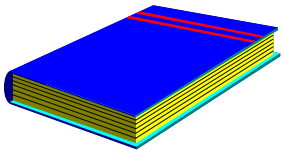
REPORT ANNOUNCEMENT



SUSQUEHANNA RIVER BASIN COMMISSION January 2009

NUTRIENTS AND SUSPENDED SEDIMENT TRANSPORTED IN THE SUSQUEHANNA RIVER BASIN, 2007, AND TRENDS, JANUARY 1985 THROUGH DECEMBER 2007

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The purpose of this report is to present basic information on annual and seasonal loads and yields of nutrients and suspended sediment (SS) measured during calendar year 2007 at SRBC's six long-term monitoring sites listed in Table 1 on the back of this announcement. Included in the report are several data comparisons aimed at removing the effects of flow to determine if improvements are occurring. This includes comparisons of 2007 values of total nitrogen (TN), total phosphorus (TP), and SS with several baselines developed from the historical datasets and trends in flow-adjusted concentrations (FACs) for the period 1985 through 2007. Statistics for 2007 for the six long-term sites are listed in Table 1. Summary statistics for all 23 sites that are part of the Chesapeake Bay Program's Non-tidal Water Quality Monitoring Network also are included.

Data were collected from six sites on the Susquehanna River, three sites on the West Branch Susquehanna River, and 14 sites on smaller tributaries in the basin. These 23 sites were selected for long-term monitoring of nutrient and SS transport in the basin. All samples were analyzed for various species of TN and TP, total organic carbon (TOC), and SS.

Precipitation data are summarized for the 2007 Susquehanna River Watersheds above Towanda, Danville, and Marietta, and the West Branch Susquehanna, Juniata, and Conestoga River Watersheds. 2007 precipitation was below average at all sites except Newport and Conestoga. Rainfall amounts ranged 15.4 inches below the long-term mean (LTM) at Towanda to 2.79 inches above the LTM at Conestoga.

Nutrient and Suspended-Sediment Loads and Yields

Nutrient and SS loads were computed for the six long-term sites for calendar year 2007. Annual loads for TN, total organic nitrogen (TON), total organic carbon (TOC), and SS were below the LTM at all sites during 2007. TP, dissolved phosphorus (DP), and dissolved orthophosphorus (DOP) were below the LTMs at Newport, Marietta, and Conestoga. TP was at LTM levels at Towanda, Danville, and Lewisburg while DP and DOP were above the LTMs.

Baseline Comparison

The annual fluctuations of nutrient and SS loads and water discharge make it difficult to determine whether the changes were related to land use, nutrient availability, or annual water discharge. To make that determination, data collected were used to create a linear relationship (baseline) between water discharge ratios (annual discharge/long-term discharge) and annual yields. Linear plots were created using the initial five years of each dataset, the first and second halves of each dataset, and the entire dataset. The 2007 yields and discharge ratios then were plotted on these graphs to see where improvements may have occurred. Reductions in TN and SS were shown by all baseline comparisons at all sites. Dramatic reductions were shown for TP and SS at Conestoga for all baselines, while TP showed only modest reductions at Marietta. TP yields at Towanda, Danville, and Lewisburg remained below the baselines calculated using the early years of the dataset. Baselines from more recent years showed the opposite, indicating that initial reductions may have leveled off and possibly reversed in more recent years.

Nutrient and Suspended-Sediment Trends

Trends for monthly mean flow and FAC were computed for the period January 1985 through December 2007 for flow, SS, TOC, and several forms of nitrogen and phosphorus. FAC trends represent the trends after the effects of flow have been removed. This is the concentration that relates to the effects of nutrient-reduction activities and other actions taking place in the watershed. For 2007, trends in FACs were found to be decreasing for TN, TP, and SS at all sites. Increasing trends in DOP were found at Towanda and Newport. No significant trends in flow were found.

This report is available in electronic format at www.srbc.net. It is also available on CD by contacting Ava Stoops at 717-238-0423 or srbc@srbc.net.

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Table 1. 2007 Annual, Seasonal, and Annual Long-term Mean Precipitation (inches); Flow (cfs); Loads (in 1000's of pounds), Yields (lbs/ac/yr), Concentration (mg/L), and Trends for Total Nitrogen (TN), Total Phosphorus (TP), and Suspended Sediment (SS) at Towanda, Danville, Lewisburg, Newport, Marietta, and Conestoga, Pa.

Parameter		Period	Towanda	Danville	Lewisburg	Newport	Marietta	Conestoga
Precipitation		Winter	6.50	7.05	9.09	7.37	8.09	9.96
		Spring	5.74	6.62	8.79	9.25	7.86	10.98
		Summer	4.21	5.72	10.43	10.98	8.24	11.59
		Fall	7.07	9.23	11.39	10.26	10.27	12.88
		2007	23.52	28.62	39.70	37.86	34.46	45.41
		LTM	38.92	39.23	41.54	36.20	40.02	42.62
Flow		Winter	18,968	26,863	17,936	6,084	61,172	1,025
		Spring	12,500	18,268	9,729	3,602	38,689	776
		Summer	1,761	2,775	1,695	1,270	7,558	315
		Fall	11,922	18,202	6,704	2,342	31,267	516
		2007	11,243	16,466	8,965	3,309	34,515	656
		LTM	11,866	16,511	10,880	4,379	39,032	679
TN	Load	Winter	9,894	14,554	8,005	5,329	46,838	3,559
		Spring	5,805	8,583	3,758	2,698	24,927	2,628
		Summer	689	1,016	732	879	4,246	1,096
		Fall	5,707	9,362	3,001	2,154	26,638	1,938
		2007	22,095	33,515	15,496	11,060	102,649	9,221
		LTM	28,337	44,208	23,608	16,154	131,990	10,737
	Yield	2007	4.43	4.67	3.54	5.15	6.17	30.65
		LTM	5.68	6.16	5.39	7.53	7.94	35.69
	Concentration	2007	1.00	1.03	0.88	1.70	1.51	7.14
		LTM	1.21	1.36	1.10	1.87	1.72	8.03
	Trend	*	Improving	Improving	Improving	Improving	Improving	Improving
TP	Load	Winter	1,077	1,653	578	130	1,799	114
		Spring	580	908	237	75	857	62
		Summer	84	96	37	37	130	22
		Fall	580	1,073	200	47	697	37
		2007	2,321	3,730	1,052	289	3,483	235
		LTM	2,419	3,761	1,361	829	7,819	684
	Yield	2007	0.465	0.519	0.240	0.135	0.209	0.781
		LTM	0.485	0.524	0.311	0.386	0.470	2.275
	Concentration	2007	0.105	0.115	0.060	0.044	0.051	0.182
		LTM	0.104	0.116	0.064	0.096	0.102	0.512
	Trend	*	No Trend	Improving	Improving	Improving	Improving	Improving
SS	Load	Winter	1,051,796	899,942	305,998	63,072	1,454,511	58,443
		Spring	372,680	381,619	67,456	29,205	540,084	25,964
		Summer	8,855	9,896	3,256	10,649	30,717	2,406
		Fall	333,469	390,886	55,688	14,538	385,060	6,515
		2007	1,766,800	1,682,343	432,398	117,464	2,410,372	93,328
		LTM	3,116,090	3,360,582	1,280,754	511,491	6,878,573	367,319
	Yield	2007	354	234	99	55	145	310
		LTM	624	468	292	238	414	1,221
	Concentration	2007	79.8	51.9	24.5	18.0	35.5	72.3
		LTM	133.4	103.4	59.8	59.3	89.5	274.6
	Trend	*	Improving	Improving	Improving	Improving	Improving	Improving

* Trend time periods: Towanda 1989-2007; Marietta 1987-2007; Lewisburg, Danville, Newport, and Conestoga 1985-2007.