Water-Data Report 2012

01628500 SOUTH FORK SHENANDOAH RIVER NEAR LYNNWOOD, VA

Potomac Basin
South Fork Shenandoah Subbasin

LOCATION.--Lat 38°19′21″, long 78°45′18″ referenced to North American Datum of 1927, Rockingham County, VA, 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.--1,079 mi^2.

SURFACE-WATER RECORDS

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

REVISED RECORDS.--WSP 1171: 1933(M). OFR 2006-1308: Drainage area.

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

COOPERATION.--Records prior to July 1, 2012 were provided by the Virginia Department of Environmental Quality - Water Division.

REMARKS.--Records good except those for estimated daily discharges, 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. 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 7,000 ft^3/s and (or) maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 8	0815	*13,000	*12.44

Suggested citation: U.S. Geological Survey, 2013, Water-resources data for the United States, Water Year 2012: U.S. Geological Survey Water-Data Report WDR-US-2012, site 01628500, accessed at http://wdr.water.usgs.gov/wy2012/pdfs/01628500.2012.pdf

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DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
DAILY MEAN VALUES
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	456	545	3,090	1,240	987	2,660	1,410	798	630	324	640	399
2	449	535	2,180	1,150	1,030	2,810	1,280	843	758	321	629	404
3	446	547	1,650	1,060	1,090	3,250	1,170	820	707	320	512	431
4	432	568	1,300	978	978	3,010	1,080	805	608	323	505	462
5	413	573	1,090	928	951	2,530	1,040	796	577	328	600	443
6	403	559	981	887	922	2,130	995	844	575	304	548	519
7	392	541	1,980	853	891	1,820	918	819	562	284	609	677
8	381	521	11,200	814	860	1,600	853	761	532	291	564	605
9	371	506	5,710	780	841	1,440	818	748	501	420	504	568
10	365	496	3,550	764	813	1,300	786	765	474	390	507	489
11	362	478	2,650	749	791	1,180	752	728	457	330	558	434
12	407	456	2,070	2,610	754	1,100	729	685	517	299	491	408
13	928	441	1,710	2,920	723	1,050	714	652	735	280	430	381
14	1,710	430	1,470	2,860	708	999	690	652	540	275	419	358
15	1,750	423	1,310	2,340	693	944	674	2,550	514	591	1,010	350
16	1,410	426	1,190	1,890	682	899	654	3,800	519	407	895	336
17	1,130	524	1,090	1,600	707	864	634	2,410	496	353	695	330
18	910	508	1,010	1,450	677	829	630	1,720	506	326	578	470
19	780	479	951	1,280	653	1,050	723	1,330	e754	379	565	2,730
20	721	474	903	1,150	669	1,210	680	1,100	e520	458	800	1,850
21	662	477	863	1,130	675	1,540	638	954	e440	477	764	1,280
22	598	496	849	1,250	684	1,400	695	864	430	479	622	942
23	552	663	2,080	1,170	718	1,330	954	843	464	413	583	718
24	523	1,100	2,290	1,160	746	1,260	871	909	421	445	582	586
25	499	1,190	1,910	1,110	769	5,010	791	893	401	960	776	507
26	480	1,060	1,660	1,060	738	5,120	809	830	376	618	605	461
27	464	931	1,490	1,080	714	3,510	922	734	363	502	590	426
28	451	837	1,730	1,160	703	2,730	834	675	354	485	521	404
29	491	1,280	1,590	1,090	765	2,270	831	636	343	447	469	415
30	598	4,540	1,460	1,070	---	1,870	812	724	320	415	434	381
31	558	---	1,350	1,030	---	1,600	---	744	---	406	408	---
Total	20,092	22,604	64,357	40,613	22,932	60,315	25,387	32,432	15,394	12,650	18,413	18,764
Mean	648	753	2,076	1,310	791	1,946	846	1,046	513	408	594	625
Max	1,750	4,540	11,200	2,920	1,090	5,120	1,410	3,800	758	960	1,010	2,730
Min	362	423	849	749	653	829	630	636	320	275	408	330
Cfsm	0.60	0.70	1.92	1.21	0.73	1.80	0.78	0.97	0.48	0.38	0.55	0.58
In.	0.69	0.78	2.22	1.40	0.79	2.08	0.88	1.12	0.53	0.44	0.63	0.65

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2012, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	706	808	997	1,227	1,384	1,842	1,569	1,200	862	537	581	663
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)

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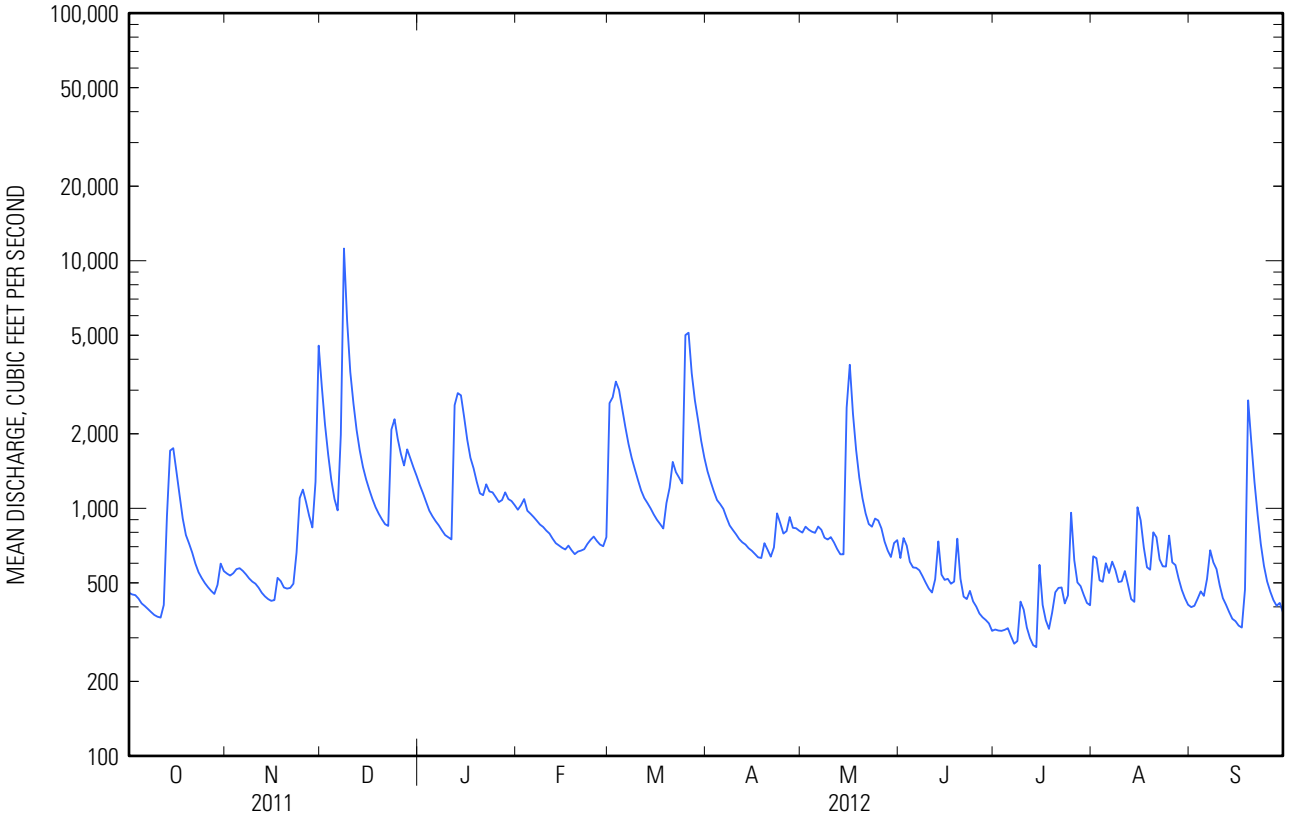
SUMMARY STATISTICS

	Calendar Year 2011		Water Year 2012		Water Years 1931 - 2012	
Annual total	439,853		353,953			
Annual mean	1,205		967		1,029	
Highest annual mean					2,020	1996
Lowest annual mean					306	2002
Highest daily mean	25,000	Apr 17	11,200	Dec 8	[a]63,500	Sep 7, 1996
Lowest daily mean	246	Aug 12	275	Jul 14	84	Jul 7, 2002 [b]
Annual seven-day minimum	261	Jul 30	310	Jul 2	90	Aug 21, 2002
Maximum peak flow			13,000	Dec 8	107,000	Sep 7, 1996
Maximum peak stage			12.44	Dec 8	[c]30.84	Sep 7, 1996
Instantaneous low flow			268	Jul 14	[d]32	Sep 20, 1932
Annual runoff (cfsm)	1.12		0.896		0.954	
Annual runoff (inches)	15.16		12.20		12.96	
10 percent exceeds	2,300		1,740		2,090	
50 percent exceeds	598		723		600	
90 percent exceeds	316		404		235	

[a] Estimated.
[b] Also Aug. 25, 2002.
[c] From high-water mark in gage house.
[d] Result of regulation.



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WATER-QUALITY RECORDS

PERIOD OF RECORD.--August 2009 to September 2010, October 2011 to September 2012.

PERIOD OF DAILY RECORD.--August to 2009 to September 2010.

INSTRUMENTATION.--Water temperature monitor August 2009 to September 2010.

COOPERATION.--Daily records were provided by the Virginia Department of Environmental Quality - Water Division. Water samples were collected by the U.S. Geological Survey and analyzed by either the U.S. Geological Survey (Agency Code 1028) or by the Virginia Division of Consolidated Laboratory Services (VDCLS, Agency Code 85116), using analytical methods approved by the U.S. Geological Survey. Analyses performed by VDCLS are reported to U.S. Geological Survey rounding specifications. Results of chemical analyses provided by VDCLS were quality-assured and approved by the U.S. Geological Survey.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 29.3°C, July 8, 2010; minimum, -0.2°C, Jan. 10, 2010.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
Part 1 of 3
[%, percent; FNU, Formazin nephelometric units; LED, light-emitting diode; N, nitrogen; P, phosphorus; ft, feet; mg/L, milligrams per liter; mm Hg, millimeters of mercury; mm, millimeters; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; --, no data; <, less than]

Date	Sample start time	Medium name	Sample type	Barometric pressure, mm Hg (00025)	Temperature, air, °C (00020)	Dissolved oxygen, water, unfiltered, mg/L (00300)	Dissolved oxygen, water, unfiltered, % saturation (00301)	pH, water, unfiltered, field, standard units (00400)
07-25-2012	*1455*	*QC sample - Artificial*	*Blank*	--	--	--	--	--
07-25-2012	1500	Surface water	Regular	733	31.5	8.0	101	8.0
07-25-2012	*1505*	*QC sample - Surface water*	*Replicate*	--	--	--	--	--
08-15-2012	1600	Surface water	Regular	732	28.0	10.1	126	7.7
09-19-2012	0900	Surface water	Regular	737	16.0	7.7	84	7.9

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
Part 2 of 3
[%, percent; FNU, Formazin nephelometric units; LED, light-emitting diode; N, nitrogen; P, phosphorus; ft, feet; mg/L, milligrams per liter; mm Hg, millimeters of mercury; mm, millimeters; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; --, no data; <, less than]

Date	Sample start time	Specific conductance, water, unfiltered, µS/cm at 25°C (00095)	Temperature, water, °C (00010)	Turbidity, water, unfiltered, monochrome near infrared LED light, 780-900 nm, detection angle 90 +/- 2.5 degrees, FNU (63680)	Gage height, ft (00065)	Suspended solids remaining after ignition, water, unfiltered, mg/L (00540)	Suspended solids, water, unfiltered, mg/L (00530)	Ammonia, water, filtered, mg/L as N (00608)	Nitrate plus nitrite, water, filtered, mg/L as N (00631)
07-25-2012	*1455*	--	--	--	--	*< 1*	*< 1*	*< .008*	*0.010*
07-25-2012	1500	380	25.1	44	3.35	38	43	.060	1.87
07-25-2012	*1505*	--	--	--	--	--	--	--	--
08-15-2012	1600	301	24.7	38	3.78	49	59	.050	1.75
09-19-2012	0900	193	17.9	110	5.66	125	147	.050	1.24

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WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Part 3 of 3

[%, percent; FNU, Formazin nephelometric units; LED, light-emitting diode; N, nitrogen; P, phosphorus; ft, feet; mg/L, milligrams per liter; mm Hg, millimeters of mercury; mm, millimeters; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; --, no data; <, less than]

Date	Sample start time	Orthophosphate, water, filtered, mg/L as P (00671)	Phosphorus, water, unfiltered, mg/L as P (00665)	Total nitrogen, water, unfiltered, mg/L (00600)	Suspended sediment, sieve diameter, percent smaller than 0.0625 mm (70331)	Suspended sediment concentration, mg/L (80154)
07-25-2012	*1455*	*0.002*	*0.010*	*< .02*	*100*	*0.2*
07-25-2012	1500	.088	.190	2.6	98	39
07-25-2012	*1505*	--	--	--	*99*	*41*
08-15-2012	1600	.042	.150	2.4	92	53
09-19-2012	0900	.134	.390	2.7	81	154