west virginia department of environmental protection

Nutrient Credit Trading in West Virginia's Potomac River Watershed

Protecting and Restoring Our Potomac River and Chesapeake Bay Watershed While Providing for Economic Development

The West Virginia Potomac Nutrient Trading Program was initiated to help the state more cost-effectively comply with new nutrient reduction requirements while providing for economic development and other environmental benefits. It is a legal, fair and effective ***voluntary*** tool for advancing water quality improvement and regulatory compliance. A market-based approach, it allows emitters with high pollution reduction costs to purchase credits from sources with lower reduction costs.

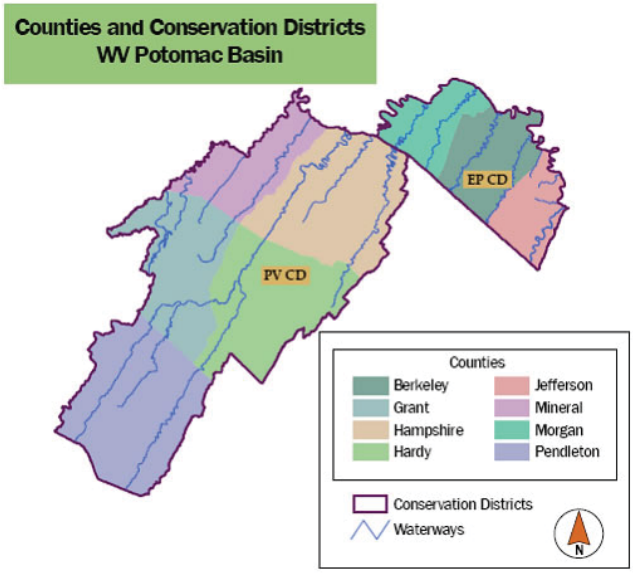
Background

Excess nutrients entering the Potomac River are creating significant downstream water quality problems. Under the Clean Water Act (CWA), West Virginia is required to address the downstream problems in the Potomac River Watershed – a tributary of the Chesapeake Bay. West Virginia has committed to reducing the amount of phosphorus entering the Potomac River by 33% and nitrogen by 35%. Programs such as nutrient trading are being implemented to help meet the nutrient reduction requirements that EPA will impose by December, 2010.

Water Quality Trading

Water Quality Trading is an innovative approach to efficiently achieve water quality goals. Trading is based on the fact that various nutrient sources in a watershed can face very different costs to control the same pollutant.

Trading programs allow facilities facing high pollution control costs to meet their regulatory obligations by purchasing environmentally equivalent (or superior) pollution reductions from other sources with lower pollution reduction costs, thus achieving water quality improvement at a lower overall cost.



Map showing West Virginia Counties in the Potomac Watershed and indicating the Potomac Valley and Eastern Pandle Conservation Districts.

Why Become Part of the Nutrient Trading Program? -- Because it Makes Economic Cents! --

Water quality trading incentivizes farmers and landowners to generate nutrient reduction credits by implementing conservation practices on their lands. These credits, based on the reduction achieved, can then be sold to facilities like wastewater treatment plants.

Water quality trading is not a governmentally mandated program or regulatory requirement. It is a market-based tool that enables some industrial and municipal facilities to meet regulatory requirements more cost-effectively. Through trading, producers and other landowners receive monetary incentives to implement conservation practices.

By a combination of agronomic management options and/or Best Management Practices (BMPs), farmers can reduce the amount of nutrients that runoff to local streams. The pounds of nitrogen and phosphorous runoff that are reduced can then be sold as credits to those wastewater treatment plants needing additional nutrient reductions to meet regulatory requirements or offset their increased load. By selling these credits, nutrient trading can be a source of additional revenue for farmers.

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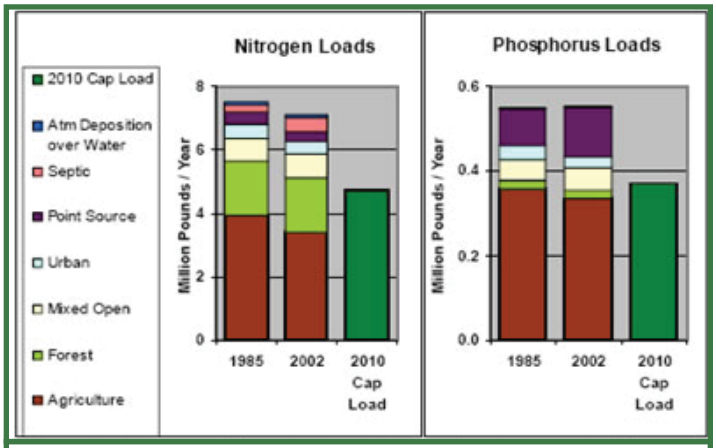
Where do excess nutrients come from?

Virtually all people in the Potomac watershed contribute nutrients to the Potomac River which end up in the Chesapeake Bay. Excess nutrients reach these waterways from three major sources:
1.) specific, identifiable entry pipes, called "point sources," principly waste water treatment plants.
2.) runoff from urban, suburban and rural land, called "non-point sources," which include fertilizers, septic systems, and farm animal manure.
3.) air pollution. from vehicles, industries etc.



This chart compares deliverd loads of nitrogen and phosphorus in 1985 and 2002 for each of the seven major land use categories in West Virginia's Potomac River watershed. The 2010 Cap Load Allocation is included for comparison purposes. Source: CBP, Sweeney, 2002 model run

How are excess nutrients a stressor on our Potomac River and the Chesapeake Bay?

Excess nutrients fuel the growth of dense algae blooms that block sunlight and rob the water of dissolved oxygen which aquatic species need to survive. The current levels of nutrients and sediment entering the River and Bay ecosystem are causing millions of dollars of damage and lost revenue annually.

Simplified example of a trade.

A waste water treatment plant (wwtp) is required to reduce its phosphorus (P) discharge at a unit cost of $10/lb. whereas a farmer can remove the same unit of P for $3/lb. In a trading scenario between these two sources, the wwtp could contract with the farmer to remove the unit of P for a payment of $5 thereby saving the ratepayers $5.

How the Program Works

A methodology has been developed for calculating potential nutrient reduction credits resulting from various agricultural practices applied in West Virginia. These calculations have been integrated into West Virginia's online water quality trading platform called NutrientNet.

NutrientNet uses six steps to calculate Nitrogen and Phosphorus Credits involving Ratios, Factors and Baselines. This Credit Calculation program helps suppliers and buyers of nutrient credits define the product more clearly. It ensures that real and verifiable pollution load reductions are established.

Step 1: The user enters site specific information about their farm. This includes crop type, amount and type of manure applied and application method as well as current conservation practices.
Step 2: NutrientNet automatically generates a "Nutrient Balance" on the field based on the information entered about the farm. It subtracts nutrient uptakes by the crops from the nutrient inputs to the cropping system and adjusts for current BMPs.
Step 3: The user then selects the BMPs or management practices that are to be implemented on the farm and NutrientNet calculates the resulting nutrient reductions.
Step 4: The Edge of Segment (EOS) Factor then adjusts for the amount of nutrients which travel from the field to the stream.
Step 5: The EOS nutrient reductions calculated in Step 4 are then adjusted for the nutrient load that reaches the Chesapeake Bay.
Step 6: Risk Reserve and Uncertainty Ratios are applied to account for uncertainty in BMP efficiencies and risk of BMP failure.

How Can I Get More Information?

Guidance Documents can be accessed at;
http://wvwri.nrcce.wvu.edu/programs/pwqb/index.cfm

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