

Post-Construction Stormwater Management Design Standards

Developer must complete and submit this form for each water quality control measure on projects that disturb more than 1 acre. Attach completed form(s) to Drainage Report.

PROJECT AND SITE INFORMATION

Project / Site Name:		Project Location:	
DA Case / Project No.		Total Site Acreage:	
Owner Name:		Existing Impervious Area (Ac):	
Date Submitted:		Proposed Impervious Area (Ac):	
Est. Project Completion Date:		Does this project overlap multiple MS4 jurisdictions?	<input type="checkbox"/> YES <input type="checkbox"/> NO

4-STEP PROCESS FOR STORMWATER QUALITY MANAGEMENT (ANALYSIS REQUIRED)

STEP	YES/NO	DESCRIPTION OF PRACTICE
STEP 1: Does the project employ runoff reduction practices by implementing low impact development (LID) strategies such as minimizing directly connected impervious area, implementing swales, rain gardens or permeable pavements?		
STEP 2: Does the project implement Best Management Practices (BMPs) that provide a Water Quality Capture Volume (WQCV) with slow release such as detention and retention ponds, sand filters, or permeable pavers with subsurface storage?		
STEP 3: Does the project stabilize drainage ways to maintain natural functions such as stream bank stabilization or drop structures?		
STEP 4: Does the project implement site specific or other source control (both structural and procedural) such as covering storage areas or removing pollutants?		

This Post-Construction Stormwater Management Design Standards form is to be completed to address water quality requirements only. Flood control may also be required and should be included in project proposals.

Select only ONE base or ONE constrained redevelopment sites design standard below for each proposed Control Measure (CM).

If multiple CMs are used on a single site, a separate form must be completed for each CM detailing the base design standard and portion of the project being addressed.

Are multiple CMs being implemented?	<input type="checkbox"/> YES <input type="checkbox"/> NO	If yes, how many CMs are being implemented?	
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BASE DESIGN STANDARDS		
BASE DESIGN STANDARD	DESIGN DETAILS	RESPONSE
<input type="checkbox"/> <p>A) WQCV Standard <i>The control measure(s) is designed to provide treatment and/or infiltration of the WQCV and:</i> 1) 100% of the applicable development site is captured, except the permittee may exclude up to 20%, not to exceed 1 acre, of the applicable development site area when the permittee has determined that it is not practicable to capture runoff from portions of the site that will not drain towards control measures. In addition, the permittee must also determine that the implementation of a separate control measure for that portion of the site is not practicable (e.g., driveway access that drains directly to the street). 2) Evaluation of the minimum drain time shall be based on the pollutant removal mechanism and functionality of the control measure implemented. Consideration of the drain time shall include maintaining vegetation necessary for operation of the control measure (e.g., wetland vegetation).</p>	Percentage of site (disturbance) the control measure provides treatment/infiltration of WQCV?	%
	CM Type:	
	% of site not treated:	%
	Acreage of site not treated:	
	Why is the excluded area impractical to treat?	
	Why is another CM not practicable for the untreated area?	
<input type="checkbox"/> <p>B) Pollutant Removal Standard <i>The control measure(s) is designed to treat at a minimum the 80th percentile storm event. The control measure(s) shall be designed to treat stormwater runoff in a manner expected to reduce the event mean concentration of total suspended solids (TSS) to a median value of 30 mg/L or less.</i> 1) 100% of the applicable site is captured, except the permittee may exclude up to 20% not to exceed 1 acre of the applicable development site area when the permittee has determined that it is not practicable to capture runoff from portions of the site that will not drain towards control measures. In addition, the permittee must also determine that the implementation of a separate control measure for that portion of the site is not practicable (e.g., driveway access that drains directly to the street).</p>	Meets design standards and requirements?	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Percentage of storm event designed to treat:	%
	Median TSS mg/L expected in effluent:	
	Documentation for basis of expected TSS result:	
	Percentage of site (disturbance) the control measure provides treatment/infiltration of WQCV?	%
	% of site not treated:	%
	Acreage of site not treated:	
	Why is the excluded area impractical to treat?	
Why is another CM not practicable for the untreated area?		

BASE DESIGN STANDARD (continued)		DESIGN DETAILS	RESPONSE
<input type="checkbox"/>	<p>C) Runoff Reduction Standard <i>The control measure(s) is design to infiltrate into the ground where site geology permits, evaporate, or evapotranspire a quantity of water equal to 60% of what the calculated WQCV would be if all impervious area for the applicable development site discharged without infiltration. This base design standard can be met through practices such as green infrastructure. "Green infrastructure" generally refers to control measures that use vegetation, soils, and natural processes or mimic natural processes to manage stormwater. Green infrastructure can be used in place of or in addition to low impact development principles.</i></p> <p>Refer to Mile High Flood District UD BMP Workbook for calculations.</p>	Meets design standards and requirements?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		CM type:	
		Percentage of site (disturbance) that the WQCV is infiltrated, evaporated or evapotranspired:	%
		Percentage of WQCV reduction:	%
<input type="checkbox"/>	<p>D) Applicable Development Site Draining to a Regional WQCV Control Measure <i>The regional WQCV control measure must be designed to accept the drainage from the applicable development site. Stormwater from the site must not discharge to a water of the state before being discharged to the regional WQCV control measure. The regional WQCV control measure must meet the requirements of the WQCV in part I.E.4.a.iv(A) (see below):</i></p> <p><u>Part I.E.4.a.iv(A)</u> 1) 100% of the applicable development site is captured, except the permittee may exclude up to 20%, not to exceed 1 acre, of the applicable development site area when the permittee has determined that it is not practicable to capture runoff from portions of the site that will not drain towards control measures. In addition, the permittee must also determine that the implementation of a separate control measure for that portion of the site is not practicable (e.g., driveway access that drains directly to the street). 2) Evaluation of the minimum drain time shall be based on the pollutant removal mechanism and functionality of the control measure implemented. Consideration of the drain time shall include maintaining vegetation necessary for operation of the control measure (e.g., wetland vegetation).</p>	Is Regional Control Measure designed to accept drainage from site?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		Does stormwater discharge to Waters of the State before being discharged to Regional WQCV Control Measure?	<input type="checkbox"/> Yes <input type="checkbox"/> No <i>*If Yes, Go to the next standard (E)</i>
		Percentage of site (disturbance) the control measure provides treatment/infiltration of WQCV?	%
		% of site not treated:	%
		Acreage of site not treated:	
		Why is the excluded area impractical to treat?	
		Why is another CM not practicable for the untreated area?	

BASE DESIGN STANDARD (continued)	DESIGN DETAILS	RESPONSE
<input type="checkbox"/> <p><u>E) Applicable Development Site Draining to a Regional WQCV Facility</u> <i>The regional WQCV facility is designed to accept drainage from the applicable development site. Stormwater from the site may discharge to a water of the state before being discharged to the regional WQCV facility. Before discharging to a water of the state, at least 20% of the upstream imperviousness of the applicable development site must be disconnected from the storm drainage system and drain through a receiving pervious area control measure comprising a footprint of at least 10% of the upstream disconnected impervious area of the applicable development site. The control measure must be designed in accordance with a design manual identified by the permittee (USDCM Vol 3 Preferred). In addition, the stream channel between the discharge point of the applicable development site and the regional WQCV facility must be stabilized.</i></p> <p><i>The regional WQCV facility must meet the following requirements:</i></p> <p>1) <i>The regional WQCV facility must be implemented, functional, and maintained following good engineering, hydrologic and pollution control practices.</i></p> <p>2) <i>The regional WQCV facility must be designed and maintained for 100% WQCV for its entire drainage area.</i></p> <p>3) <i>The regional WQCV facility must have capacity to accommodate the drainage from the applicable development site.</i></p> <p>4) <i>The regional WQCV facility be designed and built to comply with all assumptions for the development activities planned by the permittee within its drainage area, including the imperviousness of its drainage area and the applicable development site.</i></p> <p>5) <i>Evaluation of the minimum drain time shall be based on the pollutant removal mechanism and functionality of the facility. Consideration of drain time shall include maintaining vegetation necessary for operation of the facility (e.g., wetland vegetation).</i></p> <p>6) <i>The permittee shall meet the requirements in Parts I.E.4.a.v. and vii. and Part I.E.4.b. for the regional WQCV facility consistent with requirements and actions for control measures.</i></p> <p>7) <i>The regional WQCV facility must be subject to the permittee's authority consistent with requirements and actions for a Control Measure in accordance with Part I.E.4.a.iv.</i></p> <p>8) <i>Regional Facilities must be designed and implemented with flood control or water quality as the primary use. Recreational ponds and reservoirs may not be considered Regional Facilities. Water bodies listed by name in surface water quality classifications and standards regulations (5 CCR 1002-32 through 5 CCR 1002-38) may not be considered regional facilities.</i></p>	<p>Is the Regional WQCV facility implemented, functional, and maintained following good engineering, hydrologic and pollution control practices (Part I.E.4.a.iv.E.1)?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>
	<p>Percentage of site (disturbance) that the WQCV is treated:</p>	<p style="text-align: center;">%</p> <p style="text-align: center;">*Must be 100%</p>
	<p>Does the Regional WQCV facility have capacity to accommodate the drainage from the applicable development site?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>
	<p>Is the Regional WQCV facility designed and built to comply with all assumptions for the development activities planned by the permittee within its drainage area, including the imperviousness of its drainage area and the applicable development site?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>
	<p>Is the evaluation of the minimum drain time based on the pollutant removal mechanism and functionality of the facility? Consideration of drain time shall include maintaining vegetation necessary for operation of the facility (e.g., wetland vegetation).</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>
	<p>Is the Regional WQCV facility designed, constructed, and implemented with flood control and water quality as the primary use?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>
	<p>Was the stream channel stabilized? (include documentation)</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>
	<p>Method of stabilization:</p>	
	<p>Name of stream reach stabilized:</p>	
	<p>Area of unconnected impervious area (UIA) going to receiving pervious area (RPA): (RPA ≥10% UIA)</p>	<p style="text-align: right;">Square Feet</p>
	<p>Area of RPA:</p>	<p style="text-align: right;">Square Feet</p>
	<p>RPA BMP type:</p>	
<p>Name and location of Regional WQCV Facility:</p>		
<p>Regional WQCV Facility type:</p>		

CONSTRAINED REDEVELOPMENT SITES DESIGN STANDARDS

"Redevelopment" means a site that is already substantially developed with 35% or more of existing imperviousness; with the creation or addition of impervious area (including removal and/or replacement), to include the expansion of a building footprint or addition or replacement of a structure; structural development including construction, replacement of impervious area that is not part of a routine maintenance activity; and land disturbing activities.

CONSTRAINED REDEVELOPMENT SITES DESIGN STANDARD		DESIGN DETAILS	RESPONSE
REQUIRED	F.1) Constrained Redevelopment Site Standards <i>a) The applicable redevelopment site is for a site that has greater than 75% impervious area, and</i> <i>b) The permittee has determined that it is not practicable to meet any of the base design standards. The permittee's determination shall include an evaluation of the applicable redevelopment sites ability to install a control measure without reducing surface area covered with the structures .</i>	The applicable redevelopment site has greater than 75% impervious area?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		Provide an explanation of the infeasibility of Base Design Standards and justification for use of Constrained Site Standard.	
<input type="checkbox"/>	F.2.a) Constrained WQCV Standard <i>The control measure(s) is designed to provide treatment of the WQCV for the area captured. The captured area shall be 50% or more of the impervious area of the applicable redevelopment site. Evaluation of the minimum drain time shall be based on the pollutant removal mechanism and functionality of the control measure implemented.</i>	Provides treatment of WQCV?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		CM type:	
		% of site treated:	
<input type="checkbox"/>	F.2.b) Constrained Pollutant Removal Standard <i>The control measure is designed to provide treatment for the 80th percentile storm event. The control measure(s) shall be designed to treat stormwater runoff in a manner expected to reduce the event mean concentration of total suspended solids (TSS) to a median value of 30 mg/L or less.</i> <i>A minimum of 50% of the applicable development area including 50% or more of the impervious area of applicable development area shall drain to the control measure(s). This standard does not require that 100% of the applicable redevelopment site area be directed to a control measure(s) as long as the overall removal goal is met or exceeded.</i>	Meets Design Standards and Requirements for TSS removal?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		CM type:	
		% of site treated:	%
		Median TSS mg/L expected in effluent:	mg/L
		Documentation for basis of expected TSS result:	
<input type="checkbox"/>	F.2.c) Constrained Runoff Reduction Standard <i>The control measure(s) is designed to infiltrate, evaporate, or evapotranspire, through practices such as green infrastructure, a quantity of water equal to 30% of what the calculated WQCV would be if all impervious area for the applicable redevelopment site discharged without infiltration.</i>	Meets design standards and requirements for infiltration, evaporation and transpiration?	<input type="checkbox"/> Yes <input type="checkbox"/> No
		CM type:	
		% of WQCV infiltrated, evaporated or evapotranspired:	

DATE	REVISION
9/20/2018	City of Arvada
10/2/2018	City of Arvada
10/12/2018	City of Arvada
11/7/2018	City of Arvada
9/20/2021	City of Arvada