

NPDES Permitting: A Key to Restoring Chesapeake Bay

by Evelyn MacKnight, Robert Koroncai, Richard Batiuk, Brian Trulear and Ning Zhou

The waters of America's largest estuary – the Chesapeake Bay – continue to struggle under the weight of nutrients emanating from throughout the Bay's vast 64,000-mile-watershed.

The excess nutrients have a debilitating effect on habitat, water quality and living resources, creating algal blooms that block sunlight from reaching underwater bay grasses and lead to low oxygen levels in parts of the Bay.

The mandate of the federal Clean Water Act is clear – that a point source facility (including wastewater treatment systems) cannot cause or contribute to violations of water quality standards. With respect to the Chesapeake Bay, downstream water quality standards for several parameters (most notably dissolved oxygen) are being violated, and nutrients have been identified as a major culprit.

The US Environmental Protection Agency (EPA) conducted

complex modeling of the specific effect of nutrient loadings to the Bay from point source discharges. Based on the model, EPA and the affected states developed "tributary strategies" to assign waste load allocations - expressed as annual loads for the point source dischargers – to help achieve the Bay's water quality standards.

In accordance with the Clean Water Act and the goals of the *Chesapeake 2000* Bay restoration agreement, a permitting approach was developed in 2004 for the issuance of National Pollutant Discharge Elimination System (NPDES) permits for significant point source discharges of nutrients to the Chesapeake Bay watershed. A total of 483 significant municipal and industrial wastewater treatment facilities were identified, including 28 in the Southern Tier of New York State. All six states and the District of Columbia in the watershed agreed to move forward in placing numeric caps on nitrogen and phosphorus loads from these facilities.

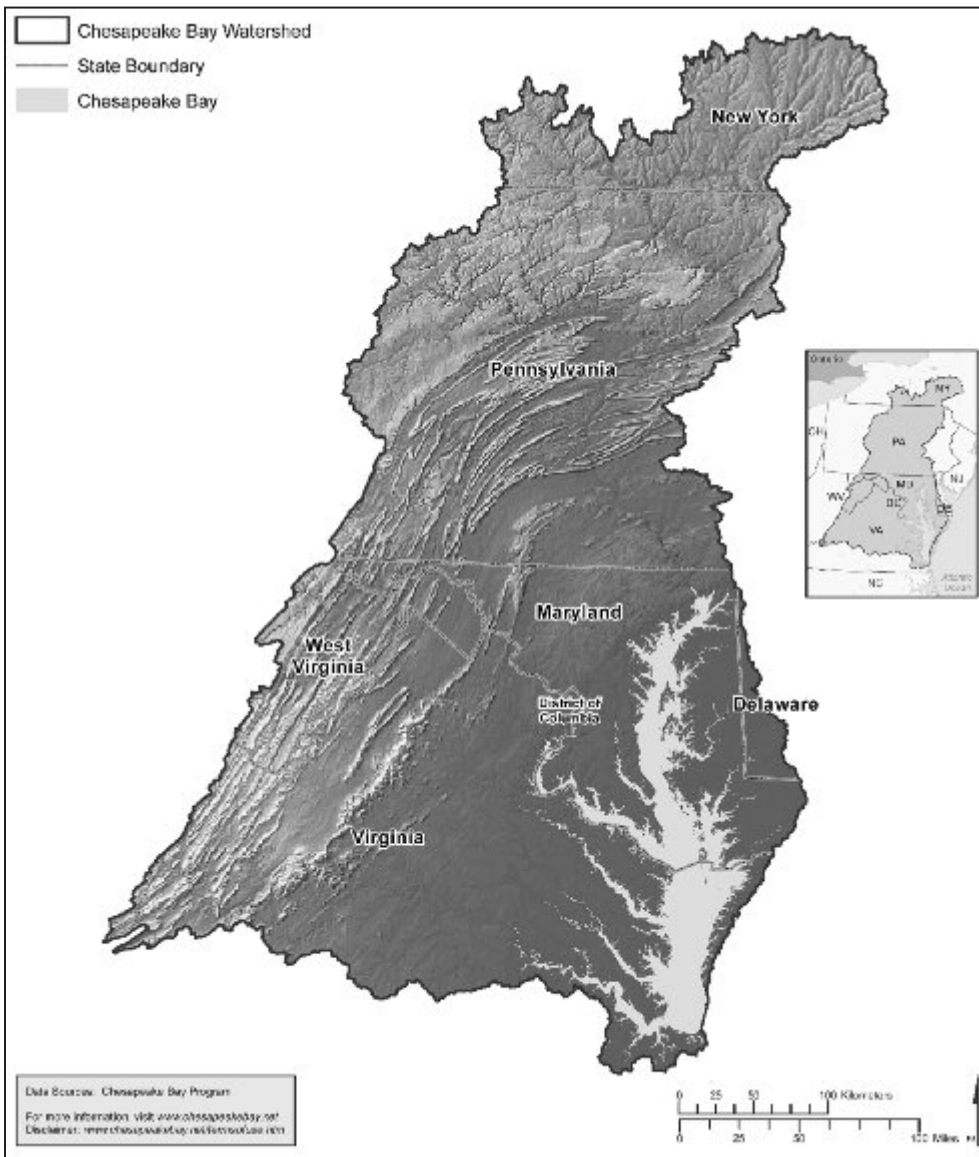
Permitting Process and Status

The common permitting approach was jointly developed by EPA and the Chesapeake Bay partner jurisdictions of New York, Pennsylvania, Maryland, Delaware, Virginia, West Virginia, and the District. When the revised Maryland water quality standards became effective in August 2005, the EPA and the state permitting authorities agreed to issue NPDES permits for all new point sources and, when they came up for renewal, reissue NPDES permits for existing significant point sources consistent with

applicable state tributary strategies.

As of December 2008, approximately 52 percent of the 483 significant facilities have been reissued permits with nutrient limits, including all of the Virginia facilities through a watershed permit. The Virginia watershed permit allows point to point trading, point to non-point trading, and even interstate trading with the Blue Plains Advanced Wastewater Treatment Plant in Washington, DC.

The nutrient loads included in these currently reissued permits



Scope of the Chesapeake Bay Watershed

Bay Watershed States Take Action

The Chesapeake Bay Program, a regional partnership of government agencies and citizen advisory groups, is working to control the array of sources of nitrogen and phosphorus that have kept the Bay and its tidal tributaries on a federal list of impaired waters. One of the most significant steps in the restoration process has been the effort to reduce nutrients from municipal and industrial wastewater treatment facilities.

represent 72 percent and 71 percent of the total Bay-wide Total Nutrient (TN) and Total Phosphorous (TP) cap loads, respectively, for significant point sources. Another 37 permits for significant dischargers have been drafted and are awaiting final issuance, which will increase the percentage of permitted loads to 76 percent for both TN and TP. Based on current state tributary strategies and permitting schedules, it is expected that all significant wastewater treatment facilities will have reissued permits by the end of 2010.

Significant facilities are defined slightly differently by each jurisdiction, but are generally considered to be municipal facilities with design flows greater than 0.5 million gallons per day (MGD) and industrial plants with equivalent nutrient loads. A significant discharger is a facility that meets one of the following criteria:

- In West Virginia, Delaware and New York – facility treating domestic wastewater and the design flow is greater than or equal to 0.4 MGD.
- In Pennsylvania – facility treating domestic wastewater and discharging greater than or equal to 0.4 MGD.
- In Maryland – facility treating domestic wastewater and the design flow is greater than or equal to 0.5 MGD.
- In Virginia – facility treating domestic wastewater and the existing design flow is greater than or equal to 0.5 MGD west of the fall line or 0.1 MGD east of the fall line. If adopted, the draft point source permitting regulations in Virginia would redefine all new facilities greater than 40,000 gallons per day (GPD) or facilities expanding by greater than 40,000 GPD as significant.
- Industrial facilities with a nutrient load equivalent to 3,800 total phosphorus (TP) lbs/year or 27,000 total nitrogen (TN) lbs/year.
- Any other municipal and industrial facilities identified within a jurisdictional tributary strategy.


Permits identified as significant dischargers are tabulated here:

State	Industrial	Municipal	Total
District of Columbia		1	1
Delaware	1	3	4
Maryland	10	75	85
New York	2	26	28
Pennsylvania	30	183	213
Virginia	23	101	124
West Virginia	15	13	28
Total	81	402	483

Permits are being issued consistent with each state's tributary strategy. The strategies were developed to achieve the cap loads necessary to meet water quality standards and to reflect each state's stakeholder process. EPA Region 3 has maintained an active role in the process, reviewing all draft significant Chesapeake Bay permits to insure consistency with each state's strategy. All reissued permits in the watershed have incorporated TN and TP limits.

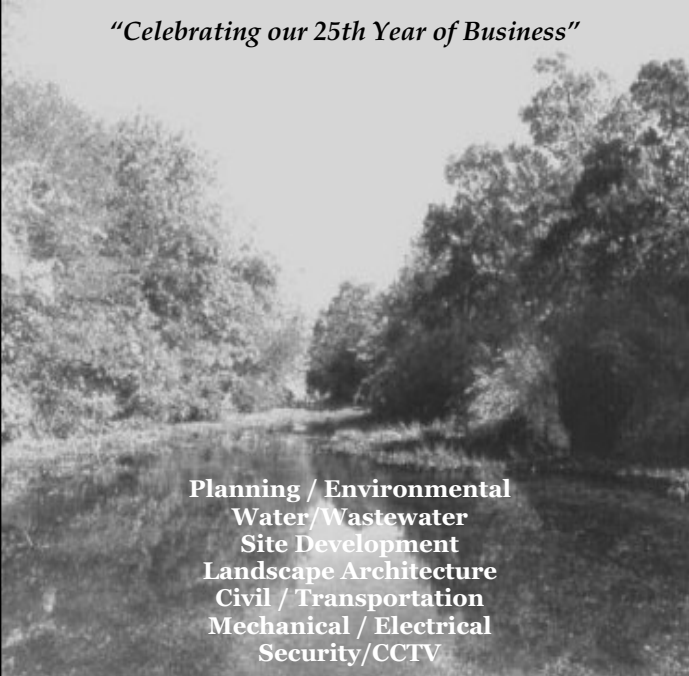
Compliance schedules have been incorporated into permits issued for significant dischargers, as needed and appropriate, or in other enforceable mechanisms where the state water quality standards and NPDES requirements allow for it. Generally, the compliance schedule requires the facility to adhere to the nutrient-based requirements of the permit or order as soon as possible in keeping with the objective of the *Chesapeake 2000* agreement. Several states have included language in their permits authorizing water quality trading as a means of achieving the limits.

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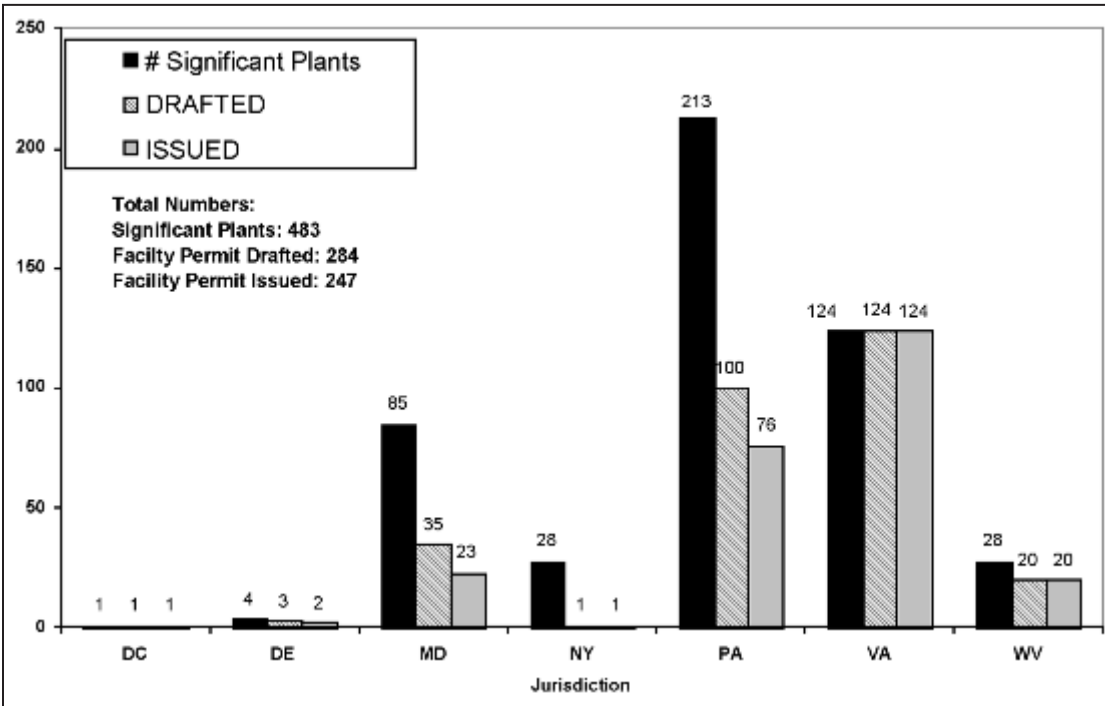
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The EPA will continue to work with New York and other states, as well as with local facilities, to accelerate point source controls in these facilities. The benefits will not only be reaped by the Chesapeake Bay, but by the local streams and rivers that wind through the watershed.

Nutrient Permit Tracking for Significant Facilities in the Bay Watershed
(Q4, 2008, calendar year)



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