

HB 1475 and SB 344 – Ammonia Criteria Report

*Flexibilities for Virginia's Permitted Dischargers Implementing EPA's 2013
Nationally-Recommended Ammonia Criteria*

Virginia Department of Environmental Quality

COMMONWEALTH OF VIRGINIA

November 1, 2018

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Executive Summary

The 2018 General Assembly approved HB 1475 and SB 344, which were signed by the Governor on March 29, 2018, with an effective date of July 1, 2018 (Attachment 1). This legislation dealt with the State Water Control Board's (Board) adoption of the U.S. Environmental Protection Agency's (EPA) recommended changes to freshwater ammonia criteria, requiring that the Board include in such adoption a phased implementation program (PIP) consistent with the federal Clean Water Act. EPA updated its 1999 Clean Water Act § 304(a) national ambient water quality criteria recommendations for ammonia in 2013. These criteria are approximately twice as stringent as the current criteria in Virginia's Water Quality Standards Regulation (9VAC25-260-155) since they reflect added toxicity data for very sensitive freshwater mussels and snails. Including the PIP in the adoption of the new ammonia criteria was intended to address potential impacts on permitted dischargers across the state that will need extended compliance schedules and may be affected by fiscal stress.

HB 1475 and SB 344 also directed the Department of Environmental Quality (DEQ) to provide certain additional information to the General Assembly, no later than November 1, 2018. Specifically, HB 1475 and SB 344 asked DEQ to:

- Identify any other states that have adopted EPA's 2013 Aquatic Life Ambient Water Quality Criteria for Ammonia as of July 1, 2018.
- Identify the specific procedures and practices for the implementation of the freshwater ammonia criteria that will both minimize the impact of the criteria on Virginia sewerage systems or other treatment works and be permissible under the federal Clean Water Act (33 U.S.C. § 1251 *et seq.*), including an opportunity to request consideration of alternative effluent limitations based on a demonstration by the permittee, acceptable to the Board, of the lack of appreciable harm from the discharge of ammonia to aquatic life that is present in the vicinity of the discharge or which should be present but for the discharge.

As of July 1, 2018, five states have adopted EPA's 2013 nationally-recommended freshwater ammonia criteria: California, Florida, Kansas, Oregon, and Vermont. Additional states are in various stages of adopting the 2013 freshwater ammonia criteria.

DEQ has identified three options specifically identified in the Water Quality Standards regulation (9VAC25-260-140. Criteria for Surface Water) that provide partial relief for permitted dischargers from the 2013 nationally-recommended ammonia criteria in Virginia. These options are the most relevant among the collection of flexibilities allowed under Clean Water

Act that States can utilize when confronted with implementation of challenging water quality criteria. The first option is the Statewide Phased Implementation Program required by HB 1475 and SB 344. The second option is a water quality standard (WQS) variance. Lastly, the 2013 nationally-recommended ammonia criteria can be recalculated to account for the absence of freshwater mussels at a particular site.

In addition to the three options specifically identified in the Virginia Water Quality Standards regulation (9 VAC 25-260) identified above, there are numerous considerations taken into account by the DEQ permit writer in establishing an appropriate effluent limitation. Some of these considerations include the determination of appropriate pH and temperature values, evaluation of stream and discharge flows, the use of actual as opposed to potential effluent ammonia concentrations, seasonal tiering of effluent limits, effluent variability, appropriate application of the Board's Antidegradation Policy in accordance with 9 VAC 26030, consideration of other related parameters that may be more limiting, etc. DEQ has formed an implementation workgroup that is currently evaluating these and other factors related specifically to the proposed nationally-recommended freshwater ammonia criteria. It is expected that revisions to current guidance will provide some relief to permitted dischargers in addition to that offered by the three alternatives identified above and discussed more fully in this report.

States that Have Adopted the 2013 Ammonia Criteria

As of July 1, 2018, five states have adopted EPA's 2013 nationally-recommended freshwater ammonia criteria: California, Florida, Kansas, Oregon, and Vermont. Additional states are in various stages of adopting the 2013 freshwater ammonia criteria, and Attachment 2 provides a table summarizing all fifty states' (and the District of Columbia's) progress towards criteria adoption.

Specific Procedures and Practices for the Implementation of the 2013 Ammonia Criteria

DEQ has identified three options that provide partial relief for permitted dischargers from the 2013 nationally-recommended ammonia criteria in Virginia. These options are the most relevant among the collection of flexibilities allowed under Clean Water Act that States can utilize when confronted with implementation of challenging water quality criteria. The first option is the Statewide Phased Implementation Program required by HB 1475 and SB 344. The second option is a water quality standard (WQS) variance. Lastly, the 2013 nationally-recommended ammonia criteria can be recalculated to account for the absence of freshwater mussels at a particular site. The options described below can be used singularly or in combination. For instance, it is possible a permittee may successfully demonstrate it qualifies

for “without mussels” criteria, but may still seek relief under one of the other two options if it cannot immediately meet a permit limit based on the acute or sub-chronic criterion.

Statewide Phased Implementation Program

DEQ used a participatory approach in drafting the proposed phased implementation program (PIP) for revised freshwater ammonia criteria. Interested stakeholders that formed a Regulatory Advisory Panel used for consultation on the rulemaking already underway to revise the freshwater ammonia criteria (along with bacteria, cadmium and 94 human health criteria) met on July 16, 2018 to discuss the draft PIP and to provide their input on the content and future actions for implementation. The draft PIP was then published in the VA Register of Regulations on August 6, 2018, for a 60-day public comment period. The closing date for receipt of comments was October 5, 2018, and two public hearings were held during September. DEQ staff will present final recommended amendments to the freshwater ammonia criteria – including the draft PIP -- to the State Water Control Board for its consideration at the Board’s December 2018 meeting. The draft PIP is attached (Attachment 3).

WQS Variance

A water quality standards (WQS) variance may be granted if an individual or group of permittees determine they cannot immediately meet a permit limit based on the 2013 nationally-recommended ammonia criteria and there is uncertainty whether they can ever meet it. A variance temporarily modifies the standards for a specific pollutant, with all other underlying standards remaining in place. Variances are allowed in Virginia’s Water Quality Standards Regulation (9VAC-260-140(E)) and federal EPA regulations (40 CFR 131.14). However, historically DEQ has provided permittees with temporary relief from water quality criteria through compliance schedules rather than variances.

The following factors (enumerated in 40 CFR 131.10(g)) may preclude attainment of the designated use and criterion, necessitating the adoption of a variance to the designated use or associated criterion:

- Naturally occurring pollutant concentrations prevent the attainment of the use;
- Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating state water conservation requirements to enable uses to be met;

- Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place;
- Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use;
- Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses; or
- Controls more stringent than those required by §§ 301(b) and 306 of the Clean Water Act would result in substantial and widespread economic and social impact.

As part of the WQS variance request, a permittee must demonstrate it has assessed and considered the following factors:

- Technology-based controls are insufficient to meet water quality-based effluent limits derived to meet the underlying designated use and criteria at issue in the variance,
- Ensure there is no jeopardy to threatened or endangered species,
- Ensure there is no unreasonable risk to human health, and
- Ensure the highest attainable condition applicable throughout the term of the variance does not result in any lowering of currently attained ambient water quality, with supporting documentation describing the pollutant control activities to achieve the highest attainable condition, including those activities identified through a Pollutant Minimization Program, which serve as milestones for the WQS variance.

Additionally, permittees must provide documentation that supports at least one of the six factors (listed above) necessitating the adoption of a variance. Ideally, a variance request should be made prior to the renewal of a Virginia Pollutant Discharge Elimination System (VPDES) permit, with enough lead time provided for development and approval. However, a variance request may be submitted at any time during the permit term if it becomes apparent that a permittee may not meet a permit limit in the foreseeable future. The variance request should be made to DEQ-Water Permitting staff, who would then consult with DEQ-Water Quality Standards (WQS) staff to determine if the requirements for a variance have been met. WQS staff would then submit the draft variance to EPA for review and approval. A draft template of the WQS variance application can be found in Attachment 4; this form is an example suggested for use and is based on documentation from the State of Oregon that may be further modified based on Virginia's particular needs for information supporting a variance

determination. DEQ will engage stakeholders as it refines this application form and drafts the guidance manual that staff will use when developing WQS variances.

WQS variances are subject to the same public participation procedures required for any other WQS modification, in accordance with 40 CFR 131.20(b) and Virginia's Administrative Process Act. Per § 62.1-44.15(3a) of the Code of Virginia, WQS variances are promulgated by the State Water Control Board. States must hold at least one public hearing when considering the adoption of a variance, and the proposed water quality standards revision and supporting documentation must be publicly available prior to the hearing.

Recommended Approach to Mussel Presence/Absence Determinations

EPA recommends equations for calculating freshwater ammonia criteria for four different site-specific scenarios: 1) acute criteria when mussels are absent but trout are present, 2) acute criteria when mussels and trout are absent, 3) chronic criteria when mussels are absent and early life stages of fish are present, and 4) chronic criteria when mussels and early life stages of fish are absent. Based on data provided by the Virginia Department of Game and Inland Fisheries (DGIF), DEQ has determined that freshwater mussels are ubiquitous and present in virtually every location DGIF has surveyed for these organisms. Thus, it is expected that the majority of permit limits for ammonia would be written to implement the more stringent "with mussels" criteria. DEQ is proceeding under the assumption that all freshwater streams and rivers contain, or have suitable habitat for mussels and snails, and it is the responsibility of the permitted discharger to demonstrate the receiving waters are naturally absent these sensitive species. However, there could be cases where mussels are naturally absent from a receiving stream (such as a stream with intermittent flow). Permittees that are able to demonstrate to DEQ's satisfaction that their receiving streams fit this classification would be eligible for permit limits based on criteria that are less stringent than the default criteria.

Attachment 5 describes an acceptable approach for making a determination of whether or not site-specific freshwater ammonia criteria are appropriate utilizing the Recalculation Procedure (EPA-600/3-84-099 October 1984) due to the absence of freshwater mussels. The elements that are described are those that would be needed to support any decision reached by DEQ permit writers regarding freshwater mussel presence or absence.

Attachment 1 – HB 1475 and SB 344

CHAPTER 510

An Act to amend and reenact § 62.1-44.15:1 of the Code of Virginia, relating to sewerage systems; state adoption of federal criteria.

[H 1475]

Approved March 29, 2018

Be it enacted by the General Assembly of Virginia:

1. That § 62.1-44.15:1 of the Code of Virginia is amended and reenacted as follows:

§ 62.1-44.15:1. Limitation on power to require construction of sewerage systems or sewage or other waste treatment works; ammonia criteria.

A. Nothing contained in this chapter shall be construed to empower the Board to require the Commonwealth, or any political subdivision thereof, or any authority created under the provisions of § 15.2-5102 or §§ 15.2-5152 through 15.2-5158, to construct any sewerage system, sewage treatment works, or water treatment plant waste treatment works or system necessary to (i) upgrade the present level of treatment in existing systems or works to abate existing pollution of state waters or (ii) expand a system or works to accommodate additional growth, unless the Board shall have previously committed itself to provide financial assistance from federal and state funds equal to the maximum amount provided for under § 8 or other applicable sections of the Federal Water Pollution Control Act, P.L. 84-660, as amended, or unless the Commonwealth or political subdivision or authority voluntarily agrees, or is directed by the Board with the concurrence of the Governor, to proceed with such construction, subject to reimbursement under § 8 or other applicable sections of such federal act.

The foregoing restriction shall not apply to those cases where existing sewerage systems or sewage or other waste treatment works cease to perform in accordance with their approved certificate requirements.

B. Nothing contained in this chapter shall be construed to empower the Board to require the Commonwealth, or any political subdivision thereof, to upgrade the level of treatment in any works to a level more stringent than that required by applicable provisions of the Federal Water Pollution Control Act, P.L. 84-660, as amended.

C. Nothing contained in this chapter shall be construed to empower the Board to adopt the 2013 proposed Aquatic Life Ambient Water Quality Criteria for Ammonia of the U.S. Environmental Protection Agency unless the Board includes in such adoption a phased implementation program consistent with the federal Clean Water Act (33 U.S.C. § 1251 et seq.) that includes (i) consideration of the relative priority of ammonia criteria and other water quality and water

infrastructure needs of the local community, (ii) mechanisms to coordinate implementation timing with grant funding mechanisms pursuant to § 10.1-2131 and other treatment facility expansion and upgrade plans, (iii) appropriate long-term compliance schedules for facilities or classes of facilities utilizing multiple permit cycles, and (iv) appropriate mechanisms to address affordability limitations and financial hardship situations remaining notwithstanding the other elements of the phased implementation program.

2. That the Department of Environmental Quality shall (i) identify any other states that have adopted the U.S. Environmental Protection Agency 2013 Aquatic Life Ambient Water Quality Criteria for Ammonia (the Criteria) as of July 1, 2018; (ii) identify the specific procedures and practices for the implementation of the Criteria by the General Assembly or the State Water Control Board (the Board) that will both minimize the impact of the Criteria on Virginia sewerage systems or other treatment works and be permissible under the federal Clean Water Act (33 U.S.C. § 1251 et seq.), including an opportunity to request consideration of alternative effluent limitations based on a demonstration by the permittee, acceptable to the Board, of the lack of appreciable harm from the discharge of ammonia to aquatic life that is present in the vicinity of the discharge or which should be present but for the discharge; and (iii) report its findings to the Chairmen of the Senate Committee on Agriculture, Conservation and Natural Resources, the House Committee on Agriculture, Chesapeake and Natural Resources, the Senate Finance Committee, and the House Appropriations Committee no later than November 1, 2018. The completion of such identification and reporting shall not preclude the Board from proceeding to adopt the Criteria.

3. That the inclusion of the phased implementation program required by this act in the current regulatory action of the State Water Control Board (the Board) on the adoption of the U.S. Environmental Protection Agency 2013 Aquatic Life Ambient Water Quality Criteria for Ammonia shall not require reproposal of the current action and shall not be considered changes with substantial impact under § 2.2-4007.06 of the Code of Virginia if the Department of Environmental Quality provides a 60-day public comment period on the proposed phased implementation program before it is presented to the Board for adoption.

CHAPTER 511

An Act to amend and reenact § 62.1-44.15:1 of the Code of Virginia, relating to sewerage systems; state adoption of federal criteria.

[S 344]

Approved March 29, 2018

Be it enacted by the General Assembly of Virginia:

1. That § 62.1-44.15:1 of the Code of Virginia is amended and reenacted as follows:

§ 62.1-44.15:1. Limitation on power to require construction of sewerage systems or sewage or other waste treatment works; ammonia criteria.

A. Nothing contained in this chapter shall be construed to empower the Board to require the Commonwealth, or any political subdivision thereof, or any authority created under the provisions of § 15.2-5102 or §§ 15.2-5152 through 15.2-5158, to construct any sewerage system, sewage treatment works, or water treatment plant waste treatment works or system necessary to (i) upgrade the present level of treatment in existing systems or works to abate existing pollution of state waters or (ii) expand a system or works to accommodate additional growth, unless the Board shall have previously committed itself to provide financial assistance from federal and state funds equal to the maximum amount provided for under § 8 or other applicable sections of the Federal Water Pollution Control Act, P.L. 84-660, as amended, or unless the Commonwealth or political subdivision or authority voluntarily agrees, or is directed by the Board with the concurrence of the Governor, to proceed with such construction, subject to reimbursement under § 8 or other applicable sections of such federal act.

The foregoing restriction shall not apply to those cases where existing sewerage systems or sewage or other waste treatment works cease to perform in accordance with their approved certificate requirements.

B. Nothing contained in this chapter shall be construed to empower the Board to require the Commonwealth, or any political subdivision thereof, to upgrade the level of treatment in any works to a level more stringent than that required by applicable provisions of the Federal Water Pollution Control Act, P.L. 84-660, as amended.

C. Nothing contained in this chapter shall be construed to empower the Board to adopt the 2013 proposed Aquatic Life Ambient Water Quality Criteria for Ammonia of the U.S. Environmental Protection Agency unless the Board includes in such adoption a phased implementation program consistent with the federal Clean Water Act (33 U.S.C. § 1251 et seq.) that includes (i) consideration of the relative priority of ammonia criteria and other water quality and water infrastructure needs of the local community, (ii) mechanisms to coordinate implementation timing with grant funding mechanisms pursuant to § 10.1-2131 and other treatment facility

expansion and upgrade plans, (iii) appropriate long-term compliance schedules for facilities or classes of facilities utilizing multiple permit cycles, and (iv) appropriate mechanisms to address affordability limitations and financial hardship situations remaining notwithstanding the other elements of the phased implementation program.

2. That the Department of Environmental Quality shall (i) identify any other states that have adopted the U.S. Environmental Protection Agency 2013 Aquatic Life Ambient Water Quality Criteria for Ammonia (the Criteria) as of July 1, 2018; (ii) identify the specific procedures and practices for the implementation of the Criteria by the General Assembly or the State Water Control Board (the Board) that will both minimize the impact of the Criteria on Virginia sewerage systems or other treatment works and be permissible under the federal Clean Water Act (33 U.S.C. § 1251 et seq.), including an opportunity to request consideration of alternative effluent limitations based on a demonstration by the permittee, acceptable to the Board, of the lack of appreciable harm from the discharge of ammonia to aquatic life that is present in the vicinity of the discharge or which should be present but for the discharge; and (iii) report its findings to the Chairmen of the Senate Committee on Agriculture, Conservation and Natural Resources, the House Committee on Agriculture, Chesapeake and Natural Resources, the Senate Finance Committee, and the House Appropriations Committee no later than November 1, 2018. The completion of such identification and reporting shall not preclude the Board from proceeding to adopt the Criteria.

3. That the inclusion of the phased implementation program required by this act in the current regulatory action of the State Water Control Board (the Board) on the adoption of the U.S. Environmental Protection Agency 2013 Aquatic Life Ambient Water Quality Criteria for Ammonia shall not require reproposal of the current action and shall not be considered changes with substantial impact under § [2.2-4007.06](#) of the Code of Virginia if the Department of Environmental Quality provides a 60-day public comment period on the proposed phased implementation program before it is presented to the Board for adoption.

Attachment 2 – States' Progress on the Adoption of the 2013 Nationally Recommended Ammonia Criteria

States that have adopted revised ammonia criteria based on EPA's 2013 recommendations

EPA Region III States

State	2013 EPA Ammonia Criteria Progress
Alabama	Has not initiated rulemaking
Alaska	Has not initiated rulemaking
Arizona	Has not initiated rulemaking
Arkansas	Has not initiated rulemaking
California	Adopted August 22, 2013 (when national recommended criteria were finalized) (link)
Colorado	Scheduled for 2027 Triennial Review
Connecticut	Has not initiated rulemaking
Delaware	Scheduled for next Triennial Review
District of Columbia	Public comment period ended 12/15/2017. Rule has not been finalized but anticipated to be completed by FY2019.
Florida	Adopted November 17, 2016 (link)
Georgia	Has elected not to adopt updated criteria and instead will implement through waste load allocations and narrative toxicity criteria.
Hawaii	Has not initiated rulemaking
Idaho	Has not initiated rulemaking
Indiana	Has not initiated rulemaking, but currently evaluating the implementation issues associated with the criteria.
Iowa	Has not initiated rulemaking

Attachment 2- States' Progress on the Adoption of the 2013 Nationally Recommended Ammonia Criteria

State	2013 EPA Ammonia Criteria Progress
Kansas	Adopted late 2017 (link)
Kentucky	Initiation of rulemaking anticipated in fall 2018
Louisiana	Has not initiated rulemaking
Maine	Has not initiated rulemaking
Maryland	Scheduled for 2019 Triennial Review
Massachusetts	Has not initiated rulemaking
Michigan	Has not initiated rulemaking, but currently evaluating the implementation issues associated with the criteria.
Minnesota	Has not initiated rulemaking. Scheduled for 2018-2020 work plan.
Mississippi	Has not initiated the rulemaking
Missouri	Deferred from 2014 Triennial Review for a later rulemaking
Montana	Has not initiated rulemaking
Nebraska	Has not initiated rulemaking
Nevada	Has not initiated rulemaking
New Hampshire	Has not initiated rulemaking
New Jersey	Has initiated rulemaking but will likely restart process due to the new administration.
New Mexico	Has not initiated rulemaking
New York	Has not initiated rulemaking
North Carolina	Scheduled for next Triennial Review
North Dakota	Has not initiated rulemaking

Attachment 2- States' Progress on the Adoption of the 2013 Nationally Recommended Ammonia Criteria

State	2013 EPA Ammonia Criteria Progress
Ohio	Has not yet initiated rulemaking for 2013 EPA criteria.
Oklahoma	Uses narrative criteria for ammonia. Has not initiated rulemaking on any ammonia-related revisions.
Oregon	Adopted August 4, 2015 (link)
Pennsylvania	Public comment period ended 2/18/2018. Rule has not been finalized.
Rhode Island	Has not initiated rulemaking
South Carolina	Has not initiated rulemaking
South Dakota	Has not initiated the rulemaking
Tennessee	Has not initiated the rulemaking
Texas	Uses narrative criteria for ammonia. Has not initiated rulemaking on any ammonia-related revisions.
Utah	Has not initiated rulemaking. Will adopt once statewide mussel survey is completed.
Vermont	Adopted December 15, 2016 (link)
Virginia	Rulemaking deferred due to 2018 General Assembly action to require joint adoption of criteria and phased implementation plan to lessen impact on affected dischargers
Washington	Has not initiated the rulemaking
West Virginia	Has not initiated rulemaking
Wisconsin	Has not initiated rulemaking
Wyoming	Has initiated rulemaking

Attachment 3 – Statewide Phased Implementation Program

Implementation of Freshwater Ammonia Criteria in subsections B and C through VPDES Permits issued pursuant to 9VAC25-31 - Virginia Pollutant Discharge Elimination System (VPDES) Permit Regulation.

1. The above criteria in subsections B and C shall be implemented in VPDES permits that are being reissued in accordance with the following schedule:
 - a. Major municipal and industrial facilities – **6 months following the WQS effective date**
 - b. Minor municipal facilities with design flows greater than or equal to 100,000 gallons per day and less than 1 million gallons per day and all minor industrial facilities – **18 months following the WQS effective date.**
 - c. Minor municipal facilities with design flows that are less than 100,000 gallons per day – **30 months following the WQS effective date.**
2. VPDES permits shall not be revoked and reissued to avoid or delay being subject to the freshwater ammonia criteria in subsections B and C in accordance with the above schedule.
3. The provisions of 9 VAC 25-31-250.A.3 notwithstanding, a permittee may request and the board may authorize, as appropriate, an extended schedule of compliance, which exceeds the term of the VPDES permit and may include multiple permit cycles to achieve effluent limits based on the freshwater ammonia water quality criteria in subsections B and C.
 - a. Any extended schedule of compliance necessary for the implementation of the freshwater ammonia criteria shall require compliance as soon as possible in accordance with 9 VAC 25-31-250.A.1. The board may consider the following factors on a case-by-case basis, relying on information provided by the permittee, in making a determination of “as soon as possible”:
 - i. The relative priority of ammonia criteria and other water quality and water infrastructure needs of the local community,
 - ii. Availability of grant funding pursuant to VA Code § 10.1-2131 and other treatment facility expansion and upgrade plans,
 - iii. Whether an extended schedule of compliance is appropriate for facilities or classes of facilities, and
 - iv. Appropriate mechanisms to address affordability limitations and financial hardship situations remaining notwithstanding parts i through iii above.
 - b. Any request by the permittee for an extended schedule of compliance shall include at the time of permit application the following information at a minimum:
 - i. Documentation of other water quality and water infrastructure projects that are in the planning, design or construction process and the relative priority of the projects in relation to compliance with the ammonia criteria.
 - ii. A preliminary engineering analysis of treatment facility upgrade alternatives necessary to meet the freshwater ammonia criteria. The analysis may include any additional upgrade or expansion plans currently under consideration. The analysis shall be prepared by a professional engineer registered in Virginia and shall include an estimation of the capital and operations and maintenance costs.

Attachment 3- Statewide Phased Implementation Program

- iii. An assessment of project affordability including an evaluation of the required sewer use fees versus median household income and identification of all potential sources of funding for enhanced ammonia treatment.
 - iv. Documentation that demonstrates the minimum estimated time required and schedule to design, fund and construct the selected treatment alternative.
 - v. An evaluation, prepared by a professional engineer registered in Virginia, of the highest achievable condition (HAC) regarding nitrification capabilities of the existing treatment facility under the influent loading conditions expected during the term of the VPDES permit as well as under design loading conditions.
 - c. Any VPDES permit that authorizes an extended schedule of compliance for meeting the freshwater ammonia criteria that exceeds the permit term shall include interim effluent limitations based on the HAC attainable during the term of the permit, final effluent limitations and a final compliance date.
 - d. New dischargers defined in 9VAC25-31 are not eligible for extended schedules of compliance under this section; however, they remain eligible for schedules of compliance consistent with 9VAC25-31-250.
4. A permittee may seek a site-specific modification or variance to the freshwater ammonia water quality criteria under 9VAC25-260-140.D, or 9VAC25-260-140.E as applicable.

Attachment 4 – Draft WQS Variance Application Form

Draft Variance Application Form



Virginia Department of Environmental Quality

Water Quality Permitting

P.O. Box 1105

Richmond, VA 23218

Draft Variance Application Form

A. Applicant Information			
1. Permittee Name		2. Contact Person	
3. VPDES Permit No.		4. Mailing Address for Contact Person	
5. Facility Name		6. City	7. State
		8. Zip Code	
9. Street Address of Facility		10. Telephone Number	
		11. Fax Number	
12. City	13. State	14. Email Address	
15. Receiving Water & River Mile		16. Sources of Influent (municipal; river mile; groundwater; process)	
17. Is this a first-time application for a variance or is this a renewal? <input type="checkbox"/> First-time <input type="checkbox"/> Renewal			
B. Effluent Characterization			
18. Pollutant for which variance requested		19. Average discharge flow rate	
20. Number of effluent samples analyzed and dates samples taken:			
21. Concentration and mass loads (annual, monthly if possible) pollutant in effluent (attach documentation)			
22. Sources of pollutant in effluent and how pollutant is entering effluent (attach Pollutant Source Investigation Report)			

C. Technology-Based Pollutant Controls

23. If applicable, EPA's effluent limit guidelines for pollutant:

24. If applicable, type of treatment technology required by EPA's effluent guidelines for the pollutant:

25. Have you installed the treatment technology referred to in no. 24? Yes No N/A

D. Controls on Nonpoint Pollutant Sources

26. Do you have control or authority over any nonpoint sources of the pollutant that discharge to the receiving water?

Yes No If yes, please explain.

27. If you have control or authority over nonpoint sources of pollutant, what actions have you taken to reduce the levels of the pollutant in your effluent and from the receiving water body from these nonpoint sources?

28. Are there cost-effective and reasonable best management practices (BMPs) available to reduce pollutants from the permittee or from nonpoint sources under your control or authority (e.g., controlling stormwater)? Yes No If yes, please identify.

29. What improvements in water quality could be achieved by implementing these BMPs? (May find information in TMDL or TMDL implementation plan or in MS-4 permit.)

E. Potential Impact of Variance on Threatened or Endangered Species

30. If an aquatic life criterion is at issue, are you aware if the receiving water provides habitat or feeds into a water body identified as critical habitat for any threatened or endangered species? Yes No If yes, please explain.

F. Potential Risk to Human Health from Variance

31. Degree to which level of pollutant in effluent exceeds criterion:

32. Describe (quantitatively, if possible) facility's relative contribution to the pollution load of water body:

33. Proximity of drinking water intakes to point of discharge:

34. List any tributaries of streams between point of discharge and drinking water intakes:

35. Are there sites known to be used for fishing near the point of discharge? If so, where?

G. Potential Impacts on Existing Uses

36. If the variance is being sought for an aquatic life pollutant, please indicate to the best of your knowledge whether the following use has occurred within the waterbody. If it has occurred, please describe the type of information you are relying upon to draw these conclusions (anecdotal, field study, personal observation, other). Cite data source.

- Fish and aquatic life

37. If the variance is being sought for a human health pollutant, please indicate to the best of your knowledge whether any of the following uses have occurred within the waterbody. If so, please describe the type of information you are relying upon to draw these conclusions (anecdotal, public records, survey, personal observation, other). Cite data source.

- Private and public domestic water supply
- Fishing
- Water contact recreation

H. Reason for Variance

38. Please indicate which of the factors below makes a variance for this pollutant necessary (more than one may apply). For each factor indicated, please fill out the applicable attachment.

- A. Naturally occurring pollutant concentrations prevent attainment of the criterion. (see Attachment 1)
- B. Flow conditions or water levels prevent attainment of the criterion. (see Attachment 2)
- C. Human-caused conditions or pollution sources prevent attainment of the criterion and cannot be remedied. (see Attachment 3)
- D. Hydrologic modifications prevent attainment of the criterion. (see Attachment 4)
- E. Natural features of the water body preclude attainment of aquatic life protection uses. (see Attachment 5)
- F. Controls more stringent than technology-based controls with result in substantial and widespread economic and social impact (see Attachment 6)

I. Evaluation of Alternatives Considered to Meet Calculated Water Quality-Based Effluent Limit

39. List alternatives considered to meet WQBEL (e.g., substituting process materials; pollutant offsets or trading; various treatment options; addressing inflow/infiltration issues, BMPs):

- a) _____
- b) _____
- c) _____
- d) _____

40. For each alternative considered, explain why it is not technically, financially or otherwise feasible to implement that alternative to meet a WQBEL:

- a) _____
- b) _____
- c) _____
- d) _____

41. If permittee is a POTW, describe legal authority to control potential sources of the pollutant that discharge into wastewater treatment facility:

J. Pollutant Reduction Plan

42. Identify actions you propose to take that will result in reasonable progress toward meeting the underlying water quality, including milestones and schedule.

43. Describe impacts(s) of actions with respect to achieving underlying water quality standard. Provide documentation where possible.

K. Additional Information or Comments

L. Certification

Based on the information provided, I believe that attainment of applicable water quality standard for the pollutant indicated is not attainable for the reasons indicated or would cause widespread adverse social and economic impact. I understand that, as a condition of the variance, DEQ will include the following in the VPDES permit: an interim effluent limitation and a requirement to submit annual reports demonstrating reasonable progress toward meeting a WQBEL. I certify that the information provided in this application, including supporting information, is true, accurate and complete.

Individual submitting request

Title

Signature of Official

Date signed

VARIANCE APPLICATION **ATTACHMENT 1** – REASON FOR VARIANCE NATURALLY OCCURRING POLLUTANTS

If you indicated in Section H of the Variance Application that you are requesting a variance because naturally occurring pollutant concentrations prevent attainment of the criterion (Reason A), please fill in the information requested below. This variance condition exists where natural background concentrations of a pollutant, such as a naturally occurring earth metal, already exceeds or contributes to exceedance of a water quality.

1. For what pollutant is the variance requested?

2. Please describe upstream ambient data sufficient to adequately characterize pollutant concentrations:

3. Please identify the source or sources of the pollutant within the water body. Also describe the data and basis for the conclusion that naturally occurring pollutant concentrations preclude attainment of the criterion. Such information may include, but is not limited to: soil composition data, groundwater data, USGS analyses/reports, comparison to data collected from headwater streams, and analyses done by other states with an explanation of why they are relevant in this case. If possible, there should be some analysis of how much of the pollutant in the stream occurs naturally and how much is a result of VPDES-permitted sources.

VARIANCE APPLICATION **ATTACHMENT 2**– REASON FOR VARIANCE
NATURAL FLOW CONDITIONS OR WATER LEVELS

If you indicated in Section H of the Variance Application that you are requesting a variance because natural, ephemeral, intermittent or low flow conditions or water levels prevent attainment of the criterion (Reason B), please fill in the information below:

1. Describe in detail the location of the problem and any monitoring data or other analyses to support this conclusion:

2. Can these conditions be compensated for by the discharge of a sufficient volume of effluent discharges to enable the criterion to be met without violating state water conservations requirements?

Yes No

Please describe the basis for your answer.

VARIANCE APPLICATION **ATTACHMENT 3** – REASON FOR VARIANCE
HUMAN-CAUSED POLLUTANTS CANNOT BE REMEDIED

If you indicated in Section H of the Variance Application that you are requesting a variance because human-caused pollutant concentrations prevent attainment of the criterion (Reason

C), please fill in the information requested below.

This variance condition exists where human-caused concentrations of a pollutant, such as mercury, PCBs, DDT and phthalates, exceeds a criterion or contributes to an exceedance of a water quality criterion; and the human-caused condition or source cannot be remedied or it would cause more environmental damage to correct than to leave in place.

1. For what pollutant is the variance requested?

2. Please describe upstream ambient data sufficient to adequately characterize pollutant concentrations:

3. Please identify the source or sources of the pollutant within the water body. Also describe the data and basis for the conclusion that human-caused pollutant concentrations preclude attainment of the criterion. Such information may include, but is not limited to: soil composition data, groundwater data, USGS analyses/reports, comparison to data collected from headwater streams, and analyses done by other states with an explanation of why they are relevant in this case. If possible, there should be some analysis of how much of the pollutant in the stream occurs as a result of legacy pollutants and how much is a result of VPDES-permitted sources.

4. Is the receiving water body water quality-limited for the pollutant? Yes No

5. Do the facility's processes contribute any of this pollutant to the effluent? Yes No

6. If applicable, please describe the environmental damage that would be caused by reducing or treating the pollutant to criteria levels, and whether that damage would outweigh the damage caused by leaving the pollutant in place. (For example, if multiple passes of non-contact cooling water concentrates the pollutant and other cooling methods, such as cooling towers are not feasible, may show that benefits to stream temperature and flow resulting from multiple passes outweigh harm caused by reducing number of passes. In some cases, additional treatment may result in potential disposal issues with waste generated from various treatment technologies such as brines or spent resin. Or, additional treatment may require greatly increased energy usage.)

VARIANCE APPLICATION **ATTACHMENT 4** – REASON FOR VARIANCE
HYDROLOGIC MODIFICATIONS PRECLUDE ATTAINMENT OF CRITERION

If you indicated in Section H of the Variance Application that you are requesting a variance because dams, diversions or other types of hydrologic modifications preclude the attainment of the criterion (Reason D), and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the criterion, please discuss with DEQ whether a use attainability analysis should be conducted in lieu of applying for a variance. If this factor is the basis for the variance request, please provide the information requested below.

1. For what pollutant is the variance requested?

2. Please describe upstream ambient data sufficient to adequately characterize pollutant concentrations:

3. Is the receiving water body water quality-limited for the pollutant? Yes No

4. Identify the dam, diversion or other type of hydrologic modification that precludes the attainment of the criterion, including its location and proximity to the permitted facility.

5. Please describe how the dam, diversion or other type of hydrologic modification precludes attainment of the criterion, and the data and basis for this conclusion.

6. Describe why it is not feasible to restore the water body to its original condition or to operate the modification in such a way that would result in attainment of the criterion.

VARIANCE APPLICATION **ATTACHMENT 5** – REASON FOR VARIANCE
NATURAL PHYSICAL FEATURES OF WATER BODY PRECLUDE
ATTAINMENT OF AQUATIC LIFE PROTECTION USES

If you indicated in Section H of the Variance Application that you are requesting a variance because physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and unrelated to water quality preclude attainment of aquatic life protection uses (Reason E), please contact your local DEQ representative to discuss whether a use attainability analysis is more appropriate than a variance request. If this factor is the basis for the variance request, please provide the information requested below.

1. For what pollutant is the variance requested?

2. Please describe upstream ambient data sufficient to adequately characterize pollutant concentrations:

3. Is the receiving water body water quality-limited for the pollutant? Yes No

4. Identify the physical conditions related to the natural features of the water body that precludes attainment of aquatic life protection uses.

5. Please describe how the physical conditions listed above preclude attainment of the criterion, and the data and basis for this conclusion.

VARIANCE APPLICATION **ATTACHMENT 6** – REASON FOR VARIANCE
SUBSTANTIAL AND WIDESPREAD ECONOMIC AND SOCIAL IMPACT

If you indicated in Section H of the Variance Application that you are requesting a variance because controls more stringent than technology-based standards would result in substantial and widespread economic and social impacts (Reason F), please provide the information requested below.

1. For what pollutant is the variance requested?

2. Please describe upstream ambient data sufficient to adequately characterize pollutant concentrations:

3. Is the receiving water body water quality-limited for the pollutant? Yes No

4. Please cite and describe the sources of information you used to evaluate available treatment technologies, their ability to achieve water quality-based effluent limits, and associated costs.

5. Have you identified non-treatment alternative to reduce the pollutant in the water body? If so, please describe those alternatives and the reductions that could be expected to be achieved through their implementation:

6. Please cite and describe the sources of information you used to evaluate available non-treatment options for reducing the pollutant.

7. Please provided an estimate of how much it would cost to treat or reduce the pollutant to criterion levels, including social and economic impacts. Please attach your social and economic impact analysis.

You may submit a justification based on this factor by conducting the analysis described in detail in EPA's Interim Economic Guidance for Water Quality Standards at <http://water.epa.gov/scitech/swguidance/standards/economics/>. This guidance applies to both private and public sector dischargers.

Another resource for POTWs on how to assess financial capability is an EPA document entitled "Combined Sewer Overflows – Guidance for Financial Capability Assessment and Schedule Development (Document No. 832-B-97-004), at <http://www.epa.gov/npdes/pubs/csofc.pdf>.

Attachment 5 – Recommended Approach to Mussels Presence/Absence Determinations

Recommended Approach to Mussel Presence/Absence Determinations

Phase 1. Delineate site and define presence and absence

Site Delineation—A site may be a single point source discharge or quite large. If water quality effects on toxicity are not a consideration, the site will be as large as a generally consistent biogeographic zone permits. Examples of site definitions include the following:

- A stream, river, lake, reservoir, or wetland.
- A segment of a stream, river, lake, reservoir, or wetland.
- A watershed or part of a watershed.
- Some specified distance upstream and downstream of a point-source discharge.
- Some other geographical feature or extent, as defined in the Water Quality Standards.

Below are acceptable examples of definitions for freshwater mussel presence and absence:

Presence—The species currently occurs at the site or has historically occurred at the site but has been extirpated due to degraded conditions. Following EPA's *Revised Deletion Process for the Site-Specific Recalculation Procedure for Aquatic Life Criteria* (EPA-823-R-13-001, April 2013), the equivalent terms "resident" or "occur at the site" includes life stages and species that:

- a) are usually present at the site,
- b) are present at the site only seasonally due to migration,
- c) are present at the site intermittently because they periodically return to or extend their ranges into the site,
- d) were present at the site in the past, are not currently present at the site due to degraded conditions, but are expected to return to the site when conditions improve, or
- e) are present in nearby bodies of water, are not currently present at the site due to degraded conditions, but are expected to be present at the site when conditions improve.

Absence— The species does not occur at the site and a search of data records indicate the species has not historically occurred at the site. Also, absence is not due to extirpation due to anthropogenic causes.

Phase 2. Check databases for mussel survey data records

No single database contains all of the available mussel data. Even within a state there may not be a single source of mussel presence/absence information. For example, the Virginia Department of Game and Inland Fisheries (VDGIF) is responsible for maintaining a database of

mussel distribution data, while the Virginia Department of Conservation and Recreation's Natural Heritage Program maintains a database only for species of concern. Additionally, there may be other sources of data that have not been included in a database such as peer-reviewed publications, student theses, contractor reports, and other sources.

Phase 3. Conduct survey

- a) Define survey objective
- b) Choose sampling approach
- c) Define sampling design
- d) Define sampling method
- e) Submit survey design to the Virginia Department of Environmental Quality (DEQ) and Department of Game and Inland Fisheries (DGIF) for consideration and approval.
- f) Submit sampling results to the Virginia Department of Environmental Quality and Department of Game and Inland Fisheries for consideration and approval.

Phase 4. Re-evaluate as needed

The reasons for re-evaluating a "mussels-absent" finding are many. First, juvenile mussels spend at least the first year of life buried deeply in the substrate. Additionally, juvenile mussels may be missed by certain sampling methods. Furthermore, the proportion of mussels at the surface of the substrate varies greatly depending on water temperature, mussel gender, mussel species, and time of year. Finally, not only do smaller species spend less time at the sediment surface, vertical migration through the substrate can be affected in general for any species by water temperature, time of year, and changing water levels. These factors contribute to a high degree of year-to-year variability with regard to sampling efficiency. Because the Recalculation Procedure states that species that occur at the site cannot be determined by a one-time sampling event, it may be necessary or beneficial to sample over a two- or three-year time period (or more) and use the results of multiple surveys to support a mussels-absent decision.