**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 7**
11201 Renner Boulevard
Lenexa, Kansas 66219

MAY 12 2016

Mr. John Madras, Director
Water Protection Program
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, Missouri 65102-0176

Dear Mr. Madras:

I would like to thank you and your staff for taking the time to discuss the state's proposed lake numeric nutrient criteria and impairment screening thresholds during conference calls held on February 29 and March 21, 2016. As noted during these calls, the proposed criteria/thresholds were developed by MDNR to address an earlier federal disapproval action.[1] The EPA has reviewed PowerPoint slides provided by the department as well as the draft report, *Rationale for Missouri Numeric Nutrient Criteria.* This letter conveys, for your consideration, the combined preliminary written comments of EPA Headquarters and Region 7. The EPA plans to provide additional and more detailed comments during the Regulatory Impact Report public comment phase of the state's upcoming water quality standards rulemaking.

Pursuant to 40 CFR §§ 130.3 and 131.11, water quality criteria must be based on a sound scientific rationale and must contain sufficient parameters to protect the designated use. For waters with multiple use designations, criteria must support the most sensitive use. The MDNR needs to consider all uses for which Missouri's lakes are designated and to develop criteria that are protective for all uses for which adequate data and scientific information exist.

The MDNR's proposed screening-based thresholds for chlorophyll-*a*, total phosphorus and total nitrogen focus on the identification of waters already requiring restoration and would do little to protect designated uses. Concentrations exceeding these values would hold regulatory (e.g., 303(d)-listing) significance only in the event of a concomitant fish kill, harmful algal bloom, or conditions of high water-column turbidity and/or widely fluctuating dissolved oxygen concentrations. This approach appears to offer no protection beyond that provided under the state's long-standing general (narrative) water quality criteria. For example, 10 CSR 20-7.031(4)(G) currently stipulates that "waters shall be free from physical, chemical, or hydrological changes that would impair the natural biological community." The MDNR also has acknowledged (3/21/16) that terms such as "fish kill" and "harmful algal bloom" are qualitative constructs subject to differing interpretations. Is the MDNR planning to define these terms in conjunction with the upcoming rulemaking?

The MDNR stated that available limnological data do not establish a clear relationship between nutrient concentrations and biological effects, and this uncertainty justifies the department's decision to delay or forgo the development of numeric criteria for the causal parameters, total phosphorus and total nitrogen. The department notes that flushing rate, critical depth, and sediment influx are among the factors

[1] Letter from Karl Brooks, EPA, to Sara Parker Pauley, MDNR, dated August 16, 2011.

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contributing to statistical variability. Variability can be managed in most instances by partitioning lakes into different descriptive categories early in the statistical analysis process and/or by applying other widely accepted statistical procedures. We note that the variability cited by MDNR has not prevented many other states from developing and adopting scientifically supportable and protective numeric criteria for total phosphorus and total nitrogen.

During the calls, MDNR stated its interest in protecting drinking water supply and warm water habitat uses. The MDNR has not demonstrated that the proposed chlorophyll-*a* criteria will protect these uses. In developing DWS criteria, the department should consider (a) available scientific reports addressing the effects of eutrophication on the prevalence of disinfection byproducts and taste/odor producing compounds in finished drinking water, and (b) the potential effects of algal toxins on sensitive human subpopulations (e.g., children under six years of age). The department's proposed warm water habitat criteria are based only on "prevailing water quality conditions" and on a stated desire to encourage the growth of certain sports fish at the potential expense of other aquatic organisms. Therefore, these criteria may not be protective of the warm water habitat use, which is defined in the state's water quality standards as "waters in which naturally-occurring water quality and habitat conditions allow [for] the maintenance of a wide variety of warm-water biota."

In summary, the EPA is concerned that the department's proposed chlorophyll-*a* criteria and impairment screening thresholds may not be scientifically defensible and protective of the designated uses of surface water, as required by federal law. We would encourage the MDNR to revisit the assumptions and analyses underpinning these criteria/thresholds and to address the technical shortcomings identified in this comment letter. As noted in earlier correspondence and during recent WQS workgroup meetings, the EPA stands ready to assist the state in this endeavor. Should you have any questions about the preliminary comments provided in this letter, please contact me at (913) 551-7782, or John DeLashmit of my staff at (913) 551-7821.

Sincerely,

Karen A. Flournoy

Karen A. Flournoy
Director
Water, Wetlands and Pesticides Division

cc: Sara Hisel-McCoy, Director, SHPD/OST, EPA HQ



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