



Fact Sheet

Commonwealth of Pennsylvania • Department of Environmental Protection

Pennsylvania's Chesapeake Bay Tributary Strategy Goals for Nutrient and Sediment Reduction and Habitat Restoration

Why were new nutrient and sediment reduction goals established for Pennsylvania?

With the signing of the Chesapeake 2000 Agreement, Pennsylvania made a commitment to help remove the Chesapeake Bay from the federal Clean Water Act's list of impaired waters by 2010. Our partners to this commitment include all the jurisdictions in the Chesapeake watershed, including Delaware, Maryland, New York, Virginia, West Virginia, and the District of Columbia. The U.S. Environmental Protection Agency (EPA) and Chesapeake Bay Commission are also key partners. Pennsylvania is critical to this effort as 50 percent of the fresh water to the Chesapeake Bay flows from the Susquehanna River.

To achieve this goal, the Chesapeake Bay Program partners developed new scientifically based water quality criteria for the Chesapeake Bay. Next, new nutrient and sediment reduction goals were developed for each major tributary and jurisdiction to meet the revised water quality criteria. For a more detailed description of this process, please refer to the fact sheet: **Pennsylvania's Chesapeake Bay Tributary Strategy -- Frequently Asked Questions**. The new goals, agreed to in April 2003, replace the previous nutrient reduction goal established by the 1987 Chesapeake Bay Agreement. The Chesapeake Bay Program partners also agreed to develop revised Nutrient and Sediment Reduction Tributary Strategies within one year, by April 2004, to plan how the goals can be met by 2010.

How do the new reduction goals compare to those under the 1987 Chesapeake Bay Agreement?

The new nutrient and sediment reduction goals for Pennsylvania are:

- Nitrogen discharges to the Bay must be reduced to no more than 71.9 million pounds.

This is referred to as the "cap load." It will require a reduction goal of 37.3 million pounds from the year 2002 watershed model loads. This is about two and a half times our previous goal of 15.5 million pounds.

- Phosphorus discharges to the Bay must be reduced to no more than 2.47 million pounds (cap load). This will require a reduction goal of 1.11 million pounds from the year 2002 watershed model loads. This goal is similar to the previous 1996 goal of 2.46 million pounds.
- Sediment discharges to the Bay must be reduced to no more than 0.995 million tons (cap load). This will require a reduction goal of 116,000 tons from the year 2002 watershed model loads. This is the first time a sediment goal has been agreed to by the Bay Program partners. Because sediment loads are not generated by point sources, allocations for sediment will only apply to the nonpoint source loads. Efforts to meet the phosphorus goal will most likely result in meeting the sediment goal.

How were the jurisdiction cap loads allocated to tributary basins?

The new major tributary and jurisdiction cap loads were developed by the Chesapeake Bay Program partners based on a formula to ensure equity and fairness across the watershed. They are based on data from the Chesapeake Bay Program's monitoring and water quality model to determine the nutrient levels needed to restore or maintain dissolved oxygen levels in the Chesapeake Bay. Pennsylvania's major tributary basins are the Susquehanna and Potomac River basins. For planning purposes, the smaller basins which flow directly to the Chesapeake Bay (Gunpowder Falls River in southern York County, and the Elk and Northeast Creeks in southern Chester County) were integrated with the major basins.

Pennsylvania agreed to separate nitrogen and phosphorus cap loads for the Susquehanna and Potomac Rivers basins.

The next step is to fairly allocate the necessary load reductions between nonpoint and point sources for the Susquehanna and Potomac basins. These allocations are based on the relative proportion of the anthropogenic (man-made) load that is estimated to be coming from each source. This is considered a fair approach to dividing the total allocation between nonpoint and point sources because:

- The original goal of a 40 percent reduction in load was a flat percent reduction across the watershed. Now the percent reduction within the watershed will vary based on the man-made loads within the watershed.
- The method places equal emphasis on both nonpoint sources and point sources based on the loads within the watershed that human activities associated with each sector generate.

The anthropogenic loads are estimated using the Chesapeake Bay Program Office's watershed model. The difference between the year 2002 implementation scenario and the "all-forest" scenario provides an estimate of anthropogenic loads. The "all-forest" scenario simulates what the nutrient and sediment loads within the Bay watershed would be if most of the man-made loads were removed.

The estimated year 2002 nutrient and sediment loads are the reference point from which progress towards the 2010 cap loads are to be measured. The 2002 loads include the reductions from those activities reported between 1985 and 2002. Because the 2002 loads reflect load reductions already accomplished, each area within the watershed receives credit for past accomplishments when the 2002 anthropogenic loads are computed.

Will the major tributary allocations be sub-allocated to smaller tributary basins?

The non-point source allocation will be further divided among the 13 DEP Watershed Team areas in Pennsylvania's Chesapeake basin. The sub-allocation is based upon the relative portion of the nonpoint source anthropogenic loads that each watershed area contributes to the overall

anthropogenic loads delivered to the Bay. This allocation will also address air deposition of nitrogen. The nonpoint source allocations to the Watershed Teams are shown in the attached Table 1.

A formal point source allocation will not be made for the 13 Watershed Team areas. Rather, the point source allocations will be for the whole basin, either the Susquehanna or Potomac. The point source allocations for the Susquehanna and Potomac basins are shown in the attached Table 2. This will give maximum flexibility to achieve the most cost-effective approach to meet the point source allocations. The capital improvements to wastewater treatment facilities necessary to address point source loadings are significantly more expensive than best management practices designed to address nonpoint source loadings. In addition, the loadings discharged from these facilities can vary significantly throughout the watershed. For these reasons, evaluating point source reductions for each whole basin is a logical approach. Information will be provided, however, to each Watershed Team on the point source loadings generated in their basin to guide their Tributary Strategy development. Point source load information for the Watershed Teams is shown in the attached Table 3.

How will the nutrient and sediment caps be achieved?

Pennsylvania's 13 Watershed Teams located in the Chesapeake basin, with input from local governments and local stakeholders, will develop Tributary Strategies that rely on a "Bottom Up" approach. As a first step, the DEP Water Planning Office will prepare a draft strategy for each of the 13 Watershed Teams to address their allocated nutrient and sediment cap load. The Chesapeake Bay Program's Watershed Model is the basis for the draft strategies. The real planning begins when the Watershed Teams engage local stakeholders to review the draft strategies and inform their further development with local on-the-ground knowledge.

What other habitat restoration goals are set by the Chesapeake 2000 Agreement?

The Chesapeake 2000 Agreement also includes numerous commitments to address habitat restoration. These goals will be sub-allocated to the 13 Watershed Team areas using the Chesapeake Bay Program watershed model land

cover data. Habitat restoration allocations to the Watershed Teams are shown in the attached Table 4.

The Agreement identifies specific goals for watershed management plans, wetland preservation plans and wetland restoration. The Agreement calls for the development and implementation of locally supported watershed management plans in two-thirds of the Bay watershed. These plans are to address the protection, conservation and restoration of stream corridors, riparian forest buffers and wetlands. Pennsylvania's share of this goal is to have plans developed for two-thirds of our Chesapeake basin, or about 9.6 million acres. The Agreement further calls for these plans to include a wetland preservation component covering 25 percent of each state's Chesapeake basin, or about 3.6 million acres. Pennsylvania's wetlands goal is to restore

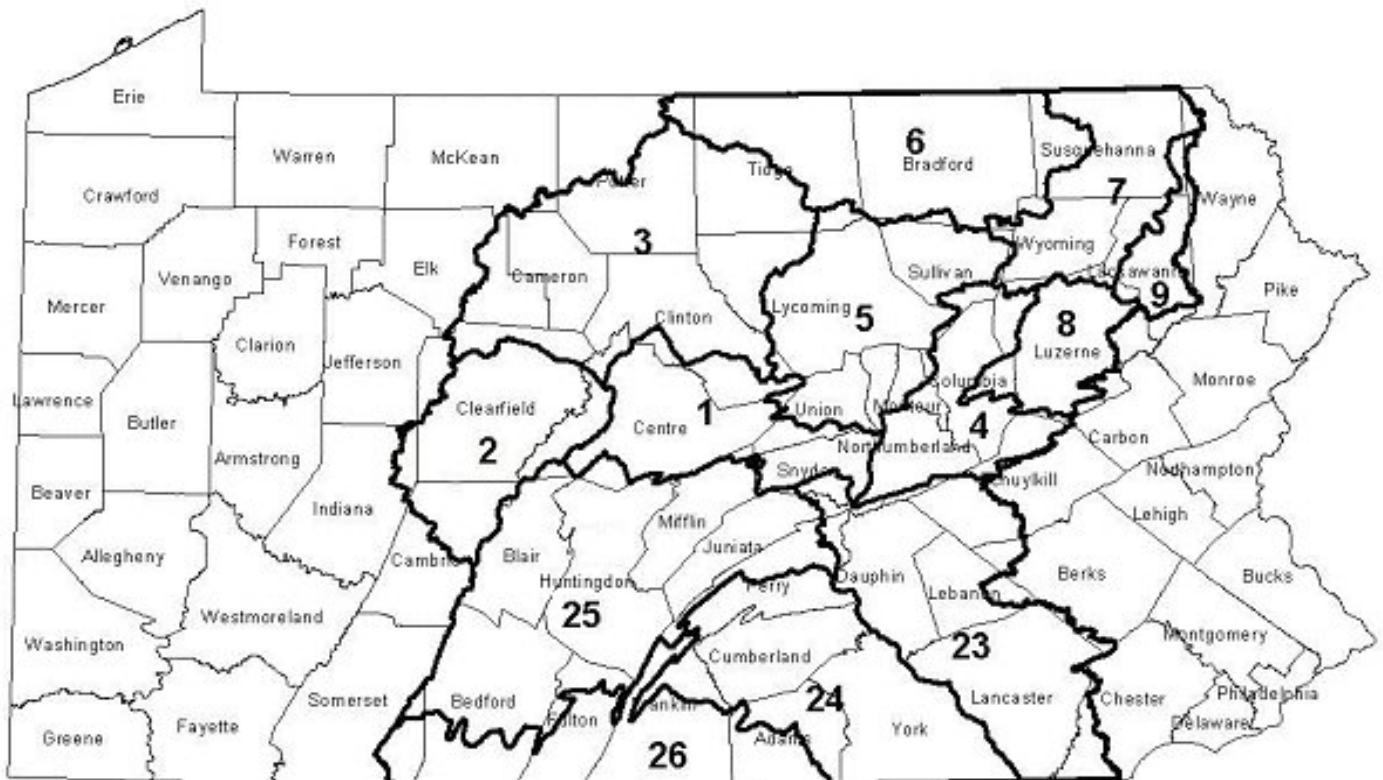
4,000 acres of wetlands from the year 2000 to 2010.

The Chesapeake Bay Program partners agreed to new riparian forest buffer goals in 2003. This goal will reflect the amount of riparian forest buffer miles included in the Tributary Strategy to help reach the nutrient and sediment reduction goals. The Draft Strategy includes 10,000 miles of riparian forest buffers. New goals for fish passage and stream corridor restoration will be negotiated in 2004.

How can I get additional information?

For information regarding Pennsylvania's Tributary Strategies and other Chesapeake Bay restoration initiatives visit the DEP website at www.dep.state.pa.us (Subjects: Chesapeake Bay), or the EPA Chesapeake Bay Program website at www.chesapeakebay.net/.

Watershed Teams in the Chesapeake Bay Watershed



**Table 1. Pennsylvania Chesapeake Bay Tributary Strategy
Non-Point Source Load Allocations by Watershed Team
(Nitrogen and Phosphorus in millions of pounds per year, Sediment in million of tons per year)**

#	Watershed Team	Nitrogen				Phosphorus				Sediment			
		1985 Load	2002 Progress	2010 Goal	Needed Reduction	1995 Load	2002 Progress	Goal	Needed Reduction	1985 Load	2002 Progress	2010 Goal	Needed Reduction
1	Central Penn	6.34	5.96	4.04	1.92	0.139	0.141	0.096	0.045	0.0514	0.0444	0.039	0.0054
2	Upper West Branch	4.14	4.21	3.41	0.80	0.093	0.079	0.069	0.011	0.0253	0.0230	0.022	0.0010
3	Susquehannock	8.10	8.37	7.08	1.29	0.137	0.127	0.105	0.022	0.0565	0.0507	0.049	0.0017
4	Lower North Branch Susquehanna	6.07	5.31	3.66	1.65	0.145	0.131	0.120	0.011	0.0537	0.0402	0.037	0.0032
5	Big Bend	8.57	7.84	5.40	2.44	0.180	0.171	0.137	0.034	0.0884	0.0750	0.067	0.0080
6	Bradford/Tioga	7.52	6.39	4.42	1.97	0.291	0.239	0.170	0.069	0.0574	0.0474	0.044	0.0034
7	Upper Susquehanna	4.44	3.96	2.93	1.03	0.145	0.117	0.092	0.025	0.0295	0.0258	0.024	0.0018
8	Wyoming Valley	2.92	2.67	1.89	0.78	0.066	0.057	0.056	0.001	0.0214	0.0171	0.016	0.0011
9	Lackawanna	1.44	1.21	0.90	0.31	0.041	0.029	0.023	0.006	0.0081	0.0070	0.0066	0.0004
23	Lower Susquehanna East	23.58	19.26	11.49	7.77	0.791	0.711	0.487	0.224	0.283	0.278	0.245	0.033
24	Lower Susquehanna West	16.24	13.19	7.99	5.20	0.374	0.374	0.265	0.109	0.162	0.159	0.140	0.019
25	Juniata	12.75	12.29	8.50	3.79	0.343	0.354	0.249	0.105	0.136	0.117	0.109	0.008
26	Potomac	6.59	6.05	3.97	2.08	0.395	0.421	0.288	0.133	0.272	0.227	0.196	0.031
	TOTAL	108.7	96.71	65.68	31.03	3.14	2.951	2.157	0.795	1.2447	1.1114	0.995	0.116

**Table 2. Pennsylvania Chesapeake Bay Tributary Strategy
Estimated Point Source Load Allocations by Basin (In Millions of Pounds)**

Basin	Nitrogen			Phosphorus		
	2002 Progress	2010 Goal	Needed Reduction	2002 Progress	2010 Goal	Needed Reduction
Susquehanna	12.286	6.101	6.185	0.600	0.399	0.201
Potomac	0.201	0.110	0.091	0.030	0.020	0.01
TOTAL	12.487	6.211	6.276	0.630	0.419	0.211

**Table 3. Pennsylvania Chesapeake Bay Tributary Strategy
Estimated Point Source Load Information by Watershed Team (In Millions of Pounds)**

#	Watershed Planning Team	Nitrogen	Phosphorus
		2002 Load	2002 Load
1	Central Penn	0.889	0.0158
2	Upper West Branch	0.126	0.0058
3	Susquehannock	0.096	0.0069
4	Lower North Branch Susquehanna	0.450	0.0392
5	Big Bend	0.940	0.0489
6	Bradford/Tioga	0.495	0.0169
7	Upper Susquehanna	0.106	0.0080
8	Wyoming Valley	1.201	0.1159
9	Lackawanna	1.132	0.0727
23	Lower Susquehanna East	3.523	0.1147
24	Lower Susquehanna West	2.281	0.0511
25	Juniata	0.961	0.0843
26	Potomac	0.287	0.0498
	TOTAL	12.487	0.63

**Table 4. Pennsylvania Chesapeake Bay Tributary Strategy
Habitat Restoration Goal Allocations by Watershed Team
(Goals for Fish Passage and Stream Corridor Restoration to be developed)**

#	Watershed Team	Wetland Restoration Goal for 2000 - 2010 (acres)	Watershed Management Plan (WMP) Goal (acres)	Wetland Preservation Plan Goal (acres)	Riparian Forest Buffer Goal*
1	Central Penn	248	599,929	224,973	500
2	Upper West Branch	269	596,511	223,692	500
3	Susquehannock	601	1,278,327	479,373	800
4	Lower North Branch Susquehanna	178	448,789	168,296	500
5	Big Bend	332	779,840	292,440	700
6	Bradford/Tioga	382	878,925	329,597	700
7	Upper Susquehanna	233	525,116	196,919	500
8	Wyoming Valley	121	287,302	107,738	500
9	Lackawanna	66	152,888	57,333	500
23	Lower Susquehanna East	344	1,053,250	394,969	1200
24	Lower Susquehanna West	328	942,362	353,386	1200
25	Juniata	624	1,434,352	537,882	1400
26	Potomac	274	670,091	251,284	1000
	TOTAL	4000	9,647,682	3,617,882	10,000