



Water-Data Report 2010

**01402000 MILLSTONE RIVER AT BLACKWELLS MILLS, NJ**

RARITAN RIVER BASIN

LOCATION.--Lat 40°28'30", long 74°34'33" referenced to North American Datum of 1983, Hillsborough Township, Somerset County, NJ, Hydrologic Unit 02030105, on left bank 30 ft downstream from highway bridge at Blackwells Mills, and 0.3 mi downstream from Six Mile Run.

DRAINAGE AREA.--258 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--June 1903 to December 1904 (gage heights only), August 1921 to current year. Monthly discharge only for some periods, published in WSP 1302. Published as "at Millstone" 1903-04.

REVISED RECORDS.--WSP 1552: 1924-25(M), 1926.

GAGE.--Water-stage recorder. Concrete control since Nov 18, 1933. Datum of gage is 26.97 ft above NGVD of 1929. June 27, 1903 to Dec 31, 1904, non-recording gage at bridge 2.0 mi downstream at Millstone at different datum. Aug 4, 1921 to Aug 16, 1928, non-recording gage at present site and datum.

REMARKS.--Records good. Inflow from and losses to Delaware and Raritan Canal above station. Flow slightly regulated by Carnegie Lake, capacity, 310,000,000 gal and several smaller reservoirs, combined capacity, 49,800,000 gal. Several measurements of water temperature were made during the year. Satellite telemetry at station.

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

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec 10	0500	5,260	10.30
Dec 27	1330	6,520	11.40
Jan 26	1100	3,620	8.52
Feb 25	1230	3,270	8.07
Mar 14	1030	*14,700	*16.15
Mar 31	0645	7,190	11.89

## 01402000 MILLSTONE RIVER AT BLACKWELLS MILLS, NJ—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010**  
**DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	220	562	236	535	279	887	3,670	268	465	51	52	41
2	173	493	224	569	259	1,150	1,710	239	818	49	55	40
3	154	394	1,150	437	254	1,290	862	321	513	49	55	38
4	148	324	1,060	356	254	1,400	625	358	228	50	52	37
5	145	286	616	309	244	1,310	528	271	161	48	49	36
6	138	258	793	285	244	1,110	460	219	139	47	46	32
7	125	231	673	270	235	930	417	188	112	46	41	32
8	111	211	532	264	235	816	372	172	100	43	40	33
9	99	202	2,330	243	224	715	459	149	102	46	41	31
10	97	200	4,450	221	239	597	445	141	218	56	41	31
11	95	192	2,230	209	271	506	357	135	184	57	40	34
12	92	183	834	206	272	542	308	233	154	56	40	36
13	89	192	775	200	257	2,900	284	241	134	81	41	39
14	89	285	1,860	194	243	13,300	277	209	176	351	40	44
15	97	299	1,340	189	232	7,510	259	305	138	374	40	43
16	181	284	794	190	247	3,760	249	241	117	369	41	47
17	222	237	538	258	250	2,080	254	177	116	291	89	101
18	283	198	431	778	243	1,070	242	220	98	155	66	90
19	248	184	374	638	252	712	226	453	91	109	54	74
20	189	577	362	472	322	584	216	353	86	94	48	61
21	160	636	360	353	379	506	205	256	80	83	44	51
22	138	386	345	297	403	547	230	188	78	78	45	48
23	126	292	323	267	740	2,220	228	164	90	71	78	51
24	382	257	295	244	2,270	2,180	209	159	74	67	68	81
25	2,060	237	292	1,130	3,190	1,030	292	161	67	67	63	50
26	1,350	240	1,550	3,220	2,740	680	995	153	66	84	62	43
27	743	231	5,690	1,780	1,620	551	1,300	137	63	75	58	56
28	1,960	210	3,950	757	1,020	465	882	180	60	66	53	84
29	2,730	191	1,800	496	---	2,170	491	194	57	62	50	83
30	1,460	191	689	356	---	4,140	328	187	55	58	44	167
31	700	---	531	306	---	6,540	---	204	---	54	42	---
<b>Total</b>	14,804	8,663	37,427	16,029	17,418	64,198	17,380	6,876	4,840	3,187	1,578	1,634
<b>Mean</b>	478	289	1,207	517	622	2,071	579	222	161	103	50.9	54.5
<b>Max</b>	2,730	636	5,690	3,220	3,190	13,300	3,670	453	818	374	89	167
<b>Min</b>	89	183	224	189	224	465	205	135	55	43	40	31
<b>Cfsm</b>	1.85	1.12	4.68	2.00	2.41	8.03	2.25	0.86	0.63	0.40	0.20	0.21
<b>In.</b>	2.13	1.25	5.40	2.31	2.51	9.26	2.51	0.99	0.70	0.46	0.23	0.24

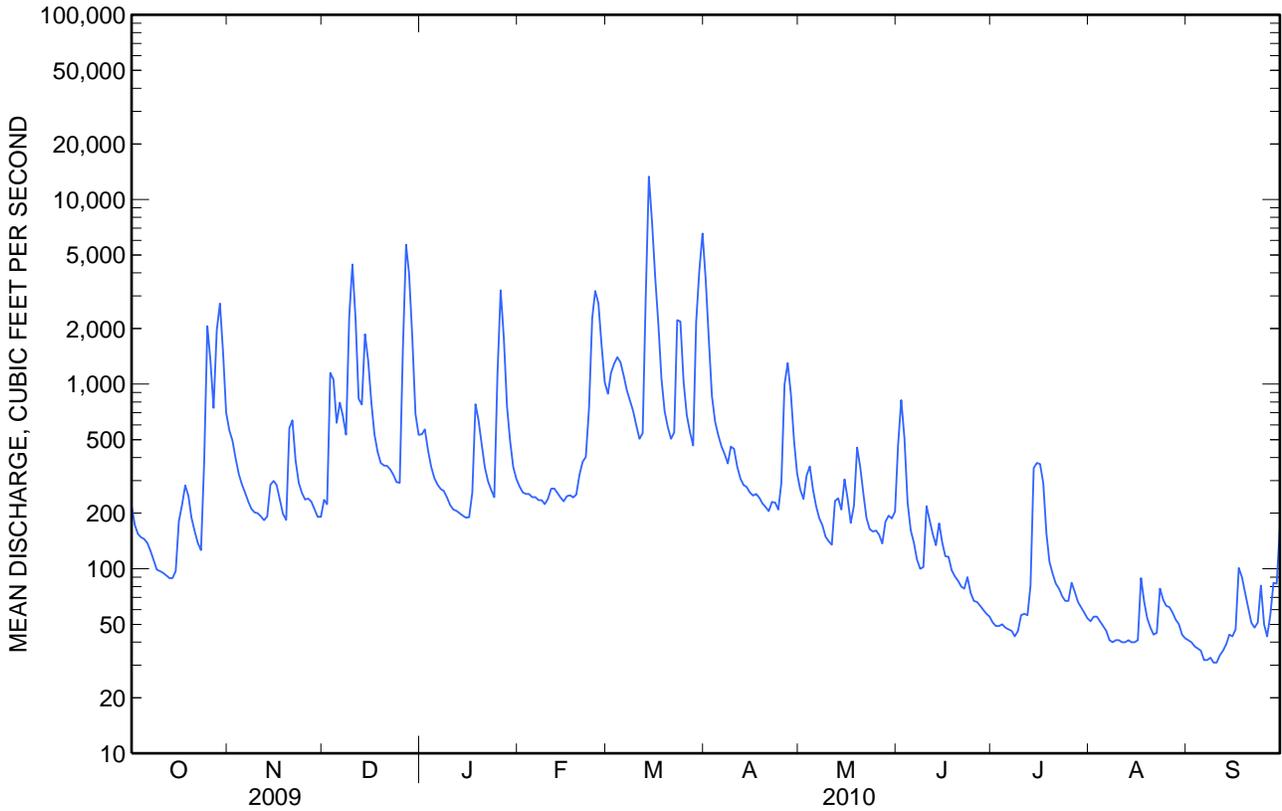
**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1922 - 2010, BY WATER YEAR (WY)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	221	341	490	516	562	697	552	359	255	241	215	226
<b>Max</b>	1,296	1,113	1,550	1,743	1,199	2,071	1,968	1,264	1,217	1,808	1,267	1,370
<b>(WY)</b>	(2006)	(1973)	(1997)	(1979)	(1925)	(2010)	(2007)	(1989)	(2003)	(1975)	(1971)	(1999)
<b>Min</b>	42.6	51.2	67.0	62.9	105	158	103	82.8	45.5	19.3	17.3	20.2
<b>(WY)</b>	(1942)	(1966)	(1966)	(1981)	(1934)	(1985)	(1985)	(1963)	(1963)	(1966)	(1981)	(1980)

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SUMMARY STATISTICS

	Calendar Year 2009		Water Year 2010		Water Years 1922 - 2010	
<b>Annual total</b>	176,444		194,034			
<b>Annual mean</b>	483		532		389	
<b>Highest annual mean</b>					690	1975
<b>Lowest annual mean</b>					165	1985
<b>Highest daily mean</b>	5,690	Dec 27	13,300	Mar 14	22,000	Sep 17, 1999
<b>Lowest daily mean</b>	89	Oct 13	31	Sep 9, 10	5.0	Sep 16, 1923
<b>Annual seven-day minimum</b>	94	Oct 9	33	Sep 5	6.3	Aug 7, 1966
<b>Maximum peak flow</b>			14,700	Mar 14	26,200	Sep 17, 1999
<b>Maximum peak stage</b>			16.15	Mar 14	21.01	Sep 17, 1999
<b>Instantaneous low flow</b>			29	Sep 9, 10	5.0	Sep 16, 1923
<b>Annual runoff (cfsm)</b>	1.87		2.06		1.51	
<b>Annual runoff (inches)</b>	25.44		27.98		20.48	
<b>10 percent exceeds</b>	1,040		1,210		833	
<b>50 percent exceeds</b>	268		231		201	
<b>90 percent exceeds</b>	133		48		60	



## 01402000 MILLSTONE RIVER AT BLACKWELLS MILLS, NJ—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1962-69, 1973, 1976-80, 1991 to current year.

REMARKS.--Cooperative Network Site Descriptor: Watershed Integrator, New Jersey Department of Environmental Protection, Watershed Management Area 10.

COOPERATION.--Physical measurements and samples for laboratory analysis were provided by personnel of the NJ Department of Environmental Protection. Determinations of dissolved ammonia, dissolved orthophosphate, and suspended residue were performed by the NJ Department of Health and Senior Services, Environmental and Chemical Laboratory. Analysis of the split and concurrent replicate samples was performed by the Laboratory Branch of the U.S. EPA, Region II, Division of Environmental Science and Assessment.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010**

Part 1 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO<sub>3</sub>, calcium carbonate; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; SiO<sub>2</sub>, silicon dioxide; cm, centimeter; ft<sup>3</sup>/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; μS/cm, microsiemens per centimeter; μg/L, micrograms per liter; <, less than; E, estimated]

Date	Sample start time	Medium name	Sample type	Barometric pressure, mm Hg (00025)	Temperature, air, °C (00020)	Absorbance, UV, 254 nm, 1 cm path length, water, filtered, units per centimeter (50624)	Absorbance, UV, organic constituents, 280 nm, 1 cm path length, water, filtered, units per centimeter (61726)	Discharge, instantaneous, ft <sup>3</sup> /s (00061)
11-17-2009	0900	Surface water	Replicate	768	8.6	.158	.124	241
11-17-2009	0900	QC sample - Surface water	Split Replicate	--	--	--	--	--
11-17-2009	0901	QC sample - Surface water	Concurrent Replicate	--	--	--	--	--
02-09-2010	0800	Surface water	Replicate	765	-5.0	.080	.063	214
02-09-2010	0800	QC sample - Surface water	Split Replicate	--	--	--	--	--
02-09-2010	0801	QC sample - Surface water	Concurrent Replicate	--	--	--	--	--
06-03-2010	0800	Surface water	Replicate	754	23.0	.335	.270	558
06-03-2010	0800	QC sample - Surface water	Split Replicate	--	--	--	--	--
06-03-2010	0801	QC sample - Surface water	Concurrent Replicate	--	--	--	--	--
09-15-2010	0900	Surface water	Replicate	764	14.0	.125	.094	43
09-15-2010	0900	QC sample - Surface water	Split Replicate	--	--	--	--	--
09-15-2010	0901	QC sample - Surface water	Concurrent Replicate	--	--	--	--	--

## 01402000 MILLSTONE RIVER AT BLACKWELLS MILLS, NJ—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010**

Part 2 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO<sub>3</sub>, calcium carbonate; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; SiO<sub>2</sub>, silicon dioxide; cm, centimeter; ft<sup>3</sup>/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; E, estimated]

Date	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)	Turbidity, water, unfiltered, broad band light source (400-680 nm), detectors at multiple angles including 90 +/- 30 degrees, ratiometric correction, NTRU (63676)	Dissolved solids dried at 180 °C, water, filtered, mg/L (70300)	Dissolved solids, water, filtered, sum of constituents, milligrams per liter (70301)	Hardness, water, mg/L as CaCO <sub>3</sub> (00900)
11-17-2009	9.5	86	7.3	309	10.9	4.3	200	167	75.7
11-17-2009	--	--	--	--	--	--	190	160	72.9
11-17-2009	--	--	--	--	--	--	190	161	74.6
02-09-2010	12.5	90	7.4	469	1.5	8.2	245	239	79.1
02-09-2010	--	--	--	--	--	--	270	229	82.4
02-09-2010	--	--	--	--	--	--	260	230	82.4
06-03-2010	5.2	62	6.8	205	24.5	33	115	105	43.6
06-03-2010	--	--	--	--	--	--	110	108	42.8
06-03-2010	--	--	--	--	--	--	110	108	43.1
09-15-2010	5.2	56	7.3	518	19.0	2.9	279	286	131
09-15-2010	--	--	--	--	--	--	310	282	124
09-15-2010	--	--	--	--	--	--	320	281	124

## 01402000 MILLSTONE RIVER AT BLACKWELLS MILLS, NJ—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010**

Part 3 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO<sub>3</sub>, calcium carbonate; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; SiO<sub>2</sub>, silicon dioxide; cm, centimeter; ft<sup>3</sup>/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; μS/cm, microsiemens per centimeter; μg/L, micrograms per liter; <, less than; E, estimated]

Date	Suspended solids, water, unfiltered, mg/L (00530)	Calcium, water, filtered, mg/L (00915)	Magnesium, water, filtered, mg/L (00925)	Potassium, water, filtered, mg/L (00935)	Sodium, water, filtered, mg/L (00930)	ANC,	Carbon (inorganic plus organic), suspended sediment, total, mg/L (00694)	Chloride, water, filtered, mg/L (00940)	Fluoride, water, filtered, mg/L (00950)	Inorganic carbon, suspended sediment, total, mg/L (00688)
						water, unfiltered, fixed endpoint titration, (pH 4.5) laboratory, mg/L as CaCO <sub>3</sub> (90410)				
11-17-2009	3	18.1	7.42	4.12	23.4	39	.30	41.2	.15	< .06
11-17-2009	< 10	17.0	7.40	4.00	23.0	40	--	45.0	.17	--
11-17-2009	< 10	18.0	7.20	4.00	23.0	39	--	45.0	.17	--
02-09-2010	9	18.6	7.96	3.25	46.2	32	.39	94.0	.10	< .06
02-09-2010	< 10	19.0	8.50	3.50	49.0	34	--	87.0	.13	--
02-09-2010	< 10	19.0	8.50	3.50	49.0	35	--	87.0	.13	--
06-03-2010	16	10.5	4.23	3.14	16.7	23	.70	31.4	.16	< .06
06-03-2010	14	9.90	4.40	3.20	18.0	24	--	37.0	.15	--
06-03-2010	15	10.0	4.40	3.20	18.0	24	--	37.0	.15	--
09-15-2010	2	26.6	15.6	7.83	44.1	62	.23	71.8	.43	< .06
09-15-2010	10	25.0	15.0	7.50	44.0	62	--	67.0	.41	--
09-15-2010	12	25.0	15.0	7.50	43.0	62	--	67.0	.41	--

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010**

Part 4 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO<sub>3</sub>, calcium carbonate; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; SiO<sub>2</sub>, silicon dioxide; cm, centimeter; ft<sup>3</sup>/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; μS/cm, microsiemens per centimeter; μg/L, micrograms per liter; <, less than; E, estimated]

Date	Silica, water, filtered, mg/L as SiO <sub>2</sub> (00955)	Sulfate, water, filtered, mg/L (00945)	Ammonia plus organic nitrogen, water, filtered, mg/L as N (00623)	Ammonia plus organic nitrogen, water, unfiltered, mg/L as N (00625)	Ammonia, water, filtered, mg/L as N (00608)	Nitrate plus nitrite, water, filtered, mg/L as N (00631)	Orthophosphate, water, filtered, mg/L as P (00671)	Particulate nitrogen, suspended in water, mg/L (49570)	Phosphorus, water, filtered, mg/L as P (00666)
			nitrogen, water, filtered, mg/L as N (00623)	nitrogen, water, unfiltered, mg/L as N (00625)					
11-17-2009	11.7	24.4	.46	--	.094	2.94	.142	E .03	.16
11-17-2009	--	26.0	E .44	E .48	.090	3.00	.150	--	.160
11-17-2009	--	26.0	E .51	E .56	.071	3.10	.140	--	.160
02-09-2010	10.9	23.4	.50	--	.259	3.19	.132	.05	.13
02-09-2010	--	26.0	E .53	E .62	.280	3.40	.130	--	.160
02-09-2010	--	26.0	E .55	E .58	.270	3.40	.130	--	.140
06-03-2010	5.6	13.4	.57	--	.120	1.40	--	.08	.13
06-03-2010	--	14.0	E .43	E .64	.130	1.50	.110	--	.120
06-03-2010	--	14.0	E .45	E .72	.130	1.50	.100	--	.120
09-15-2010	6.8	43.9	.61	--	.044	7.16	--	E .03	1.11
09-15-2010	--	52.0	E .46	E .53	< .050	6.90	1.10	--	1.20
09-15-2010	--	52.0	E .59	E .60	< .050	6.90	1.10	--	1.20

## 01402000 MILLSTONE RIVER AT BLACKWELLS MILLS, NJ—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010**

Part 5 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO<sub>3</sub>, calcium carbonate; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; SiO<sub>2</sub>, silicon dioxide; cm, centimeter; ft<sup>3</sup>/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; μS/cm, microsiemens per centimeter; μg/L, micrograms per liter; <, less than; E, estimated]

Date	Phosphorus, water, unfiltered, mg/L as P (00665)	Total nitrogen, water, filtered, mg/L (00602)	Total nitrogen, water, unfiltered, mg/L (00600)	Boron, water, filtered, μg/L (01020)	Organic carbon, suspended sediment, total, mg/L (00689)	Organic carbon, water, filtered, mg/L (00681)
<b>11-17-2009</b>	.19	3.4	E 3.4	--	.30	4.0
<b>11-17-2009</b>	.190	E 3.4	E 3.5	50	--	4.8
<b>11-17-2009</b>	.190	E 3.6	E 3.7	50	--	4.7
<b>02-09-2010</b>	.17	3.7	3.7	--	.39	2.3
<b>02-09-2010</b>	.200	E 3.9	E 4.0	40	--	2.2
<b>02-09-2010</b>	.210	E 4.0	E 4.0	40	--	2.2
<b>06-03-2010</b>	.26	2.0	2.0	--	.70	5.6
<b>06-03-2010</b>	.260	E 1.9	E 2.1	30	--	7.0
<b>06-03-2010</b>	.260	E 1.9	E 2.2	30	--	6.6
<b>09-15-2010</b>	1.19	7.8	E 7.8	--	.23	4.1
<b>09-15-2010</b>	1.20	E 7.4	E 7.4	100	--	4.9
<b>09-15-2010</b>	1.30	E 7.5	E 7.5	100	--	5.0