



Commonwealth of Virginia
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

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SUBJECT: Virginia Stormwater Management Handbook Technical Review Committee
(TRC) Seventh Meeting Minutes

DATE: May 28, 2026

The Virginia Department of Environmental Quality (DEQ) held the seventh TRC meeting on May 28, 2026, at DEQ's Central Office, Bank of America 3rd Floor Conference Room, 1111 E. Main St., Richmond, Virginia 23219. The meeting began at 9:33 AM and ended at 2:00 PM. The purpose of the meeting is to assist DEQ in reviewing and revising the Virginia Stormwater Management Handbook (Handbook).

The following members and alternate members of the TRC attended the meeting:

Branin, Thomas – Henrico County	Jacobs, Richard – Virginia Soil and Water Conservation Districts
Buck, Ranee – Lane Enterprises	Jones, Alexander – Virginia Electric Cooperatives
Burgh, Melissa – VDOT	Mahoney, Kristen – Appalachian Power
Crowley, Noelle – Virginia Water Environment Association Stormwater Committee	Rochet, Rebecca – City of Richmond
Dorman, Jacob – Contech Engineered Solutions LLC	Stonefield, Jerry – Fairfax County
Filippino, KC – HRPDC	Tuttle, Mark – Henrico County
Garrod, Dawson - University of Virginia	Warner, Trent – ASCE
Gerel, Mike – Chesapeake Bay Foundation	Webb, Jared – Appalachian Power
Gustafson, Nicki – Virginia Department of Conservation and Recreation (DCR)	Zegler, Hannah – Dominion Energy, Inc.
Irigaray, Gabe – Dominion Energy	

The following members of the TRC or alternate were not in attendance:

Afrin, Tanjina – Virginia Military Institute	Golden, Rebecca – VSPE
Agans, Sean—Rotondo	Hamze, Lara – Virginia Water Environment Association
Almond, Billy—ASLA	Hash, Phillip – Montgomery County
Bailey, Jason –Komline	Hypes, Rene – Virginia Department of Conservation and Recreation (DCR)

Blackwell, Channing – Virginia Society of Professional Engineers (VSPE)	Krauland, Sam – Rotondo Environmental Solutions, LLC
Bottoms, Jacob – Ferguson Waterworks	Kumar, Sandeep – Old Dominion University
Bower, Sheldon – American Society of Civil Engineers (ASCE)	Lindsey, Trish – Dept of Housing and Community Dev
Brumberg, Sam – Virginia Electric Cooperatives	Martin, Sarah – ADS Pipe
Bryant, Graham – Hydroworks	Miller, Mark – Aquashield, Inc
Carter, Kristin – University of Virginia	Moyer, Daniel – Fairfax County
Clark, Andrew – Home Builders Association of Virginia	Musarra, Sal – Virginia Chapter of the American Society of Landscape Architects (ASLA)
Clarke, Jim – Advanced Drainage Systems	Orndorff, Wil – Virginia Department of Conservation and Recreation (DCR)
Curtis, Justin – AquaLaw for Virginia Municipal Stormwater Association	Patterson, Abigail – Virginia Economic Development Partnership (VEDP)
Davis, Angela – Virginia Department of Conservation and Recreation (DCR)	Pomeroy, Chris - AqualLaw
Doyle, Justin – James River Association	Sawyer, Chase – Department of Housing and Community Development (DHCD)
Dreiling, Mike – VEDP	Sheehan, Mike – Shaw
Duval, Rachel – Virginia Soil and Water Conservation Districts	Stayer, Dana – Contech
Fanning, Patrick – Chesapeake Bay Foundation	Sunderland, Jill – Hampton Roads Planning District Commission (HRPDC)
Foraste, J. Alex – Virginia Department of Transportation (VDOT)	Thomas, Sarah – Virginia Assoc of Commercial Real Estate
Freeman, Ken – Lane Enterprises	Yoon, Jaewan – Old Dominion University
Jones, Meredith – Montgomery County	

The following members of the public attended the meeting:

Kathy Gee – OptiRTC, Inc.	Michael DeVuono - Arcadis
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The following DEQ staff attended the meeting:

Kathleen Alexander, Stormwater Program Engineer, Office of Stormwater Management	Jonas Eppert, Water Division
Chantz Ballard, Stormwater Plan Review Manager, Office of Stormwater Management	Andrew Huff, Training Specialist, Office of Training Services, Office of Stormwater Management
Margaret Culpepper, Stormwater Plan Reviewer	Fernando Pasquel, Chief Policy Advisor
Sarah Desmarais, Regulatory Analyst, Division of Policy	April Rhodes, Stormwater Program Manager, Office of Stormwater Management
Nelson Daniel, Policy Analyst, Division of Policy	Jeanette Ruiz, Regulatory Analyst, Division of Policy

Meeting Opening:

Kay Alexander, welcomed members of the TRC and public to the meeting, provided an overview of the proposed agenda, and reviewed the public meeting requirements in Virginia's Freedom of Information Act. Prior to the meeting, DEQ provided draft specifications and a meeting agenda to the TRC and posted both on the Virginia Regulatory Town Hall website. The meeting minutes from the sixth TRC meeting on April 30, 2026, were finalized after TRC members indicated there were no comments or additional revisions needed.

V1.3 Post-Construction BMP Follow-up from the Sixth TRC Meeting (P-BAS, P-CNV, P-FIL and P-SUP)

DEQ reviewed the following proposed changes that were drafted as a result of previous TRC discussions.

- **P-BAS-01 Constructed Wetlands:**

- **Group Discussion/Staff Response:** Side slopes for Level 1 revised from 5H:1V to 4H:1V to reflect BMP Clearinghouse specification. Existing Wetlands section of Table P-BAS-01-5 revised to read: "Recommend not locating constructed wetlands within existing natural wetlands. Consider potential impacts from inundation, discharges to and changes the hydroperiods of existing neighboring wetlands communities in accordance with the appropriate regulations."

- **P-BAS-02 Wet Pond:**

- **Group Discussion:** Section 5.8 Liners language revised to indicate that clay liner design should be supported by geotechnical data or reports. TRC discussed changing the aquatic bench minimum in coastal plan from 10 ft to 20 ft. Per Arcadis, GA and SC manuals have increased requirements for the aquatic bench within wet ponds up to 30 feet to account for tidal impacts on stormwater flow through the BMP.
- **Group Discussion:** Table P-BAS-02-7 Aeration Requirements: No change to aeration specifications, VDOT should request variance and to provide alternatives for oxygenation if not achievable.
- **Group Discussion:** TRC raised the difference between 8 ft. access roads for dry ponds and 12 ft. for wet ponds. Staff explained the difference is due to equipment/machinery types required for BMP maintenance. Language updated to clarify access roads must have a minimum width of 8 ft. Additional width may be necessary to accommodate large maintenance equipment and turn around areas,

- **P-CNV-04 Regenerative Stormwater Conveyance:**
 - **Staff Response:** Removal efficiencies use those from P-CNV-03 Wet Swale, as established in the previous Clearinghouse. Insufficient expertise exists to establish new higher efficiencies, potential for future study. No change to specification for this version.
- **P-SUP-07 Quantity-Only Approach to BMPs:**
 - **Group Discussion:** P-FIL-04 Infiltration Practices: Discussed the comment that major inflow definition restricts design feasibility. DEQ noted it is important for long term maintenance. Awaiting research from Coastal Plain representative on specific challenges.
- **C-SCM-02 Construction Road Stabilization with Timber Mats:**
 - **Group Discussion:** Discussed removal of use for laydown yards since this specification is specific to roads. It was noted the intent is that timber mats are an alternative surface material to stone. Discussed that defining the activity as or not as land disturbance is not appropriate for a construction specification and will be removed from, the revision.
- **C-SCM-03 Temporary Stone Construction Entrance with Timber Mats:**
 - **Group Discussion:** Discussed washing procedures, which resulted in Table C-SCM-03-1 language revision: Use appropriate washing procedures as described in this table to remove sediment and debris from tires equivalent to that provided by an aggregate surface. Will evaluate against the Minimum Standard in the regulations.

V1.3 Post-Construction BMP Specifications Review

- **P-FIL-03 Permeable Pavement**
 - **Group Discussion:** TRC discussed defining terms like “sand” to establish a standard and prevent use of inferior or inconsistent types. A member noted Minnesota addresses this in their BMP manual and will share the information with staff. Discussion followed on the importance of detailing minimum requirements to prevent interpretation as an infiltration layer. Staff will follow up at next TRC meeting on the ‘sand layer’ definition. Member suggested “little to no maintenance” language should be struck. DEQ noted a need for vendor specifications on various permeable

- pavement types to identify general requirements; some members indicated some product information may be proprietary. A committee member offered to provide specifications to staff. Staff noted that if relying on manufacturer's specifications, they should be included in the plans. A member identified an inconsistency in language regarding karst vs permeable soils. Staff will update for consistency.
- **Group Discussion:** Section 7.2 Maintenance Tasks: Member requested removal of the sentence: "Most installations work reasonably well year after year with little or no maintenance, whereas some have problems right from the start." DEQ and the TRC members responded with general agreement to remove the sentence.
 - **Group Discussion:** The permeable pavement cross section graphic will be updated to show a typical system; manufacturer's specifications should be consulted for proprietary products. The intent is to conform this graphic to the VDOT standard installation. TRC raised questions about whether geotextile is always required, and how it relates to the sand layer. TRC noted that the depiction of turf in the graphic should not be sloped and should match the narrative. TRC requested clarification of sand type (clean, washed) to ensure proper infiltration, and noted the sand/geotextile layer is typically a layer for separation and support, not a filtration layer.
 - **Staff Response:** DEQ cannot change the specification based on specific vendor requests but can review variances as appropriate. TRC discussed how the Handbook is influenced by manufactured proprietary product specifications. TRC discussed maintenance importance and whether manufacturer-assigned efficiency ratings are accurate. Staff requested the TRC provide wording from their discussion on proprietary product utilization. Staff also requested copies of manufacturers' specifications for different product types to analyze commonalities and inform the general specifications. The current specification has been informed by discussions with the Virginia Asphalt Association and other sources but could be better informed by proprietary product specifications.
 - **Group Discussion:** TRC recommended installing liner up the side of the trench when the BMP is adjacent to a building or other structure. Table 5: TRC asserts that the specification should include only minimum thickness requirements, rather than a range; discussed use of the proprietary specifications to inform these minimums. Staff asked whether TRC has seen porous asphalt use that differs from VDOT's product specification. TRC requested a copy of the referenced VDOT specification; Staff will provide.
 - **Action item:** Staff will review Table P-FIL-03 Permeable Pavement Specifications at the next meeting scheduled for 6/25/26.

- **P-FIL-09 Tree Planting**

- **Group Discussion:** TRC and staff discussed language qualifying title/description of who can design a planting plan to include flexibility for other qualified titles, including professional engineers. Members updated language for clarity and consistency. TRC noted that defining “equivalent licensed professional” should be consistent throughout the specification.
- **Group Discussion:** TRC and staff discussed nutrient removal efficiency numbers and how they were developed.
- **Group Discussion:** TRC noted dead links throughout the specification. Staff will check and update all links and references, including the DCR invasive species list (updated annually on average) and the American Standard for Nursery Stock publication date. TRC suggested staff use language such as “use most up-to-date” given the lists are routinely updated.
- **Group Discussion:** Under site assessment design elements, some wording is incorrect and implies a different meaning than intended. Staff requested the TRC provide correct language for update.
- **Group Discussion:** Under soil amendments, language limits the types of amendments that can be used. Staff requested proposed language to revise this section to align with industry practices.
- **Group Discussion:** TRC flagged phosphorus leeching properties of compost. Staff noted this topic is more appropriate for specifications involving larger compost applications rather than single tree planting.
- **Group Discussion:** TRC requested post-construction tree inspection requirements be more specific to indicators of tree health, with “professional” requirements consistent throughout the specification. DEQ requires post-construction BMP inspections every 5 years; localities may require more frequent inspections.
- **Action Item:** Update invasive species list.

Draft BMP Specifications Review

- **Flocculant Specification:**

- **Group Discussion:** TRC discussed use of “shall” and intent of how flocculants will be utilized. When flocculants are utilized, they should be upstream of another BMP such as a silt fence. Wording will be considered and revised.
- **Group Discussion:** Sentences should be reordered for clarity: (1) product must be on the approved list; (2) product should be used in conjunction with other BMPs. TRC noted the requirement to get approval from the local authority should be clearly indicated even if the product is on the DEQ-approved list. As currently written, the spec could be interpreted to allow any anionic flocculant; language should ensure that only products that are listed as approved can be utilized.
- **Group Discussion:** Inconsistent referencing of jar tests versus other testing means throughout the spec. Testing requirements should be consistent; some are more prescriptive than others.
- **Group Discussion:** TRC raised concern that active flocculants unbound to sediment could enter natural waterways and not readily biodegrade. Different flocculants have different biodegradability, but this characteristic is not addressed in the specification. TRC asked whether biodegradability should be part of the approval process. Arcadis will further investigate.
- **Group Discussion:** Monitoring requirement: clarify frequency of monitoring. TRC supports inclusion of “periodically.” Ensure consistent use of “inspection” versus “monitoring” throughout. TRC discussed where monitoring takes place, clarifying it occurs within the BMP and the receiving area. Staff clarified that jar testing is performed prior to application to determine the application “recipe.” TRC recommended phrasing such as “evaluate flocculant performance by monitoring” or “visual evaluation of performance” to clarify monitoring determines effectiveness.
- **Group Discussion:** TRC requested clarification on jar testing requirements for land applications of flocculants.
- **Group Discussion:** TRC discussed jar test and application rate determination when submitting an ESC plan for approval. DEQ clarified that dosing does not require approval but must be documented in the SWPPP. Staff recommends use of manufacturer’s specifications plus visual toxicity monitoring to ensure proper dosing rather than locality approval.
- **Group Discussion:** Dosing approval requirement is unclear in both use pathway options in the specification. TRC raised concern for small projects not requiring a SWPPP; wondering where information would be documented. Specification should ensure documentation and approval by the VESCP/VESMP authority. TRC requests clarification in the language.

- **Group Discussion:** Requirement to inspect dosing equipment daily is unclear. Staff requests the TRC's proposed language.
- **Group Discussion:** Current language related to discharge to an MS-4 is unclear. Proposed to remove this statement or add that it applies to any waterway. Arcadis noted the intent was that discharges flow through an additional erosion and sediment control measure prior to entering the MS-4 system.
- **Group Discussion:** TRC has a strong position that cationic flocculants should not be approved or used. TRC argues DEQ, as an environmental agency, should have authority to prevent use of products with known toxicity concerns, and that including the approval process in the Handbook sets a bad precedent. TRC noted Tennessee specifically bans cationic flocculants. Staff requested further information from TRC. DEQ staff and specification consultant will discuss further.
- **Group Discussion:** Confusion exists between the process of being added to DEQ's approved product list versus obtaining site-specific approval for use. TRC asserts approval of cationic flocculants should be case-by-case, not added to a general approved list. Current wording implies DEQ must approve use of these products, not the local authority. Localities want to retain the ability to deny use of a product or application method/rate.
- **Group Discussion:** TRC asked how approval of cationic flocculants will differ from anionic. TRC noted all proprietary practices require DEQ approval, so this requirement should also apply to flocculants.
- **Group Discussion:** TRC requested that the cationic approval process be included in an appendix rather than detailed within the specification. TRC also noted the intended use of cationic flocculants is for wastewater, not stormwater.
- **Group Discussion:** TRC noted training should not be required for all site personnel, only appropriate personnel directly involved with its application.
- **Staff Response:** Staff will prioritize further investigation and continue discussion of this specification at the next TRC meeting. Staff will share proposed revisions based on today's discussions with the TRC. Staff requests any additional information the TRC would like to submit on this topic.
- **CMAC (Continuous Monitoring and Adaptive Control)**
 - **Group Discussion:** DEQ presented the TRC with a draft specification in the information packet that had limited discussion. Staff will present the draft specification for further consideration at the 8th TRC meeting.
 - **Group Discussion:** TRC clarified that CMAC is for quantity-only treatment, not intended to address the treatment volume requirement for quality at this time. TRC

requested clarification in the language regarding double-counting treatment volume. Staff will clarify this language.

- **Group Discussion:** TRC requested an example project using CMAC to understand the design parameters and modeling.

New Topics

- Permanent Linear Utility Access Roads: DEQ introduced the topic and indicated further discussion to follow at the 8th TRC meeting.

Public Forum: No public comments.

Next Steps

- Next meeting 6/25
 - Revisit flocculants and CMAC
 - TRC should consider draft spec for linear utility access roads
- V1.3 still expected to be released this year.

Meeting Adjournment: 2:00pm