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1.0 Introduction

1.1 Title

The contents of this document shall be known as the Dust Prevention and Control Manual ("the Manual")

1.2 Purpose of Manual

The purpose of the Manual is to establish minimum requirements consistent with nationally recognized practices for controlling fugitive dust emissions and to define “all available dust control measures that are technologically feasible and economically reasonable to prevent off-property transport or off-vehicle transport of fugitive dust emissions” pursuant to Fort Collins' Municipal Code §12-146(a) for specific dust generating activities. The objective of the City’s fugitive dust control program is to prevent health impacts and nuisances from dust emissions through the application of readily available and generally accepted dust control measures.

1.3 Applicability

The Manual applies to any person, owner, or operator who owns or operates a dust generating activity or source, as defined in this manual, within the City of Fort Collins. A dust generating activity or source creates dust emissions that are transported beyond the property or project boundary or transported off of a vehicle onto a public right-of-way and has the potential to cause adverse impacts, impair visibility, or create a safety hazard.
1.4 Definitions

**Bulk materials transport** shall mean the carrying, moving, or conveying of loose materials including, but not limited to, earth, rock, silt, sediment, sand, gravel, soil, fill, aggregate, dirt, mud, construction or demolition debris, and other organic and/or inorganic material containing particulate matter onto a public road or right-of-way in trailers, truck beds, bins, or other open container.

**Chemical stabilization** shall mean the application of chemicals used to bind soil particles or increase soil moisture content including but not limited to dust suppressants, palliatives, tackifiers, surfactants, and soil stabilizers. Asphalt based products or any product containing cationic polyacrylamide or products deemed environmentally incompatible with Municipal Code §26-498, or defined as a pollutant per Municipal Code §26-491, or explicitly prohibited by the U.S. Environmental Protection Agency or the state of Colorado may not be used for chemical stabilization. Water soluble plant based oils or gums, clay additives, or other synthetic polymer emulsion that is non-toxic, non-combustible, and harmless to fish, wildlife, plants, pets, and humans may be used for chemical stabilization.

**Dust control measure** shall mean any action or process that is used to prevent or mitigate the emission of fugitive dust into the air.

**Dust generating activity or source** shall mean a process, operation, action, or land use that creates emissions of fugitive dust and causes an air pollution nuisance pursuant to Municipal Code §20-1 or causes off-property or off-vehicle transport and has the potential to; adversely impact human health, property, sensitive vegetation or waters of the state; impair visibility; or create a safety hazard, including but not limited to; earthmoving, demolition and renovation, stockpiles, street sweeping, bulk materials transport, open areas, parking lots, unpaved roads, haul roads, saw cutting, grinding, abrasive blasting, and leaf blowing.

**Earthmoving** shall mean any process that involves land clearing, disturbing soil surfaces, or moving, loading, or handling of earth, dirt, soil, sand, aggregate, or similar materials.

**Fugitive dust** shall mean solid particulate matter emitted into the air by mechanical processes or natural forces but is not emitted through a stack, chimney, or vent and includes fugitive particulate emissions as defined in Colorado Air Quality Control Commission Regulation No. 1.

**Local wind speed** shall mean the current or forecasted wind speed for the Fort Collins area as measured at the surface weather observation station KFNL located at the Fort Collins Loveland Municipal Airport and available from the National Weather Service at [http://forecast.weather.gov/MapClick.php?lat=40.56&lon=-105.07](http://forecast.weather.gov/MapClick.php?lat=40.56&lon=-105.07) or as measured onsite with a portable or hand-held anemometer.
**Mechanical (leaf) blower** shall mean any portable machine powered with an internal combustion or electric powered engine used to blow leaves, clippings, dirt or other debris off sidewalks, driveways, lawns, medians, and other surfaces including but not limited to hand held, back pack, and walk behind units as well as blower-vacuum units.

**Off-property transport** shall mean the visible emission of fugitive dust beyond the property line of the property on which the emission originates or the project boundary when the emission originates in the public right-of-way or on public property.

**Off-vehicle transport** shall mean the visible emission of fugitive dust from a vehicle that is transporting dust generating materials on a public road or right-of-way.

**On-tool local exhaust ventilation** shall mean a vacuum dust collection system attached to a construction tool that includes a dust collector (hood or shroud), tubing, vacuum, and a high efficiency particulate air (HEPA) filter.

**On-tool wet dust suppression** shall mean the operation of nozzles or sprayers attached to a construction tool that continuously applies water or other liquid to the grinding or cutting area by a pressurized container or other water source such as a hose connected to a faucet.

**Open area** shall mean any area of undeveloped land greater than one-half acre that is less than 70% vegetated. This includes undeveloped lots, vacant or idle lots, natural areas, parks, or other non-agricultural areas. Recreational and multi-use trails maintained by the City are not included as an open area.

**Operator or owner** shall mean any person who has control over a dust generating source either by operating, supervising, controlling, or maintaining ownership of the activity or source including but not limited to a contractor, lessee, or other responsible party of an activity, operation, or land use that is a dust generating activity or source.

**Particulate matter** shall mean any material which is emitted into the air as finely divided solid or liquid particles, other than uncombined water, and includes dust, smoke, soot, fumes, aerosols, and mists

**Sensitive area** shall mean a specific area that warrants special protection from adverse impacts due to the deposition of fugitive dust such as natural areas (excluding buffer zones), sources of water supply, wetlands, critical wildlife habitat, or wild and scenic river corridors.

**Soil retention** shall mean the stabilization of disturbed surface areas that will remain exposed and inactive for 30 days or more while vegetation is being established using sodding, mulching, soil mats, or other methods.

**Stockpile** shall mean any accumulation of bulk materials that contain particulate matter being stored for future use or disposal. This includes trench spoils; backfill materials; and storage piles for soil, sand, dirt, mulch, aggregate, straw, chaff, or other materials that produce dust.

**Storm drainage facility** shall mean those improvements designed, constructed or used to convey or control stormwater runoff and to remove pollutants from stormwater runoff after precipitation.

**Surface roughening** shall mean to modify the soil surface to resist wind action and reduce dust emissions from wind erosion by creating grooves, depressions, ridges or furrows perpendicular to the predominant wind direction using tilling, ripping, discing, or other method.
**Synthetic or natural cover** shall mean the installation of a temporary cover material on top of disturbed soil surfaces or stockpiles such as tarps, plastic sheeting, mulch, wood chips, gravel or other materials capable of preventing wind erosion.

**Track-out** shall mean the carrying of mud, dirt, soil, or debris on vehicle wheels, sides, or undercarriages, from a private, commercial, or industrial site onto a public road or right-of-way.

**Vegetation** shall mean the planting or seeding of appropriate grasses, plants, bushes, or trees to hold soil or to create a wind break.

**Wet suppression** shall mean the application of water by spraying, sprinkling, or misting to maintain optimal moisture content or to form a crust in dust generating materials and applied at a rate that prevents runoff from entering any public right-of-way, storm drainage facility or watercourse.

**Wind barrier** shall mean an obstruction at least five feet high with 50% or less porosity, comprised of a solid board fence, chain link and fabric fence, vertical wooden slats, hay bales, earth berm, bushes, trees, or other materials installed perpendicular to the predominant wind direction or upwind of an adjacent residential or sensitive area.
2.0 Fugitive Dust and the Problems it Causes

2.1 What is Fugitive Dust?

Dust, also known as particulate matter, is made up of solid particles in the air that consist primarily of dirt and soil but can also contain ash, soot, salts, pollen and spores, and other materials. “Fugitive” dust means particulate matter that has become airborne by wind or human activities and has not been emitted from a stack, chimney, or vent. The Colorado Department of Public Health and Environment (CDPHE) estimates that over 4,300 tons of dust are emitted into the air in Larimer County on an annual basis. The primary sources of this dust include construction activities, paved and unpaved roads, and agricultural operations.

The quantity of dust emitted from a particular activity or area and the materials in it can depend on the soil type (sand, clay, silt), moisture content (dry or damp), local wind speed, and the current or past uses of the site (industrial, farming, construction).

2.2 Health and Environmental Affects

Dust particles are very small and can be easily inhaled. They can enter the respiratory system and increase susceptibility to respiratory infections, and aggravate cardio-pulmonary disease. Even short term exposure to dust can cause wheezing, asthma attacks, and allergic reactions, and may cause increases in hospital admissions and emergency department visits for heart- and lung-related diseases. According to the Environmental Protection Agency (EPA), studies have linked particulate matter exposure to health problems such as:

- Irritation of the airways, coughing, and difficulty breathing
- Reduced lung function
- Aggravated asthma
• Chronic bronchitis
• Irregular heartbeat
• Increases in heart attacks
• Lung cancer

In addition, dust particles that have been stirred up from construction sites, industrial areas, agricultural operations, or roadways can contain pesticides, heavy metals, asbestos, bacteria, fungi, and a variety of other contaminants and carcinogens that not only cause adverse impacts to humans but to animals and vegetation as well.

Fugitive dust emissions can cause significant environmental impacts as well as health effects. When dust from wind erosion or human activity deposits out of the air, it may impact sensitive vegetation, adversely affect nearby soils and waterways, and cause damage to cultural resources. Wind erosion can result in the loss of valuable top soil, reduce crop yields, and stunt plant growth. According to the EPA, effects of particulate matter deposition include:

• Haze and reduced visibility
• Increased acidity of lakes and streams
• Nutrient balance changes in coastal waters and river basins
• Reduced levels of nutrients in soil
• Damage to forests and crops
• Reduced diversity in ecosystems
• Damage to stone and other materials
2.3 Nuisance and Aesthetics

Dust, dirt, and debris that become airborne eventually settle back down to the surface. How far it travels and where it gets deposited depends on the size and type of the particles as well as wind speed and direction. When this material settles, it can be deposited on homes, cars, lawns, pools and ponds, hanging laundry, and other property. The small particles can get trapped in machinery and electronics and cause abrasion, corrosion, and malfunctions. The deposited dust can damage painted surfaces, clog filtration systems, stain materials, and cause other expensive clean-up projects.

2.4 Safety Hazard and Visibility

Blowing dust can be a safety hazard at construction sites and on roads and highways. Dust can obstruct visibility and can cause accidents between vehicles and bikes, pedestrians, or site workers. Dust plumes can also decrease visibility across a natural area or scenic vistas. The “brown cloud” that is often visible along the Front Range during the winter months and the brilliant red sunsets that occur some afternoons are caused by particulate matter and other pollutants in the air.
3.0 Dust Control Measures

Colorado state air regulations, Larimer county air quality standards, and Fort Collins’ Municipal code generally require owners and operators of dust generating activities or sources to use all available and practical methods which are technologically feasible and economically reasonable in order to prevent fugitive dust emissions. However, state regulations and permitting requirements typically apply to larger stationary sources rather than specific activities that generate dust. Larimer County fugitive dust standards apply to land development only.

Although state and county requirements apply to many construction activities, they do not cover smaller sources and some of the dust generating activities that negatively impact citizens in Fort Collins. In addition, City code compliance officers enforce City code and do not have authority to enforce state or county regulations. This manual describes established methods for controlling dust emissions that are practical and used in common practice to prevent or mitigate impacts to air quality from dust generating activities and sources that are relevant to Fort Collins.

Fort Collins is located in a dry region where dust in the air can be affected by high winds and natural sources of dust such as wildfire smoke, pollen, and transport of dust from other regions. The objective of the dust control measures included in this manual are to reduce dust emissions from human activities and to prevent those emissions from impacting others and are based on the following principles:

- **Prevent** – prevent dust with good project planning or modifying or replacing dust generating activities.

- **Control** – control dust with methods that capture, collect, or contain emissions.

- **Restrict Access** – if the dust generating activity can’t be modified and dust cannot be controlled, then restrict public access to the dusty area.
3.1 Earthmoving Activities

Dust emissions from earthmoving activities are dependent on the type of activity being conducted, the amount of exposed surface area, wind conditions, and soil type and moisture content. Earthmoving includes:

- Site preparation (clearing, grubbing, scraping)
- Road construction
- Grading and overlot grading
- Excavating, trenching, backfilling, and compacting
- Loading and unloading dirt, soil, gravel, or other earth materials
- Dumping of dirt, soil, gravel, or other earth materials into trucks, piles, or receptacles
- Screening of dirt, soil, gravel, or other earth materials

Dust Control Measures

(a) Any person, owner, or operator who conducts earthmoving that is a dust generating activity or source shall implement the following dust control measures to prevent off property transport of fugitive dust emissions:

(i) **Minimize disturbed area**: plan the project or activity so that the minimum amount of disturbed soil or surface area is exposed to wind or vehicle traffic at any one time.

(ii) **Reduce vehicle speeds**: establish a maximum speed limit or install traffic calming devices to reduce speeds to a rate that prevents off-property transport of dust entrained by vehicles.

(iii) **Drop height**: unload truck beds and loader or excavator buckets slowly and at the lowest height possible. Minimize drop height of materials through screening operations.

(iv) **High winds restriction**: no earthmoving activities may be performed when local wind speeds exceed 30 miles per hour.
(v) **Restrict access**: restrict access to the work area to only essential vehicles and personnel.

(vi) **Engineering Controls**: Use one or more of the following engineering controls as necessary or as directed by a City code compliance officer when (i) – (v) are not effective at preventing off-property transport:

(A) **Wet suppression**: apply water to disturbed soil surfaces, backfill materials, screenings, and other dust generating operations as necessary and appropriate considering current weather conditions, and prevent water used for dust control from entering any public right-of-way, stormwater drainage facility, or watercourse.

(B) **Wind barrier**: construct a sand fence or other type of wind barrier to prevent wind erosion of top soils.

(C) **Vegetation**: plant vegetation appropriate for retaining soils or creating a wind break.

(D) **Surface roughening**: stabilize an active construction area during periods of inactivity or when vegetation cannot be immediately established.

(E) **Synthetic or natural cover**: install cover materials during periods of inactivity or during local wind speeds greater than 30 miles per hour and properly anchor the cover.

(F) **Soil retention**: stabilize disturbed or exposed soil surface areas that will be inactive for more than 30 days or while vegetation is being established.

(G) **Chemical stabilization**: apply chemical stabilizers using manufacturer’s recommended application rates. Avoid over-application and prevent runoff of chemical stabilizers into any public right-of-way, storm drainage facility, or watercourse.

(b) Any person, owner, or operator who conducts earthmoving that is a dust generating activity or source at a construction site or land development project with a total disturbed surface area equal to or greater than five (5) acres shall implement the following dust control measures:

(i) **Dust Control Plan**: submit a plan that describes all potential sources of fugitive dust and methods that will be employed to control dust emissions with the development construction permit application or development review application (see Chapter 4). A copy of the Dust Control Plan must be onsite at all times and one copy must be provided to all contractors and operators engaged in dust generating activities at the site.

(ii) **Construction sequencing**: include sequencing or phasing in the project plan to minimize the amount of disturbed area at any one time. Sites with greater than 25
acres of disturbed surface exposed at any one time may be asked to provide additional justification, revise the sequencing plan, or include additional dust control measures.
3.2 Demolition and Renovation

Dust generated from demolition activities may contain significant levels of silica, lead, asbestos, and particulate matter. Inhalation of silica and asbestos is known to cause lung cancer and exposure to even small quantities of lead dust can result in harm to children and the unborn.

In addition to complying with the dust control measures below, any person engaged in demolition or renovation projects must comply with applicable state and federal regulations for asbestos and lead containing materials and notification and inspection requirements under the State of Colorado Air Quality Control Commission’s Regulation No. 8, Part B Control of Hazardous Air pollutants.

**Dust Control Measures**

(a) Any person, owner, or operator who conducts demolition or renovation that is a dust generating activity or source shall implement the following dust control measures to prevent off-property transport of fugitive dust emissions:

(i) **Asbestos and lead containing materials**: demolition and renovation activities that involve asbestos or lead containing materials must be conducted in accordance with Municipal Code Chapter 5 Sec. 5-27 (59) §3602.1.1.

(ii) **Building permit**: obtain a building permit, if required, per Land Use Code §2.7.1.

(iii) **Restrict access**: restrict access to the demolition area to only essential vehicles and personnel.

(iv) **High winds restriction**: no demolition activities may be performed when local wind speeds exceed 30 miles per hour.

(v) **Drop height**: unload truck beds and loader or excavator buckets slowly and at the lowest height possible. Minimize drop height of materials through screening operations.

(vi) **Engineering controls**: use one or more of the following engineering controls as necessary or as directed by a City code compliance officer when (i) – (v) are not effective at preventing off-property transport:
(A) **Wet suppression:** apply water to demolished materials or pre-wet materials to be demolished as necessary. Prevent water used for dust control from entering any public right-of-way, storm drainage facility, or watercourse.

(B) **Chemical stabilization:** apply chemical stabilizers to demolished materials or materials to be demolished using manufacturer’s recommended application rates. Avoid over-application and prevent runoff of chemical stabilizers into any public right-of-way, storm drainage facility, or watercourse.

(C) **Wind barrier:** construct a sand fence or other type of wind barrier to prevent wind erosion of top soils.
3.3 Stockpiles

Stockpiles are used for both temporary and long-term storage of soil, fill dirt, sand, aggregate, woodchips, mulch, asphalt and other industrial feedstock, construction, and landscaping materials. Fugitive dust can be emitted from stockpiles while working the active face of the pile or when wind blows across the pile. The quantity of emissions depends on pile height and exposure to wind, moisture content and particle size of the pile material, surface roughness of the pile, and frequency of disturbance of the pile.

Dust Control Measures
(a) Any owner or operator of a stockpile that is a dust generating activity or source shall implement the following dust control measures to prevent off property transport of fugitive dust emissions:

(i) Stockpile permit: obtain a stockpile permit, if required, per Land Use Code §2.6.2.

(ii) Erosion Control Plan: implement an Erosion Control Plan, if required, per Fort Collins Stormwater Criteria Manual and comply with soil stockpile height limit, watering, surface roughening, vegetation, and silt fencing requirements.

(iii) Drop height: unload truck beds and loader or excavator buckets slowly and at the lowest height possible. Minimize drop height of materials through screening operations.

(iv) Engineering controls: use one or more of the following engineering controls as necessary or as directed by a City code compliance officer when (i) – (iii) are not effective at preventing off-property transport:

(A) Wet suppression: Apply water to the active face when working the pile or to the entire pile during periods of inactivity. Prevent water used for dust control from entering any public right-of-way, storm drainage facility, or watercourse.
(B) **Synthetic or natural cover**: install cover materials during periods of inactivity or during local wind speeds greater than 30 miles per hour and properly anchor the cover.

(C) **Surface roughening**: stabilize a stockpile that during periods of inactivity or when vegetation cannot be immediately established.

(D) **Stockpile location**: locate soil stockpile a distance equal to ten times the pile height from property boundaries that abut residential areas.

(E) **Vegetation**: Seed and mulch any soil stockpile that will remain inactive for 30 days or more.

(F) **Chemical stabilization**: apply chemical stabilizers using manufacturer’s recommended application rates. Avoid over-application and prevent runoff of chemical stabilizers into any public right-of-way, storm drainage facility, or watercourse.

(G) **Enclosure**: construct a 3-sided structure equal to or greater than the height of the pile to shelter the pile from the predominant winds.
3.4 Street Sweeping

Street sweeping is an effective method for removing dirt and debris from streets and preventing it from entering storm drains or becoming airborne. Newer technology sweepers can achieve particulate matter removal efficiencies between 80-90% using a vacuum assisted dry sweeper. Regenerative air sweepers and mechanical sweepers with water spray can also be effective at removing particulate matter from hard surfaces.

Dust Control Measures
(a) Any owner or operator that conducts sweeping operations or services on paved or concrete roads, parking lots, rights-of-way, pedestrian ways, plazas or other solid surfaces, and whose operations are a dust generating activity or source shall implement the following dust control measures to prevent off-property transport of fugitive dust emissions:

(i) **Uncontrolled sweeping prohibited:** the use of rotary brushes, power brooms, or other mechanical sweeping for the removal of dust, dirt, mud, or other debris from a paved public road, right-of-way, or parking lot without the use of water, vacuum system with filtration, or other equivalent dust control method is prohibited. Mechanical or manual sweeping that occurs between lifts of asphalt paving operations is excluded from this prohibition.

(ii) **Engineering controls:** use one or more of the following engineering controls as necessary or as directed by a City code compliance officer:

(A) **Wet suppression:** use a light spray of water or wetting agent applied directly to work area or use equipment with water spray system while operating sweeper or power broom. Prevent water used for dust control from entering any storm drainage facility or watercourse.

(B) **Vacuum system:** use sweeper or power broom equipped with a vacuum collection and filtration system.

(C) **Other method:** use any other method to control dust emissions that has a demonstrated particulate matter control efficiency of 80% or more.
3.5 Track-out / Carry-out

Mud, dirt, and other debris can be carried from a work site on the wheels or undercarriage of trucks and other equipment onto public roads. When this tracked out material dries, it can become airborne by wind activity or when other vehicles travel over it. This dust is not only a health concern but can cause visibility issues and safety hazards.

Dust Control Measures
(a) Any owner or operator of any operation that has the potential to result in track-out of dirt, dust, or debris on public roads and rights of way and whose operation is a dust generating activity or source shall implement the following dust control measures to prevent off property transport of fugitive dust emissions:

(i) **Contracts and standards:** comply with track-out prevention requirements and construct engineering controls as specified in applicable construction standards, contract documents, or Fort Collins Stormwater Criteria Manual.

(ii) **Remove deposition:** promptly remove any deposition that occurs on public roads or right of ways as a result of the owner or operator’s operations, using mechanical sweeping with vacuuming and water spray, manual brooming or shoveling with a light spray of water, or other methods that prevent dust emissions. Avoid over-watering and prevent runoff into any storm drainage facility or watercourse.

(iii) **Engineering controls:** use one or more of the following engineering controls as necessary or as directed by a City code compliance officer at each access point to public roads and right of ways:

(A) Install rails, pipes, grate, or similar track-out control device.

(B) Install a gravel bed track-out apron that extends at least 50 feet from the intersection with a public road or right of way.

(C) Install gravel bed track-out apron with steel cattle guard or concrete wash rack.

(D) Install vehicle and equipment washing station.

(E) Install a paved surface that extends at least 100 feet from the intersection with a public road or right of way.

(F) Manually remove mud, dirt, and debris from equipment and vehicle wheels, tires, and undercarriage.
3.6 Bulk Materials Transport

Haul trucks are used to move bulk materials such as dirt, rock, demolition debris, or mulch to and from construction sites, material suppliers, and storage yards. Dust emissions from haul trucks, if uncontrolled, can be a safety hazard by impairing visibility or by depositing debris on roads, pedestrians, bicyclists, or other vehicles.

**Dust Control Measures**
(a) Any owner or operator of a vehicle used for transporting bulk materials on a public or private road or on a public right-of-way and whose operations are a dust generating activity or source shall implement the following dust control measures to prevent off-vehicle transport of fugitive dust emissions:

(i) **Load cover:** completely cover or enclose all material in a manner that prevents the material from blowing, dropping, sifting, leaking, or otherwise escaping from the vehicle.

(ii) **Drop Height:** unload truck beds and loader or excavator buckets slowly and at the lowest height possible. Minimize drop height of materials through screening operations.

(iii) **Engineering controls:** use one or more of the following engineering controls as necessary or as directed by a City code compliance officer if load covering alone does not adequately control dust emissions or if load covering is not feasible:

   (A) **Wet suppression:** apply water to bulk materials loaded for transport as necessary to prevent fugitive dust emissions and deposition of materials on roadways. Prevent water used for dust control from entering any public right-of-way, storm drainage facility, or watercourse.

   (B) **Chemical stabilization:** apply chemical stabilizers using manufacturer’s recommended application rates. Avoid over-application and prevent runoff of chemical stabilizers into any public right-of-way, storm drainage facility, or watercourse.

   (C) **Other technology:** use other equivalent technology, such as limiting the load size to provide at least 3 inches of freeboard to prevent spillage.
3.7 Unpaved Roads and Haul Roads

Road dust from unpaved roads is caused by particles lifted by and dropped from rolling wheels traveling on the road surface and from wind blowing across the road surface. Road dust can aggravate heart and lung conditions as well as cause safety issues by decreasing driver visibility and other safety hazards.

Dust Control Measures
(a) Any owner or operator of an unpaved road located on a construction site greater than five acres or an unpaved road used as a public right-of-way and whose operations are a dust generating activity or source shall implement the following dust control measures to prevent off-property transport of fugitive dust emissions:

(i) **Reduce vehicle speeds**: establish a maximum speed limit or install traffic calming devices to reduce speeds to a rate that prevents off-property transport of dust entrained by vehicles.

(ii) **Restrict access**: restrict travel on unpaved roads by limiting access to only essential vehicle use.

(iii) **Engineering controls**: use one or more of the following engineering controls as necessary or as directed by a City code compliance officer when (i) – (ii) are not effective at preventing off-property transport:

   (A) **Wet suppression**: apply water to unpaved road surface as necessary and appropriate considering current weather conditions, and prevent water used for dust control from entering any public right-of-way, storm drainage facility, or watercourse.

   (B) **Surface improvements**: install gravel or similar materials with sufficient depth to reduce dust or pave high traffic areas.

   (C) **Chemical stabilization**: apply chemical stabilizers appropriate for high traffic areas using manufacturer’s recommended application rates. Avoid over-application and prevent runoff of chemical stabilizers into any public right-of-way, storm drainage facility, or watercourse.

   (D) **Access road location**: locate site access roads away from residential or other populated areas.
3.8 Parking Lots

This section applies to paved and unpaved areas where vehicles are parked or stored on a routine basis and includes parking areas for shopping, recreation, or events, automobile or vehicle storage yards, and animal staging areas.

Dust Control Measures

(a) Any owners or operator of a parking lot greater than one half acre and whose operations are a dust generating activity or source shall implement one or more of the following dust control measures as necessary to prevent off-property transport of fugitive dust emissions:

(i) **Surface improvements**: install gravel or similar materials with sufficient depth to reduce dust or pave high traffic areas.

(ii) **Maintenance**: repair potholes and cracks and maintain surface improvements.

(iii) **Mechanical sweeping**: (applies to paved parking lots only) sweep lot with a vacuum sweeper and light water spray as necessary to remove dirt and debris. Avoid overwatering and prevent runoff from entering any public right-of-way, storm drainage facility, or watercourse.

(iv) **Vegetation**: plant vegetation appropriate for retaining soils or creating a wind break.

(v) **Wet suppression**: apply water as necessary and appropriate considering current weather conditions to prevent off-property transport of fugitive dust emissions. Prevent water used for dust control from entering any public right-of-way, storm drainage facility, or watercourse.

(vi) **Chemical stabilization**: apply chemical stabilizers appropriate for high traffic areas using manufacturer’s recommended application rates. Avoid over-application and prevent runoff of chemical stabilizers into any public right-of-way, storm drainage facility, or watercourse.

(vii) **Wind barrier**: construct a sand fence or other type of wind barrier.

(viii) **Reduce vehicle speeds**: establish a maximum speed limit or install traffic calming devices to reduce speeds to a rate that prevents off-property transport of dust entrained by vehicles.

(ix) **Restrict access**: restrict travel in parking lots to only those vehicles with essential duties and limit access to hours of operation or specific events.
3.9 Open Areas and Vacant Lots

Open areas are typically not a significant source of wind-blown dust emissions if the coverage of vegetation is sufficient or soil crusts are intact. However, if soils in open areas are disturbed by vehicle traffic, off-highway vehicle use, bicycling, grazing, or become overrun by animal colonies, dust emissions can become a problem.

Dust Control Measures

(a) Any owner or operator of an open area greater than one half acre located and whose operations are a dust generating activity or source shall implement one or more of the following dust control measures to stabilize disturbed or exposed soil surface areas that will be inactive for 30 days or more and to prevent off-property transport of fugitive dust emissions:

(i) **Vegetation**: plant vegetation appropriate for retaining soils or creating a wind break.

(ii) **Synthetic or natural cover**: install cover materials over exposed areas during periods of inactivity and properly anchor the cover.

(iii) **Surface roughening**: stabilize an exposed area during periods of inactivity or when vegetation cannot be immediately established.

(iv) **Soil retention**: stabilize disturbed or exposed soil surface areas that will be inactive for more than 30 days or while vegetation is being established.

(v) **Wet suppression**: apply water to disturbed soil surfaces as necessary and appropriate considering current weather to prevent off-property transport of fugitive dust emissions. Prevent water used for dust control from entering any public right-of-way, storm drainage facility, or watercourse.

(vi) **Wind barrier**: construct a snow fence or other type of wind barrier to prevent wind erosion of top soils.

(vii) **Chemical stabilization**: apply chemical stabilizers using manufacturer’s recommended application rates. Avoid over-application and prevent runoff of chemical stabilizers into any public right-of-way, storm drainage facility, or watercourse.
3.10 Saw Cutting and Grinding

Cutting and grinding of asphalt, concrete, and other masonry materials can be a significant source of fugitive dust that creates a nuisance condition and can expose workers and the public to crystalline silica. Inhalation of silica can cause lung disease known as silicosis and has been linked to other disease such as tuberculosis and lung cancer. Using engineering controls during cutting and grinding operations can significantly reduce dust emissions.

**Dust Control Measures**

(a) Any person, owner, or operator that cuts or grinds asphalt, concrete, brick, tile, stone, or other materials and whose operations are a dust generating activity or source shall implement the following dust control measures to prevent off property transport of fugitive dust emissions:

(i) **Restrict access**: prevent the public from entering the area where dust emissions occur.

(ii) **High winds restriction**: cease activity during local wind speeds greater than 30 miles per hour unless work area is enclosed.

(iii) **Equipment and work area clean up**: use wet wiping, wet sweeping, or vacuuming with HEPA filtration for equipment and work area clean up and do not cause dust to become airborne during clean up.

(iv) **Slurry clean up**: prevent water used for dust control or clean up from entering any public right-or-way, storm drainage facility, or watercourse by using containment, vacuuming, absorption, or other method to remove the slurry and shall dispose of slurry and containment materials properly. Follow additional procedures prescribed in the City’s *Fort Collins Stormwater Criteria Manual* or contract documents and specifications.

(v) **Engineering controls**: use one or more of the following engineering controls as necessary or as directed by a City code compliance officer when (i) – (iv) are not effective at preventing off-property transport:

(A) **On-tool local exhaust ventilation**: use a tool mounted dust capture and collection system.
(B) **On-tool wet suppression**: use a tool mounted water application system.

(C) **Vacuuming**: use a vacuum equipped with a HEPA filter simultaneously with cutting or grinding operations.

(D) **Wet suppression**: use a water sprayer or hose simultaneously with cutting or grinding operations.

(E) **Enclosure**: conduct cutting or grinding within an enclosure with a dust collection system or temporary tenting over the work area.
3.11 Abrasive Blasting

Abrasive blasting is used to smooth rough surfaces, roughen smooth surfaces, and remove paint, dirt, grease, and other coatings from surfaces. Abrasive blasting media may consist of sand, glass, plastic, or metal beads; aluminum oxide; corn cobs; or other materials. Abrasive blasting typically generates a significant amount of fugitive dust if not controlled. The material removed during abrasive blasting can become airborne and may contain silica, lead, cadmium or other byproducts removed from the surface being blasted.

**Dust Control Measures**

(a) Any person, owner, or operator who conducts outdoor abrasive blasting and whose operations are a dust generating activity or source shall implement the following dust control measures to prevent off property transport of fugitive dust emissions:

(i) **Restrict access:** prevent the public from entering the area where dust emissions occur.

(ii) **High winds restriction:** cease activity during local wind speeds greater than 30 miles per hour unless work area is enclosed.

(iii) **Equipment and work area clean up:** use wet wiping, wet sweeping, or vacuuming with HEPA filtration for equipment and work area clean up and do not cause dust to become airborne during clean up.

(iv) **Slurry clean up:** prevent water used for dust control or clean up from entering any public right-of-way, storm drainage facility, or watercourse by using containment, vacuuming, absorption, or other method to remove the slurry and dispose of slurry and containment materials properly.

(v) **Engineering controls:** use one or more of the following engineering controls as necessary or as directed by a City code compliance officer when (i) – (iv) are not effective at preventing off-property transport:

   (A) **Enclosure:** conduct abrasive blasting within an enclosure with a dust collection system or temporary tenting over the work area.
(B) **Wet suppression blasting:** use one of several available methods that mix water with the abrasive media or air during blasting operations.

(C) **Vacuum blasting:** conduct air-based blasting that uses a nozzle attachment with negative air pressure to capture dust.

(D) **Abrasive media:** select less toxic, lower dust-generating blasting media such as walnut shells, dry ice, sponge or baking soda.

* Blasting on surfaces that contain lead paint or wastes from sand blasting that contain hazardous materials may be subject to additional state and federal requirements.
3.12 Mechanical (Leaf) Blowing

Mechanical blowers are commonly used to move leaves, grass clippings, and other landscaping debris to a central location for easier pick-up and removal. Mechanical blowing with a leaf blower can be a significant source of fugitive dust in some situations and can create nuisance conditions and cause health effects for sensitive individuals. Mechanical leaf blowing can resuspend dust particles that contain allergens, pollens, and molds as well as pesticides, fecal contaminants, and toxic metals causing allergic reactions, asthma attacks and exacerbating other respiratory illness.

Dust Control Measures
(a) Any person, owner, or operator who operates a mechanical leaf blower (gas, electric, or battery powered) in a manner that is a dust generating activity or source shall implement the following dust control measures to prevent off property transport of fugitive dust emissions:

(i) Alternative method: use an alternative where possible, such as a rake, broom, shovel, manual push leaf sweeper or a leaf vacuum machine equipped with a filtration system.

(ii) Prevent impact: do not blow dust and debris towards people, animals, open windows, air intakes, or parked vehicles or onto adjacent property, public right-of-way, storm drainage facility, or watercourse.

(iii) Prevent use on dirt: do not use mechanical blower on unpaved lots, road shoulders or loose dirt or to spread fertilizer.

(iv) Low speed: use the lowest speed appropriate for the task.

(v) Operation: use the full length of the blow tube and place the nozzle as close to the ground as possible.
(vi) **Wet suppression**: use a light spray of water, as necessary and appropriate considering current weather conditions, to dampen dusty work areas. Prevent water, dirt, and debris from entering any storm drainage facility, or watercourse.

(vii) **Remove debris**: remove and properly dispose of blown material immediately.

(viii) **High winds restriction**: do not conduct leaf blowing when local wind speeds exceed 30 miles per hour.
4.0 Dust Control Plan for Land Development Greater Than 5 Acres

A dust control plan is required for all development projects or construction sites with a total disturbed surface area equal to or greater than five (5) acres. If the project is required to obtain a development construction permit, then the dust control plan shall be submitted with the development review application or the development construction permit application. If the project is not required to obtain a development construction permit, then a copy of the dust control plan shall be available onsite at all times for compliance and inspection purposes.

The dust control plan may be submitted on the Dust Control Plan Form included in Chapter 4 (or online at __________) or other equivalent format and shall include the following information:

- Project name and location.
- Name and contact information of property owner.
- Project start and completion dates.
- Name and contact information of the developer, general contractor, and each contractor or operator that will be engaged in an earthmoving activity.
- Total size of the development project or construction site in acres.
- A description of the phasing or sequencing of the project to minimize disturbed surface area and the maximum amount of disturbed surface area at any one time during the project.
- A list of each dust generating activity or source associated with the project.
- A list of each best management practice and engineering control that will be implemented for each dust generating activity or source.
- A list of engineering controls that will be implemented if initial controls are ineffective.
- A signed statement from the property owner, developer, general contractor, and each contractor or operator engaged in an earthmoving activity acknowledging receipt of the dust plan and an understanding of and ability to comply with the dust control measures in the plan.
### DUST CONTROL PLAN

**PROJECT INFORMATION**

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<th>Project Name</th>
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**PROJET PHASING OR SEQUENCING**

Provide a description of how this project will be phased or sequenced to minimize the disturbed surface area. Attach phasing plan or map if available.
**Instructions:** Place an X in each box indicating all dust control measures that will be implemented for each dust generating activity. Please refer to the Dust Prevention and Control Manual for requirements.

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<tr>
<th>Dust Generating Activity</th>
<th>Earthmoving</th>
<th>Demolition/Removal</th>
<th>Stockpile</th>
<th>Street Sweeping</th>
<th>Track-out/Carry-out</th>
<th>Bulk Materials</th>
<th>Transport</th>
<th>Unpaved Roads and Haul Roads</th>
<th>Parking Lot</th>
<th>Open Area</th>
<th>Saw Cutting or Sawdust Blowing</th>
<th>Abrasive Blasting</th>
<th>Leaf Blowing</th>
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Describe any other dust generating activities and dust control measures (not already indicated in the table above) that will be used to control fugitive dust emissions.
DUST CONTROL PLAN CERTIFICATION

I certify the information and attachments contained in this Dust Control Plan are true and correct to the best of my knowledge and that I have received a copy of this Dust Control Plan and acknowledge my understanding of and ability to comply with best management practices for controlling fugitive dust emissions. I hereby permit City officials to enter upon the property for the purpose of inspection of any dust generating activity or source for which I am the responsible person, owner, or operator.

Name: ________________________________

Title: __________________ Role on project: __________________

Address: __________________ Phone: __________________

Signature: ___________________________ Date: ______________

Name: ________________________________

Title: __________________ Role on project: __________________

Address: __________________ Phone: __________________

Signature: ___________________________ Date: ______________

Name: ________________________________

Title: __________________ Role on project: __________________

Address: __________________ Phone: __________________

Signature: ___________________________ Date: ______________

Name: ________________________________

Title: __________________ Role on project: __________________

Address: __________________ Phone: __________________

Signature: ___________________________ Date: ______________
5.0 Enforcement of Dust Control Requirements

It is the responsibility of any person, owner, or operator, who conducts a dust generating activity or who owns or operates a dust generating source to be aware of and comply with the requirements contained in this manual as well as any other local, county, state, and federal requirements related to the control of fugitive dust emissions. The City of Fort Collins will monitor the effectiveness of dust control measures for controlling fugitive dust through inspections and response to citizen complaints and concerns.

City inspectors conduct routine inspections in response to building permits, development construction permits, excavation permits, stockpile permits, erosion control plans, and a variety of infrastructure and capital improvement construction projects. Code compliance officers respond to citizen concerns and complaints to determine if a code violation has occurred. As a part of a routine inspection or in response to a citizen complaint, City inspectors or code compliance officers who have been trained in fugitive dust control will evaluate the presence and effectiveness of dust control measures that are in place at the site. Code compliance officers respond to complaints from citizens who are being impacted by fugitive dust.

If, during a routine inspection or a response to a specific complaint, there is evidence of off-property transport of fugitive dust emissions attributable to dust generating activities or sources at the inspection site and there are no or ineffective dust control measures in place, then the inspector or code compliance officer may take the following action(s):

- Determine if off-property or off-vehicle transport of fugitive dust emissions has or is occurring,
- Determine if dust control measures have been implemented appropriately and effectively,
- Direct the person, owner, or operator responsible for the dust generating activity or source to improve existing dust control measures,
- Direct the person, owner, or operator responsible for the dust generating activity or source to implement additional dust control measures,
- Allow a reasonable time for implementation of improved or additional dust control measures and re-inspect.
- Issue a notice of non-compliance in accordance with Municipal Code Chapter 1 §1-15 if dust control measures have not been improved or implemented that resolve the off-property or off-vehicle transport of fugitive dust emissions.

A violation of Municipal Code Chapter 12, §12-147 will not be issued if off-property transport of fugitive dust emissions occurs during periods of local wind speeds greater than 30 miles per hour if the person conducting the dust generating activity or the owner or operator of a dust generating source has implemented the dust control measures as described in this manual.

Cross Reference to Codes, Standards, Regulations, and Policies:

Fort Collins Land Use Code §2.14.3 Inspection.

Fort Collins Municipal Code §1-15. General penalty and surcharges for misdemeanor offenses, traffic offenses and traffic and civil infractions.
6.0 Resources

6.1 Cross Reference to Codes, Standards, Regulations, and Policies

**Earthmoving Activities**
Fort Collins Land Use Code Article 3 General Development Standards §3.2.2 Access, Circulation and Parking.

Fort Collins Land Use Code Article 3 General Development Standards §3.4.1(N) Standards for Protection During Construction.

Fort Collins Land Use Code Article 3 General Development Standards §3.4.2 Air Quality.

Fort Collins Municipal Code, Chapter 5 Buildings and Building Regulations, Section 5-27 (59) §3602.1.1 Building demolitions.

Fort Collins Municipal Code Chapter 20 Nuisances, Article 1 In General, §20-1 Air pollution nuisances prohibited

Fort Collins Municipal Code Chapter 23 Public Property §23-16. Permit required; exception in case of emergency.


Fort Collins Stormwater Criteria Manual, Volume 3, Chapter 7, Section 1.3 Policy, Standards and Submittal Requirements, §1.3.3.e.5.

Fort Collins Stormwater Criteria Manual – Fact Sheet SM-1 Construction Phasing/Sequencing and Fact Sheet EC-1 Surface Roughening.

Larimer County Land Use Code §8.11.4. Fugitive dust during construction.


**Demolition and Renovation**
Fort Collins Land Use Code, Division 2.7 Building Permits §2.7.1

Fort Collins Municipal Code, Chapter 5 Buildings and Building Regulations, Section 5-27 (59) §3602.1.1 Building demolitions.
Fort Collins Municipal Code Chapter 20 Nuisances, Article 1 In General, §20-1 Air pollution nuisances prohibited.


State of Colorado, Air Quality Control Commission, Regulation Number 8, Part B Control of Hazardous Air Pollutants, 5 CCR 1001-10.

**Stockpiles**
Fort Collins Land Use Code, Division 2.6 Stockpiling Permits and Development Construction Permits §2.6.2.

Fort Collins Land Use Code §2.6.3 (K) Stockpiling Permit and Development Construction Permit Review Procedures.

Fort Collins Municipal Code Chapter 20 Nuisances, Article 1 In General, §20-1 Air pollution nuisances prohibited.


Fort Collins Stormwater Criteria Manual Volume 3, Chapter 7, Section 1.3 Policy, Standards and Submittal Requirements, §1.3.3.e.7.


**Street Sweeping**
Fort Collins Municipal Code Chapter 20 Nuisances, Article 1 In General, §20-1 Air pollution nuisances prohibited.


Fort Collins Stormwater Criteria Manual - Fact Sheet SM-7 Street Sweeping and Vacuuming.

**Track-out/Carry-out**
Fort Collins Traffic Code, Part 1407 Spilling loads on highways prohibited.

Fort Collins Land Use Code §5.2.1 Definitions *Maintenance (of a newly constructed street)*.


Fort Collins Stormwater Criteria Manual, Volume 3, Chapter 7, Section 1.3 Policy, Standards and Submittal Requirements, §1.3.3.e.8.


Fort Collins Stormwater Criteria Manual – Fact Sheet SM-7 Street Sweeping and Vacuuming.


**Bulk Materials Transport**
Fort Collins Traffic Code, Part 1407 Spilling loads on highways prohibited.

Fort Collins Municipal Code Chapter 20 Nuisances, Article 1 In General, §20-1 Air pollution nuisances prohibited.


State of Colorado, Air Quality Control Commission, 5 CCR 1001-3, Regulation No. 1, §III.D.2.f Haul Trucks.

Colorado Revised Statutes. 42-4-1407 Spilling loads on highways prohibited.

**Unpaved Roads and Haul Roads**
Fort Collins Municipal Code Chapter 20 Nuisances, Article 1 In General, §20-1 Air pollution nuisances prohibited.


**Parking Lots**
Fort Collins Municipal Code Chapter 20 Nuisances, Article 1 In General, §20-1 Air pollution nuisances prohibited.


**Open Areas and Vacant Lots**
Fort Collins Municipal Code Chapter 20 Nuisances, Article 1 In General, §20-1 Air pollution nuisances prohibited.

**Saw Cutting and Grinding**
Fort Collins Municipal Code Chapter 20 Nuisances, Article 1 In General, §20-1 Air pollution nuisances prohibited.


Colorado Department of Transportation Standard Specifications for Road and Bridge Construction, Section 208.04 Best Management Practices for Stormwater.

**Abrasive Blasting**
Fort Collins Municipal Code Chapter 20 Nuisances, Article 1 In General, §20-1 Air pollution nuisances prohibited.


**Mechanical (Leaf) Blowing**
Fort Collins Municipal Code Chapter 20 Nuisances, Article 1 In General, §20-1 Air pollution nuisances prohibited.


6.2 City of Fort Collins Manuals and Policies


City of Fort Collins, Recommended Species and Application Rates of Perennial Native Upland Grass Seed for Fort Collins, Colorado.

City of Fort Collins Plant List, April 2011.
6.3 References for Dust Control

**Leaf Blowing**
http://www.arb.ca.gov/msprog/mailouts/msc0005/msc0005.pdf

**Abrasive Blasting**

Protecting Workers from the Hazards of Abrasive Blasting Materials, OSHA Fact Sheet.

California Air Resources Board, Abrasive Blasting Program.  
http://www.arb.ca.gov/ba/certabr/certabr.htm

**Saw Cutting**
OSHA Fact Sheet on Crystalline Silica Exposure  

State of New Jersey – Dry Cutting and Grinding Fact Sheet  
http://www.state.nj.us/health/surv/documents/dry_cutting.pdf

Centers for Disease Control and Prevention - Engineering Controls for Silica in Construction  
http://www.cdc.gov/niosh/topics/silica/cutoffsaws.html

http://www.cdc.gov/niosh/nioshtic-2/20042808.html


**Unpaved Roads, Parking Lots, and Open Areas**

*Colorado Forest Road Field Handbook*, Colorado State Forest, Editor: Richard M. Edwards, CF; CSFS Assistant Staff Forester, July 2011.


**Chemical Stabilizers**


**Street Sweeping**


**Agriculture and Livestock**


California Air Pollution Control Officers Association Agriculture Clearinghouse http://www.capcoa.org/ag-clearinghouse/


Demolition and Renovation
CDPHE, Demolition and Asbestos Abatement forms and information https://www.colorado.gov/pacific/cdphe/asbestos-forms

Earthmoving Activities

Working With Dirt When the Wind Blows http://www.gradingandexcavation.com/GX/Articles/Working_With_Dirt_When_the_Wind_Blows_5455.aspx


Health Effects of Particulate Matter

*Preventing Silicosis in Construction Workers*, NIOSH http://www.cdc.gov/niosh/docs/96-112/

**General**

*Dust Abatement Handbook*, Maricopa County Air Quality Department, June 2013.


Colorado Oil and Gas Conservation Commission, Rules and Regulations, Rule 805 Odors and Dust
http://cogcc.state.co.us/