



Quick Look Book

**Best Management
Practices (BMPs) for
Dust Control by Soil Type**

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ACRONYMS/DEFINITIONS

ASHTO - American Association of State Highway Transportation Officials

DAQ - Clark County Department of Air Quality

ASTM - American Society for Testing and Materials

Bulk material – Any material, including but not limited to, earth, rock, silt, sediment, sand, gravel, soil, fill, aggregate less than 2 inches in length or diameter, dirt, mud, demolition debris, cotton, trash, cinders, pumice, saw dust, feeds, grains, fertilizers, and dry concrete, which is capable of producing fugitive dust at an industrial, institutional, governmental, construction, and/or demolition site.

Control Measure – An action or practice employed to comply with a Control Requirement.

Control Requirement – A summary statement of the regulation requirements pertaining to a particular activity or action.

Dust Palliative – Hygroscopic material, non-toxic chemical stabilizer or other dust palliative material which is not prohibited for ground surface application by EPA or NDEP or any applicable law or regulation, as treatment material for reducing fugitive dust emissions.

Dust Suppressant – Water, hygroscopic material, solution of water and chemical surfactants, foam, non-toxic chemical stabilizer or any other dust palliative which is not prohibited for ground application by the EPA or NDEP or any applicable law or regulation, as treatment material for reducing fugitive dust emissions.

EPA – Environmental Protection Agency

NDEP – Nevada Division of Environmental Protection

Freeboard – The distance measured from the top of the side of storage area of a truck to the fill line.

Opacity – A visual measurement of the density of a particulate matter such as soil dust when suspended in air. Opacity is evaluated using specified test methods.

Optimum Soil Moisture Content – The water content at which soil can be compacted to the maximum dry weight by modified compactive effort using ASTM D 1557 for Optimum Soil Moisture Content/Maximum Density.

PEP - Particulate Emission Potential

Silhouette Area – The area of a shadow produced if a light was shown directly from the opposite side of an object.

Stable, and Stabilized – Stationary soils are considered stable or stabilized when they are in compliance with the standard set forth per Regulation Section 90. Soils that are being actively handled or disturbed by construction related activity or off-road construction traffic and vehicle parking are considered stable or stabilized when they are in compliance with the opacity and plume limitations set forth per Regulation Section 94. Unpaved haul roads are considered stable or stabilized when they are in compliance with standards set forth per Regulation Section 91. Test methods for stability are expected to be used when necessary, but are not required to be utilized continuously during active construction activity.

Staging area – Any portion of a construction project used for storing materials, parking vehicles, and equipment; may be a separate area from the main construction project area.

Surfactant – A compound or element that reduces the surface tension of a liquid. The term is used in this document to describe wetting and spray adjuvants designed to promote the economical application of water to hydrophobic soils. Surfactants prevent drifting, decrease run-off, increase the penetrating and wetting properties, and promote more even, consistent spray patterns.

Tack coat – An asphaltic material applied as a binder to Type II Aggregate prior to the placement of asphalt during road construction.

Tackifier – A substance mixed with water that binds together mulches, small particles, or other dust palliatives without forming a hard crust. Many dust palliatives, in a more dilute concentration, can be used as tackifiers.

Trackout – Soil on paved roadways deposited from vehicles that have passed from a construction site or from an unpaved access route onto the paved surface.

Type II Material – Base Aggregate as defined in Section 704 of the Uniform Standards Specifications for Public Works' Construction Off-Site Improvements, Clark County Area, Nevada.

Wheel shaker – A device capable of spreading the tread on tires and shaking the wheels and axles of vehicles for the purpose of releasing mud, soil, and rock from the tires and undercarriage to prevent tracking those materials onto paved surfaces.

Wheel washer – A station or device, either temporary or permanent, that utilizes a bath or spray of water for the purpose of cleaning mud, soil, and rock from the tires and undercarriage of vehicles to prevent tracking those materials onto paved surfaces.

Wobbler - Type of sprinkler head designed to minimize evaporation of water by enhancing the horizontal spray pattern.

BEST MANAGEMENT PRACTICES FOR DUST CONTROL

Best Management Practices are site-specific dust control measures that are based on each project soil type, specific construction activities, phases and stages. These practices must be included in each Dust Mitigation Plan and are established to meet the goal of reducing particulate emissions from construction sites. Additionally, some practices are designed for the purpose of reducing the amount of water needed for dust control.

1. Soil Type Categories

Soil types are classified into five categories (high, moderately high, moderately low, low, and slight) based on their particulate emission potential (PEP). The fifth category, “slight”, is created solely to identify areas of bedrock outcrops. PEP is determined by soil silt content (measured by the soil percentage that will pass through a 200-mesh sieve) and optimum moisture content (measured by the percent of moisture necessary to compact soils).

Figure 1 depicts a “decision flowchart” using these parameters. A graph, which plots measured optimum moisture content vs. silt content for Las Vegas Valley soils, is used to classify PEP and is included as Figure 2. If optimum moisture content or silt content is not known for a specific project location, maps of Clark County and Las Vegas Valley delineating the five soil type categories are provided as Figures 3 and 4, respectively.

Soil type category maps are to be used as a guideline. The actual measured silt content and moisture content for maximum compaction shall take precedence over any mapped soil type categories. Permit holders shall immediately modify their Dust Control Permit if construction site soils are found to be different than mapped categories.

2. Best Management Practices

The following subsections list the current Best Management Practices (BMPs) developed and approved for use in Clark County for dust mitigation for construction activities. The BMPs are organized alphabetically by construction activity.

The Control Requirements of each construction activity category to be conducted on the construction project must be met through implementation of Control Measures. Within most construction activity categories, there are choices of Control Measure(s) to be selected from to meet the Control Requirements. Control Requirements are stated for each construction activity. All Control Measures that will be used to meet the Control Requirements on the construction project must be identified in the Dust Mitigation Plan for each construction activity.

Control Measures are presented by soil type category where applicable. Some Control Measures apply to construction activities regardless of soil type. The Control Measures selected to meet Control Requirements must address the soil type for the area in which the construction project is permitted (see Figures 3 and 4).

Control Measures not currently listed in the Dust Control Handbook may be proposed in a Dust Mitigation Plan. Such unlisted Control Measures will be reviewed by DAQ staff and may require additional information regarding their effectiveness. Any unlisted Control Measure must clearly meet the Control Requirements for an activity category.

The DAQ will apply the following minimum criteria when evaluating any unlisted Control Measures that are proposed to meet the Control Requirements for a BMP:

1. The Control Measure technique is a new or alternative technology that is demonstrated to be equally or more effective in meeting the Control Requirement than the existing Control Measures; or
2. Site logistics do not practically allow for implementation of a listed Control Measure as written (e.g. road width or pre-existing barriers limit the size or width of a gravel pad); or
3. The owner/operator demonstrates that a listed Control Measure is technically infeasible due to site-specific or material-specific conditions, such that implementation of the Control Measure will not provide a benefit in reducing fugitive dust (e.g. pre-soaking screened, washed rock when handling).

Permit deviations from specific soil type BMPs in the form of a “downgrade” to the BMPs listed for a soil type with a lower PEP, or applying a Control Measure listed for all soil types in lieu of a specific soil type BMP, are not approvable unless demonstrated to meet at least one of the above criteria.

BACKFILLING

BMP 01

Definition: Filling area previously excavated or trenched.

Requirement: Stabilize backfill material when not actively handling.

- 01-1 Water backfill material to maintain moisture or to form crust when not actively handling.
- 01-2 Apply and maintain a dust palliative to backfill material to form crust when not actively handling.
- 01-3 Cover or enclose backfill material when not actively handling.

Requirement: Stabilize backfill material during handling.

- 01-4 Empty loader bucket slowly and minimize drop height from loader bucket.
- 01-5 Dedicate water truck or large hose to backfilling equipment and apply water as needed.

Note: Select at least one of the above; in addition the appropriate control measure for your soil type must be selected from the following.

- 01-6 **L:** Mix moist soil with dry soil until the optimum moisture is reached.
- 01-7 **ML:** Apply and mix water into the backfill material until optimum moisture is reached.
- 01-8 **MH:** Apply and mix water and tackifier solution into the backfill material until optimum moisture is reached.
- 01-9 **H:** Apply and mix water and surfactant solution into the backfill material until optimum moisture is reached.

Requirement: Stabilize soil at completion of backfilling activity.

- 01-10 Apply water and maintain disturbed soils in a stable condition until permanent stabilization is complete.
- 01-11 Apply and maintain a dust palliative on disturbed soils to form a crust following backfilling activity.

Requirement: Stabilize material while using pipe padder equipment.

- 01-12 Mix moist soil with dry soil until the optimum moisture is reached.
- 01-13 Dedicate water truck or large hose to equipment and apply water as needed.

BLASTING – Abrasive

BMP 02

Definition: Sandblasting and/or abrasive blasting.

Requirement: Stabilize surface soils where support equipment and vehicles will operate.

- 02-1 Pre-water and maintain surface soils in a stabilized condition where support equipment and vehicles will operate.
- 02-2 Apply and maintain a dust palliative on surface soils where support equipment and vehicles will operate.

Requirement: Limit visible emissions to no more than an average of 40% opacity for any period aggregating 3 minutes in any 60-minute period pursuant to Air Quality Regulations.

- 02-3 Hydro-blasting, using water as the propellant, must be conducted in a manner to maintain visible emissions within opacity standards.
- 02-4 Dry, unconfined blasting with abrasive material must use only those abrasives that are approved and certified by the California Air Resources Board (CARB) for such use (see Attachment 3: CARB-Approved Abrasives Information).

Requirement: Stabilize particulate matter in surrounding area following blasting.

- 02-5 Clean particulate material from surrounding area and water disturbed soils following blasting.
- 02-6 Apply and maintain a dust palliative to surrounding area following blasting.

Recommendation: Abrasive blasting should be conducted within an enclosed structure whenever possible to preclude the release of visible emissions to the atmosphere.

BLASTING – Soil and Rock

BMP 03

Definition: Explosive blasting of soil and rock.

Requirement: A Blasting Supplemental form must be filled out, submitted and approved by the DAQ prior to any blasting (see Appendix A: Dust Control Permit Supplemental Forms)

Requirement: No blasting within 1,500 feet of a residential area, occupied building or major roadway, when wind direction is toward these structures.

Requirement: Blasting shall be between the hours of 8:00 a.m. and 4:30 p.m., excluding Saturdays, Sundays and holidays unless prior permission is obtained from the Control Officer.

Requirement: No blasting allowed when the National Weather Service forecasts wind gusts above 25 miles per hour (mph).

03-1 Prior to setting explosive charges in holes, document current and predicted weather conditions as provided by the National Weather Service. If the current forecast is for wind gusts of 25 mph or greater or they are forecasted to be 25 mph or greater within the next 24 hours, do not charge any blast holes. When setting explosive charges, monitor weather reports for wind gusts of 25 mph or greater on the National Weather Service Radio and/or Internet sites. If wind gusts above 25 mph are stated, discontinue charging additional blast holes. Limit the blast to holes charged at time the wind report is made.

Requirement: Stabilize surface soils where drills, support equipment and vehicles will operate.

03-2 Pre-water and maintain surface soils in a stabilized condition where drills, support equipment and vehicles will operate.

03-3 Apply and maintain a dust palliative on surface soils where drills, support equipment and vehicles will operate.

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Requirement: Stabilize soil during blast preparation activities.

- 03-4 Limit the blast footprint area to no larger than what can be practically stabilized immediately following the blast.
- 03-5 Maintain surface rock and vegetation where possible to reduce exposure of disturbed soil to wind.

Note: Select at least one of the above; in addition the appropriate control measure for your soil type must be selected from the following.

- 03-6 **L & ML:** Presoak surface soils to depth of the caliche or bedrock with water using water trucks, water pulls, sprinklers or wobblers.
- 03-7 **MH:** Presoak surface soils to depth of the caliche or bedrock with water and tackifier mixture using water trucks, water pulls, sprinklers or wobblers.
- 03-8 **H:** Presoak surface soils to depth of the caliche or bedrock with water and surfactant mixture using water trucks, water pulls, sprinklers or wobblers.

Requirement: Stabilize soil after blasting.

- 03-9 Water disturbed soils to form crust immediately following blast and safety clearance.
- 03-10 Apply and maintain a dust palliative to form crust immediately following blast and safety clearance.

See also: BMP 11: DISTURBED LAND – Long-Term Stabilization, if no continuing activity will occur within 30 days.

CLEARING AND GRUBBING

BMP 04

Definition: Clearing and grubbing for site preparation and vacant land cleanup.

Requirement: Stabilize surface soils where support equipment and vehicles will operate.

- 04-1 Pre-water and maintain surface soils in a stabilized condition where support equipment and vehicles will operate.
- 04-2 Apply and maintain a dust palliative on surface soils where support equipment and vehicles will operate.

Requirement: Stabilize soil during clearing and grubbing activities.

- 04-3 **L & ML:** Apply water during clearing and grubbing activities.
- 04-4 **MH:** Apply water and tackifier mixture during clearing and grubbing activities.
- 04-5 **H:** Apply water and surfactant mixture during clearing and grubbing activities.

Requirement: Stabilize disturbed soil immediately after clearing and grubbing activities.

- 04-6 Water disturbed soils to form crust immediately following clearing and grubbing activities.
- 04-7 Apply and maintain a dust palliative on disturbed soils to form crust immediately following clearing and grubbing activities.

Recommendations: Maintain live perennial vegetation and desert pavement where possible.

See also: BMP 11: DISTURBED LAND – Long-Term Stabilization, if no continuing activity will occur within 30 days.

CLEARING FORMS, FOUNDATIONS AND SLABS

BMP 05

Definition: Clearing and cleaning of forms, foundations and slabs.

Requirement: Limit visible emissions to no more than an average of 20% opacity for any period aggregating 3 minutes in any 60-minute period pursuant to Air Quality Regulations.

05-1 Use single stage pours, unless prohibited by engineering design or building code, to minimize clearing.

Note: At least one of the following must be selected.

05-2 Use water spray to clear forms, foundations and slabs.

05-3 Use sweeping and water spray to clear forms, foundations and slabs.

05-4 Use industrial vacuum to clear forms, foundations and slabs prior to the use of high pressure air to blow soil and debris.

05-5 Use industrial vacuum to clear forms, foundations and slabs.

Recommendations: Verify Building Code Restrictions for use of water on slabs.

Avoid use of high pressure air to blow soil and debris from forms, foundations and slabs.

CRUSHING

BMP 06

Definition: Crushing of construction and demolition debris, rock and soil.

Requirement: Obtain the appropriate Operating Permit for powered crushers prior to engaging in crushing activity. Comply with permit conditions.

Requirement: Stabilize surface soils where support equipment and vehicles will operate.

06-1 Pre-water and maintain surface soils in a stabilized condition where support equipment and vehicles will operate.

06-2 Apply and maintain a dust palliative to surface soils where support equipment and vehicles will operate.

Requirement: Stabilize material before crushing.

06-3 Pre-water material prior to loading into crusher.

06-4 Test material to determine moisture content and silt loading, crush only material that is at optimum moisture content.

Requirement: Stabilize material during crushing.

06-5 Apply water to stabilize material so as to remain in compliance with opacity standards and permit conditions, during crushing.

06-6 Monitor emissions opacity. Make adjustments to remain in compliance with opacity standards and permit conditions.

Requirement: Stabilize material after crushing.

06-7 Water crushed material to form crust immediately following crushing.

06-8 Apply and maintain a dust palliative to crushed material.

See also: BMP 19. STOCKPILING

CUT AND FILL

BMP 07

Definition: Cut and/or fill soils for site grade preparation.

Requirement: Stabilize surface soils where support equipment and vehicles will operate.

- 07-1 Pre-water and maintain surface soils in a stabilized condition where support equipment and vehicles will operate.
- 07-2 Apply and maintain a dust palliative to surface soils where support equipment and vehicles will operate.

Requirement: Pre-water soils.

- 07-3 Dig a test hole to depth of cut or equipment penetration to determine if soils are moist at depth. Continue to pre-water if not moist to depth of cut.
- 07-4 **L & ML:** Pre-water with sprinklers or wobblers to allow time for penetration.
- 07-5 **L & ML:** Pre-water with water trucks or water pulls to allow time for penetration.
- 07-6 **MH:** Pre-water with a water and tackifier mixture using sprinklers or wobblers to allow time for penetration.
- 07-7 **MH:** Pre-water with a water and tackifier mixture using water trucks or water pulls to allow time for penetration.
- 07-8 **H:** Pre-water with a water and surfactant mixture using sprinklers or wobblers to allow time for penetration.
- 07-9 **H:** Pre-water with a water and surfactant mixture using water trucks or water pulls to allow time for penetration.

Requirement: Stabilize soil during cut activities.

- 07-10 Apply water, using water truck or water pull, to depth of cut prior to subsequent cuts.
- 07-11 No cut activities fill only.

Requirement: Stabilize soil after cut and fill activities.

- 07-12 Water disturbed soils to form crust following fill and compaction.
- 07-13 Apply and maintain a dust palliative on disturbed soils to form crust following fill and compaction.

See also: BMP 11: DISTURBED LAND – Long-Term Stabilization if no continuing activity will occur within 30 days.

DEMOLITION – Implosion

BMP 08

Definition: Implosive blasting demolition of structure.

- Requirement: A Demolition Supplemental form (see Appendix A) and a Supplement To The Dust Mitigation Plan (see Appendix B) must be filled out, submitted and approved by the Control Officer prior to implosion.**
- Requirement: An asbestos survey must be conducted on any facility before demolition can commence.**
- Requirement: A complete Clark County NESHAP Notification form must be submitted to the DAQ at least ten working days prior to demolition. The asbestos survey must be attached to this notification.**
- Requirement: All friable and non-friable asbestos containing material must be removed from the facility prior to implosion.**
- Requirement: Confine blasting to times when wind direction is away from closest residential areas, occupied buildings and major roadways.**
- Requirement: Implosion time must be pre-approved by the Control Officer.**
- Requirement: Monitor and document current weather conditions and weather predictions from National Weather Service.**
- 08-1 Prior to setting explosive charges, obtain and document current and predicted weather conditions as provided by the National Weather Service. If wind advisory (over 20 miles per hour gusts or average wind speed of 10 miles per hour) is current or forecasted for blast period, do not set charges and do not blast. Maintain a calibrated anemometer and log ambient air velocity and direction within 1,000 feet of the implosion site, beginning at least 1 (one) hour prior to and 15 minutes after the implosion.

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Requirement: Stabilize surface area where support equipment and vehicles will be operated.

08-2 Restrict support equipment and vehicles to existing paved and/or stable areas.

Note: You must select one of the following if paved and/or stable areas do not already exist and you have not selected 08-2.

08-3 Pre-water and maintain surface soils in a stabilized condition where support equipment and vehicles will operate.

08-4 Apply and maintain a dust palliative on surface soils where support equipment and vehicles will be operated.

Requirement: Stabilize demolition debris immediately following blast and safety clearance.

08-5 Apply water to debris immediately following blast and safety clearance.

08-6 Apply and maintain a dust palliative to debris immediately following blast and safety clearance.

Requirement: Stabilize and clean surrounding area immediately following blast and safety clearance.

08-7 Water all disturbed soil surfaces to establish crust and prevent wind erosion of soil.

08-8 Thoroughly clean blast debris from paved and other surfaces following blast and safety clearance.

See also: BMP 23: TRUCK LOADING.

DEMOLITION - Mechanical/Manual

BMP 09

Definition: Mechanical and manual demolition of walls, stucco, concrete, freestanding structures, buildings, load-bearing walls and removal of transite pipe

Requirement: For renovation or demolition of a structure, a Demolition Supplemental form (see Appendix A) must be filled out, submitted and approved by the Control Officer prior to commencing demolition.

Requirement: An asbestos survey must be conducted on any facility or structure that is subject to NESHAP requirements before demolition can commence.

Requirement: A complete Clark County NESHAP Notification form must be submitted to the DAQ at least ten working days prior to demolition. The asbestos survey must be attached to this notification.

Requirement: Stabilize surface soils where support equipment and vehicles will operate.

09-1 Pre-water and maintain surface soils in a stabilized condition where support equipment and vehicles will operate.

09-2 Apply and maintain a dust palliative to surface soils where support equipment and vehicles will operate.

09-3 Area where support equipment and vehicles will operate is completely covered with paving or concrete.

Requirement: Stabilize demolition debris during handling.

09-4 Apply water to demolition debris during handling.

Requirement: Stabilize debris following demolition.

09-5 Apply water to stabilize demolition debris.

09-6 Apply a dust palliative to stabilize demolition debris.

Requirement: Stabilize surrounding area following demolition.

09-7 Apply water to stabilize surrounding area following demolition.

09-8 Apply and maintain a dust palliative to stabilize surrounding area following demolition.

See also: BMP 23: TRUCK LOADING.

DISTURBED SOIL

BMP 10

Definition: Disturbed soil throughout project including between structures.

Requirement: For each non-linear project to be permitted for 5 acres or less; install perimeter wind barrier 3 feet or more in height made of material with a porosity of 50% or less.

Requirement: Limit vehicle traffic and disturbance of soils where possible.

10-1 Limit vehicle traffic and disturbance of soils with the use of fencing, barriers, barricades, and/or wind barriers.

Requirement: Stabilize and maintain stability of all disturbed soil throughout construction site.

Note: You must choose one or more of the following.

10-2 Apply water to stabilize disturbed soils. Soils must be kept in a sufficiently damp, crusted or covered condition.

10-3 Apply and maintain a dust palliative based on soil type and future plans.

Requirement: Soil conditions, including preventive and corrective measures, must be recorded every day the construction project is active.

10-4 Record soil conditions and dust control actions in daily project records.

Recommendations: If interior block walls are planned, install as early in the construction as possible.

See also: BMP 11: DISTURBED LAND – Long-Term Stabilization, if no continuing activity will occur within 30 days.

DISTURBED LAND – Long-Term Stabilization

BMP 11

Definition: Large tracts of disturbed land that will not have continuing activity for more than 30 days.

Requirement: Stabilize soil to meet standards required by Air Quality Regulation Section 90.

- 11-1 Apply and maintain a dust palliative on disturbed soils for long-term stabilization.
- 11-2 Stabilize disturbed soil with vegetation for long-term stabilization.
- 11-3 Pave or apply surface rock for long-term stabilization.
- 11-4 Use wind breaks in accordance with a site-specific plan approved by the Control Officer and Region IX Administrator of the EPA.
- 11-5 Apply water and maintain soils in a visible damp or crusted condition for temporary stabilization.

Requirement: Prevent access to limit soil disturbance.

- 11-6 Prevent access by fencing, ditches, vegetation, berms or other suitable barrier or means approved by the Control Officer.

Recommendations: Plant perimeter vegetation early. Use of native and drought-tolerant plants with greater than 50 % silhouette area is encouraged.

See also: BMP 12: DUST SUPPRESSANT, DUST PALLIATIVE AND SURFACTANT – Selection and Use.

DUST PALLIATIVE – Selection and Use

BMP 12

Definition: Selection and use of chemical and organic dust suppressing agents and other dust palliatives.

Requirement: Follow AQD “Interim Policy on Dust Palliatives Use In Clark County, Nevada”.

Requirement: Record use of suppressants and dust palliatives and retain records.

Requirement: Follow applicable federal and state regulations.

Requirement: Select method of long-term stabilization taking into consideration future land use.

12-1 For traffic area applications use Table 1: Traffic Area Application Requirements, Appropriate Use of Liquid Dust Palliatives and Application Rates, from the Interim Policy on Dust Palliatives Use In Clark County, Nevada.

12-2 For non-traffic area applications use Table 2: Non-Traffic Area Application Requirements, Appropriate Use of Liquid Dust Palliatives and Application Rates, from the Interim Policy on Dust Palliatives Use In Clark County, Nevada.

IMPORTING/EXPORTING SOIL, ROCK AND OTHER BULK MATERIAL

BMP 13

Definition: Importing or exporting of soil, aggregate, decorative rock, debris, Type II and other bulk material.

Requirement: Limit visible dust opacity from vehicular operations.

- 13-1 Apply water and limit vehicle speeds to 15 mph on the work site.
- 13-2 Apply and maintain dust suppressant on haul routes.

Requirement: Check belly-dump truck seals regularly and remove any trapped rocks to prevent spillage.

Requirement: Maintain 3-6 inches of freeboard to minimize spillage.

Requirement: Stabilize materials during transport on site.

- 13-3 Use tarps or other suitable enclosures on haul trucks.
- 13-4 Stabilize materials with water.

Requirement: Clean wheels and undercarriage of haul trucks prior to leaving construction site.

Recommendations: Verify State and local laws, concerning the hauling of bulk materials on public roadways.

See also: BMP 20: TRACKOUT PREVENTION AND CLEANUP.
BMP 23: TRUCK LOADING.

LANDSCAPING

BMP 14

Definition: Installation of sod, decorative rock, desert or other landscape material.

Requirement: Stabilize soils, materials and slopes during handling.

- 14-1 **L & ML:** Apply water prior to leveling or any other earth moving activity to keep the soil moist throughout the process.
- 14-2 **MH:** Apply a water and tackifier mixture prior to leveling or any other earth moving activity to keep the soil moist throughout the process.
- 14-3 **H:** Apply a water and surfactant mixture prior to leveling or any other earth moving activity to keep the soil moist throughout the process.

Requirement: Stabilize soils, materials and slopes at completion of activity.

- 14-4 Stabilize sloping surfaces using soil binders until vegetation or ground cover can effectively stabilize the slope.
- 14-5 Apply water and maintain sloping surfaces in a crusted condition.
- 14-6 Maintain effective cover over materials.

PAVING/SUBGRADE PREPARATION

BMP 15

Definition: Subgrade preparation for paving streets, parking lots, etc.

Requirement: Stabilize soils prior to activities.

- 15-1 Pre-water subgrade surface until optimum moisture content is reached and maintained.

Requirement: Stabilize soils during activities.

- 15-2 Maintain at least 70% of optimum moisture content for Type II material while aggregate is being applied.

Requirement: Stabilize soils following activities.

- 15-3 Place tack coat on Type II aggregate base immediately after it is applied.
- 15-4 Apply water to Type II aggregate base immediately after it is applied.

Requirement: Stabilize adjacent disturbed soils following paving activities.

- 15-5 Stabilize adjacent disturbed soils following paving activities by crusting with water.
- 15-6 Stabilize adjacent disturbed soils following paving activities by applying a dust palliative.
- 15-7 Stabilize adjacent disturbed soils following paving activities with immediate landscaping activity or installation of vegetative or rock cover.
- 15-8 There are no soils adjacent to paving activities.

SAWING/CUTTING MATERIALS

BMP 16

Definition: Sawing or cutting materials such as concrete, asphalt, block or pipe.

Requirement: Limit visible emissions to no more than an average of 20% opacity, pursuant to Air Quality Regulations.

- 16-1 Use water to control dust when cutting materials.
- 16-2 Use a vacuum to collect dust when cutting materials.

SCREENING

BMP 17

Definition: Screening of rock, soil or construction debris.

Requirement: If using a powered screen, obtain the appropriate Operating Permit for powered screens prior to engaging in screening activity. Comply with permit conditions.

Requirement: Drop material through the screen slowly and minimize drop height.

Requirement: Stabilize surface soils where support equipment and vehicles will operate.

- 17-1 Pre-water and maintain surface soils in a stabilized condition where support equipment and vehicles will operate.
- 17-2 Apply and maintain a dust palliative on surface soils where support equipment and vehicles will operate.

Requirement: Pre-treat material prior to screening.

- 17-3 Apply sufficient water to obtain at least 70% optimum moisture in material prior to screening.
- 17-4 Apply a dust suppressant to material prior to screening.

Requirement: Stabilize material during screening.

- 17-5 Dedicate water truck or large hose to screening operation and apply water as needed to prevent dust.
- 17-6 Apply water to material as it is being dropped through the screen.
- 17-7 Install wind barrier upwind of screen as high as the screen drop point and made of material with a porosity of 50% or less.

Requirement: Stabilize material and surrounding area immediately after screening.

- 17-8 Apply water to stabilize screened material and surrounding area after screening.
- 17-9 Apply and maintain a dust palliative to stabilize screened material and surrounding area after screening.

See also: BMP 19: STOCKPILING

STAGING AREAS

BMP 18

Definition: Staging areas, equipment storage and material storage areas.

Requirement: Limit visible dust opacity from vehicular operations.

- 18-1 Limit vehicle speeds to 15 mph in the staging area and on all unpaved access routes.
- 18-2 Apply and maintain dust suppressant on all vehicle traffic areas in the staging areas and unpaved access routes.

Requirement: Stabilize staging area soils during use.

- 18-3 Pre-water and maintain surface soils in a stabilized condition where support equipment and vehicles will operate.
- 18-4 Apply and maintain a dust palliative to surface soils where support equipment and vehicles will be operated.

Requirement: Stabilize staging area soils at project completion.

- 18-5 Apply a dust palliative.
- 18-6 Apply screened or washed Type II aggregate.
- 18-7 Use wind breaks in accordance with a site-specific plan approved by the Control Officer and Region IX Administrator of the EPA.
- 18-8 Pave with thin paving.
- 18-9 Completed project will cover staging area with buildings, paving, and/or landscaping.
- 18-10 Apply water to form adequate crust and prevent access.

Recommendations: Limit size of staging areas.
Limit ingress and egress points.

See also: BMP 20: TRACKOUT PREVENTION AND CLEANUP

STOCKPILING

BMP 19

Definition: Stockpiling of materials, such as Type II, rock or debris, for future use or export.

Requirement: To the extent possible, maintain stockpile to avoid steep sides or faces.

Requirement: Stockpile location and height must be maintained pursuant to Air Quality Regulations. Stockpiles located within 100 yards of occupied buildings must not be constructed over 8 feet in height.

19-1 Stockpiles will not be constructed over 8 feet in height.

19-2 Stockpiles will be constructed over 8 feet high and must have a road bladed to the top to allow water truck access or must have a sprinkler irrigation system installed, used and maintained

Requirement: Stabilize surface soils where support equipment and vehicles will operate.

19-3 Pre-water and maintain surface soils in a stabilized condition where support equipment and vehicles will operate.

19-4 Apply and maintain a dust palliative on surface soils where support equipment and vehicles will operate.

Requirement: Stabilize stockpile materials during handling.

19-5 Maintain stockpile materials with at least 70% optimum moisture content.

19-6 Remove material from the downwind side of the stockpile, when safe to do so.

Note: Select at least one of the above; in addition the appropriate control measure for your soil type must be selected from the following.

19-7 **L & ML:** Apply water during stacking, loading and unloading operations.

19-8 **MH:** Apply a water and tackifier mixture during stacking, loading and unloading operations.

19-9 **H:** Apply a water and surfactant mixture during stacking, loading and unloading operations.

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Requirement: Stabilize stockpiles at completion of activity.

- 19-10 Water stockpiles to form a crust immediately at the completion of activity.
- 19-11 Apply and maintain a dust palliative to all outer surfaces of the stockpiles.
- 19-12 Provide and maintain wind barriers on 3 sides of the pile, whose length is no less than equal to the length of the pile, whose distance from the pile is no more than twice the height of the pile, whose height is equal to the pile height, and made of material with a porosity of 50% or less.
- 19-13 Apply a cover or screen to stockpiles.

TRACKOUT PREVENTION AND CLEANUP

BMP 20

Definition: Prevention and cleanup of mud, silt and soil tracked out onto paved roads.

Requirement: In soils that have a PEP classification of “High”, pave construction activities roadways as early as possible.

Requirement: Use of soil to create a ramp for vehicle access over a curb is prohibited.

Requirement: Trackout conditions, including preventive and corrective measures, must be recorded daily for every day that the construction project access is used by vehicles.

20-1 Record soil conditions and dust control actions in daily project records.

Requirement: Prevent dust from trackout.

20-2 Immediately clean trackout from paved surfaces to maintain dust control. Trackout must not extend 50 feet or more.

20-3 Maintain dust control during working hours and clean trackout from paved surfaces at the end of the work shift/day. Trackout must not extend 50 feet or more and must be cleaned daily, at minimum.

Requirement: Install and maintain trackout control devices in effective condition at all access points where paved and unpaved access or travel routes intersect.

20-4 Install gravel pad(s) consisting of 1” to 3” rough diameter, clean, well-graded gravel or crushed rock. Minimum dimensions must be 30 feet wide by 3 inches deep, and, at minimum, 50’ or the length of the longest haul truck, whichever is greater. Re-screen, wash or apply additional rock in gravel pad to maintain effectiveness.

20-5 Install wheel shakers. Clean wheel shakers on a regular basis to maintain effectiveness.

20-6 Install wheel washers. Maintain wheel washers on a regular basis to maintain effectiveness.

20-7 Install wheel shakers in the event that trackout cannot be controlled with gravel pads.

20-8 Install wheel washer in the event that trackout cannot be controlled with gravel pads and wheel shakers.

20-9 Motorized vehicles will only operate on paved surfaces.

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Requirement: All exiting traffic must be routed over selected trackout control device(s).

20-10 Clearly establish and enforce traffic patterns to route traffic over selected trackout control device(s).

20-11 Limit site accessibility to routes with trackout control devices in place by installing effective barriers on unprotected routes.

TRAFFIC – Unpaved Routes and Parking Areas

BMP 21

Definition: Construction related traffic on unpaved interior and/or access roads and unpaved employee/worker parking areas.

Requirement: Limit visible dust opacity from vehicular operations.

- 21-1 Limit vehicle speeds to 15 mph on all unpaved routes and parking areas.
- 21-2 Apply and maintain dust palliative on all vehicle travel areas.

Requirement: Stabilize all haul routes.

- 21-3 Apply water to haul routes and maintain in a stabilized condition.
- 21-4 Apply a dust palliative to haul routes and maintain in a stabilized condition.
- 21-5 Apply gravel to haul routes and maintain in a stabilized condition.
- 21-6 Supplement dust palliative or aggregate applications with watering, if necessary.

Requirement: Stabilize all off-road and parking areas.

- 21-7 Apply water to off-road traffic and parking areas and maintain in a stabilized condition.
- 21-8 Apply gravel to off-road traffic and parking areas and maintain in a stabilized condition.
- 21-9 Apply recycled asphalt (or other suitable material) to off-road traffic and parking areas and maintain in a stabilized condition.
- 21-10 Apply and maintain a dust palliative (designed for vehicle traffic) to off-road traffic and parking areas and maintain in a stabilized condition.

Recommendations: Use of bumps or dips for speed control is encouraged.

Apply paving as soon as possible to all future roadway areas for PEP categories other than “High”.

TRENCHING

BMP 22

Definition: Trenching with track or wheel mounted excavator, shovel, backhoe or trencher.

Requirement: Stabilize surface soils where trenching equipment, support equipment and vehicles will operate.

- 22-1 Pre-water and maintain surface soils in a stabilized condition where trenching equipment, support equipment and vehicles will operate.
- 22-2 Apply and maintain a dust palliative to surface soils where trenching equipment, support equipment and vehicles will operate.

Requirement: Presoak soils prior to trenching activities.

- 22-3 Pre-water surface, pre-trench to 18" depth, soak soils via pre-trench prior to deep trenching.
- 22-4 **L & ML:** Presoak soil with water using sprinklers or wobblers.
- 22-5 **L & ML:** Presoak with water, using water truck and/or water pull.
- 22-6 **MH:** Presoak soil with a water and tackifier mixture using water pulls and/or water trucks.
- 22-7 **MH:** Presoak soil with a water and tackifier mixture using sprinklers or wobblers.
- 22-8 **H:** Presoak soil with a water and surfactant mixture using water pulls and/or water trucks.
- 22-9 **H:** Presoak soil with a water and surfactant mixture using sprinklers or wobblers.

Requirement: Stabilize soil during trenching activities.

- 22-10 **L & ML:** Complete trenching with a dedicated water truck or large hose maintaining water as needed to prevent dust.
- 22-11 **L & ML:** Use spray nozzles mounted on trenching machine.
- 22-12 **MH:** Complete trenching with a dedicated water truck or large hose maintaining a water and tackifier mixture as needed to prevent dust.
- 22-13 **H:** Complete trenching with a dedicated water truck or large hose maintaining a water and surfactant mixture as needed to prevent dust.

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Requirement: Stabilize soils at the completion of trenching activities.

- 22-14 Use water to form crust on excavated soil windrow as it is formed.
- 22-15 Use dust palliative to form crust on excavated soil windrow as it is formed.

Recommendations: Wash mud and soil from equipment at completion of trench to prevent crusting and drying of soil on equipment.

See also: BMP 01: BACKFILLING, if applicable.

TRUCK LOADING

BMP 23

Definition: Loading trucks with materials including construction and demolition debris, rock and soil.

Requirement: Ensure all loads are covered prior to leaving the construction site and traveling on public roadways.

Requirement: Stabilize surface soils where loaders, support equipment and vehicles will operate.

23-1 Pre-water and maintain surface soils in a stabilized condition where loaders, support equipment and vehicles will operate.

23-2 Apply and maintain a dust palliative on surface soils where loaders, support equipment and vehicles will operate.

Requirement: Stabilize material during loading.

23-3 Empty loader bucket slowly and keep loader bucket close to the truck to minimize the drop height while dumping.

Note: You must selected 23-3 if PEP is greater than LOW, in addition one of the following must be selected.

23-4 **L & ML:** Mix material with water prior to loading.

23-5 **L & ML:** Spray material with water while loading.

23-6 **MH:** Mix material with a water and tackifier mixture prior to loading.

23-7 **MH:** Spray material with a water and tackifier mixture while loading.

23-8 **H:** Mix material with a water and surfactant mixture prior to loading.

23-9 **H:** Spray material with a water and surfactant mixture while loading.