



February 1, 2011

Ms. Stephanie Sanzone
Designated Federal Officer (DFO)
EPA Science Advisory Board Staff Office (1400R)
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, D.C., 20460

Subject: Comments on the Discussion Draft Document (dated January 25, 2011) prepared by the EPA Science Advisory Board Nutrient Criteria Review Panel

Dear Ms. Sanzone,

On behalf of the Everglades Agricultural Area Environmental Protection District (EAA-EPD), I appreciate the opportunity to provide comments on the Science Advisory Board (SAB) Review Panel's Discussion Draft Report. The Panel has prepared a Draft Report with comments on the EPA's draft document, *Methods and Approaches for Deriving Numeric Criteria for Nitrogen/Phosphorus Pollution in Florida's Estuaries, Coastal Waters, and Southern Inland Flowing Waters* (November 17, 2010 draft; hereafter "Methods Document"). I support the Panel's findings on a number of key points relevant to canals in south Florida (Southern Inland Flowing Waters), and have listed these below.

Critical areas within the EPA's Methods Document, identified as deficient by the Panel's Draft Report, fall into three categories. First, there is an inadequate definition of reference conditions, including biological endpoints for assessment and the stated goal of balanced natural populations of flora and fauna, in the wholly man-made canals. The Panel also notes that "current reference conditions may not represent historical conditions", and that "least disturbed sites tend to be in

one region only and may not be transferrable to other identified regions.” I therefore believe it unlikely that the reference approach can be successfully implemented for south Florida canals.

Second, there are enormous challenges related to selection and use of chlorophyll *a* as the primary response variable, over alternative variables such as macroinvertebrate communities and fish. The Panel notes that “chlorophyll *a*, which measures biomass, cannot be used to infer population “balance” in terms of species composition or relative abundance/dominance.” Further, the flow conditions in a canal, legacy sediment nutrient levels, and even upstream inputs of algae may be equally or more important than surrounding land practices in controlling water column chlorophyll *a* levels.

Third, the Panel’s report calls attention to the fact that the EPA’s approach to criteria derivation, as outlined in its Methods Document, fails to adequately address the overwhelming influences of habitat and hydrology on ecological communities in the canal systems in south Florida. The Panel notes that the “primary purpose of south Florida canals is management of water quantity”, and canals can be “viewed as a source of nutrients to adjacent, more oligotrophic systems, rather than for any valued ecological attributes that may be unique to them.”

In my view, there are three key factors to consider in developing numeric nutrient criteria for canals in South Florida. First, there are no data that suggest that decreasing nutrient concentrations will result in improved biological condition in the canals. Second, the dynamic hydrology in the highly managed south Florida canals must be considered when assessing water quality conditions, and a failure to do so would result in costly, ineffective regulations that do little to improve or protect biological health of the canals and downstream areas. Third, the proposed methods of deriving criteria for canals do not reflect substantial investments in regional water treatment facilities, such as the Everglades Stormwater Treatment Area (STA) wetlands, which require canal networks to collect and transport drainage waters for treatment prior to discharge into oligotrophic receiving waters. The Legislature of the State of Florida recognized this beneficial use of EAA canal conveyance in 1994.¹

¹ Everglades Forever Act, Chp.373.4592(4)e(4)

With respect to biological conditions and selection of an appropriate assessment endpoint, the Panel notes (under Faunal Communities, p. 22) the apparent discrepancy between findings cited by EPA and those I reported during my public comment on December 13, 2010². I would like to clarify the findings from the limited studies on macroinvertebrate and nutrient relationships in south Florida waters. The Florida Department of Environmental Protection (FDEP) conducted a survey of “benchmark”, undisturbed Florida streams in watersheds with minimal development or hydrologic alteration³. FDEP’s study demonstrated that biological condition, assessed using the macroinvertebrate-based Stream Condition Index (SCI), was healthy across a broad range of TN and TP concentrations. A second survey conducted in large south Florida canals with typical, highly degraded habitat showed that SCI scores were low both under low-nutrient and higher-nutrient concentrations⁴. Finally, a third study (Snyder et al. 1998, cited in the EPA Methods Document) showed that macroinvertebrate communities (also characterized as SCI scores) in south Florida canals were healthier when the surrounding landscape was predominately natural wetland, and that communities were degraded when the land use was developed⁵. While the nutrient condition was not addressed in the Snyder study, the canals surrounded by wetlands likely benefited from enhanced habitat and refugia for recolonization as compared to the canals surrounded by residential or commercial development. Together these studies demonstrate the importance of habitat and flow conditions in supporting healthy macroinvertebrate communities, and their lack of sensitivity to a broad range of nutrient concentrations in south Florida waters.

The Panel has pointed to other studies⁶ that describe promising multivariate analytical approaches to parsing out nutrient influence on bioassessment data. Such an effort has not been conducted in south Florida, where high geologic and hydrologic diversity would require an

² DeBusk, T.A. 2010. Comments on Numeric Nutrient Criteria for Florida’s Southern Inland Flowing Waters. Presentation to the SAB Nutrient Criteria Review Panel, December 13, 2010.

³ See Figures 7-6 and 7-7 (p.110) in Florida Department of Environmental Protection (FDEP) 2009. Draft Technical Support Document: Development of Numeric Nutrient Criteria for Florida Lakes and Streams. Prepared by FDEP Standards and Assessment Section. June 2009, Tallahassee, FL.

⁴ DB Environmental (DBE) 2009. Characteristics of Macroinvertebrate Populations in South Florida Canals. Prepared for the Everglades Agricultural Area Environmental Protection District.

⁵ Snyder, B. D., M. T. Barbour, E. W. Leppo. 1998. Development of a watershed-based approach for biomonitoring of fresh surface waters in Southern Florida canals system. Prepared for Miami-Dade Environmental Resources Management Miami, FL.

⁶ Verdonshot. P. F. M. 1987. Aquatic oligochaetes in ditches. *Hydrobiologia* 155: 283-292.

extensive sampling and analysis effort. The available studies described above suggest, however, that the benefits to biological health of decreased nutrient concentrations in south Florida canals are very likely to be small because of limited habitat and extreme hydraulic variations.

Respectfully submitted,

Thomas A. DeBusk
President and Principal Scientist