UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
Four Penn Center
1600 John F Kennedy Blvd
Philadelphia, Pennsylvania 19103-2852

Ms. Jutta Schneider, Director
Water Planning Division
Virginia Department of Environmental Quality
1111 East Main Street, Suite 1400
Richmond, Virginia 23219

Dear Ms. Schneider,

The U.S. Environmental Protection Agency, Region III (EPA) has reviewed the Virginia Department of Environmental Quality's (VADEQ) Final Draft 2022 Integrated Report and supporting documentation and information submitted as final on September 23, 2022. VADEQ published the draft 2022 Integrated Report for public notice and comment from July 4, 2022 until August 5, 2022. EPA reviewed and determined that the portion of the Integrated Report (Category 5) constituting Virginia's list of water quality-limited segments still requiring Total Maximum Daily Loads meets the requirements of Section 303(d) of the Clean Water Act and EPA's implementing regulations. Therefore, with this letter and the enclosed rationale, EPA approves VADEQ's 2022 Section 303(d) list as submitted electronically to EPA through the Assessment, TMDL Tracking and Implementation System (ATTAINS). The enclosed approval rationale describes the applicable statutory and regulatory requirements and EPA's review of Virginia's compliance with those requirements.

EPA commends you and your staff for the thorough work and exemplary effort in developing the list and responding to the public comments received. EPA looks forward to working with VADEQ staff in preparation for the next Section 303(d) list submission due April 1, 2024 along with implementation of EPA's Vision for the Clean Water Act 303(d) Program.

If you have any questions regarding EPA's action, please contact Mr. Gregory Voigt, Chief of Standards and TMDLs Section, at 215-814-5737.

Sincerely,

LESLIE GILLESPIE-MARTHALER

Digitally signed by LESLIE GILLESPIE-MARTHALER
Date: 2022.10.21 11:24:23 -04'00'

Catherine A. Libertz, Director
Water Division

Enclosure

cc : Sandra Mueller

Rationale for EPA Approval of Virginia's 2022 Clean Water Act Section 303(d) List

I. Purpose

This document sets forth the U.S. Environmental Protection Agency Region III's (EPA's) rationale for approving Virginia's 2022 Clean Water Act (CWA) Section 303(d) list. On September 23, 2022, EPA received the Virginia Department of Environmental Quality (VADEQ) final 2022 Integrated Report (IR) and supporting documentation and information through the Assessment, Total Maximum Daily Load (TMDL) Tracking and Implementation System (ATTAINS). EPA has conducted a review of VADEQ's 2022 IR and supporting documentation and information. Based on this review, EPA has determined that the portion of the IR constituting Virginia's list of water quality-limited segments (WQLSs) still requiring TMDLs (i.e., Category 5 of the IR) satisfies the requirements of Section 303(d) of the CWA and EPA's implementing regulations. Therefore, EPA hereby approves Virginia's 2022 Section 303(d) list. The statutory and regulatory requirements, and EPA's review of Virginia's compliance with each requirement, are described in detail below.

II. Statutory and Regulatory Background

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

Section 303(d)(1) of the CWA and EPA's implementing regulations at 40 C.F.R. Part 130 direct 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 the applicable water quality standards, 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. EPA's regulations require states to biennially submit to EPA the list identifying WQLSs still requiring a TMDL. This list of WQLSs is commonly referred to as the Section 303(d) list. 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 regulations provide that states do not need to identify waters on the Section 303(d) list where the following controls are adequate to implement applicable water quality standards: (1) technology based effluent limitations required by the CWA; (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) and (2).

EPA's recommended multi-part IR format is intended to satisfy the listing requirements of Section 303(d) and the requirements of Sections 305(b) and 314 of the CWA. [1] This IR format is intended to provide the public and other interested stakeholders with a comprehensive summary of a state's water quality. Consistent with that format, VADEQ's IR places all surface waters in Virginia into at least one of a number of categories or subcategories described below. Category 5 of the IR represents the Section 303(d) list of WQLSs still requiring a TMDL.[2] The assessment categories used in

[1] Integrated Report categories are described in further detail in EPA's Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act: https://www.epa.gov/sites/production/files/2015-10/documents/2006irg-report.pdf

[2] With the exception of Category 5, EPA neither approves nor disapproves the Integrated Report. Category 5 constitutes the

VADEQ's IR are as follows:

FULLY SUPPORTING – Waters are supporting one or more designated uses

- **EPA Category 1** – Attaining all associated designated uses and no designated uses is threatened.
  - **Va. Category 1A** – waters area attaining all uses and a TMDL has been developed for one or more uses.
- **EPA Category 2** – Available data and/or other information indicate that some, but not all of the designated uses are supported.
  - **Va. Category 2A** – waters are supporting all of the uses for which they are monitored.
  - **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.
  - **Va. Category 2C** – waters are now attaining the use(s) for which they were originally 303(d) listed and the TMDL is EPA approved but other applicable use(s) were not monitored and assessed.

INDETERMINATE – Waters needing additional information

- **EPA Category 3** – Insufficient data and/or information to determine whether any designated uses are met.
  - **Va. Category 3A** – no data are available within the data window of the current assessment to determine if any designated use is attained and the water was not currently listed as impaired.
  - **Va. Category 3B** – some data exist but are insufficient to determine support of designated uses. Such waters will be prioritized for follow up monitoring, as resources allow.
  - **Va. Category 3C** – data collected by a citizen monitoring or another organization indicating water quality problems may exists but the methodology and/or data quality has not been approved for a determination of support of designated uses(s). These waters are considered as having insufficient data with observed effects. Such waters will be prioritized by DEQ for follow up monitoring.
  - **Va. Category 3D** – data collected by a citizen monitoring or other organization indicating designated use(s) are being attained but the methodology and/or data quality has not been approved for such a determination.

IMPAIRED – Waters are impaired or threatened but a TMDL is not required

- **EPA Category 4A** – water is impaired or threatened for one or more designated uses but does not require a TMDL. A new TMDL is not necessary to address the newly identified impaired tributaries if TMDL modeling, source identification and reductions cover the entire watershed and the TMDL has been approved by EPA. These waters are primarily related to shellfish and/or recreational bacteria impairments but could include benthic impairments.
- **EPA Category 4B** – water is impaired or threatened for one or more designated uses but does not require the development of a TMDL because other pollution controls requirements (such VPDES limits under a compliance schedule) are reasonably expected to result in attainment of water quality standards by the next reporting period or permit cycle.
- **EPA Category 4C** – water is impaired or threatened for one or more designated uses but does not require a TMDL because the impairment is not caused by a pollutant and/or is determined to be caused by natural conditions.
  - **Va. Category 4D** – part(s) of a water quality standard is attained for a pollutant with a TMDL, but the remaining criteria for the standard were not assessed due to

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list of impaired waters pursuant to CWA Section 303(d) that EPA approves or disapproves pursuant to 33 U.S.C. 1313(d)(2) and 40 C.F.R. 130.7.

insufficient information. (Only to be applied to dissolved oxygen in tidal waters of the Chesapeake Bay).

IMPAIRED – Waters are impaired or threatened and require a TMDL

- **EPA Category 5 – Waters are impaired or threatened and a TMDL is needed**. [3]
  - **Va. Category 5A** – a water quality standard is not attained. The water is impaired or threatened for one or more designated uses (excluding shellfish use) by a pollutant(s) and requires a TMDL (303d list).
  - **Va. Category 5B** – the water quality standard for shellfish use is not attained. One or more pollutants causing impairment require TMDL development.
  - **Va. Category 5C** – the water quality standard is not attained due to "suspected" natural conditions. The water is impaired for one or more pollutant(s) and may require TMDL (303d list). Water quality standards for these waters may be re-evaluated due to the presence of natural conditions.
  - **Va. Category 5D** – the water quality standard is not attained where TMDLs for a pollutant(s) have been developed but one or more pollutants are still causing impairment requiring additional TMDL development.
  - **Va. Category 5E** – effluent limited facilities are not expected to meet compliance schedules by next permit cycle or reporting period.
  - **Va. Category 5F** – the water quality standard is attained for a pollutant(s) with a TMDL and 303(d) delisting approved but the water remains impaired for additional pollutant(s) requiring TMDL development.
  - **Va. Category 5R** – the Water Quality Standard is not attained and the water is impaired, and implementation of an EPA-accepted restoration plan is expected to result in attainment. A status update will be provided each 303(d) cycle to evaluate progress.
- **EPA Category 5M** – the water quality standard is not attained for mercury primarily due to atmospheric deposition.

2) Consideration of Existing and Readily Available Water Quality Related Data and Information

In developing the Section 303(d) list, 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 water quality 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 assessment submitted to EPA. In addition to these minimum categories, states are required to evaluate and should actively solicit any other data and information that is existing and readily available. See 40 CFR §130.7(b)(5). While states must 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,

[3] Chapter 1-Introduction of Virginia's 2020 Integrated Report notes on page 4 that Virginia's Category 5A is the 303(d) list. EPA considers all subcategories of Category 5 (5A, 5B, 5C, 5D, 5E, 5F, 5R, 5M) to comprise Virginia's 303(d) list of impaired waters.

as part of their submissions to EPA, documentation to support decisions to use or not use particular data and information, and decisions to list or not list waters on the Section 303(d) list. Such documentation needs to 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.

3) 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 Section 303(d) 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). As long as these factors are taken into account, states retain considerable discretion and may consider other factors when prioritizing and scheduling TMDLs. See 57 FR 33040, 33045 (July 24, 1992).

III. Analysis of Virginia's Submission

1) Identification of Waters and Consideration of Existing and Readily Available Water Quality Related Data and Information (CFR §130.7(b)(1), (2), (5))

EPA has reviewed Virginia's 2022 IR and has concluded that VADEQ developed its 2022 Section 303(d) list in compliance with Section 303(d) of the CWA and 40 CFR §130.7. EPA's review is based on its analysis of whether VADEQ evaluated all existing and readily available water quality related data and information, had a reasonable rationale for not using certain existing and readily available water quality related data and information, and reasonably identified waters required to be listed on the Section 303(d) list.

EPA received VADEQ's final 2022 Section 303(d) list on September 23, 2022 through ATTAINS, which is EPA's electronic system to accept and track 303(d) submissions and actions. ATTAINS transformed and modernized paper integrated reporting into an electronic system, which allows EPA, states, and the public to access, search, and track water quality assessment decisions[4]. Specifically, VADEQ's Category 5 data in ATTAINS represents VADEQ's Section 303(d) list of impaired waters requiring TMDLs. In addition to the Section 303(d) list, VADEQ submitted through ATTAINS water quality assessment results for its other surface waters pertaining to IR assessment categories 1 – 4, along with a narrative IR and supporting documentation and information. In addition to ATTAINS, VADEQ shares their IR and supporting documentation and information, including the Section 303(d) list, on their webpage[5].

In summary, EPA considered the following: (1) the Integrated Report narrative and appendices; (2) the Section 303(d) list, or waters listed in Category 5, present within ATTAINS; (3) the remaining waters listed in Categories 1 – 4, present within ATTAINS; (4) the state's assessment methodologies; (5) descriptions of the data solicitation and public notice processes; (6) documentation to support

[4] ATTAINS data is publicly accessible via EPA's How's My Waterway online tool and ATTAINS web and geospatial services. For more information, see: https://www.epa.gov/waterdata/get-data-access-public-attains-data

[5] Hyperlink: https://www.deq.virginia.gov/water/water-quality/assessments/integrated-report

decisions to list or not list waters, including decisions to remove waters from Category 5; (7) descriptions of data that the state evaluated; (8) any rationale provided by the state for not using existing and readily available data; (9) comments received on the draft list; and (10) the state's response to those comments.

To the extent that prior approved Section 303(d) lists have been incorporated into the 2022 Section 303(d) list, EPA's rationale for approving those lists remains operative unless otherwise noted. In general, EPA's review of the 2022 Section 303(d) list focused on new water quality-related data and information and changes from the prior lists.

A) Description of the methodology used to develop the list (CFR §130.7(b)(6)(i))

VADEQ has developed methodologies for assessing whether waters are achieving their water quality standards, including their designated uses and associated water quality criteria. These assessment methodologies are intended to describe the state's interpretation of its water quality standards and establish scientifically defensible approaches for assessing water quality. Assessment methodologies are not considered rules, but rather provide a means to provide consistency and transparency in integrated reporting. Furthermore, assessment methodologies are living documents that are revised as new statistical approaches, technologies, or other improved methods are adopted by the state. While EPA considers the state's methodologies, EPA takes action on the Section 303(d) list. EPA neither approves nor disapproves state methodologies.

VADEQ has provided the public with notice and an opportunity to comment on their assessment methodologies. VADEQ issued their Draft Water Quality Assessment Guidance Manual for public comment from January 19, 2021 through February 18, 2021. VADEQ accepted feedback on their assessment methodologies during the public comment period and provided response to all the comments received. The Final Water Quality Assessment Guidance Manual was published for a second 30-day public comment period from April 26, 2021 through May 26, 2021. No comments were received. VADEQ's final assessment methodologies are published on their webpage[6], which EPA reviewed and considered as supporting documentation associated with the IR. These assessment methodologies include:

- Monitoring Station Siting and Delineation
- Evaluation of Designated Uses
- Chesapeake Bay Assessment
- Biological Assessments
- Toxics Assessments
- Swamp Waters Assessment
- Lakes/Reservoirs Assessment
- Nonpoint Source Assessment
- Coastal Assessment
- Wetlands Assessment
- Freshwater Probabilistic Monitoring Assessment
- Continuous Monitoring Assessment

For the 2022 reporting cycle, VADEQ made several changes to the Water Quality Assessment

[6] Hyperlink: https://www.deq.virginia.gov/water/water-quality/assessments/wqa-guidance-manual

Guidance Manual. Bacteria assessment methodologies were updated to reflect the updated recreational water quality criteria adopted by Virginia in 2019 and recreational use assessment determinations were also made using Virginia Department of Health (VDH) algal bloom notices. Also, additional indicators were added to determine aquatic life use impairments due to chlorophyll-a in the tidal James River, lake and reservoir assessment guidance were consolidated, and VADEQ discontinued making assessment determinations for facilities based solely on water quality based effluent limits.

B) Description of the data and information used to identify waters (CFR §130.7(b)(6)(ii))

In preparation for the 303(d) listing process, VADEQ is responsible for the collection and compilation of water quality-related data and information. VADEQ based the 2022 Section 303(d) list on a variety of data and information sources, including data and information described in 40 CFR §130.7(b)(5), with a particular focus on data collected between January 2015 and December 2020.

Virginia's water quality monitoring consists of a network of multiple monitoring programs and special studies. Between January 2015 and December 2020, VADEQ staff collected multiple samples at 3,420 water quality monitoring stations. For these stations, the number of independent observations for the common field measurements were 105,310 for temperature, 88,392 for pH, 89,425 for specific conductance, and 105,003 for dissolved oxygen. In addition, these samples were analyzed for a variety of physical and chemical constituents including nutrients (80,688 for nitrogen and phosphorus), bacteria (52,626 for E. coli and Enterococci), metals (16,103), chlorophyll (9,458), and solids (22,287). These monitoring programs include, but are not limited to, the programs detailed below. For more information, see Chapter 3 of VADEQ's Integrated Report narrative.

- Ambient Watershed Network: monitoring stations sampled within a major river basin every other month for two years and rotated to a new set of stations in other basins the following two years, completing a statewide cycle in six years.
- Virginia Probabilistic Monitoring (ProbMon) Program: monitoring in freshwater and estuarine waters which employs random site selection to produce statistically unbiased estimates of water quality conditions proportional to their occurrence across Virginia. ProbMon is a tool for evaluating large-scale watershed management activities, for testing new monitoring and assessments methods in a variety of ecological settings and for supporting agency activities such as TMDL studies and determining permit limits. VADEQ's Freshwater ProbMon program has sampled 894 randomly selected wadeable sites to provide statistically valid estimates of statewide and watershed biological condition and stressor extent. VADEQ's Estuarine ProbMon program has stations located in the Chesapeake Bay watershed that were distributed among the upper tidal reaches of the mainstem James, York, Potomac, and Rappahannock rivers including tidal tributaries and embayments.
- Chesapeake Bay Non-Tidal Program: monitoring network based on recommendations from the EPA Chesapeake Program Office and encompasses a multi-state water quality characterization effort.
- Chesapeake Bay Tidal Program: monitoring in extensive tidal portions of Virginia's Bay tributaries, mainstem, small creeks and embayments in coordination with the EPA Chesapeake Program Office.
- Citizen Monitoring: monitoring locations identified through public participation and public data submittal. Citizens usually request water quality monitoring to study and address their water quality concerns.

- Fish tissue Program: monitoring of fish tissue to better understand pollutant levels in edible fish with regard to evaluating the fish consumption designated use. This monitoring effort informs fish consumption advisories, impairment decisions, development of polychlorinated biphenyl and mercury TMDLs, and information about restoration progress once an Implementation Plan is in place.
- The Ambient Groundwater Characterization Program: monitoring of chloride concentrations in the Virginia Coastal Plain aquifers. These data are collected at trend stations (repeated wells) and spot samples to better define chloride concentrations throughout the coastal plain, as well as to assess temporal changes (increases in salinity) as a result of increasing groundwater withdrawals.
- Regional Biological Monitoring: monitoring of the benthic microinvertebrate community as a tool to detect and assess water quality conditions.
- The Reservoir Monitoring Program: monitoring of Virginia's largest lakes and others. The prioritization of sampling locations depends on the significance of several criteria.
- Trend Stations: monitoring of fixed (permanent) site locations for the purpose of detecting short-, medium-, and long-term water quality trends for a wide variety of environmentally important water quality parameters.
- The High Frequency Bacteria Monitoring Network: monitoring to complement VADEQ's routine monthly or bimonthly bacteria monitoring by allowing VADEQ to collect enough data to conduct water quality assessments for the recreation designated use at approximately 100 sites total, with approximately 50 sites expected to be sampled each year.
- Algae: Filamentous algae monitoring methods were developed and tested in 2016 and 2017. Monthly monitoring of filamentous algae (from May through October) continues in segments of the Shenandoah River basin.
- TMDL Monitoring Stations: monitoring associated with the development of a TMDL or other non-TMDL approach, and/or a TMDL implementation plan for segments listed on the 303(d) list of impaired waters (not meeting water quality standards for designated uses), which indicate the segments that need a cleanup plan.
- Post-TMDL Implementation Monitoring: tracks the progress of TMDL efforts following installation of best management practices and other controls on pollution sources.
- Special Studies in Virginia are identified by individual project plans and are generally specialized intensive targeted monitoring efforts designated to answer specific questions related to water quality conditions.

The Quality Control Assurance Program is a component of each of the individual programs and varies in the number and types of quality control samples produced. Generally, between two and ten percent of samples collected in the field have associated quality control samples. These include field replicate samples, field blanks and standard reference material. See Chapter 3 of VADEQ's IR for more information.

VADEQ also solicited relevant water quality data and information from the public via their webpage through March 5, 2021. VADEQ received citizen monitoring data from 1,655 monitoring sites and 26,460 sampling events for the 2022 reporting cycle. Data from these sampling events were used to assess 3,174 miles of non-tidal freshwater streams, 64 square miles of tidal estuaries, and 33,347 acres of lakes. Data were submitted from 80 citizen monitoring groups across Virginia. VADEQ additionally receives water quality data from an expanding pool of government, private industry, and other non-citizen, professional organizations (referred to as outside agencies). VADEQ received data representing 491 monitoring sites and 11,066 sampling events collected by outside agencies for the 2022 reporting

cycle. Data from these sampling events were used to assess 1,049 miles of non-tidal freshwater streams, 193 square miles of tidal estuaries, and 4,925 acres of lakes. A total of 19 outside agencies submitted data for the 2022 IR. Moving forward, VADEQ will continue to provide opportunities for community involvement in water monitoring and in the water quality assessment process. This allows VADEQ to utilize data that were previously unavailable or unknown to the agency.

VADEQ properly listed waters with nonpoint sources causing or expected to cause impairment, consistent with Section 303(d) and EPA guidance[7]. EPA's long-standing interpretation is that Section 303(d) applies to waters impacted by point and/or nonpoint sources.

VADEQ also assembled and evaluated other data in addition to the categories of existing and readily available data and information listed in the EPA regulations and set out above.

EPA has reviewed VADEQ's description of the data and information considered in the listing process and its methodology for identifying waters. EPA concludes that VADEQ properly assembled and evaluated all existing and readily available water quality-related data and information, including data and information relating to the categories of waters specified in 40 CFR §130.7(b)(5).

C) A rationale for any decision to not use any existing and readily available data and information (CFR §130.7(b)(6)(iii))

While states must evaluate all existing and readily available water quality-related data and information, states may make reasonable decisions whether and how particular data or information is used in determining whether to list particular waters. VADEQ provided its rationale for not using particular existing and readily available water quality related data and information as a basis for identifying waters as part of the Section 303(d) list.

VADEQ has formalized the Commonwealth's assessment process through its Water Quality Assessment Guidance Manual[8] which describes how citizen and non-VADEQ data is evaluated and used by VADEQ for purposes of the IR and the Section 303(d) List. As a general matter, citizen-generated data that does not meet Level III criteria described in the manual is not used by VADEQ to identify impairments for purposes of Section 303(d) but is still assembled and evaluated.

Non-VADEQ water quality data continue to be tremendously valuable to the assessment process. The data generated by citizen groups, the private sector, and other governmental agencies extend the reach of VADEQ's monitoring network. VADEQ has made a considerable effort to improve the data quality of outside data providers by reviewing monitoring protocols and holding training events. VADEQ also provides guidance for quality control of citizen data in its Citizen Monitoring Methods Manual[9].

EPA finds VADEQ's protocol for evaluating data described in its IR to be a reasonable rationale in determining the usage of outside data for the purposes of 130.7(b)(5) and (b)(6)(iii).

[7] Hyperlink: https://www.epa.gov/sites/default/files/2015-10/documents/lisgid.pdf
[8] Hyperlink: https://www.deq.virginia.gov/water/water-quality/assessments/wqa-guidance-manual
[9] Hyperlink: https://www.deq.virginia.gov/water/water-quality/monitoring/citizen-monitoring

D) Any other reasonable information requested by the Regional Administrator (CFR §130.7(b)(6)(iv))

Where the impairing pollutants are known and are the subject of Virginia numeric water quality criteria, VADEQ identified the pollutants that were causing or expected to cause a violation of the applicable water quality standards. For WQLSs identified on VADEQ's Section 303(d) list as violating Virginia's narrative water quality criteria as applied to aquatic life, the impairing pollutant frequently is unknown because the impairment is identified by a direct measure of the biological community. Therefore, the Section 303(d) List identifies many WQLSs based upon failure to achieve the narrative water quality criteria as applied to aquatic life without identifying the cause of the impairment. VADEQ anticipates that the cause(s) of biological impairments in these situations will be determined during TMDL development through a stressor identification process, which are available at VADEQ's webpage[10]. EPA notes that these causes are identified in the publicly available TMDL reports developed for the relevant watersheds. Where the cause(s) of the impairment has been identified, EPA expects the IR and 303(d) list to identify the pollutants causing or expected to cause violations of the applicable water quality standards. 40 C.F.R. § 130.7(b)(4).

Shenandoah River

Based upon EPA's review of VADEQ's final 2022 IR submission and after considering the applicable narrative nutrient criterion and the limitations of the available data and information associated with algae cover and impacts, EPA found VADEQ's decision not to include certain segments of the Shenandoah River on the section 303(d) list for the recreational use and to collect additional data and information reasonable. VADEQ has continued to place these segments into Category 3 due to insufficient information to make an attainment decision. It is EPA's expectation that VADEQ will collect and assemble enough data and information to make assessment decisions on these waterbodies in the 2024 IR.

As VADEQ noted in Chapter 4.3 of the 2022 IR narrative, VADEQ previously evaluated citizen complaints and information received in the 2012 and subsequent IRs related to algal growth in the Shenandoah River. In response to these submissions and in light of the nature of the applicable water quality standards and the information provided, VADEQ classified sections of the Shenandoah River and the North Fork and South Fork of the Shenandoah River as Category 3C for the recreational use (having an observed effect)[11] in the 2014 through 2022 IRs and decided that additional information was needed. As part of this effort, VADEQ began collecting additional data and developing a field method for estimating filamentous algae growth in May 2016, which continued into 2019. Initial efforts focused on the Shenandoah River segments added to Category 3C in the 2014 IR.[12] VADEQ staff tested three different field methods for estimating algae cover to determine which method provided the greatest agreement amongst field staff. VADEQ staff also began collecting chlorophyll-a and ash free dry mass data to estimate algal densities on the bottom of the river. Results of Shenandoah algae monitoring have

[10] Hyperlink: https://www.deq.virginia.gov/water/water-quality/tmdl-development

[11] As per Virginia's Water Quality Assessment Guidance Manual for 2022, Rule 6: "When data are insufficient for the determination of use attainment but indicate possible impairment, additional monitoring should be considered. "Observed effects" are indications in the form of single sample WQS exceedances, observed pollutants or signs of water quality degradation (i.e., fish kills) lacking specific standards, or lower quality data that point to possible impairment (e.g., high bacteria counts on a Coliscan® plate). This rule applies to conventional and toxic parameters (water column, sediment, nutrient, and fish tissue) as well as biological monitoring."

[12] In recognition of the public concern about algal growth in the Shenandoah River, the initial field work has prioritized the Category 3C segments.

been shared by VADEQ with the public and presented to the public during public webinars in December 2016 and March 2018 and the Environment Virginia Conference in April 2017. In addition, VADEQ staff researched thresholds by other states for the purpose of determining when filamentous algae growth has reached a nuisance recreational condition in freshwater streams. The result of this multi-year effort is a proposed standard for inclusion in the Virginia Water Quality Standards for benthic chlorophyll-a criteria designated to limit persistent, nuisance filamentous algae growth in large sections of the mainstem North Fork Shenandoah, South Fork Shenandoah, and Shenandoah Rivers. A Notice of Intended Regulatory Action (NOIRA) for the next Triennial Review of Virginia's Water Quality Standards (9 VAC-260) was published in the Virginia Register for a 30-day public comment period in March 2021. Information on this rulemaking as part of the 2021 Water Quality Standards Triennial Review is available on Virginia's webpage[13]. The proposed amendments provide two-month median and seasonal median criteria for benthic chlorophyll-a, both of which would apply during the recreation season (May 1 through October 31).

Apart from these efforts, VADEQ discusses additional efforts to reduce nutrients and sediment in the Shenandoah River basin, which include the Chesapeake Bay TMDL and Virginia's Bay Watershed Implementation Plan (WIP) and the development of waterbody-specific TMDLs. EPA acknowledges the efforts put forth by VADEQ staff thus far and encourages VADEQ to continue working towards meeting algae-related commitments.

i) Rationale for delisting of waterbodies included on the previous Section 303(d) list

VADEQ has demonstrated, to EPA's satisfaction, good cause for not including certain waters on its list. As provided in 40 CFR §130.7(b)(6)(iv), EPA requested that VADEQ demonstrate good cause for not including waters that were on the previous Section 303(d) list for the prior IR cycle. For the 2022 Section 303(d) list, VADEQ submitted data and information demonstrating that certain previously listed waters either recovered to the point that the applicable water quality standards have been attained or were initially listed in error and/or are currently not impaired. A water may be delisted for various reasons including the following: more recent or accurate data; more sophisticated water quality modeling; flaws in the original analysis that led to the water being listed in the categories in section 130.7(b)(5); or changes in conditions (i.e., new control equipment, elimination of discharges). There may also be reassessments revealing that a WQLS is still impaired, but that the causes of impairment have changed; these waters therefore remain on the list but are identified as impaired by a different pollutant(s). For each water-pollutant combination proposed for removal from the 2022 Section 303(d) list, VADEQ provided EPA with sufficient documentation and justification, which included data and information on these waters along with a justification for removal. EPA reviewed these data and agrees that VADEQ has demonstrated good cause for why the waters or water-pollutant combinations are not included on the 2022 Section 303(d) list.

In addition, removal of water-pollutant combinations from the 2022 Section 303(d) list also included those segments where EPA-approved TMDL(s) have been developed. These segments were moved to Category 4A. Implementation of the TMDL is not required prior to removal to Category 4A. Where a water was previously listed for more than one pollutant, only those pollutants addressed in an approved TMDL were moved to Category 4A. VADEQ also identified waters with newly identified bacteria impairments occurring in watersheds addressed by existing TMDLs and placed those water-pollutant combinations directly into Category 4A without first being listed in Category 5. VADEQ considers these new water-pollutant combinations to be addressed by existing TMDLs, and therefore,

[13] Hyperlink: https://townhall.virginia.gov/L/ViewStage.cfm?stageid=9117

did not include these water-pollutant combinations on the 2022 Section 303(d) list. EPA agrees that under appropriate circumstances it is not necessary for a water-pollutant combination to first be listed in Category 5 before being listed in Category 4A. Not including waters on the 2022 Section 303(d) list is appropriate when the existing load and wasteload allocations in the TMDL are established at levels necessary to lead to the attainment of the applicable water quality standard once fully implemented.

ii) Rationale for omitting waterbodies from the Section 303(d) list pursuant to 40 CFR §130.7(b)(1) because the waterbodies are expected to meet water quality standards

VADEQ's decision not to include certain waters on its 2022 Section 303(d) list due to other required pollution controls is consistent with EPA regulations at 40 CFR §130.7(b)(1). These waters were identified in Category 4B of the IR. Under 40 CFR §130.7(b)(1), states are not required to list WQLSs still requiring TMDLs (i.e., the Section 303(d) list or waters listed in Category 5) where effluent limitations required by the CWA, more stringent effluent limitations required by state or local authority, or other pollution control requirements required by state, local, or federal authority, are stringent enough to implement applicable water quality standards. The regulation does not specify the timeframe in which these various requirements must implement applicable water quality standards to support a state's decision not to list particular waters. Consistent with EPA guidance on this issue, EPA expects that required controls will result in attainment in a reasonable time, based on the nature of the pollutant and actions that need to be taken to achieve attainment.

As indicated above, VADEQ has listings in Category 4B. Consistent with a program of continuous assessment, EPA encourages VADEQ to continue efforts, including monitoring as appropriate, to provide updates on the status of these segments. Monitoring should be scheduled for these waters to verify either that water quality standards are attained or water quality standards are expected to be attained in a reasonable time. Where it is found that water quality standards will not be attained through implementation of the requirements listed in 40 CFR §130.7(b)(1) in a reasonable time, it is appropriate for the water to be placed on the Section 303(d) list to ensure that implementation of the required controls, and progress towards compliance with applicable water quality standards, is tracked. If it is determined that the water is, in fact, meeting applicable water quality standards when the next Section 303(d) list is developed, it would be appropriate for the state to remove the water from the Section 303(d) list or Category 4B of the IR at that time.

2) TMDL Priority Ranking and Targeting (CFR §130.7(b)(4))

EPA reviewed VADEQ's priority ranking of Section 303(d) listed waters for TMDL development and concludes that VADEQ took into account the severity of pollution and the uses to be made of such waters. See Chapter 7.2 of VADEQ's IR for more information. Beyond these two statutory factors, states retain considerable discretion and may consider other factors when prioritizing and scheduling TMDLs, including: vulnerability of particular waters; recreational, economic, and aesthetic importance of particular waters; restoration potential; degree of public interest and support; state or national policies and priorities; technical considerations, such as the complexity of the impairment; availability of adequate data and models; and implementation of watershed-based permitting programs or basin planning cycles. *See, e.g.,* 57 Fed. Reg. 33040, 33,044-45 (July 24, 1992).

Virginia's 2022 Section 303(d) list addresses the priority ranking requirement by designating waters as high, medium, or low priority for TMDL development. Specifically, on its 2022 303(d) List, VADEQ identified TMDL priorities as:

- H (High): waterbody is a priority under the 303(d) Program Vision and will be addressed with a TMDL or alternative plan;
- M (Medium): waterbody is a VADEQ internal priority and may be addressed with a TMDL or alternative plan; or
- L (Low): for all other impaired waterbodies with low priority for TMDL development.

In addition, EPA has reviewed VADEQ's identification of WQLSs targeted for TMDL development in the next two years and concludes that VADEQ's schedule is reasonable. VADEQ explains that those listings denoted as high priorities are those that VADEQ will begin addressing with TMDLs, TMDL-alternatives, or stressor analyses during the next two years. Scheduling takes into account additional considerations other than priority designations, such as programmatic consideration (e.g., efficient allocation of resources, basin planning cycles, coordination with other programs or states) and technical considerations (e.g., data availability, problem complexity, availability of technical tools).

3) Public Participation

VADEQ released its draft 2022 IR and the Section 303(d) list of impaired waters for public review and comment on July 4, 2022 with a public comment period, open for 30 days, until August 5, 2022. A notice of availability of the draft 2022 IR and the Section 303(d) list was published in the Virginia Register of Regulations on July 4, 2022. In addition, announcements were sent via e-mail to VADEQ's stakeholder listserve. All materials, including the IR narrative and supporting documentation and information, were made available on VADEQ's webpage[14]. Paper copies could also be requested. A public meeting was held virtually to present and summarize the draft IR on July 13, 2022.

VADEQ received comments from 14 organizations/individuals. VADEQ addressed all comments received in a comment response document included within the final IR submission to EPA. In addition, VADEQ made several changes to the IR in response to public comment, as appropriate. EPA has determined that VADEQ addressed all issues raised by the public comments received.

The Environmental Integrity Project (EIP), a nonprofit, non-partisan organization dedicated to the effective enforcement of environmental laws, submitted comments on behalf of the Chesapeake Legal Alliance, Waterkeepers Chesapeake, and the Shenandoah Riverkeeper regarding several of VADEQ's bacteria assessments within the Shenandoah River basin. It is EPA's understanding that after finalization of VADEQ's 2020 IR and Section 303(d) list, EIP alerted VADEQ that certain waters were inadvertently omitted from category 4 or 5 of the impaired waters list based on observed exceedances of the water quality criteria following the assessment methods in place at that time. During the 2022 IR cycle, VADEQ reassessed those waters using the revised water quality criteria for *E. coli* adopted by VADEQ in 2019 along with VADEQ's revised assessment methods public noticed and finalized in 2021. Due to the changes in the water quality criteria and assessment methods, VADEQ concluded that additional data and information were needed.

4) Consultation with Tribes

On August 8, 2022, EPA notified each of the following tribes with letters on the availability of a

[14] Hyperlink: https://www.deq.virginia.gov/water/water-quality/assessments/integrated-report

consultation and coordination opportunity concerning EPA's action to approve or disapprove Virginia's Section 303(d) List of impaired waters:

- Chickahominy Indian Tribe
- Chickahominy Indian Tribe – Eastern Division
- Monacan Indian Nation
- Nansemond Indian Nation
- Pamunkey Indian Tribe
- Rappahannock Tribe
- Upper Mattaponi Indian Tribe

Consultation and coordination were accepted by the Nansemond Indian Nation and the Upper Mattaponi Indian Tribe. EPA met virtually with the Nansemond Indian Nation on September 22, 2022. EPA engaged only in e-mail exchanges with the Upper Mattaponi Indian Tribe. EPA offered both the Nansemond Indian Nation and the Upper Mattaponi Indian Tribe the opportunity to discuss any additional questions or concerns they may have had related to Virginia's 2022 303(d) List and requested formal comments as needed. EPA did not receive comments from any of the Tribes. Consultation and coordination were completed after EPA received Virginia's final 2022 303(d) List. Consultation closeout letters will be sent to Nansemond Indian Nation and the Upper Mattaponi Indian Tribe.