The Challenges Presented by Manufactured Stormwater Treatment Devices.

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Achieving 80% sediment (TSS) removal.

- Local ordinances mandate total suspended solids or sediment reduction of 80% for all developments that will disturb more than one acre of land.
- Natural solutions for sediment reduction are considered the best and most desirable. A rain garden is a good example and will remove up to 85% of sediment in the runoff.

Typical Rain Garden

Rain garden under construction in Elizabethton.

Why not use natural BMP's all the time and everywhere?

- Natural BMP's require significant land area.
- In Elizabethton we saw prices upwards of $400,000 per acre for prime newly developed commercial land.
- It may not be cost effective for commercial developers to allocate square footage for stormwater management.

A solution: proprietary or manufactured devices.

- Many manufacturers are now developing and selling engineered and pre-manufactured devices.
- The devices are designed to remove combinations of sediment (TSS), hydrocarbons and trash.
- Proprietary stormwater treatment devices are compact and can be installed under parking lots.

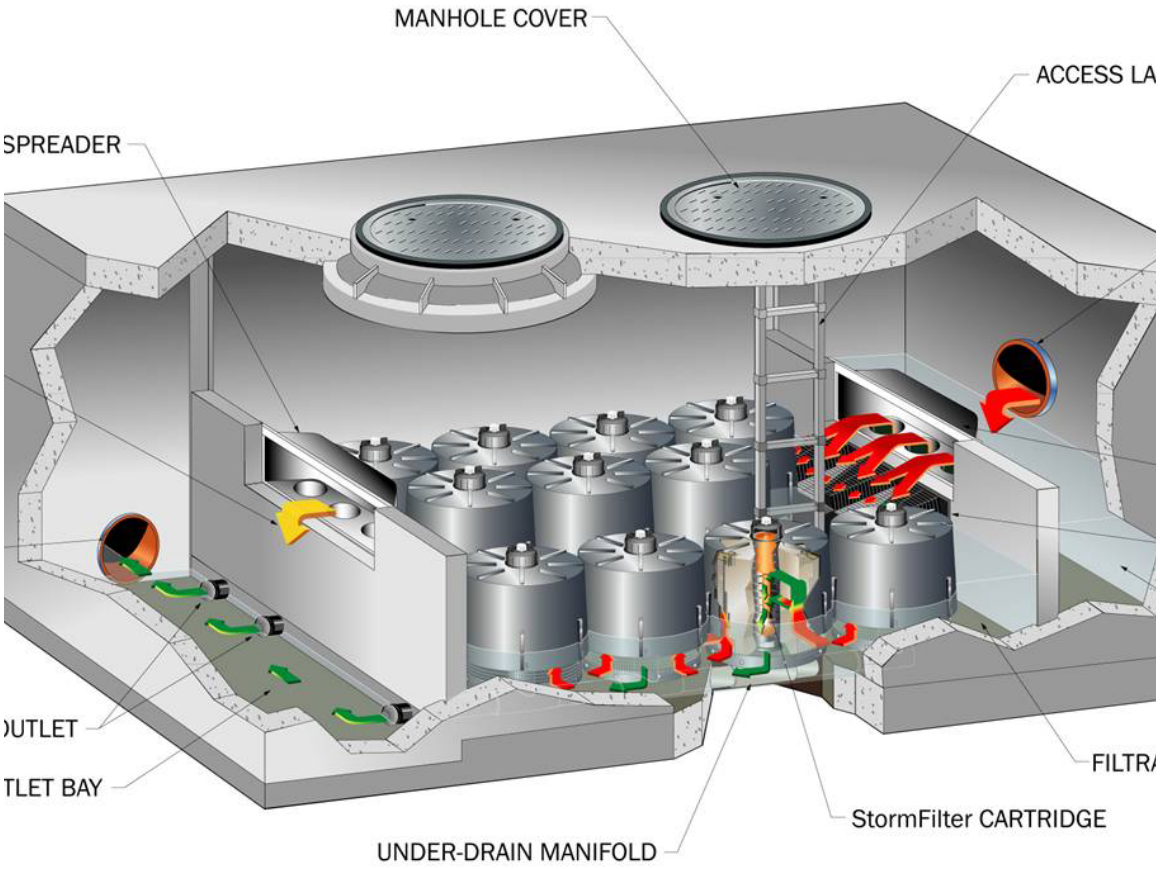
Types of manufactured devices.

- Settlement type devices work by slowing down flow velocity through the device to allow solids to settle to the bottom.
- Swirl type devices are designed to “fling” or drop out particles by inducing swirling or circular motion to the water.
- Filter devices make up the third main group.
- Combination devices use more than one mechanism.

A settling device.

The sheet metal chamber (with the cross bar) is designed to capture and hold spilled hydrocarbons.

An example of a swirl type device.



A filtering device

Are manufactured devices cheaper?

- In many cases, especially for smaller lots, the initial construction cost is comparable. The cost for larger lots can be very high.
- Manufactured devices are a lot more maintenance intensive than natural BMP's.
- The lifecycle or life time cost of owning and operating a manufactured device will be higher. This is supported by observation in Elizabethton, but we need more long term data before we can make a broad unqualified statement.

So, what's the problem?

- Badly designed devices will re-suspend previously captured sediments during high rainfall events.
- Was proper scientific testing done in both laboratory and actual field conditions to support the manufacturer's claims?
- Devices need to be optimally sized:
  larger = more expensive = undersized devices
- Devices need correct and regular maintenance to work as designed.

The biggest challenge for local regulators.

- We do not have the time and resources to evaluate extensive product research data often submitted with an approval request.
- Presently, there is no single national standardized methodology for vendors to prove their device capability claims.

This is available and very good (but not easily digested by busy local officials).

- The New Jersey Corporation for the Advancement of Technology (NJCAT).
- The U.S. Environmental Protection Agency Environmental Technology Verification (ETV) Program.
- Any party may use accepted protocols, e.g. "Stormwater Best Management Practices Demonstration Tier II Protocol for Interstate Reciprocity" as developed under the Environmental Council of States (ECOS) and Technology Acceptance and Reciprocity Partnership (TARP).
- There are more …

Cost of technology verification.

- NJCAT cost for preliminary device approval can be about $40,000. Final NJCAT or ETV approval may cost manufacturers several hundred thousand dollars.
- There are many products being actively marketed to engineers, developers and communities that have undergone no, or very rudimentary, testing.

Tennessee initiatives.

The newly created Tennessee Stormwater Association, an association of MS4 officials, recently created a “Manufactured BMP Committee” at the first meeting of the new board. The committee had a membership and goal setting meetings, and is now exploring solutions towards standardized approval of manufactured BMP’s in TN.

Local solutions.

Johnson City, Bristol and Elizabethton are presently creating a guidance document to expand the proprietary device section of the mutually adopted Water Quality BMP manual. The partner cities will, for the interim, only accept manufactured devices that went through the NJCAT and ETV processes.

Thank you. Questions?