

Public Comments & DNR Responses
to Proposed Guidance

**Modeling Post-Construction Storm Water Management
Treatment**

The Department of Natural Resources (DNR) received comments from seven individuals and/or organizations:

Name	Organization	Commenter Code
Alex Mayou	JSD	1
Carlea Jones	AECOM	2
John Lindert	Strand	3
Todd Gibbon	Long Island Engineering	4
Jesse Becker	Point of Beginning	5
Brad Seubert	HECL	6
Alyssa Reinke	Northeast Wisconsin Stormwater Consortium	7

Thank you for taking the time to review and comment on the proposed guidance.

A summary of comments and DNR responses are listed below under the pertinent final guidance item number.

General Comment

Thank you for the opportunity to comment. I use this document every week. It is a valuable resource. [4]

DNR Response: Thank you for letting us know that you value this guidance.

Guidance Item 6.

The specification for the compost is typically not achievable or not available. My concern is that developers will use local compost from nearby dairy farms in an attempt to meet the tech standard. This certainly wouldn't meet the specifications and would release large amounts of phosphorus for several years. Instead of requiring compost, I recommend using onsite salvaged topsoil that has been screened, or imported screened topsoil.

Using onsite materials reduces the amount of invasive plants that can be transported. Using topsoil instead of compost will reduce the risk of discharging large amounts of phosphorus during the first years while the compost continues to break down. Onsite topsoil is a cost effective material. I do a lot of projects in rural northern WI and the closest composting meeting spec was found in Minneapolis. Not a financially responsible option to truck compost 250 miles.

Three inches of screened topsoil placed on top of the sand, and then roto tilled to a depth of 12" makes for nice growing soil for infiltration basins and biofiltration basins. [4]

DNR Response:

The original DNR engineered soil mixture included mixing sandy loam or loamy sand topsoil along with compost and C33 sand. However, there were instances of topsoil with clayey soil getting mixed into the engineered soil mixture. Clayey soil that receives runoff with road salt can lead to high soil Sodium Adsorption Ratio (SAR), which can reduce or even seal the soil from allowing infiltration. For this reason, DNR removed topsoil completely from its recommended engineered soil mixture.

Adding compost per Specification S100 (available with the post-construction technical standards) can provide greater metals and hydrocarbons capture.

Alternatives to compost use include, per guidance item 47, C33 sand without any compost. There are native prairie plants that can grow in sand without adding compost.

The commenter was also provided a list of facilities generating Class A compost as defined in s. NR 502.12(16), Wis. Adm. Code. No change was made to the guidance.

Guidance Item 6.c.

If 80% TSS reduction is specified, a corresponding 67% or so TP reduction is generated by WinSLAMM. There are instances where if you do not specify 80% solids reduction but use the WDNR's engineered media mix, TP pollutant reduction can turn negative due to the leaching of TP from the compost. When you force WinSLAMM to give you this 80% treatment is this considered acceptable for TP reduction or should another mixture like peat moss be used instead of compost to prevent leaching of TP and is there any guidance from WDNR on how to calculate credit? Will WinSLAMM incorporate that at some point? [3]

DNR Response: The department is aware of this concern and that new research also indicates that runoff containing road salt enhances leaching of TP from the media. Therefore, Guidance Item 44 states that, no phosphorus reduction should be taken for biofilters with compost in the engineered soil. WinSLAMM version 10.5 includes a variety of soil media and amendments, including iron filings, with removal rates based on literature reviews. The department will be reviewing that literature and providing additional guidance on determining pollutant removal estimation for other media mixes. In the meantime, for amendments not included in WinSLAMM, please consult a DNR storm water engineer. No change was made to the guidance.

Guidance Item 6.d.

Will Technical Standard 1004 be updated to provide specific requirements or recommendations for how to limit the input of sediment and reduce maintenance? [7]

DNR Response: Technical Standard 1004 includes a pretreatment section. It is recommended that if the 'a biofilter will clog' warning is received in WinSLAMM, that the design be adjusted to increase the infiltration area, decrease the drainage area, or include

other BMPs upstream of the biofilter. The guidance was modified to clarify that the design should be modified.

Guidance Item 7.

Will adding tree canopy increase the TP load coming off the source area? [3]

DNR Response: If leaves from deciduous trees are not managed in the fall, they will increase the TP load from the source area. However, it is DNR's understanding that WinSLAMM only accounts for changes in the volume of runoff due to tree canopy but does not incorporate related changes to pollutant concentrations.

The guidance was modified to clarify that the tree canopy feature should not be used.

Guidance Item 7.

- a) For municipal streets, does tree coverage only pertain to trees in the right of way only or does it include all the source area?
- b) Do trees not count toward private sites that are developed?
- c) What is the baseline coverage for trees in WinSLAMM? The inputs are default to "0", so is there something built into WinSLAMM that is not visible to modelers? If existing tree coverage is less than the baseline coverage, does WinSLAMM deduct treatment? [7]

DNR Response:

- a) Tree coverage would only pertain to tree canopy over the pavement. WinSLAMM is set up to adjust the hydrology to account for water intercepted by the tree canopy.
- b) Trees typically would not count toward private sites as the trees are not big enough at permit termination to provide any benefit.
- c) Baseline tree canopy coverage in SLAMM has not been established. SLAMM hydrology and pollutant runoff were developed based on monitoring data collected from what was considered to be typical land use conditions including tree canopy cover over streets at the time.

DNR has revised the guidance to state:

WinSLAMM version 10.5 allows a percent of tree canopy cover to be added for parking, streets, driveways/sidewalks source areas as a source area parameter. Similar to impervious surface disconnection, adding tree canopy reduces the volume of water from the source area and the quantity of pollutants tied to that quantity of water. Increased pollutant loading to account for tree pollen and leaf fall is not included in the program at this time. Therefore, modeling to demonstrate compliance with storm water performance standards or TMDL wasteload allocations should not include use of this feature.

Guidance Item 9.

Is total street length equal to the total street centerline length? Also, does the paved street width include the gutter pan? [3]

DNR Response: It appears from the PV Associates WinSLAMM help menu under “Street Source Area Parameters” that the total street length is a centerline length. The paved street width would include the curb and gutter pan. The guidance has been updated to add: “The paved street width is measured from curb face to curb face or from outside gutter edge to outside gutter edge.”

Guidance Item 15.

The words “on the same parcel” were added. There are many reasons why parcels cannot be combined but are viewed as the same property, such as parks (example Lutz Park in Appleton) and larger redevelopments where a master plan is developed and implemented (example Riverheath redevelopment in Appleton).

Suggest adding the following “...on the same parcel, unless locating practices on a different parcel is approved by the local approving agency and the appropriate easements and long term maintenance documents are recorded.” [7]

DNR Response: This suggestion has been incorporated.

Guidance Item 25.

- a) What is the purpose of the note regarding Atlas 15?
- b) Will it be required for modeling?
- c) It is our understanding that the release timeline NOAA Atlas 15 is 2027. Is it worthwhile to mention Atlas 15 at this time? [7]

DNR Response: The note in the guidance was further clarified.

- a) To make people aware that NOAA Atlas 15 is under development and it is expected to increase rainfall frequency estimates as compared to NOAA Atlas 14.
- b) Atlas 15 will be considered by regulatory agencies when it is available.
- c) DNR is commonly asked about what is being done to account for the apparent increasing rainfall intensity and depth. Therefore, we believe it is appropriate to make others aware of the ongoing development of Atlas 15.

Guidance Item 35.

- a) What is the basis for the 72 hour draw down time?
- b) What is meant by “an extended period of time?”
- c) Since WinSLAMM and P8 are the only models approved for use, clarify whether or not the current versions are or are not “designed to measure draw down from the end of a rainfall event” or “include the effect of back-to-back rainfalls on its calculated draw down time”.
- d) Should the “Note” be a statement and not a note? [7]

DNR Responses:

- a) The 72-hour maximum subsurface drawdown time has been expected since the original Bioretention Standard 1004 nearly 20 years ago. The belief still stands that

the native infiltration soil interface should have a dry out period to allow for aeration to help prevent anoxic conditions which may reduce infiltration or cause mobilization of natively occurring metals in the subsurface. It was felt that a 72-hour period to draw down should be applied to a single rainfall event, even though back-to-back rainfall events may lead to longer subsurface ponding periods.

- b) Upgradient devices like detention ponds commonly restrict the flow rate and release water over a longer period. This slower release will increase ponding time and saturation of downgradient infiltration device, which could lead to anoxic conditions or biofouling of the soil and reduced infiltration rates.
- c) WinSLAMM 10.5 and earlier versions do not calculate drawdown time from the end of a rainfall event. It is our understanding that future WinSLAMM version 10.6 may adjust for this, but it may still not account for upgradient restrictive devices. HydroCAD and other hydraulic models commonly provide a better means to evaluate how long water is released from devices in series.
- d) DNR believes a note is appropriate because the subject addressed in the note is specific to how to access information in a specific modeling program. The balance of the item is not model specific.

No changes were made to the guidance.

Guidance Item 35.

The Detailed Output Options for Biofilters are as follows:

Detailed Biofilter Output
Pollutant Concentration Detailed Output
Particulate Reduction Output
Stage-Outflow
Stochastic Seepage Rate Detail
Water Balance
Evapotranspiration Detail

None of these are titled Event Performance Summary. You should specify that you need to run the Water Balance Detailed Output to get the specified csv. [3]

DNR Response: This clarification has been added to the guidance.

Guidance Item 39.

Consider rewording this paragraph. It's not clear what the paragraph is intending to say or what direction is being provided. Is the intent that grass swales or filter strips don't count towards the effective infiltration cap? [6]

DNR Response: The paragraph has been reworded to emphasize that infiltration must be utilized to the maximum extent practicable in order for an effective infiltration area to count toward the infiltration area cap. The exclusion of grass swales and filter strips has been removed.

Guidance Item 45.

Can this guidance [Information needed to conduct water quality reviews of additives] be included in this document? (ie: if additives are used, will the TP reduction credit go up, and what is the process to do so?) [3]

DNR Response: Guidance Item 45 references and provides a link to existing procedures for toxicity review of additives that have been developed in collaboration with the wastewater program. That guidance is too long to duplicate within the post-construction modeling guidance document and does not address the pollution removal capabilities of the additives. The Proprietary Storm Water Filtration Devices Standard 1010 allows phosphorus removal credit for a filter that has GULD phosphorus approval through Washington State Department of Ecology's TAPE program. The potential phosphorus treatment credit for proprietary filter media additives and iron filings used in non-proprietary systems are being considered on a case-by-case basis until a guidance document on determining credit for these additives can be developed. No change was made to this guidance.

Guidance Item 46.

- a) For private sites it is not practical to expect salt to be diverted around bioretention facilities when, in many cases, a separate company is hired to manage snow and ice.
- b) Is there guidance/suggestions for how to complete this (catch basins with sumps, treatment swales, etc.)? [7]

DNR Response: Implementing a diversion around a bioretention device during the deicing season is recommended but not required. Diversion methods would be site specific and likely would require a flow diversion structure that can be opened and closed to divert flow to a separate swale or piped system. No change was made to the guidance.

Guidance Item 47.

The section "Sand Filter" (#36 in current document and #47 in the draft guidance document) has changed to not include 35% filtering credit for TP (Total Phosphorus). The Permeable pavement section still includes 35% TP reduction. Is there a reason it was removed from Sand Filters? If not, can this be updated to include the 35% TP reduction again in the sand filter note? [1,2, 3]

There appears to be an undocumented substantial change to the "Sand Filter" section of the guidance. The previous issuance of the guidance indicated that use of a sand filter in a bioretention basin would provide 35% TP removal treatment credit. This has been eliminated, but is not highlighted as substantial. In my opinion, this is a substantial change, as this means that the guidance document no longer readily provides a means to achieve TP removal via runoff filtering through the engineered soil. [5]

Continue to allow the 35% credit for Total Phosphorus removal until the new sand filter Technical Standard is effective and the research is more widely understood. Without this option, smaller sites have few options to meet TP removal requirements. [7]

DNR Response: The 35% TP sand filtering credit will be maintained in the guidance.

Recent research suggests that runoff with road salt draining through engineered soil leads to a release of metals and phosphorus. Soil amendments/additives may be needed to limit potential leaching of metals and phosphorus. The 35% TP sand filtering credit may be removed in future updates of the post-construction modeling guidance if the issue is addressed in Technical Standard 1012, Storm Water Sand Filter System, which is currently in development.

Guidance Item 57.

For the recommendation paragraph. The majority of sites are required to be evaluated for both infiltration and TSS control. Is this saying that two different models are required? One for TSS control with the filter strip coded as pervious and one for infiltration with it coded as source area 70? Please clarify. [6]

DNR Response: Yes, two model runs are needed. This clarification has been added.

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