

## **POLLUTANT LOAD ALLOCATIONS IN THE CHESAPEAKE BAY: A COMPARISON OF ONE ALTERNATIVE APPROACH TO TMDLS**

The Chesapeake Bay is a unique and beloved water resource. One consequence of the beauty and bounty of the bay is that it suffers from well-documented water quality issues. Understandably, the bay has received considerable focused attention regarding its water quality challenges, as well as special statutory recognition, in certain respects, under the Clean Water Act (CWA).

Watersheds located in the District of Columbia and six states—Maryland, Virginia, West Virginia, Delaware, Pennsylvania and New York—drain to the Chesapeake Bay. The U.S. Environmental Protection Agency (EPA) and these bay partner jurisdictions, under the umbrella of the Chesapeake Bay Program (CBP), have entered into various agreements over the last twenty three years to collectively study and understand, and seek to reverse and remedy, the various causes of the bay's water quality issues. To say that the scientific, political and legal challenges inherent in this effort are complex and difficult is an understatement. Yet, there are a number of recent developments that derive from CBP initiatives that are being implemented by EPA and the affected states to improve water quality in the bay.

One of the recent developments involves the implementation of nutrient and sediment load allocations that were established for the bay in a collaborative process that culminated in a 2003 CBP decision report. The CBP load allocations that EPA and the states are seeking to implement are not total maximum daily loads (TMDLs). Indeed, the 2003 CBP pollutant allocations are explicitly an alternative approach to establishing any TMDLs for the bay. EPA determined that establishing TMDLs throughout the bay or for the bay as a whole would be an enormous challenge, given the vast size of the resource and a host of technical, legal and political complexities. Even though the CBP allocations are not themselves TMDLs, the goals are the same as the goals of TMDLs, that is, to reduce specified pollutant loadings so that water quality standards and designated uses are achieved and maintained.

Although the bay allocations are not TMDLs, implementation in the six affected states and the District is and will be occurring at least in part through

TMDL and NPDES permitting processes. The nutrient and sediment load allocations for the bay are intended to be implemented consistent with an EPA/bay partner NPDES permitting strategy developed at the end of 2004.

For reasons elaborated below, the CBP loads that will be implemented as NPDES permit limits will be established as annual limits. In contrast to this annual approach, there is now a federal Circuit court split—involving TMDLs from two jurisdictions whose watersheds drain to the bay—on whether the “D” in TMDL means daily (see related article). Thus, this article addresses how the distinctions between the recent CBP load allocations and the CWA TMDL program may affect implementation issues in the affected states.

### **Background**

The CBP originated as a result of federally funded research of the bay during the 1970s. The federal study culminated in a 1983 report in which the decline of water quality and living resources in the bay was first comprehensively documented. This report was followed by the establishment of several federal-state agreements to focus on these water quality and resource issues, and, later, congressional recognition of the CBP and EPA's coordinating role in the 1987 CWA amendments. Working with various stakeholders over the years, the CBP produced a strategic plan called the “Chesapeake 2000 Agreement” that contains a variety of commitments to restore the bay. Many of the efforts outlined in the plan will occur in the bay itself, while others are directed at the contributing watersheds that lie within the affected jurisdictions.

One of the key elements of Chesapeake 2000 Agreement is to define the water quality conditions that are necessary to protect aquatic resources and to implement measures to achieve these conditions. An initial step in this effort was EPA's development of new aquatic life designated uses and water quality criteria for the bay. Although states typically take the lead in establishing water quality standards, given the age of the various state water quality standards at issue and EPA's coordinating CBP role, EPA led the

effort to develop comprehensive updated criteria for the bay as a whole. As a result, in April 2003, EPA published a guidance document for the bay and its tidal tributaries in which new water quality criteria for dissolved oxygen, clarity, and chlorophyll *a* were established. EPA selected these three indicator parameters, in lieu of establishing criteria directly for nutrients and sediments, based on EPA's finding that these indicator parameters better reflected the adverse ways in which nutrients and sediments express themselves in the natural environment, *e.g.* promotion of algal growth, clouding leading to suppressed natural aquatic growth, and decay of algae that sinks and consumes available oxygen.

Under the CBP umbrella, the next step in this effort was for the bay states and the District to review and propose revisions to their water quality standards, taking into account the new published EPA guidance. Accordingly, several of the affected states have adopted or are in the process of adopting revised water quality standards consistent with EPA's 2003 Bay guidance. Indeed, Maryland's recent adoption of new water quality standards in response to the Bay guidance has triggered implementation of a 2004 Agreement among EPA and the bay partners for a nutrient-based NPDES permitting approach.

Concurrent with EPA's establishment of the 2003 EPA Bay guidance, the CBP also identified pollutant-loading caps for nutrients and sediment that were deemed necessary to achieve the water quality and aquatic resource restoration goals of Chesapeake 2000 Agreement. It is important to understand, as the CBP documents clearly express, that these pollutant loads for nitrogen, phosphorus and sediment were the result not only of scientific consensus attained based on the best available information, but also of overt political commitments. As the December 2003 decision report of the CBP states, after reviewing the scientific understandings upon which the underlying allocations were derived:

significant policy guidance was vital in order to arrive at cap load allocations with the highest probability of 'buy-in,' and, therefore, the greatest assurance of implementation.

("Setting and Allocating The Chesapeake Bay Basin Nutrient and Sediment Loads: The Collaborative Process, Technical Tools and Innovative Ap-

proaches," EPA Region III Chesapeake Bay Program Office, page 8 (December 2003).) In essence, the CBP allocations are part science and part political compromise.

In particular, focusing on nutrients, the scientific analysis indicated that, to achieve the new water quality criteria, annual nitrogen and phosphorus loads needed to be capped at 175 and 12.8 million pounds, respectively. These caps in turn called for annual reductions of 110 million pounds of nitrogen and 6.3 million pounds of phosphorus. Using available science and modeling, the CBP identified corresponding load reductions for nitrogen and phosphorus in the nine major bay tributary basins based on current land uses and discharges. This process resulted in shortfalls in the needed reductions of 12 million pounds of nitrogen and 1 million pounds of phosphorus. Ultimately, policy commitments were made by EPA and affected states that resulted in allocations of nitrogen and phosphorus load reductions to the nine tributaries and the federal Clear Skies Program. A similar process was used to develop the final sediment allocation in the CBP report.

### Analysis

These CBP nutrient and sediment allocations are now in the process of being translated by the affected states into tributary strategies under CWA § 117(g)(1). Tributary strategies are basically watershed management plans that, for CBP purposes, will be used on a river-specific basis to detail the voluntary and mandatory measures that will be needed to meet the nutrient and sediment allocations established under *Chesapeake 2000*. In all, there will be 36 such strategies covering the bay's 64,000 square-mile watershed. To attain the allocated reductions, each affected jurisdiction is expected to rely heavily upon a wide variety of best management practices ranging from planting new riparian forest and grass buffers to implementing nutrient management plans for agriculture, and from more traditional NPDES permit control efforts to more innovative water quality trading programs.

As noted above, the CBP nutrient load allocations are expressed as annual loads. EPA has also determined that, for NPDES permitting purposes in bay jurisdictions, effluent limitations for nitrogen and phosphorus should be expressed as annual limits in order to accurately and practically reflect the long

hydraulic duration times in the bay. Although the D.C. Circuit court's recent opinion that TMDLs require daily limits will affect how the District and EPA approach the Anacostia River TMDL at issue in that case, the TMDL program is not the statutory basis upon which the CBP program allocations expressly rely. Therefore, the court's findings do not directly call into question the validity of the conclusions reached in the CBP 2003 documents (though there may be other bases to question these conclusions).

The derivation of the bay load allocations as discussed above and the expression of these in annual terms raises the further question of how the individual tributary strategies being designed for CBP load allocation purposes will coordinate with state and federal TMDL efforts—including those that are already completed and others that are in development. The brief answer is that it will vary. Each bay state and the District are in varying stages of TMDL implementation. Because most existing TMDLs in these jurisdictions were written and adopted before the EPA revised criteria and load allocations were adopted, these existing TMDLs are likely to be based on state water quality standards that have been amended or are in the process of being changed to conform to EPA's Bay guidance. However, most such TMDLs will not have been revised yet, and therefore will still be in effect.

Further complicating the scene is the fact that implementation of the CBP allocations are dependent

on adoption of updated tributary strategies that are themselves still in development. Each affected state and the District have considerable flexibility in how they fashion their tributary strategies for any given water body or segment of that water body. Those strategies conceivably could seek to use existing TMDLs, as well as any new water quality standards and new TMDLs built upon such standards, along with a variety of other tools, to distribute the load reductions reflected in the CBP allocations. The various CBP documents contemplate that the necessary tributary strategies will be adopted by 2007. Worth noting, to add to the uncertainties inherent in the processes outlined above, is EPA's intent to revisit the issue of establishing TMDLs for the bay if the tributary strategies are not being effectively implemented in a timely manner.

### Conclusion and Implications

Nutrient and sediment loadings in Chesapeake Bay watersheds are now subject to two separate CWA frameworks—TMDLs and CBP. Both frameworks will play a role in how EPA and state NPDES permitting decisions are made with respect to effluent limitations and BMP programs. Much is in flux with water quality standard revisions, tributary strategy development and TMDL implementation within the bay jurisdictions, and affected parties will want to parse the various program elements carefully in developing permitting and water quality trading strategies. (RDS/KMH)

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