01616500 OPEQUON CREEK NEAR MARTINSBURG, WV

Potomac Basin
Conococheague-Opequon Subbasin

LOCATION.--Lat 39°25′25″, long 77°56′20″ referenced to North American Datum of 1927, Berkeley County, WV, Hydrologic Unit 02070004, on right bank 300 ft upstream from Evans Run, 2.3 mi upstream from Tuscarora Creek, 3.0 mi southeast of Martinsburg, and at mile 11.6.

DRAINAGE AREA.--273 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--May 1905 to June 1906 (monthly mean discharge published in WSP 1302, and annual maximum published in WSP 1672), July 1947 to current year (daily discharge and peaks).

REVISED RECORDS.--WSP 1702: 1959. WDR WV-97-1: Drainage area, 1936(M), 1967(M), 1968(P), 1969(M).

GAGE.--Water-stage recorder with satellite telemeter. Datum of gage is 354.33 ft above NAVD 88 (VERTCON conversion of 354.89 ft above NGVD 29). Prior to July 1906, nonrecording gage at approximately the same site at different datum. July 23, 1947 to July 22, 1948, nonrecording gage at present site and datum.

REMARKS.--Water discharge records good except those for periods of estimated daily discharges (no gage-height record, ice effect), which are poor. Some diurnal fluctuation at low flow caused by upstream mills in Virginia and since July 18, 1988, by wastewater treatment plant, 1,000 ft upstream from Opequon Creek near Berryville, Va (01615000); drainage area 57.4 mi^2.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1936 reached a stage of about 17.5 ft, from information by local residents, estimated discharge, 19,100 ft^3/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,900 ft^3/s and (or) maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec 10	0030	2,920	10.38
Jan 26	0230	5,220	12.14
Mar 14	0530	*6,530	*12.91
Mar 29	1630	3,130	10.62

Minimum discharge, 60 ft^3/s, Oct. 7, 12, 13, 14, gage height, 1.87 ft.

01616500 OPEQUON CREEK NEAR MARTINSBURG, WV—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010
DAILY MEAN VALUES
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	67	102	114	333	336	672	613	255	153	107	84	73
2	66	117	118	308	317	823	542	256	150	107	83	71
3	65	107	266	257	306	758	492	396	149	106	84	73
4	63	95	299	240	293	843	455	336	154	106	84	69
5	63	88	207	236	e289	740	420	271	154	104	87	68
6	62	84	205	222	e295	657	401	243	149	103	84	68
7	62	80	193	212	e300	586	378	224	161	101	82	68
8	63	79	180	205	e300	539	362	215	146	100	79	68
9	63	78	1,430	194	305	502	363	201	144	99	78	67
10	67	78	1,480	185	314	463	341	193	156	135	78	65
11	64	83	545	179	295	435	322	193	143	133	77	65
12	62	159	366	178	288	1,830	309	231	136	112	79	71
13	62	200	322	171	298	5,070	299	271	206	108	96	79
14	62	138	375	168	300	5,550	295	226	155	161	90	70
15	72	122	328	166	299	2,960	285	203	177	132	87	68
16	115	109	279	166	302	1,330	273	188	193	110	91	68
17	116	100	240	272	292	963	264	196	181	106	85	76
18	126	93	219	732	289	806	256	310	151	102	82	79
19	114	98	226	507	318	703	248	280	141	98	88	72
20	94	221	215	392	407	625	240	230	134	97	87	70
21	83	188	211	334	444	568	236	205	127	96	82	67
22	75	138	204	341	539	534	236	191	124	95	79	67
23	75	124	203	480	629	518	227	236	121	92	77	67
24	96	210	208	440	887	484	219	236	119	89	80	66
25	103	265	215	2,450	887	444	272	209	117	91	90	66
26	89	185	1,040	3,080	738	464	563	195	116	92	85	66
27	86	160	1,360	813	605	458	633	184	114	90	79	72
28	224	142	780	602	588	451	381	174	113	88	75	121
29	241	127	536	488	---	2,220	312	176	113	86	74	108
30	135	120	403	411	---	1,120	280	167	110	84	74	320
31	111	---	355	371	---	760	---	158	---	83	73	---
Total	2,846	3,890	13,122	15,133	11,460	34,876	10,517	7,049	4,307	3,213	2,553	2,428
Mean	91.8	130	423	488	409	1,125	351	227	144	104	82.4	80.9
Max	241	265	1,480	3,080	887	5,550	633	396	206	161	96	320
Min	62	78	114	166	288	435	219	158	110	83	73	65
Cfsm	0.34	0.47	1.55	1.79	1.50	4.12	1.28	0.83	0.53	0.38	0.30	0.30
In.	0.39	0.53	1.79	2.06	1.56	4.75	1.43	0.96	0.59	0.44	0.35	0.33

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 2010, BY WATER YEAR (WY)

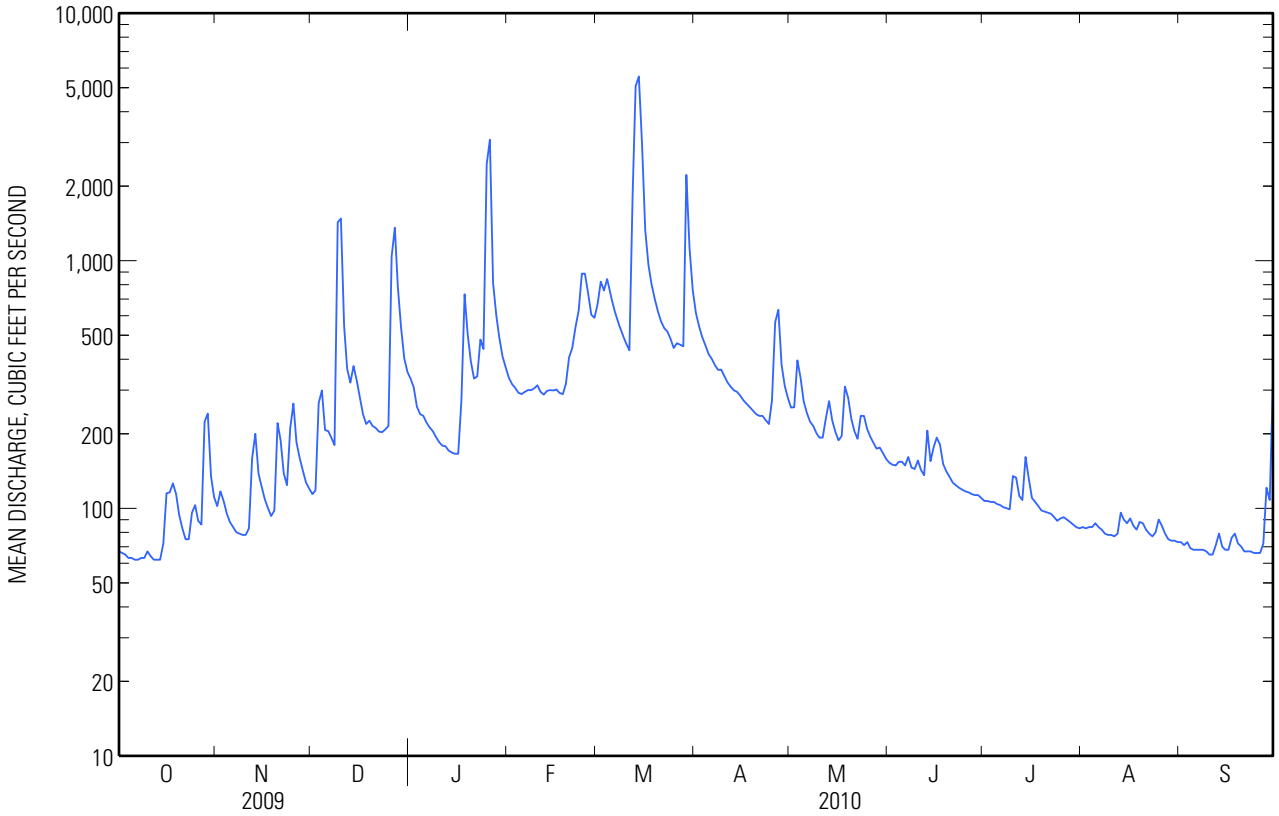
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	149	180	251	282	338	456	380	285	222	142	134	139
Max	788	609	821	1,337	1,269	1,461	1,199	1,091	1,190	456	772	970
(WY)	(1977)	(1997)	(1973)	(1996)	(1998)	(1993)	(1984)	(1988)	(1972)	(1972)	(1996)	(1996)
Min	30.5	35.1	33.7	39.6	49.9	97.2	97.8	86.0	62.3	49.4	36.6	35.2
(WY)	(1948)	(1966)	(1966)	(1966)	(2002)	(2002)	(1954)	(1969)	(1999)	(1966)	(1966)	(1947)

01616500 OPEQUON CREEK NEAR MARTINSBURG, WV—Continued

SUMMARY STATISTICS

	Calendar Year 2009		Water Year 2010		Water Years 1947 - 2010	
Annual total	71,571		111,394			
Annual mean	196		305		246	
Highest annual mean					581	1996
Lowest annual mean					85.7	1954
Highest daily mean	1,760	May 5	5,550	Mar 14	[e]15,000	Jan 20, 1996
Lowest daily mean	62	Oct 6[a]	62	Oct 6[a]	26	Oct 25, 1947
Annual seven-day minimum	63	Oct 3	63	Oct 3	27	Sep 7, 1966
Maximum peak flow			6,530	Mar 14	[b]23,400	Jan 20, 1996
Maximum peak stage			12.91	Mar 14	18.76	Jan 20, 1996
Instantaneous low flow			60	Oct 7[c]	25	Oct 25, 1947
Annual runoff (cfsm)	0.718		1.12		0.901	
Annual runoff (inches)	9.75		15.18		12.25	
10 percent exceeds	345		587		484	
50 percent exceeds	125		179		143	
90 percent exceeds	77		72		59	

[a] Also Oct. 7, 12-14.
[b] From rating curve extended above 7,100 ft³/s.
[c] Also Oct. 12, 13, 14.
[e] Estimated.



01616500 OPEQUON CREEK NEAR MARTINSBURG, WV—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--June 2005 to current year.

COOPERATION.--This site is sampled as part of the Chesapeake Bay Program's Non-Tidal Monitoring Network in cooperation with the West Virginia Department of Environmental Protection, Division of Water and Waste Management.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 1 of 3

[%, percent; N, nitrogen; P, phosphorus; ft, feet; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; °C, degrees Celsius; µS/cm, microsiemens per centimeter; <, less than; E, estimated]

Date	Sample start time	Sample type	Barometric pressure, mm Hg (00025)	Discharge, instantaneous, ft³/s (00061)	Dissolved oxygen, water, unfiltered, mg/L (00300)	Dissolved oxygen, water, unfiltered, % saturation (00301)	pH, water, unfiltered, field, standard units (00400)	Specific conductance, water, unfiltered, µS/cm at 25 °C (00095)	Temperature, water, °C (00010)	Gage height, ft (00065)
10-15-2009	**1438**	Regular	733	70	10.4	97	8.3	733	10.2	1.97
11-17-2009	**1550**	Regular	757	98	12.9	119	8.5	710	11.4	2.17
12-04-2009	**0840**	Regular	752	323	10.5	90	8.1	542	7.9	3.34
12-16-2009	**0900**	Regular	760	285	11.7	93	8.2	554	5.6	3.10
01-13-2010	**1655**	Regular	754	174	13.9	106	8.4	713	3.4	2.57
01-26-2010	**1500**	Regular	743	1,550	10.6	90	7.9	743	7.0	7.66
02-24-2010	**0955**	Regular	745	890	11.7	95	8.1	479	5.4	5.46
03-11-2010	**1000**	Regular	748	440	11.6	103	8.2	566	9.5	3.80
03-12-2010	**1800**	Regular	746	3,110	9.8	89	7.7	318	10.2	10.59
03-14-2010	**1040**	Regular	736	6,210	10.0	89	7.9	293	9.0	12.73
04-13-2010	**1650**	Regular	763	299	11.7	112	8.2	597	13.3	3.16
05-19-2010	**1540**	Regular	748	270	9.9	99	8.3	582	14.3	3.04
06-08-2010	**1650**	Regular	755	146	10.4	117	8.4	684	20.6	2.40
07-13-2010	**1650**	Regular	752	109	9.6	116	8.2	693	23.9	2.13
08-10-2010	**1700**	Regular	753	81	9.5	120	8.4	744	26.5	1.96
09-13-2010	**1805**	Regular	749	76	9.8	111	8.2	786	20.5	1.86
09-15-2010	**0915**	Regular	753	67	8.1	86	8.2	796	17.3	1.78

01616500 OPEQUON CREEK NEAR MARTINSBURG, WV—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 2 of 3

[%, percent; N, nitrogen; P, phosphorus; ft, feet; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; °C, degrees Celsius; µS/cm, microsiemens per centimeter; <, less than; E, estimated]

Date	Sample start time	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)	Nitrate, water, filtered, mg/L as N (00618)	Nitrite, water, filtered, mg/L as N (00613)	Orthophosphate, water, filtered, mg/L as P (00671)	Phosphorus, water, unfiltered, mg/L as P (00665)	Total nitrogen, water, unfiltered, analytically determined, mg/L (62855)
10-15-2009	**1438**	< 15	< .020	1.41	1.41	.003	.405	.441	1.60
11-17-2009	**1550**	< 15	E .011	1.41	1.41	.006	.306	.349	1.63
12-04-2009	**0840**	< 15	< .020	1.48	1.48	.004	.103	.145	1.83
12-16-2009	**0900**	< 15	< .020	1.06	1.06	.003	E .004	.015	1.24
01-13-2010	**1655**	< 15	.057	2.79	2.77	.021	.219	.298	2.91
01-26-2010	**1500**	137	.108	1.65	1.64	.011	.097	.330	2.65
02-24-2010	**0955**	51	.046	1.62	1.62	.009	.029	.140	2.29
03-11-2010	**1000**	< 15	E .012	2.00	1.99	.012	.017	.045	2.26
03-12-2010	**1800**	237	.062	1.22	1.21	.012	.045	.705	3.06
03-14-2010	**1040**	122	.048	1.35	1.34	.019	.056	.252	2.15
04-13-2010	**1650**	< 15	< .020	1.82	1.81	.012	E .023	.046	2.17
05-19-2010	**1540**	18	.021	1.78	1.76	.016	.061	.091	1.97
06-08-2010	**1650**	< 15	.025	1.93	1.93	.008	.166	.189	2.20
07-13-2010	**1650**	< 15	.020	1.68	1.67	.013	.259	.285	1.90
08-10-2010	**1700**	< 15	.023	1.22	1.21	.006	.227	.275	1.43
09-13-2010	**1805**	< 15	E .012	1.38	1.37	.007	.274	.321	1.62
09-15-2010	**0915**	< 15	E .011	1.24	1.23	.005	.193	.248	1.48

01616500 OPEQUON CREEK NEAR MARTINSBURG, WV—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 3 of 3
[%, percent; N, nitrogen; P, phosphorus; ft, feet; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; °C, degrees Celsius; µS/cm, microsiemens per centimeter; <, less than; E, estimated]

Date	Sample start time	Suspended sediment concentration, mg/L (80154)	Suspended sediment discharge, tons per day (80155)
10-15-2009	**1438**	2	.38
11-17-2009	**1550**	1	.26
12-04-2009	**0840**	12	10
12-16-2009	**0900**	5	3.8
01-13-2010	**1655**	4	1.9
01-26-2010	**1500**	148	621
02-24-2010	**0955**	67	161
03-11-2010	**1000**	13	15
03-12-2010	**1800**	495	4,150
03-14-2010	**1040**	160	2,680
04-13-2010	**1650**	10	8.1
05-19-2010	**1540**	13	9.5
06-08-2010	**1650**	8	3.2
07-13-2010	**1650**	4	1.2
08-10-2010	**1700**	4	.88
09-13-2010	**1805**	3	.61
09-15-2010	**0915**	4	.72