

## Designing for the Coastal Plain, What Manufactured Treatment Devices (MTDs) Can Do For You- The Regulatory Picture

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## What is a MTD?

“Manufactured treatment devices” or “MTDs” (also referred to as proprietary treatment devices) means commercial products fabricated in manufacturing facilities that provide stormwater pollution treatment.- DEQ in GM14-2009

Over 40 technologies available for use at 5 different TP removal rates- 50%, 45%, 40%, 25%, and 20%



# Evaluating MTDs

- BMPs should not be approved without credible performance data
- Lab and field testing have value/distinct pros and cons

## Lab Testing

- Control Variables
- Replicate infrequent events
- Comparability
- Faster/Cheaper

## Field Testing

- More realistic
- Takes Longer/More expensive
- Variable Conditions
- On par with land based

- Credible protocols exist for both
  - ❑ NJDEP (Lab) & TAPE (Field) most commonly accepted across the country
  - ❑ TARP referenced in VA guidance\_ older field testing protocol (NJ roots)
- Local standards and pollutant removal goals drive test criteria
- Field most realistic way to asses longevity and pollutants other than solids

# New Jersey Department of Environmental Protection (NJDEP) Certification

- Laboratory protocol/process administered by NJDEP
- NJDEP issues certification; New Jersey Center for Advanced Technology (NJCAT) verifies performance testing
- Evaluation of Total Suspended Solids (TSS) removal performance
- Separate protocols for hydrodynamic separators (HDS) and filter technologies
- Process includes transition plan for when new protocols implemented
- Widely recognized and accepted throughout the country



# Distinctions in role of NJDEP vs. NJCAT

	NJDEP	NJCAT
Develops, owns, and maintains the laboratory testing protocol to assess total suspended solids (TSS) removal in the evaluation of MTDs	✓	✗
Requires testing to be conducted or overseen by an independent third party	✓	✗
Establishes regulatory standards for the design of MTDs and their maximum allowable pollutant removal rates (50% for Hydrodynamic Sedimentation, 80% for Filtration)	✓	✗
Requires MTD performance testing to be conducted with the NJDEP Test Sediment Particle Size Distribution (PSD)	✓	✗
Prescribes a standardized unit scaling methodology to ensure consistent pollutant removal efficiencies across MTD model sizes	✓	✗
Evaluates MTD test data to verify that the performance claim is supported by the laboratory performance	✗	✓
Provides verification for MTDs that may not fully meet the NJDEP standards	✗	✓

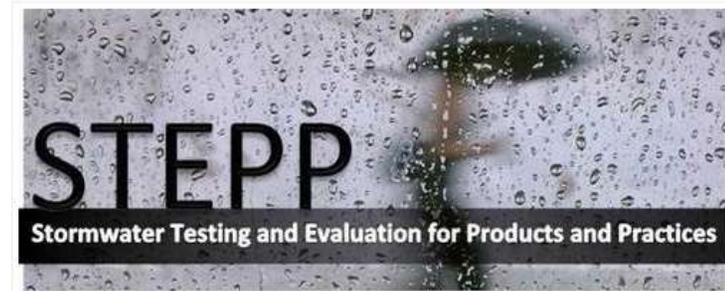
## Technology Assessment Protocol- Ecology (TAPE)

- Field protocol/process administered by WA Dept. of Ecology
- Three levels of approval/Use Level Designation
  - Pilot (PULD) - Up to 5 installs all must be monitored
  - Conditional (CULD) - 10 installs at least one successful TAPE study
  - General (GULD) - Unlimited installs, only issued after completion of TAPE field study
- Separate approvals for different pollutants
  - TSS
  - Total Phosphorus
  - Metals
  - TPH
- TAPE considered gold standard for field MTD evaluation and the data/results are accepted throughout the country



# National Stormwater Testing and Evaluation for Products and Practices (STEPP)

- Triggered by end of EPA's ETV Program in 2012
- Currently WEF-led, consortium includes ASTM, ASCE, ITRC, TAPE, and NJDEP
  - ❑ Additional stakeholders support the ongoing effort including SWEMA, NAHB, NMSA, & more
- Intent is to create standardized BMP testing verification criteria applicable nationwide
  - ❑ Verification entity only; Not an approval process (up to each state)
- ASTM developing standards for testing of HDS and Filters
- Expected to lean heavily on NJDEP (HDS) and TAPE (Field)
  - ❑ Probable HDS is finalized as ASTM standards in 2020
  - ❑ Filter timeline TBD



# How'd we get here in VA.....

2008- Revised SWM regulations passed

2009- New regulations suspended

2011- Final revised stormwater regulations were approved

2014- Regulations implemented on July 1

- Resulted in RR Method and Parts II.B and II.C
- VTAP never implemented

COMMONWEALTH OF VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
WATER DIVISION

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**Subject:** **Guidance Memo No. 14-2009**  
INTERIM USE OF STORMWATER MANUFACTURED TREATMENT DEVICES (MTDs) TO MEET THE NEW VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) TECHNICAL CRITERIA, PART IIB WATER QUALITY DESIGN REQUIREMENTS

**To:** Regional Directors

**From:** Melanie D. Davenport, Director *Melanie D. Davenport*

**Date:** May 15, 2014

**Copies:** James Golden, Fred Cunningham, Drew Hammond, Robert Cooper, Joan Salvati, Allan Brockenbrough, Regional Stormwater Compliance Managers

## Post- 2014

Specific to MTDs:

### **Guidance Memo No. 14-2009**

- Procedures for approval of MTDs under II.B
- Interim period of one (1) year
- Department plans to develop final MTD acceptance and evaluation procedures

# Approval Criteria within GM14-2009

Table 1 - Summary of Testing Procedures with Associated % TP Removal Efficiencies

Testing Protocol Followed	Chemical Parameter	Certification	% TSS Removal <sup>1</sup>	%TP Removal <sup>1</sup>
TARP*	TSS	Required	< 50% ≥ 50% ≥ 80%	Up to 10% Up to 20% Up to 40%
Other (TARP*, TAPE**, USGS, etc.)	TP	If Available	N/A	Up to 50%

Established clear intent for the following:

- 1) Field monitoring
- 2) Total Phosphorus (TP) as the monitored pollutant of concern
- 3) Robustly tested protocols

## Where did GM14-2009 need more robustness?

Upon implementation, GM14-2009 did not address two key criteria:

- MTD Sizing
  - ❑ Calculating a peak water quality treatment flow based on the required water quality volume
  - ❑ Establishing approved flow/hydraulic loading rates for each approved MTD
  
- The ability of some MTDs to achieve greater performance than 50% TP
  - ❑ Imposed a cap limiting performance

## But MTDs can still be used. What's the big deal?

Not long after GM14-2009 was implemented:

- Reciprocity rule change in 2015 (§62.1-44.15:28.A.9)
  - ❑ Many practices, predominantly HDS, approved via NJDEP laboratory protocol (TSS only)
- Monitoring results other than TAPE/TARP were accepted
  - ❑ Multiple studies with different Hydraulic Loading Rates (HLR)
  - ❑ Some studies do not contain HLRs
  - ❑ Techs with no field TP data given nearly same credit (40 % vs. 50%) as those with robust data for TP
- Approval of HDS at greater than 20% TP
- No guidance (at that time) to calculate converting treatment volume to a treatment flow rate
- Illogical treatment trains showing up on plans
  - ❑ Proprietary and non-proprietary
  - ❑ Ex. Filter upstream of HDS

## But wasn't sizing guidance provided in 2017?

Yes!

- GM14-2009 requires HLR not be exceeded
- <https://www.swbmp.vwrrc.vt.edu/wp-content/uploads/Calculating-Treatment-Volume-Peak-Discharge-1.pdf>



Sizing guidance addressed part of the issue.

- Still no HLR readily available to verify against

## **That's the end of it then, right?**

### **Well, not quite.**

After 4 years of interim GM14-2009, DEQ proposed recommendations in April 2019 that included:

- Two approval pathways
  - ❑ VA Specific Protocol (To be developed) and Reciprocity (TAPE GULD and NJDEP)
- HDS reduction to 10%
- Maintains arbitrary TP cap
- No recommendation for a transition period

DEQ requested feedback.....

## Feedback received.....

- (1) Laboratory testing facility
- (1) Industry Association
- (1) Planning District Commission
- (1) County Government
- (7) Manufacturers

### \*Major Consensus Themes Included:

- 1) Maintain 20% TP credit for HDS
- 2) Transition period
- 3) Pathway to remove TP cap
- 4) Use of recognized protocols (NJDEP and TAPE)
  - Single pathway via reciprocity supported by SWEMA

\*Discussed at 8.15.19 BMP Clearinghouse Meeting

## Also at the August 2019 BMP Clearinghouse Meeting

DEQ requested HLR information from NJDEP and TAPE

- HLR is critical sizing variable missing from VA's program
- HLR= Maximum flow rate designed to pass through system to provide treatment of water quality storm
- “Baked” into NJDEP and TAPE protocols
  - ❑ Corresponding loading rate should be used; performance predicated on it
  - ❑ NJDEP and TAPE include max HLR in approval letter



# General Assembly Activity

## HB 882- 2020 Legislative Session

- Defines reciprocity as “Provide for the use of a proprietary best management practice ***only if another state, regional, or national certification program has verified and certified its nutrient or sediment removal effectiveness***”
  
- Creates a sunset provision in two parts:
  2. MTDs listed on Clearinghouse ***prior to July 1, 2020, shall by December 31, 2021***, provide documentation to DEQ showing that another state, regional, or national certification program has verified and certified its nutrient or sediment removal effectiveness.
  
  3. MTDs that fail to provide DEQ with the documentation required by the ***second enactment of this act*** shall ***not be approved for use*** in any stormwater management plan ***submitted on or after January 1, 2022***, until such proprietary BMP provides the Department with such required documentation.

# Why does this concern Coastal Virginia?

- MTD sizing should be tied to performance testing
  - ❑ Need verification element for reviewers
  - ❑ Crediting of MTDs in Bay Model (eventually)
- Artificial TP cap stifles innovation
  - ❑ Parity between non-proprietary and proprietary practices
  - ❑ Proven options at higher TP needed
  - ❑ Infiltration challenging in the coastal plain
- Changing storm intensities and frequencies
  - ❑ Broader toolbox for larger and recurring storms
  - ❑ Compliance and site flexibility
- Longevity considerations
  - ❑ All BMPs, incl. MTDs, require maintenance
  - ❑ Field studies, particularly TAPE, assess actual performance with real stormwater runoff
  - ❑ More I & M/complicated processes may lead to higher life cycle costs

## Moving Forward...

- Consistent BMP Clearinghouse Meetings
  - ❑ Results of 8/2019 Information requests (HLRs)
  - ❑ More than just MTDs
    - Non-proprietary practices update and treatment train guidance needed
  - ❑ Valuable resource: Expertise and Research
  
- Determination of effect of HB882
  - ❑ New Guidance? Or Regulatory Process?
  - ❑ What happens in between?

Questions?

Thank you!

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