

subbasins of the Susquehanna River Basin and are reported in Table 4 for Group A sites. Average rainfall values for October through December for Group B sites are reported in Table 20. Due to high rainfalls in the summer (mostly from Tropical Storm Ivan), precipitation totals exceeded the LTM at all Group A sites for 2004.

WATER DISCHARGE

Water discharge data were obtained from the USGS and are listed in Table 5. Water discharges

were above the LTM at all Group A sites ranging from 127.7 percent of the LTM at Danville to 157.9 percent at Conestoga. These values were a direct effect of Tropical Storm Ivan during September 2004. High flows for September ranged from 10 percent of the annual flow at Conestoga to 19 percent of the annual flow at Newport. Figure 3 compares the 2004 discharges with the LTM discharges for each site.

Table 4. Summary for Annual Precipitation for Selected Areas in the Susquehanna River Basin, Calendar Year 2004

River Location	Season	Calendar Year 2004 Precipitation	Average Long-term Precipitation	Departure From Long-term
		inches	inches	inches
Susquehanna River above Towanda, Pa.	January-March	6.36	7.20	-0.84
	April-June	11.96	10.60	+1.36
	July-September	20.01	11.23	+8.78
	<u>October-December</u>	<u>8.57</u>	<u>8.72</u>	<u>-0.15</u>
	Yearly Total	46.90	37.75	+9.15
Susquehanna River above Danville, Pa.	January-March	6.31	7.25	-0.94
	April-June	12.18	10.70	+1.48
	July-September	20.19	11.48	+8.71
	<u>October-December</u>	<u>8.85</u>	<u>8.80</u>	<u>+0.05</u>
	Yearly Total	47.53	38.23	+9.30
West Branch Susquehanna River above Lewisburg, Pa.	January-March	8.67	8.06	+0.61
	April-June	13.29	11.23	+2.06
	July-September	24.59	12.66	+11.93
	<u>October-December</u>	<u>8.46</u>	<u>9.38</u>	<u>-0.92</u>
	Yearly Total	55.01	41.33	+13.68
Juniata River above Newport, Pa.	January-March	7.80	7.66	+0.14
	April-June	13.29	9.66	+3.63
	July-September	21.78	10.15	+11.63
	<u>October-December</u>	<u>7.77</u>	<u>8.80</u>	<u>-1.03</u>
	Yearly Total	50.64	36.27	+14.37
Susquehanna River above Marietta, Pa.	January-March	7.22	7.94	-0.72
	April-June	13.65	10.80	+2.85
	July-September	21.87	11.71	+10.16
	<u>October-December</u>	<u>8.77</u>	<u>9.10</u>	<u>-0.33</u>
	Yearly Total	51.51	39.55	+11.96
Conestoga River above Conestoga, Pa.	January-March	7.45	8.83	-1.38
	April-June	15.77	10.55	+5.22
	July-September	19.75	12.82	+6.93
	<u>October-December</u>	<u>9.28</u>	<u>10.06</u>	<u>-0.78</u>
	Yearly Total	52.25	42.26	+9.99

Table 5. Annual Water Discharge, Calendar Year 2004

Site	Years of Record	Long-term Annual Mean cfs ¹	2004	
			Mean cfs	Percent of LTM ²
Towanda	16	11,635	15,337	131.8
Danville	20	17,091	21,823	127.7
Lewisburg	20	11,356	16,530	145.6
Newport	20	4,773	6,862	143.8
Marietta	18	40,336	56,169	139.3
Conestoga	20	666	1,052	158

¹ Cubic feet per second

² Long-term mean

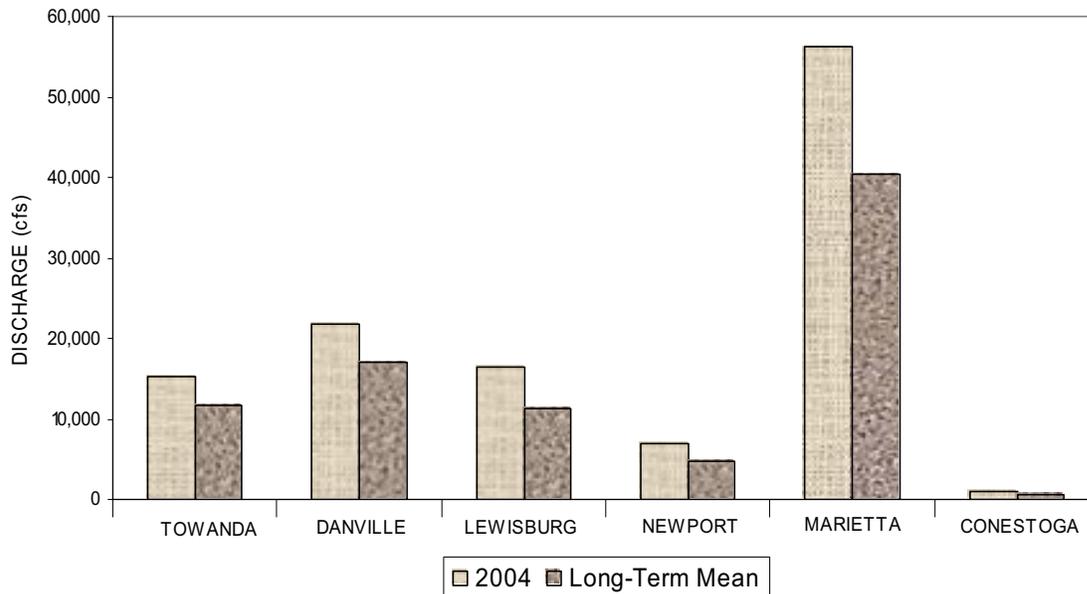


Figure 3. Annual and Long-Term Discharges at Towanda, Danville, Lewisburg, Newport, Marietta, and Conestoga, Pa.

ANNUAL NUTRIENT AND SUSPENDED-SEDIMENT LOADS AND YIELDS

Loads and yields represent two methods for describing nutrient and SS amounts within a basin. Loads refer to the actual amount of the constituent being transported in the water column past a given point over a specific duration of time and are expressed in pounds. Yields compare the transported load with the acreage of the watershed

and are expressed in lbs/acre. This allows for easy watershed comparisons. This project reports loads and yields for the constituents listed in Table 6 as computed by the Minimum Variance Unbiased Estimator (MVUE) described by Cohn and others (1989). This estimator relates the constituent concentration to water discharge, seasonal effects, and long-term trends, and computes the best-fit regression equation. Daily loads of the constituents were then calculated