

Numeric Nutrient Criteria Development in Other States
Nutrient Criteria Development Advisory Workgroup June 20, 2011
Texas Commission on Environmental Quality Water Quality Standards

Alabama

- Alabama Department of Environmental Management's [current Water Quality Standards](#) (EPA approved) has chlorophyll *a* criteria for selected reservoirs, adopted in 2010 and 2011. The chlorophyll *a* (chl *a*) criteria were developed using seasonal means, April through October for most reservoirs. They are currently working on the rest of reservoirs, streams, and rivers for 2012.

Arizona

- Arizona Department of Environmental Quality's [2009 Unofficial Copy Water Quality Standards for Surface Waters](#) (state adopted) has functional lake classes and six applicable designated uses. For each class and each applicable designated use, Arizona developed numeric criteria ranges. Ranges for all lake categories are as follows: chl *a* 5 to 50 micrograms per liter, Secchi depth 0.5 to 2.5 meters, total nitrogen 1.0 to 1.9 milligrams per liter, total Kjeldahl nitrogen (TKN) 0.7 to 1.7 micrograms per liter, total phosphorus (TP) 50 to 160 micrograms per liter, percent blue-green algae 20,000 per milliliter, and total count of blue-green algae less than 50 percent of total count.

Hawaii

- Hawaii Department of Health's [2009 Water Quality Standards](#) (EPA approved) have numeric nutrient criteria for both inland waters and estuaries. The criteria for inland waters have a geometric mean with 10 and 2 percent values for allowable exceedances. The standards also define a wet season as November through April and dry season as May through October. Inland waters criteria in micrograms per liter: total nitrogen (TN) 250.0 wet season 180.0 dry season, nitrate + nitrite 70.0 wet season 30.0 dry season, and total phosphorus (TP) 50.0 wet season 30.0 dry season. Estuaries criteria in micrograms per liter geometric means: TN 200.00, ammonia 6.0, nitrate + nitrite 8.0, TP 25.0, and chlorophyll *a* 2.0.

Minnesota

- Minnesota Pollution Control Agency's [2008 Water Quality Standards for Protection of Waters of the State](#) (EPA approved) has criteria for total phosphorus 30 to 90 micrograms per liter, secchi disk not less than 0.9 to 2.0 meters, and chlorophyll *a* 9 to 30 micrograms per liter. Minnesota plans to develop river nutrient criteria for the 2012 revision.

Missouri

- Missouri Department of Natural Resources' state adopted numeric nutrient criteria in the [2009 Water Quality Standards](#). They are using four lake groupings for classified lakes that have total phosphorus (TP) criteria, with total nitrogen (TN) and chlorophyll *a* (chl *a*) criteria determined as a function of reference and predicted TP criteria. There are also site specific criteria in micrograms per liter for TP ranging from 7 to 31, TN ranging from 200 to 616, and chl *a* ranging from 1.5 to 11, specified for 25 the main pool of lakes. As well as 6 site specific TP criteria for six major tributary arms, ranging from 12 to 26 micrograms per liter.

New Jersey

- New Jersey Department of Environmental Protection's [2011 Surface Water Quality Standards](#) has revisions to the states nutrient criteria. The criterion for non tidal streams is total phosphorus (TP) not to exceed 0.1 milligrams per liter and for reservoirs/lakes TP not to exceed 0.05 milligrams per liter.

Ohio

- Ohio Environmental Protection Agency's [current 2011 Draft Water Quality Standard](#) designates beneficial use designation to lakes and establishes lake habitat water quality criteria May through October for total phosphorus 18 to 34 micrograms per liter, total nitrogen 450-1,225 micrograms per liter, secchi disk 1.19 to 2.6 meters, chlorophyll a 6.0 to 14.0 micrograms per liter and other parameters. Ohio is currently working on nutrient standards for small streams and rivers <500 square mile drainage for 2011/2012; and large rivers >500 square mile drainage, after collecting more data during 2010-2012, for 2013

Oregon

- Oregon Department of Environmental Quality [Water Quality Standards](#), as of February 2011, have numeric chlorophyll a criteria of 0.01 milligram per liter for natural lakes that stratify and 0.015 for natural lakes that do not thermally stratify, reservoirs, rivers and estuaries. Samples must be collected in three consecutive months at the deepest point or at the mid-flow point of a river.

Rhode Island

- State of Rhode Island and Providence Plantations Department of Environmental Management's [2010 amendment to the 2006 Water Quality Regulations](#) has criteria for total phosphorus and nitrates. The average total phosphorus (TP) in lakes, ponds, kettlehole or reservoir not to exceed 0.025 milligrams per liter, and average TP in tributaries at the point of entry shall not cause exceedances of the TP criterion, unless site specific criterion are established. Nitrate is not to exceed 5.0 milligrams per liter for lakes, ponds and reservoirs, and by class from rivers ranging from 0.20 to 5.0 milligrams per liter.

Vermont

- Vermont Natural Resource Board's Water Resource Panel's [2008 Water Quality Standards](#) (EPA approved) has annual mean total phosphorus (TP) criteria, listed for two lakes and lower elevation streams and rivers, ranging from 0.010 to 0.054, and for streams above 2,500 feet TP shall not exceed 0.010 milligrams per liter at low median monthly flow.

Virginia

- Virginia Department of Environmental Quality's [Water Quality Standards, effective January 2011 with amendments](#) (EPA approved 2007) has site specific numeric nutrient criteria for man-made lakes and reservoirs. Lists approximately 122 lakes with criteria for chlorophyll a (chl a), ranging from 10 to 60 micrograms per liter (based on the 90th percentile) and for lakes that have received an algaecide treatment between April 1 and October 31 a total phosphorus (TP) criteria ranging from 10 to 40 micrograms per liter. Virginia is currently working on numeric nutrient criteria for streams and rivers.

Wisconsin

- Wisconsin Department of Natural Resources' [2010 Water Quality Standards](#) (EPA approved) has numeric nutrient criteria for total phosphorus (TP). Lake criteria range from 15 to 40 micrograms per liter and 4 to 7 micrograms per liter for the Great Lakes. Rivers TP criteria are 100 micrograms per liter, and stream criteria are 75 micrograms per liter.

Note: transparency/clarity and other parameters were only examined with presented with nutrient regulations in water quality standards, and states may have separate criteria not covered in the above list. This is not an exhaustive list of state and only excerpts of particular criteria of interest have been summarized. Visit the state webpages linked for more information.