



CITY OF LONE TREE

**POST-CONSTRUCTION
STORMWATER MANAGEMENT
PROGRAM**

**STANDARD OPERATING
PROCEDURES MANUAL**

CITY OF LONE TREE PUBLIC WORKS DEPARTMENT

OCTOBER 2018

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CHAPTER 1 - INTRODUCTION

The Federal Clean Water Act (CWA) is the cornerstone of surface water quality protection in the United States. Though the CWA does not deal directly with groundwater or with water quantity issues, the statute employs a variety of regulatory and nonregulatory tools to sharply reduce direct pollutant discharges into waterways and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the Nation's waters so that they can support the protection of watersheds. To further reduce the adverse effects of stormwater runoff, the U.S. Environmental Protection Agency (EPA) instituted its Stormwater Phase II Final Rule on December 8, 1999.

PHASE II STORMWATER PROGRAM ADMINISTRATION

As authorized by the CWA, the National Pollutant Discharge Elimination System (NPDES) Permit Program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. The Phase II Stormwater Program is part of the EPA's NPDES program, which in Colorado is delegated to the Water Quality Control Division (Division) of the Colorado Department of Public Health and Environment (CDPHE) to administer.

PHASE II STORMWATER PROGRAM REGULATIONS

The City of Lone Tree's Municipal Separate Storm Sewer System (MS4) is a system that discharges stormwater runoff to surface water or waters of the state. Phase II regulates discharges from small MS4s located in "urbanized areas" (as delineated by the Census Bureau in the most recent census) and from additional small MS4s designated by the Division. Phase II also regulates construction activities that disturb one (1) or more acres of land. In addition, the Phase II Final Rule ends the temporary exemption from Phase I requirements for some municipally-operated industrial activities.

MS4s are typically operated by municipalities, but the Phase II definition of "MS4" includes storm sewer systems owned or operated by other public bodies (e.g., counties). The EPA also notes that an MS4 is not always just a system of underground pipes; it can include roads with drainage systems, gutters, and ditches.

THE ROLE OF POST-CONSTRUCTION STORMWATER MANAGEMENT IN PHASE II STORMWATER

The EPA's Phase II rule specified that permitting authorities (i.e., the Division) must issue general permits for "automatically designated" small MS4s by December 9, 2002. The rule required that the City of Lone Tree (City) apply for NPDES permit coverage within 90 days of permit issuance, and no later than March 10, 2003. To obtain this coverage, the City had to develop, implement, and enforce a stormwater management program that was designed to reduce the discharge of pollutants to the maximum extent practicable, protect water quality, and satisfy the applicable water quality requirements

of the CWA. The EPA's Stormwater Phase II Final Rule stated that this stormwater management program must include the following six minimum control measures:

- Public Education and Outreach on stormwater impacts,
- Public Involvement and Participation,
- Illicit Discharge Detection and Elimination,
- Construction Site Stormwater Management,
- **Post-Construction Stormwater Management in new development and redevelopment**, and
- Pollution Prevention and Good Housekeeping for municipal operations.

As part of the application for permit coverage, the City had to identify the Best Management Practices (BMPs) used to comply with each of these six minimum control measures and measurable goals set for each measure. Since it went into effect on March 28, 2003, the City has implemented the Colorado Discharge Permit System (CDPS) General Permit COR-080000 under the Certification Number COR-080016. The current version of the City's permit has an effective date of July 1, 2016 and expires June 30, 2021.

PHASE II STORMWATER EDUCATION

As reflected above, the City, through the successful implementation of the six minimum control measures, provides stormwater education, including Post Construction Stormwater Management, to City employees and the general public.

ABOUT THIS MANUAL

This Manual has been designed to give an overview of the processes used by the City of Lone Tree to meet the requirements of the Permit Program for Post-Construction Stormwater Management as follows:

- Chapter 2 explains the Post-Construction Stormwater Management requirements of the Permit.
- Chapter 3 identifies the exclusions allowed by the Permit.
- Chapter 4 references the regulatory mechanisms.
- Chapter 5 references the Control Measure Requirements.
- Chapter 6 provides the procedures for the review and approval of site plans.
- Chapter 7 reviews the procedures for site inspections.
- Chapter 8 provides the procedure for enforcement and sanctions against entities responsible for applicable construction activities.
- Chapter 9 outlines the training approaches.
- Chapter 10 describes the files used for recordkeeping.

CHAPTER 2 - POST-CONSTRUCTION STORMWATER MANAGEMENT PROGRAM

WHY ARE POST-CONSTRUCTION STORMWATER MANAGEMENT EFFORTS NECESSARY?

Within the Colorado Discharge Permit System (CDPS) Fact Sheet to Permit Number COR080000 General Permit for Discharges from MS4s that Discharge to the Cherry Creek Reservoir Drainage Basin, the Division determined that it is less expensive to remove pollutants from stormwater before it enters the MS4 than to treat polluted stormwater after it is discharged to a state water. Construction site operators must install a control measure that will control stormwater pollution from the site after construction is completed. Some control measures slow down fast moving stormwater that can erode streambanks and allow dirt and other pollutants to settle out of the stormwater before discharging the cleaner stormwater into local waterways. Either the property owner or the permittee periodically maintains the control measures and properly disposes of the dirt, trash, and other pollutants collected by the control measure.

THE ELEMENTS OF AN POST-CONSTRUCTION STORMWATER MANAGEMENT PROGRAM

The Permit states that “The permittee must implement a program to reduce or prevent the discharge of pollutants to the MS4 from applicable construction activities. For sites that drain wholly or in part to the Cherry Creek Reservoir drainage basin and are located wholly or in part within the urbanized area or growth area, the requirements contained in the Cherry Creek Reservoir Control Regulation (5 CCR 1002- 72) shall apply in addition to the requirements contained in this section”. The City’s Post Construction Stormwater Management program includes the following elements:

- Regulatory Mechanisms: Lone Tree Municipal Code
 - Section 15-1-10 adopts the Douglas County Storm Drainage Design and Technical Criteria Manual (Manual) for the City’s program;
 - Section 15-2-20 prohibits the discharge of any non-stormwater into the City’s MS4 or Waters of the State;
 - Section 15-2-70 prohibits stormwater management facilities to be operated in a manner that violates the MS4 Permit or the Manual;
 - Section 15-2-80 authorizes access to private and public properties for inspection or investigation conditions that may constitute a violation;
 - Section 15-2-90 provides for the administration and enforcement for any and all illicit discharges;
 - Section 15-2-100 provides for the civil enforcement of the Manual; and
 - Section 15-2-110 defines the penalties for violation.
- Regulatory Mechanism Exemptions: The City tracks any exemption implemented by the City to waive control measures used to meet effluent limits.
- Development Review: The City reviews all construction stormwater site plans; sediment and erosion control plans, stormwater pollution prevention plans,

- drainage reports, drainage plans, and stormwater management plans submittals for general compliance with the Manual;
- Construction Inspection: Prior to the approval of the permanent control measures for all applicable construction sites, the City:
 - Requires a stamped as-built that certifies the measures have been constructed in accordance with the City-approved construction drawings. The certification must include:
 - Pond Volumes
 - Outlet structure conformance for elevations and diameters/restrictor plates/weir configurations;
 - Requires the completion of a City-approved Operations and maintenance Manual for the completed measures;
 - Conducts a final field inspection, including photos, of the approved measures.
 - Post-Construction Inspection: The City shall include inspections of field conditions and control measures to confirm conformity with the site plan, identify any inadequate control measures, and identify control measures requiring routine maintenance, such as trash removal. All functional elements of control measures shall be inspected at a frequency determined by the permittee. Inspections of each control measure shall occur at least once during the permit term.
 - Enforcement: The City can, at its discretion, escalate the enforcement mechanisms defined under the City Code.
 - Recordkeeping: The City maintains records that include:
 - The City-approved Construction Plans;
 - Inspection forms and associated photographs;
 - Correspondence; and
 - Project files with activity spreadsheets

The City has incorporated all of these elements within this Manual and through implementation of our Phase II Permit requirements.

CHERRY CREEK RESERVOIR DRAINAGE BASIN

The City's program must also meet the requirements contained in the Cherry Creek Reservoir Control Regulation (5 CCR 1002- 72) for sites within the City limits that drain wholly or in part to the Cherry Creek Reservoir drainage basin in addition to the requirements contained in this document.

CHAPTER 3 – POST-CONSTRUCTION EXCLUSIONS

GENERAL PERMIT EXCLUSIONS

The General Permit includes the following three exclusions from the Post-Construction Program. These construction activities are not subject to the requirements of Section (1.E.4.b.iv.):

- Pavement Management Sites: Sites, or portions of sites, for the rehabilitation, maintenance, and reconstruction of roadway pavement, which includes roadway resurfacing, mill and overlay, white topping, black topping, curb and gutter replacement, concrete panel replacement, and pothole repair. The purpose of the site must be to provide additional years of service life and optimize service and safety. The site also must be limited to the repair and replacement of pavement in a manner that does not result in an increased impervious area and the infrastructure must not substantially change. The types of sites covered under this exclusion include day-to-day maintenance activities, rehabilitation, and reconstruction of pavement. “Roadways” include roads and bridges that are improved, designed or ordinarily used for vehicular travel and contiguous areas improved, designed or ordinarily used for pedestrian or bicycle traffic, drainage for the roadway, and/or parking along the roadway. Areas primarily used for parking or access to parking are not roadways.
- Excluded Roadway Redevelopment: Redevelopment sites for existing roadways, when one of the following criteria is met:
 - 1) The site adds less than 1 acre of paved area per mile of roadway to an existing roadway, or
 - 2) The site does not add more than 8.25 feet of paved width at any location to the existing roadway.
- Excluded Existing Roadway Areas: For redevelopment sites for existing roadways, only the area of the existing roadway is excluded from the requirements of an applicable development site when the site does not increase the width by two times or more, on average, of the original roadway area. The entire site is not excluded from being considered an applicable development site for this exclusion. The area of the site that is part of the added new roadway area is still an applicable development site.
- Aboveground and Underground Utilities: Activities for installation or maintenance of underground utilities or infrastructure that does not permanently alter the terrain, ground cover, or drainage patterns from those present prior to the construction activity. This exclusion includes, but is not limited to, activities to install, replace, or maintain utilities under roadways or other paved areas that return the surface to the same condition.
- Large Lot Single Family Sites: A single-family residential lot, or agricultural zoned lands, greater than or equal to 2.5 acres in size per dwelling and having a total lot impervious area of less than 10 percent. A total lot imperviousness greater than 10 percent is allowed when a study specific to the watershed and/or MS4 shows that expected soil and vegetation conditions are suitable for infiltration/filtration of

the WQCV for atypical site, and the permittee accepts such study as applicable within its MS4 boundaries. The maximum total lot impervious covered under this exclusion shall be 20 percent.

- Non-Residential and Non-Commercial Infiltration Conditions: This exclusion does not apply to residential or commercial sites for buildings. This exclusion applies to applicable development sites for which post-development surface conditions do not result in concentrated stormwater flow during the 80th percentile stormwater runoff event. In addition, post-development surface conditions must not be projected to result in a surface water discharge from the 80th percentile stormwater runoff events. Specifically, the 80th percentile event must be infiltrated and not discharged as concentrated flow. For this exclusion to apply, a study specific to the site, watershed and/or MS4 must be conducted. The study must show rainfall and soil conditions present within the permitted area; must include allowable slopes, surface conditions, and ratios of impervious area to pervious area; and the permittee must accept such study as applicable within its MS4 boundaries.
- Sites with Land Disturbance to Undeveloped Land that will Remain Undeveloped: Permittees may exclude sites with land disturbance to undeveloped land (land with no human-made structures such as buildings or pavement) that will remain undeveloped after the site.
- Stream Stabilization Sites: Permittees may exclude stream stabilization sites.
- Trails: Permittees may exclude bike and pedestrian trails. Bike lanes for roadways are not included in this exclusion, unless attached to a roadway that qualifies under another exclusion in this section.
- Oil and Gas Exploration: Permittees may exclude facilities associated with oil and gas exploration, production, processing, or treatment operations, or transmission facilities, including activities necessary to prepare a site for drilling and for the movement and placement of drilling equipment, whether or not such field activities or operations may be considered to be an applicable construction activity.

The City keeps a record on these exclusions. See Chapter 10 for the name and location of the exclusion file.

CHAPTER 4 – REGULATORY MECHANISMS

INTRODUCTION

The City of Lone Tree has implemented regulatory mechanisms to:

- Give the City the ability to implement sanctions against entities responsible for applicable development site activities;
- Require control measures to be implemented for all applicable development sites;
- Require long-term operation and maintenance of control measures; and
- Implement procedures to ensure that any exemptions, waivers or variances included in the regulatory mechanism are applied in a manner that complies with the terms and conditions of the Permit.

SANCTIONS

Section 5.10.1 of the Code identifies the City's ability to sanction a project or property for failing to meet the City's Post-Construction Management Program:

"In addition, any violation of this Article may constitute a violation of the Federal Clean Waters Act and the Colorado Water Quality Control Act. Pursuant to Section 25-8-08, C.R.S., any person who violates the Act or any permit issued under the Act shall be subject to a civil penalty of not more than \$10,000 per day for each day during which such violation occurs. Pursuant to Section 25-8-609, C.R.S., any person who recklessly, knowingly, intentionally or with criminal negligence discharges any pollutant into any state waters commits criminal pollution if such discharge is made in violation of any permit issued under the Act. If the violation is committed with negligence or recklessness, the maximum fine shall be \$12,500 per day. If the violation is committed knowingly or intentionally, the maximum fine shall be \$25,000 per day."

CHAPTER 5 – CONTROL MEASURE REQUIREMENTS

INTRODUCTION

The City's Post-Construction Management Program must address selection, installation, implementation, and maintenance of control measures that meet the requirements of Part I.B. The "base design standard" is the minimum design standard for new development and redevelopment. Control measures must also be appropriate for the development site. There are a wide variety of structural and non-structural control measures that can be used at applicable development sites. The current edition of the Douglas County Storm Drainage Design and Technical Criteria Manual, as adopted by Code Section 15-1-10, meets the following requirements.

REQUIREMENTS

The control measures for applicable development sites shall meet one of the following base design standards listed below:

- WQCV Standard: The control measure(s) is designed to provide treatment and/or infiltration of the WQCV and:
 - 1) 100% of the applicable development site is captured, except the permittee may exclude up to 20 percent, 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 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 control measure (e.g., wetland vegetation).
- Pollutant Removal Standard: 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 and:
 - 1) 100% of the applicable development site is captured, except the permittee may exclude up to 20 percent 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 street).
- Runoff Reduction Standard: The control measure(s) is designed 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.

➤ Applicable Development Site Draining to a Regional WQCV Control Measure:

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.c.iv(A).

➤ Applicable Development Site Draining to a Regional WQCV Facility: 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 percent 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 percent 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. In addition, the stream channel between the discharge point of the applicable development site and the regional WQCV facility must be stabilized. The regional WQCV facility must meet the following requirements:

- 1) The regional WQCV facility must be implemented, functional, and maintained following good engineering, hydrologic and pollution control practices.
- 2) The regional WQCV facility must be designed and maintained for 100% WQCV for its entire drainage area.
- 3) The regional WQCV facility must have capacity to accommodate the drainage from the applicable development site.
- 4) 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.
- 5) 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).
- 6) The permittee shall meet the requirements in Parts I.E.4.c.v. and vii. and Part I.E.4.d. for the regional WQCV facility consistent with requirements and actions for control measures.
- 7) 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.c.iv.
- 8) 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.

➤ Constrained Redevelopment Sites Standard:

- 1) Applicability: The constrained redevelopment sites standard applies to redevelopment sites meeting the following criteria:
 - (a) The applicable redevelopment site is for a site that has greater than 75% impervious area, and
 - (b) The permittee has determined that it is not practicable to meet any of the design standards in Parts I.E.4.c.iv(A), (B), or (C). 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.
- 2) Constrained Redevelopment Sites Design Standard: The control measure(s) is designed to meet one of the following:
 - (a) 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,
 - (b) The control measure(s) is designed to provide for treatment of 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. A minimum of 50% of the applicable development area including 50% or more of the impervious area of the 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 control measure(s) as long as the overall removal goal is met or exceeded (e.g., providing increased removal for a smaller area), or
 - (c) 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.

➤ Previous Permit Term standard:

- 1) Applicability: The previous permit term standard is only applicable to applicable development activities where one of the following criteria are met:
 - (a) The control measure(s) is constructed for the applicable development site prior to July 1, 2019, which is the deadline in Part I.H to implement a post-construction sites program.
 - (b) The control measure(s) for the applicable development site is designed and in review prior July 1, 2019, which is the deadline in Part I.H to implement a post-construction sites program.
 - (c) The control measure(s) for the applicable development site is designed and approved prior to July 1, 2019, which is the deadline in Part I.H to implement a post-construction sites program.

- 2) The previous permit design standard is the design approved by the permittee consistent with the CDPS Stormwater Management Plan Description submitted to the Division in accordance with the requirements of the previous permit.
- 3) Any modifications to the control measure(s) shall be consistent with the CDPS Stormwater Management Plan Description submitted to the Division in accordance with the requirements of the previous permit, or consistent with one of the control measure requirements in I.E.4.c.i(A) through (F).

CHAPTER 6 – SITE PLANS

INTRODUCTION

The City's Public Works Department, as part of the entitlement process, reviews every Site Improvement Plan (SIP) submitted to the City. Under the Permit, SIPs can include construction stormwater site plans; sediment and erosion control plans, stormwater pollution prevention plans, drainage reports, drainage plans, and stormwater management plans.

REVIEW REQUIREMENTS

The City requires operators to develop SIPs that locate and identify all structural and non-structural control measures for the applicable development activities. The SIP must include the following:

- 1) Design details for all structural control measures implemented to meet the requirements of Part I.E.4.
- 2) A narrative reference for all non-structural control measures for the site, if applicable. "Non-structural control measures" are control measures that not structural control measures, and include, but are not limited to; control measures that prevent or reduce pollutants being introduced to water or that prevent or reduce the generation of runoff or illicit discharges.
- 3) Documentation of operation and maintenance procedures to ensure the long-term observation, maintenance, and operation of the control measures. The documentation shall include frequencies for routine inspections and maintenance activities.
- 4) Documentation regarding easements or other legal means for access of the control measure sites for operation, maintenance, and inspection of control measures.

The City, using the current editions of the Douglas County Storm Drainage Design and Technical Criteria Manual and Urban Drainage and Flood Control District Volumes 1-3 as references, shall confirm that the proposed site plan includes appropriate control measures for the development site.

REVIEW PROCESS

An SIP is required for the development of new buildings and related site improvements and for exterior modifications to existing buildings and site improvements, as determined by the City's Planning Director. SIPs are required for all single-family attached, multi-family and non-residential development.

Public Works reviews several documents (or portions thereof) as part of the SIP process, including but not limited to:

- Preliminary and Final Plats
- SIP sheets pertaining to Grading, Utilities, and Drainage
- Preliminary and Final Utility Reports

- Master, Preliminary, and Phase III Drainage Reports
- Preliminary and Final Construction Plans
- Public Improvements Cost Estimate

The initial submittal of these documents occurs through the Planning Department. Subsequent correspondence can be directly between the development's engineer and Public Works. Include the project planner with all documentation. Once approved by Public Works, final versions of the documents, complete with engineer's stamp, are received and approved by the City and stored electronically in the City's database.

CHAPTER 7 – SITE INSPECTION

STANDARD OPERATING PROCEDURES

INSPECTIONS

Per the Permit, the City is required to implement:

- Inspection and acceptance procedures to ensure that control measures are installed and implemented in accordance with the site plan inspect permitted construction sites; and
- Written procedures to ensure adequate long-term operation and maintenance of control measures to confirm that they are functioning as designed.

CONSTRUCTION SITE INSPECTION

The City must conduct at least one site inspection to confirm that the completed control measure operates in accordance with the City-approved site plan documents. Prior to the approval of the permanent control measures for all applicable development sites, the City:

- Requires a stamped as-built that certifies the measures have been constructed in accordance with the City-approved construction drawings. The certification can be from either a Colorado State licensed engineer or surveyor. The certification must include:
 - Pond Volumes
 - Outlet structure conformance for elevations and diameters/restrictor plates/weir configurations;
- Requires the completion of a City-approved Operations and maintenance Manual for the completed measures;
- Conducts a final field inspection, including photos, of the approved measures.

This documentation is added to the appropriate file as described in Chapter 10.

All applicable development sites must have operational permanent water quality control measures at the completion of the site. In the case where permanent water quality control measures are part of future phasing, the permittee must have a mechanism to ensure that all control measures will be implemented, regardless of completion of future phases or site ownership. In such cases, temporary water quality control measures must be implemented as feasible and maintained until removed or modified. All temporary water quality control measure must meet one of the design standards in Part I.E.4.c.iv. For the purpose of this section, completion of a site or phase shall be determined by the issuance of a certificate of occupancy, use of the completed site area according to the site plan, payment marking the completion of a site control measure, the nature of the selected control measure or equivalent determination of completion as appropriate to the nature of the site.

LONG-TERM OPERATION AND MAINTENANCE OVERSIGHT

The City has implemented written procedures which include the following minimum requirements to ensure adequate long-term operation and maintenance of control measures to ensure that they are functioning as designed:

- Procedures to enforce the requirements for the owner or operator to implement and maintain control measures when necessary; and
- Oversight shall include inspections of field conditions and control measures to confirm conformity with the site plan, identify any inadequate control measures, and identify control measures requiring routine maintenance, such as trash removal. All functional elements of control measures shall be inspected at a frequency determined by the permittee. Inspections of each control measure shall occur at least once during the permit term except when Inspections for oversight of control measures on individual residential lots serving only the individual lot shall occur as determined by the permittee and may rely on alternative oversight process.

POST-CONSTRUCTION INSPECTION

The City currently inspects all of the post-construction permanent control measures in the MS4 boundary on an annual basis, including those that were installed prior to the Phase II permit. While the frequency and scope of these inspections are not required by the Permit, the City prefers to keep track of all of the control measures. All permanent facilities built after March 2003 (when the first Permit became effective) have a water quality component(s) associated with the control measure.

Section 15-2-80 of the Code states that “The authorized representatives or employees of the City may enter at all reasonable times in or upon any private or public property for the purpose of inspecting or investigating conditions and practices which may constitute a violation of this Article. The authorized enforcement agent and the City of Lone Tree Police Department shall administer, implement and enforce the provisions of this Article.”

The document [Control Measure Spreadsheet.xls](#) has been developed and maintained to complete the annual inspections of the permanent control measures. Each control

City of Lone Tree Drainage Facility Inspections																				
CM o n a t s r u r e	Location	Structure	Type	Vegetation	For re ba y	M i c r o p o l	S t r u c t u r e	T o p G r a t e	S t e p s	C h a n n e l	O v e r f l o w	1 0 0 - Y e a r	1 0 - Y e a r	E U R V	W Q	S c r e e n	Date	Notes		
0001	LTGC Hole #6	0568	100									6.5x3.5 Boxes								
0001	LTGC Hole #6	0570	10										30" Pipe							
0002	BBVA	0255	WQ				4x4					3" Orif	3" Orif		1 x 1/4"				5.6' Depth to Rim	
0003	City Hall	1712	100				6.5 x 6.5					3.84'w x2.15'								8.0' Depth to Rim

measure is listed with the non-applicable features shaded out. This spreadsheet gives the inspector a compact reference to be carried in the field during the inspections.

The inspector shall inspect each of the applicable features indicated on the spreadsheet. There are three conditions that each feature can be rated.

Good Requires Maintenance Fail (Violation)

- Good indicates that the feature is in good working order, is free from debris, is appropriately attached or secured, and does not require maintenance.
- Requires Maintenance indicates that the feature requires routine maintenance to bring it up to good working order. This is typically an issue with debris or vegetation.
- Fail (Violation) indicates that the feature is completely non-functioning, not attached or secured, or is missing.

As part of the inspection, photos should be taken of each control measure and associated structure to document the condition of the control measure. Make sure to take photos of any of the deficiencies. Once the inspections are completed, the inspector shall archive the photos into the appropriate folder under the Post Construction Control Measures folder. See Chapter 10 for the archiving nomenclature procedure.

The City's SOP **C3-Storm Sewer Detention Pond and Outlet Structure** is included as Appendix A help familiarize the inspector with the different components of the inspection.

INSPECTION CORRESPONDENCE

There is no further documentation required for a control measure that is found to be in **Good Working Order**.

If a control measure **Requires Maintenance**, a letter is sent via e-mail to the known responsible party. An example is in Appendix A. The following paragraph is included:

“This deficiency has a direct effect on the intended performance of the facility. The City will be conducting a follow-up inspection during the coming year. If maintenance has not been performed, this drainage facility could be considered out of compliance with the City's Stormwater Management Program, per City of Lone Tree Ordinance No. 05-07. It is important to note that if this escalates to a Notice of Violation, the process may result in penalties.”

Note that the text of this paragraph calls out for a follow-up inspection during the coming year. This allows the next annual inspection to serve as the follow-up and also gives the inspector the discretion to leave the next inspection as requiring maintenance or escalating the issue to a Notice of Violation.

If a control measure is in **Fail (Violation)**, a letter is sent via e-mail to the known responsible party. An example is in Appendix A. The following paragraph is included:

“This drainage facility is not functioning properly and is out of compliance with the City’s Stormwater Management Program. Per City of Lone Tree Municipal Code Section 15-2-90, you are hereby required to implement remedies in fifteen (15) days after receipt of this notice of violation. A City Inspector will complete a follow-up inspection within thirty (30) days of this notice to determine compliance. It is Public Works’ intent to partner with the community to maximize water quality within the City. However, City Ordinance specifies that “Any person who violates any provision of this Article commits a criminal offense and, upon conviction, shall be punished by a fine not exceeding one thousand dollars (\$1,000.00) or by imprisonment not exceeding one (1) year, or by both such fine and imprisonment. Each day a violation continues shall be considered a separate offense.”

Note that the text of this paragraph calls out for a follow-up inspection to occur within thirty (30) days of the Notice of Violation. The inspector or MS4 Coordinator should consider reaching out to the responsible party prior to the deadline to develop a better line of communication to define the expectations from the City’s perspective while respecting the financial implications to the responsible party.

OTHER DOCUMENTATION

All associated documentation including e-mails, phone memos, follow-up photos and inspections should be included for either finding level.

Additionally, A Notice of Violation log is kept to track each violation through remedy acceptance.

CHAPTER 8 – ENFORCEMENT RESPONSE

INTRODUCTION

As described in Section 15-2-70 of the Code identifies the City's ability to sanction a project or property for failing to meet the City's Post-Construction Management Program. While the City strives to find equitable solutions with the private owners of the permanent control measures, there may be an occasion where the City is required to escalate enforcement proceedings.

VIOLATIONS

Section 15-2-70 states "It shall be unlawful for any person to cause or allow any stormwater management facilities to be operated or maintained in a manner that violates the MS4 permit or the City of Lone Tree Storm Drainage Design and Technical Criteria Manual."

As described in Chapter 7, there is only one level of violation for the post-construction control measure inspection. The Requires Maintenance level of finding requires a re-inspection but does not require immediate remediation.

NOTICE OF VIOLATION

A Notice of Violation is not a legally binding document but generally gets the attention of the Permittee(s) that immediate remediation is required for the control measure(s) site. While the determination of a violation is very definitive, the inspector should use the potential of escalating the violation judiciously, as it is Public Works' intent to partner with the community to maximize water quality within the City.

In the event that the Permittee(s) does not comply with the Notice of Violation and the MS4 Coordinator escalates the violation to an enforcement level, the Coordinator will need to get the Police Department involved to enforce the violation as, per Municipal Code, the Police Department is the sole entity within the City that has enforcement abilities.

PROCEDURE

The Coordinator shall compile all documentation that led to the Notice of Violation and post-issuance correspondence and present this documentation to the Public Works Director (or the highest-ranking available member of Public Works) immediately upon determining the need to escalate the complaint to a civil enforcement level. If the violation is determined to be egregious enough for intervention by the Police Department, the complete file needs to be forwarded to one of the Police Department's Captains for their determination of the next course of action to be taken against the Permittee(s). All documentation regarding the Notice of Violation and its resolution shall be kept within the appropriate City's Post Construction Control Measures folder file.

CHAPTER 9 - TRAINING

INTRODUCTION

Per the Permit, the City shall train applicable municipal staff to inspect the control measures in accordance with the City's procedures. The City must identify those who will be likely to inspect the control measures and provide training to those individuals. The training must also include information on trash and its effects on water quality.

PROCEDURE

All new inspectors shall review this Manual to be adequately versed in the requirements of the City's Permit. It is also helpful to have reviewed the Douglas County Storm Drainage Design and Technical Criteria Manual and the Urban Drainage and Flood Control District Volume 3 for reference.

The City may also provide continued education for its inspectors for current trends and approaches for the control of pollutants within the City's MS4.

CHAPTER 10 - RECORDKEEPING

INTRODUCTION

The Division substantially revised the framework of the 2016 Permit. Review of the previous permit indicated a gap in the documentation of demonstrating permit compliance. For the 2016 Permit, recordkeeping requirements include the development of documents such as standard operating procedures (SOPs).

Recordkeeping allows the City to communicate accurately and effectively to staff and construction operators. Recordkeeping enables the City, applicable development site operators, and others participating in the stormwater program to be timely in reporting to both the Division and the City. In addition, recordkeeping helps to minimize errors and allow for a periodic review of the success of the stormwater program. Opportunities for stormwater program improvements can also be identified through the review of records.

POST-CONSTRUCTION STORMWATER MANAGEMENT PROGRAM FILES

The following files can be found under: **MS4 Documentation\Section – Post-Construction**

Drainage Report – Control Measure Database.xls

An Excel file used to catalog each permanent control measure and cross-reference it with the City-approved Phase III (Final) Drainage Report and GIS database. The input:

- **Facility On-site?:** Does this report have an on-site control measure?
- **Design:** If there is an on-site measure, this references the GIS number
- **Control Measure No.:** This references the GIS number for the type of measure:
 - **WQ:** As a stand-alone control measure or as part of a detention pond
 - **EURV:** As an Excess Urban Runoff Volume measure
 - **10-Year:** As a ten-year release outlet
 - **100-Year:** As a one-hundred-year release outlet
- **Parcel:** The legal description of the control measure location
- **Informal Name:** Project Name or Identifier (subject to change)
- **Year:** The year the report was approved by the City
- **LT#:** The City's project number. The three-digit numbers represent the early filing nomenclature; the DCXX numbers reflect reports that were approved by Douglas County prior to the incorporation of the City or annexation; the XX-XX City review number.

This file should be updated with each new drainage report approval, even if an existing control measure provides water quality and detention.

Control Measures History.xls

An Excel file used to document the history of each control measure. This information is used to quantify the number of new control measures for the Annual Report document sent to the Division every year.

The Yearly Summary tab summarizes the year and type of each control measure added to the City's MS4. Each year a new row is added for that year. The columns link with the data columns on the Date History tab. The "Ponds Modified" and "Ponds Removed" rows require manual revision to correlate the total number shown in M25 to be the same as the total number of permanent control measures in the Control Measure Database.

The Date History tab summarizes the year and type of each control measure added to the City's MS4. Each year a new row is added for that year. This is the sheet that requires data input that will link the data columns to the Yearly Summary tab. The GIS number is referenced to the year and type of the control measure. If the measure is moved, updated, or retrofitted, the old number is voided in its existing row/column by identifying it with a **XXX**. The new configuration is added to the new year row/column and identified with a **XXX**. A removed pond is voided in its existing row/column and identified with a **XXX**.

This file should be updated with the approval of each new control measure or modification of an existing control measure.

Control Measures Database.xls

An Excel file used to document the pertinent information for each control measure:

- **Control Measure:**
 - **No.:** The GIS database number assigned to the control measure
 - **WQ?:** Does the control measure include water quality?
 - **Type:** The type of control measure
- **Structure and Control Measure Type:**
 - **No.:** The GIS database number assigned to the outlet structure
 - **WQ:** If applicable, how is the water quality metered?
 - **WQ/10:** If applicable, how is the water quality/ten-year release metered?
 - **EURV:** If applicable, how is the Excess Urban Runoff Volume release metered?
 - **10-Yr:** If applicable, how is the 10-year release metered?
 - **100-Yr:** If applicable, how is the 100-year release metered?
- **Detail?:** Is there a construction detail(s) for the structure and/or control measure?
- **O&M?:** Is there an Operations and Maintenance Manual for the control measure?
- **Drainage Basin:** The receiving water of the control measure. The
 - The Willow and Little Dry basins flow to the South Platte
 - The Cottonwood, Happy Canyon, and Newlin basins are in the Cherry Creek basin
- **Informal Name:** The informal name of the project or location
- **On-Line Year:** The year the control measure came on line for the MS4.
- **CoLT No.:** The City's project number. The three-digit numbers represent the early filing nomenclature; the DCXX numbers reflect reports that were approved

by Douglas County prior to the incorporation of the City or annexation; the XX-XX City review number.

- **Legal:** The legal description of the control measure location
- **Owner Name/Address/City/State/Zip:** As registered on the Douglas County Assessors Database.
- **E-Mail:** The known e-mail address of the responsible party. This address is used for all correspondence regarding the control measure.
- **Notes:** As needed

This file should be updated with the approval of each new control measure or modification of an existing control measure.

CoLT Post-Construction Exclusions Database.xls

An Excel file used to document all post-construction activities given exclusions:

- **GIS ID No.:** The GIS database number, if assigned
- **Site/Project name:** Reference name
- **Owner:** Owner of site/project
- **Legal Description/Location:** Description of location
- **Type:** Project type
- **Completion Date:** Date when construction was completed and accepted
- **Imperv. Acreage:** The total impervious areas disturbed
- **WQ Provided?:** Pond number of Water Quality receiving stormwater from site
- **Reason for Exclusion:** Identify the exclusion category from those listed in Chapter 3

This file should be updated with the approval of each new project that is given an exclusion or the completion of an existing exclusion.

RFM Template 2018.doc

A Word file used for the initial correspondence requesting maintenance on a control measure. Once there is a template filled out for a specific control measure, file that document in the Post Construction Control Measures Individual File. All correspondence regarding an RFM is only filed in the Post Construction Control Measures Individual File.

RFM Closure Template 2018.doc

A Word file used for the follow up correspondence confirming that maintenance has been carried out on a control measure. Once there is a closure template filled out for a specific control measure, file that document in the Post Construction Control Measures Individual File.

NoV Template 2018.doc

A Word file used for the initial correspondence for a Notice of Violation on a control measure. Once there is a template filled out for a specific control measure, file that document in the Post Construction Control Measures Individual File. All correspondence regarding an NoV is filed both in the Post Construction Control Measures Individual File and the Notice of Violation Individual File.

NoV Closure Template 2018.doc

A Word file used for the follow up correspondence confirming that the deficiencies identified by Notice of Violation have been remedied for a control measure. Once there is a closure template filled out for a specific control measure, file that document in the Post Construction Control Measures Individual File.

Notice of Violation Log.xls

An Excel file used to document the pertinent information for each Notice of Violation:

- **NoV #:** The file number for the Notice of Violation follows this nomenclature: xx-xxx; xx-Last two digits of the year xxx-next available number
- **Status:** **Open** if unresolved, **Closed** if completed
- **Structure:** GIS number of associated structure, if applicable
- **Informal Name:** Common identifying name where control measure is located
- **Location:** Address or cross-street location of complaint
- **Violation:** Description of complaint
- **Legal:** Legal description of parcel where control measure is located
- **2nd Inspection:** Date of second inspection
- **3rd Inspection:** Date of third inspection (if needed)
- **4th inspection:** Date of fourth inspection (if needed)
- **Closed:** Date of closure of complaint
- **Notes:** As needed

This file should be updated with the receipt of each new complaint, subsequent inspection(s), or closure of the complaint.

NOTICE OF VIOLATION INDIVIDUAL FILES

Each Notice of Violation has a folder that includes the following documents that include but are not limited to: Details; O&M Manuals; Inspection Photos; Request for Maintenance Correspondence if applicable; Notice of Violation Correspondence; Inquiries; and Voided Documentation.

The file number for the Notice of Violation follows this nomenclature:

xx-xxx; xx-Last two digits of the year xxx-next available number

POST CONSTRUCTION CONTROL MEASURES INDIVIDUAL FILES

Each control measure has a folder that includes the following documents that include but are not limited to: Details; O&M Manuals; Inspection Photos; request for Maintenance Correspondence; Notice of Violation Correspondence; Inquiries; and Voided Documentation.

The following nomenclature should be used so the documents can be sorted by date:

xxxx – 20xx-xx-xx Description, where

xxxx

The four-digit GIS database number for the control measure or the outlet structure associated with the control measure.

Note that the outlet structure items are filed under a numbered sub-folder for the control measure

[Space]

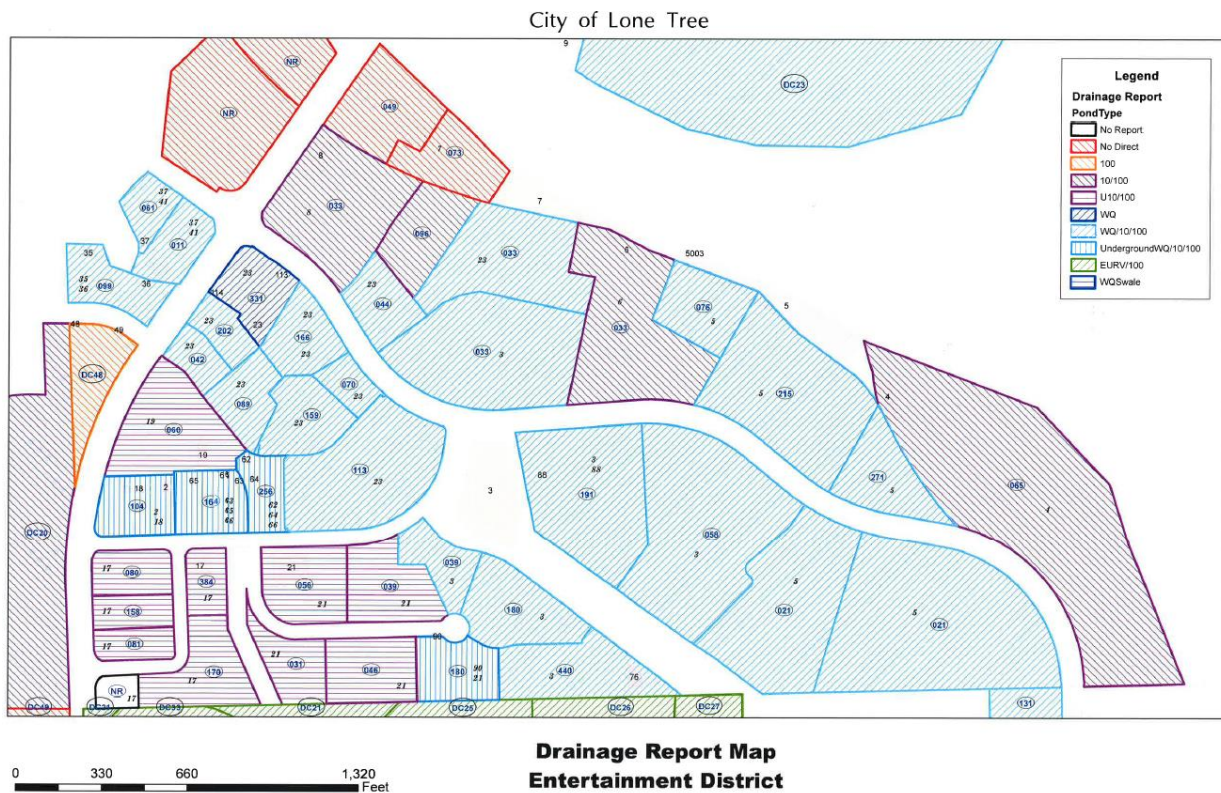
20xx-xx-xx The year/month/date. The month and date are identified by putting a "0" in front of the single-digit month or date.

[Space]

Description Identify what the file is or pertains to

CITY OF LONE TREE GEOGRAPHIC INFORMATION SYSTEM (GIS)

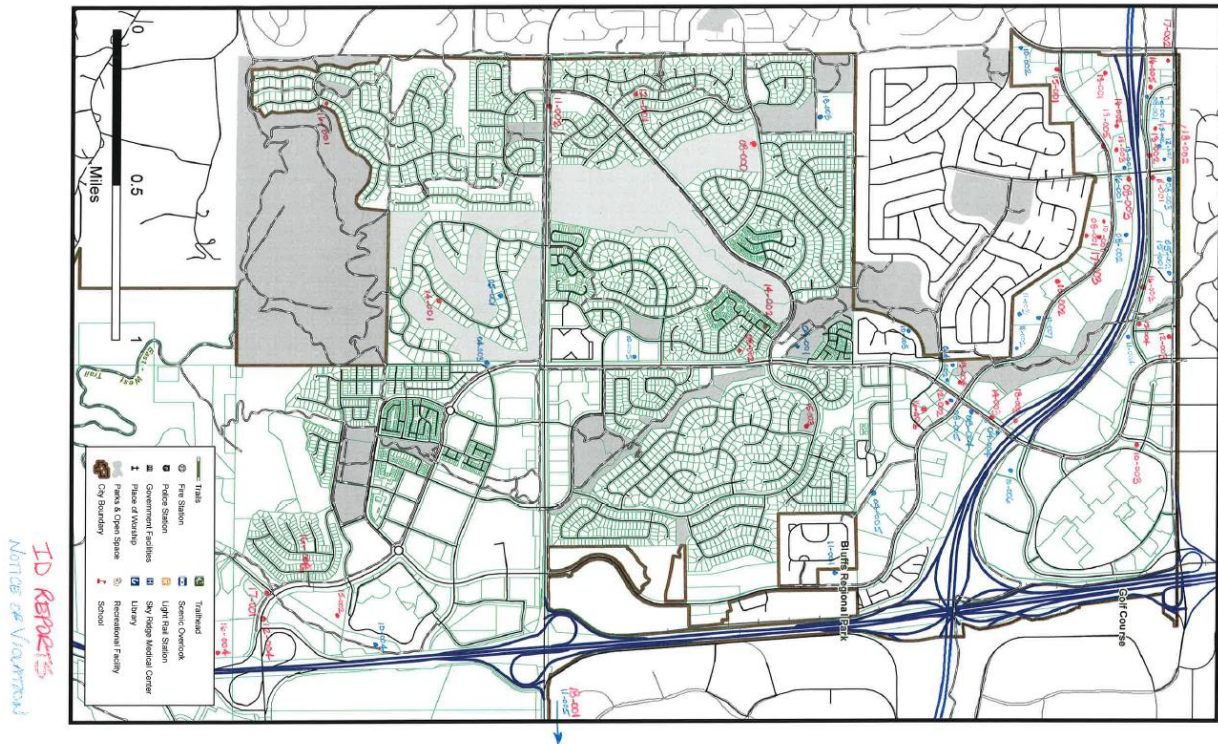
The City's GIS system includes the locations of all of the current permanent control measures and the referenced drainage report associated with each parcel within the City limits. The map template is filed under \Maps\Stormwater\Drainage Report Map Set.pdf.



These maps cross-reference the information in the Control Measures Database.xls in a color and hatch coded depiction.

This information should be updated on at least a semi-annual basis to keep the information current.

The City's GIS system includes the location of each Notice of Violation. The map template is filed under \Maps\Illicit Discharge-Notice of Violation Map.



This information should be updated on a semi-annual basis to keep the information current.