SCWQA

Water Quality Through Sound Science

February 27, 2026

Mr. Andrew Edwards
Water Quality Standards Coordinator
South Carolina Department of Environmental Services
Bureau of Water
2600 Bull Street
Columbia, SC 29201

Re: Triennial Review Proposals to:
Use Harmonic Mean for Non-Carcinogens (EPA Recommendation)
Clarify Bacteria Implementation Provisions
Clarify MS4 Compliance Requirement

Dear Mr. Edwards:

I hope you are doing well.

I am writing on behalf of the South Carolina Water Quality Association (WQA) to propose three changes for the upcoming triennial review of DES' Water Quality Standards Regulation. The changes relate to implementation language found in 61-68 Sections E.14.c(5), E.14.c(8)-(12), and E.14.d(13).

The SCWQA comprises public water, sewer, and stormwater utilities statewide. Our members strive to protect public health and the environment in the most affordable and cost-effective manner. Our members serve a majority of sewered population of the State.

Annual Average or Harmonic Mean Flow for Non-Carcinogens.

The Department's current water quality standards regulation provides that "the applicable critical flow conditions for human health [are] annual average flow for carcinogens, 7Q10 (or 30Q5 if provided by the applicant) for noncarcinogens . . . ." *Id*. §61-68 E.14.c(5). The specification of an average flow statistic for carcinogens is appropriate because the criteria are derived under the assumption that the target human health effects occur because of a long-term exposure to low concentrations of a pollutant (e.g. EPA's assumptions being based on human consumption of two liters per day of water for a seventy-year lifetime). Logically, the same assumptions are also appropriate for noncarcinogens.

Thus, rather than the current specification of the 7Q10, DHEC should use the annual average or harmonic mean flow. This recommendation is consistent with EPA's Water Quality Standards Handbook, Chapter 5 on General Policies, describes these water quality standards and application concepts at page 13. EPA 820-B-14-004 (2014) (emphasis added):

> "The EPA recommends the harmonic mean flow for implementing human health criteria. The concept of a harmonic mean is a standard statistical data analysis technique. The EPA's model for human health effects assumes that such effects occur because of a long-term exposure to low concentrations of a toxic pollutant (e.g. two liters of water per day for seventy years). The harmonic mean flow allows for estimating the concentration of toxic pollutant contained in those two liters of water per day when the daily variation in the flow rate is high. Therefore, the EPA recommends use of the harmonic mean flow in computing critical low flows for human health criteria rather than using other averaging techniques.
>
> *What Design Stream Flow Should Be Used to Implement Human Health Criteria?*
>
> Human health criteria represent ambient pollutant concentrations that are acceptable based on a lifetime (70 years) of exposure. Accordingly, discharges of pollutants should be regulated such that criteria will not be exceeded under stream conditions that represent long-term average conditions . . . With today's Human Health Methodology, EPA is revising its guidance to recommend harmonic mean flow be used to implement both carcinogen and noncarcinogen human health criteria. Harmonic mean flow should be used to implement human health criteria because, by and large, human health criteria are designed to protect an individual over a lifetime of exposure. … Therefore, we have attempted to match the longest stream flow averaging period (using harmonic mean) with the criterion which is protective over a human lifetime.

Accordingly, we urge the Department to modify R.61-68 to specify the use of either an annual average or harmonic mean flow for both carcinogens and noncarcinogens. Our specific recommended revisions are provided in Attachment A hereto.

Clarify POTW Bacteria Permit Implementation Provisions.

We question why NPDES Permit implementation procedures are included in the Department's water quality standards regulation. We suggest the Department move these procedures to the NPDES permit regulation at a convenient point in the future.

In the interim, we ask the Department to clarify implementation of bacteria effluent limits in permits for POTWs. Specifically, as shown in Appendix B hereto, we ask the Department to clarify in the regulation that monthly average limits are actually implemented as monthly geometric mean limits in accordance the Department's decades-old practice and EPA's criteria development and recommendations. At

smaller facilities where only one sample may be taken in a month, the effluent limit will be a monthly average (because a geometric mean cannot be calculated from one sample).

The Department should also adjust its short-term limits to conform to EPA's permitting regulation which specifies weekly geometric mean limits (again weekly average if only one sample is taken during the week). The NPDES regulations provide that limits for continuous discharges (such as POTW discharges) shall be expressed and necessarily limited to expression as average monthly and average weekly. See 40 C.F.R. § 122.45(d)(2).

We note that our suggested clarifications mirror North Carolina's approach and that a number of states (including nearby Virginia, Maryland, and the District of Columbia) only impose monthly geometric mean limits (consistent with the derivation of EPA's bacteria criteria). We also note the excellent performance of facilities in those states which demonstrates that EPA's required monthly/weekly bacteria limits are fully protective.

MS4 Permit Compliance Clarification

Finally, we ask the department to make the following clarification to 61-68 E.14.d(13) as follows:

> (13) For waters of the State, where a permit has been issued pursuant to R.61-9.122.26 and R.6109.122.34, the Department shall consider the permittee in compliance with the established bacterial (i.e., E.coli, enterococci, fecal coliform) criteria for recreational use of the waterbody if the permittee is in compliance with bacteria-related provisions in their permit.

Thank you for considering these requested clarifications. We are happy to provide any additional information you may require and are available to discuss these changes at your convenience.

Sincerely,

F. Paul Calamita

F. Paul Calamita
General Counsel

C: SCWQA Members
Mr. Shawn Clark

Attachment A

Annual Average Flow for Non-Carcinogens

R. 61-68 C.4.b(1): b. Human health and organoleptic numeric criteria.

(1) The applicable critical flow conditions for human health shall be defined as annual average flow for carcinogens~~, 7Q10 (or 30Q5 if provided by the applicant) for~~ and noncarcinogens, or tidal conditions as determined by the Department… The numeric criteria of this regulation are not applicable to waters of the State when the flow rate is less than the annual average flow for carcinogens or ~~7Q10 (or 30Q5 if provided by the applicant) for~~ noncarcinogens, except as prescribed below….

R. 61-68 E.14.c(5) Human health and organoleptic numeric criteria.

(5) Except as provided herein, where application of MCLs or W/O numeric criteria using annual average flow for carcinogens, ~~7Q10 (or 30Q5 if provided by the applicant) for~~ and noncarcinogens, or comparable tidal conditions as determined by the Department results in permit effluent limitations more stringent than limitations derived from other applicable human health criteria (organism consumption only), aquatic life criteria, or organoleptic numeric values, MCLs or W/O shall be used in establishing permit effluent limitations for human health protection….

R. 61-68 Appendix: Priority Toxic Pollutants:

ee This criterion is a noncarcinogen. As prescribed in Section E of this regulation, application of this criterion for determining permit effluent limitations requires the use of ~~7Q10~~annual average or harmonic mean flow or comparable tidal condition as determined by the Department

Appendix to WQS Regulation: Non-Priority Toxic Pollutants:

L This criterion is a noncarcinogen. As prescribed in Section E of this regulation, application of this criterion for determining permit effluent limitations requires the use of ~~7Q10~~annual average or harmonic mean or comparable tidal condition as determined by the Department.

Attachment B

Clarifications to Bacteria Implementation Provisions