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The Enforceability Factor

Critical criteria for regulation and specification writing

Early in my career I took a short course to get a Construction Documents Technician certification that, among other things, taught me how to organize and write an effective (enforceable) specification. One of the basic rules I took away was that when writing a performance-based specification, one must include the criteria by which performance is to be verified.

This is valuable information for any specifier or regulator to remember when writing storm water quality specifications or regulations. Without a clear, concise definition of the conditions at which a pollutant removal goal is to be achieved, enforcement of that goal is impossible. Ultimately, water quality suffers.

The way we manage and treat storm water has evolved greatly over the past 20 years. Regulations have moved from promoting simple, volume-based treatment design standards that were presumed to achieve a certain level of treatment (e.g., those for detention/retention ponds) to engineered structural treatment devices that are tested to confirm performance under known conditions. While these devices continue to be tested and refined by their manufacturers, regulations that govern their sizing often lag behind the current knowledge base.

One example is the common general storm water regulatory goal to remove 80% total suspended solids (TSS). Without defining a particle size distribution, this requirement is so ambiguous that it is unenforceable as a specification or regulation. Other parameters of storm water treatment design that are equally problematic when omitted from a specification or regulation are the hydrographic methods used to calculate water quality treatment flows; pollutant buildup and wash-off models (is a first-flush assumption allowed?); and assumed pollutant concentration.

An effective storm water quality specification or regulation must define such parameters with language that is as concise as possible. A menu-driven treatment regulation or specification where treatment best management practices are preapproved for use at specific flow rates based on test results is one option, but this often involves a significant expenditure of time resources that many regulatory agencies and specifiers simply do not have. Another option is to write a well defined, performance-based regulation or specification that requires submittal of design information in a controlled format. This can facilitate direct comparison of alternatives by holding several design variables constant.

To illustrate the issue more clearly, I often use what I call the "five-gallon-bucket analogy." If basic design parameters such as particle size or treatment flow rate calculation are left out of a specification or regulation, an engineer can make an objective, defensible argument that a 5-gal bucket could be inserted into the base of any outfall pipe to achieve 80% TSS removal.

The argument may assume larger particle sizes and lower flow rates than one would expect for the outfall, but if you neglect to define those parameters, assumptions will be made for you. Do not let such assumptions be made, as they certainly will not benefit water quality. Remember this the next time you are specifying or reviewing conformation with a water quality regulation. Your natural waters will thank you. SWS

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