UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Ms. Melanie Davenport, Director
Division of Water Quality Programs
Virginia Department of Environmental Quality
629 E. Main Street
P.O. Box 1105
Richmond, Virginia 23218

DEC 12 2013

Dear Ms. Davenport:

The U.S. Environmental Protection Agency (EPA) has conducted a review of the Virginia Department of Environmental Quality's (VADEQ) 2012 Section 303(d) List (category 5 of Virginia's 2012 Integrated Report) and all supporting documentation and information. Based on this review, EPA has determined to partially approve Virginia's 2012 list of water quality-limited segments still requiring Total Maximum Daily Loads (TMDLs) and defer final action on the assessment status of the impacts of algal growth on recreation uses in the Shenandoah River, North Fork Shenandoah River, and South Fork Shenandoah River (collectively, Shenandoah River). Final action on the assessment status of the Shenandoah River has been deferred due to information provided by the Shenandoah Riverkeeper to EPA and VADEQ related to algal growth impacts to recreation uses. The remainder of Virginia's 2012 303(d) list, including all other listings and assessment decisions that VADEQ made in the Shenandoah watershed, is approved.

EPA has agreed to support a pilot study to develop a quantitative and repeatable evaluation of algal growth impacts to Virginia's non-tidal flowing waters. EPA has provided funding for the study, which will be performed by the Interstate Commission on the Potomac River Basin (ICPRB) and will be conducted on the Shenandoah River, in consultation with VADEQ. EPA and DEQ anticipate that ICPRB will develop information that will improve EPA and DEQ's ability to evaluate spatial and temporal extent of algal growth and its impact on River enjoyment and can be applicable to other non-tidal flowing waters in Virginia. It is anticipated that the pilot study will make use of citizen monitors to collect information in a manner that could serve as a model for future use of citizen data regarding algal biomass. EPA anticipates the study results to be available in 2015. This study will inform EPA's ongoing review of the Commonwealth's Integrated Reports.

EPA would like to take this opportunity to recognize Virginia's dedicated work on TMDL development. The TMDLs that Virginia has developed over the last 14 years have been and will continue to be instrumental tools for improving the overall quality of the Commonwealth's water resources. EPA would also like to thank Virginia for maintaining consistent cause group codes on the 2010 and 2012 303(d) Lists. Consistent segment IDs are critical for cycle to cycle tracking of impaired waters.

EPA appreciates the effort put forth by you and your staff to compile this list and assess the waters of the Commonwealth. If you have any questions, please feel free to contact me, or have your staff call Ms. Evelyn MacKnight at (215) 814-5717 or Mr. Bill Richardson at (215) 814-5675.

Sincerely,

Jon M. Capacasa, Director
Water Protection Division

Enclosure

RATIONALE FOR PARTIAL APPROVAL OF VIRGINA DEPARTMENT OF ENVIRONMENTAL QUALITY 2012 SECTION 303(d) LIST

I. Purpose

The purpose of this document is to describe the rationale for the U.S. Environmental Protection Agency's (EPA) partial approval of Virginia Department of Environmental Quality's (VADEQ) 2012 Section 303(d) list. EPA has conducted a complete review of Virginia's 2012 Section 303(d) list and supporting documentation and information. Based on this review, with the exception of the assessment status related to algal growth impacts to recreation uses in the North Fork Shenandoah River, South Fork Shenandoah River and mainstem Shenandoah River (collectively referred to as the Shenandoah River), EPA has determined that the Commonwealth's list of water quality limited segments (WQLSs) still requiring Total Daily Maximum Loads (TMDLs) meets the requirements of Section 303(d) of the Clean Water Act (CWA or the Act) and EPA's implementing regulations. Therefore, by this letter and with the exception of the assessment status related to algal growth impacts to recreation uses in the Shenandoah River noted above, EPA hereby approves Virginia's Section 303(d) list, which is comprised of Category 5 of Virginia's Water Quality Assessment 305(b)/303(d) Integrated Report. EPA is deferring its final decision on the Section 303(d) listing status of the Shenandoah River with respect to algal growth impacts to recreation uses. EPA's deferral is limited to the assessment status of algal growth impacts to recreation uses in the Shenandoah River; all other listings and assessment decisions that VADEQ made in the Shenandoah watershed are approved by EPA. As set forth in greater detail below, EPA is working with Virginia to further evaluate algal growth in the Shenandoah River with assistance from the Interstate Commission on the Potomac River Basin (ICPRB). EPA also notes that Virginia continues to take a number of actions to reduce nutrient input to the Shenandoah that should have an ameliorative effect on algal growth.

II. Statutory and Regulatory Background

A. Identification of WQLSs for Inclusion on Section 303(d) List

Section 303(d) (1) of the Clean Water Act (CWA or the Act) directs states to identify those waters within their jurisdiction for which effluent limitations required by section 301(b) (1) (A) and (B) are not stringent enough to implement any applicable water quality standard, and to establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters. The Section 303(d) listing requirement applies to waters impaired by point and/or nonpoint sources, pursuant to EPA's long-standing interpretation of Section 303(d).

EPA's implementing regulations require states to biennially submit a list identifying water quality limited segments still requiring a Total Maximum Daily Load (TMDL). 40 CFR 130.7(b)(1). EPA regulations provide that states do not need to list waters where the following

controls are adequate to implement applicable standards: (1) technology-based effluent limitations required by the Act, (2) more stringent effluent limitations required by State or local authority, and (3) other pollution control requirements required by state, local, or Federal authority (see 40 CFR 130.7(b)(1)).

B. Consideration of Existing and Readily Available Water Quality-Related Data and Information

In developing Section 303(d) Lists, states are required to assemble and evaluate all existing and readily available water quality-related data and information, including, at a minimum, consideration of existing and readily available data and information about the following categories of waters: (1) waters identified as partially meeting or not meeting designated uses, or as threatened, in the state's most recent Section 305(b) report; (2) waters for which dilution calculations or predictive modeling indicate non-attainment of applicable standards; (3) waters for which water quality problems have been reported by governmental agencies, members of the public, or academic institutions; and (4) waters identified as impaired or threatened in any Section 319 nonpoint source assessment submitted to EPA (see 40 CFR 130.7(b)(5)). EPA's 1991 Guidance for Water Quality-Based Decisions describes categories of water quality-related data and information that may be existing and readily available (see Guidance for Water Quality-Based Decisions: The TMDL Process, EPA Office of Water, 1991, Appendix C ("EPA's 1991 Guidance")). While states are required to evaluate all existing and readily available water quality-related data and information, states may make reasonable decisions to rely or not rely on particular data or information in determining whether to list particular waters.

In addition to requiring states to assemble and evaluate all existing and readily available water quality-related data and information, EPA regulations at 40 CFR 130.7(b)(6) require states to include, as part of their submissions to EPA, documentation to support decisions to list or not list waters. Such documentation must include, at a minimum, the following information: (1) a description of the methodology used to develop the list; (2) a description of the data and information used to identify waters; 3) a rationale for any decision to not use existing and readily available data discussed in 130.7(b)(5); and (4) any other reasonable information requested by the Region. Virginia's *Water Quality Assessment Guidance Manual for 2012 305(b)/303(d) Integrated Water Quality Report* identified the State's assessment methodology and its use of data. This guidance was submitted to EPA prior to the Integrated Report.

C. Priority Ranking

EPA regulations also codify and interpret the requirement in Section 303(d) (1) (A) of the CWA that states establish a priority ranking for listed waters. The regulations at 40 CFR 130.7(b) (4) require states to prioritize waters on their Section 303(d) Lists for TMDL development, and also to identify those WQLSs targeted for TMDL development in the next two years. In prioritizing and targeting waters, states must, at a minimum, take into account the severity of the pollution and the uses to be made of such waters (See Section 303(d)(1)(A)). States may consider

other factors relevant to prioritizing waters for TMDL development, including immediate programmatic needs, vulnerability of particular waters as aquatic habitats, recreational, economic, and aesthetic importance of particular waters, degree of public interest and support, and state or national policies and priorities. If an endangered species or a public water supply is affected by an impairment listing, that should be considered in scheduling TMDL development as expeditiously as possible. (See 57 FR 33040, 33045 (July 24, 1992), and EPA's 1991 Guidance).

III. Analysis of Virginia Submission

Section III analyzes Virginia's 2012 Section 303(d) submission other than the assessment status of the Shenandoah River related to the recreational use as impacted by algal growth. EPA's analysis of the assessment status of the Shenandoah River related to the recreational use as impacted by algal growth is set forth in Section IV below.

Virginia developed an Integrated Report which identifies the assessment status of all of Virginia's waters combining CWA's Section 303(d) and 305(b) requirements. Virginia's Section 303(d) List is just one portion of Virginia's Integrated Report; the impaired waters list is comprised of seven subcategories. Category 5A of the Integrated Report contains those waters which are impaired for one or more designated uses by a pollutant(s) and require a Total Maximum Daily Load (TMDL). Category 5B of the Integrated Report identifies those waters which require a TMDL because they do not support the shellfish consumption use. Category 5C of the list contains those waters that are unable to attain their designated uses due to suspected natural conditions. These waters will be further studied to determine if a change in water quality standards would be appropriate to reflect the natural condition impacts. TMDLs are required on these waters unless standards are modified such that no TMDL is needed. Category 5D waters are those waters which have a TMDL developed to address a specific pollutant and/or impairment, but other TMDLs are needed for additional pollutants and/or impairments. Category 5E of the list contains those waters that are impaired by individual point sources that are not expected to meet their compliance schedule by their next permit issuance or the reporting period. Category 5F of the list contains waters where the water quality standard is attained for a pollutant(s) with a TMDL, but the water remains impaired for additional pollutant(s) requiring TMDL development. Category 5M of the list are waters impaired due to atmospheric mercury.

A. Identification of Waters and Consideration of Existing and Readily Available Water Quality Related Data and Information

EPA has reviewed Virginia's 2012 submission, and has concluded that the Commonwealth identified the waters on its 2012 Section 303(d) list submission in compliance with Section 303(d) of the Act and 40 CFR §130.7. Based on a review of all existing and readily available information, EPA is deferring its final decision on the assessment status of the impact of algal blooms on recreation uses in the Shenandoah River. EPA's deferral is due to information provided to VADEQ and EPA by the Shenandoah Riverkeeper detailing the impact of algal growth in the Shenandoah River. All other listings and assessment decisions that VADEQ made in the Shenandoah watershed are approved by EPA. EPA is only deferring action on assessment

determinations related to algal growth impacts to recreational uses in the Shenandoah River. As detailed later in this document, EPA is working with VADEQ to further study algal impact to recreational uses in the Shenandoah River. The results of the study should be available to VADEQ in 2015.

VADEQ initially provided EPA with a draft 2012 Integrated Report, which included the 2012 Section 303(d) List, in preliminary draft form, on March 23, 2012. The draft 2012 Integrated Report was public noticed in the Virginia Register as being available for public comment from March 26, 2012 until April 27, 2012. A public webinar summarizing the findings of the report was held on April 9, 2012. An electronic copy of the report was made available on the DEQ web page and paper copies were available upon request. EPA provided comments to DEQ on the draft 2012 Integrated Report on April 18, 2012. The Commonwealth amended its 2012 Integrated Report to address the public's and EPA's comments. An electronic copy of Virginia's revised final 2012 Integrated Report was submitted to EPA for approval on September 12, 2012.

B. Description of the methodology used to develop this list (CFR 130.7 (b)(6)(i)

Waters are defined as impaired in Virginia when they do not support, or only partially support, any of their designated uses. The five designated uses are aquatic life, fish consumption, shellfish consumption, recreation, and drinking. Use attainment is determined by comparison of field measured or projected values of various water quality parameters to applicable numeric or narrative criteria. The process for determining impairment for the Section 303(d) List portion of the Integrated Report begins with Virginia's 305(b) portion of the Integrated Report. The 305(b) Report identifies waters which are in violation of water quality criteria or otherwise are not achieving a designated use.

C. Description of the data and information used to identify waters, including a description of the data and information used by the state as required by Section 130.7 (b)(5).

In preparing its 2012 Section 303(d) List, Virginia assembled all existing and readily available data. The list was a result of the combined efforts of many state agencies. The Virginia Department of Conservation and Recreation (DCR) was responsible for the assessment and analysis of nonpoint source information. The Virginia Department of Health (VDH) provided other water quality health-related information regarding shellfish and fish tissue impairments. Water quality assessments were conducted by staff in each of DEQ's regional offices. This was done through the use of data collected by the regional ambient water quality monitoring program and regional biologists. Monitoring data was also provided to VADEQ by the United States Geological Survey (USGS), United States Forest Service (USFS), Tennessee Valley Authority (TVA), the EPA Chesapeake Bay Program, and various citizen monitoring groups.

1. Section 130(b)(5)(i), Waters identified by the state in its most recent Section 305(b) report as "partially meeting" or not meeting designated uses or as "threatened."

Virginia's 2012 Section 303(d) List was combined with the 305(b) Report to form what is referred to as the Integrated Report. Therefore, the 305(b) Report is no longer a stand alone document and the data that would have gone into the development of such a "stand alone" report was used in the production of the Integrated Report. In Virginia the biennial water quality assessment is conducted by DEQ with the assistance of DCR. The Integrated Report incorporates the data and evaluations from other agencies such as the USGS, TVA, USFS, and various citizens groups within the state. Virginia's Integrated Report compartmentalized the waters of Virginia into five distinct categories. Waters are defined as Category 1: Supporting of All Uses, Category 2: Supporting of All Uses for Which Assessment Occurred, Category 3: Lacking Data for a Determination, Category 4: Impaired but not Requiring a TMDL, or Category 5: Impaired and Requiring a TMDL. Many of these five categories were further sub-categorized by Virginia.

Waters in any of the sections in Category 5: Impaired and Requiring a TMDL, are those which are placed on Virginia's 2012 Section 303(d) List. These waters are found as not attaining one or more designated uses based on monitoring data. Details on determination of non-attainment for the designated use categories is provided in Virginia's *Water Quality Assessment Guidance Manual for Y2012 305(b)/303(d) Integrated Water Quality Report*. Virginia's 2012 Section 303(d) further refines the impaired Category 5 waters identified in the Integrated Report into the seven sub-categories described above.

2. Section 130.7(b) (5) (ii) Waters for which dilution calculations or predictive models indicate non-attainment of applicable water quality standards.

Most of the waters listed on Virginia's 2012 Section 303(d) List were listed based on monitoring data. However, waters listed on Part 5E of the 2012 Section 303(d) List were listed based on permit information, i.e. predictive modeling information. These facilities have compliance schedules for water quality-based effluent limits that extend beyond the listing cycle. These facilities are expected to attain their final effluent limits which will allow for the attainment of water quality standards.

3. Section 130.7(b) (5) (iii), Waters for which water quality problems have been reported by local, state, or Federal agencies; members of the public; or academic institutions.

Several waters were placed on Virginia's Section 303(d) List as a result of data collected by agencies other than DEQ.

- Federal agencies included the TVA, USGS, USFS, and the Chesapeake Bay Program
- State agencies included DCR and VDH
- Several citizen-generated data sets were evaluated in the report and list[a]

[a] Information provided by citizens regarding the assessment status of the Shenandoah River related to the recreation use as impacted by algal growth is discussed in Section IV.

4. Section 130.7(b) (5)(iv), Waters identified by the State as impaired or threatened in a non-point assessment submitted to EPA under section 319 or in any updates of the assessment.

VADEQ also considered Virginia's 2010 Non-Point Source (NPS) Assessment and Prioritization Study identified potential pollutant loadings, water quality impairments, and biological health impacts. The main focus of the study was to determine the potential nutrient and sediment loadings associated with the land uses of a watershed. These waters were then segmented so that a summation of total impaired length per watershed could be derived. Watersheds were then prioritized based on potential pollutant loadings, water quality impairments, measures of biological health, and NPS reduction activities. Virginia's list of water quality limited segments, i.e., the 303(d) list, is the basis for the impaired waters portion of the 2010 NPS Assessment study.

5. Other data and information used to identify waters (besides items 1-4 discussed above).

DEQ considered other data in addition to the categories of existing and readily available data and information listed in the EPA regulations and set out above. As mentioned earlier several federal and state agencies as well as citizens groups provided data to DEQ which was used in the formation of Virginia's 2012 Integrated Report and Section 303(d) List.

D. A rationale for any decision to not use any existing and readily available data and information for any one of the categories of waters as described in Sections 130.7(b)(5) and 130.7(b)(6)(iii)

Citizen generated data which lacked the state's Quality Assurance/Quality Controlled (QA/QC) monitoring requirements were not used in the determination of impairment. This was done because of the uncertainty associated with data that is not properly QA/QC data.

E. Any other reasonable information requested by the Regional Administrator described in Section 130.7(b) (6) (iv).

During the review of Virginia's 2012 Section 303(d) List, EPA Region III staff requested and received additional information from Virginia.

- **Justification for the de-listed segments.** Virginia delisted several waters which were previously listed on their 2010 Section 303(d) List. Virginia provided EPA with supplemental data on these waters as was done for past assessments. A short justification for delisting was also submitted for EPA Region III's review.

- **Clarification of changes to previously listed waters.** EPA Region III requested that Virginia provide the old segment identification numbers for waters that were previously listed. EPA made this request in order to track waters from previous Section 303(d) Lists

to the 2012 Section 303(d) List. EPA also requested clarification on the listing category for several formerly impaired waters.

F. Identification of the pollutants causing or expected to cause a violation of the applicable water quality standards described in Section 130.7(b) (4).

Virginia identified the pollutants that were causing or expected to cause a violation of the applicable water quality standards for every listed segment where the identity of the pollutant was known. Virginia included those pollutants for which a numeric water quality criterion was violated, such as *E. coli*. For violations of a narrative criterion, pollutants were rarely identified. Therefore, many waters were listed for violations of the general standard benthic aquatic life use without identifying a cause since no cause was determined at the time of listing. Virginia anticipates performing a stressor analysis at the time of TMDL development.

G. Priority Ranking and Targeting

Virginia's 2012 Section 303(d) List addresses the priority ranking requirement by identifying dates by which TMDLs will be developed for waters identified as impaired and requiring TMDLs. Streams for which a TMDL will not be established within the next two years are identified as having a TMDL due by 2014, 2016, 2018, etc.

EPA reviewed Virginia's priority ranking of listed waters for TMDL development, and concluded that the Commonwealth appropriately took into account the severity of pollution and the uses to be made of such waters. VADEQ utilizes various mechanisms to schedule the development of TMDLs, consistent with EPA guidance, which allows for states to use additional criteria to prioritize its Section 303(d) list (see EPA, April 1991).

H. Public Participation

The draft 2012 Integrated Report was public noticed in the Virginia Register as being available for public comment from March 26, 2012 until April 27, 2012. A public webinar summarizing the findings of the report was held on April 9, 2012. An electronic copy of the report was made available on the DEQ web page and paper copies were available upon request. EPA provided comments to DEQ on the draft 2012 Integrated Report on April 18, 2012. The Commonwealth amended their 2012 Integrated Report to address the public's and EPA's comments. An electronic copy of Virginia's revised final 2012 Integrated Report was submitted to EPA for approval on September 12, 2012.

I. Coordination with the U.S. Fish and Wildlife Service

EPA notified the Virginia Field Office of the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS), by letters to each agency dated April 16, 2012 and February 19, 2013, of the availability of Virginia's 2012 draft and final Integrated Report. EPA provided notification as an informal coordination and invited the resource agencies'

comments. NMFS responded with a number of recommendations related to Virginia's priority ranking. Specifically, NMFS recommended that tributaries to the James/Appomatox and Potomac Rivers and particularly areas where there are tidal influence and Atlantic sturgeon are likely to be present be prioritized for TMDL development. NMFS further recommended that waters in the Chesapeake Bay and its tributaries identified as impaired for dissolved oxygen and/or PCBs be prioritized for TMDL development. While NMFS has not designated any Virginia waters as critical habitat for sea turtles, NMFS also recommended that priority be given to waters where sea turtles are known to occur.

As noted elsewhere, EPA recognizes that States appropriately may consider a number of factors in establishing priority ranking for TMDL development. It also should be noted that a priority ranking of "high" does not necessarily mean that a particular TMDL will be completed first. Many waters with a "high" priority ranking involve complex data collection and analysis that takes significant resources and time. A "high" priority ranking has historically indicated that the State is devoting resources to establishing TMDLs for those waters on a priority basis, but the State simultaneously may be establishing TMDLs for lower priority waters where there is less complexity and the TMDL can be established quickly.

EPA recommends that VADEQ consider NMFS's recommendations when identifying priorities for TMDL development.

IV. Assessment Status of the Shenandoah River Related to Recreation Use as Impacted by Algal Growth

EPA is deferring its final decision on the Section 303(d) listing status of the impacts of algal growth to the recreation uses in the Shenandoah River. EPA's deferral is limited to the assessment status of the Shenandoah River related to algal growth impacts to recreation uses; all other listings and assessment decisions that VADEQ made in the Shenandoah watershed are approved by EPA.

Regarding the State's review of available data and information pertaining to algal growth, VADEQ stated that its approach for purposes of assessing the recreational use is based upon human health concerns and, therefore, is focused on bacteria levels. VADEQ indicated that it does not have a systematic method for collecting and evaluating the presence of algal growth to determine whether there is a nuisance. VADEQ stated: "We believe it is appropriate to recognize these sections of the river as having an observed effect of aquatic algae. Therefore, we propose to modify the 2012 Draft Water Quality 305(b)/303(d) Integrated Report accordingly and list these waters under VA Category 2B ("*waters are of concern to the state but no water quality standard exists for a specific pollutant, or the water exceeds a state screening value or toxicity test*") for the recreational use. This designation means that these areas will remain a priority for monitoring and assessment in the future and will be evaluated when water quality standards related to nutrients and supporting indicators are available for free flowing rivers and streams."

EPA is deferring final action on the assessment status of the Shenandoah River to continue to consider whether recreational uses are impaired due to excess algae, including consideration of the data provided by the Shenandoah Riverkeeper. As part of EPA's assessment, EPA does consider visual observation and statements by water users regarding algal blooms to be relevant to a determination whether one or more narrative criteria or designated uses are being achieved. Information on spatial and temporal resolution of such observations and statements should also be considered.

To improve data and information on water quality, VADEQ and EPA have agreed to cooperate in a pilot study to develop a means to evaluate spatial and temporal extent of algal growth in Virginia's non-tidal flowing waters in a quantitative and repeatable way. EPA has provided funding for the study, which will be performed by the ICPRB and will be conducted on the Shenandoah River. EPA and DEQ anticipate that ICPRB will develop information that will improve EPA and DEQ's ability to evaluate spatial and temporal extent of algal growth and its impact on River enjoyment and can be applicable to other non-tidal flowing waters in Virginia. Moreover, additional information may be obtained as TMDLs are implemented in 17 tributaries to the Shenandoah Basin rivers for nutrient and sediment, as well as actions are implemented under the Virginia Watershed Implementation Plan (WIP) for Chesapeake Bay restoration, which details nutrient and sediment reductions for the River.