April 5, 2012

Kathleen Baskin, P.E.
Director of Water Policy
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, 9th floor
Boston, MA 02114

RE: Comments on Draft SWMI Framework released by EEA on February 3, 2012

Dear Ms. Baskin:

Below are some specific comments with respect to the revised "safe yield" methodology proposed by EEA:

1) The primary reason that the DEP has had such a hard time developing a safe yield value for the basins in Massachusetts is that the technical term "safe yield" was never originally intended to apply to entire basins – it was intended for water sources such as wells and reservoirs. Unfortunately, after the WMA was written DEP chose to define the "source" of water that the term safe yield would apply to as major river basins. This was presumably done in order to limit the number of water sources that needed to be evaluated, but it made it virtually impossible to define a useful value for "safe yield." It is a relatively straightforward process to calculate the "safe yield" of a well or reservoir. The scientific literature contains numerous recent articles about the inappropriateness of this term when managing the water resources of a basin. Below are a selected few.

   Alley, W.M and S.A. Leake, 2004, The Journey From Safe Yield to Sustainability" Ground Water, Vol. 32, No. 1.

   Sophocleous, M. A. (ed.), 1998. Perspectives on Sustainable Development of Water Resources in Kansas. Kansas Geological Survey Bulletin 239, Lawrence, KS, 239p.

   Sophocleous, Marios, 1997, "Why Safe Yield is not Sustainable," Ground Water, Vol. 34, No. 4.

   Sophocleous, Marios, 1999, "From Safe Yield to Sustainable development of water resources—the Kansas experience" Journal of Hydrology, 235, 2000.

2) DEP's "clarification" of "safe yield" issued in 2009 only made the problem of calculating a reasonable "safe yield" even more difficult and conceptually problematic by including a vaguely worded "environmental protection factor." The clarification implies that a single value for each river basin could be capable of both protecting all relevant

aspects of the environment and still provide a reasonable basis for water allocation. The term "safe yield" was never intended to address all of the potential environmental issues related to the development of a given water source. "Safe yield" was intended to be a rough estimate of available water. Site specific environmental protections were already explicitly addressed and provided for during the WMA permitting process. The proponent is required to evaluate the potential environmental impacts of a proposed water withdrawal. It is DEP's job to evaluate those impacts. This is the primary effort involved in the permitting process. These issues cannot be addressed by developing a single number, a "safe yield" that includes an effective "environmental protection factor."

3) The definition of "safe yield" requires that it takes into account: "*the probable driest period or period of greatest water deficiency is likely to occur*". The "safe yield" methodology proposed by EEA does not fit this definition since it is based on the 90% flow probability (Q90) which is worse than the drought of record and is therefore not *likely to occur.* A 75 or 80% probability would be more appropriate.

4) The 55% environmental protection factor is arbitrary. Some sites may require greater protection, some sites may need no additional protection.

I appreciate the opportunity to provide these comments.

Sincerely,

W. Jesse Schwalbaum, Senior Hydrogeologist,
Former SWMI Technical Committee Member