



**Public Works Department, Engineering Division**

121 5th Ave N  
Edmonds, WA 98020

## **Checklist 12: Rain Gardens**

Per ECDC 18.30, all Category 1 projects must comply with Minimum Requirements No. 1 through No. 5, and all Category 2 projects must comply with Minimum Requirements No. 1 through No. 9. Rain gardens may be used to help meet Minimum Requirement No. 5, provided that the following requirements are met. See also Addendum Checklists 1 through 3 for submittal requirements, and Addendum Appendix A for infeasibility criteria that apply to Minimum Requirement No. 5 specifically.

Rain gardens shall be designed in accordance with the Department of Ecology's Stormwater Management Manual for Western Washington (SWMMWW), ECDC 18.30, and the requirements in the Addendum. The City of Edmonds developed the following checklist to aid project proponents and plan reviewers in complying with the applicable SWMMWW requirements for this BMP. In addition, City-specific requirements (i.e., requirements presented in ECDC 18.30, the Addendum, or other City requirements that are not included in the SWMMWW) are also included in the checklist. Note also that much of the rain garden design content in the SWMMWW refers to the Rain Garden Handbook for Western Washington (Rain Garden Handbook). To simplify the design and review process, the requirements from the Rain Garden Handbook are also included in this checklist.

This checklist reflects most, but not necessarily all, of the items that shall be documented by the project proponent, for review by the Engineering Division. It is intended to be used as an aid for developers and plan reviewers by providing a foundation for clear and consistent BMP design in the City of Edmonds. However, all items may not be applicable to every project, and all items of concern to this office may not be covered on this checklist.

**Applicant:**

**Application #:**

<p><b>Within each blank cell, enter comment codes as follows:</b></p> <p>C = Complete                      R = Revise (i.e., make corrections)</p> <p>N/A = Not Applicable            M = Missing (i.e., please include)</p> <p>IC = Incomplete</p>	
<p><b>MODELING AND SIZING</b></p> <p>(SWMMWW Volume V, Section 5.3.1 BMP T5.14A)</p>	
<p><b>Minimum Requirement #5 (List #1)</b></p>	
1	<p>For compliance with Minimum Requirement #5 (List #1), the rain garden area has a horizontally projected surface area below the overflow, which is at least 5 percent of the total impervious surface area draining to it. If lawn/landscape area will also be draining to the rain garden area, the horizontally projected surface area below the overflow is increased by 2 percent of the lawn/landscape area.</p>
<p><b>SETBACKS</b></p> <p>(Addendum, Appendix A)</p> <p>Note: setback distances are measured from the bottom edge of the rain garden footprint.</p>	
2*	<p>The rain garden is not within the North Edmonds Earth Subsidence and Landslide Hazard Area (ESLHA).</p>
3*	<p>The rain garden is not within the buffer of the ESLHA (minimum buffer equal to the height of the steep slope or 50 feet, whichever is greater) unless a geotechnical assessment and soils report is prepared addressing the potential impact of the proposed system.</p>
4*	<p>The rain garden is not within 50 feet of the top of slopes greater than 15 percent (unless a geotechnical assessment and soils report is prepared addressing the potential impact of the proposed system).</p>
5*	<p>The rain garden is located on a slope of less than 8 percent.</p>
6*	<p>The rain garden is not located:</p> <ul style="list-style-type: none"> <li>• Within 100 feet of an area known to have deep soil contamination;</li> <li>• Where groundwater modeling indicates infiltration will likely increase or change the direction of the migration of pollutants in the groundwater;</li> <li>• Where surface soils have been found to be contaminated unless those soils are removed within 10 horizontal feet from the infiltration area;</li> <li>• In 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>
7*	<p>For sites with on-site or adjacent septic systems, the discharge point is at least 30 feet upgradient, or 10 feet downgradient, of the drainfield primary and reserve areas (per WAC 246-272A-0210). This requirement can be modified by the City if site topography will clearly prohibit flows from intersecting the drainfield or where site conditions (soil permeability, distance between systems, etc.) indicate that this is unnecessary.</p>
8*	<p>The rain garden is not within 10 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is 1,100 gallons or less.</p>
9*	<p>The rain garden is not within 100 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is greater than 1,100 gallons.</p>

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10	A minimum of 1 foot of clearance from seasonal high groundwater or other impermeable layer is provided.
11*	The rain garden is at least 5 feet from a structure without a basement and 10 feet from a structure with a basement.
12*	The rain garden is at least 5 feet from any property lines and easements.
13*	The rain garden is not within the buffer of a Category 1 or Category 2 wetland.
14*	The rain garden is not within the buffer of a Category 3 or Category 4 wetland, except for the outer 25 percent of the buffer.
	<b>DESIGN CRITERIA</b> (SWMMWW Volume V, Section 5.3.1 (BMP T5.14A), Section 7.4 (BMP T7.30), and the Rain Garden Handbook, 2013; City of Edmonds Standard Details for Rain Gardens)
	<b>Applications and Limitations</b>
15*	Rain garden soil mix does not contain composted materials if the rain garden area drains to Hall Creek or Lake Ballinger, and if the underlying native soil does not meet the soil suitability criteria for treatment.
	<b>Flow Entrance</b>
16*	Flow entrance is sized to capture flow from the catchment area and designed to reduce the potential for clogging at the inlet and prevent inflow from causing erosion in the rain garden.
17*	Runoff is delivered to rain garden across a landscaped area, through an open swale with plants and decorative rock, or through a pipe (Rain Garden Handbook, 2013).
18*	If water is directed through a swale with slope greater than 2 percent, small rock check dams are included every 5 to 10 feet (Rain Garden Handbook, 2013).
19*	A pad of rock is provided where water enters the rain garden from a swale or pipe to slow the water and guard against erosion (Rain Garden Handbook, 2013).
	<b>Ponding Area</b>
20*	The ponding depth is 6 inches.
21*	The freeboard (measured from the invert of the overflow pipe or earthen channel to facility overtopping elevation) is at least 4 inches (Rain Garden Handbook, 2013).
22*	If berming is used, the slope on berm is not steeper than 3H:1V, and the width of the berm is at least 1 foot.
23*	Soil used for berming is imported rain garden soil or amended native soil.
	<b>Bottom Area and Side Slopes</b>
24*	The planted side slope is not steeper than 2.5H:1V.
25*	The bottom width is at least 1 foot.

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<b>Overflow</b>																
26*	An overflow route is identified for stormwater flows that overtop the rain garden area. The overflow route flows to the downstream conveyance system or other acceptable discharge point (e.g., open space, roadside swale, or storm drain) without posing a health or safety risk or causing property damage. Overflow is not directed towards adjacent properties or structures.															
27*	A rock-lined overflow is provided (Rain Garden Handbook, 2013).															
28*	The overflow cuts through the berm in a depression that slopes out from the ponding area (Rain Garden Handbook, 2013).															
29	The overflow rock extends about 4 feet outside the rain garden to slow water as it exits (Rain Garden Handbook, 2013).															
<b>Rain Garden Soil</b>																
30*	The treatment soil is 12 to 24 inches deep (Rain Garden Handbook, 2013).															
<b>Compost Requirements</b>																
31*	Compost does not include biosolids or manure.															
32*	Meets the definition of “composted material” in WAC 173-350-100 and complies with testing parameters and other standards in WAC 173-350-220.															
33*	Produced at Cedar Grove Composting, Washington or other approved equal. See: <a href="http://www.ecy.wa.gov/programs/swfa/organics/soil.html">http://www.ecy.wa.gov/programs/swfa/organics/soil.html</a> .															
34*	Composed of yard debris, crop residues, or bulking agents originated with a minimum of 65 percent by volume.															
35*	Composed of postconsumer food waste originated with a maximum of 35 percent by volume.															
36*	Water content: no visible free water or dust is produced when handling the material.															
37*	Tested in accordance with the U.S. Composting Council “Test Method for the Examination of Compost and Composting” (TMECC).															
38*	Meets the size gradations established in the U.S. Composting Council’s Seal of Testing Assurance (STA) program: <table border="1"> <thead> <tr> <th></th> <th><b>Min.</b></th> <th><b>Max.</b></th> </tr> </thead> <tbody> <tr> <td>Percent passing 2 inches</td> <td>100</td> <td></td> </tr> <tr> <td>Percent passing 1 inch</td> <td>99</td> <td>100</td> </tr> <tr> <td>Percent passing 0.625 inch</td> <td>90</td> <td>100</td> </tr> <tr> <td>Percent passing 0.25 inch</td> <td>75</td> <td>100</td> </tr> </tbody> </table>		<b>Min.</b>	<b>Max.</b>	Percent passing 2 inches	100		Percent passing 1 inch	99	100	Percent passing 0.625 inch	90	100	Percent passing 0.25 inch	75	100
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Percent passing 0.25 inch	75	100														
39*	pH is between 6.0 and 8.5.															
40*	“Physical contaminants” (as defined in WAC 173-350-100) content is less than 1 percent by weight (TMECC 03.08-A) total, and does not exceed 0.25 percent film plastic by dry weight.															
41*	Minimum organic matter content is 40 percent by dry weight basis (TMECC 04.10-A).															
42*	Soluble salt contents are less than 4.0 dS/m (mmhos/cm) (TMECC 04.10-A).															

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43*	Maturity indicators from a cucumber bioassay shall be greater than 80 percent (TMECC 04.10-A) for both emergence and vigor.
44*	Stability is 7 mg CO <sub>2</sub> -C/g OM/day or less (TMECC 05.08-B).
45*	Carbon to nitrogen ratio is than 25:1 (TMECC 05.02A “Carbon to Nitrogen Ratio,” which uses TMECC 04.01). A ratio of up to 35:1 may be allowed when only Puget Sound lowland native species are planted, and a ratio of up to 40:1 may be allowed for coarse compost to be used as a surface mulch.
<b>Rain Garden Soil Mix</b>	
46*	Compost meets compost requirements above.
47*	OPTION No. 1. Excavate and Replace Soil: Excavate the soil and completely replace with imported rain garden soil mix; <b>or</b> OPTION No. 2. Excavate and Amend Soil for Reuse: Excavate the soil, amend it by mixing in compost, then put it back into the rain garden; <b>or</b> OPTION No. 3. Amend Soil in Place: Amend your existing soil in place by mixing in compost after you’ve excavated to the proper depth. (Rain Garden Handbook, 2013.)
48*	If the applicant chooses Option No. 1 above, rain garden soil is 60 percent screened sand and 40 percent compost by volume, or meets the bioretention soil mix specification (Rain Garden Handbook, 2013).
49*	If the applicant chooses Option No. 2 above, amended soil is approximately 65 percent excavated soil and 35 percent compost by volume. Before adding amended soil, the excavated area is scarified (Rain Garden Handbook, 2013).
50*	If the applicant chooses Option No. 3 above, 3 inches of compost and till are spread over the excavation to a depth of 4 to 5 inches (Rain Garden Handbook, 2013).
<b>Planting</b>	
51	The design plans specify that vegetation coverage of selected plants will achieve 90 percent coverage within 2 years, or additional plantings will be provided until this coverage requirement is met.
52	Plant spacing and plant size is designed to achieve specified coverage.
53*	Plants are sited according to sun, soil, wind, and moisture requirements.
54*	Provisions are made for supplemental irrigation for at least the first two growing seasons following installation.
55*	Plants are chosen in accordance with the Rain Garden Handbook, 2013.
<b>Mulch Layer</b>	
56*	The mulch layer is a maximum of 3 inches thick (Rain Garden Handbook, 2013).
57*	Compost is provided in the bottom of the rain garden area, and wood chip mulch is used on the rain garden cell slopes above the ponding elevation and rim area.
58*	Wood chip mulch is composed of shredded or chipped hardwood or softwood (Rain Garden Handbook, 2013).
59*	Mulch is not composed of grass clippings, pure bark, beauty bark, or rock mulch (Rain Garden Handbook, 2013).
60*	Mulch layer is free of weed seeds, soil, roots, and other material that is not trunk or branch wood and bark (Rain Garden Handbook, 2013).

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<p><b>CONSTRUCTION CRITERIA INCLUDED IN THE SWPPP</b></p> <p>(Addendum, Section 6.1)</p>	
61*	The rain garden area is clearly identified (e.g., using flagging or high-visibility fencing) and protected prior to construction.
62	A soil and vegetation management plan is provided showing areas to be protected and restoration methods for disturbed areas.
63*	General (i.e., non-BMP-specific) construction SWPPP BMPs and protection techniques are implemented as applicable. The upslope areas of construction areas are stabilized, and overland flow distances are minimized.
64*	Machinery is operated outside of rain garden area during construction. If machinery is operated in the rain garden area for excavation, lightweight, low ground-contact pressure equipment is utilized; and the base soil is scarified to a minimum of 12 inches at completion.
65*	Rain garden area excavated to final grade only after all disturbed areas in the upgradient project drainage area have been permanently stabilized. If rain garden areas must be excavated before permanent site stabilization, initial excavation is conducted to no less than 6 inches of the final elevation of the facility floor.
66	Excavation of rain garden areas does not occur during wet or saturated conditions.
67*	Placement or mixing of native soil, rain garden soil, or amended soil does not occur during wet or saturated conditions.
68*	The bottom of the rain garden excavation is raked or scarified to a minimum depth of 3 inches after final excavation to restore infiltration rates.
69*	Rain garden areas are not used as sediment control facilities during construction, and all drainage is directed away from the facility after initial rough grading.
70*	Clogging and over-compaction of the subgrade, native soil, rain garden soils, or amended soils is prevented during construction.
71*	Area is inspected for compaction prior to planting. If compaction occurred during construction, the native soil, rain garden soil, or amended soil was aerated prior to planting.
<p><b>INSPECTION CRITERIA</b></p>	
72	The rain garden BMP meets applicable siting, design, and construction criteria (see * notations in applicable rows).

Reviewer: \_\_\_\_\_

Review Date: \_\_\_\_\_

Reviewer Phone #: \_\_\_\_\_

Reviewer Comments: