

## **Total Maximum Daily Loads, Manure from CAFOs, & the Clean Water Act**

“A TMDL is the calculation of the maximum amount of a pollutant allowed to enter a waterbody so that the waterbody will meet and continue to meet water quality standards for that particular pollutant. A TMDL determines a pollutant reduction target and allocates load reductions necessary to the source(s) of the pollutant.” <https://www.epa.gov/tmdl/overview-total-maximum-daily-loads-tmdls>

The theory underlying TMDLs in surface waters is:

- Lakes and streams can accept, without danger, a certain amount of particular pollutants;
- The level of pollution in a body of water can be measured;
- All the pollutants and sources can be identified;
- The amount of pollution from each source can be rationed so that the total load that enters the water body does not make water unsafe for its intended use, and safe for:
  - Fish and other aquatic life
  - Human consumption
  - Agriculture and Industry, or
  - Recreation.

Instituting TMDLs is a tool for state and/or federal environmental protection agencies under the Clean Water Act that can be used to address water pollution. However, there is little to no evidence that TMDLs are reducing CAFO manure pollutant run-off to surface and groundwater.

The U.S. Environmental Protection Agency’s explanation of how states can “identify and prioritize impaired and/or threatened waters for the 303(d) list and develop pollutant loading analyses, commonly known as TMDLs, to help meet the State/Tribe’s water quality standards” can be found at this link: <https://www.epa.gov/wqs-tech/supplemental-module-listing-impaired-waters-and-developing-tmdls>

### **Implementing TMDL plans is voluntary**

Development of TMDLs by states has been slow due primarily to lack of funding and resources. There are thousands of waters on state 303(d) lists that have gone for years without TMDLs and will likely not have TMDLs in the near future. “The CWA does not require states to develop implementation plans for TMDLs.” <https://sgp.fas.org/crs/misc/R42752.pdf>

States may pursue alternative restoration approaches in developing a TMDL and set their own “milestones” to be accomplished. This alternative, although hoped would result in more immediately beneficial results, is an ineffective loophole. This alternative allows states to set milestones that have reasonable assurance of being met, but these easily-met milestones do not ensure that the total maximum daily load of a pollutant like phosphorus and nitrate from CAFO manure is reduced to avoid harms and achieve water quality.

Numerous environmental groups began suing the EPA over TMDLs in the 1990’s and this compelled a renewed interest in using this TMDL tool. In 2010, given the failure of voluntary and local interventions to address degradation of Chesapeake Bay, the EPA embarked on a giant

TMDL project to restore that national treasure due to loss of fish, shellfish, shoreline habitat and recreational opportunities that crosses state borders: “specifically, the TMDL set Bay watershed limits of 185.9 million pounds of nitrogen, 12.5 million pounds of phosphorus, and 6.45 billion pounds of sediment per year.” <https://sgp.fas.org/crs/misc/R42752.pdf>

Concentrated Animal Feeding Operations (CAFOs) are major contributors to the Chesapeake Bay poor water quality.

“Large CAFOs—confined operations with at least 1,000 cows or 10,000 broiler chickens—account for approximately 1 percent of farms in the bay watershed and only 6 percent of manure-applied acreage. On the other hand, small and medium CAFOs account for about 15 percent of the watershed’s farms and 59 percent of its manure-applied acreage. These operations are generally not regulated under CAFO manure management rules. This suggests that policies addressing manure nutrient discharges from small and medium CAFOs may be needed if larger reductions in Bay nutrient pollution are desired.”

<https://www.ers.usda.gov/amber-waves/2014/april/confined-livestock-operations-account-for-a-majority-of-the-chesapeake-bay-area-s-farmland-with-applied-manure/>

### **Locating the pollution sources, Wasteload Allocations, and manure CAFO discharges**

Pollutants enter surface waters (rivers, streams, lakes, bays, inlets) from point sources (pipes) such as wastewater treatment plants (WWTPs), factories, and CAFO sites. CAFOs are classified as point sources of water pollution. This includes production areas (pens, corrals, barns, composting areas, feed storage, and wastewater storage ponds) and directly associated cropland where manure is purportedly applied as fertilizer.

Pollution also occurs from non-point sources such as manure runoff from storm water at CAFOs and water that drains from irrigated agricultural fields. When the pollution comes through a pipe it is relatively easy to measure and control. Non-point sources are more difficult. (US EPA, 2002)

“EPA regulations use the terms Wasteload Allocations (WLA) and Load Allocations (LA) to describe loadings assigned to point and nonpoint sources, respectively.”

[https://cfpub.epa.gov/watertrain/moduleFrame.cfm?parent\\_object\\_id=2714](https://cfpub.epa.gov/watertrain/moduleFrame.cfm?parent_object_id=2714)

A WLA is the portion of a receiving water's assimilative capacity that is allocated to one of its existing or future point sources of pollution. Assimilative capacity means the ability for pollutants to be absorbed by water, without detrimental effects to water or to those who use of it.

WLAs for CAFOs are supposed to be included in National Pollutant Discharge Elimination System (NPDES) permits for CAFOs that are enforced by the states, except Idaho, Massachusetts, New Hampshire & New Mexico. [https://www.epa.gov/sites/default/files/2015-10/documents/2002\\_06\\_04\\_tmdl\\_guidance\\_final52002.pdf](https://www.epa.gov/sites/default/files/2015-10/documents/2002_06_04_tmdl_guidance_final52002.pdf)

However, typically, NPDES permits for CAFOs are designated as “no-discharge permits”, which implies that CAFOs do not discharge to surface waters. A CAFO spreading millions of gallons of untreated animal manure on fields is thereby excused from regulation. In addition, a permitted CAFO is excused from discharges that occur during unusual storms, floods, etc., and such events are not well-defined regarding wastewater runoff during and after application to crop fields. The risk of runoff increases with greater slope of fields, degree of spray drift, field underground drain-tiles, and the distance to surface water.

In practice, CAFO manure does indeed discharge through poorly lined wastewater storage ponds (WSPs and also called “lagoons”), faulty cement manure pits, tile drains underneath fields, from dead animal composting operations, by field run-off or melt-off, and from atmospheric deposition of gaseous emission and particles. NPDES permits frequently fail to address and quantify these discharges. State regulators are too quick to say that CAFOs have approved nutrient management plans and adhere to best management practices and therefore do not pollute.

Illustrating the problem, which TMDL technology is not addressing, is the Nooksack Valley in Washington State where bacterial pollution of surface waters has resulted in closure of shellfish beds for decades.

<https://apps.ecology.wa.gov/ApprovedWQA/ApprovedPages/ApprovedSearch.aspx>

The Nooksack River Watershed Bacteria Total Maximum Daily Load Submittal Report states under Loading and Waste Load Allocations:

“There are three (wastewater treatment plants (WWTPs) in the watershed. All discharge directly into the Nooksack River. The target at Brennan will be used to set permit limits. Therefore, the WWTPs are assigned a waste-load allocation of zero.

There are two dairies under the NPDES dairy general permit in the Nooksack watershed. There are 16 dairies in the Nooksack watershed that will be under the dairy general permit within a month. The permit only allows those discharges caused by chronic or catastrophic storm events prompting an overflow from facilities designed for a 25-year, 24-hour storm event. Federal requirements adopted by reference in the permit prohibit discharges that would cause an exceedance of water quality criteria. Therefore, the waste-load allocations for these streams will remain at zero. The implementation of the Washington State Dairy Nutrient Management Act may result in other dairies being covered by the NPDES Dairy permit and also receiving a waste-load allocation of zero.”

Clearly this TMDL is just a paper exercise. Whereas the US EPA Chesapeake Bay TMDL, insisted upon by environmental groups, has created some progress in monitoring improvements, the Nooksack River Watershed continues to show high levels of bacteria. In addition, after 20 years, only two of all the CAFO dairies in that Washington State watershed are required to have

a permit. Repeatedly across the country, authorities claim that the major sources, like CAFO manure, do not discharge, that is, they "allocate" none of the water pollution problem to CAFOs.

### **References:**

U.S. Environmental Protection Agency (2022) "Overview of Total Maximum Daily Loads"  
<https://www.epa.gov/tmdl/overview-total-maximum-daily-loads-tmdls>

US Environmental Protection Agency "Supplemental Module: Listing Impaired Waters and Developing TMDLs"  
<https://www.epa.gov/wqs-tech/supplemental-module-listing-impaired-waters-and-developing-tmdls>

Copeland, C., Congressional Research Service 7-5700 [www.crs.gov](http://www.crs.gov) R42752  
(2012) "Clean Water Act and Pollutant Total Maximum Daily Loads (TMDLs)"  
<https://sgp.fas.org/crs/misc/R42752.pdf>

USDA Economic Research Service—"Confined Livestock Operations Account For a Majority of the Chesapeake Bay Area's Farmland With Applied Manure"  
<https://www.ers.usda.gov/amber-waves/2014/april/confined-livestock-operations-account-for-a-majority-of-the-chesapeake-bay-area-s-farmland-with-applied-manure/>

US EPA Watershed Academy Web "Introduction to the Clean Water Act"  
[https://cfpub.epa.gov/watertrain/moduleFrame.cfm?parent\\_object\\_id=2714](https://cfpub.epa.gov/watertrain/moduleFrame.cfm?parent_object_id=2714)

U.S. Environmental Protection Agency (2002) "Guidelines for Reviewing TMDLs under Existing Regulations issued in 1992"  
[https://www.epa.gov/sites/default/files/2015-10/documents/2002\\_06\\_04\\_tmdl\\_guidance\\_final52002.pdf](https://www.epa.gov/sites/default/files/2015-10/documents/2002_06_04_tmdl_guidance_final52002.pdf)

WA State Dept. of Ecology (2022) WA State Water Quality Assessment. Available at  
<https://apps.ecology.wa.gov/ApprovedWQA/ApprovedPages/ApprovedSearch.aspx>

### **Additional Information on TMDL can be found at:**

303(d) Listing of Impaired Waters Guidance – <https://www.epa.gov/tmdl/identifying-and-listing-impaired-waters-under-clean-water-act>

This website provides guidance on listing impaired waters.

Section 303(d) Program Guidance – <https://www.epa.gov/tmdl>

This website provides guidance regarding currently effective TMDL statutory and regulatory requirements and recommends a framework for EPA approval decisions on State Section 303(d) lists.

**Updates to the Chesapeake Bay Program can be found at the links below:**

National Park Service—Chesapeake Bay—Environmental Factors—Human Impact

<https://www.nps.gov/chba/learn/environmental-factors.htm>

EPA—Chesapeake Bay Total Maximum Daily Load—EPA Oversight—WIPs and Milestones—  
EPA Oversight in the Chesapeake Bay Watershed

<https://www.epa.gov/chesapeake-bay-tmdl/epa-oversight-watershed-implementation-plans-wips-and-milestones-chesapeake-bay>

EPA will continue its commitment to [track annual progress](#) and release biennial evaluations of the Bay jurisdiction's progress and make those results available to the Chesapeake Bay Program (CBP) partnership and the public. EPA provided a specific list of assistance actions in each Bay jurisdiction's [2019 final Phase III WIP evaluation](#) as part of the agency's role to help Bay jurisdictions improve accountability to the CBP partnership and the public in meeting the 2025 water quality goals.

<https://www.epa.gov/chesapeake-bay-tmdl/epa-oversight-watershed-implementation-plans-wips-and-milestones-chesapeake-bay>