



CITY OF LONGMONT | Stormwater Quality Program

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Base Design Standards

Permanent Stormwater Control Measures (PSCMs) are required under [City of Longmont Municipal Code 14.26](#). All PSCMs must be designed to meet regulatory requirements set forth in the Colorado [Municipal Separate Storm Sewer System \(MS4\) Permit](#). Additionally, PSCMs should be designed in a manner consistent with the [Urban Storm Drainage Criteria Manual, Volume 3](#). There are three primary design standards that can be used for PSCM design. Large sites, or sites exceeding five impervious acres, typically use the water quality capture volume (WQCV) standard. Additionally, smaller sites or sites that contribute to a regional detention facility may benefit from using the Runoff Reduction Standard. The third standard, the Pollutant Removal Standard typically involves the use of an underground manufactured treatment device. The Pollutant Removal Standard may only be used in the case of a confined site. A site may only be deemed to be confined by the Stormwater Quality Program. It is recommended prior to assuming that a site qualifies as confined, to meet with the Stormwater Quality Program. Compliance with any of the design standards must be demonstrated prior to any land disturbance of one acre or greater. Please refer to the [PSCM Permit Webpage](#) for more information.

Water Quality Capture Volume (WQCV) Standard

The PSCM is designed to provide treatment and/or infiltration of the WQCV and:

1. 100% of the applicable development site is captured, except the design may exclude up to 20 percent of the total impervious area, not to exceed 1 impervious acre, when it has been determined that it is not practical to capture runoff from portions of the site that will not drain towards the PSC, and that the implementation of a separate PSCM for that portion of the site is not practical (e.g., driveway access that drains directly to 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 drain time shall include maintaining vegetation necessary for operation of the PSCM (e.g., wetland vegetation).

Implications for Design

The PSCM must be designed to treat the WQCV (see this [video](#) for calculating the WQCV) for the entire tributary area of the PSC. The PSCM must treat runoff from all of the disturbed area that does not qualify for an exclusion (see below), unless due to site constraints, it is impractical to capture a portion of the runoff. Any disturbed area that does not meet an exclusion and is untreated must be identified and justified for why it cannot be treated by the design engineer. Additionally, it must be shown that untreated runoff is less than 20% of the total impervious area and less than 1 impervious acre is not being captured to meet the design standard (the PSCM Design Standards Calculation Tool, available on the Stormwater Quality Program website, has been developed to assist with calculations demonstrating that

these two criteria are met). The designed PSCM must demonstrate that an adequate drain down time for the WQCV is achieved according to the USDCM Volume 3.

Runoff Reduction Standard

The PSCM is designed to use Receiving Pervious Area (RPA) to infiltrate into the ground where site geology permits, evaporate, or evapotranspire a quantity of water equal to 60% of the calculated WQCV for the entire applicable development site discharged without infiltration. For more information about how to quantify volume reduction and using RPA please see Factsheet T-1 of the [USDCM Volume 3, Chapter 4](#).

Implications for Design

To meet the runoff reduction standard, the total WQCV of the disturbed area of the site must be quantified. After the total WQCV is quantified, then it must be demonstrated that at least 60% of the WQCV is reduced. *Note: It is recommended to use Mile High Flood District design tools to demonstrate runoff reduction (e.g. SCM-Design). In lieu of SCM-Design other like models or calculations can be used if approved by the Stormwater Quality Program.* Runoff reduction is generally accomplished by impervious area being disconnected using grass swales and buffers and providing infiltration. It is important that all grass swales and buffers used for runoff reduction meet the design specifications outlined in the USDCM Volume 3. Landscaping in grass swales and buffers cannot be rock scape but must be grasses (preferably native or low water consumption grasses).

Pollutant Removal Standard

In the case of a confined site, where a surface water quality facility cannot be used, a manufactured treatment device (MTD) that meets the pollutant removal standard can be used. The pollutant removal standard requires the PSCM is designed to treat, at a minimum, the 80th percentile storm event. The PSCM 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 and:

1. 100% of the applicable development site is captured, except the design may exclude up to 20 percent of the total impervious area, not to exceed 1 impervious acre when it has been determined that it is not practical to capture runoff from portions of the site that will not drain towards the PSC. In addition, the permittee must also determine that the implementation of a separate PSCM for that portion of the site is not practical (e.g., driveway access that drains directly to street).

Implications for Design

To meet the pollutant removal standard, it must be demonstrated that the effluent of the 80th percentile storm event can be treated to have a median TSS concentration of 30 mg/L. Because many MTDs are flow through devices, it typically requires that a design flow rate for the tributary area pass through the MTD and provide the required treatment. The USDCM Volume 1, Chapter 6 has outlined a process for determining a water quality peak flow rate that may be used, alternatively the 2-year peak flow rate may be used. TSS concentrations of effluent runoff can be obtained from the manufacturer or from verification programs such as the Washington state Technology Assessment Protocol – Ecology (TAPE), the New Jersey Corporation for Advanced Technology – Technology Verification Database (NJCAT), or other equivalent program. A MTD should be selected that can provide water quality treatment but will also be able to pass the 100-year flow rate for all tributary flow without re-suspending removed pollutants. Any selected MTD

must meet the required design standard and must be certified by a Colorado licensed professional engineer.

Regional Permanent Stormwater Control Treatment

Applicable development sites that are tributary to an existing PSCM may qualify for this design standard if:

1. The regional PSCM has been designed to accept the drainage from the applicable development site.
2. The regional PSCM has been designed to treat the runoff in accordance with one of three primary design standards listed above.
3. Runoff from the site must not discharge to a water of the state before being discharged to the regional permanent stormwater control.

Implications for Design

To demonstrate compliance for the regional PSCM treatment standard, it must be shown that the proposed development was accounted for in the original PSCM design. This information can be determined from previous drainage reports or by individual analysis using updated design tools. It also must be shown that the existing PSCM was designed in a manner that is consistent with current standards. This standard typically will only apply for the WQCV standard or pollutant removal standard. To demonstrate that the existing PSCM meets these standards it must either be referenced in the existing drainage report or determined by separate analysis that one of the standards are met. If existing standards are not met by the facility, then the downstream, regional facility may be modified to meet existing standards for its entire tributary area, including the applicable development site.

Constrained Redevelopment Sites

The current MS4 general permit does provide an alternative design standard for what it defines as constrained redevelopment sites. If the proposed development site in its existing state is greater than 75% imperviousness, **and** it is not practicable to meet one of the design standards above, then the site **may** qualify for this provision. If you believe that your site qualifies as a constrained redevelopment, then please reach out to the Stormwater Quality Program. The Stormwater Quality Program has sole discretion to determine if the applicable development site qualifies as a constrained redevelopment.

Excluded Sites

At the City's discretion, a site may qualify for an exclusion from the permanent stormwater control measure requirements. There are nine exclusions that can be applicable to traditional municipal development:

- A) Pavement Management Sites
- B) Excluded Roadway Redevelopment
- C) Excluded Existing Roadway Areas
- D) Aboveground and Underground Utilities
- E) Large Lot Single Family Sites
- F) Non-Residential and Non-Commercial Infiltration Conditions
- G) Sites with Land Disturbance to Undeveloped Land that will Remain Undeveloped

- H) Stream Stabilization Sites
- I) Trails

Each exclusion has requirements to determine if the site qualifies. If it is believed that a site qualifies for one of the exclusions listed above, please reach out to the Stormwater Quality Program to confirm.

Definitions

Applicable development sites are those that result in land disturbance of greater than or equal to one acre, including sites less than one acre that are part of a larger common plan of development or sale. Applicable development sites include all new development and redevelopment sites for which permanent stormwater quality control measures were required in accordance with an MS4 permit.

New Development means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision for a site that does not meet the definition of redevelopment.

Redevelopment includes 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.

Green infrastructure generally refers to control measures that use vegetation, soils, and natural processes or mimic natural processes to manage stormwater.