

**Table 3. Water Quality Parameters, Laboratory Methods, and Detection Limits**

Parameter	Laboratory	Methodology	Detection Limit (mg/l)	References
Total Ammonia (TNH <sub>3</sub> )	PADEP	Colorimetry	0.020	USEPA 350.1
	CAS*	Colorimetry	0.010	USEPA 350.1R
Dissolved Ammonia (DNH <sub>3</sub> )	PADEP	Block Digest, Colorimetry	0.020	USEPA 350.1
		Block Digest, Colorimetry	0.010	USEPA 350.1R
Total Nitrogen (TN)	PADEP	Persulfate Digestion for TN	0.040	Standard Methods #4500-N <sub>org</sub> -D
Dissolved Nitrogen (DN)	PADEP	Persulfate Digestion	0.040	Standard Methods #4500-N <sub>org</sub> -D
Total Kjeldahl Nitrogen (TKN)	CAS*	Block Digest, Flow Injection	0.050	USEPA 351.2
Dissolved Kjeldahl Nitrogen (DKN)	CAS*	Block Digest, Flow Injection	0.050	USEPA 351.2
Total Nitrite plus Nitrate (TNO <sub>x</sub> )	PADEP	Cd-reduction, Colorimetry	0.010	USEPA 353.2
	CAS*	Colorimetric by LACHAT	0.002	USEPA 353.2
Dissolved Nitrite plus Nitrate (DNO <sub>x</sub> )	PADEP	Cd-reduction, Colorimetry	0.010	USEPA 353.2
	CAS*	Colorimetric by LACHAT	0.002	USEPA 353.2
Dissolved Orthophosphate (DOP)	PADEP	Colorimetry	0.010	USEPA 365.1
	CAS*	Colorimetric Determination	0.002	USEPA 365.1
Dissolved Phosphorus (DP)	PADEP	Block Digest, Colorimetry	0.010	USEPA 365.1
	CAS*	Colorimetric Determination	0.002	USEPA 365.1
Total Phosphorus (TP)	PADEP	Persulfate Digest, Colorimetry	0.010	USEPA 365.1
	CAS*	Colorimetric Determination	0.002	USEPA 365.1
Total Organic Carbon (TOC)	PADEP	Combustion/Oxidation	0.50	SM 5310D
	CAS*	Chemical Oxidation	0.05	GEN 415.1/9060
Suspended Sediment Fines & Sand	USGS	**		
Suspended Sediment (Total)	SRBC	**		
	USGS	**		

\* Columbia Analytical Services, Rochester, NY (New York sites only)

\*\* TWRI Book 3, Chapter C2 and Book 5, Chapter C1, Laboratory Theory and Methods for Sediment Analysis (Guy and others, 1969)

## PRECIPITATION

Precipitation data were obtained from long-term monitoring stations operated by the U.S. Department of Commerce. The data are published as Climatological Data–Pennsylvania, and as Climatological Data–New York by the National Oceanic and Atmospheric Administration (NOAA) at the National Climatic Data Center in Asheville, North

Carolina. Quarterly and annual data from these sources were compiled across the subbasins of the Susquehanna River Basin and are reported in Table 4 for Group A sites. 2007 precipitation was below the LTM at all sites except Newport and Conestoga which were slightly above the LTM. Towanda and Danville received dramatically lower precipitation amounts totaling in 15.41 and 10.61 inches below the LTM, respectively.

**Table 4. Summary for Annual Precipitation for Selected Areas in the Susquehanna River Basin, Calendar Year 2007**

River Location	Season	Calendar Year 2007 Precipitation inches	Average Long-term Precipitation inches	Departure From Long-term inches
Susquehanna River above Towanda, Pa.	January-March	6.50	7.44	-0.94
	April-June	5.74	10.85	-5.11
	July-September	4.21	11.44	-7.23
	<u>October-December</u>	7.07	9.19	-2.12
	<b>Yearly Total</b>	<b>23.52</b>	<b>38.92</b>	<b>-15.40</b>
Susquehanna River above Danville, Pa.	January-March	7.05	7.47	-0.42
	April-June	6.62	10.90	-4.28
	July-September	5.72	11.61	-5.89
	<u>October-December</u>	9.23	9.25	-0.02
	<b>Yearly Total</b>	<b>28.62</b>	<b>39.23</b>	<b>-10.61</b>
West Branch Susquehanna River above Lewisburg, Pa.	January-March	9.09	8.19	+0.9
	April-June	8.79	11.14	-2.35
	July-September	10.43	12.60	-2.17
	<u>October-December</u>	11.39	9.61	+1.78
	<b>Yearly Total</b>	<b>39.70</b>	<b>41.54</b>	<b>-1.84</b>
Juniata River above Newport, Pa.	January-March	7.37	7.65	-0.28
	April-June	9.25	9.58	-0.33
	July-September	10.98	10.05	+0.93
	<u>October-December</u>	10.26	8.92	+1.34
	<b>Yearly Total</b>	<b>37.86</b>	<b>36.20</b>	<b>+1.66</b>
Susquehanna River above Marietta, Pa.	January-March	8.09	8.06	+0.03
	April-June	7.86	10.87	-3.01
	July-September	8.24	11.69	-3.45
	<u>October-December</u>	10.27	9.40	+0.87
	<b>Yearly Total</b>	<b>34.46</b>	<b>40.02</b>	<b>-5.56</b>
Conestoga River above Conestoga, Pa.	January-March	9.96	8.82	+1.14
	April-June	10.98	10.72	+0.26
	July-September	11.59	12.6	-1.01
	<u>October-December</u>	12.88	10.48	+2.40
	<b>Yearly Total</b>	<b>45.41</b>	<b>42.62</b>	<b>+2.79</b>

## WATER DISCHARGE

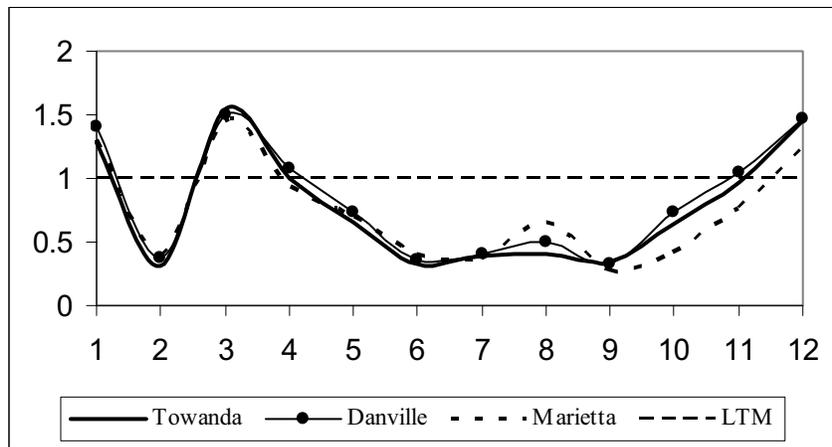
Water discharge data were obtained from the USGS and are listed in Table 5. Monthly water discharge ratios are plotted in Figure 3 for all sites. The water discharge ratio is the actual flow for the time period divided by the LTM for the same time period. Thus, a value of one equals the 2007 flow being the same as the LTM, while a value of three equals the 2007

flow being three times the volume of the LTM. High flow events occurred during January, March, and December leading to water discharges above the LTM for all mainstem sites. Tributary sites showed less dramatic increases during the same time periods with an additional high flow period during August at Newport. Lower than LTM flows occurred at sites for the majority of the year resulting in annual flows being below LTM.

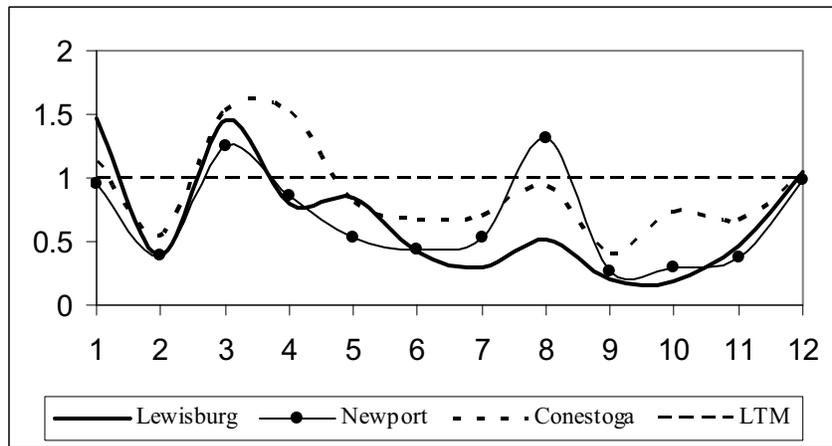
**Table 5. Annual Water Discharge, Calendar Year 2007**

Site	Years of Record	Long-term Annual Mean cfs <sup>1</sup>	2007	
			Mean cfs	Percent of LTM <sup>2</sup>
Towanda	19	11,866	11,243	94.7
Danville	23	16,511	16,466	99.7
Lewisburg	23	10,880	8,965	82.4
Newport	23	4,379	3,309	75.6
Marietta	21	39,032	34,515	88.4
Conestoga	23	679	656	96.6

<sup>1</sup> Cubic feet per second    <sup>2</sup> Long-term mean



A



B

**Figure 3. Discharge Ratios for Long-term Sites, Susquehanna Mainstem Sites (A) and Tributaries (B)**