

## MANAGED RELEASE CONCEPT (MRC) REVIEW CHECKLIST

*Complete one checklist per MRC BMP*

**Applicant:**

REVIEWING OFFICE	
1.	<p>Is the proposed MRC BMP part of a PCSM Plan for an individual Chapter 102 permit? <span style="float: right;"><input type="checkbox"/> Yes <input type="checkbox"/> No</span></p> <p><i>If Yes, DEP will conduct the review – proceed to MRC Eligibility and Completeness Section. If No, go to #2.</i></p>
2.	<p>Is the CCD delegated for PCSM technical reviews? <span style="float: right;"><input type="checkbox"/> Yes <input type="checkbox"/> No</span></p> <p><i>If Yes, the CCD will conduct the review – proceed to MRC Eligibility and Completeness Section. If No, go to #3.</i></p>
3.	<p>Is the total drainage area to the MRC <math>\leq</math> 3 acres? <span style="float: right;"><input type="checkbox"/> Yes <input type="checkbox"/> No</span></p>
4.	<p>Is the total impervious area to the MRC &lt; 1.5 acres? <span style="float: right;"><input type="checkbox"/> Yes <input type="checkbox"/> No</span></p>
5.	<p>Is the overall increase in impervious cover (including gravel) &lt; 10 acres? <span style="float: right;"><input type="checkbox"/> Yes <input type="checkbox"/> No</span></p>
6.	<p>The discharge from the MRC BMP will NOT be to local surface waters that are impaired due to siltation or flow alterations? <span style="float: right;"><input type="checkbox"/> Yes <input type="checkbox"/> No</span></p>
7.	<p>No deviations from the MRC design standards have been proposed? <span style="float: right;"><input type="checkbox"/> Yes <input type="checkbox"/> No</span></p> <p><i>If Yes to #3 through #7, the CCD should complete the MRC Eligibility and Completeness Section (at a minimum). If No to any question in #3 through #7, the CCD will request assistance from their DEP regional office to complete the MRC Technical Review Section. The DEP regional office may defer to DEP's Bureau of Clean Water. DEP may require the submission of an individual permit application where deemed appropriate.</i></p>
MRC ELIGIBILITY AND COMPLETENESS	
<p><i>For an MRC BMP to be considered eligible for use on a project, the answers to #8 through #12 must be Yes and at least one selection must be made for #9.a through #9.d. For an MRC BMP submission to be considered complete, the answers to #13 through #16 must be Yes.</i></p>	
8.	<p>A professional engineer, licensed in the Commonwealth of Pennsylvania, has completed the analyses, calculations, and evaluations associated with MRC BMPs. <span style="float: right;"><input type="checkbox"/> Yes <input type="checkbox"/> No</span></p>
9.	<p>The applicant has completed a thorough pre-development site characterization and assessment of soil and geology of the project site (not just the proposed location of the BMP), and the applicant's licensed professional engineer has determined that it is not feasible to manage the required volume through infiltration and ET alone due to soil and/or geologic conditions or other environmental constraints on the project site. <span style="float: right;"><input type="checkbox"/> Yes <input type="checkbox"/> No</span></p>
<p>The reason(s) given by the engineer is/are (at least one must be selected):</p>	
9.a	<p><input type="checkbox"/> Infiltration is extremely limited – The results of field infiltration tests (geometric mean, without a factor of safety) is <math>\leq</math> 0.2 inch/hour.</p>
9.b	<p><input type="checkbox"/> Infiltration is not feasible due to groundwater and/or regularly occurring seasonally high-water tables within one foot of the bottom of the BMP's soil media.</p>
9.c	<p><input type="checkbox"/> Infiltration is not desirable due to the presence of soil contamination on-site.</p>
9.d	<p><input type="checkbox"/> Infiltration is not desirable due to the presence of karst geology and the potential for sinkhole development.</p>
<p><i>Note – an applicant may not select this option based solely on mapped karst features on a site; a site-specific evaluation by a soils scientist, professional geologist, or professional geotechnical engineer must support this conclusion.</i></p>	

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<b>MRC ELIGIBILITY AND COMPLETENESS</b>		
10.	The installation and implementation of structural and non-structural BMPs on the project site, to the extent practicable, is not sufficient to manage the required volume according to the engineer.  <i>The engineer must indicate that conventional PCSM BMPs have been evaluated and deemed infeasible, including but not limited to infiltration basins/trenches, bioinfiltration (rain gardens), vegetated swales, infiltration berms, spray irrigation, capture and use, and detention/retention basins.</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No
11.	BMPs providing infiltration and ET are maximized on the overall project site to the extent practicable.  <i>Note – The use of vegetated MRC BMPs with internal water storage (IWS) will satisfy this.</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No
12.	The licensed professional engineer has investigated downstream conditions and identifies in the PCSM Plan that the off-site discharge flow path to the confluence with the receiving surface water will not experience accelerated erosion or damage.	<input type="checkbox"/> Yes <input type="checkbox"/> No
13.	Have a minimum of one infiltration test for every 40,000 ft <sup>2</sup> of earth disturbance and a minimum of 4 tests equally distributed across the site been completed?	<input type="checkbox"/> Yes <input type="checkbox"/> No
14.	Have the design standards identified in the MRC Design Summary Sheet (see Design Standards column) been met and supporting calculations have been provided?	<input type="checkbox"/> Yes <input type="checkbox"/> No
15.	Has the MRC Design Summary Sheet been signed and sealed by a professional engineer?	<input type="checkbox"/> Yes <input type="checkbox"/> No
16.	If the MRC BMP will not be vegetated, is pretreatment or post-treatment provided?  <i>Select Yes if the MRC BMP will be vegetated. Note that underground storage chambers utilizing stone media require pretreatment.</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>MRC TECHNICAL REVIEW</b>		
<i>A response of No to any of the questions below should be considered a technical deficiency. Questions that are not applicable may be skipped.</i>		
17.	Calculations supporting the values reported on the MRC Design Summary Sheet are technically accurate?	<input type="checkbox"/> Yes <input type="checkbox"/> No
18.	The 1.2-inch/2-hour storm runoff inflow from the contributing drainage area is managed by the proposed MRC BMP without any bypass or overflow?	<input type="checkbox"/> Yes <input type="checkbox"/> No
19.	The MRC release rate has been properly computed for 0.01 cfs per equivalent contributing impervious area, where equivalent equates to the actual runoff volume inflow (measured in cubic feet) to the MRC from a 1.2-inch/2-hour storm divided by 0.0833 feet?	<input type="checkbox"/> Yes <input type="checkbox"/> No
20.	The underdrain was sized to convey 1.34 cubic feet per minute (10 gallons per minute) per lineal foot of pipe (not considering the flow control orifice or upturned elbow)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
21.	For vegetated/surface MRCs only, the calculated void space for soil media in the IWS zone is 15% (or otherwise justification has been provided for a different value)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
22.	The actual computed dewatering time for a surface MRC is ≤ 72 hours?	<input type="checkbox"/> Yes <input type="checkbox"/> No
23.	The actual computed dewatering time to the top of the IWS for underground storage and porous pavement MRCs is ≤ 7 days?	<input type="checkbox"/> Yes <input type="checkbox"/> No
24.	The post-development 2-year/24-hour storm peak runoff rate is attenuated (either in the MRC BMP or a separate BMP) to the pre-development 1-year/24-hour storm event?	<input type="checkbox"/> Yes <input type="checkbox"/> No
25.	The post-development peak runoff rates for the 10-, 50- and 100-year/24-hour storm events do not exceed the corresponding pre-development peak runoff rates?	<input type="checkbox"/> Yes <input type="checkbox"/> No
26.	A cleanout for the underdrain has been provided and is shown on the detail on the drawings?	<input type="checkbox"/> Yes <input type="checkbox"/> No
27.	The underdrain orifice for 1.2-inch/2-year storm runoff is properly protected from clogging?	<input type="checkbox"/> Yes <input type="checkbox"/> No

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MRC TECHNICAL REVIEW		
28.	The maximum ponding depth for surface MRC BMPs is 2 feet for a 2-year/24-hour storm event?	<input type="checkbox"/> Yes <input type="checkbox"/> No
29.	Is the Internal Water Storage (IWS) depth $\geq$ 1 foot?	<input type="checkbox"/> Yes <input type="checkbox"/> No
30.	The minimum separation distance to a seasonal high water table is 1 foot (unless a liner is provided)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
31.	If the bottom of the MRC BMP is expected to be inundated, are a liner and buoyancy calculations provided?	<input type="checkbox"/> Yes <input type="checkbox"/> No
32.	If 1 foot or more of separation distance to the limiting zone is provided, then is the minimum soil media depth 2 feet?	<input type="checkbox"/> Yes <input type="checkbox"/> No
33.	Are underdrains for unvegetated MRCs located at the bottom of the IWS zone?	<input type="checkbox"/> Yes <input type="checkbox"/> No
34.	If an underground BMP are all underdrains provided with a 90-degree upturned elbow?	<input type="checkbox"/> Yes <input type="checkbox"/> No
35.	Is an off-site discharge analysis (i.e., erosion potential analysis) provided that demonstrates stability of the flow path at the MRC BMP's discharge to the first stable conveyance?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Reviewer Comments:		

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Reviewer Name

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Reviewer Title

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DEP/CCD Office Name

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Date of Review