COMMUNITY DEVELOPMENT
1701 C Street
Washougal, WA 98671
(360) 835-8501
ext. 236
Fax (360) 835-8808
cityofwashougal.us

Infeasibility Checklist for Other Hard Surfaces

Use the Infeasibility Checklist for Other Hard Surfaces to determine feasibility of On-Site Stormwater Management for projects using the Stormwater Permit Application for Small Projects or projects using List #1 in the Washougal Engineering Standards for Public Works Construction to meet Minimum Requirement #5. *Note: this form should not be used for projects using List #2 to meet Minimum Requirement #5.*

Instructions:

1. Use this list to select a BMP (or BMPs, if there is more than one other hard surface) to manage runoff from other hard surfaces.
2. Evaluate each BMP in the order given below.
3. Answer questions using site-specific information.
4. If you answer "No" to a question, continue on to the next question.
5. If you answer "No" to all questions in the table:
    a. The BMP **is feasible**, and you are required to use it to manage runoff from other hard surfaces.
    b. Go to the "Determination" row in the table and mark the "No" column to indicate that the BMP is not infeasible.
    c. Go to Step 7.
6. If you answer "Yes" to a question:
    d. The BMP **is not feasible and/or not required**, and you are not required to use it.
    e. Skip down to the "Determination" row in the table and mark the "Yes" column to indicate that the BMP is infeasible.
    f. Go to the next table to evaluate the next BMP in the list.
7. Submit this form with your stormwater permit application or plans.

INFEASIBILITY CHECKLIST
for Other Hard Surfaces

RAIN GARDENS

	YES	NO
If the project site discharges directly or indirectly to the Columbia River through an entirely manmade conveyance system (ditch, pipe, outfall protection), then the Applicant is not required to consider a Rain Garden. Does the site meet this criterion?		
Was Rain Garden found to be infeasible for **other hard surfaces**[1] for this project?		
The following criteria may be determined by the Applicant and/or Authorized Representative.		
1. Is the only available location for the Rain Garden in a landslide hazard or erosion hazard area?		
2. Is the only available location on a slope of 8% or steeper?		
3. Is the only available location within 50 feet from the top of a slope greater than 20% and taller than 10 feet?		
4. Is the only available location within 100 feet of a closed or active landfill?		
5. Is the only available location within 100 feet of a water well or spring used for drinking water?		
6. Is the only available location within 10 feet of a small on-site sewage disposal drain field, including reserve areas, and greywater reuse systems or within setbacks for large on-site sewage disposal systems established in Washington Administrative Code Chapter 246-272B?		
7. Is the only available location within 10 feet of an underground storage tank and its connecting underground pipes that 1) together have a capacity of 1,100 gallons or less and 2) 10% or more of the total storage volume is underground, and 3) that stores petroleum products, chemicals, or liquid hazardous wastes?		
8. Is the only available location within 100 feet of an underground storage tank and its connecting underground pipes that together have a capacity of greater than 1,100 gallons?		
9. Is the only available location within 10 feet from any structure, property line, or critical area (except slopes over 20%)?		
10. Do any of the Competing Needs prevent or restrict use of a Rain Garden? (see last section) *If Yes, describe and justify the Competing Need(s) on a separate piece of paper and attach to this form.*		
The following criteria require information from the Soils Report prepared by a qualified professional.		
11. Did the Infiltration / Percolation Evaluation field testing indicate that the infiltration rate at the available location for a Rain Garden is less than 0.3 in/hr?		
12. Did the Infiltration / Percolation Evaluation field testing indicate that there is less than one foot of vertical separation from the bottom of the Rain Garden to the seasonal high water table, bedrock, or other impervious layer?		

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[1] *"Other hard surfaces" are hard surfaces other than roofs, such as driveways, patios, parking areas, and sidewalks.*

	YES	NO
13. Did the Infiltration / Percolation Evaluation field testing indicate that there is less than one foot of permeable soil from the proposed finished grade to the seasonal high water table, bedrock, or other impervious layer?		
The following criteria require a written recommendation from an engineer, geologist, or hydrogeologist based on an evaluation of the site.		
14. Does a professional geotechnical evaluation recommend infiltration not be used due to concerns about erosion, slope failure or flooding?		
15. Does the site have groundwater that drains into an erosion hazard or landslide hazard area?		
16. Does the only available location for the Rain Garden threaten the safety or reliability of existing underground utilities, existing underground storage tanks, existing structures and basements, or existing roads or parking lots?		
17. Is the only available location one that does not allow for a safe overflow pathway to the municipal separate storm sewer system or to a private storm sewer system?		
18. Is the site a redevelopment[2] that lacks usable space?		
19. Would infiltrating water threaten shoreline structures such as bulkheads?		
20. Is the property known to have soil or groundwater contamination (typically federal Superfund sites or state cleanup sites under the Model Toxics Control Act (MTCA)) and does a professional evaluation or published information indicate any of the following: • The available location is within 100 feet of an area known to have deep soil contamination; or • Groundwater modeling indicates infiltration will likely increase or change the direction of the migration of pollutants in the groundwater; or • Surface soils have been found to be contaminated; or • Infiltration is prohibited by an approved cleanup plan under the state Model Toxics Control Act or federal Superfund Law or an environmental covenant under Revised Code of Washington Chapter 64.70?		
The following criterion requires a written finding from the City Public Works Department.		
21. Has the Public Works Department determined that Rain Garden is not compatible with surrounding drainage systems?		
DETERMINATION: Is a Rain Garden infeasible? *If Yes, continue to the next table to evaluate Permeable Pavement.* *If No, stop here and use a Rain Garden to manage runoff from other hard surfaces.*		

[2] *A redevelopment site is already 35% developed prior to the current construction project.*

PERMEABLE PAVEMENT

	YES	NO
If the project site discharges directly or indirectly to the Columbia River through an entirely manmade conveyance system (ditch, pipe, outfall protection), then the Applicant is not required to consider Permeable Pavement. Does the site meet this criterion?		
The following criteria may be determined by the Applicant and/or Authorized Representative.		
1. Is the location of the Permeable Pavement in a landslide hazard or erosion hazard area?		
2. Is the location within 50 feet from the top of a slope greater than 20%?		
3. Is the location within 100 feet of a closed or active landfill?		
4. If the pavement is a pollution-generating surface[3], is it located within 100 feet of a water well or spring used for drinking water?		
5. Is the location within 10 feet of a small on-site sewage disposal drainfield, including reserve areas, and grey water reuse systems or within setbacks for large on-site sewage disposal systems established in Washington Administrative Code Chapter 246-272B?		
6. Is the location within 10 feet of an underground storage tank and its connecting underground pipes that is used to store petroleum products, chemicals, or liquid hazardous wastes of which 10% or more of the total storage volume is underground?		
7. Is the location a bridge or over a culvert?		
8. Is the location likely to have long-term excessive sediment deposition after construction (e.g. construction and landscaping material yards)?		
9. Is the location on a slope greater than 12%?		
10. Do any of the Competing Needs prevent or restrict use of Permeable Pavement? (see last section) *If Yes, describe and justify the Competing Need(s) on a separate piece of paper and attach to this form.*		
The following criteria require information from the Soils Report prepared by a qualified professional.		
11. Did the Infiltration / Percolation Evaluation field testing indicate that the infiltration rate at the location of the Permeable Pavement is less than 0.3 in/hr?		
12. Did the Infiltration / Percolation Evaluation field testing indicate that seasonal high groundwater or an underlying impermeable/low permeable layer would create saturated conditions within one foot of the bottom of the lowest gravel base course?		
13. If the pavement is a pollution-generating surface[3], did the Soils Report indicate that the native soils below the pavement do not meet the following soil suitability requirement for providing treatment: • Cation exchange capacity (CEC) of the treatment soil must be ≥5 milliequivalents CEC/ 100 g dry soil (USEPA Method 9081). • Minimum of 1.0 percent organic content (ASTM D 2974). • Minimum of 18 inches depth of soil meeting the criteria? **Note:** the Applicant may elect **not** to have underlying soils tested for soil suitability for providing treatment. If so, then 1) the Applicant **may not** use this criterion to establish infeasibility of Permeable Pavement (answer "No" to this question), **and** 2) if Permeable Pavement is found to be feasible, the pavement design for the pollution-generating surface must include a six-inch layer of media meeting the soil suitability requirement for treatment or the specifications for a sand filter in the SWMMWW.		

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[3] *A pollution-generating pavement is one that is subject to vehicular use; industrial activities; or storage of erodible or leachable materials, wastes, or chemicals; and which receives direct rainfall or the run-on or blow-in of rainfall. Examples include driveways, parking areas, and outdoor chemical storage areas.*

	YES	NO
The following criteria require a written recommendation from an engineer, geologist, or hydrogeologist based on an evaluation of the site.		
14. Does a professional geotechnical evaluation recommend infiltration not be used due to concerns about erosion, slope failure or flooding?		
15. Does the site have groundwater that drains into an erosion hazard or landslide hazard area?		
16. Would infiltrating and ponded water below the Permeable Pavement compromise adjacent impervious pavements?		
17. Would infiltrating water below the Permeable Pavement threaten the safety or reliability of existing underground utilities, existing underground storage tanks, existing structures and basements, or existing roads or parking lots?		
18. Would infiltrating water threaten shoreline structures such as bulkheads?		
19. Is the location down slope of steep, erosion-prone areas that are likely to deliver sediment?		
20. Is the location on a fill soil that can become unstable when saturated?		
21. Is the location on an excessively steep slope where water within the aggregate base layer or at the sub-grade surface cannot be controlled by detention structures and may cause erosion and structural failure, or where surface runoff velocities may preclude adequate infiltration at the pavement surface?		
22. Is the property known to have soil or groundwater contamination (typically federal Superfund sites or state cleanup sites under the Model Toxics Control Act (MTCA)) and does a professional evaluation or published information indicate any of the following: • The available location is within 100 feet of an area known to have deep soil contamination; or • Groundwater modeling indicates infiltration will likely increase or change the direction of the migration of pollutants in the groundwater; or • Surface soils have been found to be contaminated; or • Infiltration is prohibited by an approved cleanup plan under the state Model Toxics Control Act or federal Superfund Law or an environmental covenant under Revised Code of Washington Chapter 64.70?		
The following criteria are applicable only to non-residential locations, including commercial sites, industrial sites, and streets. Applicants using the Stormwater Permit Application for Small Projects do not need to evaluate these criteria.		
23. Has an engineer or geologist provided a written recommendation based on an evaluation of site-specific conditions that Permeable Pavement cannot provide sufficient strength to support heavy loads at industrial facilities such as a port?		
24. Are the underlying soils unsuitable for supporting traffic loads when saturated? (Soils meeting a California Bearing Ration of 5% are considered suitable for residential access roads.)		
25. Is the location on a site with "industrial activity" as identified in 40 CFR 122.26(b)(14)? (Generally, sites meeting this definition require an NPDES Industrial Stormwater Permit.)		
26. Is the location an area where the risk of concentrated pollutant spills is more likely such as gas stations, truck stops, and industrial chemical sites?		

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	YES	NO
27. Is the site defined as a "high use site"? *High-use sites include:* • An area of a commercial or industrial site subject to an expected average daily traffic (ADT) count equal to or greater than 100 vehicles per 1,000 square feet of gross building area; • An area of a commercial or industrial site subject to petroleum storage and transfer in excess of 1,500 gallons per year, not including routinely delivered heating oil; • An area of a commercial or industrial site subject to parking, storage or maintenance of 25 or more vehicles that are over 10 tons gross weight (trucks, buses, trains, heavy equipment, etc.); • A road intersection with a measured ADT count of 25,000 vehicles or more on the main roadway and 15,000 vehicles or more on any intersecting roadway, excluding projects proposing primarily pedestrian or bicycle use improvements.		
28. Is the location a street or road with a projected average daily traffic of more than 400 vehicles? (This criterion does not apply to non-traffic-bearing surfaces associated with roads, such as sidewalks.)		
29. Is the location a street or road expected to handle through truck traffic? (Through truck traffic does not include daily school bus use, routine utility truck use (e.g. weekly garbage), multiple daily use by pick-up trucks, mail/parcel delivery trucks, or maintenance vehicles.) (This criterion does not apply to non-traffic-bearing surfaces associated with roads, such as sidewalks.)		
30. Is the location where routine, heavy application of sand occurs in frequent snow zones to maintain traction during weeks of snow and ice accumulation?		
DETERMINATION: Is Permeable Pavement infeasible? *If Yes, continue to the next table to evaluate Sheet Flow or Concentrated Flow Dispersion.* *If No, stop here and use Permeable Pavement to manage runoff from other hard surfaces.*		

SHEET FLOW DISPERSION

	YES	NO
Evaluate Sheet Flow Dispersion for flat or moderately sloping (< 15% slope) surfaces such as driveways, sports courts, patios, walkways, or any situation where concentration of flows can be avoided. If the surface is sloped or graded to concentrate flows, evaluate Concentrated Flow Dispersion instead.		
1. Is there less than 12 feet of vegetated surface between the edge of the hard surface (driveway, patio, etc.) and any property line, structure, stream, wetland, or impervious surface?		
2. Does the hard surface discharge sheet flow toward and within 50 feet of a landslide hazard area or a slope greater than 20%?		
3. Does the hard surface discharge sheet flow within 100 feet up slope of a septic system drain field?		
4. Do any of the Competing Needs prevent or restrict use of Dispersion? (see last section) *If Yes, describe and justify the Competing Need(s) on a separate piece of paper and attach to this form.*		
DETERMINATION: Is Sheet Flow Dispersion infeasible? *If Yes, stop here. You are not required to use any BMPs to manage runoff from flat or moderately sloping surfaces. You must still meet other requirements of the building code for avoiding impacts to buildings and adjacent properties.* *If No, stop here and use Sheet Flow Dispersion to manage runoff from flat or moderately sloping surfaces.*		

CONCENTRATED FLOW DISPERSION

	YES	NO
Evaluate Concentrated Flow Dispersion for hard surfaces that are sloped greater than 15% or graded to concentrate flows. If the hard surface is flat or moderately sloped, evaluate Sheet Flow Dispersion instead.		
1. Does the hard surface discharge concentrated flow to a flow path with less than 50 feet from any property line, structure, steep slope, stream, wetland, lake, or impervious surface?		
2. Does the hard surface discharge concentrated flow to a flow path with less than 50 feet from a landslide hazard area or a slope greater than 20%?		
3. Does the hard surface discharge concentrated flow within 100 feet up slope of a septic system drain field?		
4. Do any of the Competing Needs prevent or restrict use of Dispersion? (see last section) *If Yes, describe and justify the Competing Need(s) on a separate piece of paper and attach to this form.*		
DETERMINATION: Is Concentrated Flow Dispersion infeasible? *If Yes, stop here. You are not required to use any BMPs to manage runoff from highly sloping surfaces. You must still meet other requirements of the building code for avoiding impacts to buildings and adjacent properties.* *If No, stop here and use Concentrated Flow Dispersion to manage runoff from highly sloping surfaces.*		

COMPETING NEEDS

Requirements to use On-Site Stormwater Management (Minimum Requirement #5) may be superseded or reduced when they are in conflict with:

- Requirements of the following federal or state laws, rules, and standards: Historic Preservation Laws and Archaeology Laws as listed at https://dahp.wa.gov/project-review/preservation-laws, Federal Superfund or Washington State Model Toxics Control Act, Federal Aviation Administration requirements for airports, Americans with Disabilities Act.
- Public health and safety standards.
- Transportation regulations to maintain the option for future expansion or multi-modal use of public rights-of-way.
- Requirements of the City's Critical Aquifer Recharge Area code in WMC 16.04.050.

To cite Competing Needs as a reason to preclude or reduce the use of On-Site Stormwater Management, the Applicant must describe the conflict and justify the reduction in a written narrative attached to this form.

Permeable interlocking pavers