

## City of SeaTac Flow Control BMP Infeasibility Criteria

Table 1 – Infeasibility Criteria Checklist for All Dispersion BMPs and All Infiltration BMPs

LID BMP	Infeasibility Criteria	Additional Information from Applicant
All Dispersion BMPs	The following criterion establishes that dispersion BMPs are infeasible, but only if based on an evaluation of site-specific conditions and a signed and stamped written determination from an appropriately licensed professional (e.g., engineer, geologist, or hydrogeologist):	
	<input type="checkbox"/> Where professional geotechnical evaluation recommends dispersion not be used due to reasonable concerns about erosion, slope failure, or downgradient flooding.	
	The following criteria each establish that dispersion BMPs are infeasible, without further justification, though some criteria may require professional services to evaluate:	
	<input type="checkbox"/> Where the minimum design requirements for dispersion BMPs in the 2016 King County Surface Water Design Manual (KCSWDM), as amended by the City of SeaTac FINAL Addendum to KCSWDM (Addendum), effective January 2017, cannot be met.	
	<input type="checkbox"/> For sites with septic systems, where the discharge of runoff from dispersion devices cannot be located down slope of the primary and reserve drainfield areas.	
	<input type="checkbox"/> Where the only available sites for dispersion devices are within critical area buffers (City of SeaTac Municipal Code [SMC] Title 15.700) or on slopes $\geq 15\%$ . <input type="checkbox"/> Where the only available sites for dispersion devices are within 50 feet of a steep slope hazard area (SMC Title 15.700.270), erosion hazard area (Addendum), or landslide hazard area (SMC Title 15.700.250).	
All Infiltration BMPs	The following criterion establishes that infiltration BMPs are infeasible, but only if based on an evaluation of site-specific conditions and a signed and stamped written determination from an appropriate licensed professional (e.g., engineer, geologist, or hydrogeologist):	
	<input type="checkbox"/> Where professional geotechnical evaluation recommends infiltration not be used due to reasonable concerns about erosion, slope failure, or down gradient flooding.	
	The following criteria each establish that infiltration BMPs are infeasible without further justification, though some criteria may require professional services to evaluate:	
	<input type="checkbox"/> Where the minimum design requirements in the KCSWDM, as amended by the Addendum, cannot be met.	
	<input type="checkbox"/> Where the minimum 5-foot setback between any part of an infiltration device and any structure or property line cannot be provided. <input type="checkbox"/> For sites with septic systems, where the infiltration device cannot be located downgradient of the primary and reserve drainfield areas.	

LID BMP	Infeasibility Criteria	Additional Information from Applicant
All Infiltration BMPs (Continued)	<input type="checkbox"/> Where the only available sites for infiltration devices are within sensitive area buffers or critical area buffers (SMC Title 15.700.015).	
	<input type="checkbox"/> Where the only available sites for infiltration devices are within 50 feet of a steep slope hazard area (SMC Title 15.700.270), erosion hazard area (Addendum), or landslide hazard area (SMC Title 15.700.250).	
	<b>Note:</b> For most infiltration BMPs, setbacks are measured from the vertical extent of maximum ponding before overflow. For bioretention, setback distances are as measured from the bottom edge of the bioretention soil mix (i.e., bioretention cell bottom at the toe of the side slope).	

**Notes:**

Addendum	FINAL City of SeaTac Addendum to the King County Surface Water Design Manual, effective January 2017
BMP	Best Management Practice
KCSWDM	2016 King County Surface Water Design Manual
SMC	City of SeaTac Municipal Code

**Table 2 – Infeasibility Criteria Checklist for Flow Control BMPs**

BMP	Infeasibility Criteria	Reference (Standard, Section, Page)	Additional Information from Applicant
Soil Amendment	The following portions of the project area are considered to be infeasible for soil amendment:	Addendum, Key Revisions section, Page 3	
	<input type="checkbox"/> Areas covered by an impervious surface		
	<input type="checkbox"/> Areas incorporated into a drainage facility		
	<input type="checkbox"/> Areas that are subject to a state surface mine reclamation permit		
	<input type="checkbox"/> Structural fill or engineered slopes		
Full Dispersion	The following portions of the project area are considered to be infeasible for full dispersion:	Table 1 (above)  KCSWDM, Section C.2.1, Page C-32    KCSWDM, Section C.2.1.7, Page C-38	
	<input type="checkbox"/> Where any of the infeasibility criteria for “All Dispersion BMPs” apply.		
	<input type="checkbox"/> Where the minimum design requirements for full dispersion cannot be met.		
	<input type="checkbox"/> Where geotechnical evaluation and approval is required for BMPs that propose to discharge towards or within described setbacks of steep slope hazard area, erosion hazard area, landslide hazard area, or slopes $\geq 15\%$ .		
Full Infiltration	The following portions of the project area are considered to be infeasible for full infiltration:	Table 1 (above)  KCSWDM, Section C.2.2, Page C-48    KCSWDM, Section C.2.2.2, Page C-49  KCSWDM, Section C.2.2.3, Page C-50  KCSWDM, Section C.2.2.4, Page C-51	
	<input type="checkbox"/> Where any of the infeasibility criteria for “All Infiltration BMPs” apply.		
	<input type="checkbox"/> Where the minimum design requirements for full infiltration cannot be met.		
	<input type="checkbox"/> Where geotechnical evaluation and approval is required for BMPs that propose to discharge towards or within described setbacks of steep slope hazard area, erosion hazard area, landslide hazard area, or slopes $\geq 15\%$ .		
	<input type="checkbox"/> Where the minimum 5-foot setback between any part of an infiltration device and any structure or property line cannot be met.		
	<input type="checkbox"/> For gravel filled trenches, where the required minimum 15-foot setback from buildings with crawl space cannot be met or where basement elevations are below the overflow point of the infiltration system.		
<input type="checkbox"/> For drywells, where the required minimum 15-foot setback from buildings with crawl space cannot be met or where basement elevations are below the overflow point of the drywell.			

BMP	Infeasibility Criteria	Reference (Standard, Section, Page)	Additional Information from Applicant
Full Infiltration (Continued)	<input type="checkbox"/> For ground surface depressions, where the required minimum 15-foot setback from buildings with crawl space cannot be met or where basement elevations are below the overflow point of the ground surface depression.	KCSWDM, Section C.2.2.5, Page C-52	
Limited Infiltration	The following portions of the project area are considered to be infeasible for limited infiltration:		
	<input type="checkbox"/> Where any of the infeasibility criteria for “All Infiltration BMPs” apply.	Table 1 (above)	
	<input type="checkbox"/> Where the minimum design requirements for limited infiltration cannot be met.	KCSWDM, Section C.2.3, Page C-57	
	<input type="checkbox"/> Where geotechnical evaluation and approval is required for BMPs that propose to discharge towards or within described setbacks of steep slope hazard area, erosion hazard area, landslide hazard area, or slopes $\geq 15\%$ .		
	<input type="checkbox"/> Where the minimum 5-foot setback between any part of an infiltration device and any structure or property line cannot be met.	KCSWDM, Section C.2.3.2, Page C-57	
	<input type="checkbox"/> For gravel filled trenches used for limited infiltration, where the required minimum 15-foot setback from buildings with crawl space cannot be met or where basement elevations are below the overflow point of the infiltration system.	KCSWDM, Section C.2.3.3, Page C-58	
<input type="checkbox"/> For drywells used for limited infiltration, where the required minimum 15-foot setback from buildings with crawl space cannot be met or where basement elevations are below the overflow point of the infiltration system.	KCSWDM, Section C.2.3.4, Page C-58		
Basic Dispersion	The following portions of the project area are considered to be infeasible for basic dispersion:		
	<input type="checkbox"/> Where any of the infeasibility criteria for “All Dispersion BMPs” apply.	Table 1 (above)	
	<input type="checkbox"/> Where the minimum design requirements for basic dispersion cannot be met.	KCSWDM, Section C.2.4, Page C-60	
	<input type="checkbox"/> Where geotechnical evaluation and approval is required for BMPs that propose to discharge towards or within described setbacks of steep slope hazard area, erosion hazard area, landslide hazard area, or slopes $\geq 15\%$ .		
<input type="checkbox"/> For gravel filled trenches proposed for basic dispersion, where the minimum 5-foot setback between any edge of the trench and the property line cannot be met.	KCSWDM, Section C.2.4.4, Page C-63		
Bioretention	The following portions of the project area are considered to be infeasible for bioretention:		
	<input type="checkbox"/> Where any of the infeasibility criteria for “All Infiltration BMPs” apply.	Table 1 (above)	

BMP	Infeasibility Criteria	Reference (Standard, Section, Page)	Additional Information from Applicant
Bioretention (Continued)	<ul style="list-style-type: none"> <li><input type="checkbox"/> Where the minimum design requirements for bioretention cannot be met.</li> <li><input type="checkbox"/> Where geotechnical evaluation and approval is required for BMPs that propose to discharge towards or within described setbacks of steep slope hazard area, erosion hazard area, landslide hazard area, or slopes <math>\geq 15\%</math>.</li> </ul>	KCSWDM, Section C.2.6, Page C-73	
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Within setbacks from structures as established by the City of SeaTac.</li> <li><input type="checkbox"/> Where they are not compatible with surrounding drainage system as determined by the City of SeaTac (e.g., project drains to an existing stormwater collection system whose elevation or location precludes connection to a properly functioning bioretention facility).</li> <li><input type="checkbox"/> Where land for bioretention is within area designated as an erosion hazard, or landslide hazard.</li> <li><input type="checkbox"/> Where the site cannot be reasonably designed to locate bioretention facilities on slopes <math>&lt; 8\%</math>.</li> <li><input type="checkbox"/> Within 50 feet from the top of slopes <math>&gt; 20\%</math> and <math>&gt; 10</math> feet of vertical relief.</li> </ul>	KCSWDM, Section C.2.6, Page C-75	
	<ul style="list-style-type: none"> <li><input type="checkbox"/> For properties with known soil or ground water contamination (typically federal Superfund sites or state cleanup sites under the Model Toxics Control Act (MTCA)): <ul style="list-style-type: none"> <li><input type="checkbox"/> Within 100 feet of an area known to have deep soil contamination;</li> <li><input type="checkbox"/> Where ground water modeling indicates infiltration will likely increase or change the direction of the migration of pollutants in the ground water;</li> <li><input type="checkbox"/> Wherever surface soils have been found to be contaminated unless those soils are removed within 10 horizontal feet from the infiltration area;</li> <li><input type="checkbox"/> Any area where these facilities are prohibited by an approved cleanup plan under the state Model Toxics Control Act or Federal Superfund Law, or an environmental covenant under Chapter 64.70 RCW.</li> </ul> </li> </ul>	KCSWDM, Section C.2.6, Page C-75 & C-76	
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Within 100 feet of a closed or active landfill.</li> <li><input type="checkbox"/> Within 100 feet of a drinking water well, or a spring used for drinking water supply.</li> </ul>	KCSWDM, Section C.2.6, Page C-76	

BMP	Infeasibility Criteria	Reference (Standard, Section, Page)	Additional Information from Applicant
Bioretention (Continued)	<ul style="list-style-type: none"> <li><input type="checkbox"/> Within 10 feet of small on-site sewage disposal drainfield, including reserve areas, and grey water reuse systems. For setbacks from a “large on-site sewage disposal system”, see Chapter 246-272B WAC.</li> <li><input type="checkbox"/> Within 10 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system ≤1,100 gallons. (As used in these criteria, an underground storage tank means any tank used to store petroleum products, chemicals, or liquid hazardous wastes of which ≥10% of the storage volume (including volume in the connecting piping system) is beneath the ground surface.</li> <li><input type="checkbox"/> Within 100 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system &gt;1,100 gallons.</li> <li><input type="checkbox"/> Where the minimum vertical separation of 1 foot to the seasonal high water table, bedrock, or other impervious layer would not be achieved below bioretention that would serve a drainage area that is: 1) &lt;5,000 sq. ft. of pollution-generating impervious surface, and 2) &lt;10,000 sq. ft. of impervious surface; and, 3) &lt;¾ acres of pervious surface.</li> <li><input type="checkbox"/> Where the minimum vertical separation of 3 feet to the seasonal high water table, bedrock or other impervious layer would not be achieved below bioretention that: 1) would serve a drainage area that meets or exceeds: a) 5,000 square feet of pollution-generating impervious surface, or b) 10,000 square feet of impervious surface, or c) three-quarter (3/4) acres of pervious surfaces; and 2) cannot reasonably be broken down into amounts smaller than indicated in (1).</li> <li><input type="checkbox"/> Where the field testing indicates potential bioretention sites have a measured (a.k.a., initial) native soil saturated hydraulic conductivity &lt;0.30 inches per hour.</li> </ul>		

Permeable Pavement	The following portions of the project area are considered to be infeasible for permeable pavement:		
	<input type="checkbox"/> Where any of the infeasibility criteria for "All Infiltration BMPs" apply.	Table 1 (above)	
	<input type="checkbox"/> Where the minimum design requirements for permeable pavement cannot be met. <input type="checkbox"/> Where geotechnical evaluation and approval is required for BMPs that propose to discharge towards or within described setbacks of steep slope hazard area, erosion hazard area, landslide hazard area, or slopes $\geq 15\%$ .	KCSWDM, Section C.2.7, Pages C-86 & C-87	
	<input type="checkbox"/> Within an area designated as an erosion hazard, or landslide hazard. <input type="checkbox"/> Within 50 feet from the top of slopes $>20\%$ . <input type="checkbox"/> For properties with known soil or ground water contamination (typically federal Superfund sites or state cleanup sites under the Model Toxics Control Act (MTCA)): <ul style="list-style-type: none"> <li><input type="checkbox"/> Within 100 feet of an area known to have deep soil contamination;</li> <li><input type="checkbox"/> Where ground water modeling indicates infiltration will likely increase or change the direction of the migration of pollutants in the ground water;</li> <li><input type="checkbox"/> Wherever surface soils have been found to be contaminated unless those soils are removed within 10 horizontal feet from the infiltration area;</li> <li><input type="checkbox"/> Any area where these facilities are prohibited by an approved cleanup plan under the state Model Toxics Control Act or Federal Superfund Law, or an environmental covenant under Chapter 64.70 RCW.</li> </ul> <input type="checkbox"/> Within 100 feet of a closed or active landfill. <input type="checkbox"/> Within 100 feet of a drinking water well, or a spring used for drinking water supply, if the pavement is a pollution-generating surface. <input type="checkbox"/> Within 10 feet of a small on-site sewage disposal drainfield, including reserve areas, and grey water reuse systems. For setbacks from a "large on-site sewage disposal system", see Chapter 246-272B WAC. <input type="checkbox"/> Within 10 feet of any underground storage tank and connecting underground pipes, regardless of tank size. As used in these criteria, an underground storage tank means any tank used to store petroleum products, chemicals, or liquid hazardous wastes of which $\geq 10\%$ of the storage volume (including volume in the connecting piping system) is beneath the ground surface. <input type="checkbox"/> At multi-level parking garages, and over culverts and bridges.	KCSWDM, Section C.2.7, Pages C-88 & C-89	

<p>Permeable Pavement (Continued)</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Where the site design cannot avoid putting pavement in areas likely to have long-term excessive sediment deposition after construction (e.g., construction and landscaping material yards).</li> <li><input type="checkbox"/> Where the site cannot reasonably be designed to have a porous asphalt surface &lt;5% slope, or a pervious concrete surface at &lt;10% slope, or a permeable interlocking concrete pavement surface (where appropriate) at &lt;12%. Grid systems upper slope limit can range from 6% to 12%; check with manufacturer and local supplier.</li> <li><input type="checkbox"/> Where the native soils below a pollution-generating permeable pavement (e.g., road or parking lot) do not meet the soil suitability criteria for providing treatment (See Section 5.2.1 of the KCSWDM). Note that where the soil beneath the infiltration BMP does not have properties that reduce the risk of groundwater contamination, the applicant has the option of using permeable pavement for residential driveways serving ≤2 households that are not within a groundwater protection area if a 6" sand liner beneath the permeable pavement is included in the design. This approach is optional and does not make permeable pavement required to be implemented as part of the prescriptive BMP lists detailed in Core Requirement #9 and Section 1.3 of Appendix C of the KCSWDM.</li> <li><input type="checkbox"/> Where seasonal high ground water or an underlying impermeable/low permeable layer would create saturated conditions within 1 foot of the bottom of the lowest gravel base course.</li> <li><input type="checkbox"/> Where underlying soils are unsuitable for supporting traffic loads when saturated. Soils meeting a California Bearing Ratio of 5% are considered suitable for residential access roads.</li> <li><input type="checkbox"/> Where appropriate field testing indicates soils have a measured (a.k.a., initial) native soil saturated hydraulic conductivity &lt;0.3 inches per hour.</li> <li><input type="checkbox"/> Roads that receive more than very low traffic volumes, and areas having more than very low truck traffic. Roads with a projected average daily traffic volume of ≤400 vehicles are very low volume roads (AASHTO, 2001) (U.S. Dept. of Transportation, 2013). Areas with very low truck traffic volumes are roads and other areas not subject to through truck traffic but may receive up to weekly use by utility trucks (e.g., garbage, recycling), daily school bus use, and multiple daily use by pick-up trucks, mail/parcel delivery trucks, and maintenance vehicles. Note: This infeasibility criterion does not extend to sidewalks and other non-traffic bearing surfaces.</li> </ul>		
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Permeable Pavement (Continued)	<input type="checkbox"/> Where replacing existing impervious surfaces unless the existing surface is a non-pollution generating surface over an outwash soil with a saturated hydraulic conductivity $\geq 4$ inches per hour. <input type="checkbox"/> At sites defined as “high use sites”. <input type="checkbox"/> In areas with “industrial activity” as identified in 40 CFR 122.26(b)(14). <input type="checkbox"/> Where the risk of concentrated pollutant spills is more likely such as gas stations, truck stops, and industrial chemical storage sites. <input type="checkbox"/> Where routine, heavy applications of sand occur in frequent snow zones to maintain traction during weeks of snow and ice accumulation.		
Rainwater Harvesting	NA – Infeasibility assessment not required.		
Reduced Impervious Surface Credit	The following portions of the project area are considered to be infeasible for reduced impervious surface credit: <input type="checkbox"/> Where the minimum design requirements for reduced impervious surface credit cannot be met.	KCSWDM, Section C.2.9, Page C-98	
Native Growth Retention Credit	The following portions of the project area are considered to be infeasible for native growth retention credit: <input type="checkbox"/> Where the minimum design requirements for native growth retention credit cannot be met.	KCSWDM, Section C.2.10, Page C-103	
Perforated Pipe Connection	The following portions of the project area are considered to be infeasible for perforated pipe connection: <input type="checkbox"/> Where any of the infeasibility criteria for “All Infiltration BMPs” apply. <input type="checkbox"/> Where the minimum design requirements for perforated pipe connection cannot be met. <input type="checkbox"/> Where the only location for the perforated pipe portion of the system is under impervious or heavily compacted (e.g., driveways and parking areas) surfaces. <input type="checkbox"/> Where a minimum of 10 feet of perforated pipe per 5,000 square feet of contributing roof area is unachievable.	Table 1 (above) KCSWDM, Section C.2.11.1, Page C-105	
Vegetated Roof	NA – Infeasibility assessment not required.		

**Notes:**

Addendum	FINAL City of SeaTac Addendum to the King County Surface Water Design Manual, effective January 2017
BMP	Best Management Practice
KCSWDM	2016 King County Surface Water Design Manual
LID	Low Impact Development
NA	Not Applicable
SMC	City of SeaTac Municipal Code