Water-Data Report 2013

01426500 WEST BRANCH DELAWARE RIVER AT HALE EDDY, NY

Upper Delaware Basin
Upper Delaware Subbasin

LOCATION.--Lat 42°00′11″, long 75°23′01″ referenced to North American Datum of 1983, Delaware County, NY, Hydrologic Unit 02040101, on left bank at downstream side of bridge on County Highway 56 in Hale Eddy, and 9 mi upstream from confluence of East and West Branches near Hancock. Water-quality sampling site at discharge station.

DRAINAGE AREA.--595 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--November 1912 to current year.

REVISED RECORDS.--WSP 871: 1916. WDR NY-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 946.46 ft above NGVD of 1929. Prior to Sept. 8, 1928, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Subsequent to October 1963, entire flow from 454 mi^2 drainage area controlled by Cannonsville Reservoir (station 01424997). Part of flow diverted for New York City municipal supply. Remainder of flow (except for conservation releases and spill) impounded for release during periods of low flow in the lower Delaware River basin, as directed by the Delaware River Master. Satellite and telephone gage-height and temperature telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge since construction of Cannonsville Reservoir, 43,400 ft^3/s, June 28, 2006, gage height, 19.10 ft; minimum discharge, 17 ft^3/s, Oct. 20, 1963; minimum gage height, 1.03 ft, Aug. 4, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 10, 1903, reached a stage of 20.3 ft, from floodmarks, discharge, about 46,000 ft^3/s.

EXTREMES FOR PERIOD PRIOR TO REGULATION.--Maximum discharge prior to construction of Cannonsville Reservoir, 28,900 ft^3/s, Mar. 22, 1948, gage height, 15.69 ft; maximum gage height, 15.8 ft, Sept. 30, 1924, from graph based on gage readings.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,950 ft^3/s, July 2, gage height, 7.25 ft; minimum discharge, 212 ft^3/s, Oct. 18, gage height, 2.01 ft.

01426500 WEST BRANCH DELAWARE RIVER AT HALE EDDY, NY—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013
DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	376	538	328	430	1,100	445	731	550	3,150	1,360	576	995
2	268	564	331	399	794	402	675	462	2,000	2,810	611	815
3	257	521	349	407	647	381	555	356	1,730	2,550	597	962
4	256	487	339	398	623	370	492	341	1,560	1,960	574	762
5	263	470	347	386	805	362	482	333	1,370	1,580	563	699
6	255	478	289	380	765	360	467	309	1,220	1,170	557	651
7	253	448	291	377	714	354	454	270	1,150	940	557	623
8	248	425	387	365	717	358	458	297	1,110	882	557	595
9	239	404	380	361	695	358	471	374	983	788	726	582
10	234	390	416	364	673	396	623	311	881	750	665	584
11	232	377	676	365	711	462	875	348	989	739	606	636
12	225	365	557	417	843	1,540	898	336	1,210	709	586	708
13	221	553	501	594	834	1,720	847	307	1,810	708	692	769
14	224	542	455	1,040	829	1,090	697	291	2,960	692	668	703
15	225	481	421	987	828	836	602	284	3,030	678	616	659
16	219	459	398	832	828	814	590	275	2,960	668	630	584
17	215	436	383	696	682	909	669	261	3,060	921	684	511
18	213	417	743	587	340	998	560	255	2,600	972	675	489
19	524	402	695	534	339	990	555	252	2,190	777	668	486
20	510	389	597	512	331	960	926	248	1,860	646	663	479
21	402	385	2,120	471	323	927	694	260	1,610	643	658	473
22	351	375	1,580	419	328	909	634	310	1,100	644	655	501
23	420	367	1,030	402	320	892	755	340	802	786	617	484
24	660	366	805	425	319	887	605	372	716	720	543	473
25	562	353	678	434	315	897	644	425	600	675	545	467
26	491	347	590	388	315	898	676	382	592	659	562	480
27	454	344	571	370	387	902	626	344	601	654	674	526
28	417	339	513	362	507	911	589	351	2,540	700	838	788
29	396	332	492	385	---	881	586	692	2,000	652	968	928
30	559	328	469	606	---	765	571	1,750	1,590	562	751	1,050
31	567	---	443	1,750	---	687	---	3,170	---	557	724	---
Total	10,736	12,682	18,174	16,443	16,912	23,661	19,007	14,856	49,974	29,552	20,006	19,462
Mean	346	423	586	530	604	763	634	479	1,666	953	645	649
Max	660	564	2,120	1,750	1,100	1,720	926	3,170	3,150	2,810	968	1,050
Min	213	328	289	361	315	354	454	248	592	557	543	467

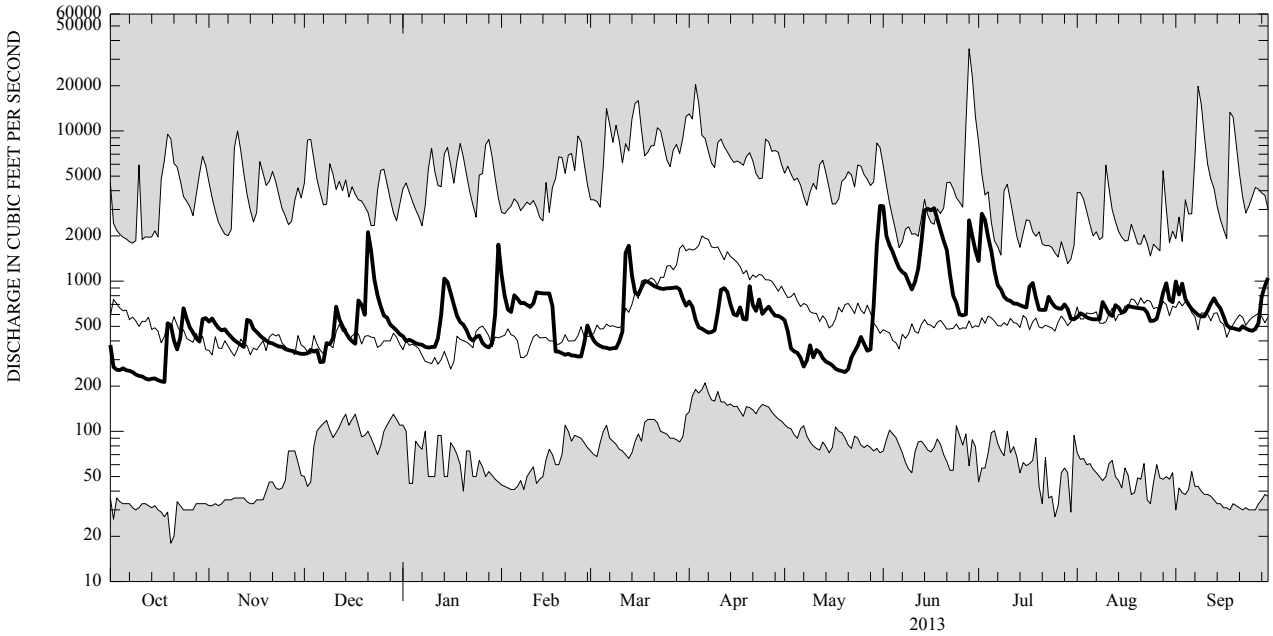
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 2013, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	704	615	753	720	721	1,394	1,722	945	751	684	709	754
Max	2,123	2,484	3,164	2,494	3,107	3,987	5,167	2,592	3,734	1,456	2,042	3,911
(WY)	(1976)	(2007)	(1997)	(1978)	(1976)	(2008)	(1993)	(2011)	(2006)	(1971)	(2009)	(2011)
Min	33.2	41.8	172	127	94.2	158	194	122	132	76.2	107	45.4
(WY)	(1964)	(1965)	(1982)	(1970)	(1989)	(1981)	(1985)	(1985)	(1965)	(1965)	(1985)	(1964)

01426500 WEST BRANCH DELAWARE RIVER AT HALE EDDY, NY—Continued

SUMMARY STATISTICS

	Calendar Year 2012		Water Year 2013		Water Years 1964 - 2013	
Annual total	200,980		251,465			
Annual mean	549		689		873	
Highest annual mean					1,583	2011
Lowest annual mean					204	1965
Highest daily mean	2,120	Dec 21	3,170	May 31	35,200	Jun 28, 2006
Lowest daily mean	213	Apr 19	213	Oct 18	18	Oct 20, 1963
Annual seven-day minimum	220	Oct 12	220	Oct 12	26	Oct 15, 1963
10 percent exceeds	823		1,090		1,910	
50 percent exceeds	452		571		524	
90 percent exceeds	298		320		140	



CURRENT WATER YEAR DAILY MEAN DISCHARGE (BOLD) WITH DAILY MEDIAN FOR PERIOD OF RECORD.
SHADED AREAS SHOW HIGHEST AND LOWEST DAILY MEAN FOR PERIOD OF RECORD THROUGH PREVIOUS WATER YEAR.

01426500 WEST BRANCH DELAWARE RIVER AT HALE EDDY, NY—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--
CHEMICAL DATA: 1958-59 (d), 1970 (b), 1971-74 (d), 1975 (c).
MINOR ELEMENTS DATA: 1971-74 (a).
ORGANIC DATA: OC--1974 (a), 1975 (c).
NUTRIENT DATA: 1971-74 (d), 1975 (c).
BIOLOGICAL DATA: Bacteria--1971, 1973 (c); 1974 (d); 1975 (c).

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1967 to current year (no winter record for water years 1969-77).

INSTRUMENTATION.--Water-temperature satellite and telephone telemeter provides 15-minute-interval readings. From October 1976 to April 1993, water-temperature recorder provided one-hour-interval readings. Prior to October 1976, water-temperature recorder provided continuous readings.

REMARKS.--Temperature readings prior to Oct. 1, 2007, rounded to the nearest 0.5 °C. Water temperature is affected by release of water from upstream reservoir.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Prior to Oct. 1, 2007--Maximum (water years 1968-77, 1979-83, 1985, 1988-96, 1998-2007), 30.5 °C, July 22, 23, 1972, June 16, 1981; minimum (water years 1968, 1978-2007), 0.0 °C on many days during winter periods.
WATER TEMPERATURE: After Oct. 1, 2007--Maximum, 20.2 °C, Sept. 8, 15, 2008, May 31, 2011; minimum, 0.0 °C, Dec. 2, 2007, Nov. 23, 2008, several days during 2011 winter period, Jan. 15, 2012.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 18.7 °C, May 21; minimum, 0.2 °C, Jan. 24, 25, 26, 27, Feb. 22.

01426500 WEST BRANCH DELAWARE RIVER AT HALE EDDY, NY—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		October			November			December			January	
1	13.4	10.5	11.8	9.4	8.6	9.0	5.1	4.5	4.8	2.9	1.7	2.5
2	12.5	11.8	12.1	9.3	8.3	8.9	6.8	5.1	5.9	1.7	0.6	1.3
3	14.5	12.1	13.2	8.6	7.7	8.1	7.9	6.8	7.2	2.4	1.0	1.7
4	13.9	13.2	13.5	8.0	7.3	7.6	8.1	6.9	7.5	3.0	1.7	2.3
5	16.4	12.7	14.4	7.3	6.5	6.8	8.0	5.4	7.0	2.8	1.6	2.2
6	15.0	11.2	13.2	8.4	6.2	7.1	5.4	4.1	4.7	3.8	1.9	2.9
7	11.2	10.1	10.6	6.9	5.7	6.3	4.5	3.7	4.0	3.5	1.9	3.0
8	11.5	9.3	10.5	7.3	6.0	6.5	5.6	4.2	4.8	2.8	1.0	2.0
9	11.7	9.6	10.7	7.3	5.2	6.4	5.9	5.4	5.6	2.4	1.5	1.9
10	12.5	10.9	11.6	8.8	6.9	7.9	6.3	5.3	5.8	3.8	1.9	2.8
11	12.5	9.3	10.8	10.5	8.1	9.2	6.2	4.8	5.7	3.1	1.9	2.6
12	10.4	8.2	9.4	10.4	8.0	9.3	5.0	3.9	4.4	4.8	3.1	3.9
13	10.1	6.8	8.6	10.4	7.4	8.7	4.4	3.0	3.8	4.4	3.6	4.0
14	12.2	9.0	10.4	8.2	6.6	7.3	4.3	2.6	3.5	4.5	3.7	4.0
15	12.2	11.2	11.6	6.7	5.3	6.1	4.9	3.2	4.2	3.7	2.7	3.1
16	11.3	8.8	10.1	6.6	5.0	5.8	4.6	4.3	4.5	3.0	2.1	2.4
17	12.0	8.1	10	7.0	4.6	5.9	5.1	4.5	4.8	3.0	2.2	2.5
18	11.0	9.0	10.2	7.1	5.0	6.0	5.6	4.9	5.2	2.4	1.2	1.6
19	11.9	10.8	11.3	7.0	4.9	5.9	5.1	4.5	4.9	2.9	0.7	1.9
20	12.2	10.8	11.6	6.7	4.8	5.9	4.5	3.2	3.7	4.0	2.1	2.9
21	11.2	9.3	10.3	7.6	5.5	6.5	4.1	3.2	3.9	2.1	1.0	1.4
22	11.9	8.9	10.4	7.2	5.0	6.2	4.3	3.3	4.0	1.7	0.3	0.8
23	10.8	9.3	9.6	6.9	4.9	6.0	4.0	3.0	3.5	1.4	0.3	0.5
24	10.9	9.7	10.5	6.8	4.7	5.7	4.1	3.3	3.7	1.5	0.2	0.4
25	11.6	10.9	11.2	4.9	4.0	4.5	3.6	3.1	3.5	1.4	0.2	0.5
26	12.1	11.4	11.7	6.2	4.8	5.4	3.1	1.2	2.2	1.4	0.2	0.5
27	12.2	11.6	11.9	5.6	4.9	5.4	2.1	1.1	1.6	1.4	0.2	0.6
28	11.8	10.9	11.3	5.6	4.9	5.3	2.5	1.6	2.0	1.1	0.3	0.6
29	11.0	10.5	10.7	5.5	3.9	4.7	2.5	1.5	2.0	3.1	1.1	2.2
30	11.0	9.9	10.5	4.9	4.0	4.5	2.4	1.4	1.7	2.9	2.3	2.6
31	9.9	8.9	9.3	---	---	---	2.8	1.1	2.0	2.4	1.1	1.8
Month	16.4	6.8	11.1	10.5	3.9	6.6	8.1	1.1	4.3	4.8	0.2	2.0

01426500 WEST BRANCH DELAWARE RIVER AT HALE EDDY, NY—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		February			March			April			May	
1	1.7	0.5	1.1	3.1	2.2	2.6	5.4	3.2	4.1	13.1	6.1	9.4
2	1.4	0.3	0.8	2.3	1.4	1.9	4.7	1.7	3.1	13.8	6.6	10.4
3	1.4	0.3	0.9	2.3	0.8	1.5	4.5	1.3	2.9	15.5	9.8	12.5
4	1.4	0.4	0.9	1.8	0.6	1.2	6.9	1.5	4.2	14.4	8.8	11.8
5	2.4	0.8	1.6	3.9	0.9	2.1	8.2	3.2	5.6	15.0	9.7	12.5
6	2.9	1.4	1.9	3.1	1.6	2.4	8.1	2.8	5.4	14.3	9.5	12.2
7	2.9	0.7	1.6	4.0	1.9	3.0	8.1	4.0	6.1	16.2	11.4	13.9
8	2.4	1.1	1.6	3.6	1.4	2.4	10.1	5.1	7.7	14.0	11.2	12.3
9	2.5	0.8	1.5	6.4	1.1	3.6	12.3	7.1	9.6	13.2	10.6	11.7
10	3.8	0.5	1.9	6.3	2.0	4.3	10.0	8.1	8.7	14.6	11.1	12.9
11	2.7	1.6	2.1	5.1	3.1	4.1	8.4	6.5	7.5	13.4	11.7	12.5
12	2.7	2.1	2.4	4.5	2.0	3.6	6.5	5.0	5.4	14.4	11.0	12.5
13	4.7	2.1	3.1	4.0	2.0	2.9	6.8	5.0	5.9	11.8	8.9	9.9
14	4.4	1.9	3.0	3.0	1.1	2.0	7.2	5.1	6.0	12.8	7.4	10.1
15	4.6	2.2	3.2	1.9	0.5	1.3	9.5	4.6	7.0	13.6	8.8	11.1
16	3.5	1.8	2.6	3.0	1.2	2.1	8.4	7.0	7.6	16.4	10.9	13.6
17	2.9	1.0	1.8	3.8	1.0	2.2	11.8	6.8	9.1	15.9	11.4	13.6
18	2.1	0.4	1.2	2.6	0.9	1.6	9.3	6.9	8.0	13.7	11.1	12.0
19	1.6	0.4	1.1	3.5	0.9	2.1	11.6	8.3	9.8	11.7	10.9	11.1
20	2.3	0.7	1.3	4.0	1.5	2.6	10.5	7.5	9.1	16.4	10.6	13.2
21	1.2	0.4	0.7	4.1	1.1	2.4	10.1	5.5	7.7	18.7	13.4	16.0
22	2.7	0.2	1.5	3.1	1.5	2.2	10.6	5.8	8.1	16.8	14.0	15.2
23	2.5	1.7	2.1	4.3	1.8	2.7	10.6	5.6	8.0	15.1	13.2	14.0
24	3.1	2.2	2.6	5.2	1.5	3.1	11.3	6.0	8.7	13.7	10.0	11.7
25	3.4	1.7	2.5	4.4	2.2	3.2	11.6	8.5	10	10.1	8.5	9.4
26	3.4	1.5	2.6	4.6	2.3	3.2	11.4	6.3	8.7	13.3	8.4	10.7
27	3.2	1.7	2.5	5.2	1.7	3.3	11.8	5.8	8.7	14.5	9.3	11.9
28	3.6	2.1	2.8	4.1	2.6	3.3	11.2	6.1	8.8	13.2	9.8	10.7
29	---	---	---	4.2	2.6	3.3	9.1	7.3	7.8	15.1	9.6	12.1
30	---	---	---	6.9	2.0	4.2	10.0	7.0	8.3	16.8	12.2	14.2
31	---	---	---	4.6	2.3	3.5	---	---	---	17.7	13.2	15.4
Month	4.7	0.2	1.9	6.9	0.5	2.7	12.3	1.3	7.3	18.7	6.1	12.3

01426500 WEST BRANCH DELAWARE RIVER AT HALE EDDY, NY—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		June			July			August			September	
1	14.8	11.6	13.2	15.0	13.4	14.3	10.9	8.3	9.5	15.7	11.9	14.1
2	16.9	11.5	14.0	18.3	13.6	15.8	14.2	9.1	11.2	16.1	12.4	14.0
3	17.2	14.0	15.4	15.3	12.1	14.2	14.8	8.9	11.4	15.2	13.0	14.3
4	18.0	13.8	15.5	14.0	10.4	12.2	13.1	8.4	10.6	16.1	11.3	13.5
5	17.2	12.4	14.3	13.5	9.4	11.0	14.0	7.7	10.7	15.1	11.1	12.8
6	13.2	11.7	12.4	13.8	9.1	11.1	13.0	8.1	10.4	14.4	9.6	11.8
7	12.1	11.3	11.7	15.6	9.2	11.9	10.7	8.4	9.6	12.9	9.6	11.3
8	12.6	11.0	11.6	15.2	9.8	11.9	13.3	8.7	10.8	13.9	10.5	11.9
9	15.2	10.5	12.4	14.9	9.9	12.0	13.1	9.9	11.2	14.4	9.4	11.8
10	10.8	9.5	10.1	13.7	9.3	11.2	15.2	9.6	12.0	14.4	10.8	12.4
11	11.6	9.5	10.6	15.2	9.3	11.7	14.1	8.9	11.2	14.8	11.1	13.0
12	14.1	10.1	11.9	13.1	8.4	10.6	14.2	8.7	11.3	13.9	12.2	13.0
13	12.7	11.4	12.0	13.2	8.5	10.5	13.4	9.2	11.1	13.5	11.8	12.7
14	16.1	12.6	14.3	15.6	8.7	11.7	12.7	9.4	10.8	12.2	10.6	11.3
15	16.9	14.2	15.3	15.4	8.9	11.7	13.9	8.4	10.9	13.2	9.6	11.4
16	15.0	12.3	14.1	15.6	8.5	11.6	13.6	8.8	10.9	12.9	10.2	11.5
17	13.7	11.1	12.4	13.7	7.9	10.5	13.9	8.5	10.8	14.3	9.0	11.5
18	12.1	10.3	11.3	13.6	8.1	10.2	11.0	8.7	9.8	14.8	9.7	12.1
19	12.6	8.7	10.5	16.1	8.1	11.5	12.0	8.8	10.2	15.2	10.1	12.6
20	11.6	7.6	9.3	13.5	8.8	10.9	14.5	8.8	11.1	15.6	10.4	12.9
21	10.9	6.9	8.5	14.2	8.3	10.9	14.2	8.8	11.2	14.5	11.0	12.9
22	12.5	7.1	9.5	13.3	8.2	10.5	14.1	9.0	11.4	13.5	11.0	12.3
23	14.7	7.7	10.9	14.6	8.9	11.5	14.7	9.1	11.7	12.3	10.2	11.2
24	11.9	8.0	10.1	13.5	9.5	11.3	15.0	8.8	11.6	14.1	9.4	11.7
25	14.6	8.3	11.2	14.2	7.9	10.7	14.5	8.8	11.5	14.4	9.6	12.0
26	12.1	8.8	10.4	14.7	7.6	10.9	12.4	9.5	10.9	14.7	10.3	12.4
27	13.0	8.4	10.7	13.6	8.1	10.7	14.9	10.4	12.4	14.3	10.4	12.4
28	15.6	11.8	14.8	12.1	8.9	10.3	14.5	10.5	12.2	14.2	10.3	12.1
29	15.5	13.5	14.2	14.7	8.6	11.3	15.8	12.2	14.2	13.4	10.4	11.7
30	16.9	13.4	14.8	13.7	8.3	10.8	16.0	12.0	13.8	13.9	10.8	11.9
31	---	---	---	14.2	8.3	10.9	15.4	11.2	13.2	---	---	---
Month	18.0	6.9	12.2	18.3	7.6	11.5	16.0	7.7	11.3	16.1	9.0	12.3

	Max	Min	Mean
Year	18.7	0.2	8.0