

# **SURVEY OF STATES, TRIBES AND TERRITORIES NUTRIENT STANDARDS**

July 2003

## **Introduction**

The Clean Water Act mandates that States, Tribes and Territories should protect the designated uses of their waters by setting sufficient parameters in their Water Quality Standards (WQS). This document is a survey of the nutrient standards adopted to the Water Quality Standards of States, Tribes and Territories. The US EPA has provided technical guidance manuals to help the States and Tribes in setting nutrient criteria for different water body types. In 1994, a survey was conducted on State nutrient Water Quality Criteria. This new survey is a follow up, on the 1994 survey to evaluate the progress made by States and Tribes in adoption of nutrient criteria in their Water Quality Standards and to determine the current status of State Nutrient Criteria.

## **Summary of Results**

All States, Territories and Tribes were reviewed to determine if they have adopted nutrient criteria in their Water Quality Standards. Every State had narrative standards that protected the waters from objectionable conditions, such as floating material, which can be used to indicate nutrient problems. Other States had narrative nutrient standards, which specifically mentioned eutrophication as a problem to be prevented in their narrative nutrient standard. In some States a translator such as the Trophic State Index (TSI) is used to indicate areas where eutrophication may be a problem.

Numeric criteria for turbidity is the most common nutrient parameter. In this survey, the turbidity values were recorded but not analyzed to determine if it is for nutrient enrichment protection or for other endpoints. The next most common numeric nutrient criteria is total phosphorus in lakes and rivers. Some States had chlorophyll a criteria for specific water bodies such as lakes and reservoirs. Total nitrogen standards for lakes and rivers are adopted in a few States. Secchi depth standards were found in some Water Quality standards. The eco-region specific nutrient criteria development process recommended by EPA is used by some States in developing criteria. All four EPA recommended parameters (e.g. total phosphorus, total nitrogen, chlorophyll a and water clarity) were adopted in two States, and this was specifically in Lakes. There are three nutrient trading programs established, two of which are incorporated on specific river basins and one is on a statewide level.

Tribes and Territories have also adopted nutrient standards. All the Tribes that have Water Quality Standards have incorporated some guideline values for nutrient parameters. Often the Tribes have adopted one numeric nutrient criteria that is applicable to all waterbodies occupied by the Tribe.

## **Study Components**

### **1) Does the State have narrative nutrient criteria?**

Some of the narrative criteria included the word “eutrophication” and specifically targeted a nutrient enrichment issue. Most States, however, had a general narrative criteria that did not directly target nutrients but indirectly was protective of any unnatural conditions. An example of a general narrative nutrient criteria is one like Mississippi’s.

## Mississippi Water Quality Standard:

“Water shall be free from materials attributable to municipal, industrial, agricultural or other discharges producing color, odor, taste, total suspended solids, or other conditions in such degree as to create a nuisance, render the waters injurious to public health, recreation or to aquatic life and wildlife or adversely affect the palatability of fish, aesthetic quality, or impair the water for any designated uses ” (November, 1995)

New Jersey’s Water Quality Standard is more specific toward nutrient enrichment problems.

“Except as due to natural conditions, nutrients shall not be allowed in concentrations that cause objectionable algal densities, nuisance aquatic vegetation, abnormal diurnal fluctuations in dissolved oxygen or pH, changes to the composition of aquatic ecosystems, or otherwise render the waters unsuitable for the designated uses ” (January 22, 2002)

All States, Tribes and Territories had some narrative criteria similar to Mississippi’s criteria. A few States had specifically mentioned eutrophication as a problem to be addressed, in their narrative standard. A few States had protection only from ‘floating materials and debris’, which could be interpreted as protecting from nutrient problems.

### 2) Does the State have a narrative nutrient criteria with a translator?

Some States incorporated the Carlson’s Trophic State Index (TSI) in their Narrative Criteria. The Trophic State Index includes data on chlorophyll, phosphorus or Secchi depth. A TSI is useful only in a lake and its use is to predict the amount of nutrient that is in the water.

Three States have a special designation of ‘Nutrient Sensitive Water,’ or ‘Nutrient Enriched Waters’ to the water bodies that they know to have nutrient related problems. These States include Virginia, North Carolina, and Oklahoma.

### 3) Does the State have numeric nutrient criteria?

The specific EPA recommended parameters are: Total nitrogen, total phosphorus, water clarity (Secchi depth, turbidity) and chlorophyll *a*. If a State had criteria for other parameters to protect from nutrient over-enrichment, that parameter was recorded in the survey.

State’s numeric criteria are associated with a designated use, water body type or in some cases there is a statewide criteria for a specific parameter. Most numeric criteria were adopted for freshwater. Many States have phosphorus criteria for their lakes whereas fewer States have phosphorus criteria for both their lakes, rivers and streams. It was only in a few States that both nitrogen and phosphorus criteria were listed for the same lake or river.

Numeric turbidity criteria are found in almost all States, whereas chlorophyll *a* criteria are found in a few States. All States had ammonia and nitrate criteria but it was for toxicity and human health purposes. However, some States had a nitrate criteria with the intent to reduce the acceleration of eutrophication.

Some States have also stated in their Water Quality Standards that they would set site specific limits in the event that eutrophication becomes a problem in their waterbodies. Most commonly, States mentioned that they would reduce effluent levels of nitrogen and phosphorus if over-enrichment became a problem.

#### 4) Other questions addressed in the survey.

- How many states have nitrate criteria for protection against eutrophication?
- What is the monitoring frequency for nutrient parameters?
- What action would the State take if nutrient criteria are exceeded?
- What rationale does the State provide for adopting a certain type of nutrient criteria?
- Has the State adopted a nutrient trading program?

The answers were found in some of the Water Quality Standards (WQS), but not all. If the information was not in the WQS of the State, then it is not recorded in this document.

#### **Survey data compilation:**

Table 1.1.1.2 contains the overall results giving an overview of what types of standards states have and how many States have different types of standards.

Appendix A contains the numeric standards or guideline nutrient parameter concentrations used by States. These tables are compiled to show the parameters and concentrations found across different States, for comparison purposes.

Appendix B contains the full compilation of both narrative and numeric criteria, as well as, designated uses, load/concentration, date of adoption and any other nutrient related comments found in WQS of States.

Appendix C contains the types of nutrient criteria adopted by Tribes.

#### **Procedure for collection of Data**

The Water Quality Standards of all States, Tribes and Territories are on the EPA website: <http://www.epa.gov/waterscience/standards/wqslibrary/>. This information has been updated twice since the beginning of the survey in July 2002. The survey was conducted between July 25, 2002 and December 2002. The date that the survey material was collected as well as the adoption date of the different standards has been recorded in the tables of the survey report.

#### **Contact Information**

For additional questions, comments or suggestions for future surveys, please contact:

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### Table 1 1 Summary of State Nutrient Standards

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State	Narrative Nutrient Standard	Translator TSI State Index	Numenc	Numenc	Numenc	Numenc	Turbidity		Site Specific Limits	Trading Program
			Rivers-P	Lakes - P	Nitrate* for protection against eutrophication	Chlorophyll a	Narrative	Numeric		
<b>Region 6</b>										
Arkansas	yes									
Louisiana	yes									
New Mexico	yes						yes			
Oklahoma	yes	Nutrient Limited waters/TSI	yes					yes		
Texas	yes						yes		yes	
<b>Region 7</b>										
Iowa	yes							yes		
Kansas	yes						yes			
Missouri	yes						yes		yes	
Nebraska	yes							yes		
<b>Region 8</b>										
Colorado	yes						yes		yes several Reservoirs	yes
Montana	yes							yes - based on background	yes- Clark Fork River	
North Dakota	yes		yes	yes	yes					
South Dakota	yes						yes	TSS - 158 mg/l grab	yes	
Utah	yes		yes	yes	yes			yes -based on background	yes- TMDL based	
Wyoming	yes							yes - based on background		

### Table 1.1 Summary of State Nutrient Standards

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Table 1 2 Number of States and Territories and the different types of Nutrient standards adopted in their Water Quality Standards.

Nutrient Criteria	Adopted in WQS (Number of States and Territories)
Narrative Nutrient Criteria in WQS	53
Narrative Turbidity Criteria	18
Numeric Turbidity Criteria	35
Narrative Nutrient Criteria with Numeric Translator	6
Numeric Lakes Phosphorus Criteria	15
Numeric Rivers, Streams Phosphorus Criterion	12
Numeric Phosphorus Coastal Criteria	1
Numeric Rivers and Streams Total Nitrogen Criteria	3
Numeric Lakes Nitrogen Criteria	4
Numeric <i>Chlorophyll a</i> criteria	8
Numeric Nitrate Criteria*	5
States with Nutrient Trading Programs (statewide or waterbody- specific)	5
Numeric Criteria for All Four Nutrient Parameters in Any One or All Waterbody type	2

\* Nitrate criteria adopted to protect against eutrophication effects. This survey does not include nitrate criteria adopted to protect the drinking water use. .

APPENDIX A. Table 1.3 - 1.11 Numeric Nutrient Criteria or guideline values used by States

States by Region	Numeric Rivers, Streams P-Criteria (TP) (mg/l)	Numeric Lakes, Reservoir (R) TP Criteria (mg/l)	Numeric Nitrate (NO <sub>3</sub> -N), dissolved inorganic nitrogen to protect from eutrophication (mg/l)	Numeric Chlorophyll <i>a</i> criteria (ug/l)
<b>Region 1)</b> Vermont	Upland Streams total phosphorus shall not exceed <b>0.010</b> at Low median monthly flow	2 Lakes and their respective segments have criteria 0.010-0.054 TP (Table 1.5)	<b>0.20</b> -above 2500ft class A1 & 2 <b>2.0</b> - below 2500ft class A1& 2 <b>5.0</b> - low median monthly flow, Class B waters <b>5.0</b> l -lakes, ponds, reservoirs	
Rhode Island		<b>0.025</b> (lakes, ponds, reservoirs)		
<b>Region 2)</b> New York		<b>0.020</b> excluding some lakes		
New Jersey	<b>0.1</b>	<b>0.05</b>	<b>2</b>	
Puerto Rico	<b>1</b>	<b>1</b>		
Virgin Islands	only coastal TP criteria <b>0.050</b>			Secchi depth 1m (coastal)
<b>Region 3)</b> Delaware Tidal portions of the stream basins of Indian River, Rehoboth Bay, Little Assawoman Bay			Dissolved inorganic N <b>0.14</b> Dissolved Inorganic P <b>0.01</b>	
<b>Region 4)</b> North Carolina			Chlorophyll <i>a</i> -Not to exceed 40ug/l - Lakes and reservoirs (not trout waters) Not to exceed 15ug/l- trout waters	
Alabama			Chlorophyll <i>a</i> - Lakes and reservoirs have chlorophyll <i>a</i> criteria - Table 1.6	
<b>Region 5)</b> Illinois	<b>0.05</b> for streams at the point of entrance to a reservoir or lake that has surface area of 8.1 hectares or more	<b>0.05</b> for Lakes or reservoirs with surface area of 8.1 hectares or more Open waters of Lake Michigan - 0.007		

States by Region	Numeric Rivers, Streams P-Criterion (TP) (mg/l)	Numeric Lakes, Reservoir (R) TP Criterion (mg/l)	Numeric Nitrate (NO3-N), dissolved inorganic nitrogen to protect from eutrophication (mg/l)	Numeric Chlorophyll <i>a</i> criteria (ug/l)
Region 6) Oklahoma	Scenic rivers 0.037			
Arkansas (Use values for screening only)	0.1 streams	0.05 Lakes and reservoirs		
Region 8) North Dakota	0.1 Class 1 streams	PO as P 0.02	1.0 mg/l for class 1 streams NO as N 0.25 for Lakes/Reservoirs	
Colorado		Site specific Dillion Reservoir 0.0074		Site Specific 15 ug/l Cherry Creek reservoir
Utah	TP -0.05 -Streams and Rivers - protect non game fish and other aquatic life, cold and warm water species	TP -0.025 - Lakes and reservoir - protection of recreation, agricultural, domestic uses		
Region 9)	Refer to Table 1 9 -Arizona, Table 1 8- Nevada, Hawaii 1 10, California Appendix A for detailed criteria			
Region 10) Washington	Nutrient Criteria set by eco-region (Table 1 11)			
Oregon	P in-stream 5 day total as P mg/l P elemental marine chronic criteria 0.1mg/l Bear Creek P elemental 0.08 mg/l		chlorophyll <i>a</i> - For Natural Lakes which thermally stratify not greater than 0.01mg/l. Natural lakes which don't thermally stratify, reservoirs, rivers and estuaries - 0.015mg/l	
Alaska	P elemental 0.0001 for marine and estuarine waters			

**Table 1.4 Connecticut Lake Trophic Classification**

<b>Connecticut</b>	<b>TP (ug/l) (spring-summer)</b>	<b>TN (ug/l) (Spring - summer)</b>	<b>Chlorophyll-a (ug/l) (Mid-summer)</b>	<b>Secchi Disk (m) (mid summer)</b>
<b>Lake</b>				
Oligotrophic	0-10	0-200	0-2	6+
Mesotrophic	10-30	200-600	2-15	2-6
Eutrophic	30-50	600-1000	15-30	1-2
Highly Eutrophic	50+	1000+	30+	0-1

At each trophic classification, the Lake can belong to class A, AA or B water. Each class has a different designated use. The opportunities for water contact recreational activities varies with each trophic classification of the lakes. The Oligotrophic lakes are designated as having "High potential for water contact recreation-," The Mesotrophic Lakes have "good" potential for water contact recreation. "Water contact recreation opportunities may be limited" in Eutrophic Lakes (Connecticut Water Quality Standard, 2002)

**Table 1.5. Vermont Lake Segment Total Phosphorus Standards**

1) Lake Champlain ( TP concentrations as mg/L)

Main Lake	0.010 as P
Malletts Bay	0.010
Burlington Bay	0.014
Shelburne Bay	0.014
Northeast Arm	0.014
Isle La Motte	0.014
Otter Creek	0.014
Port Henry I	0.014
St Albans Bay	0.017
Missisquoi Bay	0.025
South Lake A	0.025
South Lake B	0.054

2) Lake Memphremagog

Main Lake	0.014
South Bay	0.025

<b>Upland</b>	<b>0.010 mg/l</b>
<b>Streams*</b>	

\*Upland streams are all streams above 2,500 feet in elevation, total phosphorus shall not be exceeded at low median monthly flow

The above criteria shall be achieved as the annual mean total phosphorus concentration in the photosynthetic depth (euphotic zone) in central open water areas of each lake segment

Vermont also has nitrate standards to protect from eutrophication (Table 1.3)

Table 1.6  
Alabama

Which Waterbody type has standard?	Load/Concentration
Criteria for Specific Lakes – Lakes and Reservoirs	
- Walter F. George (measured at deepest point, main river channel, dam forebay)	15 µg/L
- Walter F. George (measured at deepest point, main river channel, approx. 0.25 miles upstream of U.S. Highway 82)	18 µg/L
- West Point (measured at the LaGrange, Georgia Water Intake)	27 µg/L
- Weiss (measured at deepest point, main river channel, power dam forebay; or at deepest point, main river channel, immediately upstream of Alabama Highway 9 at Cedar Bluff)	20 µg/L
- Thurlow (measured at deepest point, main river channel, dam forebay)	5 µg/L
- Yates (measured at deepest point, main river channel, dam forebay)	5 µg/L
- Martin (measured at deepest point, main river channel, dam forebay; at deepest point, main river channel, immediately upstream of Blue Creek embayment; or at deepest point, main creek channel, immediately upstream of Alabama Highway 63 [Kowaliga] bridge)	5 µg/L
- R. L. Harris (measured at deepest point, main river channel, dam forebay)	10 µg/L
- R. L. Harris (measured at deepest point, main river channel, immediately upstream of the Tallapoosa/Little Tallapoosa River confluence)	12 µg/L
- Pickwick (measured at deepest point, main river channel, dam forebay)	18 µg/L
- Wilson (measured at deepest point, main river channel, dam forebay)	18 µg/L
- Wheeler (measured at deepest point, main river channel, dam forebay)	18 µg/L
- Guntersville (measured at deepest point, main river channel, dam forebay)	18 µg/L
- Cedar Creek (measured at deepest point, main creek channel, dam forebay)	8 µg/L
- Little Bear Creek (measured at deepest point, main creek channel, dam forebay)	8 µg/L

**Table 1.7**  
Georgia Nutrient Criteria

<b>Waterbody</b>	<b>Total Phosphorus (pounds) per acre foot of lake volume per year</b>	<b>Total Nitrogen (mg/l) (photic zone)</b>	<b>Chlorophyll a (ug/l) (April-October)</b>
West Point Lake	2.4 pounds per acre foot of lake volume per year	4.0	27
<b>Lake Tributaries:</b> Yellow Jacket Creek at Hammet Road	11000		
New River at Hwy 100	14000		
Chattahoochee River at US 27	1400000		
<b>Walter F. George Lake</b>	2.4 pounds per acre foot of lake volume per year	3.0	18 15 (Dam forbay)
Major Lake Tributary Chattahoochee River at Georgia Hwy 39	2.00*10 <sup>6</sup> pounds		
<b>Lake Jackson</b>	5.5 pounds per acre foot of Lake Volume per year	4.0	20
Major Lake Tributaries South River at Island Shoals	179000		
Yellow River at Georgia Hwy 212	116000		
Alcovy River at Newton Factory Bridge Road	55000		
Tussahaw Creek at Fincherville Road	7000		
<b>Lake Allatoona</b>  Etowah river	1.3 340,000 lbs/year, 42000lbs/year, 38,000lbs/year, 9200lbs/year	4	10 ug/l , 15ug/l, 12 ug/l depending on location
Lake Sidney Lanier	0.25 annual loading not to exceed 178000,118000,14400	4	5ug/l, 10ug/l depending on location

**Table 1.8 Nevada Water Quality Standards**

Water body-specific NAC 445A 145-226 (List below excludes NAC 445A 147, 149, 150-151, 162-217,225)

Overall WQS for Class A,B,C and D (445A 124-127) available in Appendix A

NAC 445A 218 Jarbridge River East Fork

NAC 445A 222 Owyhee River East Fork above Mill Creek

NAC 445A 223 Owyhee River. East Fork south of Owyhee

NAC 445A 224 Owyhee River. East Fork Nevada-Idaho State line

\* S.V defined means Single Value, A-Avg. and A.A means Annual

Parameter	Requirements to maintain existing higher quality	Water quality standards for beneficial uses	Beneficial uses
Total Phosphorus (mg/l)		<0.1	Aquatic life, water contact recreation, municipal and domestic supply, non contact recreation
Nitrogen species (mg/l)	Nitrate S.V <1.0	Nitrate S.V <10 Nitrite S.V <0.06 Ammonia S.V <0.02 un-ionized	Municipal and domestic supply, aquatic life, water contact recreation, non-contact recreation

NAC 445A 219 Jarbridge River upstream from Jarbridge

Jarbridge River - control point upstream from Jarbridge at bridge

NAC 445A 220 Jarbridge River downstream from Jarbridge

NAC 445A 221 Bruneau River West Fork

Total Phosphorus (mg/l)	S.V <0.05	<0.1	Aquatic life, water contact recreation, municipal and domestic supply, non contact recreation
Nitrogen species (mg/l)	Nitrate S.V <1.0	Nitrate S.V <10 Nitrite S.V <0.06 Ammonia S.V <0.02 un-ionized	Municipal and domestic supply, aquatic life, water contact recreation, non-contact recreation

NAC 445A 162 West Walker River near Wellington

Total Phosphorus (mg/l)	A-Avg : <= 0.07 S.V. <= 0.10	A-Avg. <=0.1	Aquatic life, water contact recreation, municipal and domestic supply, non contact recreation
Nitrogen Species (mg/l)	Total Nitrogen A-Avg <=0.6 S.V <=1.0	Nitrate S.V <=10 Nitrite S.V <0.06 Ammonia S.V <0.02 un-ionized	Municipal and domestic supply, aquatic life, water contact recreation, non-contact recreation

NAC445A 161 Topaz Lake

Parameter	Requirements to maintain existing higher quality	Water quality standards for beneficial uses	Beneficial uses
Total Phosphorus (mg/l)		A-Avg $\leq 0.05$ S V $\leq 0.10$	Aquatic life, water contact recreation, municipal and domestic supply, non contact recreation
Nitrogen Species (mg/l)	Total Nitrogen A-Avg $\leq 0.6$ S V $\leq 1.0$	Nitrate S V $\leq 10$ Nitrite S V $\leq 0.06$ Ammonia S V $\leq 0.02$ un-ionized	Municipal and domestic supply, aquatic life, water contact recreation, non-contact recreation

NAC 445A.160 West Walker River at the State line

Total Phosphorus (mg/l)		A-Avg $\leq 0.05$ S V $\leq 0.10$	Aquatic life, water contact recreation, municipal and domestic supply, non contact recreation
Nitrogen Species (mg/l)	Total Nitrogen A-Avg. $\leq 0.6$ S V $\leq 0.9$	Nitrate S V $\leq 10$ Nitrite S V $\leq 0.06$ Ammonia S V $\leq 0.02$ un-ionized	Municipal and domestic supply, aquatic life, water contact recreation, non-contact recreation

NAC 445A 158 Carson River at Lahontan Dam

Total Phosphorus (mg/l)		S V $\leq 0.06$	Aquatic life, water contact recreation, municipal and domestic supply, non contact recreation
Nitrogen Species (N) (mg/l)	Total Nitrogen A-Avg $\leq 1.3$ S.V. $\leq 1.7$	Nitrate S V $\leq 10$ Nitrite S V $\leq 1.0$ Ammonia S V $\leq 0.2$ un-ionized	Municipal and domestic supply, aquatic life (b), water contact recreation, non-contact recreation (b) the most restrictive beneficial uses

NAC 445A 157 Carson River at weeks

Parameter	Requirements to maintain existing higher quality	Water quality standards for beneficial uses	Beneficial uses
Total Phosphates (mg/l)		S V $\leq 0.1$	Aquatic life, water contact recreation, municipal or domestic supply, non contact recreation



Nitrogen Species (N) (mg/l)	Total Nitrogen A-Avg <=0.6 S V <=1.1	Nitrate S V <=10 Nitrite S V <=1.0 Ammonia S V <0.2 un-ionized	Aquatic life municipal or domestic supply water contact recreation stock watering wildlife propagation and non contact recreation
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NAC 445A 156 Carson River at Dayton Bridge

Total Phosphates (mg/l)		A-Avg <=0.1	Aquatic life, water contact recreation, municipal or domestic supply, and non contact recreation
Nitrogen Species (N) (mg/l)	Total Nitrogen A-Avg <=1.2 S V <=1.6	Nitrate S V <=10 Nitrite S V <=1.0 Ammonia S V <0.02 un-ionized	Aquatic life municipal or domestic supply water contact recreation stock watering wildlife propagation and non contact recreation

NAC 445A 155 Carson River near New Empire

Total Phosphates (mg/l)		A-Avg. <0.1	Aquatic life (b) , water contact recreation (b), municipal and domestic supply, non contact recreation B most restrictive uses
Nitrogen Species N (mg/l)	Total Nitrogen A-Avg <1.3 S V <=1.7	Nitrate S.V <10 Nitrite S V <1.0 Ammonia S V <0.02 un-ionized	aquatic life (b)Municipal or domestic supply (b), aquatic life, water contact recreation, non-contact recreation

NAC 445A 154 Carson River at Mexican Ditch Gage

Parameter	Requirements to maintain existing higher quality	Water Quality standards for beneficial uses	Beneficial uses
Total Phosphates (mg/l) as P		A-Avg <0.1	Aquatic life (b) , water contact recreation, municipal and domestic supply, non contact recreation. (b) most restrictive uses
Nitrogen Species N (mg/l)	Total Nitrogen A-Avg <0.8 S V <=1.3	Nitrate S.V <10 Nitrite S V <0.06 Ammonia S.V <0.02 un-ionized	Aquatic life (b)Municipal or domestic supply, aquatic life, water contact recreation stock watering, non-contact recreation

NAC 445A 152 Carson River at Genoa Lane

NAC 445A 153 Carson River at Cradlebaugh Bridge

Total Phosphates (mg/l) as P		A-Avg <0.1	Aquatic life (b) , water contact recreation, municipal and domestic supply, non contact recreation B most restrictive uses
Nitrogen Species N (mg/l)	Total Nitrogen A-Avg : <0.85 S V<=1.2	Nitrate S.V <=10 Nitrite S V <0.06 Ammonia S V <0.02 un-ionized	Aquatic life (b)Municipal or domestic supply, aquatic life, water contact recreation stock watering, wildlife propagation non-contact recreation
<p>NAC 445A.177 Virgin River at Riverside.  <i>Standards of Water Quality - Virgin River</i>  Control Point at Riverside <i>The limits of this table apply from the river mouth at Lake Mead to Mesquit</i></p>			
Total Phosphates (mg/l) as P		A-Avg <0.1	Aquatic life and non-contact recreation
Nitrogen Species N (mg/l)	Total Nitrogen A-Avg <2.9 S V<=6.1	Nitrate S V <90 Nitrite S V <5.0 Ammonia S V <0.06 un-ionized	Aquatic life, stock watering, wildlife propagation and non-contact recreation

Lake Mead

NAC 445A 195 excluding area covered by NAC 445A 197

Nitrogen Species as N single value	Total inorganic Nitrogen 95% of Sample <= 4.5mg/l	Nitrate <=10mg/l Nitrite <=1mg/l	Municipal or domestic supply, or both, watering of livestock, propagation of aquatic life, including without limitation, a warm water fishery, and propagation of wildlife
Chlorophyll a	b		Recreation involving contact with water, propagation of aquatic life, including without limitation, a warm water fishery, recreation not involving contact with water and municipal or domestic supply or both
Unionized Ammonia (mg/l)		c	Propagation of aquatic life, including without limitation, a warmwater fishery

Lake Mead from the Western boundary of Las Vegas Bay campground to confluence of Las Vegas wash

Parameter	Requirements to maintain existing higher quality	Water quality standards for beneficial uses	Beneficial uses
Nitrogen Species as N Single Value	Total inorganic Nitrogen 95% of sample <=5.3mg/l	Nitrate <=90mg/l Nitrite <=5mg/l	Propagation of aquatic life including without limitation a warmwater fishery watering of livestock and propagation of wildlife

445A 199 Las Vegas Wash from confluence of discharges from city of Las Vegas to Clark County Wastewater Treatment Plant

Nitrogen Species as N Single Value	Total inorganic Nitrogen 95% of sample <=20mg/l	Nitrate <=100mg/l Nitrite <=10mg/l	Watering of livestock and propagation of wildlife
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**Water Quality Standards LAKE MEAD**

chlorophyll a (ug/l)	c kl	Nitrate <=90mg/l Nitrite <=5mg/l	Propagation of aquatic life including without limitation a warmwater fishery watering of livestock and propagation of wildlife
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Overall Water Quality Standard for Class A, B, and C waters for Total Phosphate (445A 124-127)

**Class A waters**

Total phosphate Must not exceed 0.15 mg/l in any stream at the point where it enters any reservoir or lake, nor 0.075 mg/l in any reservoir or lake. Nor 0.30 mg/l in streams and other flowing waters.

**Class B waters**

Total Phosphate

Must not exceed 0.3 mg/l

**Class C waters**

Total phosphates Must not exceed 1.0 mg/l

NAC 445A 140 "S.V." defined "S.V." means single value.

NAC 445A.129 'A-Avg' or 'A.A.' defined 'A-Avg' or 'A.A.' means annual

b.

The requirements for chlorophyll a are

(1) Not more than one monthly mean in a calendar year at Station 3 may exceed 45ug/l.

(2) The mean for chlorophyll a in summer (July 1 - September 30) must not exceed 40ug/l at Station 3, and the mean for 4 consecutive summer years must not exceed 30ug/l. The sample must be collected from the center of the channel and must be representative of the top 5 meters of the channel. "Station 3" means the center of the channel at which the depth is from 16 to 18 meters.

(3) The mean for chlorophyll a in the growing season (April 1-September 30) must not exceed 16 ug/l at LM4 and 9ug/l at LM5. LM4 is located just outside of the Las Vegas Bay launch ramp and marina, next to buoy RW "1." LM5 is located next to buoy RW "A" with the southshore landmark of Crescent Island.

(4) The mean for chlorophyll a in the growing season (April 1 - September 30) must not exceed 5ug/l in the open water of Boulder Basin, Virgin Basin, Gregg Basin and Pierce Basin. The single value must not exceed 10ug/l for more than 5% of the samples.

(5) Not less than 2 samples must be collected between the months of March and October. During months when only one sample is available, that value must be used in place of the monthly mean.

c.

The 4-day average for the concentration of un-ionized ammonia in the vertical column of water and the four-sample rolling average for each interval sampled must not exceed 0.05 mg/l more often than once every 3 years. The daily value for this average must account for diurnal fluctuation. Data must be collected at Station 2 from at least three locations between the surface and total depth. This standard is not applicable to the area between Station 2 and the confluence of the Las Vegas Wash. The single value must not exceed 0.45 mg/l more often than once every 3 years. "Station 2" means the center of the channel at which the depth is 10 meters.

**Table 1 9 Arizona**

R18-11-109 Numeric Water quality standards

H The following Water quality standards for total phosphorus and total nitrogen expressed in milligrams per liter (mg/L) shall not be exceeded

\*NNS means no Numeric Standard

	Annual Mean	90 <sup>th</sup> percentile	Single sample max.
<b>1. Verde river and its tributaries from headwaters to Bartlett Lake.</b>			
Total phosphorus	0.10	0.30	1.00
Total nitrogen	1.00	1.50	3.00
<b>2. Black River, Tonto creek, and their tributaries that are not located on tribal lands:</b>			
Total phosphorus	0.10	0.20	0.80
Total nitrogen	0.50	1.00	2.00
<b>3. Salt River and its tributaries, except Pinal Creek, above Theodore Roosevelt Lake that are not located on tribal lands, but not Pinal Creek above Theodore Roosevelt Lake:</b>			
Total phosphorus	0.12	0.30	1.00
Total nitrogen	0.60	1.20	2.00
<b>4. Theodore Roosevelt, Apache Canyon, and Saguaro Lakes:</b>			
Total phosphorus	0.03 <sup>a</sup>	NNS	0.60 <sup>b</sup>
Total Nitrogen	0.30 <sup>a</sup>	NNS	1.00 <sup>b</sup>
<b>5. Salt River below Stewart Mountain Dam to confluence with the Verde River:</b>			
Total phosphorus	0.05	NNS	0.20
Total nitrogen	0.60	NNS	3.00
<b>6. Little Colorado River and its tributaries above River Reservoir in Greer; South Fork of Little Colorado River and above South Fork Campground; Water canyon creek above Apache-Sitgreaves National Forest Boundary:</b>			
Total P	0.08	0.10	0.75
Total N	0.60	0.75	0.10
<b>7. Little Colorado River at crossing of Apache County Road N. 124</b>			
Total P	NNS	NNS	0.75
Total N	NNS	NNS	1.80
<b>8. Little Colorado River above Lyman Lake to above Amitty Ditch diversion near crossing of Arizona Highway 273 (applies only when in-stream turbidity is less than 50 NTU)</b>			
Total P	0.20	0.30	0.75
Total N	0.70	1.20	1.50
<b>9. Colorado River at Northern International Boundary near Morelos Dam:</b>			
Total P	NNS	0.33	NNS
Total N	NNS	2.50	NNS
<b>10. San Pedro River, from Curtiss to Benson:</b>			
Total P	NNS	NNS	NNS
Total N	NNS	NNS	10.00
<b>11 The discharge of wastewater to Show Low Creek and tributaries upstream of and including Fools Hollow Lake shall not exceed 0.16mg/l total phosphates as P</b>			
<b>12 The discharge of wastewater to the San Francisco River and tributaries upstream of Luna Lake Dam shall not exceed 1.0mg/l total Phosphates as P</b>			

NNS mean no numeric standard

<sup>a</sup> means annual mean of representative composite samples taken from the surface and at 2 and 5 meters depths

<sup>b</sup> means maximum for any set of representative composite samples taken from the surface and at 2 and 5 meter depths

Table 1 10 Hawaii  
Inland Nutrient Criteria

Geometric mean not to be exceed the given value						
<i>Parameter</i>	<i>Streams</i>	<i>All estuaries except Pearl Harbor</i>	<i>Pearl Harbor</i>	<i>Embayments</i>	<i>Open Coastals waters</i>	<i>Oceanic waters</i>
Total Nitrogen (ug N/L)	250 180	200	300	200 150	150 110	50
Ammonia Nitrogen ug NH <sub>4</sub> N/L		6	10			
Ammonia Nitrogen (ug (NO <sub>3</sub> + NO <sub>2</sub> )-N/L				6 3.5	3.5 2	1
Nitrate + Nitrite Nitrogen (ug (NO <sub>3</sub> + NO <sub>2</sub> )-N/L	70 30	3	15	8 5	5 3.5	1.5
Total Phosphorus ug P/L	50 30	25	60	25 20	20 16	10
Turbidity	5 2	1.5	4	1.5 0.4	0.5 0.2	0.03
Chlorophyll a (ug/L)		2	3.5	1.5 0.5	0.3 0.15	0.06
Light Extinction coefficient (k units)					0.2 0.1	

**Streams**

First Line -Wet season - November 1 through  
April 30

Second Line - Dry season - May 1 through  
October 31

**Notes for Embayments:**

First Line - Wet criteria apply when the average fresh water inflow from the land equals or  
exceeds one percent of the embayment volume per day

Second Line- Dry criteria apply when the average fresh water inflow from the land is less one percent of  
the embayment volume per day

**Notes for Open Coastal waters**

First Line - Wet criteria apply when the open coastal waters receive more than three million gallons per  
day of freshwater discharge per shoreline mile

Second Line- Dry criteria apply when the coastal waters receive less than three million gallons per day of  
freshwater discharge per shoreline mile

**Notes on Water Quality Standards of Hawaii**

\*Hawaii has detailed Nutrient standards with 'Not to exceed values for 10% and 2%' of the time which is  
not included in this chart. Area specific criteria for Kona Coast is also not included, please review Hawaii  
Water Quality Standard for the detailed standards

**Table 1.11 Washington State Lake Nutrient Criteria**

(This table is used to aid in establishing Lake nutrient criteria.)		
Coast Range, Puget Lowlands , and Northern Rockies Ecoregions		
Trophic State	If ambient TP (ug/l) Range of Lake is:	Then criteria should be set at:
Ultra-oligotrophic	0-4	4 or less
Oligotrophic	>4-10	10 or less
Lower mesotrophic	>10-20 20 or less	
	* Action value >20 ,lake specific study may be initiated	
Cascades Ecoregion:		
Ultra-oligotrophic	0-4	4 or less
Oligotrophic	>4-10	10 or less
	Action value >10 Lake specific study may be initiated	
Columbia Basin Ecoregion:		
Ultra-oligotrophic	0-4	4 or less
oligotrophic	>4-10	10 or less
Lower mesotrophic	>10-20	20 or less
Upper mesotrophic	>20-35	35 or less
	Action Value	
	>35 lake specific study may be initiated	

Washington State uses the ecoregion criteria recommendations in setting Nutrient standards. If an ecoregion does not have a recommended criteria, a lake specific study will be conducted to get a criteria. The criteria will be set to protect designated uses.

# APPENDIX B SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of adoption?	Monitoring frequency	Action if criteria is exceeded	Rationale/ other comments
REGION I Connecticut	Y	Designated uses and the criteria necessary to support those uses 1) <u>Inland Surface waters</u> -Class AA Existing or proposed drinking water supply; habitat for fish and other aquatic life and wildlife, recreation, and water supply for industry and agriculture -Class A habitat for fish and other aquatic life and wildlife, potential drinking water supplies, recreation, navigation, and water supply for industry and agriculture -Class B habitat for fish and other aquatic life and wildlife, recreation, navigation, and industrial and agricultural water supply " -Class C and Class D (with set goal to meet class A or B designated uses) <u>Coastal and Marine surface waters class SA</u> -None other than natural origin except as may result from normal agricultural, road maintenance, or construction activity, dredging activity or discharge of dredged or fill materials provided all reasonable controls and Best Management Practices are used to control turbidity and none exceeding levels necessary to protect and maintain all designated uses " <u>Coastal and Marine Surface waters, Class SB</u> (refer to last column)  3) <u>Lake Trophic classification</u>	Total Phosphorus Total Nitrogen Chlorophyll a Secchi disk transparency  Total Phosphorus Total Nitrogen Chlorophyll a Secchi disk transparency  Total Phosphorus Total Nitrogen Chlorophyll a Secchi disk transparency  Total Phosphorus Total Nitrogen Chlorophyll a Secchi disk transparency  Turbidity (narrative)  Turbidity For Class AA, A and B	Lake – Oligotrophic Maybe class A, AA or class B water  Mesotrophic May be Class AA, Class A, or Class B water  Eutrophic May be Class AA, Class A, or Class B water  Highly Eutrophic May be Class AA, Class A, or Class B water  Coastal and Marine surface waters Class SA, SB  Inland surface waters	0-10 ug/l spring – summer 0-200 ug/l spring-summer 0-2ug/l mid-summer 6+ meters mid-summer  10-30ug/l spring and summer 200-600ug/l spring and summer 2-15 ug/l mid summer 2-6 meters mid summer  30-50ug/l spring and summer 600-1000ug/l spring and summer 15-30ug/l mid summer 1-2 meters mid summer  50 + ug/l spring and summer 1000 + ug/l spring and summer 30+ ug/l mid summer 0-1 meters mid summer  <i>Standard</i> None other than of natural origin except as may result from normal agricultural, road maintenance, construction activity, or dredging provided all reasonable controls and Best Management Practices are used  Shall not exceed 5 NTU over ambient levels and none exceeding levels necessary to protect and maintain all designated uses All reasonable controls or Best Management Practices are to be used to control Turbidity	Effective December 17, 2002	Water Quality Classifications for individual waterbodies are reviewed approximately every three years at which time all available water quality monitoring data is considered	17 Controls on point and nonpoint sources of phosphorus and nitrogen which contribute to the eutrophication of any surface water including streams, rivers, lakes, ponds, impoundments and Long Island Sound may be required on a case-by-case basis  19 Best Management Practices, discharge limitations or other reasonable controls on point and non point sources of phosphorus and nitrogen, including atmospheric deposition, which contribute to the impairment of any surface water shall be required by the commissioner on a case by case basis as necessary to ensure maintenance and attainment of existing and designated uses 20 <i>Use of Best Management Practices and other reasonable controls of nonpoint sources of nutrients and sediment is preferable to the use of biocides for correction of eutrophic conditions</i>	For Class AA and class A the standard for Phosphorus is stated as– "None other than of natural origin"  <u>Coastal and Marine Surface Waters, Class SB</u>  "None other than natural origin except as may result from normal agricultural, road maintenance, or construction activity, or discharge from a waste treatment facility providing appropriate treatment, dredging activity or discharge of dredged or fill materials provided all reasonable controls and Best Management Practices are used to control turbidity and none exceeding levels necessary to protect and maintain all designated uses

## SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of adoption?	Monitoring frequency	Rationale/ other comments
REGION I Maine	Y	Four standards for the classification of Fresh Surface waters 1) Class AA 2) Class A 3) Class B 4) Class C Standards for classification of Lakes and Ponds 1) Class GPA waters  Standards for classification of Estuarine and Marine waters  1) Class SA waters 2) Class SB waters 3) Class SC waters * additional details of classes attached	Standards for classification of Lakes and Ponds (38 MRSA Section 465-A (1)) GPA waters shall be described by their trophic state based on measures of the the chlorophyll a content, secchi disk transparency, total phosphorus content and other appropriate culturally induced algal blooms which impair their use and enjoyment "	All waters  All Lakes		Updated July 2001	1 Assimilative Capacity--Rivers and Streams For the purpose of computing whether a discharge will violate the classification of any river or stream, the assimilative capacity of such river or stream shall be computed using the minimum seven day low flow which occurs once in ten years  <u>Action if criteria is exceeded</u>	A. Notwithstanding section 414-A, the department may not issue a water discharge license for any of the following discharges (4) Discharge of pollutants to waters of the State that imparts color, taste, turbidity, toxicity, radioactivity or other properties that cause those waters to be unsuitable for the designated uses and characteristics ascribed to their class. <u>Chapter 581. REGULATIONS RELATING TO WATER QUALITY EVALUATIONS</u>  SUMMARY These rules provide for the maintenance of stream and lake classifications without violations by computing capacity of the waters to break down waste and shows fish, wildlife, and organisms in file receiving waters to migrate both up and downstream in an undisturbed section of river adjacent to a waste discharge outfall. In addition, a scale of 0 to 100 is established in order to measure the trophic state or degree of enrichment of lakes due to nutrient input.  B Algal bloom - An algal bloom is defined as a planktonic growth of algae which causes Secchi disk transparency to be less than 2.0 meters C Stable or decreasing trophic state A GPA water shall be considered to have stable or declining trophic state unless it exhibits (1) a perceivable and sustained increase in its trophic state as characterized by its Trophic State Index or other appropriate indices, or (2) the onset of algal blooms



## SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "http://www.epa.gov/ost/standards/wqslibrary/

State	Nutrient Criteria? (Y/N)	Designated use or generic?	Parameter	Which Waterbody Type has standard?	Load/Concentration	Date of Adoption?	Monitoring Frequency	Action if Criteria is Exceeded? Rationale/ or other comments?
Massachusetts	Y	Designated use 1) Inland water classes (A,B,C) -Class A-Public water supply -Class B fish habitat and secondary recreation -Class C – class B values plus water can be used for irrigation 2) Coastal and Marine -Class SA,SB,SC	Turbidity (narrative)	Inland water classes		2/23/96		(5) Control of Eutrophication From and after the date 3 14 CMR 4 00 become effective there shall be no new or increased point source discharge of nutrients primarily phosphorus and nitrogen That would encourage cultural eutrophication or the growth of weeds or algae in these Lakes or ponds Any existing point source discharge containing nutrients in concentration which encourage eutrophication or growth of weeds or algae in these lakes or ponds shall be provided with all reasonable control for non-point source <u>Additional Minimum criteria applicable to all surface waters</u>  (c) Nutrients – Shall not exceed the site specific limits necessary to control accelerated or cultural eutrophication (also see 314CMR 4 04 (5))

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>" )

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of standard adoption/ amended?	Monitoring Frequency	Action if Criteria is Exceeded	Rationale / additional comments
REGION 1	Y (mostly narrative)	Two classes of surface waters I Class A highest quality waters The waters of this classification shall be considered as being potentially acceptable For water supply uses after adequate treatment * Mixing zone is prohibited	Class A waters shall contain no phosphorus or nitrogen unless naturally occurring	There is a list of names for selected Lakes, Reservoir, Ponds, Rivers and streams that belong to Class		Effective July 1, 1996 Surface Water Quality Regulations – Chapter 1700 December 10, 1999	VII All tests and sampling for the purposes of examination of waters shall be performed and carried out in a reasonable manner and whenever practicable, in accordance with the commonly accepted scientific method as selected by the department The waters in each classification shall satisfy all the provisions of all lower classifications. The minimum treatment for the lowest classification shall be as follows		Source #7151,eft 12-10-99  Additional Narrative Nutrient Standards  (c) Existing discharges containing either phosphorus or nitrogen which encourage cultural eutrophication shall be treated to remove phosphorus or nitrogen to ensure attainment and maintenance of water quality standards (d) There shall be no new or increased discharge of phosphorus into lakes or ponds (e) There shall be no new or increased discharge(s) containing phosphorus or nitrogen to tributaries of lakes or ponds that would contribute to cultural eutrophication or growth of weeds or algae in such lakes and ponds
New Hampshire		II Class B- second highest water quality Water uses - Fishing, swimming and other recreational purposes and, after adequate treatment, for use as water supplies  (If the standards in Class B cannot be met then standards in paragraph III shall be met )	Class B waters shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring  Turbidity	All lakes and ponds defined as public waters of the state shall be classified by the passage of this section as not less than Class B relating to standards for classification of surface waters of the state	Class B waters shall not exceed naturally occurring conditions by more than 10 NTUs  Waters identified to be in III shall contain no turbidity of unreasonable kind or quality				
		III The waters in temporary partial use areas established under paragraph II shall be free from slick, odors, turbidity, sludge deposits, and surface-floating solids of unreasonable kind or quantity	Dissolved oxygen		At least 75% of saturation				
			pH		6.5-8.0				

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?		Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of Standard adoption/ amended?	Monitoring Frequency	Action if criteria is exceeded	Rationale
		Class	Use							
REGION I										
Rhode Island	Y	Freshwater -Class A	Public drinking water supply, primary and secondary contact recreation, fish and wildlife habitat, industrial processes and good aesthetic value	Turbidity		Not to exceed 5 NTU over background	August 6, 1997			<p>(d) Nutrients- Nutrients shall not exceed the limitations specified in rule 8 D (2) and 8 D (3) and/or more stringent site-specific limits necessary to prevent or minimize accelerated or cultural eutrophication</p> <p>P 17 Nutrients ( For all classes in Freshwater)</p> <p>10 a Average Total phosphorus shall not exceed 0.025mg/l in any lake, pond, Kettlehole, or reservoir, and average Total P in tributaries at the point where they enter such bodies of water shall not cause exceedance of this phosphorus criteria except as naturally occurs, unless the director determines, on a site specific basis that a different value of phosphorus is necessary to prevent cultural eutrophication</p> <p>10 b None is such concentration that would impair any usages specifically assigned to said Class or cause undesirable or nuisance aquatic species associated with cultural eutrophication, nor cause exceedance of the criterion of 10(a) above in a downstream lake, pond, or reservoir. New dischargers of waste containing phosphates will not be permitted into or immediately upstream of lakes or ponds. Phosphates shall be removed from existing discharges to the extent that such removal is or may become technically and reasonably feasible</p> <p>10 Nutrients</p> <p>(For all classes in Seawater)</p> <p>None is such concentration that would impair any usage specifically assigned to said class or cause undesirable or nuisance aquatic species associated with cultural eutrophication. Shall not exceed site-specific criteria limits if deemed necessary by the director to prevent or minimize accelerated or cultural eutrophication. TP, Nitrates and ammonia may be assigned site-specific permit limits based on reasonable Best Available Technology. Where waters have low tidal flushing rates, applicable treatment to prevent or minimize accelerated or cultural eutrophication may be required for regulated nonpoint source activities</p>
		-Class B	Fish and wildlife habitat, primary and secondary contact recreation, industrial processes, cooling, hydropower, aquacultural uses, navigation, irrigation and other agricultural uses. These waters shall have good aesthetic value.	Turbidity		Not to exceed 10 NTU over natural background				
		Class B1	Primary and secondary contact recreation activities, industrial processes, cooling, hydropower, aquacultural uses, navigation, irrigation and other agricultural uses. These waters shall have good aesthetic value.							
		Class C	Secondary contact recreation activities and fish and wildlife habitat. Industrial processes etc same as class B1, B and A.							
		Seawater -Class SA	Shellfish harvesting for direct human consumption, primary and secondary contact recreation activities, fish and wildlife habitat, aquacultural uses, navigation and industrial cooling.	Turbidity		Not to exceed 5 NTU over background				
		-Class SB	Primary and secondary contact recreational activities, shellfish harvesting, fish and wildlife habitat, aquacultural uses, navigation, and industrial cooling.	Turbidity		Not to exceed 10 NTU over background				
		-Class SB1	All Class SB criteria must be met. Primary contact recreation activities may be impaired due to pathogens from approved wastewater discharges.							
		-Class SC	Secondary contact recreation activities, and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation, and industrial cooling. These waters shall have good aesthetic value.							
				TP -for all classes in Freshwater Lake pond kettlehole or reservoir		Average TP shall not exceed 0.025mg/l				

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/osu/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of Standard adoption/ amended?	Monitoring Frequency	Action if criteria is exceeded	Rationale
REGION I Vermont	Y	<b>Class A (1) – Ecological waters</b> Turbidity not to exceed 10NTU <b>Class A (2) Public water supplies</b> (Turbidity of 10 NTU) <b>Class B <i>Aquatic Biota, Wildlife, and Aquatic Habitat</i></b>  In Cold Water Fish Habitat waters - Not to exceed 10 NTU, and b In Warm Water Fish Habitat waters - Not to exceed 25 NTU	Phosphorus criterion	Upland Streams (In addition to compliance with the general policy)	For all streams above 2,500 feet in elevation, total phosphorus shall not exceed 0.010 mg/l at low median monthly flow	Adopted June 10, 1999 Effective July 2, 2000			In all waters, total phosphorus loadings shall be limited so that they will not contribute to the acceleration of eutrophication or the stimulation of the growth of aquatic biota in a manner that prevents the full support of Uses
				Lakes <u>Lake Champlain</u> Maine Lake and Mallets Bay Burlington Bay, Shelburne Bay, Northeast Arm, Isle La Motte, Otter Creek, Port Henry St. Albans Bay South Lake A and Missisquoi Bay  South Lake B	0.010mg/l  0.014mg/l  0.017mg/l 0.025mg/l 0.054mg/l 0.014mg/l			<i>d Lakes ponds or reservoirs that have drainage areas of less than 40 square miles and a drainage area to surface area ratio of less than 500:1 and their tributaries</i> <i>(1) In addition to compliance with the general policy above, there shall be no significant increase over currently permitted phosphorus loadings. Discharges to tributaries shall not increase in-stream conditions by more than 0.001 mg/l at low median monthly flow.</i> <i>Indirect discharges to lakes, ponds, or reservoirs shall not increase total dissolved phosphorus as measured in the groundwater 100</i>	
				<u>Lake Memphremagog</u> Main Lake  South Bay	0.014mg/l  0.025mg/l				
			Nitrate	Other waters	Not to exceed 0.20 mg/l, as nitrate-nitrogen (NO3-N)				In all waters nitrates shall be limited so that they will not contribute to the acceleration of eutrophication, or the stimulation of the growth of aquatic biota, in a manner that prevents the full support of uses
				Lakes, ponds, reservoirs	Not to exceed 5.0mg/l as NO3-N				
				Other waters	Not to exceed 0.20 mg/l, as nitrate-nitrogen (NO3-N)				

## SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of adoption?	Monitoring Frequency	Action if criteria is exceeded	Rationale / additional comment
REGION 2	Y - Narrative Nutrient Policies	Both Use and Type of waterbody				January 2002			<p>2 Except as due to natural conditions, nutrients shall not be allowed in concentrations that cause objectionable algal densities, nuisance aquatic vegetation, abnormal diurnal fluctuations in dissolved oxygen or pH changes to the composition of aquatic ecosystems, or otherwise render the waters unsuitable for the designated uses</p> <p>3 The Department may establish watershed or site-specific water quality criteria for nutrients in lakes ponds, reservoirs or streams, in addition to or in place of the criteria in N.J.A.C. 7:9B-1.4, when necessary to protect existing or designated uses. Such criteria shall become part of these Water Quality Standards</p> <p>4 The Department shall establish water quality based effluent limits for nutrients, in addition to or more stringent than, the effluent standard in N.J.A.C. 7:9-5.7, as necessary to meet the quality criteria</p>
New Jersey (Updated May 2003)		PL - Pinelands area as designated by the Pinelands Protection Act	For Nitrate-Nitrogen		2 mg/L				
		FW2, SE3 Fresh water with discharge Saline Estuarine water	Turbidity		Maximum 30-day average of 15 NTU A maximum of 50 NTU at any time				
		SE1, SE2 Saline Estuarine waters 1 and 2 are the designated uses	Turbidity		A Maximum 30 day average of 10 NTU, a maximum of 30 NTU at any time				
		SC Saline Coastal Waters	Turbidity		Levels shall not exceed 10.0 NTU				<p>5 Activities resulting in the non-point discharge of nutrients shall implement the best management practices determined by the Department to be Necessary to protect the existing or designated uses</p> <p>6 The Department may allow or require the use of algal bioassays, to determine the limiting nutrient in a lake, pond reservoir or Stream</p>
		FW2 - Freshwater where there is a possible discharge	Phosphorus, Total as (mg/L)	<p>In any Lake, pond or reservoir, or in a tributary at the point where it enters such bodies of water except where site-specific criteria are developed</p> <p>Rivers and Streams- except as necessary to satisfy the more stringent criteria</p>	<p>Shall not exceed 0.05 mg/l</p> <p>0.1 mg/l (unless it can be demonstrated that total P is not a limiting nutrient and will not otherwise render the waters unsuitable for the designated uses)</p>				

"limiting nutrient" means a nutrient whose absence or scarcity exerts a restraining influence upon an aquatic biological population

## SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/os/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of adoption	Monitoring Frequency	Action if Criteria is exceeded	Rationale/ other comments
REGION 2	Y	FRESH SURFACE WATERS	Turbidity	Groundwater	Shall not exceed 5 nephelometric units	August 4, 1999			<p>AA, A, B, C, D, SA SB, SC, I, SD, A-Special</p> <p>These waters shall contain no phosphorus and nitrogen in amounts that will result in growths of algae, weeds and slimes that will impair the waters for their best usage</p> <p>Turbidity – not to increase above background levels</p> <p>Class N Fresh water surfaces</p> <p>These waters shall contain no deleterious substances, hydrocarbons or substances that would contribute to eutrophication, nor shall they receive surface runoff containing any such substance.</p>
New York	(mostly narrative)	Class N, The best usages of Class N waters are the enjoyment of water in its natural condition and, where compatible, as a source of water for drinking or culinary purposes, bathing, fishing, fish propagation, and recreation	Nitrogen as (N) effluent limitations for the counties of Nassau and Suffolk	Groundwater effluent	Not to exceed 10mg/l				
Updated May 2003		<p>Ponds, Lakes and reservoirs, which are potable drinking, water sources (Class A, A-S, AA, AA-S) Class B waters which are fishable/ swimmable protection for primary and secondary recreation</p> <p>Class AA-Special (AA-S), The best usages of Class AA-S waters are sources of water supply for drinking, culinary or food processing purposes, primary and secondary contact recreation, and fishing The waters shall be suitable for fish propagation and survival</p> <p>Class A-Special (A-S) fresh surface waters</p> <p>Class AA, Class A, Class B,</p> <p>Other classes Class C, Class D fresh surface waters SALINE SURFACE WATERS, Class SA, Class SB, Class SC, Class I, Class SD</p>	Phosphorus	Ponds, Lakes and reservoirs that are classified as (Class A, A-S, AA, AA-S, and B)	20 ug/l				

## SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of Standard adoption/ amended?	Monitoring Frequency	Action if criteria is exceeded	Rationale
REGION 2 Puerto Rico (Updated May 2003)	Y- Criteria	Class SA – coastal waters and estuarine waters of high quality	No change in any parameters except by natural causes	Coastal, estuarine		October 1990			
		Class SB –coastal and estuarine water intended for primary and secondary contact recreation Propagation and preservation of desired species	Turbidity	Coastal, estuarine	Not to exceed 10NTU except by natural causes				
		Class SC- indirect human body contact, propagation and preservation of desirable species	Turbidity	Not to exceed 10 NTU					
		Class SD- public water supply, propagation and preservation of desirable species, primary and secondary contact recreation	Turbidity	Not to exceed 50 NTU					<b>8 Total Phosphorus</b> Total phosphorus shall not exceed 1 ppm (mg/), in surface water bodies upstream from reservoirs, in segments of surface water bodies with drinking water intakes or estuarine waters except when it is demonstrated to the satisfaction of the Board that a higher value of total phosphorus in combination with prevailing nitrogen derived nutrients will not contribute to eutrophic conditions in the water body
			Total phosphorus	In surface water bodies upstream of reservoirs,	Shall not exceed 1ppm (mg/l) Unless it is demonstrated that a higher value will not cause eutrophication				
		Class SE – surface waters and wetlands of exceptional ecological value	Ammonia values not to be exceeded given						
			No parameter to be altered						
		Class SG1 – ground water intended for use as source of public water supply, agricultural sources including irrigation	Turbidity	Shall not be altered except by natural causes					

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of Standard adoption/ amended?	Monitoring Frequency	Rationale/ General Criteria
REGION 2 Virgin Islands	Y- Criteria	Class A- <i>Preservation of natural phenomena Requiring special conditions such as the Natural Barrier Reef at Buck Island St Croix and the Under Water Trail at Trunk Bay St John</i>				September 1985		<i>All surface waters shall meet generally accepted aesthetic qualifications and shall be capable of supporting diversified aquatic life These waters shall be free of substances attributable to municipal, industrial, or other discharges or wastes as follows</i> <i>(a) Materials that will settle to form objectionable deposits</i> <i>(b) Floating debris, oil, scum, and other matter</i> <i>(c) Substances producing objectionable color, odor, taste, or turbidity</i> <i>(d) Materials, including radionuclides, in concentrations or combinations which are toxic or which produce undesirable physiological responses in human, fish and other animal life, and plants.</i> <i>(e) Substances and conditions or combinations thereof in concentrations which produce undesirable aquatic life</i>
		Class B- <i>For propagation of desirable species of marine life and for primary contact recreation (swimming water skiing, etc.)</i>	Total Phosphorus (as P)	Coastal waters	Shall not exceed 50ug/l			
			Color and turbidity		(A) A Secchi disc shall be visible at a minimum depth of one Meter A maximum NTU reading of three shall be permissible Amended March 7, 1985, May 30 1985			
		Class C <i>Marine life and primary contact recreation</i>	Secchi depth		Must be Visible at 1 meter depth			



# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/osl/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of Standard adoption/ amended?	Monitoring Frequency	Action if criteria is exceeded	Rationale / other
REGION 3									
Delaware	Y	Stream basins and designated use	Dissolved Inorganic Nitrogen	Tidal portions of the stream basins of Indian River, Rehoboth Bay, Little Assawoman Bay, controls need to attain submerged aquatic vegetation growth season	0.14mg/l	August 11, 1999	The levels are to be held for March 1 – October		Nutrients controls may include but shall not be limited to discharge limitations or Best Management Practice
			Dissolved Inorganic Phosphorus		0.01mg/l				
				Lakes and Ponds	Site specific level				Controls to eliminate over-enrichment
		Freshwater > Fish and water ingestion	Nitrate –N		Not to exceed 10mg/l				
			Turbidity		Shall not exceed natural levels by more than 10 units				
Pennsylvania	Y	Designated use	Ammonia Nitrogen Nitrite plus Nitrate		10mg/l	November 17, 2000			
			Phosphorous – case by case basis			Source <a href="http://www.pascode.com/secure/data/025/chapter%2093/chap931oc.html">http://www.pascode.com/secure/data/025/chapter 93/chap931oc.html</a>			
		Potable water supply, Aquatic Life warm water supply, migratory fishes	Turbidity	River and Creek	Not more than 100 NTU				
		Potable water supply, - Aquatic Life – warm water fishery and cold water fishery and migratory fishes	Turbidity	River and Creek	Not more than 40 NTU For the period May 15–Sept. 15 of any year; for the period September 16 – May 14 of any year not more than 100 NTU				Regulations contemplate that the Department will evaluate the degree to which the phosphorus contributes to the impairment of the designated uses on a case by case basis and may impose more stringent limitations where necessary

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of Standard adoption/ amended?	Monitoring Frequency	Action if criteria is exceeded	Rationale
REGION 3 District of Columbia	Y	Designated use A) Primary contact recreation B) Secondary contact recreation and aesthetic enjoyment C) Protection & propagation of fish, shellfish and wildlife D) Protection of human health related to consumption of fish & shellfish E. Navigation	Turbidity (narrative)		Turbidity increase above ambient NTU – 20 for class A,B,C	DC Register – January 21, 2000	Water effect Ratio. Water samples collected from the site shall be representative of critical low flow. A minimum of eight samples per location per season should be evaluated.		
Virginia	Y	State is divided into 9 basins and then further into sub-basins. Also there is a designation of 'Nutrient Enriched Waters' – whenever a water body is designated as "nutrient enriched water," the board shall modify the VPDES permits of point source discharge's into the nutrient enriched waters. If waterway is nutrient enriched it will be designated with a 'NEW' in special standards column.	Total Phosphorous	Discharge's: All discharger's except Holly Farms Poultry Industries, Inc. Chickahomony watershed above Walker's Dam	Effluent standards: Not to exceed 0.1 mg/l monthly average. Holly Farms: 0.3 mg/l daily maximum.	December 10, 1997			9 VAC25-280-330 Purpose: The Board recognizes that nutrients are contributing to undesirable growths of aquatic plant life in surface waters of the Commonwealth. This standard establishes a designation of "nutrient enriched waters." Designations of surface waters of the Commonwealth as "nutrient enriched waters" are determined by the Board based upon an evaluation of the historical water quality data for one or more of the following indicators of nutrient enrichment: chlorophyll "a" concentrations, Dissolved oxygen fluctuations, and concentrations of total phosphorus.
				Rappahannock River Basin	Effluent standard - Nitrogen 1mg/l – weekly average. Phosphorus- 0.1 mg/l – weekly average.				

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of Standard adoption/ amended?	Monitoring Frequency	Action if criteria is exceeded	Rationale
REGION 3	Y (narrative for turbidity)	Designated uses ( 7 designated categories with additional sub-categories)	Turbidity	All waters	Turbidity not to exceed 10 NTU's over the background turbidity of 50 NTU or less or have more than a 10% increase in turbidity (plus 10 NTU minimum) when the background turbidity is more than 50 NTUs)	Effective date July 1, 1999			
West Virginia		Water supply use	Nitrate (mg/l)		10mg/l		1 -One hour average concentration not to be exceeded more than once every three years on the average, unless otherwise noted		
			Nitrite (as Nitrite - N) (mg/l)		Aquatic life >Warm water fishery(B1), and Wetlands (B4)>Acute <sup>1</sup> and Chronic <sup>2</sup> Not to exceed - 1.0 mg/l Trout waters (B2)> Acute <sup>1</sup> -Chronic <sup>2</sup> > 0.060mg/l		2 -Four-day average concentration not to be exceeded more than once every three years on the average, unless otherwise noted		
Maryland (Updated web site - complete MD Water quality standard not found)	N	7 designated uses Antidegradation Tier 1, 2 and 3	Ammonia Criteria	For Freshwater aquatic life	A very detailed table including temperature and pH	If the Indices of biological integrity is not available for a water body the department may determine its status based on other existing fish and bottom community data 5 Pending adoption of numeric nutrient criteria, nutrient concentrations will be less than 50% of the concentrations used to determine the impairment for the purposes of the 303(d) List (Website has been updated so link is not valid Source <a href="http://www.mde.state.md.us/wqstandards/antidegradation2b.htm">http://www.mde.state.md.us/wqstandards/antidegradation2b.htm</a> ( August 13, 2002)			

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of Standard adoption/ amended?	Monitoring Frequency	Action if criteria is exceeded	Rationale
REGION 4 Alabama	Y- Criteria	1) Outstanding Alabama Water 2) Public Water Supply 3) Swimming and other whole body contact sports 4) Shellfish harvesting 5) Fish and wildlife 6) Limited warm water 7) Fishery 8) Agricultural and industrial water supply	Turbidity	All use classifications	50 NTU Above background	January 12, 2001			
			Chlorophyll a	Criteria for Specific Lakes – Lakes and Reservoirs	See Table 1 6				
				Criteria for Specific Lakes - Walter F. George	15ug/l				
				- West point	27ug/l				
				- Weiss	20ug/l				
							Chlorophyll levels set for samples collected between April – October Samples collected monthly at deepest points		

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of standard adoption/ amended?	Narrative Criteria
REGION 4	Y	Class 1 – Potable water supply Class 2 – Shellfish, propagation, or harvesting Class 3 – Recreation Class 4 – Agricultural water supplies Class 5 – Navigation, utility, and industrial use	Turbidity	For all Classes of water	-For all Classes <= 29 NTU -Not greater than 41 NTU for mixing zones	Effective year 1982	<p>Narrative criteria- applies to all classes</p> <p>62-302.530(47) Nuisance Species Substances in concentrations which result in the dominance of nuisance species. None shall be present. This applies to all classes.</p> <p>62-302.530(48)(a) Nutrients The discharge of nutrients shall continue to be limited as needed to prevent violations of other standards contained in this chapter. Man-induced nutrient enrichment (total nitrogen or total phosphorus) shall be considered degradation in relation to the provisions of Section 62-302.300, 62-302.700, and 62-4.242, F.A.C. 62-302.530 (48)(b) Nutrients In no case shall nutrient concentrations of a body of water be altered so as to cause an imbalance in natural populations of aquatic flora or fauna. This applies to waterbody classes I, II, III.</p> <p>Rules</p> <p><b>Section 62.302.300 Finding, Intent and Anti-degradation Policy for Surface water quality</b></p> <p>(13) The Department finds those excessive nutrients (total Nitrogen and total phosphorus) constitute one of the most severe water quality problems facing the State. It shall be the Department's policy to limit the introduction of man-induced nutrients into waters of the State. Particular consideration shall be given to the protection from further nutrient enrichment of waters, which are presently high in nutrient concentrations or sensitive to further nutrient concentrations and sensitive to further nutrient loadings. Also, particular consideration shall be given to the protection from nutrient enrichment of those presently containing very low nutrient concentrations <u>less than 0.3 milligrams per liter total nitrogen or less than 0.04 milligrams per liter total phosphorus.</u></p>
Florida							

## SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration			Date of Standard adoption/amendment	Monitoring Frequency	Rationale
REGION 4 Georgia	Y	Designated uses Drinking Water Supplies Recreation Fishing, Propagation of Fish, Shellfish, Game and Other Aquatic Life Wild River Scenic River Coastal Fishing	Total Nitrogen, Total Phosphorous, chlorophyll a	Only Lakes* and Major Lake Tributaries	West Point Lake	Walter F George Lake	Lake Jackson	Last revised July 2000	Annually once per month during the months of April-October	for Lakes, and monthly for major lake tributaries
					Chlorophyll a Shall not exceed 27ug/l (April through October)	Chlorophyll a April-October not to exceed 18 ug/l	Chlorophyll a Not to exceed 20ug/l (April- October)			
			Turbidity (Narrative)	For all waters	Total Nitrogen Not to exceed 4.0 mg/l in the photic zone	Total Nitrogen Not to exceed 3.0 mg/l in the photic zone	Total Nitrogen Not to exceed 4.3 mg/l as nitrogen in the photic zone			
					TP Not to exceed 2.4 pounds per acre foot of lake volume per year	TP Lake loading not to exceed 2.4 pounds per acre foot of lake volume per year	TP Not to exceed 5.5 pounds per acre foot of lake volume per year			

- \* There are six Lakes in Georgia with the detailed criteria for TP, TN and Chlorophyll a – only 3 are included in the table
- \*\* For Total Phosphorus there is more detailed loading numbers for each tributary of the lake

## SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "http://www.epa.gov/ost/standards/wqslibrary/)

STATE	Designated use/ generic?	Which waterbody type has standard?	Parameters	Load/Concentration	Date of standard adoption/amended?	Monitoring Frequency	Action if criteria is exceeded	Rationale/ Narrative Criteria
Kentucky  (Narrative Nutrient Criteria)	Designated uses 1) Warm water aquatic habitat 2) Cold water aquatic habitat 3) Primary contact recreation 4) Secondary contact recreation 5) Domestic water supply 6) Outstanding state Resource water	Lakes and reservoirs and their tributaries, and other surface waters	Nitrogen, phosphorus	Standards based on a case by case basis	Effective date- 12 8 99			<p><u>Nutrient Limits.</u> In Lakes and Reservoirs and their tributaries, and other surface waters where eutrophication problems may exist, nitrogen, phosphorus, carbon, and contributing trace element dischargers shall be limited in accordance with -</p> <p>(1) The scope of the problem (2) The geography of the affected area (3) Relative contribution from existing and proposed sources</p> <p>Section 2</p> <p><u>Minimum criteria applicable to all surface waters.</u> (1) The following minimum water quality criteria are applicable to all surface waters including mixing zones shall be subject to the provisions of 401 KAR 5 029, section 4 Surface waters shall not be aesthetically or otherwise degraded by substances that</p> <p>(a) Settle to form objectionable deposits (b) Float as debris, scum, oil, or other matter to form a nuisance (c) Produce objectionable color, odor, taste, or turbidity, (d) Produce undesirable aquatic life or result in the dominance of nuisance species</p>
		For domestic water supply (For protection of human health)	Nitrite + Nitrate Nitrogen	Maximum allowable instream conc 10mg/l				
			Nitrite- Nitrogen	Maximum allowable instream conc 1 0mg/l				

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/os/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of standard adoption/ amended?	Monitoring Frequency	Action if Criteria is exceeded	Rationale
REGION 4 Mississippi	Y	Designated use (5) 1) Public water supply 2) Shellfish harvesting 3) Recreation 4) Fish and Wildlife 5) Ephemeral Stream	For 'Public water supply' for Nitrate (as N)		For nitrate as N shall not exceed 10.0 mg/l	November 16, 1995			
			Turbidity Outside the limits of a 750-foot mixing zone shall not exceed the background turbidity at the time of discharge by more than 50 NTU An exemption may be granted in cases of emergency to protect the public health and welfare	All waterbody	Not to exceed 50 NTU -				
Tennessee	Y (few)	Designated uses 1) Domestic water supply 2) Industrial water supply 3) Fish and aquatic 4) Recreation 5) Irrigation 6) Livestock watering and wildlife	Turbidity or color  Turbidity See last column	Designated use - domestic water supply and industrial water supply	Narrative Designated use of domestic water supply and industrial use Turbidity or Color - There shall be no turbidity or color in amounts or- Characteristics that cannot be reduced to acceptable concentrations by conventional water treatment processes	Date of adoption 22 <sup>nd</sup> day of June 1999		Additional Narrative Criteria <u>Turbidity</u> Fish and aquatic life: there shall be no turbidity or color in such amounts or of such character that may be detrimental to fish and aquatic life Recreation: There shall be no turbidity or color in such amounts or character that will result in any objectionable appearance in the water <u>All waters Narrative</u> Tennessee also has solids, floating material and deposits standard and narrative biological criteria for fish and aquatic life	



# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of adoption?	Monitoring frequency	Action if criteria is exceeded	Rationale
REGION 4	Y	14 classifications of waters by type and use Also there is a designation of <i>Nutrient Sensitive waters</i>	Chlorophyll a	Freshwater – Class C waters and tidal salt water For lakes and reservoirs and other waters subject to growths of macroscopic and microscopic vegetation not designated as trout waters	Not to exceed 40ug/l	November 9, 1979		the Commission or its designee may prohibit or limit any discharge of waste into surface waters if, in the opinion of the Director, the surface waters experience or the discharge would result in growths of microscopic or macroscopic vegetation such that the standards established pursuant to this Rule would be violated or the intended best usage of the waters would be impaired,	* designation of Nutrient sensitive waters – in order to limit the discharge of nutrients( usually nitrogen and phosphorus) They are designated NSW following the water classification
North Carolina				Lakes, reservoirs and other waters subject to growths of macroscopic or microscopic vegetation designated as trout waters ( not applicable to lakes and reservoirs less than 10 acres in surface area)	Not to exceed 15ug/l				
			Turbidity	Streams not designated as trout waters	Not to exceed 50 NTU			If turbidity exceeds these levels due to natural background conditions, the existing turbidity level cannot be increased. Compliance with this turbidity standard can be met when land management activities employ Best Management Practices (BMPs) [as defined by Rule 0202(6) of this Section] recommended by the Designated Nonpoint Source Agency [as defined by Rule 0202 of this Section]. BMPs must be in full compliance with all specifications governing the proper design, installation, operation and maintenance of such BMPs,	Nutrients where nutrient over-enrichment is projected to be a concern, effluent limitations shall be set for phosphorus or nitrogen or both
				in streams, lakes or reservoirs designated as trout waters	Not to exceed 10 NTU				Additional Notes -Entire Chowan and a portion of the Upper Cape Fear and White Oak river basins have received NSW designation. Site specific nutrient management strategies have been developed for Lakes Wylie, Jordan, Santeetlah NC House bill 515 -This legislation mandated total nitrogen and phosphorus permit limits for specific discharge to those waters that had been designated as Nutrient sensitive waters -Established a total nitrogen permit limit of 5.5 mg/l and phosphorous limit of 2.0 mg/l for all new dischargers commencing after July 1, 1997, and those dischargers existing before this date and with a discharge greater than 500,000 gallons per day
				For lakes and reservoirs not designated as trout waters Tidal salt waters	Not to exceed 25 NTU				
			Nitrate- Nitrogen	For waters used as a water supply or any other designated use	Maximum permissible concentration – 10.0mg/l				
			TN and TP	Tar Pamlico River Basin	<ul style="list-style-type: none"> <li>Nutrient Management strategy</li> <li>View attached details</li> </ul>				
				Neuse River Basin					

## SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/os/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of Adoption	Monitoring Frequency	Narrative standards, rationale for adoption of criteria.
REGION 4 South Carolina	Y	Water classification 1) Outstanding National resource waters 2) Outstanding resource waters 3) Trout waters 4) Freshwaters 5) Shellfish harvesting waters 6) Class SA tidal saltwater suitable for primary and secondary contact 7) Class SB also suitable for the survival and propagation of a balanced indigenous aquatic community or marine fauna and flora	Turbidity	Trout Waters  Freshwater  Lakes*  Shellfish harvesting waters, SA, SB	– Not to exceed 10% above the natural conditions provided existing uses are maintained  Not to exceed 50 NTUs provided existing uses are maintained * only Not to exceed 25 NTUs provided existing uses are maintained  Not to exceed 25 NTUs provided existing uses are maintained	Effective June 22, 2001		In order to protect and maintain lakes and other waters of the State, consideration needs to be given to the control of nutrients reaching the waters of the State. Therefore, the Department shall control nutrients as prescribed below. Discharges of nutrients from all sources, including point and nonpoint, to waters of the State shall be prohibited or limited if the discharge would result in or if the waters experience growths of microscopic or macroscopic vegetation such that the water quality standards would be violated or the existing or classified uses of the waters would be impaired. Loading of nutrients shall be addressed on an individual basis as necessary to ensure compliance with the narrative and numeric criteria. b. Numeric nutrient criteria for lakes are based on an ecoregional approach, which takes into account the geographic location of the lakes within the State, and are listed below. These numeric criteria are applicable to lakes of 40 acres or more. Lakes of less than 40 acres will continue to be protected by the narrative criteria. c. In evaluating the effects of nutrients upon the quality of lakes and other waters of the State, the Department may consider, but not be limited to, such factors as the hydrology and morphometry of the waterbody, the existing and projected trophic state, characteristics of the loadings, and other control mechanisms in order to protect the existing and classified uses of the waters. d. The Department shall take appropriate action, to include, but not limited to establishing numeric effluent limitations in permits, establishing Total Maximum Daily Loads, establishing waste load allocations, and establishing load allocations for nutrients to ensure that the lakes attain and maintain the above narrative and numeric criteria and other applicable water quality standards.
			Lakes Total Phosphorous Total Nitrogen Chlorophyll a	Lakes Blue Ridge Mountains ecoregion of the State	Lakes 0.02 mg/l 0.35 mg/l 10.0 ug/l			
			Total Phosphorous Total Nitrogen Chlorophyll a	Piedmont and Southeastern Plains	0.06 mg/l 1.50 mg/l 40 ug/l			
			Total Phosphorous Total Nitrogen Chlorophyll a	Middle Atlantic Coastal Plains	0.09 mg/l 1.50 mg/l 40 ug/l			

# SUMMARY OF STATE NUTRIENT CRITERIA

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State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of Standard adoption/ amended?	Monitoring Frequency	Action if criteria is exceeded	Rationale / other comments
REGION 5 Indiana	Y	Eight designated uses by the board 1) Great Lakes – designated as full-body contact recreation 2) Industrial water supply 3) Agriculture use water 4) Public water fishery 5) Limited use water 6) Outstanding state resource waters 7) Salmonid fishery and put and take trout fishing –Sec 5	Dissolved solids shall not exceed 750 mg/l in all waters Dissolved oxygen Chlorides Phenols Sulfates Total phosphorus Total dissolved solids Nitrate		For Total Phosphorus criteria see 'monitoring frequency' Nitrate – 10mg/l	filed Jan 14, 1997,  Readopted filed Jan 10, 2001	Water Quality Criteria 2) During each triennial review of the water quality standards, prior to preliminary adoption of revised rules, the department shall prepare a report for the board on the monitoring data for the constituents in the following table (Table 8-10), as measured at the drinking water intakes in Lake Michigan. If these data indicate that the levels of the constituents are either increasing or exceed the levels in the table, the report shall provide available information on the known and potential causes of the increased levels of these parameters, the known and potential impacts on aquatic life, wildlife, and human health, and any recommended revisions of the criteria Table 8-10 Total phosphorus Monthly average 0.03 mg/l Daily maximum 0.04 mg/l		327 IAC 5-10-2 – Phosphorus removal <u>ARTICLE 5. INDUSTRIAL WASTEWATER PRETREATMENT PROGRAMS (NPDES) WASTEWATER PRETREATMENT</u>
Illinois	Y (to all waters except those in the Great Lakes system)	(A) Industrial water supply (B) Agricultural use (C) Public water supply (D) Full body contact (E) Aquatic life (F) Limited use	Turbidity (narrative for all waters)  Phosphorus   Nitrate (N) + Nitrite (mg/l) Nitrite-N (mg/l)	In any 'reservoir or lake' (see rationale column) with a surface area of 8.1 hectares (20 acres) or more, or in any stream at the point where it enters any such reservoir or lake  Open waters of Lake Michigan Basin  Point of water intake – Human health	Section 302.205 Phosphorus Phosphorus as P shall not exceed 0.05mg/l  7.0 ug/l  Nitrate + Nitrite 10mg/l 1.0mg/l				For the purposes of this Section, the term "reservoir or lake" shall not include low level pools constructed in free flowing streams or any body of water which is an integral part of an operation which includes the application of sludge on land. Point source discharges which comply with Section 304.123 shall be in compliance with this Section for purposes of application of Section 304.105 (Source: Amended at 3 Ill. Reg., no. 20, page 95, effective May 17, 1979.)

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

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(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of adoption?	Monitoring Frequency	Action if Criteria is exceeded	Rationale/ other comments
REGION 5 Minnesota	Y	Yes – water use classification Basin – creek- lakes have designated use	Turbidity		Aquatic Life (2A) – 10NTU Drinking water → 1-5 NTU 2B 25NTU	Water quality standard applicable to use – 4/13/94			Subp 2 Nuisance conditions prohibited -Excessive growths of aquatic plants, or other offensive or harmful effects Subp 8 Class 7 waters, limited resource value waters - 6 Additional standards In addition to the standards in subparts 2 to 5, no sewage, industrial waste, or other wastes from point or nonpoint sources, treated or untreated, shall be discharged into or permitted by any person to gain access to any waters of the state classified for domestic consumption so as to cause any material undesirable increase in the taste, or nutrient content, or in any other manner to impair the natural quality or value of the waters for use as a source of drinking water
			Nitrate Nitrite		10mg/l for drinking water 1mg/l				
			Dissolved oxygen		7mg/l as a daily minimum – more detailed DO standards available				
Wisconsin		Uses and designated standards Intrastate and Interstate waters 1) Fish and aquatic life uses a) cold water communities b) warm water sport fish communities c) warm water forage fish communities d) limited forage fish communities e) limited aquatic life standards for Recreational use 3) Standards for public health and welfare 4) Standards for wildlife	Nutrient (narrative) Maintain the function of the wetland by protecting the natural conditions of the wetland	Wetlands		February 1998			NR 102 06 Phosphorus In addition to the requirements established in ch. NR 217, any wastewater discharger, regardless of population, volume or type of waste discharge, or geographic location, may be required to remove excess amounts of phosphorus. Effluent limitations for total phosphorus based on surface water quality may be established where, in the best professional judgment of the department, such limitations will result in an improvement in water quality, or preserve the quality of surface waters where long-term discharges may result in impairment of water quality. Such limitations for phosphorus shall include an evaluation of the discharges from point sources, nonpoint sources, background sources, tributaries, and a consideration of a margin of safety. History: Cr. Register July 1975 No. 235 eff. 8-1-75 renum. from NR 102 06, Register February 1989, No. 398 eff. 3-1-89
			NH3/N	All surface waters	3mg/l weekly average (May – October) 6mg/l (November – April)				
			Turbidity (narrative) –	Mixing zone	Free of objectionable turbidity				

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/os/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of standard adoption/ amended?	Monitoring Frequency	Action if Criteria is Exceeded	Rationale / narrative criteria
REGION 5	Y mostly narrative	Use designation I) Aquatic Life Habitat a) warm water b) limited warm water c) exceptional warm water d) modified warm water e) seasonal salmonid f) cold water I) inland trout streams II) native fauna g) Limited resource water I) acid mine drainage II) small drainageway maintenance II) other specified conditions  SRW = State Resource Water; PWS = Public Water Supply; AWS = Agricultural Water Supply; IWS = Industrial Water Supply; BW = Bathing Water; PCR = Primary Contact Recreation; SCR = Secondary Contact Recreation  A list of rivers with its tributaries has a designated use table	Total Nitrate as N protection of drinking water		10mg/l	Effective July 31, 1999	3745-1-03 Analytical methods and availability of documents. (A) Analytical methods (1) All methods of analysis used in applying any of the chemical-specific criteria in Chapter 3745-1 of the Administrative Code shall be in accord with those prescribed in 40 CFR part 136, as amended, "Test Procedures for the Analysis of Pollutants" and "Manual of Ohio EPA Laboratory Standard Operating Procedures, Volumes I, II and III," as cited in paragraph (B) of this rule (2) All methods of sample collection and preservation used in applying any of the chemical-specific criteria in Chapter 3745-1 of the Administrative Code shall be in accord with "Ohio EPA Division of Environmental Services Field Practices Sampling Analysis and Bio-monitoring" as cited in paragraph (B) of this rule		3745-1-04 Criteria applicable to all waters (E) Free from nutrients entering the waters as a result of human activity in concentrations that create nuisance growths of aquatic weeds and algae; Effective October 15, 1998  3745-1-05 Antidegradation  (3) The director may waive the submittal and review requirements due to increased discharge from a non-point source IF (b) Any proposed net increase in the discharge of nutrients (such as, but not limited to, phosphorus and nitrogen) or toxic substances complies with all applicable water quality standards and will not threaten environmentally sensitive areas such as downstream lakes, reservoirs, wetlands, exceptional warmwater habitats, coldwater habitats, outstanding national resource waters, outstanding high quality waters, superior high quality waters or state resource waters, Table 7-10 Statewide water quality criteria for the protection against adverse aesthetic conditions (for drinking water and mixing zone maximum) c Total phosphorus as P shall be limited to the extent necessary to prevent nuisance growths of algae, weeds, and slimes that result in a violation of the water quality criteria set forth in paragraph (E) of rule 3745-1-04 of the Administrative Code or, for public water supplies, that result in taste or odor problems. In areas where such nuisance growths exist, phosphorus discharges from point sources determined significant by the director shall not exceed a daily average of one milligram per liter as total P, or such stricter requirements as may be imposed by the director in accordance with the international joint commission (United States-Canada agreement)
Ohio			Phosphorous (discharge from point source)	Waterbody where point discharge occurs and there is a nuisance algae, weed and slime growth	1 mg/l				
			Total Nitrates + Nitrites	Agricultural use	100mg/l				

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.cpa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of standard adoption?	Monitoring Frequency	Action if Criteria is exceeded	Rationale/ additional comments
REGION 6	Y	Designated uses (A) Extraordinary Resource Waters (B) Ecologically Sensitive Waterbody (c) Natural and Scenic Waterways (D) Primary Contact Recreation (E) Secondary Contact Recreation (F) Fisheries -Trout -Lakes and Reservoirs -Streams (G) Domestic Water Supply (H) Industrial Water Supply (I) Agricultural Water Supply (J) Other Uses	Total phosphorus	Streams	Shall not exceed 100ug/l	January 1998			The Commission may establish alternative nutrient limitations for lakes, reservoirs and streams, and shall incorporate such limitations into appropriate water quality management plans
Arkansas				Lakes and Reservoirs	Shall not exceed 50 ug/l				
			Turbidity	Lakes and Reservoirs	Not to exceed 25				
				Streams - Trout	Not to exceed 10NTU				
				-Ozark highlands					
				-Boston mountains					
				-Ouachita Mountains	Not to exceed 21				
				-Springwater- influenced Gulf Coastal Typical Gulf Coastal					
				Least Altered Delta	Not to exceed 45				
				St Francis River Channel-Altered Delta	Not to exceed 75				
				Mississippi River Red River Arkansas River	Not to exceed 50				

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/osu/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of standard adoption?	Monitoring Frequency	Action if Criteria is exceeded	Rationale/ additional comments
REGION 6 Louisiana	Y (narrative)	Seven water use designations A Primary contact recreation B Secondary contact recreation C Fish and Wildlife propagation D Drinking water supply E Oyster propagation F Agriculture G Outstanding Natural resource water	Turbidity	i Red, Mermentau, Atchafalaya, Mississippi, and Vermilion Rivers and Bayou Teche-150 NTU, ii estuarine lakes, bays, bayous, and canals-, iii Amite, Pearl, Ouachita, Sabine, Calcasieu, Tangipahoa, Tickfaw, and Tchoufouche rivers	i) 150 NTU ii) 50 NTU iii) 50 NTU	2000			8 Nutrients The naturally occurring range of nitrogen-phosphorous ratios shall be maintained. This range shall not apply to designated intermittent streams. To establish the appropriate range of ratios and compensate for natural seasonal fluctuations, the administrative authority will use site-specific studies to establish limits for nutrients. Nutrient concentrations that produce aquatic growth to the extent that it creates a public nuisance or interferes with designated water uses shall not be added to any surface waters.
				freshwater lakes, reservoirs, and oxbows-	25 NTU,				Turbidity for other state waters not included in Subsection B 9 b i-v of this Section, and in waterbody segments where natural background turbidity exceeds the values specified in these clauses, turbidity in NTU caused by any discharges shall be restricted to the appropriate background value plus 10 percent. This shall not apply to designated intermittent streams.
				v designated scenic streams and outstanding natural resource waters not specifically listed in Subsection B 9 b i-iv of this Section-	25NTU				



## SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of standard adoption?	Monitoring Frequency	Action if Criteria is exceeded	Rationale/ additional comments
REGION 6	Y	River Basin has a designated use irrigation, livestock watering, wildlife habitat, marginal coldwater fishery, secondary contact, and warmwater fishery	Turbidity	The main stem of the Rio Grande Basin	shall not exceed 50 NTU	Effective February 23, 2000			C. Plant Nutrients Plant nutrients from other than natural causes shall not be present in concentrations which will produce undesirable aquatic life or result in a dominance of nuisance species in surface waters of the State
New Mexico		Designated Uses irrigation storage, livestock watering, wildlife habitat, primary contact, and warmwater fishery	Turbidity	Elephant Butte Reservoir	turbidity shall not exceed 50 NTU				
		A Designated Uses coldwater fishery, primary contact, irrigation, livestock watering, and wildlife habitat.	Turbidity	-The Jemez River from its confluence with the Rio Guadalupe upstream to State Highway -Perennial reaches of Bluewater Creek, Rio Moquino, Seboyeta Creek, Rio Pague, the Rio Puerco within the Santa Fe National Forest, to Horace Springs * Turbidity standard per each stream/river etc	turbidity shall not exceed 25 NTU				
			Phosphorus Turbidity	Perennial reaches of Blue water Creek	Shall not exceed 0.1mg/l Shall not exceed 25NTU				

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of standard adoption?	Monitoring Frequency	Action if Criteria is exceeded	Rationale/ additional comments
REGION 6	Y	Designated use Public and private water supplies Emergency public and private water supplies Fish and wildlife propagation Agriculture livestock and irrigation Hydroelectric power generation Industrial and municipal process and cooling water Primary Body Contact Recreation	Carlson's Trophic State index (using chlorophyll a ) of 62 or greater, or is otherwise listed as "NLW" in Appendix A of chapter	"Nutrient Impaired Reservoir" means a reservoir with a beneficial use or uses determined by the NLW impairment study to be impaired by human induced eutrophication.		UNOFFICIAL 785 45			Source of data is outside of EPA web site " <a href="http://www.state.ok.us/%7Eowrb/rules/Chap45.pdf">http://www.state.ok.us/%7Eowrb/rules/Chap45.pdf</a> " -and it says data is current as of August 29, 2002 <b>Nutrients</b> (A) Narrative criterion applicable to all waters of the state. Nutrients from point source discharges or other sources shall not cause excessive growth of periphyton, phytoplankton, or aquatic macrophyte communities which impairs any existing or designated beneficial use
Oklahoma				"Nutrient-limited watershed" - means a watershed of a waterbody with a designated beneficial use which is adversely affected by excess nutrients as determined by Carlson's Trophic State Index		This document contains emergency amendments to Chapter 45 adopted by the Oklahoma Water Resources Board that became effective May 5, 2002			
			Turbidity	Cool water Aquatic community/ Trout Fisheries	10 NTU		Numerical criteria apply only to seasonal base flow conditions		
				Lakes	25 NTU				
				Other surface waters	50 NTU				
			Phosphorus	Scenic river	shall not exceed 0.037 mg/L				

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of adoption?	Monitoring Frequency	Action if criteria is exceeded	Rationale/ other comments
REGION 6 Texas	Y (narrative)	<p>Site-Specific Uses and Criteria</p> <p>1) Recreation</p> <p>a) Contact recreation waters (CR)</p> <p>b) Non-contact recreation waters (NCR)</p> <p>2) Domestic water supply</p> <p>a) Public water supply (PS)</p> <p>b) Aquifer protection</p> <p>3) Aquatic Life Use Subcategory with dissolved oxygen criteria (mg/l) and 'aquatic life attributes'</p> <p>a) Exceptional</p> <p>b) High (H)</p> <p>c) Intermediate</p> <p>d) Limited</p> <p>There are classified segments of River basins and coastal areas. Each segment has a designated use and a criteria for Cl, DO, sulfate, TDS, pH, Temperature and Fecal Coliform</p>	<p>A&gt; Water and fish</p> <p>&gt;Nitrate-Nitrogen</p> <p>Aquatic Life Attribute - Trophic Structure</p> <p>Balanced</p> <p>Balanced to slightly imbalanced</p> <p>Moderately imbalanced</p> <p>Severely imbalanced</p>		10 000* (ug/l) micrograms/ liter	Adopted by the commission March 19, 1997 Effective April 30, 1997			<p>§307.4 General Criteria</p> <p>(c) Nutrient parameters. Nutrients from permitted discharges or other controllable sources shall not cause excessive growth of aquatic vegetation which impairs an existing, attainable, or designated use. Site-specific nutrient criteria, nutrient permit limitations, and/or separate rules to control nutrients in individual watersheds will be established where appropriate after notice and opportunity for public participation and proper hearing.</p> <p>(5) Waste discharges shall not cause substantial and persistent changes from ambient conditions of turbidity or color.</p>

\* \* Based on Maximum Contaminant Levels (MCL's) specified in 30 TAC §290 (relating to Water Hygiene)

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/osl/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of standard adoption/ amended?	Monitoring Frequency	Action if Criteria is Exceeded	Rationale / narrative criteria
REGION 7	Y (narrative)	By designated uses General use segments Designated use segments Primary contact recreation (Class "A") Cold water aquatic life (Class "B" (CW)) High quality water (Class "HQ") High quality resource water (Class "HQR") Significant resource warm water (Class "B(WW)") Limited resource warm water (Class "B(LR)") Lakes and wetlands (Class "B(LW)") Drinking water supply (Class "C")	Turbidity	All waters	f The turbidity of the receiving water shall not be increased by more than 25 Nephelometric turbidity units by any point source discharge	567--61.1 Rescinded, effective August 31 1977			61.3(2) General water quality criteria. The following criteria are applicable to all surface waters including general use and designated use waters, at all places and at all times to protect livestock and wildlife watering, aquatic life, noncontact recreation, crop irrigation, and industrial domestic agricultural and other incidental water withdrawal uses not protected by the specific numerical criteria of subrule 61.3(3) b. Such waters shall be free from floating debris, oil, grease, scum and other floating materials attributable to wastewater discharges or agricultural practices in amounts sufficient to create a nuisance c. Such waters shall be free from materials attributable to wastewater discharges or agricultural practices producing objectionable color, odor or other aesthetically objectionable conditions.
Iowa Sept. 9 2002	Y (narrative)								
Kansas Sept. 18 2002	Y (narrative)	Designated use 1) Agricultural water use supply 2) Aquatic life support use 3) Special aquatic life use waters 4) Expected aquatic life use waters 5) Restricted aquatic life use waters 6) Domestic water supply use 7) Food procurement use 8) Groundwater recharge use 9) Industrial water supply use 10) Recreational use-primary and secondary	Phosphorus (elemental white) Turbidity Nitrate (as N) Nitrite + Nitrate (as N)	Protect aquatic life - chronic All waters Use water supply public health Agricultural (livestock) Water supply	Phosphorus - chronic 0.1 ug/l Narrative 10000ug/l 100000ug/l 10,000ug/l	June 1 1999	Administrative Permit issuance c. Parameter Testing Frequency The frequency for which a parameter is tested is dependent upon many factors such as the flow rate and type of treatment facility the receiving stream designated uses, the receiving stream flow rate relative to the effluent flow rate the toxicity and likely presence of the parameter potential for episodic flows with higher than normal concentrations of the parameter, operating history of the facility amount and quality of available data, amount and type of industrial contributors to the collection system. A suggested testing frequency follows:		General criteria for surface waters. The following criteria shall apply to all surface waters, regardless of classification. Nutrients. The introduction of plant nutrients into streams lakes or wetlands from artificial sources shall be controlled to prevent the accelerated succession or replacement of aquatic biota or the production of undesirable quantities or kinds of aquatic life. The natural appearance of surface waters shall not be altered by the addition of color-producing or turbidity producing substances of artificial origin. (1) Surface waters shall be free, at all times, from the harmful effects of substances that originate from artificial sources of pollution and that produce any public health hazard, nuisance condition, or impairment of a designated use.

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard? (Or use)	Load/ Concentration	Date of standard adoption/ amended?	Monitoring Frequency	Action if Criteria is Exceeded	Rationale / narrative criteria
REGION 7	Y	1 Primary Contact Recreation 2 Aquatic Life -Coldwater Aquatic Life Use Class Specific Criteria 003 03A Class A- Coldwater 003 03B Class B - Coldwater Warmwater Aquatic Life Class Specific Criteria Class A- Warmwater Class B - Warmwater Water Supply Public Drinking Water Agricultural	Nitrate- Nitrogen	Public water drinking supply	10mg/l	Approved February 2, 2000 Received by Water Resource Protection, April 2, 2000			005 Aesthetics This use applies to all surface waters of the state. To be aesthetically acceptable, waters shall be free from human-reduced pollution which causes 1) noxious odors, 2) floating, suspended, colloidal, or settleable materials that produce objectionable films, colors, turbidity, or deposits, and 3) The occurrence of undesirable or nuisance aquatic life (e.g., algal blooms) Surface waters shall also be free of junk, refuse, and discarded dead animals
Nebraska Sept. 2002			Nitrate and Nitrite as Nitrogen	Agricultural use	Not to exceed 100mg/l				
			Total Ammonia as Nitrogen	Platte River	*there is a detailed table of total ammonia average at various pH's				
			Turbidity	To be classified as State Resource water - Class B (exceed aquatic life and recreational use value) then it has to meet the specific load requirements for turbidity	90 percent or more of the turbidity values less than 50 JTU				
Missouri Sept. 2002	Y	I = Protection of Aquatic Life II = Human Health Protection - Fish Consumption III = Drinking Water Supply IV = Irrigation V = Livestock, Wildlife Watering VI = Whole-Body- Contact Recreation VII = Groundwater	-Nitrate as N -Chronic and acute Criteria for Ammonia in cold- water fishery and warm water fishery temperature and pH specific	Drinking water and ground water	10mg/l	Rescinded December 11, 1977 Code of State regulations 6/30/96	10 CSR 20-7.015 Effluent Regulations Discharges in the White River basin and outside of the area designated above for phosphorus limitations shall be monitored for phosphorus discharges and the frequency of monitoring shall be the same as that for BOD and NFR, but not less than annually The department may reduce the frequency of monitoring if the monitoring data is sufficient for water quality planning purposes		(D) Waters shall be free from substances or conditions in sufficient amounts to result in injury to human, animal or aquatic life  (G) Waters shall be free from physical chemical or hydrologic changes that would impair the natural biological community  Additional Classes Class L1 - Lakes used primarily for Public water drinking supply Class L2 - Major Reservoirs Class L3 - Other lakes which are waters of the state Class P - streams that maintain permanent flow even in drought seasons Class P1 - standing water reaches of Class P streams Class C- Streams that may cease flow Class W- Wetlands
			Phosphorus 10 CSR 20-7.015 Effluent Regulations	1) Discharges to Lake Taneycomo and its tributaries 2) Discharges to Table Rock Lake watershed	Not to exceed 0.5mg/l as a monthly average				

# Summary of State Nutrient Criteria

(Source of Information <http://www.epa.gov/ost/standards/wqslibrary/>)

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of standard adoption/ amended?	Monitoring Frequency	Rationale / narrative criteria
REGION 8	Detailed studies conducted by the commission on specific river basins Also General Criteria for Statewide waterbody	Classification and numeric standards for the Arkansas river basin - No nutrient criteria				October 22 <sup>nd</sup> 1998		The proposed phosphorus (P) standard for Dillon Reservoir, Segment 3 of the Blue River in Summit County was 0.010 mg/l in the top five meters, as an annual average. Based on the record, the Commission found that the summer beneficial uses were those that should be protected by the phosphorus standard. Therefore, the adopted standard of 0.0074 mg/l total phosphorus as P measured in the top 15 meters of water is for the months July through October. The standard as proposed in the notice of rulemaking and that which was adopted are based on the same set of phosphorus sampling, but the adopted standard is based only on the July to October data.
Colorado		Classification and numeric standards for Upper Colorado River Basin and North Platte River	Total phosphorus	Dillon Reservoir, Segment 3 of the Blue River in Summit County	0.0074 mg/l (July-October)		Top 15 meters of water	In adopting the alternate proposal of 0.0074 mg/l P, the Commission reduced the four inorganic numeric special standards for phosphorus assigned only for the Dillon Reservoir portion of Segment 3 of the Blue River. The Commission took this action to maintain the chlorophyll a in the Dillon Reservoir at a level which will protect presently classified beneficial uses. The Commission found there were no significant differences in the phosphorus levels among the areas encompassed by the Reservoir. Maintaining the 0.0074 mg/l of phosphorus should limit chlorophyll a to the 1982 level. The Commission found that the assignment of a single phosphorus standard to the Dillon Reservoir was economically reasonable. (P. 39) (They have a fiscal impact statement) County local government to enforce the point/ non point source tradeoffs - The commission evaluated the standards based on economic feasibility.
		Classification and numeric standards for San Juan River and Dolores River Basins						
		Classification and numeric standards for San Juan Gunnison and Lower Dolores River Basins Re # 35	Use protected designation - no metal or nutrient standards for some segments					
		Rio Grande Basin	Nothing on nutrients					
		Lower Colorado River basin				August 30, 1997		Lower South Platte segment 3 is designated use-protected because it is identified in section 305(b) report as eutrophic.
		South Platte River Basin, Laramie River Basin, Republican River Basin, Smoky Hill river basin	Chlorophyll a	Cherry Creek Reservoir	The chlorophyll a goal of 15 ug/l was a compromise level to protect both recreational and aquatic life uses.	Effective June 20, 2001		
		Bear Creek Reservoir	Narrative water quality standard for phosphorus "Limit concentration of total phosphorus by the extent necessary to prevent algal growth" - improvement in trophic condition		Peak algal biomass (chlorophyll a) most important indicator upon which to assess trophic response, because algae blooms are most often associated with impaired uses. 16% reduction in the frequency of nuisance algal blooms during the growing season would need to be achieved as well as a reduction in frequency and magnitude of the peak chlorophyll a concentrations.	Hearing May 5, 1992 Effective June 20, 2001		38.38 Statement of Basis, specific statutory authority, and purpose, May 4, 1992 Hearing on segment 1c of Bear Creek. Available scientific evidence indicates that, in general, the amount of algae is directly related to the concentration of nutrients, in particular total phosphorus. Experience in lake and reservoir restoration around the country during the past two decades has shown that control and limitation of phosphorus supply remains one of the most effective means of controlling eutrophication. In order to achieve a change in trophic status through reduction in algae growth there will, therefore, have to be a substantial reduction in total phosphorus concentration in the reservoir. The phase I study indicates that phosphorus concentrations in the reservoir averaged 111 ug/liter during the growing season. Water quality models predict a 16 percent reduction in frequency of blooms will require a 70% reduction in external phosphorus loading to the reservoir. There would also need to be concomitant in-lake treatment to reduce internal loading and to improve hypolimnion dissolved oxygen concentrations. (more of "Basic and Purpose" attached )

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of standard adoption/ amended?	Monitoring Frequency	Action if Criteria is Exceeded	Rationale / narrative criteria
REGION 8	Yes mostly narrative	Specific Surface water quality standards <b>A-Closed classification std</b> -suitable for drinking, culinary, and food processing after simple disinfection. Water quality is to be maintained suitable for swimming, recreation, growth and propagation of fishes and associated aquatic life. <b>A-1 Classification standards</b> Waters classified A-1 are to be maintained suitable for drinking culinary and food processing purposes after conventional treatment for removal of naturally present impurities. Water quality must be maintained suitable for bathing, swimming and recreation, growth and propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers, and agricultural and industrial water supply.	Turbidity	Not classified by waterbody	No increase above naturally occurring turbidity is allowed except as permitted in 75-5-318, MCA	Revised October 1999			Narrative Criteria for A-Closed (h) No increases of carcinogenic, bioconcentrating, toxic or harmful parameters, pesticides and organic and inorganic materials, including heavy metals, above naturally occurring concentrations, are allowed.
Montana			Turbidity		Same as above				

## SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of Standard adoption/ amended?	Monitoring Frequency	Action if criteria is exceeded	Rationale
REGION 8	Y	<p><b>Class 1 Streams</b> The quality of the waters in this class shall be suitable for the propagation and/or protection of resident fish species and other aquatic biota and for swimming, boating, and other water recreation</p> <p><b>Class 1A</b> The quality of the waters in this class shall be the same as the quality of Class 1 streams, except that treatment for municipal use may also require softening to meet the requirements of the department</p> <p>The beneficial uses and parameter limitations designated for Class 1 streams shall apply to all classified lakes</p> <p>However, specific background studies and information may require that the department revise a standard for any specific parameter</p>	NO as N PO as P	Lakes (1-5)	0.25mg/l 0.02 mg/l	March 2001			Lakes -these nutrient parameters are guidelines for use as goals in any lake improvement or maintenance program
North Dakota			Phosphorus Nitrate	Class 1 streams	0.1mg/l 1.0mg/l				<p>The standards for nitrates (N) and phosphorus (P) are intended as interim guideline limits. Since each stream or lake has unique characteristics which determine the levels of these constituents that will cause excessive plant growth (eutrophication), the department reserves the right to review these standards after additional study and to set specific limitations on any waters of the state.</p> <p>However, in no case shall the standard for nitrates (N) exceed 10 mg/l for any waters used as a Municipal or domestic drinking water supply</p>



# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of standard adoption/ amended?	Monitoring Frequency	Action if Criteria is Exceeded	Rationale / narrative criteria
REGION 8	Y	Five Classes Domestic water supply 1High Quality waters 1,2,3 2Recreation and aesthetics	Nitrates		Less than 10mg/l	7-17-02	R317-2-10 Laboratory and Field Analyses 10 1 Laboratory Analyses All laboratory examinations of samples collected to determine compliance with these regulations shall be performed in accordance with standard procedures as approved by the Utah Division of Water Quality by the Utah Office of State Health Laboratory or by a laboratory certified by the Utah Department of Health 10 2 Field Analyses All field analyses to determine compliance with these regulations shall be conducted in accordance with standard procedures specified by the Utah Division of Water Quality		It shall be unlawful, and a violation of these regulations, for any person to discharge or place any waste or other substance in such a way as will be or... cause conditions which produce undesirable aquatic life or which produce objectionable tastes in edible Aquatic organisms,
Utah As of August 12, 02		3Non- game fish and other aquatic life, cold water species and warm water species 4Agricultural use including irrigation of crops and stock watering 5The Great Salt Lake protected for recreation, Aquatic wildlife, mineral Extraction	Total Phosphorus	Lakes and Reservoirs	Less than 0 025mg/l				
			Total Phosphorus		0 05 mg/l (3a, 3c)				
South Dakota As of August 19, 2002	Y (Narrative, general except for N)	74 51 01 45 1) Cold water permanent fish life propagation waters 2) Cold water marginal 3) Warm water semi permanent fish life propagation 4) Warm water permanent 5) Warm water marginal fish life propagation Fish and wildlife --->- propagation, 6) recreation and stock, 7)Domestic water supply 8) Recreation water 9) Limited contact recreation waters, 10) Commerce and industry waters and 11) Irrigation waters	Un-ionized ammonia nitrogen as N		<= 0 02 mg/l 30 day average	July 1, 1996		South Dakota 74 51 01 60 Water resource enhancement or restoration projects - Department approval required Projects designed to enhance or restore overall water quality or beneficial uses may include application of registered pesticides for elimination of nuisance aquatic life, including algae, weeds, and undesirable fish life, furtherance of fish and wildlife research projects, and removal of accumulated sediment	74 51 01 09 Nuisance aquatic life. Materials which produce nuisance aquatic life may not be discharged or caused to be discharged into surface waters of the state in Concentrations that impair a beneficial use or create a human health problem
			Un-ionized ammonia nitrogen as N		<= 0 04mg/l 30 day average				
			Nitrate Nitrate (<= 10mg/l)		<= 0 05 mg/l 30 day average <= 50 mg/l 30 day average <= 88 mg/l daily average				

## SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of standard adoption/ amended?	Monitoring Frequency	Action if Criteria is Exceeded	Rationale / narrative criteria
REGION 8	Y	Surface water classes and uses	Turbidity		Section 23 Turbidity	May 1999	Section 10 Testing Procedures		Section 16 Floating and Suspended Solids
Wyoming As of Sept 25, 2002	turbidity	<p>1) Class 1 – Those surface waters in which no further water quality degradation by point source discharge other than from dams will be allowed</p> <p>2) Class 2 – Those surface waters, other than those classified as Class 1, which are determined to support game fish,</p> <p>3) Class 3 – Those surface waters, other than those classified as Class 1 which are determined to be presently supporting non-game fish only</p> <p>4) Class 4 – Those surface waters, other than those classified as Class 1, which are determined to not have the hydrologic or natural water quality potential to support fish and include all intermittent and ephemeral streams Class 4 waters shall receive protection for agricultural uses and wildlife watering * Class 1 and Class 2 are designated as coldwater game fisheries unless identified as a warmwater game fishery by a "ww" notation in Appendix a</p> <p>*Class 1 and Class 2 are designated as coldwater game fisheries unless identified as a warmwater game fishery by a "ww" notation in Appendix a</p>	Detailed Ammonia and pH chart in Appendix C of standard		<p>(a) In all Class 1 and 2 waters which are cold-water fisheries, the discharge of substances attributable to or influenced by the activities of man shall not be present in quantities which would result in a turbidity increase of more than 10 nephelometric turbidity units (NTUs)</p> <p>(b) In all Class 3 waters and in Class 1 and 2 waters which are warm water fisheries, the discharge of substances attributable to or influenced by the activities of man shall not be present in quantities which would result in a turbidity increase of more than 15 NTUs</p> <p>(c) An exception to paragraphs (a) and (b) of this section shall apply to the North Platte River from Guernsey Dam to the Nebraska line during the annual "silt run" from Guernsey Dam</p>		<p>For determination of the parameters involved in the standards, analyses will be in accord with test procedures defined pursuant to Title 40, Code of Federal Regulations, Part 136, or any modifications thereto For test procedures not listed in the Code of Federal Regulations, test procedures outlined in the latest editions of <u>EPA Methods for Chemical Analysis of Water and Wastes</u>, or, <u>Standard Methods for the Examination of Water and Waste</u> 82 waters, or, <u>ASTM Standards, Part 31, Water</u> shall be used</p>		<p><b>Section 16 Floating and Suspended Solids</b> In all Wyoming surface waters, floating and suspended solids attributable to or influenced by the activities of man shall not be present in quantities which could result in significant aesthetic degradation, significant degradation of habitat for aquatic life, or adversely affect public water supplies, agricultural or industrial water use, plant life or wildlife</p>

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Waterbody type	Turbidity (NTU)	Total Phosphorus (micro grams P per liter)	Total Nitrogen (micro grams N per Liter)	Chlorophyll a	Light Penetration depth (to exceed given value 50% of the time )	Date of Standards Adoption/ amendment?	Rationale/ General Criteria
REGION 9	Y-		Median not to exceed the given value					1989 revision	Standards of Water Quality
American Samoa	Critera	Fresh Surface Waters	5	150	300				(1) They shall be substantially free from materials attributable to sewage, industrial wastes, or other activities of man that will produce objectionable color, odor, or taste, either of itself or in combinations, or in the biota
		Pago Pago Harbor	0.75	30	200	1.0	65		24 0206 Water Classifications-Uses Protected, Prohibited
		Embayments	0.35	20	150	0.5	120		Special Embayments
		Fagatele Bay and Pala Lagoon	0.25 Fagatele Bay 0.75 Pala Lagoon	15	135	0.35	130		(C) Protected uses
		Open coastal waters	0.25	15	130	0.25	130		(I) Recreational and subsistence fishing_
		Ocean waters	0.2	11	115	0.18	150		(II) Subsistence food gathering, e.g. shellfish harvesting
		Fresh Water	Embayments						(III) Aesthetic enjoyment,
		Protected uses for fresh surface water	(A) Protected uses for Pago Pago Harbor						(IV) Whole and limited body-contact recreation, e.g. swimming, snorkeling, surfing and scuba diving,
		(A) Potable water supply,	(I) Recreational and subsistence fishing,						(V) Support and propagation of marine life,
		(B) The support and propagation of aquatic life and wildlife,	(II) Boat-launching ramps and designated mooring areas,						(VI) Industrial water supply;
		(C) Aesthetic enjoyment, and	(III) Subsistence food gathering, e.g. shellfish harvesting,						(VIII) Marl-culture development,
		(D) Compatible recreation in and on the water; e.g. fishing	(IV) Aesthetic enjoyment,						(IX) Normal harbor activities, e.g. ship movements, docking, loading and unloading, marine railways and floating drydocks, and
			(V) Whole and limited body-contact recreation, e.g. swimming, snorkeling, and scuba diving,						(X) Scientific investigations
			(VI) Support and propagation of marine life,						
			(VII) Industrial water supply;						
			(VIII) Marl-culture development,						
			(IX) Normal harbor activities, e.g. ship movements, docking, loading and unloading, marine railways and floating drydocks, and						
			(X) Scientific investigations						
			(e) Ocean Waters						
			(1) Protected uses						
			(A) Commercial, subsistence, and recreational fishing						
			(B) Scientific investigations,						
			(C) Commercial and recreational boating						
			(D) The support and propagation of marine life,						
			(E) Aesthetic enjoyment, and						
			(F) Whole or limited body-contact recreation						
			Protected Uses for Pago Pago Harbor						
			(I) Recreational and subsistence fishing,						
			(II) Boat-launching ramps and designated mooring areas,						
			(III) Subsistence food gathering, e.g. shellfish harvesting,						
			(IV) Aesthetic enjoyment,						
			(V) Whole and limited body-contact recreation,						
			e.g. swimming, snorkeling, and scuba diving,						
			(VI) Support and propagation of marine life,						
			(VII) Industrial water supply						
			(VIII) Marl-culture development,						
			(IX) Normal harbor activities, e.g. ship movements, docking, loading and unloading, marine railways and floating drydocks, and						
			(X) Scientific investigations						
			Other Embayments						
			(4) Other Embayments All embayments of the territory excluding Paoa						
			Pago Pago Harbor, Pala Lagoon, and Fagatele Bay are included in this category						
			(A) Protected uses						
			(I) Recreational and subsistence fishing,						
			(II) Boat-launching ramps and designated mooring areas,						
			(III) Subsistence food gathering, e.g. shellfish harvesting						
			(VI) Aesthetic enjoyment,						
			(V) Whole and limited body-contact recreation, e.g. bathing, swimming, snorkeling, surfing, and scuba diving,						
			(VI) Support and propagation of marine life, and						
			(VII) Marl-culture development						

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/os/standards/wqshlibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of standard adoption/ amended?	Monitoring Frequency	Action if Criteria is Exceeded	Rationale / narrative criteria																																																															
REGION 9	Y	A&Wc= aquatic and wildlife coldwater A&Ww = aquatic and wildlife warmwater A&We = aquatic and wildlife ephemeral A&Wedw = aquatic and wildlife effluent dependent water FBC = full body contact PBC = partial body contact DWS = domestic water source FC = Fish consumption AgI = Agricultural irrigation AgL = Agricultural Livestock Watering Other U = waterbody designated as unique water EDW = Effluent dependent water WWTP = Wastewater treatment plant Km = Kilometers  Designated uses of a surface water may include full body contact, partial body contact, domestic water source, fish consumption, aquatic and wildlife (warm water fishery), aquatic and wildlife (ephemeral), aquatic and wildlife (effluent dependent water) agricultural irrigation, and agricultural livestock watering. The designated uses for specific waters are listed in Appendix B of the article	Suspended sediment concentration	Applies to surface water that is at or near base flow and does not apply to a surface water during or soon after a precipitation event	A&W, A&Ww 80mg/l expressed as geometric mean (four sample minimum) A&W, A&wedw 25NTU A&Wc 10NTU	Amended effective April 24, 1996 (Supp 92-1)	R-18-11-111 Analytical Methods A A person conducting an analysis of a sample taken to determine compliance with a water quality standard shall use an approved analytical method prescribed in 9 A A C 14 , Article 6, or an alternative analytical method that is approved by the director of the Department of Health Services under R9-14-607B  B A test from a sample taken to determine compliance with a water quality standard is valid only if the sample has been analyzed by a laboratory that is licensed by the Arizona Department of Health Services for the analysis performed.		Arizona has a narrative nutrient criteria.  R18-11-118 Dams and Flood Control Structures  A Increase in turbidity that result from the routine physical or mechanical maintenance of dams and flood control structures are not violations of this article.  In the Water Quality Standard there is a document titled "Implementation Guidelines for the Narrative Nutrient Criteria" - this document is being revised by Arizona with a completion date of June 2004																																																															
Arizona As of 10/30/02  Narrative Nutrient Implementation Guidelines (28 pages)			R18-11-109 Numeric Water quality standards H The following Water quality standards for total phosphorus and total nitrogen expressed in milligrams per liter (mg/L) shall not be exceeded. <table><thead><tr><th></th><th>Annual Mean</th><th>90<sup>th</sup> percentile</th><th>Single sample max.</th></tr></thead><tbody><tr><td>1 Verde river and its tributaries from headwaters to Bartlett Lake</td><td></td><td></td><td></td></tr><tr><td>Total phosphorus</td><td>0.10</td><td>0.30</td><td>1.00</td></tr><tr><td>Total nitrogen</td><td>1.00</td><td>1.50</td><td>3.00</td></tr><tr><td>2 Black River, Tonto creek, and their tributaries that are not located on tribal lands</td><td></td><td></td><td></td></tr><tr><td>Total phosphorus</td><td>0.10</td><td>0.20</td><td>0.80</td></tr><tr><td>Total nitrogen</td><td>0.50</td><td>1.00</td><td>2.00</td></tr><tr><td>3 Salt River and its tributaries, except Pinal Creek, above Theodore Roosevelt Lake that are not located on tribal lands, but not Pinal Creek above Theodore Roosevelt Lake</td><td></td><td></td><td></td></tr><tr><td>Total phosphorus</td><td>0.12</td><td>0.30</td><td>1.00</td></tr><tr><td>Total nitrogen</td><td>0.60</td><td>1.20</td><td>2.00</td></tr><tr><td>4 Theodore Roosevelt, Apache Canyon, and Saguaro Lakes</td><td></td><td></td><td></td></tr><tr><td>Total phosphorus</td><td>0.03<sup>a</sup></td><td>NNS</td><td>0.60<sup>b</sup></td></tr><tr><td>Total nitrogen</td><td>0.30<sup>a</sup></td><td>NNS</td><td>1.00<sup>b</sup></td></tr><tr><td>5 Salt River below Stewart Mountain Dam to confluence with the Verde River</td><td></td><td></td><td></td></tr><tr><td>Total phosphorus</td><td>0.05</td><td>NNS</td><td>0.20</td></tr><tr><td>Total nitrogen</td><td>0.60</td><td>NNS</td><td>3.00</td></tr></tbody></table> (More standards 6 - 12 on next page ) NNS mean no numeric standard				Annual Mean	90 <sup>th</sup> percentile	Single sample max.	1 Verde river and its tributaries from headwaters to Bartlett Lake				Total phosphorus	0.10	0.30	1.00	Total nitrogen	1.00	1.50	3.00	2 Black River, Tonto creek, and their tributaries that are not located on tribal lands				Total phosphorus	0.10	0.20	0.80	Total nitrogen	0.50	1.00	2.00	3 Salt River and its tributaries, except Pinal Creek, above Theodore Roosevelt Lake that are not located on tribal lands, but not Pinal Creek above Theodore Roosevelt Lake				Total phosphorus	0.12	0.30	1.00	Total nitrogen	0.60	1.20	2.00	4 Theodore Roosevelt, Apache Canyon, and Saguaro Lakes				Total phosphorus	0.03 <sup>a</sup>	NNS	0.60 <sup>b</sup>	Total nitrogen	0.30 <sup>a</sup>	NNS	1.00 <sup>b</sup>	5 Salt River below Stewart Mountain Dam to confluence with the Verde River				Total phosphorus	0.05	NNS	0.20	Total nitrogen	0.60	NNS	3.00			
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<sup>a</sup> means annual mean of representative composite samples taken from the surface and at 2 and 5 meters depths

<sup>b</sup> means maximum for any set of representative composite samples taken from the surface and at 2 and 5 meter depths

## SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "http://www.epa.gov/ost/standards/wqslibrary/)

STATE / REGION CALIFORNIA	NUTRIENT CRITERIA Y/N	DESIGNATED USE/ GENERIC	PARAMETERS	WATERBODY TYPE W/ STANDARD (all waters)	LOAD/ CONCENTRATION	DATE OF STANDARD ADOPTION	MONITORING FREQUENCY	ACTION IF CRITERIA IS EXCEEDED
Water Quality control plan for the North Coast Region 1	Yes		Turbidity	Turbidity shall not be increased more than 20 percent above naturally occurring background levels		December 9, 1993		Bio stimulatory substances  Waters shall not contain bio stimulatory substances in concentrations that promote aquatic growths to the extent that such growth promote nuisance or adversely affect beneficial uses
Water quality control board for the San Francisco Bay basin Region 2	Yes		Turbidity	Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases from normal background light penetration or turbidity relatable to waste discharge shall not be greater than 10 percent in areas where natural turbidity is greater than 50NTU		June 21, 1995		Bio stimulatory Substances Waters shall not contain bio stimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses. Changes in chlorophyll a and associated phytoplankton communities follow complex dynamics that are sometimes associated with a discharge of bio stimulatory substances. Irregular and extreme levels of chlorophyll a or phytoplankton blooms may indicate exceedance of this objective and require investigation
Regional water quality control board 3 (Central Coast) Water Quality Control Plan	Yes		Turbidity	Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increase in turbidity attributable to controllable water quality factors shall not exceed the following limits  Where natural turbidity is between 0 and 50 Jackson Turbidity Units (JTU), increases shall not exceed 20 percent 2. Where natural turbidity is between 50 and 100 JTU, increases shall not exceed 10 JTU 3. Where natural turbidity is greater than 100 JTU, increases shall not exceed 10 percent		September 8, 1994		Eutrophication Estuarine Disposal Where eutrophication problems are apparent, secondary treatment with denitrification, or phosphorus removal and disinfection should be provided prior to discharge

R18-11-109 Numeric Water quality standards

H. The following Water quality standards for total phosphorus and total nitrogen expressed in milligrams per liter (mg/L) shall not be exceeded.

Annual Mean 90<sup>th</sup> percentile Single sample max

6 Little Colorado River and its tributaries above River Reservoir in Greer, South Fork of Little Colorado River and above South Fork Campground, Water canyon creek above Apache-Sitgreaves National Forest Boundary

Total P	0.08	0.10	0.75
Total N	0.60	0.75	0.10

7 Little Colorado River at crossing of Apache County Road N 124

Total P	NNS	NNS	0.75
Total N	NNS	NNS	1.80

8 Little Colorado River above Lyman Lake to above Amity Ditch diversion near crossing of Arizona Highway 273 (applies only when in-stream turbidity is less than 50 NTU)

Total P	0.20	0.30	0.75
Total N	0.70	1.20	1.50

9 Colorado River at Northern International Boundary near Morelos Dam

Total P	NNS	0.33	NNS
Total N	NNS	2.50	NNS

10 San Pedro River, from Curtiss to Benson

Total P	NNS	NNS	NNS
Total N	NNS	NNS	10.00

11 The discharge of wastewater to Show Low Creek and tributaries upstream of and including Fools Hollow Lake shall not exceed 0.16mg/l total phosphates as P

12 The discharge of wastewater to the San Francisco River and tributaries upstream of Luna Lake Dam shall not exceed 1.0mg/l total Phosphates as P

# SUMMARY OF STATE NUTRIENT CRITERIA

-This report does not include Nutrient criteria adopted in Regional Board six, seven and eight Basin Plans

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of standard adoption/ amended?	Monitoring Frequency	Action if Criteria is Exceeded	Rationale / narrative criteria
REGION 9	Y for inland and estuarine surface waters	Uses Aquatic life Agriculture Drinking water PROC	Ammonia -Designated use is aquatic life in inland and estuarine surface waters	Watershed/Streams reaches Ventura County coastal streams Ventura River watershed Santa Clara River Watershed Calleguas- Conejo Creek Watershed Los Angeles County Coastal streams Malibu Creek watershed Ballona Creek Watershed Dominguez Channel Watershed Los Angeles River Watershed, including isolated lakes and reservoirs San Gabriel River watershed Channel Islands watercourses San Antonio Creek watershed Ventura County coastal areas Los Angeles County coastal areas Coastal wetlands	Ammonia Applied to all inland and estuarine surface waterbodies -numeric criteria based on Maximum Contaminant levels (MCLs) and/or waterbody-specific background concentration Either 10mg/l as NO3-N + NO2-N or waterbody specific criteria for NO3-N + NO2-N in inland surface waters specified in Table 3.8 of chapter 3 of Los Angeles basin plan (Please note that waterbody specific criteria for NO3-N + NO2-N are 2,5,8, or 10mg/L, depending on watershed reach. The lack of adequate nitrogen data preclude the establishment of waterbody specific numerical criteria for all inland streams, in these waters, 10mg/L as NO3-N + NO2-N applies ) 45mg/L as NO3 10mg/L as NO3-N, and 1 mg/L as NO2-N	Varies by parameter			<b>Bio stimulatory Substances</b>  Bio stimulatory substances include excess nutrients mg/l (Nitrogen, phosphorus) and other compounds that stimulate aquatic growth. In addition to being aesthetical unpleasant (causing taste, odor, or color problems), this excessive growth can also cause other water quality problems.  Waters shall not contain bio stimulatory substances in concentrations that promote aquatic growth to the extent that such growth causes nuisance or adversely affects beneficial uses (Basin Plan June 13, 1994 Chapter 3 section 8)
California  Los Angeles Water Quality Control Board 4		Designated uses apply to all tributaries of the waterbodies indicated in chapter 2 of the Los Angeles basin plan, if the tributaries are not listed separately	-Numeric criteria for freshwater surface waters are based on EPA's 1999 criteria -Numeric criteria for estuarine surface waters are based on EPA's 1986 criteria						

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "http://www.epa.gov/ost/standards/wqslibrary/

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of standard adoption/ amended?	Monitoring Frequency	Action if Criteria is Exceeded	Rationale / narrative criteria
REGION 9	Y		Turbidity	"Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits		Basin Plans 1998			<b>NARRATIVE CRITERIA</b>
California				Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs) increases shall not exceed 1 NTU					Biostimulatory Substances "Water shall not contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses "
SACRAMENTO/SAN JOAQUIN BASIN PLAN (RB5)				Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent					Chemical Constituents "Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses "
				Where natural turbidity is between 50 and 100 NTUs increases shall not exceed 10 NTUs					Color Water shall be free of discoloration that causes nuisance or adversely affects beneficial uses "
				Where natural turbidity is greater than 100 NTUs increases shall not exceed 10 percent					
				In determining compliance with the above limits appropriate averaging periods may be applied provided that beneficial uses will be fully protected					
				Exceptions to the above limits will be considered when a dredging operation can cause an increase in turbidity In those cases an allowable zone of dilution within which turbidity in excess of the limits may be tolerated will be defined for the operation and prescribed in a discharge permit					
				For Folsom Lake and American River (Folsom Dam to Sacramento River) except for periods of storm runoff the turbidity shall be less than or equal 10 NTUs To the extent of any conflict with the general turbidity objective the more stringent applies					
				For Delta waters the general objectives for turbidity apply subject to the following except for periods of storm runoff the turbidity of Delta waters shall not exceed 50 NTUs in the waters of the Central Delta and 150 NTUs in other Delta waters Exceptions to the Delta specific objectives will be considered when a dredging operation can cause an increase in turbidity In this case an allowable zone of dilution within which turbidity in excess of limits can be tolerated will be defined for the operation and prescribed in a discharge permit					



# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of standard adoption/ amended?	Monitoring Frequency	Action if Criteria is Exceeded	Rationale / narrative criteria
REGION 9	Y					Second edition 1995			<p>Ammonia "Waters shall not contain un-ionized ammonia in amounts which adversely affect beneficial uses"</p> <p>Biostimulatory Substances "Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses"</p> <p>Chemical Constituents "Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses"</p> <p>Color "Waters shall be free of discoloration that causes nuisance or adversely affects beneficial uses"</p> <p>Turbidity "Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses"</p> <p>Implementation policy re. Discharges to Navigable Waters As a minimum discharges to surface waters including stream channels shall comply with the following effluent limits In addition discharges to waters having an EC or water quality objective of less than 150 micromhos shall comply with the following -nutrient removal as necessary to control biostimulation</p>
California									
<b>TULARE LAKE BASIN PLAN (RBS)</b>			<p>Turbidity "Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU Where natural turbidity is between 5 and 50 NTUs increases shall not exceed 20 percent Where natural turbidity is between 50 and 100 NTUs increases shall not exceed 10 NTUs Where natural turbidity is greater than 100 NTUs increases shall not exceed 10 percent In determining compliance with the above limits the Regional Water Board may prescribe appropriate averaging periods provided that beneficial uses will be fully protected</p>						

## SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "http://www.epa.gov/ost/standards/wqslibrary/

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of standard adoption/ amended?	Monitoring Frequency	Action if Criteria is Exceeded	Rationale / narrative criteria
REGION 9	Y	Uses Aquatic life Agriculture Drinking water PROC	Turbidity	-Inland Surface waters, -Lagoons and Estuaries - San Diego Bay	-20 NTU -Transparency not < 50% Secchi Depth -specific transparency parameters	Current as of 1994 Basin Plan			<p>The San Diego Basin Plan (Ch. 3-6) contains water quality objectives for Biostimulatory Substances. "Inland surface waters, bays and estuaries and coastal lagoon waters shall not contain biostimulatory substances in concentrations that promote aquatic growth to the extent that such growths cause nuisance or adversely affect beneficial uses. Concentrations of nitrogen and phosphorus by themselves or in concentration with other nutrients shall be maintained at levels below those that stimulate levels below those, which stimulate algae and emergent plant growth. Threshold total phosphorus (P) concentrations shall not exceed 0.05 mg/l in any stream at the point where it enters any standing body of water; nor 0.025 mg/l in any standing body of water. A desired goal in order to prevent plant nuisance in streams and other flowing waters appears to be 0.1 mg/l total P. These values are not to be exceeded more than 10% of the time unless studies of the specific water body approved in question clearly show that water quality objective changes are permissible and changes are approved by the Regional Board.</p> <p>Analogous threshold values have not been set for nitrogen compounds, however, natural ratios of nitrogen to phosphorus are to be determined by surveillance and monitoring and upheld. If data are lacking, a ratio of N : P = 10 : 1, on a weight-to-weight basis shall be used."</p>
California Region - 9 Regional Board 9 - San Diego			N and P	Inland surface waters, Bays and Estuaries					

This document does not include Regional Board six, seven and eight Basin Plans' Nutrient criteria

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State Territories	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration  SHALL NOT EXCEED	Date of standard adoption/ amended?	Monitoring Frequency	Action if Criteria is Exceede d	Rationale / narrative criteria
REGION 9 Commonwealth of the Northern Mariana Islands	Y	Classification of water uses <b>Marine waters</b> - Class AA It is the objective of this class that these waters remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-related source or actions -Class A - It is the objective of this class of waters that their use for recreational purposes and aesthetic enjoyment be protected <b>Fresh water</b> -Class I The uses to be protected in this class of water are for domestic water supplies, food processing, the support and propagation of aquatic life, compatible recreation and aesthetic enjoyment including water contact recreation Class 2 (b) Class 2 - use for recreational purposes, propagation of fish and other aquatic life, and agricultural and industrial water supply not be limited in any way. The uses to be protected in this class of waters are all uses compatible with the protection and propagation of fish and other aquatic life, and with recreation in and on these waters	Nitrate -Nitrogen	AA A	0.20 mg/l 0.50 mg/l	1/27/97			
Total Nitrogen	AA A, 1 2	0.4 mg/l 0.75 mg/l 1.50 mg/l							
Total Phosphorus	AA A 1,2	0.025 mg/l 0.05 mg/l 0.10 mg/l							
Orthophosphate	AA A 1,2	0.025 0.05 0.10							
Turbidity	AA, 1  A, 2	0.5 NTU over ambient conditions except when due to natural conditions  1.0 NTU above ambient conditions except when due to natural conditions							

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "http://www.epa.gov/ost/standards/wqslibrary/

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters and concentration	Water Classification	Date of standard adoption/ amended?	Monitoring Frequency	Action if Criteria is Exceeded	Rationale / narrative criteria
REGION 9	Y	M-1 Marine waters of the highest quality M2 Good -propagation and survival of marine organisms, particularly shellfish, corals and other reef related resources M3 Fair -Commercial and industrial use Surface Waters	<b>Nutrients</b> <b>Nutrients</b> <b>Phosphorus</b> Orthophosphate (PO4-P) Shall not exceed 0.025 mg/l Orthophosphate (PO4-P) Shall not exceed 0.05 mg/l Orthophosphate (PO4-P) Shall not exceed 0.10 mg/l	Applicable to M-1 S-1 M-2 S-2 M-3 S-3	25 <sup>th</sup> May 1990			In all cases, discharges containing nutrients, primarily nitrogen and/or phosphorous shall be treated to the extent necessary to prevent damage to coral reefs or growth of aquatic species which create a public nuisance or interfere with beneficial uses as defined in section 1
GUAM		Category S-1 HIGH -Drinking water resources, conservation of wilderness areas, propagation and preservation of aquatic life and aesthetic enjoyment. Category S-2 Medium -Used for recreational purposes including water contact recreation, for use as potable water supply after adequate treatment propagation and preservation of aquatic wildlife and aesthetic enjoyment. Category S-3 Low -Used for commercial, agricultural and industrial activities Aesthetic enjoyment and compatible recreation	<b>Nitrogen</b> Nitrate-nitrogen (NO3-N) shall not exceed 0.10 mg/l Nitrate-nitrogen (NO3-N) shall not exceed 0.20 mg/l Nitrate-nitrogen (NO3-N) shall not exceed 0.50 mg/l <b>Turbidity</b> Turbidity at any point, as measured by nephelometric turbidity units (NTU), shall not exceed 0.5 NTU over ambient conditions except when due to natural conditions Turbidity values (NTU) at any point shall not exceed 1.0 NTU over ambient conditions except when due to natural conditions	M-1 S-1 M-2 S-2 M-3 S-3  M-1 S-1  M-2 S-2 M-3 S-3				<b>Turbidity Standard</b>  Since debris, rapidly settling particles and true color give low readings when using Nephelometric methods in making Turbidity determinations and one or more of these conditions may exist in marine and surface water, secchi disc determinations will be used when these conditions exist. Secchi disc visibility shall not decrease by more than 5 meters from ambient conditions except when due to natural conditions

Hawaii has Nutrient standards Please see Table 1.10 for detail

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of standard adoption/ amended?	Monitoring Frequency	Action if Criteria is Exceeded	Rationale / narrative criteria
REGION 9  Nevada Compiled (May, 2003)	Yes Waterbody specific standards (NAC 445A 145 - 226) in Table 1 8 and overall WQS for different classes	<b>Class A waters</b> Municipal or domestic supply, or both, with treatment by disinfections only, aquatic life, propagation of wildlife, irrigation, watering of Livestock, recreation including contact with the water and recreation not involving contact with the water <b>Class B Waters</b> The beneficial uses of class B water are municipal or domestic supply, or both With treatment by disinfection and filtration only, irrigation, watering of livestock, aquatic life and propagation of wildlife, recreation involving contact with the water, recreation not involving contact with the water, and industrial supply <b>Class C waters</b> The beneficial uses of class C water are municipal or domestic supply, or both, following complete treatment, irrigation, watering of livestock, aquatic life, propagation of wildlife, recreation involving contact with the water, recreation not involving contact with the water, and industrial supply <b>Class D waters</b> The beneficial uses of class D waters are recreation not involving contact with the water, aquatic life, propagation of wildlife, irrigation, watering of livestock, and industrial supply except for food processing purposes	Total Phosphate Total Phosphorus Nitrogen Species Chlorophyll a Unionized ammonia	Detailed waterbody specific standards included in Table 1 8 Total Phosphate standards for Class A, B and C	<b>Class A waters</b> Total phosphate Must not exceed 0.15 mg/l in any stream at the point where it enters any reservoir or lake, nor 0.075 mg/l in any reservoir or lake Nor 0.30 mg/l in streams and other flowing waters <b>Class B waters</b> Total Phosphate Must not exceed 0.3 mg/l <b>Class C waters</b> Total phosphates Must not exceed 1.0 mg/l	Revised February, 1998			Waterbody specific standards (NAC 445A 145-226) included in Table 1 8

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameter	Which Waterbody type has standard?	Load/ Concentration	Date of standard adoption/ amended?	Monitoring Frequency	Action if Criteria is Exceeded	Rationale / narrative criteria
REGION 10	Y	State water protected for the following use classes (unless stated otherwise)	Turbidity	Freshwater uses	(1) a) (i) May not exceed 5 nephelometric turbidity units (NTU) above natural conditions when the natural turbidity is 50 NTU or less, and may not have more than 10% increase in turbidity when the natural turbidity is more than 50 NTU, not to exceed a maximum increase of 25NTU (ii) May not cause detrimental effects on indicated use (iii) aquaculture May not exceed 25 NTU above natural conditions For all lake waters, may not exceed 5 NTU above natural conditions (A) Water Supply (iv) industrial May not cause detrimental effects on established water supply treatment levels (B) (i) May not exceed 5 NTU above natural conditions when the natural turbidity is 50 NTU or less, and may not have more than 10% increase in turbidity when the natural turbidity is more than 50 NTU, not to exceed a maximum increase of 15NTU May not exceed 5 NTU above natural turbidity for all lake waters (ii) Secondary recreation May not exceed 10 NTU above natural conditions when natural turbidity is 50 NTU or less, and may not have more than 20% increase in turbidity when the natural turbidity is greater than 50 NTU, not to exceed a maximum increase of 15 NTU For all lake waters, turbidity may not exceed 5 NTU above natural turbidity C) Same as 1 A iii	Standard - September 29, 2000 Quality Criteria for water (1976)			Water Quality Criteria of 1976 has Criterion for Phosphorus, and turbidity same that are the same as Red Book. Phosphorus 0.1 ug/l yellow (elemental) phosphorus for marine or estuarine waters
Alaska Oct 12, 2002		(1) Fresh water (A) Water supply (i) Drinking, culinary, and food processing, (ii) Agriculture, including irrigation and stock watering; (iii) Aquaculture, (iv) Industrial, (B) Water recreation (i) Contact recreation, (ii) Secondary recreation, (C) Growth and propagation of fish, shellfish, other aquatic life, and wildlife, and (2) Marine water (A) Water supply (i) Aquaculture, (ii) Seafood processing; (iii) Industrial, (B) Water recreation (i) Contact recreation, (ii) Secondary recreation, (C) Growth and propagation of fish, shellfish, other aquatic life, and Wildlife, and (D) Harvesting for consumption of raw mollusks or other raw aquatic life							

# SUMMARY OF STATE NUTRIENT CRITERIA

(Source of information "<http://www.epa.gov/ost/standards/wqslibrary/>")

State	Nutrient Std? (Y/N)	Designated use/ generic?	Parameters	Which Waterbody type has standard?	Load/ Concentration	Date of standard adoption/ amended?	Monitoring Frequency	Action if Criteria is Exceeded	Rationale / narrative criteria
REGION 10	Y	<b>100 SURFACE WATER USE DESIGNATIONS</b> Wherever attainable, the designated beneficial uses for which the surface waters of the state are to be protected include (4-5-00) <b>01 Aquatic Life</b> (7-1-93) a. Cold water (COLD) water quality appropriate for the protection and maintenance of a viable aquatic life community for cold water species (4-5-00) b. Salmonid spawning waters which provide or could provide a habitat for active self-propagating populations of salmonid fishes (7-1-93) c. Seasonal cold water (SC) water quality appropriate for the protection and maintenance of a viable aquatic life community of cool and cold water species, where cold water aquatic life may be absent during, or tolerant of, seasonally warm temperatures (4-5-00) d. Warm water (WARM) water quality appropriate for the protection and maintenance of a viable aquatic life community for warm water species (4-5-00) e. Modified (MOD) water quality appropriate for an aquatic life community that is limited due to one (1) or more conditions set forth in 40 CFR 131.10(g) which preclude attainment of reference streams or conditions (4-5-00) <b>02 Recreation</b> (7-1-93) a. Primary contact recreation (PCR) water quality appropriate for prolonged and intimate contact by humans or for recreational activities when the ingestion of small quantities of water is likely to occur. Such activities include, but are not restricted to, those used for swimming, water skiing, or skin diving (4-5-00) b. Secondary contact recreation (SCR) water quality appropriate for recreational uses on or about the water and which are not included in the primary contact category. These activities may include fishing, boating, wading, infrequent swimming, and other activities where ingestion of raw water is not likely to occur (4-5-00) <b>03 Water Supply</b> (7-1-93) a. Domestic water quality appropriate for drinking water supplies (4-5-00) b. Agricultural water quality appropriate for the irrigation of crops or as drinking water for livestock. This use applies to all surface waters of the state (4-5-00) c. Industrial water quality appropriate for industrial water supplies. This use applies to all surface waters of the state. (4-5-00) <b>04 Wildlife Habitats</b> . Water quality appropriate for wildlife habitats. This use applies to all surface waters of the state (4-5-00) <b>05 Aesthetics</b> . This use applies to all surface waters of the state (7-1-93) -Outstanding resource waters -Special resource waters	Turbidity	Mixing zones --> (And Wastewater)	d. Turbidity, below any applicable mixing zone set by the Department, shall not exceed background turbidity by more than fifty (50) NTU instantaneously or more than twenty-five (25) NTU for more than ten (10) consecutive days	4-5-00? (various dates)			Narrative criteria Excess Nutrients Surface waters of the state shall be free from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses (8-24-94)
Idaho As of Sept 15, 2002	(narrative)				Water supply use designation 1) domestic ii. For those surface waters identified in Subsection 252-01 b 1 (small public water supplies) turbidity as measured at the public water intake shall not be (4-5-00) (1) Increased by more than five (5) NTU above natural background, measured at a location upstream from or not influenced by any human induced nonpoint source activity, when background turbidity is fifty (50) NTU or less (8-24-94) (2) Increased by more than ten percent (10%) above natural background, measured at a location upstream from or not influenced by any human induced nonpoint source activity, not to exceed twenty-five (25) NTU, when background turbidity is greater than fifty (50) NTU				

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REGION 10	Y	By basin and waterbody type	Ammonia Nitrogen	Bear Creek	Not to exceed Ammonia Nitrogen in N - 0.25mg/l High flow 1mg/l	January 12, 2001	(c) Average Chlorophyll a values shall be based on the following methodology (or other methods approved by the Department) A minimum of three samples collected over any three consecutive months at a minimum of one representative location (e.g., above the deepest point of a lake or reservoir or at a point mid-flow of a river) from samples integrated from the surface to a depth equal to twice the secchi depth or the bottom (the lesser of the two depths), analytical and quality assurance methods shall be in accordance with the most recent edition of Standard Methods for the Examination of Water and Wastewater		
Oregon (As of July 30, 2002)			Phosphorus (Instream five day total as P mg/l) Phosphorus Elemental	Manne chronic criteria	0.1mg/l  The total phosphorus maximum annual loading discharged into Clear Lake shall not exceed 241 pounds per year from all sources				
			Turbidity	Natural lakes, Marine and estuarine	No more than 10% above natural background				
			Chlorophyll a	Lakes, Reservoirs, estuaries and streams except for ponds and reservoirs less than ten acres in surface area, marshes and saline lakes	Natural lakes which thermally stratify not greater than 0.01mg/l  Natural lakes which don't thermally stratify, reservoirs, rivers and estuaries 0.015mg/l				



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							This area shall be used to include details of Lake nutrient criteria establishment in the state		
REGION 10	Yes						This table shall aid in establishing nutrient criteria Coast Range, Puget Lowlands , and Northern Rockies		
Washington	Class AA (extraordinary) Water quality of this class shall markedly and uniformly exceed the requirements for all or substantially all uses Characteristic uses i) water supply (domestic, agricultural, industrial) ii) stock watering iii) fish and shellfish * iv) wildlife habitats v) Recreation vi) Commerce and navigation vii) Aesthetic Values ** Class A (excellent) Same as class AA except for fecal coliform levels are lower in the AA category in freshwater Class B (good) Water quality for this class shall meet or exceed the requirements for most uses Characteristic uses i) Water supply (industrial and agricultural) (All other uses stay the same as above classes Different numeric criteria for DO and Fecal coliform) Class C (fair) Water quality of this class shall meet or exceed the requirements of selected essential uses 1) water supply (industrial) Different criteria for DO and coliform in this class Lake class -Establishing Lake Nutrient criteria	Turbidity	Freshwater and marine water	Not to exceed 5NTU over background turbidity when the background turbidity is 50 NTU or less, or have more than a 10 percent increase in turbidity when the background turbidity is more than 50 NTU	Effective 12/19/97	Ecoregions			
		Trophic State		If ambient TP (ug/l) Range of Lake is	Then criteria should be set at				
		Ultra-oligotrophic		0-4	4 or less				
		Oligotrophic		>4-10	10 or less				
		Lower mesotrophic		>10-20 *Action value >20 lake specific study may be initiated	20 or less				
		Cascades Ecoregion							
		Ultra-oligotrophic		0-4	4 or less				
		Oligotrophic		>4-10	10 or less				
				Action value >10 Lake specific study may be initiated					
		Columbia Basin Ecoregion							
		Ultra-oligotrophic		0-4	4 or less				
		oligotrophic		>4-10	10 or less				
		Lower mesotrophic		>10-20	20 or less				
		Upper mesotrophic		>20-35 Action Value >35 lake specific study may be initiated	35 or less				

Lakes in the Willamette, East Cascade foothills, or North-Columbia ecoregions do not have recommended values and need to have lake-specific studies in order to reserve criteria as described in (c)(1) of this subsection.

(b) The following actions are recommended if ambient monitoring of a lake shows the epilimnetic total phosphorus concentrations, as shown in Table 1 of this section, is below the action value for an ecoregion:

(i) Determine trophic status from existing or newly gathered data. The recommended maximum sampling to determine trophic status is calculated as the mean of four or more samples collected from the epilimnion between June through September in one or more consecutive years. Sampling must be spread throughout the season.

(ii) Propose criteria at or below the upper limit of the trophic state, or

(iii) Conduct lake-specific study to determine and propose to adopt appropriate criteria as described in (c) of this subsection.

(c) The following actions are recommended if ambient monitoring of a lake shows total phosphorus to exceed the action value for an ecoregion shown in Table 1 of this section or where recommended ecoregional action values do not exist:

(i) Conduct a lake-specific study to evaluate the characteristic uses of the lake. A lake-specific study may vary depending on the sources or threat of phosphorus. Phytoplankton biomass, total phytoplankton, or excessive aquatic plants, are examples of various sources of impairment. The following are examples of quantitative measures that a study may describe: Total phosphorus, total nitrogen, chlorophyll-a, dissolved oxygen in the hypolimnion if thermally stratified, pH, hardness, or other measures of existing "conditions and potential changes in any one of these parameters."

(ii) Determine appropriate total phosphorus concentrations or other nutrient criteria to protect characteristic lake uses. If the existing total phosphorus concentration is protective of characteristic lake uses, then set criteria at existing total phosphorus concentrations. If the existing total phosphorus concentration is not protective of the existing characteristic lake uses, then set criteria at a protective concentration. Proposals to adopt appropriate total phosphorus criteria to protect characteristic uses must be developed by considering technical information and stakeholder input as part of a public involvement process equivalent to the Administrative Procedure Act (chapter 34.05 RCW).

(iii) Determine if the proposed total phosphorus criteria necessary to protect characteristic uses is achievable. If the recommended criterion is not achievable and if the characteristic use the criterion is intended to protect is not an existing use, then a higher criterion may be proposed in conformance with 40 CFR part 131.10.

(d) The department will consider proposed lake-specific nutrient criteria during any water quality standards rule making that follows development of a proposal. Adoption by rule formally establishes the criteria for that lake.

(e) Prioritization and investigation of lakes by the department will be initiated by listing problem lakes as a watershed needs assessment, and scheduled as part of the water quality program's watershed approach to pollution control. This prioritization will apply to lakes identified as warranting a criteria based on the results of a lake-specific study to lakes warranting a lake-specific study for establishing criteria, and to lakes regarding restoration and pollution control measures due to exceedence of an established criterion. The adoption of nutrient criteria are generally not intended to apply to lakes or ponds with a surface area smaller than five acres, or to ponds wholly contained on private property owned and surrounded by a single landowner and structures do not drain or

Appendix C

**Nutrient Criteria of Tribes obtained from their Water Quality Standard**

Tribes	Narrative	Translator	Rivers,	Lakes	Turbidity	Chlorophyll a
(R - Region)	Nutrient	like TSI, %	streams	Phosphorus		
	Criteri	chloro Value	P-criterion	criterion		
					♦	
<b>R4) Miccosukee Tribe of Florida</b>	♦		♦	♦	♦	
Seminole of Florida	♦				♦	
<b>R5) Sokaogon Chippewa Comm</b>	♦				♦	
Fond du lac band of Chippea	♦				♦	
<b>R6) Pueblo of Acoma</b>	♦		♦	♦	♦	
Pueblo of Isleta	♦		♦	♦	♦	
Pueblo of Nambe	♦		♦	♦	♦	
Pueblo of Picuris	♦		* ♦	* ♦	♦	
Pueblo of Pojoaque	♦				♦	
Pueblo of Sandia	♦		* ♦	* ♦	♦	
Pueblo of San Juan	♦		♦	♦	♦	
Pueblo of Santa Clara	♦		♦	♦	♦	
Pueblo of Tesuque	♦				♦	
<b>R8) Fort Peck Indian Reservation</b>	♦				♦	
Salish and Kootenai	♦				♦	
<b>R9) White Mountain Apache</b>	♦		♦	♦	♦	
Hoopa Valley Tribe	♦				♦	
<b>R10) Confederated Tribes of</b>	♦				♦	
Chehalis Reservation						
<i>Confederated Tribes of the</i>	♦				♦	
<i>Colville</i>						
	♦				♦	
<i>Puyallup Tribe of Indians</i>						
<i>Confederated Tribes of the Warm</i>	♦	ch ♦			♦	
<i>Springs Reservation,</i>						
	♦	ch ♦			♦	♦
<i>Confederated Tribes of Umatilla</i>		secchi depth				

**Notes**

\* Total Nitrogen Tribes that have an "\*" in the columns have both total phosphorus and total nitrogen criteria  
 Ch - Chlorophyll a value used in determining areas where impairment of designated uses occurs

Source <http://www.epa.gov/waterscience/standards/wqslibrary/tribes.html> (January 2003)