



## Delaware River Basin Commission

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**Steven J. Tambini, P.E.**

Executive Director

October 17, 2022

***Via First Class U.S. Mail***

Michael S. Regan, Administrator  
Janet McCabe, Deputy Administrator  
U.S. Environmental Protection Agency Headquarters  
1200 Pennsylvania Avenue, NW  
Mail Code: 1101A  
Washington, D.C. 20460

RE: Rulemaking Petition to Revise the Designated Uses and Dissolved Oxygen Criteria for Three Zones of the Delaware Estuary

Dear Administrator Regan and Deputy Administrator McCabe:

The Delaware River Basin Commission (“DRBC” or “Commission”) has a long history of working collaboratively with the U.S. Environmental Protection Agency (“EPA”) and the DRBC’s state and federal members to successfully support Clean Water Act goals for the interstate Delaware River. DRBC continues to be focused and fully invested in updating water quality standards for the river consistent with the states’ Clean Water Act obligations. The Commission is equally committed to charting a path for measurable water quality improvement in these waters based on sound science.

A group of organizations (“Petitioners”) have asked EPA to by-pass ongoing DRBC processes and undertake an independent EPA-led action to upgrade aquatic life designated uses and dissolved oxygen (“DO”) criteria for a portion of the Delaware River Estuary. As we relate in detail below, the standards revision process is well under way by means of collective action of the basin states and the United States through the DRBC. In addition to summarizing the results of that process, this letter informs EPA of inaccuracies and misrepresentations in the Petitioners’ submission.

The petition was delivered to EPA in April 2022. Since then, DRBC has continued on plan and on schedule to deliver the comprehensive engineering and scientific analyses, accompanied by high level cost and socioeconomic evaluations, that the DRBC Commissioners by Resolution No. 2017-4 (as amended in September 2020) unanimously directed the staff to perform.<sup>1</sup> DRBC is continuing with the next steps in its rulemaking process. Although the Commission believes that its process is the best mechanism for

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<sup>1</sup> DRBC, Resolution No. 2017-4 (Sept. 13, 2017), available at:

[https://www.state.nj.us/drbc/library/documents/Res2017-04\\_EstuaryExistingUse.pdf](https://www.state.nj.us/drbc/library/documents/Res2017-04_EstuaryExistingUse.pdf). Resolution No. 2017-4 was amended by DRBC, Resolution for the Minutes of September 10, 2020, available at:

[https://www.nj.gov/drbc/library/documents/ResForMinutes091020\\_EstuaryDesignatedUse.pdf](https://www.nj.gov/drbc/library/documents/ResForMinutes091020_EstuaryDesignatedUse.pdf)

achieving a science-based upgrade of the designated aquatic life uses and criteria for the Estuary consistent with CWA requirements, should EPA choose to proceed under its separate rulemaking authority, the Commission's position is that the comprehensive studies completed by the DRBC should be fully considered.

**The Commission's milestone draft report, *Analysis of Attainability: Improving Dissolved Oxygen and Aquatic Life Uses in the Delaware River Estuary*, was released on September 30, 2022.**

By Resolution No. 2017-4, the Commission directed the DRBC staff to initiate a rulemaking process to revise the aquatic life uses of the Delaware River Estuary and the water quality criteria necessary to protect these uses, with the understanding that before new standards could be proposed or finalized, additional studies were needed to support rulemaking. On September 30, 2022, the Commission issued its draft report, *Analysis of Attainability: Improving Dissolved Oxygen and Aquatic Life Uses in the Delaware River Estuary* ("AA Report"), with supporting publications, representing substantial completion of this work.<sup>2</sup> The AA Report is the culmination of five years of intensive study involving scientific and technical expertise across multiple disciplines. A linked, three-dimensional hydrodynamic and eutrophication model for the Estuary has been developed and fully calibrated. DRBC scientists have utilized this powerful tool to evaluate the DO improvements achievable through control of pollutant sources to enhance DO conditions in the 38-mile reach of the Estuary for which ambient conditions and applicable standards currently do not support propagation. Multiple sensitivity and future condition test scenario simulations were performed to identify key variables and sources, in particular, for addressing the seasonal DO "sag" around Philadelphia and Camden.

DRBC's analysis identifies the highest attainable dissolved oxygen ("HADO") condition for the compromised reach of the Delaware Estuary and the management scenario capable of achieving that condition. More than a paper exercise, the results illuminate the path forward for real and measurable improvements in Estuary water quality and the propagation of resident fish.

The Commission's directive of 2017 emphasized the importance of a collaborative process informed by technical studies and specialized scientific and engineering expertise. From the outset, DRBC staff have drawn on the expertise of the Commission's member agencies and the basin community through the DRBC's Water Quality Advisory Committee ("WQAC" or "Committee"), meetings with co-regulators, and consultation with a panel of highly qualified experts.<sup>3</sup> The WQAC is comprised of representatives from

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<sup>2</sup> DRBC, *Analysis of Attainability: Improving Dissolved Oxygen and Aquatic Life Uses in the Delaware River Estuary* (Draft) (Sept. 2022), accessed at: [DRAFTsept2022.pdf \(nj.gov\)](#). For supporting draft and final publications issued on September 30, 2022 or previously, see: [https://www.state.nj.us/drbc/about/advisory/WQAC\\_index.html#AA](https://www.state.nj.us/drbc/about/advisory/WQAC_index.html#AA).

<sup>3</sup> The Commission's model development expert panel as authorized by DRBC Resolution No. 2012-7 included Dr. Victor Bierman of LimnoTech, Carl Cerco of the U.S. Army Corps of Engineers, Dr. Robert Chant of Rutgers University,

DRBC's state and federal partner agencies including EPA Regions 2 and 3, the industrial and municipal regulated community, environmental groups, local watershed organizations, and academia.<sup>4</sup> Meetings of the Committee are announced in advance and open to the public. Since September 2017, the WQAC has met twenty-one times, including monthly from April through September 2022, to share and discuss baseline design conditions, assumptions, scenario development, evaluation metrics, findings, and overall progress of the analysis and supporting studies. Staff have had a similar level of interaction with co-regulators and with the expert panel. As necessary, staff met with dischargers individually to gather more reliable information and to improve assumptions used in the work.

The key results presented in staff's AA Report are summarized below.

*Highest attainable DO condition.* The Commission's analysis describes the highest attainable DO achievable in the 38-mile reach of the Estuary comprising Water Quality Management and Assessment Zones 3, 4 and the upper portion of Zone 5 of the Estuary, referred to in the AA Report as the Fish Maintenance Area ("FMA"). The HADO was determined based upon 2012 hydrologic and temperature conditions that caused the lowest DO condition seen in the last twelve years, and with the following additional assumptions: each modeled facility discharges constantly at its permitted flow and median observed ammonia and DO concentrations (based on data for May through October, 2018-2019); long term CSO control plans are fully implemented; nine key discharges are characterized by effluent DO of 4 mg/L and lower than 1.5 mg/L summertime (May through October) effluent ammonia nitrogen; and an additional 10 percent ammonia load is assumed as reserve capacity for all 67 modeled point source discharges. Under the HADO condition:

- The minimum DO concentration at the lowest point of the Estuary DO sag is increased by approximately 2.3 mg/L to approximately 4.5 mg/L.
- The lowest point of the DO sag moves upstream approximately 10 miles to around RM 100.

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and Dr. Steven Chapra of Tufts University. The panel's original focus was nutrients. After publication of the DRBC's existing use evaluation in 2015, *infra* note 30, the focus of model development shifted to DO. At this point, DRBC applied for and was awarded a grant from the William Penn Foundation and used a portion of the proceeds to engage Dr. Bierman as a consultant on the project. Tim Wool, an environmental scientist with EPA Region 4 (now retired), who at the time was maintaining the source codes of the Water Quality Analysis Simulation Program model employed by DRBC for the project, took Dr. Bierman's place. The panel has since been comprised of Carl Cerco, Bob Chant, Steven Chapra and Tim Wool.

<sup>4</sup> Membership of the WQAC, along with committee meeting minutes, presentations, and related information, is available at: [https://www.state.nj.us/drbc/about/advisory/WQAC\\_index.html](https://www.state.nj.us/drbc/about/advisory/WQAC_index.html). WQAC members from EPA are Brent Gaylord, Water Quality Standards Coordinator, Region 2, and Kuo-Liang Lai, P.E., Office of Standards, Assessment, and TMDLs, Region 3, both of whom also participate on a co-regulator group focused on the aquatic life designated use work and comprised of lead technical staff of DRBC, the environmental protection agencies of Delaware, New Jersey and Pennsylvania, EPA Regions 2 and 3, and EPA Headquarters.

- DO achieves 4.5 mg/L or better 100% of the time<sup>5</sup> throughout the FMA. DO of 4.5 mg/L is currently exceeded only about 50% of the time within the DO sag.
- DO achieves 5.0 mg/L or better throughout the FMA at least 83% of the time.
- DO achieves 6.0 mg/L or better throughout the FMA at least 62% of the time.
- DO achieves 7.0 mg/L or better throughout the FMA at least 50% of the time.

*Technically feasible advanced treatment for only nine (9) of 67 discharges.* DO sensitivity simulations for individual sources and source categories identified thirteen (13) wastewater discharges out of the 67 included in the linked hydrodynamic and water quality model as potentially impactful and manageable sources. Sequential model simulations evaluated the incremental and cumulative impacts of these discharges on Estuary DO. Through this process, nine (9) wastewater discharges from among the thirteen were identified as contributing to low DO in the 38-mile reach referred to as the FMA. Together, these nine contribute 96 percent of the total ammonia nitrogen load discharged to the Estuary by wastewater treatment point sources.

Under the pollutant reduction scenario required to achieve the HADO:<sup>6</sup> (a) effluent ammonia nitrogen concentration from seven (7) wastewater treatment plants<sup>7</sup> discharging directly to Water Quality Zones 3, 4 and upper Zone 5 of the Estuary is reduced to a level of 1.5 mg/L;<sup>8</sup> (b) effluent ammonia nitrogen concentration from two (2) wastewater treatment plants<sup>9</sup> located in Water Quality Zone 2 is reduced to

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<sup>5</sup> References to “percent of time” over particular DO values are based on predicted DO concentrations from May 1 through October 15, the season important to juvenile fish development that is susceptible to periods of low DO.

<sup>6</sup> Eight load reduction scenarios were developed and characterized in terms of resultant DO improvement, Estuary-wide cost, and facility-specific affordability. The feasibility of achieving various effluent pollutant concentration levels was characterized based on proven treatment technologies with long-term performance records. See DRBC, Nitrogen Reduction Cost Estimation Study—Final Summary Report, Technical Report No. 2021-1 (Jan. 2021) (prepared for DRBC by Kleinfelder, Inc.) (hereinafter, “Kleinfelder Report”), accessed at: [https://www.state.nj.us/drbc/library/documents/NitrogenReductionCostEstimates\\_KleinfelderJan2021.pdf](https://www.state.nj.us/drbc/library/documents/NitrogenReductionCostEstimates_KleinfelderJan2021.pdf)

<sup>7</sup> The seven municipal wastewater treatment plants discharging within the FMA are the Philadelphia Water Department’s Northeast Water Pollution Control Plant (PWD NE), Southeast Water Pollution Control Plant (PWD SE), and Southwest Water Pollution Control Plant (PWD SW), and plants operated by the Camden County Municipal Utilities Authority (CCMUA), Gloucester County Utility Authority (GCUA), Delaware County Regional Water Quality Control Authority (DELCORA), and City of Wilmington Wastewater Treatment Plant.

<sup>8</sup> Lower concentrations of effluent ammonia nitrogen will be achieved during the summer months (May through October) due to higher treatment efficiency under warmer temperatures.

<sup>9</sup> The two wastewater treatment plants discharging within Zone 2, upstream of the FMA, are the Hamilton Township Water Pollution Control Facility and the plant operated by Lower Bucks County Joint Municipal Authority (Lower Bucks JMA).

a level of 5 mg/L to improve DO conditions in the upper portion of the FMA, in Zone 3; and (c) controls are implemented on all nine plants to achieve a DO effluent concentration of 4 mg/L.<sup>10</sup>

Importantly, DRBC's analysis has eliminated factors that would *not* measurably improve DO in the reach of the Estuary that at present does not support fish propagation. These include: reducing nutrient loads from the non-tidal Delaware River, the Schuylkill River and other tributaries; further reducing carbonaceous biochemical oxygen demand from point source discharges; reducing Estuary point source discharges of total nitrogen or ammonia or both from mid-October through May; and controlling direct stormwater and stormwater runoff or both into the Estuary. DRBC also has determined that 58 of the 67 Estuary discharges originally screened have a de minimis impact on DO concentrations in Zones 3, 4 and upper Zone 5 of the Estuary. This finding alone illustrates the value of the rigorous scientific analysis that DRBC has performed.

*Total cost of required improvements.* The combined total annualized cost for the wastewater improvements required to achieve the HADO is \$153 Million per year in 2019 dollars. This sum includes the annualized present worth of \$2.6 Billion in capital investment plus annual operation and maintenance.<sup>11</sup> The investment is significant.

*Socioeconomic impact.* Using affordability indicators published by EPA in 2022 and by the American Water Works Association ("AWWA") with others in 2019,<sup>12</sup> DRBC staff evaluated the cost burden on households within the service areas of the nine affected utilities of adding advanced wastewater treatment to reduce effluent ammonia nitrogen. While the costs associated with the addition of advanced treatment are assumed to be distributed among ratepayers, the associated increase for ratepayers, at the utility service area scale, is not enough to increase the baseline burden category, as defined by either guidance document, to a higher category. Staff's analysis recognizes that the cost burden may not be equal within utility service area communities and that higher cost burdens may exist in disadvantaged communities. The final cost to taxpayers or rate payers will depend upon many factors, including the availability and use

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<sup>10</sup> The DELCORA facility currently operates under a permitted effluent DO concentration of 4 mg/L.

<sup>11</sup> Planning-level capital and operating cost estimates for the improvements to the nine facilities were developed by the engineering firm Kleinfelder, Inc. The complexity degree of cost estimate is American Association of Cost Estimating (AACE) Level 4 estimate. See Kleinfelder Report, *supra* note 6.

<sup>12</sup> See DRBC, Social and Economic Factors Affecting the Attainment of Aquatic Life Uses in the Delaware River Estuary (Sept. 2022), accessed at:

[https://www.nj.gov/drbc/library/documents/AnalysisAttainability/SocialandEconomicFactors\\_DRAFTsept2022.pdf](https://www.nj.gov/drbc/library/documents/AnalysisAttainability/SocialandEconomicFactors_DRAFTsept2022.pdf). This report was developed using EPA, Proposed 2022 Clean Water Act Financial Capability Assessment Guidance (Feb. 2022), accessed at: [https://www.epa.gov/system/files/documents/2022-02/2022-proposed-fca\\_feb-2022.pdf](https://www.epa.gov/system/files/documents/2022-02/2022-proposed-fca_feb-2022.pdf) and AWWA et al., Developing a New Framework for Household Affordability and Financial Capability Assessment in the Water Sector (Apr. 17, 2019), accessed at: [www.awwa.org/Portals/0/AWWA/ETS/Resources/DevelopingNewFrameworkForAffordability.pdf?ver=2020-02-03-090519-813](http://www.awwa.org/Portals/0/AWWA/ETS/Resources/DevelopingNewFrameworkForAffordability.pdf?ver=2020-02-03-090519-813).

of federal, state and local programs that can improve affordability for utilities, communities, and individual households.

*Impact on fish propagation.* As described above, the minimum ambient DO concentration under critical design conditions will increase from 2.2 to 4.5 mg/L in the FMA. This improvement will be accompanied by a significant increase in the durations in which DO will exceed 4.5, 5, 6 and 7 mg/L at any location in the Estuary. The HADO will eliminate the occurrence of DO levels below 4.3 mg/L, which may not support propagation of one or more DO-sensitive species in all environmental conditions.<sup>13</sup> Within the range of DO levels supportive of propagation, from 4.3 mg/L to 7.0 mg/L, the degree of propagation attained will depend on the timing, frequency, and duration of exposure to particular DO levels.<sup>14</sup> Under the HADO conservative design condition from May 1 to October 15, as noted above, DO will exceed 6.0 mg/L throughout the FMA at least 62 percent of the time and 7 mg/L at least 50 percent of the time. DO will exceed a level of 5 mg/L 100 percent of the time during nine months of the year, and the occurrence of DO above 5 mg/L will increase from 17 percent of the time (baseline condition) to 72 percent during the months of July through September.<sup>15</sup> The number of river miles over which the water column under critical conditions can be expected to drop below 5 mg/L at any time will decrease from 51 miles to 12.

The HADO thus represents a DO condition that will support both maintenance and propagation of resident fish.<sup>16</sup> The condition will exceed (i.e., result in more DO than) the criteria established by EPA to protect DO-sensitive fish, including Atlantic sturgeon, one of the more sensitive species, in the Chesapeake Bay.<sup>17</sup>

*Next steps.* The AA Report includes a recommendation that the Commission proceed with rulemaking to add fish propagation as a designated use within the reach of the Estuary currently designated for fish maintenance, after which the entire Estuary will be designated for fish propagation. The report further recommends that DO water quality criteria be revised to support the new use.

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<sup>13</sup> See DRBC, *Linking Aquatic Life Uses with Dissolved Oxygen Conditions in the Delaware River Estuary*, (forthcoming).

<sup>14</sup> *Id.*

<sup>15</sup> See AA Report, *supra* note 2, Figure 5-9.

<sup>16</sup> An early next step by the DRBC staff will be to issue a second draft and complete the report, *Linking Aquatic Life Uses with Dissolved Oxygen Conditions in the Delaware River Estuary*, which will establish the range of DO levels that support propagation of sensitive species. In combination with the attainability analysis, and in partial reliance on EPA 2003, *infra* note 36, and NOAA's designation of critical habitat for Atlantic sturgeon, 82 Fed. Reg. 39160, 39161 (April 17, 2017), the *Linking* report will demonstrate that attainable Estuary DO conditions are consistent with those required for propagation. The attainable conditions will be translated into proposed criteria.

<sup>17</sup> See Attachment A (table summarizing DO criteria developed or approved by EPA for other Atlantic coast estuarine waters).

The Commission will receive input on its draft AA Report from the DRBC Commissioners, co-regulators and the WQAC before rulemaking commences. Because of the inherently dynamic nature of DO concentrations, the recommended criteria will not be a single value, as Petitioners appear to assume. They will consist of numeric values for dissolved oxygen, together with the appropriate temporal units (e.g., minimum, daily mean, 7-day mean) and spatial extents. The development of water quality criteria will be based upon a sound scientific rationale, including detailed work set forth in DRBC's AA Report and supporting studies, EPA guidance, EPA national criteria, and criteria developed or approved by EPA to protect similar uses.<sup>18</sup> The DRBC water quality regulations will be updated, and the revised water quality standards will generally be consistent with guidance provided by the EPA for implementation of the Clean Water Act. Rulemaking will include public notice and additional opportunities for oral and written comment on the proposed standards.

**The Commissioners deliberated carefully in choosing to analyze attainability before, rather than after, revising standards.**

The Commission solicited public comment and carefully considered the most effective path to reducing the sources of pollution impacting Estuary aquatic life before it embarked on the attainability analysis outlined in Resolution No. 2017-4.

Although few commenters addressed the question of which numeric water quality criteria for dissolved oxygen should be adopted, a number urged the Commission to add propagation as a designated use in Water Quality Zones 3, 4 and upper Zone 5 without delay.<sup>19</sup> As EPA knows well, the criteria must be specified when a revised designated use is proposed.

As the Commission in 2017 observed, proponents of a "rulemaking first" approach offered no assurances that this method would result in faster water quality improvements or greater protection for fish.<sup>20</sup> The Commissioners and staff reasoned that changing standards alone does not improve water quality; reductions in point and non-point source loadings through the improvement of treatment facilities and practices are needed to transform standards into improved conditions.<sup>21</sup> The Commission decided that to

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<sup>18</sup> *Id.*

<sup>19</sup> At the time, DRN and others proposed the criterion of 5.5 mg/L as a seven-day average. See WQAC, Minutes for the Meeting of January 28, 2016, p. 6 (Row "G" of table), available at: [https://www.state.nj.us/drbc/library/documents/WQAC/012816/wqac\\_jan16.pdf](https://www.state.nj.us/drbc/library/documents/WQAC/012816/wqac_jan16.pdf)

<sup>20</sup> Memorandum from Thomas J. Fikslin, Ph.D., Dir., Sci. & Water Quality Mgmt., DRBC, and Pamela M. Bush, Esq., Sec'y & Assistant Ge. Counsel, DRBC, on DRBC Response to Comments Received on Draft Resolution to Review the Designated Aquatic Life Uses and Associated Water Quality Criteria for Zones 3, 4 and a Portion of Zone 5 of the Delaware River Estuary (July 14, 2017), pp. 16-17; available at: [https://www.state.nj.us/drbc/library/documents/Res\\_EstuaryAquaticLifeUses\\_CommentResponseDoc\\_2017.pdf](https://www.state.nj.us/drbc/library/documents/Res_EstuaryAquaticLifeUses_CommentResponseDoc_2017.pdf).

<sup>21</sup> *Id.*

provide the foundation for such improvement, deliberate scientific evaluation was needed to determine not only the appropriate numerical value(s) of new DO criteria, but also the appropriate unit(s), whether absolute minimum, daily mean, seven-day mean, or other, and the temporal and spatial extent of the criteria.

To set criteria first and determine their attainability only afterward would have meant promulgating rules that were certain to be contested, without the strong scientific basis required to defend and implement them. The resources required for the scientific analyses the Commission has undertaken would have been diverted in the process. Of equal importance, the Commissioners recognized that improving water quality will require ratepayers in multiple disadvantaged communities to invest in new infrastructure. Analyses such as those performed by the DRBC are necessary to determine the permit limitations, where needed, that must be imposed on individual dischargers, and the accompanying treatment upgrades. Major infrastructure investments are also best undertaken in *alliance* with the affected utilities and communities. By engaging stakeholders in its model development and attainability analysis process, the Commission has worked to build these alliances. It will no doubt be in continued dialogue with the utilities servicing affected communities as this process advances.

In the end, the Commission concluded that its transparent, science-based approach is responsible for the remarkable recovery of aquatic life observed in the Estuary to date. The Commissioners chose the path of continued progress through an equally rigorous scientific process when they voted unanimously in favor of the analysis-first approach set forth in Resolution No. 2017-4.

**EPA and state authority under the Clean Water Act, and DRBC authority under the Delaware River Basin Compact, are complementary and may be exercised concurrently.**

The Commission agrees with Petitioners that it is “uniquely situated as the unified authority responsible for developing, managing, and implementing WQS for the Delaware River Estuary.”<sup>22</sup> The Commission also recognizes that the states and the EPA may exercise their respective authorities concurrently to consider alternatives to the Commission’s approach.<sup>23</sup>

The DRBC is the vehicle through which its five members—the states of Delaware, New Jersey, and New York, the Commonwealth of Pennsylvania, and the United States—have for decades established uniform water quality standards for interstate waters of the Basin. The Compact in relevant part directs the Commission to “develop and adopt, and . . . from time to time review and revise, a comprehensive plan

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<sup>22</sup> Delaware Riverkeeper Network et al., Rulemaking Petition to Revise the Designated Uses and Dissolved Oxygen Criteria for Three Zones of the Delaware River Estuary (Apr. 29, 2022), p. 3, accessed at: [Coalition Petitions EPA For River Action PR and Petition \(2022-04-29\).pdf \(delawareriverkeeper.org\)](#).

<sup>23</sup> See Resolution No. 2017-4, *supra* note 1, par. 7 (stating in relevant part, “It is recognized that if the schedules in this Resolution are not achieved, that alternative approaches will be considered by the Commission, the states, and the USEPA within their respective jurisdictions and authorities.”).



for the immediate and long range development and use of the water resources of the basin” (Compact, § 13.1); and empowers it to “[a]dopt and from time to time amend and repeal rules, regulations and standards to control . . . future pollution and abate existing pollution, and to require such treatment of sewage, industrial or other waste . . . as may be required to protect the public health or preserve the waters of the basin for uses in accordance with the comprehensive plan” (Compact, § 5.2). The water uses and criteria (in DRBC parlance, “stream quality objectives”) established by the Commission are part of the Commission’s Comprehensive Plan. They comprise Article 3 of the Delaware River Basin Water Code (the “Water Code”), a set of technical regulations incorporated by reference in the Code of Federal Regulations at 18 C.F.R. Part 410.<sup>24</sup> The current water quality standards for the Delaware Estuary and Bay (DRB Water Quality Zones 2 through 6) can be found at Sections 3.30.2 through 3.30.6 of the Water Code. The water quality standards adopted by each of the Estuary states of Delaware, New Jersey and Pennsylvania refer or defer to these DRBC standards.<sup>25</sup>

Although the Commission acts under the authority of the Compact, not the Clean Water Act, it consults EPA guidance and follows the procedures EPA requires for the promulgation of water quality standards to ensure that the obligations of its member states pursuant to their respective Clean Water Act authorities are satisfied by the designated uses and stream quality objectives DRBC adopts. The EPA also exerts influence on the Commission’s water quality agendas in multiple ways, including: as an advisor to EPA’s federal representative, the Commander, North Atlantic Division, U.S. Army Corps of Engineers; as a member of DRBC’s WQAC and other technical advisory committees;<sup>26</sup> as the entity through which the Commission receives annual Section 106 grants under the Clean Water Act; and as the triennial reviewer of the basin states’ delegated Clean Water Act programs. The EPA and the DRBC have thus worked cooperatively and in complementary ways to improve and protect water quality throughout the Delaware River Basin since the EPA’s founding a decade after the Commission was created.

EPA has acted in the past on the basis of DRBC-led science, engineering and modeling work and a Commission stakeholder engagement process. In 2003 and 2006, EPA established Estuary polychlorinated

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<sup>24</sup> The Commission’s designated uses and stream quality objectives (numeric criteria) are also set forth in a stand-alone document called the Water Quality Regulations (accessed at: [Microsoft Word - WQ Regs - 2013-12-04 \(FINAL 04-09-14\) \(state.nj.us\)](#)), which is identical to Article 3 of the Water Code in all respects relevant to this discussion. Like the Water Code, the Water Quality Regulations are incorporated by reference at 18 C.F.R. Part 410.

<sup>25</sup> See 7-5000-7401 Del. Admin. Code § [4.4](#); N.J. Admin. Code. §§ [7:9B-1.5\(b\)\(1\)](#) and [7:9B-1.14\(h\)](#); and 25 Pa. Code §§ [93.2\(b\)](#), [93.7](#), [93.9\(e\)](#), and [93.9\(g\)](#).

<sup>26</sup> EPA representatives sit on the Commission’s Water Quality Advisory Committee, Toxics Advisory Committee, Monitoring Advisory and Coordination Committee, and Water Management Advisory Committee. Advisory committee members are listed on the Commission’s website at: <https://www.state.nj.us/drbc/about/advisory/>.

biphenyls ("PCBs") TMDLs developed by the DRBC.<sup>27</sup> Their implementation, in significant part through a DRBC requirement that dischargers develop and implement pollutant minimization plans, has achieved substantial reductions in PCB loadings to the Estuary<sup>28</sup> and led to the relaxation of two state fish consumption advisories.<sup>29</sup> The groundbreaking work on PCBs was achieved by combining EPA's and the states' distinct authorities and obligations under the Clean Water Act with DRBC's specialized modeling and monitoring capability focused on the Delaware River, separate rulemaking authority, and unique position to convene co-regulators and stakeholders.

**The Commission has played a central role in Estuary DO improvements to date and agrees that rulemaking to upgrade water quality standards consistent with Clean Water Act goals and feasible improvements should proceed at this time.**

When DRBC established water quality standards for the Delaware Estuary in 1967, it effectively created two tiers of standards, both of which were aspirational. Dissolved oxygen concentrations sufficient to support "fish propagation," a use that includes reproduction and juvenile development, were not deemed attainable within the 38-mile reach extending from Northeast Philadelphia to Wilmington, Delaware, encompassing DRBC water quality Zones 3 and 4 and upper Zone 5. Within this densely urbanized reach, the standards DRBC established thus included maintenance of resident fish and passage of migratory fish but excluded propagation. Upstream in Zone 2 and downstream in Zones 5 and 6, the designated aquatic life uses included fish maintenance, passage *and* propagation.

Improvements in Estuary water quality and fish populations in the decades since have been remarkable, thanks in part to DRBC's regulation in 1968 of carbonaceous biochemical oxygen demand (the driver of

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<sup>27</sup> See U.S. Env'tl. Prot. Agency, Regions 2 and 3, Total Maximum Daily Loads for Polychlorinated Biphenyls (PCBs) for Zones 2 - 5 of the Tidal Delaware River, prepared by the DRBC (Dec. 15, 2003), accessed at: <https://attains.epa.gov/attains-public/api/documents/actions/21PA/428/197659>; U.S. Env'tl. Prot. Agency, Regions 2 and 3, Total Maximum Daily Load for Polychlorinated Biphenyls (PCBs) for Zone 6 of the Delaware River, prepared by the DRBC (Dec. 14, 2006), accessed at: [https://nj.gov/drbc/library/documents/TMDL/Zone6final-rpt\\_Dec2006.pdf](https://nj.gov/drbc/library/documents/TMDL/Zone6final-rpt_Dec2006.pdf).

<sup>28</sup> See, e.g., U.S. Env'tl. Prot. Agency, Turning the Tide in the Delaware: Reducing a Legacy Pollutant (Apr. 9, 2015), accessed at: <https://www.epa.gov/de/turning-tide-delaware-reducing-legacy-pollutant>; and Greg Cavallo, P.G., Implementation of the PCB TMDLs in the Delaware Estuary and Bay (presentation at EPA Region 3) (Feb. 20, 2018), slides 28-29, available at: [https://www.state.nj.us/drbc/library/documents/PCB\\_PMPpresentation\\_DRBCtoEPA022018.pdf](https://www.state.nj.us/drbc/library/documents/PCB_PMPpresentation_DRBCtoEPA022018.pdf).

<sup>29</sup> See, e.g., U.S. Env'tl. Prot. Agency, EPA 823-N-18-007, New Fish Consumption Advisories Reflect Continuing Improvements in Water Quality for Delaware Waterways, Fish and Shellfish Program Newsletter (July 2018), p. 1 (showing relaxation of fish consumption advisories by Delaware, attributed in part to reductions in PCBs), accessed at: <https://www.epa.gov/sites/default/files/2018-08/documents/fish-news-july2018.pdf>; N.J. Dep't of Env'tl. Prot., 18-P015, New Jersey and Delaware Ease Consumption Advisories for Certain Fish Caught in Lower Delaware River and Delaware Bay (Feb. 20, 2018) (describing "an ongoing trend in which contaminants from . . . PCBs and pesticides continues to decline"), accessed at: [https://www.nj.gov/dep/newsrel/2018/18\\_0015.htm](https://www.nj.gov/dep/newsrel/2018/18_0015.htm).

low dissolved oxygen in the river at that time) discharged by treatment plants; significant federal grants and subsequent investment in wastewater treatment infrastructure following adoption of the Clean Water Act in 1972; coordinated interstate and federal water quality management on an ongoing basis; and practical improvements by wastewater treatment plant engineers and operators. As a result of these efforts, DO levels in the Estuary steadily improved. By the 2000s, the Estuary exhibited moderate to strong recovery of multiple fin fish species. However, the seasonal DO sag in the compromised zones persisted.

In the Fall of 2013, the Commission's WQAC recommended that staff evaluate the existing use of Zones 3, 4 and upper Zone 5 for propagation of resident and anadromous fish species. That evaluation resulted in the report, *Existing Use Evaluation for Zones 3, 4 & 5 of the Delaware Estuary Based upon Spawning and Rearing of Resident and Anadromous Fishes*.<sup>30</sup> Although evidence of propagation was presented, the report concluded that "[f]ull attainment of a 'maintenance and propagation' use has not been demonstrated now based on the data available and examined for this existing use evaluation."<sup>31</sup> Due to the limitations of the available data and for additional reasons set forth above, the Commission determined that a deliberative scientific process was needed before changes were made to the designated aquatic life uses and DO criteria in Zones 3, 4 and the upper portion of Zone 5.

Resolution No. 2017-4 directed the staff to complete three types of studies before commencing rulemaking: DO and fish studies to determine the DO requirements, occurrence, and spatial and temporal distribution of life stages of DO-sensitive species in the Estuary; modeling studies, to include the development and calibration of a eutrophication model for the Delaware River Estuary and Bay, and to determine the limits on nutrient loadings from point and non-point sources necessary to support key aquatic species; and cost and feasibility studies to identify the available technologies and associated costs for achieving higher DO levels in Zones 3, 4 and upper Zone 5.

Since 2017, staff has moved as rapidly as possible consistent with sound scientific practices and the resources available to it to complete the required studies and the AA Report. The DRBC's work has produced valuable insights about the causes of the Estuary DO sag and has identified the feasible wastewater treatment facility improvements needed to address it.

Throughout this process, the Commission has operated with the utmost transparency. Petitioners, along with representatives of each of the Commission's member environmental agencies, including EPA, municipal and industrial dischargers, members of academia and other stakeholders, have through meetings of the WQAC engaged in discussion and debate regarding methodologies, assumptions, and preliminary findings. The highest attainable DO in Water Quality Zones 3, 4 and upper Zone 5 has been

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<sup>30</sup> See DRBC, *Existing Use Evaluation for Zones 3, 4, & 5 of the Delaware Estuary Based on Spawning and Rearing of Resident and Anadromous Fishes* (Sept. 30, 2015), accessed at: [https://www.state.nj.us/drbc/library/documents/ExistingUseRpt\\_zones3-5\\_sept2015.pdf](https://www.state.nj.us/drbc/library/documents/ExistingUseRpt_zones3-5_sept2015.pdf)

<sup>31</sup> *Id.*, p. 32.

defined. Because successful propagation is not solely a function of DO concentrations, the extent of improvement that can be achieved by elevating DO is uncertain. Challenges unrelated to DO include variable salinity and temperature conditions, mortality from ship strikes, losses through impingement and entrainment in cooling water intakes, adequate prey availability, and presence of spawning habitat. However, the Commission's work makes clear that DO concentrations, a fundamental limitation on the recovery of multiple sensitive species, can be elevated meaningfully to better support propagation. The Commission is now able to proceed with rulemaking to implement this understanding by March 2025.

**Petitioners make unsupported claims and misrepresent the available science.**

Without citing any peer-reviewed literature, modeling analysis, or other authority, Petitioners advance a "cherry-picked" water quality criterion of "6.3 mg/L or higher" (without temporal or special parameters) "as necessary to support the spawning and rearing of the endangered Atlantic sturgeon in the Delaware Estuary." Petitioners also assert that a DRBC report supports this number as the appropriate Estuary DO criterion.

The DO concentration cited by Petitioners appears among other numbers in a broad literature review by the Academy of Natural Sciences of Drexel University, published in 2018 on the Commission's behalf.<sup>32</sup> Specifically, the number is taken from a 2009 article by Edwin J. Niklitschek and his (former) thesis advisor David H. Secor of the University of Maryland, in which the authors measured physiological responses of juvenile Atlantic sturgeon in a laboratory to an "incomplete factorial array" of temperature, salinity and DO levels.<sup>33</sup> While the DRBC, EPA, and others have used this laboratory study and other research by Niklitschek and Secor to examine the sensitivity of juvenile Atlantic Sturgeon to DO, contrary to the Petitioners' claims, neither the authors nor the DRBC staff have ever advanced 6.3 mg/L as an appropriate criterion for DO in the Delaware Estuary. The Petitioners chose to ignore or failed to carefully examine and interpret other research, including a bioenergetics model by the same authors<sup>34</sup> that has been used by EPA to establish water quality criteria to protect juvenile Atlantic sturgeon in other estuaries.

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<sup>32</sup> See Academy of Natural Sciences of Drexel University, A Review of Dissolved Oxygen Requirements for Key Sensitive Species in the Delaware Estuary—Final Report (Submitted to the Delaware River Basin Commission) (Nov. 2018), accessed at: [https://www.state.nj.us/drbc/library/documents/Review\\_DOreq\\_KeySensSpecies\\_DelEstuary\\_ANStoDRBCnov2018.pdf](https://www.state.nj.us/drbc/library/documents/Review_DOreq_KeySensSpecies_DelEstuary_ANStoDRBCnov2018.pdf)

<sup>33</sup> See Edwin J. Niklitschek and David H. Secor, Dissolved oxygen, temperature and salinity effects on the ecophysiology and survival of juvenile Atlantic sturgeon in estuarine waters: I. Laboratory results, *Journal of Experimental Marine Biology and Ecology* 381, Supplement (Dec. 1, 2009), pp. S150-S160, accessed at: <https://doi.org/10.1016/j.jembe.2009.07.018>.

<sup>34</sup> See Edwin J. Niklitschek and David H. Secor, Dissolved oxygen, temperature and salinity effects on the ecophysiology and survival of juvenile Atlantic sturgeon in estuarine waters: II. Model development and testing, *Journal of Experimental Marine Biology and Ecology* 381, Supplement (Dec. 1, 2009), pp. S161-S172, accessed at: <https://doi.org/10.1016/j.jembe.2009.07.019>.

To support the DO criterion that they advance, Petitioners offer a single graph comparing observed ambient DO above 6.3 mg/L to unpublished data on recruitment of young-of-year juvenile sturgeon. Petitioners offer no evidence comparing sturgeon recruitment to other DO conditions. The Nature Conservancy's more comprehensive study on the relationship of DO, salinity and flow to successful recruitment of Atlantic sturgeon in the Delaware River, published in 2016, does not support Petitioners' claims.<sup>35</sup>

In developing its ambient water quality criteria for the Chesapeake Bay, EPA developed several criteria protective of sturgeon. Criteria minimum concentrations of 3.2 and 4.3 mg/L were adopted for non-stressful and stressful temperatures, respectively.<sup>36</sup> EPA also determined that 60 percent DO saturation (or 5 mg/L at 25°C) would be protective of non-lethal effects on Atlantic sturgeon.<sup>37</sup> EPA used a combination of time-average criteria (including 7-day averages, 30-day averages, and instantaneous minimums) and seasonal criteria.<sup>38</sup> A year-round, 30-day mean of 5.5 mg/L was adopted to protect growth of larval, juvenile, and adult fish and shellfish and to protect federally listed threatened and endangered species.<sup>39</sup> A 7-day mean of 4.0 mg/L was established to protect the survival of open-water fish larvae.<sup>40</sup> An instantaneous minimum of 3.2 mg/L (4.3 mg/L when temperature > 29 C) was included to protect the survival of threatened and endangered sturgeon species. In addition, the Migratory Fish and Spawning designated use is protected by a 7-day mean of 6.0 mg/L and instantaneous minimum of 5.0 mg/L during the spawning season, from February through May.<sup>41</sup> Neither EPA nor any other standard-setting body on the Atlantic seaboard has determined that Atlantic sturgeon or other DO-sensitive species require a continuous DO concentration of 6.3 mg/L or higher for successful propagation.

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<sup>35</sup> See The Nature Conservancy, Potential Impacts of Dissolved Oxygen, Salinity and Flow on the Successful Recruitment of Atlantic Sturgeon in the Delaware River (Jan. 2016), accessed at: [Microsoft Word - CoverPage\\_ProjectSummary \(conservationgateway.org\)](#).

<sup>36</sup> See U.S. Env'tl. Prot. Agency, EPA 903-R-03-002, Ambient water quality criteria for dissolved oxygen, water clarity and chlorophyll *a* for the Chesapeake Bay and its tidal tributaries (April 2003) (citing Campbell and Goodman, 2003), accessed at: [https://d38c6ppuvigmp.cloudfront.net/content/publications/cbp\\_13142.pdf](https://d38c6ppuvigmp.cloudfront.net/content/publications/cbp_13142.pdf).

<sup>37</sup> See U.S. Env'tl. Prot. Agency, EPA 903-R-03-002, pp. 30-31, *supra* note 36 (citing Secor and Niklitschek, 2001).

<sup>38</sup> See U.S. Env'tl. Prot. Agency, EPA 903-R-17-002, Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll *a* for the Chesapeake Bay and its Tidal Tributaries (Nov. 2017), p.6, accessed at: [2017\\_Nov\\_ChesBayWQ\\_Criteria\\_Addendum\\_Final.pdf \(d18lev1ok5leia.cloudfront.net\)](#)

<sup>39</sup> *Id.*

<sup>40</sup> *Id.*

<sup>41</sup> *Id.*

### **Other Petition Issues**

The Commission's work on this matter stands on its merits, and the integrity of the staff is evident from the work products and the transparency with which these have been developed and shared. However, Petitioners make two allegations that require direct responses.

Petitioners aver that "DRBC has consistently refused to revise the WQS," that DRBC and its members have exhibited a "patterned refusal to take action," and that "DRBC has consistently demonstrated that it will continue to delay action" on upgrading water quality standards in the Delaware River Estuary. The evidence presented above demonstrates that the opposite is true. DRBC has outlined the steps needed to revise the water quality standards and has delivered upon each one to date.

The petition alleges that DRBC has not acted on petitions previously submitted to the Commission but instead has indicated "that it needs more time to study this problem." Letter responses dated April 27, 2021 and October 4, 2021 to the petition of March 3, 2021 addressed to the DRBC and Petitioners' letter of September 9, 2021 to the DRBC Commissioners are provided as Attachments B and C of this response. In both, the Commission properly referred Petitioners to the plan outlined in Resolution No. 2017-4.

Although we have not addressed every allegation and inaccuracy contained in Petitioners' submission to the EPA, we urge EPA to confer with DRBC and other co-regulators if it has questions not addressed in this response. DRBC has engaged staff at EPA Region 2 and Region 3 throughout the process. We value our longstanding relationship with the EPA, which has produced exceptional results under the Clean Water Act and the Delaware Basin Compact to meet shared goals.

### **Conclusion**

Petitioners include members of the WQAC who have engaged actively in the Commission's analysis of attainability process since its inception. Based on draft reports and presentations furnished to members of the WQAC, they well understood in April of 2022 that the Commission's analysis was nearing completion. Why they chose this moment to seek intervention by the EPA is unclear, as they could certainly have done so in 2017 when the Commission adopted its path forward, or in 2020 when the Commission's timeline for completing this initiative was extended, an unavoidable consequence of the suspension of essential fieldwork and other activities stemming from significant funding and budget uncertainties associated with the COVID-19 pandemic. Funding from the Commission's state members to support the aquatic life use attainability analysis, and importantly, DRBC operations altogether, was at best uncertain during DRBC fiscal year 2020. Since COVID-19-related budget issues were resolved, no delays have occurred.

The Commission has acted with purpose, transparency and priority to establish the scientific foundation for new Estuary water quality standards and the public investments required to attain them. In accordance with the schedule the Commission has established, the Commission intends to revise the water quality

Michael S. Regan, Administrator, and  
Janet McCabe, Deputy Administrator  
U.S. Environmental Protection Agency Headquarters  
October 17, 2022  
Page 15

standards by March of 2025.<sup>42</sup> Petitioners' claims that DRBC is "failing to discharge its duty to protect the health of the Delaware River Estuary at the expense of valuable aquatic life;"<sup>43</sup> that the Commission has "failed to recognize that the Delaware Estuary . . . is being used for maintenance and propagation of resident fish and other aquatic life;"<sup>44</sup> that "DRBC has consistently neglected its duties to promulgate water quality standards that align with the purposes of the [Clean Water] Act"<sup>45</sup> and the like, are unfounded. The work described and cited above demonstrates that the opposite is true.

The Commission is committed to the course it charted unanimously by Resolution No. 2017-4. That unified direction, combined with the work of the DRBC staff to date to implement it, in our view demonstrate that the Commission's process is the best means of upgrading Estuary water quality standards to establish attainable uses and criteria consistent with sound science and CWA requirements. We reiterate that should EPA choose to proceed under its separate rulemaking authority, the comprehensive studies completed by the DRBC should be fully considered. We also encourage EPA to engage with the broader Basin and Estuary community before determining its response. Petitioners are not alone in their concern regarding Estuary aquatic life uses. In addition to state co-regulators, an engaged community of regulated entities and other stakeholders exists around this important issue.

Thank you for your consideration of DRBC's perspectives. Please contact me if you have any questions or require additional information.

Respectfully,



Steven J. Tambini  
Executive Director

c: DRBC Alternate Commissioners

Lisa F. Garcia, Regional Administrator, EPA Region 2

Adam Ortiz, Regional Administrator, EPA Region 3

Javier Laureano, Director, Clean Water Division, EPA Region 2

Catherine A. Libertz, Director, Water Division, EPA Region 3

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<sup>42</sup> See DRBC, Resolution for the Minutes of September 10, 2020, *supra* note 1, p.2, numbered par. 2.

<sup>43</sup> Petition, *supra* note 22, p. 1.

<sup>44</sup> Petitioners, "Environmental Coalition Petitions the US Environmental Protection Agency to Take Action on Delaware River Oxygen Standards in Facing of [sic] DRBC & State Failure to Act," (Press Release) (Apr. 29, 2022), *supra* note 22.

<sup>45</sup> Petition, *supra* note 22, p. 10.

Atlantic sturgeon Distinct Population Segment (DPS)	State	Classification / Use	Criteria	Duration	Conditions
Chesapeake Bay	MD VA	migratory fish spawning and nursery use survival/growth of larval/juvenile fish incl T&E	6 mg/L	7-d avg (Feb 1 to May 31)	salinity <0.5 ppt
			5 mg/L*	minimum (Feb 1 to May 31)	
		open water fish and shellfish growth of larval, juvenile and adult fish incl T&E	5.5 mg/L	30-d avg	salinity <0.5 ppt
			5.0 mg/L	30-d avg	salinity >0.5 ppt
			4 mg/L	7-d avg	
			3.2 mg/L*	minimum	temperature < 29°C
4.3 mg/L*	minimum	temperature > 29°C			
NY Bight	PA	Passage, maintenance and propagation of warmwater, anadromous and catadromous fishes	5.5 mg/L	7-d avg	tidal
			5 mg/L	minimum at any time	
	NJ	Maintenance, migration and propagation of the natural and established biota	5 mg/L	24-hr avg	freshwater nontrout
			4 mg/L	minimum at any time	freshwater and estuarine
	NY	fish propagation and survival	5 mg/L	daily avg	freshwater nontrout
			4 mg/L	at any time	
		fish propagation and survival	4.8 mg/L	daily avg with allowable excursions	estuarine
			3.0 to 4.8 mg/L	allowable excursions**	
	CT	marine fish including larval recruitment	4 mg/L	at any time	estuarine: good to excellent
			3.0 mg/L	at any time	
			3.0 to 3.5 mg/L	up to 2 days	
			3.5 to 4.0 mg/L	up to 7 days	
4.0 to 4.5 mg/L			up to 14 days		
4.5 to 4.8 mg/L	up to 30 days				
Carolinas	NC	aquatic life	5.0 mg/L	daily avg	freshwater/estuarine
			4.0 mg/L	instantaneous minimum	freshwater
	SC	survival and propagation of balanced indigenous aquatic community of fauna and flora	5.0 mg/L	daily avg	freshwater and estuarine
			4.0 mg/L	instantaneous minimum	

\* Established by USEPA specifically to protect sturgeon species (including Atlantic sturgeon) and other T&E

\*\* The DO concentration may fall below 4.8 mg/L for a limited number of days, as defined by the formula:

$$DO_i = 13.0/2.80 + 1.84 * e^{-0.1 * t_i}$$

where: DO<sub>i</sub> = DO concentration in mg/L between 3.0-4.8 mg/L; and t<sub>i</sub> = time in days.

This equation is applied by dividing the DO range of 3.0-4.8 mg/L into a number of equal intervals. DO<sub>i</sub> is the lower bound of each interval (i) and t<sub>i</sub> is the allowable number of days that the DO concentration can be within that interval. The actual number of days that the measured DO concentration falls within each interval (i) is divided by the allowable number of days that the DO can fall within interval (t<sub>i</sub>). The sum of the quotients of all intervals (i...n) cannot exceed 1.0: i.e.,

$\sum \frac{nt_i}{t_i} < 1.0$

$\sum < 1.0$

i=1 (allowed)

The DO concentration may not fall below the acute standard of 3.0 mg/L at any time.





**Delaware River Basin Commission**

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**ATTACHMENT B**

**Steven J. Tambini, P.E.**  
Executive Director

April 27, 2021

*Via email*

Maya K. van Rossum  
Delaware Riverkeeper Network  
925 Canal Street, Suite 3701  
Bristol, PA 19007

Re: Aquatic Life Uses in the Delaware River Estuary

Dear Ms. van Rossum:

I write on the Commission's behalf in response to your letter dated March 3, 2021. The Commission shares with the signatories to your letter the overarching water quality improvement goals that you describe for Zones 3, 4 and the upper portion of Zone 5 of the Delaware River Estuary. The Commission's position on these vital matters is reflected in Resolution No. 2017-04 and the Resolution for the Minutes of September 10, 2020 amending that instrument. Both resolutions were approved unanimously by the Commission's four member states and the United States.

Before embarking on the path set by the two resolutions, the Commission carefully considered the most efficient and effective path to reducing the sources of pollution impacting Estuary aquatic life. Alternatives were considered that prioritized rulemaking over the modeling and analytical work that is now underway. The Commission rejected that approach because in this context it would divert limited resources and result in a longer and costlier road to improved water quality. Only by understanding the sources and dynamics of oxygen demand in the Estuary can we determine how the sources can be reduced and water quality improved. In accordance with the path set forth in Resolution No. 2017-04, and in consultation with experts from within and outside the Basin community, DRBC's dedicated team of scientists, engineers and modelers is focused on determining how we may build on the extraordinary Estuary water quality improvements of the past 50 years to reach the goals we share. We are proceeding on our established course as quickly as possible consistent with sound scientific practices and available resources.

The Commission is concerned that your use of the term "backsliding" may mislead readers and Estuary stakeholders. There has been no relaxation of the effluent limitations or the water quality standards in the Estuary or anywhere else in the Basin. The attainment of water quality standards is not measured by instantaneous records such as the two you reference. At both Chester and Ben Franklin Bridge, existing standards were achieved on 100 percent of all days in 2019 and 2020. And notwithstanding hourly, daily, seasonal, and annual fluctuations, the trend in dissolved oxygen levels and water quality generally in Zones 3 through 5 of the Estuary, including during the warmer months, has been one not of decline but of improvement.

Maya van Rossum  
Delaware Riverkeeper Network  
April 27, 2021  
Page Two  
Re: Aquatic Life Uses in the Delaware River Estuary

We share your desire to support and restore sensitive aquatic life species in the Delaware River, Estuary and Bay, including the endangered Atlantic sturgeon. DRBC will continue to rely upon guidance from, and consultation with, the National Marine Fisheries Service on long term recovery plans for this species. As you may be aware, data that help to define the adult Atlantic sturgeon population in the Delaware River are limited. The Commission has and will continue to support the collection of additional data to inform plans for the species' recovery.

On behalf of the Commission, I appreciate your support for improving water quality for aquatic life and for people. Achieving that improvement will require a collective commitment by all sectors of the Basin community. In that spirit, the Commission would welcome the collaborative efforts of the co-signers to help address the vitally important water resource challenges we face together.

Sincerely,

A handwritten signature in black ink, appearing to read "Stambini". The signature is fluid and cursive, with a large loop at the beginning and a horizontal line at the end.

Steven J. Tambini  
Executive Director

c: DRBC Commissioners



## Delaware River Basin Commission

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**Steven J. Tambini, P.E.**  
Executive Director

October 4, 2021

Ms. van Rossum, Mr. Minott, Ms. Bonomo and Mr. O'Malley,

I write on the Commission's behalf in response to your letter of September 9, 2021. Your letter addresses oxygen conditions in the tidal Delaware River, a topic also addressed in a March 3, 2021 letter and accompanying Petition sent to the Commission from your organizations and others. By letter dated April 27, 2021, a copy of which is enclosed, the Commission responded to the March 3 letter.

As outlined in the Commission's April 27, 2021 response, the Commission's position on these vital matters is reflected in [Resolution No. 2017-04](#) and the [Resolution for the Minutes of September 10, 2020](#) amending that instrument. These resolutions, approved unanimously by the Commission's four member states and the United States, direct the Executive Director to initiate a rulemaking process to establish the designated uses and determine the water quality criteria required to support these uses in Zones 3, 4 and the upper portion of Zone 5 following the performance of the additional studies described in Resolution No. 2017-4. The actions and studies specified in Resolution No. 2017-4 are necessary to inform the rulemaking and are well underway.

In the interim, DRBC has given close attention to the results of dissolved oxygen sampling in the Estuary. Based upon available data from the USGS at Chester, PA and at Penns Landing (formerly Ben Franklin Bridge), Philadelphia, PA. The attainment of water quality standards is not measured by instantaneous records such as the two you reference in your letter. At both Chester, PA and Philadelphia, PA, the dissolved oxygen water quality criteria ("24-hour average concentration shall not be less than 3.5 mg/l") was met throughout the summers of 2019, 2020 and 2021.

In accordance with the path set forth in Resolution No. 2017-04, and in consultation with experts from within and outside the Basin community, DRBC's dedicated team of scientists, engineers and modelers is focused on determining how we may build on the extraordinary Estuary water quality improvements of the past 50 years to reach the goals we share for additional water quality improvements. We are proceeding on our established course as quickly as possible and practicable consistent with sound scientific practices and available resources.

Sincerely,

A handwritten signature in black ink, appearing to read 'Stambini', written over a large, light-colored oval shape.

Steven J. Tambini  
Executive Director

Enclosure

c: DRBC Alternate Commissioners