City of Bellingham Comments
on
Stormwater Management Manual for Western Washington

Volume I, Chapter 2, section 2.5
For projects required to comply with Minimum Requirements #1-5, per Volume I, Chapter 2, section 2.5, projects are required to use permeable pavement if it meets the feasibility criteria in Volume I, Appendix I-F. Per Volume III, Chapter 3, section 3.4, permeable pavement designs for projects required to comply with Minimum Requirements #1-5 are not required to perform infiltration testing. This is of concern because the Design Criteria for Permeable Pavements in Volume III, Appendix III-C does not provide recommended subgrade depths for different hydrological classification soils. Hydrological classified "A" soils drain differently than "C" soils, but the subgrade design criteria is the same. Additionally, there are concerns that requiring project to use permeable pavements and raingardens, if meeting the feasibility criteria, will result in unanticipated, undesired results such as flooding or erosion impacts on nearby properties and structures.

Volume I, section 2.2 Exemptions
The proposed change for road maintenance, that previously allowed road projects that are not increasing the pavement area to only address Minimum Requirement #2, now requires compliance with Minimum Requirement #1-5. Those projects in excess of 2,000 sf must meet either the Low Impact Development Performance Standard, or must comply with Mandatory List #1. Mandatory List #1 requires permeable pavement, where full dispersion cannot be accomplished and where found to be feasible. Per the feasibility criteria in Appendix I-F of Volume I, PIT testing is required as Bellingham has largely glacial till soils. Additionally, per Volume III, Chapter 3, section 3.4 permeable pavement designs must test to observe groundwater elevations between December 1 through April 1. This would result in additional costs and increased time for projects that have new/replaced impervious surfaces between 2,000 sf and 5,000 sf.

Volume 1,Appendix I-F
*The Feasibility Criteria for Selected Low Impact Development Best Management Practices in Appendix I-F of Volume I for permeable pavement, requires that all roads other than arterial and collectors must be constructed with permeable pavement, if it meets the additional feasibility criteria. This requirement takes away the City's ability to make decisions on how the City's street will be constructed as well as result in additional costs and time from the required infiltration testing (PIT testing since Bellingham is on unconsolidated soils) and wet season groundwater monitoring as required in Volume III , Chapter 3, section 3.3. Additionally, the requirement for the use of permeable pavement will increase the cost of stormwater infrastructure maintenance labor and machinery.

Volume III, 3.3
The City is concerned about a lack of data on the need to use modified infiltration testing standards. As you know, the infiltration standards proposed to be eliminated have been the industry standard for much longer than stormwater regulations have been in place. Is Ecology saying that these standards have created defective stormwater facility designs for twenty plus years? If so, has there been testing to back up that assumption? Were the correction factors of 2, 4 or more for certain methodologies inadequate? The impact of this change in methodologies is so great, that Ecology should provide more information on what formed the basis of this decision.

Volume III, Chapter 3, section 3.3
*The elimination of the previously allowed infiltration testing methodology in Volume III, Chapter 3, section 3.3 is problematic. Per Volume III, Chapter 3 section3.5.5, only Pilot Infiltration Testing (PIT) would only be allowed within Bellingham since soils are considered unconsolidated. PIT testing is expensive and requires the use of large equipment and likely water trucks, if the property has no available water, which will increase the time and costs of development projects. Additionally, for City capital projects, such as roads, the project will be required to perform PIT testing along the right-of-way, which for many developed areas will require areas used by businesses and residential units, such as driveway access, landscaping, etc. to be disturbed to a greater extent than the previous accepted testing methods. Only allowing PIT testing for determining infiltration rates will increase project costs, increase project planning time, and may result in negotiations and restoration of disturbed areas used by private development, which also has an associated increase in costs.

Volume III, Chapter 3, section 3.3
There must be more clarification as to what would constitute appropriate historical data in regards to determining infiltration rates and groundwater monitoring as identified in Volume III, Chapter 3, section 3.3. In the current Manual, there are multiple infiltration testing methodologies that were allowed. Per Volume III, Chapter 3 section3.5.5, only Pilot Infiltration Testing (PIT) would only be allowed within Bellingham since soils are considered unconsolidated. Few to no development projects have used PIT testing to determine the sites infiltration rates. Could infiltration rate determinations, using the proposed to be unapproved methods, constitute historical data? Could groundwater elevation studies that didn't establish the direction of flow or seasonal variations be used as adequate historical data? Providing more clarification would provide a higher degree understanding as to what historical data and studies would be relevant.

Volume III Chapter 3, section 3.3.5
This requires that groundwater monitoring wells be installed and monitored through at least one wet season unless historical data regarding groundwater levels is available for projects that are required to comply with Minimum Requirements #1-9. There must be guidance as to what historical data would qualify. Additionally, the wet season groundwater monitoring must be performed before final design and is required to be part of the Stormwater Site Plan narrative. This rule requires that projects cannot submit for permitting without this monitoring. This required testing will result in increased cost of development. This monitoring requirement will also delay both private development projects as well as capital improvement projects by 3 to 9 months which will result in additional increased costs.

Volume III, Chapter 3, section 3.4
There is now an additional requirement to provide post construction monitoring and testing of infiltration and bioretention facilities. Guidance on those testing procedures for acceptance should be provided along with regional guidance/requirements regarding the consequences of failure. If we are going to tell people to dig up a facility and replace it in Bellingham our hope would be that the same conclusion is drawn in other cities and counties.

Volume III, Chapter 3, section 3.4
For projects that trigger Minimum Requirement #1-5, the proposed changes in the Manual will require much more up front planning and analysis which will result in increased costs. Per Volume III, Chapter 3, section 3.4 permeable pavement designs must test to observe groundwater elevations between December 1 through April 1. This requirement will increase the time and costs necessary for small development projects. Many projects that require compliance with Minimum Requirement #1-5 are single family residences. This requirement is seen as another cost the will continue to raise the cost of homes and other development projects.

Volume III, Pages C-7 to C-11 and Volume V, BMP T5.30
*The requirements and suggested parameters in this section conflict with BMP T5.30. It is suggested that BMP T5.30 be rewritten to incorporate the requirements of this appendix. Appendix C appears to have more specific design information for full dispersion for roadways but it also contains many should statements that are problematic to enforce upon.

For instance, Appendix C provides better information on sizing full dispersion based on collection system design and soil typing. Roads that collect water and discharge it as a point flow has different requirements than one that is allowed to use sheet flow. The requirements of App. C modify the dispersion length based on soils and tributary area. It also provides a requirement for the minimum area necessary devoted for full dispersion. BMP T5.30 does not include any of these more restrictive and better specified requirements.

In using one section versus the other here are some differences:
In App. C the the length of the dispersion area is calculated based on the tributary drainage width with a minimum of 100feet, in T5.30 there only a flat 100 feet required.
In App.C the area required to be devoted to the dispersion area is the length of the road x the treatment flow width. In T5.30 the requirement allows the 65% preserved area to be located anywhere even above the discharge point.

Appendix C includes a **suggested** varied slope allowance of 8% or 15% dependant on whether the water is being dispersed from a collection system or if it is natural sheet flow. While this standard appears to be a good one it has no authority.