January 31, 2020

Re: Response to Comments on Proposed Revisions to the 2013 Stormwater Management Guidebook

INTRODUCTION

The following are Department of Energy and Environment (DOEE) responses to comments on the proposed revisions to the Stormwater Management Guidebook (the Guidebook), for which notice was given in the February 15, 2019 issue of the DC Register. DOEE opened a 45-day public comment period on February 15, 2019, which concluded on April 1, 2019. DOEE appreciates the time and effort taken by all parties who reviewed and commented on the proposed rulemaking. Overall, DOEE received formally submitted comments from 42 different entities.

Responses are organized to reflect the structure of the Guidebook and are generally grouped by sections of chapters and topics within those sections. Due to the quantity of comments and repetitive comments from multiple commenters, comments are summarized or paraphrased. Each comment is followed by DOEE's response.

Note: through revisions to the Guidebook as a result of public comments, DOEE added some appendices. Both the original appendix name and the new appendix name have been included in the "Section" column.

COMMENTS

SECTION	TOPIC	COMMENT
Chapter 2.2	*Regulated Site Definition and Examples*	*1. Some commenters expressed general confusion with understanding the example project diagrams in Chapter 2.*

Response:

1. DOEE has reformatted the project examples in Chapter 2 and moved them into their own appendix, Appendix V –Examples of Regulated Activities. Diagrams include land cover designations, full project descriptions, area calculations, cost calculations, and a detailed explanation of how each project does or does not trigger a Major Land Disturbing (MLD) or Major Substantial Improvement (MSI) activity.

Chapter 2.3	*Stormwater Retention Volume*	2. *One commenter asked how applicants should meet the 50% minimum retention or treatment Site Drainage Area requirement for the types of projects with small, constrained Site Drainage Areas with limited stormwater management opportunity, for example, side yards and grassy frontages.* 3. *One commenter recommended including a factor in Equation 2.1 – Stormwater Retention Volume to account for the slope of the project.*

Response:

2. Changes already proposed to § 526.1 allow the Relief from Extraordinarily Difficult Site Conditions process to be applied for these types of site drainage areas (SDAs). Please refer to Appendix F – Relief from Extraordinarily Difficult Site Conditions (Formerly Appendix E) for more information.

3. Modifications to Equation 2.1 are outside the scope of the revisions to the Guidebook. No change is proposed.

Chapter 2.6	*Control of the 2-Year Storm*	4. *One commenter asked if DOEE could provide a larger map than Figure 2.7, which shows areas that may be exempt from the 2-year detention requirement based on the sewershed and tidal zone in the District.*

Response:

4. An electronic, searchable GIS map is available in the DOEE Stormwater Database. The map can be found at the following web address: https://dcgis.maps.arcgis.com/apps/webappviewer/index.html?id=0bdc0da685a6428aabc17a9ae1602412.

Chapter 2.10	*Hydrology Methods*	5. *One commenter requested calculation templates for demonstrating a project is meeting peak discharge requirements.*

Response:

5. Appendix I – Acceptable Hydrologic Methods and Models (Formerly Appendix H) now incorporates three design examples. Designers are encouraged to follow the procedure in these design examples to demonstrate compliance with peak discharge requirements.

Chapter 2.11	*Additional Stormwater Management Requirements*	6. *Some commenters asked which scenarios DOEE would define as generating runoff contaminated by oil and grease in concentrations exceeding 10 mg/L;* 7. *One commenter stated the requirement to include a baffle, oil and water separator, or other mechanism with a stormwater BMP is a disincentive to install permeable pavement in parking lots and loading areas as this practice cannot be combined with one of the above-mentioned mechanisms.* 8. *One commenter asked how BMPs located in the MS4 which drain to a sanitary sewer would be accounted within a site drainage area. Additionally, the commenter asked whether permeable pavement may be used within a dog park and whether a bioretention may be used adjacent to a dog park.* 9. *Some commenters asked to clarify where the 25-foot buffer requirements would apply and how DOEE defines "waterbody."* 10. *One commenter recommended additional language to clarify the intent of the first condition of meeting the 25-foot buffer requirements.*

Response:

6. DOEE understands the substance of this comment and has provided additional clarification. Areas where surface runoff is contaminated by oil or grease are also defined as hotspots in the Guidebook, and additional language has been provided to clarify that connection. This section now includes a reference to Appendix Q – Stormwater Hotspots (Formerly Appendix P), which lists the types of situations DOEE considers likely to contaminate surface runoff by oil and grease.

7. DOEE agrees that due to these requirements, BMP types other than permeable pavement are more effective in hotspot areas, as without this requirement the oil and grease would compromise the functionality of the permeable pavement. A regular parking lot, however, is not a DOEE-recognized hotspot, and so the installation of permeable pavement within a regular parking lot without one of these oil and grease mechanisms is acceptable.

8. If a BMP located in the MS4 sewershed contains an underdrain and/or an overflow structure that is connected to the sanitary sewer, a SDA would be delineated according to the Contributing Drainage Area (CDA) to the BMP. Bioretention and permeable pavement are allowed adjacent and within dog parks, provided some additional design measures are included. Contact DOEE for guidance on these design measures.

9. The 25-foot buffer requirements are not new requirements. Guidance is newly incorporated in the Guidebook to clarify the existing rules regarding the 25-foot buffer. DOEE is not modifying its existing interpretation of "waterbody," which is equivalent to "water of the District" as defined in the District's Water Pollution Control Act, D.C. Official Code § 8-103.01(26). The 25-foot buffer rules are intended to apply only to waterbodies that run above ground. Language has been added to the Guidebook clarifying the applicability of the 25-foot buffer rules.

10. The commenter's proposed language has been adopted in part to clarify how applicants may meet the first condition of the 25-foot buffer requirements.

Chapter 2.12.2	*Disturbance for BMP Installation*	*11. One commenter asks for clarification regarding the intent of Item 4: "To provide for off-site retention through in-lieu fee payments."*

Response:

11. The language in the Guidebook is a clarification of the existing provisions in 21 DCMR § 517.2. This is one of the situations in which DOEE will exempt projects from stormwater management requirements. Item 4 refers to when DOEE constructs a stormwater BMP using money generated from in-lieu fee payments. DOEE will not require compliance with a stormwater management performance obligation for those projects.

Chapter 2.12.3	*Affordable Housing*	*Some commenters asked questions or clarifications about the review process for affordable houses.* *12. One commenter asked if there are examples of how DOEE determines a project has taken all practicable steps to meet stormwater management requirements.* *13. Some commenters asked if the review and relief process for affordable houses applies to multifamily residential buildings, or homes that are part of a term lease and are not sold.* *14. Some commenters asked generally how DOEE would administer the process of receiving, tracking, and confirming income information.*

Response:

12. DOEE understands the substance of this comment and has incorporated a change. A new appendix has been written to guide designers through what is now called the "Practicable Process." This process ensures all practicable steps have been taken to meet stormwater management requirements. See the new Appendix C – The Practicable Process for more information.

13. The review and relief process is available only to single and two-family homes that will be affordable housing that is owner-occupied. Multifamily residential projects or homes that will not be owner-occupied cannot apply for this process.

14. DOEE intends to track these sites using the Stormwater Database. DOEE's regulations already require that changes in ownership must be reported to DOEE. DOEE's submittal database is also integrated with the Office of Tax and Revenue Real Property database, which DOEE will use to confirm property sales and periodically check that proper notifications and purchaser income verifications have been provided through the submittal database. If these are not submitted, then DOEE will contact the property owner to request income verification, which will be provided to DOEE through the submittal database.

Chapter 2.12.5	*Athletic Playing Fields, Permeable Athletic Tracks, and Permeable Playground Surfaces*	*15. One commenter asked whether athletic playing fields need to be permeable, and whether Astroturf or other synthetic turf qualifies for this exemption.*

Response:

15. Yes, athletic playing fields need to be permeable, which includes synthetic turf. Please refer to the definition of "Athletic playing fields" in Appendix Y - Definitions (Formerly Appendix X): "Compacted land cover and synthetic surfaces that are constructed primarily for use for athletic activities at public parks and schools. … Synthetic surfaces must have a minimum surface permeability of at least 10 inches per hour, in accordance with ASTM F2898 Standard Test Method for Permeability of Synthetic Turf Sports Field Base Stone and Surface System by Non-confined Area Flood Test Method."

Chapter 3.2.1	*Green Roof Feasibility Criteria*	*16. Several commenters asked for additional flexibility in the type and method of access to green roofs for maintenance and inspections, including the use of temporary ladders.* *17. One commenter asked if the green roof setback requirement is still applicable if the HVAC equipment is raised above the green roof.* *18. A commenter stated that the 1:1 CDA-to-green roof area ratio was not available for public comment. The commenter stated that the change significantly affects the design methodology of stormwater management plans. The commenter also states that the 1:1 ratio does not have empirical evidence supporting it and the commenter states that green roofs can support larger CDAs.* *19. One commenter suggested, instead of the green roof 1:1 CDA limit, limiting the maximum depth of a green roof system to 18 inches, and then categorizing all deeper practices as standard bioretention practices with a 60% retention value.*

Response:

16. DOEE understands the substance of this comment and has incorporated a change. Temporary ladders are allowed when accessing a roof that is 10 feet in height or less from a stable surface. DOEE added a new figure to Chapter 3.2.1 outlining temporary ladder specifications.

DOEE has also clarified that permanent access for roof hatch trap door sizes are for firefighter access; windows meeting the required sizing are acceptable.

17. Language has been added to the Guidebook in this section clarifying the setback for HVAC equipment is waived if it is elevated above the green roof.

18. While DOEE does not consider the 1:1 ratio and other errata as changes to the Guidebook for the purpose of this revision, DOEE has been willing to receive and respond to comments on these changes. DOEE understands that this change will affect the way projects choose to implement green roofs. DOEE has frequently observed in plan submissions small green roofs with relatively large drainage areas, particularly those that resemble rooftop planter boxes. DOEE has set the 1:1 ratio to discourage excessive drainage of impervious rooftop area to green roofs, which DOEE has observed causing erosion, scouring, or otherwise compromising the retention of the green roof. If a rooftop planter is designed with a large CDA relative to its surface area, DOEE recommends it be designed as bioretention.

    DOEE has listened to stakeholder feedback and will modify its implementation of the 1:1 ratio. Previously, DOEE required excess runoff above the 1:1 ratio to be diverted away from the green roof. For example, a 100 square foot green roof may have no more than 100 square feet of rooftop draining to it, and all other rooftop area must drain elsewhere. To facilitate design flexibility, DOEE will allow unlimited area to drain to a green roof, but cap the retention value the green roof receives to runoff generated at the 1:1 ratio. For example, a 100 square foot green roof may have 500 square feet of rooftop area draining to it, but DOEE will provide retention value for only 100 square feet of rooftop area in addition to the 100 square feet of the green roof itself. No additional retention value will be provided for runoff generated from the remaining rooftop area.

19. While DOEE appreciates the commenter's suggestion, DOEE does not have the data to support such a categorization. DOEE's intent with retention values assigned to stormwater practices is to approximate real-world performance, and DOEE does not yet have data that suggests green roofs deeper than 18 inches retain stormwater differently than green roofs shallower than 18 inches. DOEE will continue to monitor leading green roof research and reevaluate its determination accordingly. DOEE recommends green roofs which accept runoff greater than the 1:1 ratio be designed as bioretention practices, but will not cap the depth of green roof systems.

Chapter 3.2.4	*Green Roof Design Criteria*	*20. One commenter asked for clarification how the 30% maximum organic content requirement of green roof soil media was measured – by weight or by volume.* *21. One commenter recommended allowing a lower density filter fabric in green roof system, as they have observed higher-density systems clogging faster.* *22. One commenter recommended some text changes to the section "Rock Wool and Contributing Drainage Area" to clarify the design requirements.*

Chapter 3.2.4	*Green Roof Design Criteria*	*23. One commenter requested a detail to illustrate the overflow channel requirement for rockwool in green roof systems.* *24. One commenter noted inconsistency between the minimum allowable soil media depths for green roofs. The Stormwater Management Guidebook requires a minimum media depth of 3 inches, while the Green Area Ratio Guidebook requires a minimum of 2 inches. For the sake of consistency, the commenter suggested both requirements match.* *25. One commenter noted that the minimum retention values for green roof soil media and retention layers are far lower than any test results they have seen and asked why the default values were lowered.* *26. Some commenters spoke on the requirement to provide water retention test results for green roof soil media that are representative of the thickness of the soil media used in the system specified on the stormwater management plan. One commenter requested setting a range of green roof soil media depths for which water retention test results will be accepted, as opposed to requiring a test for each depth of media used. The commenter specifically noted challenges with sloped or mounded green roof systems with many different thicknesses. One commenter asked for clarification of the purpose of this requirement.* *27. One commenter expressed approval of the new guidance for allowing placement of solar panels on top of green roofs without reducing retention values.* *28. One commenter requested clarification regarding whether conduits leading to or from HVAC units need to be elevated if they are above a green roof.* *29. One commenter requested a waiving of the 50% reduction in irrigated green roof storage volume if a "smart" irrigation system is used.* *30. One commenter asked for clarification on the requirement for rockwool to be in contact with the roof deck for green roof systems accepting CDA from the bottom of the practice, without any air layer present. The commenter notes the benefits of an air layer on plant health and survivability.* *31. One commenter noted the symbol used for the maximum water retaining capacity of a soil is the same as typically used for the porosity of the soil, which is a different property.*

Response:

20. Green roof filter media percentages are by weight. Language has been added to this section clarifying this measurement.

21. DOEE agrees with the substance of this comment. The density requirement has been deleted from the Guidebook.

22. DOEE agrees with the substance of this comment. The text changes have been incorporated as suggested.

23. DOEE has added a figure to this section to clarify the requirements for the optional overflow channels.

24. DOEE has determined that two-inch green roof systems have a higher failure rate and are difficult to successfully maintain due to the thinness of the system. DOEE will maintain the current three-inch minimum media depth for green roofs.

25. DOEE recognizes the vast majority of green roof products specified in plans do not have retention values below the new default retention values. However, on occasion DOEE has seen green roof materials with retention values lower than the previous default retention value, 0.15. Therefore, DOEE has lowered the default retention values for both soil media and retention layers to be lower than any test results DOEE has encountered. The intent of this change is to avoid over-counting the retention of any green roof products. Designers may continue to use retention values above the default values, provided they provide verification of the values from an ASTM-certified lab using the methods described in the Guidebook under Chapter 3.2.4 – Green Roof Design Criteria.

26. Green roofs of varying depths perform differently and have different maximum water retention values. In the case of sloped or mounded green roof systems, these issues will be worked out on a case-by-case basis and will likely involve an interpolation calculation of the different water retention values. DOEE is not making a change in response to this comment.

27. DOEE appreciates the commenter's feedback.

28. DOEE has added additional clarification to the "Solar Panels and Other Structures Section" that only the solar panels and HVAC equipment need to be raised. The conduits do not.

29. Regular irrigation outside of establishment and times of drought should be unnecessary for stormwater retention BMPs. While "Smart" irrigation systems are more efficient when watering green roofs as needed, the irrigation nonetheless affects the green roof's ability to function as a stormwater BMP. DOEE does not yet have the ability to verify green roofs have been irrigated in such a way as to avoid impact on the practice's retention capacity. The 50% retention value reduction associated with irrigated green roofs is a compromise to allow their use but acknowledge that irrigated green roofs will often not perform as well as un-irrigated green roofs with regard to stormwater retention.

30. DOEE agrees that an air layer is a beneficial component of many green roof configurations. However, when a rock wool-based design is used to absorb runoff from adjacent roof area, an air layer would be counterproductive. The air layer would allow water to bypass the green roof entirely by flowing underneath it.

31. DOEE agrees with the substance of this comment. To reduce confusion, the symbol for maximum water retention used in BMP storage volume equations has been revised to differentiate it from the symbol typically used for porosity.

Chapter 3.2.5	*Green Roof Landscaping Criteria*	*32. One commenter noted that their firm prepares green roof plans regularly, and argues that the preparation of green roof planting plans should not be limited to landscape architects or botanists.* *33. One commenter recommends DOEE add a definition for "extreme drought condition," as it relates to when irrigation can be applied to BMP systems without negatively affecting stormwater retention achieved.*

Response:

32. DOEE agrees with the substance of this comment. The green roof planting plan preparation requirement has been changed to a recommendation, as DOEE will review the substance of the planting plan regardless of who prepared it.

33. DOEE notes there is no instance of the phrase "extreme drought condition" in the Guidebook. However, DOEE has added a definition of "Drought condition" to Appendix Y – Definitions (Formerly Appendix X).

Chapter 3.2.6	*Green Roof Construction Sequence*	*34. One commenter noted the current leak detection tests have been difficult for their clients working on renovation projects. Often the roofing is not able to accommodate a flood test, or the roof membrane is incompatible with the Electronic Vector Field Mapping test. The commenter recommends expanding the number of allowable test methods for leak detection.*

Response:

34. DOEE agrees with the substance of this comment. DOEE has removed references to EVFM and has generalized the leak detection methods to recommendations of electronic leak detection and flood testing.

Chapter 3.2.8	*Green Roof Stormwater Compliance Calculations*	*35. One commenter recommends DOEE specify the 50% storage reduction for irrigated green roofs only applies to the retention volume and the full storage volume may be counted towards meeting detention requirements.*

Response:

35. DOEE's intent is for the 50% storage reduction to apply to both. The irrigation of green roofs affects the storage space for stormwater in the context of both retention and detention. Language has been added in this section clarifying the application of this reduction.

Chapter 3.3.5	*Rainwater Harvesting Landscaping Criteria*	*36. One commenter asked if there were any conditions under which a designer could use harvested rainwater to irrigate green roofs.*

Response:

36. Intensive green roof systems must be considered compacted cover if they are to be irrigated by a rainwater harvesting system BMP. Otherwise, the rainwater harvesting system will not be considered as a stormwater BMP and the irrigation rules for green roofs will apply. No irrigation of any kind is allowed for extensive green roof systems. DOEE has added language to this section for these conditions.

Chapter 3.5.1	*Permeable Pavement Feasibility Criteria*	*37. One commenter described the challenges associated with meeting new 10-ft setback requirements for infiltrating practices near property lines.* *38. One commenter asked for clarification regarding the section on "Hotspot Land Uses," as they interpreted the paragraphs to contradict each other.* *39. One commenter disagrees that installing permeable pavement should be avoided in high loading situations, such as areas with high sediment, trash, or other debris loads.*

Response:

37. DOEE agrees with the substance of this comment. In the "Setbacks" subsection for all BMPs, DOEE has removed the requirement for 10-foot setbacks from property lines. DOEE retains the right to require an impermeable liner to protect adjacent properties where DOEE determines it necessary due to drainage and flooding concerns.

38. The paragraphs in this section are referring to two separate contamination issues and do not contradict one-another. The first paragraph discusses permeable pavement use in hotspot areas where surface runoff may be contaminated by oil and grease, per Appendix Q – Stormwater Hotspots. However, the second paragraph is referring to below-grade contaminated soils, such as what may occur with a leaking underground storage tank. However, the reference of Appendix Q in both paragraphs may cause confusion and has been corrected. Language has also been added to the "Hotspot Land Use" sections for several BMPs, including permeable pavement, to clarify the two separate contamination issues.

39. DOEE disagrees with the commenter. Permeable pavement is not intended to treat sites with high sediment or trash/debris loads, since such loads will cause the practice to clog and fail.

Chapter 3.5.4	*Permeable Pavement Design Criteria*	*40. One commenter recommends adding a maximum depth of aggregate below the underdrain of permeable pavement systems to ensure the system is not installed with a sump when there may be little or no infiltration.* *41. One commenter noted other jurisdictions do not have a minimum drawdown time for permeable pavement practices and requests clarification on why DOEE has one.*

Response:

40. DOEE agrees with the substance of this comment. DOEE has added language to the "Underdrain" subsection of this section specifying a maximum of 2 inches of stone beneath the underdrain.

41. The 36-hour minimum drain time for underdrains in permeable pavement, athletic playing fields, permeable athletic tracks, or permeable playground surfaces was put in place to ensure that these practices provide sufficient retention. Longer detention times will provide more retention via greater infiltration and evaporation.

Chapter 3.6.4	*Bioretention Design Criteria*	*42. One commenter compares a standard bioretention practice to a similar proprietary practice and argues this proprietary practice should be accepted as a standard bioretention.* *43. One commenter asked for clarification regarding whether the average bioretention ponding depth requirement still applies if non-bioretention soil is used for the structural soil portion under pavement and not counted towards the overall bioretention area.* *44. One commenter asked for clarification regarding whether the mulch layer is counted as part of the filter media layer for the minimum depth requirement.* *45. One commenter requests an addition to the rain garden soil specifications to allow deep decompaction and augmentation of existing soils instead of DOEE's current requirement of soil exchange, citing neighboring jurisdictions which allow this practice.* *46. One commenter suggests allowing perlite or Solite in bioretention soil mixes to achieve a much higher retention capacity, citing neighboring jurisdictions which allow this practice.* *47. One commenter expressed approval that the DOEE bioretention soil specification matches the DDOT bioretention soil specification.* *48. One commenter pointed out the difficulties in accessing soil media beneath sidewalks and permeable pavements adjacent to engineered tree box filters for routine maintenance.*

Chapter 3.6.4	*Bioretention Design Criteria*	*49. One commenter questioned the relative stormwater retention and detention benefits of green roof soil versus bioretention soil when considering each soil's permeability.*

Response:

42. DOEE does not endorse any particular product, but may approve it if it meets the Guidebook's design requirements for bioretention. Otherwise, the practice must be submitted as a proprietary practice and DOEE will evaluate the degree of retention, if any, based on available laboratory testing and research.

43. The comment is correct. If non-bioretention soil is used under the sidewalk and is not considered bioretention area, then the ponding requirements will apply only to the bioretention area itself.

44. Mulch is not considered part of the filter media layer regarding the minimum filter media bed depth. Language has been added to the "Filter Media Depth" section clarifying this intent.

45. DOEE does not allow augmentation for bioretention soils due to the variability in the retention capacity of the soil in-situ. For consistency, DOEE must require a standard soil specification that is exchanged with the in-situ soils. However, deep decompaction and augmentation methods could be used to construct an infiltration basin or trench instead of a rain garden.

46. DOEE has investigated the use of perlite and Solite in bioretention mixes, including in neighboring jurisdictions such as Montgomery County. Based on this research, DOEE has determined these substances do not provide a greater retention value than the bioretention soil mix already specified in the Guidebook, which contains mostly sand. Because an intent of DOEE's choice of bioretention soil mix is to maintain consistency with the bioretention mixes of other agencies, such as the DDOT, the bioretention mix in the Guidebook will remain unchanged.

47. DOEE appreciates the commenter's feedback.

48. DOEE appreciates the commenter's feedback. DOEE will consider investigating these maintenance difficulties.

49. DOEE agrees that green roof media with lower rates of permeability may provide greater retention benefit. This is why the storage volume equations for green roofs utilize the parameter maximum water retention rather than porosity to determine how much water is held by a green roof.

Chapter 3.8.4	*Infiltration Design Criteria*	*50. One commenter expressed support for the pretreatment requirements for infiltration trenches and basins. Additionally, the commenter expressed support for the use of saturated hydraulic conductivity for designing infiltration practices.*

Response:

50. DOEE appreciates the commenter's feedback.

Chapter 3.8.8	*Infiltration Stormwater Compliance Calculations*	*51. A commenter argued that additional BMPs with a 100% retention value – such as green roofs and infiltration trenches – should be included in the list of DOEE-accepted treatment practices to remove 80% of total suspended solids (TSS) to meet MS4 site drainage area requirements.*

Response:

51. DOEE offers a clarification on its existing guidance. Infiltration trenches, enhanced bioretention designs, and all other BMP designs that retain 100% of their storage volume are all inherently considered accepted TSS treatment practices because they are retaining all runoff and pollutants from their contributing drainage area up to the BMP's storage volume. By contrast, some BMPs retain less than 100% of their storage volume, such as standard bioretention practices, due to the physical properties of these systems and how they retain water. While these practices do not receive retention value for their entire storage volume, these practices receive treatment value for the volume that is not retained because runoff still filters through the system, thereby removing pollutants. In all cases, any additional runoff is considered overflow that bypasses the BMP and is not treated. Language in the Stormwater Compliance Calculations sections for several BMPs have been revised to reflect DOEE's clarification.

Chapter 3.13.1	*Proprietary Feasibility Criteria*	*52. One commenter requested DOEE consider creating an additional pathway for proprietary practice use outside Chapter 3.13.*

Response:

52. DOEE determined Chapter 3.13 is a sufficient pathway for proprietary practice use in stormwater management plans.

Chapter 3.14.2	*Planting Trees*	*53. One commenter asked why trees can't get more retention value.*

Response:

53. The retention values assigned to trees are based on a comprehensive study conducted by the Center for Watershed Protection, funded by a grant from the U.S. Forest Service's National Urban and Community Forestry Advisory Council. The models and research produced by this study support the retention values assigned to the different categories of trees. Additionally, based on further review of this study, DOEE has assigned different retention values to Special and Heritage trees as defined in the Tree Canopy Protection Amendment Act of 2016, effective July 1, 2016 (D.C. Law 21-133, D.C. Official Code § 8-651.02), whereas before these tree categories were assigned the same retention value. DOEE's intent is to recognize the relative stormwater management performance of preserved trees of these sizes. Preserved Special Trees now receive 30 cubic feet of retention value and preserved Heritage Trees receive 40 cubic feet of retention value.

Chapter 3.14.5	*Tree Stormwater Compliance Calculations*	*54. Some commenters expressed approval at the addition of the new categories of trees.*

Response:

54. DOEE appreciates the commenters' feedback.

Chapter 5.2.1	*Submittal and Review Process of Stormwater Management Plans*	*55.* One commenter recommends DOEE revise its expiration of stormwater management plan approval to better accommodate phased projects or projects that are revised, but do not change the project's stormwater management features.

Response:

55. While DOEE's approval of a stormwater management plan may expire if the building permit expires, the applicant is free to submit the same stormwater management plan so long as it meets stormwater management requirements at the time of resubmittal. Regarding phased projects, stormwater management plans are approved individually for each phase and are unlikely to encounter this issue.

Chapter 5.2.2	*SWMP Submittal Documents*	*56. Some commenters requested an update of the list of SWMP submittal documents to reflect DOEE's current administrative processes.*

Response:

56. DOEE agrees with the substance of this comment. The list of supporting documents has been updated.

Chapter 5.2.4	*Resubmission of Stormwater Management Plans*	*57. Some commenters disagreed with the requirements for resubmitting stormwater management plans, pointing out that the list of changes that require resubmission occur frequently during construction. These commenters recommended allowing more flexibility with the resubmission process to accept more changes at the as-built stage rather than requiring a resubmission and re-approval during construction. One commenter specifically pointed out that most as-built submissions require a revision approval, which is challenging to complete within the 21 days required once the final inspection has been conducted.*

Response:

57. DOEE determined the list of changes based on feedback from DOEE inspectors and through several years of observing as-built submissions since the 2013 Stormwater Management Regulations were implemented. The intent of the list is to catch modifications to stormwater management plans which would affect the performance and function of BMPs that are being constructed, along with changes

which would affect the compliance data DOEE uses in its reporting on its MS4 permit. The revised list of changes is more specific than the list included in the 2013 Guidebook, but does not expand the scope of changes that require a resubmission. Therefore, the revised list of changes is intended to not only help designers and construction teams better determine which types of changes require a resubmission, but also changes which do not require a resubmission, resulting in fewer unnecessary resubmissions. DOEE will move forward with the criteria for the resubmission of stormwater management plans as proposed. DOEE will monitor the frequency of resubmittals and listen to the design community's feedback and make changes to DOEE's business practices accordingly. DOEE points out that the final inspection won't be conducted if a revision is required; therefore, there is no 21-day time limit on the submission and approval of a revision submitted at the as-built stage.

Chapter 6.3	*Off-Site Retention Via Stormwater Retention Credits*	*58. A commenter requested confirmation about whether sites in the MS4 that purchase SRCs from the CSS can purchase additional SRCs from the CSS for subsequent years of compliance.* *59. A commenter offered the following scenario: a site in the CSS has sold SRCs to a site in the MS4. The site in the MS4 does not purchase additional SRCs from the seller. The commenter asked whether the site in the CSS could sell SRCs to a different site in the MS4.* *60. The commenter asked whether sites in the CSS that triggered the pre-2013 regulations and are SRC eligible would be able to sell SRCs to sites in the MS4.*

Response:

58. In the scenario described by the commenter, the buyer could purchase additional SRCs from the CSS only if the subsequent purchase were made according to the terms of a contract signed prior to three months after the effective date of the final rulemaking. This could be the case if the original contract had options for purchases in future years. However, the buyer could not purchase additional SRCs from the CSS from the same seller under the terms of a subsequent contract and could not purchase SRCs from the CSS from a different seller.

59. In the scenario described by the commenter, the site in the CSS could not sell SRCs to a different site in the MS4, unless they are sold according to a contract signed prior to three months after the effective date of the rulemaking.

60. No. Sites in the MS4 will be able to use only SRCs from the MS4.

Appendix B	*B.4.5 - Potential Design Modifications for Infiltration-based PROW BMPs*	*61. One commenter asked whether DDOT will approve the specific design modifications outlined in the referenced section and what is the purpose of these modifications.*

Response:

61. Both BMP design modifications were developed in partnership with DDOT and have been implemented in Type 1 MEP roadway reconstruction projects for several years. Due to the size and scope of these Type 1 MEP projects, it is not feasible to conduct infiltration

tests at every BMP location. Therefore, DOEE allows these BMP design modifications to encourage more infiltrating BMPs where it is not reliable to extrapolate infiltration data from the nearest test. Projects that implement BMPs with these design modifications may achieve more retention than they otherwise would be allowed due to lack of reliable infiltration data, but are also designed to drain sufficiently in the event infiltration rates are poorer than anticipated. This section clarifies that these design modifications apply only to MEP Type 1 projects.

Appendix P (Formerly Appendix O)	***Geotechnical Information Requirements for Underground BMPs***	*Many commenters disagreed with the use of the saturated hydraulic conductivity as the basis for calculating an infiltrating BMP's drawdown time and storage volume.* 62. *Many commenters point to neighboring jurisdictions, which allow using the infiltration rate reported from a falling head test.* 63. *Many commenters noted they have installed infiltration trenches in the District for years with no known BMP failure, and want to continue using the infiltration rate accepted since DOEE first began implementing the stormwater regulations.* 64. *Many commenters argued that using the saturated hydraulic conductivity will require drastic increases in BMP sizing to meet a more conservative drawdown rate, thus increasing project cost.* 65. *Many commenters argued using the saturated hydraulic conductivity will place an additional burden on single-family development where infiltration is often the only option.* 66. *Many commenters pointed out the impact on groundwater recharge opportunities that will be eliminated due to requiring more piped and structural stormwater solutions.* 67. *One commenter argues the saturated hydraulic conductivity value is a drastically different metric than the infiltration rate derived from a falling head test. The commenter points out that the saturated hydraulic conductivity value models infiltration into completely saturated soil. Whereas the falling head test models behavior of typical stormwater practices, such as an infiltration trench, which infiltrate into unsaturated soil.* 68. *One commenter provided general technical information on the limitations of using the saturated hydraulic conductivity to design infiltrating BMPs.*

Response:

62. Due to the impact of horizontal flow during the test, a simple falling head infiltration test through a small-diameter pipe does not adequately reflect the flow that will likely occur through a large infiltration facility. The saturated hydraulic conductivity, which is determined by the testing method DOEE requires and incorporated into the infiltration design equations, is a better approximation of infiltration facility performance. The conservative nature of the saturated hydraulic conductivity can account for the degradation of infiltrating soils during construction due to compaction and over time from sedimentation. An accurate estimate of infiltration performance is important for multiple reasons, including because the over-estimation of BMP infiltration can lead to stagnated water and BMP failure.

    While measuring infiltration in terms of saturated hydraulic conductivity may be more conservative than the method DOEE previously allowed, it also provides a more reliable estimate, which has enabled DOEE, after consulting several experts and newly-emerged research, to remove the requirement to include a safety factor. That requirement called for measured infiltration rates to be halved prior to using for design purposes. All drawdown equations in the Guidebook have been modified accordingly, and additionally clarify the use of the saturated hydraulic conductivity in their calculation.

63. See response #62.

64. See response #62.

65. See response #62.

66. See response #62.

67. See response #62.

68. DOEE acknowledges the limitations to using saturated hydraulic conductivity for infiltration design. DOEE is conducting a study to determine the applicability of new design methodologies for infiltrating BMPs and may release updated guidance in the future.

Appendix Y (Formerly Appendix X)	*Definitions – Land Disturbance*	*DOEE received several comments regarding land disturbance within a building footprint.* *69. Commenters argued that small, residential projects would be unfairly impacted by triggering stormwater management requirements as a result of this definition, forcibly expanding the scope of such projects and increasing their cost.* *70. Commenters argue that there are few stormwater opportunities in renovation projects which are not changing the existing building footprint but are underpinning the existing foundation.* *71. Commenters argued many more projects will be triggered by this definition change.* *72. Commenters argued that land disturbance should be considered such only in areas which are exposed to the weather and therefore stormwater runoff.* *73. Commenters argued that because the stormwater characteristics on these types of renovation projects are not changing, they should not be subject to stormwater management requirements.* *74. One commenter asked whether DOEE is referring to the above-grade or below-grade portion of a building's wall when evaluating whether underpinning or other foundation-strengthening activities are considered land disturbance or an improvement.*

Response:

69. DOEE points out that the definition changes will result in fewer small residential projects triggering the requirements than would otherwise be the case. Additionally, the typical small, individual residential project does not trigger the stormwater regulations, due to these types of projects having less than 5,000 square feet of work area (work area being either area of disturbance, building footprint, or a combination of both). The typical rowhouse in DC sits on an individual lot less than 2,000 square feet. Therefore, multiple rowhouses would need to be developed at the same time for the project to trigger stormwater management requirements. Projects of this scope and size constitute the type of development DOEE intends to regulate with the stormwater management regulations.

70. DOEE disagrees with this comment. A project which consists solely of renovating an existing building with no expansion of the footprint will likely not require a wall to be taken down to complete the renovation; therefore, the activity would not be considered "land disturbance." If such a project would require a wall to be taken down, it would almost assuredly include some other exterior disturbance due to the movement of large construction equipment, stockpile areas, and construction entrances; therefore, the project would not be limited to the building's footprint to install stormwater practices.

71. DOEE disagrees with this comment. No additional projects will be triggered because the area threshold of both major regulated activities will remain the same. There still must be 5,000 square feet of work area present for a project to trigger the stormwater regulations. The clarification in this definition only changes how some activities are considered when calculating the stormwater retention volume requirement for a project: while under the previous interpretation, all work that exposed soil, even within a building's footprint, was considered "land disturbance." Under the new interpretation, sometimes work that exposes soil within a building's footprint is considered an "improvement" and not "land disturbance." The effect is that while the total regulated area remains the same, the required volume of stormwater management may be reduced in certain projects by DOEE's change in definition.

72. DOEE disagrees with this comment. DOEE has observed that many stormwater management opportunities exist on projects which disturb land that is not exposed to the weather.

73. DOEE disagrees with this comment, which is also outside the scope of this guidebook revision since DOEE is not changing the applicability of the regulations to specific projects. Aside from the 15-year detention requirement, DOEE's stormwater regulations are not based on the change in stormwater characteristics between pre-project and post-project conditions. The stormwater management regulations are intended to enable the District to achieve the long-term goal of fishable and swimmable waterbodies. Because the District was already heavily developed at the time the stormwater regulations were promulgated, DOEE recognized that the existing conditions were insufficient to achieve this goal. Therefore, development projects above the thresholds in the stormwater regulations are required to improve the stormwater characteristics of their site, regardless of the existing conditions.

74. DOEE's intent was to refer to the above-grade portion of a building's wall. Additional clarification is provided in the definition of "land disturbance."

Appendix Y (Formerly Appendix X)	***Definitions – "Major Land Disturbing" and "Major Substantial Improvement"***	*75. One commenter asked how land disturbing activities within a building's footprint contribute to triggering a major regulated activity.*

Response:

75. DOEE has created a new appendix, Appendix V – Examples of Regulated Activities to illustrate how projects trigger major regulated activities. Please see Appendix V for more information.

Appendix Y (Formerly Appendix X)	***Definitions – "Common Plan of Development"***	*76. One commenter recommends DOEE provides clarification or an outline of the master plan process.*

Response:

76. While outside of the proposed rulemaking or Guidebook updates, DOEE agrees with the substance of this comment. DOEE will continue internal discussions and seek to issue further guidance of the master plan process in a future update to the Guidebook.

Appendix Y (Formerly Appendix X)	***Definitions – "publicly accessible"***	*77. Several commenters requested a definition of "publicly accessible," asking whether various situations would be considered "publicly accessible," such as schools and community centers.*

Response:

77. DOEE has included additional language in the regulations to clarify the types of situations that the exemptions for athletic fields, permeable play areas, and permeable tracks apply. Section 517.7(c) now refers to these types of projects being located at "a school or public park and is made available for use by the general public." If a community center has an athletic playing field, permeable play area, or permeable track on its property, DOEE would generally consider this part of the property to be a park.

Appendix Y (Formerly Appendix X)	***Definitions – "site"***	*78. One commenter asked how DOEE defines a "site" with regard to the definitions of Major Land Disturbing and Major Substantial Improvement, specifically for projects on campuses.*

Response:

78. DOEE defines a site in Appendix Y – Definitions. For additional information regarding how DOEE identifies sites, please see Appendix W – Site Drainage Area and BMP Design Diagrams.

Appendix Y (Formerly Appendix X)	***Definitions – "Market Value of Structure"***	*79. One commenter pointed out that for properties with multiple buildings on one lot, it is difficult to determine the building value per the Office of Tax and Revenue's assessment.*

Response:

79. When there is not an assessment for an individual building on a lot with multiple buildings, DOEE can request an individual estimate from the Office of Tax and Revenue.

No specific Guidebook reference	***No specific Guidebook reference***	*80. One commenter proposes adding conservation easements into the GAR landscape elements to incentivize the protection of private green space.* *81. One commenter expressed general opposition to small-scale green infrastructure on the grounds that green infrastructure is intended for large industrial projects and not for residential use.* *82. One commenter recommends DOEE clarify or provide alternative wording for the requirements associated with a vehicular access area.*

Response:

80. Green Area Ratio is outside the scope of the Stormwater Management Guidebook.

81. DOEE disagrees with this commenter's opinion, as DOEE has seen significant benefits from small-scale green infrastructure implemented throughout the District.

82. DOEE determined the existing wording is clear and sufficient.

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