Andrew Edwards
Water Quality Standards Coordinator
S.C. Department of Health & Environmental Control

Subject: South Carolina 2022 Triennial Review Surface Water Quality Standards

Dear Andrew Edwards,

IDEXX appreciates the opportunity from the South Carolina Department of Health & Environmental Control (Department) to submit our input on the proposed updates for the Triennial Review of Water Quality Standards. At this time, IDEXX would like to request the Department to consider the following comments.

1) We suggest adding additional technical corrections by adding the missing comma after "fecal coliform" listed in the following tables under Section G.(4) Outstanding National Resource Waters (ONRW) are freshwaters or saltwaters which contribute an outstanding national recreational or ecological resource and Section G. (6) Outstanding Resource Waters (ORW) are freshwaters or saltwaters which constitute an outstanding recreational or ecological resource or those freshwaters suitable as a source of drinking water purposes with treatment levels specified by the Department.

   Examples of the suggested punctuation is provided below, with the comma font in red.

4. Outstanding National Resource Waters (ONRW) are freshwaters or saltwaters which constitute an outstanding national recreational or ecological resource.

Quality Standards for Outstanding National Resource Waters	
ITEMS	**STANDARDS**
a. Color, dissolved oxygen, fecal coliform, enterococci, *E. coli*, pH, temperature, turbidity, and other parameters.	Water quality conditions shall be maintained and protected to the extent of the Department's statutory authority. Numeric and narrative criteria for Class ONRW shall be those applicable to the classification of the waterbody immediately prior to reclassification to Class ONRW, including consideration of natural conditions.

6. Outstanding Resource Waters (ORW) are freshwaters or saltwaters which constitute an outstanding recreational or ecological resource or those freshwaters suitable as a source for drinking water supply purposes with treatment levels specified by the Department.

Quality Standards for Outstanding Resource Waters	
ITEMS	**STANDARDS**
a. Color, dissolved oxygen, fecal coliform, enterococci, *E. coli*, pH, temperature, turbidity, and other parameters.	Water quality conditions shall be maintained and protected to the extent of the Department's statutory authority. Numeric and narrative criteria for Class ORW shall be those applicable to the classification of the waterbody immediately prior to reclassification to Class ORW, including consideration of natural conditions.

2) We suggest revising and removing the use of the bacteria indicator of fecal coliform as an acceptable indicator for the assessment of fecal contamination of surface waters and only utilizing the indicators of *Escherichia Coli* (*E. coli*) and/or enterococci.

   Fecal coliform bacteria are commonly identified as being thermotolerant bacteria (able to grow at 44.5ºC) [4]. Thermotolerant bacteria consists of *E. coli,* Klebsiella, Enterobacter, and Citrobacter species [1,2]. When testing for fecal coliform, the population of the bacteria present can affect the fecal coliform results. For example, Klebsiella, Enterobacter, and Citrobacter species are false-positive indicators of fecal contamination as they are from non-fecal origin [2]. Studies have found, up to 15% of Klebsiella (nonfecal origin) are thermotolerant and up to 10% of *E. coli* are not thermotolerant, thus potentially causing an error rate of 25% when testing for fecal coliform [3]. *E. coli* are the only bacteria, of the coliform bacteria group, that come from the intestinal tract, have been found to be more specific to the detection of fecal contamination, and are the definitive indicator of fecal contamination in U.S. drinking water regulations and the recommended bacteria for recreational surface waters [3-5].

   Within marine waters, studies show enterococci as compared to other fecal contamination indicators, have a higher survival rate and enterococci show a direct association with risk of swimmer's illness [6,7]. The European Union (EU) uses enterococci as an indicator of fecal contamination for recreational and drinking water, and additionally, enterococci are part of the US EPA 2012 Recreational Water Quality Criteria and included by the World Health Organization as recommended bacteria indicator for fecal contamination for recreational water [5,7].

We understand that federal regulations still require fecal coliforms as the bacteria indicator for shellfish beds, however, revising all other designated uses of surface water bacteria to either *E. coli* or enterococci would be more protective to public health by using indicators that are definitive of fecal contamination. We also understand that this suggested revision, removing fecal coliform as a bacteria indicator, maybe considered out of scope of the proposed changes, but we hope that the Department will consider this suggested edit in a future triennial review as an additional way to strengthen the standard and better protect public health. IDEXX appreciates the opportunity to provide these comments and we look forward to the next steps in the regulation process.

Respectfully submitted,

Jody Frymire, MPH| Regulatory Affairs Specialist | IDEXX Water
One IDEXX Drive, Westbrook, ME |idexx.com/water|Jody-frymire@idexx.com

References

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