



# Total Maximum Daily Loads for Surface Waters

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The development and allocation of total maximum daily loads (TMDLs) is a primary tool for addressing water pollution in surface waters that have been designated as “impaired” under the federal Clean Water Act. A TMDL is the amount of a pollutant that a waterbody (or waterbody segment) can receive and not exceed water quality standards.

## KEY BACKGROUND CONCEPTS

### Water Quality Standards

Under state law implementing the federal Clean Water Act, the Department of Natural Resources (DNR) must establish water quality standards for navigable surface waters in Wisconsin.<sup>1</sup> [s. 281.15, Stats.] Those state water quality standards must be no more stringent than required to ensure that a waterbody will have sufficient water quality necessary for its “designated use.” For example, if a lake is designated as having a recreational use, then the water quality standard should ensure that the lake can be used for recreation.

### Point Source Pollution

Any discharge to a navigable water from a point source,<sup>2</sup> such as an industrial outlet, municipal wastewater treatment plant, municipal storm sewer system, or large animal feeding operation, must be authorized by a Wisconsin Pollutant Discharge Elimination System (WPDES) permit. Among other requirements, a WPDES permit specifies water quality-based “effluent limitations,” which limit the specific pollutants that may be discharged from the point source. Those effluent limitations may be based on an approved TMDL. [See, e.g., ss. 283.16 (1) (i) and 283.31 (3) (d) 3., Stats.]

### Nonpoint Source Pollution

The Clean Water Act also requires states to address nonpoint sources of pollution to surface waters. Nonpoint sources are diffuse and include runoff from agricultural, urban, or residential areas. Nonpoint source pollution is not subject to WPDES permitting requirements. Instead, the state addresses nonpoint source pollution through performance standards, cost-sharing, adaptive management,<sup>3</sup> and water pollution credit trading.

DNR must establish performance standards for both agricultural and nonagricultural sources of nonpoint source pollution. For agricultural sources, DNR must do so in consultation with the Department of Agriculture, Trade, and Consumer Protection (DATCP). [s. 281.16 (2) (a) and (3) (a), Stats.] The performance standards must be “designed to achieve water quality standards by limiting nonpoint source water pollution.”<sup>4</sup> One such performance standard requires crop and livestock producers to use certain best management practices, conservation practices, or technical standards designed to meet any applicable TMDL. [s. NR 151.005 (1), Wis. Adm. Code.] Local units of government may also enact ordinances to address nonpoint source pollution, if approved by referendum.<sup>5</sup> [s. 92.11, Stats.]

### “Impaired Waters” and TMDLs

States must submit a list of “impaired waters” – i.e., waterbodies or waterbody segments that do not meet water quality standards – to the Environmental Protection Agency (EPA) every two years. [33 U.S.C. s. 1313 (d) (1) (A).] Wisconsin’s most recent list includes more than 1,500 impaired waterbodies.<sup>6</sup>

## TMDLS IN WISCONSIN

The Clean Water Act requires states to develop TMDLs for all impaired surface waters. [33 U.S.C. s. 1313 (d) (1).] A TMDL establishes “waste load allocations” for point sources and “load allocations” for nonpoint sources within a TMDL area to address one or more pollutants. In Wisconsin, phosphorous has been a common pollutant addressed through TMDLs in recent years.

TMDL waste load and load allocations are determined based on a formula that takes various factors into account. Specifically, DNR’s administrative rules provide that the sum of waste load allocations for point sources and load allocations for nonpoint sources must not be not greater than the loading capacity of the waterbody for the pollutants in question, minus the sum of natural background loads, the reserve capacity,<sup>7</sup> and any applicable margin of safety.<sup>8</sup> [s. NR 212.73 (3), Wis. Adm. Code.] The process of determining quantities to input into this formula can be time consuming, as it involves developing water quality models that incorporate variables such as weather, topography, and land use.

Recognizing that developing TMDLs takes time, DNR’s administrative rules require the department to include a priority ranking for TMDL development in its list of impaired surface waters. To determine TMDL priorities, DNR considers the severity of pollution, the uses to be made of specific waters, and whether effluent limits in existing WPDES permits are sufficient to achieve water quality standards. [s. NR 212.73 (2), Wis. Adm. Code.]

A TMDL does not establish an independent source of regulatory authority. However, as mentioned, Wisconsin implements TMDLs by incorporating waste load allocations in WPDES permits and by incorporating load allocations into certain agricultural performance standards. TMDLs are also incorporated in criteria for urban and non-urban stormwater permitting. [ss. NR 216.024 (1)(e) and (3)(b) and 216.025 (3), Wis. Adm. Code.]

DNR has established, and EPA has approved, TMDLs for more than 30 waterbodies or waterbody segments in Wisconsin.<sup>9</sup> Most recently, TMDLs were approved for segments of the Wisconsin River and the Upper Fox and Wolf Rivers in 2019 and 2020.

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<sup>1</sup> DNR has done so in chs. NR 102 and 103, Wis. Adm. Code. In addition to the surface water quality standards required by the federal Clean Water Act, state law requires DNR to establish water quality standards for other “waters of the state,” including groundwater.

<sup>2</sup> A “point source” is any discernible, confined, and discrete conveyance from which pollutants are or may be discharged. [33 U.S.C. s. 1362 (14).]

<sup>3</sup> Adaptive management is an option that allows a WPDES permittee to comply with an effluent limitation or TMDL load allocation for phosphorus by reducing phosphorus discharges from other sources, including nonpoint sources, subject to certain conditions established by DNR. [s. 283.13 (7), Stats.; s. NR 217.18, Wis. Adm. Code.]

<sup>4</sup> An agricultural producer must comply with the agricultural performance standards if: (a) the agricultural operation is newer than October 14, 1997; (b) cost-sharing has been made available to the owner or operator, or the owner receives a farmland preservation tax credit; (c) the operation is a large concentrated animal feeding operation or is otherwise required to obtain a WPDES permit; or (d) the operator of a large livestock facility was required to comply with state standards as a condition for obtaining a local conditional use permit or special exception for a large livestock facility. [See s. 281.16 (3) (e), Stats.; ss. NR 151.095 (4) (c) and 243.26 (4) (a) 1., Wis. Adm. Code.]

<sup>5</sup> In general, local regulation of livestock operations must be consistent with state performance standards. However, a local government may enact a more stringent requirement if DNR or DATCP determines the requirement is necessary to ensure compliance with state water quality standards. [ss. 92.11 and 92.15 (3) (a), Stats.]

<sup>6</sup> The list of impaired waters is available at <https://dnr.wisconsin.gov/topic/SurfaceWater/ConditionLists.html>.

<sup>7</sup> “Reserve capacity” accounts for future increases in pollutant loads from anticipated growth in the area.

<sup>8</sup> A margin of safety accounts for technical uncertainties that might be present in the development of a TMDL.

<sup>9</sup> Approved TMDLs are available at <https://dnr.wisconsin.gov/topic/TMDLs/TMDLReports.html>.