TALKING POINTS

The Middle Road

Using science to evaluate environmental policy

Sean Darcy

From an academic standpoint, monitoring studies never truly end. We learn that our original set of objectives may require modification, and that additional gathering of information is essential for providing clarity. We use science as a tool for implementing environmental policy in response to potential problems or environmental trends. The challenge is that policy tends to be ambiguous, and science tends to require too much specificity. So where is the middle road?

The most common treatment goal is the benchmark of 80% removal of total suspended solids (TSS) on an annual basis, a relatively simple concept. By removing $^4/_5$ of the sediment and its associated contaminants from urban runoff, we should be able to improve our receiving body's water quality. To meet the TSS treatment goal, several agencies have taken a scientific approach in creating field monitoring protocols for evaluating storm water treatment BMPs. Clearly defined objectives are paramount to a successful conclusion. In this case, the objective is to quantify a performance claim relative to the treatment goal. Most monitoring protocols require an individual site to be monitored. Ensuring that this site is representative is important. After all, there are 2,150 unique watersheds across the U.S.

Particle size distribution (PSD) can be used as a tool for characterizing a representative site. However, not a single analytical method has been selected as a standard due to the uncertainty associated with interpreting the results of storm water runoff characteristics. One such method, laser diffraction, assumes each particle is spherical with a uniform specific gravity. The challenge with such a technique is that a particle also can be angular and flat shaped, like organic matter with a dynamic specific gravity. In addition to PSD, we can evaluate sites that have some commonalities among watersheds, like the effects of rainfall distributions, land use and regional soil texture types. In reality, considering the cost of field monitoring, this is still an impractical set of combinations.

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We can find some relief by selecting a combination from the middle of this spectrum and monitoring over the course of multiple seasons. Sites that are within Type Ia and Type II rainfall distributions, roadway and commercial sites, and sites getting close to a true loam ($^+/_-$20%) soil texture type can be the primary focus. This should provide a baseline for substantiating hypothesis testing—using hydraulic, performance and pollutant loading data generated in the laboratory and comparing these results with field data.

In the end, we have to keep things in perspective when using science to evaluate environmental policy. Science is beginning to unravel the complexities associated with storm water and a relatively stable compound in suspended sediment. Initiating comprehensive field and laboratory work is just the beginning, especially as additional, less-stable contaminants like metals, nutrients and organics enter into the mix of regulated parameters. Buckle up … it should be a fun and interesting ride. **SWS**

Sean Darcy is NW regulatory manager for CONTECH Stormwater Solutions. He can be reached at darcys@contech-cpi.com.