



Virginia  
Regulatory  
Town Hall

## Final Regulation Agency Background Document

<b>Agency Name:</b>	Department of Environmental Quality
<b>VAC Chapter Number:</b>	9 VAC 25-260
<b>Regulation Title:</b>	Water Quality Standards
<b>Action Title:</b>	State Water Control Board Adoption of Amendments to the Water Quality Standards to recognize low dissolved oxygen concentrations in some waters due to natural conditions.
<b>Date:</b>	April 23, 2001

Please refer to the Administrative Process Act (§ 9-6.14:9.1 *et seq.* of the *Code of Virginia*), Executive Order Twenty-Five (98), Executive Order Fifty-Eight (99) , and the *Virginia Register Form, Style and Procedure Manual* for more information and other materials required to be submitted in the final regulatory action package.

### Summary

*Please provide a brief summary of the new regulation, amendments to an existing regulation, or the regulation being repealed. There is no need to state each provision or amendment; instead give a summary of the regulatory action. If applicable, generally describe the existing regulation. Do not restate the regulation or the purpose and intent of the regulation in the summary. Rather, alert the reader to all substantive matters or changes contained in the proposed new regulation, amendments to an existing regulation, or the regulation being repealed. Please briefly and generally summarize any substantive changes made since the proposed action was published.*

The State Water Control Board is revising the State's Water Quality Standards Regulation at 9 VAC 25-260-50 and adding a new section identified as section 55 (paragraphs A through E). Paragraphs A – D of section 55 will change the State's approach to assessment of dissolved oxygen data in certain waters that are low in dissolved oxygen concentrations due to non-anthropogenic causes and certain chemical and physical processes. The waters where this can occur are the deep stratified tidal waters including the Chesapeake Bay and its tidal tributaries, the deep stratified waters in lakes and reservoirs and areas of stagnant waters with minimal flow velocity and large amounts of decomposing vegetation (swamps). These conditions are considered "natural" and these waters should be listed as "naturally impaired" under § 62.1-44.19:5.C of the Water Quality Monitoring Information and Restoration Act. The amendments

also describe the types of information the Board will use in making the determination of naturally low dissolved oxygen concentrations.

This procedure will enable staff to make better decisions when doing assessments for Clean Water Act 305(b) reports and 303(d) listings. Currently, even waters that are naturally low in dissolved oxygen must be listed as impaired under 303(d) with a schedule for development of a total maximum daily load. Paragraphs A through D would be used during assessments as a basis for determining whether or not to list such waters as “impaired” or “naturally impaired”.

Paragraph E of section 55 specifies that the Board will use these determinations of natural water quality to initiate a rulemaking to set site specific criteria that reflect the findings found in paragraphs A through D.

### Statement of Final Agency Action

*Please provide a statement of the final action taken by the agency: including the date the action was taken, the name of the agency taking the action, and the title of the regulation.*

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The State Water Control Board adopted the amendments to the Water Quality Standards regulation 9 VAC 25-250-50 *et seq* at their March 26, 2001 quarterly meeting.

### Basis

*Please identify the state and/or federal source of legal authority to promulgate the regulation. The discussion of this statutory authority should: 1) describe its scope and the extent to which it is mandatory or discretionary; and 2) include a brief statement relating the content of the statutory authority to the specific regulation. In addition, where applicable, please describe the extent to which proposed changes exceed federal minimum requirements. Full citations of legal authority and, if available, web site addresses for locating the text of the cited authority, shall be provided. If the final text differs from that of the proposed, please state that the Office of the Attorney General has certified that the agency has the statutory authority to promulgate the final regulation and that it comports with applicable state and/or federal law.*

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§ 62.1-44.15(3a) of the Code of Virginia, as amended, mandates and authorizes the Board to establish water quality standards and policies for any State waters consistent with the purpose and general policy of the State Water Control Law, and to modify, amend or cancel any such standards or policies established. The Water Quality Monitoring Information and Restoration Act at § 62.1-44.19:5 mandates the Board to identify waters that are "naturally impaired" in the 303(d) report. The federal Clean Water Act at 303(c) mandates the State Water Control Board to review and, as appropriate, modify and adopt water quality standards. The corresponding federal water quality standards regulation at 40 CFR 131.6 describes the minimum requirements for water quality standards. The minimum requirements are use designations, water quality criteria to protect the designated uses and an antidegradation policy. All of the citations mentioned describe mandates for water quality standards. The federal water quality standards regulation at

40 CFR 131.13 allows for the States to include in their standards policies generally affecting their application and implementation. The authority in 40 CFR 131.13 is discretionary.

Web Address sites where citations can be found:

Federal Regulation web site

<http://www.epa.gov/epahome/cfr40.htm>

Clean Water Act web site

<http://www4.law.cornell.edu/uscode/33/1313.html>

State Water Control Law (Code of Virginia) web site

<http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+62.1-44.2>

<http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+62.1-44.15>

The content of the statutory authority is related to the specific regulation in that the amendments are modifications of the water quality standards and are consistent with the general policy of the State Water Control Law. They are also consistent with the Water Quality Monitoring Information and Restoration Act that requires the Board to set out naturally impaired waters in the 303(d) report. The regulation is consistent with the federal regulation, which allows the states to adopt implementation procedures for criteria in their water quality standards.

The amendments do not exceed federal minimum requirements.

The Office of the Attorney General has been notified of the changes to the amendments and we received statutory certification on March 30, 2001.

## Purpose

*Please provide a statement explaining the need for the new or amended regulation. This statement must include the rationale or justification of the final regulatory action and detail the specific reasons it is essential to protect the health, safety or welfare of citizens. A statement of a general nature is not acceptable, particular rationales must be explicitly discussed. Please include a discussion of the goals of the proposal and the problems the proposal is intended to solve.*

The amendments are needed because the current regulation does not allow the assessments staff to make water quality decisions based on natural conditions. These waters may have lower water quality but that quality is natural and ecologically acceptable.

Furthermore, the amendments are needed because if they are not adopted, the existing regulation may trigger the development of a Total Maximum Daily Load (TMDL) in waters where additional wastewater treatment or best management practices will not improve the condition of the water body. Currently, many waters are scheduled for development of a TMDL for dissolved oxygen even though the low dissolved oxygen levels may be due to naturally occurring conditions.

This provision of the regulation is justified from the standpoint of the public's health, safety or welfare in that it allows for the protection of designated uses of the water bodies without imposing unreasonable requirements on the Commonwealth and its citizens. Proper criteria protect water quality and living resources of Virginia's waters for consumption of fish and shellfish, recreational uses and conservation in general.

The goals of the amendments are to add some flexibility and reasonableness to implementation of these criteria in these types of waters.

## Substance

*Please identify and explain the new substantive provisions, the substantive changes to existing sections, or both where appropriate. Please note that a more detailed discussion is required under the statement of the regulatory action's detail.*

A new section (9 VAC 25-260-55) describes the implementation procedures for assessment of dissolved oxygen data in waters naturally low in dissolved oxygen. It further states that this procedure is in accordance with the Water Quality Monitoring Information and Restoration Act of the State Water Control Law and is to be implemented when assessing dissolved oxygen data in preparation of Clean Water Act § § 305(b) and 303(d) reports. It states that the cause of the low concentrations are due to non-anthropogenic sources and physical/chemical processes resulting from density stratification and depth in Class II tidal waters, lakes and reservoirs in Classes III, IV, V and VI and in minimal flow velocity waters with decomposing vegetation which prevents reaeration of these waters. The section states that the Board shall list waters as naturally impaired in accordance with the 62.1-44.19:5.C (Water Quality Monitoring Information and Restoration Act). This section also lists the information the Board will use in making the determination of natural water quality. The last part of the new section provides for public review and comment via the 303(d) reporting process and requires the Board to initiate a water quality standards rulemaking to set site specific criteria to reflect the natural quality of water bodies for which this determination has been made. This new section is footnoted in the existing table of numerical criteria for dissolved oxygen by four asterisks \*\*\*\*. The intent of this new language is to allow staff to make better decisions when assessing dissolved oxygen data for Clean Water Act 305(b) and 303(d) reporting.

## Issues

*Please provide a statement identifying the issues associated with the final regulatory action. The term "issues" means: 1) the advantages and disadvantages to the public of implementing the new provisions; 2) the advantages and disadvantages to the agency or the Commonwealth; and 3) other pertinent matters of interest to the regulated community, government officials, and the public. If there are no disadvantages to the public or the Commonwealth, please include a sentence to that effect.*

The primary advantage to the public is that the standards will portray more accurate water body conditions and will result in more reasonable and accurate water quality assessments. The disadvantage is that the public may see this as an attempt to "lower the bar" on water quality or

that DEQ is trying to change the standards just to remove waters from the 303(d) list to avoid Total Maximum Daily Loads. These concerns ignore the fact that Total Maximum Daily Loads should be developed where there are pollution impacts and not where natural quality may be lower, but still ecologically acceptable. It also ignores the importance of setting realistic, yet protective goals in water quality management. In response to the Virginia General Assembly Water Quality Monitoring Information and Restoration Act of 1997, the Virginia Water Quality Academic Advisory Committee 1998 report stated that DEQ should provide specific criteria by which natural impairment can be determined and that the identification of naturally impaired waters is appropriate.

The primary advantage to the agency is that this recognition of waters as “naturally low in dissolved oxygen” is written to allow assessments staff to make better decisions about which waters should be included on 303(d) lists. This should result in a positive impact to the agency as existing resources can concentrate on waters exceeding water quality standards due to pollution rather than naturally occurring (non-anthropogenic) conditions. There are no disadvantages to the agency or the Commonwealth.

Another issue is how the Board is going to make the determination that certain low dissolved oxygen concentrations are due to natural conditions and/or which proportion of a low dissolved oxygen concentration is due to non-anthropogenic sources and the physical/chemical processes listed in the procedure. The amendments state that the Board will make the determination of natural water quality based upon an evaluation of aquatic life, habitat, monitoring data, computer modeling results or other accepted scientific principles. Furthermore, it states the Board shall also conduct a watershed assessment to document anthropogenic sources that individually or cumulatively cause low dissolved oxygen concentrations including: locating and identifying all point and non-point sources of pollution, and identifying any man-made activities (such as water withdrawals) that cause low flow conditions and result in low dissolved oxygen levels.

The DEQ Lakes Monitoring Committee is discussing implementation of this procedure for lakes. They are gathering the scientific literature to defend an approach that would allow for exclusion of the DO data from the lake hypolimnion (deep waters) in water quality assessments. This only applies to the times of the year when the lake is stratified and would not be appropriate in lakes with anthropogenic impacts causing the dissolved oxygen to go below natural levels.

For the Bay, the issue is more complex and staff has not been able to identify where this has been addressed anywhere in the nation. DEQ is working closely with VIMS to analyze the relationship between stratification, depth and DO in the Bay. They are looking at monitoring information, statistical tools and water quality models for the Chesapeake Bay. There is one model available that characterizes a “pristine” Bay (all forested watershed with non-anthropogenic sources). Along with the effects of depth and stratification, this model may be the best way to determine what natural dissolved oxygen concentrations would be expected.

The detailed guidance for making the demonstration of naturally low dissolved oxygen will be published in the 305(b)/303(d) guidance. This guidance is published for public review and comment as required by the Virginia Water Quality Monitoring Information and Restoration Act.

## Statement of Changes Made Since the Proposed Stage

*Please highlight any changes, other than strictly editorial changes, made to the text of the proposed regulation since its publication.*

There are eight changes made to the text of the proposed regulation since its publication.

1. The language that was proposed in paragraphs A and B of section 55 have been expanded to five paragraphs A through E. Each revised or new paragraph is described below.
2. Revised paragraphs A through D in section 55 have been clarified to say that these paragraphs describe the implementation procedure to be used during the 305(b)/303(d) process when assessing dissolved oxygen data in these specific types of waters. Implementation procedures for criteria are allowed by the federal water quality standards regulation at 40 CFR 131.13 and this is what we were trying to accomplish with this rulemaking but that was not clear to the public in the original proposal. It also states in section 55 that this procedure is in accordance with section 62.1-44.19.5 of the Water Quality Monitoring Information and Restoration Act (WQMIRA). WQMIRA says the Board must identify waters that are "naturally impaired" in the 303(d) report. WQMIRA further justifies the identification of these waters and is, therefore, appropriately mentioned in the final. In support of the above clarifications, footnote \*\*\*\* in section 50 has been modified to refer the reader to section 55 for implementation of these criteria in waters naturally low in dissolved oxygen.
3. Section 55 paragraph A has been modified to state that the cause of the low dissolved oxygen concentrations are due to non-anthropogenic sources and physical/chemical processes resulting from density stratification and depth in Class II tidal waters, lakes and reservoirs in Classes III, IV, V and VI and in minimal flow velocity waters with decomposing vegetation which prevents reaeration of these waters. Previously, non-anthropogenic sources were not mentioned and this caused concern to the public and EPA that DEQ would not develop TMDLs in any of these types of waters, even if pollution was causing or contributing to the low dissolved oxygen.
4. The description (i.e. minimal flow velocity waters with decomposing vegetation) and list of stagnant shallow waters under special standard "y" in section 310 have been deleted. The description has been added to section 55 paragraph A, but not the list of stream segments. This was done to ensure consistency of the new procedure with the other naturally low dissolved oxygen waters where individual water segments were not listed. The intent was to do a periodic determination of the natural dissolved oxygen quality of the tidal waters and lakes (via 305(b) and 303(d)) but the "swamp" waters listing would have indicated a permanent "low dissolved oxygen" designation. Since our intent was really to make this an implementation procedure for 305(b) and 303(d), it was more reasonable to treat all the naturally low dissolved oxygen waters under the same procedure. In addition, the public had provided DEQ information which indicated a more detailed review was needed on the list of swamp waters before listing them under such a permanent designation.
5. The statement in proposed paragraph A that these low dissolved oxygen concentrations do not constitute a violation of the water quality criteria has been deleted. EPA stated that DEQ could not make this statement without first changing the dissolved oxygen criteria for that water segment from which the naturally low dissolved oxygen was found. The statement was replaced

with the statement that the Board shall list waters as naturally impaired in accordance with 62.1-44.19:5.C which is the Water Quality Monitoring Information and Restoration Act. The new statement appears in revised paragraph B.

6. The list of items in proposed paragraph A.1 to be evaluated in making the determination of natural water quality was moved to paragraph B and expanded because the public thought that DEQ needed to do a more detailed review of each of these waters. DEQ included anadromous fish spawning areas as an additional item we may use in making the determination and included an evaluation of anthropogenic inputs in the watershed as part of the determination. Deleted from revised paragraph B is the reference to “periodically” and the words “uses” and “available.” These terms were determined to be extraneous and therefore, not needed.

7. Paragraphs C and D have been added to explain that the determination (of naturally low dissolved oxygen waters) shall be subject to public comment on draft 303(d) reports and made available to the public in final 303(d) reports. The paragraphs replace old paragraphs A.2 and B which stated that the Board would provide public comment and maintain a list of waters but did not state under which program or regulatory process this would occur.

8. We added a paragraph E, which clarifies the Board will initiate a rulemaking to adopt site specific criteria after the appropriate “natural” determinations are made under revised paragraphs 55 A and B. This was added because the public and EPA thought that the determinations of naturally low dissolved oxygen waters should also be reflected as site-specific criteria in the water quality standards.

## Public Comment

*Please summarize all public comment received during the public comment period and provide the agency response. If no public comment was received, please include a statement indicating that fact.*

### **Comments: Chesapeake Bay Foundation, Jeff Corbin, Virginia Staff Scientist**

CBF is concerned that the proposal is driven largely by the Department’s desire to relieve staff and workload pressures rather than addressing natural resource needs. Staff time and effort should be focused on implementing the requirements of state and federal law.

CBF agrees that certain hydrodynamic conditions may cause low levels of dissolved oxygen but the Department has not defined the requirements for identifying such waters or the implications that the modified standard may have on discharge limitations for permitted entities.

The CBF objects that the proposed regulation does not adequately define the temporal boundaries under which the “natural” seasonal violations are occurring. Also, outside of those seasonal boundaries, the waters must fully comply with the dissolved oxygen criteria already established. The regulation must clarify this requirement in both sections 55 and 310. The Department must also amend their regulation to include the specific requirements for data collections and analysis prior to listing the waters as “naturally” impacted. These specific requirements must include 1) the period of record for which data must be collected, 2) the minimum number of data points, 3) the acceptable location of sample collection points, 4)

acceptable times of sample collection, 5) minimum number of violations that must occur during the “seasonal” impairment, and 6) minimum requirements for follow-up monitoring.

CBF objects to the proposed regulation implying that any water listed as “natural” is free of impacts from anthropogenic sources. The regulations should describe the evaluation process for potential sources of impairment and non-point source contributions must also be considered as anthropogenic sources of low dissolved oxygen.

The regulation is completely lacking any discussion describing how the data or alternative criteria will be used in these waters during the VPDES or TMDL process. It is CBF’s position that waters experiencing “natural” violations are extremely environmentally sensitive and should be given the classification of Exceptional State Water in 9 VAC 25-260-30(3).

Section 310, special standard “y” minimal flow waters should be revised to allow for public comment for any additional waters that may be proposed under this section.

***Response:*** *DEQ’s reason for making these changes to recognize natural background was in response to EPA, DEQ staff and the Virginia Water Quality Academic Advisory Committee recommendations. These recommendations were that DEQ needed to provide specific criteria by which natural impairment could be determined. This approach recognized the fact that TMDLs should be developed where there are pollution impacts and not where natural quality may be lower, but still ecologically acceptable. This coincides with the importance of setting realistic, yet protective goals in water quality management.*

*DEQ agrees that the technical requirement for defining waters naturally low in dissolved oxygen should be defined and any implications on discharge limitations should be specified. The specific technical requirements will be included in the 305(b)/303(d) guidance which is published for comment as required by the Water Quality Monitoring and Information Restoration Act. DEQ is working with VIMS on developing the technical requirements for estuarine waters. It will be based on the relationship, using models, between stratification, depth and dissolved oxygen. Similarly, the technical requirements for lakes and swamps will also be provided at part of the 305(b)/303(d) guidance. To address concerns that the evaluation process was not detailed enough and needed to include an evaluation of anthropogenic inputs, DEQ added to the evaluation process a requirement to conduct a watershed assessment to document any anthropogenic sources that may be causing low dissolved oxygen concentrations.*

*Regarding the implications on discharge limitations, DEQ has revised the narrative provision to clearly state that this new provision is to be used for water quality assessments during the 305(b) and 303(d) reporting process. Therefore, it will not have an impact on VPDES discharge requirements. These amendments were not intended to loosen (make less stringent) VPDES permit limits. However, DEQ did add a requirement that any of the determinations of natural dissolved oxygen quality would be subject to a water quality standards rulemaking. If adopted as water quality standards change (new numerical criteria plus use designations for individual stream segments), the new criteria and use would apply to VPDES permits in the stream segment as well.*

*DEQ agrees that the temporal boundaries are required since the procedure is only applicable seasonally (i.e. during periods of stratification and minimal flow). Requirements for data collections and analysis prior to listing the waters as naturally low in dissolved oxygen will be provided in the 305(b)/303(d) guidance (which is published for comment also). Specifically, we agree that the guidance should require a minimum number of data points and that the dissolved oxygen levels should be well defined at a monitoring location before the procedure is implemented. The lack of data at some of the swamp locations was one reason DEQ removed the list of swamp waters from special standard “y” and placed the category in section 55 with the other waters so they could be reviewed periodically (during 305(b)/303(d) reporting). After reviewing public comment, we agreed some more requirements should be listed in the regulation. DEQ added a requirement for a review of the anthropogenic sources in the watershed and presence of certain aquatic life species (i.e. anadromous fish). .*

*Regarding the comment that the regulation should clarify that the waters must fully comply with the numerical dissolved oxygen criteria already established during other times of the year, DEQ does not agree that this provision in paragraph A through D removes the dissolved oxygen criteria. Rather it is an implementation procedure to use during the 305(b)/303(d) process and the language has been revised to clarify that point.*

*DEQ agrees that non-point source contributions should also be considered as anthropogenic sources of low dissolved oxygen. The proposal was written to clearly state that the only sources considered under this procedure are non-anthropogenic. Furthermore, DEQ added that in making the determination of naturally low dissolved oxygen concentrations, the Board shall conduct a watershed assessment to document anthropogenic sources that cause low dissolved oxygen concentrations. This assessment includes locating and identifying all point and non-point sources of pollution, and identifying any man-made activities that cause low flow conditions and result in low dissolved oxygen levels.*

*These waters can only be considered exceptional state waters with documentation that demonstrate an exceptional environmental setting and exceptional aquatic life communities or exceptional recreational opportunities. DEQ will consider any petition for exceptional waters as long as the documentation to support the exceptional qualities is complete and the requirements for petitioning the agency are met.*

*Regarding the comment that additional waters under special standard “y” can only be added via a separate rulemaking, DEQ has removed special standard “y” from the proposal. All waters that might be low in dissolved oxygen due to non-anthropogenic sources and minimal flow and decomposing vegetation may be assessed under the implementation procedures described in section 55. 305(b)/303(d) guidance will present the details of that review. This guidance will be available for public comment.*

**Comment: Department of Game and Inland Fisheries, Tom Wilcox**

DGIF conceptually supports the proposed amendments but recommends further coordination with their agency concerning the implementation guidelines.

**Response:** *DEQ acknowledges the support and will work with the Department of Game and Inland Fisheries in developing guidelines for determining non-anthropogenic low dissolved oxygen concentrations due to stratification, depth and minimal flow combined with vegetative decomposition.*

**Comment: EPA, Region III, Mark Smith, Office of Watersheds**

EPA interprets the amendments to mean that the periodic site specific adaptations would change the numerical dissolved oxygen criteria and that site specific criteria are allowed by federal regulation and are subject to EPA review and approval. EPA recognizes that pollutants may naturally exceed criteria and the states may establish site specific criteria by setting the criteria equal to natural background. EPA defines natural background as those concentrations due only to non-anthropogenic sources. The state should include in their water quality standards (1) a definition of natural background consistent with EPA's; (2) a provision that site specific criteria may be set to natural background; and (3) a procedure for determining natural background, or alternatively, a reference in their water quality standards to another document describing the binding procedure that will be used. The state should also provide for public comment and notice on the above three provisions. The site-specific criteria should be adopted into the regulation and the water body segment to which the site-specific criteria apply should be listed.

Violations of the dissolved oxygen criteria are violations no matter what factors produce the violation. An analysis of the non-anthropogenic conditions producing a natural condition resulting in a DO level below current standards and the listing of that water body in a natural condition segment of the 305(b) and 303(d) reports is an appropriate strategy to present water quality data. It enables the public and watershed managers to more efficiently commit resources for environmental analysis and restoration. The individual water body whose DO level is below the current DO a numeric criterion is in violation of the standard. If a site-specific criteria is instituted and the water body governed by that standard is shown to adhere to the new standard it is not a violation.

**Response:** *DEQ does not believe that this rulemaking constitutes a change to the numerical water quality criteria. The existing criteria apply as always, and will continue to be used in regulatory permit programs. This expanded narrative provision is an implementation procedure specifically for data assessment under 305(b) and 303(d). Implementation procedures for water quality standards such as this are allowed by 40 CFR 131.13.*

*The existing 305(b) guidance will be revised to include details for DEQ assessment staff on how to use this new provision. This 305(b) guidance is published for comment as required by the Virginia Water Quality Monitoring, Information and Restoration Act. DEQ has revised the language to make it very clear that these are the implementation procedures for those particular programs and that the public will have an opportunity to comment on the waters that fall into this category via the 303(d) public comment periods. The 303(d) report will also be subject to EPA approval.*

*However, DEQ has added the provision that the Board shall initiate a rulemaking to set site specific criteria that reflect the natural quality of that water body or segment when a*

*determination under 9 VAC 25-260-55.B has been made. DEQ is currently working with EPA's Chesapeake Bay Program Office to develop criteria and designated uses for the Chesapeake Bay, including the deep channels. In the meantime, a narrative implementation provision such as this one can be used to allow staff to make reasonable decisions on what constitutes a non-impaired, partially impaired, threatened or impaired water. Regarding the definition of natural, DEQ has clarified that the only sources allowed under this provision to lower the dissolved oxygen are non-anthropogenic sources. This is consistent with EPA's definition of "natural". DEQ has also added a provision that includes an evaluation of anthropogenic inputs via a watershed assessment in our evaluation of naturally low dissolved oxygen.*

*In response to the last comment, DEQ has removed the statement that these naturally low dissolved oxygen concentrations are not considered violations of the criteria.*

**Comments: Merck & Co., Inc., Tedd H. Jett, P.E., Manager, Environmental Engineering**

Merck supports the establishment of Total Maximum Daily Loads (TMDLs) to achieve scientifically based, quantitative water quality standards where voluntary measures fall short of reaching those standards. Considerable resources to draft and fulfill TMDLs will be a great expense and the cost will be borne by Virginia taxpayers and consumers. The TMDL exercise must be done efficiently and effectively by correctly identifying impaired waters and applying the limited resources where they will do the most good. It is well established that low dissolved oxygen concentrations can occur naturally. Under current rules these natural conditions must be listed as impaired under 303(d). An attempt to "correct" natural conditions would be a wasted effort. Water quality improvements should be focused on the real water quality problems. Merck supports the proposal.

*Response: DEQ acknowledges the support of the proposal and the need to expend TMDL resources where truly impaired waters are located.*

**Comments: United States Fish and Wildlife Service, Karen Mayne, Supervisor, Virginia Field Office**

The proposed regulations may adversely impact habitat for federally listed threatened and endangered species and cause indirect effects to those species. The proposal does not ensure that the causes of the low dissolved oxygen are not due to point or non-point source pollution, which can be controlled. "Seasonally" is not defined and alternative dissolved oxygen criteria are not provided, leaving no dissolved oxygen criteria in effect. A list of the endangered and threatened habitat and waters known as anadromous spawning and nursery habitat for fish effected by the minimal flow waters (swamps) part of the proposal were provided. Many of the spawning areas and two additional minimal flow waters were also known Great Blue Heron rookeries. Four of the minimal flow velocity streams were documented freshwater mussel habitat that should not be listed because of documented non-point source pollution and/or that the presence of freshwater mussels indicates natural dissolved oxygen concentrations would not be low. The dissolved oxygen in these waters should remain high to protect these species. There were also three minimal flow velocity streams that were not clearly described in the proposal.

The water quality standards should retain regulatory language for dissolved oxygen that establishes that the criteria are in effect at all times. Some states do recognize that natural events may result in dissolved oxygen concentrations falling below criteria; however, the state can not say that criteria do not apply in those instances. These are procedures that should be established in programmatic guidance. The proposal indicates the dissolved oxygen criteria will not apply to the proposed waters for assessment purposes. While some waters may be naturally low in dissolved oxygen at times, the Clean Water Act does not allow for numeric dissolved oxygen criteria to be used for some programs (i.e. 402 permits), yet not for other programs (i.e. 303(d)).

A watershed evaluation should be conducted to look for sources that may cause hypoxic and anoxic conditions in the waters before calling it “natural.” The Service found that one of the waterbodies listed as “natural” was documented as a rich freshwater mussel habitat being negatively impacted by cattle accessing the stream and eroding the banks (non-point source pollution). All the streams listed should be documented as fully as possible any reason which causes the water not to meet standards.

The Service is also concerned the monitoring data used to base decisions about natural quality is temporally limited and may not accurately and completely describe dissolved oxygen trends. High frequency monitoring has documented the dynamic nature of short-term dissolved oxygen concentrations, which is critical to interpreting and understanding trends relative to water quality goals. The reference provided also verifies that diurnal swings of dissolved oxygen may not be fully represented in existing models of estuarine systems as well. The Service recommends continuously deployed sensors to aid in understanding dissolved oxygen trends and the trends should be verified in as near pristine waters as possible.

***Response:*** *DEQ does not believe that this rulemaking constitutes a change to the numerical water quality criteria. A water quality standards rulemaking will have to be initiated in order to change the criteria and this has been recognized under 9 VAC 25-260-55 paragraph E. The existing criteria apply as always, and will continue to be used in regulatory permit programs. This narrative provision is an implementation procedure specifically for data assessment under 305(b) and 303(d). Implementation procedures for water quality standards such as this are allowed by 40 CFR 131.13. DEQ agrees that the minimal flow velocity creeks where documentation shows (such as what the Service provided) that the waters are impacted by non-point source pollution should be scrutinized before allowing low dissolved oxygen concentrations in these waters to be considered natural. The amendments have been revised to say that the Board only recognizes non-anthropogenic sources for lowering the dissolved oxygen. Furthermore, DEQ has also added a provision that includes an evaluation of anthropogenic inputs via a watershed assessment in our evaluation of naturally low dissolved oxygen. This evaluation will include locating and identifying all point and non-point sources of pollution, and identifying any man-made activities (such as water withdrawals) that cause low flow conditions and result in low dissolved oxygen levels. If non-point source pollution would lower the dissolved oxygen beyond that allowed by this procedure, those waters would be listed as “impaired” under 303(d).*

*DEQ staff agrees that more aquatic life consideration, anthropogenic inputs and minimum data requirements should have been reviewed. DEQ believes that more detailed guidance should be*

*written before listing such waters in a permanent designation under special standard “y.” Because of this and other comments received about the inconsistencies between special standard “y” and the new section 9 VAC 25-260-55, DEQ has deleted the waters listed under special standard “y” and will write more detailed guidance for the water quality assessments staff to review for consideration of low dissolved oxygen concentrations in these types waters*

*WQS staff agrees that continuously deployed oxygen sensors would aid significantly in the understanding of temporal oxygen fluctuations, particularly in the Bay. The comment will be forwarded to the DEQ Chesapeake Bay Program staff.*

**Comments: Virginia Association of Municipal Wastewater Agencies, Christopher Palmeroy, McGuire, Woods, Battle and Boothe**

Water quality standards should be based on sound science and good public policy. VAMWA has in the past and continues to concur in the need for the Water Quality Standards Regulation to fully and accurately account for naturally occurring exceedances of the water quality standards. However, the existing proposal does not change the numeric criteria for dissolved oxygen, despite the fact the existing numeric criteria suffer from many technical deficiencies. These technical deficiencies have been enumerated in previous comments on the Notice of Intent comment period associated with these regulation and are submitted again via this reference. VAMWA encourages Virginia to continue participating in the redevelopment process for Bay criteria under the Chesapeake Bay Program. This process includes a comprehensive Use Attainability Analysis and takes into account the economic impacts of the controls needed to meet new and revised water quality standards. However a narrative provision, such as what is proposed, is necessary because it is impractical to revise the water quality standards regulation to identify a particular water body as impacted by natural conditions or to revise the numeric standard for that water body. Such regulatory changes typically take 18-24 months, yet regulatory processes need to be completed in much shorter timeframes. Each water body may vary according to its natural condition and it is not practical to develop site-specific criteria at this time for each and every different type of water at this time. Therefore, narrative criteria are necessary to fill in this gap in the standards setting process. However, the narrative provisions should not be limited to dissolved oxygen. There are other natural variations in water quality that should be covered in the narrative provisions. The proposal should recognize that the naturally occurring value serves as the applicable standards, and it should be an automatic recognition. This would ensure the public that human activity is not considered as part of “natural background” and it would facilitate timely utilization of the provision for 303(d) and permitting. The public participation component that is currently described in the rulemaking could remain. In this rulemaking, the Board is proposing two different mechanisms for addressing natural variation. For minimal flow velocity/vegetative decomposition waters, the provisions are the same except each and every water segment under the provision is listed. Any new waters would have to be added via a rulemaking process to revise the list of minimal flow velocity/vegetative decomposition waters. This is not the case for the stratified waters, although some public participation is incorporated into the narrative for stratified waters. The Board should explain why inconsistent approaches are used and VAMWA recommends the Board use the procedure proposed for the stratified waters for the minimal flow velocity waters as well. The will provide for maximum flexibility to respond to evidence showing natural water quality

impacts. In addition, there are many miles (e.g. the Pamunkey River) of rivers and streams included in Virginia's 1998 303(d) list for natural conditions that were incorrectly omitted from this section of the proposal.

*Response: DEQ agrees that the existing numeric criteria may have technical deficiencies but elected not to replace existing criteria at this time. DEQ staff, with input from an ad hoc advisory committee, decided that it was best for DEQ to incorporate a strong narrative exclusion for waters naturally low in dissolved oxygen at this time. However, DEQ has added to the provisions that a rulemaking shall be initiated to set site-specific criteria that reflect the natural quality of a water body or segment when a determination of natural dissolved oxygen concentrations has been made under 9 VAC 25-260-55.B. Please note that DEQ had intended and clarified that this narrative provision was to be used for water quality assessments under 305(b)/303(d).*

*DEQ also agrees that all natural conditions should be considered in water quality standards, however, this rulemaking was only designed to address dissolved oxygen. A separate rulemaking should address other natural causes of water quality standards violations (for example, pH). The federal and state mandated triennial review will begin with a Notice publication on January 29, 2001. This would be an appropriate time to ask the state to consider other "natural" events or to consider a broader definition of "natural".*

*DEQ agrees that the process for identifying stratified waters and low flow/decomposition waters should be the same. There was too much confusion from the public as to why these waters were treated separately as well as the need for additional data requirements to support the designation. These minimal flow velocity waters with decomposing vegetation are now included under 9 VAC 25-260-55 and will be determined as needed when data requirements have been met. The requirements will be included as part of the 305(b)/303(d) guidance. Related to this, DEQ did not see the Pamunkey River listed as impaired due to dissolved oxygen or natural conditions in the 1998 303(d) list which is why it was not on the original list of minimal flow waters.*

**Comment: Virginia Manufacturers Association, Cathy C. Taylor, Vice President, VMA Environmental Affairs:**

VMA supports efficient and effective development of TMDLs by correctly identifying truly impaired waters so that resources are applied where they will do the most good. It would be fruitless to correct "natural" conditions when water quality improvements should be prioritized and focused on the real water quality problems.

Although VMA support the Board's proposal to amend the water quality standards for natural conditions and dissolved oxygen, they recommend that the natural background issue should apply more broadly to all "natural" conditions. VMA provided a narrative definition of natural background as follows: Where the concentration of a pollutant exceeds a water quality standard and the exceedance is not caused by human activity but is due solely to naturally-occurring conditions, the exceedance shall not be considered a violation of the water quality standard.

**Response:** *DEQ agrees that water quality improvements should be focused on anthropogenic causes (and hence, solutions) of water pollution. This language specifically acts to exclude waters that are low in dissolved oxygen due to non-anthropogenic sources so that resources are expended towards improving the man-made inputs. DEQ also agrees that all natural conditions should be considered; however, this rulemaking was only designed to address dissolved oxygen. A separate rulemaking could address other natural causes of water quality standards violations (for example, pH). The federal and state mandated triennial review will begin with a Notice publication on January 29, 2001. This would be an appropriate time to ask the state to consider other “natural” events or to consider a broader definition of “natural”.*

**Comment: Virginia State Dairymen’s Association, Dale A. Gardner, Executive Secretary-Treasurer**

The Dairymen’s Association supports the amendments and that natural phenomenon should be accounted for in regulations. They also stated that this natural phenomenon could also apply to fecal coliforms, where fecal levels would naturally be above existing numerical criteria even if all cattle were removed from the watershed in Franklin County.

**DRAFT Response:** *DEQ acknowledges the support and will continue to work with the Dairymen’s Association in making amendments to the fecal coliform criteria and primary contact use designations as is part of another ongoing rulemaking comment period ending January 8, 2001.*

**Comment: Zicht Engineering, Limited, Eric E. Zicht, PE, LS**

Zicht Engineering supports the proposal to revise the water quality standards to reflect natural conditions because it is important to reflect the real world and good science. There are other natural conditions that may cause waters to contravene current dissolved oxygen standards, including no or low flow swamps and marshes and these should fall under the new provisions also.

**Response:** *DEQ acknowledges the support of the proposal. DEQ has also included minimal flow velocity waters with decomposing vegetation under the implementation procedures in 9 VAC 25-260-55.*

## Detail of Changes

*Please detail any changes, other than strictly editorial changes, that are being proposed. Please detail new substantive provisions, all substantive changes to existing sections, or both where appropriate. This statement should provide a section-by-section description - or crosswalk - of changes implemented by the proposed regulatory action. Include citations to the specific sections of an existing regulation being amended and explain the consequences of the changes.*

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Section 9 VAC 25-260-50: Footnote \*\*\*\*\* previously referenced new section 9 VAC 25-260-55 for as “special provisions for waters naturally low in dissolved oxygen.” Revised footnote \*\*\*\*\* reference 9 VAC 25-260-55 for “implementation of these criteria in waters naturally low in dissolved oxygen.”

Section 9 VAC 25-260-55: Title changed from “Waters Naturally Low in Dissolved Oxygen” to “Implementation Procedure for Dissolved Oxygen Criteria in Waters Naturally Low in Dissolved Oxygen”

Paragraph A: Added an opening statement which states this is a procedure to be implemented when assessing dissolved oxygen data for preparation of 305(b) and 303(d) reports. Also added in a reference to the Water Quality Monitoring Information and Restoration Act.

Paragraph A: Added that “non-anthropogenic sources” and “physical and chemical processes” are recognized as causing low dissolved oxygen concentrations.

Paragraph A: The non-anthropogenic and physical and chemical processes that will result in low dissolved oxygen concentrations seasonally are set apart in three new sub-sections (A.1, A.2 and A.3). Old sub-sections A.1 and A.2 have been deleted and the concepts moved to new paragraph B, C and D.

Paragraph A: Added the recognition that minimal flow velocity waters with decomposition of vegetation also applied under this procedure. This category of waters was placed in new sub-section A.3.

Old Paragraph B: Deleted

New Paragraph B: Deleted from paragraph A is the statement that “These low dissolved oxygen concentrations are not a violation of the water quality criteria as long as the Board determines these concentrations do not fall below the natural waters quality resulting from stratification and depth.” It is replaced with “In preparation of the Clean Water Act §§ 305(b) and 303(d) reports the Board shall list waters as naturally impaired in accordance with 62.1-44.19:5.C when the Board determines that the low dissolved oxygen concentrations result from non-anthropogenic sources and the physical and chemical processes described in 9 VAC 25-260-55.A.”

Paragraph B: Moved from proposed paragraph A are the types of information the Board will use in making that determination. To the list of information, “anadromous fish spawning areas” was added and a requirement that the Board shall conduct a watershed assessment to document anthropogenic sources that individually or cumulatively cause low dissolved oxygen concentrations including: locating and identifying all point and non-point sources of pollution, and identifying any man-made activities (such as water withdrawals) that cause low flow conditions and result in low dissolved oxygen levels. Deleted from revised paragraph B is the reference to “periodically” and the words “uses” and “available.”

New Paragraphs C and D: Added in statements that these determinations shall be subject to public comment on draft 303(d) reports and made available to the public in final 303(d) reports.

Paragraph E: Added a statement that the Board shall initiate a rulemaking to set site specific criteria that reflect the natural quality of that water body or segment following a determination made under 9 VAC 25-260-55.B.

Section 310: Special standard “y” deleted.

Section 380: Second paragraph in “B” deleted.

Sections 390, 410, 420, 440, 470, 480, 520, and 530: All reference to special standard “y” in the Special Standards column deleted.

### Family Impact Statement

*Please provide an analysis of the regulatory action that assesses the impact on the institution of the family and family stability including the extent to which the regulatory action will: 1) strengthen or erode the authority and rights of parents in the education, nurturing, and supervision of their children; 2) encourage or discourage economic self-sufficiency, self-pride, and the assumption of responsibility for oneself, one’s spouse, and one’s children and/or elderly parents; 3) strengthen or erode the marital commitment; and 4) increase or decrease disposable family income.*

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The development of water quality standards is for the protection of public health and safety, which has only an indirect impact on families.