,440	557	190	561
11	110	412	173	108	265	691	1,680	138	1,240	566	994	559
12	80	383	159	84	267	703	1,530	556	1,670	132	1,500	561
13	72	204	219	300	266	699	1,510	562	1,620	126	1,470	117
14	93	136	210	313	295	753	1,490	558	314	746	1,490	114
15	99	126	131	312	129	143	1,490	574	231	581	1,480	448
16	142	145	134	313	258	154	1,490	570	898	567	272	450
17	118	250	125	313	172	489	1,490	142	1,760	560	133	447
18	103	157	120	89	173	485	1,520	147	1,590	558	768	480
19	78	147	117	81	183	479	322	325	1,840	141	792	546
20	74	121	179	300	204	1,170	167	302	1,540	132	793	124
21	98	119	123	312	249	839	564	876	1,500	548	793	113
22	98	116	106	311	1,060	1,490	531	904	1,480	592	808	344
23	100	88	124	282	686	1,460	1,440	924	1,470	609	160	440
24	92	83	174	334	1,510	1,450	1,440	176	854	568	158	366
25	101	111	241	88	1,490	909	1,450	149	1,430	558	671	355
26	83	109	168	79	1,480	465	283	447	1,450	125	677	352
27	77	108	147	227	1,490	469	158	462	1,460	115	677	116
28	109	107	105	238	1,520	446	716	651	254	557	676	115
29	140	105	100	240	---	129	734	1,010	127	547	705	826
30	174	80	501	257	---	186	1,020	1,010	436	582	141	866
31	127	---	531	250	---	446	---	209	---	586	123	---
TOTAL	3,117	4,121	4,918	8,332	13,651	19,004	27,668	18,214	30,402	19,386	20,294	12,065
MEAN	101	137	159	269	488	613	922	588	1,013	625	655	402
MAX	174	412	531	578	1,520	1,490	1,680	1,130	1,840	1,510	1,500	866
MIN	69	80	79	79	90	124	115	138	127	115	123	113
(†)	+913	+5,994	+4,865	-1,129	+4,598	+771	-978	+30	-353	-131	-1,316	-1,321
MEAN‡	130	337	316	232	652	638	890	589	1,002	621	612	358
CFSM‡	.50	1.30	1.22	.90	2.52	2.46	3.44	2.27	3.87	2.40	2.36	1.38
IN.‡	.58	1.45	1.41	1.03	2.62	2.84	3.83	2.62	4.32	2.77	2.73	1.54

CAL YR 2002 MEAN‡ 160 CFSM‡ .62 IN.‡ 8.38
WTR YR 2003 MEAN‡ 529 CFSM‡ 2.04 IN.‡ 27.74

† Total change in contents, equivalent in cubic feet per second, per month, in Philpott Lake; provided by U.S. Army Corps of Engineers.
‡ Adjusted for change in contents.

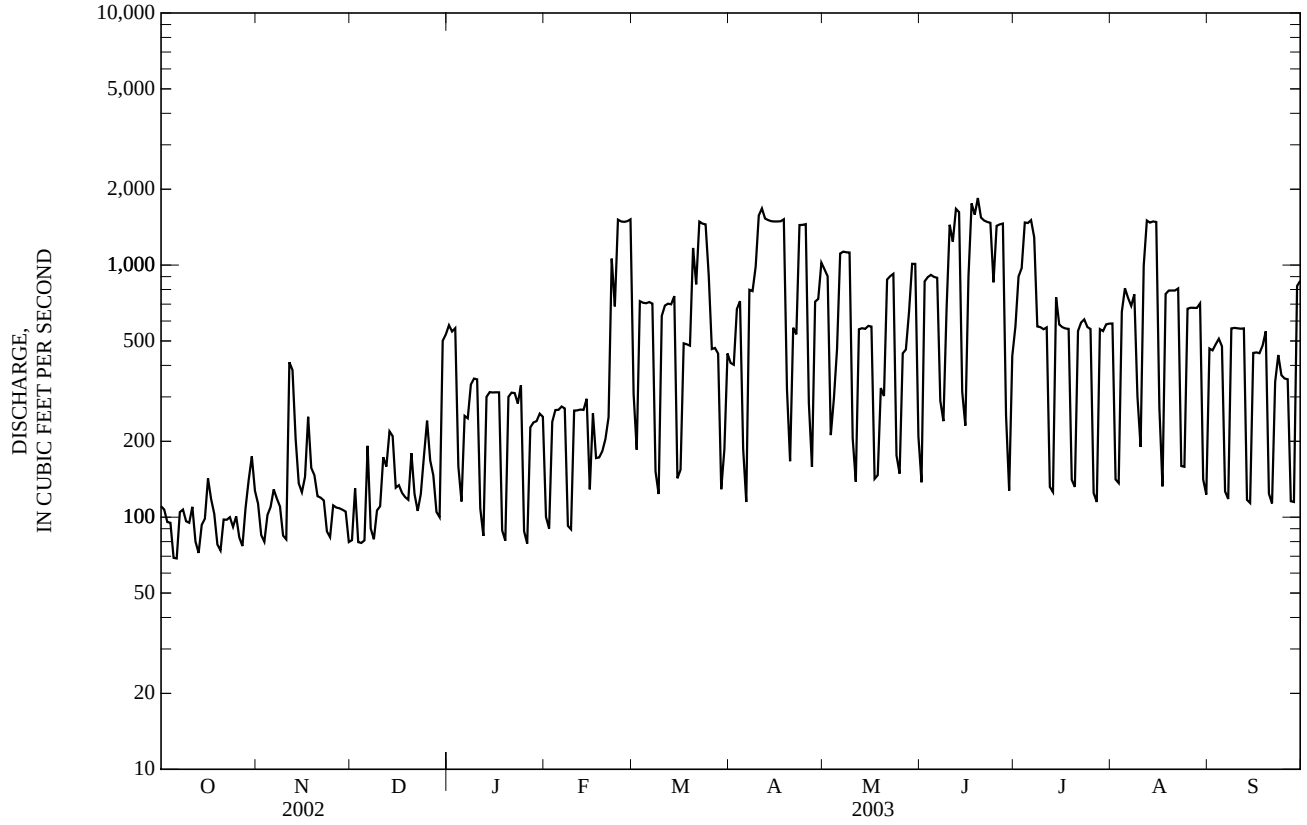
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2003, BY WATER YEAR (WY)

MEAN	268	262	289	324	332	404	453	363	336	282	297	300
MAX	944	996	724	655	846	1,197	1,474	902	1,013	759	655	912
(WY)	(1990)	(1986)	(1997)	(1991)	(1998)	(1993)	(1987)	(1978)	(2003)	(1972)	(2003)	(1979)
MIN	101	98.4	110	107	110	114	98.6	86.7	84.4	89.7	83.1	89.7
(WY)	(2003)	(1953)	(1996)	(1989)	(1989)	(1982)	(1969)	(1964)	(1964)	(2002)	(2002)	(2002)

02072500 SMITH RIVER AT BASSETT, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1951 - 2003	
ANNUAL TOTAL	43,120		181,172			
ANNUAL MEAN	118		496		326	
HIGHEST ANNUAL MEAN					523	1987
LOWEST ANNUAL MEAN					131	2002
HIGHEST DAILY MEAN	531	Dec 31	1,840	Jun 19	6,080	Apr 24, 1992
LOWEST DAILY MEAN	62	aAug 10	69	bOct 5	44	Aug 23, 1964
ANNUAL SEVEN-DAY MINIMUM	80	Aug 9	91	Oct 4	67	Oct 6, 1980
MAXIMUM PEAK FLOW			3,120	Feb 22	c17,700	Sep 7, 1987
MAXIMUM PEAK STAGE			5.80	Feb 22	c15.20	Sep 7, 1987
INSTANTANEOUS LOW FLOW			57	Oct 24	d19	Jul 19, 1956
ANNUAL RUNOFF (CFSM)	0.46		1.92		1.26	
ANNUAL RUNOFF (INCHES)	6.19		26.02		17.09	
10 PERCENT EXCEEDS	190		1,440		718	
50 PERCENT EXCEEDS	99		312		240	
90 PERCENT EXCEEDS	76		98		76	

a Also Aug. 24, 25, 2002.
b Also Oct. 6, 2002.
c Prior to regulation, 1940-50, maximum peak flow, 26,600 ft^3/s, Aug. 14, 1940, gage height, 18.28 ft.
d Prior to regulation, 1940-50, instantaneous low flow, 58 ft^3/s, Jan. 3, 1940.



02073000 SMITH RIVER AT MARTINSVILLE, VA

LOCATION.--Lat 36°39'40", long 79°52'50", NAD83, Henry County, Hydrologic Unit 03010103, on right bank at south edge of Martinsville, 800 ft downstream from bridge on U.S. Highways 58 and 220, and 5.0 mi downstream from Beaver Creek.

DRAINAGE AREA.--380 mi^2.

PERIOD OF RECORD.--August 1929 to current year.

REVISED RECORDS.--WSP 1032: 1933-35(M), 1936-39, 1940-41(P). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 657.22 ft NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since August 1950 by Philpott Lake (station 02071900) 19.6 mi upstream from station. Some additional regulation by powerplant 1,000 ft upstream from station. Statistics of monthly mean data and summary statistics for water years 1930-1950 (unregulated flow) are available in previous data books, water years 1991-1998. Maximum discharge, 39,000 ft^3/s, from rating curve extended above 17,000 ft^3/s on basis of computations of flow over dam at gage heights 16.76 ft and 21.50 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	124	184	102	762	143	834	597	1,150	309	719	837	512
2	144	91	199	782	169	445	595	1,010	754	1,340	546	670
3	135	101	151	792	328	713	504	531	1,070	1,550	398	713
4	106	168	236	467	265	832	845	587	1,380	1,760	680	1,390
5	71	126	149	263	386	807	571	411	2,310	1,730	1,130	863
6	86	295	164	423	429	853	242	1,200	1,090	1,740	1,150	526
7	117	157	164	353	387	821	1,160	1,240	1,520	1,730	1,060	302
8	160	173	149	362	221	406	1,180	1,220	916	584	1,070	605
9	138	83	254	445	90	227	1,820	1,210	1,370	757	901	789
10	105	94	176	435	371	586	2,700	605	1,650	721	734	764
11	297	560	349	238	353	737	2,460	290	1,520	763	1,620	749
12	65	1,020	413	167	375	756	1,810	463	2,010	519	2,020	768
13	79	502	712	370	365	733	1,710	644	2,160	322	1,900	490
14	246	336	837	384	374	834	1,650	639	840	1,790	1,900	282
15	119	251	247	381	265	393	1,630	661	536	777	1,890	447
16	404	395	331	396	730	449	1,610	690	1,380	744	825	638
17	278	901	254	395	378	590	1,600	452	2,410	727	363	623
18	152	301	163	166	326	679	1,680	293	2,010	699	809	873
19	74	288	253	147	350	600	840	416	2,320	473	1,080	976
20	78	249	406	351	450	5,920	359	432	1,860	269	1,080	533
21	104	212	236	393	596	1,510	514	828	1,730	474	1,070	273
22	284	198	228	381	2,970	1,770	725	1,130	1,670	735	1,070	436
23	126	91	278	385	1,230	1,680	1,480	1,140	1,640	988	712	3,250
24	117	152	395	342	1,700	1,630	1,540	609	993	871	461	762
25	127	249	750	200	1,620	952	1,540	848	1,590	729	691	574
26	75	174	445	147	1,580	462	706	931	1,600	486	935	528
27	91	205	294	305	1,720	598	317	1,030	1,610	244	922	363
28	281	94	184	309	1,730	607	583	988	638	495	910	336
29	316	224	208	306	---	329	834	1,260	262	705	940	716
30	350	89	537	321	---	574	1,110	1,200	435	811	714	1,070
31	266	---	604	354	---	712	---	696	---	871	379	---
TOTAL	5,115	7,963	9,868	11,522	19,901	29,039	34,912	24,804	41,583	27,123	30,797	21,821
MEAN	165	265	318	372	711	937	1,164	800	1,386	875	993	727
MAX	404	1,020	837	792	2,970	5,920	2,700	1,260	2,410	1,790	2,020	3,250
MIN	65	83	102	147	90	227	242	290	262	244	363	273
(†)	+913	+5,994	+4,865	-1,129	+4,598	+771	-978	+30	-353	-131	-1,316	-1,321
MEAN‡	194	465	475	335	875	962	1,131	801	1,374	871	951	683
CFSM‡	.51	1.22	1.25	.88	2.30	2.53	2.98	2.11	3.62	2.29	2.50	1.80
IN.‡	.59	1.37	1.44	1.02	2.40	2.92	3.32	2.43	4.04	2.64	2.89	2.01

CAL YR 2002 MEAN‡ 236 CFSM‡ .62 IN.‡ 8.42
WTR YR 2003 MEAN‡ 757 CFSM‡ 1.99 IN.‡ 27.05

† Total change in contents, equivalent in cubic feet per second, per month, in Philpott Lake; provided by U.S. Army Corps of Engineers.
‡ Adjusted for change in contents.

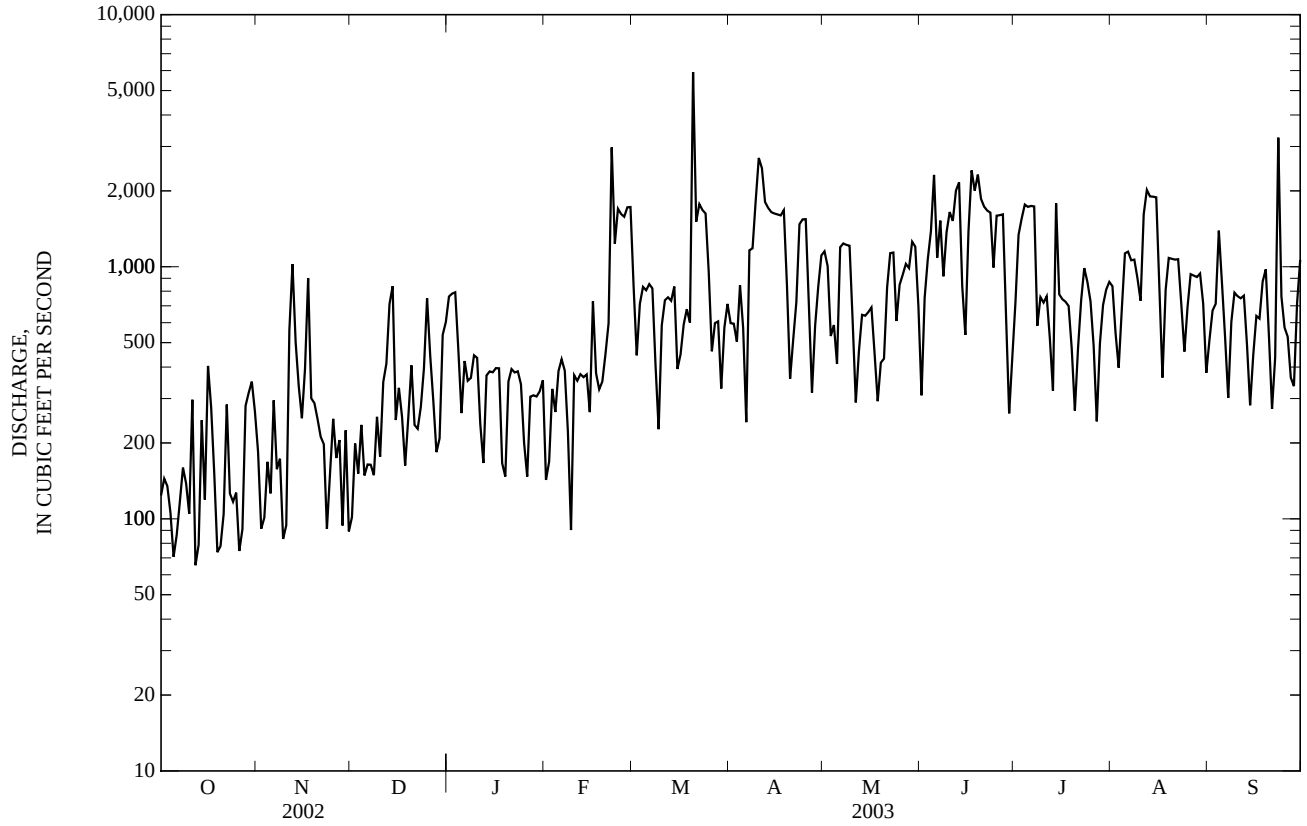
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2003, BY WATER YEAR (WY)

MEAN	382	378	422	487	511	614	637	521	486	414	410	429
MAX	1,389	1,266	988	1,000	1,212	1,735	2,206	1,138	1,467	1,174	1,032	1,624
(WY)	(1990)	(1986)	(1997)	(1991)	(1998)	(1993)	(1987)	(1978)	(1992)	(1989)	(1985)	(1987)
MIN	163	162	203	206	179	233	175	164	120	125	95.6	132
(WY)	(1952)	(1953)	(2001)	(1957)	(2002)	(1981)	(2002)	(1964)	(2002)	(2002)	(2002)	(2002)

02073000 SMITH RIVER AT MARTINSVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1951 - 2003	
ANNUAL TOTAL	70,768		264,448			
ANNUAL MEAN	194		725		474	
HIGHEST ANNUAL MEAN					817	1987
LOWEST ANNUAL MEAN					187	2002
HIGHEST DAILY MEAN	1,400	Mar 18	5,920	Mar 20	11,300	Sep 8, 1987
LOWEST DAILY MEAN	59	Sep 13	65	Oct 12	24	Oct 2, 1982
ANNUAL SEVEN-DAY MINIMUM	82	Aug 9	112	Oct 1	82	Aug 9, 2002
MAXIMUM PEAK FLOW			11,200	Mar 20	a34,600	Sep 8, 1987
MAXIMUM PEAK STAGE			10.27	Mar 20	a20.08	Sep 8, 1987
INSTANTANEOUS LOW FLOW			43	bNov 4	c3.8	Mar 19, 1955
ANNUAL RUNOFF (CFSM)	0.51		1.91		1.25	
ANNUAL RUNOFF (INCHES)	6.93		25.89		16.95	
10 PERCENT EXCEEDS	315		1,630		903	
50 PERCENT EXCEEDS	157		571		351	
90 PERCENT EXCEEDS	79		152		161	

a Prior to regulation, 1930-50, maximum peak flow, 39,000 ft^3/s, Oct. 19, 1937, gage height, 21.50 ft.
b Also Nov. 5, 2002.
c Prior to regulation, 1930-50, instantaneous low flow, 5.0 ft^3/s, May 20, 1934.



02074000 SMITH RIVER AT EDEN, NC

LOCATION.--Lat 36°31'31", long 79°45'56", Rockingham County, Hydrologic Unit 03010103, on right bank at Eden, 0.3 mi downstream of bridge on State Highway 14, 0.8 mi upstream from bridge on Secondary Road 1714, 1.2 mi south of Virginia-North Carolina State line, 1.3 mi downstream of Stuart Creek, and 3.9 mi upstream from mouth.

DRAINAGE AREA.--538 mi^2.

PERIOD OF RECORD.--October 1939 to current year. Prior to October 1970, published as "Smith River at Spray".

REVISED RECORDS.--WSP 1433: 1946.

GAGE.--Water-stage recorder. Datum of gage is 539.56 ft above NGVD of 1929. Satellite telemetry at station.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated since August 1950 by Philpott Lake, 40 mi upstream (usable capacity, 6,325,000,000 ft^3). Additional regulation by hydroelectric plant at Martinsville, Virginia, 18 mi upstream. Maximum discharge prior to regulation: 45,600 ft^3/s, Aug. 15, 1940, from rating curve extended above 12,000 ft^3/s on the basis of computation of peak flow over dam 1.5 mi downstream; gage height: 19.28 ft. Minimum discharge for current water year also occurred Oct. 11.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	245	292	150	890	321	1,630	819	1,400	507	803	1,060	e900
2	151	177	247	1,020	236	788	770	1,130	579	1,280	924	e700
3	166	166	188	987	352	795	581	980	1,190	1,990	568	e600
4	154	230	280	843	419	1,010	948	738	1,410	1,870	947	e1,400
5	124	229	242	463	375	949	870	695	3,840	1,780	1,140	1,300
6	84	455	232	508	386	996	419	1,010	1,590	1,760	1,370	889
7	100	346	222	481	626	940	1,590	1,340	2,670	1,780	1,450	576
8	127	274	210	456	400	731	1,640	1,310	2,170	968	1,100	551
9	167	176	309	530	222	394	2,770	1,310	3,110	866	1,240	946
10	150	163	240	509	402	528	4,150	1,150	2,110	922	771	949
11	305	490	511	422	424	819	4,130	446	1,970	892	2,140	911
12	372	1,300	701	249	441	838	2,290	499	2,550	850	2,160	865
13	134	1,200	945	357	502	836	2,010	825	3,070	549	1,870	975
14	140	508	1,590	462	412	896	1,840	825	1,700	2,580	1,780	519
15	262	385	628	449	379	709	1,760	834	921	1,190	1,730	537
16	421	429	593	449	1,210	906	1,700	901	2,080	996	1,300	826
17	447	1,540	424	459	703	881	1,660	851	3,270	1,050	529	805
18	322	784	316	362	573	855	1,700	532	2,640	935	719	872
19	212	478	342	185	554	779	1,430	686	2,800	897	1,110	1,540
20	133	395	522	348	683	11,400	507	697	2,260	530	1,060	992
21	166	338	448	444	922	3,750	557	649	1,950	508	1,060	501
22	213	302	381	442	4,460	2,360	863	1,490	1,840	901	1,060	530
23	288	196	426	432	3,480	2,050	1,310	1,480	1,770	944	1,030	4,160
24	180	196	544	402	1,860	1,900	1,550	1,170	1,250	1,300	631	1,550
25	167	318	1,370	379	1,910	1,770	1,550	1,060	1,610	922	503	1,130
26	201	256	850	226	1,760	819	1,210	1,520	1,650	880	950	1,050
27	145	240	527	267	1,860	810	453	1,300	1,670	435	992	995
28	169	202	325	408	2,000	782	514	1,490	1,170	456	916	667
29	377	256	353	381	---	606	922	1,310	488	888	e800	785
30	531	178	460	399	---	762	1,050	1,400	518	915	e600	1,300
31	513	---	682	431	---	1,060	---	1,260	---	899	e800	---
TOTAL	7,166	12,499	15,258	14,640	27,872	44,349	43,563	32,288	56,353	33,536	34,310	30,321
MEAN	231	417	492	472	995	1,431	1,452	1,042	1,878	1,082	1,107	1,011
MAX	531	1,540	1,590	1,020	4,460	11,400	4,150	1,520	3,840	2,580	2,160	4,160
MIN	84	163	150	185	222	394	419	446	488	435	503	501
†	+29	+200	+157	-36	+164	+25	-33	+1	-12	-4	-42	-44

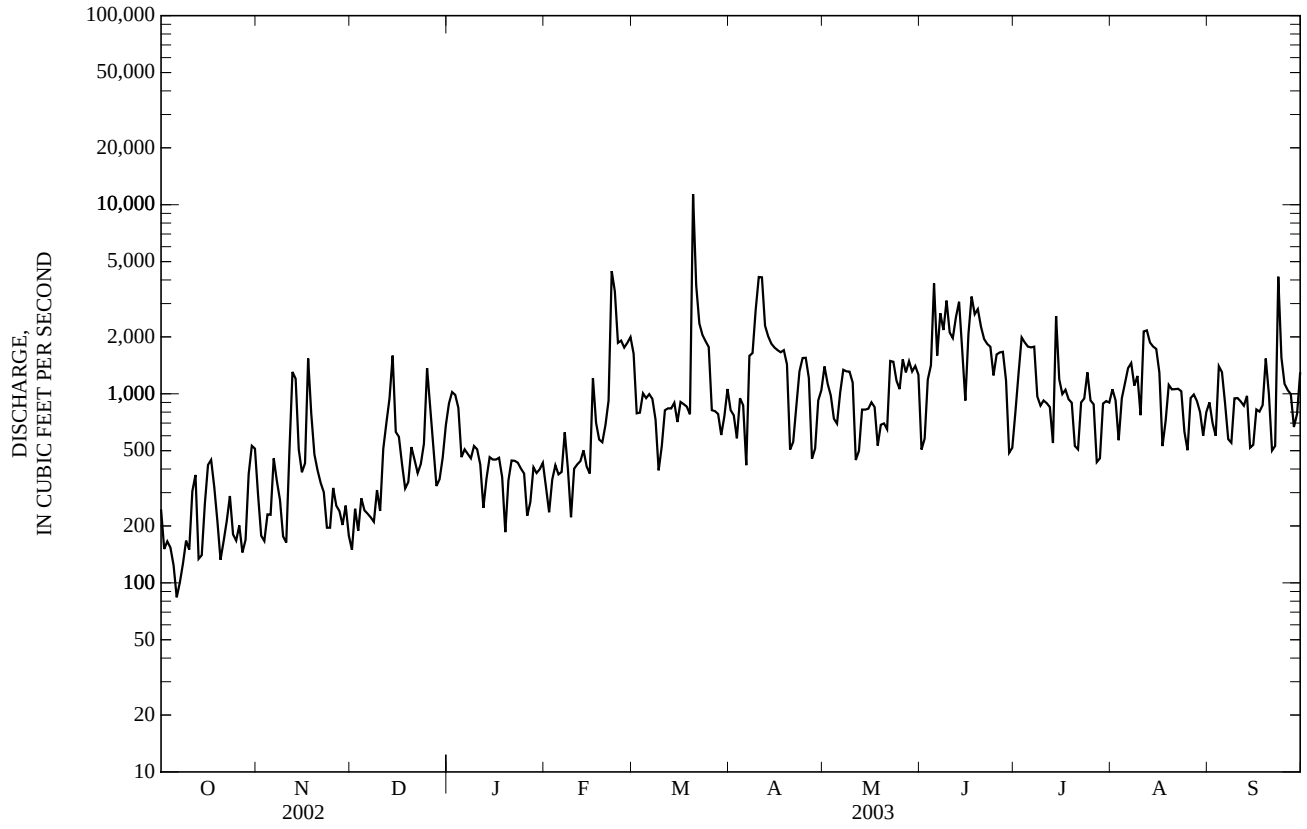
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2003,* BY WATER YEAR (WY)

MEAN	496	491	576	678	728	892	883	707	649	510	495	528
MAX	1,572	1,530	1,376	1,453	1,633	2,519	3,016	1,567	2,026	1,374	1,454	2,030
(WY)	(1990)	(1986)	(1997)	(1979)	(1998)	(1993)	(1987)	(1978)	(1972)	(1989)	(1985)	(1996)
MIN	201	211	267	291	249	331	248	266	146	151	126	165
(WY)	(1952)	(1982)	(2001)	(1989)	(2002)	(1967)	(2002)	(1964)	(2002)	(2002)	(2002)	(2002)

02074000 SMITH RIVER AT EDEN, NC—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1951 - 2003*	
ANNUAL TOTAL	102,288		352,155	‡998		(UNADJUSTED)
ANNUAL MEAN	280		965		635	
HIGHEST ANNUAL MEAN					1,010	1987
LOWEST ANNUAL MEAN					254	2002
HIGHEST DAILY MEAN	2,560	May 9	11,400	Mar 20	16,700	Jun 21, 1972
LOWEST DAILY MEAN	73	Jul 21	84	Oct 6	46	Aug 14, 1967
ANNUAL SEVEN-DAY MINIMUM	100	Aug 10	129	Oct 2	100	Aug 10, 2002
MAXIMUM PEAK FLOW			16,800	Mar 20	24,800	Jun 21, 1972
MAXIMUM PEAK STAGE			13.06	Mar 20	16.24	Jun 21, 1972
INSTANTANEOUS LOW FLOW			76*	Oct 10	38	Aug 7, 1967
10 PERCENT EXCEEDS	451		1,860		1,170	
50 PERCENT EXCEEDS	228		800		445	
90 PERCENT EXCEEDS	113		230		219	

e Estimated.
† Change in contents, equivalent in cubic feet per second, in Philpott Lake provided by U.S. Army Corps of Engineers.
‡ Adjusted for change in contents.
* Regulated period only (1951-2003). See REMARKS.



02074500 SANDY RIVER NEAR DANVILLE, VA

LOCATION.--Lat 36°37'10", long 79°30'15", NAD83, Pittsylvania County, Hydrologic Unit 03010103, on right bank 200 ft downstream from Hickory Forest Creek, 400 ft upstream from bridge on State Highway 863 between Callahans Store and Mount Cross, 5.5 mi northwest of western city limits of Danville, and 5.8 mi upstream from mouth.

DRAINAGE AREA.--112 mi^2.

PERIOD OF RECORD.--October 1929 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 972: 1930-41. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 460.38 ft NGVD of 1929. Prior to June 26, 1942, at site 1,200 ft downstream at datum 5.57 ft lower.

REMARKS.--Records good except those for periods with ice effect, Dec. 6-8 and Jan. 17-20, 23-25, which are fair. Diurnal fluctuation at low flow caused by small mill upstream from station. Maximum discharge, 23,000 ft^3/s, from rating curve extended above 11,000 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1700	4,480	6.73	Jun 16	1530	3,570	6.16
Mar 20	1100	*6,380	*7.83	Aug 11	0030	2,210	5.15
Apr 11	0000	2,140	5.08	Sep 23	0430	1,670	4.61
Jun 5	0830	2,320	5.24	Sep 23	1130	1,520	4.45
Jun 12	2230	1,760	4.71				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	58	35	227	70	347	178	138	155	106	78	90
2	20	48	34	256	65	392	148	109	112	253	75	80
3	20	43	35	247	63	245	131	96	124	327	153	79
4	19	43	35	219	74	172	121	137	180	163	501	212
5	19	47	45	148	82	150	118	116	985	119	189	137
6	19	134	e44	121	70	170	112	113	231	103	121	95
7	18	81	e40	103	83	145	702	104	665	99	362	86
8	18	58	e42	96	78	124	427	95	487	92	200	82
9	18	51	39	90	70	115	1,060	91	461	86	139	80
10	19	48	38	85	78	105	1,540	89	227	91	247	77
11	81	152	125	79	85	98	940	94	177	82	945	74
12	76	434	155	76	83	95	340	85	775	80	221	72
13	38	310	513	73	77	95	231	78	810	87	152	81
14	31	128	612	71	74	105	190	74	339	131	148	94
15	27	89	240	70	105	90	169	76	289	95	115	85
16	85	157	157	67	432	232	155	87	1,100	83	110	85
17	88	669	119	e66	209	261	140	80	620	83	117	74
18	45	235	100	e62	149	166	136	104	371	76	194	132
19	36	114	89	e72	170	132	153	140	375	74	110	393
20	32	81	173	e69	257	4,060	135	100	250	73	99	141
21	51	67	166	64	344	824	127	96	178	73	93	104
22	48	59	111	61	2,060	327	122	153	149	74	88	94
23	40	51	91	e60	1,020	222	111	208	128	101	167	837
24	35	47	271	e55	300	181	106	156	114	144	229	236
25	33	45	796	e61	197	155	107	209	104	83	111	142
26	43	43	288	64	160	140	110	469	98	72	92	116
27	42	41	165	60	174	128	106	364	93	68	86	128
28	42	39	126	e59	292	121	99	412	94	68	83	159
29	72	38	108	66	---	124	96	201	93	72	80	101
30	112	38	97	68	---	287	93	159	110	85	78	90
31	91	---	89	73	---	292	---	146	---	76	87	---
TOTAL	1,339	3,448	4,978	2,988	6,921	10,100	8,203	4,579	9,894	3,219	5,470	4,256
MEAN	43.2	115	161	96.4	247	326	273	148	330	104	176	142
MAX	112	669	796	256	2,060	4,060	1,540	469	1,100	327	945	837
MIN	18	38	34	55	63	90	93	74	93	68	75	72
CFSM	0.39	1.03	1.43	0.86	2.21	2.91	2.44	1.32	2.94	0.93	1.58	1.27
IN.	0.44	1.15	1.65	0.99	2.30	3.35	2.72	1.52	3.29	1.07	1.82	1.41

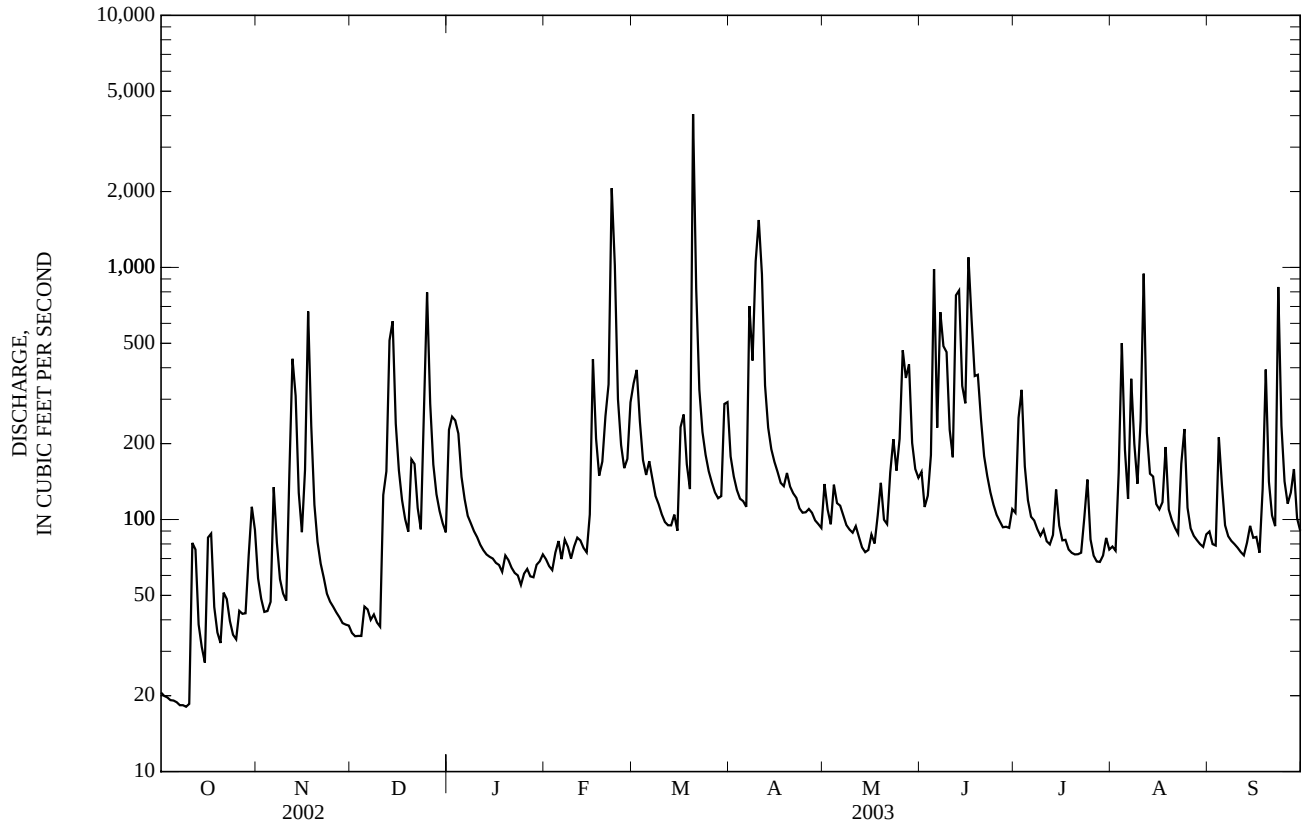
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2003, BY WATER YEAR (WY)

MEAN	81.4	82.9	106	138	147	174	147	110	90.0	74.2	81.8	86.8
MAX	366	281	249	409	369	738	591	279	376	265	556	739
(WY)	(1938)	(1958)	(1974)	(1936)	(1979)	(1975)	(1987)	(1971)	(1972)	(1989)	(1940)	(1996)
MIN	19.2	26.5	35.2	31.5	40.2	63.9	42.5	52.8	23.0	19.0	11.6	14.2
(WY)	(2002)	(2002)	(1934)	(1934)	(1934)	(1967)	(2002)	(1986)	(2002)	(2002)	(2002)	(1930)

02074500 SANDY RIVER NEAR DANVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1930 - 2003	
ANNUAL TOTAL	23,557.1		65,395			
ANNUAL MEAN	64.5		179		110	
HIGHEST ANNUAL MEAN					191	1996
LOWEST ANNUAL MEAN					44.8	2002
HIGHEST DAILY MEAN	2,430	May 9	4,060	Mar 20	8,340	Sep 6, 1996
LOWEST DAILY MEAN	6.4	aAug 23	18	bOct 7	6.4	aAug 23, 2002
ANNUAL SEVEN-DAY MINIMUM	7.8	Aug 9	19	Oct 4	7.8	Aug 9, 2002
MAXIMUM PEAK FLOW			6,380	Mar 20	23,000	Aug 14, 1940
MAXIMUM PEAK STAGE			7.83	Mar 20	c14.80	Aug 14, 1940
INSTANTANEOUS LOW FLOW			18	dOct 6	3.0	Sep 29, 1930
ANNUAL RUNOFF (CFSM)	0.58		1.60		0.98	
ANNUAL RUNOFF (INCHES)	7.82		21.72		13.31	
10 PERCENT EXCEEDS	109		342		166	
50 PERCENT EXCEEDS	39		104		71	
90 PERCENT EXCEEDS	14		44		34	

a Also Aug. 24, 2002.
b Also Oct. 8, 9, 2002.
c From floodmarks, present datum.
d Also Oct. 7-10, 2002.
e Estimated.



02075045 DAN RIVER AT SEWAGE TREATMENT PLANT, NEAR DANVILLE, VA

LOCATION.--Lat 36°33'46", long 79°22'11", NAD83, Pittsylvania County, Hydrologic Unit 03010104, on right bank at foot- bridge at Danville sewage treatment plant, 0.1 mi downstream from Pumpkin Creek, and 0.6 mi southeast of Danville.

DRAINAGE AREA.--2,105 mi^2, approximately .

PERIOD OF RECORD.--October 1995 to current year.

REVISED RECORDS.--WDR VA-01-1: 1996-2000(m).

GAGE.--Water-stage recorder. Datum of gage is 365.19 ft NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good except for discharges greater than 5,000 ft^3/s, which are fair. Diurnal fluctuation caused by mills and hydroelectric generating facility at Schoolfield Dam 5.2 mi upstream. Since August 1950, flow regulated by Philpott Lake (station 02071900) 76.6 mi upstream. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	381	1,580	858	2,380	1,430	6,570	4,140	3,580	3,050	2,320	2,600	2,090
2	433	1,020	516	3,210	1,100	5,040	3,470	3,870	2,670	3,190	2,870	2,490
3	226	867	829	2,990	949	4,240	3,190	3,430	3,020	5,760	2,430	2,320
4	425	540	888	3,310	1,230	3,400	2,960	3,000	5,590	4,550	7,340	6,710
5	425	908	822	2,500	1,420	2,950	2,940	3,440	11,200	3,610	5,040	13,100
6	204	1,440	1,020	2,000	1,520	3,080	2,600	3,480	6,080	3,480	4,150	4,370
7	220	1,770	1,100	1,770	1,550	3,410	5,540	3,790	6,920	4,550	5,120	3,100
8	325	1,340	989	1,680	1,520	2,980	9,240	3,590	12,900	3,850	8,900	2,710
9	294	1,130	800	1,610	1,520	2,370	10,600	3,390	16,500	2,620	6,530	2,720
10	242	840	1,020	1,630	1,110	2,190	18,900	3,260	8,540	2,660	4,440	2,720
11	1,190	876	1,860	1,420	1,520	2,390	27,500	2,500	5,210	2,680	14,400	2,590
12	1,460	3,170	3,830	1,330	1,520	2,310	22,300	2,220	6,380	2,540	10,300	2,410
13	801	6,270	4,450	1,160	1,430	2,240	6,850	2,390	8,640	2,290	5,690	2,450
14	561	3,000	10,100	1,170	1,420	2,290	5,240	2,360	5,800	4,520	5,780	2,340
15	544	2,030	4,910	1,320	1,440	2,500	4,860	2,360	5,510	5,810	4,170	2,090
16	1,020	1,540	2,800	1,310	2,380	3,310	4,490	2,450	11,700	3,060	3,700	2,110
17	2,160	7,270	2,130	1,150	2,910	7,570	4,190	2,500	13,400	3,200	2,890	2,230
18	1,670	5,760	1,710	1,260	2,370	4,310	3,970	2,470	8,640	3,060	3,900	2,370
19	832	2,750	1,400	1,060	2,200	3,200	4,420	3,000	7,080	2,430	3,410	4,270
20	525	1,960	1,650	682	2,720	24,300	4,370	2,740	7,190	2,350	2,920	3,400
21	1,040	1,500	2,490	1,270	3,180	37,100	3,490	2,510	5,240	2,410	2,740	2,500
22	1,070	1,400	2,140	1,290	9,350	31,500	3,470	3,340	4,300	2,460	2,690	2,100
23	995	1,020	1,720	1,180	25,200	6,590	3,380	5,090	3,870	2,770	2,960	12,200
24	877	1,280	2,180	1,030	12,200	5,000	3,850	4,250	3,590	3,260	2,770	11,200
25	518	985	5,960	1,040	5,080	4,480	3,780	3,320	3,070	2,920	2,430	3,430
26	555	1,090	5,430	1,040	3,970	3,860	3,790	12,000	3,290	2,380	2,330	2,760
27	753	924	2,890	1,030	3,900	3,350	3,330	8,310	3,190	1,970	2,280	2,560
28	711	889	2,120	893	5,580	3,240	3,190	5,460	3,160	1,820	2,260	2,350
29	1,180	514	1,710	1,300	---	3,140	3,130	4,150	2,360	2,110	2,230	2,300
30	1,950	954	1,420	1,410	---	3,700	2,950	3,920	2,210	2,330	2,260	2,320
31	2,110	---	1,730	1,440	---	5,960	---	3,670	---	2,490	2,190	---
TOTAL	25,697	56,617	73,472	47,865	101,719	198,570	186,130	115,840	190,300	95,450	133,720	112,310
MEAN	829	1,887	2,370	1,544	3,633	6,405	6,204	3,737	6,343	3,079	4,314	3,744
MAX	2,160	7,270	10,100	3,310	25,200	37,100	27,500	12,000	16,500	5,810	14,400	13,100
MIN	204	514	516	682	949	2,190	2,600	2,220	2,210	1,820	2,190	2,090
(†)	+913	+5,994	+4,865	-1,129	+4,598	+771	-978	+30	-353	-131	-1,316	-1,321
MEAN‡	858	2,087	2,527	1,508	3,797	6,430	6,172	3,738	6,332	3,075	4,271	3,700
CFSM‡	.41	.99	1.20	.72	1.80	3.05	2.93	1.78	3.01	1.46	2.03	1.76
IN.‡	.47	1.11	1.38	.83	1.88	3.52	3.27	2.05	3.36	1.68	2.34	1.96

CAL YR 2002 MEAN‡ 1,053 CFSM‡ .50 IN.‡ 6.79
WTR YR 2003 MEAN‡ 3,698 CFSM‡ 1 .76 IN.‡ 23.85

† Total change in contents, equivalent in cubic feet per second, per month, in Philpott Lake; provided by U.S. Army Corps of Engineers.
‡ Adjusted for change in contents.

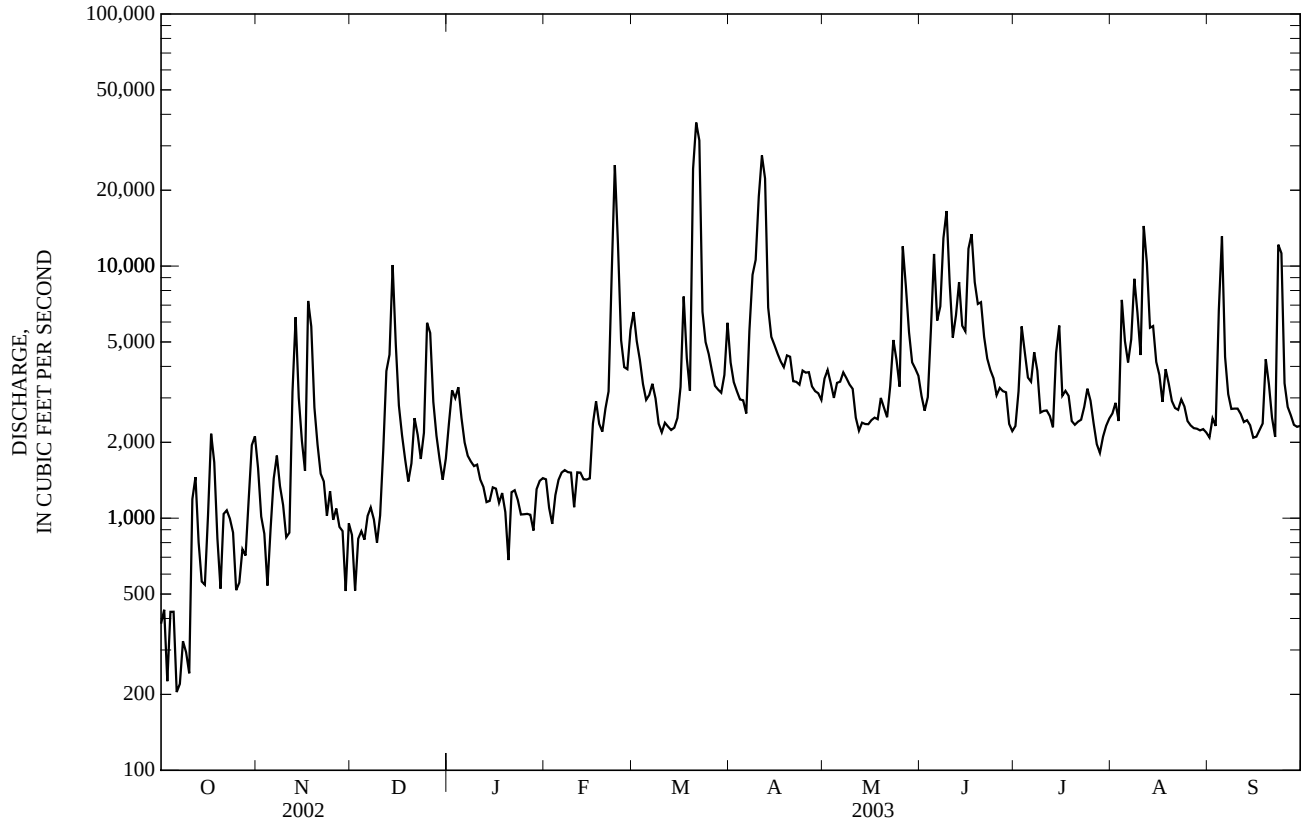
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 2003, BY WATER YEAR (WY)

MEAN	1,193	1,302	1,743	2,521	2,705	3,127	3,096	2,436	2,195	1,284	1,571	2,324
MAX	2,418	2,120	4,516	4,924	5,565	6,405	6,204	3,983	6,343	3,079	4,314	8,158
(WY)	(1997)	(1996)	(1997)	(1998)	(1998)	(2003)	(2003)	(1998)	(2003)	(2003)	(2003)	(1996)
MIN	426	523	796	1,116	864	1,412	884	1,173	466	418	236	454
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)	(2002)

02075045 DAN RIVER AT SEWAGE TREATMENT PLANT, NEAR DANVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1996 - 2003	
ANNUAL TOTAL	369,078		1,337,690			
ANNUAL MEAN	1,011		3,665		2,119	
HIGHEST ANNUAL MEAN					3,665	2003
LOWEST ANNUAL MEAN					731	2002
HIGHEST DAILY MEAN	10,100	Dec 14	37,100	Mar 21	41,500	Sep 7, 1996
LOWEST DAILY MEAN	a104	Aug 15	204	Oct 6	a104	Aug 15, 2002
ANNUAL SEVEN-DAY MINIMUM	126	Aug 11	303	Oct 3	126	Aug 11, 2002
MAXIMUM PEAK FLOW			38,500	Mar 21	47,100	Sep 6, 1996
MAXIMUM PEAK STAGE			25.38	Mar 21	28.65	Sep 6, 1996
INSTANTANEOUS LOW FLOW			a192	Oct 1	a83	Aug 15, 2002
ANNUAL RUNOFF (CFSM)	0.48		1.74		1.01	
ANNUAL RUNOFF (INCHES)	6.52		23.64		13.68	
10 PERCENT EXCEEDS	1,780		6,640		3,790	
50 PERCENT EXCEEDS	766		2,620		1,370	
90 PERCENT EXCEEDS	221		939		585	

a Result of regulation.



02075500 DAN RIVER AT PACES, VA

LOCATION.--Lat 36°38'32", long 79°05'22", NAD83, Halifax County, Hydrologic Unit 03010104, on right bank 100 ft upstream from bridge on State Highway 658, 0.5 mi southeast of Paces, 0.5 mi upstream from Big Toby Creek, 2.7 mi upstream from Birch Creek, and at mile 36.0.

DRAINAGE AREA.--2,550 mi^2, approximately.

PERIOD OF RECORD.--November 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 322.48 ft NGVD of 1929.

REMARKS.--Records fair except those for periods of doubtful gage-height record, Apr. 9, May 13-17, 26-30, and June 4, which are poor. Diurnal fluctuation caused by mills 23 mi upstream at Danville. Since August 1950, flow regulated by Philpott Lake (station 02071900) 101.4 mi upstream. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 64,800 ft^3/s, from rating curve extended above 32,000 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 16, 1940, reached a stage of 32.3 ft, from floodmark.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	506	2,620	1,220	2,890	2,060	9,360	6,150	3,400	4,130	2,600	3,920	2,370
2	396	1,770	858	4,740	1,850	8,740	4,310	4,160	2,960	3,820	4,060	2,530
3	379	1,290	741	4,760	1,180	7,600	3,710	3,680	2,810	7,890	3,420	2,770
4	254	977	1,130	4,900	1,480	5,960	3,180	3,440	e8,000	7,050	6,360	5,440
5	461	855	974	4,230	1,690	4,620	3,160	3,430	13,600	5,100	7,280	15,800
6	362	2,010	1,250	3,240	1,900	4,390	3,060	3,430	10,300	4,490	5,800	8,920
7	217	2,770	1,270	2,450	2,030	5,200	5,870	3,890	6,990	4,840	6,970	4,360
8	233	2,250	1,510	2,360	2,630	4,760	12,700	3,770	14,000	5,540	9,730	3,340
9	326	1,590	967	2,040	2,440	3,710	e12,000	3,490	17,000	3,720	9,440	2,870
10	304	1,550	1,200	2,190	1,880	3,050	18,100	3,290	16,400	3,420	7,760	3,230
11	1,700	911	1,930	1,880	1,720	2,950	25,500	3,010	7,780	3,440	10,600	2,930
12	2,890	3,340	5,590	1,750	2,210	3,090	29,200	2,270	6,750	3,330	13,900	2,730
13	2,690	8,380	6,840	1,440	1,840	2,830	19,500	e2,400	10,100	3,340	7,820	2,460
14	824	6,590	12,400	1,530	1,790	2,860	7,280	e2,500	8,400	3,760	6,490	2,820
15	682	3,460	10,200	1,460	1,800	2,970	6,030	e2,400	7,230	7,870	5,870	2,260
16	1,120	2,480	5,270	1,670	2,620	3,580	5,400	e2,600	10,500	4,490	4,840	2,200
17	2,600	7,680	3,740	1,400	4,170	9,400	4,940	e2,600	17,700	4,000	3,980	2,250
18	3,000	10,800	2,660	1,370	3,410	7,570	4,540	2,640	13,800	4,380	3,850	2,390
19	1,620	5,950	2,350	1,530	3,560	5,250	4,610	4,000	9,290	3,260	4,890	5,560
20	777	3,540	2,180	967	3,960	16,000	5,430	3,420	8,660	2,990	3,720	5,300
21	962	2,550	3,640	1,120	4,540	35,300	3,900	2,890	7,050	3,100	3,280	3,450
22	1,600	1,820	3,550	1,610	6,530	42,200	3,520	4,040	5,740	2,800	3,170	2,320
23	1,060	1,790	2,560	1,360	18,900	27,300	3,540	8,130	5,120	3,830	3,210	13,600
24	1,390	1,470	2,760	1,270	23,200	7,520	3,860	7,330	4,770	4,000	3,790	19,700
25	896	1,510	7,770	1,200	9,440	5,630	3,890	5,390	4,060	4,110	3,120	9,710
26	717	1,290	9,320	1,190	5,800	4,910	3,930	e14,000	4,210	3,160	2,560	4,430
27	762	1,290	5,400	1,200	5,360	3,770	3,740	e17,500	4,040	2,780	2,670	3,690
28	880	1,340	3,640	1,130	7,300	3,540	3,360	e9,000	4,070	2,180	2,530	3,480
29	1,190	808	2,610	1,220	---	3,260	3,030	e5,100	3,520	2,250	2,480	2,960
30	3,330	823	2,310	1,690	---	3,770	3,080	e4,600	2,780	2,850	2,470	2,930
31	3,710	---	1,900	2,080	---	7,260	---	4,440	---	3,050	2,600	---
TOTAL	37,838	85,504	109,740	63,867	127,290	258,350	220,520	146,240	241,760	123,440	162,580	148,800
MEAN	1,221	2,850	3,540	2,060	4,546	8,334	7,351	4,717	8,059	3,982	5,245	4,960
MAX	3,710	10,800	12,400	4,900	23,200	42,200	29,200	17,500	17,700	7,890	13,900	19,700
MIN	217	808	741	967	1,180	2,830	3,030	2,270	2,780	2,180	2,470	2,200
(†)	+913	+5,994	+4,865	-1,129	+4,598	+771	-978	+30	-353	-131	-1,316	-1,321
MEAN‡	1,250	3,050	3,697	2,024	4,710	8,359	7,318	4,718	8,047	3,978	5,202	4,916
CFSM‡	.49	1.20	1.45	.79	1.85	3.28	2.87	1.85	3.16	1.56	2.04	1.93
IN.‡	.56	1.35	1.67	.92	1.92	3.78	3.20	2.13	3.52	1.80	2.35	2.15

CAL YR 2002 MEAN 1,380‡ CFSM‡ .54 IN.‡ 7.35
WTR YR 2003 MEAN 4,761‡ CFSM‡ 1.87 IN.‡ 25.35

† Total change in contents, equivalent in cubic feet per second, per month, in Philpott Lake; provided by U.S. Army Corps of Engineers.
‡ Adjusted for change in contents.

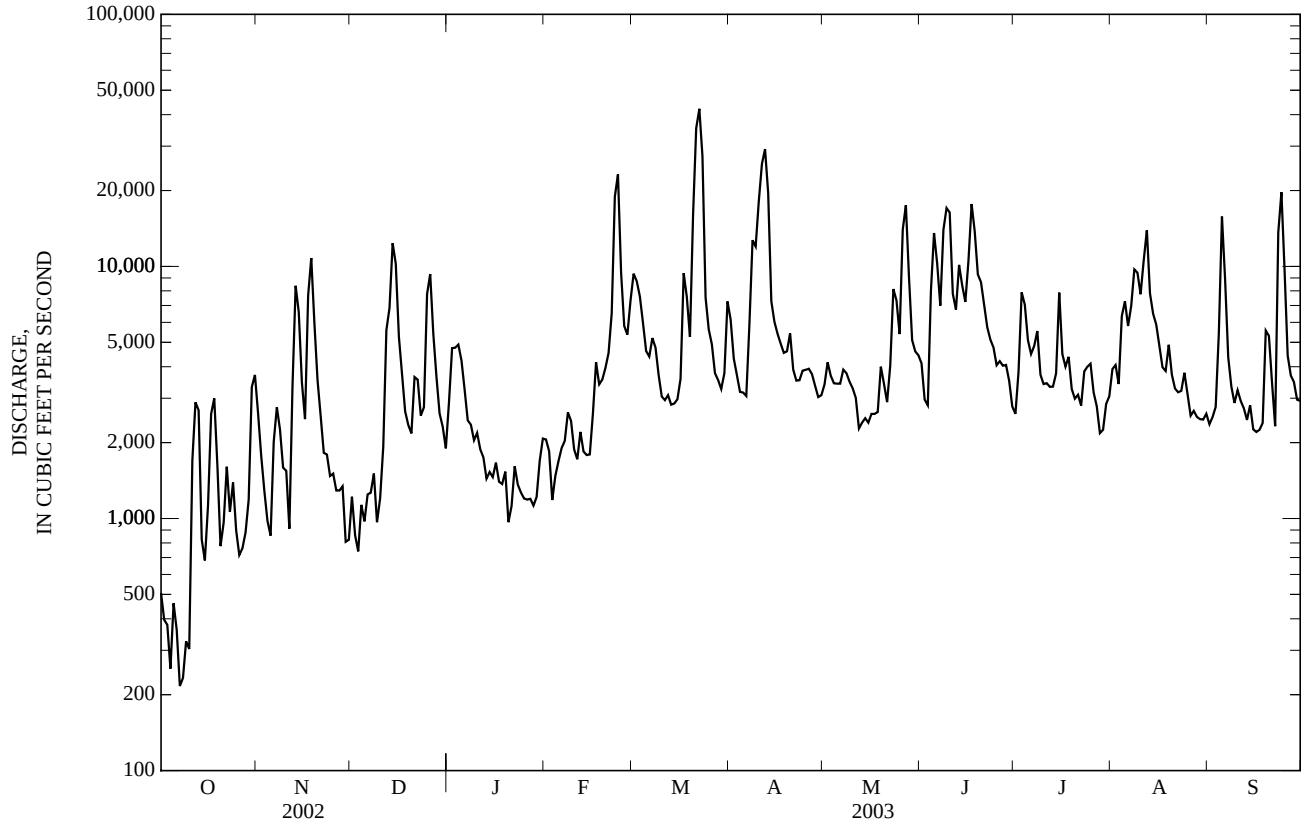
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2003, BY WATER YEAR (WY)

MEAN	1,959	2,015	2,603	3,356	3,826	4,476	4,009	2,845	2,428	1,847	1,772	1,924
MAX	7,253	6,184	5,734	8,407	9,141	11,190	11,500	6,505	8,987	5,091	5,245	10,200
(WY)	(1960)	(1958)	(1997)	(1978)	(1960)	(1975)	(1987)	(1978)	(1972)	(1975)	(2003)	(1996)
MIN	522	602	925	1,015	1,104	1,580	1,060	1,184	465	418	243	452
(WY)	(2002)	(2002)	(2002)	(1981)	(2002)	(1981)	(2002)	(1986)	(2002)	(2002)	(2002)	(1954)

02075500 DAN RIVER AT PACES, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1951 - 2003	
ANNUAL TOTAL	488,547		1,725,929			
ANNUAL MEAN	1,338		4,729		2,749	
HIGHEST ANNUAL MEAN					4,729	2003
LOWEST ANNUAL MEAN					872	2002
HIGHEST DAILY MEAN	12,400	Dec 14	42,200	Mar 22	63,400	Jun 23, 1972
LOWEST DAILY MEAN	a133	Aug 15	217	Oct 7	a133	Aug 15, 2002
ANNUAL SEVEN-DAY MINIMUM	143	Aug 12	308	Oct 4	143	Aug 12, 2002
MAXIMUM PEAK FLOW			42,900	Mar 22	64,800	Jun 23, 1972
MAXIMUM PEAK STAGE			28.26	Mar 22	33.15	Jun 23, 1972
INSTANTANEOUS LOW FLOW			210	Oct 7	a129	Aug 15, 2002
ANNUAL RUNOFF (CFSM)	0.52		1.85		1.08	
ANNUAL RUNOFF (INCHES)	7.13		25.18		14.65	
10 PERCENT EXCEEDS	2,720		9,380		4,970	
50 PERCENT EXCEEDS	878		3,410		1,850	
90 PERCENT EXCEEDS	242		1,200		875	

a Result of regulation.
e Estimated.



02076000 DAN RIVER AT SOUTH BOSTON, VA

LOCATION.--Lat 36°41'37", long 78°54'09", NAD83, Halifax County, Hydrologic Unit 03010104, on left bank 100 ft upstream from Norfolk and Western Railroad bridge at South Boston.

DRAINAGE AREA.--2,730 mi^2.

PERIOD OF RECORD.--August 1900 to May 1907, April 1923 to September 1952, October 1952 to July 1962 (gage heights only), August 1980 to September 2000 (annual maximum only), October 2000 to current year (gage heights only).

REVISED RECORDS.--WDR VA-02-01: 2001(M,m).

GAGE.--Water-stage recorder. Datum of gage is 299.23 ft NGVD of 1929.

REMARKS.-- No gage-height record Jan. 6-8. Mean daily gage heights are shown in table below. Diurnal fluctuation caused by mills and hydroelectric generating facility 36.4 mi upstream at Danville. Since August 1950, flow regulated by Philpott Lake (station 02071900) 114.8 mi upstream.

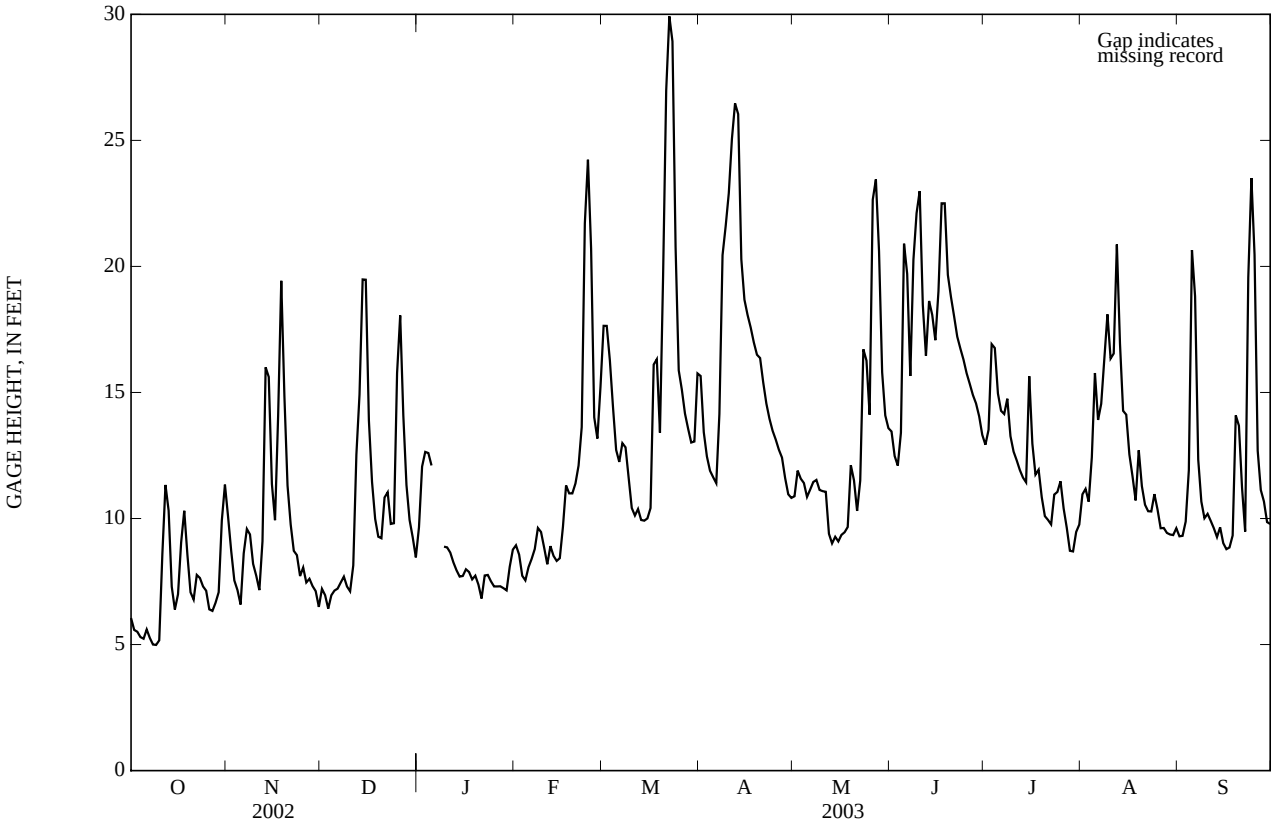
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 81,000 ft^3/s, Aug. 16, 1940, gage height, 31.8 ft.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 30.34 ft, Mar. 22; minimum gage height, 4.92 ft, Oct. 9.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.05	10.07	7.21	9.65	8.94	17.64	15.65	10.88	13.45	12.93	10.96	9.29
2	5.58	8.71	6.96	12.06	8.57	17.64	13.42	11.90	12.48	13.52	11.17	9.31
3	5.51	7.54	6.42	12.64	7.73	16.27	12.46	11.58	12.10	16.92	10.67	9.88
4	5.30	7.16	6.95	12.60	7.55	14.42	11.90	11.41	13.40	16.76	12.43	11.92
5	5.23	6.59	7.14	12.10	8.07	12.72	11.64	10.86	20.90	14.96	15.77	20.65
6	5.60	8.62	7.22	---	8.40	12.25	11.40	11.15	19.70	14.27	13.91	18.81
7	5.26	9.58	7.46	---	8.79	12.99	14.14	11.45	15.65	14.15	14.55	12.34
8	5.00	9.37	7.70	---	9.62	12.82	20.45	11.53	20.26	14.75	16.33	10.67
9	4.98	8.20	7.30	8.88	9.47	11.61	21.59	11.13	22.11	13.27	18.10	10.01
10	5.17	7.73	7.11	8.85	8.85	10.42	22.90	11.09	22.99	12.65	16.35	10.19
11	8.59	7.16	8.14	8.65	8.18	10.12	25.07	11.06	18.47	12.31	16.54	9.91
12	11.33	9.10	12.53	8.26	8.90	10.38	26.47	9.39	16.46	11.92	20.87	9.61
13	10.31	16.00	14.91	7.95	8.52	9.94	26.04	9.01	18.63	11.62	16.94	9.26
14	7.30	15.62	19.48	7.70	8.32	9.91	20.29	9.27	18.08	11.44	14.27	9.65
15	6.39	11.37	19.47	7.72	8.43	10.00	18.68	9.09	17.07	15.65	14.12	9.02
16	6.99	9.93	13.89	7.99	9.67	10.42	18.08	9.35	19.02	12.97	12.54	8.78
17	9.05	14.09	11.45	7.88	11.31	16.11	17.57	9.46	22.50	11.74	11.68	8.85
18	10.31	19.43	9.99	7.59	11.00	16.32	16.98	9.66	22.50	11.94	10.72	9.33
19	8.57	14.85	9.28	7.73	11.00	13.41	16.50	12.12	19.66	10.85	12.71	14.09
20	7.07	11.31	9.22	7.38	11.39	19.58	16.37	11.51	18.78	10.09	11.28	13.68
21	6.79	9.77	10.83	6.83	12.10	26.98	15.40	10.30	18.02	9.94	10.55	11.22
22	7.76	8.72	11.04	7.74	13.63	29.92	14.56	11.50	17.22	9.76	10.29	9.48
23	7.64	8.55	9.79	7.76	21.71	28.93	13.96	16.71	16.74	10.95	10.28	19.56
24	7.31	7.72	9.81	7.51	24.23	20.77	13.48	16.26	16.30	11.05	10.97	23.51
25	7.13	8.05	15.77	7.31	20.70	15.88	13.13	14.12	15.76	11.48	10.36	20.47
26	6.40	7.46	18.06	7.30	14.01	15.11	12.73	22.65	15.34	10.40	9.61	12.69
27	6.33	7.61	14.09	7.31	13.17	14.16	12.42	23.45	14.90	9.63	9.62	11.13
28	6.66	7.32	11.33	7.24	15.23	13.56	11.61	20.61	14.56	8.72	9.43	10.68
29	7.08	7.12	9.94	7.15	---	13.01	10.96	15.80	14.06	8.69	9.37	9.86
30	9.92	6.49	9.26	8.08	---	13.05	10.82	14.09	13.32	9.47	9.34	9.78
31	11.34	---	8.46	8.77	---	15.76	---	13.58	---	9.76	9.61	---
MEAN	7.22	9.71	10.59	---	11.34	15.23	16.22	12.64	17.35	12.08	12.62	12.12
MAX	11.34	19.43	19.48	---	24.23	29.92	26.47	23.45	22.99	16.92	20.87	23.51
MIN	4.98	6.49	6.42	---	7.55	9.91	10.82	9.01	12.10	8.69	9.34	8.78

02076000 DAN RIVER AT SOUTH BOSTON, VA—Continued



02077000 BANISTER RIVER AT HALIFAX, VA

LOCATION.--Lat 36°46'35", long 78°54'57", NAD83, Halifax County, Hydrologic Unit 03010105, on left bank 10 ft downstream from bridge on State Highway 360, 1,700 ft downstream from Terrible Creek, 1 mi northeast of Halifax, and 10 mi upstream from mouth

DRAINAGE AREA.--547 mi^2.

PERIOD OF RECORD.--September 1904 to December 1905, October 1928 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 892: 1929-30, 1932-35. WSP 972: 1938(M), 1940. WSP 1112: 1943(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 318.54 ft NGVD of 1929 (levels by U.S. Army Corps of Engineers). Sept. 28, 1904, to Dec. 31, 1905, nonrecording gage at site 400 ft upstream at different datum. Dec. 9, 1928, to Sept. 20, 1950, water-stage recorder at site 400 ft upstream at present datum.

REMARKS.--Records good except for period of no gage-height record, Nov. 3-6, which is poor. Flow regulated by a reservoir and hydroelectric generating facility 0.5 mi upstream from station. Maximum discharge, 50,000 ft^3/s, from rating curve extended above 13,000 ft^3/s on basis of slope-area measurement of peak flow and velocity-area study. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	407	212	546	405	1,760	1,190	632	1,130	480	529	422
2	43	257	202	1,050	419	2,050	817	458	933	794	466	356
3	43	e200	194	931	371	2,080	635	283	680	1,920	479	349
4	43	e180	192	1,130	420	1,320	621	596	778	2,370	1,170	1,060
5	43	e170	194	929	460	976	526	508	976	1,090	2,190	2,100
6	42	e1,000	249	681	470	875	466	496	1,890	649	1,100	1,080
7	42	837	252	512	465	945	1,400	441	1,660	606	804	523
8	41	467	252	567	474	768	3,790	426	2,370	550	856	441
9	40	315	262	452	442	646	4,710	401	2,340	531	1,260	390
10	40	229	238	400	438	538	5,980	1,330	1,540	556	1,020	345
11	625	258	420	365	484	530	8,100	2,780	1,020	517	768	354
12	576	1,610	1,080	314	481	469	7,770	1,080	876	435	1,950	330
13	277	3,240	1,430	286	481	472	2,760	515	1,490	436	1,380	339
14	198	1,800	2,870	351	447	469	1,320	394	2,270	497	799	436
15	95	801	2,710	275	471	481	1,020	407	1,940	537	558	467
16	195	567	1,490	323	1,390	446	822	441	1,380	455	478	445
17	404	1,550	855	303	1,830	489	715	488	1,240	438	848	390
18	336	2,660	605	274	1,070	567	648	590	2,030	475	650	867
19	135	1,460	524	227	884	499	633	1,330	1,670	348	505	3,320
20	161	754	583	295	1,190	4,460	629	1,330	1,980	373	486	2,940
21	178	525	930	320	1,720	11,700	584	782	1,280	363	439	1,300
22	91	450	755	284	2,360	8,830	561	933	869	426	414	693
23	153	369	520	279	6,430	2,750	516	1,430	664	533	376	7,500
24	122	309	654	201	6,990	1,200	477	1,730	588	919	384	5,440
25	83	295	2,580	211	2,530	886	460	1,260	530	756	457	2,240
26	154	278	3,550	293	1,170	734	489	4,900	483	481	385	1,040
27	188	261	1,710	291	935	632	546	4,410	462	400	344	740
28	96	242	893	236	1,060	585	544	3,270	462	365	306	806
29	346	235	634	301	---	557	453	2,950	431	334	299	938
30	769	231	546	349	---	708	431	1,720	426	468	294	592
31	645	---	482	389	---	1,240	---	1,210	---	576	405	---
TOTAL	6,247	21,957	28,068	13,365	36,287	50,662	49,613	39,521	36,388	19,678	22,399	38,243
MEAN	202	732	905	431	1,296	1,634	1,654	1,275	1,213	635	723	1,275
MAX	769	3,240	3,550	1,130	6,990	11,700	8,100	4,900	2,370	2,370	2,190	7,500
MIN	40	170	192	201	371	446	431	283	426	334	294	330
CFSM	0.37	1.34	1.66	0.79	2.37	2.99	3.02	2.33	2.22	1.16	1.32	2.33
IN.	0.42	1.49	1.91	0.91	2.47	3.45	3.37	2.69	2.47	1.34	1.52	2.60

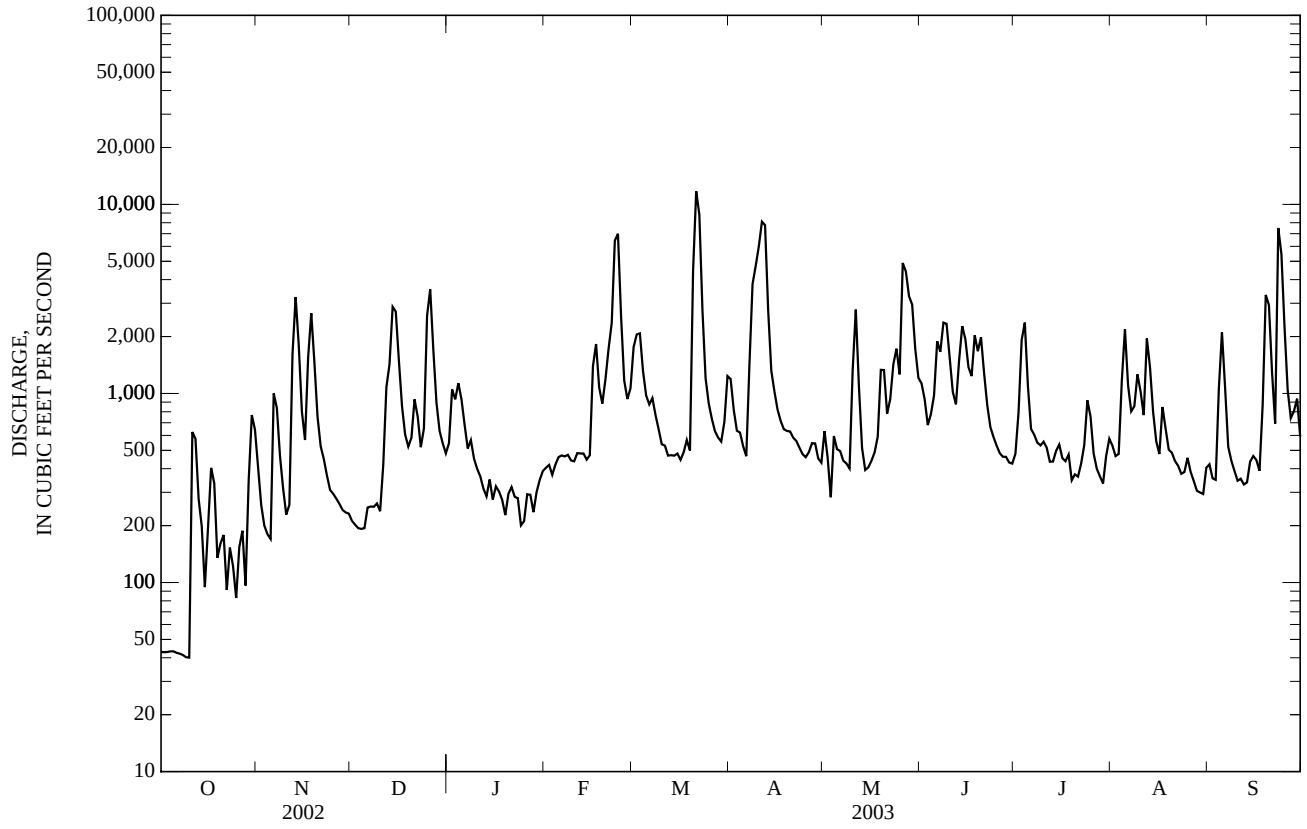
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1905 - 2003, BY WATER YEAR (WY)

MEAN	346	389	494	670	755	840	725	492	391	298	321	381
MAX	1,691	1,431	1,211	2,125	1,857	2,738	2,121	1,374	1,588	1,065	2,898	3,717
(WY)	(1938)	(1973)	(1949)	(1937)	(1979)	(1975)	(1983)	(1978)	(1972)	(1938)	(1940)	(1944)
MIN	34.9	77.4	125	170	160	270	170	178	62.4	29.6	25.2	29.4
(WY)	(1931)	(2002)	(2002)	(1981)	(2002)	(1981)	(2002)	(1981)	(2002)	(2002)	(1999)	(1954)

02077000 BANISTER RIVER AT HALIFAX, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1905 - 2003	
ANNUAL TOTAL	98,176		362,428			
ANNUAL MEAN	269		993		508	
HIGHEST ANNUAL MEAN					993	2003
LOWEST ANNUAL MEAN					136	2002
HIGHEST DAILY MEAN	3,550	Dec 26	11,700	Mar 21	44,700	Sep 20, 1944
LOWEST DAILY MEAN	18	aAug 23	40	bOct 9	6.0	Aug 30, 1932
ANNUAL SEVEN-DAY MINIMUM	18	Aug 21	42	Oct 4	18	Oct 8, 1930
MAXIMUM PEAK FLOW			12,700	Mar 21	50,000	Sep 20, 1944
MAXIMUM PEAK STAGE			26.19	Mar 21	c40.80	Sep 20, 1944
INSTANTANEOUS LOW FLOW			40	bOct 9	6.0	dAug 19, 1932
ANNUAL RUNOFF (CFSM)	0.49		1.82		0.93	
ANNUAL RUNOFF (INCHES)	6.68		24.65		12.61	
10 PERCENT EXCEEDS	604		2,090		952	
50 PERCENT EXCEEDS	159		533		300	
90 PERCENT EXCEEDS	29		233		108	

a Also Aug. 24-27, 2002.
b Also Oct. 10, 2002.
c From floodmarks.
d Also many other days in August and September 1932.
e Estimated.



02077500 HYCO RIVER NEAR DENNISTON, VA

LOCATION.--Lat 36°35'17", long 78°53'55", NAD83, Halifax County, Hydrologic Unit 03010104, on left bank 60 ft upstream from bridge on U.S. Highway 501, 0.8 mi upstream from Mayo Creek, 2.5 mi northeast of Denniston, and 7.3 mi south of South Boston.

DRAINAGE AREA.--289 mi^2.

PERIOD OF RECORD.--October 1928 to September 1934, October 1950 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 1383: Drainage area, 1930. WSP 1503: 1930(M). WSP 1723: 1930(m). WDR VA-75-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 315.24 ft NGVD of 1929. July 10, 1929, to Mar. 14, 1934, nonrecording gage at same site and datum.

REMARKS.--Records good except for period of no gage-height record, Mar. 27 to Apr. 3, which is poor. Small diurnal fluctuation at low flow in some years caused by mill upstream from station. Since September 1964, flow regulated by Hyco Lake 15.7 mi upstream, capacity 75,480 acre-ft, and since Apr. 26, 1974, by Roxboro Steam-Electric Generating Plant Afterbay Reservoir, capacity 12,000 acre-ft. Statistics of monthly mean data and summary statistics for water years 1929 - 1934, 1951 - 1964 (unregulated flow) are available in previous data books, water years 1991 - 1998. Maximum discharge, 10,800 ft^3/s, from rating curve extended above 8,200 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in August 1928 and September 1945 reached stages of 26.4 ft and 25.6 ft, respectively, from floodmarks.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.4	768	89	1,030	201	2,120	e1,400	130	260	238	550	110
2	7.5	666	87	198	596	2,830	e800	122	181	746	864	85
3	6.7	125	88	179	368	3,040	e680	126	161	2,260	120	81
4	7.2	108	87	175	125	3,190	629	128	437	1,970	1,290	606
5	6.8	456	103	145	125	2,740	595	119	971	1,840	1,550	1,440
6	6.1	833	122	133	111	1,580	543	129	794	340	1,770	1,050
7	6.4	605	123	124	332	1,420	1,280	122	1,120	161	1,520	146
8	7.7	217	118	119	521	1,180	3,250	115	2,370	134	887	104
9	8.4	120	130	114	1,030	334	4,690	109	2,980	123	974	96
10	8.6	198	131	109	1,010	189	5,840	113	3,920	136	2,680	91
11	1,130	444	672	504	820	164	6,110	167	3,090	113	2,000	87
12	1,680	775	1,490	722	556	152	5,090	122	1,730	113	886	84
13	148	1,430	1,580	110	199	141	3,250	107	900	124	265	84
14	72	1,480	2,270	97	121	156	1,360	102	928	121	151	85
15	57	1,020	2,500	93	125	187	706	101	1,050	109	118	83
16	320	530	2,740	90	254	820	588	138	1,820	104	107	81
17	614	1,410	1,470	90	197	909	522	112	2,780	115	102	79
18	476	2,130	204	88	267	1,160	483	153	3,130	110	97	329
19	450	2,570	177	85	1,090	1,220	344	1,360	2,630	511	154	2,130
20	432	1,950	611	84	788	2,900	170	1,550	932	436	111	1,420
21	303	868	629	85	561	6,620	157	807	203	97	97	649
22	108	496	564	84	895	6,340	148	1,440	199	110	92	167
23	97	138	457	84	1,850	3,790	138	2,760	545	519	88	853
24	81	123	353	82	1,900	2,270	130	3,840	517	245	85	1,830
25	77	115	1,500	82	1,230	870	126	3,140	166	135	84	2,000
26	77	109	1,800	82	582	1,240	129	3,970	118	109	82	891
27	75	105	1,730	82	703	e1,210	643	5,310	111	99	80	340
28	90	102	1,230	80	1,470	e790	539	4,350	114	93	79	138
29	344	97	199	85	---	e700	165	2,120	109	91	78	110
30	939	94	157	134	---	e1,000	138	717	105	92	79	103
31	889	---	558	336	---	e2,600	---	521	---	92	106	---
TOTAL	8,531.8	20,082	23,969	5,505	18,027	53,862	40,643	34,100	34,371	11,486	17,146	15,352
MEAN	275	669	773	178	644	1,737	1,355	1,100	1,146	371	553	512
MAX	1,680	2,570	2,740	1,030	1,900	6,620	6,110	5,310	3,920	2,260	2,680	2,130
MIN	6.1	94	87	80	111	141	126	101	105	91	78	79
CFSM	0.95	2.32	2.68	0.61	2.23	6.01	4.69	3.81	3.96	1.28	1.91	1.77
IN.	1.10	2.58	3.09	0.71	2.32	6.93	5.23	4.39	4.42	1.48	2.21	1.98

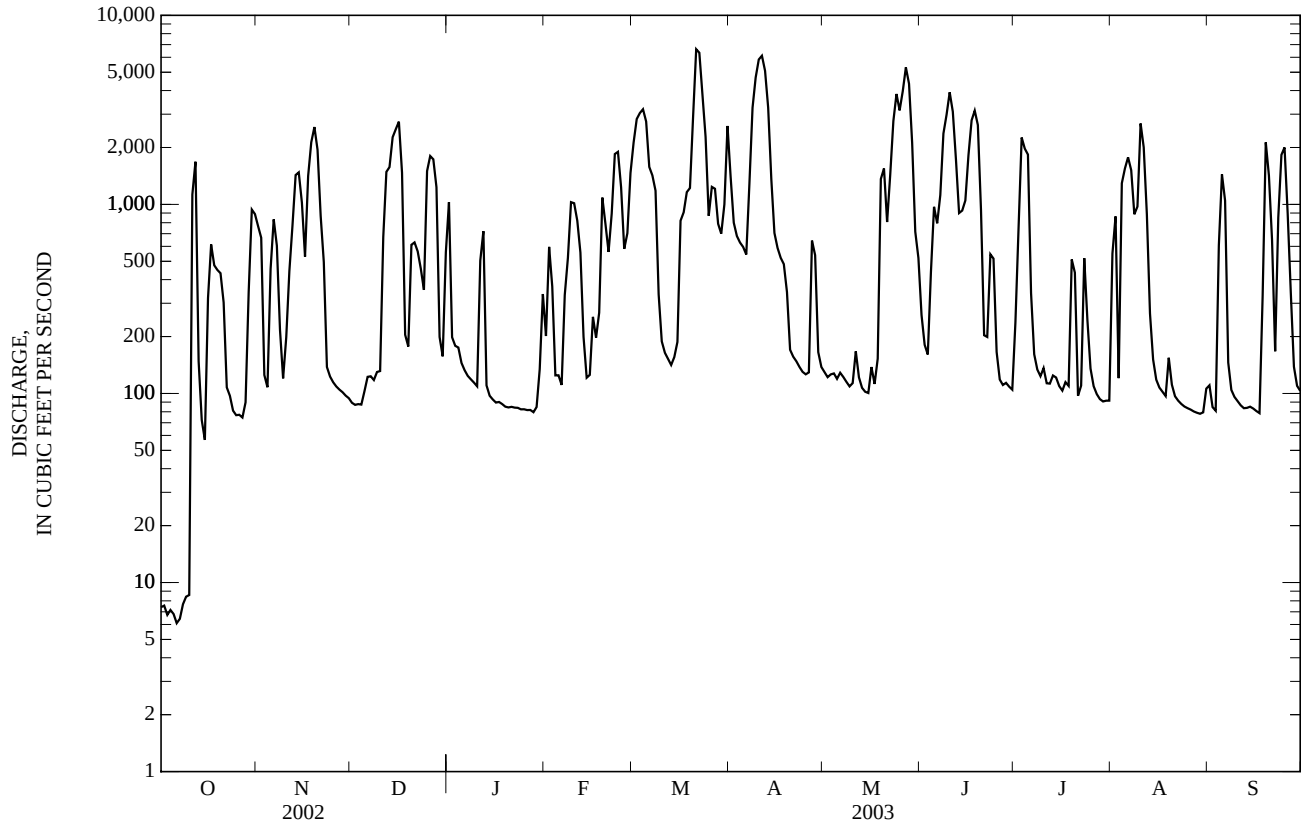
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 2003, BY WATER YEAR (WY)

MEAN	116	131	204	447	490	604	392	229	148	130	108	166
MAX	805	786	815	1,692	1,364	1,737	1,355	1,332	1,146	1,492	553	1,341
(WY)	(1972)	(1973)	(1973)	(1978)	(1998)	(2003)	(2003)	(1978)	(2003)	(1975)	(2003)	(1996)
MIN	9.04	9.36	14.0	28.5	29.2	44.6	23.6	21.7	11.3	10.9	7.49	11.1
(WY)	(1999)	(1999)	(2002)	(1966)	(2002)	(1981)	(2002)	(2002)	(2002)	(2002)	(1999)	(1998)

02077500 HYCO RIVER NEAR DENNISTON, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1965 - 2003	
ANNUAL TOTAL	59,124.5		283,074.8			
ANNUAL MEAN	162		776		263	
HIGHEST ANNUAL MEAN					776	2003
LOWEST ANNUAL MEAN					21.5	2002
HIGHEST DAILY MEAN	2,740	Dec 16	6,620	Mar 21	10,300	Jul 15, 1975
LOWEST DAILY MEAN	4.2	aAug 23	6.1	Oct 6	2.5	Aug 24, 1999
ANNUAL SEVEN-DAY MINIMUM	4.7	Aug 21	6.9	Oct 1	3.4	Aug 19, 1999
MAXIMUM PEAK FLOW			7,230	Mar 21	b10,800	Jul 15, 1975
MAXIMUM PEAK STAGE			20.42	Mar 21	b24.27	Jul 15, 1975
INSTANTANEOUS LOW FLOW			5.9	cOct 6	d2.1	Aug 24, 1999
ANNUAL RUNOFF (CFSM)	0.56		2.68		0.91	
ANNUAL RUNOFF (INCHES)	7.61		36.44		12.35	
10 PERCENT EXCEEDS	465		2,130		630	
50 PERCENT EXCEEDS	20		217		71	
90 PERCENT EXCEEDS	8.1		85		19	

a Also Aug. 25, 2002.
b Prior to regulation, 1929-34, 1951-64, maximum peak flow, 7,630 ft^3/s, Oct. 3, 1929, gage height, 21.88 ft.
c Also Oct. 7, 2002.
d Prior to regulation, 1929-34, 1951-64, instantaneous low flow, 0.004 ft^3/s, Sept. 14, 1932.
e Estimated.



02079490 JOHN H. KERR RESERVOIR NEAR BOYDTON, VA

LOCATION.--Lat 36°35'56", long 78°18'06", Mecklenburg County, Hydrologic Unit 03010102, at John H. Kerr Dam on Roanoke River, 2.7 mi upstream from Allen Creek, 6.7 mi southeast of Boydton, 18 mi upstream from the Virginia-North Carolina State line, and at mile 178.7.

DRAINAGE AREA.--7,780 mi^2, approximately.

PERIOD OF RECORD.--July 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929.

REMARKS.--Reservoir is formed by concrete dam with earth embankments. Spillway, with crest at elevation 288.0 ft, is equipped with 22 radial gates 32 ft high by 42 ft wide. Storage began in September 1950 during construction; initial filling started June 30, 1952; water in reservoir first reached rule-curve elevation in March 1953. Total capacity at top of gates, elevation, 320 ft, is 2,770,000 acre-ft of which 1,281,400 acre-ft is controlled flood storage between elevations 300 ft, top of power pool, and 320 ft; 316,900 acre- ft is available for power between elevations 293.0 ft, bottom of power pool, and 300 ft; 1,171,700 acre-ft is inactive and dead storage below elevation 293.0 ft. Figures given herein represent total contents. Reservoir is used for flood control, hydroelectric power, low-water regulation for navigation and pollution abatement, release of water for downstream fish spawning, water supply, and recreation.

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

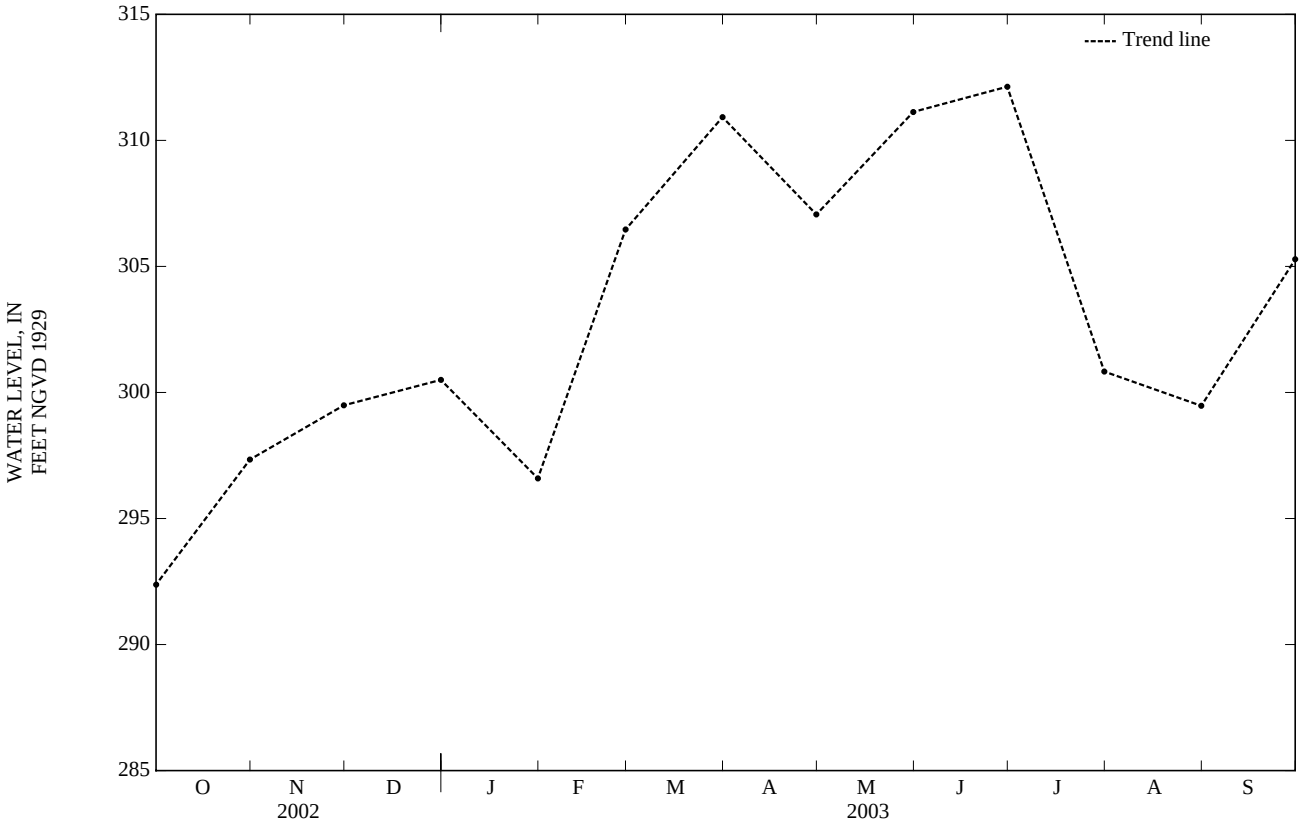
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 2,736,460 acre-ft, Apr. 29, 1987, elevation, 319.61 ft; minimum (after first filling to rule curve), 724,700 acre-ft, Feb. 3, 1956, elevation, 280.23 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 2,534,690 acre-ft, Apr. 14, elevation, 317.16 ft; minimum, 1,102,040 acre-ft, Oct. 10, elevation, 291.24 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	292.38	1,146,840	
Oct. 31	297.34	1,360,940	+214,100
Nov. 30	299.49	1,463,560	+102,620
Dec. 31	300.50	1,513,850	+50,290
CAL YR 2002			+415,700
Jan. 31	296.59	1,326,570	-187,280
Feb. 28	306.46	1,834,960	+508,390
Mar. 31	310.92	2,101,740	+266,780
Apr. 30	307.06	1,869,410	-232,330
May 31	311.13	2,114,960	+245,550
June 30	312.13	2,178,690	+63,730
July 31	300.83	1,530,520	-648,170
Aug. 31	299.47	1,462,580	-67,940
Sept. 30	305.28	1,768,140	+305,560
WTR YR 2003			+621,300

02079490 JOHN H. KERR RESERVOIR NEAR BOYDTON, VA—Continued



02079500 ROANOKE RIVER AT BUGGS ISLAND, VA

LOCATION.--Lat 36°36'06", long 78°17'56" NAD83, Mecklenburg County, Hydrologic Unit 03010106, on left bank 1,200 ft downstream from John H. Kerr dam, 5.3 mi upstream from bridge on U.S. Highway 1, 6.7 mi southeast of Boydton, and at mile 178.4.

DRAINAGE AREA.--7,789 mi^2.

PERIOD OF RECORD.--November 1921 to August 1923 (gage heights only), April 1947 to September 1962, October 1963 to September 2000 (annual maximum only), October 2000 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is 196.72 ft NGVD of 1929. November 1921 to August 1923, at site 0.3 mi upstream at different datum. April 1947 to Sept. 30, 1952, at site 2,800 ft downstream at different datum.

REMARKS.--Mean daily gage heights are shown in table below. Since July 1950, flow regulated by John H. Kerr reservoir (station 02079490) 1,200 ft upstream.

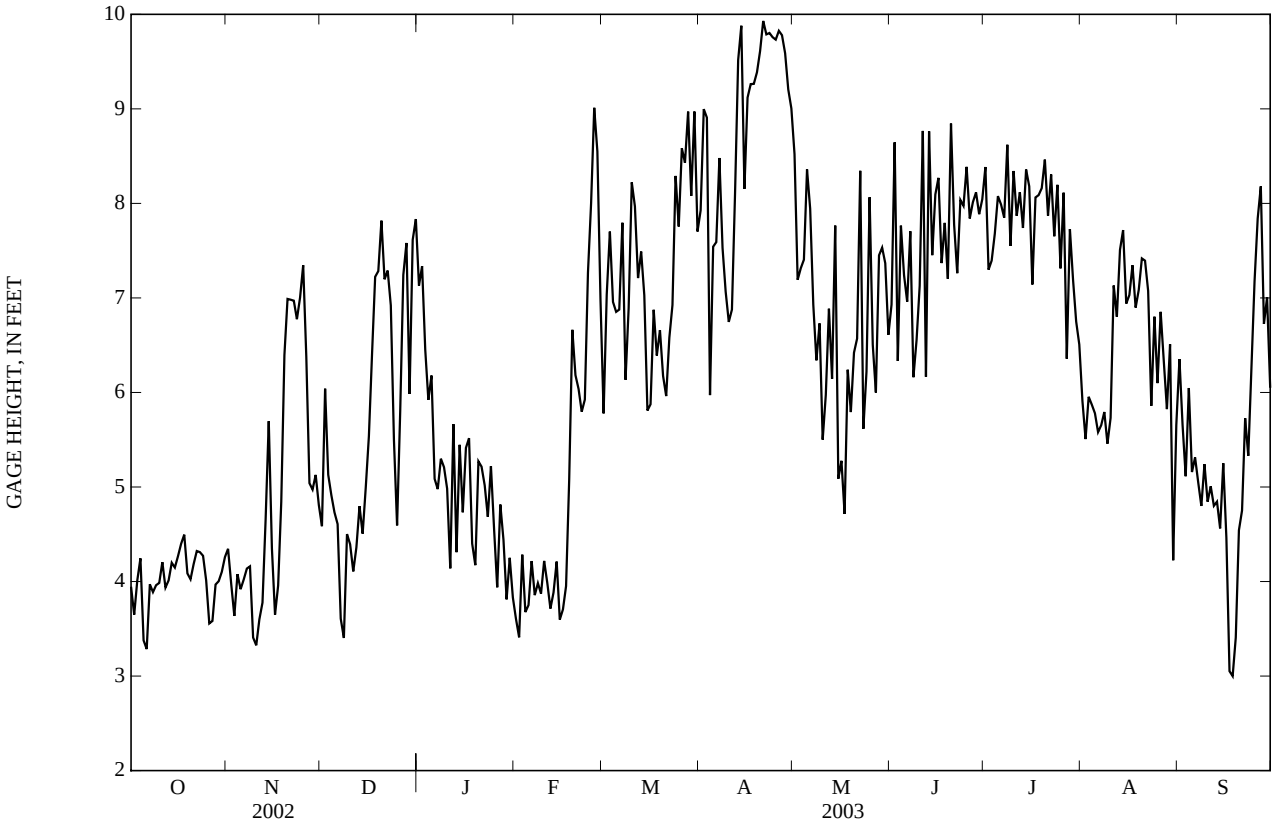
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,000 ft^3/s, Dec. 7, 1948, gage height, 14.97 ft.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 10.02 ft, Dec. 4; minimum gage height, 2.11 ft, Sept. 18.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.95	4.35	4.58	7.13	3.60	5.78	7.93	8.52	6.93	8.38	5.91	6.35
2	3.65	3.97	6.04	7.34	3.41	7.04	9.00	7.19	8.65	7.30	5.51	5.66
3	4.01	3.64	5.13	6.45	4.28	7.70	8.91	7.31	6.33	7.40	5.95	5.11
4	4.25	4.08	4.91	5.92	3.68	6.96	5.97	7.40	7.76	7.68	5.87	6.05
5	3.38	3.92	4.73	6.18	3.75	6.85	7.54	8.36	7.24	8.08	5.78	5.16
6	3.29	4.02	4.61	5.09	4.22	6.88	7.59	7.94	6.96	7.99	5.58	5.31
7	3.97	4.14	3.61	4.98	3.86	7.80	8.48	6.93	7.71	7.85	5.65	5.05
8	3.89	4.16	3.40	5.30	3.98	6.13	7.53	6.34	6.16	8.62	5.79	4.80
9	3.96	3.41	4.50	5.21	3.87	6.89	7.07	6.73	6.55	7.55	5.46	5.24
10	3.99	3.33	4.39	4.98	4.22	8.22	6.75	5.50	7.13	8.34	5.73	4.84
11	4.21	3.60	4.11	4.14	3.99	7.97	6.88	5.97	8.77	7.87	7.13	5.01
12	3.94	3.78	4.36	5.67	3.71	7.21	8.11	6.89	6.17	8.12	6.80	4.80
13	4.01	4.66	4.80	4.31	3.88	7.49	9.52	6.14	8.76	7.74	7.51	4.84
14	4.20	5.70	4.51	5.45	4.21	7.03	9.88	7.77	7.45	8.36	7.72	4.56
15	4.15	4.35	5.00	4.73	3.60	5.81	8.15	5.09	8.09	8.18	6.94	5.25
16	4.27	3.65	5.54	5.41	3.71	5.88	9.12	5.28	8.27	7.14	7.03	4.46
17	4.40	3.96	6.41	5.52	3.95	6.87	9.26	4.71	7.37	8.06	7.35	3.05
18	4.50	4.84	7.22	4.40	5.07	6.39	9.26	6.24	7.79	8.09	6.90	3.00
19	4.09	6.39	7.28	4.17	6.66	6.66	9.39	5.79	7.20	8.16	7.09	3.41
20	4.02	6.99	7.82	5.27	6.18	6.17	9.61	6.42	8.84	8.46	7.42	4.54
21	4.18	6.98	7.20	5.21	6.04	5.96	9.93	6.57	7.78	7.87	7.39	4.75
22	4.32	6.97	7.29	5.02	5.80	6.58	9.79	8.34	7.26	8.31	7.07	5.73
23	4.31	6.77	6.92	4.68	5.92	6.92	9.80	5.62	8.04	7.65	5.86	5.33
24	4.27	7.00	5.50	5.22	7.27	8.29	9.76	6.22	7.97	8.20	6.80	6.26
25	4.01	7.35	4.59	4.55	8.00	7.76	9.73	8.07	8.39	7.31	6.10	7.17
26	3.56	6.38	5.80	3.94	9.01	8.58	9.83	6.51	7.84	8.11	6.85	7.84
27	3.58	5.04	7.24	4.81	8.55	8.43	9.78	6.00	8.01	6.36	6.33	8.18
28	3.97	4.97	7.58	4.44	6.98	8.97	9.59	7.45	8.12	7.73	5.82	6.73
29	4.00	5.13	5.98	3.81	---	8.08	9.21	7.53	7.89	7.19	6.51	7.01
30	4.10	4.81	7.62	4.25	---	8.97	9.00	7.37	8.04	6.75	4.22	6.05
31	4.26	---	7.83	3.83	---	7.70	---	6.61	---	6.51	5.66	---
MEAN	4.02	4.94	5.69	5.08	5.05	7.22	8.75	6.74	7.65	7.79	6.38	5.38
MAX	4.50	7.35	7.83	7.34	9.01	8.97	9.93	8.52	8.84	8.62	7.72	8.18
MIN	3.29	3.33	3.40	3.81	3.41	5.78	5.97	4.71	6.16	6.36	4.22	3.00

02079500 ROANOKE RIVER AT BUGGS ISLAND, VA—Continued



02079640 ALLEN CREEK NEAR BOYDTON, VA

LOCATION.--Lat 36°40'47", long 78°19'36", NAD83, Mecklenburg County, Hydrologic Unit 03010106, on right bank at upstream side of upstream bridge on U.S. Highway 58, 0.8 mi upstream from Coleman Creek, 2.3 mi downstream from Layton Creek, 3.7 mi east of Boydton, and 11.8 mi southwest of South Hill.

DRAINAGE AREA.--53.4 mi^2, approximately.

PERIOD OF RECORD.--October 1961 to September 1996, October 2000 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 216.50 ft NGVD of 1929 (levels by Virginia Department of Transportation). October 1961 to September 1996, recording gage at site 200 ft downstream, on left bank, and at same datum.

REMARKS.--Records good except those for periods of doubtful or no gage-height record, Oct. 26 to Dec. 4, Apr. 1, 2, and Aug. 10-20, and periods with ice effect, Dec. 7-9 and Jan. 17, 18, 21-25, 28, which are fair. Maximum discharge, 7,380 ft^3/s, from rating curve extended above 3,100 ft^3/s. Several measurements of water temperature were made during the year.

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

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct 11	1930	1,300	13.77	Apr 7	1900	1,970	16.17
Dec 13	2300	1,280	13.70	Apr 9	1500	3,000	18.38
Dec 25	0100	1,330	13.91	Apr 11	0400	2,010	16.27
Jan 1	2030	1,260	13.58	May 22	1900	1,300	13.78
Feb 22	2300	1,510	14.65	May 26	1030	*7,380	*23.35
Mar 2	1000	864	11.29	Jun 8	0330	1,990	16.22
Mar 20	2130	3,880	19.77	Sep 19	0600	5,330	21.50
Mar 30	1830	945	11.79				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.68	e19	e9.2	463	70	279	e85	61	93	18	12	26
2	0.44	e12	e8.5	298	45	539	e60	28	43	311	13	12
3	0.21	e9.5	e8.0	111	34	166	49	19	33	143	13	9.7
4	0.07	e13	e7.3	85	30	83	41	20	55	48	31	172
5	0.02	e17	12	53	27	72	36	18	151	29	59	188
6	0.01	e175	17	42	23	155	32	19	43	22	349	36
7	0.01	e85	e14	35	184	115	967	18	335	39	41	22
8	0.00	e21	e15	31	148	66	374	17	889	23	83	17
9	0.00	e16	e20	29	60	52	1,820	15	336	21	21	15
10	0.00	e12	23	25	49	42	640	22	99	21	e145	14
11	444	e16	205	22	56	36	966	67	64	16	e52	12
12	162	e315	217	20	40	33	167	25	52	14	e43	12
13	21	e150	424	18	31	31	91	17	68	13	e23	13
14	11	e60	480	18	27	30	64	14	41	13	e19	16
15	8.1	e28	115	17	60	26	51	13	33	13	e17	16
16	67	e32	64	16	259	26	43	20	32	13	e15	15
17	47	e420	42	e16	92	27	37	17	35	19	e16	14
18	15	e190	32	e13	59	26	32	106	41	13	e25	340
19	8.4	e70	28	17	133	24	46	422	72	11	e17	2,810
20	5.8	e33	32	15	223	1,770	39	92	62	10	e14	141
21	14	e25	42	e14	144	1,030	33	49	34	9.7	12	57
22	24	e22	29	e12	555	134	30	687	26	9.9	11	43
23	12	e19	24	e11	563	78	27	675	22	27	10	272
24	8.0	e16	227	e10	118	57	23	249	19	20	9.4	114
25	5.9	e14	794	e12	67	46	23	149	17	13	8.7	50
26	e13	e13	172	13	50	39	28	3,500	16	10	8.4	35
27	e11	e12	73	12	111	34	27	248	14	9.3	8.2	28
28	e30	e11	49	e11	425	30	22	177	15	8.6	7.9	24
29	e100	e11	39	13	---	32	19	83	14	8.5	7.6	22
30	e130	e10	32	50	---	477	17	59	13	17	7.5	19
31	e45	---	28	182	---	268	---	60	---	14	15	---
TOTAL	1,183.64	1,846.5	3,282.0	1,684	3,683	5,823	5,889	6,966	2,767	957.0	1,113.7	4,564.7
MEAN	38.2	61.5	106	54.3	132	188	196	225	92.2	30.9	35.9	152
MAX	444	420	794	463	563	1,770	1,820	3,500	889	311	349	2,810
MIN	0.00	9.5	7.3	10	23	24	17	13	13	8.5	7.5	9.7
CFSM	0.72	1.15	1.98	1.02	2.46	3.52	3.68	4.21	1.73	0.58	0.67	2.85
IN.	0.82	1.29	2.29	1.17	2.57	4.06	4.10	4.85	1.93	0.67	0.78	3.18

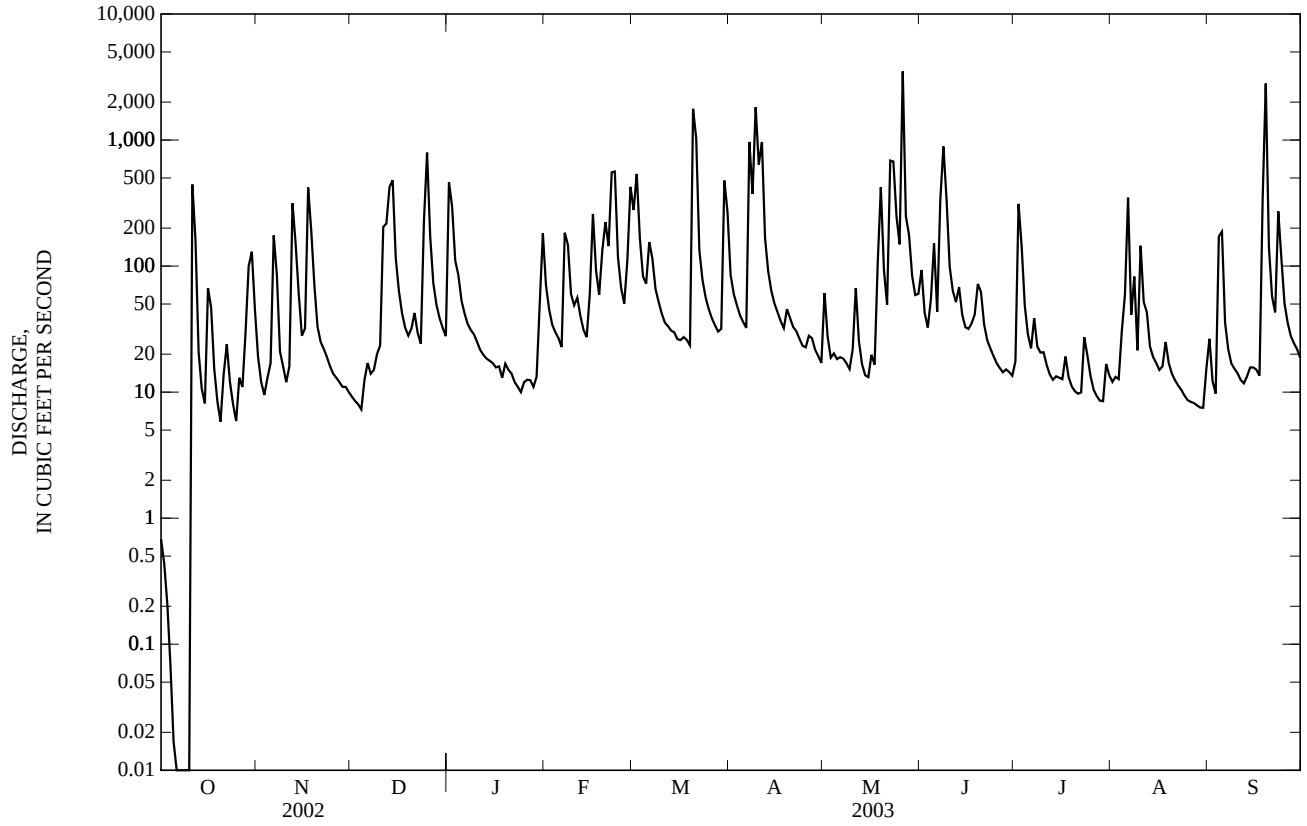
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1996, 2001 - 2003, BY WATER YEAR (WY)

MEAN	24.1	31.6	41.9	74.8	82.5	101	70.0	40.3	28.3	17.7	13.3	22.0
MAX	201	151	107	239	214	289	404	225	125	174	61.9	188
(WY)	(1972)	(1986)	(1984)	(1978)	(1979)	(1975)	(1987)	(2003)	(1982)	(1975)	(1989)	(1979)
MIN	0.20	1.61	2.36	7.42	11.8	15.3	10.9	10.3	0.95	0.080	0.090	0.022
(WY)	(1971)	(1966)	(1966)	(1981)	(2002)	(1981)	(1966)	(1986)	(2002)	(2002)	(2002)	(1970)

02079640 ALLEN CREEK NEAR BOYDTON, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1952 - 1996 2001 - 2003	
ANNUAL TOTAL	9,470.91		39,759.54			
ANNUAL MEAN	25.9		109		45.4	
HIGHEST ANNUAL MEAN					109	2003
LOWEST ANNUAL MEAN					9.07	2002
HIGHEST DAILY MEAN	794	Dec 25	3,500	May 26	3,700	Apr 25, 1987
LOWEST DAILY MEAN	0.00	aJul 16	0.00	bOct 8	0.00	(c)
ANNUAL SEVEN-DAY MINIMUM	0.00	dJul 16	0.02	Oct 4	0.00	(f)
MAXIMUM PEAK FLOW			7,380	May 26	7,380	May 26, 2003
MAXIMUM PEAK STAGE			23.35	May 26	23.35	May 26, 2003
INSTANTANEOUS LOW FLOW			0.00	(g)	0.00	(h)
ANNUAL RUNOFF (CFSM)	0.49		2.04		0.85	
ANNUAL RUNOFF (INCHES)	6.60		27.70		11.56	
10 PERCENT EXCEEDS	45		248		82	
50 PERCENT EXCEEDS	6.3		28		14	
90 PERCENT EXCEEDS	0.01		10		1.9	

a Also July 17-23, Aug. 7-18, 20-25, and Oct. 8-10, 2002.
b Also Oct. 9, 10, 2002.
c Many days August to October 1968, September, October 1970, and July, August, October 2002.
d Also July 17 and August 7-19, 2002.
e Estimated.
f Many days August to October 1968, September, October 1970, and July, August 2002.
g No flow part or all of each day Oct. 7-10, 2002.
h No flow part or all of many days August to October 1968, September, October 1970, and July to October 2002.



03161000 SOUTH FORK NEW RIVER NEAR JEFFERSON, NC

LOCATION.--Lat 36°23'35", long 81°24'25", Ashe County, Hydrologic Unit 05050001, on right bank 600 ft upstream from bridge on State Highways 16 and 88, 0.2 mi downstream of Bear Creek, and 4 mi southeast of Jefferson.

DRAINAGE AREA.--205 mi^2.

PERIOD OF RECORD.--October 1924 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 1275: 1925-26(M), 1928-30(M), 1931-32, 1933-35(M), 1941-42(m), 1944(m). WDR NC-81-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,657.04 ft above NGVD of 1929. Prior to Oct. 14, 1934, nonrecording gage on bridge 400 ft downstream at same datum. Oct. 14, 1934, to Mar. 25, 1935, nonrecording gage at present site and datum. Satellite telemetry at station.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Maximum discharge for period of record, from rating curve extended above 14,000 ft^3/s on basis of slope-area measurement of peak flow. Minimum discharge for period of record result of freezeup. Minimum discharge for current water year also occurred Oct. 9, 10, 2002. Maximum peak stage for current water year from high-water mark in well.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 15, 1916, reached a stage of 18.0 ft, from floodmarks witnessed by local resident; discharge, 35,200 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	291	307	288	484	332	602	542	979	511	660	477	494
2	253	268	275	637	e310	560	594	688	431	1,720	529	480
3	230	246	278	586	295	527	545	652	441	1,800	696	416
4	216	237	284	590	333	487	504	584	561	975	782	488
5	202	256	375	506	406	470	504	599	505	764	575	521
6	192	416	468	476	332	557	513	683	437	732	547	431
7	185	413	358	446	329	608	494	642	927	758	607	401
8	178	332	e306	e425	e306	502	530	594	1,410	692	806	389
9	174	292	e294	e402	e298	475	649	558	1,170	604	999	386
10	174	280	291	393	e294	450	1,550	548	816	573	1,100	367
11	202	430	608	371	294	429	2,150	515	672	572	912	352
12	253	702	734	346	289	414	1,400	496	627	547	747	341
13	203	675	665	e330	e279	406	1,090	469	649	529	687	334
14	179	493	954	e320	294	413	930	454	689	499	590	332
15	204	417	671	e310	393	388	811	455	982	517	615	329
16	871	591	545	e300	831	891	732	608	1,010	482	752	335
17	720	975	485	e290	573	1,010	665	508	1,650	461	685	319
18	407	704	440	e284	458	720	1,830	497	1,070	442	563	310
19	322	545	413	e282	458	685	1,700	494	1,180	423	511	309
20	285	472	529	e280	447	1,040	1,130	470	905	412	484	301
21	263	468	580	e278	446	1,150	965	459	751	422	464	294
22	255	502	468	e276	e1,640	845	891	485	660	415	489	318
23	242	428	437	e270	e2,120	709	782	508	601	577	464	818
24	223	385	496	e268	1,100	634	713	525	557	445	481	495
25	224	361	704	e264	800	581	677	501	523	400	428	373
26	234	341	532	e262	670	542	662	570	509	383	407	342
27	230	328	463	e270	641	521	616	504	504	375	391	350
28	229	312	e425	e300	683	495	583	455	521	363	397	632
29	276	297	e402	e340	---	498	566	447	482	387	422	462
30	334	292	392	428	---	606	582	472	527	496	458	382
31	404	---	380	388	---	614	---	473	---	459	485	---
TOTAL	8,655	12,765	14,540	11,402	15,651	18,829	25,900	16,892	22,278	18,884	18,550	12,101
MEAN	279	426	469	368	559	607	863	545	743	609	598	403
MAX	871	975	954	637	2,120	1,150	2,150	979	1,650	1,800	1,100	818
MIN	174	237	275	262	279	388	494	447	431	363	391	294
CFSM	1.36	2.08	2.29	1.79	2.73	2.96	4.21	2.66	3.62	2.97	2.92	1.97
IN.	1.57	2.32	2.64	2.07	2.84	3.42	4.70	3.07	4.04	3.43	3.37	2.20

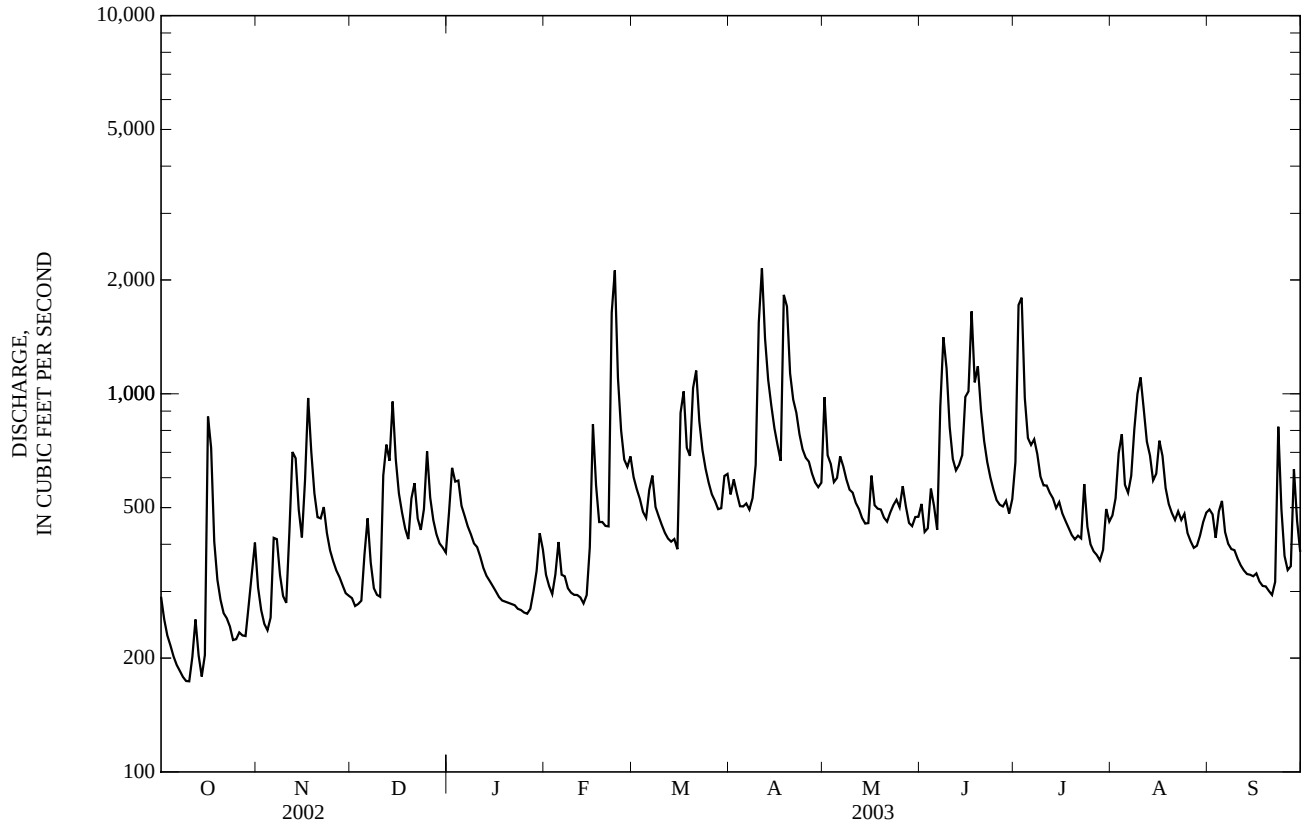
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 2003, BY WATER YEAR (WY)

MEAN	352	398	402	468	513	584	562	455	389	332	352	321
MAX	901	1,889	797	1,346	1,173	1,316	1,350	1,052	1,036	904	2,613	1,212
(WY)	(1991)	(1978)	(1958)	(1995)	(1998)	(1979)	(1983)	(1973)	(1992)	(1941)	(1940)	(1979)
MIN	111	124	146	140	188	222	236	220	158	111	93.7	99.5
(WY)	(2001)	(1932)	(1934)	(1940)	(2001)	(1988)	(1986)	(2001)	(1988)	(1930)	(1925)	(1954)

03161000 SOUTH FORK NEW RIVER NEAR JEFFERSON, NC—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1925 - 2003	
ANNUAL TOTAL	98,015		196,447			
ANNUAL MEAN	269		538		427	
HIGHEST ANNUAL MEAN					669	1949
LOWEST ANNUAL MEAN					215	2002
HIGHEST DAILY MEAN	2,020	Sep 27	2,150	Apr 11	27,700	Aug 14, 1940
LOWEST DAILY MEAN	75	Aug 24	174	Oct 9	65	Sep 9, 1925
ANNUAL SEVEN-DAY MINIMUM	83	Aug 9	187	Oct 5	72	Aug 21, 1925
MAXIMUM PEAK FLOW			3,440	Feb 22	52,800*	Aug 14, 1940
MAXIMUM PEAK STAGE			5.99*	Feb 22	22.50	Aug 14, 1940
INSTANTANEOUS LOW FLOW			173	Oct 8	52*	Dec 24, 1943
ANNUAL RUNOFF (CFSM)	1.31		2.63		2.08	
ANNUAL RUNOFF (INCHES)	17.79		35.65		28.28	
10 PERCENT EXCEEDS	465		855		705	
50 PERCENT EXCEEDS	223		482		342	
90 PERCENT EXCEEDS	119		279		167	

e Estimated.
* See REMARKS.



03164000 NEW RIVER NEAR GALAX, VA

LOCATION.--Lat 36°38'50", long 80°58'44", NAD83, Grayson County, Hydrologic Unit 05050001, on left bank at upstream side of bridge on State Highway 94, 500 ft downstream from Meadow Creek, 1.2 mi southwest of Old Town, 3.1 mi southwest of Galax, and 3.6 mi downstream from Elk Creek.

DRAINAGE AREA.--1,131 mi^2.

PERIOD OF RECORD.--October 1929 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 758: Drainage area, 1933(M). WSP 893: 1930(M), 1935(M).

GAGE.--Water-stage recorder. Datum of gage is 2,208.04 ft NGVD of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 17 to Feb. 3, which is poor. American Electric Power gage-height transmitter at station, recorder at Roanoke. National Weather Service gage-height telemeter at station. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Maximum discharge, 141,000 ft^3/s, from rating curve extended above 32,000 ft^3/s on basis of computation of peak flow over dam at Fries 6 mi downstream and slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 9,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	2330	*24,400	*7.31	Jun 8	0600	9,380	3.88
Apr 11	0130	22,100	6.84	Jul 3	0330	14,300	5.12
Apr 19	0630	9,470	3.90				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	968	1,750	1,030	1,920	e1,550	3,840	2,450	3,120	2,180	2,320	2,180	2,390
2	826	1,320	969	2,920	e1,600	3,520	2,830	3,460	2,090	6,190	2,680	2,090
3	736	1,080	943	3,110	e1,800	3,160	2,760	2,890	1,890	12,200	2,770	1,710
4	672	964	965	3,350	1,920	2,740	2,500	2,750	2,290	6,550	2,910	1,960
5	635	949	1,180	2,900	1,930	2,500	2,460	2,560	2,350	4,430	2,580	2,290
6	596	1,460	1,990	2,540	1,810	2,770	2,790	2,910	1,960	3,590	2,510	1,890
7	569	2,120	1,690	2,220	1,670	3,850	2,750	2,850	3,330	3,850	3,610	1,590
8	548	1,830	1,400	1,970	1,490	3,230	3,060	2,680	7,970	4,020	3,070	1,450
9	532	1,450	1,260	1,830	1,230	2,690	3,640	2,500	5,450	3,180	4,370	1,380
10	527	1,220	1,160	1,730	1,360	2,360	9,390	2,320	4,110	3,020	3,890	1,340
11	574	1,530	1,540	1,590	1,290	2,090	17,800	2,210	3,170	2,830	4,170	1,260
12	716	3,150	3,260	1,340	1,210	1,920	10,400	2,080	4,620	2,720	3,730	1,200
13	718	4,030	3,410	1,260	1,100	1,780	7,180	1,890	3,910	2,650	2,940	1,160
14	639	2,940	5,290	1,390	1,090	1,800	5,620	1,780	3,440	2,420	2,850	1,130
15	598	2,120	4,270	1,390	1,530	1,730	4,650	1,780	3,540	2,220	2,350	1,140
16	1,680	2,320	3,010	1,160	5,730	2,560	4,060	2,280	4,240	2,100	2,460	1,180
17	3,610	4,830	2,430	e1,100	5,170	4,010	3,570	2,150	6,720	1,980	2,900	1,150
18	2,010	4,400	2,090	e1,080	3,410	3,230	5,000	2,070	5,600	1,860	2,400	1,070
19	1,320	3,010	1,860	e1,000	2,780	2,890	8,610	2,060	6,590	1,780	2,030	1,100
20	1,040	2,370	2,180	e940	2,680	4,300	5,890	1,910	5,740	1,670	1,830	1,090
21	920	2,060	2,980	e920	2,670	6,640	4,850	1,830	4,350	1,720	1,740	1,010
22	885	2,210	2,600	e880	10,800	5,060	4,530	1,940	3,510	1,690	1,710	1,030
23	825	2,030	2,150	e820	18,400	4,010	4,020	2,010	2,950	2,080	1,690	2,540
24	771	1,770	2,150	e760	9,260	3,350	3,530	2,180	2,570	1,890	1,640	2,500
25	741	1,580	3,520	e760	5,820	2,920	3,250	2,220	2,280	1,630	1,550	1,590
26	750	1,450	3,090	e800	4,450	2,630	3,130	2,340	2,080	1,470	1,440	1,280
27	781	1,330	2,380	e880	3,880	2,450	2,950	2,170	1,960	1,420	1,360	1,290
28	779	1,260	2,060	e1,100	4,010	2,230	2,650	1,910	2,010	1,380	1,350	2,030
29	1,020	1,160	1,860	e1,400	---	2,120	2,470	1,830	1,960	1,500	1,460	1,990
30	1,510	1,090	1,690	e1,700	---	2,410	2,370	2,130	1,850	2,450	1,610	1,490
31	2,150	---	1,590	e1,600	---	2,600	---	2,070	---	1,910	1,700	---
TOTAL	30,646	60,783	67,997	48,360	101,640	93,390	141,160	70,880	106,710	90,720	75,480	46,320
MEAN	989	2,026	2,193	1,560	3,630	3,013	4,705	2,286	3,557	2,926	2,435	1,544
MAX	3,610	4,830	5,290	3,350	18,400	6,640	17,800	3,460	7,970	12,200	4,370	2,540
MIN	527	949	943	760	1,090	1,730	2,370	1,780	1,850	1,380	1,350	1,010
CFSM	0.87	1.79	1.94	1.38	3.21	2.66	4.16	2.02	3.15	2.59	2.15	1.37
IN.	1.01	2.00	2.24	1.59	3.34	3.07	4.64	2.33	3.51	2.98	2.48	1.52

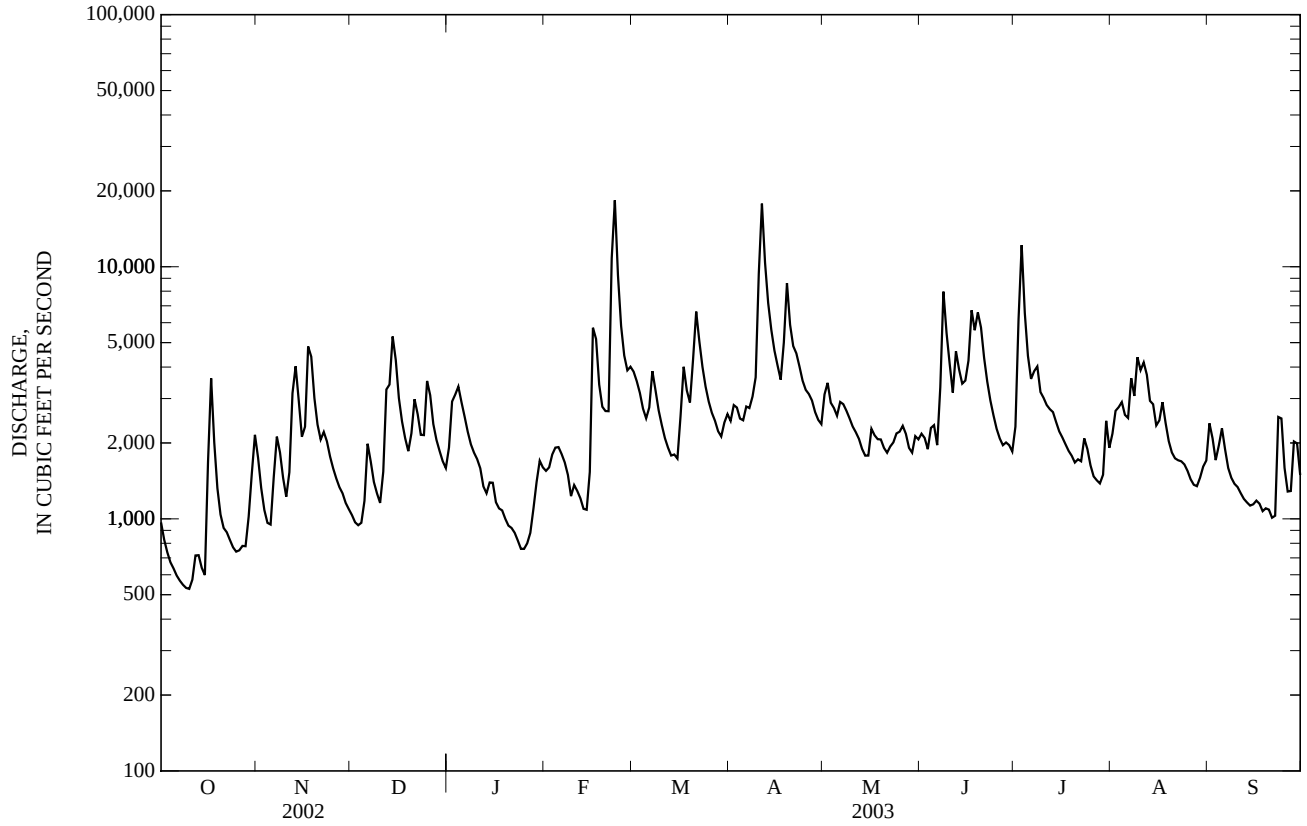
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2003, BY WATER YEAR (WY)

MEAN	1,357	1,597	1,786	2,186	2,571	2,876	2,636	2,122	1,696	1,382	1,366	1,219
MAX	3,625	7,189	4,005	5,744	5,566	5,827	6,345	4,469	5,280	4,017	8,148	4,827
(WY)	(1977)	(1978)	(1962)	(1995)	(1998)	(1993)	(1987)	(1973)	(1992)	(1949)	(1940)	(1989)
MIN	414	504	592	568	630	958	1,017	811	614	426	424	381
(WY)	(2001)	(1954)	(1956)	(1956)	(1934)	(1988)	(1942)	(1941)	(1988)	(1930)	(2002)	(1954)

03164000 NEW RIVER NEAR GALAX, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1930 - 2003	
ANNUAL TOTAL	449,739		934,086			
ANNUAL MEAN	1,232		2,559		1,896	
HIGHEST ANNUAL MEAN					2,807	1958
LOWEST ANNUAL MEAN					954	2002
HIGHEST DAILY MEAN	8,560	Mar 18	18,400	Feb 23	86,200	Aug 14, 1940
LOWEST DAILY MEAN	299	Aug 15	527	Oct 10	265	Sep 19, 1954
ANNUAL SEVEN-DAY MINIMUM	317	Aug 10	569	Oct 5	304	Sep 13, 1954
MAXIMUM PEAK FLOW			24,400	Feb 22	141,000	Aug 14, 1940
MAXIMUM PEAK STAGE			7.31	Feb 22	a25.70	Aug 14, 1940
INSTANTANEOUS LOW FLOW			519	Oct 10	b193	Jan 9, 1956
ANNUAL RUNOFF (CFSM)	1.09		2.26		1.68	
ANNUAL RUNOFF (INCHES)	14.79		30.72		22.78	
10 PERCENT EXCEEDS	2,180		4,320		3,420	
50 PERCENT EXCEEDS	943		2,090		1,440	
90 PERCENT EXCEEDS	476		988		651	

a From floodmark.
b Result of freezeup.
e Estimated.



03165000 CHESTNUT CREEK AT GALAX, VA

LOCATION.--Lat 36°38'45", long 80°55'09", NAD83, Galax City, Hydrologic Unit 05050001, on right bank 200 ft upstream from bridge on State Highway 89 and 1.7 mi downstream from Wards Mill Branch.

DRAINAGE AREA.--39.4 mi^2.

PERIOD OF RECORD.--September 1944 to current year.

REVISED RECORDS.--WSP 1385: 1953.

GAGE.--Water-stage recorder. Concrete control since Aug. 30, 1979. Datum of gage is 2,344.17 ft NGVD of 1929. Prior to June 25, 1948, nonrecording gage, and June 25, 1948, to May 28, 1953, water-stage recorder, at site 200 ft upstream at datum 0.86 ft higher.

REMARKS.--Records good except those for periods with ice effect, Jan. 12, 13, 16-19, 24-28, which are fair. Maximum discharge, 6,980 ft^3/s, from rating curve extended above 2,200 ft^3/s on basis of two slope-area and one contracted-opening measurements at gage heights 9.5 ft, 14.4 ft, and 17.4 ft, respectively, site and datum then in use. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 14, 1940, reached a stage of 17.4 ft, at site and datum used 1944-53, discharge, 11,000 ft^3/s, by contracted-opening measurement.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	1315	1,650	4.94	Jun 12	0330	1,490	4.59
Apr 10	1845	1,370	4.33	Jun 19	0630	856	3.24
Apr 18	2000	902	3.33	Aug 7	0800	*1,740	*5.13
Jun 7	1545	1,000	3.53	Aug 15	2330	866	3.26

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	49	37	125	48	86	106	88	73	108	139	141
2	34	43	37	97	48	81	100	83	66	434	117	89
3	31	39	37	98	47	72	86	80	71	234	138	113
4	29	37	35	79	61	66	80	89	91	125	103	135
5	28	42	54	69	52	64	86	93	80	105	101	104
6	27	65	51	64	48	81	78	94	67	103	97	87
7	25	46	44	59	49	68	93	85	487	102	724	84
8	25	42	44	57	46	63	88	81	215	93	172	79
9	25	39	43	55	48	61	143	77	121	90	135	78
10	25	38	42	53	45	59	732	74	95	91	235	75
11	35	111	94	50	45	56	345	72	98	87	175	73
12	34	154	79	e49	45	56	159	69	515	83	121	72
13	28	94	121	e47	43	54	121	66	144	91	103	72
14	27	66	114	48	46	55	105	64	114	82	97	70
15	29	57	73	48	78	53	98	73	101	85	155	76
16	163	117	62	e47	111	219	93	80	306	88	252	71
17	71	154	57	e47	70	111	89	70	172	82	113	68
18	49	83	53	e44	61	90	485	82	145	83	97	68
19	41	68	51	e44	68	83	331	81	408	90	92	77
20	37	60	95	45	82	335	167	72	170	77	87	68
21	38	60	66	45	103	164	139	71	127	78	85	66
22	38	55	58	47	711	110	123	85	109	168	87	84
23	35	50	54	42	281	94	109	90	98	152	82	159
24	33	48	90	e41	128	87	100	84	92	102	79	80
25	32	46	89	e39	97	81	99	77	89	85	78	73
26	39	45	66	e40	85	78	101	122	86	79	76	69
27	35	43	59	e42	93	77	94	86	83	77	75	177
28	44	42	56	e44	97	72	90	76	84	74	75	168
29	56	40	53	47	---	91	88	92	86	104	99	86
30	83	39	52	53	---	103	86	89	81	117	104	79
31	60	---	51	49	---	96	---	80	---	89	159	---
TOTAL	1,293	1,872	1,917	1,714	2,736	2,866	4,614	2,525	4,474	3,458	4,252	2,741
MEAN	41.7	62.4	61.8	55.3	97.7	92.5	154	81.5	149	112	137	91.4
MAX	163	154	121	125	711	335	732	122	515	434	724	177
MIN	25	37	35	39	43	53	78	64	66	74	75	66
CFSM	1.06	1.58	1.57	1.40	2.48	2.35	3.90	2.07	3.79	2.83	3.48	2.32
IN.	1.22	1.77	1.81	1.62	2.58	2.71	4.36	2.38	4.22	3.26	4.01	2.59

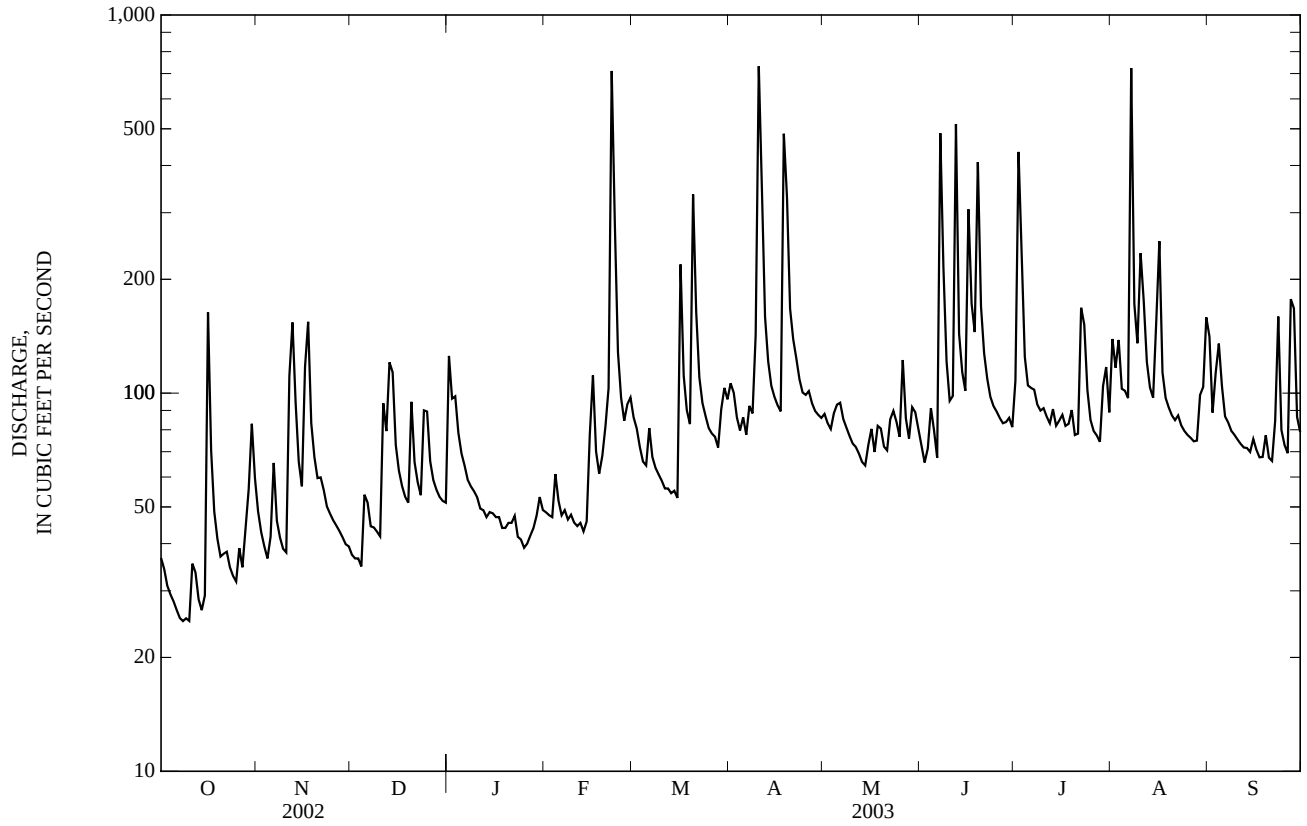
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2003, BY WATER YEAR (WY)

MEAN	57.1	61.5	63.5	69.8	80.7	92.7	89.8	74.5	66.7	52.1	49.7	53.3
MAX	197	157	112	161	166	301	233	160	172	150	156	254
(WY)	(1948)	(1980)	(1958)	(1995)	(1998)	(1993)	(1983)	(1973)	(1992)	(1989)	(1949)	(1989)
MIN	19.8	24.2	25.8	23.9	33.2	38.1	35.5	30.4	19.6	20.7	15.6	18.6
(WY)	(1964)	(2002)	(1964)	(1956)	(2001)	(1988)	(2001)	(2002)	(2002)	(1986)	(1981)	(1954)

03165000 CHESTNUT CREEK AT GALAX, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1945 - 2003	
ANNUAL TOTAL	14,216		34,462			
ANNUAL MEAN	38.9		94.4		67.5	
HIGHEST ANNUAL MEAN					107	1993
LOWEST ANNUAL MEAN					32.5	2002
HIGHEST DAILY MEAN	350	Sep 27	732	Apr 10	2,050	Apr 21, 1992
LOWEST DAILY MEAN	12	aSep 11	25	bOct 7	12	cAug 26, 1981
ANNUAL SEVEN-DAY MINIMUM	13	Sep 7	26	Oct 4	13	Aug 23, 1981
MAXIMUM PEAK FLOW			1,740	Aug 7	6,980	Oct 17, 1947
MAXIMUM PEAK STAGE			5.13	Aug 7	d14.40	Oct 17, 1947
INSTANTANEOUS LOW FLOW			25	fOct 7	12	gAug 25, 1981
ANNUAL RUNOFF (CFSM)	0.99		2.40		1.71	
ANNUAL RUNOFF (INCHES)	13.42		32.54		23.28	
10 PERCENT EXCEEDS	63		144		108	
50 PERCENT EXCEEDS	32		79		51	
90 PERCENT EXCEEDS	17		41		27	

a Also Sept. 12, 13, 2002.
b Also Oct. 8-10, 2002.
c Also Sept. 11-13, 2002.
d From floodmark, site and datum then in use.
e Estimated.
f Also Oct. 8-11, 2002.
g Also Aug. 26-30, 1981, Nov. 22, 2000, and Sept. 11-14, 2002.



03165500 NEW RIVER AT IVANHOE, VA

LOCATION.--Lat 36°50'05", long 80°57'09", NAD83, Wythe County, Hydrologic Unit 05050001, on left bank at Ivanhoe, 2.1 mi downstream from Big Branch, and 2.3 mi upstream from Cripple Creek.

DRAINAGE AREA.--1,340 mi^2.

PERIOD OF RECORD.--August to December 1927, October 1929 to September 1978, October 1978 to September 1982 (annual maximum only), February 1996 to present. Monthly discharge only for some periods, published in WSP 1305. Gage-height records collected in vicinity, October 1916 to July 1943, are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 783: Drainage area, 1933(M).

GAGE.--Water-stage recorder. Datum of gage is 1,943.09 ft NGVD of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 20-29, which is fair. Large diurnal fluctuation and some regulation caused by powerplants at Buck 2.8 mi upstream and at Byllesby 5.5 mi upstream. Maximum discharge, 155,000 ft^3/s, from rating curve extended above 32,000 ft^3/s on basis of flood records for other stations on New River. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in July 1916 reached a stage of 34.8 ft, from floodmark, discharge, 132,000 ft^3/s, from rating curve extended as explained above. Flood in September 1878 was about 5 ft lower than flood in July 1916 and was the highest known from 1840 to 1916.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 13,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 23	0445	*24,100	*12.56	Jul 3	0545	14,500	9.36
Apr 11	0800	21,700	11.84				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,440	2,220	1,540	2,370	2,260	4,040	3,050	3,190	2,400	2,740	2,580	2,620
2	1,280	1,790	1,390	3,200	2,070	3,810	3,370	3,540	2,520	5,420	3,010	2,520
3	996	1,530	1,410	3,380	2,100	3,870	3,350	3,150	2,300	12,700	3,120	2,240
4	911	1,400	1,420	3,510	2,100	3,540	3,060	3,100	2,480	7,340	3,110	2,090
5	837	1,440	1,490	3,170	2,340	3,130	2,980	2,950	2,730	4,800	2,960	2,560
6	759	1,700	2,270	2,840	2,270	2,370	3,270	3,130	2,430	3,910	2,940	2,240
7	688	2,320	2,160	2,580	2,180	3,640	3,230	3,170	3,370	3,740	4,760	1,930
8	669	2,230	1,880	2,390	1,920	3,600	3,550	2,990	7,760	4,040	3,880	1,710
9	657	1,910	2,110	2,270	1,770	3,120	3,980	2,900	6,090	3,530	4,460	1,680
10	593	1,700	1,890	2,140	1,850	2,900	7,540	2,750	4,350	3,200	4,170	1,650
11	732	2,070	1,870	2,080	1,830	2,670	18,700	2,620	3,480	3,060	4,440	1,570
12	912	3,280	3,110	1,750	1,710	2,480	10,800	2,600	5,120	2,980	3,910	1,490
13	1,010	4,060	2,990	1,600	1,620	2,390	7,290	2,300	4,240	2,960	3,300	1,460
14	900	3,280	4,890	1,750	1,600	2,360	5,690	2,200	3,860	2,810	3,200	1,440
15	908	2,560	4,340	1,760	2,010	2,340	4,840	2,270	3,770	2,610	2,820	1,460
16	1,520	2,660	3,360	1,510	4,830	2,860	4,170	2,590	4,580	2,490	2,960	1,470
17	3,580	4,400	2,780	1,470	5,370	3,980	3,660	2,630	6,360	2,410	3,120	1,490
18	2,540	4,470	2,430	1,420	3,730	3,610	4,690	2,550	6,150	2,320	2,790	1,420
19	1,870	3,330	2,260	1,280	3,100	3,260	8,930	2,560	7,500	2,280	2,400	1,500
20	1,490	2,740	2,460	e1,200	3,070	4,300	6,160	2,400	6,280	2,150	2,180	1,400
21	1,350	2,450	3,070	e1,200	3,090	6,410	5,000	2,280	4,630	2,160	2,040	1,360
22	1,250	2,460	2,940	e1,150	9,170	5,190	4,580	2,410	3,770	2,200	2,260	1,380
23	1,210	2,420	2,530	e1,100	20,700	4,170	4,090	2,510	3,340	2,620	2,040	2,420
24	1,090	2,160	2,550	e1,000	10,400	3,700	3,650	2,530	2,930	2,390	2,130	2,920
25	964	2,000	3,510	e1,000	6,310	3,320	3,500	2,660	2,720	2,200	1,950	2,090
26	1,030	1,880	3,390	e1,050	4,710	3,100	3,390	2,720	2,520	1,930	1,510	1,610
27	1,050	1,800	2,760	e1,100	4,110	2,960	3,290	2,670	2,400	1,920	1,700	1,550
28	1,120	1,680	2,460	e1,200	4,100	2,800	3,030	2,420	2,400	1,850	1,600	2,520
29	1,360	1,610	2,280	e1,500	---	2,740	2,810	2,250	2,470	1,980	1,720	2,300
30	2,060	1,530	2,200	1,840	---	2,960	2,550	2,490	2,440	2,910	1,950	1,890
31	2,340	---	2,040	2,410	---	3,160	---	2,540	---	2,510	2,080	---
TOTAL	39,116	71,080	77,780	58,220	112,320	104,780	148,200	83,070	117,390	102,160	87,090	55,980
MEAN	1,262	2,369	2,509	1,878	4,011	3,380	4,940	2,680	3,913	3,295	2,809	1,866
MAX	3,580	4,470	4,890	3,510	20,700	6,410	18,700	3,540	7,760	12,700	4,760	2,920
MIN	593	1,400	1,390	1,000	1,600	2,340	2,550	2,200	2,300	1,850	1,510	1,360
CFSM	0.94	1.77	1.87	1.40	2.99	2.52	3.69	2.00	2.92	2.46	2.10	1.39
IN.	1.09	1.97	2.16	1.62	3.12	2.91	4.11	2.31	3.26	2.84	2.42	1.55

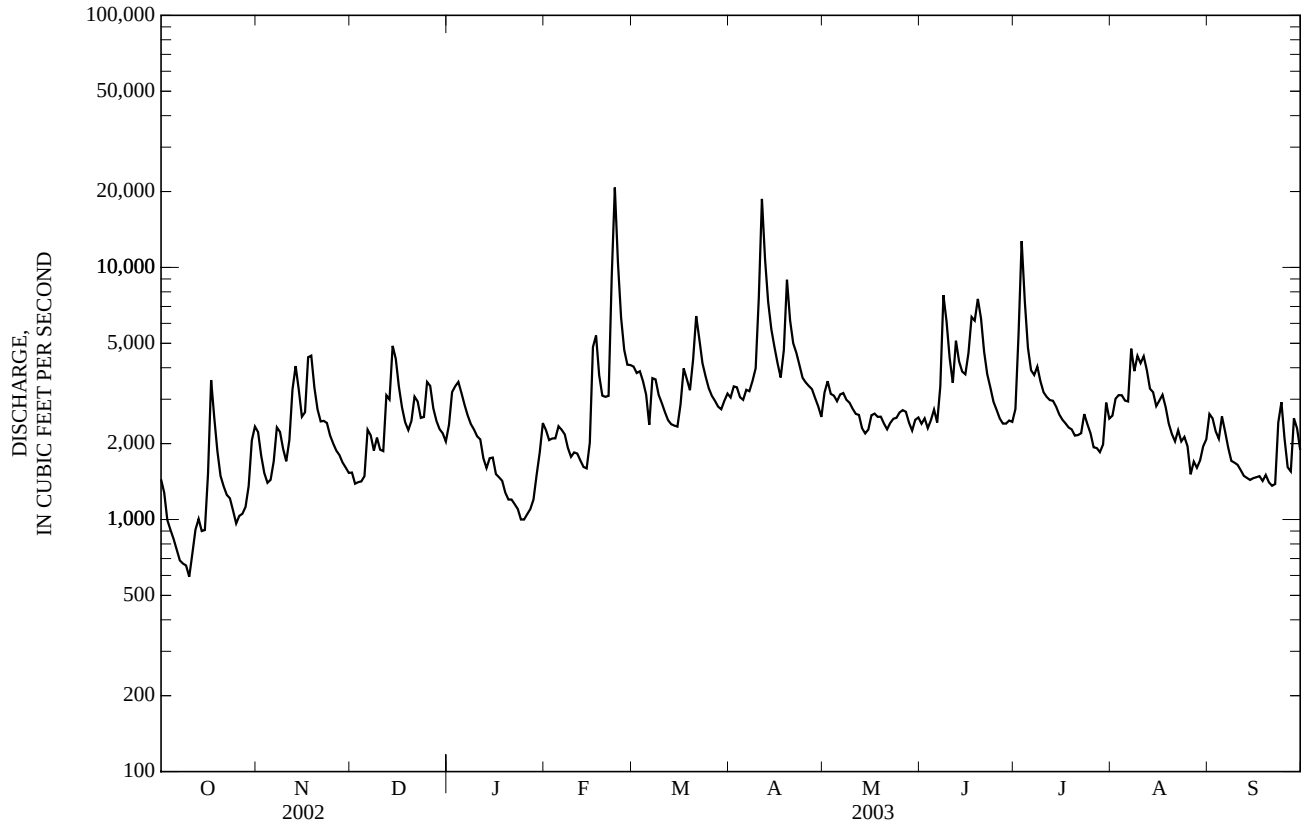
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1978, 1997 - 2003, BY WATER YEAR (WY)

MEAN	1,571	1,759	1,993	2,420	2,885	3,162	2,909	2,351	1,882	1,560	1,589	1,343
MAX	4,200	7,149	4,248	5,052	6,106	6,266	5,993	5,000	4,511	4,440	8,953	4,499
(WY)	(1930)	(1978)	(1962)	(1937)	(1998)	(1975)	(1960)	(1998)	(1976)	(1949)	(1940)	(1945)
MIN	491	578	703	678	693	1,450	1,289	991	781	485	451	433
(WY)	(1931)	(1932)	(1940)	(1940)	(1934)	(1931)	(1942)	(1941)	(2002)	(1930)	(2002)	(1954)

03165500 NEW RIVER AT IVANHOE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1930 - 1978 1997 - 2003	
ANNUAL TOTAL	526,626		1,057,186			
ANNUAL MEAN	1,443		2,896		2,109	
HIGHEST ANNUAL MEAN					3,188	1978
LOWEST ANNUAL MEAN					1,131	2002
HIGHEST DAILY MEAN	9,140	Mar 19	20,700	Feb 23	87,600	Aug 14, 1940
LOWEST DAILY MEAN	239	Aug 23	593	Oct 10	184	Jul 28, 1930
ANNUAL SEVEN-DAY MINIMUM	297	Aug 10	705	Oct 5	297	Aug 10, 2002
MAXIMUM PEAK FLOW			24,100	Feb 23	155,000	Aug 14, 1940
MAXIMUM PEAK STAGE			12.56	Feb 23	a38.10	Aug 14, 1940
INSTANTANEOUS LOW FLOW			564	bOct 10	44	Oct 11, 1965
ANNUAL RUNOFF (CFSM)	1.08		2.16		1.57	
ANNUAL RUNOFF (INCHES)	14.62		29.35		21.38	
10 PERCENT EXCEEDS	2,540		4,460		3,750	
50 PERCENT EXCEEDS	1,230		2,510		1,660	
90 PERCENT EXCEEDS	472		1,400		723	

a From floodmark.
b Also Oct. 15, 2002.
e Estimated.



03167000 REED CREEK AT GRAHAMS FORGE, VA

LOCATION.--Lat 36°56'22", long 80°53'12", NAD83, Wythe County, Hydrologic Unit 05050001, on left bank 20 ft downstream from bridge on State Highway 619 at Grahams Forge, 2.2 mi downstream from Glade Creek, and at mile 7.3.

DRAINAGE AREA.--247 mi^2.

PERIOD OF RECORD.--July 1908 to September 1916, January 1927 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 1235: 1912-13, 1915-16. WSP 1275: 1911, 1927-28(M), 1930-34(M). WSP 1705: 1913(M), 1916(M), 1957 calendar year runoff. WSP 1725: 1915 calendar year runoff. WDR VA-92-1: 1984-86(P), 1987, 1988-89(P), 1990-91.

GAGE.--Water-stage recorder. Datum of gage is 1,924.65 ft NGVD of 1929. Prior to Oct. 1, 1916, nonrecording gage at same site at datum 0.68 ft lower. Feb. 3, 1927, to Oct. 28, 1934, and June 11, 1974, to July 22, 1975, nonrecording gage, at present site and datum.

REMARKS.--Records good except for period with ice effect, Jan. 24-29, which is fair. Occasional diurnal fluctuation at low flow caused by mills upstream from station. Maximum discharge, 17,500 ft^3/s, from rating curve extended above 7,600 ft^3/s on basis of velocity-area study and slope-area measurement at gage heights 11.4 ft and 10.01 ft, respectively. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,300 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 16	1145	5,010	5.65	Jul 3	0500	4,280	5.32
Feb 23	0145	*9,390	*7.73	Jul 7	0345	2,680	4.46
Apr 11	0830	4,670	5.50				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77	248	177	381	240	804	364	313	183	612	317	439
2	70	180	165	624	236	901	476	300	172	2,010	307	281
3	66	147	156	729	233	805	483	275	164	3,430	400	222
4	62	131	151	847	277	662	434	267	188	1,220	482	291
5	60	126	173	651	566	602	410	259	176	807	484	520
6	58	208	205	539	396	582	392	258	157	868	387	313
7	57	302	184	450	336	550	404	245	226	1,660	390	252
8	55	228	176	397	279	507	475	240	437	721	702	226
9	55	182	174	376	225	480	1,050	241	477	565	615	204
10	56	157	170	353	241	445	1,630	241	334	632	514	190
11	70	257	280	328	219	413	3,540	227	306	555	700	181
12	80	574	694	297	208	387	1,460	215	600	473	747	173
13	73	852	951	277	192	367	926	197	766	416	546	169
14	67	490	1,450	267	197	364	705	188	480	375	477	164
15	63	344	891	248	518	337	601	196	659	349	399	172
16	163	364	633	223	3,240	347	540	246	678	326	497	199
17	331	828	509	228	1,250	343	496	209	1,670	306	695	171
18	173	739	438	198	768	334	642	227	1,160	286	437	161
19	122	475	386	199	592	335	1,020	221	1,050	271	352	189
20	102	372	501	203	603	507	753	205	921	258	311	177
21	97	338	769	200	820	931	655	241	673	244	283	163
22	94	408	545	184	4,060	681	634	300	529	238	276	162
23	86	421	433	169	5,660	558	548	291	435	249	247	270
24	81	364	504	e110	1,910	492	481	274	373	235	235	242
25	80	309	1,070	e105	1,180	436	440	248	329	219	221	199
26	92	267	757	e110	926	402	415	225	304	206	209	181
27	91	243	555	e120	781	379	378	210	285	199	201	243
28	103	221	465	e120	734	347	342	194	281	193	197	446
29	173	202	409	e140	---	331	317	188	261	564	190	305
30	351	191	368	220	---	363	310	192	263	522	185	240
31	385	---	336	247	---	360	---	185	---	344	196	---
TOTAL	3,493	10,168	14,675	9,540	26,887	15,352	21,321	7,318	14,537	19,353	12,199	7,145
MEAN	113	339	473	308	960	495	711	236	485	624	394	238
MAX	385	852	1,450	847	5,660	931	3,540	313	1,670	3,430	747	520
MIN	55	126	151	105	192	331	310	185	157	193	185	161
CFSM	0.46	1.37	1.92	1.25	3.89	2.00	2.88	0.96	1.96	2.53	1.59	0.96
IN.	0.53	1.53	2.21	1.44	4.05	2.31	3.21	1.10	2.19	2.91	1.84	1.08

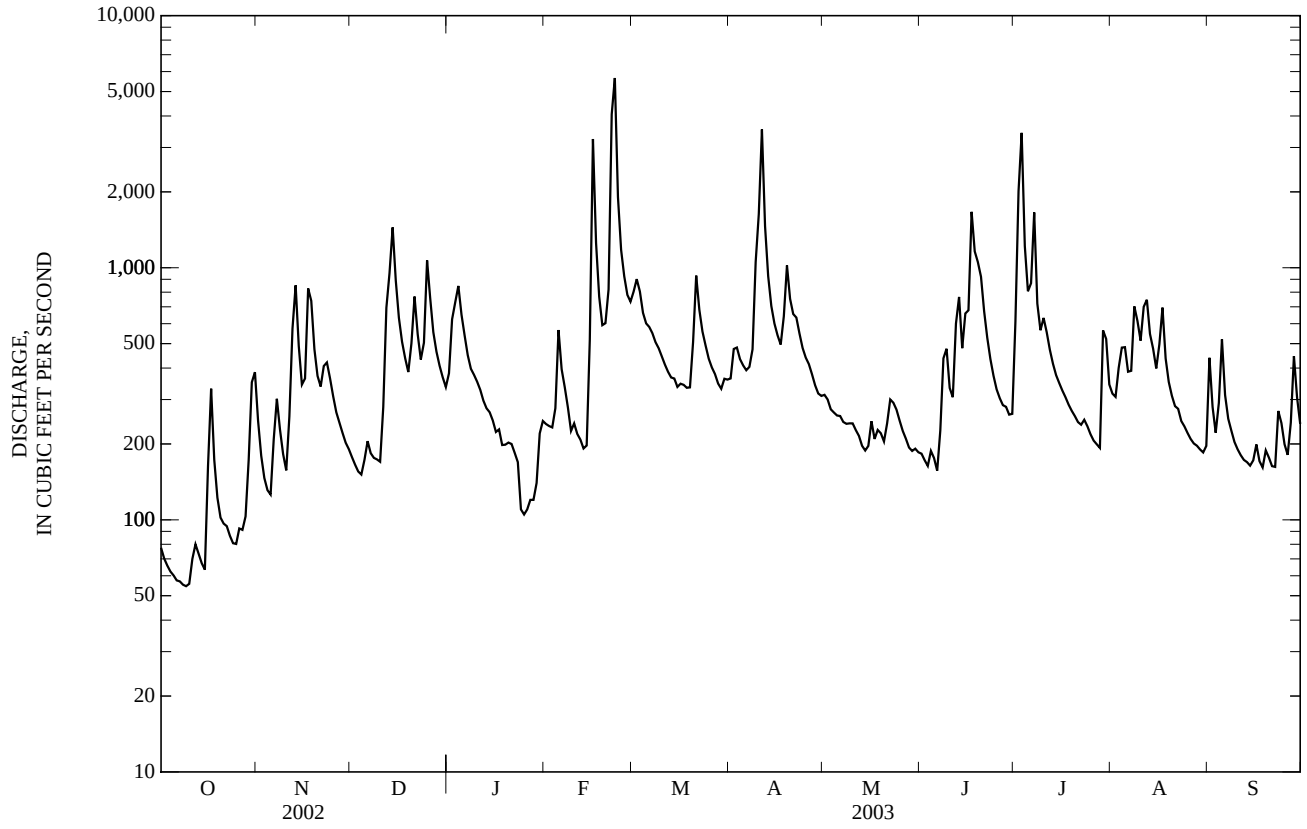
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 1916, 1927 - 2003, BY WATER YEAR (WY)

MEAN	138	161	239	348	457	506	418	322	211	163	142	117
MAX	626	606	790	911	1,411	1,406	1,374	731	732	867	517	488
(WY)	(1938)	(1930)	(1973)	(1936)	(1957)	(1955)	(1987)	(1958)	(1992)	(1916)	(1916)	(1989)
MIN	45.3	50.7	59.9	61.2	63.5	120	100	91.4	74.6	63.5	60.5	51.4
(WY)	(1942)	(1942)	(1942)	(1942)	(1934)	(1988)	(1942)	(1941)	(1941)	(1930)	(1930)	(1941)

03167000 REED CREEK AT GRAHAMS FORGE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1909 - 1916 1927 - 2003	
ANNUAL TOTAL	79,281		161,988			
ANNUAL MEAN	217		444		268	
HIGHEST ANNUAL MEAN					444	2003
LOWEST ANNUAL MEAN					118	1941
HIGHEST DAILY MEAN	7,620	Mar 18	5,660	Feb 23	10,600	Apr 5, 1977
LOWEST DAILY MEAN	41	Sep 11	55	aOct 8	22	Jan 30, 1934
ANNUAL SEVEN-DAY MINIMUM	47	Sep 8	58	Oct 4	33	Feb 24, 1942
MAXIMUM PEAK FLOW			9,390	Feb 23	17,500	Jul 16, 1916
MAXIMUM PEAK STAGE			7.73	Feb 23	b11.40	Jul 16, 1916
INSTANTANEOUS LOW FLOW			45	Oct 5	c5.0	Dec 22, 1909
ANNUAL RUNOFF (CFSM)	0.88		1.80		1.08	
ANNUAL RUNOFF (INCHES)	11.94		24.40		14.72	
10 PERCENT EXCEEDS	446		774		541	
50 PERCENT EXCEEDS	111		313		158	
90 PERCENT EXCEEDS	58		157		73	

a Also Oct. 9, 2002.
b Present datum, from floodmarks.
c Observed, result of freezeup.
e Estimated.



03168000 NEW RIVER AT ALLISONIA, VA

LOCATION.--Lat 36°56'15", long 80°44'44", NAD83, Pulaski County, Hydrologic Unit 05050001, on left bank on State Highway 653, 0.2 mi downstream from Big Reed Island Creek, and 0.5 mi upstream from Allisonia.

DRAINAGE AREA.--2,202 mi^2.

PERIOD OF RECORD.--September 1929 to current year.

REVISED RECORDS.--WSP 783: Drainage area. WSP 823: 1936. WSP 1305: 1933(M).

GAGE.--Water-stage recorder. Datum of gage is 1,848.36 ft NGVD of 1929.

REMARKS.--Records good except those for period with ice effect, Jan. 20-29, and period of no gage-height record, Mar. 19-21, which are fair. Large diurnal fluctuation and some regulation by powerplant 25 mi upstream from station. U.S. Army Corps of Engineers satellite gage-height telemeter at station. American Electric Power gage-height transmitter at station. Maximum discharge, 185,000 ft^3/s, from rating curve extended above 52,000 ft^3/s on basis of flood records for other stations on New River. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 17,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 23	0400	*46,500	*9.85	Jun 19	1330	17,500	5.55
Apr 11	0730	37,800	8.67	Jul 3	0445	25,600	6.81
Jun 9	0230	20,000	5.97				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,690	2,850	1,800	3,160	2,910	6,780	4,280	4,460	3,290	4,310	4,420	4,170
2	1,380	2,160	1,620	5,160	2,690	6,570	4,930	5,000	3,340	9,050	4,390	3,950
3	1,190	1,820	1,660	5,300	2,670	6,210	4,970	4,440	3,100	22,600	5,590	3,580
4	1,140	1,630	1,620	5,870	2,720	5,730	4,430	4,490	3,380	12,300	5,520	3,430
5	1,030	1,490	1,760	5,040	3,370	5,090	4,180	4,230	3,880	8,100	5,040	4,550
6	986	1,890	2,560	4,400	3,210	4,110	4,410	4,390	3,360	6,370	4,870	3,660
7	948	2,750	2,490	3,870	2,960	5,350	4,560	4,470	5,250	7,050	10,000	3,100
8	908	2,730	2,170	3,460	2,540	5,410	5,300	4,160	13,500	6,370	7,540	2,750
9	870	2,240	2,260	3,260	2,160	4,750	6,990	4,060	13,800	5,510	8,470	2,600
10	877	1,940	2,580	3,030	2,380	4,330	13,400	3,810	7,480	5,350	7,620	2,510
11	946	3,200	2,230	2,860	2,330	3,900	32,900	3,810	5,830	4,900	8,040	2,400
12	1,080	5,480	4,350	2,390	2,170	3,640	17,400	3,500	10,300	4,510	6,920	2,300
13	1,180	7,230	5,090	2,030	1,990	3,390	11,600	3,270	8,380	4,530	5,650	2,230
14	1,100	5,060	8,880	2,330	1,980	3,290	9,060	2,980	7,290	4,400	5,090	2,200
15	1,030	3,580	7,420	2,310	2,700	3,270	7,520	3,040	6,700	4,010	4,440	2,180
16	1,620	3,560	5,240	1,880	11,300	3,720	6,420	3,670	7,700	3,750	4,770	2,360
17	4,570	7,460	4,140	2,000	10,100	5,400	5,490	3,820	11,700	3,650	5,260	2,230
18	3,370	7,620	3,590	1,800	6,330	5,160	6,640	3,720	11,200	3,550	4,720	2,160
19	2,190	5,100	3,130	1,660	4,770	e4,600	14,800	3,700	15,200	3,540	3,930	3,140
20	1,720	3,950	3,550	e1,600	4,740	e6,000	10,600	3,420	12,300	3,240	3,530	2,370
21	1,500	3,400	5,000	e1,600	5,260	e10,000	8,170	3,280	8,570	3,090	3,370	2,190
22	1,400	3,350	4,520	e1,500	22,300	8,600	7,350	3,540	6,530	3,220	3,670	2,080
23	1,350	3,350	3,770	e1,400	38,100	6,420	6,470	3,690	5,500	4,190	3,250	4,430
24	1,230	2,990	3,590	e1,350	17,500	5,370	5,610	3,660	4,720	3,590	3,220	4,530
25	1,190	2,670	6,060	e1,350	10,800	4,670	5,270	3,760	4,430	3,140	3,100	3,350
26	1,190	2,420	5,610	e1,400	7,990	4,400	5,070	3,920	4,070	2,730	2,540	2,570
27	1,210	2,260	4,340	e1,500	6,700	4,210	4,970	3,850	3,760	2,620	2,600	2,430
28	1,290	2,070	3,680	e1,600	6,610	3,850	4,520	3,500	3,660	2,500	2,550	4,440
29	1,540	1,970	3,340	e1,900	---	3,680	4,100	3,160	3,710	3,170	2,560	3,710
30	2,490	1,880	3,100	2,210	---	3,970	3,650	3,380	3,510	5,220	2,960	3,050
31	3,250	---	2,770	2,950	---	4,380	---	3,500	---	3,960	3,330	---
TOTAL	47,465	100,100	113,920	82,170	191,280	156,250	235,060	117,680	205,440	164,520	148,960	90,650
MEAN	1,531	3,337	3,675	2,651	6,831	5,040	7,835	3,796	6,848	5,307	4,805	3,022
MAX	4,570	7,620	8,880	5,870	38,100	10,000	32,900	5,000	15,200	22,600	10,000	4,550
MIN	870	1,490	1,620	1,350	1,980	3,270	3,650	2,980	3,100	2,500	2,540	2,080
CFSM	0.70	1.52	1.67	1.20	3.10	2.29	3.56	1.72	3.11	2.41	2.18	1.37
IN.	0.80	1.69	1.92	1.39	3.23	2.64	3.97	1.99	3.47	2.78	2.52	1.53

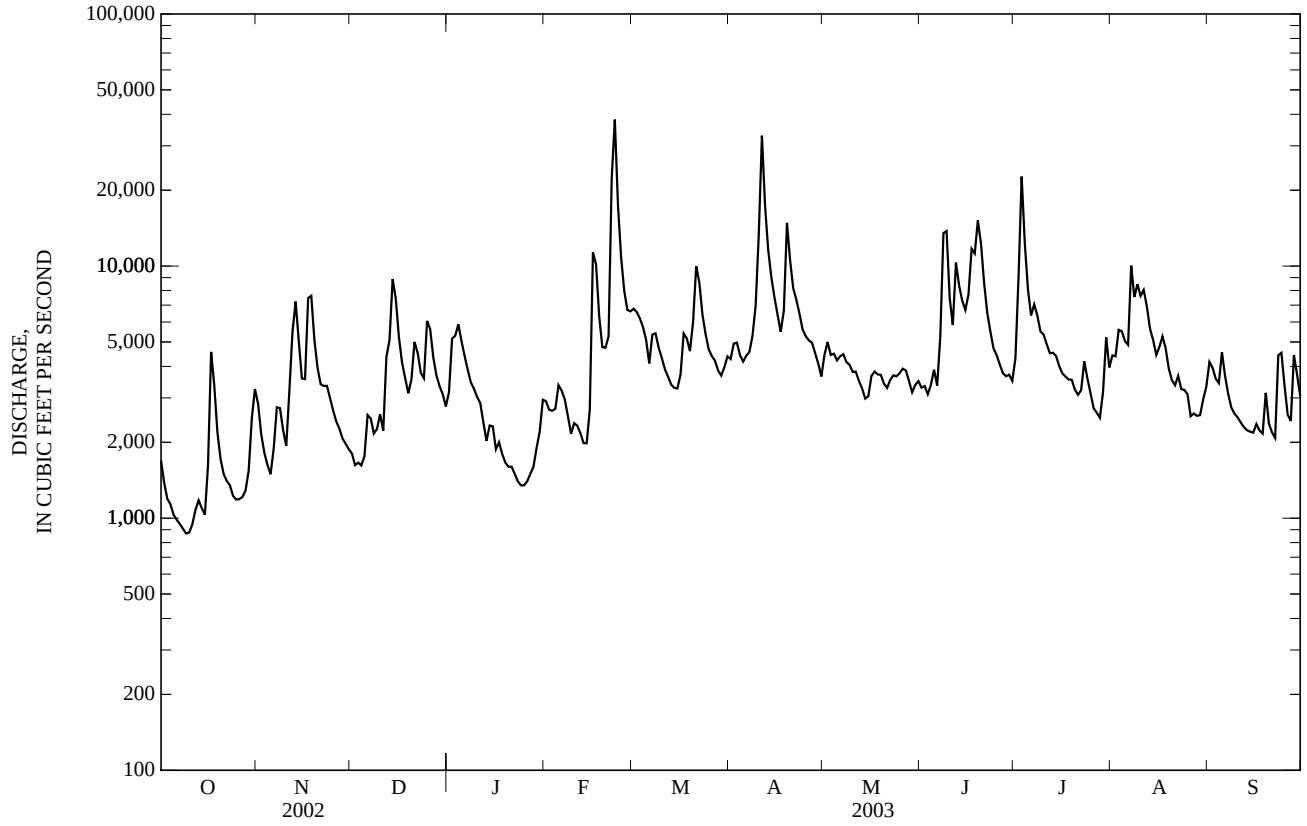
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2003, BY WATER YEAR (WY)

MEAN	2,224	2,549	2,933	3,702	4,416	4,974	4,547	3,686	2,864	2,284	2,200	1,979
MAX	6,561	9,597	6,125	8,600	9,195	10,870	11,880	7,736	8,552	6,230	11,570	8,448
(WY)	(1990)	(1978)	(1962)	(1995)	(1998)	(1993)	(1987)	(1973)	(1992)	(1949)	(1940)	(1989)
MIN	726	797	1,007	1,018	1,041	1,554	1,685	1,406	989	744	662	743
(WY)	(1931)	(2002)	(1966)	(1956)	(1934)	(1988)	(1942)	(1941)	(2002)	(1930)	(2002)	(1930)

03168000 NEW RIVER AT ALLISONIA, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1930 - 2003	
ANNUAL TOTAL	718,593		1,653,495			
ANNUAL MEAN	1,969		4,530		3,190	
HIGHEST ANNUAL MEAN					4,761	1978
LOWEST ANNUAL MEAN					1,496	2002
HIGHEST DAILY MEAN	21,800	Mar 18	38,100	Feb 23	95,000	Aug 14, 1940
LOWEST DAILY MEAN	446	Sep 13	870	Oct 9	446	Sep 13, 2002
ANNUAL SEVEN-DAY MINIMUM	501	Sep 8	938	Oct 5	501	Sep 8, 2002
MAXIMUM PEAK FLOW			46,500	Feb 23	185,000	Aug 14, 1940
MAXIMUM PEAK STAGE			9.85	Feb 23	23.42	Aug 14, 1940
INSTANTANEOUS LOW FLOW			835	Oct 9	412	Sep 7, 1930
ANNUAL RUNOFF (CFSM)	0.89		2.06		1.45	
ANNUAL RUNOFF (INCHES)	12.14		27.93		19.68	
10 PERCENT EXCEEDS	3,630		7,620		5,770	
50 PERCENT EXCEEDS	1,400		3,670		2,380	
90 PERCENT EXCEEDS	696		1,630		1,080	

e Estimated.



03169000 CLAYTOR RESERVOIR NEAR RADFORD, VA

LOCATION.--Lat 37°04'28", long 80°35'06", NAD83, Pulaski County, Hydrologic Unit 05050001, at Claytor Dam on New River, 0.5 mi upstream from Little River, and 5.5 mi upstream from Radford.

DRAINAGE AREA.--2,382 mi^2.

PERIOD OF RECORD.--May 1939 to current year (monthly figures only).

REVISED RECORDS.--WSP 2108: 1961-65 monthend contents and change in contents.

GAGE.--Water-stage recorder. Datum of gage is approximately at NGVD of 1929 (levels by Appalachian Power Company). Prior to Sept. 11, 1943, nonrecording gage at same site and datum.

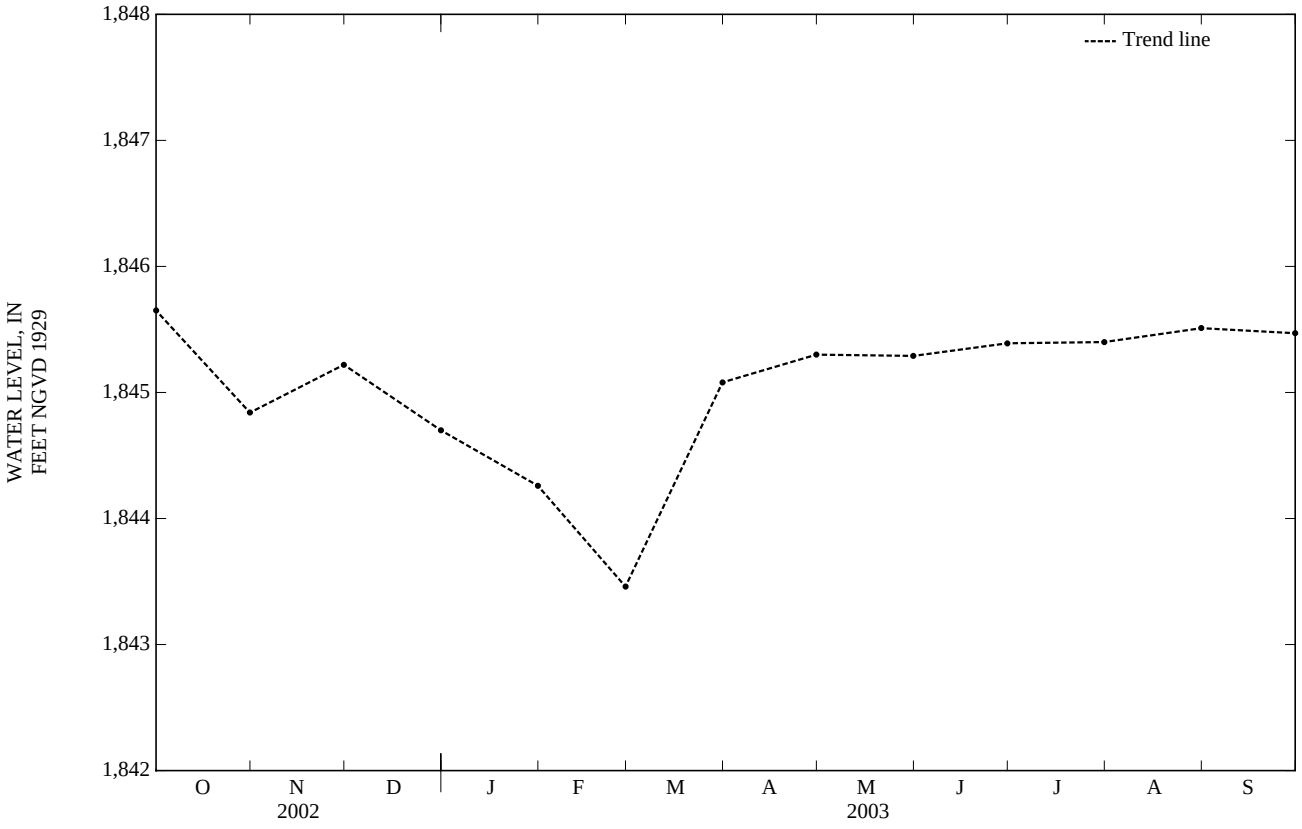
REMARKS.--Reservoir is formed by gravity overflow concrete dam. Spillway with crest at elevation 1,818.5 ft is equipped with 9 lift gates 30 ft high by 50 ft wide. Dam completed and storage began May 22, 1939; water in reservoir reached minimum pool elevation in January 1940. Total level-pool capacity at elevation 1,847.0 ft, 1.5 ft below top of gates, is 230,100 acre-ft of which about 100,000 acre-ft is controlled storage above minimum pool elevation of 1,820.0 ft. Reservoir is used for hydroelectric power and recreation. U.S. Army Corps of Engineers satellite elevation telemeter at station.

COOPERATION.--Records were provided by the American Electric Power.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,845.65	224,000	
Oct. 31	1,844.84	220,500	-3,500
Nov. 30	1,845.22	222,200	+1,700
Dec. 31	1,844.70	219,900	-2,300
CAL YR 2002			-3,400
Jan. 31	1,844.26	218,100	-1,800
Feb. 28	1,843.46	214,600	-3,500
Mar. 31	1,845.08	221,600	+7,000
Apr. 30	1,845.30	222,500	+900
May 31	1,845.29	222,500	0
June 30	1,845.39	222,900	+400
July 31	1,845.40	222,900	0
Aug. 31	1,845.51	223,400	+500
Sept. 30	1,845.47	223,200	-200
WTR YR 2003			-800

03169000 CLAYTOR RESERVOIR NEAR RADFORD, VA—Continued



03170000 LITTLE RIVER AT GRAYSONTOWN, VA

LOCATION.--Lat 37°02'15", long 80°33'24", NAD83, Pulaski County, Hydrologic Unit 05050001, on left bank at upstream side of bridge on State Highway 693 at Snowville, 0.5 mi southeast of Graysontown, 7 mi south of Radford, and at mile 8.6.

DRAINAGE AREA.--300 mi^2.

PERIOD OF RECORD.--October 1928 to current year. Published as "at Graysonton" prior to October 1990.

REVISED RECORDS.--WSP 823: 1929-36. WSP 1143: 1945. WSP 1305: 1929(M). WSP 1555: Drainage area (at site used 1928-41). WSP 1625: 1951(M). WSP 1725: 1936(M).

GAGE.--Water-stage recorder. Datum of gage is 1,816.04 ft NGVD of 1929. Prior to Nov. 20, 1931, nonrecording gage at bridge 1.0 mi downstream at datum 17.99 ft lower. Nov. 20, 1931, to Nov. 12, 1941, water-stage recorder 1.2 mi downstream at datum 20.58 ft lower.

REMARKS.--Records good except for period with ice effect, Jan. 17-27, which is poor. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 22,800 ft^3/s, from rating curve extended above 16,000 ft^3/s on basis of slope-area measurements at gage heights 12.76 ft and 13.40 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 22	2130	*9,500	*7.80	Jun 19	1500	3,450	4.27
Apr 11	0330	3,470	4.28				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	104	234	172	294	232	761	599	506	467	455	791	388
2	95	164	158	431	238	704	973	445	401	1,230	567	384
3	90	132	167	386	254	623	736	414	375	1,880	650	408
4	85	120	163	408	300	532	577	789	433	957	606	544
5	82	132	142	367	344	505	539	614	433	663	562	624
6	79	158	209	340	276	542	526	554	380	622	873	386
7	75	231	166	315	226	560	579	495	697	598	741	345
8	72	155	168	285	231	486	892	462	1,630	570	985	334
9	70	149	221	312	198	457	1,250	439	1,120	497	1,570	321
10	72	134	188	286	269	430	1,790	422	703	484	1,410	312
11	83	383	224	267	242	401	2,600	535	669	487	1,310	301
12	92	890	386	181	246	388	1,390	454	1,330	420	917	293
13	101	930	504	179	205	381	966	393	895	468	707	300
14	86	434	762	250	239	384	760	360	939	625	701	313
15	80	312	518	238	413	366	653	358	803	497	584	324
16	129	359	398	182	1,260	377	593	461	943	424	635	346
17	410	957	352	e180	610	499	557	450	1,020	398	637	299
18	215	629	321	e170	450	431	579	502	1,050	379	501	301
19	136	409	295	e160	374	396	922	719	2,800	364	448	961
20	116	331	358	e160	413	1,100	711	585	1,700	385	418	515
21	107	293	486	e165	637	1,560	621	513	1,100	360	404	383
22	118	281	366	e150	5,260	895	581	571	811	428	421	362
23	123	255	329	e140	4,110	642	536	574	648	794	392	786
24	103	237	376	e130	1,580	543	501	565	556	535	368	595
25	96	207	681	e130	1,020	495	490	499	499	399	360	414
26	98	200	508	e140	760	467	497	534	478	360	349	332
27	108	199	377	e150	643	483	501	531	456	342	336	333
28	121	193	335	152	626	438	454	557	457	333	341	739
29	186	175	321	159	---	427	430	487	457	630	339	484
30	318	173	297	215	---	531	422	498	419	797	333	398
31	363	---	284	238	---	580	---	457	---	614	367	---
TOTAL	4,013	9,456	10,232	7,160	21,656	17,384	23,225	15,743	24,669	17,995	19,623	12,825
MEAN	129	315	330	231	773	561	774	508	822	580	633	428
MAX	410	957	762	431	5,260	1,560	2,600	789	2,800	1,880	1,570	961
MIN	70	120	142	130	198	366	422	358	375	333	333	293
CFSM	0.43	1.05	1.10	0.77	2.58	1.87	2.58	1.69	2.74	1.93	2.11	1.43
IN.	0.50	1.17	1.27	0.89	2.69	2.16	2.88	1.95	3.06	2.23	2.43	1.59

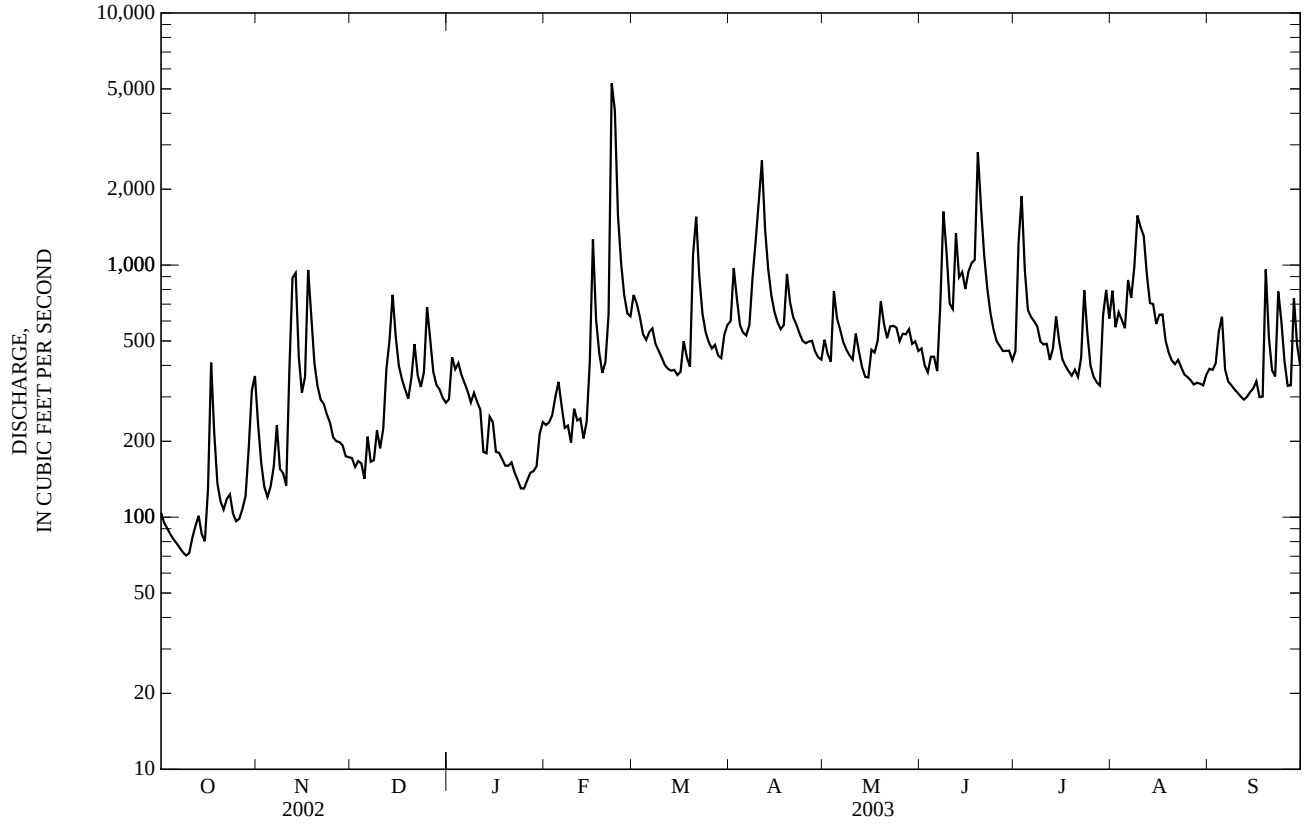
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2003, BY WATER YEAR (WY)

MEAN	287	294	327	396	472	537	502	406	335	265	253	250
MAX	1,458	916	860	1,050	1,055	1,213	1,444	810	942	945	1,584	988
(WY)	(1930)	(1986)	(1949)	(1937)	(1998)	(1993)	(1987)	(1958)	(1972)	(1949)	(1940)	(1989)
MIN	86.7	94.7	115	108	113	220	146	168	101	97.6	53.7	76.9
(WY)	(1954)	(2002)	(1966)	(1966)	(1934)	(1940)	(1942)	(1941)	(2002)	(2002)	(2002)	(1932)

03170000 LITTLE RIVER AT GRAYSONTOWN, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1929 - 2003	
ANNUAL TOTAL	67,700		183,981			
ANNUAL MEAN	185		504		360	
HIGHEST ANNUAL MEAN					631	1949
LOWEST ANNUAL MEAN					148	2002
HIGHEST DAILY MEAN	1,830	Mar 18	5,260	Feb 22	13,200	Oct 2, 1929
LOWEST DAILY MEAN	31	aAug 14	70	Oct 9	31	aAug 14, 2002
ANNUAL SEVEN-DAY MINIMUM	32	Aug 10	76	Oct 5	32	Aug 10, 2002
MAXIMUM PEAK FLOW			9,500	Feb 22	22,800	Jun 21, 1972
MAXIMUM PEAK STAGE			7.80	Feb 22	13.40	Jun 21, 1972
INSTANTANEOUS LOW FLOW			70	bOct 8	c21	Feb 22, 1942
ANNUAL RUNOFF (CFSM)	0.62		1.68		1.20	
ANNUAL RUNOFF (INCHES)	8.39		22.81		16.29	
10 PERCENT EXCEEDS	354		895		616	
50 PERCENT EXCEEDS	136		414		264	
90 PERCENT EXCEEDS	69		150		124	

a Also Aug. 15, 2002.
b Also Oct. 9, 10, 2002.
c Result of freezeup.
e Estimated.



03170500 LITTLE RIVER RESERVOIR NEAR RADFORD, VA

LOCATION.--Lat 37°04'39", long 80°34'21", NAD83, Pulaski County, Hydrologic Unit 05050001, on left bank 30 ft upstream from dam, 0.25 mi upstream from mouth of Little River, 3 mi downstream from Meadow Creek, and 4 mi south of Radford.

DRAINAGE AREA.--337 mi^2.

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

GAGE.--Water-stage recorder. Datum of gage is 1,770 ft NGVD of 1929, from topographic map.

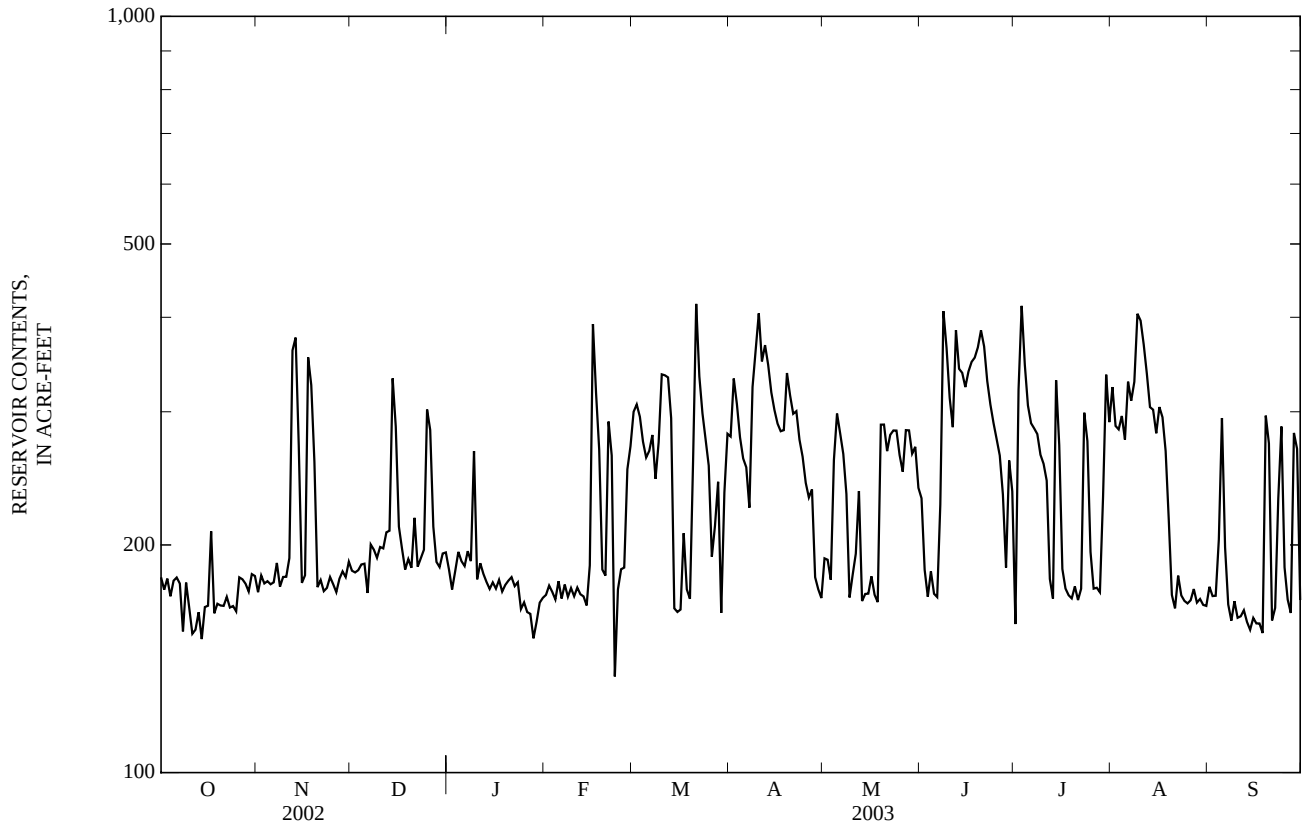
REMARKS.--No estimated daily values. Records good. Reservoir is operated for generating power for the city of Radford.

EXTREMES FOR CURRENT YEAR.--Maximum recorded contents, 501 acre-ft, Mar. 20; minimum recorded contents, 0.93 acre-ft, Feb. 23.

RESERVOIR STORAGE, ACRE FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	181	173	185	186	172	300	278	192	231	157	323	176
2	175	182	184	175	177	307	332	191	185	321	287	171
3	181	178	185	185	173	295	307	180	171	414	284	171
4	171	179	188	196	169	274	278	259	185	346	296	203
5	179	177	189	190	179	261	260	298	172	306	276	294
6	181	178	173	188	170	266	253	281	171	290	329	199
7	178	189	200	196	177	280	224	264	226	285	310	167
8	154	176	197	190	171	245	324	233	407	280	329	159
9	178	181	192	266	175	273	362	170	364	263	404	169
10	165	182	199	180	171	336	405	183	313	256	396	160
11	153	192	198	189	176	335	350	195	286	243	368	161
12	155	362	208	183	172	333	367	236	385	180	337	164
13	163	376	209	179	171	294	346	169	342	170	304	158
14	150	271	332	175	166	165	318	172	338	330	302	154
15	166	178	287	178	188	163	302	172	323	271	281	160
16	166	182	211	175	392	164	289	182	339	186	304	157
17	209	354	198	180	317	207	283	172	349	175	295	157
18	162	325	186	174	268	175	284	168	354	172	266	153
19	167	258	192	177	186	170	338	288	365	170	216	296
20	166	176	187	179	182	258	315	289	384	176	172	272
21	166	180	217	181	291	417	298	266	366	169	165	159
22	171	174	187	176	263	334	301	280	329	175	182	165
23	165	175	192	178	134	299	276	283	307	299	172	230
24	166	181	197	165	175	276	262	283	290	274	169	287
25	163	177	302	168	186	255	242	263	276	196	167	187
26	181	173	284	163	187	193	231	250	263	175	169	169
27	180	180	211	162	252	212	237	284	233	176	175	163
28	178	185	190	151	270	242	181	283	187	173	168	281
29	174	181	187	158	---	163	175	264	259	231	170	268
30	183	190	195	168	---	235	170	270	235	336	167	169
31	182	---	195	170	---	281	---	238	---	291	166	---
TOTAL	5,309	6,265	6,457	5,581	5,710	8,008	8,588	7,258	8,635	7,486	7,949	5,779
MEAN	171	209	208	180	204	258	286	234	288	241	256	193
MAX	209	376	332	266	392	417	405	298	407	414	404	296
MIN	150	173	173	151	134	163	170	168	171	157	165	153

03170500 LITTLE RIVER RESERVOIR NEAR RADFORD, VA—Continued



03171000 NEW RIVER AT RADFORD, VA

LOCATION.--Lat 37°08'30", long 80°34'09", NAD83, Pulaski County, Hydrologic Unit 05050001, on left bank 2,000 ft downstream from bridge on U.S. Highway 11 at Radford, 5 mi downstream from Little River, and 5.5 mi downstream from Claytor Dam.

DRAINAGE AREA.--2,748 mi^2.

PERIOD OF RECORD.--October 1907 to September 1915, August 1939 to current year. Records for August 1898 to September 1907, published in WSP 27, 36, 48, 65, 83, 98, 128, 169, 205, 243, and 536, are unreliable and should not be used. Gage-height records collected at same site since 1895 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 873: Drainage area. WSP 953: 1940-41. WSP 1305: 1908-12. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 1,712.16 ft NGVD of 1929. Prior to Aug. 30, 1939, nonrecording gage at highway bridge 2,000 ft upstream at datum 0.85 ft lower.

REMARKS.--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. Statistic of monthly mean data and summary statistics for water years 1908-1915 (unregulated flow) are available in previous data books, water years 1991-1998. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. National Weather Service gage-height telemeter at station. Maximum discharge, 218,000 ft^3/s, from rating curve extended above 76,000 ft^3/s on basis of records for other stations on New River and flow over Claytor Dam, computed by Appalachian Power Company. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jul. 16, 1916, reached a stage of 35.7 ft, discharge, 200,000 ft^3/s, at site and datum used by Geological Survey 1907-15, from reports of the National Weather Service.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,090	4,570	1,250	4,880	1,220	5,470	5,550	5,250	3,950	6,920	5,130	4,350
2	1,500	1,320	1,580	4,860	1,380	5,770	6,020	5,530	3,910	9,140	5,050	4,900
3	1,370	1,080	1,840	6,790	3,470	6,600	6,300	4,760	3,950	23,800	6,140	4,160
4	1,060	2,080	2,570	6,270	4,130	6,910	6,900	4,920	4,040	15,900	6,590	5,320
5	987	1,710	2,910	3,860	4,150	6,780	4,340	4,940	4,500	9,770	5,770	5,590
6	947	2,340	3,480	4,380	4,620	6,860	3,940	4,960	4,400	6,640	5,560	3,180
7	961	3,260	2,070	4,190	4,090	5,680	5,360	5,110	5,650	7,760	7,310	3,600
8	997	2,720	898	4,200	1,130	4,100	7,260	4,840	13,000	8,250	8,800	3,420
9	965	1,960	2,840	4,180	870	3,950	9,660	4,690	15,000	6,380	9,610	3,440
10	977	1,620	3,040	3,950	2,830	5,590	13,700	4,500	11,100	5,470	9,540	2,580
11	987	3,920	3,970	1,490	3,300	4,530	30,300	4,470	6,330	6,090	9,130	2,610
12	1,230	7,720	4,510	1,370	3,100	4,710	20,000	4,430	11,600	4,900	8,390	3,220
13	1,260	9,860	5,990	3,590	2,690	4,780	14,100	3,970	10,600	4,780	6,680	2,440
14	1,290	5,340	8,590	3,020	2,900	4,510	11,500	3,800	8,560	5,180	5,970	2,630
15	2,670	5,600	7,890	3,340	1,360	1,610	7,930	2,800	8,190	4,870	5,030	2,820
16	2,840	4,280	5,530	2,400	11,000	2,510	6,700	4,490	8,670	4,110	4,950	3,450
17	4,130	8,650	5,180	2,110	12,100	5,750	6,350	4,520	11,800	4,040	5,900	3,480
18	3,840	7,710	4,180	1,010	8,370	8,030	7,900	4,660	12,300	3,990	6,010	3,020
19	2,360	4,790	3,160	891	6,900	6,050	12,600	4,140	17,800	3,970	4,440	3,950
20	1,120	3,600	4,200	1,780	7,500	8,830	13,100	4,550	16,700	3,400	4,160	3,040
21	1,510	4,940	4,790	1,440	8,440	11,000	10,600	4,370	11,300	3,620	3,890	2,110
22	1,140	4,830	4,540	2,220	22,300	8,260	7,440	4,670	7,250	3,980	3,910	2,620
23	1,050	2,740	4,370	4,070	45,300	6,020	7,020	4,420	6,300	5,420	4,040	5,230
24	1,260	1,450	4,820	3,580	20,300	5,220	6,600	4,400	5,530	4,180	3,370	5,560
25	1,840	3,650	7,730	1,050	13,600	6,260	6,380	4,310	5,090	3,710	3,520	4,230
26	1,350	3,970	7,150	933	11,700	5,170	5,360	5,020	4,610	3,230	3,100	3,100
27	1,040	3,320	5,930	3,260	10,500	5,250	5,040	4,600	4,240	2,850	3,010	3,210
28	2,630	1,390	2,120	1,810	8,340	5,720	5,690	4,630	4,210	2,770	3,510	5,150
29	2,480	1,270	2,800	1,520	---	3,040	4,700	4,340	4,280	4,440	2,970	4,690
30	3,160	1,210	3,830	2,530	---	3,080	4,060	3,800	4,480	6,610	3,460	3,650
31	3,860	---	4,680	3,080	---	5,530	---	4,090	---	4,950	3,990	---
TOTAL	54,901	112,900	128,438	94,054	227,590	173,570	262,400	139,980	239,340	191,120	168,930	110,750
MEAN	1,771	3,763	4,143	3,034	8,128	5,599	8,747	4,515	7,978	6,165	5,449	3,692
MAX	4,130	9,860	8,590	6,790	45,300	11,000	30,300	5,530	17,800	23,800	9,610	5,590
MIN	947	1,080	898	891	870	1,610	3,940	2,800	3,910	2,770	2,970	2,110
(†)	-1,765	+857	-1,160	-907	-1,765	+3,529	+454	0	+202	0	+252	-101
MEAN‡	1,714	3,792	4,106	3,005	8,065	5,713	8,762	4,515	7,985	6,165	5,457	3,688
CFSM‡	.62	1.38	1.49	1.09	2.93	2.08	3.19	1.64	2.91	2.24	1.99	1.34
IN.‡	.72	1.54	1.72	1.26	3.06	2.40	3.56	1.89	3.24	2.59	2.29	1.50

CAL YR 2002 MEAN‡ 2,236 CFSM‡ .81 IN.‡ 11.05
WTR YR 2003 MEAN‡ 5,215 CFSM‡ 1.90 IN.‡ 25.77

† Total change in contents, equivalent in cubic feet per second, per month, in Claytor Reservoir; provided by American Electric Power.
‡ Adjusted for monthly change in contents.

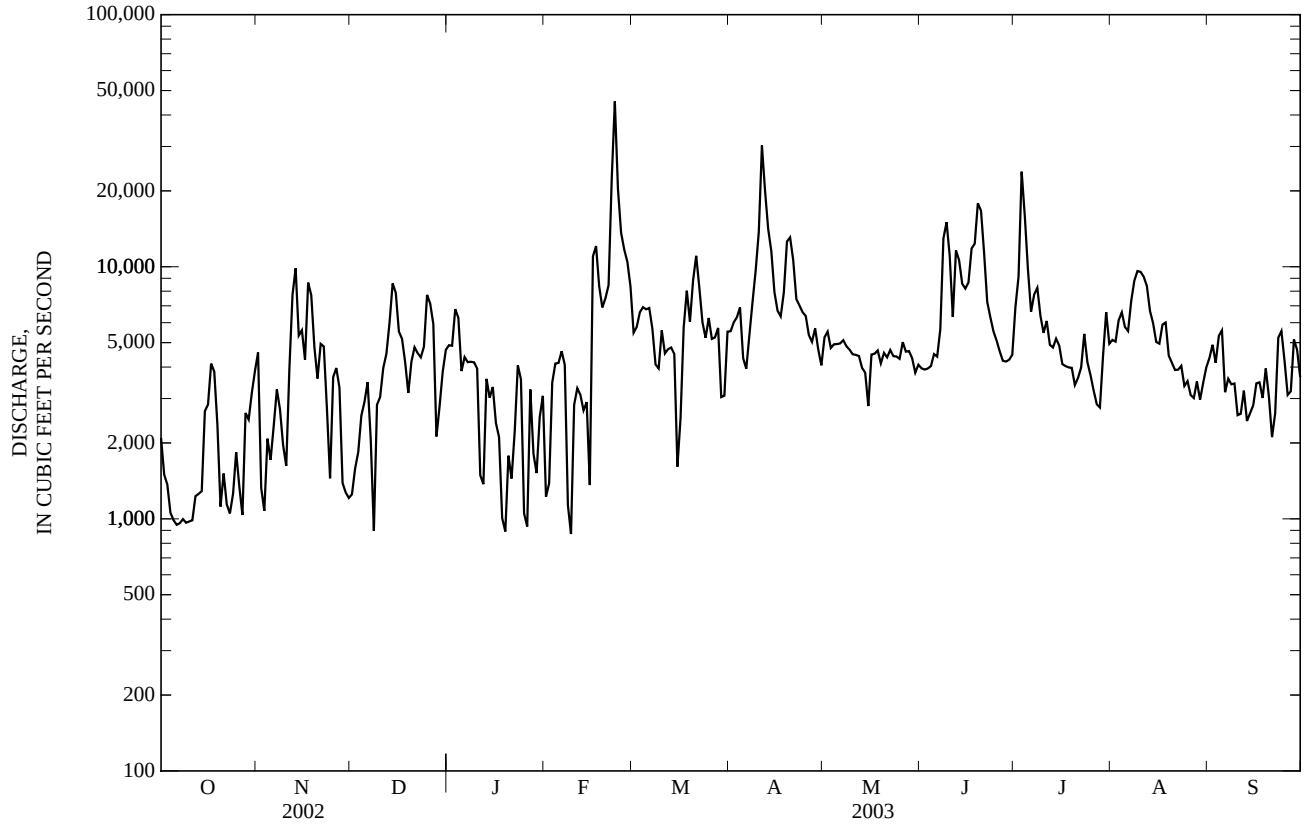
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2003, BY WATER YEAR (WY)

MEAN	2,604	2,991	3,519	4,271	5,319	5,960	5,472	4,465	3,598	2,793	2,684	2,440
MAX	7,619	10,300	7,426	9,459	10,590	13,130	14,490	8,875	9,627	7,545	14,170	9,855
(WY)	(1990)	(1978)	(1962)	(1995)	(1998)	(1993)	(1987)	(1973)	(1992)	(1949)	(1940)	(1989)
MIN	1,028	925	1,144	1,064	1,618	2,016	2,203	1,721	1,198	1,208	867	1,126
(WY)	(2002)	(2002)	(1940)	(1940)	(2002)	(1988)	(1942)	(1941)	(2002)	(1988)	(2002)	(1968)

03171000 NEW RIVER AT RADFORD, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1940 - 2003	
ANNUAL TOTAL	817,732		1,903,973			
ANNUAL MEAN	2,240		5,216		3,834	
HIGHEST ANNUAL MEAN					5,471	1978
LOWEST ANNUAL MEAN					1,708	2002
HIGHEST DAILY MEAN	22,300	Mar 19	45,300	Feb 23	105,000	Aug 14, 1940
LOWEST DAILY MEAN	765	Sep 8	870	Feb 9	627	Nov 19, 1967
ANNUAL SEVEN-DAY MINIMUM	793	Sep 8	974	Oct 5	793	Sep 8, 2002
MAXIMUM PEAK FLOW			53,900	Feb 23	a218,000	Aug 14, 1940
MAXIMUM PEAK STAGE			15.08	Feb 23	a35.96	Aug 14, 1940
INSTANTANEOUS LOW FLOW			713	Feb 2	b165	Aug 25, 1944
ANNUAL RUNOFF (CFSM)	0.82		1.90		1.40	
ANNUAL RUNOFF (INCHES)	11.07		25.77		18.96	
10 PERCENT EXCEEDS	4,350		8,950		7,240	
50 PERCENT EXCEEDS	1,500		4,400		2,900	
90 PERCENT EXCEEDS	852		1,450		1,150	

a Prior to regulation, 1908-15, maximum peak flow, 46,000 ft^3/s, May 21, 1909; maximum gage height, 15.00 ft, May 21, 1909 and Mar. 27, 1913, at site and datum then in use.
b Prior to regulation, 1908-15, instantaneous low flow not determined.



03173000 WALKER CREEK AT BANE, VA

LOCATION.--Lat 37°16'05", long 80°42'34", NAD83, Giles County, Hydrologic Unit 05050002, on left bank at Bane, 0.2 mi downstream from bridge on State Highway 100, 0.2 mi downstream from Sugar Run, and at mile 7.9.

DRAINAGE AREA.--305 mi^2.

PERIOD OF RECORD.--March 1938 to current year.

REVISED RECORDS.--WSP 1143: 1939(M), 1940, 1944, 1946. WSP 1305: 1938(M).

GAGE.--Water-stage recorder. Datum of gage is 1,665.92 ft NGVD of 1929. Prior to Aug. 1, 1938, nonrecording gage at same site and datum.

REMARKS.--Records good except for period with ice effect, Jan. 24-29, which is fair. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 25,000 ft^3/s, from rating curve extended above 7,200 ft^3/s on basis of slope-area measurements at gage heights 16.50 ft and 19.28 ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in September 1878 reached a stage of about 23.5 ft, discharge, 40,400 ft^3/s, from rating curve extended as explained above.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 16	0730	6,860	11.11	Apr 11	0730	4,090	9.19
Feb 22	2200	*14,400	*15.43				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	76	361	199	516	177	892	342	402	303	211	231	947
2	63	253	179	1,050	182	985	630	401	276	799	203	607
3	55	192	163	1,030	190	985	698	362	253	2,830	185	364
4	50	160	155	1,110	224	845	616	376	270	1,420	289	319
5	47	146	155	912	479	753	542	353	259	875	311	703
6	44	279	178	754	446	692	474	340	225	760	341	482
7	41	402	144	627	389	624	432	322	261	1,290	273	357
8	39	307	150	533	326	551	501	315	628	630	471	290
9	38	244	162	499	247	505	1,280	311	703	479	935	245
10	39	202	149	472	288	464	1,670	313	517	436	2,010	211
11	45	332	258	435	251	417	3,190	295	422	370	1,300	186
12	49	962	877	378	236	385	1,780	275	816	317	891	168
13	52	1,370	1,110	348	210	355	1,170	245	925	292	901	156
14	50	781	1,740	349	215	341	903	222	698	323	1,220	147
15	46	539	1,110	312	703	309	741	221	786	249	784	145
16	155	447	818	262	4,770	301	638	298	1,000	223	604	160
17	428	913	698	281	1,870	304	556	307	1,270	203	608	151
18	220	924	610	229	1,100	290	621	672	1,320	187	483	137
19	142	649	509	230	810	297	1,740	1,310	1,600	174	392	258
20	109	496	1,450	233	751	510	1,240	921	1,250	167	327	330
21	94	432	1,680	228	1,050	1,120	985	717	960	155	287	230
22	85	568	1,020	201	6,470	891	867	657	734	147	260	198
23	77	602	757	183	6,780	715	726	584	562	146	230	484
24	69	492	756	e130	2,690	601	622	522	448	144	206	480
25	64	404	1,720	e125	1,600	508	554	454	369	136	188	349
26	73	336	1,140	e130	1,200	449	508	400	310	127	173	281
27	88	297	824	e135	993	406	453	355	270	121	160	246
28	105	267	680	e135	890	358	391	310	250	116	151	708
29	280	233	576	e150	---	329	346	302	232	273	151	533
30	606	215	493	177	---	345	337	322	209	588	148	374
31	560	---	439	186	---	346	---	299	---	304	140	---
TOTAL	3,889	13,805	20,899	12,340	35,537	16,873	25,553	13,183	18,126	14,492	14,853	10,246
MEAN	125	460	674	398	1,269	544	852	425	604	467	479	342
MAX	606	1,370	1,740	1,110	6,780	1,120	3,190	1,310	1,600	2,830	2,010	947
MIN	38	146	144	125	177	290	337	221	209	116	140	137
CFSM	0.41	1.51	2.21	1.31	4.16	1.78	2.79	1.39	1.98	1.53	1.57	1.12
IN.	0.47	1.68	2.55	1.51	4.33	2.06	3.12	1.61	2.21	1.77	1.81	1.25

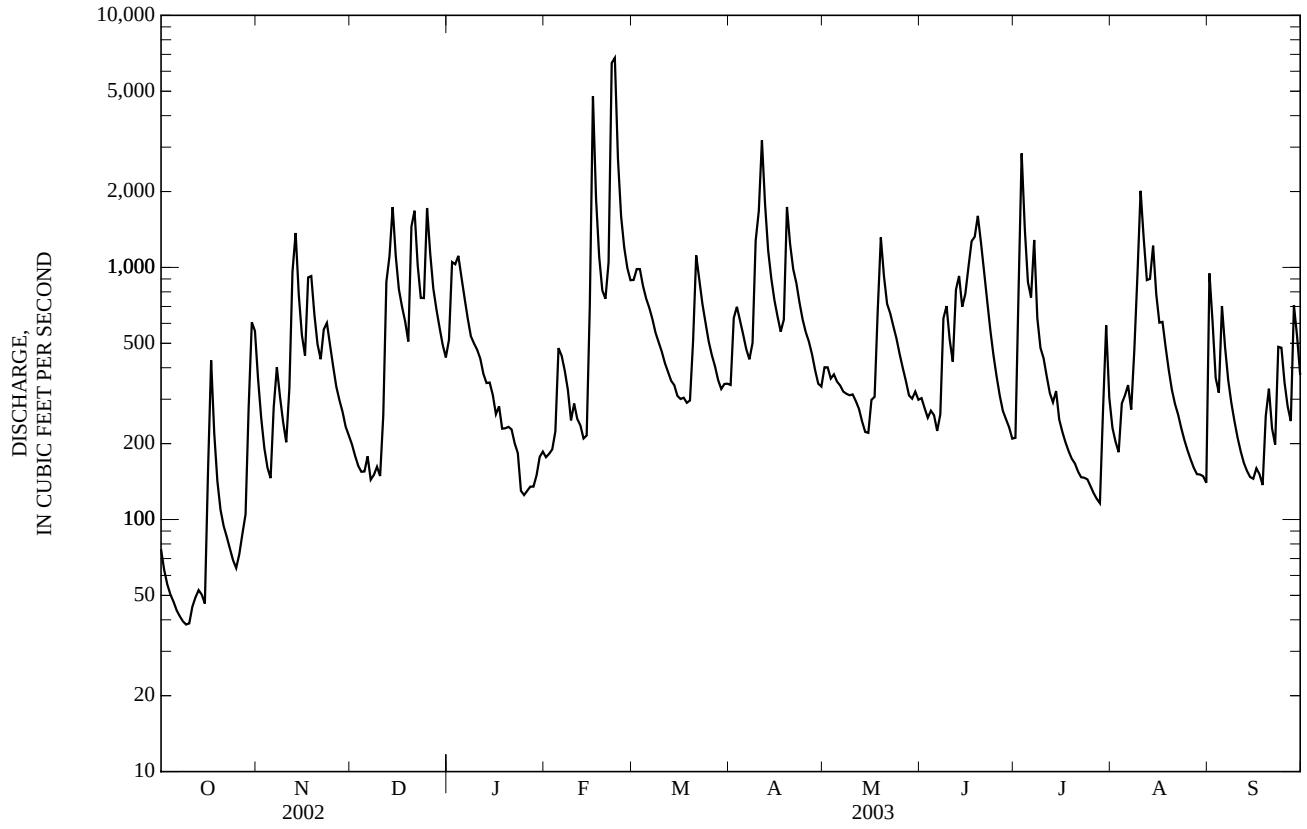
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2003, BY WATER YEAR (WY)

MEAN	124	182	308	431	592	683	542	427	241	146	133	101
MAX	721	737	941	1,191	1,577	1,800	1,806	1,096	1,125	735	759	639
(WY)	(1990)	(1980)	(1973)	(1996)	(1957)	(1955)	(1987)	(2001)	(1992)	(1938)	(1949)	(1989)
MIN	34.7	42.4	44.9	44.8	95.6	108	126	115	60.6	41.6	33.7	35.6
(WY)	(1964)	(1999)	(1956)	(1956)	(1942)	(1988)	(1986)	(1941)	(1988)	(1988)	(1988)	(1955)

03173000 WALKER CREEK AT BANE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1938 - 2003	
ANNUAL TOTAL	92,724		199,796			
ANNUAL MEAN	254		547		323	
HIGHEST ANNUAL MEAN					553	1949
LOWEST ANNUAL MEAN					135	1988
HIGHEST DAILY MEAN	3,600	Mar 18	6,780	Feb 23	14,100	Jun 5, 1992
LOWEST DAILY MEAN	27	aSep 12	38	Oct 9	24	bSep 27, 1964
ANNUAL SEVEN-DAY MINIMUM	29	Sep 8	42	Oct 5	28	Sep 22, 1964
MAXIMUM PEAK FLOW			14,400	Feb 22	25,000	Jun 5, 1992
MAXIMUM PEAK STAGE			15.43	Feb 22	19.28	Jun 5, 1992
INSTANTANEOUS LOW FLOW			38	cOct 9	d15	Dec 21, 1958
ANNUAL RUNOFF (CFSM)	0.83		1.79		1.06	
ANNUAL RUNOFF (INCHES)	11.31		24.37		14.41	
10 PERCENT EXCEEDS	608		1,070		729	
50 PERCENT EXCEEDS	114		355		157	
90 PERCENT EXCEEDS	39		143		48	

a Also Sept. 13, 2002.
b Also Sept. 28, 1964.
c Also Oct. 10, 2002.
d Result of freezeup.
e Estimated.



03175500 WOLF CREEK NEAR NARROWS, VA

LOCATION.--Lat 37°18'20", long 80°50'59", NAD83, Giles County, Hydrologic Unit 05050002, on right bank at downstream side of bridge on State Highway 724, 2.8 mi southwest of Narrows, and at mile 3.5.

DRAINAGE AREA.--223 mi^2.

PERIOD OF RECORD.--July 1908 to September 1916, March 1938 to September 1995, October 1996 to current year.

REVISED RECORDS.--WSP 973: 1940-41(M). WSP 1235: 1912-13, 1915-16. WSP 1505: 1940, monthly and yearly runoff. WSP 1725: 1913(M), 1915-16(M), 1941 calendar year runoff.

GAGE.--Water-stage recorder. Datum of gage is 1,583.83 ft NGVD of 1929. July 22, 1908, to Sept. 30, 1916, and Mar. 31 to Nov. 7, 1938, nonrecording gage at same site and datum.

REMARKS.--Records good except for period with ice effect Jan. 24-29, which is fair. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 12,900 ft^3/s, from rating curve extended above 5,700 ft^3/s on basis of contracted-opening measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 16	0600	7,720	10.49	Apr 11	0400	4,180	8.43
Feb 22	1830	*10,900	*11.81	Sep 1	0030	2,230	6.70

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	417	293	467	285	861	271	290	337	145	144	879
2	54	310	257	669	274	941	509	278	339	527	138	325
3	48	244	233	864	281	919	566	253	309	1,560	125	218
4	43	213	208	1,060	500	785	505	239	305	950	141	267
5	40	205	247	853	838	692	457	221	274	634	154	465
6	36	472	311	702	629	637	404	219	229	462	178	319
7	33	678	264	584	542	575	392	202	227	441	179	248
8	31	527	255	512	445	504	448	219	509	370	402	202
9	29	402	244	489	362	465	1,600	217	525	314	783	168
10	30	326	226	469	357	420	1,900	236	428	308	732	143
11	39	673	575	432	318	380	3,440	217	371	281	706	124
12	49	1,260	988	370	288	350	1,720	206	422	253	518	112
13	49	1,410	1,160	345	250	328	1,090	177	367	230	451	102
14	43	884	1,430	331	255	335	851	161	350	201	503	95
15	41	638	1,000	297	1,260	300	676	155	355	177	368	96
16	316	504	775	253	5,540	290	569	229	486	159	336	120
17	428	668	656	268	1,950	285	492	226	1,040	146	405	102
18	234	760	575	216	1,120	281	616	565	925	132	359	94
19	151	591	513	213	809	281	1,020	863	837	123	294	415
20	115	499	1,050	204	727	307	819	638	780	114	248	371
21	99	469	1,300	213	915	465	693	525	657	103	209	271
22	92	601	896	170	5,700	461	630	459	546	98	182	217
23	85	621	677	165	5,970	417	538	398	442	113	163	473
24	75	529	720	e110	2,440	379	470	359	361	108	144	431
25	69	449	1,240	e105	1,410	342	431	317	303	93	128	326
26	73	384	939	e110	1,070	317	404	292	262	85	115	264
27	78	402	729	e115	903	306	363	262	221	79	105	246
28	81	383	616	e115	820	275	318	230	195	74	99	311
29	220	348	533	e130	---	257	289	233	173	126	96	248
30	584	326	467	303	---	272	274	265	145	256	88	202
31	585	---	421	306	---	273	---	281	---	176	176	---
TOTAL	3,914	16,193	19,798	11,440	36,258	13,700	22,755	9,432	12,720	8,838	8,669	7,854
MEAN	126	540	639	369	1,295	442	758	304	424	285	280	262
MAX	585	1,410	1,430	1,060	5,970	941	3,440	863	1,040	1,560	783	879
MIN	29	205	208	105	250	257	271	155	145	74	88	94
CFSM	0.57	2.42	2.86	1.65	5.81	1.98	3.40	1.36	1.90	1.28	1.25	1.17
IN.	0.65	2.70	3.30	1.91	6.05	2.29	3.80	1.57	2.12	1.47	1.45	1.31

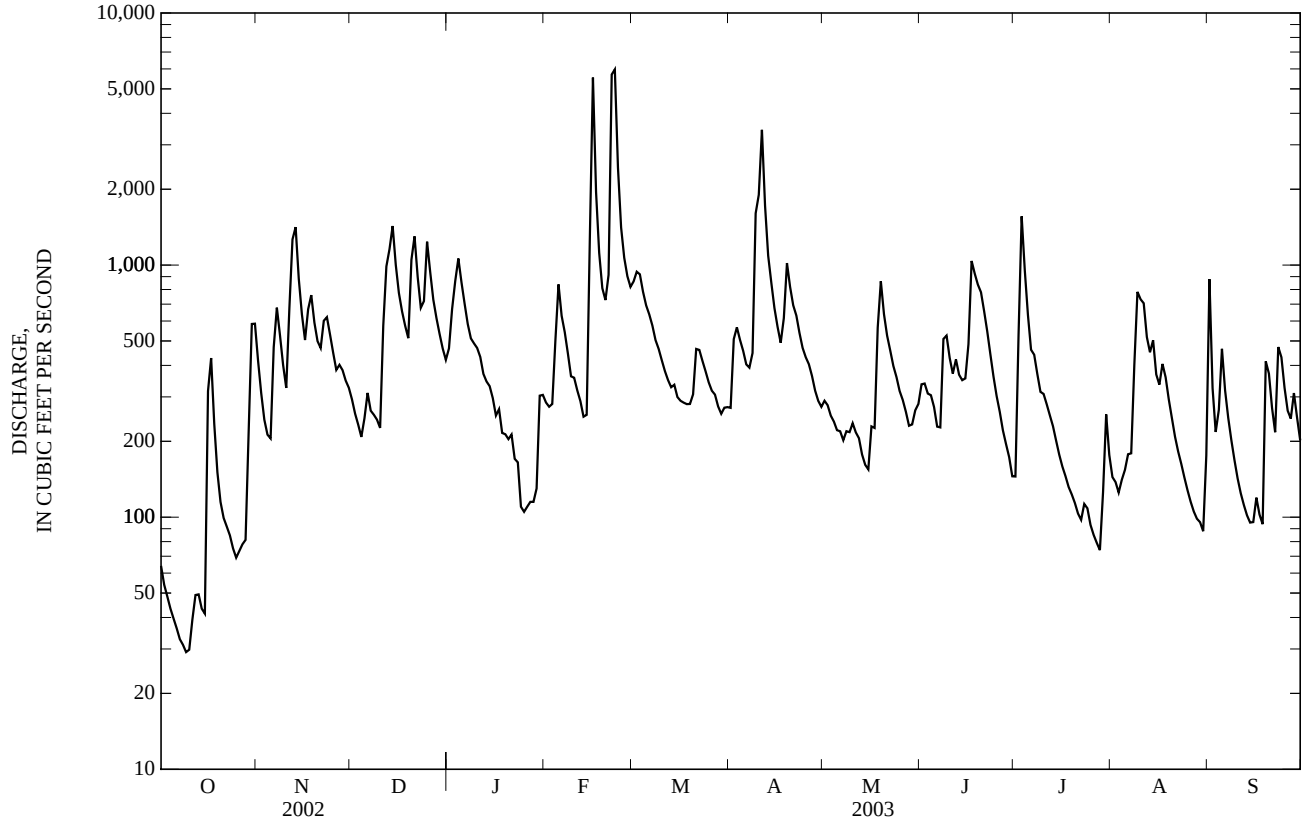
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1908 - 1916, 1938 - 1995, 1997 - 2003, BY WATER YEAR (WY)

MEAN	108	162	300	425	554	640	486	374	207	142	115	80.4
MAX	621	754	850	1,128	1,469	1,789	1,728	1,059	748	964	512	576
(WY)	(1990)	(1978)	(1973)	(1957)	(1957)	(1955)	(1987)	(1971)	(1992)	(1916)	(1916)	(1989)
MIN	21.4	28.6	31.1	50.0	122	113	120	99.4	49.3	32.9	26.8	27.4
(WY)	(1964)	(1940)	(1940)	(1940)	(1942)	(1988)	(1995)	(1941)	(1914)	(1988)	(1988)	(1964)

03175500 WOLF CREEK NEAR NARROWS, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1908 - 1916, 1938 - 1995, 1997 - 2003	
ANNUAL TOTAL	102,552		171,571			
ANNUAL MEAN	281		470		298	
HIGHEST ANNUAL MEAN					475	1972
LOWEST ANNUAL MEAN					126	1988
HIGHEST DAILY MEAN	4,050	May 3	5,970	Feb 23	8,380	Apr 5, 1977
LOWEST DAILY MEAN	26	Sep 14	29	Oct 9	10	Sep 4, 1999
ANNUAL SEVEN-DAY MINIMUM	27	Sep 8	34	Oct 5	16	Aug 29, 1999
MAXIMUM PEAK FLOW			10,900	Feb 22	12,900	Jan 29, 1957
MAXIMUM PEAK STAGE			11.81	Feb 22	a12.55	Jan 29, 1957
INSTANTANEOUS LOW FLOW			28	bOct 9	c8.8	Dec 25, 1953
ANNUAL RUNOFF (CFSM)	1.26		2.11		1.33	
ANNUAL RUNOFF (INCHES)	17.11		28.62		18.14	
10 PERCENT EXCEEDS	669		881		680	
50 PERCENT EXCEEDS	141		319		152	
90 PERCENT EXCEEDS	38		103		39	

a From floodmark in well; floodmark on downstream side of bridge was 13.8 ft.
b Also Oct. 10, 2002
c Result of freezeup.
e Estimated.



03176500 NEW RIVER AT GLEN LYN, VA

LOCATION.--Lat 37°22'22", long 80°51'38", NAD83, Giles County, Hydrologic Unit 05050002, on right bank 90 ft upstream from bridge on U.S. Highway 460 at Glen Lyn, 0.3 mi upstream from East River, and 6.3 mi downstream from Wolf Creek.

DRAINAGE AREA.--3,768 mi^2.

PERIOD OF RECORD.--August 1927 to current year.

REVISED RECORDS.--WSP 758: Drainage area. WSP 1305: 1928(M), 1930(M).

GAGE.--Water-stage recorder. Datum of gage is 1,490.11 ft NGVD of 1929. Aug. 11, 1927, to Oct. 16, 1934, on left bank opposite present site at same datum, and Oct. 17, 1934, to June 16, 1939, on left bank at site 200 ft upstream at same datum.

REMARKS.--Records good except for period of doubtful gage-height record, Sept. 27-29, which is fair. Flow regulated since 1939 by Claytor Reservoir (station 03169000) 55 mi upstream from station. Statistics of monthly mean data and summary statistics for water years 1928-1938 (unregulated flow) are available in previous data books, water years 1991-1998. Water withdrawn by American Electric Power at gage, U.S. Army Corps of Engineers satellite gage-height telemeter at station. Maximum discharge, 226,000 ft^3/s, from rating curve extended above 89,000 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,800	5,500	2,440	7,120	4,210	10,400	6,810	5,570	6,650	6,810	6,360	6,160
2	2,620	5,810	2,350	8,440	2,200	8,930	8,290	6,990	5,780	11,100	6,090	6,370
3	1,980	2,160	2,610	9,740	2,660	10,000	9,580	6,900	5,530	29,300	6,390	5,510
4	1,810	1,870	2,810	11,100	4,920	9,960	8,990	6,340	5,790	26,400	7,930	5,630
5	1,420	2,920	3,820	8,640	6,170	9,840	8,400	6,820	5,890	14,700	8,070	7,790
6	1,300	2,910	4,330	6,690	6,160	10,000	6,070	6,720	5,970	11,100	7,250	6,100
7	1,200	4,180	4,730	7,010	6,400	9,090	6,320	6,940	6,610	12,100	6,980	4,170
8	1,190	4,780	2,990	6,550	5,530	7,780	8,060	6,980	12,000	11,300	11,400	4,560
9	1,210	3,970	1,910	6,330	2,370	5,720	13,700	6,460	17,800	10,300	13,100	4,070
10	1,180	2,910	3,780	6,080	2,230	6,510	17,700	6,320	14,200	8,150	14,200	3,970
11	1,300	3,430	4,830	5,800	4,100	7,620	36,800	5,940	10,600	8,420	12,700	3,250
12	1,340	9,150	7,110	3,110	4,640	6,230	31,700	5,980	11,600	7,720	11,600	3,320
13	1,540	14,200	8,680	2,910	4,270	6,470	20,300	5,470	15,100	6,610	10,200	4,000
14	1,600	10,200	12,700	5,080	3,830	6,480	14,700	4,910	12,700	7,010	8,980	2,880
15	1,600	7,430	12,700	4,490	5,640	6,060	12,000	4,460	13,400	6,550	7,930	3,320
16	3,810	7,730	9,440	4,780	18,400	3,010	10,000	5,470	15,300	5,970	7,700	3,440
17	4,320	8,550	8,310	3,510	19,500	4,360	9,220	6,230	17,300	5,320	8,140	3,980
18	5,430	12,300	7,610	3,320	13,700	9,260	8,530	8,220	17,500	5,170	8,800	3,990
19	4,410	9,090	5,870	2,120	10,600	7,990	14,900	10,900	21,000	5,170	7,020	5,310
20	2,970	6,640	7,240	2,020	10,100	9,840	16,300	8,700	25,300	5,040	5,840	5,490
21	1,660	5,830	10,900	2,930	11,600	13,300	14,700	7,590	17,000	4,390	5,370	3,900
22	1,980	7,460	8,730	2,550	33,200	12,400	11,100	7,630	12,400	4,540	4,940	3,220
23	1,610	7,330	7,430	3,260	74,000	9,650	10,300	7,160	9,840	5,950	5,440	4,620
24	1,420	4,860	7,070	5,370	37,700	7,190	8,990	6,740	8,280	5,960	4,520	7,850
25	1,580	3,220	11,800	4,860	21,300	7,860	8,780	6,350	7,680	4,780	4,300	6,300
26	2,490	5,370	11,600	1,990	16,100	8,060	8,010	6,570	6,730	4,430	4,320	4,840
27	1,720	5,550	10,100	1,830	14,600	6,700	6,770	6,630	6,190	3,980	3,710	e4,300
28	1,540	4,780	7,910	4,160	12,400	7,150	7,150	6,290	5,820	3,650	4,010	e4,500
29	3,770	2,710	4,530	2,740	---	6,470	6,840	6,180	5,790	4,120	4,020	e6,600
30	4,760	2,550	4,920	2,640	---	4,550	6,030	5,970	5,770	8,430	3,710	5,560
31	5,430	---	6,120	3,790	---	5,130	---	5,580	---	7,070	4,380	---
TOTAL	72,990	175,390	207,370	150,960	358,530	244,010	357,040	205,010	331,520	261,540	225,400	145,000
MEAN	2,355	5,846	6,689	4,870	12,800	7,871	11,900	6,613	11,050	8,437	7,271	4,833
MAX	5,430	14,200	12,700	11,100	74,000	13,300	36,800	10,900	25,300	29,300	14,200	7,850
MIN	1,180	1,870	1,910	1,830	2,200	3,010	6,030	4,460	5,530	3,650	3,710	2,880
(†)	-1,765	+857	-1,160	-907	-1,765	+3,529	+454	0	+202	0	+252	-101
MEAN‡	2,298	5,875	6,652	4,840	12,740	7,985	11,920	6,613	11,060	8,437	7,279	4,830
CFSM‡	.61	1.56	1.77	1.28	3.38	2.12	3.16	1.76	2.94	2.24	1.93	1.28
IN.‡	.70	1.74	2.04	1.48	3.52	2.44	3.53	2.02	3.27	2.58	2.23	1.43

CAL YR 2002 MEAN‡ 3,368 CFSM‡ .89 IN.‡ 12.14
WTR YR 2003 MEAN‡ 7,491 CFSM‡ 1.99 IN.‡ 27.00

† Total change in contents, equivalent in cubic feet per second, per month, in Claytor Reservoir; provided by American Electric Power.
‡ Adjusted for monthly change in contents.

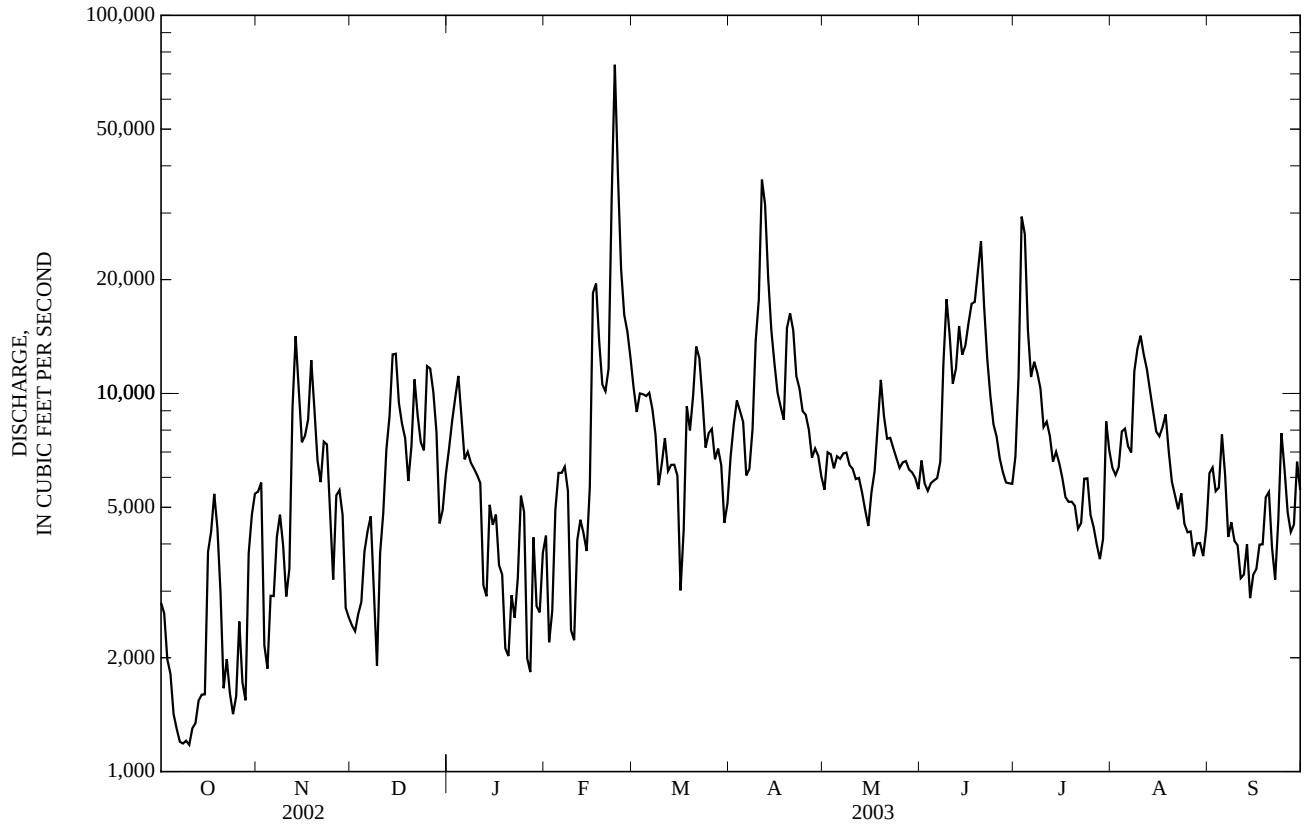
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2003, BY WATER YEAR (WY)

MEAN	3,110	3,671	4,588	5,816	7,387	8,277	7,386	5,967	4,477	3,321	3,192	2,826
MAX	9,882	12,450	10,910	13,290	15,810	18,650	20,890	11,270	12,860	9,784	16,410	11,500
(WY)	(1990)	(1978)	(1949)	(1996)	(1957)	(1993)	(1987)	(1984)	(1992)	(1949)	(1940)	(1989)
MIN	1,204	1,258	1,305	1,489	2,285	2,407	2,673	2,397	1,373	1,390	1,040	1,127
(WY)	(1989)	(1982)	(1998)	(1966)	(2002)	(1988)	(1986)	(1941)	(1999)	(1988)	(2002)	(1998)

03176500 NEW RIVER AT GLEN LYN, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1939 - 2003	
ANNUAL TOTAL	1,231,070		2,734,760			
ANNUAL MEAN	3,373		7,492		4,988	
HIGHEST ANNUAL MEAN					7,492	2003
LOWEST ANNUAL MEAN					2,511	2002
HIGHEST DAILY MEAN	37,900	Mar 19	74,000	Feb 23	126,000	Aug 15, 1940
LOWEST DAILY MEAN	831	Sep 11	1,180	Oct 10	a557	Aug 19, 1999
ANNUAL SEVEN-DAY MINIMUM	876	Sep 8	1,250	Oct 6	646	Aug 13, 1999
MAXIMUM PEAK FLOW			82,700	Feb 23	b226,000	Aug 14, 1940
MAXIMUM PEAK STAGE			15.71	Feb 23	b27.50	Aug 14, 1940
INSTANTANEOUS LOW FLOW			1,130	Oct 8	a,c449	dAug 13, 1999
ANNUAL RUNOFF (CFSM)	0.90		1.99		1.32	
ANNUAL RUNOFF (INCHES)	12.15		27.00		17.99	
10 PERCENT EXCEEDS	7,280		12,700		9,630	
50 PERCENT EXCEEDS	2,170		6,290		3,630	
90 PERCENT EXCEEDS	1,050		2,620		1,510	

a Affected by withdrawals.
b Prior to regulation, 1928-38, maximum peak flow, 99,000 ft^3/s, Oct. 3, 1929, gage height, 16.75 ft.
c Prior to regulation, 1928-38, instantaneous low flow, 770 ft^3/s, Sept. 8, 1930.
d Also Aug. 19, 1999.
e Estimated.



03207800 LEVISA FORK AT BIG ROCK, VA

LOCATION.--Lat 37°21'13", long 82°11'44", NAD83, Buchanan County, Hydrologic Unit 05070202, on left bank at Big Rock, 2,000 ft downstream from Rocklick Creek, and 2,500 ft downstream from bridge on State Highway 645.

DRAINAGE AREA.--297 mi^2.

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

GAGE.--Water-stage recorder. Datum of gage is 866.37 ft NGVD of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 25-27, which is fair. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Maximum discharge, 56,000 ft^3/s, from rating curve extended above 7,000 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 29, 1957, reached a stage of about 23.0 ft, information from local resident.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 16	0630	*20,000	*16.37	Apr 11	0130	10,300	11.96
Feb 22	1530	11,200	12.46				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	167	205	323	370	1,420	272	360	441	245	148	178
2	39	139	177	303	423	1,200	300	615	389	296	150	151
3	36	100	163	788	443	952	315	480	356	367	149	178
4	32	97	152	1,230	921	782	316	403	378	284	164	410
5	31	111	951	856	1,070	699	346	396	340	244	174	442
6	32	189	1,260	686	733	628	331	388	294	246	145	261
7	30	198	676	581	599	551	1,330	357	486	476	184	201
8	27	160	479	539	461	497	1,520	584	840	275	386	171
9	25	131	377	516	385	467	2,410	665	748	269	411	150
10	26	113	320	494	379	426	3,380	608	531	507	244	130
11	33	529	558	458	354	397	5,530	512	417	460	290	117
12	41	1,020	682	409	325	375	1,950	419	524	360	371	107
13	42	878	599	368	292	370	1,260	349	422	346	269	100
14	40	415	698	349	306	386	935	303	388	282	202	95
15	40	275	730	315	3,430	346	765	468	715	241	164	120
16	229	252	634	272	11,200	336	664	945	1,060	214	673	108
17	194	408	514	276	3,010	330	601	642	1,430	198	1,700	93
18	98	512	437	239	1,720	329	903	592	2,000	180	1,200	84
19	69	412	385	233	1,250	313	951	546	2,150	169	562	99
20	60	336	469	218	991	297	828	464	1,290	160	367	98
21	59	352	497	209	867	291	723	903	860	151	280	86
22	57	581	463	187	5,610	274	650	959	650	177	266	105
23	50	569	403	169	3,870	260	554	743	519	266	227	152
24	46	418	399	156	2,030	249	489	1,090	434	211	192	105
25	43	319	542	e150	1,460	236	462	710	376	170	172	85
26	46	261	633	e140	1,190	240	503	574	335	149	155	78
27	45	278	580	e145	1,050	241	443	468	309	136	143	114
28	122	251	496	151	1,280	219	393	413	291	129	137	155
29	271	239	428	184	---	219	378	416	308	183	136	114
30	381	232	369	261	---	268	354	445	266	187	176	88
31	262	---	332	309	---	275	---	437	---	157	207	---
TOTAL	2,549	9,942	15,608	11,514	46,019	13,873	29,856	17,254	19,547	7,735	10,044	4,375
MEAN	82.2	331	503	371	1,644	448	995	557	652	250	324	146
MAX	381	1,020	1,260	1,230	11,200	1,420	5,530	1,090	2,150	507	1,700	442
MIN	25	97	152	140	292	219	272	303	266	129	136	78
CFSM	0.28	1.12	1.70	1.25	5.53	1.51	3.35	1.87	2.19	0.84	1.09	0.49
IN.	0.32	1.25	1.95	1.44	5.76	1.74	3.74	2.16	2.45	0.97	1.26	0.55

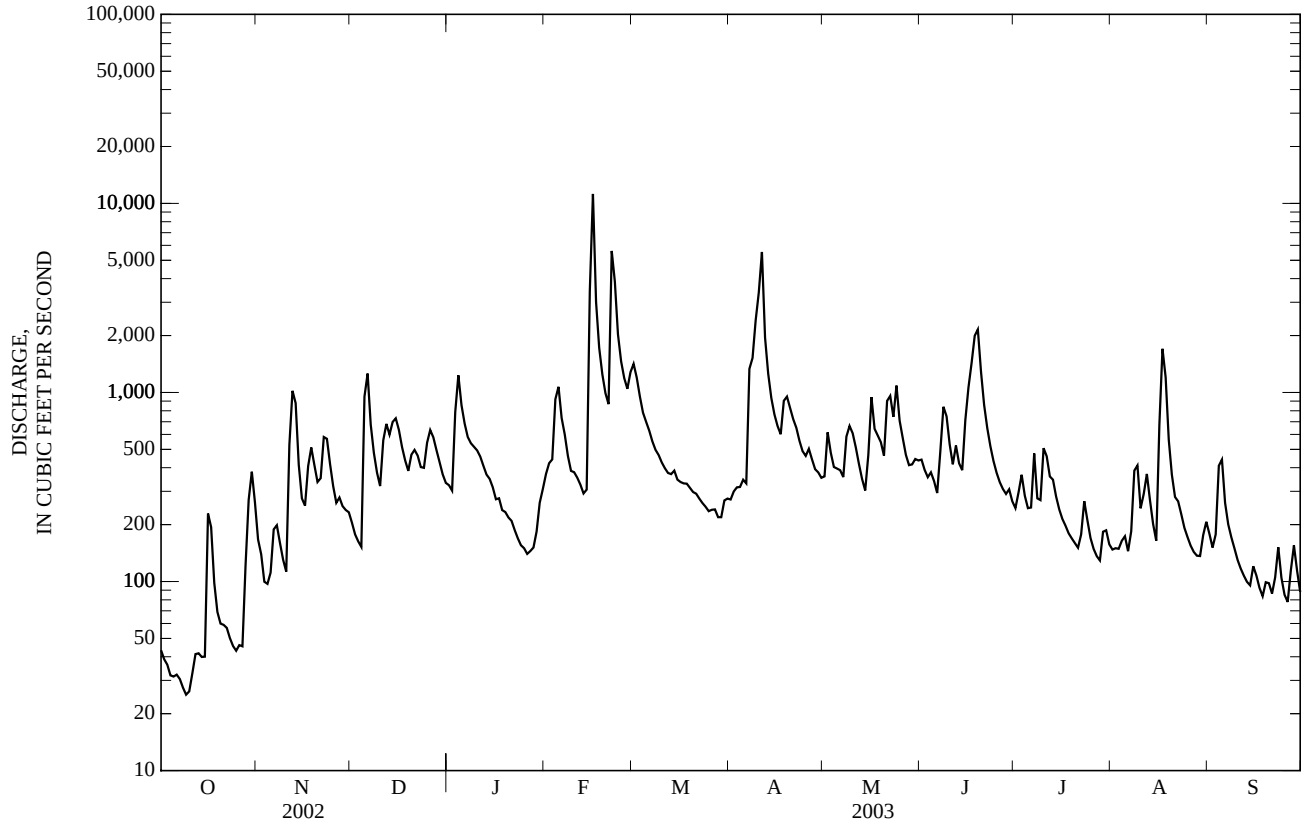
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2003, BY WATER YEAR (WY)

MEAN	122	201	346	539	683	739	699	517	284	172	131	82.9
MAX	692	911	1,201	1,596	1,644	2,107	2,355	1,323	1,135	630	422	273
(WY)	(1990)	(1978)	(1973)	(1974)	(2003)	(1975)	(1987)	(1984)	(1979)	(1979)	(2000)	(1989)
MIN	6.85	19.3	54.4	82.7	168	139	154	113	40.2	29.1	33.3	12.6
(WY)	(1970)	(1970)	(2001)	(1981)	(1968)	(1988)	(1986)	(1976)	(1970)	(1970)	(1969)	(1969)

03207800 LEVISA FORK AT BIG ROCK, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1968 - 2003	
ANNUAL TOTAL	121,729		188,316			
ANNUAL MEAN	334		516		375	
HIGHEST ANNUAL MEAN					606	1979
LOWEST ANNUAL MEAN					121	1988
HIGHEST DAILY MEAN	6,210	May 3	11,200	Feb 16	24,800	Apr 4, 1977
LOWEST DAILY MEAN	24	Sep 14	25	Oct 9	5.1	Oct 19, 1969
ANNUAL SEVEN-DAY MINIMUM	27	Sep 9	29	Oct 4	5.5	Oct 13, 1969
MAXIMUM PEAK FLOW			20,000	Feb 16	56,000	Apr 4, 1977
MAXIMUM PEAK STAGE			16.37	Feb 16	27.38	Apr 4, 1977
INSTANTANEOUS LOW FLOW			24	Oct 8	5.0	aOct 1, 1969
ANNUAL RUNOFF (CFSM)	1.12		1.74		1.26	
ANNUAL RUNOFF (INCHES)	15.25		23.59		17.14	
10 PERCENT EXCEEDS	690		951		826	
50 PERCENT EXCEEDS	159		346		180	
90 PERCENT EXCEEDS	40		100		37	

a Also Oct. 13, 14, 17-20, 1969.
e Estimated.



03208500 RUSSELL FORK AT HAYSI, VA

LOCATION.--Lat 37°12'25", long 82°17'45", NAD83, Dickenson County, Hydrologic Unit 05070202, on right bank 180 ft downstream from bridge on State Highway 63, at Haysi, and 700 ft downstream from McClure River.

DRAINAGE AREA.--286 mi^2.

PERIOD OF RECORD.--July 1926 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 1003: 1926-43. WSP 1385: 1928(M), 1929, 1933(M), 1935(M), 1937-38(M).

GAGE.--Water-stage recorder. Datum of gage is 1,237.61 ft NGVD of 1929. Prior to Dec. 21, 1939, nonrecording gage at highway bridge 180 ft upstream at same datum.

REMARKS.--Records good except those for period with ice effect, Jan. 24-28, and for period of no gage-height record, May 15-21, which are poor. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Maximum discharge, 59,000 ft^3/s, from rating curve extended above 32,000 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 16	0700	*28,300	*18.89	Apr 9	0500	6,530	8.07
Feb 22	1430	15,900	13.35	Apr 10	2330	18,800	14.75

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	117	123	278	341	1,460	340	300	307	148	358	196
2	36	91	106	258	353	1,170	392	400	252	253	232	124
3	33	76	98	680	354	904	402	325	227	378	199	126
4	32	78	94	1,100	722	742	385	277	251	228	170	310
5	30	87	970	820	922	664	414	311	219	176	172	358
6	31	128	1,140	663	678	601	408	370	176	226	161	184
7	32	138	604	553	540	518	2,050	322	539	555	248	135
8	33	114	409	521	407	469	2,230	355	996	297	334	108
9	31	95	303	480	320	441	5,240	807	773	292	229	94
10	30	89	245	417	322	400	7,800	635	510	711	175	84
11	36	732	785	345	289	373	8,050	453	369	600	166	77
12	45	1,070	918	283	265	354	2,390	339	342	419	198	71
13	42	792	675	280	233	348	1,420	260	279	625	126	66
14	37	356	843	251	243	370	1,010	215	250	439	108	64
15	39	217	815	219	3,280	329	809	e500	393	314	95	73
16	206	194	639	220	e15,000	323	694	e840	1,150	243	522	70
17	165	392	484	205	3,370	316	628	e600	1,750	205	594	62
18	89	478	385	184	1,760	320	2,650	e580	2,390	166	399	57
19	63	351	321	186	1,180	305	1,940	e540	1,950	148	202	61
20	56	261	769	156	922	290	1,170	e480	1,030	130	139	62
21	58	291	911	152	801	286	867	e840	663	118	113	56
22	57	517	646	134	7,770	267	705	736	488	126	105	59
23	49	463	473	128	4,700	250	574	660	374	163	99	101
24	44	323	443	e120	2,120	240	489	721	298	169	92	79
25	44	235	635	e120	1,430	230	451	507	250	121	82	64
26	45	186	731	e125	1,150	236	494	435	216	101	76	58
27	42	185	623	e130	1,030	237	426	350	194	92	73	82
28	78	158	509	e135	1,430	217	368	302	181	89	74	109
29	146	140	415	139	---	215	352	297	171	217	94	75
30	241	135	336	233	---	280	322	355	157	189	92	61
31	185	---	290	293	---	307	---	327	---	608	200	---
TOTAL	2,095	8,489	16,738	9,808	51,932	13,462	45,470	14,439	17,145	8,546	5,927	3,126
MEAN	67.6	283	540	316	1,855	434	1,516	466	572	276	191	104
MAX	241	1,070	1,140	1,100	15,000	1,460	8,050	840	2,390	711	594	358
MIN	30	76	94	120	233	215	322	215	157	89	73	56
CFSM	0.24	0.99	1.89	1.11	6.49	1.52	5.30	1.63	2.00	0.96	0.67	0.36
IN.	0.27	1.10	2.18	1.28	6.75	1.75	5.91	1.88	2.23	1.11	0.77	0.41

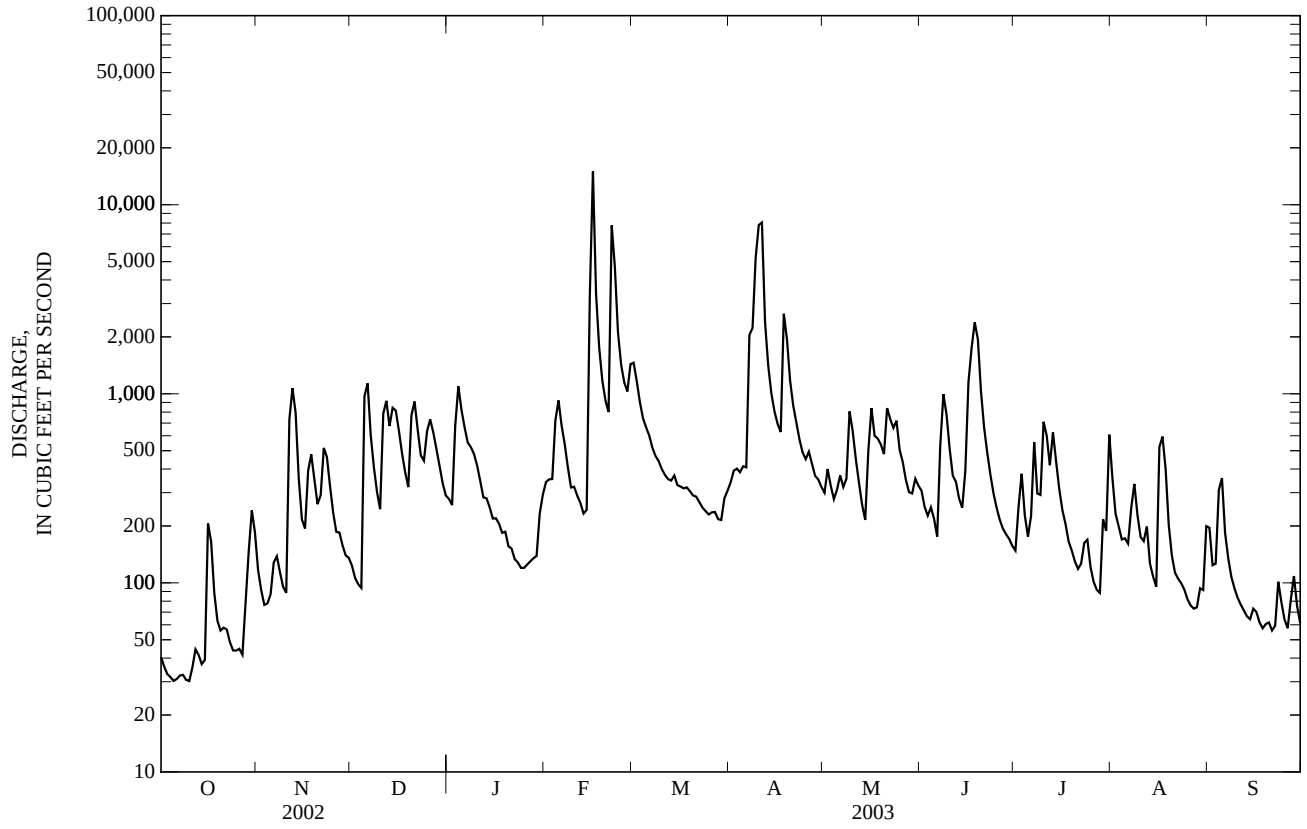
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 2003, BY WATER YEAR (WY)

MEAN	85.2	161	323	508	654	769	596	418	192	159	123	64.0
MAX	838	961	1,326	2,083	1,855	2,331	1,994	1,429	738	862	561	608
(WY)	(1990)	(1978)	(1927)	(1937)	(2003)	(1955)	(1977)	(1958)	(1998)	(2001)	(1966)	(1989)
MIN	0.98	2.46	11.1	19.6	57.7	168	64.0	63.4	21.6	3.03	8.81	2.07
(WY)	(1954)	(1954)	(1954)	(1940)	(1941)	(1988)	(1942)	(1941)	(1966)	(1930)	(1953)	(1943)

03208500 RUSSELL FORK AT HAYSI, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1926 - 2003	
ANNUAL TOTAL	133,521		197,177			
ANNUAL MEAN	366		540		336	
HIGHEST ANNUAL MEAN					568	1994
LOWEST ANNUAL MEAN					100	1941
HIGHEST DAILY MEAN	14,800	Mar 18	e15,000	Feb 16	30,600	Apr 4, 1977
LOWEST DAILY MEAN	17	aSep 13	30	bOct 5	0.20	Jun 27, 1936
ANNUAL SEVEN-DAY MINIMUM	18	Sep 9	31	Oct 4	0.56	Jun 24, 1936
MAXIMUM PEAK FLOW			28,300	Feb 16	59,000	Apr 4, 1977
MAXIMUM PEAK STAGE			18.89	Feb 16	28.24	Apr 4, 1977
INSTANTANEOUS LOW FLOW			27	cOct 4	d0.20	fJun 27, 1936
ANNUAL RUNOFF (CFSM)	1.28		1.89		1.18	
ANNUAL RUNOFF (INCHES)	17.37		25.65		15.99	
10 PERCENT EXCEEDS	717		922		736	
50 PERCENT EXCEEDS	136		291		132	
90 PERCENT EXCEEDS	32		71		16	

a Also Sept. 14, 2002.
b Also Oct. 10, 2002.
c Also Oct. 5, 2002.
d Observed.
e Estimated.
f Also June 28, 1936.



03208680 NORTH FORK OF POUND LAKE AT POUND, VA

LOCATION.--Lat 37°07'27", long 82°37'52", NAD83, Wise County, Hydrologic Unit 05070202, in control tower of North Fork Pound Dam at Pound, 1,200 ft upstream from Stacy Branch, and 1.2 mi upstream from South Fork Pound River.

DRAINAGE AREA.--17.2 mi^2.

PERIOD OF RECORD.--July 1966 to current year. Published as "North Fork Pound River Lake" prior to October 1993.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Aug. 29, 1966, nonrecording gage at same site and datum.

REMARKS.--Lake is formed by rockfill dam. Spillway with crest at elevation 1,644.0 ft is in a saddle 350 ft southeast of dam. Except during major floods, all discharge will be through a diversion tunnel, the invert of the entrance of which is at elevation 1,556.5 ft. Storage began in September 1964 during construction with peak discharge affected thereafter; initial filling for regular operation started July 13, 1966. Total capacity at elevation 1,644.0 ft, top of spillway, is 11,290 acre-ft of which 8,110 acre-ft is flood-control storage for summer operations between elevations 1,611.0 ft, top of summer conservation pool, and 1,644.0 ft; an additional 1,290 acre-ft is available for flood control during the period December to March between elevations 1,601.0 ft, top of winter conservation pool, and 1,611.0 ft; contents at established minimum pool, 1,601.0 ft, is 1,900 acre-ft; dead storage is 7 acre-ft below elevation 1,556.5 ft. Figures given herein represent total contents. Lake is used for flood control, low-water augmentation for water-quality control, and recreation. U.S. Army Corps of Engineers satellite precipitation and elevation telemeter at station.

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

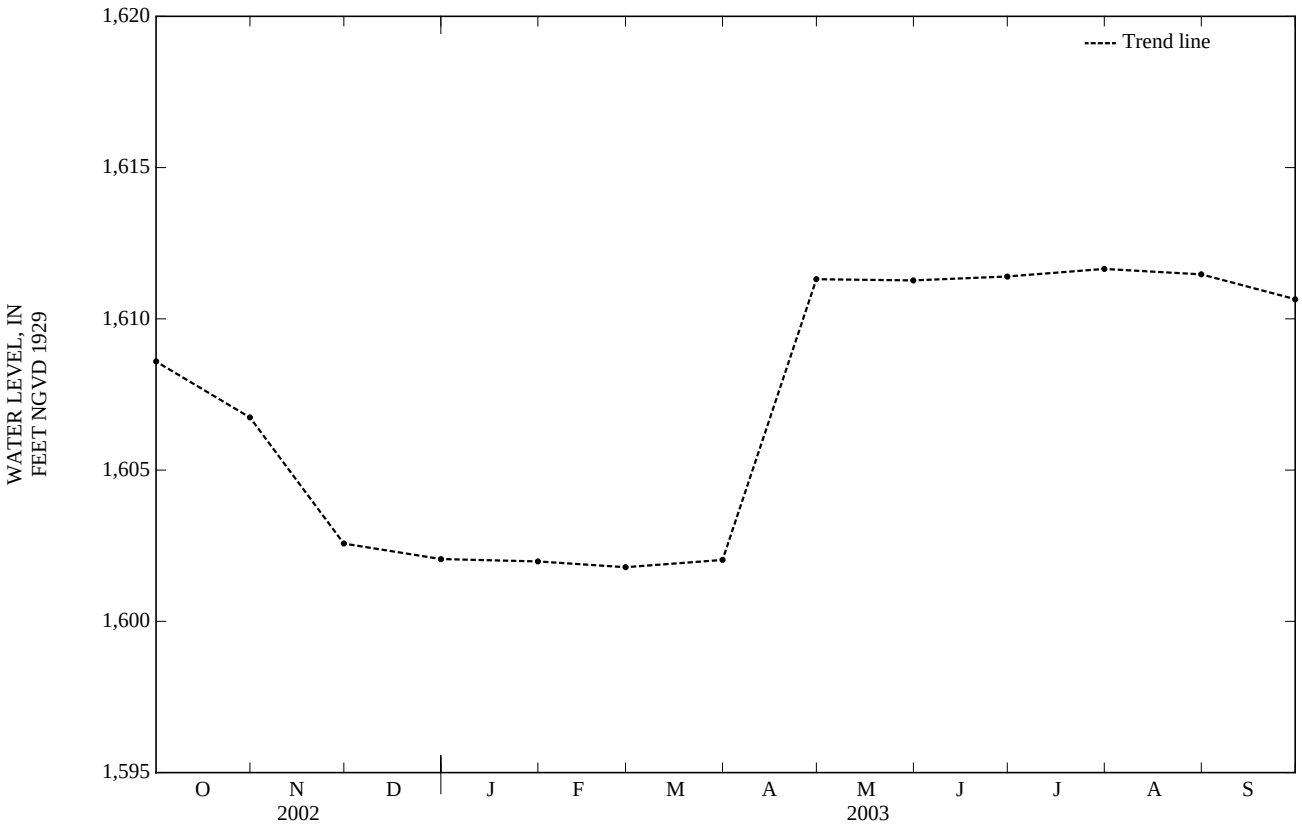
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 6,920 acre-ft, Apr. 8, 1977, elevation, 1,629.41 ft; minimum (after initial filling for regular operation), 1,660 acre-ft, Jan. 23, 1969, elevation, 1,598.62 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 4,420 acre-ft, Apr. 11, elevation, 1,618.18 ft; minimum, 1,960 acre-ft, Feb. 22, elevation, 1,601.60 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,608.59	2,830	
Oct. 31	1,606.74	2,580	-250
Nov. 30	1,602.57	2,060	-520
Dec. 31	1,602.06	2,010	-50
CAL YR 2002			-10
Jan. 31	1,601.98	2,000	-10
Feb. 28	1,601.79	1,980	-20
Mar. 31	1,602.03	2,000	+20
Apr. 30	1,611.34	3,240	+1,240
May 31	1,611.27	3,220	-20
June 30	1,611.40	3,250	+30
July 31	1,611.65	3,290	+40
Aug. 31	1,611.47	3,260	-30
Sept. 30	1,610.65	3,130	-130
WTR YR 2003			+300

03208680 NORTH FORK OF POUND LAKE AT POUND, VA—Continued



03208950 CRANES NEST RIVER NEAR CLINTWOOD, VA

LOCATION.--Lat 37°07'26", long 82°26'20", NAD83, Dickenson County, Hydrologic Unit 05070202, on left bank on State Highway 649, 500 ft downstream from Clinchfield Railway bridge, 1,000 ft downstream from Rush Creek, and 2.1 mi southeast of Clintwood.

DRAINAGE AREA.--66.5 mi^2.

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

REVISED RECORDS.--WDR VA-77-1: 1967(M). WDR VA-92-1: 1991(P).

GAGE.--Water-stage recorder. Datum of gage is 1,440.30 ft NGVD of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 24-27, which is fair. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Maximum discharge, 18,000 ft^3/s, from rating curve extended above 3,100 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality record for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 29, 1957, reached a stage of about 20.0 ft.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 16	0800	*5,970	*16.82	Apr 10	2130	3,130	12.36
Feb 22	1400	2,940	11.96	Apr 18	0800	1,400	8.00
Apr 9	0100	1,360	7.88				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	27	28	66	61	219	61	78	96	55	47	55
2	13	21	25	63	58	194	61	97	79	72	40	37
3	12	19	25	92	58	164	60	79	71	78	39	32
4	11	20	25	108	137	142	59	69	76	56	36	122
5	11	20	108	99	136	132	75	99	64	52	38	85
6	12	35	116	92	104	123	76	115	56	142	32	50
7	11	33	81	82	92	109	413	98	176	105	146	39
8	11	27	63	79	75	100	509	89	193	66	87	34
9	10	23	53	76	71	92	1,000	122	163	117	57	30
10	11	21	48	70	66	84	1,580	107	118	153	49	28
11	13	163	195	61	62	79	1,230	89	92	147	47	26
12	13	143	157	53	59	75	420	73	86	126	110	24
13	12	106	117	65	54	75	268	62	71	136	55	23
14	12	62	182	51	57	82	199	56	62	95	47	22
15	12	45	147	47	617	72	164	128	104	71	40	22
16	54	44	112	55	2,850	69	144	199	269	60	39	21
17	31	76	89	47	564	67	134	178	478	52	38	20
18	20	73	75	45	316	68	772	208	519	45	40	19
19	16	58	66	44	220	64	360	165	413	42	33	19
20	15	49	208	41	177	61	235	125	233	39	30	19
21	16	54	161	41	157	61	185	155	164	37	30	18
22	15	69	115	38	1,480	56	156	153	130	41	32	20
23	13	60	89	32	866	52	133	172	108	48	30	34
24	13	49	89	e31	399	51	118	232	89	62	27	22
25	12	42	115	e30	276	50	111	144	77	39	26	19
26	13	37	111	e30	224	52	130	127	69	34	24	18
27	13	38	97	e31	207	50	110	106	64	32	23	20
28	14	33	85	33	233	48	98	93	61	35	27	32
29	25	30	76	44	---	47	90	104	55	85	31	21
30	62	30	67	63	---	60	83	125	52	56	41	18
31	40	---	61	58	---	61	---	114	---	46	67	---
TOTAL	551	1,507	2,986	1,767	9,676	2,659	9,034	3,761	4,288	2,224	1,408	949
MEAN	17.8	50.2	96.3	57.0	346	85.8	301	121	143	71.7	45.4	31.6
MAX	62	163	208	108	2,850	219	1,580	232	519	153	146	122
MIN	10	19	25	30	54	47	59	56	52	32	23	18
CFSM	0.27	0.76	1.45	0.86	5.20	1.29	4.53	1.82	2.15	1.08	0.68	0.48
IN.	0.31	0.84	1.67	0.99	5.41	1.49	5.05	2.10	2.40	1.24	0.79	0.53

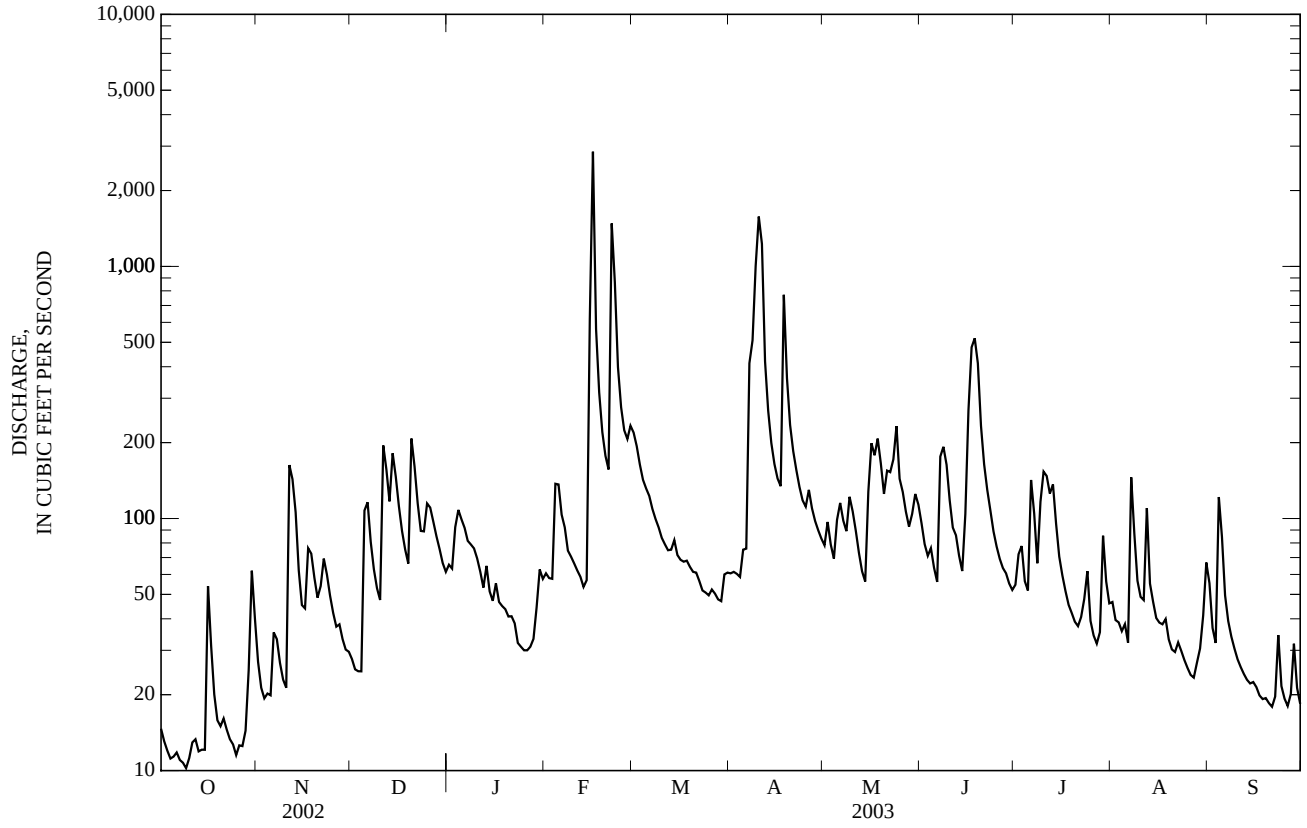
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 2003, BY WATER YEAR (WY)

MEAN	28.2	44.4	78.7	114	144	164	138	95.7	52.4	33.8	32.7	23.3
MAX	191	164	228	338	367	434	498	262	236	80.7	142	116
(WY)	(1990)	(1978)	(1992)	(1972)	(1994)	(1975)	(1977)	(1984)	(1989)	(2001)	(1966)	(1982)
MIN	1.67	6.33	4.41	5.98	36.6	37.8	28.1	21.2	7.40	5.50	6.74	3.95
(WY)	(1964)	(1966)	(1966)	(1966)	(1968)	(1988)	(1986)	(1976)	(1966)	(1970)	(1999)	(1965)

03208950 CRANES NEST RIVER NEAR CLINTWOOD, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1964 - 2003	
ANNUAL TOTAL	27,581.5		40,810			
ANNUAL MEAN	75.6		112		78.8	
HIGHEST ANNUAL MEAN					126	1994
LOWEST ANNUAL MEAN					34.7	1988
HIGHEST DAILY MEAN	3,750	Mar 18	2,850	Feb 16	8,000	Apr 4, 1977
LOWEST DAILY MEAN	7.6	Sep 14	10	Oct 9	0.70	Sep 17, 1964
ANNUAL SEVEN-DAY MINIMUM	7.9	Sep 10	11	Oct 4	0.93	Sep 12, 1964
MAXIMUM PEAK FLOW			5,970	Feb 16	18,000	Apr 4, 1977
MAXIMUM PEAK STAGE			16.82	Feb 16	a26.09	Apr 4, 1977
INSTANTANEOUS LOW FLOW			8.2	Oct 5	0.48	Sep 28, 1964
ANNUAL RUNOFF (CFSM)	1.14		1.68		1.18	
ANNUAL RUNOFF (INCHES)	15.43		22.83		16.10	
10 PERCENT EXCEEDS	126		188		168	
50 PERCENT EXCEEDS	34		62		38	
90 PERCENT EXCEEDS	12		20		8.2	

a From floodmark.
e Estimated.



03208990 JOHN W. FLANNAGAN RESERVOIR NEAR HAYSI, VA

LOCATION.--Lat 37°14'00", long 82°20'56", NAD83, Dickenson County, Hydrologic Unit 05070202, in control tower of John W. Flannagan Dam on Pound River, 1.3 mi upstream from Blacklog Branch, and 3.7 mi northwest of Haysi.

DRAINAGE AREA.--221 mi^2.

PERIOD OF RECORD.--September 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Mar. 31, 1965, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by rockfill dam. Spillway with crest at elevation 1,410.0 ft is in a saddle 0.3 mi upstream from dam and is equipped with 6 radial gates 36 ft high by 42 ft wide. Except during major floods, all discharge will be through a diversion tunnel, the invert of the entrance of which is at elevation 1,230.0 ft. Storage began in September 1961 during construction with peak discharge affected thereafter; initial filling for regular operations started in March 1965. Total capacity at elevation 1,446.0 ft, top of gates, is 145,700 acre-ft of which 78,600 acre-ft is controlled flood storage for summer operations between elevations 1,396.0 ft, top of summer conservation pool, and 1,446.0 ft; an additional 16,500 acre-ft is available for flood control during the period December to March between elevations 1,380.0 ft, top of winter conservation pool, and 1,396.0 ft; contents at established minimum pool, 1,314.0 ft, is 12,000 acre-ft; dead storage is 300 acre-ft below elevation 1,230.0 ft. Figures given herein represent total contents. Reservoir is used for flood control, low-water augmentation for water-quality control, and recreation. U.S. Army Corps of Engineers satellite precipitation and elevation telemeter at station.

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

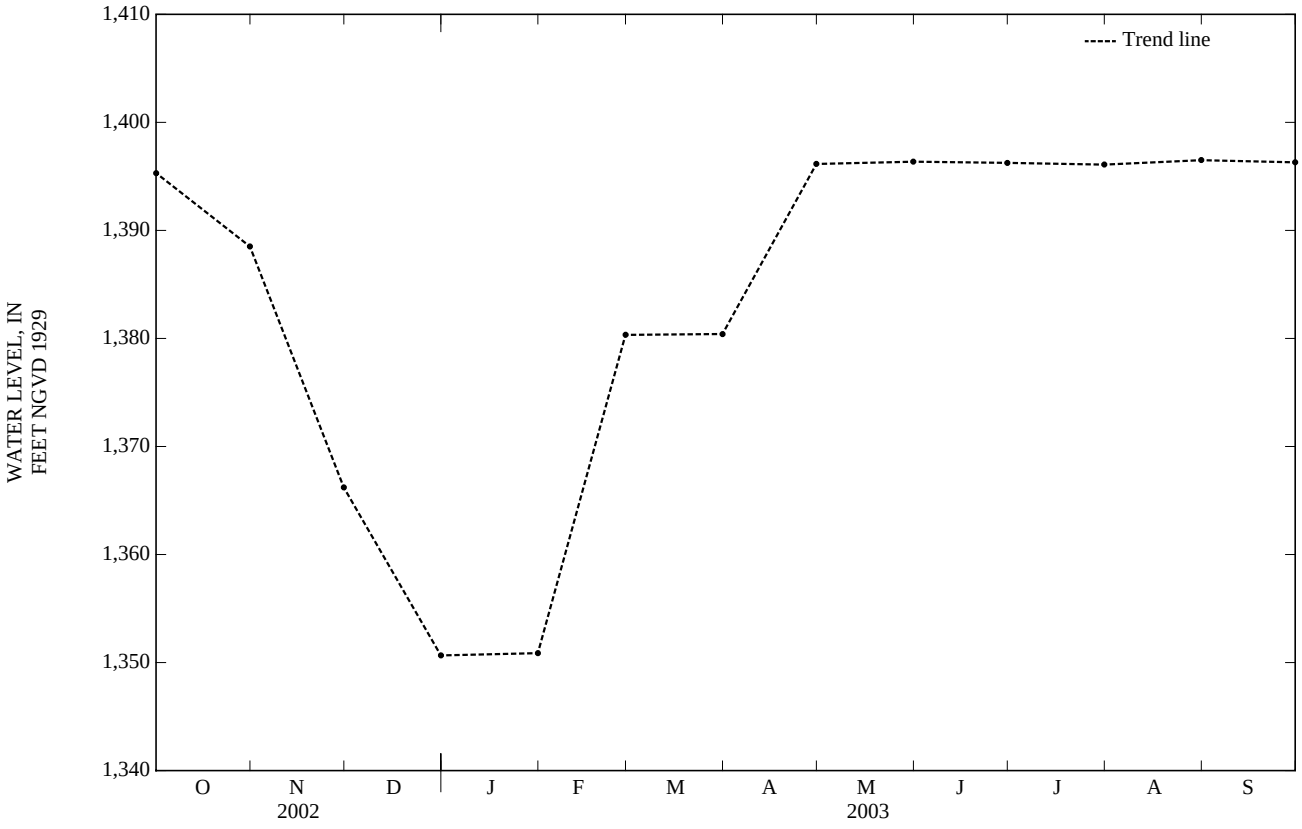
EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 116,500 acre-ft, Apr. 7, 1977, elevation, 1,430.80 ft; minimum (after initial filling for regular operation), 11,800 acre-ft, Apr. 1, 1965, elevation, 1,313.42 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 82,420 acre-ft, Apr. 11, elevation, 1,408.40 ft; minimum, 27,430 acre-ft, Dec. 26, elevation, 1,349.20 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,395.31	66,300	
Oct. 31	1,388.51	58,920	-7,380
Nov. 30	1,366.20	38,920	-20,000
Dec. 31	1,350.66	28,300	-10,620
CAL YR 2002			-22,300
Jan. 31	1,350.87	28,430	+130
Feb. 28	1,380.33	50,870	+22,440
Mar. 31	1,380.41	50,940	+70
Apr. 30	1,396.15	67,270	+16,330
May 31	1,396.36	67,500	+230
June 30	1,396.25	67,380	-120
July 31	1,396.09	67,190	-190
Aug. 31	1,396.50	67,670	+480
Sept. 30	1,396.30	67,430	-240
WTR YR 2003			+1,130

03208990 JOHN W. FLANNAGAN RESERVOIR NEAR HAYSI, VA—Continued



03209000 POUND RIVER BELOW FLANNAGAN DAM, NEAR HAYSI, VA

LOCATION.--Lat 37°14'13", long 82°20'36", NAD83, Dickenson County, Hydrologic Unit 05070202, on right bank 1,100 ft upstream from Blacklog Branch, 1,700 ft downstream from John W. Flannagan Dam, 1.4 mi upstream from mouth, and 3.4 mi northwest of Haysi.

DRAINAGE AREA.--221 mi^2.

PERIOD OF RECORD.--July 1926 to current year. Monthly discharge only for some periods, published in WSP 1305. Prior to October 1963, published as Pound River near Haysi.

REVISED RECORDS.--WSP 953: 1940-41. WSP 1003: 1942, 1943(P). WSP 1275: 1927-30, 1931(M), 1932-39.

GAGE.--Water-stage recorder. Datum of gage is 1,200.00 ft NGVD of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Dec. 20, 1939, nonrecording gage at site 3.8 mi upstream at different datum. Dec. 20, 1939, to Sept. 30, 1963, water-stage recorder at site 4.6 mi upstream at datum 79.91 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since March 1965 by John W. Flannagan Reservoir (station 03208990) 1,700 ft upstream and since August 1966 by North Fork of Pound Lake (station 03208680) 33 mi upstream. Statistics of monthly mean data and summary statistics for water years 1926-1964 (unregulated flow) are available in previous data books, water years 1991-1998. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Maximum discharge, about 30,000 ft^3/s, from rating curve extended above 1,750 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53	506	510	192	46	889	89	201	315	173	77	346
2	53	495	509	192	46	888	52	350	265	223	173	91
3	53	350	649	423	32	558	36	420	248	265	165	131
4	53	301	515	439	17	412	22	324	238	140	131	621
5	269	414	554	286	17	412	23	173	239	96	247	481
6	267	478	859	286	17	412	23	509	240	223	256	197
7	66	477	889	314	17	412	18	480	599	395	930	159
8	87	475	881	392	17	350	15	355	957	194	397	100
9	176	472	493	337	17	319	88	890	697	109	296	88
10	235	472	413	188	17	127	616	659	414	271	150	79
11	234	472	965	225	17	166	2,040	341	209	425	124	80
12	345	1,090	1,180	225	17	231	3,960	343	163	308	238	66
13	264	1,160	978	210	17	234	3,930	243	242	383	230	52
14	53	899	979	179	17	235	2,270	194	283	323	95	53
15	79	591	805	179	20	237	607	357	655	218	95	53
16	352	591	721	179	23	237	537	1,260	1,300	170	96	53
17	243	587	378	179	1,950	237	397	891	1,260	148	209	53
18	84	691	285	179	3,830	238	1,390	1,120	1,690	148	137	51
19	281	857	237	137	3,150	217	1,840	949	2,900	126	64	50
20	262	594	532	70	1,800	178	902	612	3,120	72	60	50
21	178	191	462	111	665	179	688	1,070	1,330	72	60	50
22	198	630	420	135	240	179	566	1,060	468	72	66	56
23	179	606	515	135	1,620	179	363	854	421	122	74	141
24	179	557	557	104	3,170	100	265	998	263	158	74	108
25	182	499	670	73	3,100	51	504	571	275	135	82	67
26	381	510	380	73	2,810	139	340	495	275	83	78	56
27	307	518	197	112	1,300	186	218	367	251	83	72	55
28	51	515	197	163	844	168	424	308	188	83	72	54
29	255	513	198	189	---	138	407	308	138	411	72	63
30	455	513	411	189	---	138	267	555	138	359	97	75
31	486	---	401	147	---	170	---	470	---	152	236	---
TOTAL	6,360	17,024	17,740	6,242	24,833	8,616	22,897	17,727	19,781	6,140	5,153	3,579
MEAN	205	567	572	201	887	278	763	572	659	198	166	119
MAX	486	1,160	1,180	439	3,830	889	3,960	1,260	3,120	425	930	621
MIN	51	191	197	70	17	51	15	173	138	72	60	50
(†)	-3,847	-10,342	-5,379	+61	+11,300	+45	+8,858	+106	-45	-76	+227	-187
MEAN‡	81.1	223	399	203	1,290	279	1,058	575	658	196	174	113
CFSM‡	.37	1.01	1.81	.92	5.84	1.26	4.79	2.60	2.98	.89	.79	.51
IN.‡	.42	1.13	2.08	1.06	6.08	1.46	5.34	3.00	3.32	1.02	.91	.57

CAL YR 2002 MEAN‡ 293 CFSM‡ 1.33 IN.‡ 18.00
WTR YR 2003 MEAN‡ 430 CFSM‡ 1.95 IN.‡ 26.42

† Total change in contents, equivalent in cubic feet per second, per month, in North Fork of Pound Lake and John W. Flannagan Reservoir; provided by U.S. Army Corps of Engineers.
‡ Adjusted for change in contents.

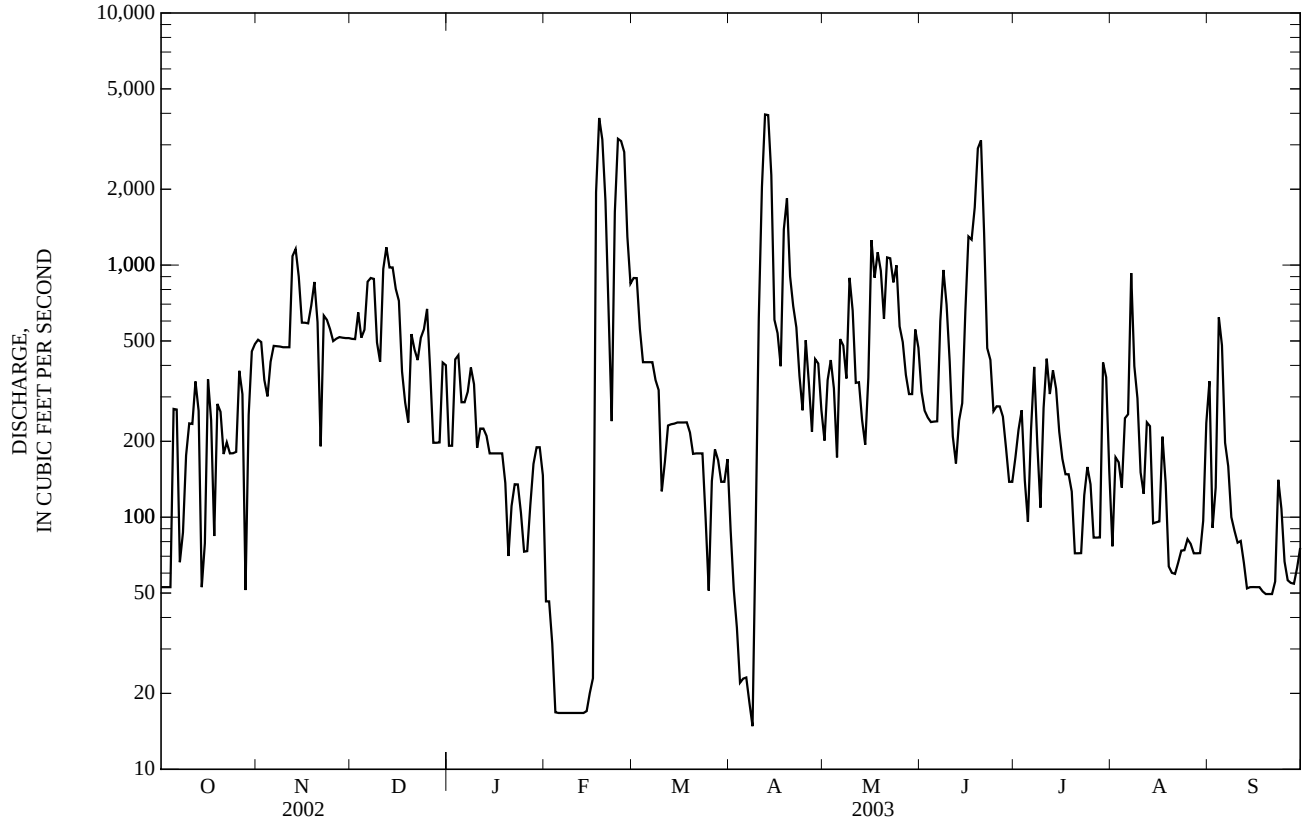
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 2003, BY WATER YEAR (WY)

MEAN	231	303	324	420	495	514	302	356	190	121	109	94.7
MAX	927	679	1,003	1,171	1,343	1,181	1,004	1,074	756	348	268	405
(WY)	(1990)	(1978)	(1992)	(1972)	(1994)	(1975)	(1977)	(1975)	(1989)	(2001)	(2001)	(1982)
MIN	48.9	24.8	16.1	31.8	92.3	110	46.1	47.4	9.66	5.49	7.13	32.5
(WY)	(1989)	(1966)	(1966)	(1966)	(1992)	(1988)	(1995)	(1982)	(1966)	(1965)	(1965)	(1967)

03209000 POUND RIVER BELOW FLANNAGAN DAM, NEAR HAYSI, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1965 - 2003	
ANNUAL TOTAL	118,144.3		156,092			
ANNUAL MEAN	324		428		288	
HIGHEST ANNUAL MEAN					481	1975
LOWEST ANNUAL MEAN					120	1966
HIGHEST DAILY MEAN	2,930	Jan 26	3,960	Apr 12	4,410	Apr 9, 1977
LOWEST DAILY MEAN	9.3	Mar 16	15	Apr 8	2.3	aJun 26, 1965
ANNUAL SEVEN-DAY MINIMUM	19	Mar 11	17	Feb 4	2.5	Jun 25, 1965
MAXIMUM PEAK FLOW			4,060	Feb 17	b4,540	Apr 8, 1977
MAXIMUM PEAK STAGE			7.81	Feb 17	b8.20	Apr 8, 1977
INSTANTANEOUS LOW FLOW			14	Apr 8	c,d0.00	Sep 22, 2000
ANNUAL RUNOFF (CFSM)	1.46		1.94		1.30	
ANNUAL RUNOFF (INCHES)	19.89		26.27		17.68	
10 PERCENT EXCEEDS	657		900		640	
50 PERCENT EXCEEDS	173		242		140	
90 PERCENT EXCEEDS	51		53		46	

a Also June 27-29, 1965.
b Prior to regulation, 1926-64, maximum peak flow, 30,000 ft^3/s, Mar. 23, 1929, gage height, 16.50 ft, from floodmarks, site and datum then in use.
c Prior to regulation, 1926-64, instantaneous low flow, less than .10 ft^3/s, on several days in September 1932.
d Practically no flow, due to regulation.



03209500 LEVISA FORK AT PIKEVILLE, KY

LOCATION.--Lat 37°27'51", long 82°31'35", Pike County, Hydrologic Unit 05070203, on right bank 20 ft downstream from bridge on State Highway 1426, 0.75 mi downstream from Lanks Branch, 1.0 mi south of Pikeville, 1.5 mi upstream from Harolds Branch, and at mile 117.3.

DRAINAGE AREA.--1,232 mi^2.

PERIOD OF RECORD.--October 1937 to current year. Gage-height records collected in this vicinity since 1907 are contained in reports of National Weather Service.

REVISED RECORDS.--WRD KY 78-1: Drainage area.

GAGE.--Water-stage recorder with telemetry. Datum of gage is 631.98 ft above NGVD of 1929. Prior to Sept. 23, 1944, nonrecording gage at site 2.3 mi downstream at datum 2.65 ft higher. Sept. 23, 1944 to Sept. 30, 1952, water-stage recorder 2.3 mi downstream at datum 1.65 ft higher. Oct. 1, 1952 to Sept. 30, 1979, at site 2.1 mi downstream at same datum.

REMARKS.--Records good. Flow regulated since March 1965 by John W. Flannagan Lake (station 03208990), since August 1966 by North Fork Pound River Lake (station 03208680) and since October 1968 by Fishtrap Lake (station 03207995).

COOPERATION.--U.S. Army Corps of Engineers, Huntington District.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

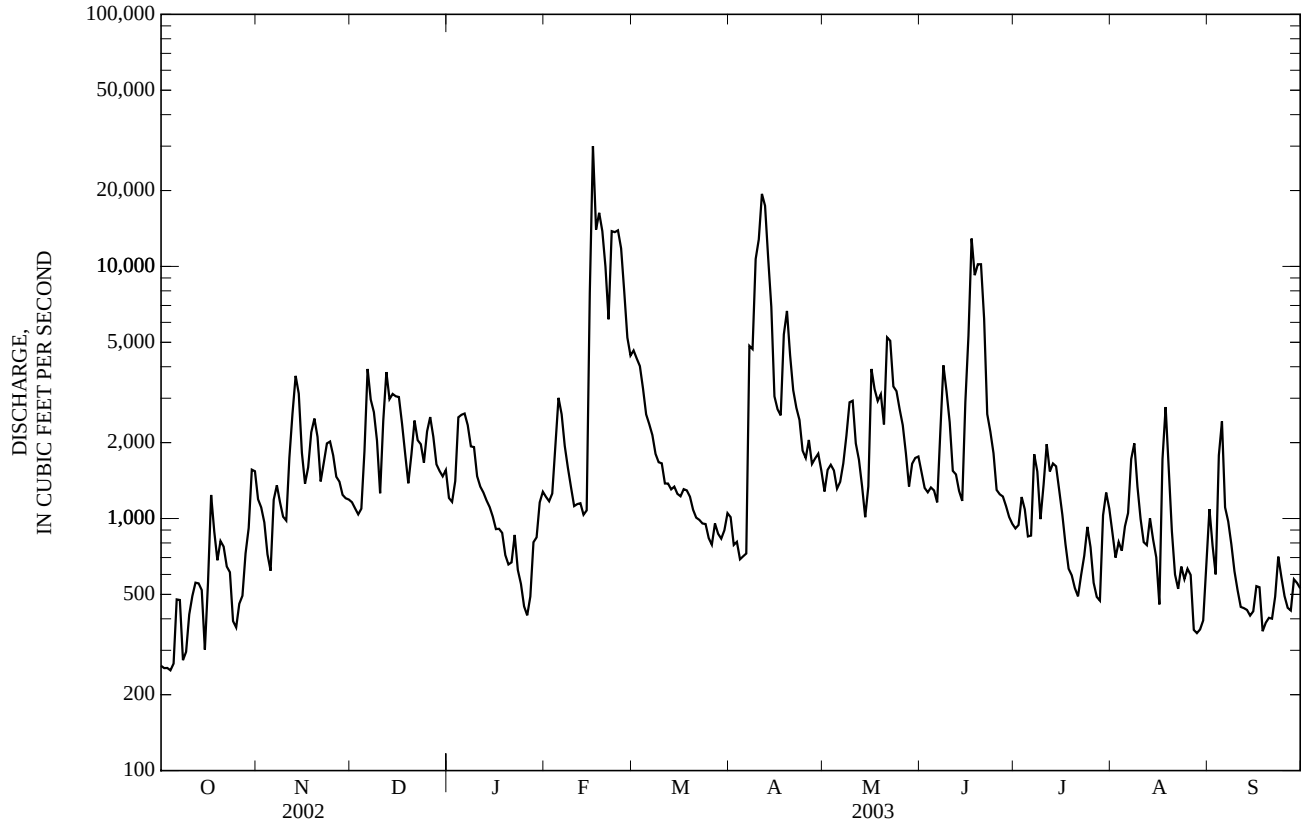
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	261	1,190	1,160	1,210	1,220	4,640	1,010	1,280	1,530	913	877	1,090
2	255	1,110	1,100	1,160	1,170	4,310	785	1,560	1,320	942	700	781
3	255	965	1,040	1,410	1,260	4,020	808	1,630	1,270	1,220	806	600
4	250	721	1,090	2,520	1,940	3,280	689	1,550	1,330	1,090	745	1,780
5	266	621	1,850	2,580	3,010	2,590	708	1,310	1,290	849	931	2,430
6	478	1,190	3,920	2,610	2,590	2,370	726	1,400	1,160	856	1,050	1,110
7	475	1,350	2,960	2,340	1,940	2,140	4,840	1,650	2,200	1,800	1,720	973
8	274	1,160	2,640	1,930	1,590	1,800	4,700	2,130	4,050	1,540	1,990	790
9	296	1,020	2,040	1,920	1,330	1,670	10,700	2,890	3,180	994	1,340	618
10	416	981	1,260	1,470	1,120	1,660	12,800	2,930	2,410	1,360	996	519
11	493	1,740	2,440	1,340	1,140	1,380	19,400	1,990	1,550	1,970	806	446
12	556	2,610	3,810	1,270	1,150	1,380	17,400	1,710	1,500	1,540	784	441
13	553	3,680	2,980	1,180	1,040	1,300	10,800	1,340	1,290	1,650	1,000	434
14	520	3,130	3,120	1,110	1,080	1,340	6,910	1,010	1,170	1,610	826	412
15	302	1,820	3,050	1,020	7,870	1,250	3,050	1,340	2,890	1,290	702	429
16	557	1,380	3,030	908	30,000	1,230	2,710	3,920	5,310	1,030	456	539
17	1,240	1,590	2,380	910	14,000	1,310	2,570	3,260	12,900	791	1,720	534
18	889	2,200	1,810	877	16,300	1,290	5,370	2,930	9,230	632	2,770	357
19	683	2,490	1,380	716	13,800	1,220	6,660	3,110	10,200	595	1,570	386
20	814	2,110	1,800	657	9,980	1,080	4,450	2,360	10,200	529	891	404
21	774	1,400	2,450	670	6,170	1,010	3,230	5,230	6,200	491	600	401
22	645	1,670	2,040	861	13,800	988	2,750	5,070	2,600	597	526	490
23	612	1,990	1,970	625	13,700	956	2,460	3,340	2,210	712	645	706
24	392	2,020	1,670	550	13,900	951	1,860	3,200	1,820	927	575	585
25	370	1,780	2,220	448	11,800	836	1,740	2,720	1,300	770	632	492
26	459	1,460	2,530	413	7,960	787	2,050	2,350	1,250	556	597	442
27	494	1,400	2,110	490	5,220	956	1,650	1,820	1,220	489	362	432
28	727	1,240	1,640	805	4,430	870	1,730	1,340	1,120	472	351	574
29	916	1,200	1,540	842	---	832	1,810	1,650	1,010	1,030	363	555
30	1,560	1,190	1,470	1,160	---	898	1,550	1,740	953	1,270	394	529
31	1,540	---	1,560	1,280	---	1,050	---	1,760	---	1,090	652	---
TOTAL	18,322	48,408	66,060	37,282	190,510	51,394	137,916	71,520	95,663	31,605	28,377	20,279
MEAN	591	1,614	2,131	1,203	6,804	1,658	4,597	2,307	3,189	1,020	915	676
MAX	1,560	3,680	3,920	2,610	30,000	4,640	19,400	5,230	12,900	1,970	2,770	2,430
MIN	250	621	1,040	413	1,040	787	689	1,010	953	472	351	357

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 2003, BY WATER YEAR (WY)

MEAN	774	1,088	1,500	2,230	2,832	2,924	2,330	1,995	1,072	643	510	455
MAX	3,939	3,991	5,385	6,861	6,804	8,081	7,646	6,067	3,492	2,028	1,150	1,606
(WY)	(1990)	(1978)	(1973)	(1974)	(2003)	(1975)	(1977)	(1984)	(1979)	(2001)	(2001)	(1989)
MIN	158	312	300	278	814	529	388	349	210	200	203	168
(WY)	(1970)	(2001)	(1981)	(1981)	(1992)	(1988)	(1986)	(1976)	(1988)	(1988)	(1969)	(1969)

03209500 LEVISA FORK AT PIKEVILLE, KY—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1969 - 2003	
ANNUAL TOTAL	540,874		797,336			
ANNUAL MEAN	1,482		2,184		1,523	
HIGHEST ANNUAL MEAN					2,459	1979
LOWEST ANNUAL MEAN					522	1988
HIGHEST DAILY MEAN	22,100	Mar 18	30,000	Feb 16	69,300	Apr 5, 1977
LOWEST DAILY MEAN	192	Jan 4	250	Oct 4	66	Dec 3, 1970
ANNUAL SEVEN-DAY MINIMUM	211	Aug 30	320	Oct 1	103	Oct 10, 1968
MAXIMUM PEAK FLOW			33,000	Feb 16	85,500	Jan 30, 1957
MAXIMUM PEAK STAGE			39.97	Feb 16	52.72	Jan 30, 1957
INSTANTANEOUS LOW FLOW					66	Dec 3, 1970
10 PERCENT EXCEEDS	2,930		4,030		3,480	
50 PERCENT EXCEEDS	742		1,280		754	
90 PERCENT EXCEEDS	234		491		233	



03471500 SOUTH FORK HOLSTON RIVER AT RIVERSIDE, NEAR CHILHOWIE, VA

LOCATION.--Lat 36°45'37", long 81°37'52", NAD83, Smyth County, Hydrologic Unit 06010102, on right bank 400 ft upstream from highway bridge at Riverside, 900 ft upstream from Spring Branch, 3.2 mi downstream from Redstone Branch, 4.0 mi southeast of Chilhowie, and at mile 97.2.

DRAINAGE AREA.--76.1 mi^2.

PERIOD OF RECORD.--October 1920 to December 1931, July 1942 to current year. Monthly discharge only for some periods, published in WSP 1306. Prior to October 1924, published as "near Chilhowie." June 1907 to December 1909, at site 4.5 mi downstream also published as "near Chilhowie"; records not equivalent.

REVISED RECORDS.--WSP 1033: 1943-44(m). WSP 1306: Drainage area, 1921-31(M).

GAGE.--Water-stage recorder. Datum of gage is 2,106.77 ft NGVD of 1929. Nov. 1, 1920, to Nov. 14, 1931, nonrecording gage at site 400 ft downstream at same datum.

REMARKS.--Records good except for period with ice effect, Jan. 24-28, which is fair. Prior to August 1951, diurnal fluctuation at low flow caused by mill 500 ft upstream from station. Maximum discharge, 9,600 ft^3/s, from rating curve extended above 3,700 ft^3/s on basis of slope-area measurement of peak flow. Minimum discharge recorded, 2 ft^3/s, but may have been less in 1925 and 1926 before installation of water-stage recorder. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 16	0415	1,150	4.82	Jun 12	0030	696	4.00
Feb 22	1800	*3,320	*7.03	Jul 3	0100	821	4.25
Apr 10	2315	2,340	6.23				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	51	68	136	161	335	97	143	135	110	140	80
2	26	48	64	176	141	326	198	204	133	379	147	68
3	25	45	60	204	132	272	203	162	120	665	164	61
4	24	46	59	221	183	227	172	138	113	363	172	84
5	23	46	104	203	234	202	180	131	98	237	144	92
6	23	66	125	175	199	228	183	129	87	181	117	74
7	22	87	107	150	174	247	188	124	101	237	103	66
8	22	80	95	135	146	230	181	131	251	175	113	62
9	22	71	86	127	125	202	216	124	264	162	128	58
10	22	63	79	118	122	174	782	120	190	161	117	55
11	25	149	108	107	111	153	1,330	113	228	148	110	54
12	25	259	172	96	102	138	574	105	478	132	120	49
13	24	277	241	91	93	127	384	97	331	139	125	49
14	24	182	364	89	94	121	288	89	256	120	109	47
15	26	133	262	84	275	110	233	89	299	108	94	53
16	52	121	201	79	912	112	201	101	343	100	142	52
17	49	225	161	78	482	111	178	86	550	94	179	47
18	38	222	135	71	313	113	221	97	420	85	166	46
19	34	165	121	70	238	111	250	92	403	80	135	51
20	32	130	275	69	209	146	227	90	395	75	113	48
21	33	120	364	68	207	223	220	94	305	72	98	45
22	31	130	256	65	1,500	195	203	95	236	70	92	47
23	29	132	195	61	1,520	163	188	112	191	71	93	64
24	28	120	194	e58	706	141	169	148	158	65	80	55
25	28	106	268	e52	438	124	155	131	135	61	73	52
26	28	95	250	e50	341	116	144	118	120	58	68	49
27	28	91	206	e52	291	106	130	105	120	56	64	50
28	31	81	177	e52	292	97	117	94	110	54	62	58
29	39	76	156	99	---	92	109	101	102	167	62	52
30	49	73	137	189	---	102	112	117	98	113	58	50
31	54	---	127	184	---	95	---	118	---	95	63	---
TOTAL	942	3,490	5,217	3,409	9,741	5,139	7,833	3,598	6,770	4,633	3,451	1,718
MEAN	30.4	116	168	110	348	166	261	116	226	149	111	57.3
MAX	54	277	364	221	1,520	335	1,330	204	550	665	179	92
MIN	22	45	59	50	93	92	97	86	87	54	58	45
CFSM	0.40	1.53	2.21	1.45	4.57	2.18	3.43	1.53	2.97	1.96	1.46	0.75
IN.	0.46	1.71	2.55	1.67	4.76	2.51	3.83	1.76	3.31	2.26	1.69	0.84

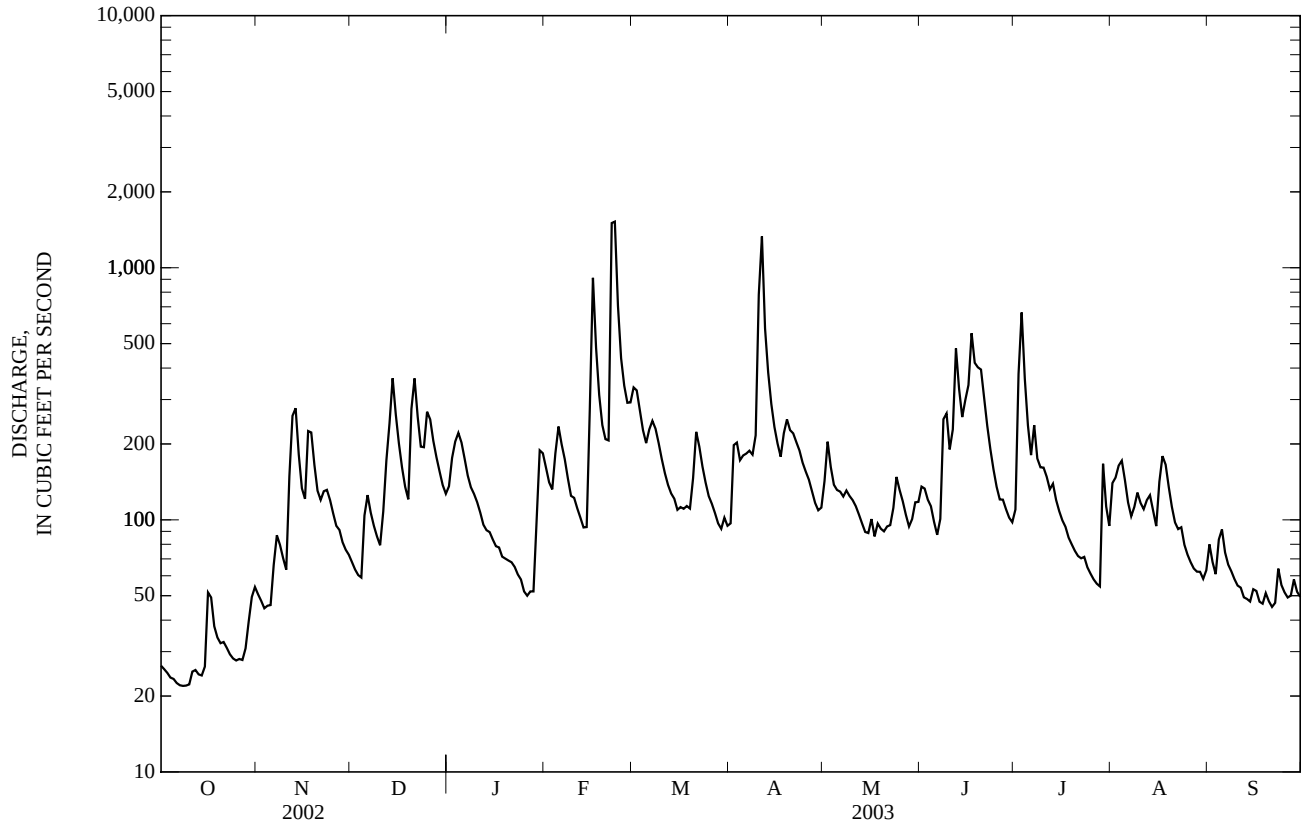
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 1932, 1942 - 2003, BY WATER YEAR (WY)

MEAN	48.2	67.9	108	149	201	206	170	137	91.5	62.1	56.0	44.3
MAX	162	409	272	353	508	512	570	278	322	213	209	254
(WY)	(1990)	(1978)	(1973)	(1996)	(1957)	(1955)	(1987)	(1945)	(1923)	(2001)	(1942)	(1989)
MIN	18.7	17.6	25.3	28.8	54.3	51.3	52.6	49.1	31.1	22.5	17.5	20.6
(WY)	(1932)	(1932)	(2001)	(1956)	(2002)	(1988)	(1986)	(1926)	(1988)	(1988)	(1988)	(1988)

03471500 SOUTH FORK HOLSTON RIVER AT RIVERSIDE, NEAR CHILHOWIE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1921 - 1932, 1942 - 2003	
ANNUAL TOTAL	29,492		55,941			
ANNUAL MEAN	80.8		153		111	
HIGHEST ANNUAL MEAN					162	1974
LOWEST ANNUAL MEAN					53.8	1988
HIGHEST DAILY MEAN	1,800	Mar 18	1,520	Feb 23	4,040	Nov 6, 1977
LOWEST DAILY MEAN	19	Sep 10	22	aOct 7	8.0	Jul 19, 1926
ANNUAL SEVEN-DAY MINIMUM	20	Sep 6	23	Oct 4	15	Jul 17, 1926
MAXIMUM PEAK FLOW			3,320	Feb 22	9,600	Nov 6, 1977
MAXIMUM PEAK STAGE			7.03	Feb 22	10.20	Nov 6, 1977
INSTANTANEOUS LOW FLOW			20	bOct 6	2.0	cAug 26, 1943
ANNUAL RUNOFF (CFSM)	1.06		2.01		1.46	
ANNUAL RUNOFF (INCHES)	14.42		27.35		19.85	
10 PERCENT EXCEEDS	172		266		225	
50 PERCENT EXCEEDS	47		117		70	
90 PERCENT EXCEEDS	23		48		27	

a Also Oct. 8-10, 2002.
b Also Oct. 7-10, 2002.
c Also Oct. 15, 1943, Aug. 9, 11, 1944, and Oct. 19, 1945.
e Estimated.



03473000 SOUTH FORK HOLSTON RIVER NEAR DAMASCUS, VA

LOCATION.--Lat 36°39'06", long 81°50'38", NAD83, Washington County, Hydrologic Unit 06010102, on right bank 500 ft upstream from bridge on U.S. Highway 58, 0.7 mi downstream from Laurel Creek, 3.2 mi northwest of Damascus, 4.9 mi upstream from Middle Fork, and at mile 77.2.

DRAINAGE AREA.--301 mi^2.

PERIOD OF RECORD.--October 1931 to current year. Monthly discharge only for some periods, published in WSP 1306. Published as "at Vestal" prior to October 1978.

REVISED RECORDS.--WSP 823: Drainage area. WSP 1306: 1932-33(M).

GAGE.--Water-stage recorder. Datum of gage is 1,792.30 ft NGVD of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 24-28, which is fair. Prior to 1980, some diurnal fluctuation at low flow caused by powerplant upstream from station. Maximum discharge, 22,000 ft^3/s, from rating curve extended above 10,000 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 16	0445	5,650	9.04	Apr 11	0030	6,510	9.71
Feb 22	1815	*8,900	*11.39	Jul 2	2245	4,300	7.91

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	120	428	336	559	908	1,570	441	678	603	524	1,260	958
2	110	347	307	674	744	1,380	726	719	554	2,860	1,150	497
3	104	294	292	834	664	1,140	796	679	496	3,330	920	390
4	97	278	285	942	1,030	948	696	616	465	1,690	775	535
5	94	264	1,060	857	1,230	852	792	624	408	1,040	1,010	571
6	92	645	1,210	739	957	1,250	805	676	363	802	778	454
7	88	793	828	619	808	1,400	835	664	435	1,370	657	390
8	86	560	634	556	665	1,140	796	701	872	1,210	814	357
9	85	440	523	524	569	947	956	670	881	1,020	1,050	328
10	85	373	458	498	556	796	2,900	609	664	1,000	737	300
11	104	1,280	685	452	510	692	4,710	564	581	957	644	280
12	110	1,850	792	404	475	614	2,500	499	1,140	871	668	264
13	97	1,670	979	383	440	577	1,720	450	956	866	725	245
14	102	972	1,390	382	441	596	1,230	410	774	700	569	237
15	152	678	1,110	358	1,530	519	957	409	880	602	486	261
16	618	629	867	329	4,510	527	804	424	1,080	541	620	257
17	416	1,040	696	335	2,290	512	706	370	1,380	508	681	225
18	282	1,060	584	291	1,420	512	1,090	400	1,180	444	600	213
19	221	800	522	301	1,040	491	1,130	361	1,350	407	509	237
20	191	647	1,120	303	892	580	969	345	1,300	379	446	220
21	203	640	1,430	307	844	722	964	379	1,010	357	398	206
22	180	749	1,050	296	4,750	687	897	394	791	390	381	229
23	160	736	796	262	5,430	606	809	392	636	428	407	437
24	144	624	850	e230	2,920	549	716	600	535	351	351	287
25	136	527	1,410	e220	1,870	499	648	508	468	323	323	248
26	144	458	1,310	e210	1,430	478	599	461	421	303	305	234
27	136	477	983	e220	1,360	456	541	409	478	285	290	235
28	178	413	792	e230	1,620	414	484	374	433	281	295	343
29	325	386	668	584	---	398	456	449	411	500	316	274
30	582	369	577	1,260	---	453	555	527	398	458	296	244
31	575	---	523	1,100	---	426	---	534	---	458	553	---
TOTAL	6,017	20,427	25,067	15,259	41,903	22,731	32,228	15,895	21,943	25,255	19,014	9,956
MEAN	194	681	809	492	1,497	733	1,074	513	731	815	613	332
MAX	618	1,850	1,430	1,260	5,430	1,570	4,710	719	1,380	3,330	1,260	958
MIN	85	264	285	210	440	398	441	345	363	281	290	206
CFSM	0.64	2.26	2.69	1.64	4.97	2.44	3.57	1.70	2.43	2.71	2.04	1.10
IN.	0.74	2.52	3.10	1.89	5.18	2.81	3.98	1.96	2.71	3.12	2.35	1.23

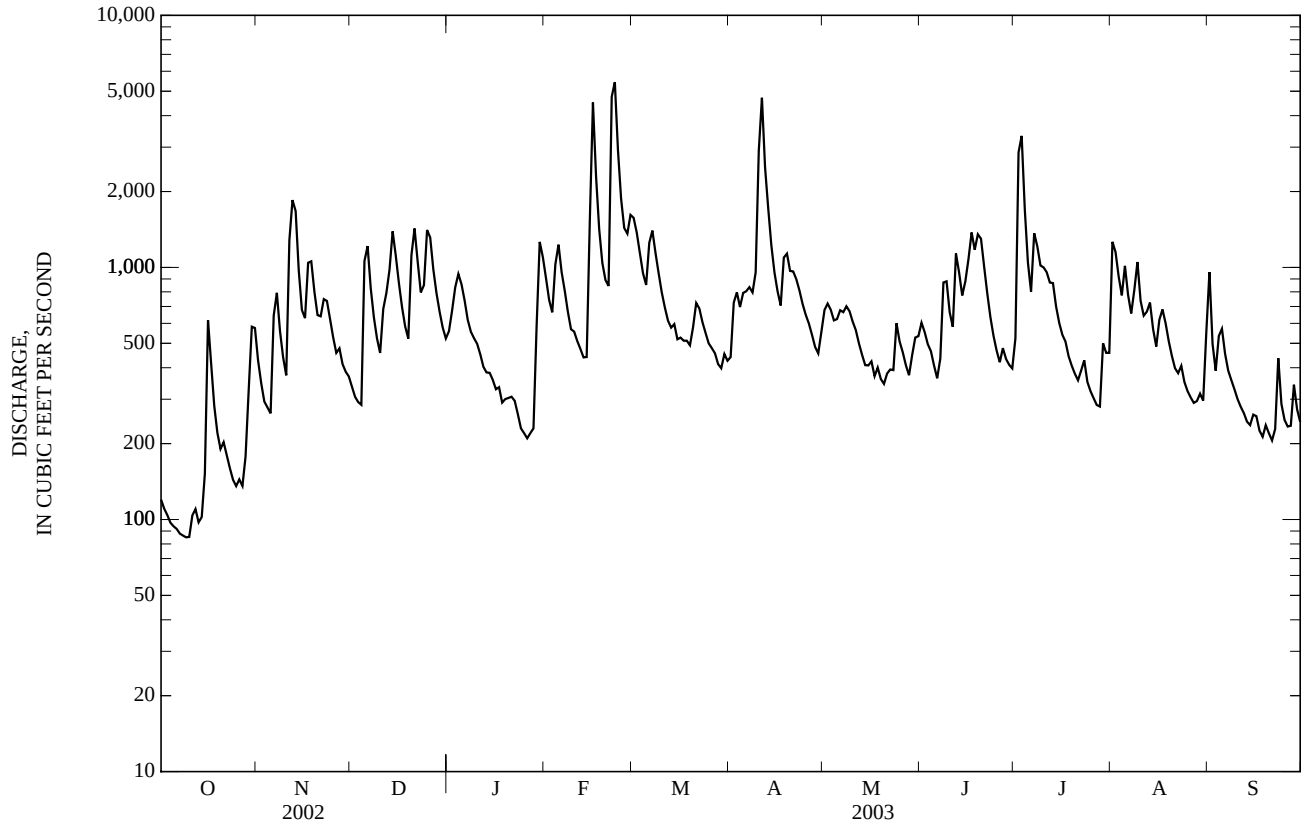
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 2003, BY WATER YEAR (WY)

MEAN	209	283	473	654	838	873	723	571	365	296	256	178
MAX	938	1,258	1,203	1,490	2,022	2,075	1,995	1,367	968	1,079	1,193	790
(WY)	(1978)	(1978)	(1973)	(1957)	(1957)	(1955)	(1987)	(1998)	(1998)	(1938)	(1940)	(1989)
MIN	76.5	85.3	93.6	101	200	228	224	155	129	100	89.6	79.0
(WY)	(1953)	(1940)	(1940)	(1940)	(1941)	(1988)	(1942)	(1941)	(1988)	(1988)	(1988)	(1954)

03473000 SOUTH FORK HOLSTON RIVER NEAR DAMASCUS, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1932 - 2003	
ANNUAL TOTAL	143,652		255,695			
ANNUAL MEAN	394		701		475	
HIGHEST ANNUAL MEAN					712	1974
LOWEST ANNUAL MEAN					245	1988
HIGHEST DAILY MEAN	7,010	Mar 18	5,430	Feb 23	12,800	Apr 5, 1977
LOWEST DAILY MEAN	65	aSep 11	85	bOct 9	40	Dec 27, 1983
ANNUAL SEVEN-DAY MINIMUM	67	Sep 8	90	Oct 4	63	Sep 13, 1954
MAXIMUM PEAK FLOW			8,900	Feb 22	22,000	Apr 5, 1977
MAXIMUM PEAK STAGE			11.39	Feb 22	17.11	Apr 5, 1977
INSTANTANEOUS LOW FLOW			85	cOct 8	30	dOct 14, 1941
ANNUAL RUNOFF (CFSM)	1.31		2.33		1.58	
ANNUAL RUNOFF (INCHES)	17.75		31.60		21.44	
10 PERCENT EXCEEDS	837		1,230		988	
50 PERCENT EXCEEDS	216		556		302	
90 PERCENT EXCEEDS	94		235		110	

a Also Sept. 12, 13, 2002.
b Also Oct. 10, 2002.
c Also Oct. 9, 10, 2002.
d Also Dec. 24, 1943.
e Estimated.



03474000 MIDDLE FORK HOLSTON RIVER AT SEVEN MILE FORD, VA

LOCATION.--Lat 36°48'26", long 81°37'19", NAD83, Smyth County, Hydrologic Unit 06010102, on right bank at downstream side of bridge on U.S. Highway 11 at Seven Mile Ford, 0.3 mi upstream from Meade Creek, 3.3 mi downstream from Walker Creek, and at mile 32.1.

DRAINAGE AREA.--132 mi^2.

PERIOD OF RECORD.--July 1942 to December 1981, January 1982 to September 1987 (annual maximum only), October 1987 to September 1989, October 1989 to September 1996 (annual maximum only), October 1996 to current year.

REVISED RECORDS.--WSP 973: 1942(m). WSP 1306: 1947(M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,960.00 ft NGVD of 1929.

REMARKS.--Records good except for period with ice effect, Jan. 25-28, which is 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 data logger at station, called at 6-hour intervals by computer at Knoxville, TN. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been made at this location.

COOPERATION.--Gage-height record of extremes were provided by Tennessee Valley Authority for the period Jan. 1, 1982, to Sept. 30, 1987, and Oct. 1, 1989 to Sept. 30, 1996.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 16	0130	5,050	5.27	Apr 10	2215	5,190	5.36
Feb 22	1645	*6,870	*6.40				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	115	120	244	295	575	200	157	182	125	389	156
2	39	88	115	300	253	545	340	144	153	763	314	113
3	38	74	155	392	241	451	298	138	132	968	299	94
4	36	72	149	422	512	381	253	127	122	474	247	302
5	37	74	273	343	551	364	251	122	103	311	207	285
6	36	193	292	303	369	394	235	123	88	258	172	161
7	35	184	236	266	307	349	270	116	119	621	164	123
8	33	131	217	247	249	428	293	127	219	392	185	107
9	33	104	203	244	216	400	603	112	186	368	266	96
10	33	88	184	239	213	363	2,040	105	146	528	229	87
11	42	316	287	223	199	340	1,990	104	232	429	222	83
12	42	575	369	209	186	316	766	95	675	341	233	76
13	39	509	443	198	176	209	500	88	351	283	212	71
14	37	283	602	193	184	203	380	84	302	228	175	70
15	49	206	465	182	1,220	186	314	108	931	194	158	97
16	279	190	340	166	2,410	184	277	128	809	172	592	92
17	149	420	276	121	774	178	250	100	779	158	519	77
18	84	351	232	107	503	175	287	104	549	140	411	70
19	65	251	208	102	408	168	294	92	626	128	280	84
20	56	202	404	101	429	229	275	88	546	118	217	74
21	53	208	458	100	539	339	322	143	377	109	179	68
22	50	306	326	96	3,220	288	349	254	285	130	160	81
23	45	310	256	91	1,960	246	304	199	225	146	147	153
24	42	239	332	80	938	216	260	169	187	110	127	93
25	42	196	613	e76	633	196	236	137	162	100	113	78
26	43	167	454	e76	517	188	216	117	145	92	106	70
27	42	177	335	e80	458	176	191	102	153	87	101	78
28	54	159	286	e84	480	161	167	91	138	85	95	127
29	98	144	249	256	---	155	157	110	122	570	90	90
30	265	136	231	445	---	178	151	139	111	300	91	77
31	185	---	232	350	---	177	---	140	---	251	136	---
TOTAL	2,123	6,468	9,342	6,336	18,440	8,758	12,469	3,863	9,155	8,979	6,836	3,233
MEAN	68.5	216	301	204	659	283	416	125	305	290	221	108
MAX	279	575	613	445	3,220	575	2,040	254	931	968	592	302
MIN	33	72	115	76	176	155	151	84	88	85	90	68
CFSM	0.52	1.63	2.28	1.55	4.99	2.14	3.15	0.94	2.31	2.19	1.67	0.82
IN.	0.60	1.82	2.63	1.79	5.20	2.47	3.51	1.09	2.58	2.53	1.93	0.91

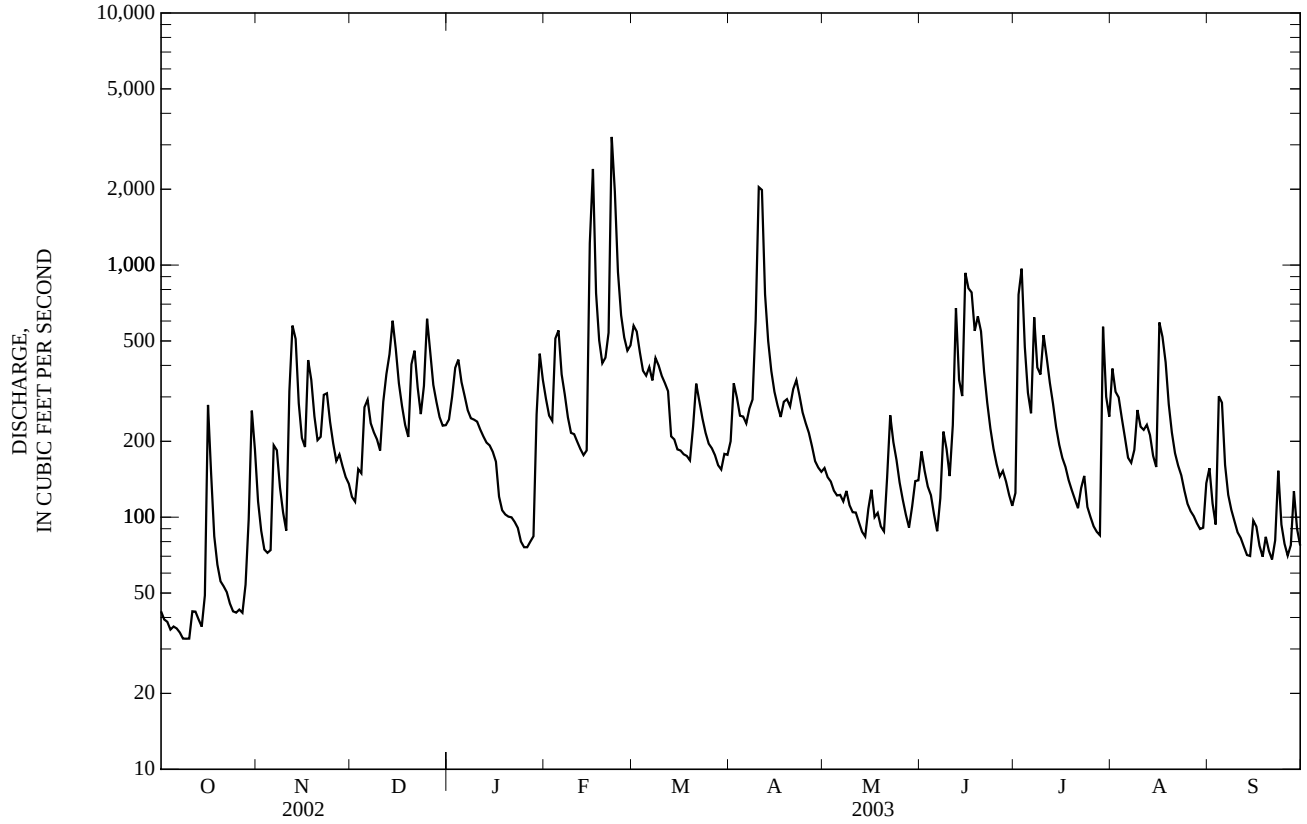
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1981, 1988 - 1989, 1997 - 2003, BY WATER YEAR (WY)

MEAN	68.7	93.3	160	224	295	307	245	201	126	94.6	79.7	65.6
MAX	298	580	534	708	870	844	630	433	305	366	221	256
(WY)	(1977)	(1978)	(1973)	(1957)	(1957)	(1955)	(1977)	(1945)	(2003)	(2001)	(2003)	(1989)
MIN	32.4	29.8	34.1	37.0	84.7	74.5	107	73.0	38.9	33.8	28.1	32.4
(WY)	(1989)	(1954)	(1956)	(1966)	(2002)	(1988)	(1963)	(1964)	(1988)	(1988)	(1988)	(1988)

03474000 MIDDLE FORK HOLSTON RIVER AT SEVEN MILE FORD, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1942 - 1981, 1988 - 1989, 1997 - 2003	
ANNUAL TOTAL	54,291		96,002			
ANNUAL MEAN	149		263		163	
HIGHEST ANNUAL MEAN					263	2003
LOWEST ANNUAL MEAN					79.2	1988
HIGHEST DAILY MEAN	5,720	Mar 18	3,220	Feb 22	5,990	Apr 4, 1977
LOWEST DAILY MEAN	26	aSep 10	33	bOct 8	20	cSep 26, 1944
ANNUAL SEVEN-DAY MINIMUM	27	Sep 6	35	Oct 4	24	Sep 3, 1960
MAXIMUM PEAK FLOW			6,870	Feb 22	14,500	Nov 6, 1977
MAXIMUM PEAK STAGE			6.40	Feb 22	10.75	Jan 29, 1957
INSTANTANEOUS LOW FLOW			29	Oct 10	9.0	Sep 26, 1944
ANNUAL RUNOFF (CFSM)	1.13		1.99		1.23	
ANNUAL RUNOFF (INCHES)	15.30		27.06		16.76	
10 PERCENT EXCEEDS	301		501		338	
50 PERCENT EXCEEDS	68		190		92	
90 PERCENT EXCEEDS	35		76		37	

a Also Sept. 11, 2002.
b Also Oct. 9, 10, 2002.
c Also Aug. 2, 1964.
e Estimated.



03475000 MIDDLE FORK HOLSTON RIVER NEAR MEADOWVIEW, VA

LOCATION.--Lat 36°42'47", long 81°49'07", NAD83, Washington County, Hydrologic Unit 06010102, on left bank 48 ft downstream from bridge on State Highway 803, 0.9 mi upstream from Cedar Creek, 4.1 mi southeast of Meadowview, and at mile 13.2.

DRAINAGE AREA.--211 mi^2.

PERIOD OF RECORD.--October 1931 to September 1953, May 1976 to current year. Monthly discharge only for October 1931, published in WSP 1306.

REVISED RECORDS.--WSP 823: Drainage area. WSP 1276: 1932-34.

GAGE.--Water-stage recorder. Datum of gage is 1,820.22 ft NGVD of 1929.

REMARKS.--Records good except those for period with ice effect, Jan. 25-28, and period of doubtful gage-height record, May 5-7, which are fair. Prior to 1954, flow regulated by powerplant 0.9 mi upstream from station. Maximum discharge, 12,500 ft^3/s, from rating curve extended above 12,000 ft^3/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 29, 1957, reached a stage of 11.8 ft, from floodmark, discharge, 10,000 ft^3/s, and flood of Dec. 10, 1972, reached a stage of 11.0 ft, from floodmark, discharge, 8,540 ft^3/s, from information by Tennessee Valley Authority. Flood of Mar. 30, 1975, reached a stage of 10.37 ft, discharge, 7,410 ft^3/s.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 16	0815	5,740	9.28	Apr 11	0600	5,000	8.74
Feb 23	0015	*7,170	*10.24				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	79	195	192	372	469	940	249	291	248	211	720	267
2	74	150	173	421	403	907	329	288	231	634	613	211
3	71	129	198	499	370	779	345	291	209	1,460	549	187
4	68	125	207	601	554	665	305	281	202	714	485	287
5	67	124	425	513	824	601	302	e270	179	470	671	490
6	68	225	553	452	560	619	292	e250	159	385	443	272
7	66	285	422	404	470	551	303	e230	176	1,010	376	219
8	63	214	365	371	387	575	327	238	270	728	369	197
9	61	172	329	361	333	560	619	233	268	687	458	184
10	61	149	304	353	328	513	1,390	215	221	890	392	171
11	68	361	444	334	309	478	3,420	195	215	714	409	160
12	75	712	565	309	298	448	1,240	189	854	628	357	153
13	71	839	580	291	285	369	792	171	537	546	352	145
14	68	446	868	286	291	336	601	165	376	438	310	143
15	78	307	716	273	1,060	306	507	167	1,240	376	289	165
16	300	267	540	256	3,980	292	447	226	1,310	336	539	182
17	298	497	433	231	1,480	284	404	187	1,350	310	802	152
18	157	543	368	204	927	276	454	183	883	283	601	142
19	119	379	323	196	727	267	464	172	909	262	444	149
20	104	302	520	191	712	278	427	161	878	245	350	147
21	98	291	714	193	798	378	467	182	629	231	301	136
22	92	401	528	185	2,990	349	560	307	477	229	273	143
23	87	457	419	179	4,150	309	487	284	384	288	258	247
24	80	360	444	161	1,810	283	423	298	325	233	236	189
25	77	292	910	e150	1,140	264	388	229	287	209	220	155
26	78	252	800	e145	936	253	367	205	259	196	207	143
27	78	259	584	e150	853	249	338	184	254	187	199	137
28	88	236	485	e155	884	229	307	168	252	185	193	177
29	133	219	422	294	---	222	291	179	224	978	186	167
30	301	209	378	697	---	241	294	209	212	691	181	145
31	303	---	372	576	---	250	---	206	---	474	200	---
TOTAL	3,431	9,397	14,581	9,803	28,328	13,071	17,139	6,854	14,018	15,228	11,983	5,662
MEAN	111	313	470	316	1,012	422	571	221	467	491	387	189
MAX	303	839	910	697	4,150	940	3,420	307	1,350	1,460	802	490
MIN	61	124	173	145	285	222	249	161	159	185	181	136
CFSM	0.52	1.48	2.23	1.50	4.79	2.00	2.71	1.05	2.21	2.33	1.83	0.89
IN.	0.60	1.66	2.57	1.73	4.99	2.30	3.02	1.21	2.47	2.68	2.11	1.00

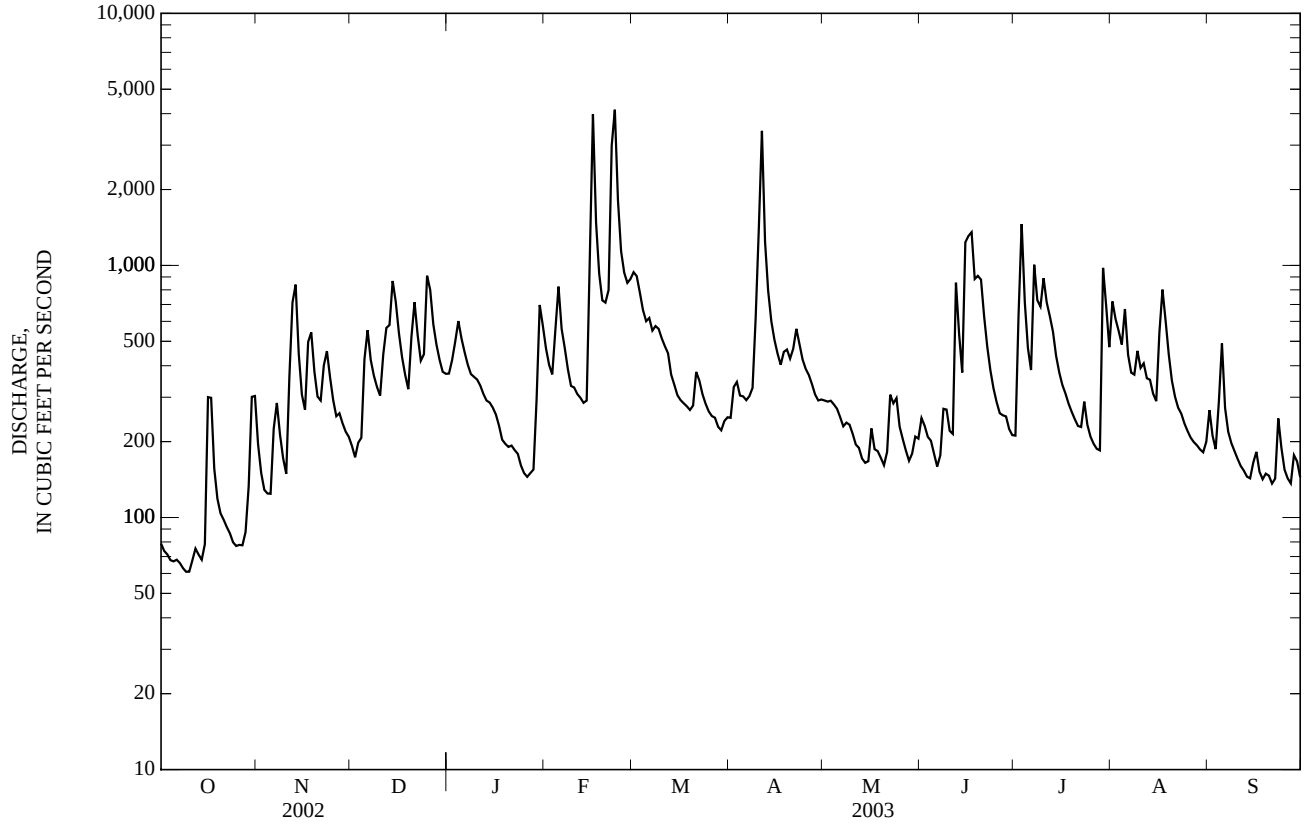
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 1953, 1976 - 2003, BY WATER YEAR (WY)

MEAN	110	132	208	337	452	452	355	294	197	158	151	99.4
MAX	479	739	526	731	1,050	899	1,158	677	485	491	649	357
(WY)	(1977)	(1978)	(1943)	(1996)	(1994)	(1993)	(1987)	(1990)	(1981)	(2003)	(1940)	(1989)
MIN	45.3	44.3	49.9	52.6	64.0	114	98.3	74.2	61.5	55.5	50.5	50.0
(WY)	(1934)	(1942)	(1940)	(1940)	(1934)	(1988)	(1942)	(1941)	(1988)	(1988)	(1988)	(1952)

03475000 MIDDLE FORK HOLSTON RIVER NEAR MEADOWVIEW, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1932 - 1953 1976 - 2003	
ANNUAL TOTAL	82,727		149,495			
ANNUAL MEAN	227		410		245	
HIGHEST ANNUAL MEAN					410	2003
LOWEST ANNUAL MEAN					105	1941
HIGHEST DAILY MEAN	7,040	Mar 18	4,150	Feb 23	8,220	Apr 5, 1977
LOWEST DAILY MEAN	49	aSep 11	61	bOct 9	c7.0	Nov 19, 1950
ANNUAL SEVEN-DAY MINIMUM	51	Sep 8	65	Oct 4	38	Oct 25, 1952
MAXIMUM PEAK FLOW			7,170	Feb 23	12,500	Nov 7, 1977
MAXIMUM PEAK STAGE			10.24	Feb 23	13.41	Nov 7, 1977
INSTANTANEOUS LOW FLOW			60	dOct 8	c6.0	fNov 10, 1933
ANNUAL RUNOFF (CFSM)	1.07		1.94		1.16	
ANNUAL RUNOFF (INCHES)	14.59		26.36		15.77	
10 PERCENT EXCEEDS	445		748		497	
50 PERCENT EXCEEDS	118		294		147	
90 PERCENT EXCEEDS	66		145		63	

a Also Sept. 12, 2002.
b Also Oct. 10, 2002.
c Flow was regulated by powerplant.
d Also Oct. 9, 10, 2002.
e Estimated.
f Also Dec. 4, 1936, Jan. 21, 22, Feb. 1, 1940, Jan. 8, 1942, and Oct. 15, 16, 31, 1943.



03478400 BEAVER CREEK AT BRISTOL, VA

LOCATION.--Lat 36°37'54", long 82°08'01", NAD83, Bristol City, Hydrologic Unit 06010102, on right bank 50 ft upstream from bridge on State Highway 1405, 75 ft downstream from Goose Creek, 0.9 mi downstream from Clear Creek, 3.7 mi northeast of Bristol, VA post office, and at mile 20.6.

DRAINAGE AREA.--27.7 mi^2.

PERIOD OF RECORD.--July 1957 to current year. Published as "near Bristol" prior to October 1974.

GAGE.--Water-stage recorder. Datum of gage is 1,780.98 ft NGVD of 1929.

REMARKS.--No estimated daily discharges. Records good. Small diurnal fluctuation at low flow caused by withdrawal of water, which is returned to stream 600 ft upstream from station, for car-washing operation. Since September 1965, some regulation at high flow by flood-control reservoirs, capacity, 7,600 acre-ft. Maximum discharge, 1,600 ft^3/s, from rating curve extended above 390 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1936 reached a stage of about 12 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	22	34	54	49	130	42	61	37	53	49	34
2	11	20	32	52	45	121	40	68	36	205	38	31
3	11	18	30	68	42	109	40	71	37	119	76	28
4	10	21	35	56	70	101	40	62	37	85	46	69
5	10	23	101	54	60	95	46	70	34	72	46	45
6	10	36	85	53	54	112	40	69	33	65	39	36
7	10	31	70	49	54	93	43	66	46	68	87	33
8	10	26	61	47	49	86	61	69	46	57	135	31
9	10	23	54	46	46	82	103	76	34	87	129	29
10	10	21	52	45	46	76	225	62	30	69	81	28
11	12	82	75	42	45	68	249	60	38	56	73	27
12	10	96	66	40	45	65	148	55	38	57	66	26
13	10	77	74	39	43	67	116	52	31	58	58	25
14	9.8	58	82	38	50	61	99	50	32	52	53	24
15	26	48	73	37	119	57	88	54	77	50	49	35
16	64	50	75	35	184	61	81	52	91	52	48	26
17	30	59	60	35	136	55	80	49	74	47	48	24
18	22	52	54	34	110	54	164	48	98	44	45	23
19	18	49	53	33	96	52	114	45	144	43	42	23
20	20	45	91	32	89	56	98	43	102	41	40	23
21	17	52	74	32	85	52	118	55	80	40	38	22
22	15	52	66	30	280	48	103	47	68	44	41	52
23	15	48	59	30	258	46	91	43	61	40	39	41
24	14	45	73	28	170	45	83	42	55	38	35	29
25	14	41	94	28	141	44	80	41	52	36	34	26
26	15	42	82	27	136	44	77	40	49	35	32	24
27	14	44	73	27	142	43	72	39	49	34	31	28
28	25	40	68	27	144	43	67	38	46	35	30	27
29	26	38	63	51	---	43	65	43	43	43	35	24
30	37	36	58	58	---	47	63	39	59	35	32	22
31	27	---	55	52	---	44	---	41	---	40	33	---
TOTAL	543.8	1,295	2,022	1,279	2,788	2,100	2,736	1,650	1,657	1,800	1,628	915
MEAN	17.5	43.2	65.2	41.3	99.6	67.7	91.2	53.2	55.2	58.1	52.5	30.5
MAX	64	96	101	68	280	130	249	76	144	205	135	69
MIN	9.8	18	30	27	42	43	40	38	30	34	30	22
CFSM	0.63	1.56	2.35	1.49	3.59	2.45	3.29	1.92	1.99	2.10	1.90	1.10
IN.	0.73	1.74	2.72	1.72	3.74	2.82	3.67	2.22	2.23	2.42	2.19	1.23

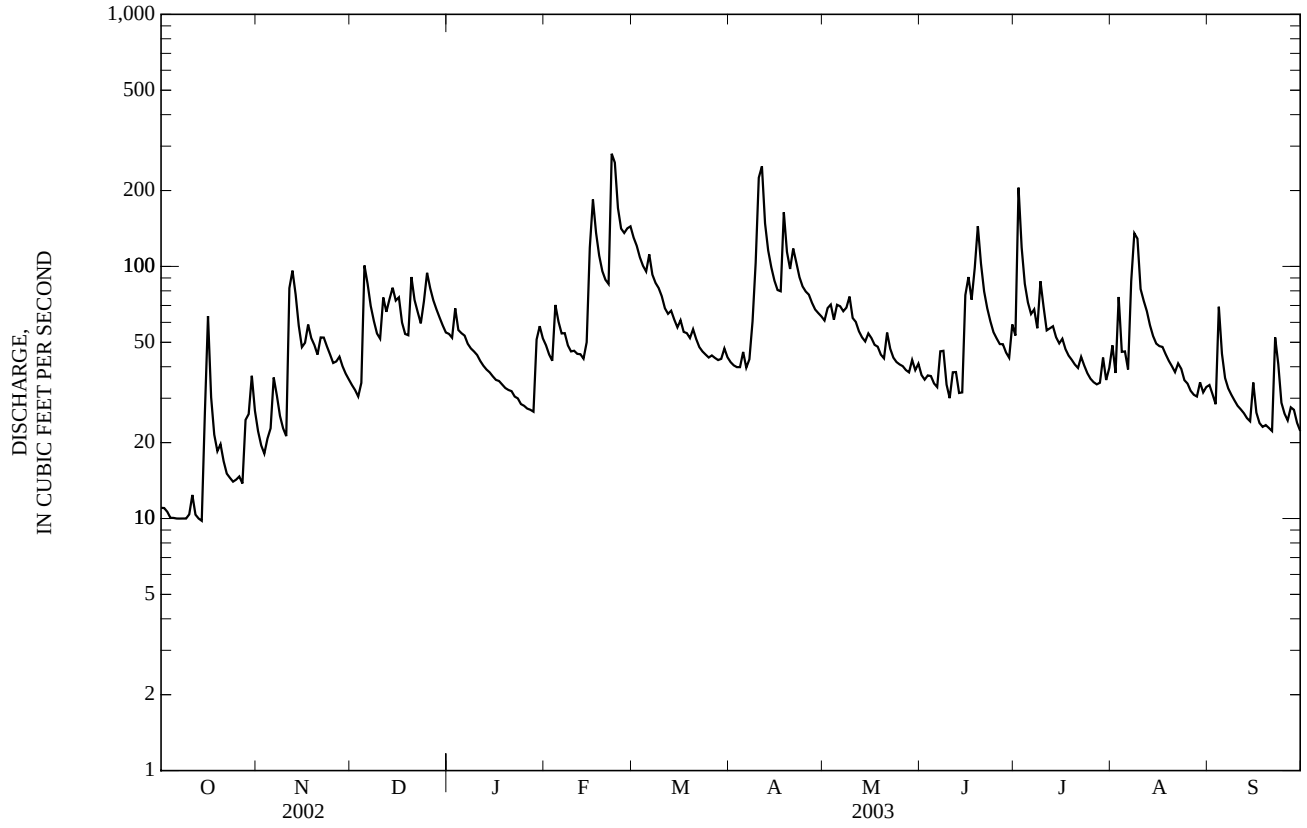
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 2003, BY WATER YEAR (WY)

MEAN	17.7	19.7	31.1	40.9	53.9	58.3	52.4	40.4	32.2	26.1	21.8	17.8
MAX	76.1	58.0	128	141	131	130	120	129	73.1	58.1	64.5	48.9
(WY)	(1973)	(1978)	(1973)	(1974)	(1994)	(1963)	(1998)	(1958)	(1972)	(2003)	(1982)	(1982)
MIN	8.08	9.62	9.13	8.92	19.5	19.7	19.3	16.9	13.0	10.2	9.96	9.23
(WY)	(1970)	(2001)	(1966)	(1966)	(1981)	(1988)	(1985)	(2000)	(1988)	(1988)	(1988)	(1969)

03478400 BEAVER CREEK AT BRISTOL, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1958 - 2003	
ANNUAL TOTAL	11,546.4		20,413.8			
ANNUAL MEAN	31.6		55.9		34.3	
HIGHEST ANNUAL MEAN					62.8	1973
LOWEST ANNUAL MEAN					16.2	1988
HIGHEST DAILY MEAN	449	Mar 18	280	Feb 22	580	Mar 12, 1963
LOWEST DAILY MEAN	8.9	Jan 16	9.8	Oct 14	7.1	aDec 9, 2000
ANNUAL SEVEN-DAY MINIMUM	9.3	Jan 12	10	Oct 4	7.2	Dec 7, 2000
MAXIMUM PEAK FLOW			415	Apr 10	1,600	Oct 2, 1977
MAXIMUM PEAK STAGE			6.38	Apr 10	9.94	Oct 2, 1977
INSTANTANEOUS LOW FLOW			9.7	bOct 7	3.4	Dec 30, 1963
ANNUAL RUNOFF (CFSM)	1.14		2.02		1.24	
ANNUAL RUNOFF (INCHES)	15.51		27.41		16.80	
10 PERCENT EXCEEDS	66		96		63	
50 PERCENT EXCEEDS	21		47		26	
90 PERCENT EXCEEDS	10		24		12	

a Also Dec. 10, 11, 2000.
b Also Oct. 14, 15, 2002.



03488000 NORTH FORK HOLSTON RIVER NEAR SALTVILLE, VA

LOCATION.--Lat 36°53'48", long 81°44'46", NAD83, Smyth County, Hydrologic Unit 06010101, on right bank 0.5 mi upstream from Cedar Branch bridge, 1.5 mi northeast of Saltville, 7.8 mi downstream from Laurel Creek, and at mile 85.0.

DRAINAGE AREA.--222 mi^2.

PERIOD OF RECORD.--June 1907 to December 1908 (published as "at Saltville"), October 1920 to current year. Monthly discharge only for some periods, published in WSP 1306.

REVISED RECORDS.--WSP 758: Drainage area. WSP 1113: 1944-47. WSP 1306: 1907(M), 1921-22(M), 1924-30(M), 1932-34(M), drainage area at site used 1907-8. WSP 1726: 1947, monthly and yearly runoff.

GAGE.--Water-stage recorder. Datum of gage is 1,703.53 ft NGVD of 1929. June 11, 1907, to Nov. 12, 1908, nonrecording gage on highway bridge 2.1 mi downstream at different datum. Nov. 2, 1920, to May 23, 1934, nonrecording gage on highway bridge 0.5 mi downstream at datum 7.74 ft lower.

REMARKS.--Records good except for period with ice effect, Jan. 25-28, which is fair. National Weather Service gage-height telemeter at station. Maximum discharge, 16,500 ft^3/s, from rating curve extended above 13,000 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

REVISIONS.--The maximum discharge for the water year 2002 has been revised to 16,000 ft^3/s, Mar. 18, 2002, gage height, 14.83 ft, superseding the figure published in the report for 2002.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 16	0615	9,010	10.44	Apr 11	0330	5,830	8.00
Feb 22	2115	*9,970	*11.11				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	279	254	325	477	968	215	211	281	143	346	296
2	51	212	221	402	414	938	278	206	279	352	294	222
3	47	172	202	754	389	779	352	195	236	1,070	270	162
4	45	160	186	1,100	966	627	337	188	239	646	333	380
5	43	158	452	786	1,280	543	327	173	213	420	367	730
6	42	333	616	605	779	515	314	174	179	324	319	372
7	39	460	452	480	590	495	299	169	230	491	256	263
8	38	342	366	410	454	447	322	168	707	397	332	210
9	37	263	321	389	344	415	1,230	165	596	324	438	175
10	37	219	289	382	342	381	2,190	177	387	528	328	150
11	40	924	806	362	308	342	4,210	164	287	482	441	133
12	43	1,310	1,050	314	279	315	1,660	162	285	402	314	122
13	48	1,380	977	279	250	297	948	147	239	329	314	113
14	49	713	1,400	281	247	305	679	137	227	268	294	105
15	47	471	992	261	1,590	276	545	135	546	297	249	105
16	296	376	706	223	6,060	262	472	161	975	223	1,210	129
17	397	627	534	231	1,950	261	408	155	2,030	196	1,350	108
18	204	695	444	197	1,050	255	635	143	974	170	810	96
19	141	510	386	191	726	250	743	142	1,060	153	486	95
20	111	416	963	193	698	248	609	135	886	139	344	125
21	99	403	1,250	189	854	294	528	177	605	129	269	104
22	88	606	799	174	4,890	306	479	250	441	128	225	108
23	87	649	578	162	4,920	299	410	228	336	139	196	304
24	74	501	578	139	2,160	279	361	240	272	126	170	235
25	69	393	1,110	e130	1,230	255	332	221	228	113	152	169
26	69	329	928	e125	921	245	316	194	197	103	138	138
27	70	342	671	e130	790	242	284	171	175	97	128	122
28	74	329	535	e135	913	218	248	155	166	94	121	116
29	100	308	451	207	---	207	224	162	158	194	115	121
30	284	288	381	537	---	214	214	226	149	381	124	105
31	391	---	340	542	---	224	---	231	---	253	151	---
TOTAL	3,220	14,168	19,238	10,635	35,871	11,702	20,169	5,562	13,583	9,111	10,884	5,613
MEAN	104	472	621	343	1,281	377	672	179	453	294	351	187
MAX	397	1,380	1,400	1,100	6,060	968	4,210	250	2,030	1,070	1,350	730
MIN	37	158	186	125	247	207	214	135	149	94	115	95
CFSM	0.47	2.13	2.80	1.55	5.77	1.70	3.03	0.81	2.04	1.32	1.58	0.84
IN.	0.54	2.37	3.22	1.78	6.01	1.96	3.38	0.93	2.28	1.53	1.82	0.94

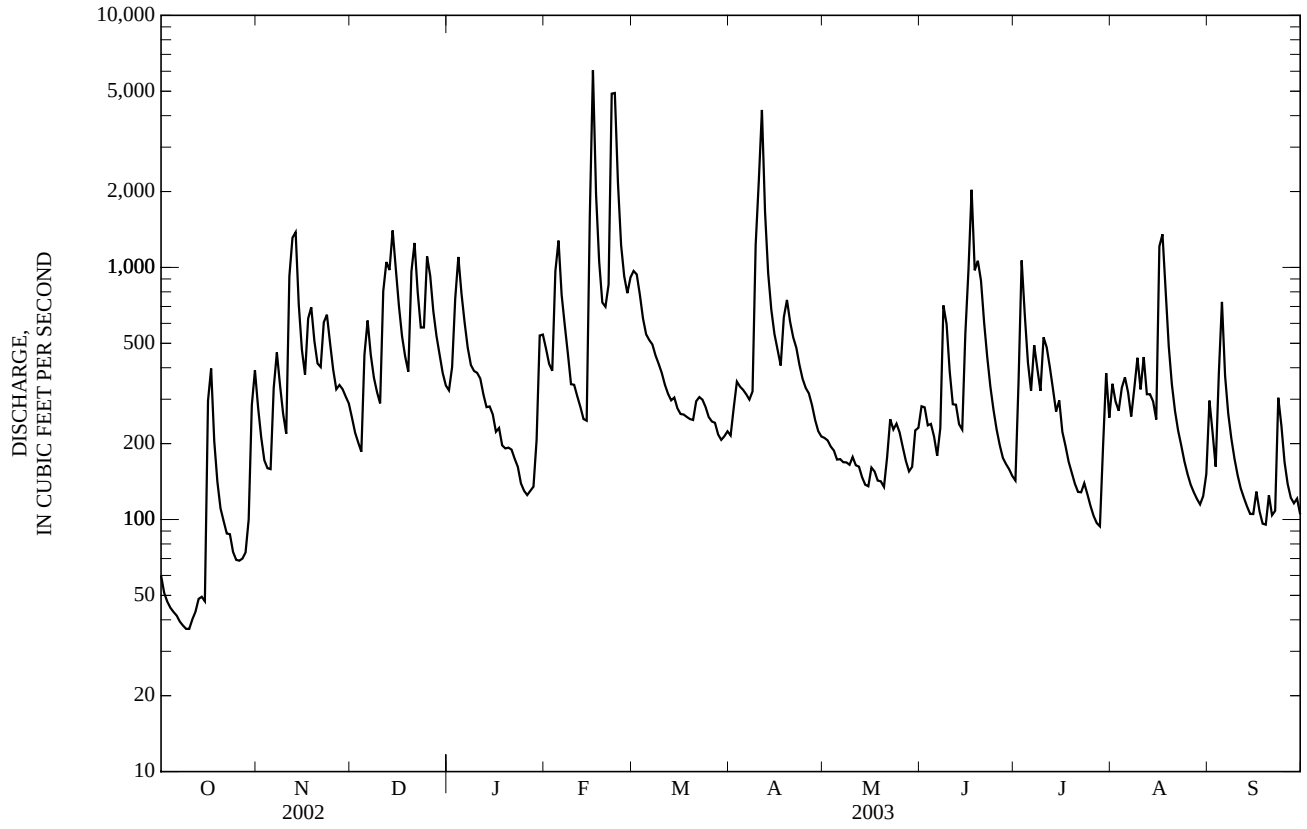
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1907 - 2003, BY WATER YEAR (WY)

MEAN	111	167	322	461	570	600	446	365	224	135	121	86.8
MAX	916	1,077	1,178	1,317	1,500	1,735	1,311	858	1,036	704	584	474
(WY)	(1977)	(1978)	(1927)	(1957)	(1957)	(1955)	(1987)	(1990)	(1907)	(2001)	(1940)	(1989)
MIN	24.9	27.5	32.4	49.9	98.0	121	116	80.4	46.3	33.6	25.2	25.8
(WY)	(1954)	(1940)	(1940)	(1966)	(1934)	(1988)	(1995)	(1941)	(1930)	(1988)	(1988)	(1930)

03488000 NORTH FORK HOLSTON RIVER NEAR SALTVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1907 - 2003	
ANNUAL TOTAL	106,259		159,756			
ANNUAL MEAN	291		438		298	
HIGHEST ANNUAL MEAN					457	1973
LOWEST ANNUAL MEAN					135	1988
HIGHEST DAILY MEAN	12,700	Mar 18	6,060	Feb 16	12,700	Mar 18, 2002
LOWEST DAILY MEAN	25	Sep 13	37	aOct 9	2.0	Oct 15, 1947
ANNUAL SEVEN-DAY MINIMUM	27	Sep 8	39	Oct 5	21	Sep 8, 1952
MAXIMUM PEAK FLOW			9,970	Feb 22	16,500	Jan 29, 1957
MAXIMUM PEAK STAGE			11.11	Feb 22	14.83	Mar 18, 2002
INSTANTANEOUS LOW FLOW			37	bOct 8	c1.0	dOct 15, 1947
ANNUAL RUNOFF (CFSM)	1.31		1.97		1.34	
ANNUAL RUNOFF (INCHES)	17.81		26.77		18.27	
10 PERCENT EXCEEDS	597		922		643	
50 PERCENT EXCEEDS	130		285		155	
90 PERCENT EXCEEDS	42		112		39	

a Also Oct. 10, 2002.
b Also Oct. 9-11, 2002.
c Flow retarded by mine cave-in.
d Also Oct. 16, 1947.
e Estimated.



03524000 CLINCH RIVER AT CLEVELAND, VA

LOCATION.--Lat 36°56'41", long 82°09'17", NAD83, Russell County, Hydrologic Unit 06010205, on right bank 500 ft upstream from highway bridge at Cleveland, 0.5 mi downstream from Muddy Hollow, 2.3 mi downstream from Weaver Creek, 4.4 mi downstream from Thompson Creek, and at mile 271.6.

DRAINAGE AREA.--528 mi^2.

PERIOD OF RECORD.--October 1920 to current year. Monthly discharge only for some periods, published in WSP 1306.

REVISED RECORDS.--WSP 823: Drainage area. WSP 1306: 1921-23(M), 1926(M), 1929-31(M). WSP 1706: 1927(M).

GAGE.--Water-stage recorder. Datum of gage is 1,500.24 ft NGVD of 1929. Prior to Nov. 1, 1931, nonrecording gage on highway bridge 500 ft downstream at datum 1.0 ft lower.

REMARKS.--Records good except those for period of no gage-height record, Jan. 14-16, and period with ice effect, Jan. 23-28, which are fair. Maximum discharge, 34,500 ft^3/s, from rating curve extended above 26,000 ft^3/s on basis of contracted-opening measurement at gage height 24.40 ft. Several measurements of water temperature made during the year. Water-quality records for some prior periods have been collected at this location.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 16	1400	*13,600	*16.07	Apr 11	0230	11,200	14.14
Feb 23	0445	11,600	14.46				

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	123	386	619	699	1,030	2,900	460	497	731	394	686	314
2	111	298	515	690	953	2,350	494	492	681	527	554	293
3	100	246	451	1,310	874	1,870	554	468	580	890	1,770	263
4	92	239	415	2,340	1,710	1,500	556	474	564	823	1,250	571
5	89	291	2,120	1,810	2,780	1,270	555	453	516	602	1,220	681
6	86	434	3,340	1,450	1,770	1,130	568	438	430	620	1,400	463
7	84	683	1,890	1,200	1,360	1,010	726	412	581	1,880	1,690	338
8	80	606	1,270	1,030	1,070	872	990	403	1,410	1,260	2,130	285
9	79	434	974	950	850	794	3,260	471	1,220	991	1,850	254
10	81	346	796	899	784	725	5,440	625	924	1,300	1,310	232
11	85	2,170	1,200	835	727	666	9,540	501	713	1,250	1,220	214
12	85	3,700	1,920	733	658	619	4,540	457	800	1,020	1,140	199
13	88	3,550	1,630	640	595	594	2,680	388	694	955	814	187
14	88	1,720	1,920	e620	568	623	1,830	342	553	729	657	178
15	96	1,060	1,780	e580	2,540	582	1,420	343	818	590	584	198
16	693	804	1,450	e540	12,000	541	1,170	750	1,290	511	1,700	254
17	763	1,010	1,170	498	6,620	520	1,010	770	1,850	449	2,810	244
18	406	1,340	964	454	3,480	510	2,410	649	1,540	394	2,890	210
19	258	1,060	827	418	2,340	498	2,540	638	2,800	354	1,420	197
20	201	888	1,290	415	1,830	472	1,820	536	2,340	319	947	202
21	174	857	1,720	401	1,610	475	1,490	655	1,480	293	726	226
22	160	1,310	1,390	372	5,230	464	1,300	752	1,070	291	596	203
23	149	1,540	1,110	e350	9,800	434	1,080	619	828	326	518	264
24	137	1,150	1,040	e300	4,960	414	916	621	669	323	447	269
25	124	873	1,710	e280	3,220	396	824	644	562	284	393	254
26	121	711	2,010	e270	2,490	386	788	570	485	249	350	216
27	120	929	1,570	e280	2,450	394	712	501	428	228	318	196
28	118	999	1,250	e290	3,040	375	625	438	395	242	297	196
29	137	845	1,030	430	---	356	564	448	646	801	279	186
30	276	731	868	1,110	---	389	542	632	499	1,150	286	170
31	467	---	764	1,150	---	453	---	647	---	910	345	---
TOTAL	5,671	31,210	41,003	23,344	77,339	24,582	51,404	16,634	28,097	20,955	32,597	7,957
MEAN	183	1,040	1,323	753	2,762	793	1,713	537	937	676	1,052	265
MAX	763	3,700	3,340	2,340	12,000	2,900	9,540	770	2,800	1,880	2,890	681
MIN	79	239	415	270	568	356	460	342	395	228	279	170
CFSM	0.35	1.97	2.51	1.43	5.23	1.50	3.25	1.02	1.77	1.28	1.99	0.50
IN.	0.40	2.20	2.89	1.64	5.45	1.73	3.62	1.17	1.98	1.48	2.30	0.56

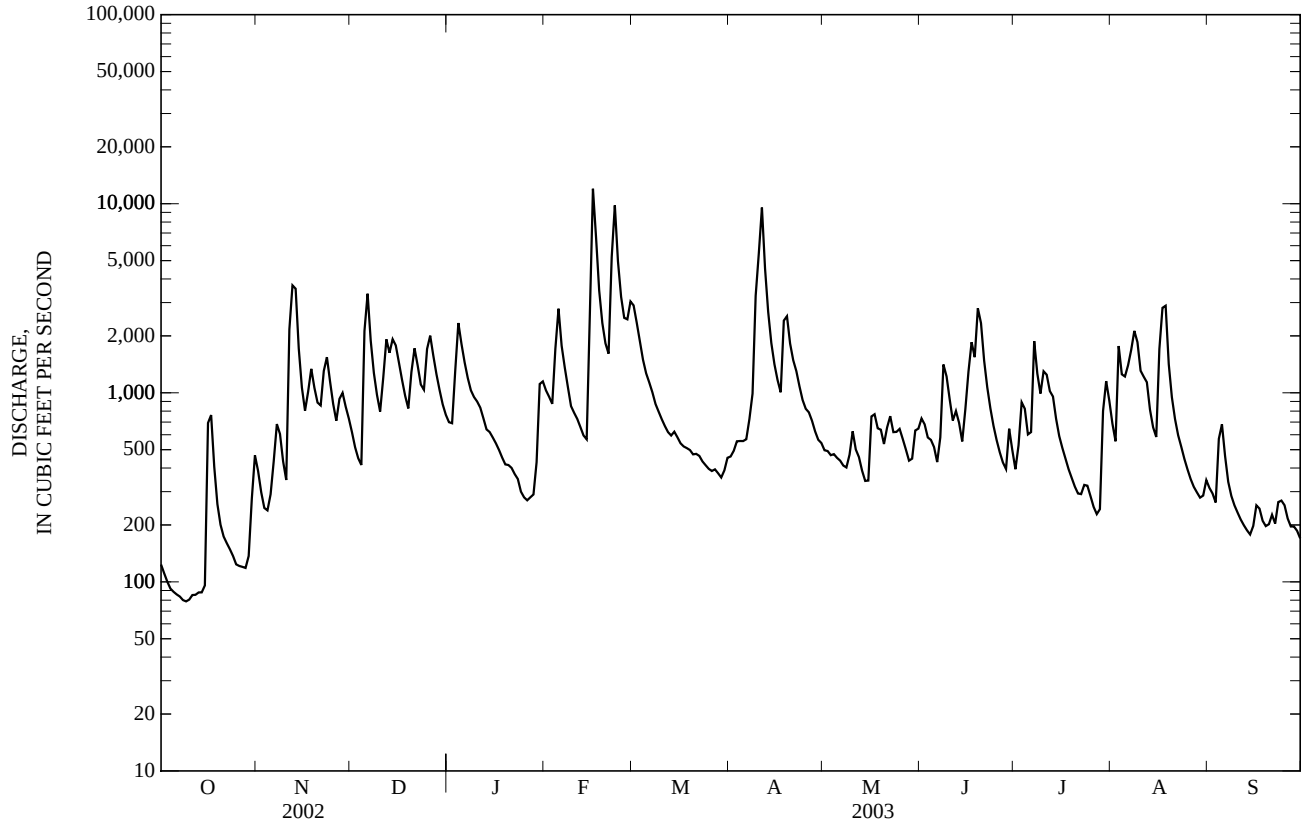
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 2003, BY WATER YEAR (WY)

MEAN	256	395	757	1,115	1,367	1,422	1,023	788	485	345	323	208
MAX	1,389	2,011	3,043	2,817	3,360	4,572	3,414	2,254	2,016	1,292	1,640	1,003
(WY)	(1977)	(1978)	(1927)	(1937)	(1957)	(1955)	(1987)	(1958)	(1923)	(2001)	(1940)	(1989)
MIN	53.8	64.0	80.7	92.1	206	309	228	195	79.7	78.2	63.2	55.3
(WY)	(1931)	(1940)	(1940)	(1940)	(1941)	(1988)	(1942)	(1941)	(1930)	(1930)	(1988)	(1930)

03524000 CLINCH RIVER AT CLEVELAND, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1921 - 2003	
ANNUAL TOTAL	244,848		360,793			
ANNUAL MEAN	671		988		704	
HIGHEST ANNUAL MEAN					1,076	1972
LOWEST ANNUAL MEAN					287	1988
HIGHEST DAILY MEAN	20,100	Mar 18	12,000	Feb 16	27,800	Apr 5, 1977
LOWEST DAILY MEAN	54	Sep 14	79	Oct 9	37	aSep 13, 1964
ANNUAL SEVEN-DAY MINIMUM	56	Sep 9	83	Oct 6	40	Sep 13, 1964
MAXIMUM PEAK FLOW			13,600	Feb 16	34,500	Apr 5, 1977
MAXIMUM PEAK STAGE			16.07	Feb 16	26.40	Apr 5, 1977
INSTANTANEOUS LOW FLOW			78	bOct 8	35	Sep 28, 1964
ANNUAL RUNOFF (CFSM)	1.27		1.87		1.33	
ANNUAL RUNOFF (INCHES)	17.25		25.42		18.11	
10 PERCENT EXCEEDS	1,440		1,900		1,560	
50 PERCENT EXCEEDS	287		638		370	
90 PERCENT EXCEEDS	88		207		97	

a Also Sept. 28, 1964.
b Also Oct. 9, 2002.
e Estimated.



03527000 CLINCH RIVER AT SPEERS FERRY, VA

LOCATION.--Lat 36°38'55", long 82°45'02", NAD83, Scott County, Hydrologic Unit 06010205, on right bank 200 ft downstream from bridge on U.S. Highway 58, 0.5 mi downstream from Copper Creek, 0.8 mi northwest of Speers Ferry, 1.8 mi south of Clinchport, and at mile 211.0.

DRAINAGE AREA.--1,126 mi^2.

PERIOD OF RECORD.--October 1920 to September 1976, October 1976 to September 1978 (annual maximum only), October 1978 to September 1981, October 1981 to September 1995 (annual maximum only), October 2001 to September 2002.

REVISED RECORDS.--WSP 823: Drainage area. WSP 1276: 1925(M), 1927, 1928-31(M), 1932, 1935(M). WSP 1306: 1922(M).

GAGE.--Water-stage recorder. Datum of gage is 1,196.52 ft NGVD of 1929. Prior to Nov. 23, 1926, nonrecording gage at site 400 ft upstream at datum 1.50 ft higher. Nov. 23, 1926 to Nov. 6, 1931, nonrecording gage.

REMARKS.--Records good except for period with ice effect, Jan. 26-28, which is fair. Maximum discharge, 89,000 ft^3/s, from rating curve extended above 45,000 ft^3/s on basis of slope-area measurement of peak flow. Prior to May 1951, diurnal fluctuation at low flow caused by mills upstream from station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in February 1862 reached a stage of 33 ft, present site and datum, from reports of the Tennessee Valley Authority. Flood of Feb. 28, 1902 reached a stage of 26.6 ft, at site 400 ft upstream and at datum about 1 ft higher, from records of the National Weather Service.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	310	912	1,170	1,510	2,060	5,370	900	1,250	1,340	1,320	1,680	755
2	255	689	1,030	1,460	1,910	4,600	914	1,200	1,330	1,960	1,440	663
3	221	520	899	1,620	1,770	3,800	956	1,240	1,210	2,600	1,820	572
4	195	457	796	3,000	2,890	3,120	1,010	1,120	1,110	2,100	3,110	851
5	181	467	2,860	3,310	4,850	2,630	1,080	1,250	1,070	1,650	1,980	2,350
6	158	1,200	6,120	2,710	3,970	2,360	1,170	1,610	952	1,550	2,030	1,390
7	151	1,270	4,430	2,290	2,970	2,100	3,690	1,480	1,310	1,660	2,150	954
8	144	1,200	2,870	2,010	2,370	1,860	4,550	1,380	5,130	2,520	3,570	739
9	136	983	2,130	1,840	1,910	1,680	7,370	3,370	3,680	2,090	3,020	621
10	136	764	1,720	1,730	1,690	1,540	11,300	2,820	2,410	4,030	2,590	539
11	144	4,790	2,430	1,610	1,570	1,410	21,400	2,070	1,780	4,360	2,060	483
12	152	6,450	3,620	1,460	1,470	1,310	13,100	1,620	1,660	3,570	1,850	440
13	157	6,900	3,360	1,300	1,330	1,260	6,310	1,300	1,580	3,430	1,600	409
14	145	4,060	3,740	1,200	1,260	1,240	4,240	1,070	1,290	2,650	1,240	387
15	155	2,420	3,870	1,130	5,330	1,210	3,230	1,000	1,630	2,070	1,040	372
16	237	1,870	3,150	1,030	25,100	1,140	2,590	1,240	3,940	1,670	1,120	384
17	815	1,910	2,480	978	22,200	1,080	2,230	1,810	4,240	1,350	2,370	408
18	1,020	2,260	2,020	903	8,570	1,060	6,670	2,270	4,410	1,120	3,820	409
19	638	2,280	1,710	854	5,280	1,060	6,940	1,890	5,970	960	2,670	370
20	462	1,890	3,650	814	4,010	1,010	4,530	1,590	5,670	844	1,710	338
21	380	1,850	4,450	798	3,300	979	3,600	1,440	3,810	753	1,290	343
22	320	2,570	3,430	774	10,800	954	3,100	1,850	2,690	729	1,090	392
23	284	2,880	2,530	721	20,900	912	2,570	1,740	2,040	801	944	469
24	261	2,450	2,220	570	12,800	866	2,160	1,750	1,620	762	819	503
25	245	1,870	3,320	524	6,840	831	1,910	1,530	1,340	704	718	452
26	245	1,510	4,030	e520	4,930	810	1,940	1,450	1,140	621	639	427
27	229	1,390	3,470	e560	4,510	802	1,820	1,260	995	544	581	395
28	242	1,540	2,740	e580	5,130	790	1,590	1,100	895	501	534	425
29	346	1,470	2,240	715	---	762	1,420	1,080	840	644	504	429
30	927	1,290	1,900	1,340	---	779	1,320	1,180	1,290	1,430	482	373
31	951	---	1,640	2,170	---	862	---	1,350	---	2,120	525	---
TOTAL	10,242	62,112	86,025	42,031	171,720	50,187	125,610	48,310	68,372	53,113	50,996	17,642
MEAN	330	2,070	2,775	1,356	6,133	1,619	4,187	1,558	2,279	1,713	1,645	588
MAX	1,020	6,900	6,120	3,310	25,100	5,370	21,400	3,370	5,970	4,360	3,820	2,350
MIN	136	457	796	520	1,260	762	900	1,000	840	501	482	338
CFSM	0.29	1.84	2.46	1.20	5.45	1.44	3.72	1.38	2.02	1.52	1.46	0.52
IN.	0.34	2.05	2.84	1.39	5.67	1.66	4.15	1.60	2.26	1.75	1.68	0.58

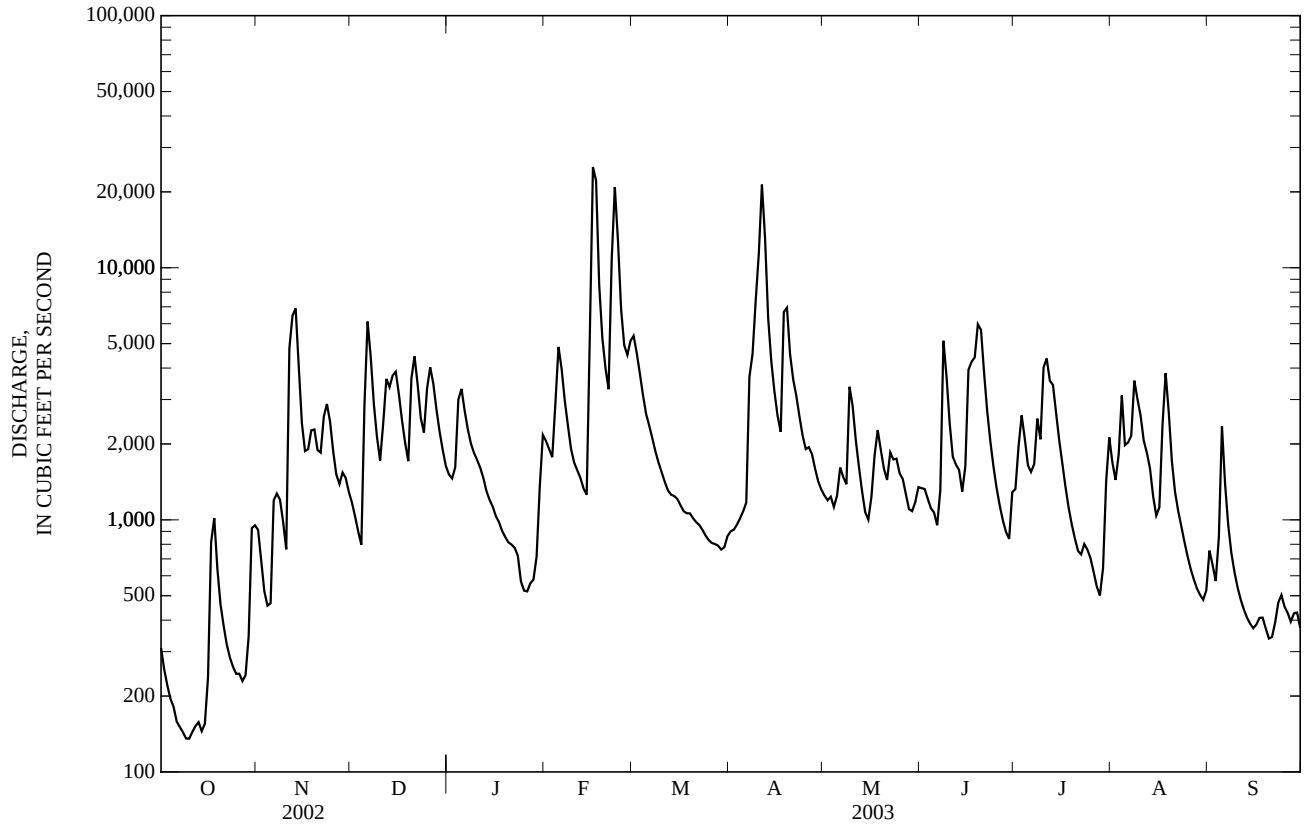
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 1976, 1979 - 1981, 2002 - 2003, BY WATER YEAR (WY)

MEAN	491	853	1,791	2,644	3,129	3,298	2,331	1,753	984	809	717	410
MAX	1,988	2,905	7,243	7,105	6,942	9,084	4,640	5,053	2,782	2,509	3,624	1,984
(WY)	(1972)	(1930)	(1927)	(1937)	(1957)	(1963)	(1935)	(1958)	(1923)	(1938)	(1942)	(1928)
MIN	93.6	116	157	203	486	1,067	551	408	219	183	132	110
(WY)	(1931)	(1940)	(1940)	(1940)	(1941)	(1931)	(1942)	(1941)	(1941)	(1930)	(1925)	(1955)

03527000 CLINCH RIVER AT SPEERS FERRY, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS	
ANNUAL TOTAL	546,381		786,360			
ANNUAL MEAN	1,497		2,154		1,594	
HIGHEST ANNUAL MEAN					2,534	1927
LOWEST ANNUAL MEAN					668	1941
HIGHEST DAILY MEAN	43,600	Mar 18	25,100	Feb 16	43,600	Mar 18, 2002
LOWEST DAILY MEAN	88	aSep 12	136	bOct 9	77	cOct 7, 1930
ANNUAL SEVEN-DAY MINIMUM	91	Sep 9	145	Oct 8	81	Oct 7, 1930
MAXIMUM PEAK FLOW			29,100	Feb 16	89,000	Apr 5, 1977
MAXIMUM PEAK STAGE			24.50	Feb 16	d36.69	Apr 5, 1977
INSTANTANEOUS LOW FLOW			132	Oct 9	42	fSep 29, 1939
ANNUAL RUNOFF (CFSM)	1.33		1.91		1.42	
ANNUAL RUNOFF (INCHES)	18.05		25.98		19.24	
10 PERCENT EXCEEDS	3,190		4,240		3,600	
50 PERCENT EXCEEDS	623		1,430		860	
90 PERCENT EXCEEDS	166		409		190	

a Also Sept. 14, 15, 2002.
b Also Oct. 10, 2002.
c Also Oct. 8, 14, 15, 22, 1930.
d From floodmarks.
e Estimated.
f Also Oct. 23, 1939.



03528000 CLINCH RIVER ABOVE TAZEWELL, TN

LOCATION.--Lat 36°25'30", long 83°23'54", Claiborne County, Hydrologic Unit 06010205, on right bank 0.4 mi upstream from Grissom Island, 4.6 mi downstream from Big War Creek, 10 mi east of Tazewell, and at mile 159.8.

DRAINAGE AREA.--1,474 mi^2.

PERIOD OF RECORD.--October 1918 to current year. Published as "near Lone Mountain" October 1918 to September 1927; as "near Tazewell" August 1927 to December 1936; and as "above Tazewell" July 1935 to current year. Prior to April 1919, monthly discharge only, published in WSP 1306. Gage-height record "near Tazewell" January 1937 to July 1941.

REVISED RECORDS.--WSP 803: Drainage area at site "near Tazewell". WSP 1306: Drainage area at site "near Lone Mountain". WSP 1336: 1928.

GAGE.--Data collection platform. Datum of gage is 1,060.7 ft above NGVD of 1929. April 1, 1919, to Sept. 30, 1927, nonrecording gage on railroad bridge 23.3 mi downstream at datum 102.7 ft lower. Aug. 8, 1927, to July 16, 1941, water-stage recorder at site 8.0 mi downstream at datum 47.2 ft lower. Water-stage recorder at present site and datum since July 29, 1935.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in February 1862 reached a stage of about 24 ft, present site and datum, from information by local resident, discharge, about 66,000 ft^3/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 14,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb 17	0200	*40,800	*18.01	Apr 12	0030	28,900	14.72
Feb 23	1630	28,500	14.60				

Minimum discharge, 192 ft^3/s, Oct. 9, 10, 11.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	469	1,140	1,520	2,030	2,940	7,100	1,120	1,740	1,630	1,910	2,600	764
2	376	1,010	1,340	1,910	2,640	6,420	1,140	1,630	1,550	2,580	1,900	920
3	312	814	1,190	1,880	2,410	5,260	1,150	1,640	1,510	3,570	1,680	822
4	275	678	1,110	2,330	2,970	4,290	1,190	1,570	1,420	2,950	2,670	798
5	253	640	3,830	3,710	5,330	3,610	1,310	1,540	1,310	2,380	2,890	1,550
6	230	1,280	7,230	3,420	5,630	3,240	1,450	2,490	1,240	1,860	2,040	2,230
7	218	1,820	6,870	2,930	4,210	2,930	4,000	2,860	1,410	1,870	2,310	1,430
8	203	1,530	4,360	2,570	3,330	2,600	7,900	2,490	4,780	2,250	2,900	1,070
9	194	1,380	3,120	2,330	2,720	2,340	9,360	2,760	6,040	2,550	3,450	866
10	192	1,150	2,470	2,160	2,330	2,140	15,600	4,530	3,700	3,350	2,910	746
11	197	5,000	2,710	2,000	2,130	1,960	26,300	3,200	2,620	5,020	2,860	663
12	199	8,520	4,100	1,840	2,000	1,810	24,800	2,530	2,300	5,060	2,160	603
13	201	8,510	4,450	1,670	1,850	1,720	11,500	1,990	2,180	3,830	1,970	559
14	199	6,410	4,400	1,520	1,770	1,740	6,460	1,640	1,950	3,670	1,650	528
15	205	3,630	4,870	1,420	5,860	1,670	4,690	1,430	3,310	2,700	1,360	505
16	264	2,560	4,300	1,340	30,800	1,600	3,680	1,500	5,870	2,310	1,410	481
17	330	2,330	3,460	1,260	37,400	1,520	3,160	1,730	8,450	1,930	2,110	484
18	866	2,490	2,810	1,170	19,900	1,460	4,200	3,020	7,420	1,580	3,610	499
19	959	2,790	2,370	1,110	8,410	1,440	9,430	2,800	7,970	1,340	4,170	509
20	691	2,520	4,270	1,060	5,830	1,400	6,580	2,300	8,750	1,170	2,480	476
21	560	2,460	6,400	1,030	4,590	1,340	4,850	2,050	6,100	1,040	1,790	439
22	462	3,230	4,970	1,010	11,500	1,280	4,120	2,080	4,080	988	1,440	476
23	394	3,390	3,750	977	26,800	1,230	3,460	2,320	3,030	1,090	1,260	604
24	350	3,220	3,070	803	23,000	1,170	2,940	2,050	2,390	1,040	1,100	610
25	324	2,610	3,620	750	11,500	1,120	2,560	2,020	1,950	956	964	611
26	318	2,080	4,840	759	7,230	1,080	2,550	1,810	1,660	877	860	564
27	318	1,800	4,660	777	6,320	1,060	2,550	1,670	1,450	788	781	561
28	330	1,680	3,780	870	6,550	1,030	2,250	1,470	1,290	709	719	625
29	500	1,870	3,090	1,080	---	1,020	2,000	1,380	1,170	736	675	594
30	1,080	1,720	2,600	2,110	---	1,030	1,820	1,390	1,180	1,020	637	559
31	1,390	---	2,240	2,590	---	1,070	---	1,490	---	1,850	687	---
TOTAL	12,859	80,262	113,800	52,416	247,950	68,680	174,120	65,120	99,710	64,974	60,043	22,146
MEAN	415	2,675	3,671	1,691	8,855	2,215	5,804	2,101	3,324	2,096	1,937	738
MAX	1,390	8,520	7,230	3,710	37,400	7,100	26,300	4,530	8,750	5,060	4,170	2,230
MIN	192	640	1,110	750	1,770	1,020	1,120	1,380	1,170	709	637	439
MED	318	2,210	3,750	1,520	5,480	1,600	3,570	1,990	2,240	1,870	1,900	604
CFSM	0.28	1.82	2.49	1.15	6.01	1.50	3.94	1.43	2.25	1.42	1.31	0.50
IN.	0.32	2.03	2.87	1.32	6.26	1.73	4.39	1.64	2.52	1.64	1.52	0.56

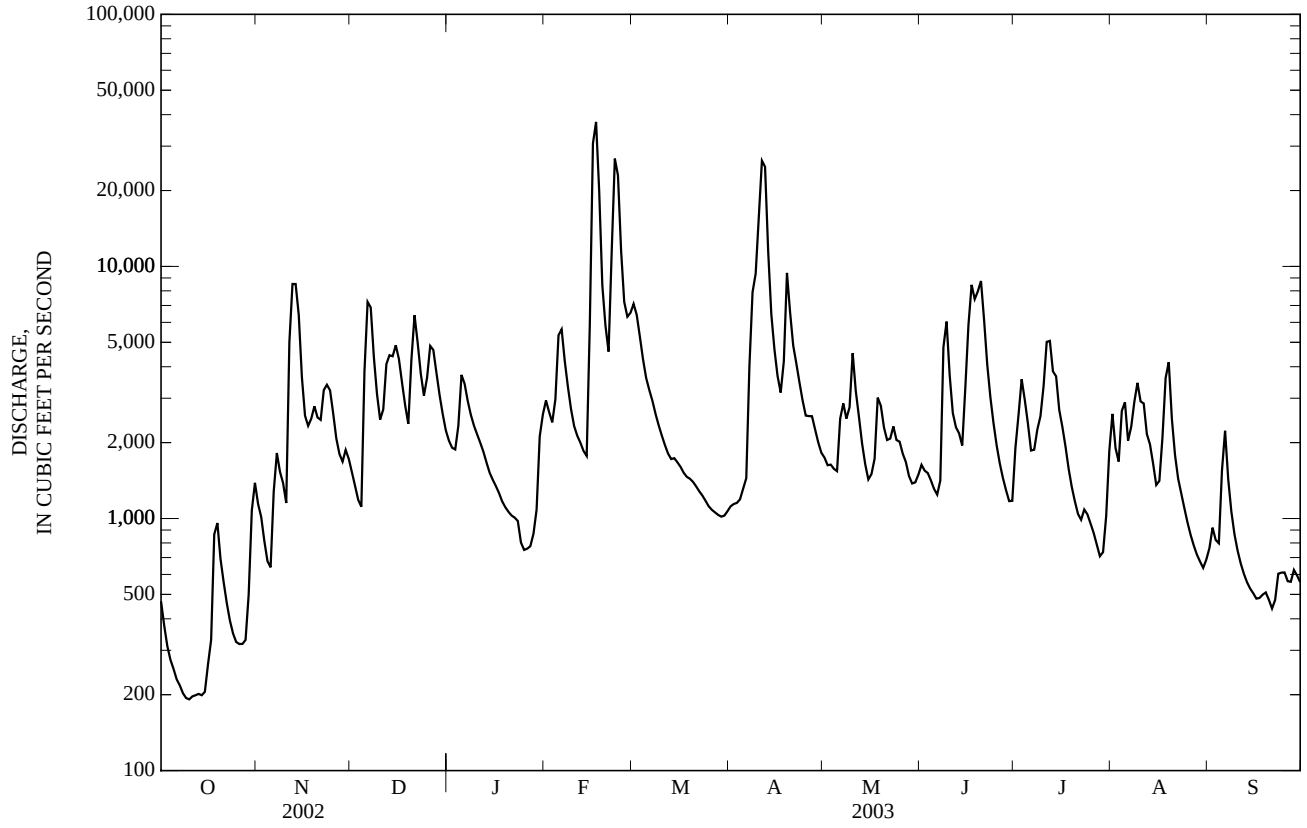
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 2003, BY WATER YEAR (WY)

MEAN	640	1,095	2,297	3,399	4,122	4,252	3,107	2,281	1,295	980	872	526
MAX	2,871	4,794	9,107	9,500	9,426	11,950	8,860	6,382	3,865	3,251	4,411	2,939
(WY)	(1990)	(1978)	(1927)	(1937)	(1957)	(1963)	(1977)	(1929)	(1989)	(1938)	(1942)	(1989)
MIN	145	159	217	285	572	990	711	547	301	239	169	136
(WY)	(1964)	(1940)	(1940)	(1940)	(1941)	(1988)	(1986)	(1941)	(1988)	(1988)	(1925)	(1955)

03528000 CLINCH RIVER ABOVE TAZEWELL, TN—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1919 - 2003	
ANNUAL TOTAL	681,768		1,062,080			
ANNUAL MEAN	1,868		2,910		2,063	
HIGHEST ANNUAL MEAN					3,269	1927
LOWEST ANNUAL MEAN					850	1941
HIGHEST DAILY MEAN	51,200	Mar 19	37,400	Feb 17	83,300	Apr 5, 1977
LOWEST DAILY MEAN	115	Sep 16	192	Oct 10	108	Sep 11, 1925
ANNUAL SEVEN-DAY MINIMUM	118	Sep 13	198	Oct 8	116	Sep 17, 1955
MAXIMUM PEAK FLOW			40,800	Feb 17	98,100	Apr 5, 1977
MAXIMUM PEAK STAGE			18.01	Feb 17	a29.32	Apr 5, 1977
INSTANTANEOUS LOW FLOW			b192	Oct 9	108	Sep 11, 1925
ANNUAL RUNOFF (CFSM)	1.27		1.97		1.40	
ANNUAL RUNOFF (INCHES)	17.21		26.80		19.02	
10 PERCENT EXCEEDS	4,000		5,840		4,630	
50 PERCENT EXCEEDS	733		1,870		1,100	
90 PERCENT EXCEEDS	203		560		264	

a From floodmarks.
b Also occurred on Oct. 10, 11.



03529500 POWELL RIVER AT BIG STONE GAP, VA

LOCATION.--Lat 36°52'08", long 82°46'32", NAD83, Wise County, Hydrologic Unit 06010206, on right bank 10 ft upstream from bridge on U.S. Highway 23 at Big Stone Gap, 1 mi upstream from South Fork Powell River, 2.5 mi downstream from Pigeon Creek, and at mile 179.2.

DRAINAGE AREA.--112 mi^2.

PERIOD OF RECORD.--October 1944 to September 1959, October 1959 to September 1977 (annual maximum only), October 1978 to September 1981, October 1981 to July 1994 (annual maximum only), October 2001 to September 2002.

REVISED RECORDS.--WSP 1053: Drainage area. WSP 1276: 1948. WSP 1436: 1949(M), 1950(P), 1951-53(M), 1955(P).

GAGE.--Water-stage recorder. Datum of gage is 1,459.07 ft NGVD of 1929. Prior to Apr. 27, 1948, staff gage.

REMARKS.--Records good except for period with ice effect, Jan. 25-28, which is fair. Maximum discharge, 24,000 ft^3/s, from rating curve extended above 1,900 ft^3/s on basis of slope-area measurements at gage heights 9.67 ft, 10.39 ft, and 16.50 ft.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 11	0500	1,930	4.97	Apr 8	2315	2,450	5.50
Feb 16	0600	*9,930	*10.54	Apr 10	2100	4,220	7.00
Feb 22	1430	5,120	7.66	Jun 7	1230	2,310	5.36

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	99	101	186	127	519	109	183	152	120	134	96
2	42	82	96	168	125	469	115	186	134	161	100	67
3	40	72	92	177	128	409	118	175	131	138	90	57
4	40	71	98	168	485	360	114	159	155	111	83	197
5	48	99	380	165	404	332	137	287	134	127	75	124
6	40	251	373	159	278	307	130	292	118	123	78	81
7	39	190	245	146	233	275	911	244	1,120	177	164	67
8	35	142	195	144	188	254	1,100	225	797	126	128	60
9	33	118	169	142	164	237	1,890	781	415	162	97	55
10	36	128	148	135	162	218	2,470	462	283	282	88	51
11	41	1,100	281	126	145	204	2,450	329	241	301	78	48
12	40	491	285	116	134	191	1,130	251	273	239	70	45
13	38	338	259	113	124	195	709	209	218	244	65	44
14	39	232	348	112	133	189	528	187	191	179	62	44
15	40	186	316	105	1,420	172	431	191	291	187	60	43
16	105	184	266	101	5,300	165	372	213	406	142	63	41
17	86	197	227	102	1,950	159	359	229	471	123	71	38
18	61	182	201	95	943	154	875	270	675	107	62	37
19	50	179	194	93	665	147	637	229	814	98	57	37
20	49	172	1,140	92	523	144	477	194	520	93	52	39
21	49	215	604	91	450	138	404	242	370	87	52	40
22	42	236	398	85	2,750	129	345	235	290	89	54	59
23	39	206	300	82	2,150	123	299	231	238	87	50	76
24	38	177	312	76	1,150	119	265	214	202	83	47	52
25	39	152	381	e68	800	113	246	185	177	74	45	44
26	45	138	348	e64	637	114	303	177	161	68	43	41
27	42	136	294	e66	560	109	251	154	150	66	41	51
28	51	120	257	e68	550	105	227	141	140	84	40	67
29	165	114	227	100	---	106	212	159	128	126	41	49
30	238	111	202	125	---	121	199	169	126	112	49	43
31	133	---	186	121	---	115	---	165	---	127	74	---
TOTAL	1,827	6,118	8,923	3,591	22,678	6,392	17,813	7,368	9,521	4,243	2,213	1,793
MEAN	58.9	204	288	116	810	206	594	238	317	137	71.4	59.8
MAX	238	1,100	1,140	186	5,300	519	2,470	781	1,120	301	164	197
MIN	33	71	92	64	124	105	109	141	118	66	40	37
CFSM	0.53	1.82	2.57	1.03	7.23	1.84	5.30	2.12	2.83	1.22	0.64	0.53
IN.	0.61	2.03	2.96	1.19	7.53	2.12	5.92	2.45	3.16	1.41	0.74	0.60

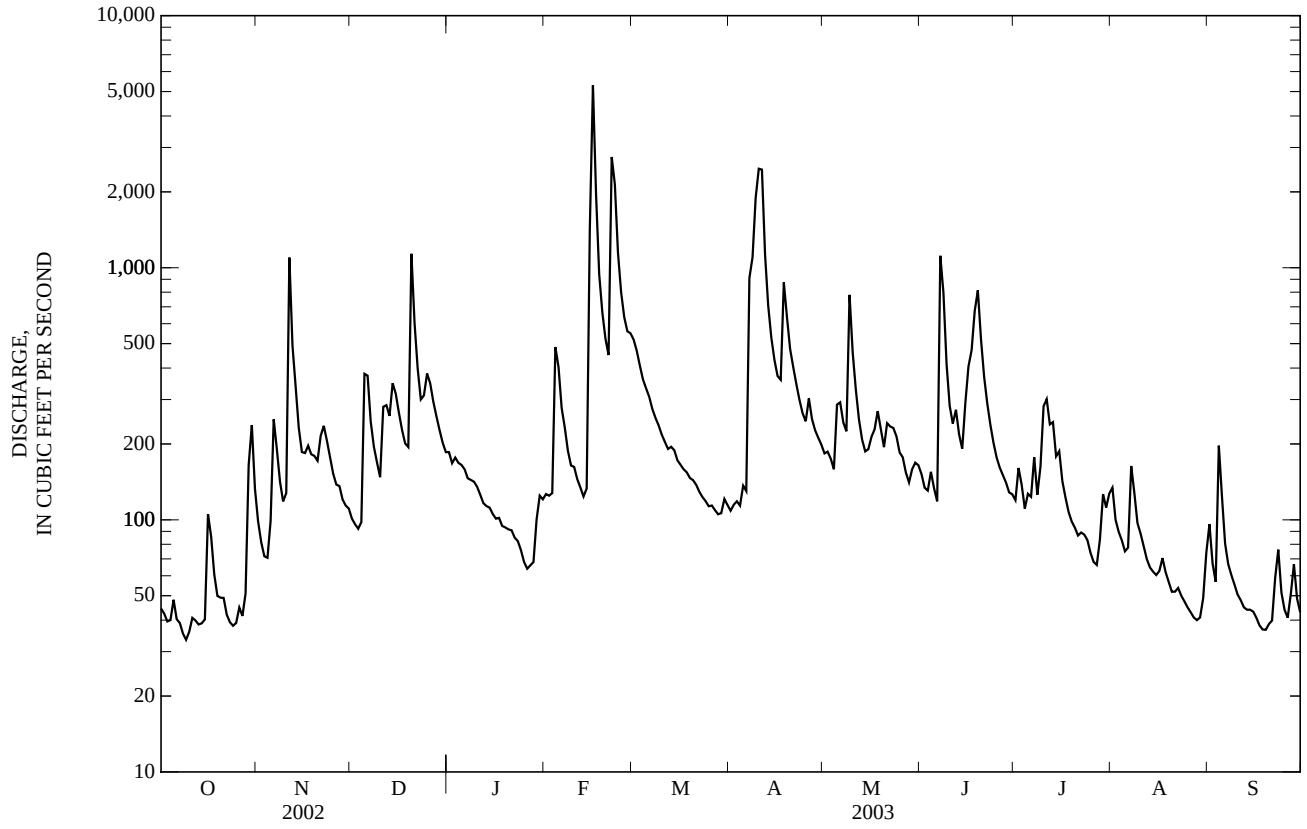
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1959, 1979 - 1981, 2002 - 2003, BY WATER YEAR (WY)

MEAN	35.0	97.7	229	365	447	412	316	235	122	76.6	71.1	38.4
MAX	136	290	622	745	982	1,054	621	486	317	152	283	94.0
(WY)	(1950)	(1980)	(1952)	(1950)	(1948)	(1955)	(1956)	(1958)	(2003)	(1958)	(1947)	(1979)
MIN	7.25	9.47	26.4	27.5	65.5	188	137	62.7	25.8	22.4	14.0	9.27
(WY)	(1954)	(1954)	(1954)	(1981)	(1954)	(1957)	(1954)	(1957)	(1948)	(1948)	(1948)	(1955)

03529500 POWELL RIVER AT BIG STONE GAP, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1945 - 1959, 1979 - 1981, 2002 - 2003	
ANNUAL TOTAL	72,026		92,480			
ANNUAL MEAN	197		253		202	
HIGHEST ANNUAL MEAN					299	1979
LOWEST ANNUAL MEAN					101	1954
HIGHEST DAILY MEAN	7,280	Mar 18	5,300	Feb 16	7,860	Feb 13, 1948
LOWEST DAILY MEAN	23	Aug 14	33	Oct 9	5.0	aSep 16, 1955
ANNUAL SEVEN-DAY MINIMUM	25	Sep 7	37	Oct 7	5.7	Sep 13, 1955
MAXIMUM PEAK FLOW			9,930	Feb 16	24,000	Apr 5, 1977
MAXIMUM PEAK STAGE			10.54	Feb 16	16.50	Apr 5, 1977
INSTANTANEOUS LOW FLOW			32	Oct 9	4.0	bSep 16, 1955
ANNUAL RUNOFF (CFSM)	1.76		2.26		1.81	
ANNUAL RUNOFF (INCHES)	23.92		30.72		24.56	
10 PERCENT EXCEEDS	359		473		445	
50 PERCENT EXCEEDS	105		144		99	
90 PERCENT EXCEEDS	34		45		19	

a Also Sept. 17, 18, 1955.
b Also Sept. 17, 19, 1955.
e Estimated.



03531500 POWELL RIVER NEAR JONESVILLE, VA

LOCATION.--Lat 36°39'43", long 83°05'42", NAD83, Lee County, Hydrologic Unit 06010206, on right bank 175 ft downstream from highway bridge, 2 mi southeast of Jonesville, 10 mi upstream from Wallen Creek, and at mile 143.1.

DRAINAGE AREA.--319 mi^2.

PERIOD OF RECORD.--October 1931 to current year. Monthly discharge only for some periods, published in WSP 1306.

REVISED RECORDS.--WSP 823: Drainage area. WSP 1033: 1932-44. WSP 1436: 1946(M), 1948(M).

GAGE.--Water-stage recorder. Datum of gage is 1,259.08 ft NGVD of 1929.

REMARKS,--Records good except for period with ice effect, Jan. 25-28, which is fair. Maximum discharge, 57,000 ft^3/s, from rating curve extended above 20,000 ft^3/s on basis of slope-area measurement of peak flow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov 11	1315	7,160	13.46	Apr 9	0830	5,850	11.46
Feb 16	1630	*25,100	*30.34	Apr 11	0445	9,640	17.07
Feb 22	2245	12,900	20.78	Jun 7	2030	7,120	13.41

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	105	280	284	486	537	1,680	265	741	768	423	499	184
2	89	196	252	475	503	1,460	253	721	642	457	378	210
3	81	156	233	455	462	1,180	254	731	580	576	305	160
4	75	146	234	480	1,320	959	262	633	619	424	273	231
5	75	154	1,670	473	1,890	849	287	1,040	637	351	238	682
6	80	697	2,010	473	1,120	774	339	1,780	541	344	220	300
7	77	577	1,150	445	841	684	2,310	1,360	3,130	348	261	204
8	71	373	769	419	648	605	2,800	1,260	3,760	386	346	163
9	67	275	587	413	514	558	5,180	2,040	1,920	373	272	138
10	64	229	486	396	485	515	5,480	2,040	1,160	1,320	241	124
11	69	4,750	839	363	453	471	7,630	1,560	825	1,900	218	112
12	75	2,290	1,180	330	414	442	3,530	1,190	853	1,190	196	105
13	75	1,510	922	299	376	419	2,440	919	764	1,280	173	100
14	68	910	1,240	303	371	432	1,960	770	620	886	157	95
15	67	625	1,270	289	3,410	397	1,650	742	1,330	661	150	94
16	97	541	974	259	19,300	376	1,390	892	2,440	578	162	91
17	169	584	747	265	8,180	367	1,250	907	3,150	495	154	91
18	134	603	610	239	3,230	361	2,430	1,550	3,600	406	170	86
19	104	528	530	229	2,210	350	2,490	1,260	3,270	352	162	81
20	93	526	2,500	227	1,720	331	1,960	970	2,290	315	138	80
21	91	625	2,210	224	1,310	322	1,660	882	1,570	289	126	78
22	88	918	1,380	216	6,280	310	1,380	988	1,090	270	124	83
23	81	776	931	205	7,690	297	1,150	857	835	305	139	210
24	77	601	809	165	3,330	283	983	812	675	268	128	179
25	73	487	1,290	e150	2,270	269	899	714	570	241	111	118
26	80	411	1,310	e145	1,860	259	1,420	682	501	211	103	99
27	90	388	1,010	e150	1,750	261	1,260	623	454	195	98	94
28	91	352	810	e155	1,730	250	1,020	565	427	192	95	247
29	178	321	676	248	---	240	895	624	388	284	95	196
30	950	305	574	647	---	257	817	708	358	393	93	127
31	465	---	507	588	---	292	---	717	---	332	119	---
TOTAL	3,999	21,134	29,994	10,211	74,204	16,250	55,644	31,278	39,767	16,045	5,944	4,762
MEAN	129	704	968	329	2,650	524	1,855	1,009	1,326	518	192	159
MAX	950	4,750	2,500	647	19,300	1,680	7,630	2,040	3,760	1,900	499	682
MIN	64	146	233	145	371	240	253	565	358	192	93	78
CFSM	0.40	2.21	3.03	1.03	8.31	1.64	5.81	3.16	4.16	1.62	0.60	0.50
IN.	0.47	2.46	3.50	1.19	8.65	1.89	6.49	3.65	4.64	1.87	0.69	0.56

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 2003, BY WATER YEAR (WY)

MEAN	149	309	641	923	1,077	1,128	826	578	323	237	198	117
MAX	1,086	1,405	2,026	2,765	2,666	3,423	2,542	1,436	1,601	825	1,187	603
(WY)	(1978)	(1974)	(1973)	(1937)	(1994)	(1963)	(1977)	(1984)	(1989)	(1941)	(1942)	(1982)
MIN	22.9	29.7	46.5	57.8	124	281	169	108	46.7	47.7	49.0	24.5
(WY)	(1955)	(1954)	(1966)	(1940)	(1941)	(1988)	(1986)	(1941)	(1936)	(1944)	(1953)	(1955)

03531500 POWELL RIVER NEAR JONESVILLE, VA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1932 - 2003	
ANNUAL TOTAL	210,439		309,232			
ANNUAL MEAN	577		847		540	
HIGHEST ANNUAL MEAN					943	1974
LOWEST ANNUAL MEAN					218	1941
HIGHEST DAILY MEAN	21,400	Mar 18	19,300	Feb 16	35,000	Apr 5, 1977
LOWEST DAILY MEAN	43	Sep 13	64	Oct 10	18	Oct 3, 1933
ANNUAL SEVEN-DAY MINIMUM	44	Sep 10	69	Oct 9	18	Sep 11, 1954
MAXIMUM PEAK FLOW			25,100	Feb 16	57,000	Apr 5, 1977
MAXIMUM PEAK STAGE			30.34	Feb 16	a44.32	Apr 5, 1977
INSTANTANEOUS LOW FLOW			63	Oct 10	17	bSep 19, 1954
ANNUAL RUNOFF (CFSM)	1.81		2.66		1.69	
ANNUAL RUNOFF (INCHES)	24.54		36.06		22.98	
10 PERCENT EXCEEDS	1,170		1,890		1,220	
50 PERCENT EXCEEDS	226		454		252	
90 PERCENT EXCEEDS	67		96		54	

a From floodmark.
b Also Sept. 20, 1954, and as a result of storage behind temporary dam Oct. 18, 1961.
e Estimated.

