



CITY OF
LONE TREE

**PUBLIC WORKS
RUNOFF
CONTROL
PLAN**

Prepared by:
City of Lone Tree
Public Works Department
9222 Teddy Lane
Lone Tree, CO 80124

June 2017



CITY OF LONE TREE PUBLIC WORKS RUNOFF CONTROL PLAN

Introduction

City of Lone Tree Facilities identified as having activities with high potential for pollutants to be exposed to stormwater have Runoff Control Plans (RCPs) to prevent pollutants from entering state waters, and to maintain compliance with the MS4 permit. The purpose of the RCP is to provide instruction and assistance to employees at any City of Lone Tree facility on how to minimize or eliminate the migration of pollutants off-site during a storm event through the implementation of pollution control measures, or Best Management Practices (BMPs). The stormwater management practices within this RCP are implemented by the Public Works Department.

Best Management Practices for pollution control include structural and non-structural controls. Structural controls such as secondary containment areas and coverings are used for runoff management and/or to minimize exposure of pollutants to stormwater. Non-structural controls focus on facility operations and procedures, such as employee trainings, spill prevention, and guidelines for pesticide use.

One of the main goals of the RCP is to educate employees on the importance of understanding and implementing these procedures during city operations at the Public Works Facility. This requires an understanding of the various City Public Works activities that have the potential to impact water quality, and sets of procedures that prevent or correct problem areas.

Section 1: Facilities

In addition to the operation and maintenance of the streets and storm sewer within the public rights-of-way, the City has ownership, easements for, and/or maintenance responsibilities for the following facilities:

Facility	Address	Legal	Receiving Waters	Site Acreage (ac)	Building (sf)
City Hall	9285 Teddy Lane	Lot 14E2R Park Meadows #2 5th Amendment	Willow Creek/Little Dry Creek/ South Platte	3.50	41,369
Lone Tree Arts Center	10075 Commons Street	Lot 1A, RidgeGate Section 15 Filing 5, 3rd Amendment	Willow Creek/Little Dry Creek/ South Platte	4.77	28,994
The Hub	8827 Lone Tree Parkway	Tract A-1 Lone Tree Filing #1 8th Amendment	Willow Creek/Little Dry Creek/ South Platte	2.74	9,740
Maintenance Facility	13750 West Parker Road	Part of a Tract in the North Half of Section 13, T6S, R67W	Happy Canyon Creek/Cherry Creek	2.01 (Leased)	7,576
Civic Center	8527 Lone Tree Parkway	Part of Lot 7 Block 10 Lone Tree Filing 1	Willow Creek/Little Dry Creek/ South Platte	0.68	3,636
Lincoln Avenue Pedestrian Bridge	At Lincoln Avenue, west of Heritage Hills Circle	Tract D, Heritage Hills 1-F 2nd Amendment	Willow Creek/Little Dry Creek/ South Platte	0.39	11,822
Lone Tree Elementary Park Public Restrooms	9373 Heritage Hills Circle	Part of Tract D-1 Heritage Hills 1-F, 1st Amendment	Willow Creek/Little Dry Creek/ South Platte	Agreement Only	147

Section 2: Description of Pollutant Sources

Per the MS4 permit, the City must implement the following categories of control measures as necessary to prevent or reduce the pollutant sources present:

- 1) Preventive maintenance
- 2) Good housekeeping
- 3) Spill prevention and response procedures
- 4) Structural control measures
- 5) Evaluation of non-stormwater discharges
- 6) Employee training

The City's facilities have the potential to contribute pollutants to stormwater from **fifteen specific areas** if control measures are not used. With the utilization of the appropriate Standard Operating Procedures (SOPs) in each of these areas, the six required categories are addressed as necessary. The specific areas and associated pollutants of concern are listed below.

Area	Pollutant Source	Pollutants
Public Rights-of-Way	Remove and Replace Activities; Patching and Overlay Activities; Sweeping; De-icing; Snow Removal	Total Suspended Solids (TSS); De-icing Material
Private Drive Lanes/Parking	Lot Repair; Patching and Overlay Activities; Sweeping; De-icing; Snow Removal	Total Suspended Solids (TSS); De-icing Material
Building/Structures	General Maintenance; Painting; Window Washing; Carpet Cleaning;	Total Suspended Solids (TSS); Total Dissolved Solids (TDS); Trash/Debris
Landscaping	Chemical Applications; Mulch; Vegetation	Total Suspended Solids (TSS); Total Dissolved Solids (TDS); Trash/Debris; Fertilizers; Pesticides and Herbicides; Nutrients
Outdoor Material Storage	Stock Piles, which may include waste from catch basin cleaning and sweeping; aggregates; dirt; topsoil; riprap; recycled asphalt and concrete; and sand	Total Suspended Solids (TSS), Total Dissolved Solids (TDS), Oil and Grease, Benzene, Heavy Metals
Outdoor Bulk Storage	Liquid Chemical Storage	De-icing Material
Outdoor Trash Enclosures	Accumulated Trash and Debris	Total Suspended Solids (TSS); Total Dissolved Solids (TDS); Trash/Debris

Area	Pollutant Source	Pollutants
Outdoor Traffic Control Storage	Signs; Accumulated Trash; Debris	Total suspended solids (TSS), Total Dissolved Solids (TDS), Trash/debris
Outdoor Utilities Storage	Pipe Storage; Accumulated Trash; Debris	Total Suspended Solids (TSS), Total Dissolved Solids (TDS), Trash/debris
Outdoor Vehicle and Equipment Storage	Leaks of lubricants and coolants	Solvents, Acids, Oil, Grease, Arsenic, Heavy Metals, Chemical Oxygen Demand (COD), Benzene
Indoor Vehicle and Equipment Storage	Tracking of spilled and leaked lubricants and coolants out of building	Solvents, Acids, Oil, Grease, Arsenic, Heavy Metals, Chemical Oxygen Demand (COD), Benzene
Indoor Salt and Sand Storage	Tracking of chemical materials out of building	Total Suspended Solids (TSS), Total Dissolved Solids (TDS), Bulk Granular De-icer, Oil and Grease, Benzene, Heavy Metals
Long-term Vehicle and Equipment Storage	Leaks of lubricants and coolants	Solvents, Acids, Oil, Grease, Arsenic, Heavy Metals, Chemical Oxygen Demand (COD), Benzene
Fleet Vehicle Maintenance	Parts cleaning, waste disposal of rags, oil filters, air filters, batteries, hydraulic fluids, transmission fluids, brake fluids, coolants, lubricants, degreasers, spent solvents	Gas/diesel fuel, fuel additives, oil/lubricants, heavy metals, brake fluids, transmission fluids, chlorinated solvents, arsenic
Vehicle Fueling	Spills and leaks during fuel transfer, spills from “topping off” tanks, runoff from fueling areas, wash-down of fueling areas, leaking storage tanks, spills of oils, brake fluids, transmission fluids	Gas/diesel fuel, fuel additives, oil, lubricants, heavy metals
Storm Sewer System	All listed above	All listed above

Section 3: Stormwater Pollution Prevention Standard Operating Procedures

Standard Operating Procedures (SOPs) have been developed for specific municipal activities. Each SOP describes several control measures that reduce or minimize stormwater pollution Control and include when appropriate, installation and implementation specifications and information. Control Measures are pollution prevention practices that include structural and non-structural controls. Structural controls such as secondary containment areas and coverings are used for runoff management and/or to minimize exposure of pollutants to stormwater. Non-structural controls focus on facility operations and procedures, such as employee trainings, spill response, and guidelines for pesticide use.

While a variety of control measures may be used to minimize or eliminate the presence of pollutants in stormwater discharges, it is more efficient to prevent pollutants from becoming entrained in stormwater than remove these pollutants from stormwater.

The associated SOPs for each of the specific areas are listed below and the SOP can be found in Appendix A.

Area	Associated SOPs
Public Rights-of-Way	<ul style="list-style-type: none"> • Street Curb Gutter Maintenance • Street Sweeping • Snow and Ice Control • Spill Prevention and Response
Private Drive Lanes/Parking	<ul style="list-style-type: none"> • Street Curb Gutter Maintenance • Street Sweeping • Snow and Ice Control • Waste Management • Spill Prevention and Response
Building/Structures	<ul style="list-style-type: none"> • Building Maintenance • Spill Prevention and Response
Landscaping	<ul style="list-style-type: none"> • Fertilizer Herbicide Pesticide Application • Spill Prevention and Response
Outdoor Material Storage	<ul style="list-style-type: none"> • Outdoor Material Storage • Waste Management • Salt and Sand Storage • Spill Prevention and Response
Outdoor Bulk Storage	<ul style="list-style-type: none"> • Outdoor Material Storage • Spill Prevention and Response
Outdoor Trash Enclosures	<ul style="list-style-type: none"> • Waste Management
Outdoor Traffic Control Storage	<ul style="list-style-type: none"> • Outdoor Material Storage
Outdoor Utilities Storage	<ul style="list-style-type: none"> • Outdoor Material Storage
Outdoor Vehicle and Equipment Storage	<ul style="list-style-type: none"> • Spill Prevention and Response

Area	Associated SOPs
Indoor Vehicle and Equipment Storage	<ul style="list-style-type: none"> • Spill Prevention and Response
Indoor Salt and Sand Storage	<ul style="list-style-type: none"> • Spill Prevention and Response
Long-term Vehicle and Equipment Storage	<ul style="list-style-type: none"> • Spill Prevention and Response
Fleet Vehicle Maintenance	<ul style="list-style-type: none"> • Spill Prevention and Response
Vehicle Fueling	<ul style="list-style-type: none"> • Vehicle Fueling • Spill Prevention and Response

Section 4: Inspections

Part I.E.5.ii. Municipal Facility Runoff Control Measures in the MS4 permit states; (C) *The permittee shall implement written municipal facility inspection procedures, which must at a minimum include the following:*

- 1) *An annual visual inspection of each applicable municipal facility.*
- 2) *A verification that the written procedures and documentation reflect current conditions.*
- 3) *Observation of locations and areas where stormwater from municipal facilities are discharged off-site; or discharged to waters of the state, or to a storm sewer system that drains to waters of the state.*
- 4) *Observation of facility conditions, including pollutant sources and control measures, to identify inadequate control measure and control measure requiring maintenance.*

The Public Works Department staff or their designee makes annual visual inspection of the Public Works Facility. An inspection report specific to the facility has been created and can be found in Appendix B. The scope of the annual inspection includes observation of stormwater discharge locations and areas. These areas are displayed on the facility map attached to the Inspection Report. The scope of the inspection also includes observation of facility conditions, including pollutant sources and control measures, to identify inadequate control measure and control measure requiring maintenance.

Inspection records are filed in the stormwater files on the Public Works shared drive and a copy is given to the Public Works Director and/or the Operations Manager. The following information is documented on the inspection report for all inspections conducted:

- 1) Inspection date
- 2) Name of inspector
- 3) Applicable facility identification
- 4) Inspection findings including, when present: inadequate control measures, control measures requiring routine maintenance, and if there was any evidence of polluted discharges from the facility
- 5) Confirmation and documentation that the control measures are adequate or a list of follow up actions.

If follow up actions are necessary, it is indicated on the report and a follow up date is noted to ensure the appropriate corrective action was taken.

Section 5: Nutrient Source Reductions

The MS4 permit requires the City to “*evaluate, identify, and document the municipal operations and facilities that are and/or have the potential to contribute nitrogen and phosphorus to the waters receiving the discharge authorized under this permit (identified municipal operations nutrient sources).*”

The MS4 permit also requires that the City include the storage and application of fertilizer, including subsequent stormwater or irrigation runoff from areas where fertilizer has been applied, as an identified municipal operations nutrient source if these operations were not covered under the municipal facility plan or standard operating procedures. The Public Works Facility has been evaluated to determine if there is potential to contribute nitrogen and phosphorus to discharges under the MS4 permit. The following municipal operations found at the Public Works Facility have been identified as municipal operations nutrient sources:

- Fertilizer Herbicide Pesticide Application
- Landscaping - Irrigation runoff

These operations are covered under this municipality facility plan and SOPs can be found in Appendix A.

Section 6: Training and Documentation

Applicable municipal staff are trained on the facility plan and applicable standard operation procedures related to the operations they perform. Employees that conduct municipal facility inspections are trained on how to inspect the control measures present at the facility.

Training informs employees responsible for operations with the potential to result in an illicit discharge about the prohibitions against, and potential impacts associated with, illicit discharges from municipal operations. The training includes information on trash and its effects on water quality.

Documentation for individual training session shall include the name and title of each individual trained, date of training, the type of training, and a list of topics covered.

Copies of this manual should be kept by the City’s Facilities Manager, the Public Works Department, and on-site at all City-owned Buildings.



CITY OF LONE TREE OPERATIONS MANUAL APPENDIX SECTION A

Standard Operating Procedures

Description

As a requirement of the City of Lone Tree's Municipal Separate Storm Sewer Systems (MS4) permit (COR-080016, effective July 1, 2017) with the Colorado Department of Health and Environment, the City has created the following written procedures developed for the Pollution Prevention/Good Housekeeping for Municipal Operations program. These Standard Operating Procedures (SOPs) address the municipal facilities and operations, and any other activities or facilities the City identifies as part of their Pollution Prevention/Good Housekeeping for Municipal Operations program and should be implemented for all City-related related activities and facilities.

Procedures

The following Standard Operating Procedures are included in this Manual:

SECTION B - RIGHTS-OF-WAY

- B.1 - Street Curb Gutter Maintenance
- B.2 - Street Curb Gutter Replacement and Construction
- B.3 - Street Sweeping
- B.4 - Snow and Ice Control
- B.5 - Snow Storage
- B.6 - Bridge Maintenance

SECTION C - UTILITIES

- C.1 - Utility and Storm Sewer Maintenance
- C.2 - Utility and Storm Sewer Replacement and Construction
- C.3 - Storm Sewer Detention Facility and Outlet Structure

SECTION D - PARKS AND OPEN SPACE

- D.1 - Parks and Open Space Maintenance
- D.2 - Fertilizer Herbicide Pesticide Application
- D.3 - Large Outdoor Festivals and Events

SECTION E - FACILITIES

- E.1 - Building Maintenance
- E.2 - Outdoor Material Storage
- E.3 - Vehicle Fueling
- E.4 - Waste Management
- E.5 - Power Washing
- E.6 - Salt and Sand Storage
- E.7 - Spill Prevention and Response
- E.8 - New Construction Activities

SECTION F - GESC Inspections



CITY OF LONE TREE OPERATIONS MANUAL

APPENDIX SECTION B.1

For More Information

City of Lone Tree Public Works
9222 Teddy Lane
Lone Tree, CO 80124
303-662-8112
www.cityoflonetree.com

Possible Pollutants

Fine-grained sediment
Organics
Oil
Saw-cut slurry
Trash

Good Housekeeping

Dumpster/Waste Management
Employee/Contractor Training
Proper cleanup and disposal procedures
Dry cleaning methods

Related Procedures

Spill Prevention and Response
Street Sweeping

Street, Curb, and Gutter Maintenance

Description

Street, curb, and gutter activities include concrete and asphalt installation, maintenance, repair, and replacement; bridge maintenance; and painting and striping. Procedures involving the maintenance of streets, curbs, and gutters have the potential to impact stormwater quality. Materials involved in these activities should be used efficiently and disposed of properly.

When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

Procedures

General

- All Grading, Erosion, and Sediment Control shall be in conformance with the Douglas County GESC Manual, current edition.
- Protect storm drain inlets and drains with curb socks, rock berms, inlet protection, or drain covers/mats prior to any maintenance activity.
- When saw cutting ensure that no slurry enters the storm drain, let the slurry dry, sweep it up, and properly dispose of the sweepings.
- Do not perform concrete or asphalt patch work during wet conditions whenever possible.
- Leaking material containers should be properly discarded and replaced.
- Store materials in containers under cover when not in use and away from any storm drain inlet.
- Monitor equipment for leaks and use drip pans as necessary.
- Sweep or vacuum the roadway once maintenance activities are complete.

Bridge Maintenance

- Do not transfer or load any materials directly over waterways.
- Secure lids and caps on all containers when on bridges.
- Suspend drop cloths or nets below any bridgework where wastes, scraps, or drips might be spilled into a waterway.

Concrete Maintenance

- Minimize the drift of chemical cure on windy days by using the curing compound sparingly and applying it close to the concrete surface.
- Ensure there is a concrete truck washout area available or require the contractor to wash out at the batch plant.
- Whenever possible, recycle concrete rubble; otherwise, dispose of it as solid waste.

Asphalt Maintenance

- Sweep to minimize sand and gravel from new asphalt from getting into storm drains, streets, and creeks.
- Do not allow asphaltic concrete grindings, pieces, or chunks used in embankments or shoulder backing to enter any storm drain or watercourses. Apply temporary perimeter controls. Install silt fence until the structure is stabilized or permanent controls are in place.
- Whenever possible, recycle broken asphalt. If impossible, dispose of as solid waste.
- Drainage inlet structures shall be covered with inlet protection during application of seal coat, tack coat, slurry seal, and/or fog seal.

Painting and Striping

- If possible, schedule painting and striping projects during dry weather.
- Use thermoplastic or epoxy markings in place of paint whenever feasible.
- The pre-heater for thermoplastic striping and the melting tanks used during pavement marking must be filled carefully to prevent splashing or spilling of materials. Leave 6 inches at the top of pre-heater and the melting tanks to allow room for material to move and splash when vehicles are deadheaded.

Employee Training

- Train applicable employees who perform street, curb, and gutter maintenance on this written procedure. Information regarding how to avoid and report spills will be presented during the training.
- Periodically conduct refresher training on the SOP for applicable employees who perform street, curb, and gutter maintenance.

Records

The following records could be used to document activities performed:

- Records of employee training with sign-in sheet.



CITY OF LONE TREE OPERATIONS MANUAL

APPENDIX SECTION B.2

For More Information

City of Lone Tree Public Works
9222 Teddy Lane
Lone Tree, CO 80124
303-662-8112
www.cityoflonetree.com

Possible Pollutants

Fine-grained sediment
Organics
Oil
Saw-cut slurry
Trash

Good Housekeeping

Dumpster/Waste Management
Employee/Contractor Training
Proper cleanup and disposal procedures
Dry cleaning methods

Related Procedures

Spill Prevention and Response
Street Sweeping
Street Curb and Gutter Maintenance

Street, Curb, and Gutter Replacement and Construction

Description

Procedures involving the replacement and construction of streets, curbs, and gutters have the potential to impact stormwater quality. Materials involved in these activities should be used efficiently and disposed of properly.

When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

Procedures

General

- All Grading, Erosion, and Sediment Control shall be in conformance with the Douglas County GESC Manual, current edition.
- Obtain all applicable federal, state, and local permits for construction projects.
 - The Colorado Stormwater Construction General permit applies to construction sites disturbing one acre or more, or less than one acre but part of a larger common plan of development.
 - A larger common plan of development is defined as a **contiguous area** where multiple separate and distinct construction activities may be taking place at different times on different schedules under one plan.
 - A dewatering permit may be required if construction activities require the removal and discharge of groundwater offsite.

- A U.S. Army Corps of Engineers (USACE) Section 404 Permit may be needed if the work will be conducted in or impact Waters of the United States, including wetlands, washes, drainages, ditches, creeks, streams, and rivers.
- Applicable sediment and erosion controls may be installed, such as inlet protection, silt fence, sediment traps, erosion control logs, check dams, and vehicle tracking control. Sediment and erosion controls will be installed and maintained in accordance with approved design criteria and/or industry standards.
- When saw cutting, ensure that no slurry enters the storm drain. Let the slurry dry, sweep it up, and properly dispose of the sweepings or vacuum while saw cutting.
- Do not perform concrete or asphalt paving work during wet conditions whenever possible.
- Monitor construction equipment for leaks and use drip pans as necessary.
- Leaking material containers should be properly discarded and replaced.
- Store materials in containers under cover when not in use and away from any storm drain inlet.
- Wash out mixers, delivery trucks, or other equipment in the designated concrete washout area only.
- Locate concrete washout, portable toilets, and material storage away from storm drain inlets.
- Material stockpiles will not be stored in stormwater flow lines. Temporary sediment control will be used during temporary, short-term placement while work is actively occurring.
- Sweep or vacuum the roadway as needed, during construction and once construction is complete.
- Best management practices will be periodically inspected and maintained as necessary.
- Where practicable, non-structural controls will be used, such as phased construction, dust control, good housekeeping practices, and spill prevention and response procedures.
- Where practicable, non-structural controls will be used, such as phased construction, dust control, good housekeeping practices, and spill prevention and response.

Bridge Construction

- Do not transfer or load any materials directly over waterways.
- Suspend drop cloths or nets below any bridgework where wastes, scraps, or drips might be spilled into a waterway.

Concrete Work

- Minimize the drift of chemical cure on windy days by using the curing compound sparingly and applying it close to the concrete surface.
- Ensure there is a concrete truck washout area available or require the contractor to wash out at the batch plant.
- Whenever possible, recycle concrete rubble; otherwise, dispose of it as solid waste.

Asphalt Work

- Control the placement of road base or asphalt used in embankments or shoulder backing; do not allow these materials to fall into any storm drain or watercourses.
- Whenever possible, recycle asphalt. If recycling is not possible, dispose of as solid waste.

Painting and Striping

- If possible, schedule painting and striping projects during dry weather.
- Use thermoplastic or epoxy markings in place of paint whenever feasible.
- Use care to prevent splashing or spilling of any liquid material. Follow the Spill Prevention and Response procedure should a spill occur.

Employee Training

- Train applicable employees who perform street, curb, and gutter construction on this written procedure. Information regarding how to avoid and report spills will be presented during the training.
- Periodically conduct refresher training on the SOP for applicable employees who perform street, curb, and gutter construction.

Records

The following records could be used to document activities performed:

- Records of employee training with sign-in sheet.



CITY OF LONE TREE OPERATIONS MANUAL

APPENDIX SECTION B.3

For More Information

City of Lone Tree Public Works
9222 Teddy Lane
Lone Tree, CO 80124
303-662-8112
www.cityoflonetree.com

Possible Pollutants

Fine-grained sediment
Organics
Oil and Grease
Trash
Road Salt
Metals
Toxins

Good Housekeeping

Employee/Contractor Training
Proper cleanup and disposal procedures
Dry cleaning methods
Stormwater retrofits

Related Procedures

Large Outdoor Festivals and Events
Power Washing
Spill Prevention and Response
Vehicle Fueling

Street Sweeping

Description

Street sweeping gives the City an overall clean appearance, and aids in helping reduce traffic accidents and air pollution caused by fine dust particles. Street sweeping can prevent pollutants such as sediment particles, organics, oil, grease, trash, road salt, and trace metals from entering and plugging the storm sewer system.

When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

Procedures

General

- Operate all sweepers according to manufacturer's recommended settings and standards.
- Do not conduct street sweeping during or immediately after rainstorms.
- Conduct regular maintenance of sweepers in accordance with the master schedule or as needed.
- Prior to operating the sweeper, perform a routine inspection, including checking for leaks. Follow procedures outlined in the Spill Prevention and Response procedure if a leak is observed.
- Do not wash down any streets or curbs for routine cleaning. If medians or signs are washed seasonally, follow the Power Washing procedure.
- Immediately contain and properly clean up all spills (see the Spill Prevention and Response procedure)..

- Handle sweeper debris as detailed in written procedure in this section

Frequency

- Streets are swept in accordance with the master schedule.
Schedule can be broken out by type (i.e., once a year on City-owned parking lots, once a year on residential streets, once a year for alleys, twice a year on roadways, as needed on snow emergency routes), season, crew.
- Increase the frequency of street sweeping in areas prone to litter and dust/dirt accumulation, sensitive areas (i.e., adjacent to a sensitive waterbody), and areas that have a history of storm drain plugging.
- Schedule additional sweeping, where feasible, including:
 - Construction conducted by the municipality where there is temporary storage of construction materials like dirt, sand, and road base along the roadway.
 - Special events (e.g., street fairs, art shows, and parades) where additional debris is likely to have accumulated.
 - Median grass cutting.
 - Landscape planting.
 - After heavy rainstorms in which sediment is present on the streets.
 - After snows melt where large coarse sediments and garbage have been left behind.

Street Sweeper Debris Disposal

- Do not empty sweeper hoppers, even temporarily, onto areas near storm drains or surface water bodies or where wind or rain could wash the debris into the storm sewer system or scatter the debris.
- Dispose of sweeper debris at a designated dump site or at the designated area at the municipal facility. The temporary storage area for debris is protected from wind, rain, and surface runoff (when applicable).
- If unusual sweeping materials are identified, bring the issue to the attention of a supervisor for evaluation and proper disposal.
- If dirt or traffic accident debris is swept up, it must be disposed of properly.

Sweeper Wash Out

- Sweepers must be washed every day at the end of the day.

Employee Training

- Train applicable employees who perform street sweeping on this written procedure. Information on how to avoid and report spills will be presented during the training.
- Periodically conduct refresher training on the SOP for applicable employees who perform street sweeping.

Records

The following records could be used to document activities performed:

- Annually updated master schedule with priority areas for sweeping indicated.
- Annually updated master schedule with priority areas for sweeping municipal parking lots, sidewalks, and other municipally-owned large outdoor paved surfaces areas.
- Log of the number of curb-miles swept each year.
- Records of employee training with sign-in sheet.

For More Information

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Possible Pollutants

Sediment
Toxics

Good Housekeeping

Dry cleanup methods
Employee training

Related Procedures

Outdoor Material Storage
Salt and Sand Storage
Snow Storage
Spill Prevention and Response
Vehicle Fueling

Snow and Ice Control

Description

This plan serves as a basic guide to the City's policies and responsibilities associated to managing the winter season maintenance activities. The City is committed to the winter maintenance of all classifications of streets, and endeavors to clear all City streets and sidewalks of snow during and/or within a reasonable time period after every storm (defined as an event).

Responsibilities and expectations are defined herein, however, it should be noted that flexibility is also allowed as individual storm conditions warrant.

The City's MS4 Permit requires Good Housekeeping procedures to be in place, and since snow removal services are contracted, this written procedure will be provided to the contractor to ensure performance. In addition, the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations that may not be stated in this document.

From a stormwater perspective, deicers can contaminate surface and ground water and damage vegetation adjacent to roadways. Salt will change the chemical balance of local waterways and sand can be picked up by stormwater resulting in higher dissolved and suspended sediment loads in waterways. Sand also presents an air quality concern.

As a policy, the City's goals for winter maintenance of the city roadways include:

- To ensure public safety for the City's residents and visitors
- To facilitate the ability of emergency vehicles and public transportation to operate at near normal levels
- To reduce the hazard of winter conditions to motorists
- To reduce the economic impact on local businesses during and after storm events
- To minimize the environmental effects associated with the maintenance, and
- To provide efficient maintenance services.

Responsibilities

Currently, all of the roadway maintenance for the City is contracted. For this document, the term “City” shall refer to the City of Lone Tree and/or a representative of the City of Lone Tree, and the term “contractor” shall refer to the company that is contracted to perform said maintenance.

Equipment

At a minimum, the contractor must stage the following equipment full time (between October 1 and May 1) at the City’s Maintenance Facility. All equipment must be maintained and in good working order:

- (1) Supervisor pickup truck w/adjustable 8’ plow
- (2) Dually sander and 8’ plow trucks
- (1) Dually spray and 8’ plow truck
- (2) Tandem combination sander and sprayer 10’ plow trucks
- (1) 4-yard sander and 10’ plow truck
- (1) Front-end loader, 2-yard bucket

In addition, for sidewalk clearing:

- (2) Small riding tractors with sidewalk plows
- (1) Bobcat skid steer.

All equipment shall comply with all Colorado Department of Transportation regulations and be equipped with adequate and operational safety beacons and backup alarms. Each vehicle shall undergo a safety inspection before and after every operator shift.

Staff

The contractor is responsible to ensure that all necessary staff is available for the above-listed equipment and, after consulting with a representative of the City, assigns the appropriate level of response to each storm. If there are predicted blizzard storm conditions, the contractor shall supply staff with extra clothing and other supplies to endure the duration of the storm. Each plow operator shall use the loader to refill their truck’s salt/sand supply. Mechanics can be on-call. All operators shall be familiar with the routes and hazards of each route.

Response

Once contacted by the City to commence operations, the contractor is required to mobilize at least two (2) operators within ninety (90) minutes and with any remaining equipment in operation within two (2) hours. All equipment shall be continuously manned and operating for the duration of the event. The contractor shall be available by telephone at all times.

Scope

The City is committed to around the clock snow and ice removal on all three classifications of roads within the city limits. The contractor shall maintain all of what the City is responsible for; approximately forty-nine (49) lane miles of Primary, twenty (20) lane miles of Secondary, and thirty-two (32) lane miles of Tertiary roadways within the City limits. In addition, the City must clear forty thousand (40,000) lineal feet of four foot (4’) to six-foot (6’) sidewalk. The first attached map indicates the location and classification of each road. Three (3) of the City’s major east-west arterial roads (County Line Road, Lincoln Avenue, and Park Meadows Drive east of I-25) are currently maintained by Douglas County. The second map shows the locations and limits of the public sidewalks.

Storm Intensity

Each storm event will fall into one of the following five categories. Each category will have a minimum level of service associated with it.

Intensity Category One: Predicted snowfall events of trace to two inches (2").

Intensity Category Two: Predicted snowfall events of two inches (2") to six inches (6").

Intensity Category Three: Predicted snowfall events of six inches (6") to twelve inches (12").

Intensity Category Four: Predicted snowfall events of twelve inches (12") or more.

Intensity Category Five: Blizzard conditions, as defined by the National Weather Service as a storm that produces the following conditions for three (3) hours or longer:

- Sustained winds or frequent gusts 35 mph or greater, and;
- Falling and/or blowing snow reducing visibility frequently to less than one-quarter (1/4) mile on a widespread or local basis.

The City relies upon several sources for the prediction of adverse weather conditions. Local news outlets and the National Weather Service compliment the City's own pavement temperature stations, allowing the City to have a more accurate indication of the current and potential road conditions. The contractor shall monitor this information and maintain communication with the City representative when there is a potential for a storm event.

Procedures

Priority

In accordance with the attached Snow Removal Plan, all of the City streets need to be maintained, with the following order of priority:

Primary: Major arterials for the City; including Yosemite Street, Park Meadows Drive, and Ridgeway Parkway; collectors including Lone Tree Parkway, Timberline Drive, Ptarmigan Trail, Maximus Drive, Kimmer Drive, Teddy Lane, Park Meadows Center Drive, Sky Ridge Avenue (at the hospital), and West Parker Road.

Secondary: Collector streets including Parkway Drive, Fairview Drive, Acres Green Drive, Heritage Hills Circle, Sunningdale Boulevard, Rosemont Avenue, Carriage Club Drive, Ridgeway Circle, Sky Ridge Avenue, Commons Street, Crossington Way, Bismark Drive, Rose Tuggle Lane, Hillston Street, South Willow Street, Parkland Road, Westview Road, and Chester Street.

Tertiary: All other public streets within the city limits.

Service Level

The contractor shall respond to each level of storm intensity as follows:

Intensity Category One

- Apply anti-icing liquid to all primary routes.
- Maintain all routes during the storm event.
- Apply deicing solids if necessary.
- This category typically does not require multiple passes for plowing or heavy equipment.

Intensity Category Two

- Apply anti-icing liquid to all primary routes.
- Maintain all routes during the storm event.

- Application of deicing solids is typically required during the event.
- All primary and secondary routes are maintained during the event, with tertiary routes maintained as the storm abates.
- This category typically usually requires multiple passes for plowing and may require multiple shifts. Heavy equipment is not required.

Intensity Category Three

- Apply anti-icing liquid to all primary routes.
- Maintain all routes during the storm event.
- Apply deicing solids as required.
- All primary routes are maintained during the event, with secondary routes maintained as equipment is available and tertiary routes maintained as the storm abates.
- This category typically usually requires multiple passes for plowing, multiple shifts, and heavy equipment.

Intensity Category Four

- This category has a storm intensity that includes sufficient snowfall to cause disruption in the normal operation of the public transportation system, public schools and local businesses.
- Apply anti-icing liquid to all primary routes.
- Maintain all routes during the storm event.
- Apply deicing solids as required.
- All primary routes are maintained during the event, with secondary routes maintained as equipment is available and tertiary routes maintained as the storm abates.
- This category typically usually requires multiple passes for plowing, multiple shifts, heavy equipment, and use of all available equipment. It also may require additional resources.

Intensity Category Five

- Apply anti-icing liquid to all primary routes.
- Maintain all routes during the storm event.
- Apply deicing solids as required.
- Street closures may occur.
- A passable lane must be maintained on the following primary routes to be able to provide emergency service: Yosemite Street, Ridgeway Parkway, and Park Meadows Drive.
- All other primary routes and secondary routes shall be maintained as equipment is available and tertiary routes maintained as the storm abates.
- This category typically usually requires multiple passes for plowing, multiple shifts, heavy equipment, and use of all available equipment. The contractor also needs to make lodging and food accommodations for the multiple shift requirements.

Plowing

Prior to leaving the Maintenance Facility, each operator should:

- Inspect plowing equipment for leaks prior to use.
- Take care when connecting or releasing plow shovels and clean up any hydraulic fluid that may leak onto the pavement.

- Wash snow removal equipment only at approved washing stations.
- Be briefed on route assignment.
- Be familiar with locations identified on the City's Ice Removal Plan.

During normal plowing operations, the operator should:

- Drop the plow blade while on Lincoln Avenue to assist Douglas County in clearing snow accumulation on that road.
- Work in tandem on multi-lane streets to prevent windrows.
- Plow from the center of the road.
- When plowing cul-de-sacs, pile snow in the middle of the circle.
- On residential streets that run east-west, move all snow to the north side of the street.
- Avoid damaging median curb and gutter.
- Avoid piling snow in front of fire hydrants.
- Do not pile snow in front of storm sewer inlets to allow inflow of snowmelt runoff.

Deicer Application

For normal ice control operations, the contractor has several options:

- Anti-icing liquid that is applied to the pavement prior to the event to retard the bonding of snow and ice to the pavement. The City currently uses Apex® magnesium chloride and has xxx gallon dual containment storage at the Maintenance Facility.
- Deicing solids that are applied to melt ice and packed snow on the pavement. The City currently uses Ice Slicer® and has xxx cubic yard dual containment storage at the Maintenance Facility.

Prior to the storm event, deicing liquid shall be applied on all of the primary routes.

- Apply only the recommended amount of deicer to roadways.
- Spreaders should be calibrated at the beginning of each season and inspections for maintenance or repair should be conducted after each storm.
- As soon as weather conditions allow, follow-up with street sweeping to remove remaining deicer from roadways.

Ice Cutting

- Gutters and storm sewer inlets should be cleared of ice to allow drainage of snowmelt or ice-melt.

Snow Storage

If needed, the City has designated Crossington Way (between Rivington Court and Rose Tuggle Lane) as a location to store excess snow. Refer to Section B.5 Snow Storage for procedures.

Employee Training

- Train applicable employees who are involved in snow and ice control on this written procedure. Information regarding proper storage practices and how to prevent and report spills will be presented during the training.
- Periodically conduct refresher training on the SOP for applicable employees who are involved in snow and ice control.

Records

The following records may be used to document activities performed:

- Record of any major spills and the action taken.
- Records of employee training with sign-in sheet.

For More Information

City of Lone Tree Public Works
9222 Teddy Lane
Lone Tree, CO 80124
303-662-8112
www.cityoflonetree.com

Possible Pollutants

Sediment
Organics
Oil
Grease

Good Housekeeping

Secondary containment
Employee training

Related Procedures

Outdoor Material Storage
Salt and Sand Storage
Snow and Ice Control
Spill Prevention and Response
Street Sweeping
Vehicle Fueling

Snow Storage

Description

Snow may have to be stored during major winter storms to increase street accessibility. It is possible for pollutants such as sediment, organics, oil, and grease to be concentrated at snow storage locations and to impact stormwater quality.

When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

Procedures

Snow Storage

- Snow should be stored away from storm sewer inlets and waterways.
- When possible, snow should be stored on a pervious surface to allow infiltration.
- Snowmelt runoff should be routed through a best management practice (e.g., extended detention basin, oil/water separator, vegetated buffer) prior to reaching a waterbody.
- Sweep or vacuum impervious snow storage areas once snow has melted.

Employee Training

- Train applicable employees who are involved with snow storage on this written procedure. Information regarding proper storage practices and how to prevent and report spills will be presented during the training.
- Periodically conduct refresher training on the SOP for applicable employees who are involved with snow storage activities.

Records

The following records could be used to document activities performed: employee training sign-in sheet.



CITY OF LONE TREE OPERATIONS MANUAL

APPENDIX SECTION B.6

For More Information

City of Lone Tree Public Works
9222 Teddy Lane
Lone Tree, CO 80124
303-662-8112
www.cityoflonetree.com

Possible Pollutants

Organics
Oil and Grease
Trash
Sediment
Paint

Good Housekeeping

Dumpster/waste management
Employee/Contractor Training
Proper cleanup and disposal procedures

Related Procedures

Street Sweeping
Spill Prevention and Response
Power Washing

Bridge Maintenance

Description

Control the maintenance that take place on municipal bridges and surrounding grounds by promoting procedures to help eliminate the potentially contaminated debris, trash, and water runoff from reaching our stormwater system. This includes the disposal of debris caused by routine maintenance and scheduled painting.

When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

Procedures

General

- Remove paper, trash and other debris from bridge deck and landings.
- Standard cleaning of bridge generates sediment, chemicals and debris. Collect material and dispose of properly.
- When maintenance operation requires wash water such as power washing, the wash water must be collected and disposed of by vacuum method or directed to landscaping so it does not reach the storm sewer system. For further information, refer to the Power Washing SOP.
- At no time shall chemicals or dry blasting materials be allowed to be washed into the storm sewer system.
- Sediment collected from walkways and deck needs to be collected, removed and disposed, and not swept or power-washed into stormwater drains.



CITY OF LONE TREE OPERATIONS MANUAL

APPENDIX SECTION B.6

Debris Handling

- Conduct regular clean-up of bridge and landings of all trash and debris,
- If a spill should happen, refer to the Spill Prevention & Control SOP for proper procedures.
- Contractors such as landscapers, painters and any others are expected to follow proper clean-up procedures to ensure that chemicals, runoff, debris, and excessive sediment will not enter the stormwater system.

Employee Training

- Provide applicable employees who are involved in building maintenance this written procedure.



CITY OF LONE TREE OPERATIONS MANUAL

APPENDIX SECTION C.1

For More Information

City of Lone Tree Public Works
9222 Teddy Lane
Lone Tree, CO 80124
303-662-8112
www.cityoflonetree.com

Possible Pollutants

Sediment
Nutrients
Metals
Hydrocarbons
Trash

Good Housekeeping

Waste Management
Employee/Contractor Training
Proper Cleanup and Disposal
Procedures

Related Procedures

Parks and Open Space
Maintenance
Spill Prevention and Response
Street, Curb, and Gutter
Replacement and
Construction
Utilities and Storm Sewer
System Replacement and
Construction
Vehicle Fueling

Utility and Storm Sewer System Maintenance

Description

This procedure addresses utility and storm sewer system maintenance. Utilities include power, sanitary sewer, water conveyance systems, and the storm sewer system.

Power includes electrical and gas utilities. Maintenance of power may require excavation and reinstallation of lines including open cut trenching or directional boring in landscaped areas or street right of way. Electrical and gas line maintenance ensures services are provided to businesses and households without interruption.

The sanitary sewer system is cleaned as part of routine maintenance and on an emergency basis. Without proper maintenance, sanitary sewer back-ups and overflows may occur and can result in potential property damage and significant health concerns if not properly managed.

Water conveyance systems are flushed and pressure tested as part of routine maintenance. Potable water systems must be properly maintained to ensure delivery of water that meets State and Federal health standards. Failures result in water main breaks that can cause property damage including erosion.

The storm sewer system is cleaned as part of routine maintenance and on an emergency basis in the event of flooding. Maintenance will remove pollutants and ensure the system functions properly to avoid flooding. Flooding, ponding, and uncontrolled sheet flow can result in property damage and increased soil erosion.

When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

Procedures

General

- Conduct routine inspection and maintenance on utility and storm sewer systems.
- Where feasible, schedule maintenance activities during dry weather.
- Monitor the jet/vacuum truck closely for leaks and use a drip pan as needed.
- Wash and fuel the jet/vacuum truck per the Heavy Equipment/Vehicle Maintenance procedure.
- Properly dispose of vac truck contents.
- Stay alert for any signs of illicit discharges. This includes “dry weather” flows or pipes or hoses emptying directly into waterways or the storm sewer system.
- Report any suspicious discharges or dumping to your supervisor.

Electrical and Gas Utility Maintenance

- To prevent sediment, mud and particles generated by power utility maintenance from entering the stormwater system implement inlet protection, perimeter control, street sweeping, vehicle tracking control, stockpile management and material management BMPs.
- Restore landscaped or hardscaped areas promptly.

Potable Water Line Flushing

- Remove any debris from the gutter that could wash away with the water. If possible, sweep the flow line before flushing the line.
- Direct the water so that it is not flowing over exposed soil areas in order to minimize erosion.

Water Line Breaks

- Contain spoils by building berms or installing rock socks around the area of disturbance.
- Dewater the excavation by using a vac truck.
- Discharge high chlorine water to the sanitary sewer via the nearest manhole, to a water truck, through a dechlorinating diffuser, or other method of dechlorination.
- Remove sediment from the street, curb, gutter and storm inlets as needed immediately following the repair.
- Where needed, install a temporary patch or repave as soon as practicable following the repair.
- If necessary, revegetate areas as soon as practicable following the repair.

Sanitary Sewer Backup

- Clear line stoppage to prevent backup into house basements and manhole overflows.
- Contain overflows by using emergency generator, pump and/or a vac truck to intercept flows. It may be necessary to construct additional containment.

- Clean up spills by washing and vacuuming the affected areas. Lime may need to be applied for disinfection of affected areas. Lime must be removed once disinfection is complete.

Storm Sewer System Pipes, Catch Basins, Inlet and Outlet Structures, and Culverts

- Clean storm sewer system by manual cleaning or jetting the pipes using a jet/vacuum truck to remove the material.
- Do not temporarily store collected storm system cleaning debris adjacent to any surface water, storm drain inlet, or drainageway.
- Storm sewer system maintenance wastes may be either non-hazardous or hazardous. Solid non-hazardous waste may be disposed in a sanitary landfill or recycled. Liquid non-hazardous waste must be evaporated before disposing of it into the landfill or discharged to the sanitary sewer system with the approval of the local wastewater treatment plant. Hazardous waste, as defined under Colorado Hazardous Waste Regulations (6 CCR 1007-3), must be transported and disposed of at a permitted disposal or treatment facility.
- Replace or maintain “no dumping” stencils or plaques as necessary.
- Remove trash from trash racks and grated openings.

Detention and Retention Ponds

- Inspect the outlet works and remove trash or vegetation from the trash racks and grates.
- Inspect side slopes of the pond for erosion and reestablish vegetation as needed.
- Remove and service fountains and aerator motors as recommended.
- Report any suspected water quality problems such as a change in growth or appearance of vegetation.
- Report excessive sediment accumulation, standing water beyond the designed drain down time or damage requiring additional maintenance.

Drainageways

Drainageways include drainage channels, ditches, grass swales, and washes.

- Inspect drainageways for erosion and repair if necessary.
- Remove and properly dispose of trash and debris from the drainageways. Remove sediment which could impede flow in drainageways.
- Leave an unmown buffer when mowing adjacent to drainageways to filter pollutants. Do not leave grass clippings in or next to the drainageway. Do not apply landscape chemicals in the buffer area.

Employee Training

- Train applicable employees who perform utility and storm sewer system activities on this written procedure. Information regarding how to avoid and report spills will be presented during the training.

- Periodically conduct refresher training on the SOP for applicable employees who perform utility and storm sewer system activities.

Records

The following records could be used to document activities performed:

- Records of employee training with sign-in sheet.



CITY OF LONE TREE OPERATIONS MANUAL

APPENDIX SECTION C.2

For More Information

City of Lone Tree Public Works
9222 Teddy Lane
Lone Tree, CO 80124
303-662-8112
www.cityoflonetree.com

Possible Pollutants

Sediment
Chemicals
Organics
Trash

Good Housekeeping

Waste Management
Employee/Contractor Training
Proper Cleanup and Disposal
Procedures

Related Procedures

Parks and Open Space
Maintenance
Spill Prevention and Response
Street, Curb, and Gutter
Replacement and
Construction
Utilities and Storm Sewer
System Replacement and
Construction
Vehicle Fueling

Utility and Storm Sewer System Replacement and Construction

Description

This procedure covers utility and storm sewer system replacement and construction. Utilities include power, storm sewer, sanitary sewer, water conveyance systems.

When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

Procedures

General

- All Grading, Erosion, and Sediment Control shall be in conformance with the Douglas County GESC Manual, current edition.
- Obtain all applicable federal, state, and local permits for construction projects.
- The Colorado Stormwater Construction General permit applies to construction sites disturbing one acre or more, or less than one acre but part of a larger common plan of development.
- A larger common plan of development is defined as a **contiguous area** where multiple separate and distinct construction activities may be taking place at different times on different schedules under one plan.
- A dewatering permit may be required if construction activities require the removal and discharge of groundwater offsite.

- A U.S. Army Corp of Engineers (USACE) Section 404 Permit may be needed if the work will be conducted in or impact waters of the United States, including wetlands, washes, drainages, ditches, creeks, streams, and rivers.
- Applicable sediment and erosion controls may be installed, such as inlet protection, silt fence, sediment traps, sediment control logs, check dams and vehicle tracking control. Sediment and erosion controls will be installed and maintained in accordance with approved design criteria and / or industry standards.
- When saw cutting, ensure that no slurry enters the storm drain. Let the slurry dry, sweep it up, and properly dispose of the sweepings or vacuum while saw cutting.
- Do not perform concrete or asphalt paving work during wet conditions whenever possible.
- Monitor construction equipment for leaks and use drip pans as necessary.
- Leaking material containers should be properly discarded and replaced.
- Store materials in containers under cover when not in use and away from any storm drain inlet.
- Wash out mixers, delivery trucks, or other equipment in the designated concrete washout area only.
- Locate concrete washout, portable toilets, and material storage away from storm drain inlets.
- Material stockpiles will not be stored in stormwater flow lines. Temporary sediment control will be used during temporary, short-term placement while work is actively occurring.
- Sweep or vacuum the roadway as needed, during construction and once construction is complete.
- Best management practices will be periodically inspected and maintained as necessary.
- Where practicable, non-structural controls will be used, such as phased construction, dust control, good housekeeping practices, and spill prevention and response procedures.

Emergency Repair and Replacement

Emergency Discharges are defined as situations in which it is not possible to implement all of the available BMPs due to the uncontrolled nature of the discharge. The primary focus during these events is to identify and mitigate the cause as soon as possible. Clean up of resulting sediment or other pollutants will be performed as soon as practicable following the emergency. Refer to the Spill Prevention and Response procedure for reporting requirements.

Employee Training

- Train applicable employees who perform utility replacement and construction activities on this written procedure. Information regarding how to avoid and report spills will be presented during the training.
- Periodically conduct refresher training on the SOP for applicable employees who perform utility replacement and construction activities.

Records

The following records could be used to document activities performed:

- Records of employee training with sign-in sheet.



CITY OF LONE TREE OPERATIONS MANUAL

APPENDIX SECTION C.3

Storm Sewer Detention Facility and Outlet Structure

Description

This procedure addresses storm sewer detention facility and outlet structure operation and maintenance.

These facilities should be cleaned as part of routine maintenance and on an emergency basis in the event of flooding. Maintenance is an important part of ensuring that the system functions properly to remove pollutants and avoid flooding. Flooding, ponding, and uncontrolled sheet flow can result in property damage and increased soil erosion.

When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

What is a detention facility and outlet structure? It is a basin designed to detain stormwater for several hours after storm runoff ends. Depending on when the facility was constructed, the facility may include the use a much smaller outlet that extends the emptying time of the more frequently occurring runoff events to facilitate pollutant removal. The drain time for the water quality capture volume (WQCV) can be from 24 to 72 hours as recommended to remove a significant portion of total suspended solids (TSS). A typical facility includes a micropool at the outlet to enhance the settling of the suspended solids and promote the biological uptake of soluble pollutants, a trickle channel to direct low flows through the facility, and a forebay to settle solids out of the flow before entering the detention volume of the facility. The basins are sometimes called "dry ponds" because they are designed not to have a significant permanent pool of water remaining between storm runoff events.

For More Information

City of Lone Tree Public Works
9222 Teddy Lane
Lone Tree, CO 80124
303-662-8112
www.cityoflonetree.com

Possible Pollutants

Sediment
Nutrients
Metals
Hydrocarbons
Trash

Good Housekeeping

Waste Management
Employee/Contractor Training
Proper Cleanup and Disposal Procedures

Related Procedures

Spill Prevention and Response

What is a Detention Facility?

Below is a figure from the Urban Drainage and Flood Control District's Volume 3. It identifies the different elements that the City inspects as part of the MS4 permit.

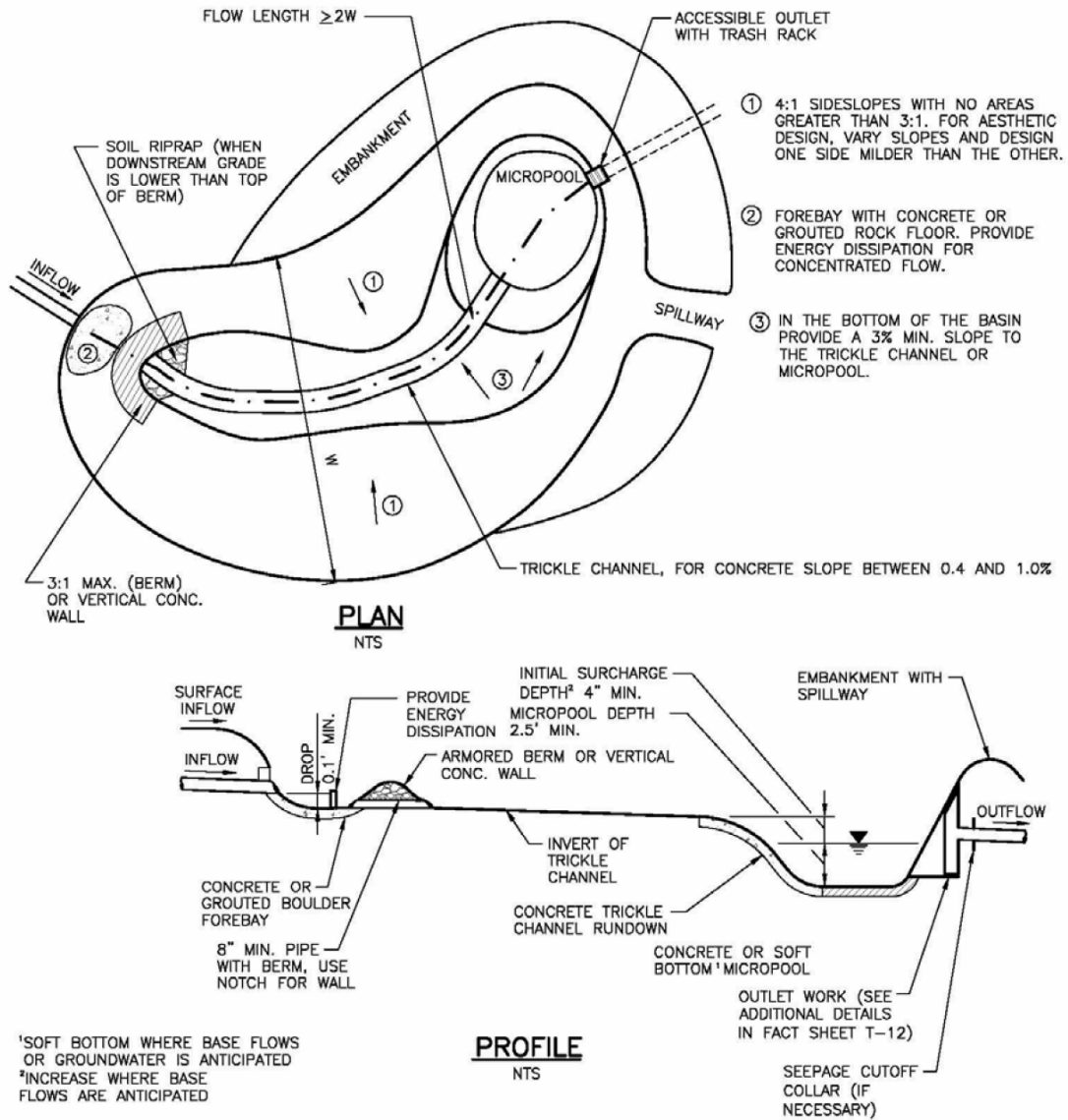



FIGURE EDB-3
EXTENDED DETENTION BASIN

What Does the City Look For?

The inspection checklist that the City uses is shown below. Each element of the facility is inspected to insure that it is properly maintained and functioning correctly.



CITY OF LONE TREE

**DETENTION FACILITY
and
OUTLET STRUCTURE
INSPECTION FORM**

Date: _____ By: _____ Location: _____

Structure ID: _____ Pond ID: _____

	Condition				Comments:
	Pass (OK)	Requires Maintenance	Fail (Violation)	N/A	
Forebay:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Micropool:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Structure:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Top Grate:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Steps:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Channel:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Overflow:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Vegetation/ Sediment/Debris Control:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
100-Year:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
10-Year:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
EURV:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
WQ	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Screen:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

An example of each of the above items follows:

Forebay



The Forebay is located at the entrance(s) to the detention facility. It can be a concrete structure or just a berm. Low flows can be release by curb opening or pipe.

Micropool



The Micropool is located at the outlet to enhance the soluble pollutant removal and promote biological uptake. It can be a concrete structure or just a graded depression. Micropools are designed to have a permanent water surface, although during long dry spells may evaporate.

Structure



The Structure is located at the outlet to control the performance requirements of the facility. In its simplest form, the structure can be a concrete weir for elevation control.

Top Grate and Steps



The Top Grate prevents larger debris from entering the storm sewer system. Depending on the size and depth of the structure, Steps may be installed to facilitate access to the bottom of the structure.

Channel



The Channel is typically concrete and helps keep the bottom of the facility from becoming saturated during low flow events.

Overflow



The Overflow is typically located near the outlet structure and is designed to direct flows that exceed the design of the facility. It is important to maintain the stability of the facility's embankment.

Vegetation/Sediment/Debris



The primary maintenance issue with these facilities is to keep the structure clear of Sediment and Debris.

100-Year Control



The 100-year Control is located at the outfall end of the structure. The outfall pipe may have plates that restrict the flow capacity of the structure.

10-Year Control



The 10-year Control is located on the front or sides of the outlet structure. It can be a circular or square weir, orifice, or pipe.

EURV



The EURV Control for a facility is an expanded low-flow plate on the front of the outlet structure. This photo shows the EURV plate with the accompanying screen removed.

WQ Control



The WQ Control for a facility is a low-flow plate on the front of the outlet structure. This photo, taken from the interior of the structure, shows the active drainage of the plate during the design drain time for a storm.

Screen



The Screen collects debris, preventing blockage of the holes in the WQ or EURV Control plate.

What Should I Look For?

The City Inspectors are trained to make both quick observations and detailed inspections. The most telling observation of an un-maintained facility can be accomplished by just driving by:



This facility has not drained down, even though there has not been any precipitation in over seven days. It is obvious that there is a blockage of the outlet.

What causes the blockage? The City has documented many ways to plug up the system:



Vegetation Growth



Leaves



Clogged Screen



Sediment



Trash



Pallet Plastic Wrap

In the instance of the above photo, when the maintenance of the above facility did occur, they found that the four inch (4") outlet was completely blocked by a plastic shopping bag.

Maintenance Procedures

General

- Conduct routine inspection and maintenance on storm sewer systems and facilities. It is especially important to inspect the facility(s) after a precipitation event.
- When feasible, schedule maintenance activities during dry weather.
- Train employees who perform storm sewer system activities on this written procedure. Information regarding how to avoid and report spills should be presented during the training.
- If applicable, add inspection and maintenance responsibilities to the scope of services provided by a maintenance contractor.
- Properly dispose of anything removed from the storm sewer or detention facility. Debris will find a way back to clogging the structure if not removed. If the facility needs to be pumped down to access the outlet structure, it can be pumped into the outlet storm sewer system with an acceptable form of sediment control at the point of discharge.
- Stay alert for any signs of illicit discharges. This includes “dry weather” flows or pipes or hoses emptying directly into waterways or the storm sewer system.
- Report any suspicious discharges or dumping to the City.

Storm Sewer System Pipes, Catch Basins, Inlet and Outlet Structures, and Culverts

- Clean storm sewer system by manual cleaning or jetting the pipes using a jet/vacuum truck to remove the material.
- Do not temporarily store collected storm system cleaning debris adjacent to any surface water, storm drain inlet, or drainageway. Immediately haul it away.
- Storm sewer system maintenance wastes may be either non-hazardous or hazardous. Solid non-hazardous waste may be disposed in a sanitary landfill or recycled. Liquid non-hazardous waste must be evaporated before disposing of it into the landfill or discharged to the sanitary sewer system with the approval of the local wastewater treatment plant. Hazardous waste, as defined under Colorado Hazardous Waste Regulations (6 CCR 1007-3), must be transported and disposed of at a permitted disposal or treatment facility.
- Remove trash from trash racks and grated openings.

Detention and Retention Facilities

- Inspect the outlet works and remove trash or vegetation from the trash racks and grates. A modified broom or rake can assist in this activity.
- Inspect side slopes of the facility for erosion and reestablish vegetation as needed.

- If present, remove and service fountains and aerator motors as recommended.
- Report any suspected water quality problems such as a change in growth or appearance of vegetation.
- Report excessive sediment accumulation, standing water beyond the designed drain down time or damage requiring additional maintenance.

Drainageways

Drainageways include drainage channels, ditches, grass swales, and washes.

- Inspect drainageways for erosion and repair if necessary.
- Remove and properly dispose of trash and debris from the drainageways. Remove sediment which could impede flow in drainageways.
- Leave an unmown buffer when mowing adjacent to drainageways to filter pollutants. Do not leave grass clippings in or next to the drainageway. Do not apply landscape chemicals in the buffer area.



CITY OF LONE TREE OPERATIONS MANUAL

APPENDIX SECTION D.1

For More Information

City of Lone Tree Public Works
9222 Teddy Lane
Lone Tree, CO 80124
303-662-8112
www.cityoflonetree.com

Possible Pollutants

Organics
Chemicals
Sediment
Fuel

Good Housekeeping

Secondary containment
Employee training

Related Procedures

New Construction
Fertilizer, Herbicide, and
Pesticide Application
Material Storage
Snow and Ice Control
Snow Storage
Vehicle Fueling

Parks and Open Space Maintenance

Description

Parks and open space maintenance activities involve the operation of equipment such as mowers and tractors; disposal of waste from mowing, planting, weeding, raking, pruning and trash collection; application of pesticides, herbicides and fertilizers, cleaning and maintenance of park amenities such as play equipment, restrooms, and structures; and snow removal.

When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

Procedures

General

- Repair damage to landscaped areas or mulch or vegetate bare areas to minimize erosion.
- Remove (sweep or shovel) materials such as soil, mulch and grass clippings from parking lots, streets, curbs, gutters and sidewalks.
- Collect and dispose of trash.
- Do not attempt to clean up any unidentified or possibly hazardous materials found on or around landscaped areas during maintenance; notify the supervisor immediately upon discovery of hazardous materials.
- Refer to the Fertilizer, Pesticide, and Herbicide Application procedure for information on the application of landscape chemicals.

Maintenance

- Wastewater from power washing signs, structures, or bleachers cannot be discharged into the storm sewer system. Refer to the Power Washing procedure for more information.
- A Permit must be obtained from the Colorado Department of Public Health and Environment for washing outdoor structures including stadium seating and bleachers.
- When painting park equipment, use a drop cloth and clean up any spills immediately. Do not leave open containers on the ground where they may accidentally tip over.
- Sweep parking lots with a street sweeper, or if using a hand sweeper, collect the sweeping debris and dispose of it in the trash. Never wash ambient dust from parking lots into the storm drain.

Mowing

- Remove paper, debris, and trash from the landscaped and surrounding areas prior to mowing.
- Collect grass clippings and leaves. Do not blow or wash them into the street, gutter or drainage ways.
- Properly recycle or dispose of organic wastes after mowing, weeding, and trimming.

Irrigation

- Repair broken sprinkler heads as soon as possible.
- Only irrigate at a rate that can infiltrate into the soil to limit run-off.

Landscape Equipment

- Brush off mowers (reels and decks) and tractors over grassy areas or in contained washout areas.
- Leave clippings on grassy areas or dispose of in trash or by composting. Do not hose off mowers over paved areas that drain to the storm drain system.
- Fuel all equipment following the Vehicle Fueling procedure.
- Do not allow grease from the grease zirks on mowers to fall onto areas where they can be washed into the storm drain.

Snow Removal

- Conduct snow and ice removal operations using the Snow and Ice Control procedure.
- Store all salt or sand that will be used on walks inside or under a roof or in a covered container.

Other Activities

- Utilize pet waste stations with bags and trash receptacles.
- All portable toilets should be staked down in flat, secure locations where they are less likely to be knocked or blown over. All portable toilets should be in a location that would retain any spillage opposed to washing into storm sewer or waterway. Ensure routine maintenance and cleaning is conducted.

Employee Training

- Train applicable employees who are involved with parks and open space maintenance activities on this written procedure. Information regarding proper storage practices and how to prevent and report spills will be presented during the training.
- Periodically conduct refresher training on the SOP for applicable employees who are involved with parks and open space maintenance activities.

Records

The following records could be used to document activities performed:

- Records of employee training with sign-in sheet.



CITY OF LONE TREE OPERATIONS MANUAL

APPENDIX SECTION D.2

For More Information

City of Lone Tree Public Works
9222 Teddy Lane
Lone Tree, CO 80124
303-662-8112
www.cityoflonetree.com

Possible Pollutants

Organics
Chemicals
Fuel

Good Housekeeping

Secondary containment
Employee training

Related Procedures

Material Storage
Parks and open Space
Maintenance
Spill Prevention and Response
Vehicle Fueling

Fertilizer, Herbicide, and Pesticide Application

Description

It is important to properly handle, apply, and clean up all fertilizers, herbicides, pesticides, and other landscaping chemicals. These chemicals could cause water pollution. Excessive fertilizer application can also contribute to algae blooms and deplete oxygen from waterways.

Refer to the Related Procedures listed in the sidebar for additional information.

When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

Procedures

General

- Employees should fully understand their right to know what chemicals they are using through the availability of on-site Material Safety Data Sheets.
- Follow label directions when applying, storing, handling, mixing, recycling, and disposing of chemicals and empty containers.
- Use care to transfer, mix or dispose of chemicals. Never perform these activities near storm drains or drainage areas.
- Have spill cleanup materials available in case of a spill and clean up chemical spills promptly with dry methods, if possible. Refer to the Spill Prevention and Response procedure.

Application

- Staff performing chemical applications must wear all appropriate protective garments.
- All chemicals shall be used strictly in accordance with their labels and all applicable federal, state, and local laws, regulations, and ordinances.
- Always follow the manufacturer's recommendation on handling and applying the chemicals.
 - Many chemicals should not be applied right before or during rain storms or while the area is being irrigated.
 - Many chemicals should not be applied right before or during high-wind events.
 - Apply only the recommended amounts of chemicals. Over-applying chemicals may "burn" leaves and could lead to thatch buildup and excessive mowing.
- Be careful not to overspray chemicals onto an impervious surface, such as a sidewalk or roadway. These chemicals will wash into the storm drain inlet during the next rainstorm.
- Clean up all over-sprayed chemicals.
- Do not apply landscape chemicals to frozen ground.
- When watering landscaped areas after fertilizer application, do not allow water to runoff into streets and into storm drains.

Chemical Storage

- Materials shall be stored in accordance with all current federal, state and local laws, regulations and ordinances.
- Chemicals shall be stored in an enclosed, secure building.
- Recycle or dispose of all spent or excess chemicals properly and promptly.
- Establish chemical inventory controls to minimize storage and disposal of excess chemicals.
- Follow the Outdoor Material Storage procedure.

Application Equipment

- Sprayers shall be used to apply only materials that are suitable for spraying.
- Spreaders shall be used to apply only materials that are available in granular forms.
- Fertilizers and pesticides should be loaded into application equipment over impervious surfaces, so that any spills can be easily cleaned.
- Properly calibrate application equipment to ensure the proper amount of chemical is applied.

- Keep application equipment clean; do not allow a buildup of chemicals.
- Fuel all equipment following the Vehicle Fueling procedure.

Employee Training

- It is recognized that additional training and certifications exist that describe procedures for chemical application, handling, and storage. The appropriate employees and supervisors must have this certification.
- Train applicable employees who are involved with fertilizer, herbicide, and pesticide application on this written procedure. Information regarding proper storage practices and how to prevent and report spills will be presented during the training.
- Periodically conduct refresher training on the SOP for applicable employees who are involved with fertilizer, herbicide, and pesticide application activities.

Records

The following records could be used to document activities performed:

- Chemical Applicator Certification
- Records of employee training with sign-in sheet.

For More Information

City of Lone Tree Public Works
9222 Teddy Lane
Lone Tree, CO 80124
303-662-8112
www.cityoflonetree.com

Possible Pollutants

Organics
Trash
Septage

Good Housekeeping

Dumpster/Waste Management
Employee/Contractor Training
Proper cleanup and disposal procedures
Dry cleaning methods

Related Procedures

Power Washing
Spill Prevention and Response
Street Sweeper Cleaning and Waste

Large Outdoor Festivals and Events

Description

Large outdoor festivals and events operated and controlled by the regulated municipality have the potential to impact stormwater quality. Potential contaminants may include trash, septage, and organics.

A large event would meet all of the following criteria:

- Portable toilets
- Trash receptacles
- Food and beverage vendors
- Street closures

When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

Procedures

Trash Collection and Removal

- Provide adequate trash receptacles for vendors and guests.
- Monitor and respond to leaking waste containers.
- Empty trash receptacles to prevent overflow.
- Store waste containers under cover or on grassy areas, if possible.
- Do not wash out trash receptacles unless wash water will be discharged to the sanitary sewer.
- Walk the outdoor festival and event area during and after every large event to pick up loose trash and debris. Properly dispose of this material.
- Sweep the roadway and parking lots after the large festival or event.
- Follow the Power Washing procedure for clean up procedures.
- Follow the Spill Prevention and Response procedures. Have spill kits available and ensure that vendors understand that it is prohibited to dump any pollutants into the storm sewer system.

Portable Toilet Service

Portable toilets are used at most large outdoor festivals and events. All portable toilet waste is classified as septage. The municipality will use a licensed waste hauler to dispose of their waste for any large outdoor festival or event that has portable toilets. The units will be removed as soon as the festival or event is completed so that they do not become a nuisance or vandalized.

Food and Beverage Vendor Waste

Waste generated by food and beverage vendors is regulated by the Colorado Retail Food Rules and Regulations.

Employee Training

- Train applicable employees who perform trash collection and street sweeping and issue leases/permits for large outdoor festivals and events on this written procedure. Information on how to respond to spills will be presented during the training.
- Periodically conduct refreshed training on the SOP for applicable employees who perform trash collection and street sweeping activities.

Records

The following records could be used to document activities performed:

- Records of employee training with sign-in sheet.



CITY OF LONE TREE OPERATIONS MANUAL

APPENDIX SECTION E.1

For More Information

City of Lone Tree Public Works
9222 Teddy Lane
Lone Tree, CO 80124
303-662-8112
www.cityoflonetree.com

Possible Pollutants

Construction Debris
Organics
Oil and Grease
Trash
Sediment
Paint
Carpet Cleaning

Good Housekeeping

Dumpster/waste management
Employee/Contractor Training
Proper cleanup and disposal procedures
Dry cleaning methods

Related Procedures

Street Sweeping
Spill Prevention and Response
Power Washing

Building Maintenance

Description

Control the maintenance and construction activities that take place in municipal buildings and their surrounding grounds by promoting procedures to help eliminate the potentially contaminated debris, trash, and water runoff from reaching our stormwater system. This includes the disposal of debris caused by window washers, painters, and building contractors.

When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

Procedures

General

- Remove paper, trash and other debris from building grounds, (parking lots, landscaped areas, detention ponds and waterways).
- Standard cleaning of buildings and windows generate sediment, chemicals and debris. Collect material and dispose of properly.
- When maintenance operation requires wash water such as power washing of buildings, wash water must be collected and disposed of in the sanitary system or directed to landscaping so it does not reach the storm sewer system. For further information, refer to the Power Washing SOP.
- At no time shall chemicals be allowed to be washed into the storm sewer system.
- Sediment collected from walkways and parking areas needs to be collected, removed and disposed, and not swept or power-washed into stormwater drains.



CITY OF LONE TREE OPERATIONS MANUAL

APPENDIX SECTION E.1

Debris Handling

- Conduct regular clean-up of property grounds of all trash and debris,
- If a spill should happen, refer to the Spill Prevention & Control SOP for proper procedures.
- Contractors such as landscapers, painters and any others are expected to follow proper clean-up procedures to ensure that chemicals, runoff, debris, and excessive sediment will not enter the stormwater system.

Employee Training

- Provide applicable employees who are involved in building maintenance this written procedure.

For More Information

City of Lone Tree Public Works
9222 Teddy Lane
Lone Tree, CO 80124
303-662-8112
www.cityoflonetree.com

Possible Pollutants

Sediment
Organics
Chemicals
Oil and Grease
Trash
Metals
Toxins

Good Housekeeping

Employee/Contractor Training
Proper cleanup and disposal procedures
Dry cleaning methods

Related Procedures

Salt and Sand Storage
Spill Prevention and Response
Waste Management

Outdoor Material Storage

Description

The responsible management of automotive products, fertilizers, pesticides, paints, chemicals, and other materials at a municipal facility can significantly reduce polluted stormwater runoff. All materials should be handled properly including unloading, use, storage, and disposal. Proper management of materials can also reduce the likelihood of accidental spills or releases.

When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

Procedures

General

- Establish material storage and inventory controls to minimize the amount of materials used and stored.
- Periodically inspect material storage areas to ensure that all materials are being stored properly when not in use.
- Clean the material storage area when necessary using dry clean up methods.
- Properly dispose of unused materials.
- Store materials in a manner that reduces the potential for transport in stormwater flows.

Materials Stored in Containers

- Whenever possible, containerize and cover stored materials to prevent stormwater from coming in contact with materials. Secondary containment may be required.
- Store containers in a location where they will not be accidentally damaged by equipment or vehicles.
- Provide tight-fitting lids for all containers.

- Follow the Spill Prevention and Response procedure to respond to and clean up any spills or leaks.
- Inspect storage containers regularly for signs of leaking or deterioration.
- Replace or repair leaking storage containers.
- Use care to avoid spills when transferring materials from one container to another.
- Use powered equipment or get assistance when moving materials to and from a storage area. Handle containers appropriately and get help if needed. Use care to prevent punctures in the containers from equipment.

Loose Materials

- Consolidate loose material (gravel, mulch, etc.) and berm where needed to prevent run-on of stormwater.
- Follow the Salt and Sand Storage procedure for piles of salt and sand.
- Large inert materials such as piping and road signs can be stored outside without a protective covering. These materials do not impact stormwater quality.
- Rusting iron is a potential source for stormwater pollution and should not come in contact with stormwater.

Hazardous Materials

- Identify all hazardous materials stored at the facility.
- Maintain a Material Safety Data Sheet (MSDS) for each hazardous chemical.
- Clearly label all containers with the name, chemical, unit number, expiration date, handling instructions, and health and environmental standards.
- Provide special handling, storage (e.g., metal lockers), and disposal for all hazardous materials.

Maintenance Facility Yard

- The City stores liquid de-icer (Magnesium Chloride) in three tanks, each with a capacity of four thousand five hundred (4,500) gallons. These tanks are on a concrete pad that is surrounded by a two-foot containment wall that provides a secondary containment volume of approximately six thousand four hundred (6,400) gallons. Since this containment area is exposed to weather, collected stormwater should be pumped out after each significant storm event. This stormwater is considered uncontaminated and can be directed into the yard's storm sewer system.
- Identify a location to stockpile material collected through standard maintenance of the storm sewer system. Collected material should be properly disposed of when dried.

Employee Training

- Train applicable employees on this written procedure. Information on how to respond to spills will be presented during the training.
- Periodically conduct refresher training on the SOP for applicable employees who perform outdoor material storage activities.

Records

The following records could be used to document activities performed:

- Records of employee training with sign-in sheet.
- MSDSs.
- Packing lists, purchasing records, inventory records.

For More Information

City of Lone Tree Public Works
9222 Teddy Lane
Lone Tree, CO 80124
303-662-8112
www.cityoflonetree.com

Possible Pollutants

Metals
Hydrocarbons
Toxins

Good Housekeeping

Drip pans
Secondary containment
Automatic shutoff nozzles
Signs
Spill response plans
Spill cleanup materials
Dry cleanup methods
Employee training

Related Procedures

Spill Prevention and Response

Vehicle Fueling

Description

Spills of gasoline and diesel fuel on the ground or on vehicles during fueling can wash into a storm drain and cause water pollution.

When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state and federal codes, laws, and regulations.

Procedures

General

- Fuel vehicles at approved locations (municipal fueling station or offsite fueling station).
- Provide spill kits near the municipal fueling location.
- If fuel is stored in an above-ground tank, store fuel in enclosed, covered tanks with secondary containment (e.g., concrete barrier or double-walled tanks).
- All fuel tanks will be inspected per State and Federal regulations.
- Periodically inspect municipal fueling locations for the following:
 - For above-ground tanks, inspect tank foundations, connections, coatings, tank walls, and piping systems. Look for corrosion, leaks, cracks, scratches, and other physical damage that may weaken the tank.
 - Check for spills and fuel tank overfills due to operator error.
- Clean up any leaks or drips. Clean up is not completed until the absorbent is swept up and disposed of properly.
- Report leaking vehicles to fleet maintenance.

Vehicle Fueling

- Follow all posted warnings.
- Ensure that the nozzle is properly inserted in the filler neck of the vehicle before dispensing any fuel.
- Remain by the fill nozzle while fueling to ensure the nozzle stays in place.
- Do not top off the tank of the vehicle once the nozzle has shut off the fuel.
- Follow the procedures outlined in the Spill Prevention and Response Procedure to respond to any leaks or spills.
- Clean fuel dispensing areas with absorbent material.
- Never use water to clean up a spill.

Mobile Fuel Truck

- Provide inlet protection (e.g., berms, weighted inlet covers) for nearby storm drain inlets when transferring fuel and fueling a vehicle.
- Use secondary containment when transferring fuel from the tank truck to the fuel tank. All gas cans must be placed in the secondary containment box/pan and remain on the ground when fueling.
- Use a funnel to transfer fuel to vehicles and equipment. After the transfer is complete, the funnel should be dried with a rag or placed in a container to avoid dripping fuel on the ground.

Employee Training

- Train applicable employees who fuel vehicles on this written procedure. Information regarding how to avoid and report spills will be presented during the training.
- Periodically conduct refresher training on the SOP for applicable employees who fuel vehicles.

Records

The following records could be used to document activities performed:

- Records of employee training with sign-in sheet.

For More Information

City of Lone Tree Public Works
9222 Teddy Lane
Lone Tree, CO 80124
303-662-8112
www.cityoflonetree.com

Possible Pollutants

Construction Debris
Organics
Oil and Grease
Trash
Metals
Paint
Toxins

Good Housekeeping

Dumpster/waste management
Employee/Contractor Training
Proper cleanup and disposal procedures
Dry cleaning methods
Stormwater retrofits

Related Procedures

Large Outdoor Festivals and Events
Outdoor Material Storage
Spill Prevention and Response
Street Sweeping

Waste Management

Description

- All solid and liquid wastes must be disposed of properly. Some of the most common sources of pollution at municipal facilities are a result of littering, improper collection of debris, and improper disposal of solid or liquid waste.
- When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

Procedures

General

- Provide cover, if feasible, for all waste storage areas including keeping dumpster lids closed.
- Provide a low containment berm, if feasible, around waste storage areas.
- Conduct periodic inspections of solid and liquid waste storage areas to check for leaks and spills.
- Conduct periodic inspections of work areas to ensure that all wastes are being disposed of properly.
- Follow the Spill Prevention and Response procedure to respond to and clean up any spills or leaks.
- Clean storage areas when necessary using dry clean up methods (except in areas where the wash water will enter the sanitary sewer and is an approved discharge).
- Return dumpsters to the supplier when cleaning is necessary or if the dumpster is leaking.
- Properly handle and dispose of all hazardous wastes. See the Outdoor Material Storage procedure for more information.

Solid Waste

- Solid waste that cannot be recycled should be disposed of in a trash dumpster.
- Recycled solid wastes, including the following:
 - Glass
 - Plastic containers
 - Cardboard and Paper
 - Organic material
 - Scrap metal
 - Wood debris
 - Used batteries
 - Used oil filters
 - Light bulbs
- Follow the Street Sweeping procedure for proper disposal of street sweepings.

Liquid Waste

- Never place liquids in a dumpster.
- If unable to recycle, old latex paints should be mixed with floor dry or other adsorbent material to solidify prior to disposal in the trash.
- If unable to recycle, enamels and other oil-based paints should be applied to cardboard, newspaper, or similar materials and allowed to dry prior to disposal in the trash.
- Recycle liquid wastes, including the following:
 - Used oil
 - Used antifreeze
 - Used solvents

Maintenance Facility Yard

- Maintain perimeter rock sock protection of the sump inlet and placement of warning cones.
- Periodically remove sediment build-up around perimeter inlet protection, particularly within concrete pan area.
- Sediment should be properly disposed of when dried.

Employee Training

- Train applicable employees who dispose of wastes on this written procedure. Information on how to avoid and report spills will be presented during the training.
- Periodically conduct refresher training on the SOP for applicable employees who dispose of wastes.

Records

The following records could be used to document activities performed:

- Records of employee training with sign-in sheet.



CITY OF LONE TREE OPERATIONS MANUAL

APPENDIX SECTION E.5

For More Information

City of Lone Tree Public Works
9222 Teddy Lane
Lone Tree, CO 80124
303-662-8112
www.cityoflonetree.com

Possible Pollutants

Fine-grained sediment
Oil
Paint
Trash

Good Housekeeping

Waste Management
Employee/Contractor Training
Proper Cleanup and Disposal
Procedures

Related Procedures

Spill Prevention and Response
Street Sweeping

Power Washing

Description

Wastewater from power washing must not be allowed to enter the storm sewer system and must be disposed of properly. Power washing combined with proper wastewater collection can prevent or reduce fine-grained sediment particles, anti-freeze, oil, paint, or trash from polluting stormwater.

When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

Procedures

General

- Use dry methods for surface pre-cleaning, such as using absorbent on small oil spots and sweeping up trash, debris, dirt, and used absorbent before power washing.
- Minimize the amount of water used during power washing activities.
- Avoid using cleaning products that contain hazardous substances (e.g., hydrofluoric acid, muriatic acid, sodium hydroxide, bleach) that can turn wastewater into hazardous waste.

Wastewater Collection

- Identify the locations of all storm drains in the area and place inlet protection or drain covers at all locations, as needed.
- Locate high and low spots on the property to determine the area where wastewater will be pooled for collection.

- Equipment to contain and collect wastewater generated by power washing includes: vacuum pumps, booms, berms, portable containment areas, weighted storm drain covers, inflatable plumber's plugs, oil and water separators, holding tanks, portable sump pumps, hoses, and absorbent pads.
- Avoid mixing non-hazardous wastewater with wastewater known to contain hazardous substances or hazardous levels of pollutants. Mixing these wastes may increase the characteristic and/or total volume of waste, resulting in more expensive disposal and additional regulatory requirements.
- Place an oil-absorbent mat or pad on top of collected wastewater to help reduce the amount of oil re-deposited on the surface of the collection area.
- Wastewater can be filtered through an oil absorbent boom or oil/water separator and a filter to decrease the concentration of oil in the liquid and the amount of solids in the wastewater.
- Once wastewater has been collected, visible solids remaining in the collection area after liquids have evaporated must be swept up and properly disposed to prevent future discharges to the storm sewer system.

Wastewater Disposal

- Do not dispose of power washing wastewater into the storm sewer system.
- Power washing wastewater may be disposed of in an inside drain connected to the sanitary sewer system with the permission of the wastewater treatment plant (may require a permit) and the facility owner where the work is being performed. Collected wastewater can also be discharged to the sanitary sewer system at the power washer's place of business with the permission of the wastewater treatment plant, or can be taken directly to a wastewater treatment plant.
- Do not remove sewer manhole covers to dispose of wastewater to the sanitary sewer system without prior approval.
- Power washing wastewater may be discharged to landscaped areas if it is not harmful to vegetation, there is no ponding, and there is no runoff from the site to the storm sewer system.

Employee Training

- Train applicable employees who perform power washing activities on this written procedure. Information regarding how to avoid and report spills will be presented during the training.
- Periodically conduct refresher training on the SOP for applicable employees who perform power washing.

Records

The following records could be used to document activities performed:

- Records of employee training with sign-in sheet.
- List of power washing activities and departments responsible for conducting power washing.



CITY OF LONE TREE OPERATIONS MANUAL

APPENDIX SECTION E.6

For More Information

City of Lone Tree Public Works
9222 Teddy Lane
Lone Tree, CO 80124
303-662-8112
www.cityoflonetree.com

Possible Pollutants

Sediment
Chemicals

Good Housekeeping

Covered outdoor storage areas
Dry clean up methods
Employee training

Related Procedures

Material Storage
Salt and Sand Storage
Snow and Ice Control
Snow Storage
Spill Prevention and Response
Street Sweeping
Vehicle Fueling

Salt and Sand Storage

Description

Deicers, including salt and sand, are commonly used during snow removal activities. Improper handling of deicers, salt and sand can contribute pollutants to waterways.

When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

Procedures

Solid Deicer Storage

- Deicers should be stored under cover, such as inside a covered structure or under a tarp.
- Containment barriers should be placed to prevent transport of the material beyond the storage area unless stored inside a structure.
- Whenever possible, storage areas should be outside of the 100-year floodplain for protection against flooding.
- Any temporary salt and sand storage areas should be protected from erosive forces of wind and rain.
- Do not overload material spreaders.
- Sweep the area outside of the material storage area after loading and unloading.

Liquid Deicer Storage

- Establish liquid deicer inventory controls to minimize the amount of deicer used and stored.
- Store tanks/containers in a location where they will not be accidentally damaged by equipment or vehicles.

- Follow all State and Federal above-ground and underground storage tank requirements.
- Clean the storage tank/container area when necessary using dry clean-up methods.
- Periodically inspect storage tanks/containers to ensure that all materials are being stored properly when not in use
- When receiving bulk deliveries or when loading liquid deicers into truck mounted tanks minimize leaks and clean up spills as soon as they occur.

Employee Training

- Train applicable employees who are involved in salt and sand storage activities on this written procedure. Information on proper storage practices and on how to prevent and report spills will be presented during training.
- Periodically conduct refresher training on the SOP for applicable employees who are involved in salt and sand storage activities.

Records

The following records could be used to document activities performed:

- Record of any major spills and the action taken.
- Records of employee training with sign-in sheet.

Examples



Cover stockpiles when not in use



Protect downstream side of stockpile



CITY OF LONE TREE OPERATIONS MANUAL

APPENDIX SECTION E.7

For More Information

City of Lone Tree Public Works
9222 Teddy Lane
Lone Tree, CO 80125
303-662-8112
www.cityoflonetree.com

Possible Pollutants

Chemicals
Toxics
Oil
Paint
Fuel

Good Housekeeping

Waste Management
Employee/Contractor Training
Proper cleanup and disposal procedures

Related Procedures

Fertilizer, Pesticide, and Herbicide Application
Outdoor Material Storage
Vehicle Fueling

Spill Prevention and Response

Description

Due to the type of work and the materials involved, many activities that occur either at a municipal facility or as part of municipal operations have the potential for accidental spills. Some municipal facilities operate under Spill Prevention Control and Countermeasures (SPCC) plans that include procedures for spill response. Proper spill response planning and preparation enables employees and contractors to effectively respond to problems and minimize the discharge of pollutants to the storm sewer system.

When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

Procedures

Spill Prevention

- Keep work areas neat and well organized.
- Maintain a Material Safety Data Sheet (MSDS) for each hazardous chemical. Follow the Outdoor Material Storage procedures.
- Provide tight fitting lids for all containers.
- Keep containers clearly labeled. Labels should provide name and type of substance, stock number, expiration date, health hazards, handling suggestions, and first aid information.
- Store containers, drums, and bags away from direct traffic routes to prevent accidental spills.
- Inspect storage containers regularly for signs of leaking or deterioration.
- Replace or repair leaking storage containers.

- Use care to avoid spills when transferring materials from one container to another.
- Use powered equipment or get assistance when moving materials to and from a storage area. Use care to prevent puncturing containers with the equipment.
- Do not wash down or hose down any outdoor work areas or trash/waste container storage areas except where wash water is captured and discharged into the sanitary sewer (if approved).
- Conduct periodic inspections to ensure that materials and equipment are being handled, disposed/recycled, and stored correctly.
- Provide adequate spill kits or lockers with sufficient equipment and supplies necessary for each work area where the potential for spills or leaks exists.
- Inspect each spill kit or locker regularly and after each spill response. Replace any spent supplies or repair any equipment that is worn or not suitable for service.
- Stock adequate personal protective equipment.

Spill Response

Safety

Consider safety at all times. Anticipate and avoid all likely hazards. Never approach, contact, or sample an unknown substance. If a highly toxic or flammable substance is discovered, staff should leave the immediate area and contact the appropriate identified response authority, such as the fire department. If there is any question about a substance, contact the appropriate identified response authority or other designated representative.

Procedures

- Stop the leading edge of the spill. Block or divert the spill to avoid discharge to the storm sewer system and to minimize the area requiring cleanup.
- Determine the source of the spill and stop the spill at its source by closing a valve, plugging a leak, or setting a container upright. Transfer material from a damaged container.
- Identify the material and volume spilled. Contact the appropriate identified response authority or other designated representative if you cannot identify the material and its properties.
- Refer to the MSDS to determine appropriate personal protective equipment, such as gloves and safety glasses and appropriate cleanup methods.
- Clean up spills immediately to prevent spreading of wastes by wind, rain, and vehicle traffic and potential safety hazards.
- Use sand absorbents or socks, pillows, or pads to quickly capture spilled liquid and properly dispose of all clean-up materials. Use dry clean-up methods only.
- Complete all necessary reports.

Spill Reporting

- A spill of any chemical, oil, petroleum product, or sewage that enters waters of the state of Colorado (that include surface water, ground water, and dry gullies and storm sewers leading to surface water) must be reported immediately to the Colorado Department of Public Health and Environment.
- Release of a substance into a storm drain, or onto a parking lot or roadway as part of a storm sewer leading to surface water, is reportable. However, if the material can be contained and cleaned within the storm sewer system to the degree that a subsequent flow in the storm sewer will not flush the substance to waters of the State, it may not need to be reported.
- Contact the appropriate identified response authority within the municipality or other designated representative and be prepared to provide details needed to report the spill to the necessary agencies.
- Detailed spill reporting guidance can be found at <http://www.cdphe.state.co.us/op/wqcc/Resources/Guidance/spillguidance.pdf> and <http://www.cdphe.state.co.us/hm/spillsandreleases.htm>

Employee Training

- Train applicable employees who perform spill prevention and response on this written procedure. Information regarding how to avoid and report spills will be presented during the training.
- Periodically conduct refresher training on the SOP for applicable employees who perform spill prevention and response activities.

Records

The following records could be used to document activities performed:

- Records of any major spills and the action taken.
- Records of employee training with sign-in sheet.



CITY OF LONE TREE OPERATIONS MANUAL

APPENDIX SECTION E.8

For More Information

City of Lone Tree Public Works
9222 Teddy Lane
Lone Tree, CO 80124
303-662-8112
www.cityoflonetree.com

Possible Pollutants

Sediment
Chemicals
Organics
Trash

Good Housekeeping

Waste Management
Employee/Contractor Training
Proper Cleanup and Disposal
Procedures

Related Procedures

Parks and Open Space
Maintenance
Spill Prevention and Response
Street, Curb, and Gutter
Replacement and
Construction
Utilities and Storm Sewer
System Replacement and
Construction
Vehicle Fueling

New Construction Activities for Municipalities

Description

This fact sheet covers new construction activities disturbing less than one acre not subject to a CDPS Construction permit. New construction includes, but is not limited to buildings, structures, capital improvements, roadways, and recreational components such as trails, restrooms, and other structures. Procedures provided are general in nature and can be applied to any scale or type of municipal construction.

When services are contracted, this written procedure should be provided to the contractor so they have the proper operational procedures. In addition, the contract should specify that the contractor is responsible for abiding by all applicable municipal, state, and federal codes, laws, and regulations.

Procedures

- Obtain all applicable federal, state, and local permits for construction projects.
- The Colorado Stormwater Construction General permit applies to construction sites disturbing one acre or more, or less than one acre but part of a larger common plan of development.
- A larger common plan of development is defined as a **contiguous area** where multiple separate and distinct construction activities may be taking place at different times on different schedules under one plan.
- A dewatering permit may be required if construction activities require the removal and discharge of groundwater offsite.

- A U.S. Army Corp of Engineers (USACE) Section 404 Permit may be needed if the work will be conducted in or impact waters of the United States, including wetlands, washes, drainages, ditches, creeks, streams, and rivers.
- Applicable sediment and erosion controls may be installed, such as inlet protection, silt fence, sediment traps, erosion control logs, check dams, and vehicle tracking control.
- All Grading, Erosion and Sediment Control shall be in conformance with the Douglas County GESM Manual, current edition.
- Installed and maintained in accordance with approved design criteria and/or industry standards.
- Material stockpiles will not be stored in stormwater flow lines. Temporary sediment control will be used during temporary, short-term placement while work is actively occurring.
- Where feasible, grading activities should be scheduled during dry weather.
- Best management practices will be periodically inspected and maintained as necessary.
- Waste containment for concrete washout, masonry, paint, trash and other potential pollutants will be available when these activities are being conducted.
- Where practicable, non-structural controls will be used, such as phased construction, dust control, good housekeeping practices, and spill prevention and response.

Employee Training

- Train applicable employees who perform new construction activities on this written procedure. Information regarding how to avoid and report spills will be presented during the training.
- Periodically conduct refresher training on the SOP for applicable employees who perform new construction activities.

Records

The following records could be used to document activities performed:

- Records of employee training with sign-in sheet.



CITY OF LONE TREE OPERATIONS MANUAL

APPENDIX SECTION F

Standard Operating Procedure for GESC Inspections

Description

As part of the City of Lone Tree's Municipal Separate Storm Sewer System permit (COR-080016, effective July 1, 2016) with the Colorado Department of Public Health and Environment, the City is required to create written procedures developed for the Construction Sites Runoff Control, as described in Part I.E.3 of the permit. This Standard Operating Procedures (SOP) addresses all procedures for construction site compliance assessment.

General

All Grading, Erosion, and Sediment Control shall be in conformance with the Douglas County GESC Manual, current edition, as adopted by the City of Lone Tree.

Procedures

Inspection and enforcement of the GESC Program is a high priority at the City of Lone Tree. The inspection process for the City's GESC Program includes inspections by Lone Tree Engineering staff and Inspectors to include, but not be limited to, the following:

- All GESC projects are inspected routinely during the entire life of the project. After construction is complete, inspections continue until the revegetation effort is acceptable.
- Selected inspections will be provided by Engineering staff, including inspections of the initial traffic control and temporary access plan, and any permanent drainage or water quality facilities.
- An initial inspection of the temporary construction access point and initial-stage BMPs by a City Inspector prior to commencement of earthwork activity.
- For most GESC Permits, inspection by a GESC Inspector can occur any time during construction, including when a new on-site GESC manager is chosen.
- For most GESC Permits, some steps during the construction process require the contractor to call in for inspections by City staff, which may include:
 - Inspection by a GESC Inspector after interim- and final-stage BMPs are installed.
 - Inspection by a GESC Inspector prior to issuance of a Right-of-Way Use and Construction Permit.
 - Inspection by a GESC Inspector at final project completion prior to the contractor leaving the site (prior to certificate of occupancy being issued).
 - Inspection by a GESC Inspector one year after final project completion for check of revegetation success.
 - Inspection by a GESC Inspector two years after final project completion, or when vegetation coverage is established.
- GESC projects that disturb more than 40 acres (70 acres for soil mitigation) must have multiple grading phases and an inspection by a GESC Inspector before the start of each phase.

Appropriate control measures must be implemented prior to the start of construction activity, must control potential pollutants during each phase of construction, and must be continued through final stabilization. Appropriate structural control measures must be maintained in operational condition.

Inspection Frequency

The following inspection types must be indicated on the GESC Field Inspection Report:

Routine Inspection: A routine inspection must be conducted at least once before final stabilization and meet the following permit requirements:

- **Frequency:** Conduct at least every 45 days.
- **Scope:** The inspection must assess the following:
 - **Control measures:** Identify failure to implement control measures, inadequate control measures, and control measures requiring routine maintenance.
 - **Pollutant sources:** Evaluate all pollutant sources, including trash, to determine if an illegal discharge has occurred.
 - **Discharge points:** Evaluate discharge points to the MS4, or beyond the limits of the construction site as necessary to determine if an illicit discharge has occurred. The permittee must require the removal of the pollutants, when feasible, from the MS4 when the permittee identifies a failure to implement a control measure or an inadequate control measure resulting in pollutants discharging to the MS4 or beyond the limits of the construction site.

Reduced Site Inspection: Reduced site inspections must occur at the frequency and include the scope indicated below for each type of site:

Inactive Site Inspection: Sites where surface ground disturbance activities are completed and are pending growth for final stabilization or for sites where no construction activity has occurred since the last inspection.

- **Frequency:** Conduct at least every 90 days.
- **Scope:** The inspection must assess the following:
 - **Control measures:** Identify failure to implement control measures, inadequate control measures, and control measures requiring routine maintenance.
 - **Discharge points:** Evaluate discharge points to the MS4, or beyond the limits of the construction site as necessary to determine if an illicit discharge has occurred. The permittee must require the removal of the pollutants, when feasible, from the MS4 when the permittee identifies a failure to implement a control measure or an inadequate control measure resulting in pollutants discharging to the MS4 or beyond the limits of the construction site.

Stormwater Management System Administrator's Program Inspection: These inspections are for construction activities operated by a participant in a Division designated Stormwater Management System Administrator's Program in accordance with Article 8 of title 25, Colorado Revised Statutes that has been identified by the Stormwater Management System Administrator

to be fully implementing the program and qualified for reduced oversight incentives of the program.

- Frequency: Conduct at least every 90 days.
- Scope: The inspection must assess the following:
 - Control measures: Identify failure to implement control measures, inadequate control measures, and control measures requiring routine maintenance.
 - Pollutant sources: Evaluate all pollutant sources, including trash, to determine if an illicit discharge has occurred.
 - Discharge points: Evaluate discharge points to the MS4, or beyond the limits of the construction site as necessary to determine if an illicit discharge has occurred. The permittee must require the removal of the pollutants, when feasible, from the MS4 when the permittee identifies a failure to implement a control measure or an inadequate control measure resulting in pollutants discharging to the MS4 or beyond the limits of the construction site.

Staff Vacancy: These inspections are allowed to accommodate a staff vacancy or temporary leave due to vacation or illness.

- Frequency: Conduct at least every 90 days.
- Scope: The inspection must assess the following:
 - Control measures: Identify failure to implement control measures, inadequate control measures, and control measures requiring routine maintenance.
 - Pollutant sources: Evaluate all pollutant sources, including trash, to determine if an illicit discharge has occurred.
 - Discharge points: Evaluate discharge points to the MS4, or beyond the limits of the construction site as necessary to determine if an illicit discharge has occurred. The permittee must require the removal of the pollutants, when feasible, from the MS4 when the permittee identifies a failure to implement a control measure or an inadequate control measure resulting in pollutants discharging to the MS4 or beyond the limits of the construction site.

Indicator Inspection: Indicator inspections, such as a drive-by or screening, are conducted to assess sites for indicators of noncompliance and do not fully assess the adequacy of control measures and overall site management. A routine inspection must be conducted at least once at the site with an applicable construction activity before an indicator inspection can be used. In addition, if the indicator inspection indicates a need for a compliance inspection, then another routine inspection must be conducted before the indicator inspection frequency and scope can be used again. Indicator inspections are a reduced scope inspection that can be used to extend the frequency required of routine inspections up to 90 days when all indicators evaluated determine control measures meet Good Engineering, Hydrologic and Pollution Control Practices as defined in I.B.1. and there is no evidence of discharges to the MS4. Types of Indicator inspections are defined below:

- Frequency: Conduct at least every 14 days. A Routine Inspection must be conducted every 90 days.

- Scope: Perimeter of the site must be evaluated for indicators of inadequate control measures. The inspection must assess the following:
 - Control measures: Identify failure to implement control measures and inadequate control measures.
 - Discharge points: Evaluate discharge points to the MS4, or beyond the limits of the applicable construction activities as necessary to determine if an illicit discharge has occurred. The permittee must require the removal of the pollutants, when feasible, from the MS4 when the permittee identifies a failure to implement a control measure or an inadequate control measure resulting in pollutants discharging to the MS4 or beyond the limits of the construction site.

Compliance Inspection: A compliance inspection must occur after the permittee documents an illicit discharge or identifies that there is a failure to implement a control measure or an inadequate control measure, unless corrections were made and observed by the inspector during the initial inspection.

- Frequency: Conduct within at least 14 days from the time the permittee documents an illicit discharge or identifies that there is a failure to implement a control measure or an inadequate control measure, unless corrections were made and observed by the inspector during the initial inspection.
- Scope: A compliance inspection, or alternative inspection listed below, must identify if corrections have been completed on sites where the permittee has documented an illicit discharge or failure to implement a control measure or an inadequate control measure during the previous inspection. One of the following, that incorporates this required scope, may be performed or required in lieu of a compliance inspection within 14 days of the permittee site inspection identifying that there is a failure to implement a control measure or an inadequate control measure:
 - Routine inspection;
 - Indicator Inspection; or
 - Operator Compliance Inspection: Require the operator to inspect and report that the control measure has been implemented or corrected as necessary. The operator report must include photographs of the new/adequate control measure(s).

Inspection Enforcement

The enforcement of the GESC Program will be at the discretion of the GESC Inspector and/or City Engineer and includes three levels of violations. Additional fees may be assessed for all levels of violations. Level III violations are given for minor violations of the GESC criteria. A Level II violation is given for more serious risks. A Level I violation may result in an immediate Stop Work Order, GESC Permit revocation, and/or all work on site being stopped until the site is brought back into compliance with the GESC criteria. Failure to correct any noncompliant item(s) by the time of re-inspection may result in the escalation of the level of violation (e.g., failure to correct a Level II violation may result in the issuance of a Level I - Stop Work Order violation).

Level III violations are viewed as posing a low immediate risk to people and/or the environment and may include, but are not limited to:

- Failure to provide routine maintenance for the installed erosion and sediment controls.
- Installation of non-accepted erosion and sediment control BMPs.
- Failure to provide temporary inlet protection after the pouring of an inlet.
- Failure to provide inlet protection after placement of asphalt or concrete pavement.
- Staging of equipment outside the stabilized staging area.
- Failure to have the approved GESC Permit and Plan on-site.

Level II violations are viewed as posing a moderate risk to people and/or the environment and may include, but are not limited to:

- Tracking of material onto roadways and adjacent paved areas.
- Incorrect use of BMP (e.g., washing out concrete trucks in wrong location).
- Failure to make required plan revisions.
- Failure to perform BMP maintenance as directed by the GESC Inspector.
- Failure to correct Level III violations per the directives of the GESC Inspector.

A Level I violation includes those conditions that are viewed by Lone Tree as posing an immediate and serious risk to the health, safety, and/or welfare of people and/or the environment. Examples of violations that may result in a Stop Work Order include, but are not limited to:

- Clearing, grubbing or grading without a GESC permit.
- Failure to schedule and have an initial GESC inspection prior to beginning general construction.
- Failure to be able to contact the GESC Manager or GESC Managers alternate during a Level II violation.
- Failure to restrict operations to approved limits of construction.
- Failure to clean up tracking of material onto roadways and adjacent paved areas.
- Exporting material to or importing material from a non-permitted site.
- Failure to follow an approved phasing plan.
- Failure to correct Level II violations per the directives of the GESC Inspector.

GESC projects that fail to achieve compliance through the Stop Work Order process may be criminally prosecuted in accordance with City Ordinance 05-07.

The GESC Inspector will fill out a Field Inspection Report for each site visit. If a violation is cited, the Inspector, when possible, will discuss the violation and procure a signature from the permit's GESC Manager before leaving the site. The report form includes the following note:

Level I NOV's may result in an immediate Stop Work Order. Level II NOV's may be re-inspected within 1 calendar day. Level III NOV's may be re-inspected within 2 calendar days. Failure to comply with a NOV prior to a re-inspection may result in a Stop Work Order and revocation of the applicable GESC Permit. Subsequent to issuance of a Stop Work Order, a GESC Permit reinstatement fee must be paid at the City DPW prior to any further site activity

(other than GESC corrections). Regardless of Violation Level and re-inspection schedule, any GESC compliance violation must be corrected immediately, whether documented or not, and may subject the Permittee to enforcement (and associated penalties) by any of the applicable agencies (City, County, State, EPA).



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APPENDIX B FACILITY INSPECTION FORM

Facility: _____

Date: _____

Area	Yes	No	N/A	Comments
Private Drive Lanes/Parking				
• Clear of trash/debris				
• Evidence of spills/leaks				
• Buildup of oil/grease				
• Stored materials				
• Maintenance needed				
Building/Structure				
• Clear of trash/debris				
• Stored materials				
• Maintenance needed				
Landscaping				
• Clear of trash/debris				
• Stored Materials				
• Maintenance needed				
Outdoor Material Storage				
• Clear of trash/debris				
• Approaches clean				
• Contents in bins				
• Evidence of spills/leaks				
• Maintenance needed				
Outdoor Bulk Storage				
• Clear of trash/debris				
• Containment area clean				
• Containment area drained				
• Maintenance needed				
Outdoor Trash Enclosure				
• Clear of trash/debris				
• Evidence of spills/leaks				
• Cover in place				
• Maintenance needed				
Outdoor Traffic Control Storage				
• Clear of trash/debris				
• Evidence of spills/leaks				
• Maintenance needed				
Outdoor Utilities Storage				
• Clear of trash/debris				
• Evidence of spills/leaks				
• Maintenance needed				



CITY OF LONE TREE OPERATIONS MANUAL APPENDIX B FACILITY INSPECTION FORM

Area	Yes	No	N/A	Comments
Indoor Vehicle Storage				
• Clear of trash/debris				
• Evidence of spills/leaks				
• Maintenance needed				
Indoor Salt and Sand Storage				
• Clear of trash/debris				
• Evidence of spills/leaks				
• Maintenance needed				
Long Term Vehicle Storage				
• Clear of trash/debris				
• Evidence of spills/leaks				
• Maintenance needed				
Fleet Vehicle Maintenance				
• Clear of trash/debris				
• Evidence of spills/leaks				
• Maintenance needed				
Vehicle Fueling				
• Clear of trash/debris				
• Evidence of spills/leaks				
• Maintenance needed				
Storm Sewer/Detention				
• Clear of trash/debris				
• Clear of Sediment				
• Repairs/replacement needed				

This inspection form shall be kept on file.

Inspected By: _____