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Exempt Requester

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1. RP00-241-000 11-18-02 John F. Riordan
2. RP00-241-000 12-9-02 James H. Farrell, Jr.
3. CP02-396-000 12-20-02 Inge S. Terrill, M.En.
4. Project No. 2069-007 12-26-02 Steven L. Spangle.
5. Project No. 2086-000 12-26-02 Thomas T. Taylor

Linwood A. Watson, Jr.,
Deputy Secretary.
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ENVIRONMENTAL PROTECTION AGENCY

[OW-FRL-7435-7]

Nutrient Criteria Development; Notice of Ecoregional Nutrient Criteria

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of ecoregional nutrient criteria for lakes and reservoirs, and rivers and streams.

SUMMARY: Pursuant to section 304(a) of the Clean Water Act (CWA), the Environmental Protection Agency (EPA) announces two actions: (1) The finalization of nine section 304(a) ecoregional nutrient criteria documents for lakes and reservoirs, and rivers and streams within specific geographic regions (ecoregions) of the United States; and (2) a request for significant scientific information on three new section 304(a) ecoregional nutrient criteria documents. These documents serve as recommendations for States, Territories and authorized Tribes¹ to use as they develop nutrient criteria to

protect designated uses and adopt these criteria into water quality standards.

For Which New Documents Is EPA Requesting Significant Scientific Information From the Public?

EPA invites the public to provide scientific views on three new ecoregional nutrient criteria documents: Lakes and reservoirs in ecoregions 1 and 10, and rivers and streams in ecoregion 13. EPA requests significant scientific information pertaining to the derivation of the draft criteria. EPA will accept significant scientific information submitted to the Agency within 90 days of publication of this notice in the **Federal Register**. Written significant information to: Robert Cantilli, U.S. EPA, Health and Ecological Criteria Division (4304), Office of Science and Technology, Ariel Rios Building, 1200 Pennsylvania Ave., NW., Washington DC 20460. You may also send comments by e-mail to: cantilli.robert@epa.gov.

What Are the Criteria Recommendations for These Three Ecoregions?

AGGREGATE ECOREGIONAL (AGG. ER) CRITERIA RECOMMENDATIONS

Parameter	Agg. ER I	Agg. ER X	Agg. ER XIII
TP µg/L	55.00	60.00	15.00
TN mg/L	*0.66	0.57	1.44
Chl a µg/L	4.88	5.47	
Secchi/Turbidity**	2.55	0.77	1.49

*Calculated—a value for TN was not available, so TN was calculated based on measurements of Total Kjeldahl Nitrogen (TKN), and Nitrate + Nitrite (NO₂+NO₃).
**Secchi depth (m) is applicable to the values in Agg. ER's I and X. Turbidity (FTU) is applicable to Agg. ER XIII.

Which Documents Are Final?

The nine documents being finalized today represent nutrient criteria recommendations for lakes and reservoirs in ecoregions 3, 4, 5, and 14 and nutrient criteria recommendations for rivers and streams in ecoregions 1, 4, 5, 8, and 10. EPA announced the availability of these documents in the

Federal Register on February 28, 2002. These documents have undergone external peer review and have been reviewed by the public.

What Are the Nutrient Criteria Recommendations for Those Ecoregions?

The following tables summarize criteria recommendations for lakes and

reservoirs and rivers and streams, respectively. Table 3 of each document also provides values for each of the subecoregion (level III) within each Aggregate ecoregion.

AGGREGATE ECOREGIONAL (AGG. ER) CRITERIA RECOMMENDATIONS FOR LAKES AND RESERVOIRS

Parameter	Agg. ER III	Agg. ER IV	Agg. ER V	Agg. ER XIV
TP µg/L	17.00	20.00	33.00	8.00
TN mg/L	0.40	0.44	0.56	0.32
Chl a µg/L	3.40	2.00 (S)	2.30 (S)	2.90
Secchi (m)	2.70	2.00	1.30	4.50

Chl a—Chlorophyll a measured by Fluorometric method, unless specified. S is for Spectrophotometric.

¹ Hereafter, this **Federal Register** Notice refers to these entities as "States and authorized Tribes."

Throughout this document, reference to States and authorized Tribes is intended to include Territories.

AGGREGATE ECOREGIONAL (AGG. ER) CRITERIA RECOMMENDATIONS FOR RIVERS AND STREAMS

Parameter	Agg. ER 1	Agg. ER IV	Agg. ER V	Agg. ER VIII	Agg. ER X
TP µg/L	47.00	23.00	67.00	10.00	*128
TN mg/L	0.31	0.56	0.88	0.38	0.76
Chl a µg/L	1.80	2.40	3.00	0.63	2.10(S)
Turb (FTU)	4.25	4.21	7.83	1.30	17.50

* This number appears inordinately high and may either be a statistical anomaly or reflects a unique condition. In any case, further regional investigation strongly encouraged to determine the sources, i.e., measurement error, notational error, statistical anomaly, natural enriched conditions, or cultural impacts (impacts from human activities).

Turb = Turbidity, FTU are nephelometric turbidity units, calibrated with formazin suspension.

What were the Main Submissions of Significant Scientific Information Provided by the Public?

Many of the concerns raised by the public about EPA's approach for developing nutrient criteria were raised earlier during the development of EPA's Technical Guidance Manuals. At that time, questions were raised about EPA's use of a statistical derivation of a reference condition. EPA continues to believe these approaches are reasonable for the purpose of making today's criteria recommendations. The Science Advisory Board (SAB) endorsed the reference condition approach used by EPA. The SAB stated in its review of "Biological Criteria: Technical Guidance for Streams and Small Rivers" (EPA, 1993) that "the definition of reference condition using reference sites is appropriate when used in conjunction with historical data, empirical models, and expert opinion/consensus." EPA's Nutrient Criteria Program later adopted the reference condition approach and continues to recommend it in all of its nutrient criteria guidance manuals. Additionally, the statistical derivation approach to developing nutrient criteria was favorably reviewed by peer reviewers as well. Consequently, EPA did not change its fundamental approach to nutrient criteria development or change the documents significantly beyond responding to comments of peer reviewers. Following is a summary of the most significant scientific information submitted by the public. The issues are grouped by topic, and then followed by EPA's response:

Percentile Approach

(1) The criteria are based on a statistical analysis of current nutrient levels in the Nation's waters rather than on the latest scientific knowledge and therefore are inconsistent with section 304(a) of the Clean Water Act.

(2) The use of the 25th percentile of all data or the 75th percentile of all reference data as criteria by States is undocumented, not scientifically valid, and results in meaningless numerical criteria values.

(3) Many data gaps exist in the nutrient database (for example a lake with only one reading for a parameter in a given year). Some screening techniques should have been done so that only those waterbodies were included for which there are sufficient representative data.

(4) The statistical approach used to develop the nutrient criteria is statistically flawed because it ignores the relationship between nutrient levels and in-stream/in-lake effects. As a result, there is no way of knowing the environmental benefit or the level of protection of designated uses gained by attaining the nutrient criteria levels set forth in the documents. As a result, EPA's statistical derivation of numerical nutrient criteria are meaningless to real world situations and are not helpful in making watershed management decisions, TMDL allocations, or in developing Water Quality Standards for nutrients at the State level. Therefore, they should be withdrawn.

EPA Response: The mean, median and mode are measures of central tendency commonly used in science to represent the distribution of a population of observations. The frequency distribution approach is not used to establish criteria; rather it is used to determine one of the components of a criterion, the reference condition. This reference condition is one element of a criterion which should be considered along with historical background information, possible model extrapolations of data, and consideration of possible downstream impacts on those waters by a regional panel of experts (Regional Technical Assistance Group—RTAG).

Further, the scientific community uses frequency distributions as a common basic interpreter of data with the upper and lower quartiles as an admittedly subjective, but traditional, approach to viewing the extent of a distribution about a central tendency. It is not mandatory or expected that the reference condition so derived be translated directly into a criterion. The selection of an upper quartile (or lower

quartile with mixed water quality samples) is also consistent with the EPA policy to set levels protective of the majority of waters and has been peer reviewed both by EPA's SAB and external peer reviewers of our water body type technical guidance.

Finally, EPA's technical guidance manuals provide examples of alternate approaches to frequency distributions to assess reference conditions and determine relationships among causal response variables.

Model Based Approach

The percentile-based nutrient criteria proposed by EPA are acceptable only as a way to initiate a model-based, decision-theoretic approach to standard setting (as described in submission) to be undertaken by the effected States and Tribes with the assistance of EPA.

EPA Response: The presumption underlying EPA's use of a reference condition approach is that reference conditions reflect conditions conducive to the protection of most aquatic life in the given water body type and geographic region. The upper quartile of the reference data distribution is an accommodation to variability of the reference condition, and the lower quartile of a mixed sample is an effort to approach this reference condition when insufficient a priori sites exist. Therefore, the percentiles serve as recommended starting points to be further refined by in the absence of refinements that may be employed by the States, authorized Tribes and RTAGs.

Need for Site Specific Criteria

(1) Establishing a single nutrient criterion for all waters of a geographically diverse region based on inadequate data is not an appropriate approach. Numeric criteria should be developed at a site-specific level.

(2) Regarding the chlorophyll standard: annual cycle of circadian photo-periods vary significantly from southern Georgia to southern Maine. Hours of daylight affect the growth of the chlorophyll in a water body not only in photons activating chlorophyll but in

water temperature. It is difficult to understand how a single standard for chlorophyll or Secchi depth could be set over this geographic distance.

(3) The recommended criteria are lower than concentrations that may be needed to support fisheries and may result in a reduction of fish biomass.

EPA Response: EPA is using an ecoregion approach as an initial attempt to assess nutrient conditions in a broad geographic context. The Agency encourages RTAGs, including member States and authorized Tribes, to refine and further subdivide the initial ecoregions. If time and resources permit, States and authorized Tribes should also consider adopting nutrient criteria that are tailored to specific sites. EPA believes that recommending nutrient criteria on an ecoregion basis, with the use of ecoregional reference conditions, is a reasonable alternative to recommending a single nation-wide criterion that may fail to account for regional variability or to recommending criteria on an individual water body basis, which would be very resource-intensive. The EPA SAB has endorsed this region and water body-type specificity for biological criteria, and nutrient criteria share a similar ecological orientation.

One of the concerns expressed to EPA was that if the recommended nutrient criteria were met, there would not be sufficient nutrients to support fisheries. Generally, however, cultural eutrophication has been identified by States' section 303 (d) reports as one of the top national water quality problems. Where enrichment is documented as beneficial by regional specialists, EPA recommends that nutrient criteria be developed to promote the removal of that amount of ambient total nitrogen and phosphorus in excess of optimal fish production as determined by consultation of the RTAG with State and Federal fisheries biologists and water resource managers.

Total Nitrogen Criteria

Total Nitrogen criteria are not necessary and should not be required unless EPA can show site-specific reasoning for applying nitrogen criteria to all water bodies.

EPA Response: As a threshold matter, it should be noted that EPA's choice of parameters and criteria values are recommendations. The documents announced today impose no requirements. States and authorized Tribes have considerable flexibility in adopting nutrient criteria, provided that the criteria meet the requirements of the CWA and EPA's regulations (that is, they are based on sound scientific

rationale and contain sufficient parameters to protect the designated uses).

With respect to EPA's recommendation that States and authorized Tribes adopt nutrient criteria for nitrogen, EPA notes that while phosphorus is often considered the limiting nutrient determining the extent of vegetative growth in fresh waters, nitrogen is often considered to be the limiting nutrient in the lower reaches of estuaries and in coastal marine waters. However, there are cases where phosphorus limits algal growth in estuaries and nitrogen performs a similar role in some freshwater systems. While nitrogen itself will not usually cause water quality impairments in the near-field in phosphorus-limited systems, if phosphorus supplies are reduced to attenuate symptoms of eutrophication within freshwater segments of a given river system, corresponding reductions in freshwater algal blooms will allow the highly soluble dissolved forms of nitrogen to be transported downstream. This downstream nitrogen transportation to estuaries or coastal waters may support larger algal blooms resulting in water quality impairments. The practice of setting criteria for only nitrogen or phosphorus in a given region could displace the responsibility for nutrient abatement from the area of the source to a downstream jurisdiction. This places an undue burden on the recipient of this imported material and increases the abatement costs because source control is lost as a management option. EPA suggests, therefore, that where downstream effects take place, States and Tribes describe technologies or best management practices in their plans to begin nitrogen control.

Grouping of Reservoirs and Lakes

The final document should clarify whether Reservoir means impounded stream or river. If impoundments were sampled with natural lakes, the 75th percentile number may be too high as a standard for historic conditions in natural lakes.

EPA Response: EPA agrees that, if possible, reservoirs should not be grouped with lakes and recommends in the Technical Guidance Manual that, wherever feasible, criteria for reservoirs and lakes should be developed separately. Using the National Nutrient Database, one can separate data by lake or reservoir and determine reference conditions for each.

How Can I Get Copies of These Documents?

You can get copies of the set of three new criteria documents or any nutrient criteria document from the U.S. National Service Center for Environmental Publications (NSCEP), 11029 Kenwood Road, Cincinnati, OH 45242; (513) 489-8190 or toll free (800) 490-9198. The documents are also available electronically at <http://www.epa.gov/waterscience/standards/nutrient.html>. The waterbody-specific technical guidance manuals are also available from EPA's nutrient Web site. EPA's Office of Water, Office of Science and Technology prepared this document. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

Can the Public Continue To Provide Input After the Documents Are Finalized?

EPA encourages the public to provide additional scientific information that could help States and or authorized Tribes refine these recommended nutrient water quality criteria. EPA identified specific sections within each document where the public could greatly assist States and authorized Tribes in the task of augmenting the database for deriving ecoregional nutrient water quality criteria. For example, the public can provide information about the historical conditions and trends of the water resources within an ecoregion related to eutrophication resulting from human activities. EPA will forward all comments received on a particular ecoregional criterion or set of criteria to the appropriate State or authorized Tribe to help foster water quality criteria refinement.

SUPPLEMENTARY INFORMATION:

What Are Water Quality Criteria?

Section 304(a) of the Clean Water Act (CWA) requires the EPA to develop and publish and, from time to time, revise criteria for water quality accurately reflecting the latest scientific knowledge. Water quality criteria recommendations developed under section 304(a) are based solely on data and scientific judgments. They do not consider economic impacts or the technological feasibility of meeting the criteria in ambient water.

What Is the Purpose of These Documents?

These documents give State and Tribal decision makers and others information to support the development

of numeric nutrient criteria for lakes and reservoirs and rivers and streams within several different nutrient ecoregions. An ecoregion is a geographic area with assumed relative homogeneity of ecological characteristics. EPA's section 304(a) criteria recommendations for phosphorous, total nitrogen, chlorophyll a and some form of water clarity, *i.e.* Secchi depth or turbidity represent reference conditions of surface waters that are minimally affected by human activities and provide for the protection and propagation of aquatic life and recreation.

These recommendations do not substitute for the CWA or EPA's regulations; nor are the documents themselves regulations. Thus, they cannot impose legally binding requirements on EPA, States, Indian tribes or the regulated community. Indeed, there may be other approaches that would be appropriate in particular situations or circumstances. When EPA reviews a new or revised nutrient water quality criterion submitted by a State or authorized Tribe under CWA section 303(c), EPA will decide to approve or disapprove that submission on a case-by-case basis and will be guided by the applicable requirements of the Clean Water Act and implementing regulations, taking into account comments and information presented at that time by interested persons regarding the appropriateness of applying these recommendations to the particular situation.

Why Does EPA Develop Ecoregional Nutrient Criteria?

States and authorized Tribes consistently identify excessive levels of nutrients as a major reason why as much as half of the surface waters surveyed in this country do not meet water quality objectives, such as full support of aquatic life. In 2000, EPA published nutrient criteria technical guidance manuals for lakes and reservoirs and for rivers and streams. In 2001, EPA published a draft guidance manual for estuarine and coastal marine waters. These manuals provide techniques for assessing nutrient conditions as well as methods for developing nutrient criteria for specific water body types. These and related documents are also available from EPA's nutrient Web site: <http://www.epa.gov/waterscience/standards/nutrient.html>. EPA is developing a guidance manual for wetlands.

What Is the Total Set of Ecoregional Nutrient Criteria That EPA Has Published?

On January 9, 2001, EPA announced the availability of ecoregional nutrient criteria documents for lakes and reservoirs in eight ecoregions, for rivers and streams in eight ecoregions (several of which overlap with the eight ecoregions for lakes and reservoirs), and for wetlands in one ecoregion. Those ecoregions were chosen based on the availability of nutrient data within each ecoregion. On February 28, 2002, EPA announced the availability of nine ecoregional nutrient criteria documents for lakes and reservoirs, and rivers and streams. Today, EPA announces the availability of three additional ecoregional nutrient criteria documents for lakes and reservoirs, and rivers and streams. This brings the total number of ecoregional nutrient criteria documents to 29 and results in nutrient criteria covering almost 100% of the freshwater waterbodies of the U.S. (excluding wetlands).

EPA also provided guidance on development and adoption of nutrient criteria into water quality standards. More recently, on November 14, 2001, Geoffrey H. Grubbs, Director of the Office of Science and Technology, in EPA's Office of Water provided this guidance to EPA, and State and Interstate Water Program Directors. This memorandum can be viewed electronically at: <http://www.epa.gov/waterscience/standards/nutrient.html>.

Dated: December 20, 2002.

Geoffrey H. Grubbs,
Director, Office of Science and Technology.
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ENVIRONMENTAL PROTECTION AGENCY

[OW-FRL-7435-8]

Nutrient Criteria Development; Notice of Nutrient Criteria Technical Guidance Manual: Estuarine and Coastal Marine Waters

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of final Nutrient Criteria Technical Guidance Manual: Estuarine and Coastal Marine Waters.

SUMMARY: The Environmental Protection Agency announces the availability of a final nutrient criteria technical guidance manual for estuaries and coastal marine waters. This document gives State and Tribal water quality managers and others guidance on how to develop

numeric nutrient criteria for estuaries and coastal marine waters. This document does not contain site-specific numeric nutrient criteria for any estuary or coastal marine water. This guidance was developed to help States and Tribes establish nutrient criteria. States and Tribes are in the best position to consider site-specific conditions in developing nutrient criteria. While this guidance contains EPA's scientific recommendations regarding defensible approaches for developing regional nutrient criteria, this guidance is not regulation. Thus it does not impose legally binding requirements on EPA, States, Territories, Tribes, or the public. States, Territories, and authorized Tribes retain the discretion to adopt, where appropriate, other scientifically defensible approaches to developing regional or local nutrient criteria that differ from these recommendations.

We are issuing this technical guidance in a manner similar to that used to issue new and revised criteria (see **Federal Register**, December 10, 1998, 63 FR 68354 and in the EPA document titled, National Recommended Water Quality—Correction EPA 822-Z-99-001, April 1999). EPA notified the public about the availability of the draft guidance manual and peer review on October 10, 2001 (66 FR 51665). At that time, the Agency solicited views from the public on issues of science pertaining to the information contained in the draft technical guidance manual. EPA considered the scientific views from the peer reviewers and the public and has revised the document accordingly. The completed document is now available.

ADDRESSES: You can get copies of the completed document entitled "Nutrient Criteria Technical Guidance Manual: Estuarine and Coastal Waters" from EPA's National Service Center for Environmental Publications (NSCEP) by phone at (513) 489-8190 or toll free (800) 490-9198 or by e-mail to: ncepiwo@one.net, or by conventional mail to NSCEP, 11029 Kenwood Road, Cincinnati, OH 45242. The document is also available electronically at <http://www.epa.gov/OST/standards/nutrient.html>.

FOR FURTHER INFORMATION CONTACT: Dr. David Flemer, USEPA, Health and Ecological Criteria Division (4304T), Office of Science and Technology, Ariel Rios Building, 1200 Pennsylvania Ave., NW., Washington, DC 20460; or call (202) 566-1101; fax (202) 566-1139; or e-mail flemer.david@epa.gov.

SUPPLEMENTARY INFORMATION: