

Evaluating Proprietary BMPs, is it Time for a State, Regional or National Program?

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Workshop Rationale:

The recently imposed Chesapeake Bay Total Maximum Daily Load (TMDL) requires significant reductions in nutrient and sediment runoff from new- and re-developed land, as well as restoration goals for existing developed land. In both cases, these goals can be met through a variety of nonstructural and structural treatment practices commonly known as best management practices or BMPs. Meeting the allocated reductions from the Bay TMDL presents a challenge for the development community and municipal stormwater programs.

New- and Re-Development: In part due to the Bay TMDL, many Mid-Atlantic States have revised their stormwater programs significantly. In most cases, water quality treatment through specific BMPs is required. Treatment needs are usually met from a set of nonproprietary or traditional BMPs, for which expected performance, while variable, has been established based upon research, including field deployment and monitoring. Alternatively, manufactured treatment devices (MTDs) are structural BMPs that are typically proposed for ultra-urban or other high density developments. In many cases, it is not practical to implement many of the 15 nonproprietary BMPs, and cost effective treatment is only achieved through the reduced footprint (and generally more expensive) of a proprietary BMP.

Restoration of Urban Land: Restoration goals are generally targeted towards those lands that contribute the greatest pollutant load and stormwater runoff volume. Traditional BMPs are often referred to as land-based because they require a dedicated “footprint” in order to include the pollutant removal pathways and storage volume. However, in most urban areas, where the greatest need for restoration is located, the existing drainage system can be considered inadequate for treating the large runoff volume, leaving the extremely high pollutant loading (gross solids, i.e., trash, along with nutrients and sediment). Proprietary BMPs, if demonstrated to perform and selected based on the target pollutant loads, can be a very effective tool in addressing these high pollutant load areas.

Innovation: Numerous studies are beginning to evaluate the cost-benefit of stormwater treatment as it relates to stormwater or nutrient banking programs. This new business model will quickly drive the need for innovation and improved long term performance and operation costs for both traditional and proprietary BMPs. Having a strong verification program that provides a level of certainty in how innovative products and ideas can be brought to market is essential to both the MTD industry as well as the restoration goals of the Chesapeake Bay. It is important to strike a balance between the needs of the investor for returns, scientific advancement, and water quality to ensure a public benefit (Figure 1).

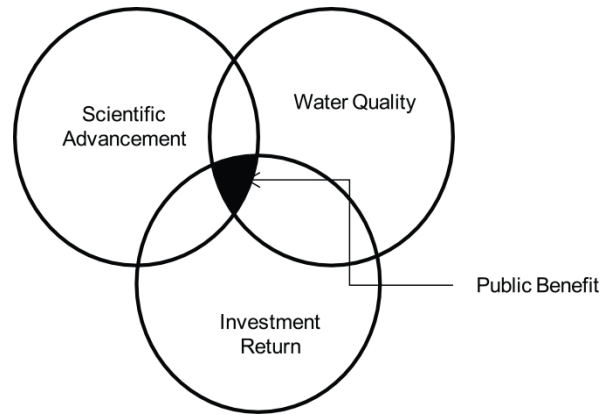


Figure 1. Diagram of competing objectives and common goals in stormwater BMP evaluations, yielding public benefits (Sample et al., 2012).

MTDs are a means of innovation, which will help broaden the array of treatment technologies and eventually lower the unit cost of treatment, providing better water quality at a reduced cost. Verifying the performance of MTDs can be difficult and protocols for their evaluations are evolving. Existing programs have been developed in other states, i.e., the Technology Assessment Protocol-Ecology (TAPE), in Washington State (TAPE, 2011), and the Technology Acceptance Reciprocity Partnership (TARP), in New Jersey (NJ DEP, 2009; NJCAT, 2010; TARP, 2001), but have limitations that lead to Virginia’s development of the Virginia Technology Acceptance Protocol, (VTAP) (Virginia Department of Conservation and Recreation, 2011). This protocol remains a voluntary guidance. Adoption of it by regulation was put on hold by the Virginia Department of Environmental Quality (DEQ) after a 5-year consensus effort due to fears of litigation, legislation, and objections from vendors.

While not easy, verifying performance of MTDs and the unique geometry and unique packaging of the unit processes of water quality would be relatively simple compared to some of the more complex BMPs being implemented in the Chesapeake Bay watershed. However, it is the innovation and the uniqueness of the geometry that makes this process complicated. The companies that have invested hundreds of thousands of dollars into R&D are hopeful that the regulatory agencies in the Bay Watershed can reach a consensus. We will explore what programs are working and which are not, and why. The workshop will also explore whether such a program is necessary, and whether it should be state, regional, or national and focus. In order to provide an unbiased recommendation, vendors or proponents of particular technologies are specifically excluded.

Anticipated Sessions/Speakers:

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|---|--------------------|
| 1. What is the problem? Intro to the workshop | |
| a. Extent of load reductions necessary | |
| b. Available technologies | |
| 2. Why require testing? | |
| a. Rationale from a regulatory perspective | Snead |
| b. Balance between evaluation and innovation | Battiata |
| 3. Evaluating stormwater treatment performance | |
| a. Variability of SW WQ | Sansalone |
| b. Treatment | A. Davis |
| c. Monitoring- | T. Grizzard |
| d. Statistics- | D. Sample |
| 4. Review of nonproprietary BMP evaluation programs | |
| a. Nonproprietary-Expert panel process | Schueler |
| b. Other? | |
| 5. Proprietary BMP evaluation programs | |
| a. ASCE report summary | W. Hunt/J. Lenhart |
| b. New Jersey, TARP, NJCAT | R. McGee |
| c. Washington State, TAPE | Baker/Marx |
| d. Virginia program (former) | Crafton |
| e. Virginia program (Now) | Cunningham |
| f. Maryland program | S. Comstock |
| g. Costs of evaluation | J. Lenhart |
| 6. Proposed National BMP evaluation program | |
| a. ETV program | ??? |
| b. WEF project | Seth Brown |
| 7. Diagnosis, what worked, what didn't, and why? | Panel |
| 8. Synthesis section, recommendations | ALL |

Workshop Products

1. Workshop report, with recommendations.
2. Initiate a regional a communications network on the subject that has previously been strictly focused a lot state boundaries.

Logistics

The 1-day workshop is intended to take place in early fall (September) of 2014. We will hold the workshop in a central location, such as DC, Falls Church or Annapolis. Expected attendance, 50 individuals. Invitees will include state and federal environmental agency personnel, and local MS4 programs.

Budget

Item	Cost
Venue	\$1,000
Hotel (4 rooms, 1 note)	\$500
Local transportation	\$500
Airfare/train for 4 individuals	\$2,000
Meals and food	\$1,000
Total	\$5,000

References

- NJ DEP, 2009. Protocol for Total Suspended Solids Removal Based on Field Testing Amendments to TARP Protocol, Trenton, NJ, 8 p., http://www.njstormwater.org/pdf/field_protocol_08_05_09.pdf.
- NJCAT, 2010. NJCAT, Corporation for Advanced Technology: Promoting Emerging Energy and Environmental Technologies, <http://www.njcat.org/>.
- Sample, D.J., Grizzard, T.J., Sansalone, J., Davis, A.P., Roseen, R.M., Walker, J., 2012. Assessing performance of manufactured treatment devices for the removal of phosphorus from urban stormwater. *Journal of Environmental Management*, 113 (0), pp. 279-291. doi: 10.1016/j.jenvman.2012.08.039.
- TAPE, 2011. Technical Guidance Manual for Evaluating Emerging Stormwater Treatment Technologies, Washington State Department of Ecology, Olympia, WA, Publication no. 11-10-061, 73 p., <http://www.ecy.wa.gov/pubs/1110061.pdf>.
- TARP, 2001. Protocol for Stormwater Best Management Practice Demonstrations, Final Protocol 8/01, Updated 7/03, 37 p., <http://www.mass.gov/dep/water/laws/swprotoc.pdf>.
- Virginia Department of Conservation and Recreation, 2011. Guidance for Evaluating Stormwater Manufactured Treatment Devices Virginia Technology Assessment Protocol (VTAP), 42 p.,