

its Chesapeake Bay Program to assess the costs to WWTPs to implement system retrofits to achieve biological nutrient removal. This nitrogen benchmark estimate is approximately \$4 per pound of nitrogen removed, based on a range of costs of \$0.80 to \$5.90 per pound of nitrogen removed. EPA's estimated cost-effectiveness to remove nitrogen falls within the estimated range of removal costs and is less than this average benchmark value assumed for this rule. For phosphorus, EPA assumed a cost-effectiveness benchmark of roughly \$10 per pound based on a review of values reported in the agricultural research of the costs to remove phosphorus using various nonpoint source controls and management practices. EPA's estimated cost-effectiveness to remove phosphorus under this rule also falls below this \$10 per pound benchmark value, indicating that the requirements are cost-effective. This is particularly true when compared to the reported cost to remove phosphorus at other industrial point source dischargers, where reported average costs are twice that for agricultural sources and often exceed \$100 per pound of phosphorus removed. Based on these results, EPA concludes that these values are cost-effective.

EPA also examined the cost-effectiveness of removing sediments under the regulations. EPA estimates a cost of less than \$0.30 per pound of sediment removal in this rule (pre-tax, 2001 dollars). This estimated per-pound removal cost is low compared to EPA's POTW benchmark for conventional pollutants. That benchmark measures the potential costs per pound of TSS and BOD removed for an "average" POTW (see 51 FR 24982). Indexed to 2001 dollars, EPA's benchmark costs are about \$0.73 per pound of TSS and BOD removed. For information on EPA's cost-effectiveness, see the *Economic Analysis*.

IX. Coordination With Other Federal Programs

A. How Does Today's Rule Function in Relation to Other EPA Programs?

The relationship between animal agriculture and water quality is affected by existing programs other than the CAFO regulations. This section of the preamble presents today's action in the context of some of these other programs.

1. Water Quality Trading

EPA proposed a water quality trading policy on May 15, 2002, for public review and comment. The proposed policy lays out guidelines for States and

local governments/municipalities to consider when implementing a water quality trading program to maintain or reduce pollutant loading and achieve the goals of the Clean Water Act. Water quality trading is considered by some to be a more efficient and quicker pollution reduction process to meet water quality standards than conventional Clean Water Act methods. The proposed trading policy encourages currently regulated and nonregulated sources of pollution to interact more and make mutually beneficial agreements to reduce pollutant loading they might otherwise not be motivated to make. CAFOs may find mutually beneficial opportunities for water quality pollutant trading with other point and nonpoint sources in their watershed. For CAFOs interested in more details about Water Quality Trading, please go <http://www.epa.gov/ow>. The trading policy includes a general EPA water quality trading policy statement and identifies elements that define a successful trading program and provisions that should ensure consistency with the Clean Water Act.

2. Total Maximum Daily Load (TMDL)

The TMDL provisions of the Clean Water Act are intended to be the second line of defense for protecting the quality of surface water resources. When technology-based controls on point sources are inadequate for water to meet State water quality standards, section 303(d) of the Clean Water Act requires States to identify those waters and to develop TMDLs. A TMDL study must be conducted for each pollutant that causes a water body to fail to meet State water quality standards. More than 20,000 waters are identified nationally as being impaired and possibly requiring a TMDL. The top impairments in 1998 were sediment, nutrients, and pathogens. AFOs and CAFOs can be sources of all three pollutants.

A TMDL is a calculation of the greatest amount of a pollutant that a water body can receive without exceeding water quality standards. A TMDL allocates the amount of pollution that can be contributed by the pollutant sources. A TMDL study identifies both point and nonpoint sources of each pollutant that cause a water to fail to meet water quality standards. Water quality sampling, biological and habitat monitoring, and computer modeling help the TMDL writer determine how much each pollutant source must reduce its contribution to ensure that the water quality standard is met. Through the TMDL process, pollutant loads are allocated to all sources. Wasteload allocations for point sources

are enforced through NPDES discharge permits. Load allocations for nonpoint sources are not federally enforceable, but can be met through voluntary approaches. In some impaired watersheds, AFOs and CAFOs may be affected by TMDLs since improved management practices may be necessary to restore water quality. In the case of CAFOs, any necessary pollutant loading reductions would be achieved through the use of NPDES permits issued in accordance with the requirements contained in today's final rule.

3. Watershed Permitting

Watershed-based permits are NPDES permits that are issued to point sources on a geographic or watershed basis. They focus on watershed goals and consider multiple pollutant sources and stressors, including the level of nonpoint source control needed. A watershed approach provides a framework for addressing all stressors within a hydrologically defined drainage basin instead of viewing individual pollutant sources in isolation. More than 20 States have implemented some form of the watershed approach and manage their resources on a rotating basin cycle.

Because of the recent emphasis on water quality-based permits and development of TMDLs that focus on water quality impacts, EPA is looking at ways to use watershed-based permits to achieve watershed goals. The watershed-based permit is a tool that can assist with implementation of a watershed approach. The utility of this tool relies heavily on a detailed, integrated, and inclusive watershed planning process. Many of the actions necessary for a successful TMDL are also needed for a successful watershed approach. The process and data needs for developing a watershed-based permit and for developing a TMDL are very similar. In places where TMDLs have been developed, watershed permits may be useful tools for implementing TMDLs. For example, North Carolina's nutrient management strategy for the Neuse River Basin includes a watershed-based permit approach for TMDL implementation. The strategy recognizes the need for all groups to work together and includes an approach for permitted dischargers to work collectively to meet a combined nitrogen allocation, rather than be subject to individual allocations. The implementation of the approach is being developed (NC DWQ, 1998, 2002). A watershed permit approach was also used for municipal discharges in Connecticut contributing nutrients to the Long Island Sound (CTDEP, 2001).