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July 25, 2019

Tennessee Department of Environment and Conservation, Division of Water Resources; Attention: Vojin Janjić
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243

Dear Mr. Janjic,

This letter provides comments in response to the Notice of Rulemaking issued by TDEC pertaining to draft Rule 0400-40-10-.04. These comments are submitted by the Northeast Tennessee Stormwater Planning Group, specifically: **City of Johnson City TN; City of Bristol TN; City of Elizabethton TN; and East Tennessee State University (ETSU)**. Each of these entities is subject to the State of Tennessee's small Municipal Separate Storm Sewer System (MS4) general permit. Note that one or more of these permittees may submit additional comments separate from the group comments provided in this letter. Contact information for each permittee is provided below.

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Wood Environmental & Infrastructure Solutions, Inc. (Wood) was authorized by the permittees to prepare and provide these comments to you on their behalf. Any questions you may have regarding these comments can be directed to me (contact information below).

Kind regards,

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Cc: Jacob Chandler PE, City of Bristol TN; Johann Coetzee, City of Elizabethton TN
Mark Jee, ETSU; Jeremy Jones, City of Johnson City TN

#	Part	Comment	Suggested Revision
1	General	**The draft rule should not lump green space development (new development) and gray space development (redevelopment) into the single overarching term of "new development".** Rationale: These two development types can be vastly different with redevelopment requiring a number of different decisions to address the issue of stormwater treatment. EPA recognizes this fact in their *Model Ordinance for the Control of Post Construction Stormwater Runoff* (https://www.epa.gov/sites/production/files/2015-12/documents/modelillicit_0.pdf) Using singular terminology and rules for very different types of development can prevent permittees from implementing post-construction requirements in an effective manner.	Eliminate the use of "new development" to define both new development and redevelopment projects.
2	(1)	**Permittees who have implemented permanent stormwater programs compliant with standards equal to or more stringent than those under proposed 0400-40-10-.04(2) under a currently or previously authorized and duly issued general permit by the State of Tennessee that require(d) establishment of a Permanent Stormwater Management Program should be deemed by the State as meeting the proposed 0400-40-10-04(2), without requirement to amend their compliant program.**	Add subparagraph (f) under 0440-40-10.-04(2) to read: *Permittees who can demonstrate compliance with permanent stormwater management requirements established in the 2010 general NPDES small MS4 permit issued prior to adoption of these rules shall be deemed compliant with the standards in 0400-40-10-.04(2)(b) and (c) based on documentation of equal or more stringent program standards in effect at the time of adoption of this rule. Such local program standards shall have met all requirements of public notice, adoption, permit reporting, and review by the issuing agency of the State.*
3	(2)	**Permittees must have the flexibility to establish equivalent or more stringent standards and use standard compliance and design methods than that set forth in parts (2)(b) and (c) of the draft rule. This flexibility is not established in the draft rule.** Rationale: In the public question session held on July 15, 2019, when asked to define the standard in the rule, TDEC staff stated they did not intend to be prescriptive regarding how the 80% TSS Removal standard is met. Later however, TDEC staff indicated the table in (2)(c) was also the standard. The	1. Modify the first sentence of (2)(b) as shown in red below. *Compliance with permanent stormwater standards for new development and redevelopment projects is determined by designing and installing SCMs ~~as established by this rule~~ to achieve, at a minimum, 80% removal of total suspended solids (TSS) from the water quality treatment volume (WQTV) and complying with other requirements of this rule. ~~For design purposes, total suspended solids may be used as~~*

		table outlines a highly prescriptive design method to design SCMs to meet 80% TSS Removal (henceforth called "the TDEC method"). The level of specificity in the draft rule conflicts with EPA's intent to allow MS4's "maximum flexibility" to optimize their programs. As a post-construction design standard, 80% TSS removal of a prescribed has been around for over a decade. In general, design approaches to support this standard are well known among site designers, primarily through the design approach included in the Georgia Stormwater Management Manual and similar approaches contained in a number of stormwater design manuals developed by (or referenced by) Tennessee permittees. This "Georgia method" differs from the TDEC Method in that it prescribes a static WQTV (e.g., 1-inch) for all SCMs, along with a list of accepted SCMs and their % TSS removal efficiencies. However, across the spectrum of SCMs, the Georgia method provides greater flexibility to the site designer than the TDEC method without increasing the WQTV to meet the presumptive 80% TSS removal standard. Site designers can use SCMs in sequence to achieve the standard without managing the volume and surface area increases that would occur when designing via the TDEC method. This design flexibility is critical to site designers, yet it still ensures they can meet an 80% TSS removal standard. Requiring the treatment of new impervious surfaces recognizes the differences in how stormwater quality requirements can be addressed on new developments versus redevelopments. This is in keeping with EPA's guidance provided in their *Model Ordinance for the Control of Post Construction Stormwater Runoff* (https://www.epa.gov/sites/production/files/2015-12/documents/modelillicit_0.pdf).	~~*the indicator for the removal of pollutants (such as sediment, nutrients, and pathogens).*~~ *SCMs must be designed to provide full treatment* ~~*capacity*~~ *of the WQTV within 72 hours following the end of the preceding rain event for the life of the new development or redevelopment project. The* ~~*water quality treatment volume (WQTV)*~~ *is defined, at a minimum, as the* ~~*portion of the*~~ *runoff generated from new impervious surfaces at a new development or redevelopment project by 1-inch of rainfall. Permittees may use equivalent or more stringent definitions of the WQTV as appropriate for their program.* ~~*The design storm is a 1 year, 24 hour storm event.*~~ 2. Delete (2)(c) in its entirety. Provide it as guidance in the rule/permit rationale, the TN Permanent Stormwater BMP Manual, or elsewhere.
4	(2)(b) (2)(c)	Related comments regarding TSS as an indicator of other pollutants: **1. USEPA (Region 3) lost a challenge to the regulation of surrogate parameters (*VDOT vs. USEPA, 2013*), so TSS should not be explicitly**	Eliminate the second sentence of (2)(b) per the suggested revision provided for comment 2 above.

		identified as a surrogate for other pollutants in a permanent stormwater management standard. 2. **Nutrients and pathogens should be regulated separately from TSS/sediment.** Rationale: The only SCMs treatment type that can reliably remove nutrients and pathogens is infiltration, evapotranspiration, and reuse. The remainder of SCMs (i.e., flow through types) cannot reliably control nutrients and pathogens without design specifications that target those pollutants specifically. Simply increasing the WQTV for flow-through SCMs is not necessarily effective. Thus, a % TSS removal standard is an inappropriate approach for nutrient and pathogen control. If TDEC wishes to require control of nutrients and pathogens within the permanent stormwater management minimum control measure, the requirement should be separate from the % TSS removal standard, such as a separate % pollutant removal target, a source control approach, or other more directly targeted, pollutant appropriate requirement. 3. **Because flow through SCMs designed for % TSS removal are highly variable for nutrient and pathogen removal, using TSS as an indicator for nutrients and pathogens within a permanent stormwater management program creates difficulties for permittees in measuring the effectiveness of TSS removal for other nutrient/pathogen control requirements, such as TMDLs.** Set separate, targeted standards for nutrients and pathogens, based on stream impairments or other locally relevant data, would likely result in more relevant measures of effectiveness.	
5	(2)(b) (2)(c)	**In general, the rule lacks sufficient specificity in rainfall information to allow permittees to ascertain the rule's requirements for the rainfall/hydrologic conditions to be used for design purposes. As well, the design approach implied by the permit requires a higher level of engineering analysis and review without providing appreciable benefits for pollutant removal or SCM design quality when compared to the**	Eliminate the design storm specification and references per the suggested revisions provided for comment 2 above.

	traditional water quality volume design methodology. The new rule should eliminate the use of, and references to, a design storm and hydrologic distribution of rainfall and require use of an instantaneous capture design as the minimum level standard. Rationale: The draft rule specifies the design of SCMs for "the first X-inches" of the 1-year, 24-hour design storm (where X is variable depending on SCM treatment type). To accomplish this, a designer needs to use a rainfall distribution (e.g., Type II storm, NRSC distributions based on NOAA Atlas 14, etc.) though none is specified in the draft rule. As well, by requiring design for "*the first*" X inches up to a treatment volume, a designer will need to model the storm event in the drainage area/system upstream and to each SCM to account for the rainfall distribution and losses (interception storage, ground storage, soil infiltration, etc.) that occur before any appreciable runoff is discharged to the SCM. For the model, the designer will likely assume the upstream system is "dry" unless the rule specifies an inter-event dry period (e.g., 72 hours of no precipitation). Continuous simulation modeling with larger, localized rainfall dataset is a potential method for this level of design. However, this level of analysis is well-beyond the standard engineering practices for stormwater system design. Further, given the inaccuracies inherent in rainfall distributions and the variability of hydrologic parameters over time and space, these models won't necessarily provide significant hydrologic accuracy or result in more effective pollutant removal over more traditional engineering design methods. Does TDEC really intend for designers to create a hydrologic model for every SCM design? Alternately, the more traditional water quality treatment volume design approach most familiar to permittees and site designers who are already using an 80% TSS removal standard is no less inaccurate. But, when compared to the approach implied in the draft rule, it is much less time-consuming and cumbersome from the design preparation, plan submittal, and plan review perspectives. A water quality volume approach requires calculation based on a simple equation, such as WQTV = P*R*A where P = rainfall depth (e.g., 1.1 inches), R is a standard volumetric hydrologic runoff	

		coefficient for impervious cover, and A is the impervious surface area or drainage area. This approach is used widely in the southeast United States and elsewhere to design for a presumptive % pollutant removal standard. It is also the approach currently established in a number of stormwater design manuals in Tennessee or referred to in permittee ordinances. In summary, the new rule should not prescribe the use of an alternate, more complex design approach when it does not provide significant benefits for water quality, permittees, designers, and the general citizenry of Tennessee over the traditional water quality volume approach. Rather, the new rule should establish the traditional water quality volume design approach as a minimum requirement and allow equivalent or more stringent hydrologic and design methods if desired by the permittee.	
6	(2)(b)	3rd sentence. The word "capacity" is incorrectly used in the sentence. Replace with "the WQTV".	Exchange "capacity" with "of the WQTV" as indicated in the suggested revision provided for comment 2 above.
7	(2)(c) (2)(e)	Comments regarding the use of green infrastructure, non-structural SCMs, and LID site planning techniques: 1. **If the table in (2)(c) is eliminated as suggested in comment 2, the rule should allow the use of design or pollutant standard incentives to promote the use of green infrastructure and LID practices.** 2. **If the table in (2)(c) is retained, the draft rule should explicitly recognize and allow non-structural green space SCMs, such as trees and green space, impervious area disconnection, reforestation, soil restoration, and buffer enhancements.** Rationale: These features, when properly situated, can infiltrate and evapotranspire stormwater from impervious areas and provide pollutant removal.	1. To address item 1 in the comment, revise (2)(e) as follows. "*The permanent stormwater management program may include incentives for the use of low impact planning techniques and/or SCMs that infiltrate, evapotranspire, or reuse stormwater.*" Then add green infrastructure SCMs (bioretention, infiltration trench, etc.) and LID approaches to the list of accepted conditions and offer acceptable incentive options, such as a lower rainfall than the standard for the WQTV (e.g., 1-inch as opposed to 1.2 inches). 2. To address item 2 in the comment, add the following sentence to (2)(c): "*Permittee programs may recognize nonstructural vegetated SCMs and vegetated areas which receive stormwater discharges from impervious areas as infiltration and/or evapotranspiration SCMs when such SCMs and areas are designed or otherwise can be shown to*

			sufficiently infiltration and/or evapotranspire the stormwater discharged to them."
8	(2)(c)	Terminology in the (2)(c) table needs clarification. 1. **Define "biologically active filtration" and provide examples of acceptable SCMs and clarify what is mean by "12 inches of internal water storage" (within gravel voids, free-standing water, etc.).** During the public comment session TDEC staff defined "biologically active filtration" as a minimum of 12 inches of internal water storage. This remains unclear. The word "storage" implies volume. So, is the internal water storage intended below the underdrain or is the phrasing trying to require a minimum depth of filtration media above the underdrain of 12-inches? As well, biologically active implies flora and/or fauna are a part of the treatment mechanism, however the definition provided by TDEC staff implies sand and gravel filtration could also be included in this category. Additional clarification is needed regarding "biologically active" as well. Biologically active implies flora and/or fauna are a part of the treatment mechanism. Is it one or both? 2. **Define "sand or gravel filtration" and provide examples of acceptable SCMs.**	None provided
9	(2)(c)	**It is not clear how SCMs such as pervious/permeable pavements and pavers, engineered wetlands, and green roofs fit within the table.**	None provided
10	(2)(c)	**The draft rule's implication that design of any MTD at the "*maximum flowrate of the design storm*" will achieve 80% TSS removal standard inaccurate and the entire requirement as currently written should be removed.** Rationale: Different devices have different pollutant removal capabilities. One device will have different removal capabilities at different flow rates. Some devices self-flush at high flow rates. Because of these highly detailed characteristics, most permittees struggle in their understanding of MTD pollutant removal efficiencies. Designing MTDs to achieve a set standard without due regard for the unique characteristics of each MTD, as is implied by the draft rule, will eliminate the permittees	Remove the requirement to design MTDs to the maximum flow rate of the design storm and improve permittee guidance regarding the approval of MTDs to meet the 80% TSS removal standard. Use of information provided by the NJDEP/NJCAT program is highly recommended as it includes information regarding MTD pollutant removal at one or more specific flow rates.

		struggle at the design stage by eliminating the need to debate with vendors and developers over MTD capabilities. However, it will result in the purchase and installation larger and more numerous MTDs in order to meet the design requirement while not necessarily providing effective protection of water quality. As a result, this will exacerbate permittee problems at the maintenance stage as permittees must oversee (or perform) maintenance on larger and more numerous MTDs, many of which do not adequately remove pollutants.	
11	(2)(e)	**The draft rule should allow incentives to be defined by the permittee outside of the WQTV reductions already identified in (2)(e).** Rationale: A WQTV reduction should not be the only type of stormwater-related incentive available to permittees. For example, redevelopment can be a key strategy for reducing net increases in impervious surfaces and associated degradation to receiving waters. Beyond this, many local governments (usually cities) desire to incentive redevelopment to reverse urban blight, attract new businesses, and improve economic conditions. In the experience of the permittees submitting these comments, the incentives the draft rule (and provided in past small MS4 permits) are insufficient for developers to see redevelopment as a desirable LID option and do not correlate to the real water quality benefits received. For example, redevelopment is often performed in a confined area where usable space is at a premium. Thus, the improvement of green space (new development) is chosen over redevelopment. This is a loss on all fronts: water quality, economic progress, blight reduction. Recognizing that LID performed on redevelopment is a significant benefit across the board would result in more ability to gain water quality protection through redevelopment. Thus, other incentives should be available to permittees, such as a significant reduction or elimination of the requirement to control the WQTV for redevelopments which result in an overall decrease in impervious surface area.	Eliminate part (2)(e) in its entirety and replace with the following: *The permanent stormwater management program may provide incentives for new development and redevelopment projects which are designed and constructed using low impact development (LID) practices. The LID practices incentivized must be measurable (e.g., reduction in impervious surface areas over existing impervious areas (redevelopments only); surface area established vertically vs what could be established at ground level, etc.) and the incentives provided must correlate to the pollutant reduction being provided (e.g. reduction in impervious surface area correlates directly to reduced WQTV or improved pollutant discharges).*
12	(3)(a)	**2nd sentence. The terms "must ensure" and "if practicable" in this sentence negate each other.**	None provided

13	(4)(c)	**1st sentence. Non-infiltration SCMs should be allowed in the buffer provided they are fully vegetated and do not discharge concentrated water (e.g., engineered wetlands) or discharge directly to the stream.**	Modify the first sentence as shown below in red. *Permittees may establish permissible land uses or activities within the buffer, such as biking and walking trails, infiltration-based SCM, other SCMs provided they are fully vegetated and do not discharge stormwater to the surface of the buffer in a shallow concentrated or channelized manner, selective landscaping, habitat improvement, road and utility crossings or other limited uses as determined by the permittee.*
14	(4)(d)	1. **It is not clear whether the rules paragraph regarding "*alternative widths*" would allow buffer width averaging.** A number of Tennessee permittees already allow buffer width averaging to provide development flexibility while still maintaining riparian protections. Buffer width averaging to a minimum allowable width should be explicitly allowed by the rule. 2. **The draft rule does not allow for development situations where water quality riparian buffers may not be possible.** In northeast Tennessee, land developments tend to occur in the valleys between ridges and hills. However, even when in a valley, individual properties can have a significant slope and/or other topographic features which significantly limit development. While not a frequent occurrence, there are instances where the addition of a riparian buffer, even with a maximum practicable buffer width, is not possible. In such cases, engineering practices other than buffers can be used to treat runoff prior to discharge to a stream, provide some degree of shading, and prevent streambank erosion.	1. Add the following sentences to (4)(b) below the table. *Buffer width averaging is allowed provided the minimum total buffer width (in the table above) is used as the minimum average total buffer width and the actual buffer width is not less than the minimum allowable width (as shown in the table above) at any location along the buffer.* Then add a right column to the table with the heading "Minimum Allowable Width for Buffer Averaging) with the State's acceptable minimum widths in an averaging scenario. 2. Add the following paragraph to (d) or as new part (e). *Permittees may allow waiver of riparian buffer requirements in limited circumstance where it can be proven that a buffer of any width will result in the complete loss of property usage. To obtain the waiver, the permittee must require the new development or redevelopment project to implement practices which prevent the discharge of untreated stormwater into the receiving stream in keeping with part (2) above, prevent erosion of the streambank in the unbuffered area, and*

			provide shade along the stream in the unbuffered area to the maximum extent practicable.
15	(5)(b)	**Last sentence. What does the "sub-section 4.1.1" reference mean?**	Not provided
16	(6)(b)	**2nd sentence. As written, the sentence requires incentives be included in the process, but incentives are not necessarily required of the permittee in part (3) of the rule.** It would be better to allow, but not require, incentives.	Modify the 2nd sentence in (6)(b) as shown in red below. *The process must also include incentives as authorized by paragraph (3) of this rule* ***if implemented by the permittee****, along with water quality buffers as required by paragraph (5) of this rule; and*
17	(6)(c)	**1st sentence. The requirement for verification of SCM construction as designed is concerning. It could impact the ability of permittees to keep the site owner/operator liable for SCM construction through the end of construction and afterward (during post-construction vegetation or construction warranty periods).** Rationale: Typically, final verification of SCM construction occurs at the end of construction, when all construction activities have ceased and SCM integrity and cleanliness (removal of sediment, debris, EPSC measures, etc.) can also be assessed. The 90-day verification inspection required by the rule is premature as construction activities may still be on-going and could damage or otherwise impact SCM construction and/or function.	Modify the 1st sentence in (6)(c) as shown in red below. *Verification that SCMs have been installed per design specifications within* ***30*** ~~***90***~~ *days* ~~***of installation***~~ ***after termination of land disturbance activities****.*
18	(7)(a)	**The text "*provide full treatment capacity within 72 hours following the end of the preceding rain event*" and difficult to specifically ascertain after construction.** Just refer to the presumptive standard described in part (2) above and allow permittees to determine the most appropriate methods for inspection to ascertain SCM compliance at the post-construction stage.	Delete the text after the comma (*and provide full treatment capacity within 72 hours following the end of the preceding rain event).*
19	(7)(b)(3)	**1st sentence. Eliminate the requirement for a legally-binding maintenance agreement.** Rationale: There is significant variability among Tennessee permittees regarding whether and how legally binding maintenance agreements are used. Much of this variability is the result of how permittee legal staff interpret state law regarding property rights and municipal authorities and processes. For example:	Modify the first sentence of 7(b)(3) as shown in red below. ~~***A clear, documented,***~~ ***An ordinance or regulatory mechanism, deed restriction,*** *legally binding agreement* ***or other legal instrument*** *assigning SCM maintenance responsibility to the owner/operator, a third party, or the permittee as appropriate.*

		- Some permittees who opt to require inspection and/or maintenance of privately owned SCMs by their owners are advised by their attorneys that legally-binding maintenance agreements are an improper and/or unnecessary legal instrument to force SCM owner maintenance. This problem can place the permittee staff in a difficult position with elected officials who are being advised by legal staff not to enter into the such agreements. - The process required for some permittees to execute maintenance agreements as a result of legal staff interpretation of state laws is extremely cumbersome and can delay construction only for sake of legal issues, even after plan approval. Permittee legal staff are always able to find an alternative means by which the permittee can require and enforce maintenance of SCMs by a private property owner. This is not always a legally binding agreement. If the State is not proficient in the legal issues surrounding the execution of private property maintenance agreements between a local government and private property owner, then TDEC should not predicate the legal instrument by which the permittee forces owner maintenance. Rather, for permittees that will require private owners to be responsible for private SCM maintenance, TDEC should only require that that the permittee utilize a legal instrument (ordinance or other regulatory mechanism, deed restriction, legally-binding agreement, etc.) to require and enforce maintenance.	
20	(7)(b)(4)	Same as above	Modify the first sentence of 7(b)(3) as shown in red below. *An ~~allowance or agreement~~ ordinance or regulatory mechanism, deed restriction, legally binding agreement or other legal instrument ~~for~~ allowing permittee personnel to lawfully access the SCMs for inspections and provide for enforcement action for failure to maintain SCMs ~~according to agreement~~.*
21	(8)(b)	**SCM location should be added to the list of require tracking elements.**	None provided