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

Mr. D. Lee Currey, Director
Water and Science Administration
Maryland Department of the Environment
1800 Washington Blvd., Suite 4502
Baltimore, Maryland 21230-1718

Dear Mr. Currey,

Recently, the Maryland Department of the Environment (MDE) adopted amendments to the State's Water Quality Standards (WQS) in the Code of Maryland Regulations (COMAR) *Title 26, Department of the Environment, Subtitle 08, Water Pollution* (COMAR 26.08.02). In this letter, the U.S. Environmental Protection Agency, Region 3 (EPA) is acting on only those WQS revisions submitted for approval by MDE in accordance with the Clean Water Act (CWA) Section 303(c).

As part of its triennial review, the MDE published in the *Maryland Register* the Notice of Final Action to amend its WQS on October 23, 2022. The Maryland Office of the Attorney General, certified in a letter dated October 31, 2022, that these revisions were duly adopted in accordance with Maryland's laws. These revisions were submitted by the MDE to the U.S. Environmental Protection Agency (EPA), Region 3, as required under the Clean Water Act (CWA) Section 303(c)(2)(A), 33 U.S.C. §1313(c)(2)(A), and 40 CFR Part 131.20(c). EPA received this package on April 24, 2023.

EPA has completed its review of the revisions to Maryland's WQS. Based on the review of the MDE submission and supporting documentation, EPA finds that the new or revised provisions in Maryland's regulation which Maryland submitted for approval are consistent with the CWA and EPA's implementation regulations at 40 C.F.R. Part 131. The specific provisions EPA is approving, both substantive and non-substantive, and a brief rationale for the approval can be found in Enclosure 1 to this letter.

Note that EPA is taking no action on any changes to COMAR that were published in the Maryland Register on October 23, 2022, but not submitted to EPA for review and approval. EPA is also not taking action on two provisions that were submitted for EPA's review and approval because those provisions included errors. Maryland deleted the footnote for Pentachlorophenol (PCP) in Table 6. Toxic Substances for Ambient Water Quality Criteria --- Pesticides and Chlorinated Compounds (COMAR 26.08.02.03-2G(6)). That footnote referred to COMAR 26.08.02.03-2D of the regulation, which indicates that the toxicity of certain substances in Tables 1 and 4 of §G of this regulation is increased or decreased by hardness or pH. It is our understanding that Maryland intended to delete the indication that PCP is affected by hardness, but inadvertently also deleted the indication that PCP is affected by pH (consistent with EPA's CWA 304(a) recommendation for PCP). Because EPA is not taking CWA §303(c) action on this footnote, the PCP water quality criteria effective for CWA purposes remains that the criteria that are a function of pH. EPA is also not taking action on the deletion of Table 1 Chronic Ammonia Criteria for Waters Where Freshwater Fish Early Life Stages May be Present (COMAR 26.08.02.03-2I(5)), as well as the equation included as a footnote to that table. Due to an error, Maryland did not submit the revised Table 1 and the accompanying equation for review and approval. Until such time that Maryland submits a revised table and equation, or other appropriate revision and EPA approves under CWA §303(c), the previously approved Table 1 and equation will remain effective for CWA purposes. All other new or revised provisions of the ammonia criteria that were submitted for EPA review were approved, and the details of EPA's approval can be found in Enclosure 1 to this letter.

Under Section 7 of the Endangered Species Act (ESA), 42 U.S.C. §1536, EPA must ensure that the Agency's approval of these modifications to the State's WQS regulation will not jeopardize the continued existence of Federally listed threatened and endangered species and their critical habitat in Maryland. To fulfill this obligation, EPA prepared biological evaluations of the new or revised provisions of Maryland's regulation which concluded that EPA's approval of Maryland's WQS is not likely to adversely affect (NLAA) listed species and their critical habitat. The Chesapeake Bay Field Office of the U.S. Fish and Wildlife Service concurred with EPA's NLAA conclusion on November 8, 2022.

EPA requested concurrence, or in the alternative, requested formal consultation with the Greater Atlantic Regional Fisheries Office of NOAA National Marine Fisheries Service (NOAA Fisheries) for the proposed aquatic life criteria for cadmium and ammonia. NOAA issued a biological opinion (BiOp) on April 27, 2023. That BiOp concluded that EPA's action to approve Maryland's acute cadmium criterion, and acute and chronic ammonia criteria are not likely to adversely affect ESA-listed species under NOAA Fisheries jurisdiction. The BiOp also concluded that EPA's action to approve Maryland's revised freshwater chronic cadmium criterion is likely to adversely affect, but is not likely to jeopardize, the continued existence of shortnose sturgeon or the Chesapeake Bay Distinct Population Segments of Atlantic sturgeon. NOAA Fisheries also issued an incidental take statement in accordance with ESA Section 7(a)(2).

NOAA Fisheries concluded in its BiOp that two reasonable and prudent measures (RPMs) are necessary or appropriate to minimize the impact of the amount or extent of incidental take on threatened and endangered species resulting from exposure to cadmium within the freshwater chronic criterion. In accordance with those RPMs, EPA reminds MDE of the importance of compliance with permit limits based on such criteria in all NPDES permits, including general permits, to protect threatened and endangered species, including the Atlantic and shortnose sturgeon. EPA encourages MDE to monitor ammonia and cadmium in areas where ESA-listed Atlantic and shortnose sturgeon occur. If EPA becomes aware of new information that indicates revisions to criteria subject to this consultation may be necessary to protect threatened and endangered species, EPA will work with MDE to revise water quality standards or take other actions, as appropriate. Additional information on the ESA consultation and the RPMs can be found in Enclosure 2 to this letter.

EPA thanks MDE for their efforts to review and revise its WQS regulation and looks forward to working with MDE on future revisions. If you have any questions regarding this action, please do not hesitate to contact me or have your staff contact Gregory Voigt at 215-814-5737, or Voigt.Gregory@epa.gov, or Hunter Pates at 214-814-3385, or Pates.Hunter@epa.gov.

Sincerely,

Catherine A. Libertz, Director
Water Division

Enclosures (2)

cc: Matthew Stover, MDE-WSA

Enclosure 1

Summary of Maryland's New and Revised Water Quality Standards – 2023 Triennial Review Submission

As part of its triennial review, the Maryland Department of the Environment (MDE) adopted amendments to its Water Quality Standards (WQS) in the Code of Maryland Regulations (COMAR). These amendments were published in *Maryland Register* on October 23, 2022 and submitted to the U.S. Environmental Protection Agency (EPA), Region III, for review on April 24, 2023. Pursuant to Clean Water Act (CWA) Section 303(c) and 40 C.F.R. Part 131, EPA is providing this summary and brief rationale of its approval of the following revisions to Maryland's WQS regulations:

Table 1
Revisions to MD WQS that EPA is approving pursuant to Section 303(c) of the Clean Water Act

Section Approved	Description of Revision	EPA Rationale
COMAR 26.08.02.08. A(6) Stream Segment Designations and Existing Uses	Text was added to the general portion of this regulation to provide notification to the reader that some water bodies have existing uses that may not be protected by the codified designated use class. However, these existing uses and the water quality necessary to support them must be protected per Maryland's antidegradation policy in COMAR 26.08.02.04-1. These existing uses will be described, maintained, and made available on the MDE website.	This revision clarifies language surrounding the application of existing uses and designated uses, as well as MDE's antidegradation policy. These revisions are consistent with the definition of existing uses at 40 CFR § 131.3(e) and the requirement to protect the existing uses at 40 CFR § 131.12(a).
COMAR 26.08.02.08B Sub-Basin 02-12-02:	Amendments were made to clarify the extent of tidal influence and where the public water supply use applied. This consisted of correcting/clarifying the extent of the mainstem Susquehanna that should be designated in tidal (Class II) versus nontidal (Class I) waters. In this case, the Department clarified that Class I should extend downstream and terminate at the head of tide near Spencer Island with Class II starting at Spencer Island and continuing downstream. This also	In cases where the Public Water Supply designated use was added, EPA is approving these revisions

<table>
<tr><th>Section Approved</th><th>Description of Revision</th><th>EPA Rationale</th></tr>
<tr><td>Lower Susquehanna River Area

(1) Class I-P
(2) Class II
(3) Class II-P</td><td>included adding latitudinal and longitudinal points for Concord Point and Perry Point as the delineation between the Class II-P area and the polygon defining the Class II area. Other corrections made to waters in the area of the Susquehanna River include adding the “-P” public water supply designated use to all nontidal tributaries that flow into the Susquehanna River upstream of the mouth. These proposed changes resulted after the Department reviewed this portion of the regulation with associated GIS resources. In this case, MDE realized that several tributaries upstream of other “-P” waters (and upstream of a surface water supply system intake) were not assigned the public water supply use. In order to be consistent with the public water supply designation elsewhere in the State and to provide upstream protections for a drinking water source, MDE added the “-P” designation to those waters. In no case did revisions to this provision result in designated uses that require criteria less stringent than previously applicable.</td><td>as consistent with 40 CFR §131.10.</td></tr>
<tr><td>COMAR 26.08.02.08B

Sub-Basin 02-12-02: Lower Susquehanna River Area

(5) Class III-P</td><td>The following waterbodies were redesignated from Class I-P to Class III-P
<table><tr><td>(s) Unnamed tributary to Deer Creek and all tributaries</td><td>39.643704</td><td>-76.41237</td><td>Runs parallel to Rocks Road</td></tr><tr><td>(t) Unnamed tributary to Falling Branch and all tributaries</td><td>39.683601</td><td>-76.439217</td><td>Flows through Rocks State Park near Falling Branch Road</td></tr><tr><td>(u) Unnamed tributary to Conowingo Reservoir and all tributaries</td><td>39.717647</td><td>-76.224782</td><td>Flows from Eckman Lane to Susquehanna River</td></tr></table></td><td>Based on temperature and biological data, these stream segments were redesignated as Class III streams. This is an increase in protection. EPA is approving these revisions as consistent with 40 CFR §131.10.</td></tr>
<tr><td>COMAR 26.08.02.08H

Sub-Basin 02-13-06: Elk River Area</td><td>The following waterbody was redesignated from Class I-P to Class III-P
<table><tr><td>Mill Creek</td><td>39.585249</td><td>-76.052864</td><td>Upstream of an unnamed tributary near Reservoir Rd.</td></tr></table></td><td>Based on temperature and biological data, this stream segment was redesignated as a Class III stream. This is an increase in protection. EPA is approving this revision as consistent with 40 CFR § 131.10.</td></tr>
</table>

<table>
<tr><th>Section Approved</th><th>Description of Revision</th><th>EPA Rationale</th></tr>
<tr><td>(4) Class III-P</td><td></td><td></td></tr>
<tr><td>COMAR 26.08.02.08K

Sub-Basin 02-13-09: Patapsco River Area

(4) Class III-P</td><td>The following waterbodies were redesignated from Class I-P to Class III-P

<table>
<tr><td>(p) Unnamed Tributary to North Branch Patapsco River and all tributaries</td><td>39.534575</td><td>-76.891732</td><td>Near Wesley Road</td></tr>
<tr><td>(q) Unnamed tributary to the West Branch North Branch Patapsco River and all tributaries</td><td>39.574623</td><td>-76.955109</td><td>Near Tannery Road</td></tr>
<tr><td>(r) Unnamed tributary to the West Branch North Branch Patapsco River and all tributaries</td><td>39.559758</td><td>-76.927383</td><td>Near Dutrow Road</td></tr>
<tr><td>(s) Unnamed tributary to the West Branch North Branch Patapsco River and all tributaries</td><td>39.553998</td><td>-76.91500</td><td>Near Reese Road</td></tr>
<tr><td>(t) Unnamed tributary to Cranberry Branch and all tributaries</td><td>39.608109</td><td>-76.958926</td><td>Near Guadelupe Drive</td></tr>
<tr><td>(u) Unnamed tributary to Liberty Reservoir and all tributaries</td><td>39.432231</td><td>-76.940664</td><td>Flows from area near Woodridge Lane</td></tr>
<tr><td>(v) Unnamed tributary to Liberty Reservoir and all tributaries</td><td>39.432498</td><td>-76.940303</td><td>Flows from area near Sykesville Road</td></tr>
</table>
</td><td>Based on temperature and biological data, these stream segments were redesignated as Class III streams. This is an increase in protection. EPA is approving this revision as consistent with 40 CFR § 131.10.</td></tr>
<tr><td>COMAR 26.08.02.08P

Sub-Basin 02-14-03: Middle Potomac River Area</td><td>The following waterbodies were redesignated from Class I-P to Class III-P</td><td>Based on temperature and biological data, these stream segments were redesignated as Class III streams. This is an increase in protection. EPA is approving this</td></tr>
</table>

<table>
<tr><th>Section Approved</th><th>Description of Revision</th><th>EPA Rationale</th></tr>
<tr><td>(4) Class III-P</td><td>
<table>
<tr><td>(s) Flickinger Branch and all tributaries</td><td>39.450649</td><td>-77.135427</td><td>Near unnamed road off of Black Ankle Road</td></tr>
<tr><td>(t) Unnamed Tributary to Big Pipe Creek and all tributaries</td><td>39.675983</td><td>-76.919152</td><td>Near Dug Hill Drive</td></tr>
<tr><td>(u) Unnamed Tributary to Big Pipe Creek and all tributaries</td><td>39.657544</td><td>-76.92231</td><td>Near Route 27 Manchester Road</td></tr>
<tr><td>(v) Weldon Creek</td><td>39.478131</td><td>-77.11824</td><td>Upstream of tributary near Hoopers Delight Road</td></tr>
</table>
</td><td>revision as consistent with 40 CFR § 131.10.</td></tr>
<tr><td>COMAR 26.08.02.08R

Sub-Basin 02-14-10: North Branch Potomac River Area

(4) Class III-P</td><td>The following waterbody was added stream miles to Class III-P; previously that portion of the waterbody was designated Class I-P.

<table>
<tr><td colspan="4">(4) Class III-P:</td></tr>
<tr><td>(a) North Branch Potomac River mainstem from below Jennings Randolph Dam downstream to the confluence with [Laurel Run near Bloomington] Savage River</td><td>[39.4742592] 39.480398</td><td>[79.1054876] -79.067187</td><td>Mainstem only. [From Jennings Randolph Dam downstream to the confluence with Laurel Run near Bloomington]</td></tr>
</table>
</td><td>Based on temperature and biological data, this stream segment was redesignated as a Class III-P stream. This is an increase in protection. EPA is approving this revision as consistent with 40 CFR § 131.10.</td></tr>
<tr><td>COMAR 26.08.02.08S

Sub-Basin 05-02-02: Youghiogheny River Area

(4) Class III-P</td><td>The following waterbody was added stream miles to Class III-P; previously that portion of the waterbody was designated Class I-P.

<table>
<tr><td>(b) Piney Creek and all tributaries</td><td>[39.721323] 39.722497</td><td>[78.960085]- 78.964199</td><td>[Upstream from the Frostburg Watershed property (near Jay Road)]</td></tr>
</table>
</td><td>Based on temperature and biological data, this stream segment was redesignated as a Class III-P stream. This is an increase in protection. EPA is approving this revision as consistent with 40 CFR § 131.10</td></tr>
</table>

<table>
<tr><th>Section Approved</th><th>Description of Revision</th><th>EPA Rationale</th></tr>
<tr><td>COMAR 26.08.02.03-2G Numerical Criteria for Toxic Substances Waters

Tables of Ambient Water Quality Criteria

Table 1. Toxic Substances Criteria for Ambient Surface Waters</td><td>[Deleted text in brackets] and added text in italics

<table>
<tr><th rowspan="3">Substance</th><th rowspan="3">CAS #</th><th colspan="4">Aquatic Life (µg/L)</th></tr>
<tr><th colspan="2">Fresh Water</th><th colspan="2">Salt Water</th></tr>
<tr><th>Acute</th><th>Chronic</th><th>Acute</th><th>Chronic</th></tr>
<tr><td>Cadmium</td><td>7440439</td><td>[2.0]
1.8</td><td>[0.25]
0.72</td><td>[40]
33.13</td><td>[8.8]
7.9</td></tr>
</table></td><td>Criteria consistent with EPA’s recommendations published in the Aquatic Life Ambient Water Quality Criteria Cadmium – 2016 (EPA-820-R-16-002).</td></tr>
<tr><td>COMAR 26.08.02.03-2G

Numerical Criteria for Toxic Substances Waters</td><td>[Deleted text in brackets] and added text in italics

<table>
<tr><th rowspan="2">Substance</th><th rowspan="2">CAS #</th><th colspan="2">Human Health for Consumption of:</th></tr>
<tr><th>Drinking Water + Organism (µg/L)</th><th>Organism Only (µg/L)</th></tr>
<tr><td>1,1 Dichloroethylene (DCE)</td><td>75354</td><td>[330] 300</td><td>[7100] 20000</td></tr>
<tr><td>1,2,4,5-Tetrachlorobenzene</td><td>95943</td><td>0.03</td><td>0.03</td></tr>
<tr><td>1,2-Dichlorobenzene</td><td>95501</td><td>[420] 1000</td><td>[1300] 3000</td></tr>
</table></td><td>New and revised criteria are consistent with EPA’s National Recommended Human Health Water Quality Criteria – 2015 Update (80 FR 36986). Criteria for carcinogens are adopted based on a risk level of 10^{-5} (indicated by footnote “a”).</td></tr>
</table>

Section Approved	Description of Revision				EPA Rationale
Table 4. Toxic Substances for Ambient Water Quality Criteria – Organic Compounds	1,2-Dichloroethane	107062	[3.8] *99*[a]	[370] *6500*[a]	
	1,2-Diphenylhydrazine	122667	[0.36] *0.3*[a]	[2] *2*[a]	
	1,2-Trans-Dichloroethylene	156605	[140] *100*	[10000] *4000*	
	1,4-Dichlorobenzene	106467	[63] *300*	[190] *900*	
	2,4,5-Trichlorophenol	*95954*	*300*	*600*	
	2,4-Dimethylphenol	105679	[380] *100*	[850] *3000*	
	2-Chloronapthalene	91587	[1000] *800*	[1600] *1000*	
	2-Methyl-4,6-Dinitrophenol	534521	[13] *2*	[280] *30*	
	3,3'-Dichlorobenzidine	91941	[0.21] *0.49*[a]	[0.28] *1.5*[a]	
	3-Methyl-4-Chlorophenol	*59507*	*500*	*2000*	
	Acrylonitrile	107131	[0.51] *0.61*[a]	[2.5] *70*[a]	
	Benzidine	92875	[0.00086] *0.0014*[a]	[0.002] *0.11*[a]	
	Bis(2-Chloroethyl) Ether	111444	0.3[a]	[5.3] *22*[a]	
	Bis2(Chloroisopropyl) Ether	108601	[1400] *200*	[65000] *4000*	
	Bis(Chloromethyl) Ether	*542881*	*0.0015*[a]	*0.17*[a]	
	Carbon tetrachloride	56235	[2.3] *4*[a]	[16] *50*[a]	
	Chlorodibromomethane	124481	[See Trihalomethanes] *8*[a]	[130] *210*[a]	
	Chloroform	67663	[See Trihalomethanes] *60*	[4700] *2000*	
	Chlorophenoxy Herbicide (2,4-D)	*94757*	*1300*	*12000*	
	Chlorophenoxy Herbicide (2,4,5-TP)	*93721*	*100*	*400*	
	Dinitrophenols	*25550587*	*10*	*1000*	

<table>
<tr><th>Section Approved</th><th>Description of Revision</th><th>EPA Rationale</th></tr>
<tr><td></td><td>
<table>
<tr><td>Hexachlorobenzene</td><td>118741</td><td>[0.0028] 0.00079[a]</td><td>[0.0029] 0.00079[a]</td></tr>
<tr><td>Hexachlorocyclopenta-diene</td><td>77474</td><td>[40] 4</td><td>[1100] 4</td></tr>
<tr><td>Hexachlorocyclohexane (HCH)-Technical</td><td>608731</td><td>0.066[a]</td><td>0.1[a]</td></tr>
<tr><td>Isophorone</td><td>78591</td><td>[350] 340[a]</td><td>[9600] 18000[a]</td></tr>
<tr><td>Methoxychlor</td><td>72435</td><td>0.02</td><td>0.02</td></tr>
<tr><td>Methyl bromide</td><td>74839</td><td>[47] 100</td><td>[1500] 10000</td></tr>
<tr><td>Methylene chloride</td><td>75092</td><td>[46] 200[a]</td><td>[5900] 10000[a]</td></tr>
<tr><td>Nitrobenzene</td><td>98953</td><td>[17] 10</td><td>[690] 600</td></tr>
<tr><td>Phenol</td><td>108952</td><td>[10000] 4000</td><td>[860000] 300000</td></tr>
<tr><td>Tetrachloroethylene</td><td>127184</td><td>[6.9] 100[a]</td><td>[33] 290[a]</td></tr>
<tr><td>Trichloroethylene (TCE)</td><td>79016</td><td>[25] 6[a]</td><td>[300] 70[a]</td></tr>
<tr><td>Vinyl chloride</td><td>75014</td><td>[0.25] 0.22[a]</td><td>[24] 16[a]</td></tr>
</table>
</td><td></td></tr>
<tr><td>COMAR 26.08.02.03-2

Numerical Criteria for Toxic Substances Waters

Table 4. Toxic Substances for Ambient</td><td>Deleted:
<table>
<tr><td rowspan="2">Substance</td><td rowspan="2">CAS #</td><td colspan="2">Human Health for Consumption of:</td></tr>
<tr><td>Drinking Water + Organism (µg/L)</td><td>Organism Only (µg/L)</td></tr>
<tr><td>[2,4-Dinitrophenol</td><td>51285</td><td>69</td><td>5300]</td></tr>
</table>
</td><td>EPA is approving this removal of 2,4-Dinitrophenol. 2,4 Dinitrophenol is one of six isomers of the “Dinitrophenols” criterion that was added by MD.</td></tr>
</table>

<table>
<tr><th>Section Approved</th><th>Description of Revision</th><th>EPA Rationale</th></tr>
<tr><td>Water Quality Criteria – Organic Compounds</td><td></td><td></td></tr>
<tr><td>COMAR 26.08.02.03-2

Numerical Criteria for Toxic Substances Waters

Table 5 Toxic Substances for Ambient Water Quality Criteria – Polycyclic Aromatic Hydrocarbons and Phthalates</td><td>[Deleted text in brackets] and added text in italics

<table>
<tr><th rowspan="2">Substance</th><th rowspan="2">CAS #</th><th colspan="2">Human Health for Consumption of:</th></tr>
<tr><th>Drinking Water + Organism (µg/L)</th><th>Organism Only (µg/L)</th></tr>
<tr><td>Acenaphthene</td><td>83329</td><td>[670] 70</td><td>[990] 90</td></tr>
<tr><td>Anthracene</td><td>120127</td><td>[8,300] 300</td><td>[40,000] 400</td></tr>
<tr><td>Benzo(a)Anthracene</td><td>56553</td><td>[0.038] 0.012[a]</td><td>[0.18] 0.013[a]</td></tr>
<tr><td>Benzo(a)Pyrene</td><td>50328</td><td>[0.038] 0.0012[a]</td><td>[0.18] 0.0013[a]</td></tr>
<tr><td>Benzo(b)Fluoranthene</td><td>205992</td><td>[0.038] 0.012[a]</td><td>[0.18] 0.013[a]</td></tr>
<tr><td>Benzo(k)Fluoranthene</td><td>207089</td><td>[0.038] 0.12[a]</td><td>[0.18] 0.13[a]</td></tr>
<tr><td>Dibenzo(a,h)Anthracene</td><td>53703</td><td>[0.038] 0.0012[a]</td><td>[0.18] 0.0013[a]</td></tr>
<tr><td>Fluoranthene</td><td>206440</td><td>[130] 20</td><td>[140] 20</td></tr>
<tr><td>Fluorene</td><td>86737</td><td>[1,100] 50</td><td>[5,300] 70</td></tr>
<tr><td>Ideno(1,2,3-cd)Pyrene</td><td>193395</td><td>[0.038] 0.012[a]</td><td>[0.18] 0.013[a]</td></tr>
<tr><td>Pyrene</td><td>129000</td><td>[830] 20</td><td>[4,000] 30</td></tr>
<tr><td>Bis(2-Ethylhexyl)Phthalate</td><td>117817</td><td>[12] 3.2[a]</td><td>[22] 3.7[a]</td></tr>
<tr><td>Butylbenzyl Phthalate</td><td>85687</td><td>[1,500] 1[a]</td><td>[1,900] 1[a]</td></tr>
<tr><td>Diethyl Phthalate</td><td>84662</td><td>[17,000] 600</td><td>[44,000] 600</td></tr>
<tr><td>Dimethyl Phthalate</td><td>131113</td><td>[270,000] 2000</td><td>[1,100,000] 2000</td></tr>
<tr><td>Di-n-Butyl Phthalate</td><td>84742</td><td>[2,000] 20</td><td>[4,500] 30</td></tr>
</table></td><td>New and revised criteria are consistent with EPA’s National Recommended Human Health Water Quality Criteria – 2015 Update (80 FR 36986). Criteria for carcinogens are adopted based on a risk level of 10^{-5} (indicated by footnote “a”).</td></tr>
</table>

<table>
<tr><th>Section Approved</th><th>Description of Revision</th><th>EPA Rationale</th></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>COMAR 26.08.02.03-2

Numerical Criteria for Toxic Substances Waters

Table 6 Toxic Substances for Ambient Water Quality Criteria – Pesticides and Chlorinated Compounds</td><td>[Deleted text in brackets] and added text in italics

<table>
<tr><th rowspan="2">Substance</th><th rowspan="2">CAS #</th><th colspan="2">Human Health for Consumption of:</th></tr>
<tr><th>Drinking Water + Organism (µg/L)</th><th>Organism Only (µg/L)</th></tr>
<tr><td>4,4'-DDD</td><td>72548</td><td>[0.0031] 0.0012[a]</td><td>[0.0031] 0.0012[a]</td></tr>
<tr><td>4,4'-DDE</td><td>72559</td><td>[0.0022] 0.00018[a]</td><td>[0.0022] 0.00018[a]</td></tr>
<tr><td>4,4'-DDT</td><td>50293</td><td>[0.0022] 0.0003[a]</td><td>[0.0022] 0.0003[a]</td></tr>
<tr><td>Aldrin</td><td>309002</td><td>[0.00049] 0.0000077[a]</td><td>[0.00050] 0.0000077[a]</td></tr>
<tr><td>alpha-BHC</td><td>319846</td><td>[0.026] 0.0036[a]</td><td>[0.049] 0.0039[a]</td></tr>
<tr><td>alpha-Endosulfan</td><td>959988</td><td>[62] 20</td><td>[89] 30</td></tr>
<tr><td>beta-BHC</td><td>319857</td><td>[0.091] 0.08[a]</td><td>[0.17] 0.14[a]</td></tr>
<tr><td>beta-Endosulfan</td><td>33213659</td><td>[62] 20</td><td>[89] 40</td></tr>
<tr><td>Chlordane</td><td>57749</td><td>[0.0080] 0.0031[a]</td><td>[0.0081] 0.0032[a]</td></tr>
<tr><td>Dieldrin</td><td>60571</td><td>[0.00052] 0.000012[a]</td><td>[0.00054] 0.000012[a]</td></tr>
<tr><td>Endosulfan Sulfate</td><td>1031078</td><td>[62] 20</td><td>[89] 40</td></tr>
<tr><td>Endrin Aldehyde</td><td>7421934</td><td>[0.29] 1</td><td>[0.30] 1</td></tr>
<tr><td>gamma-BHC (Lindane)</td><td>58899</td><td>[0.98] 4.2</td><td>[1.8] 4.4</td></tr>
<tr><td>Heptachlor</td><td>76448</td><td>[0.00079] 0.000059[a]</td><td>[0.00079] 0.000059[a]</td></tr>
<tr><td>Heptachlor Epoxide</td><td>1024573</td><td>[0.00039] 0.00032[a]</td><td>[0.00039] 0.00032[a]</td></tr>
</table></td><td>New and revised criteria are consistent with EPA’s National Recommended Human Health Water Quality Criteria – 2015 Update (80 FR 36986). Criteria for carcinogens are adopted based on a risk level of 10^{-5} (indicated by footnote “a”).</td></tr>
</table>

<table>
<tr><th>Section Approved</th><th>Description of Revision</th><th>EPA Rationale</th></tr>
<tr><td></td><td>
<table>
<tr><td>Toxaphene</td><td>8001352</td><td>[0.0028] 0.007[a]</td><td>[0.0028] 0.0071[a]</td></tr>
<tr><td>Pentachlorobenzene</td><td>608935</td><td>0.1</td><td>0.1</td></tr>
</table>
</td><td></td></tr>
<tr><td>COMAR 26.08.02.03-2H(1)

Acute Numeric Toxic Substance Criteria for Ammonia for the Protection of Fresh Water Aquatic Life</td><td>Incorporated by reference the document “Procedures for Applying the Mussel-Absent Ammonia Criteria to Maryland Surface Waters.” Maryland requires documentation consistent with this guidance as a condition of using mussel-absent criteria.</td><td>EPA has reviewed this document and has determined that it will result in the accurate determination of the absence of mussels, and therefore the appropriate application of the mussel-absent ammonia criteria. This is consistent with 40 CFR §131.11(a).</td></tr>
<tr><td>COMAR 26.08.02.03-2H(6)-(9)

Acute Numeric Toxic Substance Criteria for Ammonia for the Protection of</td><td>The existing Table 1, which presented both “Salmonids Present” and “Salmonids Absent” as functions of pH, and the equations that were used to calculate the criteria, which were presented as footnotes 1 & 2, was deleted.

In its place, the state adopted Tables 1 through 4. The tables present criteria as functions of pH and temperature, and include the equations used to calculate the criteria presented as a footnote to each table.

(6) Table 1. Acute Water Quality Criteria for Freshwater Aquatic Life for Ammonia Where Salmonids May Be Present (milligrams of nitrogen per liter)[1].

Temperature (°C)</td><td>Criteria consistent with EPA’s recommended water quality criteria published in the Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater 2013 (EPA 822-R-18-002).</td></tr>
</table>

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Fresh Water Aquatic Life.

pH	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
6.5	32.6	32.6	31.6	29.1	26.8	24.6	22.7	20.9	19.2	17.7	16.3	15.0	13.8	12.7	11.7	10.8	9.9
6.6	31.3	31.3	30.3	27.9	25.7	23.6	21.8	20.0	18.4	17.0	15.6	14.4	13.2	12.2	11.2	10.3	9.5
6.7	29.8	29.8	28.8	26.5	24.4	22.5	20.7	19.0	17.5	16.1	14.9	13.7	12.6	11.6	10.7	9.8	9.0
6.8	28.0	28.0	27.2	25.0	23.0	21.2	19.5	18.0	16.5	15.2	14.0	12.9	11.9	10.9	10.0	9.2	8.5
6.9	26.2	26.2	25.3	23.3	21.5	19.8	18.2	16.7	15.4	14.2	13.1	12.0	11.1	10.2	9.4	8.6	7.9
7.0	24.1	24.1	23.3	21.5	19.8	18.2	16.8	15.4	14.2	13.1	12.0	11.1	10.2	9.4	8.6	7.9	7.3
7.1	21.9	21.9	21.3	19.6	18.0	16.6	15.3	14.0	12.9	11.9	11.0	10.1	9.3	8.5	7.9	7.2	6.7
7.2	19.7	19.7	19.1	17.6	16.2	14.9	13.7	12.6	11.6	10.7	9.8	9.1	8.3	7.7	7.1	6.5	6.0
7.3	17.5	17.5	17.0	15.6	14.4	13.2	12.2	11.2	10.3	9.5	8.7	8.0	7.4	6.8	6.3	5.8	5.3
7.4	15.3	15.3	14.9	13.7	12.6	11.6	10.7	9.8	9.0	8.3	7.7	7.0	6.5	6.0	5.5	5.1	4.7
7.5	13.3	13.3	12.9	11.8	10.9	10.0	9.2	8.5	7.8	7.2	6.6	6.1	5.6	5.2	4.8	4.4	4.0
7.6	11.4	11.4	11.0	10.1	9.3	8.6	7.9	7.3	6.7	6.2	5.7	5.2	4.8	4.4	4.1	3.8	3.5
7.7	9.6	9.6	9.3	8.6	7.9	7.3	6.7	6.2	5.7	5.2	4.8	4.4	4.1	3.8	3.5	3.2	2.9
7.8	8.1	8.1	7.9	7.2	6.7	6.1	5.6	5.2	4.8	4.4	4.0	3.7	3.4	3.2	2.9	2.7	2.5
7.9	6.8	6.8	6.6	6.0	5.6	5.1	4.7	4.3	4.0	3.7	3.4	3.1	2.9	2.6	2.4	2.2	2.1
8.0	5.6	5.6	5.4	5.0	4.6	4.2	3.9	3.6	3.3	3.0	2.8	2.6	2.4	2.2	2.0	1.9	1.7
8.1	4.6	4.6	4.5	4.1	3.8	3.5	3.2	3.0	2.7	2.5	2.3	2.1	2.0	1.8	1.7	1.5	1.4
8.2	3.8	3.8	3.7	3.4	3.1	2.9	2.7	2.4	2.3	2.1	1.9	1.8	1.6	1.5	1.4	1.3	1.2
8.3	3.1	3.1	3.1	2.8	2.6	2.4	2.2	2.0	1.9	1.7	1.6	1.4	1.3	1.2	1.1	1.0	1.0
8.4	2.6	2.6	2.5	2.3	2.1	2.0	1.8	1.7	1.5	1.4	1.3	1.2	1.1	1.0	0.9	0.9	0.8
8.5	2.1	2.1	2.1	1.9	1.8	1.6	1.5	1.4	1.3	1.2	1.1	1.0	0.9	0.8	0.8	0.7	0.6
8.6	1.8	1.8	1.7	1.6	1.5	1.3	1.2	1.1	1.0	1.0	0.9	0.8	0.7	0.7	0.6	0.6	0.5
8.7	1.5	1.5	1.4	1.3	1.2	1.1	1.0	0.9	0.9	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.4

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8.8	1.2	1.2	1.2	1.1	1.0	0.9	0.9	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.4
8.9	1.0	1.0	1.0	0.9	0.9	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.3	0.3
9.0	0.9	0.9	0.9	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.3

[1] The acute water quality criteria for total ammonia where salmonids may be present was calculated using the following equation, which may also be used to calculate unlisted values: Acute water quality criteria for ammonia (salmonids present) =

$$CMC = MIN\left[\left(\frac{0.275}{1+10^{7.204-pH}}+\frac{39}{1+10^{pH-7.204}}\right),\left(0.7249*\left(\frac{0.0114}{1+10^{7.204-pH}}+\frac{1.6181}{1+10^{pH-7.204}}\right)*\left(23.12*10^{0.036*(20-T)}\right)\right)\right]$$

Where MIN indicates the lesser of the two values separated by a comma.

(7) Table 2. Acute Water Quality Criteria for Freshwater Aquatic Life for Ammonia Where Salmonids Are Absent (milligrams of nitrogen per liter)[1].

	Temperature (°C)																					
pH	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
6.5	50.9	47.8	44.0	40.5	37.3	34.3	31.6	29.1	26.8	24.6	22.7	20.9	19.2	17.7	16.3	15.0	13.8	12.7	11.7	10.8	9.9
6.6	48.9	45.9	42.2	38.9	35.8	32.9	30.3	27.9	25.7	23.6	21.8	20.0	18.4	17.0	15.6	14.4	13.2	12.2	11.2	10.3	9.5
6.7	46.5	43.6	40.2	37.0	34.0	31.3	28.8	26.5	24.4	22.5	20.7	19.0	17.5	16.1	14.9	13.7	12.6	11.6	10.7	9.8	9.0
6.8	43.8	41.1	37.9	34.8	32.1	29.5	27.2	25.0	23.0	21.2	19.5	18.0	16.5	15.2	14.0	12.9	11.9	10.9	10.0	9.2	8.5
6.9	40.8	38.3	35.3	32.5	29.9	27.5	25.3	23.3	21.5	19.8	18.2	16.7	15.4	14.2	13.1	12.0	11.1	10.2	9.4	8.6	7.9

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7.0	37.6	35.3	32.5	29.9	27.6	25.4	23.3	21.5	19.8	18.2	16.8	15.4	14.2	13.1	12.0	11.1	10.2	9.4	8.6	7.9	7.3
7.1	34.3	32.2	29.6	27.3	25.1	23.1	21.3	19.6	18.0	16.6	15.3	14.0	12.9	11.9	11.0	10.1	9.3	8.5	7.9	7.2	6.7
7.2	30.8	28.9	26.6	24.5	22.6	20.8	19.1	17.6	16.2	14.9	13.7	12.6	11.6	10.7	9.8	9.1	8.3	7.7	7.1	6.5	6.0
7.3	27.3	25.7	23.6	21.7	20.0	18.4	17.0	15.6	14.4	13.2	12.2	11.2	10.3	9.5	8.7	8.0	7.4	6.8	6.3	5.8	5.3
7.4	24.0	22.5	20.7	19.1	17.5	16.1	14.9	13.7	12.6	11.6	10.7	9.8	9.0	8.3	7.7	7.0	6.5	6.0	5.5	5.1	4.7
7.5	20.7	19.5	17.9	16.5	15.2	14.0	12.9	11.8	10.9	10.0	9.2	8.5	7.8	7.2	6.6	6.1	5.6	5.2	4.8	4.4	4.0
7.6	17.8	16.7	15.4	14.1	13.0	12.0	11.0	10.1	9.3	8.6	7.9	7.3	6.7	6.2	5.7	5.2	4.8	4.4	4.1	3.8	3.5
7.7	15.1	14.1	13.0	12.0	11.0	10.1	9.3	8.6	7.9	7.3	6.7	6.2	5.7	5.2	4.8	4.4	4.1	3.8	3.5	3.2	2.9
7.8	12.7	11.9	10.9	10.1	9.3	8.5	7.9	7.2	6.7	6.1	5.6	5.2	4.8	4.4	4.0	3.7	3.4	3.2	2.9	2.7	2.5
7.9	10.6	9.9	9.1	8.4	7.7	7.1	6.6	6.0	5.6	5.1	4.7	4.3	4.0	3.7	3.4	3.1	2.9	2.6	2.4	2.2	2.1
8.0	8.8	8.2	7.6	7.0	6.4	5.9	5.4	5.0	4.6	4.2	3.9	3.6	3.3	3.0	2.8	2.6	2.4	2.2	2.0	1.9	1.7
8.1	7.2	6.8	6.3	5.8	5.3	4.9	4.5	4.1	3.8	3.5	3.2	3.0	2.7	2.5	2.3	2.1	2.0	1.8	1.7	1.5	1.4
8.2	6.0	5.6	5.2	4.8	4.4	4.0	3.7	3.4	3.1	2.9	2.7	2.4	2.3	2.1	1.9	1.8	1.6	1.5	1.4	1.3	1.2
8.3	4.9	4.6	4.2	3.9	3.6	3.3	3.1	2.8	2.6	2.4	2.2	2.0	1.9	1.7	1.6	1.4	1.3	1.2	1.1	1.0	1.0

Section Approved	Description of Revision	EPA Rationale

8.4	4.1	3.8	3.5	3.2	3.0	2.7	2.5	2.3	2.1	2.0	1.8	1.7	1.5	1.4	1.3	1.2	1.1	1.0	0.9	0.9	0.8
8.5	3.3	3.1	2.9	2.7	2.4	2.3	2.1	1.9	1.8	1.6	1.5	1.4	1.3	1.2	1.1	1.0	0.9	0.8	0.8	0.7	0.6
8.6	2.8	2.6	2.4	2.2	2.0	1.9	1.7	1.6	1.5	1.3	1.2	1.1	1.0	1.0	0.9	0.8	0.7	0.7	0.6	0.6	0.5
8.7	2.3	2.2	2.0	1.8	1.7	1.5	1.4	1.3	1.2	1.1	1.0	0.9	0.9	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.4
8.8	1.9	1.8	1.7	1.5	1.4	1.3	1.2	1.1	1.0	0.9	0.9	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.4
8.9	1.6	1.5	1.4	1.3	1.2	1.1	1.0	0.9	0.9	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.3	0.3
9.0	1.4	1.3	1.2	1.1	1.0	0.9	0.9	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.3

[1] The acute water quality criteria for total ammonia where salmonids are absent were calculated using the following

equation, which may also be used to calculate unlisted values: Acute water quality criteria for ammonia (salmonids absent) =

$$CMC = \left[0.7249 * \left(\frac{0.0114}{1+10^{7.204-pH}} + \frac{1.6181}{1+10^{pH-7.204}} \right) * MIN \begin{pmatrix} 51.93, \\ 23.12 * 10^{0.036*(20-T)} \end{pmatrix} \right]$$

Where MIN indicates the lesser of the two values separated by a comma.

(8) Table 3. Acute Water Quality Criteria for Freshwater Aquatic Life for Ammonia Where Salmonids May Be Present and Freshwater Mussels Are Absent (milligrams of nitrogen per liter)[1].

Temperature (°C)																	
pH	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

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6.5	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	32.6	31.4	28.9	26.6
6.6	31.3	31.3	31.3	31.3	31.3	31.3	31.3	31.3	31.3	31.3	31.3	31.3	31.3	31.3	31.3	30.1	27.7	25.5
6.7	29.8	29.8	29.8	29.8	29.8	29.8	29.8	29.8	29.8	29.8	29.8	29.8	29.8	29.8	29.8	28.7	26.4	24.3
6.8	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	27.0	24.9	22.9
6.9	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	25.2	23.2	21.3
7.0	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	23.2	21.4	19.7
7.1	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.1	19.5	17.9
7.2	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.0	17.5	16.1
7.3	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	16.9	15.5	14.3
7.4	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	14.8	13.6	12.5
7.5	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	12.8	11.8	10.8
7.6	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.0	10.1	9.3
7.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.3	8.5	7.9
7.8	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	7.8	7.2	6.6
7.9	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.5	6.0	5.5
8.0	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.4	5.0	4.6
8.1	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.5	4.1	3.8
8.2	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.7	3.4	3.1
8.3	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.0	2.8	2.6
8.4	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.5	2.3	2.1
8.5	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	1.9	1.7
8.6	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.6	1.4
8.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.3	1.2
8.8	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.0

Section Approved	Description of Revision	EPA Rationale

8.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.8
9.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.7

[1] The acute water quality criteria for total ammonia where salmonids are present and freshwater mussels

are absent were calculated using the following equation, which may also be used to calculate unlisted values:

Acute water quality criteria for ammonia (salmonids present and freshwater mussels absent) =CMC=

$$MIN\left[\left(\frac{0.275}{1+10^{7.204-pH}}+\frac{39}{1+10^{pH-7.204}}\right),\left(0.7249*\left(\frac{0.0114}{1+10^{7.204-pH}}+\frac{1.6181}{1+10^{pH-7.204}}\right)*(62.15*10^{0.036*(20-T)})\right)\right]$$

Where MIN indicates the lesser of the two values separated by a comma.

(9) Table 4. Acute Water Quality Criteria for Freshwater Aquatic Life for Ammonia Where Salmonids

Are Absent and Freshwater Mussels Are Absent (milligrams of nitrogen per liter)[1].

Temperature (°C)																	
pH	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
6.5	50.9	50.9	50.9	50.9	50.9	50.9	50.9	50.9	50.9	47.5	43.8	40.3	37.1	34.1	31.4	28.9	26.6
6.6	48.9	48.9	48.9	48.9	48.9	48.9	48.9	48.9	48.9	45.6	42.0	38.6	35.6	32.7	30.1	27.7	25.5
6.7	46.5	46.5	46.5	46.5	46.5	46.5	46.5	46.5	46.5	43.4	39.9	36.8	33.8	31.1	28.7	26.4	24.3
6.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.8	40.9	37.6	34.6	31.9	29.3	27.0	24.9	22.9
6.9	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8	38.1	35.1	32.3	29.7	27.4	25.2	23.2	21.3
7.0	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	35.1	32.3	29.8	27.4	25.2	23.2	21.4	19.7
7.1	34.3	34.3	34.3	34.3	34.3	34.3	34.3	34.3	34.3	32.0	29.4	27.1	24.9	23.0	21.1	19.5	17.9

Section Approved	Description of Revision	EPA Rationale

7.2	30.8	30.8	30.8	30.8	30.8	30.8	30.8	30.8	30.8	28.8	26.5	24.4	22.4	20.6	19.0	17.5	16.1
7.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	25.5	23.5	21.6	19.9	18.3	16.9	15.5	14.3
7.4	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	22.4	20.6	18.9	17.4	16.1	14.8	13.6	12.5
7.5	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	19.4	17.8	16.4	15.1	13.9	12.8	11.8	10.8
7.6	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8	16.6	15.3	14.0	12.9	11.9	11.0	10.1	9.3
7.7	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	14.1	12.9	11.9	11.0	10.1	9.3	8.5	7.9
7.8	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	11.8	10.9	10.0	9.2	8.5	7.8	7.2	6.6
7.9	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	9.9	9.1	8.4	7.7	7.1	6.5	6.0	5.5
8.0	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.2	7.5	6.9	6.4	5.9	5.4	5.0	4.6
8.1	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	6.8	6.2	5.7	5.3	4.9	4.5	4.1	3.8
8.2	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.6	5.1	4.7	4.3	4.0	3.7	3.4	3.1
8.3	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.6	4.2	3.9	3.6	3.3	3.0	2.8	2.6
8.4	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.8	3.5	3.2	2.9	2.7	2.5	2.3	2.1
8.5	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.1	2.9	2.6	2.4	2.2	2.1	1.9	1.7
8.6	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.6	2.4	2.2	2.0	1.9	1.7	1.6	1.4
8.7	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.1	2.0	1.8	1.7	1.5	1.4	1.3	1.2
8.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.7	1.5	1.4	1.3	1.2	1.1	1.0
8.9	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.4	1.3	1.2	1.1	1.0	0.9	0.8
9.0	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.2	1.1	1.0	0.9	0.9	0.8	0.7

[1] The acute water quality criteria for total ammonia where salmonids are absent and freshwater mussels

are absent were calculated using the following equation, which may also be used to calculate unlisted values:

Acute water quality criteria for ammonia (salmonids absent and freshwater mussels absent) = CMC=

Section Approved	Description of Revision	EPA Rationale
	$$\left[0.7249 * \left(\frac{0.0114}{1+10^{7.204-pH}} + \frac{1.6181}{1+10^{pH-7.204}}\right) * MIN\left(\begin{matrix}51.93, \\ 62.15 * 10^{0.036*(20-T)}\end{matrix}\right)\right]$$ Where MIN indicates the lesser of the two values separated by a comma.	
COMAR 26.08.02.03-2H(2)-(5) Acute Numeric Toxic Substance Criteria for Ammonia for the Protection of Fresh Water Aquatic Life.	These subsections indicate which tables of ammonia criteria for the protection of freshwater aquatic life are applicable to which State designated uses. Subsections (2) and (3) revisions are nonsubstantial rephrasing and renumbering, subsection (4) and (5) were added to accommodate the addition of "Absence of Freshwater Mussels" criteria. As approved, these provisions now read as follows: (2) Presence of Salmonid Fish. In Class III, III-P, IV, and IV-P waters, the concentration of total ammonia (in milligrams of nitrogen per liter) may not exceed the acute criterion listed in Table 1. (3) Absence of Salmonid Fish. In Class I and I-P waters, the concentration of total ammonia (in milligrams of nitrogen per liter) may not exceed the acute criterion listed in Table 2. (4) Presence of Salmonid Fish and Absence of Freshwater Mussels. In Class III, III-P, IV, and IV-P waters, the concentration of total ammonia (in milligrams of nitrogen per liter) may not exceed the acute criterion listed in Table 3. (5) Absence of Salmonid Fish and Absence of Freshwater Mussels. In Class I and I-P waters, the concentration of total ammonia (in milligrams of nitrogen per liter) may not exceed the acute criterion listed in Table 4.	EPA is approving these revisions as consistent with 40 CFR §131.11(a).

Section Approved	Description of Revision	EPA Rationale
COMAR 26.08.02.03-2I Chronic Numeric Toxic Substance Criteria for Ammonia for the Protection of Fresh Water Aquatic Life	The existing Table 2, which presented "Chronic Ammonia Criteria for Waters Where Freshwater Fish Early Life Stages Are Absent," and the equation that was used to calculate the criteria, which was presented as footnote 1, was deleted. Maryland adopted two new equations, one at subsection (6) for "Chronic Ammonia Criteria for Waters Where Freshwater Fish Early Life States Are Present and Freshwater mussels are absent" and another at subsection (7) for "Chronic Ammonia Criteria for Waters Where Freshwater Fish Early Life Stages Are Absent and Freshwater Mussels Are Absent." Tables based on those equations will be submitted to EPA at a later date and EPA will take its CWA 303(c) action on those tables at that time. Based on Maryland's submittal, EPA is approving the following equations: [1]The freshwater chronic water quality criteria for total ammonia where fish early life stages are present but freshwater mussels are absent were calculated using the following equation, which may also be used to calculate unlisted values: Freshwater chronic water quality criterion for ammonia (fish early life stages present and freshwater mussels absent) = CCC= $$\left[0.9405*\left(\frac{0.0278}{1+10^{7.688-pH}}+\frac{1.1994}{1+10^{pH-7.688}}\right)*MIN\left(\begin{matrix}6.920,\\ 7.547*10^{0.028*(20-T)}\end{matrix}\right)\right]$$ Where MIN indicates the lesser of the two values separated by a comma [1] The freshwater chronic water quality criteria for total ammonia where fish early life stages are absent and	Criteria consistent with EPA's recommended water quality criteria published in the *Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater 2013* (EPA 822-R-18-002).

Section Approved	Description of Revision	EPA Rationale
	freshwater mussels are absent were calculated using the following equation, which may also be used to calculate unlisted values: Freshwater chronic water quality criterion for ammonia (fish early life stages absent and freshwater mussels absent) = CCC= $\left(0.9405*\left(\frac{0.0278}{1+10^{7.688-pH}}+\frac{1.1994}{1+10^{pH-7.688}}\right)*\left(7.547*10^{0.028*(20-MAX(T,7))}\right)\right)$ Where MAX indicates the greater of the two values separated by a comma.	
COMAR 26.08.02.03-2I(3) Chronic Numeric Toxic Substance Criteria for Ammonia for the Protection of Fresh Water Aquatic Life	Incorporated by reference the document "Procedures for Applying the Mussel-Absent Ammonia Criteria to Maryland Surface Waters." Maryland requires documentation consistent with this guidance as a condition of using mussel-absent criteria.	EPA has reviewed this document and has determined that it will result in the accurate determination of the absence of mussels, and therefore the appropriate application of the mussel-absent ammonia criteria. This is consistent with 40 CFR §131.11(a).
COMAR 26.08.02.03-3C(8)(e)(v) and (vi)	Revise the Chesapeake Bay Mainstem Segment 4 Mesohaline (CB4MH) seasonal deep-water fish and shellfish subcategory dissolved oxygen restoration variance from 7 percent to 5 percent. Remove the Patapsco River Mesohaline (PATMH) seasonal deep-water fish and shellfish subcategory dissolved oxygen restoration variance of 7 percent.	Restoration variances are being updated consistent with the latest science and analysis of the 2017 Midpoint Assessment

Section Approved	Description of Revision	EPA Rationale
Water Quality Criteria Specific to Designated Uses: Criteria for Class II Waters Seasonal Deep-Water Fish and Shellfish Subcategory		(MPA) required by the 2010 Chesapeake Bay TMDL. (https://www.epa.gov/chesapeake-bay-tmdl/chesapeake-bay-tmdl-midpoint-assessment)
COMAR 26.08.02.03-3C(8)(f)(ii) and (iii) Water Quality Criteria Specific to Designated Uses: Criteria for Class II Waters Seasonal Deep-Channel	Revise the Chesapeake Bay Mainstem Segment 4 Mesohaline (CB4MH) deep-channel refuge subcategory dissolved oxygen restoration variance from 2 percent to 6 percent. Remove the lower Chester River Mesohaline (CHSMH) deep-channel refuge subcategory dissolved oxygen restoration variance of 16 percent.	Restoration variances are being updated consistent with the latest science and analysis of the 2017 Midpoint Assessment (MPA) required by the 2010 Chesapeake Bay TMDL.

Section Approved	Description of Revision	EPA Rationale
Refuge Subcategory		
COMAR 26.08.02.03-3C(8)(g) Water Quality Criteria Specific to Designated Uses: Criteria for Class II Waters Implementation of the Dissolved Oxygen Water Quality Standard	Incorporating by reference the 2017 Addendum to the "Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and Its Tidal Tributaries"	The incorporated document replaces and supersedes portions of the previously incorporated addenda.
COMAR 26.08.02.04B Antidegradation Policy	Added "Consistent with the Federal Act, existing uses and the level of water quality necessary to protect existing uses for any water body shall be maintained"	New provision is consistent with 40 CFR § 131.12(a)(1)
COMAR 26.08.02.04E	Revised provision [The Department shall discourage the downgrading of any stream from a designated use with more stringent criteria to one with less stringent criteria. Downgrading may only be considered if:] *The Department shall ensure that existing uses are maintained and protected and support changes to designated uses and associated criteria in any circumstances where the designated use and criteria do not reflect and protect uses that are being attained. Changes in designated uses and associated criteria to less stringent uses and criteria may only be undertaken when:*	Revision is consistent with 40 CFR §131.10(g)

Section Approved	Description of Revision	EPA Rationale
COMAR 26.08.02.04-1 Antidegradation Policy Implementation Procedures	Maryland relocated its Tier II antidegradation implementation procedures to COMAR 26.08.02.04-2 and added provisions to protect Tier I existing uses. *Antidegradation Policy Implementation Procedures: Tier I Level of Protection – Existing Uses and Designated Uses.* *A. All waters of the State shall receive Tier I protection which requires the protection and maintenance of existing uses and designated uses.* *B. Protections. Waters that have demonstrated an existing use that is not protected by the water quality criteria specified for the current designated use for this water body shall be protected so as to maintain the existing use and the water quality necessary to protect the existing use.* *C. Implementation of the Tier I level of Protection for Cold Water Existing Uses. The determination and protection of cold water existing uses in Maryland will be implemented according to the "Cold Water Existing Use Determinations: Policy and Procedures (Maryland Department of the Environment, May 12, 2021)", which is incorporated by reference.* *D. Compilation and Maintenance of the List of Waters with Existing Uses. The Department shall compile and maintain, on its website, a public list of the waters with an existing use that is not protected by the currently designated use and associated water quality criteria.*	Maryland is adding implementation procedures for the protection of Tier 1 waters where an existing use is not protected by the designated use, but the waters do not yet meet the requirements of a more protective use classification. New provisions are consistent with 40 CFR § 131.12(a)(1) & (b).
COMAR 26.08.02.04-2 Antidegradation Policy Implementation Procedures:	Removed: One Tier II stream segment was removed from the list of Tier II waters due to a locational error where monitoring stations had incorrect coordinates. Table 1. Stream segment removed from the list of Tier II waters.	Revisions are consistent with 40 CFR § 131.12(a)(2) and the State's policy and implementation procedures.

<table>
<tr><th>Section Approved</th><th>Description of Revision</th><th>EPA Rationale</th></tr>
<tr><td>Tier II Level of Protection – High Quality Waters.</td><td>
<table>
<tr><th>Tier II Stream Name</th><th>County</th><th>From Lat</th><th>From Long</th><th>To Lat</th><th>To Long</th><th>Reason for Adjustment</th><th>Summary</th></tr>
<tr><td>Bear Creek 1</td><td>Garrett</td><td>39.65018</td><td>-79.28886</td><td>39.65046</td><td>-79.298011</td><td>Location correction</td><td>Several sampling events with high scores were incorrectly shown on an adjacent stream segment. Stream should not have been designated as Tier II.|</td></tr>
</table>
</td><td></td></tr>
<tr><td>COMAR 26.08.02.04-2

Antidegradation Policy Implementation Procedures: Tier II Level of Protection – High Quality Waters.</td><td>Correction: The baseline scores of 3 Tier II stream segments were corrected and 2 Tier II stream segments that were erroneously removed during past regulatory changes are being re-included.

Table 2. Tier II stream segments with baseline score corrections.
<table>
<tr><th>Tier II Stream Name</th><th>County</th><th>From Lat</th><th>From Long</th><th>To Lat</th><th>To Long</th><th>Reason for Adjustment</th><th>Summary</th></tr>
</table>
</td><td>Revisions are consistent with 40 CFR § 131.12(a)(2) and the State's policy and implementation procedures.</td></tr>
</table>

<table>
<tr><th>Section Approved</th><th>Description of Revision</th><th>EPA Rationale</th></tr>
<tr><td></td><td>
<table>
<tr><td>Bear Creek 4</td><td>Garrett</td><td>39.56476</td><td>-79.32195</td><td>39.65018</td><td>-79.28886</td><td>Baseline Score Correction</td><td>A site with high scores was missing from original calculations. When correctly added to the average for Bear Creek 4, the baseline scores changed.</td></tr>
<tr><td>Principio Creek UT 1</td><td>Cecil</td><td>39.61544</td><td>-76.05885</td><td>39.60709</td><td>-76.03070</td><td>Baseline Score Correction</td><td>Recalculated baseline score to reflect year of designation in accordance with sampling events used to calculate scores.</td></tr>
<tr><td>Timber Run 1</td><td>Baltimore Co.</td><td>39.44400</td><td>-76.84151</td><td>39.43794</td><td>-76.86878</td><td>Baseline Score Correction</td><td>Baseline FIBI corrected to 4.57 instead of the current 4.67 score due to a transcription error.</td></tr>
</table>
</td><td></td></tr>
<tr><td>COMAR 26.08.02.04-2

Antidegradation Policy Implementation Procedures: Tier II Level</td><td>Correction:

Table 3. Stream segments erroneously removed from Tier II list in 2018 and now being re-included.</td><td>Revisions are consistent with 40 CFR § 131.12(a)(2) and the State’s policy and implementation procedures.</td></tr>
</table>

<table>
<tr><th>Section Approved</th><th>Description of Revision</th><th>EPA Rationale</th></tr>
<tr><td>of Protection – High Quality Waters.</td><td>
<table>
<tr><th>Tier II Stream Name</th><th>County</th><th>From Lat</th><th>From Long</th><th>To Lat</th><th>To Long</th><th>Reason for Adjustment</th><th>Summary</th></tr>
<tr><td>North Branch Patapsco River UT 2</td><td>Baltimore Co.</td><td>39.494629</td><td>-76.86357</td><td>39.49571</td><td>-76.837947</td><td>Erroneously removed from the Tier II list in 2018</td><td>This Tier II water was erroneously removed from the Tier II list. Re-evaluation confirmed Tier II designation</td></tr>
<tr><td>Saint Clements Creek 2</td><td>Saint Mary’s</td><td>38.358656</td><td>-76.727069</td><td>38.34856</td><td>-76.73058</td><td>Erroneously removed from the Tier II list in 2018</td><td>This Tier II water was erroneously removed from the Tier II list. Re-evaluation confirmed Tier II designation.</td></tr>
</table>
</td><td></td></tr>
<tr><td>COMAR 26.08.02.04-2

Antidegradation Policy Implementation Procedures:</td><td>Added: Eleven Tier II segments were added to the list of Tier II waters based on recently assessed data that demonstrated high indices of biotic integrity scores.

Table 4. New Tier II Stream segments.</td><td>Revisions are consistent with 40 CFR § 131.12(a)(2) and the State’s policy and implementation procedures.</td></tr>
</table>

<table>
<tr><th>Section Approved</th><th>Description of Revision</th><th>EPA Rationale</th></tr>
<tr><td>Tier II Level of Protection – High Quality Waters.</td><td>
<table>
<tr><th>Tier II Stream Name</th><th>County</th><th>From Lat</th><th>From Long</th><th>To Lat</th><th>To Long</th><th>Reason for Adjustment</th><th>Summary</th></tr>
<tr><td>Laurel Run 1</td><td>Garrett</td><td>39.688371</td><td>-79.449636</td><td>39.6877</td><td>-79.439537</td><td>Newly identified Tier II stream</td><td>Recently collected data demonstrates high quality water (BIBI and FIBI≥4.00) justifying Tier II designation.</td></tr>
<tr><td>Sand Spring Run 1</td><td>Garrett</td><td>39.257794</td><td>-79.473281</td><td>39.272048</td><td>-79.474658</td><td>Newly identified Tier II stream</td><td>Recently collected data demonstrates high quality water (BIBI and FIBI≥4.00) justifying Tier II designation</td></tr>
<tr><td>Bush Cabin Run 1</td><td>Baltimore</td><td>39.599083</td><td>-76.707107</td><td>39.61048</td><td>-76.681793</td><td>Newly identified Tier II stream</td><td>Recently collected data demonstrates high quality water (BIBI and FIBI≥4.00) justifying Tier II designation</td></tr>
</table>
</td><td></td></tr>
</table>

	Deer Creek 1	Baltimore	39.713068	-76.597628	39.70742	-76.590096	Newly identified Tier II stream	Recently collected data demonstrates high quality water (BIBI and FIBI≥4.00) justifying Tier II designation		
	Deer Creek 9	Baltimore	39.72117	-76.609265	39.713068	-76.597628	Newly identified Tier II stream	Recently collected data demonstrates high quality water (BIBI and FIBI≥4.00) justifying Tier II designation		
	Mill Run 5	Charles	38.52755	-77.078741	38.52029	-77.090089	Newly identified Tier II stream	Recently collected data demonstrates high quality water (BIBI and FIBI≥4.00) justifying Tier II designation		
	Timothy Branch 1	Prince George's	38.710667	-76.854371	38.664667	-76.878959	Newly identified Tier II stream	Recently collected data demonstrates high quality water (BIBI and FIBI≥4.00) justifying Tier II designation		
	Wilson Owens Branch 1	Anne Arundel	38.825626	-76.68624	38.825834	-76.697119	Newly identified Tier II stream	Recently collected data demonstrates high quality water (BIBI and FIBI≥4.00) justifying Tier II designation		

Section Approved	Description of Revision								EPA Rationale
	District Branch 1	Prince George's	38.866772	-76.719393	38.854804	-76.691683	Newly identified Tier II stream	Recently collected data demonstrates high quality water (BIBI and FIBI≥4.00) justifying Tier II designation	
	Morgan Creek UT 1	Kent	39.306198	-76.016172	39.289815	-76.020911	Newly identified Tier II stream	Recently collected data demonstrates high quality water (BIBI and FIBI≥4.00) justifying Tier II designation	
	Fannels Branch 1	Kent	39.189562	-76.107898	39.187236	-76.113317	Newly identified Tier II stream	Recently collected data demonstrates high quality water (BIBI and FIBI≥4.00) justifying Tier II designation	

Table 2: General Non-Substantive Changes

Throughout Maryland's revised WQS regulation submission, informational, terminology, and formatting changes were made. Such updating or maintenance of regulations is important over time. These revisions (e.g., formatting, minor language adjustments and correction of typographical errors) aid the structure, readability, and interpretation of the state's WQS. While EPA recognizes that these revisions do not make significant substantive changes, EPA is approving the revisions to ensure public transparency as to which

provisions are effective for CWA purposes. EPA notes that its actions on these non-substantive changes to the previously approved WQS do not constitute action on the underlying previously approved WQS.

Renumbering of provisions and tables throughout the submission to accommodate the addition or deletion of regulation are not specifically noted here but are nonsubstantial revisions and considered approved.

Section Approved	**Description of Revision**
COMAR 26.08.02.02-1F(2) and G(3) Support of Estuarine and Marine Aquatic Life and Shellfish Harvesting	Amendments were made to correct the references made to the applicable designated uses during the October 1 - May 31 time frame.
COMAR 26.08.02.07E	Maryland deleted this provision as it was a placeholder for existing use determinations. No determinations were ever listed in regulation and will now be maintained and accessible on MDE's website [see COMAR 26.08.02.08A(6)]
COMAR 26.08.02.08 Stream Segment Designations	Throughout this provision, minor typos in geographic coordinates (i.e., occurrences of double hyphens) were corrected; In the Youghiogheny River Area Sub-Basin (05-02-02), North and South Branches of the Casselman River and all tributaries, "Ups" corrected to "Upstream."
COMAR 26.08.02.08.K Patapsco River Area	Minor revision to (1)(b) to reflect that several of the waterbodies in this provision were redesignated to Class III-P.
COMAR 26.08.02.03-2	This footnote was removed for arsenic because it was added in error as the criteria were never in fact hardness based.

<table>
<tr><th>Section Approved</th><th>Description of Revision</th></tr>
<tr><td>Numerical Criteria for Toxic Substances Waters

Table 1</td><td>
<table>
<tr><th rowspan="2">Substance</th><th rowspan="2">CAS#</th><th colspan="6">Aquatic Life (µg/L)</th><th colspan="3">Human Health for Consumption of:</th></tr>
<tr><th colspan="2">Fresh Water</th><th colspan="2">Estuarine Water</th><th colspan="2">Salt Water</th><th>Drinking Water + Organism (µg/L)</th><th>Organism Only (µg/L)</th><th>Drinking Water MCL (mg/L)</th></tr>
<tr><th>Acute</th><th>Chronic</th><th>Acute</th><th>Chronic</th><th>Acute</th><th>Chronic</th><th></th><th></th><th></th></tr>
<tr><td>Arsenic[1]</td><td>7440382</td><td>340</td><td>150</td><td></td><td></td><td>69</td><td>36</td><td>0.18[d]</td><td>1.4[a,d]</td><td>0.010</td></tr>
</table>
</td></tr>
<tr><td>COMAR 26.08.02.03-2 Numerical Criteria for Toxic Substances Waters

Table 4, Footnote 1</td><td>Correction of a misspelling of “dichlorobromomethane”</td></tr>
<tr><td>COMAR 26.08.02.03-2 Numerical Criteria for Toxic Substances Waters

Table 1</td><td>Footnote “d” added to Table 1, and then throughout the Table where applicable to indicate a criterion that is based on a carcinogenic risk level of 10^{-5}</td></tr>
<tr><td>COMAR 26.08.02.03-2 Numerical Criteria for Toxic Substances Waters

Tables 4, 5, & 6</td><td>Footnote “a” added to Tables 4, 5 & 6, and then throughout the Tables where applicable to indicate a criterion that is based on a carcinogenic risk level of 10^{-5}:</td></tr>
<tr><td>COMAR 26.08.02.03-2 Numerical Criteria for Toxic Substances Waters</td><td>Tables were added to codify the coefficients used to calculate hardness-based metals aquatic life criteria as well as the conversion factors for dissolved metals.</td></tr>
</table>

<table>
<tr><th>Section Approved</th><th>Description of Revision</th></tr>
<tr><td>Tables 2 & 3</td><td>

*(2) Table 2. Coefficients Used to Adjust Applicable Numerical Toxic Substance Fresh Water Aquatic Life Criteria.**

Substance	*CAS#*	*mA*	*bA*	*mC*	*bC*
Cadmium	*7440439*	*0.9789*	*-3.866*	*0.7977*	*-3.909*
Chromium III	*16065831*	*0.8190*	*3.7256*	*0.8190*	*0.6848*
Lead	*7439921*	*1.273*	*-1.460*	*1.273*	*-4.705*
Nickel	*7440020*	*0.8460*	*2.255*	*0.8460*	*0.0584*
Silver	*7440224*	*1.72*	*-6.59*	*-*	*-*
Zinc	*7440666*	*0.8473*	*0.884*	*0.8473*	*0.884*

(3) Table 3. Conversion Factors Used to Adjust Applicable Numerical Toxic Substance Fresh Water Aquatic Life Criteria.

Substance	*CAS#*	*Freshwater Acute Conversion Factor (CF)*	*Freshwater Chronic Conversion Factor (CF)*
Cadmium	*7440439*	*1.136672-LN(Hardness)*0.041838*	*1.101672-LN(Hardness)*0.041838*
Chromium III	*16065831*	*0.316*	*0.86*
Lead	*7439921*	*1.46203-LN(Hardness)*0.145712*	*1.46203-LN(Hardness)*0.145712*
Nickel	*7440020*	*0.998*	*0.997*
Silver	*7440224*	*0.85*	*-*
Zinc	*7440666*	*0.978*	*0.986*

**Hardness-dependent criteria may be calculated from the following:*

$$Acute\ Criteria = e^{mA*LN(hardness)+bA} * CF$$

$$Chronic\ Criteria = e^{mC*LN(hardness)+bC} * CF$$

</td></tr>
<tr><td>COMAR 26.08.02.03-2 Numerical Criteria for Toxic Substances Waters

Table 6</td><td>Correct CAS # for Atrazine to 1912249</td></tr>
<tr><td>COMAR 26.08.02.03-3C(8)(b)(i)</td><td>Clarification added as to when the 7-day average dissolved oxygen criterion applies to the Seasonal and Migratory Fish Spawning and Nursery subcategory designated use (i.e., only when salinities are less than or equal to 0.5 parts per thousand).</td></tr>
</table>

Section Approved	Description of Revision
Water Quality Criteria Specific to Designated Uses Dissolved Oxygen Criteria for Class II Waters	
COMAR 26.08.02.03-3(9)(d) SAV No Grow Zones	Correcting a typo for Chesapeake Bay segment Upper Nanticoke River (NANTF)
COMAR 26.08.02.04A Antidegradation Policy	The term “Class” is replaced with “Use Class Designations” to be consistent with revisions made in the last Triennial Review.
COMAR 26.08.02.04H Maryland’s Antidegradation Procedure Flow Chart	Flow chart relocated without modification from Maryland’s Antidegradation Policy Implementation Procedures to its Antidegradation Policy.

Enclosure 2

Under Section 7 of the Endangered Species Act (ESA), 42 U.S.C. §1536, EPA must ensure that the Agency's approval of modifications to a State's water quality standards (WQS) regulation will not jeopardize the continued existence of Federally listed threatened and endangered species and their critical habitat. EPA fulfills this obligation by preparing biological evaluations of the new or revised provisions.

For Maryland's 2023 adoption of new and revised WQS regulations, EPA prepared a biological evaluation of Maryland's regulation and concluded that EPA's approval is not likely to adversely affect listed species and their critical habitat due to revised cadmium and ammonia aquatic life criteria. The Greater Atlantic Regional Fisheries Office of NOAA National Marine Fisheries Service (NOAA Fisheries) issued a letter on December 19, 2022 which determined that formal consultation was required for the proposed aquatic life criteria for cadmium and ammonia. On April 28, 2023, NOAA issued a biological opinion (BiOp) (Consultation Tracking No. OPR-2022-030402). That BiOp concluded that EPA's action to approve Maryland's acute cadmium criterion, and acute and chronic ammonia criteria are not likely to adversely affect ESA-listed species under NOAA Fisheries jurisdiction. The BiOp also concluded that EPA's action to approve Maryland's revised freshwater chronic cadmium criterion is likely to adversely affect, but is not likely to jeopardize, the continued existence of shortnose sturgeon or the Chesapeake Bay Distinct Population Segments (DPSs) of Atlantic sturgeon. NOAA Fisheries also issued an incidental take statement in accordance with ESA Section 7(a)(2).

NOAA Fisheries' BiOp required two reasonable and prudent measures (RPMs) as necessary and appropriate to minimize the impacts of incidental take due to the chronic cadmium criterion. The details of the RPMs and the terms and conditions to implement the RPMs (April 28, 2023 BiOp. P. 121) are excerpted below.

12.2 Reasonable and Prudent Measures

"Reasonable and prudent measures" are measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take. (50 CFR 402.02). Section 7(b)(4) of the ESA requires that when a proposed agency action is found to be consistent with section 7(a)(2) of the ESA and the proposed action may incidentally take individuals of ESA-listed species, NMFS will issue a statement that specifies the impact of any incidental taking of endangered or threatened species. NMFS believes the RPMs described below are necessary and appropriate to minimize the impacts of incidental take on threatened and endangered species resulting from exposure to cadmium within the freshwater chronic criterion limits:

1 EPA Region 3, Water Division will work within its authorities to ensure that the implementation of water quality standards for ammonia and cadmium adopted by Maryland,

and ammonia, cadmium, and nonylphenol adopted by Delaware, minimize aggregate adverse effects to ESA-listed species and designated critical habitat under NMFS' jurisdiction.

2 EPA Region 3 will ensure that persons applying EPA-approved standards in regulatory actions and those who are subject to regulations applying EPA-approved standards are aware of the prohibition of take of ESA-listed species under section 9 of the ESA and where ESA-listed species under NMFS' jurisdiction occur.

12.3 Terms and Conditions

In addition to RPMs, section 7(b)(4) of the ESA requires the Services to identify terms and conditions (including, but not limited to reporting requirements) that must be complied with by the Federal agency or applicant, or both, to implement the RPMs. Only incidental take resulting from the agency actions that is in compliance with the terms and conditions identified in the incidental take statement are exempt from the taking prohibition of section 9(a), pursuant to section 7(o) of the ESA. Therefore, to be exempt from the ESA prohibitions of take, the EPA must comply with the following terms and conditions, which implement the RPMs described above. These include the take minimization, monitoring and reporting measures required by the section 7 regulations (50 C.F.R. § 402.14(i)). As stated above, these terms and conditions are non-discretionary in order for the EPA to be exempt from the ESA prohibition against take. If EPA fails to ensure compliance with these terms and conditions and their implementing reasonable and prudent measures, the protective coverage of section 7(o)(2) may lapse.

TERMS AND CONDITIONS FOR RPM 1:

In order to be exempt from the prohibitions of section 9 of the ESA, the Federal action agency must comply with the following terms and conditions. The EPA Region 3, Water Division shall achieve RPM 1 by providing guidance to DNREC and MDE on use of the revised criteria in NPDES permits for new sources and existing NPDES permits upon renewal, by encouraging monitoring to identify and address impairments, and by participating in sustained attention to water quality within waters where Atlantic and shortnose sturgeon occur. Specifically:

1) The EPA Water Division will notify the MDE, DNREC, and EPA-Region 3 NPDES Permit Branch of: 1) updated water quality criteria for ammonia, cadmium, and nonylphenol, and 2) the importance of compliance with permit limits based on such criteria in all NPDES permits, including general permits, to protect threatened and endangered species, including the Atlantic and shortnose sturgeon.

2) EPA Guidance to MDE and DNREC:

   a) EPA will strongly encourage MDE to monitor ammonia and cadmium, and DNREC to monitor ammonia, cadmium, and nonylphenol in areas where ESA-listed Atlantic and shortnose sturgeon occur.

   b) If EPA becomes aware of new information that indicates revisions to criteria subject to this consultation may be necessary to protect threatened and endangered species, EPA

will work with Maryland and Delaware regulatory authorities to revise water quality standards or take other actions, as appropriate.

3) Baseline Water Quality Review

   a) Within 6 months of the signature of the Biological Opinion, EPA will collaborate with NMFS on the development of a baseline water quality condition review for those stressors addressed in this consultation in waters where Atlantic and shortnose sturgeon occur.

   b) Thereafter, EPA will meet with NMFS at least biennially, for at least a period of 6 years, but not to exceed a period of 12 years, to review water quality conditions for those stressors addressed in this consultation potentially affecting Atlantic and shortnose sturgeon and discuss changes in water quality, gaps in information regarding water quality, and approaches to resolving those gaps.

TERMS AND CONDITIONS FOR RPM 2:

1) EPA Region 3 Water Division will support other EPA Region 3 branches applying EPA-approved criteria subject to this consultation in providing notice of EPA's obligations under the ESA in its communications, as appropriate, including, but not limited to, 303(c) decision letters, NPDES permit reviews and decisions, permit application materials, training, and/or informational websites. Such notice shall contain the following:

   a) Section 7(a)(2) of the ESA requires Federal agencies to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their designated and proposed critical habitat.

   b) Take of ESA-listed endangered species is prohibited under section 9 of the ESA, and these prohibitions apply to all individuals, organizations, and agencies subject to United States jurisdiction. These take prohibitions have also been extended to the Gulf of Maine DPS of Atlantic Sturgeon under section 4(d) of the ESA (50 CFR §223.211).

   c) "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct 16 U.S.C. 1532(19). "Harm" for purposes of the ESA is further defined by regulation to mean "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering" 50 CFR §222.102.

   d) Endangered shortnose sturgeon, threatened Gulf of Maine Atlantic sturgeon, and the endangered New York Bight, Chesapeake Bay, South Atlantic, and Carolina DPSs of Atlantic sturgeon may spawn, migrate, and forage within accessible inland rivers, estuaries, and coastal waters from Canada to Florida. The species may occur in the following waters of Maryland: Anacostia River, Chesapeake Bay, Choptank River,

C&D Canal, Nanticoke River including Marshyhope Creek, Patuxent River, Pocomoke River, Potomac River, St. Marys River, Susquehanna River, and Wicomico River and waters of Delaware: Chesapeake Bay, Delaware Bay, Delaware River including C&D canal, and Nanticoke River including Broad Creek. Poor water quality is among the most significant threats to the species due to harm to offspring development. Sensitive early life stages may occur in the following waters of Maryland: Potomac River and Nanticoke River, including Marshyhope Creek and Delaware: Chesapeake Bay, Delaware Bay, Delaware River including C&D canal, and Nanticoke River, including Broad Creek.