CHESAPEAKE BAY FOUNDATION
Saving a National Treasure

PENNSYLVANIA FACT SHEET

November 2013

Chesapeake Bay Water Quality: A Primer on Pollutants of Concern

Decades of investments have led to large-scale successes by Pennsylvania in the Chesapeake Bay cleanup effort. We are well on our way to a clean and healthy Bay that acts as a driver for economic activity throughout the 64,000 square mile watershed. These investments are gaining momentum and to distract ourselves now will have numerous impacts to Pennsylvanian's rivers and streams, as well as the Chesapeake Bay. [1,2,3]

Pennsylvania and the Chesapeake Bay

Nearly half of Pennsylvania drains to the Chesapeake Bay. Two major drainage areas comprise Pennsylvania's portion of the Bay—the Potomac and Susquehanna River basins—with nearly 50 percent of all the freshwater entering the Bay coming from the Susquehanna River. [4]

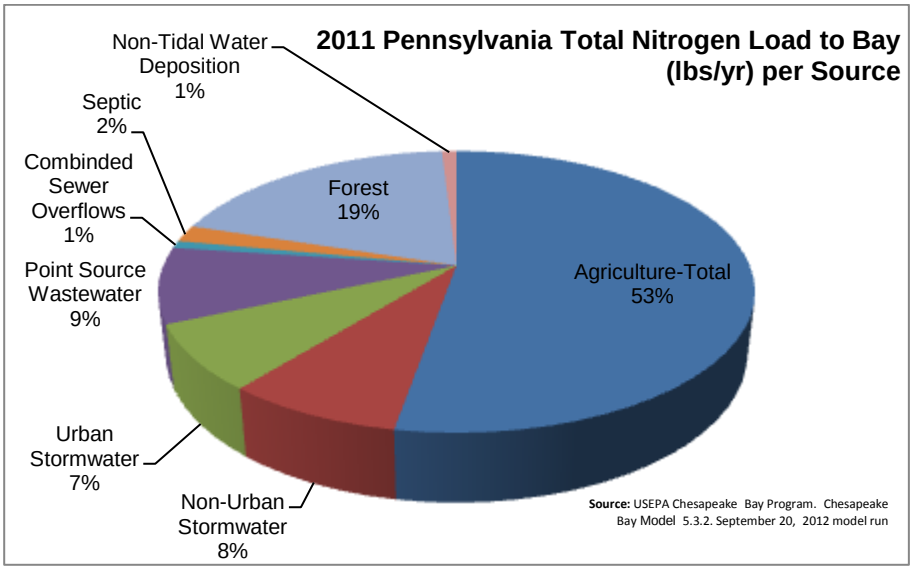
What is Polluting the Bay?

There are **three major contributors** to the poor health of our streams, rivers, and the Chesapeake Bay—**nitrogen, phosphorus, and sediment.**

High levels of nitrogen and phosphorus fuel unnaturally high levels of algae growth in the water, blocking sunlight from reaching underwater grasses that serve as food and habitat. When the algae die they are decomposed by bacteria that consume the oxygen in the water.

Too much sediment—tiny particles of dirt, sand, and clay floating in the water—turns the water cloudy, also blocking sunlight from reaching aquatic grasses. Oysters, other bottom-dwelling species, and aquatic grasses can be smothered when that sediment finally settles to the bottom.

Excessive amounts of nitrogen and phosphorous come from fertilizers, wastewater, septic tank discharges, air pollution, and runoff from farms, cities, and suburbs. Excessive amounts of sediment are carried into our waterways from erosion and from construction sites, un-vegetated land, roadside ditches, and even flooded streambanks.



Nitrogen Pollution

The four major source sectors for nitrogen pollution that Pennsylvania sends to the Chesapeake Bay are as follows: agriculture, forests, point source dischargers, and urban and non-urban stormwater runoff.

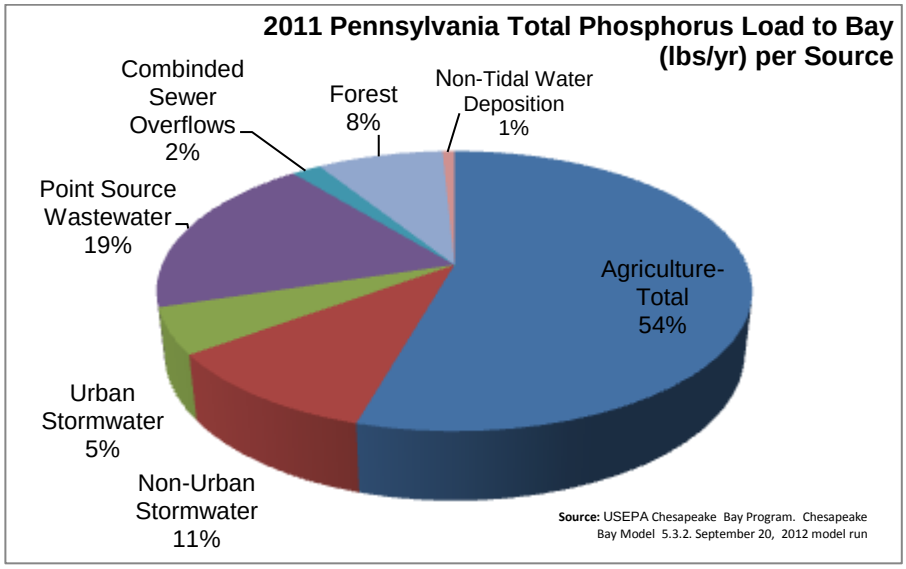
Traditional thinking is that the impacts of excessive nitrogen primarily affect salty waters like the Chesapeake Bay, not freshwater rivers and streams like those in Pennsylvania. However, under some circumstances, there is evidence that freshwater systems would benefit by controls on both nitrogen and phosphorus. [5,6,7,8]

It's important to note that according to the USEPA the majority of nitrogen from forests is from man-made activities. Nitrogen from forests is largely from atmospheric deposition onto forested areas from as far away as the Midwest.

Primary sources of this are coal power generating plants and motor vehicle exhaust.[9] The nitrogen pollution coming from forests is exacerbated by the number of streams affected by acid mine drainage in mostly forested northern parts of Pennsylvania. These streams are essentially devoid of life, so they cannot process pollution like other streams. As a result, the forest load appears high when, in fact, past and ongoing studies indicate it may be unnaturally high.[10, 11]

Phosphorus Pollution

There are four primary sources of phosphorus pollution to the Chesapeake Bay from Pennsylvania's rivers and streams. They are agriculture, point source dischargers, and urban and non-urban stormwater runoff.



Because phosphorus is not nearly as soluble in water as nitrogen, the sources of it in our rivers and streams, as well as at the ways to control it, are slightly different.

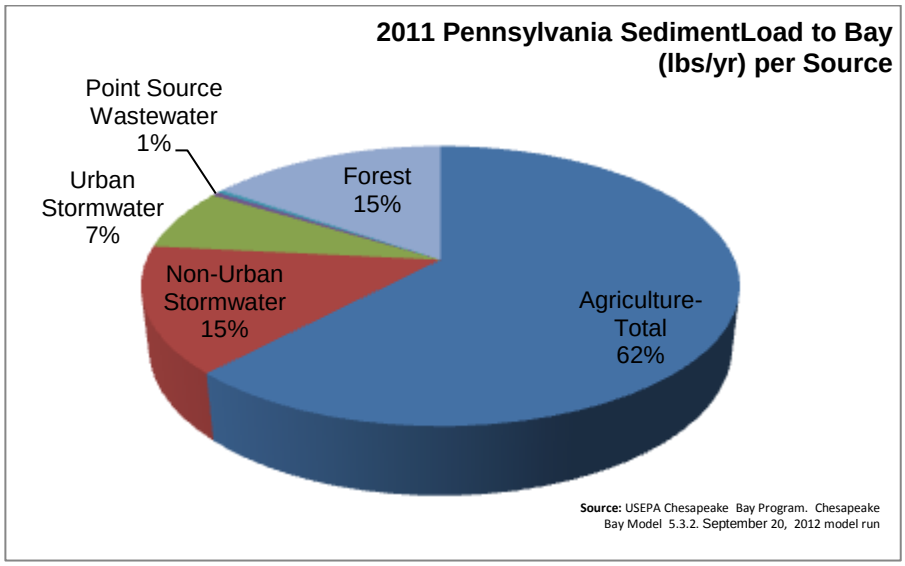
Another important distinction from nitrogen is that **phosphorus is the pollutant that largely affects freshwater rivers and streams, like those found in Pennsylvania**.[5,6,7,12]

Sediment Pollution

Sediment is a term used to describe sand, silt and clay particles that can be transported with runoff. It is largely influenced by how much, when, and where it rains. Sediment is naturally found in healthy streams, but like nutrients, excessive amounts can result in poor water quality.

When large amounts of sediment enter the Chesapeake Bay and its tributaries, the water becomes turbid, or cloudy, and sunlight is unable to reach subaquatic vegetation, reducing oxygen availability, and impacting the habitat of fish and shellfish.

The three major sources are as follows: agricultural runoff, runoff from impervious surfaces and un-vegetated land in developed areas, and forests.



Pennsylvania's Role in the Bay Cleanup

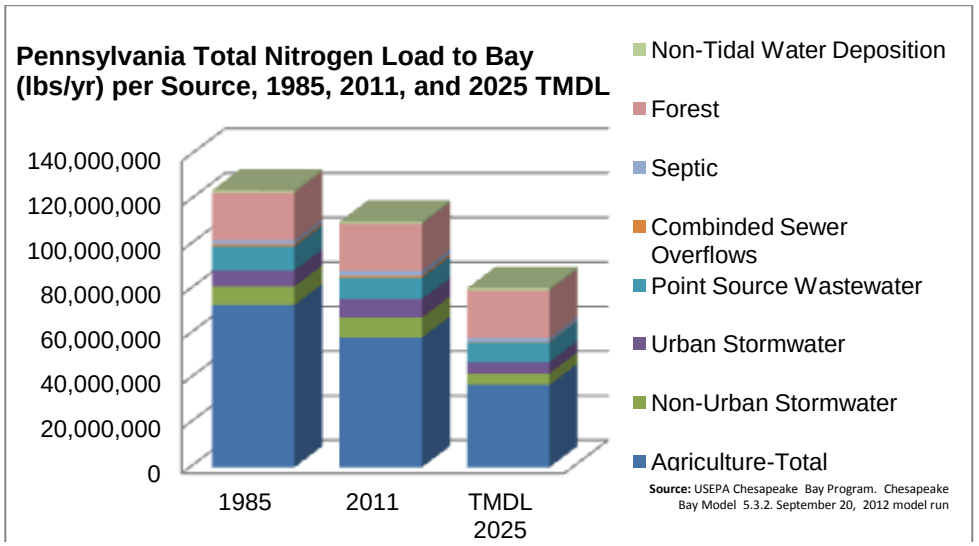
Since the mid-1980s, Pennsylvania's efforts to improve the Chesapeake Bay have rightly focused on improving the health and condition of our streams.

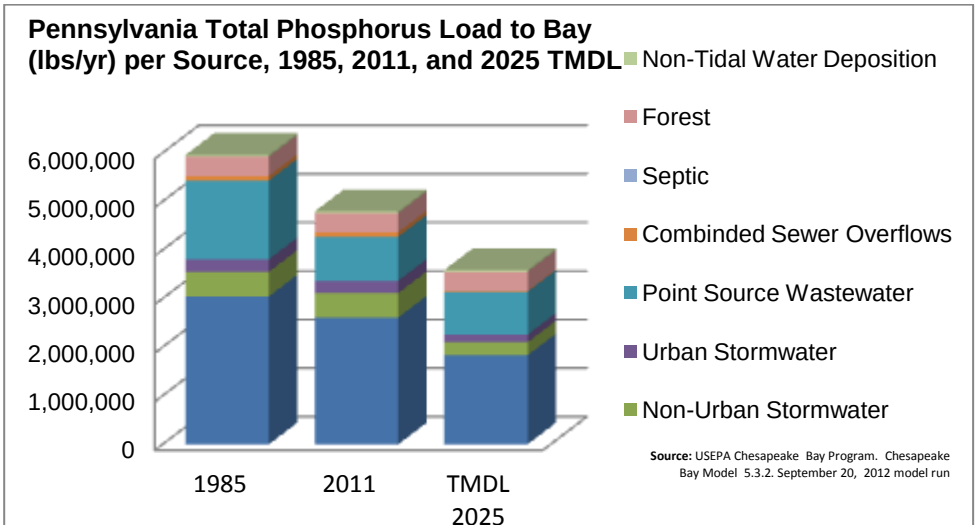
According to USEPA, Pennsylvania has made noteable strides in reducing pollution entering the Chesapeake Bay. The majority of that improvement comes from Pennsylvania farmers who have invested in on-farm **"conservation that counts"** such as conservation tillage, streamside forest installation, improved barnyard management, and a number of other important on-farm practices.

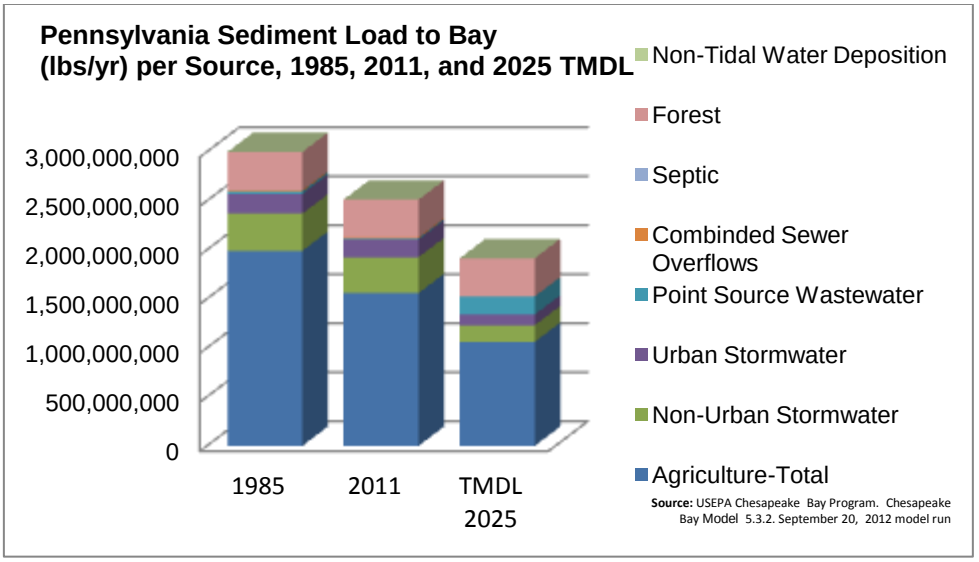
In fact, Pennsylvania farmers are credited for reducing nitrogen loads to the Bay by over **14.5 million pounds** since 1985. Farmers have also reduced phosphorus loads by over **434,000 pounds**, and sediment by **431.3 billion pounds**.[13] Other sectors have made reductions as well.

As the adjacent graphs indicate, although Pennsylvania has made significant progress in reducing pollution to the Bay and in our rivers and streams, more work is necessary.

Thankfully, we have a roadmap to success. And that roadmap, collectively called the **Chesapeake Bay Clean Water Blueprint**, is predicated on the types of investments that are proven to work and results in a number of co-benefits economically and environmentally. They are truly **"conservation that counts."**







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Founded in 1967, the Chesapeake Bay Foundation is a nonprofit 501(c)(3) conservation organization dedicated to saving a national treasure—the Chesapeake Bay and its rivers and streams. Its motto, Save the Bay, defines the organization's mission and commitment. With headquarters in Annapolis, MD, offices in Maryland, Virginia, Pennsylvania, and the District of Columbia, and 17 field centers, CBF works throughout the Chesapeake Bay's 64,000-square-mile watershed to build an informed citizenry, advocate pollution-reduction strategy, and enforce the law. CBF is supported by more than 200,000 active members and has a staff of 170 full-time employees. Approximately 80 percent of CBF's $23.6 million annual budget is privately raised.