SECTION 90: FUGITIVE DUST FROM OPEN AREAS AND VACANT LOTS

90.1 **Fugitive Dust from Open Areas and Vacant Lots**

90.1.1 **Purpose:** To limit the emission of particulate matter into the ambient air from Open Areas and Vacant Lots.

90.1.2 **Applicability:** The provisions of this regulation shall apply to Open Areas and Vacant Lots which are located in a PM_{10} nonattainment area, an area subject to a PM_{10} maintenance plan defined under 42 U.S. Code § 7505a, or the Apex Valley (hydrographic areas 216 and 217). Nothing in Section 90 of these Regulations shall be construed to prevent enforcement of Section 40 (Prohibition of Nuisance Conditions) of these Regulations. The provisions of this regulation shall not apply to normal farm cultural practices or the raising of fowl or animals. The provisions of this regulation shall not apply to Stationary Sources as defined in Section 0, except that these control measures shall be considered as part of a BACT determination.

90.1.3 **Effective Date of This Regulation:**

90.1.3.1 Section 90, adopted by the Clark County Board of County Commissioners on June 22, 2000, shall be effective in hydrographic area 212 on January 1, 2001, except as otherwise provided herein.

90.1.3.2 Section 90 shall be effective in hydrographic areas 216 and 217 on April 1, 2002, except as otherwise provided herein.

90.2 **Requirements:**

90.2.1 **Open Areas And Vacant Lots:** If Open Areas and Vacant Lots are 5,000 square feet or larger and are disturbed by any means, including use by Motor Vehicles and/or Off-Road Motor Vehicles or material dumping, then the Owner and or Operator of such Open Areas and Vacant Lots shall implement one or more of the Control Measures described in Subsection 90.2.1.1 of this regulation within 30 calendar days following the initial discovery of disturbance or vehicle use on Open Areas and Vacant Lots. The Owner and/or Operator shall implement all control measures necessary to limit the disturbance of Open Areas and Vacant Lots in accordance with the requirements of this regulation. **Advisory Notice:** In order to conserve water to the greatest extent practicable, the use of Reclaimed Water is highly encouraged.

90.2.1.1 **Control Measures:**

(a) Where there is evidence of soil disturbance by Motor Vehicles and/or Off-Road Vehicle use, prevent Motor Vehicle and/or Off-Road Vehicle trespassing, parking, and/or access, by installing barriers, curbs, fences, gates, posts, signs, shrubs, trees, or other effective traffic Control Measures. A stable surface area shall be established and maintained by using one of the Control Measures set forth in Subsections 90.2.1.1(b) or (c) or by the effective application of water in compliance with the stabilization standards set forth in Subsection 90.2.1.2. Where measures to prevent vehicular trespassing and movement are not effective, the application of water will not be utilized for surface stabilization. For the purposes of this subsection, use of or parking on Open Areas and Vacant Lots for noncommercial and non-institutional purposes by the Owner and/or Operator of such Open Areas and Vacant Lots shall not be considered vehicle use under this subsection. In addition, vehicle use related to landscaping maintenance shall not be considered vehicle use under this subsection. For the purpose of this regulation, landscape maintenance does not include grading, trenching, or any other mechanized surface disturbing activities performed to establish initial landscapes or to redesign existing landscapes; or

(b) Where a Disturbed Surface Area exists (including disturbed surfaces caused by Motor Vehicles), uniformly apply and maintain surface gravel or Dust Palliatives to all areas disturbed by Motor Vehicles in compliance with one of the stabilization standards described in Subsection 90.2.1.2 of this regulation; or

(c) Where a Disturbed Surface Area exists (including disturbed surfaces caused by motor vehicles and/or Off-Road motor Vehicles), apply and maintain an alternative control measure approved in writing by the Control Officer and the Region IX Administrator of the Environmental Protection Agency (EPA).

90.2.1.2 **Stabilization Standards:**

(a) A visible crust shall be established, as determined by Subsection 90.4.1.1 (The Drop Ball/Steel Ball Test) of these Regulations; or,

(b) A percent cover that is equal to or greater than 20% for non-erodible elements shall be established, as determined by Subsection 90.4.1.2 (Rock Test Method) of these Regulations; or,

(c) A threshold friction velocity, corrected for non-erodible elements of 100 cm/second or higher, shall be established, as determined by

Subsection 90.4.1.3 (Determination of Threshold Friction Velocity) of this regulation; or,

(d) An alternative test method approved in writing by the Control Officer and the Region IX Administrator of the EPA.

90.2.2 **Dust Mitigation Plans Required:** Any Owner and/or Operator of Open Areas and Vacant Lots having a cumulative area of 10,000 acres or greater must submit a dust mitigation plan to the department for approval by March 31, 2003, in a format prescribed by the Control Officer.

90.2.3 **Mechanized Weed Abatement and/or Trash Removal:** If machinery is used to clear weeds and/or trash from Open Areas and Vacant Lots of 5,000 square feet or larger, then the following control measures set forth in Subsection 90.2.3.1 shall be applied. **Advisory Notice:** In order to conserve water to the greatest extent practicable, the use of reclaimed water is highly encouraged.

90.2.3.1 **Control Measures**

(a) Pre-wet surface soils before mechanized weed abatement and/or trash removal occurs; and,

(b) Maintain dust control measures while mechanized weed abatement and/or trash removal is occurring; and,

(c) Pave, apply gravel, apply water, or apply a suitable Dust Palliative, in compliance with the stabilization standards set forth in Subsection 90.2.1.2 of this regulation, after mechanized weed abatement and/or trash removal occurs.

90.3 **Record Keeping Requirements**

90.3.1 **Record Keeping:** Any Person subject to the requirements of this regulation shall compile and retain records that provide evidence of Control Measure application, by indicating type of treatment or Control Measure, extent of coverage, and date applied. The records and supporting documentation shall be made available to the Control Officer within 24 hours of a written request.

90.3.2 **Record Retention:** Copies of the records required by Subsection 90.3.1 (Record Keeping Requirements) of this regulation shall be retained for at least one year.

90.4 **Test Methods**

90.4.1 **Stabilization Standards for Open Areas and Vacant Lots**: The test methods described in Subsections 90.4.1.1 through Subsections 90.4.1.3 of this regulation shall be used to determine whether an Open Area or a Vacant Lot has a stabilized surface. Should a disturbed Open Area or Vacant Lot contain more than one type of disturbance, soil, or other characteristics which are visibly distinguishable, each representative surface must be tested separately for stability in an area that represents a random portion of the overall disturbed conditions of the site, utilizing the appropriate test methods in Subsections 90.4.1.1 through Subsections 90.4.1.3 of this regulation. Depending upon test method results, include or eliminate each representative surface from the total size assessment of the Disturbed Surface Area(s).

90.4.1.1 **Soil Crust Determination** (**The Drop Ball Test):** Drop a steel ball with a diameter of 15.9 millimeters (0.625 inches) and a mass ranging from 16-17 grams from a distance of 30 centimeters (one foot) directly above the soil surface. If blowsand is present, clear the blowsand from the surfaces on which the soil crust test method is conducted. Blowsand is defined as thin deposits of loose uncombined grains covering less than 50% of an Open Area or Vacant Lot which have not originated from the representative Open Area or Vacant Lot surface being tested. If material covers a visible crust, which is not blowsand, apply the test method in Subsection 90.4.1.3 (Determination of Threshold Friction Velocity) of this regulation to the loose material to determine whether the surface is stabilized.

(a) A sufficient crust is defined under the following conditions: once a ball has been dropped according to Subsection 90.4.1.1 of this regulation, the ball does not sink into the surface, so that it is partially or fully surrounded by loose grains and, upon removal of the ball, the surface upon which it fell has not been pulverized, so that loose grains are visible.

(b) Randomly select each representative Disturbed Surface Area for the drop ball test by using a blind “over the shoulder” toss of a throwable object (for example, a metal weight with survey tape attached). Using the point of fall as the lower left hand corner, measure a 1-foot square area. Drop the ball three times within the 1-foot by 1-foot square survey area, using a consistent pattern across the survey area. The survey area shall be considered to have passed the Soil Crust Determination Test if at least two of the three times the ball was dropped, the results met the criteria in Subsection 90.4.1.1(a) of this regulation. Select at least two other survey areas that represent a random portion of the overall disturbed conditions of the site, and repeat this procedure. If the results meet the criteria of Subsection 90.4.1.1(a) of this regulation for all of the survey areas tested, then

the site shall be considered to have passed the Soil Crust Determination Test and shall be considered sufficiently crusted.

(c) At any given site, the existence of a sufficient crust covering one portion of the site may not represent the existence or protectiveness of a crust on another portion of the site. Repeat the soil crust test as often as necessary on each portion of the overall conditions of the site using the random selection method set forth in Subsection 90.4.1.1(b) of this regulation for an accurate assessment.

90.4.1.2 **Rock Test Method:** The Rock Test Method, which is similar to Subsection 90.4.1.3 (Determination of Threshold Friction Velocity) of this Regulation, examines the wind-resistance effects of rocks and other non-erodible elements on disturbed surfaces. Non-erodible elements are objects larger than 1 centimeter (cm) in diameter that remain firmly in place even on windy days. Typically, non-erodible elements include rocks, stones, glass fragments, and hardpacked clumps of soil lying on or embedded in the surface. Vegetation does not count as a non-erodible element in this method. The purpose of this test method is to estimate the percent cover of non-erodible elements on a given surface to see whether such elements take up enough space to offer protection against windblown dust. For simplification, the following test method refers to all non-erodible elements as “rocks.”

(a) Randomly select a 1 meter by 1 meter survey area within an area that represents the general rock distribution on the surface (a 1 meter by 1 meter area is slightly greater than a 3 foot by 3 foot area). Use a blind “over the shoulder” toss of a throwable object (for example, a metal weight with survey tape attached) to select the survey surface and using the point of fall as the lower left hand corner, measure a 1 meter by 1 meter survey area. Mark-off the survey area by tracing a straight, visible line in the dirt along the edge of a measuring tape or by placing short ropes, yard sticks, or other straight objects in a square around the survey area.

(b) Without moving any of the rocks or other elements, examine the survey area. Since rocks greater than 3/8 inch (1 cm) in diameter are of interest, measure the diameter of some of the smaller rocks to a get a sense of which rocks need to be considered.

(c) Mentally group the rocks greater than 3/8 inch (1cm) diameter lying in the survey area into small, medium, and large size categories. If the rocks are all approximately the same size, simply select a rock of average size and typical shape. Without removing any of the rocks from the ground, count the number of rocks in the survey area in each group and write down the resulting number.

(d) Without removing rocks, select one or two average-size rocks in each group and measure the length and width. Use either metric units or standard units. Using a calculator, multiply the length times the width of the rocks to get the average dimensions of the rocks in each group. Write down the results for each rock group.

(e) For each rock group, multiply the average dimensions (length times width) by the number of rocks counted in the group. Add the results from each rock group to get the total rock area within the survey area.

(f) Divide the total rock area, calculated in Subsection 90.4.1.2(e) of this regulation, by two (to get frontal area). Divide the resulting number by the size of the survey area (make sure the units of measurement match), and multiply by 100 for percent rock cover. For example, the total rock area is 1,400 square centimeters, divide 1,400 by 2 to get 700. Divide 700 by 10,000 (the survey area is 1 meter by 1 meter, which is 100 centimeters by 100 centimeters or 10,000 centimeters) and multiply by 100. The result is 7% rock cover. If rock measurements are made in inches, convert the survey area from meters to inches (1 inch = 2.54 centimeters).

(g) Select and mark-off two additional survey areas and repeat the procedures described in Subsection 90.4.1.2(a) through Subsection 90.4.1.2(f) of this regulation. Make sure the additional survey areas also represent the general rock distribution on the site. Average the percent cover results from all three survey areas to estimate the average percent of rock cover.

(h) If the average rock cover is greater than or equal to 20%, the surface is stable. If the average rock cover is less than 20%, follow the procedures in Subsection 90.4.1.2(i) of this regulation.

(i) If the average rock cover is less than 20%, the surface may or may not be stable. Follow the procedures in Subsection 90.4.1.3 (Determination of Threshold Friction Velocity) of this regulation and use the results from the rock test method as a correction (i.e., multiplication) factor. If the rock cover is at least 1%, such rock cover helps to limit windblown dust. However, depending on the soil's ability to release fine dust particles into the air, the percent rock cover may or may not be sufficient enough to stabilize the surface. It is also possible that the soil itself has a high enough Threshold Friction Velocity (TFV) to be stable without accounting for rock cover.

(j) After completing the procedures described in Subsection 90.4.1.2(i) of this regulation, use Table 2 of this regulation to identify the appropriate correction

factor to the TFV, depending on the percent rock cover. Multiply the correction factor by the TFV value for a final TFV estimate that is corrected for non-erodible elements.

90.4.1.3 **Determination Of Threshold Friction Velocity (TFV):** For Disturbed Surface Areas that are not crusted or vegetated, determine TFV according to the following sieving field procedure (based on a 1952 laboratory procedure published by W. S. Chepil).

(a) Obtain and stack a set of sieves with the following openings: 4 millimeters (mm), 2 mm, 1 mm, 0.5 mm, and 0.25 mm, or obtain and stack a set of standard/commonly available sieves. Place the sieves in order according to size openings, beginning with the largest size opening at the top. Place a collector pan underneath the bottom (0.25 mm) sieve. Collect a sample of loose surface material from an area at least 30 cm by 30 cm in size, to a depth of approximately 1 cm using a brush and dustpan or other similar device. Only collect soil samples from dry surfaces (i.e., when the surface is not damp to the touch). Remove any rocks larger than 1 cm in diameter from the sample. Pour the sample into the top sieve (4 mm opening) and cover the sieve/collector pan unit with a lid. Minimize escape of particles into the air when transferring surface soil into the sieve/collector pan unit. Move the covered sieve/collector pan unit by hand using a broad, circular arm motion in the horizontal plane. Complete twenty circular arm movements, ten clockwise and ten counterclockwise, at a speed just necessary to achieve some relative horizontal motion between the sieves and the particles. Remove the lid from the sieve/collector pan unit and disassemble each sieve separately, beginning with the largest sieve. As each sieve is removed, examine it for loose particles. If loose particles have not been sifted to the finest sieve through which they can pass, reassemble and cover the sieve/collector pan unit and gently rotate it an additional ten times. After disassembling the sieve/collector pan unit, slightly tilt and gently tap each sieve, and the collector pan, so that material aligns along one side. In doing so, minimize escape of particles into the air. Line up the sieves and collector pan in a row and visibly inspect the relative quantities of catch in order to determine which sieve (or whether the collector pan) contains the greatest volume of material. If a visual determination of relative volumes of catch among sieves is difficult, use a graduated cylinder to measure the volume. Estimate TFV for the sieve catch with the greatest volume using Table 1 of this Subsection, which provides a correlation between sieve opening size and TFV.

Table 1. Determination of Threshold Friction Velocity

Tyler Sieve No.	ASTM 11 Sieve No.	Opening (mm)	TFV (cm/s)
5	5	4	135
9	10	2	100
16	18	1	76
32	35	0.5	58
60	60	0.25	43
Collector Pan	—	—	30

(b) Collect at least three soil samples which represent random portions of the overall conditions of the site, repeat the above TFV test method for each sample and average the resulting TFVs together to determine the TFV uncorrected for non-erodible elements. Non-erodible elements are distinct elements, in the random portion of the overall conditions of the site, that are larger than 1 cm in diameter, remain firmly in place during a wind episode, and inhibit soil loss by consuming part of the shear stress of the wind. Non-erodible elements include stones and bulk surface material but do not include flat or standing vegetation. For surfaces with non-erodible elements, determine corrections to the TFV by identifying the fraction of the survey area, as viewed from directly overhead, that is occupied by non-erodible elements using the following procedure. For a more detailed description of this procedure, see Subsection 90.4.1.2 (Rock Test Method) of this regulation. Select a survey area of 1 meter by 1 meter that represents a random portion of the overall conditions of the site. Where many non-erodible elements lie within the survey area, separate the non-erodible elements into groups according to size. For each group, calculate the overhead area for the non-erodible elements according to the following equations:

Eq. 1: (Average length) x (Average width) = Average Dimensions.
Eq. 2: (Average Dimensions) x (Number of Elements) = Overhead Area.
Eq. 3: Overhead Area of Group 1 + Overhead Area of Group 2 (etc.) = Total Overhead Area.
Eq. 4: Total Overhead Area/2 = Total Frontal Area.
Eq. 5: (Total Frontal Area/Survey Area) x 100 = Percent Cover Of Non-Erodible Elements.

Note: Ensure consistent units of measurement (e.g. square meters or square inches when calculating percent cover).

Repeat this procedure on an additional two distinct survey areas that represent a random portion of the overall conditions of the site and average the results. Use Table 2 of this Subsection to identify the correction factor for the percent

cover of non-erodible elements. Multiply the TFV by the corresponding correction factor to calculate the TFV corrected for non-erodible elements.

Table 2. Correction Factors for Threshold Friction Velocity

Percent Cover of Non-Erodible Elements	Correction Factor
Greater than or equal to 10%	5
Greater than or equal to 5% and less than 10%	3
Less than 5% and greater than or equal to 1%	2
Less than 1%	None

History: Initial adoption: June 22, 2000
Amended: November 16, 2000; November 20, 2001; December 17, 2002; June 3, 2003; July 1, 2004; April 15, 2014; January 21, 2020.