The Chesapeake Bay at Risk:
The Case for Restoring Clean Water Act Protections

Across the country, thousands of miles of small streams and millions of acres of wetlands are losing Clean Water Act protections in the wake of two recent Supreme Court decisions in 2001 and 2006 and subsequent federal agency directives. Without Congressional or Administrative intervention to restore Clean Water Act protections for waters that were protected prior to 2001, these waters will continue to be polluted and destroyed.

Introducing the Chesapeake Bay

The Chesapeake Bay, a national treasure with an estimated economic value of over one trillion dollars, is the largest estuary in the U.S. The Bay watershed covers approximately 64,000 square miles across six states and the District of Columbia. **In the watershed 111,000 miles of creeks, streams, and rivers feed into the Bay's nine major tributaries; 1.7 million acres of wetlands support clean water and abundant wildlife.** Approximately 17 million people live in the Bay watershed and millions more use it for recreation, tourism, and environmental education. The Bay is home to 3,600 fish, animal, and plant species including iconic, commercially valuable species like the Blue Crab and Eastern Oyster.

The Chesapeake Bay is on the verge of ecological collapse, **threatened primarily by excessive nitrogen, phosphorus, and sediment pollution.** The pollution stresses on the Bay are compounded by its uniquely shallow depth, very large watershed surface area to volume ratio, and narrow outlet to the Atlantic Ocean. These physical factors add additional complexity to protection and restoration efforts.

For example, the large watershed surface area-to-volume ratio means a large quantity of runoff overwhelms a relatively small waterbody. The shallow depth allows sunlight to hit a vast amount of the Bay's water. The heat from the sun, combined with nitrogen and phosphorous runoff pollution and sewage discharges, provide ideal conditions for algal blooms. As the algae die, "dead zones" can develop as the bacteria that consume the decaying organic matter deplete the Bay's available oxygen, leaving less available for the Bay's wildlife. **In the summer of 2009, over 10% of the Bay's water volume had low enough oxygen levels to be declared a "dead zone."**

One hundred and eleven thousand miles of creeks, rivers, and streams feed into the Chesapeake Bay's nine major tributaries.

According to the Chesapeake Bay Program, water quality was "very poor" in 2009. The Bay only met 24% of health goals, falling short on goals for key indicators including dissolved oxygen, mid-channel clarity, chlorophyll *a* (an indication of algae presence), and chemical contaminants. Fish and shellfish populations in the Bay remain far below historic levels. **Urgent action is needed to save the Chesapeake Bay.**

The Clean Water Act Rollback Explained

The Clean Water Act was passed to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Though the Act refers to "navigable waters," it defines this term more broadly as "waters of the United States." From the Act's goal (above) it's clear that Congress meant to protect all of the Nation's waters. The Act broadly protects waters from pollutant dumping without a permit (including the discharge of dredged and fill material).

The Act's effectiveness is severely jeopardized due to the Supreme Court decisions in *Solid Waste Agency of Northern Cook County (SWANCC) v. U.S. Army Corps of Engineers* in 2001 and *Rapanos v. United States* in 2006, both of which cast doubt over the scope of waters protected by the Act. These decisions, coupled with the agencies' subsequent issuance of guidance, effectively removed regulatory oversight and protection of 20 million acres of geographically isolated wetlands in the lower 48 states.

Additionally, countless miles of streams and adjacent wetlands have been placed at risk. EPA estimates that approximately 60% of the nation's stream miles are at risk of losing Clean Water Act protections because they only flow intermittently or ephemerally. Approximately 1 in 3 Americans receive drinking water from sources that are fed by these at-risk streams.

To protect waters where jurisdiction is questionable, the agencies implementing the Clean Water Act must demonstrate a "significant nexus" between the water in question and a downstream navigable water—a resource-intensive process.

Absent Congressional or Administrative action to restore Clean Water Act protections for these waters, we risk long-lasting damage to our natural environment and health.

The Chesapeake Bay Watershed at Risk

The Bay's immense watershed – which gives it the largest coastal waterbody land-to-water ratio in the world – has seen extraordinary population growth over the years and now houses about 17 million people. **Resulting agricultural, urban, and industrial activities have polluted and impaired the Bay and its watershed, placing much of its wildlife at risk**, endangering public health, and drastically diminishing the once astounding commercial shellfisheries and fisheries that define this region. **Much of the pollution imperiling the Bay comes from activities occurring miles from the Bay itself, along the tens of thousands of streams, creeks, rivers and accompanying wetlands that converge to form and replenish this mighty resource.**

Climate change adds a new sense of urgency to clean up and restoration efforts. Sea level rise, increased storm intensity, changes in weather patterns, and warmer temperatures are among a plethora of changes to the water cycle that make it imperative that the Bay be restored. Reviving the Bay's natural functions provides pollution controls, flood buffers and waters storage, and quality habitat that will allow the ecosystem to withstand additional stressors.

Addressing these threats to the Bay requires marshalling the natural functions of all of the headwaters, creeks, and wetlands in the Chesapeake Bay watershed. But the *SWANCC* and *Rapanos* Supreme Court decisions and subsequent agency guidance have made it much more difficult for federal and state officials to protect the watershed's remaining non-navigable tributaries and wetlands, despite the essential functions they serve. **To protect and restore the Chesapeake Bay, Congress must restore the pre-*SWANCC* scope of the Clean Water Act, which means protecting the following:**

Non-navigable tributaries

Non-navigable tributaries, including headwater streams, are ill-suited for navigation (Clean Water Act sidebar, page 1), but they comprise the majority of streams and waters in a watershed and improve water quality by filtering runoff, sediments, nutrients, and contaminants before they move further downstream, making them the most important component of a watershed.

Headwater streams, along with wetlands and swales, form a branch-like system that feed a watershed's larger waterbodies. **The EPA has estimated that first-order headwater streams (uppermost channels with no tributaries) alone comprise over 50% of the over 200,000 miles of streams in EPA Region III, which encompasses most of the Chesapeake Bay watershed** (see watershed map, pg. 1). These small headwater and intermittently flowing streams in the watershed feed public drinking water supplies relied upon by 17 million Bay-area residents.

Headwater streams often flow only during certain seasons and frequently flow below ground. Many EPA Region III first-order streams do not flow during the summer months or dry years.

Headwater streams in the limestone regions of the Bay watershed flow underground for some length before they reemerge as surface streams some distance downstream. These types of streams have a definite hydrological connection to downstream traditionally navigable rivers, though the connection is hidden when observing surface water flows exclusively.

Many Bay watershed headwater streams, as well as higher order non-navigable tributaries, have been channelized over time and incorporated into ditch and stormwater systems that connect non-navigable streams and adjacent wetlands to downstream waters, continuing to conduct pollutants downstream into the Bay. These ditches were and should continue to be subject to the Clean Water Act.

Sweet Run on the Blue Ridge, Center for Environmental Stewardship, Virginia, USFWS

Ecosystem Services Provided by Headwaters and Wetlands

Although often unnoticed, headwaters and wetlands:

Reduce flooding—A single acre of wetland can store 1 to 1.5 million gallons of flood water, and just a 1% loss of a watershed's wetlands can increase total flood volume by almost 7%.

Recharge groundwater, replenish downstream flow—Small upstream headwaters have a large ratio of soil surface area in contact with water, making them ideal for groundwater recharge.

Remove nutrients—In one study, nutrients traveled less than 65 feet in a small headwater stream before being removed from the water. As opposed to larger rivers, small, shallow streams have a large amount of water in contact with the streambed, allowing nutrient particles to be removed more quickly than in larger bodies of water. According to one report, headwater streams remove half of all nitrate in a river basin.

House wildlife of all shapes and sizes, which supports biological diversity—Headwaters are used for spawning sites, nursery areas, feeding areas, and travel corridors. One report documented that small headwater streams, many of which do not appear on maps, support nearly 300 taxa (some of which are endemic to these headwaters).

Wetlands

Wetlands are the amazingly productive and diverse waters that stand between upland and open water. Economists have estimated that one acre of wetlands provides about $10,500 worth of ecosystem services which include: filtering and recharging drinking water, preventing flooding, protecting our coasts from hurricanes and storms, providing habitat for diverse wildlife populations, and removing nutrients. The Chesapeake Bay's headwater wetlands and streams are essential in combating this nutrient enrichment because they absorb, filter, and recycle this pollution, preventing eutrophication. **Studies have shown that non-tidal wetlands near the Chesapeake Bay removed an estimated 89% of the nitrogen pollution and 80% of the phosphorous pollution that entered the wetlands through upland runoff, groundwater, and bulk precipitation.**

Approximately 1.7 million wetland acres remain in the Chesapeake Bay watershed. Almost 90% of these remaining wetlands are non-tidal freshwater wetlands including freshwater marshes, wet meadows, forested swamps, and bogs. Forested palustrine wetlands comprise the bulk of these freshwater wetlands. These are the freshwater wetlands most likely to be considered "adjacent" for Clean Water Act purposes because they are located next to but not within the banks of freshwater lakes, streams, or rivers—making it easier to prove a "significant nexus" between these wetlands and traditionally navigable waters. Some might also be considered "isolated," though most of these are connected to surface waters through subsurface connections. Over 36,000 acres of these watershed wetlands were destroyed between 1982 and 1989 alone.

EPA Region III has estimated that roughly 36% of the Region's remaining wetlands are headwater wetlands. Within this 36%, 12% are headwater wetlands that lack a perennial or intermittent surface water connection to traditionally navigable waters. Because these wetlands lack clear and permanent surface water connections to navigable waters, they are at risk of pollution and destruction following the *SWANCC* and *Rapanos* decisions.

EPA's field studies of the Delmarva Peninsula show that many wetlands designated as "isolated" are likely to have subsurface connections to streams. These studies also found that the interrelationships between wetlands with linkages by non-perennial surface and/or subsurface flows and their surroundings require on-site inspections because these complex linkages are not displayed on widely used mapping and planning tools. Consequently, identifying these intricate connections with precision in each case for regulatory purposes is often very time and resource intensive.

The time and expense required to prove these complex linkages between wetlands and traditionally navigable waters, and the legal uncertainty regarding how these jurisdictional determinations will hold up in court, is undermining Clean Water Act enforcement. Clean Water Act protections must be restored to these valuable waters.

Wetlands like these are an integral part of the Bay watershed; they provide wildlife habitat, store flood waters, remove nutrients that would otherwise run into the larger waterbody, and recharge groundwater.

Given wetlands' important role in ecosystem health, the Chesapeake Bay Program aimed to restore 25,000 wetland acres by 2010. As of 2008, local partners had restored 13,000 acres.


USFWS

Wildlife at Risk

Blue Crabs are the most valuable commercial Bay fishery, supplying over one-third of the United States' harvest. While recent catch limits have helped the Blue Crab, a loss of grass beds and low dissolved oxygen levels chronically stress the population.


Tatooed JJ, flickr

Over 16 different species of **submerged aquatic vegetation (SAV)** provide food and shelter to blue crabs, waterfowl, and other aquatic life. These plants also improve water quality by producing oxygen, trapping sediment, and preventing erosion. Over time, runoff has taken a heavy toll on the SAV population. The 2009 population was far short — by over 50% — of the goal set by the Bay Program for SAV restoration. SAV populations are threatened by the increase in algal blooms, which block life-sustaining sunlight.

Bay **Oysters** are a tremendous source of both income and food. Through natural filtration, they also improve water quality. Unfortunately, oyster populations have been dropping quickly due to overharvesting and pollution. Estimates put the Bay's current oyster population at only 2% of its historic peak. Harvest limits and restoration efforts have slowed the decline, but without stronger protections for the Bay, oysters will continue to suffer because of low oxygen levels and polluted runoff.

The Chesapeake Bay is home to about 350 different species of fish including **menhaden, striped bass, shad,** and **rockfish**. Populations of these fish have been drastically affected by overfishing, dam construction, decreased water quality and disease. Shad populations in some of the Bay's major tributaries continue to decline despite efforts to restore populations.

Bay **waterfowl** populations have dropped to one million due to wetlands destruction, dramatic declines in SAV, and decreasing water quality. SAV loss has forced some migrating bird species to winter elsewhere or to find alternative food sources.

Lost Protections: Threatening Decades of Work to Restore the Bay

In the 1983 Chesapeake Bay Agreement, Maryland, Pennsylvania, Virginia, the District of Columbia, and the United States Environmental Protection Agency agreed to work together to solve the threats facing the Bay. Delaware, New York, and West Virginia joined in 2000.

Despite the formation of this State-Federal Partnership, the Bay watershed states failed to make significant progress restoring the Bay. In May 2009, President Obama issued an Executive Order calling on the Bay watershed states and EPA to renew their commitment to save the Bay. In response, EPA is taking the lead on developing a Clean Water Act-mandated Chesapeake Bay restoration strategy, which includes an initiative aimed at reducing nutrient pollution in the Bay through developing Total Maximum Daily Loads (the total amount of a pollutant that a waterbody can sustain daily and still meet water quality goals; it can also be thought of as a water pollution budget).

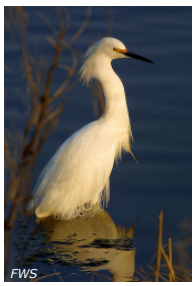
These revived efforts will yield little results while Clean Water Act jurisdiction is restricted to only the largest Bay tributaries and their adjacent wetlands, and Clean Water Act enforcement is hamstrung by confusion and delay. To be successful, the TMDL must reduce pollution from all sources within the watershed. However, the Clean Water Act can only require these reductions in the waters protected by the Act. **EPA's own data indicates that well over 50% of stream miles in each of the six Bay basin states, as well as their associated wetlands, are at risk of not being protected due to the current legal confusion.**

Oyster floats growing oysters in Taskinas Creek, Chesapeake Bay Virginia National Estuarine Research Reserve, as part of the Aquaculture Education Project.

This legal confusion complicates restoration efforts:

- Federal regulators are challenged to enforce the necessary pollution reductions from polluting facilities located on at-risk waters, absent clarification that these vulnerable waters are subject to the Act.
- Wetlands and headwaters are now subject to destruction, and without the natural pollution reduction provided by these waters, permitted facilities located downstream will find it difficult to cut their pollution levels enough to meet TMDL requirements.

In other words, **the rollback in Clean Water Act protections makes it nearly impossible for the Partnership to meet the revised water quality standards and waste allocations necessary to achieve their water quality restoration goals for the Bay.** Limited jurisdiction undermines the ecological and economic health of the Bay and contrasts dramatically with the goal of the 1972 CWA– "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."



What's next?

Congress has repeatedly considered legislation to restore the historic scope of the Clean Water Act, but has never crossed the finish line. **The Environmental Protection Agency should conduct a rulemaking to affirm and clarify its definition of "Waters of the United States" in light of the Supreme Court decisions.** While this is far short of an ideal remedy, it would restore Clean Water Act protections for many waters that are currently vulnerable to pollution and destruction.

For more information contact:

Jan Goldman-Carter • *Wetlands and Water Resources Counsel* • goldmancarterj@nwf.org • 202-797-6894
www.nwf.org/waters