

Chapter 4

Treatment Control Measures

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1.0 Overview

This chapter contains guidance and design requirements for structural control measures for new development and significant redevelopment as defined in the following sections. As discussed in Chapter 2, control measures provide treatment through a variety of hydrologic, physical, biological, and chemical processes. The functions provided by control measures may include volume reduction, treatment and slow release of the water quality capture volume (WQCV), and combined water quality/flood detention. Ideally, site designs will include a variety of source control and treatment control measures combined in a "treatment train" that controls pollutants at their sources, reduces runoff, and treats pollutants in runoff. Sites that are well designed for treatment of urban runoff will include all of the steps in the Four Step Process discussed in Chapter 1. The minimum measures required for development projects to satisfy the City's MS4 permit requirements are described in Section 4.1 of Chapter 1. This chapter hereby incorporates by reference all criteria presented in the current version of the Urban Storm Drainage Criteria Manual (USDCM), Volume 3, Best Management Practices, Chapter 4 Treatment BMPs for purposes of design and implementation, except as modified herein. Detailed descriptions, sizing and design criteria, and design procedures for these control measures are provided in the USDCM, V3 Treatment BMP Fact Sheets.

All new and significant redevelopment with construction activities that disturb equal to or greater than 1 acre, including projects less than one acre that are part of a larger common plan of development or sale must have properly design control measures in accordance with Chapter 1. For basins that have been master planned to include regional or subregional water quality control measures that are designed to treat the WQCV for the entire drainage area upstream, and when the applicant has demonstrated and documented that no intakes for drinking water use exist and no other beneficial uses are expected to be impacted by pollutant discharges from the development project, Steps 1, 3, and 4 will be required to reduce site runoff, stabilize the receiving water drainageway, and implement site specific control measures respectively. New and redevelopment within basins in which regional or sub-regional treatment of the WQCV is not provided must also implement Step 2 of the Four Step Process to ensure treatment of the WQCV for the site.

Modifications to the control measure designs in this manual must be approved through the variance process described in Chapter 1. Modifications will only be approved with proper justification for the design change. This includes documentation showing that the modified design will achieve the same or better water quality benefit as the design shown in the manual. Missing design elements of treatment control measures can only be allowed if other adjustments are made to provide for additional water quality treatment through other measures (for example, treatment train with other onsite control measures).

Alternate control measures may be considered, but they must have equivalent or better functional requirements of the WQCV control measures as to WQCV, design requirements for timed release outlet structures, and drain times (see Section 5 below).

2.0 Definition of New Development and Redevelopment/Control Measure Requirements

The MS4 permit requires that a program must be implemented and enforced by the MS4 permittee to address post-construction stormwater runoff from new development and redevelopment projects for which construction activities disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale that discharge into the MS4. Chapter 7 further defines a common plan of development.

For the purpose of defining when treatment water quality Best Management Practices are required, “New Development and Redevelopment” are defined as:

- All sites that include total development/redevelopment areas for which construction activities disturb greater than or equal to one (1) acre, including projects less than one acre that are part of a larger common plan of development or sale that discharge to the MS4. WQCV shall be provided for the total site or individual lots/parcels. Other treatment control measures may also be required as appropriate.
- All other sites that do not meet the above requirements may be required to provide treatment water quality control measures, if significant water quality impacts are anticipated or observed as a result of development/redevelopment of the site.

3.0 Submittals

The requirements of this chapter shall be incorporated into existing submittals for review and acceptance including Erosion and Stormwater Quality Control Plan (see Chapter 7), Preliminary/Final Drainage Reports (see Subdivision Policy Manual) and construction plans, or as otherwise specified by the MS4 Permittee (in Colorado Springs the City Engineer is delegated authority to implement the MS4 permit). It is recommended that discussions and collaboration regarding treatment control measures occur early in each project between the developer’s planner and engineer and MS4 permittee staff.

Also note that percolation tests required for full infiltration treatment control measures need to occur at the location and proposed depth of the control measure and not at other locations on the site because of changing soil types and conditions that could exist at the site. This information must be provided to the MS4 permittee in order for the MS4 permittee to approve the use of a full infiltration treatment control measure.

4.0 Underground Control Measures

As part of the required implementation of the Four Step Process, the use of underground, vault type control measures is generally prohibited; however, they may be allowed on a case by case basis using the variance procedures described in Chapter 1, Volume 1 of this Manual. Variances for underground treatment will not be granted for new development sites over 2 acres. Space constrained development sites still require the Four Step Process. For private control measures, a recorded maintenance agreement is required. Publicly maintained underground control measures may only be installed on behalf of public projects or programs. Inspection and Maintenance plans are required for public underground control measures.

Criteria used to select the appropriate underground control measure is described in the USDCM, V3 Underground BMP Fact Sheet.

5.0 Alternate Control Measures

Control Measures not included in the USDCM, V3 may show promise but need further independent research to determine their pollutant removal effectiveness in a semiarid climate and to develop cost-effective design criteria to ensure they are properly designed, constructed, and maintained. Alternate Treatment Control Measures may be approved for use through the variance process described in Chapter 1 of Volume 1 of this Manual if it can be demonstrated that the proposed control measure meets or

exceeds treatment standards for the WQCV or similarly applicable USDCM, V3 Treatment BMPs. Documentation must also include design plans, specifications, and maintenance requirements similar to those provided for the USDCM, V3 Treatment BMPS and stamped/signed by a Colorado Professional Engineer. In all cases the minimum standards of Chapter 1 shall be met.

6.0 Fact Sheets

As mentioned above, this chapter incorporates by reference all criteria presented in the current version of the Urban Storm Drainage Criteria Manual (USDCM), Volume 3, Best Management Practices, Chapter 4 Treatment BMPs for purposes of design and implementation. Treatment BMP Fact Sheets are provided in the USDCM, V3.