

When recorded return to:  
Clerk of the Board  
Pinal County  
P.O. Box 827  
Florence, Arizona 85232

**PINAL COUNTY BOARD OF SUPERVISORS**  
**RESOLUTION NO. 012523-AQ**  
**PINAL COUNTY AIR QUALITY CONTROL DISTRICT**

A RESOLUTION OF THE BOARD OF SUPERVISORS OF PINAL COUNTY, ADOPTING CERTAIN REVISIONS TO THE PINAL COUNTY AIR QUALITY CONTROL DISTRICT RULES AND REQUESTING THE ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY SUBMIT THE REVISIONS TO THE ENVIRONMENTAL PROTECTION AGENCY AS AN ELEMENT OF THE ARIZONA STATE IMPLEMENTATION PLAN.

**WHEREAS**, the Pinal County Board of Supervisors ("Board") is empowered under A.R.S. §49-479 to adopt rules for the purpose of controlling the release of air contaminants within the County;

**WHEREAS**, ongoing PM<sub>10</sub> exceedances in the West Pinal County Moderate PM<sub>10</sub> nonattainment area resulted in an Environmental Protection Agency (EPA) determination that the nonattainment area didn't attain the PM<sub>10</sub> standard by the December 31, 2018 attainment date. Therefore on July 24, 2020 a Final Rule was published in the Federal Register (85 FR 37756) - EPA issuance of a Finding of Failure to Attain the 1987 24-Hour PM<sub>10</sub> Standard; Reclassification as Serious Nonattainment West Pinal Serious PM<sub>10</sub> Nonattainment Area – defined in 40 CFR 81.303;

**WHEREAS**, the lead planning agency Maricopa Association of Governments (MAG) developed the West Pinal Serious PM<sub>10</sub> nonattainment area State Implementation Plan (SIP) which included a base year (2017) PM<sub>10</sub> emissions inventory that quantified construction and other general (open areas/vacant lots, unpaved roads, etc.) fugitive dust emissions as significant source categories;

**WHEREAS**, Clean Air Act §189(b)(1) requires provisions to assure that Best Available Control Measures (BACM) for control of PM<sub>10</sub> for significant sources categories should be implemented no later than four years after the date the area is classified (or reclassified) as a Serious Area.;

**WHEREAS**, ongoing PM<sub>10</sub> exceedances made attaining the PM<sub>10</sub> Standard by December 31, 2022 impracticable. Therefore MAG pursuant to Clean Air Act (CAA) §188(e) included in the SIP an attainment year extension request to 2026;

**WHEREAS**, one of the requirements for a successful attainment year extension request is demonstrating to the EPA Administrator “..that the plan for that area includes the most stringent measures (MSM) that are included in the implementation plan of any State or are achieved in practice in any State, and can feasibly be implemented in the area.”

**WHEREAS**, MAG contracted with Trinity Consultants to conduct an analysis of the BACM and MSM in all PM<sub>10</sub> Serious nonattainment areas and also in practice countrywide. The March 31, 2021 final report “Analysis of Best Available Control Measures and Most Stringent Measures for the West Pinal County Serious PM<sub>10</sub> Nonattainment Area Final Report” listed seventy BACM/MSM control measures for construction activities, general fugitive dust categories along with agricultural activities (regulated separately through the Arizona Department of Environmental Quality - ADEQ);

**WHEREAS**, the MAG committees adopted the list of seventy suggested BACM/MSM measures for the West Pinal PM<sub>10</sub> nonattainment area. The suggested list were then available for Pinal County (construction, open areas/vacant lots, unpaved roads) and ADEQ (Agricultural Best Management Practices (AgBMP) Committee) to determine which measures were available and feasible for adoption and implementation;

**WHEREAS**, the Pinal County Board of Supervisors (BOS) adopted Resolution Number 080421-AQ1 “Commitments to Implement Measures in the 2022 Serious Area Particulate Plan for PM-10 for the West Pinal County Nonattainment Areas”;

**WHEREAS**, Pinal County in coordination with stakeholders and EPA developed West Pinal Serious PM<sub>10</sub> Nonattainment area BACM/MSM fugitive dust rules for construction activities and other general fugitive dust sources (i.e. unpaved roads, open areas/vacant lots, paved roads, etc.) to reduce PM<sub>10</sub> emissions;

**WHEREAS**, to the extent applicable, the District has complied with the notice-publication and other public notification requirements of A.R.S. §§49-471.04 and 49-479, and 40 C.F.R. §51-102, including a combined notice of proposed rulemaking, oral proceeding and Board of Supervisors Public Hearing published on the Pinal County Air Quality District website on November 2, 2022 and in the local newspaper of record Pinal Central Dispatch on November 3, 2022;

**WHEREAS**, the Board’s preference regarding inclusion of those revised rules as elements of the Arizona State Implementation Plan, are also set forth below in the

proposed revision to §1-1-105;

**WHEREAS**, the elements of the final proposed changes in the County's air quality rules are set forth in Exhibit A below in full;

**THEREFORE, FOR THE PURPOSE OF PROTECTING AND PRESERVING THE QUALITY OF AIR WITHIN THE COUNTY IN A SENSIBLE AND ORDERLY MANNER, IT IS HEREBY RESOLVED BY THE BOARD TO:**

1. **Adopt the following revisions, additions and deletions to the Pinal County Air Quality Control District Code of Regulations reflected in Exhibit A.**
2. **Direct Pinal County Air Quality to submit the adopted rules (excluding §1-1-105) to the Arizona Department of Environmental Quality (ADEQ) with the request that they be submitted to the Environmental Protection Agency (EPA) for inclusion in the Arizona State Implementation Plan (SIP).**

**IN WITNESS WHEREOF**, the undersigned, in accord with the vote of the Pinal County Board of Supervisors as duly reflected in the minutes of the Board meeting, have executed this document on behalf of the Board of Supervisors on this \_\_\_\_\_ day of \_\_\_\_\_, 2023.

PINAL COUNTY, a political subdivision of the State of Arizona,

By: \_\_\_\_\_  
Jeff Serdy, Chairman of the Board of Supervisors

ATTEST: \_\_\_\_\_  
Natasha Kennedy, Clerk of the Board of Supervisors

APPROVED AS TO FORM:

Kent Volkmer  
Pinal County Attorney

By: \_\_\_\_\_  
Deputy County Attorney

# **Exhibit A**

## **1-1-105. SIP list**

A. As a declaration of Board policy rather than a rule, and subject to the limitations of paragraphs B. and C. of this section, the Board of Supervisors expressly designates the following list of sections within this Code, to be presented to the Governor of Arizona for transmittal to the Administrator of the EPA with a request that they be included as elements in the Arizona SIP:

1. Chapter 1
  - a. Article 1.(As amended 5/14/97 and 5/27/98), except for §§1-1-105 and 1-1-107.
  - b. Article 2 (As amended 5/14/97 and 7/12/00) except for §1-2-110.
  - c. Article 3. (As amended 5/14/97, 5/27/98 and 10/27/04, 07/23/14, except for §1-3-130 and the definition in §1-3-140.82 (10/12/95) of "maximum achievable control technology.")
2. Chapter 2
  - a. Article 1. (As amended 10/12/95).
  - b. Article 2. (As amended 5/14/97), excluding:
    - i. §2-2-090 (as amended 5/14/97)
  - c. Article 3. (As amended 10/12/95).
  - d. Article 4. (As amended 10/12/95).
  - e. Article 5. (As amended 10/12/95).
  - f. Article 6. (As amended 10/12/95).
  - g. Article 7. (As amended 10/12/95).
  - h. Article 8. (As amended 5/18/05, as amended 1/7/09).
3. Chapter 3
  - a. Article 1. (As amended 5/14/97, and 5/27/98, 7/12/00, and 7/1/20), excluding:
    - i. §3-1-020
    - ii. §3-1-045
    - iii. §3-1-080
    - iv. §3-1-100
    - v. §3-1-150 (as amended 5/14/97)
    - vi. §3-1-160 (as amended 5/14/97)
    - vii. §3-1-170 (as amended 5/14/97)
    - viii. §3-1-173 (as amended 5/14/97)
  - b. Article 2. (As amended 10/12/95, 5/27/98 and 7/29/98).
  - c. Article 3. (As amended 10/12/95, 5/27/15).
  - d. Article 8. (As amended 10/12/95 and 10/27/04).
4. Chapter 4
  - a. Article 1. (As amended 2/22/95, 10/28/15, 1/25/23)

- b. Article 2. (As amended 5/14/97, 7/12/00, 12/4/02 and 10/27/04).
  - c. Article 3, limited to:
    - i. §4-3-160 (As amended 10/28/15, 1/25/23)
    - ii. §4-3-170 (As amended 10/28/15, 1/25/23)
    - iii. §4-3-180 (As amended 10/28/15, 1/25/23)
    - ~~iv. §4-3-190 (As amended 10/28/15)~~
  - d. Article 4 (As amended 6/3/09).
  - e. Article 5 (As amended 6/3/09).
  - f. Reserved.
  - g. Article 7 (As amended 6/3/09)
  - h. Reserved.
  - i. Article 9, limited to:
    - i. §4-9-310 (As added 1/25/23)
    - ii. §4-9-320 (As amended 6/3/09)
    - iii. §4-9-340 (As amended 6/3/09)
5. Chapter 5
- a. Article 13. (as amended 8/5/20), excluding
    - i. §5-13-390 (as amended 10/12/95)
  - a. Article 20. (as amended 8/5/20)
- B. Notwithstanding the approval as elements of the SIP of those provisions of the Code identified in paragraph A of this section, those provisions, save §3-1-084 which shall be expressly exempted from the limitation of this paragraph, shall operate as elements of the SIP only insofar as they pertain to:
- 1. "construction," as defined in Nov. '93 Code §1-3-140.28; or
  - 2. "modification," as defined in Nov. '93 Code §1-3-140.85; and
- C. Notwithstanding the approval as elements of the SIP of those provisions of the Code identified in paragraph A of this section, neither those provisions nor any permit conditions imposed pursuant to those provisions shall:
- 1. Operate as elements of the SIP insofar as they pertain to other than "conventional pollutants," as defined in §1-3-140.33;
  - 2. Operate as elements of the SIP insofar as they pertain only to a requirement arising under, or pertain to a source subject to regulation exclusively by virtue of a requirement arising under:
    - a. §111 of the Clean Air Act; or
    - b. Title IV of the 1990 amendments to the Clean Air Act; or
    - c. Title VI of the 1990 amendments to the Clean Air Act; or
    - d. Any section of this Code that is not a part of the SIP;
  - 3. Operate as an element of the SIP, at least insofar as they impose a "fee";
  - 4. Operate as an element of the SIP, at least insofar as they require a "certification";
  - 5. Operate as an element of the SIP, at least insofar as they impose obligations pertaining to "renewals";
  - 6. Operate as an element of the SIP, at least insofar as they impose requirements regarding "excess emissions"; or
  - 7. Operate as an element of the SIP, at least insofar as they impose requirements regarding "compliance plans."

D. As a renumbering and reconciliation of previously approved SIP provisions as elements of this Code, the Board of Supervisors additionally designates the following list of sections within this Code, to be presented to the Governor of Arizona for transmittal to the Administrator of the EPA with a request that they be included as elements in the Arizona SIP without operational limitation:

1. §§1-1-010.C (2/22/95) and 1-1-010.D (2/22/95) *Declaration of Policy*
2. Chapter 2, Article 8 (As amended 1/7/09) *Visibility Limiting Standard*
3. Chapter 3, Article 8 (2/22/95) *Open Burning*
4. [Reserved]
5. [Reserved]
6. [Reserved]
7. [Reserved]
8. [Reserved]
9. [Reserved]
10. [Reserved]
11. [Reserved]
12. §5-18-740 (2/22/95) *Storage of Organic Compounds - Organic Compound Emissions*
13. §5-19-800 (2/22/95) *Loading of Volatile Organic Compounds - Organic Compound Emissions*
16. §5-22-950 (2/22/95) *Fossil Fuel Fired Steam Generator Standard Applicability*
17. §5-22-960 (2/22/95) *Fossil Fuel Fired Steam Generator Sulfur Dioxide Emission Limitation*
18. §5-24-1030.F (2/22/95) *Generally Applicable Federally Enforceable Minimum Standard of Performance - Organic Compound Emissions*
19. §5-24-1030.I (2/22/95) *Generally Applicable Federally Enforceable Minimum Standard of Performance - Carbon Monoxide*
20. §5-24-1032 (2/22/95) *Federally Enforceable Minimum Standard of Performance - Process Particulate Emissions*
21. §5-24-1040 (2/22/95) *Carbon Monoxide Emissions - Industrial Processes*
22. §5-24-1045 (2/22/95) *Sulfite Pulp Mills - Sulfur Compound Emissions*
23. §5-24-1050 (2/22/95, as amended June 20, 1996) *Reduced Sulfur Emissions - Default Limitation*
24. §5-24-1055 (2/22/95) *Pumps and Compressors - Organic Compound Emissions*

## **CHAPTER 4. EMISSIONS FROM EXISTING AND NEW NON-POINT SOURCES**

### **ARTICLE 1. WEST PINAL PM<sub>10</sub> ~~MODERATE~~ SERIOUS NONATTAINMENT AREA FUGITIVE DUST**

#### **4-1-010. General Applicability**

1. The purpose of this Article is to control fugitive dust from open areas /vacant lots, unpaved roads, unpaved lots and paved public roadways by requiring measures to prevent, reduce or mitigate fugitive dust emissions.
2. Effective Date  
The rules in this Article adopted on January 25, 2023 will become effective on January 1, 2016 June 1, 2023. The rules in this Article that became effective on January 1, 2016 will be in effect through May 31, 2023.
3. Geographic Scope  
The rules in this Article shall be effective throughout the West Pinal County PM<sub>10</sub> ~~Moderate~~ serious Nonattainment area as defined in 40 CFR Part 81.303.

[Adopted effective June 29, 1993. Revised 5/14/97. Revised 10/28/15, effective January 1, 2016]

#### **4-1-015. Exemptions**

1. In the case of legitimate vehicle test and development facilities and operations conducted by or for an equipment manufacturer, where dust is required to test and validate the design integrity, product quality and/or commercial acceptance, those specific activities shall be exempt from the applicable standards and requirements in this Article.
2. The standards and requirements of this Article shall not apply to emergency response activities that may disturb the soil conducted by any utility or government agency in order to prevent public injury or to restore critical utilities to functional status. For purposes of this subsection, an emergency response must address a situation arising from a sudden and unforeseeable event beyond the control of the owner and/or operator, including acts of God. Activities by an owner and/or operator to address a disturbance resulting from improperly designed equipment, lack of preventative maintenance, careless or improper operation or operator error shall not qualify as an emergency response.

3. The standards and requirements of this Article shall not apply to normal farm cultural practices according to A.R.S. §49-457 and A.R.S. §49-504.4 which are subject to Arizona Department of Environmental Quality (ADEQ) rules R18-2-610, R18-2-610.01, R18-2-611 and R18-2-611.01, R18-2-611.02, R18-2-611.03.
4. The standards and requirements of this Article shall not apply to dust generating operations subject to the standards and/or requirements described in Chapter 4, Article 3.
5. The standards and requirements of this Article shall not apply to the establishment of initial landscapes without the use of mechanized equipment, conducting landscape maintenance without the use of mechanized equipment, and playing on or maintaining a field used for non-motorized sports. However, establishing initial landscapes without the use of mechanized equipment and conducting landscape maintenance without the use of mechanized equipment shall not include grading, or trenching, performed to establish initial landscapes or to redesign existing landscapes.

[Adopted October 28, 2015, effective January 1, 2016]

#### **4-1-020. Definitions**

For the purpose of this Article, the following definitions shall apply:

1. ADT (Average Daily Trips) – As used in this Article, means the average number of vehicles that cross a given point surface during a specific 24-hour period as determined by the most recent Institute of Transportation Engineers trip generation manual, tube counts, or observations.
2. CERTIFIED STREET SWEEPER: A street sweeper that is certified in accordance with South Coast Air Quality Management District Rule 1186 as meeting sweeper certification procedures and requirements for PM<sub>10</sub> efficient sweepers.
2. 3. CONTROL MEASURES- as used in this Article means, a preemptive or concurrent technique used to minimize the generation, emission, entrainment, suspension, and/or airborne transport of fugitive dust in order to comply with applicable standards.
3. 4. DISTURBED SURFACE AREA – As used in this Article, means any portion of the earth's surface that has been physically moved, uncovered, destabilized, or otherwise modified from its undisturbed natural condition.
4. 5. DUST SUPPRESSANT – As used in this Article, means water, hygroscopic material, solution of water and chemical surfactant foam, non-toxic chemical stabilizer or any other dust palliative, which is not prohibited by the U. S. Environmental Protection Agency (EPA) or the Arizona Department of Environmental Quality (ADEQ), or any applicable law, rule, or regulation, as a treatment material for reducing fugitive dust emissions.
5. 6. EMERGENCY - as used in this Article means a situation arising from sudden and reasonably unforeseeable events beyond the control of the owner and/or



operator, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the associated activities to exceed a limitation in this rule, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include any noncompliance due to improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

- 6. 7. FUGITIVE DUST – As used in this Article, means the regulated particulate matter, which is not collected by a capture system, which is entrained in the ambient air, and which is caused from human and/or natural activities, such as but not limited to, movement of soils, vehicles, equipment, blasting, and wind. For the purpose of this rule, fugitive dust does not include particulate matter emitted directly from the exhaust of motor vehicles and other internal combustion engines, from portable brazing, soldering, or welding equipment, and from piledrivers.
- 7. 8. MOTOR VEHICLE - As used in this Article, means a self-propelled vehicle for use on the public roads and highways of the State of Arizona and required to be registered under the Arizona State Uniform motor vehicle Act, including any non-motorized attachments, such as but not limited to, trailers and other conveyances which are connected to or propelled by the actual motorized portion of the vehicle.
- 9. NON-TRADITIONAL SOURCE OF FUGITIVE DUST: A source of fugitive dust that is located at a source that does not require any permit under these rules. The following non-traditional sources of fugitive dust are subject to the standards and/or requirements described in this Article:

- a. Vehicle use in open areas and vacant lots
- b. Open areas and vacant lots
- c. Unpaved parking lots
- d. Unpaved roadways (including alleys)
- e. Erosion-caused deposition of bulk materials onto paved surfaces
- f. Easements, rights-of-way, and access roads for utilities (electricity, natural gas, oil, water, and gas transmission)

- 8. 10. OPEN AREAS/VACANT LOTS – As used in this Article, means any of the following described in Subsections a through c below. For the purposes of this rule, vacant portions of residential or commercial lots and contiguous parcels that

are immediately adjacent to and owned and/or operated by the same individual or entity are considered one open area.

a. An unsubdivided or undeveloped land whether or not it is adjoining a developed or a partially developed residential, industrial, institutional, governmental, or commercial area.

b. A subdivided residential, industrial, institutional, governmental, or commercial lot that contains no approved or permitted buildings or structures of a temporary or permanent nature.

c. A partially developed residential, industrial, institutional, governmental, or commercial lot and contiguous lots under common ownership.

~~9.~~ 11. OWNER AND/OR OPERATOR – As used in this Article, means any person including, but not limited to, the property owner, lessee or responsible official.

~~10.~~ 12. PAVE – As used in this Article, to apply and maintain asphalt, concrete, or other similar material to a roadway surface, such as asphaltic concrete, concrete pavement, chip seal, or rubberized asphalt.

~~11.~~ 13. PAVED PUBLIC ROADWAY – As used in this Article, means a publicly owned paved roadway, owned by federal, state, county, municipal, or other government or quasi-governmental agencies as evidenced by a formal acceptance by the state or a political subdivision of the state of either:

a. An on-going maintenance obligation for the roadway; or

b. A title or easement for the roadway.

~~12.~~ 14. PINAL COUNTY DUST CONTROL FORECAST as used in this Article, means a forecast, which shall identify a low, moderate or high risk of dust generation for the next five consecutive days and shall be issued by noon on each day the forecast is generated. When developing these forecasts, the Department of Environmental Quality shall consider all of the following:

a. Projected meteorological conditions, including:

i) Wind speed and direction,

ii) Stagnation,

iii) Recent precipitation, and

iv) Potential for precipitation;

b. Existing concentrations of air pollution at the time of the forecast; and

c. Historic air pollution concentrations that have been observed during meteorological conditions similar to those that are predicted to occur in the forecast.

~~13.~~ 15. STABILIZED – As used in this Article, means any previously disturbed surface area which, through the application of control measures, shows visual or other evidence of surface crusting and is resistant to wind-driven fugitive dust.

16. STABILIZED UNPAVED ROAD/UNPAVED SHOULDER – As used in this Article, any unpaved road, unpaved shoulder, or unpaved vehicle/equipment

traffic area surface which meets the definition of stabilized as determined by the test methods in §4-9-340 and where opacity does not exceed 20%.

14. 17. TRACKOUT – As used in this Article, any and all bulk materials that adhere to and agglomerate on the exterior surface of motor vehicles, haul trucks, and/or equipment (including tires) and that have fallen onto a paved roadway.
15. 18. UNPAVED LOT – as used in this Article, is any area that is not paved and that is used for parking, maneuvering, material handling, or storing motor vehicles and equipment. An unpaved lot includes, but is not limited to, automobile impound yards, wrecking yards, automobile dismantling yards, salvage yards, material handling yards, and storage yards. For the purpose of this rule, maneuvering shall not include military maneuvers or exercises conducted on federal facilities.
16. 19. UNPAVED ROAD— as used in this Article, means any roads ~~(including alleys)~~, equipment paths, or travel ways that are not paved. ~~Unpaved roads are owned only by federal, state, county, municipal, or other governmental or quasi-governmental agencies.~~ For the purposes of this Article, an unpaved road is not an agricultural road, horse trail, hiking path, bicycle path, or other similar path used exclusively for purposes other than travel by motor vehicles.

[Adopted October 28, 2015, effective January 1, 2016]

## **4-1-030. Standards**

### **1. GENERAL REQUIREMENTS**

- i. The owner and/or operator of open areas/vacant lots, unpaved lots, unpaved roads and paved public roadways shall be subject to the standards and/or requirements described in this rule. Failure to comply with any such standards and/or requirements is deemed a violation of this rule.
- ii. The owner and/or operator shall implement applicable control measures.
- iii. Control measures shall be implemented to meet the visible emissions requirements, stabilization requirements and compliance determinations for each applicable category.
- iv. Failure to implement control measures as required by this rule, as applicable and/or failure to maintain stabilization in order to prevent wind erosion as measured by the requirements of this rule shall be deemed a violation of this rule.

2. VEHICLE USE IN OPEN AREAS/ AND VACANT LOTS: The owner and/or operator of a non-traditional source of fugitive dust that involves vehicle use in

open areas and vacant lots shall be subject to the requirements described in Section §4-1-030.2.A of this rule and, unless otherwise specified and/or required, shall comply with the control measures described in Section §4-1-030.2.B of this rule and the additional requirements described in section §4-1-030.2.C

A. Visible Emissions and Stabilization Requirements: The owner and/or operator of a non-traditional source of fugitive dust that involves vehicle use in open areas/and vacant lots shall not cause, suffer, or allow, or permit fugitive dust visible emissions of particulate matter, including fugitive dust, beyond the property line within which the emissions are generated, which result in opacity of the dust to exceed twenty percent (20%) as measured using an opacity method, as determined by the applicable test method in §4-9-340 or an equivalent test method approved in writing by the Control Officer and the EPA Administrator. The owner and/or operator of a non-traditional source of fugitive dust that involves vehicle use in open areas and vacant lots shall stabilize the open areas and vacant lots on which vehicles are used to meet one of the following stabilization requirements:

- i. A soil crust; or
- ii. A threshold friction velocity (TFV) corrected for non-erodible elements of 100 cm/second or higher; or
- iii. Flat vegetative cover (i.e., attached [rooted] vegetation or unattached vegetative debris lying on the surface with a predominant horizontal orientation that is not subject to movement by wind) that is equal to at least 50%; or
- iv. Standing vegetative cover (i.e., vegetation that is attached [rooted] with a predominant vertical orientation) that is equal to or greater than 30%; or
- v. Standing vegetative cover (i.e., vegetation that is attached [rooted] with a predominant vertical orientation) that is equal to or greater than 10% and where the threshold friction velocity is equal to or greater than 43 cm/second when corrected for non-erodible elements; or
- vi. A percent cover that is equal to or greater than 10% for non-erodible elements

B. Control Measures:

- i. Prevent motor vehicle use and/or off-road vehicle trespassing, parking and/or access by installing barriers, curbs, fences, gates, posts, shrubs, trees, or other effective control measures;
- ii. Prevent motor vehicle and/or off-road vehicle trespassing, parking, and/or access by posting that consists of one of the following:

- a. A sign written in compliance with ordinance(s) of local, County, State, or Federal sign standards
  - b. An order of a government land management agency
  - c. Most current maps approved by a government land management agency
  - d. Virtual posting a government land management agency
- iii. Uniformly apply and maintain surface gravel or chemical/organic stabilizers to all areas disturbed by motor vehicles and/or off-road vehicles

C. Additional Requirements:

- i. If open areas and vacant lots are 0.10 acre (4,356 square feet) or larger and have a cumulative of 500 square feet or more that are disturbed by being driven over and/or used by motor vehicles, by off-road vehicles, or for material dumping, then the owner and/or operator shall implement one or more of the control measures described in Section §4-1-030.2.B of this rule within 60 calendar days following the initial discovery by the Control Officer of disturbance or vehicle use on open areas and vacant lots. Additionally the owner and/or operator shall sign up to receive the Pinal County Dust Control Forecast and shall ensure one or more of the control measures are implemented on the day prior to and the day of a high dust risk forecast.
- ii. Within 30 calendar days following the initial discovery by the Control Officer of disturbance or vehicle use on open areas and vacant lots, the owner and/or operator shall provide in writing to the Control Officer a description and date of the control measure(s) to be implemented to prevent such disturbance or vehicle use on open areas and vacant lots.
- iii. The owner and/or operator shall implement all control measures necessary to limit the disturbance or vehicle use on open areas and vacant lots in accordance with the requirements of this rule. Control measure(s) shall be considered effectively implemented when the open areas and vacant lots meet the requirements described in §4-1-030.2.A of this rule.
- iv. Use of or parking on open areas and vacant lots by the owner and/or operator of such open areas and vacant lots shall not be considered vehicle use in open areas and vacant lots and shall not be subject to the

requirements of §4-1-030.2.B and §4-1-030.2.C.i through §4-1-030.2.C.iii of this rule. Such open areas and vacant lots shall still meet the requirements described in §4-1-030.3 of this rule.

- v. Establishing initial landscapes without the use of mechanized equipment or conducting landscape maintenance without the use of mechanized equipment shall not be considered vehicle use in open areas and vacant lots and shall not be subject to the requirements of §4-1-030.2.C and §§4-1-030.2.C.i through 4-1-030.2.C.iv of this rule. Such open areas and vacant lots shall still meet the requirements described in §4-1-030.3.

- 3. OPEN AREAS AND VACANT LOTS: The owner and/or operator of a non-traditional source of fugitive dust that involves open areas and vacant lots shall be subject to the requirements described in §4-1-030.3.A and, unless otherwise specified and/or required, shall comply with control measures described in §4-1-030.3.B and the additional requirements described in §4-1-030.3.C.

A. Visible emissions and stabilization requirements:

- i. The owner and/or operator of a non-traditional source of fugitive dust that involves open areas and vacant lots shall not cause or allow visible emissions of particulate matter, including fugitive dust, beyond the property line within which the emissions are generated.
- ii. The owner and/or operator of a non-traditional source of fugitive dust that involves open areas and vacant lots shall stabilize the open areas and vacant lots to meet one of the following stabilization limitations:
  - a. A soil crust; or
  - b. A threshold friction velocity (TFV) corrected for non-erodible elements of 100 cm/second or higher; or
  - c. Flat vegetative cover (i.e. attached [rooted] vegetation or unattached vegetative debris lying on the surface with a predominant horizontal orientation that is not subject to movement by wind) that is equal to at least 50%; or
  - d. Standing vegetative cover (i.e. vegetation that is attached [rooted] with a predominant vertical orientation) that is equal to or greater than 30%; or
  - e. Standing vegetative cover (i.e. vegetation that is attached [rooted] with a predominant vertical orientation) that is equal to or greater than 10% and where the threshold friction velocity

- is equal to or greater than 43 cm/second when corrected for non-erodible elements; or
- f. A percent cover that is equal to or greater than 10% for non-erodible elements;

B. Control measures:

- i. Establish vegetative ground cover on all disturbed surface areas. Such control measure(s) must be maintained and reapplied, if necessary. Stabilization shall be achieved, per this control measure, within eight months after the control measure has been implemented; or
- ii. Apply a dust suppressant to all disturbed surface areas; or
- iii. Restore all disturbed surface areas within 60 calendar days following the initial discovery by the Control Officer of the disturbance, such that the vegetative ground cover and soil characteristics are similar to adjacent or nearby undisturbed native conditions. Such control measure(s) must be maintained and reapplied, if necessary. Stabilization shall be achieved, per such control measure, within eight months after such control measure has been implemented; or
- iv. Uniformly apply and maintain surface gravel

C. Additional requirements:

- i. If open areas and vacant lots are 0.10 acre (4,356 square feet) or larger and have a cumulative of 500 square feet or more that are disturbed and if such disturbed area remains unoccupied, unused, vacant, or undeveloped for more than 15 days, then the owner and/or operator shall implement one or more of the control measures described in §4-1-030.3.B within 60 calendar days following the initial discovery by the Control Officer of the disturbance on the open areas and vacant lots. Additionally the owner and/or operator shall sign up to receive the Pinal County Dust Control Forecast and shall ensure one or more of the control measures are implemented on the day prior to and the day of a high dust risk forecast
- ii. Within 30 calendar days following the initial discovery by the Control Officer of the disturbance on the open areas and vacant lots, the owner and/or operator shall provide in writing to the Control Officer a description and date of the control measure(s) to be implemented.

iii. Control measure(s) shall be considered effectively implemented when the disturbance on the open areas and vacant lots meets the requirements described in §4-1-030.3.A.

4. UNPAVED PARKING LOTS: The owner and/or operator of a non-traditional source of fugitive dust that involves unpaved parking lots shall be subject to the requirements described in §4-1-030.4.A and, unless otherwise specified and/or required, shall comply with one of the control measures described in §4-1-030.4.B and the additional requirements described in §4-1-030.4.C.

A. Visible emissions and stabilization requirements:

- i. The owner and/or operator of a non-traditional source of fugitive dust that involves unpaved parking lots shall not cause or allow visible emissions of particulate matter, including fugitive dust, beyond the property line within which the emissions are generated.
- ii. The owner and/or operator of a non-traditional source of fugitive dust that involves unpaved parking lots shall not cause or allow fugitive dust emissions to exceed 20% opacity and shall not allow silt loading equal to or greater than 0.33 oz/ft<sup>2</sup>. However, if silt loading is equal to or greater than 0.33 oz/ft<sup>2</sup>, then the owner and/or operator shall not allow the silt content to exceed 8%.

B. Control measures:

- i. For parking, maneuvering, ingress, and egress areas at developments other than residential buildings with four or fewer units that are utilized for more than 35 days during the calendar year:
  - a. Install and maintain pavement; or
  - b. Apply dust suppressant other than water and install, maintain, and use a suitable trackout control device that controls and prevents trackout and/or removes particulate matter from tires and the exterior surfaces of motor vehicles that traverse the site; or
  - c. Uniformly apply and maintain surface gravel.
- ii. For parking, maneuvering, ingress, and egress areas at developments other than residential buildings with four or fewer units that are utilized for 35 days or less during the calendar year:



- a. Install and maintain one of the control measures listed in §4-1-030.4.B.i; or
- b. Apply water and install, maintain, and use a suitable trackout control device that controls and prevents trackout and/or removes particulate matter from tires and the exterior surfaces of motor vehicles that traverse the site.

C. Additional requirements:

- i. Control measure(s) shall be considered effectively implemented when the unpaved parking lot meets the requirements described in §4-1-030.4.A.
- ii. If trackout occurs, the owner and/or operator shall repair and/or replace the control measure(s) and shall clean-up immediately such trackout from areas accessible to the public including curbs, gutters and sidewalks when trackout extends a cumulative distance of 25 linear feet or more and at the end of the day for all other trackout.

5. 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 control measures in §4-1-030.5.A shall be applied.

A. Control measures:

- i. Pre-wet surface soils before mechanized weed abatement and/or trash removal occurs; and,
- ii. Maintain dust control measures while mechanized weed abatement and/or trash removal is occurring; and,
- iii. Pave, apply gravel, apply water, or apply a suitable dust palliative, in order to achieve stabilization compliance with §§4-1-030.3.A.ii.1 or 4-1-030.3.A.ii.2, or 4-1-030.3.A.ii.7.

- ~~B. Upon evidence of trespass in open areas/vacant lots, an owner and/or operator shall install and maintain one of the following:~~
- ~~i. No trespassing signs~~
  - ~~ii. Physical barriers such as curbs, fences, gates, posts, shrubs, trees, or other effective control measures to effectively prevent access to the open areas/vacant lots.~~
- ~~C. Owners and/or operators of open areas/vacant lots 1.0 acre (43,560 square feet) or larger and have a cumulative of 0.5 acre (21,780 square feet) or more disturbed surface area shall implement at least one control measure described below on the disturbed surface area in order to stabilize:-~~
- ~~i. Apply and maintain water or dust suppressants; or~~
  - ~~ii. Establish vegetation; or~~
  - ~~iii. Install and maintain pavement; or~~
  - ~~iv. Apply and maintain gravel uniformly; or~~
  - ~~v. Apply and maintain chemical/organic stabilizers/suppressants; or~~
  - ~~vi. Apply and maintain an alternative control measure approved in writing by the Control Officer and the EPA Administrator.~~
- ~~D. For open areas/vacant lots 1.0 acre (43,560 square feet) or larger and have a cumulative of 0.5 acre (21,780 square feet) or more disturbed surface area, within 30 calendar days following the initial discovery of the disturbed surface area on the open areas/vacant lots, the owner and/or operator shall sign up to receive the Pinal County dust control forecast. The owner and/or operator shall ensure the open areas/vacant lots is stabilized the day leading up to and the day that is forecast to be high risk for dust emissions, as noticed by the Pinal County dust control forecast.~~
- ~~E. No person shall remove vegetation from any open areas/vacant lots by blading, disking, plowing under or any other means without implementing all of the following control measures to prevent or minimize fugitive dust.~~
- ~~i. Apply a dust suppressant(s) to the total surface area subject to the disturbance immediately prior to or during the weed abatement.~~
  - ~~ii. Prevent or eliminate material trackout onto paved surfaces and access points adjoining paved surfaces through one of the control measures in 4-1-030.5.A.i.~~

- iii. ~~Apply a dust suppressant(s), gravel, compaction or an alternative control measure immediately following weed abatement to the entire disturbed surface area such that the surface is stabilized.~~

F. ~~Compliance with the stabilization requirement in paragraphs C, D and E shall be determined by one of the following:~~

- i. ~~Observation of a visible crust as determined by the drop ball test in Article 9 (§4-9-320.B.1); or~~
- ii. ~~A Threshold Friction Velocity (TFV), corrected for non-erodible elements, of 100 cm/second or higher as determined by the test method in Article 9 (§4-9-320.B.2); or~~
- iii. ~~Flat vegetation cover equal to at least 50 percent as determined by the test method in Article 9 (§4-9-320.B.3); or~~
- iv. ~~Standing vegetation cover equal to or greater than 30 percent as determined by the test method in Article 9 (§4-9-320.B.4); or~~
- v. ~~Standing vegetation cover equal to or greater than 10 percent as determined by the test method in Article 9 (§4-9-320.B.4) where threshold friction velocity, corrected for non-erodible elements, is equal to or greater than 43 cm/second.~~

### ~~3. UNPAVED LOTS~~

A. ~~The owner and/or operator of an unpaved lot greater than 5,000 square feet in size shall be subject to the requirements described in 4-1-030.3.A.i and shall comply with at least one of the control measures described in 4-1-030.3.A.ii:~~

- i. ~~Visible Emissions Requirements and Stabilization Requirements: The owner and/or operator of an unpaved lot shall not cause or allow visible fugitive dust emissions to exceed 20% opacity as measured using an opacity method, as determined by the applicable test method in §4-9-340 or an equivalent test method approved in writing by the Control Officer and the EPA Administrator, and shall not allow silt loading equal to or greater than 0.33 oz/ft<sup>2</sup> as determined by the applicable test method in §4-9-320.A.1. However, if silt loading is equal to or greater than 0.33 oz/ft<sup>2</sup>, then the owner and/or operator shall not allow the silt content to exceed 8%;~~

ii. ~~CONTROL MEASURES:~~

- a. ~~Pave; or~~
- b. ~~Apply dust suppressant in sufficient quantity and frequency to maintain a stabilized surface; or~~
- c. ~~Apply and maintain surface gravel uniformly such that the surface is stabilized; or~~
- d. ~~Apply and maintain an alternative control measure approved in writing by the Control Officer and the EPA Administrator.~~

B. ~~Control measure(s) in 4-1-030.3.A.ii shall be considered effectively implemented when the unpaved lot meets the requirements of 4-1-030.3.A.i.~~

4. 6. UNPAVED ROADS

A. Visible emissions and stabilization requirements: on any unpaved road segment with 26 or more ADT (A traffic count shall measure motor vehicle traffic over a 48-hour period, which may consist of two non-consecutive 24-hour periods. Motor vehicle traffic shall be measured continuously during each 24-hour period.), the owner and/or operator shall not exceed an opacity of 20%, as measured using an opacity method as determined by the applicable test method in §4-9-340 and comply with requirements of a stabilized unpaved road by application and/or reapplication/maintenance of at least one of the following control measures.

- i. Watering;
- ii. Uniform layer of washed gravel;
- iii. Chemical/organic dust stabilizers/suppressants in accordance with manufacturer's specifications;
- iv. Paving;

~~A. The owner and/or operator of unpaved roads with average daily trips (ADT) greater than 150 (A traffic count shall measure motor vehicle traffic over a 48-hour period, which may consist of two non-consecutive 24 hour periods. Motor vehicle traffic shall be measured continuously during each 24 hour period.) shall be subject to the requirements described in 4-1-030.4.A.i and shall comply with one of the control measures described in 4-1-030.4.A.ii:~~

i. ~~Visible Emissions Requirements and Stabilization Requirements: The owner and/or operator of unpaved roads shall not cause or allow visible fugitive dust emissions to exceed 20% opacity as measured using an opacity method, as determined by the applicable test method in §4-9-340 or an equivalent test method approved in writing by the Control Officer and the EPA Administrator and shall not allow silt loading equal to or greater than 0.33 oz/ft as determined by the applicable test method in §4-9-320.A.1. However, if silt loading is equal to or greater than 0.33 oz/ft, then the owner and/or operator shall not allow the silt content to exceed 6%;~~

ii. ~~CONTROL MEASURES:~~

- ~~a. Pave; or~~
- ~~b. Apply and maintain dust suppressants other than water; or~~
- ~~c. Uniformly apply and maintain surface gravel~~

B. ~~Control measure(s) in 4-1-030.4.A.ii shall be considered effectively implemented when:~~

- ~~i. One of the control measures described in 4-1-030.4.A.ii is annually implemented on 15 miles per year of unpaved roads having ADT of 150 or more:
  - ~~a. When the control measure is application and maintenance of dust suppressants other than water, the application and maintenance of the dust suppressants shall only be counted towards the 15 mile threshold when:
    - ~~1. Done on unpaved roads previously untreated, and~~
    - ~~2. Application and maintenance of dust suppressants on unpaved roads previously treated continues annually until the unpaved road is paved.~~~~~~
- ~~ii. For year 2019 and beyond, control measures applied on unpaved roads with less than 150 ADT can be used for compliance with 4-1-030.4.B.i through use of the following equivalency conversion.~~

ADT Range	Mileage Equivalency (Miles of equivalent control / mileage of actual control)
0-14	0.000

14-62	0.121
62-103	0.514
103-146	0.531
146+	1.000

~~Example equivalency conversion calculation:~~

~~In year one, City or County “A” paves 10 miles of unpaved roads with ADT of 100.~~

~~$10 * 0.514 = 5.14$  miles of 150 ADT equivalent unpaved roads.~~

B. Annual Road Paving Requirements: Each city, county, or state agency with primary responsibility for any existing unpaved road within the West Pinal Serious PM10 Nonattainment Area shall take the following actions:

i. Starting January 1, 2024, pave an average of 20% annually (calendar year) of all unpaved roads identified in §4-1-030.6.A up to a maximum of 5 cumulative miles with priority given to roads with the highest ADT levels. In meeting this requirement, each jurisdiction must show incremental progress.

C. Contingency Measure: The following contingency measure will go into effect without further action by the Control Officer if EPA determines that the West Pinal Serious PM10 Nonattainment Area has failed to make reasonable further progress, or to attain the National Ambient Air Quality Standard for PM10 by the attainment date.

i. Pursuant to A.R.S. §28-703.C - In order to achieve the PM10 National Ambient Air Quality Standard in the West Pinal Serious PM10 Nonattainment Area, the owner and/or operator of any public unpaved road with an ADT of 26 or more shall have a speed limit of 15 mph.

## 5. 7. PAVED PUBLIC ROADWAY

A. Clean up of trackout, Erosion-Caused Deposition of Bulk Materials on paved public roadway: the owner and/or operator of the property from which the trackout or erosion-caused deposition came from shall upon discovery of mud/dirt that

extends ~~50~~ 25 feet or more from the nearest unpaved surface exit onto the paved public roadway shall:

- i. ~~Within 24 hours of discovery,~~ Immediately remove the mud/dirt from the paved public roadway with one of the following control measures in subsection §4-1-030.7.A.i.a through §4-1-030.7.A.i.c. For mud/dirt that extends less than 25 feet from the nearest unpaved surface exit onto the paved public roadway, removal of the mud/dirt from the paved public roadway shall be completed by the end of the day. (If needed, restrict vehicles from traveling over said mud/dirt until such time as the material can be removed from the travel lanes of the paved public roadway).

Trackout Control Measures:

- a. Manually sweeping and picking up; or
  - ~~b. Operating a rotary brush or broom accompanied or preceded by sufficient wetting to limit opacity to 20% or less; or~~
  - e. b. Operating a PM10-efficient certified street sweeper; or
  - ~~d. c. Flushing with water, if curb and gutters are not present and where the use of water will not result as a source of trackout material or result in adverse impacts on storm water drainage systems or violate any National Pollutant Discharge Elimination System permit program.~~
- ii. During removal of mud/dirt, do so in a manner that does not cause another source of fugitive dust.
  - iii. In the event unsafe travel conditions would result from restricting traffic pursuant to section §4-1-030.7.A.i and removal of such material isn't possible within 72 hours due to a weekend or holiday condition, the provisions of section §4-1-030.7.A.i can be extended upon notification to and approval by the Control Officer.

B. Paved road sweeping requirements:

- i. Any government or government agency which contracts to acquire street sweeping equipment or street sweeping services for routine street sweeping on public roads that it owns and/or maintains within

- the West Pinal Serious PM<sub>10</sub> Nonattainment area shall by January 1, 2025 acquire or use only certified street sweeping equipment.
- ii. Any government or governmental agency subject to the requirements of subsection §4-1-030.7.B.i and/or its contractors shall operate and maintain the certified street sweeping equipment in accordance with the manufacturer's specifications.

~~B.~~ C. Unpaved road shoulder work requirements:-The owner and/or operator of any existing paved public roadways shall take the following actions prior to, during and after work on unpaved road shoulders:

- i. Apply a dust suppressant(s) to the total surface area subject to the disturbance in sufficient quantity and frequency to maintain a stabilized surface.
- ii. Prevent trackout by using one of the control measures listed in §4-1-030.57.A.i.

D. Paved road development standards: Owners and/or operators having jurisdiction over, or ownership of, public or private paved roads shall construct, or require to be constructed, all new or modified paved roads in conformance with the road shoulder width and drivable median stabilization requirements as specified below:

- i. New construction, modification, or approvals of paved roads shall be constructed with a paved travel section, and four (4) feet of paved or stabilized shoulder on each side of the paved travel section. The four (4) feet of shoulder shall be paved or stabilized with a dust palliative or gravel to prevent trackout of mud and dirt to the paved section. Where shoulder stabilization is used in place of paving, the stabilized shoulders must be maintained in compliance with the stabilization standards set forth in §4-1-030.7.E.
- ii. New construction, modification, or approvals of paved roads on which vehicular traffic is greater than or equal to 3,000 vehicles per day shall be constructed with a paved travel section, and eight (8) feet of stabilized shoulder adjacent to the paved travel section where right-of-way is available for the stabilized shoulder. Where the right-of-way is not available for the full eight (8) feet of stabilized shoulder, curbing shall be installed adjacent to the shoulder. Stabilized shoulders must be maintained in compliance with the stabilization standards set forth in §4-1-030.7.E.



iii. Where curbing is constructed adjacent to and contiguous with the travel lane or paved shoulder of a road, the shoulder width design standards specified in §4-1-030.7.D.i shall not be applicable.

iv. Where paved roads are constructed, or modified with shoulders and/or medians, the shoulders and/or medians shall be constructed as set forth below.

- a. With curbing, or
- b. With solid paving across the median, or
- c. Apply a dust palliative, in compliance with the stabilization standards set forth in §4-1-030.7.D of this rule, or apply two (2) inches of gravel in compliance with the stabilization standards set forth in §4-1-030.7.D of this rule, or
- d. With materials that prevent trackout of mud and dirt to the paved section such as landscaping or decorative rock.

E. Stabilization standards for unpaved shoulders and medians: Unpaved shoulders and medians of paved roads shall be considered to have control measures effectively implemented when fugitive dust emissions do not exceed 20% opacity and silt loading does not equal or exceed 0.33 oz/ft<sup>2</sup> as determined in §4-9-310 except for unpaved shoulders on which gravel has been applied. Failure to comply with either the 20% opacity limit or silt loading limit indicates that the shoulder is not stable. Where gravel is utilized to prevent trackout from unpaved shoulders and medians of paved roads, surface gravel shall be uniformly applied and maintained to a depth of two (2) inches to comply with the 20% opacity standards, the gravel depth and silt content test methods in §4-9-310. For the purposes of this section, the term gravel shall include “aggregate” and shall mean unconsolidated material greater than 0.25 (1/4) inch but less than three (3) inches, and contain no more than six (6) percent silt, by dry weight, that will pass through a No. 200 sieve. Failure to comply with either the 20% opacity limit or the gravel depth and silt content test method indicate that the shoulder is not stable.

F. Requirements for existing nonconforming paved roads: Owners and/or operators having jurisdiction over, or ownership of, existing public or private paved roads which do not conform with the requirements of subsection §4-1-030.7.D shall reconstruct, or require to be reconstructed, the existing nonconforming paved road within 365 calendar days following the initial discovery that the road fails to meet the requirements set forth in §4-1-030.7.D. The Control Officer may require short-term stabilization of any

paved road subject to the requirements set forth in §§4-1-030.7.D and 4-1030.7.E.

[Adopted October 28, 2015, effective January 1, 2016]

#### **4-1-040. Recordkeeping**

Any person subject to the requirements of this rule shall compile and retain records that provide evidence of control measure application (i.e. receipts and/or purchase records). Such person shall describe in the records, the type of treatment or control measure, extent of coverage, and date applied. Upon verbal or written request by the Control Officer, such person shall provide the records and supporting documentation as soon as possible but no later than 48 hours, excluding weekends. If the Control Officer is at the site where requested records are kept, such person shall provide the records without delay.

Any person who creates a non-traditional source of fugitive dust shall compile and retain records (including records on any street sweeping, water applications, and maintenance of trackout control devices, gravel pads, fences, wind barriers and tarps) that provide evidence of control measure application, by indicating the type of treatment or control measure, extent of coverage, and date applied.

[Adopted October 28, 2015, effective January 1, 2016]

#### **4-1-045. Reporting Requirements**

Each city, county, or state agency with primary responsibility for any existing paved public roadway and unpaved roads shall take the following actions:

- A. By January 30 of each year provide the district with a list of all unpaved roads under its jurisdiction, including data on length of, and ADT ~~(if available)~~ on, each unpaved road segment.
- B. By January 30 of each year, submit to the district a list of unpaved roads which were paved during the previous year including the total number of unpaved roads miles, ADTs ~~(if available)~~ and their respective segments.
- C. By January 30 of each year, submit to the district a list of all paved public roads with unpaved shoulders, including data on length of, and ADT on, each segment of paved public roads with unpaved shoulders.

[Adopted October 28, 2015, effective January 1, 2016]

#### **4-1-050. Records Retention**

Copies of the records required by §4-1-040 (Recordkeeping) and §4-1-045 (reporting) of this rule shall be retained for at least two years.

[Adopted October 28, 2015, effective January 1, 2016]

#### **4-1-060. Violations**

Failure by any person to comply with the applicable requirements of this Article shall constitute a violation subject to penalty as provided in these rules and A.R.S. Title 49, Chapter 3, Article 3, A.R.S. 49-471 et. seq.

##### **Violation Exemptions:**

- A. The opacity requirements of this rule shall not apply during:
  - i. Wind conditions that cause fugitive dust to exceed the opacity requirements if applicable control measures are implemented, applied and maintained, and all dust contributing disturbed surface area are stabilized.
  - ii. Emergency maintenance of flood control channels and water retention basins if at least 1 applicable control measure is applied, and maintained.

## ARTICLE 3. CONSTRUCTION SITES - FUGITIVE DUST

### 4-3-160. General Provisions – West Pinal PM10 Nonattainment Area

#### A. ~~Intent, and~~ Applicability, general requirements and exemptions

##### 1. Intent

~~The intent of this Article is to control dust emissions associated with construction activities.~~ This Article focuses on fugitive dust emissions from process activity, site activity and a lack of adequate surface stabilization, all associated with construction.

##### 2. Effective Date

The rules in this Article adopted on January 25, 2023 will become effective on January 1, 2016-June 1, 2023. The rules in this Article that became effective on January 1, 2016 will remain in effect through May 31, 2023.

##### 3. Geographic Scope

The rules in this Article shall be effective throughout the West Pinal County PM<sub>10</sub> ~~Moderate-Serious~~ Nonattainment area as defined in 40 CFR Part 81.303. ~~These rules exclude the rest of Pinal County and the Pinal County portion of the Phoenix PM10 Serious Nonattainment area, more specifically Township 1 North, Range 8 East, Gila & Salt River Base and Meridian ("T1N R8E") which is covered under Chapter 4, Article 7.~~

##### 4. General Requirements:

- a. Any person engaged in a dust-generating operation subject to this rule shall be subject to the standards and/or requirements of this rule before, after, and while conducting such dust-generating operation, including during weekends, after work hours, and on holidays.
- b. For the purposes of this rule, any control measure that is implemented must achieve the applicable standard(s) described in this rule, as determined by the corresponding test method(s), as

applicable, and must achieve other applicable standard(s) set forth in this rule.

- c. Control measures are described in section 4-3-180.I of this rule. Regardless of whether a dust-generating operation is in compliance with an approved Dust Control Plan or there is no approved Dust Control Plan, the owner and/or operator of a dust-generating operation shall be subject to all requirements of this rule at all times.
- d. Failure to comply with the provisions of this rule, as applicable, and/or of an approved Dust Control Plan, shall constitute a violation.

#### ~~B. General Prohibition and Exemptions~~

~~1. Subject to the exemptions set forth in this Article, it constitutes a violation of this Article for any person to conduct any dust generating operation at any work site, without complying with this Article:~~

#### 25. Exemptions

The following are exempt from this Article, or portions of this Article:

- a. The application and permit requirements of this Article shall not apply to any facility operating under authority of a permit issued pursuant to ARS §§49-426 or 49-480, however, any dust generating operations are subject to the requirements of §4-3-180 sections C through N-(A) and (B), ~~and facilities must keep records pursuant to §4-3-180(C)(2)(b).~~
- b. In the case of an emergency, action may be taken to stabilize a dust generating operation or disturbed surface area before submitting a dust generating operation application form. Upon stabilizing the emergency situation, a dust generating operation application form shall be submitted.
- c. In the case of legitimate vehicle test and development facilities and operations conducted by or for an equipment manufacturer, where dust is required to test and validate the

design integrity, product quality and/or commercial acceptance, those specific activities shall be exempt from the application, permit and applicable standards in section §4-3-180 under this Article.

- d. The application and permit requirements of this rule shall not apply to road maintenance activities, however, any dust generating operations are subject to the requirements of §4-3-180 sections ~~(A) and (B)~~ C through N, ~~and records must be kept pursuant to §4-3-180(C)(2)(b).~~
- e. The application and permit requirements shall not apply with respect to dust generating operations associated with the emergency repair of utilities.
- f. Establishment of initial landscapes without the use of mechanized equipment, conducting landscape maintenance without the use of mechanized equipment, and playing on or maintaining a field used for non-motorized sports are exempt from the application, permit, and standards in section §4-3-180 of this Article. However, establishing initial landscapes without the use of mechanized equipment and conducting landscape maintenance without the use of mechanized equipment shall not include grading, or trenching performed to establish initial landscapes or to redesign existing landscapes.
- ~~g. The provisions of this rule shall not apply to rooftop operations for cutting, drilling, grinding, or coring roofing tile when such activity is occurring on a pitched roof.~~
- g. The provisions of this rule shall not apply to the following non-traditional sources of fugitive dust that are located at sources that do not require any permit under these rules. These non-traditional sources of fugitive dust are subject to the standards and/or requirements described in Chapter 4, Article 1:
  - 1) Vehicle use in open areas and vacant lots
  - 2) Open areas and vacant lots
  - 3) Unpaved parking lots
  - 4) Unpaved roadways (including alleys)

- 5) Erosion-caused deposition of bulk materials onto paved surfaces
- 6) Easements, rights-of-way, and access roads for utilities (transmission of electricity, natural gas, oil, water, and gas).
- i. Emergency maintenance of flood control channels and water retention basins if all control measures, as specified in the permit are implemented, applied, and maintained

[Adopted October 28, 2015, effective January 1, 2016]

#### **4-3-170. Definitions**

See Chapter 1, Article 3 (General Provisions and Definitions) of this code for definitions of terms that are used but not specifically defined in this Article.

- 1. “AREA ACCESSIBLE TO THE PUBLIC”, as used in this Article, means any paved parking lot or paved roadway that can be entered or used for public travel primarily for purposes unrelated to the dust generating operations.
- 2. “BLOCK PERMIT”, as used in this Article, permit applicable only to Political subdivisions, Public Utility Corporations regulated by the Arizona Corporation Commission or Contractors or subcontractors for Political subdivisions or Public Utility Corporations and issued only for dust generating operations associated with the following:
  - a. Maintenance of existing underground or above-ground lines
  - b. Effecting end-user connections, including but not limited to water connections, sewer connections, natural gas connections, electrical power connections, and communication connections;
  - c. Underground utility line extensions not exceeding 500’ in length;
  - d. Overhead utility line extensions;
  - e. Expansion or extension of paved roads, unpaved roads, road shoulders, and/or alleys and public right of ways at non-contiguous sites.

43. "BULK MATERIAL" as used in this Article, means 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, trash, cinders, pumice, saw dust, and dry concrete, which are capable of producing fugitive dust at an industrial, institutional, commercial, governmental, construction and/or demolition site.
24. "BULK MATERIAL HANDLING, STORAGE AND/OR TRANSPORTING OPERATION" as used in this Article, means the ~~processing of bulk materials, use of equipment, haul trucks, and/or motor vehicles,~~ including but not limited to, for the following activities that are capable of producing fugitive dust: the loading, unloading, conveying, transporting, piling, stacking, screening, grading, or moving of bulk materials.
35. CONSTRUCTION as used in this Article means building, maintaining or modifying a capital improvement resting upon, connected to or buried in the earth. Construction includes, but is not limited to, vertical construction, residential construction, installing underground utilities, installing above-ground utilities, and building physical infrastructure including roads, highways, railways, flood structures, drainage works and irrigation works. Notwithstanding any other exemption under these rules, weed abatement by discing or blading and conducted for the purpose of enabling Development Activity or maintaining a work site shall qualify as construction.
46. "CONTROL MEASURE" as used in this Article means, a preemptive or concurrent technique, practice, or procedure used to prevent or minimize the generation, emission, entrainment, suspension, and/or airborne transport of fugitive dust at a work site in order to comply with applicable standards in section §4-3-180. Control measures include but are not limited to:
- a. Curbing;
  - b. Paving;
  - c. Pre-watering;
  - d. Apply dust suppressant in sufficient quantity and frequency to maintain a stabilized surface;
  - e. Physically stabilizing with vegetation, gravel, recrushed/recycled asphalt or other forms of physical stabilization;
  - f. Limiting, restricting, phasing and/or rerouting motor vehicle access;



- g. Reducing vehicle speeds and/or number of vehicle trips;
- h. Limiting use of off-road vehicles on open areas and vacant lots;
- i. Utilizing work practices and/or structural provisions to prevent wind and water erosion onto areas accessible to the public;
- j. Appropriately using dust control implements;
- k. Installing one or more grizzlies, gravel pads, and/or wash down pads adjacent to the entrance of an area accessible to the public to control carry-out and trackout;
- l. Keeping open-bodied haul trucks in good repair, so that spillage may not occur from beds, sidewalls (i.e. freeboard), and tailgates; and
- m. Covering the cargo beds of haul trucks to minimize wind-blown dust emissions and spillage

<b>CONTROL MEASURES</b>	<b>Description</b>
Watering (pre wetting)	Application of water by means of trucks, hoses, and/or sprinklers prior to conducting any dust generating operation. This will increase the moisture content of the soils and increase stability of the soil.
Watering (operational control)	For disturbed surface areas and dust generating operations water is applied at sufficient intervals and quantity to increase the moisture content of the soils and increase stability of the soil. Also during stacking, loading and unloading operations on open storage piles, apply water as necessary.

Applying chemical stabilizers or dust suppressants	Apply chemical stabilizers/dust suppressants to disturbed surface areas and dust generating operations. Effective in areas which are not subject to daily disturbances.
Altering load in/load out procedures and watering	Confine load in load out procedures to downwind side of the material and mist material with water prior to loading. Empty loader slowly and keep bucket close to the truck while dumping.
Reducing vehicular speeds	Restrict maximum vehicular speeds to 15 miles per hour on unpaved easements, right of way, unpaved haul/access roads and parking lots.
Controlling Freeboard and spillage and covering haul vehicles	Load all trucks such that the freeboard is not less than three inches; and prevent spillage or loss of bulk material from holes or other openings in the conveyance; cover all haul trucks (empty or full) with an anchored tarp or other suitable anchored material.
Trackout Control	Install trackout control for work sites 5 acres or larger. For all work sites, when trackout extends a cumulative distance of 50 linear feet or more, be cleaned up as soon as practicable; but, in any case, by the end of the work day.
Limit, restrict or reroute motor vehicles access to work site	Erect signs or install physical barriers to limit access of work site.

Other measures as proposed by registrant	<del>Specific measures that are adequate to address applicable standards in section §4-3-180 at the work site. Alternative measures must be approved by the Control Officer and the EPA Administrator.</del>
--	--

57. "DISTURBED SURFACE AREA" as used in this Article, means any portion of the earth's surface or material placed on the earth's surface that has been physically moved, uncovered, destabilized, or otherwise modified from its undisturbed natural condition if the potential for the emission of fugitive dust is increased by the movement, destabilization, or modification.

~~This definition excludes those permanently stabilized areas that have:~~

- ~~a. — Been restored to a natural condition, such that vegetative ground cover and soil characteristics are similar to adjacent or nearby natural conditions;~~
- ~~b. — Been paved or otherwise covered by a permanent structure; or~~
- ~~c. — Sustained a vegetative ground cover over at least 70 percent of the area for at least 30 days.~~

8. "DUST CONTROL IMPLEMENT" as used in this Article, means a tool, machine, equipment, accessory, structure, enclosure, cover, material or supply, including an adequate readily available supply of water and its associated distribution/delivery system, used to control fugitive dust emission.

9. "DUST CONTROL PLAN" as used in this Article, means a written plan describing all control measures to be implemented and maintained in order to prevent or minimize the generation, emission, entrainment, suspension, and/or airborne transport of fugitive dust.

610. "DUST GENERATING OPERATION" as used in this Article, means any activity capable of generating fugitive dust, including but not limited to:

- a) Earthmoving activities

- b) Land clearing, maintenance, and land clean-up using mechanized equipment
- ~~b~~c) ~~Land clean-up, Land-leveling, excavating back-filling~~
- ~~c~~e) ~~Drilling~~
- d) Weed abatement by discing or blading
- ~~d~~e) Construction
- ~~e~~f) Demolition
- ~~f~~g) Bulk material handling (i.e. bulk material hauling and/or transporting, bulk material stacking, loading, and unloading operations);
- h) storage and/or transporting operations (i.e. open storage piles)
- ~~g~~i) Operation of motorized machinery ~~used in Construction~~
- j) Operation of any outdoor equipment
- ~~h~~k) Establishing and/or using unpaved parking areas, material storage areas lots, staging areas, or access routes to and from a worksite
- l) Establishing and/or using unpaved haul/access roads to, from, and within a work site
- m) Disturbed surface areas associated with a worksite
- ~~i~~n) Installing initial landscapes using mechanized equipment

For the purpose of this rule, landscape maintenance and/or playing on a ball field shall not be considered a dust generating operation.

711. "DUST SUPPRESSANT" as used in this Article, means hygroscopic material, solution of water and chemical surfactant foam, non-toxic chemical stabilizer or any other dust palliative, which is not prohibited for ground surface application by the U. S. Environmental Protection Agency (EPA) or the Arizona Department of Environmental Quality (ADEQ), or any applicable law, rule, or regulation, as a treatment material for reducing fugitive dust emissions.

812. "EARTHMOVING OPERATION-~~ACTIVITY~~" as used in this Article, means ~~any land clearing, land cutting and filling operations, blasting,~~

~~trenching, road construction, grading, landscaping, landfill operations, weed abatement through discing, soil mulching, or any other activity associated with land development where the objective is to disturb the surface of the earth.~~ the use of any equipment for an activity that may generate fugitive dust, such as but not limited to, the following activities:

- a. Cutting and filling
- b. Grading
- c. Leveling
- d. Excavating
- e. Trenching
- f. Loading or unloading of bulk materials
- g. Demolishing
- h. Blasting
- i. Drilling
- j. Adding bulk materials to or removing bulk materials from open storage piles
- k. Back filling
- l. Soil mulching
- m. Landfill operations

913. “EMERGENCY” as used in this Article means a situation arising from sudden and reasonably unforeseeable events beyond the control of the owner and/or operator, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the dust generating operation to exceed a limitation in this rule, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include any noncompliance due to improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

14. "END OF WORKDAY" as used in this Article, the end of a working period that may include one or more work shifts. If working 24 hours a day, the end of a working period shall be considered no later than 8 pm.
- ~~10~~15. "FREEBOARD" as used in this Article, means the vertical distance between the top edge of a cargo container and the highest point at which the bulk material contacts the sides, front, and back of the container.
- ~~11~~16. "FUGITIVE DUST", as used in this Article, means the regulated particulate matter, which is not collected by a capture system, which is entrained in the ambient air, and which is caused from human and/or natural activities, such as but not limited to, movement of soils, vehicles, equipment, blasting, and wind. For the purpose of this Article, fugitive dust does not include particulate matter emitted directly from the exhaust of motor vehicles and other internal combustion engines, from portable brazing, soldering, or welding equipment, and from piledrivers.
- ~~12~~17. "GRAVEL PAD" as used in this Article, means a layer of washed gravel, rock, or crushed rock that is at least one inch or larger in diameter, that is maintained at the point of intersection of an area accessible to the public and with the paved public roadway and a work site entrance exit to dislodge mud, dirt, and/or debris from the tire of the motor vehicles and/or haul trucks prior to leaving the work site. Minimum dimensions must be 30 feet wide by 3 inches deep and 50 feet long, or the length of the longest haul truck, whichever is greater. If an unpaved surface exit does not have adequate width to install a 30-foot wide gravel pad, then the width of the gravel pad must cover the full width of the unpaved surface exit and such shorter width must be adequate to prevent trackout.
- ~~13~~18. "GRIZZLY" as used in this Article, means a device (i.e. rails, pipes, or grates) maintained at the point of intersection of a paved public roadway and a work site entrance to dislodge mud, dirt and/or debris from the tires of the motor vehicles or haul trucks prior to leaving the work site.
- ~~14~~19. "HAUL TRUCK" as used in this Article, is any fully or partially open-bodied self-propelled vehicle including any non-motorized attachments, such as but not limited to, trailers or other conveyances, which are connected to or propelled by the actual motorized portion of the vehicle used for transporting bulk materials.
20. "HIGH WIND CONDITIONS" as used in this Article, instantaneous wind speeds exceed 25 miles per hour.

- ~~45~~21. "MOTOR VEHICLE" as used in this Article, is a self-propelled vehicle for use on the public roads and highways of the State of Arizona and required to be registered under the Arizona State Uniform Motor Vehicle Act, including any non-motorized attachments, such as but not limited to, trailers and other conveyances which are connected to or propelled by the actual motorized portion of the vehicle.
22. "OFF-ROAD VEHICLE" as used in this Article, any self-propelled conveyance specifically designed for off-road use, including, but not limited to, off-road or all-terrain equipment, trucks, cars, motorcycles, motorbikes, or motorbuggies.
23. "OPEN STORAGE PILE" as used in this Article, any accumulation of bulk material with a 5% or greater silt content that has a total surface area of 150 square feet or more and that at any one point attains a height of three feet. Silt content shall be assumed to be 5% or greater unless a person can show, by testing in accordance with ASTM Method C136-06.
- ~~46~~24. "OWNER AND/OR OPERATOR" as used in this Article, is any person including, but not limited to, the property owner, lessee, developer, responsible official, dust generating operation permit applicant (who may also be the responsible party contracting to do the work), general or prime contractor, supervisor, management company, or any person who owns, leases, operates, controls, or supervises a dust generating operation subject to the requirements of this rule.
25. "PAVE" as used in this Article, to apply and maintain asphalt, concrete, or other similar material to a roadway surface (i.e. asphaltic concrete, concrete pavement, chip seal, or rubberized asphalt).
- ~~47~~26. "PAVED PUBLIC ROADWAY" means a publicly owned paved roadway, owned by federal, state, county, municipal, or other governmental or quasi-governmental agencies as evidenced by a formal acceptance by the state or a political subdivision of the state of either:
1. An on-going maintenance obligation for the roadway; or
  2. A title or easement for the roadway.
- ~~48~~27. "PINAL COUNTY DUST CONTROL FORECAST" means a forecast, which shall identify a low, moderate or high risk of dust generation for the next five consecutive days and shall be issued by noon on each day the forecast is generated. When developing these forecasts, the Department of Environmental Quality shall consider all of the following:

- a) Projected meteorological conditions, including:
  - i) Wind speed and direction,
  - ii) Stagnation,
  - iii) Recent precipitation, and
  - iv) Potential for precipitation;
- b) Existing concentrations of air pollution at the time of the forecast; and
- c) Historic air pollution concentrations that have been observed during meteorological conditions similar to those that are predicted to occur in the forecast.

28. "PROPERTY LINE" as used in this Article, the boundaries of an area in which either a person causing the emission or a person allowing the emission has the legal use or possession of the property. Where such property is divided into one or more sub-tenancies, the property line(s) shall refer to the boundaries dividing the areas of all sub-tenancies.

~~19~~29. "ROAD CONSTRUCTION" as used in this Article, means the use of any equipment for the paving or new construction of a road surface, street or highway.

~~20~~30. "ROAD MAINTENANCE" as used in this Article, means the use of any equipment for the repair and preservation of an old road surface, street or highway.

31. "ROUTINE" as used in this Article, Any dust-generating operation which occurs more than 4 times per year or lasts 30 cumulative days or more per year.

32. "SILT" as used in this Article, Any aggregate material with a particle size less than 75 micrometers in diameter, which passes through a No. 200 sieve.

~~24~~33. "STABILIZE" means any previously disturbed surface area which, through application of water or dust suppressants, shows visual or other evidence of surface crusting and is resistant to wind-driven fugitive dust. Stabilization shall be demonstrated by application of the drop ball test in Article 9 (§4-9-320.B.1).



- ~~2234.~~ "TRACKOUT/CARRYOUT" means visible material deposited onto any paved public roadway, as defined in this Article, by traffic leaving a work site. As used in this Article, any and all bulk materials that adhere to and agglomerate on the surfaces of motor vehicles, haul trucks, and/or equipment (including tires) and that have fallen or been deposited onto an area accessible to the public.
- ~~2335.~~ "TRACKOUT CONTROL DEVICE" as used in this Article, means a gravel pad, grizzly, wheel wash system, or a paved area, located at the point of intersection of an unpaved area and an area accessible to the paved public roadway that controls or prevents vehicular trackout.
- ~~2436.~~ "TRENCH" as used in this Article, means a long, narrow excavation dug in the earth (as for drainage).
- ~~2537.~~ "UNPAVED HAUL/ACCESS ROAD" as used in this Article, means any on-site unpaved road used by commercial, industrial, institutional, and/or governmental traffic.
- ~~2638.~~ "UNPAVED PARKING LOT" as used in this Article, means any area larger than 5,000 square feet that is not paved and that is used for parking, maneuvering, or storing motor vehicles on a work site.
- ~~2739.~~ "UNPAVED ROAD" as used in this Article, means any unsealed or unpaved roads, equipment path, or travel ways that are not covered by typical roadway materials. Public unpaved roads are any unpaved roadway owned by federal, state, county, municipal, or other governmental or quasi-governmental agencies. Private unpaved roads are all other unpaved roadways not defined as public. For the purpose of this rule, an unpaved road is not a horse trail, hiking path, bicycle path, or other similar path used exclusively for purposes other than travel by motor vehicles.
- ~~40.~~ "WIND-BLOWN DUST" as used in this Article, means visible emissions, from any disturbed surface area, that are generated by wind action alone.
- ~~2841.~~ "WORK SITE" as used in this Article, means any property upon which dust generating operations occur during construction, and which covers an area of 0.1 acres or larger.
- a. Trenches that are equal to or larger than the following dimensions are considered work sites and are subject to the requirement of this Article:
- i. Trenches less than four feet in depth, that exceed a length of 726 feet;

ii. Trenches that are four feet or greater in depth, that exceed a length of 363 feet;

b. For calculations of disturbed surface areas for land clearing or earthmoving activities, 25 feet will be added to each dimension of all structures, driveways, concrete pads, and other construction projects being built on the site to allow for an equipment utilization zone. If this final figure equals or exceeds 0.1 acres, a dust generating operation application is required for the site.

c. If the registrant identifies situations in which the amount of surface area for trenches, land clearing or earthmoving activities should be calculated differently, a case-by-case determination may be made.

[Adopted October 28, 2015, effective January 1, 2016]

#### **4-3-180. DUST GENERATING OPERATIONS Standards, Application, Permit, ~~and~~ Recordkeeping and Training Requirements**

##### **A. PERMIT REQUIREMENTS FOR DUST-GENERATING OPERATIONS:**

1. No person shall commence construction of, operate, or make a modification to any dust-generating operation when such dust-generating operations disturb a total surface area of 0.10 acre (4,356 square feet) or more without first obtaining a permit or permit revision from the Control Officer.

2. No person shall commence construction of, operate, or make a modification to any dust-generating operation that disturbs a total surface area of less than 0.10 acre (4,356 square feet) under common control that are either contiguous or separated only by a public or private roadway and that cumulatively equal or exceed 0.10 acre in area without first obtaining a permit or permit revision from the Control Officer.

3. No person shall commence any routine dust-generating operation that disturbs a surface area of 0.10 acre or greater at a site that has obtained or must obtain a Title V, Non-Title V, or General Permit without first submitting to the Control Officer a Dust Control Plan.

4. The property owner, lessee, developer, responsible official, Dust Control permit applicant (who may also be the responsible party contracting to do the work), general contractor, prime contractor, supervisor, management company, or any person who owns, leases, operates, controls, or supervises a

dust-generating operation subject to the requirements of this rule shall be responsible for obtaining a permit or permit revision from the Control Officer.

5. All permit applications shall be filed in the manner and form prescribed by the Control Officer, which includes, but is not limited to, the Administrative requirements in this rule. The application shall contain all of the information necessary to enable the Control Officer to make the determination to grant or to deny a permit or permit revision, which shall contain such terms and conditions as the Control Officer deems necessary to assure a source's compliance with the requirements of this rule.

6. The issuance of any permit or permit revision shall not relieve any person subject to the requirements of this rule from compliance with any Federal laws, Arizona laws, or these rules.

7. Any other law, regulation or permit shall not relieve any person from obtaining a permit or permit revision required under this rule.

#### B. ADMINISTRATIVE REQUIREMENTS - DUST CONTROL APPLICATION AND PERMIT REQUIREMENTS

1. To apply for a Dust Control permit, an applicant shall complete a permit application in the manner and form prescribed by the Control Officer. At a minimum, such application shall contain the following information:

- a. Applicant information including cell phone and email address;
- b. Project information, which shall include a project site drawing and
- c. Dust Control Plan, which shall meet the specifications described in subsection C below.

#### 2. Annual Area Block Permit Application:

- a. The owner and/or operator operating at the work site may submit to the Control Officer one dust generating operation application for more than one dust generating operations at which construction will commence within 12 months of permit issuance.

- b. An annual block permit application must include all of the requirements in subsections B and C of this section, including a description of each site and type of dust generating operations to be conducted.
  - c. For any project not listed in the dust generating operation annual block application, the applicant must notify the Control Officer in writing at least three working days prior to commencing the dust generating operation. Such notification must include the site location, size, and type of dust generating operation, selected control measures, and start date.
- 3. A Dust Control permit shall be granted subject to, but not limited to, the following conditions:
  - a. The permittee shall be responsible for ensuring that all persons abide by the conditions of the Dust Control permit and these regulations;
  - b. The permittee shall be responsible for supplying complete copies of the Dust Control permit including Dust Control Plan, to all project contractors and subcontractors;
  - c. The permittee shall be responsible for all permit conditions, until a Permit Cancellation Request form has been submitted by the owner and/or operator and approved by the Control Officer.
  - d. The permittee shall be responsible for providing Dust Control Coordinator's/Coordinator's name(s) and dust control training certification information/number(s) to the Control Officer and for keeping such information updated.
- 4. The signature of the permittee on the Dust Control permit application shall constitute agreement to accept responsibility for meeting the conditions of the Dust Control permit and for ensuring that control measures are implemented throughout the project site and during the duration of the project.
- 5. Permit Renewal: The first permit obtained for an affected project must cover a contiguous area (unless it is an "annual area block permit") and is valid for one year from the date of issue. If the project has not been

completed at the end of the one-year period, the dust generating operation permit must be renewed. The owner and/or operator shall reapply for a dust generating operation permit prior to the expiration date of the original permit. Upon renewal, the new permit will be valid starting on the first calendar day after the completion of the initial one year period of the first permit and is valid for one year from that date. Upon renewal, the total acreage covered by the dust generating operation permit does not have to be contiguous, although all acreage covered by the renewed dust generating operation permit must have been included in the original dust generating operation permit.

C. ADMINISTRATIVE REQUIREMENTS - DUST CONTROL PLAN REQUIREMENTS

1. The owner and/or operator of a dust-generating operation shall submit to the Control Officer a Dust Control Plan with any permit application including both of the following situations:
  - a. When submitting an application for a Dust Control permit involving dust-generating operations that would equal or exceed 0.10 acre (4,356 square feet), and
  - b. Before commencing any routine dust-generating operation at a site with a disturbed surface area that equals or exceeds 0.10 acre (4,356 square feet) that has obtained or must obtain a Title V, Non-Title V, or General permit
2. The owner and/or operator of a dust-generating operation shall describe in a Dust Control Plan, all control measures to be implemented before, after, and while conducting any dust-generating operation, including during weekends, after work hours, and on holidays.
3. A Dust Control Plan shall, at a minimum, contain all of the following information:
  - a. Name(s), address(es), and phone numbers of person(s) responsible for the submittal and implementation of the Dust Control Plan and responsible for the dust-generating operation.
  - b. A drawing, on 8 ½" x 11" paper that shows:
    - i. Entire project site/facility boundaries, including boundaries of areas to be disturbed if less than entire project site/facility boundaries,

- iii. Acres to be disturbed with linear dimensions or certification by a licensed engineer or surveyor showing the total square footage to be disturbed.

iii. Nearest public roads,

iv. North arrow,

v. Planned exit locations onto areas accessible to the public, and

vi. Unpaved parking lot(s).

c. For projects with multiple parcels, a list of parcel number(s). - If only a mother/master parcel number is available at the time of the application and Dust control plan submittal, once the full parcel list is available the owner and/or operator shall provide the full parcel list to Pinal County Air Quality within 3 business days.

d. Appropriate control measures, or a combination thereof, as described in §4-3-180.I of this rule, for every actual and potential dust-generating operation.

i. Control measures must be implemented before, during and after conducting any dust-generating operation, including during weekends, after work hours, and on holidays.

ii. All required control measures and at least one contingency control measure must be identified for all dust-generating operations.

iii. If complying with §4-3-180.I of this rule, the Dust Control Plan must include the maximum number of vehicle trips on the unpaved haul/access roads each day (including number of employee vehicles, earthmoving equipment, haul trucks, and water trucks).

e. Dust suppressants to be applied, including all of the following product specifications or label instructions for approved usage:

i. Method, frequency, and intensity of application;

ii. Type, number, and capacity of application equipment; and

- iii. Information on environmental impacts and approvals or certifications related to appropriate and safe use for ground application.
  - f. Specific surface treatment(s) and/or control measures utilized to control material trackout and sedimentation where unpaved roads and/or access points to join areas accessible to the public.
  - g. For construction projects, except for routine maintenance and repair done under a Dust Control Block Permit, an acknowledgement that the minimum water listed in tables 1 and 2 below are available onsite, depending on the total acreage disturbed and project phase.
4. The Control Officer shall approve, disapprove, or conditionally approve the Dust Control Plan, in accordance with the criteria used to approve, disapprove or conditionally approve a permit, as described in §4-3-180.A.

Table 1: Project Phase - Site Clearing/Removal of Vegetation/Debris/Demolition

<u>Total Acres Disturbed</u>	<u>Minimum Water Available onsite</u>
<u>0.1 to 1 acre</u>	<u>300-600 gallons per day</u>
<u>1 to 10 acres</u>	<u>600-3,000 gallons per day</u>
<u>10 to 100 acres</u>	<u>3,000-30,000 gallons per day</u>
<u>&gt; 100 acres</u>	<u>&gt; 30,000 gallons per day</u>

Table 2: Project Phase - Mass Grading

<u>Minimum Water Available onsite (November - February)</u>	<u>Minimum Water Available onsite (March - October)</u>
<u>5,000 gallons per acre per day</u>	<u>10,000 gallons per acre per day</u>
<u>and</u>	<u>and</u>

<u>30 gallons per cubic yard of material moved</u>	<u>30 gallons per cubic yard of material moved</u>
--	--

D. RECORDKEEPING REQUIREMENTS:

1. Any person who conducts dust-generating operations that require a Dust Control Plan shall keep a written record of self-inspection on each day dust-generating operations are conducted. Self-inspection records shall include daily inspections for crusted or damp soil, trackout conditions and clean-up measures, daily water usage for dust control measures, and dust suppressant application. Such written records shall also include the following information:
  - a. Method, frequency, and intensity of application or implementation of the control measures;
  - b. Method, frequency, and amount of water application to the site;
  - c. Street sweeping frequency;
  - d. Types of surface treatments applied to and maintenance of trackout control devices, gravel pads, fences, wind barriers, and tarps;
  - e. Types and results of test methods conducted;
  - f. If contingency control measures are implemented, actual application or implementation of contingency control measures and why contingency control measures were implemented;
  - g. Names of employee(s) who successfully completed dust control training class(es) required by 4-3-180.F and G of this rule, date of the class(es) that such employee(s) successfully completed, and name of the agency/representative who conducted such class(es).
2. Any person who conducts dust-generating operations that do not require a Dust Control Plan shall compile and retain records (including records on any street sweeping, water applications, and maintenance of trackout control devices, gravel pads, fences, wind barriers, and tarps) that provide evidence of control measure application, by indicating the type of treatment or control measure, extent of coverage, and date applied.



3. Upon verbal or written request by the Control Officer, the log or the records and supporting documentation shall be provided as soon as possible but no later than 48 hours, excluding weekends. If the Control Officer is at the site where requested records are kept, records shall be provided without delay.
4. Owner and/or Operators shall notify the Control Officer as soon as practicable, but no later than 30 days after the completion of the project.
5. Any person who conducts dust-generating operations that require a Dust Control Plan shall retain copies of approved Dust Control Plans, control measures implementation records, and all supporting documentation for at least six months following the termination of the dust-generating operation and for at least two years from the date such records were initiated. If a person has obtained a Title V permit and is subject to the requirements of this rule, then such person shall retain records required by this rule for at least five years from the date such records are established.

E. PROJECT INFORMATION SIGN FOR DUST-GENERATING OPERATIONS:

1. For all sites with a Dust Control permit that are five acres or larger, except for routine maintenance and repair done under a Dust Control Block permit, the owner and/or operator shall erect and maintain a project information sign at the main entrance such that members of the public can easily view and read the sign at all times. Such sign shall have a white background, have black block lettering that is at least four inches high, and shall contain at least all of the following information:
  - a. Project name and permittee's name;
  - b. Current dust control permit number;
  - c. Name and local phone number of person(s) responsible for dust control matters;
  - d. Text on the sign stating: "Dust complaints? Call Pinal County Air Quality at (insert the accurate Pinal County Air Quality complaint line telephone number)."

F. BASIC DUST CONTROL TRAINING FOR DUST-GENERATING OPERATIONS:

1. At least once every three years, the following persons present at a site that is subject to a permit issued by the Control Officer requiring control of PM10 emissions from dust-generating operations shall successfully complete a Basic Dust Control Training Class conducted or approved by the Control Officer:
  - a. Water truck drivers
  - b. water-pull drivers
  - c. The site superintendent or other designated on-site representative of the permit holder, if present at a site that has more than one acre of disturbed area
2. A Dust Control Block Permit permittee/holder shall have, at a minimum, one individual trained in accordance with the Basic Dust Control Training Class as specified in section F.1 above, if present at a site that has more than one acre of disturbed surface area.
3. The Control Officer may suspend or revoke for cause including, but not limited to, inappropriate ethical activities or conduct associated with the dust control program or repeated failure to follow the training requirements, a certification issued to a person having successfully completed a Basic Dust Control Training Class conducted or approved by the Control Officer. The Control Officer will provide written notification to such person regarding such suspension or revocation.

G. COMPREHENSIVE DUST CONTROL TRAINING FOR DUST-GENERATING OPERATIONS:

1. At least once every three years, the Dust Control Coordinator, who meets the requirements of the Dust Control Coordinator section in this rule, shall successfully complete the Comprehensive Dust Control Training Class conducted or approved by the Control Officer.
2. The Control Officer may suspend or revoke for cause including, but not limited to, inappropriate ethical activities or conduct associated with the dust control program or repeated failure to follow the training requirements, a certification issued to a person having successfully completed a Comprehensive Dust Control Training Class conducted or

approved by the Control Officer. The Control Officer will provide written notification to such person regarding such suspension or revocation.

H. DUST CONTROL COORDINATOR FOR DUST-GENERATING OPERATIONS:

1. The permittee for any site of five acres or more of disturbed surface area subject to a permit issued by the Control Officer requiring control of PM10 emissions from dust-generating operations shall have on-site at least one Dust Control Coordinator trained in accordance with the comprehensive dust control training requirements in subsection G above at all times during primary dust-generating operations related to the purposes for which the Dust Control permit was obtained.
2. The Dust Control Coordinator shall have full authority to ensure that dust control measures are implemented on-site, including conducting inspections, deployment of dust suppression resources, and modifications or shut-down of activities as needed to control dust.
3. The Dust Control Coordinator shall be responsible for managing dust prevention and dust control on the site.
4. At least once every three years, the Dust Control Coordinator shall successfully complete a Comprehensive Dust Control Training Class conducted or approved by the Control Officer.
5. The Dust Control Coordinator shall have a valid dust training certification identification card readily accessible on-site while acting as a Dust Control Coordinator.
6. The requirement for a Dust Control Coordinator shall lapse when all of the following actions/events/procedures occur:
  - a. The area of disturbed surface area becomes less than five acres;
  - b. The previously disturbed surface areas have been stabilized in accordance with/in compliance with the standards and/or requirements of this rule; and
  - c. The Dust Control permit holder provides notice to the Control Officer of acreage stabilization.
7. The Dust Control Block Permit permittee/holder shall have on sites that have more than one acre of disturbed surface area at least one individual,

who has been trained in accordance with the requirements of subsection F.2 above. One such individual shall be designated by the Dust Control Block Permit permittee/holder as the Dust Control Coordinator. The Dust Control Coordinator shall be present on-site at all times during primary dust-generating activities that are related to the purposes for which the permit was obtained.

AI. ~~Within the work site, an owner and/or operator~~ CONTROL MEASURES:

1. CONTROL MEASURES IMPLEMENTATION: When engaged in a dust-generating operation, the owner and/or operator shall install, maintain, and use control measures, as applicable. Control measures for specific dust-generating operations are described in Sections §4-3-180.I.2.a through §4-3-180.I.2.i of this rule. The owner and/or operator of a dust-generating operation shall implement control measures before, after, and while conducting dust-generating operations, including during weekends, after work hours, and on holidays. At least one primary control measure and one contingency control measure must be identified in the Dust Control Plan for all dust-generating sources.

a. All control measures that are necessary to maintain soil stability shall be implemented twenty four (24) hours a day, seven (7) days a week, until the permit is closed.

b. In the event there are high wind conditions that cause fugitive dust emissions in excess of any of following opacity standards listed below, in spite of the use of control measures, all construction activities that may contribute to these emissions shall immediately cease. Water trucks and water pulls shall continue to operate under these circumstances, unless wind conditions are such that the continued operation of watering equipment cannot reduce fugitive dust emissions or that continued equipment operation poses a safety hazard.

i. 20% opacity using the time averaged method (insert code reference) or intermittent emissions method (insert code reference) defined in Chapter 4, Article 9 or

ii. One hundred (100) yards in length from the point of origin

2. CONTROL MEASURE REQUIREMENTS FOR DUST-  
GENERATING OPERATIONS:

- a. Active areas control measures: The owner and/or operator of any disturbed surface area where activity is occurring shall do the following:
  - i. High wind control measure (wind barrier): For each non-linear project to be permitted - install perimeter wind barrier 3 feet or more in height made of material with a porosity of 50% or less or install block wall around the perimeter of the worksite.
  - ii. Limit vehicle traffic and disturbance of soils with the use of fencing, barriers, barricades, and/or wind barriers.
  - iii. Stabilize and maintain stability of all disturbed soils throughout the worksite by doing one or more of the following:
    - a. Apply water to stabilize disturbed soils. Soils must be kept in a sufficiently damp, crusted or covered condition.
    - b. Apply dust suppressant in sufficient quantity and frequency to maintain a stabilized surface.
- b. Demolition - Mechanical/Manual: The owner and/or operator of a dust generating operation that involves demolition shall do the following:
  - i. Stabilize surface soils where support equipment and vehicles will operate by doing one of the following:
    - a. Pre-water and maintain surface soils in a stabilized condition where support equipment and vehicles will operate.
    - b. Apply and maintain a dust palliative to surface soils where support equipment and vehicles will operate.
    - c. Area where support equipment and vehicles will operate is completely covered with paving or concrete.

- ii. Stabilize demolition debris during handling by applying water to demolition debris by doing one of the following:
          - a. Apply water to stabilize demolition debris.
          - b. Apply a dust palliative to stabilize demolition debris.
        - iii. Stabilize surrounding area following demolition by doing one of the following:
          - a. Apply water to stabilize surrounding area following demolition
          - b. Apply and maintain a dust palliative to stabilize surrounding area following demolition.
  - c. Weed abatement by discing or blading: The owner and/or operator of a dust generating operation that involves weed abatement by discing or blading shall comply with all of the following control measures:
    - i. Before weed abatement by discing or blading occurs, apply water;
    - ii. While weed abatement by discing or blading is occurring, apply water; and
    - iii. After weed abatement by discing or blading occurs, pave, apply gravel, apply water, apply a suitable dust suppressant other than water, or establish vegetative ground cover.
  - d. Backfilling: The owner and/or operator of a dust generating operation that involves backfilling activities associated with areas previously excavated or trenched shall comply with the following control measures:
    - i. Stabilize backfill material when not actively handling by doing one of the following:
      - a. Water backfill material to maintain moisture or to form crust when not actively handling.

- b. Apply and maintain a dust palliative to backfill material to form crust when not actively handling.
    - c. Cover or enclose backfill material when not actively handling.
  - ii. Stabilize backfill material during handling by doing both of the following:
    - a. Empty loader bucket slowly and minimize drop height from loader bucket, and
    - b. Dedicate water truck or large hose to backfilling equipment and apply water as needed.
  - iii. Stabilize soil at completion of backfilling activity by doing one of the following:
    - a. Apply water and maintain disturbed soils in a stable condition until permanent stabilization is complete.
    - b. Apply and maintain a dust palliative on disturbed soils to form a crust following backfilling activity.
- e. Clearing and Grubbing (site preparation and vacant land cleanup):

The owner and/or operator of a dust generating operation that involves clearing and grubbing shall comply with the following control measures:

  - i. Stabilize surface soils where support equipment and vehicles will operate by doing one of the following:
    - a. Pre-water and maintain surface soils in a stabilized condition where support equipment and vehicles will operate.
    - b. Apply and maintain a dust palliative on surface soils where support equipment and vehicles will operate
  - ii. Stabilize soils during clearing and grubbing activities by applying water.

- iii. Stabilize disturbed soils immediately after clearing and grubbing activities by doing one of the following:
      - a. Water disturbed soils to form crust immediately following clearing and grubbing activities.
      - b. Apply and maintain a dust palliative on disturbed soils to form crust immediately following clearing and grubbing activities.
  - f. Clearing forms, foundations and slabs: The owner and/or operator of a dust generating operation that involves clearing forms, foundations and/or slabs shall comply with the following opacity standard and control measures:
    - i. Limit visible emissions associated with clearing forms, foundations and/or slabs to no more than an average of 20% opacity for any period aggregating 3 minutes in any 60-minute period pursuant to the test method in §4-9-340.C.
    - ii. Use single stage pours, unless prohibited by engineering design or building code, to minimize clearing, and
    - iii. Use at least one of the following control measures:
      - a. Use water spray to clear forms, foundations and slabs
      - b. Use sweeping and water spray to clear forms, foundations and slabs
      - c. Use industrial vacuum to clear forms, foundations and slabs prior to the use of high pressure air to blow soil and debris
      - d. Use industrial vacuum to clear forms, foundations and slabs
  - g. Cut and fill (site grade preparation): The owner and/or operator of a dust generating operation that involves cut and fill activities associated with site grade preparation shall comply with the following:



- i. Stabilize surface soils where support equipment and vehicles will operate by doing one of the following:
  - a. Pre-water and maintain surface soils in a stabilized condition where support equipment and vehicles will operate.
  - b. Apply and maintain a dust palliative to surface soils where support equipment and vehicles will operate.
- ii. Pre-water soils prior to cut and fill activities by doing the following:
  - a. Pre-water with sprinklers, wobblers, water pulls and/or water trucks to allow time for penetration. To determine if soils are moist to depth of cut, dig a test hole to depth of cut or equipment penetration. Continue to pre-water if not moist to the depth of cut.
- iii. Stabilize soils during cut activities by doing the following:
  - a. Apply water, using water truck or water pull, to depth of cut prior to subsequent cuts.
  - b. Conduct fill only without continuing cutting operations, until soil is moist to depth of cut.
- iv. Stabilize soil after cut and fill activities by doing one of the following:
  - a. Water disturbed soils to form crust following fill and compaction.
  - b. Apply and maintain a dust palliative on disturbed soils to form crust following fill and compaction.
- h. Trenching (with track or wheel mounted excavator, shovel, backhoe or trencher): The owner and/or operator of a dust generating operation that involves trenching shall comply with the following:

- i. Stabilize surface soils where trenching equipment, support equipment and vehicles will operate by doing one of the following:
  - a. Pre-water and maintain surface soils in a stabilized condition where trenching equipment, support equipment and vehicles will operate.
  - b. Apply and maintain a dust palliative to surface soils where trenching equipment, support equipment and vehicles will operate.
- ii. Presoak soils prior to trenching activities by pre-watering surface and soaking trench depth down to 18”.
- iii. Stabilize soils during trenching activities by using a dedicated water truck or large hose and maintaining water on trench and soil windrow as it is formed in order to prevent dust.
- iv. Stabilize soils at the completion of trenching activities by doing one of the following:
  - a. Use water to form crust on excavated soil.
  - b. Use dust palliative to form crust on excavated soil.
- i. Paving/Subgrade Preparation (subgrade preparation for paving streets, parking lots, etc.): The owner and/or operator of a dust generating operation that involves pavings/subgrade operations shall comply with the following:
  - i. Stabilize soils prior to and during paving/subgrade activities by pre-watering and watering subgrade surface in order to reach and maintain the subgrade surface in a stable condition.
  - ii. Stabilize soils following paving/subgrade preparation activities by doing one of the following:
    - a. Place tack coat (an asphaltic material applied as a binder to base aggregate materials prior to the

placement of asphalt during road construction) on base aggregate immediately after it is applied.

b. Apply water to base aggregate immediately after it is applied.

iii. Stabilize adjacent disturbed soils following paving activities by doing one of the following:

a. Stabilize adjacent disturbed soils following paving activities by crusting with water.

b. Stabilize adjacent disturbed soils following paving activities by applying a dust palliative.

c. Stabilize adjacent disturbed soils following paving activities with immediate landscaping activity or installation of vegetative or rock cover.

d. There are no soils adjacent to paving activities.

J. STABILIZATION REQUIREMENTS FOR DUST-GENERATING OPERATIONS:

1. Unpaved Parking Lot: The owner and/or operator of any unpaved parking lot shall not allow silt loading equal to or greater than 0.33 oz/ft<sup>2</sup>. However, if silt loading is equal to or greater than 0.33 oz/ft<sup>2</sup>, then the owner and/or operator shall not allow the silt content to exceed 8%.

2. Unpaved Haul/Access Road/Staging Areas:

i. The owner and/or operator of any unpaved haul/access road/staging areas (whether at a work site that is under construction or at a work site that is temporarily or permanently inactive) shall not allow silt loading equal to or greater than 0.33 oz/ft<sup>2</sup>. However, if silt loading is equal to or greater than 0.33 oz/ft<sup>2</sup>, then the owner and/or operator shall not allow the silt content to exceed 6%.

ii. The owner and/or operator of any unpaved haul/access road/staging areas (whether at a work site that is under construction or a work site that is temporarily or permanently inactive) shall, as an alternative to meeting the stabilization

requirements for an unpaved haul/access road in section §4-3-180.J.2.i of this rule, limit vehicle trips to no more than 20 per day per road and limit vehicle speeds to no more than 15 miles per hour. If complying with this section of this rule, the owner and/or operator must include, in a Dust Control Plan, the maximum number of vehicle trips on the unpaved haul/access roads each day (including number of employee vehicles, earthmoving equipment, haul trucks, and water trucks) and a description of how vehicle speeds will be restricted to no more than 15 miles per hour.

3. Disturbed surface area:

i. Inactive areas stabilization requirements: The owner and/or operator of any disturbed surface area on which no activity is occurring (whether at a work site that is under construction or a work site that is temporarily or permanently inactive) shall meet at least one of the standards described in Section §4-3-180.J.3.i.a through §4-3-180.J.3.i.g below, as applicable. Should such a disturbed surface area contain more than one type of stabilization characteristic, such as soil, vegetation, or other characteristic, which is visibly distinguishable, then the owner and/or operator shall test each representative surface separately for stability, in an area that represents a random portion of the overall disturbed conditions of the site, in accordance with the appropriate test methods described in Chapter 4, Article 9. The owner and/or operator of such disturbed surface area on which no activity is occurring shall be considered in violation of this rule if the area is not maintained in a manner that meets at least one of the standards listed below, as applicable. An area is considered to be a disturbed surface area until the activity that caused the disturbance has been completed and the disturbed surface area meets the standards described below.

a. Maintain a soil crust;

b. Maintain a threshold friction velocity (TFV) for disturbed surface areas corrected for non-erodible elements of 100 cms/second or higher;

- c. Maintain a flat vegetative cover (i.e. attached [rooted] vegetation or unattached vegetative debris lying on the surface with a predominant horizontal orientation that is not subject to movement by wind) that is equal to at least 50%;
- d. Maintain a standing vegetative cover (i.e. vegetation that is attached [rooted] with a predominant vertical orientation) that is equal to or greater than 30%;
- e. Maintain a standing vegetative cover (i.e. vegetation that is attached [rooted] with a predominant vertical orientation) that is equal to or greater than 10% and where the threshold friction velocity is equal to or greater than 43 cm/second when corrected for non-erodible elements;
- f. Maintain a percent cover that is equal to or greater than 10% for non-erodible elements; or

4K. VISIBLE EMISSIONS REQUIREMENTS FOR DUST-GENERATING OPERATIONS:

1. The owner and/or operator Shall not conduct or allow dust generating operations that result in opacity of the dust on the property to exceed twenty percent (20%) as measured using an opacity method, as determined by the applicable test method in §4-9-340 or an equivalent test method approved by the Control Officer and the EPA Administrator.
2. The owner and/or operator of a dust-generating operation shall not cause or allow visible emissions of particulate matter, including fugitive dust, beyond the property line within which the emissions are generated. Visible emissions shall be determined by a standard of no visible emissions exceeding 30 seconds in duration in any six-minute period as determined by using EPA Reference Method 22.
2. ~~Shall stabilize any disturbed surface area. The owner and/or operator shall conduct every other week inspections to ensure that the work site is stabilized. Ensuring the work site is stabilized shall include a site wide inspection to ensure all applicable control measures [as described in §4-3-170.4] as specified in the permit, are implemented on dust generating operations and disturbed surface areas are stabilized.~~

BL.. TRACKOUT, CARRY-OUT, SPILLAGE, AND/OR EROSION: The  
~~Where an owner and/or operator of obtains a dust generating operation shall~~  
prevent and control trackout, carry-out, spillage, and/or erosion. permit for a  
~~work site, or a combination of work sites, which are 5 acres or larger, the~~  
~~owner and/or operator shall as soon as practicable:~~

1. Criterion Trackout Control Device: Install, maintain and use a suitable  
trackout control device prior to the start of dust generating operations in  
order to prevent and control trackout and/or removal of particulate matter  
from tires and the exterior surfaces of haul trucks and/or motor vehicles  
that traverse the site at all exits onto areas accessible to the public from  
both of the following;:

i. All work sites with a disturbed surface area of two acres or  
larger, and

ii. All work sites where 100 cubic yards of bulk materials are  
hailed on-site and/or off-site per day.

2. Control Measures for Trackout Control Device: For those work sites  
identified in §4-3-180.L.1 of this rule, prevent trackout, carry-out,  
spillage, and/or erosion by implementing one of the following control  
measures:

i. At all exits onto areas accessible to the public, install a wheel  
wash system;

ii. At all exits onto areas accessible to the public, install a gravel  
pad to comply with the gravel pad requirement in §4-3-170;

iii. At all exits onto areas accessible to the public, install a grizzly  
or rumble grate that consists of raised dividers (rails, pipes, or  
grates) a minimum of three inches tall, six inches apart, and  
20 feet long, to allow a vibration to be produced such that  
dust is shaken off the wheels of a vehicle as the entire  
circumference of each wheel of the vehicle passes over the  
grizzly or rumble grate; or

iv. Pave starting from the point of the intersection with an area  
accessible to the public and extending for a centerline  
distance of at least 100 feet and a width of at least 20 feet.

3. Criterion for clean up of trackout: Clean up trackout, carry-out, spillage,  
and/or erosion from areas accessible to the public including curbs,  
gutters, and sidewalks, on the following time-schedule:

- i. Immediately when trackout, carry-out, or spillage extends a cumulative distance of 25 linear feet or more; and
- ii. At the end of the workday for all other trackout, carry-out, spillage, and/or erosion.

4. Control Measures for clean up of trackout:

- i. Operate a street sweeper or wet broom with sufficient water, or including but not limited to kick broom, steel bristle broom, teflon broom, vacuum, at the speed recommended by the manufacturer and at the frequency(ies) described in this section of this rule; or
- ii. Manually sweep up deposits to comply with this section of this rule.

M. DELAYED DUST GENERATING OPERATIONS:

- 21. For areas, or portions of areas, in which the dust generating operations have ceased or will cease for more than 30 days, the owner and/or operator shall erect signs or and install physical barriers to limit trespass;  
and

N. HIGH RISK FORECAST:

- 31. The owner and/or operator shall Ensure the work site is stabilized the day leading up to and the day that is forecast to be high risk for dust emissions, as noticed by the Pinal County Dust Control Forecast. Ensuring the work site is stabilized shall include a site-wide inspection to ensure either:
  - a~~i~~. All applicable control measures ~~{as described in §4-3-170.4}~~ as specified in the permit, are implemented on dust generating operations, and disturbed surface areas are stabilized; or
  - b~~ii~~. All dust generating operations are ceased and disturbed surface areas are stabilized.

- ~~C. Prior to engaging in any dust generating operations on a work site, the owner and/or operator shall file a dust generating operation application form with~~

the Control Officer, pay the appropriate fee in Appendix C, and receive a signed permit from the Control Officer.

~~1. Dust generating operations application form:~~

~~a. The applicant shall present a dust generating operation application on a form approved by the Control Officer, and shall include all essential identification information as specified on that form. A separate application form is required for each site location that is not a contiguous geographic area to the location on the original application form, unless an annual block application is approved.~~

~~b. The owner and/or operator shall provide a valid cell phone number or email address on the dust generating operation application form. The owner and/or operator of work sites 5 acres or larger shall subscribe to the Pinal County Dust Control Forecast as part of the permit application process.~~

~~c. Each dust generating operation application shall also include a plot plan with linear dimensions in feet. The plot plan must be on 8 1/2 by 11 inch paper, and may be on one or more sheets. The plan shall identify the parcel (if a parcel number exists; if no parcel number exists, then Global Positioning System (GPS) coordinates of the center of the parcel shall be included), the street address, the direction north, the total area to be disturbed and indicate the sources of fugitive dust emissions on the plot plan.~~

~~d. Using the options on the application form each dust generating operation application shall contain an explanation of how the applicant will demonstrate compliance with this rule by selection of at least one control measure for each dust generating operation.~~

~~e. Annual Area Block Application:~~

~~i. Area block applications shall only be available for dust generating operations associated with:~~

~~a) Maintenance of existing underground or above-ground lines;~~

~~b) Effecting end user connections, including but not limited to water connections, sewer connections, natural gas connections, electrical power connections, and communication connections;~~



~~e) — Underground utility line extensions not exceeding 500' in length; and~~

~~d) — Overhead utility line extensions; and~~

~~e) — Expansion or extension of paved roads, unpaved roads, road shoulders, and/or alleys and public right of ways at non-contiguous sites.~~

~~ii. — Area block applications shall only be available to:~~

~~a) — Political subdivisions; and~~

~~b) — Public Utility Corporations regulated by the Arizona Corporation Commission; and.~~

~~c) — Contractors or subcontractors for Political subdivisions or Public Utility Corporations~~

~~iii. — The owner and/or operator operating at the work site may submit to the Control Officer one dust generating operation application for more than one dust generating operation at which construction will commence within 12 months of permit issuance.~~

~~iv. — An annual block application must include all the requirements listed above in this subsection (1 a. through 1 d.) and a description of each site and type of dust generating operations to be conducted.~~

~~v. — The owner and/or operator of an area block permit operating at a work site shall adhere to the requirements of all current permits issued to the work site and will be required to re-apply control measures as reasonable and necessary, or re-stabilize any disturbed surface area that becomes disturbed as a result of the area block permit holder's work being done at the work site.~~

~~vi. — For any project not listed in the dust generating operation annual block application, the applicant must notify the Control Officer in writing at least three working days prior to commencing the dust generating operation. Such notification must include the site~~

~~location, size, and type of dust generating operation;  
selected control measures, and start date.~~

~~2. Dust generating operation permit and recordkeeping:~~

~~a. — The signed dust generating operation permit from the control officer will contain the requirements set under §4-3-180 (A) and (B), and conditions regarding the necessary control measures specific to the applicable project as proposed by the registrant. The signature of the owner and/or operator on the dust generating operation permit form shall constitute agreement to accept responsibility for meeting the conditions of the permit and for ensuring the applicable control measures are implemented throughout the work site, at all times that dust generating operations are being performed and during the duration of the project. The owner and/or operator shall maintain a copy of the signed permit form and provide it upon request of the Control Officer or his designee.~~

~~b. — On a form approved by the Control Officer the owner and/or operator shall keep records of the every other week inspection reports and site-wide inspection reports from the day leading up to and the day that is forecast to be high risk for dust emissions, including any necessary corrective actions. A demonstration of compliance shall include inspections of the work site conducted pursuant to, and any actions taken to comply with, §4-3-180 sections (A)(2) and (B)(3).~~

~~c. — Upon verbal or written request by the Control Officer, inspection records shall be provided as soon as practicable, but no later than 72 hours, excluding weekends. If the Control Officer is at the work site where the requested records are kept, the records shall be provided without delay. Records of inspections on a form approved by the Control Officer, shall be submitted within 30 days following the termination or expiration of the permit.~~

~~d. — Owners and/or Operators shall notify the Control Officer as soon as practicable, but no later than 30 days, of the completion of the project.~~

~~e. — Permit Renewal: The first permit obtained for an affected project must cover a contiguous area (unless it is an "annual area block~~

permit") and is valid for one year from the date of issue. If the project has not been completed at the end of the one year period, the dust generating operation permit must be renewed. The owner and/or operator shall reapply for a dust generating operation permit prior to the expiration date of the original permit. Upon renewal, the new permit will be valid starting on the first calendar day after the completion of the initial one year period of the first permit and is valid for one year from that date. Upon renewal, the total acreage covered by the dust generating operation permit does not have to be contiguous, although all acreage covered by the renewed dust generating operation permit must have been included in the original dust generating operation permit.

—f. — At all sites that are five acres or larger, the owner and/or operator shall erect a project information sign at the main entrance that is visible to the public or at each end of the road construction project site. The sign shall be a minimum of 24 inches tall by 30 inches wide, have a white background, and have the words "DUST CONTROL" shown in black block lettering which is at least four inches high, and shall contain the following information in legible fashion:

i. — Project Name

ii. — Name and phone number of person(s) responsible for conducting project

iii. Text stating: "Dust Complaints? Call Pinal County Air Quality at 520-866-6929"

[Adopted October 28, 2015, effective January 1, 2016]

#### **4-3-190. Violations Rescinded**

A. — Failure by any person to comply with the applicable requirements of this Article shall constitute a violation.

B. — Violation Exemptions:

If all records were maintained in accordance with §4-3-180 section (C)(2)(b), the provisions of section §4-3-180 (A)(1) shall not apply to a work site during:

1. — Wind conditions that cause fugitive dust to exceed the opacity requirements of §4-3-180 (A)(1), if all control measures as specified in the permit, are implemented, applied and maintained, all disturbed surface areas are stabilized, and one of the following:

- a. ~~All dust generating operations are ceased until the opacity requirements of §4-3-180(A)(1) are no longer being exceeded; or~~
- b. ~~Maintain documentation that any dust generating operations that are still being performed are not the cause of and do not contribute to the opacity violation. Documentation may include onsite opacity observations by a certified observer.~~

2. ~~Emergency maintenance of flood control channels and water retention basins if all control measures, as specified in the permit are implemented, applied, and maintained.~~

[Adopted October 28, 2015, effective January 1, 2016]

## **ARTICLE 9. TEST METHODS**

### **4-9-300. Test Method; Threshold Friction Velocity**

- A. Threshold friction velocity ("TFV") constitutes a measure of surface erodability. Assessment of TFV under this rule shall utilize a field-sieving procedure and a mathematical adjustment based on a quantitative assessment of non-erodible geologic elements that may be present.
- B. Step 1. Obtain and stack a set of sieves with the following openings:
1. 4 millimeters (mm); Tyler Sieve No. 5; ASTM 11 Sieve No. 5.
  2. 2 mm; Tyler Sieve No. 9; ASTM 11 Sieve No. 10.
  3. 1 mm; Tyler Sieve No. 16; ASTM 11 Sieve No. 18.
  4. 0.5 mm; Tyler Sieve No. 32; ASTM 11 Sieve No. 35.
  5. 0.25 mm; Tyler Sieve No. 60; ASTM 11 Sieve No. 60.
  6. A collector pan.
  7. A cover.
- C. Step 2. Stack the sieves and pan in size-order, with the largest openings at the top and the pan at the bottom. Collect a sample of loose surface material from an area at least 30 centimeters (cm) by 30 cm 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. Carefully pour the sample into the top sieve (4 mm opening), minimizing escape of particles from the sample. Cover the sieve-stack with the lid.

- D. Step 3. Manually swing the sieve-stack in a broad, circular pattern in a horizontal plane. Move the sieve-stack at a speed just necessary to audibly verify some relative horizontal motion of the sample within the sieve-stack. Complete twenty circular sweeps, ten clockwise and ten counter-clockwise. Remove the lid and un-stack the sieves in decreasing size-order. As each sieve is removed, examine the screen for loose particles. If loose particles have not been sifted to the finest sieve through which they can pass, reassemble the sieve-stack and cover and rotate the stack through an additional ten sweeps, five clockwise and five counter-clockwise. After disassembling the sieve-stack, slightly tilt and gently tap each sieve and the collector pan so that the material collects along one side. In so doing, minimize escape of particles into the air.
- E. Step 5. Line up the sieves and the pan and visually inspect the collected material to assess the relative volumes of material in each. If visual inspection is not sufficient to distinguish the relative volumes, pour the respective contents into a graduated cylinder to precisely measure the volume in each sieve and pan.
- F. Step 6. Identify the sieve or pan with the greatest volumetric catch, and define an initial TFV according to the following correlation: 4 mm sieve - 135 cm/sec.; 2 mm sieve - 100 cm/sec.; 1 mm sieve - 76 cm/sec.; 0.5 mm sieve - 58 cm/sec.; 0.25 mm sieve - 43 cm/sec.; collector pan - 30 cm./sec.
- G. Step 7. Quantify an average TFV for the affected area. Repeat steps 1 through 6 for two other representative sites within the affected area, and arithmetically average the three TFV values to define an average initial TFV.
- H. Step 8. Adjust the TFV to correct for non-erodible elements. Non-erodible elements are distinct elements in the random portion of the overall conditions of the affected area 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.
- I. Step 9. Select and mark off a 1 meter by 1 meter survey area that represents the general rock distribution on the surface. For these purposes, non-erodible, non-

vegetative matter qualifies as "rock." Without moving any of the surface material, visually assess the surface to determine whether rocks larger than 1 cm (3/8 inch) are present. If the rocks are of relatively consistent dimension, count the number of rocks in the survey area. If the size of the rocks differs substantially, define small, medium and large size categories and count the number of rocks in each category.

- J. Step 10. Remove one or two representative rocks from each size category (if necessary), and measure the length and width of each. Calculate an area for each size category (if necessary) based on the measured length and width.
- K. Step 11. Calculate an aggregate area for each size category (if necessary), based on the number of rocks and measured representative individual rock-area. If multiple size categories were defined, total the aggregate areas for the categories. Divide the calculated aggregate area by two, and then divide that product by the area of the original sample area to calculate a %-coverage. For example, within a 1-meter (100 cm) square sample area, 250 rocks with a 1 cm x 1.5 cm length/width produces a coverage of  $250 \times 1 \times 1.5 / 2 / (100 \times 100) = 1.88\%$  coverage.
- L. Step 12. Quantify an average coverage for non-erodible elements within the overall affected area. Repeat steps 8 through 11 for two other sites within the affected area, and arithmetically average the three coverage values to define an average non-erodible area coverage.
- M. Step 13. Based on the calculated average coverage by non-erodible elements, select a TFV correction factor according to the following correlation: non-erodible element coverage > 10% - correction factor = 5; non-erodible element coverage < 10% but > 5% - correction factor = 3; non-erodible element coverage < 5% but > 1% - correction factor = 2; non-erodible element coverage < 1% - correction factor = 1.
- N. Step 14. Using the initial average TFV value from Step 7, multiply by the TFV correction factor from Step 13 to calculate a representative TFV for the site.

[Adopted effective September 10, 2008.]

#### **4-9-310. Test Methods for Stabilization for Unpaved Shoulders and Medians of Paved Roads**

##### **A. For Unpaved Shoulders and Medians of Paved Roads**

1. Opacity Test Method: The purpose of this test method is to estimate the percent opacity of fugitive dust plumes caused by vehicle movement on unpaved road shoulders and medians of paved roads. This method can only be conducted by an individual who has received certification as a qualified observer.
  - a. Step 1: Stand at least 20 feet from the fugitive dust source in order to provide a clear view of the emissions with the sun oriented in the 140-degree sector to the back. Following the above requirements, make opacity observations so that the line of vision is approximately perpendicular to the dust plume and wind direction. If multiple plumes are involved, do not include more than one plume in the line of sight at one time.
  - b. Step 2: Record the fugitive dust source location, source type, method of control used (if any), observer's name, certification data and affiliation, and a sketch of the observer's position relative to the fugitive dust source. Also, record the time, estimated distance to the fugitive dust source location, approximate wind direction, estimated wind speed, description of sky condition (presence and color of clouds), observer's position to the fugitive dust source, and color of the plume and type of background on the visible emissions observation from both when opacity readings are initiated and completed.
  - c. Step 3: Make Opacity observations, to the extent possible, using a contrasting background that is perpendicular to the line of vision. Make Opacity observations approximately 3 feet above the surface from which the plume is generated. Note that the observation is to be made at only one visual point upon generation of a plume, as opposed to visually tracking the entire length of a dust plume as it is created along a surface. Make two observations per vehicle, beginning with the first reading at zero seconds and the second reading at five seconds. The zero-second observation should begin immediately after a plume has been created above the surface involved. Do not look continuously at the plume but, instead, observe the plume briefly at zero seconds and then again at five seconds.



- d. Step 4: Record the Opacity observations to the nearest 5% on an observational record sheet. Each momentary observation recorded represents the average Opacity of Emissions for a 5-second period. While it is not required by the test method, EPA recommends that the observer estimate the size of vehicles which generate dust plumes for which readings are taken (e.g. mid-size passenger car or heavy-duty truck) and the approximate speeds the vehicles are traveling when readings are taken.
  - e. Step 5: Repeat Step 3 and Step 4 until you have recorded a total of 12 consecutive Opacity readings. This will occur once six vehicles have driven on the source in your line of observation for which you are able to take proper readings. The 12 consecutive readings must be taken within the same period of observation but must not exceed 1 hour. Observations immediately preceding and following interrupted observations can be considered consecutive.
  - f. Step 6: Average the 12 Opacity readings together. If the average Opacity reading equals 20% or lower, the source is in compliance with the Opacity standard described in Section 93 of these Regulations.
2. Silt Loading Test Method: The purpose of this test method is to estimate the silt loading of the representative surfaces of dust palliative and untreated shoulders and medians of paved roads. The higher the silt loading, the greater the amount of fine dust particles that are entrained into the atmosphere when vehicles drive on unpaved shoulders and medians of paved roads.
- a. Equipment:
    - 1. A set of sieves with the following openings: 4 millimeters (ASTM No. 5), 2 millimeters, (ASTM No. 10), 1 millimeter (ASTM No. 18), 0.5 millimeter (ASTM No. 35) and 0.25 millimeter (ASTM No. 60), (or a set of standard/commonly available sieves), a lid, and collector pan.
    - 2. Equipment necessary to collect a sample of material from the surface of the subject area. (e.g., a small whisk broom or paintbrush with bristles no longer than 1.5 inches, dustpan, spatula, shallow container, sealable plastic bags.)
    - 3. Equipment necessary to complete field analysis of material. (e.g., weighting scale with half ounce increments, calculator, writing material.)
  - b. Step 1: Look for a representative surface within four (4) feet of the edge of the pavement. [Only collect samples from surfaces that are not damp due to

precipitation or dew. This statement is not meant to be a standard in itself for dampness where watering is being used as a Control Measure. It is only intended to ensure that surface testing is done in a representative manner.] Gently press the edge of a dustpan into the surface to mark an area that is 1 square foot. Collect a sample of loose surface material using a whiskbroom or brush and slowly sweep the material into the dustpan, minimizing escape of dust particles. Use a spatula or similar device to lift heavier elements such as gravel. Only collect dirt/gravel to an approximate depth of 3/8 inch in the 1 square foot area. If you reach a hard, underlying subsurface that is less than 3/8 inch in depth, do not continue collecting the sample by digging into the hard surface. In other words, you are only collecting a surface sample of loose material down to 3/8 inch. In order to confirm that samples are collected to 3/8 inch in depth, a wooden dowel or other similar narrow object at least one foot in length can be laid horizontally across the survey area while a ruler is held perpendicular to the dowel.

- At this point, you can choose to place the sample collected into a plastic bag or container and return to the department facilities to complete the remaining steps or take it to an independent laboratory for silt loading analysis. A reference to the procedure the laboratory is required to follow is at the end of this section.

- c. Step 2: Place a scale on a level surface. Place a lightweight container on the scale. Zero the scale with the weight of the empty container on it.
- d. Step 3: Stack a set of sieves in order according to the size openings specified above, beginning with the largest size opening (4 mm) at the top. Place a collector pan underneath the bottom (0.25 mm) sieve.
- e. Step 4: Carefully pour the sample into the sieve stack, minimizing escape of dust particles by slowly brushing material into the stack with a whiskbroom or brush, (on windy days, use the trunk or door of a car as a wind barricade). Cover the stack with a lid. Lift up the sieve stack and shake it vigorously up, down and sideways or place on a powered shaker for at least 1 minute.
- f. Step 5: Remove the lid from the stack and disassemble each sieve separately, beginning with the top sieve. As you remove each sieve, examine it to make sure that all of the material has been sifted to the finest sieve through which it can pass; e.g., material in each sieve (besides the top sieve that

captures a range of larger elements) should look the same size. If this is not the case, re-stack the sieves and collector pan, cover the stack with the lid, and shake it again for at least 1 minute (you only need to reassemble the sieve(s) that contain material, which requires further sifting).

- g. Step 6: After disassembling the sieves and collector pan, slowly sweep the material from the collector pan into the empty container calibrated on the scale in Step 2. Take care to minimize escape of dust particles. You do not need to do anything with material captured in the sieves; only the collector pan. Weigh the container with the material from the collector pan and record its weight.
- h. Step 7: Multiply the resulting weight by 0.38. The resulting number is the estimated silt loading.
- i. Step 8: Select another two representative surfaces of the unpaved road shoulder or median and repeat this test method. Once you have calculated the silt loading of the 3 samples collected, average your results together.
- j. Step 9: Examine Results. If the average silt loading is less than 0.33 oz/ft<sup>2</sup>, the surface is stable.
- k. Independent Laboratory Analysis: You may choose to collect 3 samples from the source, according to Step 1, and send them to an independent laboratory for silt loading analysis rather than conduct the sieve field procedure. If so, the test method the laboratory is required to use is:

"Procedures for Laboratory Analysis of Surface/Bulk Loading Samples", (Fifth Edition, Volume I, Appendix C.2.3 "Silt Analysis", 1995), AP-42, Office of Air Quality Planning & Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina

3. Gravel Depth and Silt Content Test Method: The purpose of this two (2) part test method is to estimate the gravel depth and silt content of graveled road shoulders and medians of paved roads. Two (2) inches of gravel are required to prevent vehicle tires from digging through the gravel. The higher the silt content in the top inch of the gravel, the greater the amount of fine dust particles that are entrained into the atmosphere when vehicles drive on gravel-stabilized shoulders.

- a. Equipment necessary to collect a sample of material from the surface of the subject area, including a sampling device one (1) foot by one (1) foot by one (1) inch deep, and other equipment such as, a small whisk broom or paintbrush with

bristles no longer than 1.5 inches, dustpan, spatula, shallow container, sealable plastic bags, ruler, and wood dowel or similar straight edge device.

- b. Step 1: Look for a section within four (4) feet of the edge of pavement that has an existing gravel surface that appears representative of the gravel shoulder. Using the spatula, remove the gravel from a three (3) to five (5) inch diameter area to the depth of the applied gravel surface. Make sure that the removed gravel is placed well away from the cleared area. Place a wooden dowel or other similar narrow object across the cleared survey area, and measure, perpendicular to the narrow object, to depth of the cleared area to determine the depth of the gravel material. If the depth of the gravel material is less than two (2) inches, the area fails and is not considered stable. If the depth of the gravel material is two (2) inches or greater, go to Step 2.
- c. Step 2. Using the one (1) foot by one (1) foot by one (1) inch deep sampling frame, gently press the edges of the frame into the road shoulder surface to a depth of one (1) inch. Collect the sample of loose surface material using the whiskbroom, brush, spatula, and dustpan to collect the material into the sample bag, minimizing escape of dust particles. Collect all material to a one (1) inch depth in the one (1) square foot sampling frame.
- d. Step 3. Repeat Steps 1 and 2 to obtain two (2) additional samples for a total of three (3) samples. In the event any sampled location is found to have less than (2) inches of gravel under Step 1, the shoulder is considered to be unstable. Do not proceed with additional sampling.
- e. Step 4. Laboratory Analysis: Samples collected from this source, according to Step 3 (Subsection 93.4.1.3 (d) of this regulation), are sent to a laboratory for silt content analysis. The test method the laboratory is required to use is:
  - 1. Wet screen the entire sample through a one (1) inch sieve.
  - 2. For all material passing through the one (1) inch sieve, use ASTM No. 200 wet Sieve Method to determine the percentage content of silt.
- f. Step 5: Examine Results. Average the silt content for the (3) samples. If the average silt content of the three samples is equal to or less than or six (6) percent, the surface is stable.

#### **4-9-320. Test Methods for Stabilization For Unpaved Roads and Unpaved Parking Lots**

A. For Unpaved Roads and Unpaved Parking Lots

1. Silt Content Test Method. The purpose of this test method is to estimate the silt content of the trafficked parts of unpaved roads and unpaved parking lots. The higher the silt content, the more fine dust particles that are released when cars and trucks drive on unpaved roads and unpaved parking lots.

a. Equipment:

- i. A set of sieves with the following openings: 4 millimeters (mm), 2 mm, 1mm, 0.5 mm and 0.25 mm (or a set of standard/commonly available sieves), a lid, and a collector pan.
- ii. A small whisk broom or paintbrush with stiff bristles and dustpan 1 ft. in width (The broom/brush should preferably have one, thin row of bristles no longer than 1.5 inches in length).
- iii. A spatula without holes.
- iv. A small scale with half-ounce increments (e.g. postal/package scale).
- v. A shallow, lightweight container (e.g. plastic storage container).
- vi. A sturdy cardboard box or other rigid object with a level surface.
- vii. A basic calculator.
- viii. Cloth gloves (optional for handling metal sieves on hot, sunny days).
- ix. Sealable plastic bags (if sending samples to a laboratory).

x. A pencil/pen and paper.

b. Step 1 [*-Test Site Selection; Sample Collection*]: Look for a routinely traveled surface, as evidenced by tire tracks. [Only collect samples from surfaces that are not damp due to precipitation or dew. This statement is not meant to be a standard in itself for dampness where watering is being used as a control measure. It is only intended to ensure that surface testing is done in a representative manner.] Use caution when taking samples to ensure personal safety with respect to passing vehicles. Gently press the edge of a dustpan (1 foot in width) into the surface four times to mark an area that is 1 square foot. Collect a sample of loose surface material using a whiskbroom or brush and slowly sweep the material into the dustpan, minimizing escape of dust particles. Use a spatula to lift heavier elements such as gravel. Only collect dirt/gravel to an approximate depth of 3/8 inch or 1 cm in the 1 square foot area. If you reach a hard, underlying subsurface that is < 3/8 inch in depth, do not continue collecting the sample by digging into the hard surface. In other words, you are only collecting a surface sample of loose material down to 1 cm. In order to confirm that samples are collected to 1 cm in depth, a wooden dowel or other similar narrow object at least one foot in length can be laid horizontally across the survey area while a metric ruler is held perpendicular to the dowel.

- At this point, you can choose to place the sample collected into a plastic bag or container and take it to an independent laboratory for silt content analysis. A reference to the procedure the laboratory is required to follow is at the end of this section.

c. Step 2 [*- Sample Weighing*]: Place a scale on a level surface. Place a lightweight container on the scale. Zero the scale with the weight of the empty container on it. Transfer the entire sample collected in the dustpan to the container, minimizing escape of dust particles. Weigh the sample and record its weight.

d. Step 3 [- *Equipment Configuration*]: Stack a set of sieves in order according to the size openings specified above, beginning with the largest size opening (4 mm) at the top. Place a collector pan underneath the bottom (0.25 mm) sieve.

e. Step 4 [- *Sample Processing #1*]: Carefully pour the sample into the sieve stack, minimizing escape of dust particles by slowly brushing material into the stack with a whiskbroom or brush. (On windy days, use the trunk or door of a car as a wind barricade.) Cover the stack with a lid. Lift up the sieve stack and shake it vigorously up, down and sideways for at least 1 minute.

f. Step 5 [- *Sample Processing #2*]: Remove the lid from the stack and disassemble each sieve separately, beginning with the top sieve. As you remove each sieve, examine it to make sure that all of the material has been sifted to the finest sieve through which it can pass (e.g., material in each sieve [besides the top sieve that captures a range of larger elements] should look the same size). If this is not the case, re-stack the sieves and collector pan, cover the stack with the lid, and shake it again for at least 1 minute. (You only need to reassemble the sieve(s) that contain material, which requires further sifting.)

g. Step 6 [- *Weighing Collector Pan Material*]: After disassembling the sieves and collector pan, slowly sweep the material from the collector pan into the empty container originally used to collect and weigh the entire sample. Take care to minimize escape of dust particles. You do not need to do anything with material captured in the sieves; only the collector pan. Weigh the container with the material from the collector pan and record its weight.

h. Step 7 [- *Silt Loading and Silt Content Calculation*]: If the source is an unpaved road, multiply the resulting weight by 0.38. If the source is an unpaved parking lot, multiply the resulting weight by 0.55. The resulting number is the estimated silt loading. Then,

divide by the total weight of the sample you recorded earlier in Step 2 and multiply by 100 to estimate the percent silt content.

i. Step 8 [*- Characterization Across Entire Site*]: Select another two routinely traveled portions of the unpaved road or unpaved parking lot and repeat this test method. Once you have calculated the silt loading and percent silt content of the 3 samples collected, average your results together.

j. Step 9: Examine Results. If the average silt loading is less than 0.33 oz/ft<sup>2</sup>, the surface is STABLE. If the average silt loading is greater than or equal to 0.33 oz/ft<sup>2</sup>, then proceed to examine the average percent silt content. If the source is an unpaved road and the average percent silt content is 6% or less, the surface is STABLE. If the source is an unpaved parking lot and the average percent silt content is 8% or less, the surface is STABLE. If your field test results are within 2% of the standard (for example, 4%–8% silt content on an unpaved road), it is recommended that you collect 3 additional samples from the source according to Step 1 and take them to an independent laboratory for silt content analysis.

k. Independent Laboratory Analysis: You may choose to collect 3 samples from the source, according to Step 1 and send them to an independent laboratory for silt content analysis rather than conduct the sieve field procedure. If so, the test method the laboratory is required to use is:

- U.S. Environmental Protection Agency (1995), “Procedures for Laboratory Analysis of Surface/Bulk Dust Loading Samples”, (AP-42 Fifth Edition, Volume I, Appendix C.2.3 “Silt Analysis”), Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina.

B. Stabilization Limitations for Open Areas and Vacant Lots: The test methods described below 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, vegetation, or other characteristics, which are visibly distinguishable, test each representative surface separately for stability, in an area that represents a random portion of the overall disturbed conditions of the site, according to the appropriate test methods described below, and include or eliminate it from the total size assessment of disturbed surface area(s) depending upon test method results.

1. Visible Crust Determination [- *The "Drop Ball Test"*].

a. *[Appropriate Testing Conditions]* Where a visible crust exists, drop a steel ball with a diameter of 15.9 millimeters (0.625 inches) and a mass ranging from 16-17 grams (0.56-0.60 ounce) from a distance of 30 centimeters (one foot) directly above (at a 90° angle perpendicular to) the soil surface. If blowsand is present, clear the blowsand from the surfaces on which Drop Ball Test is conducted. Blowsand is defined as thin deposits of loose uncombined grains covering less than 50% of a vacant lot which have not originated from the representative vacant lot surface being tested. If material covers a visible crust, which is not blowsand, apply the Threshold Friction Velocity determination of §B.2 of this rule to the loose material to determine whether the surface is stabilized.

b. *[Definition of Sufficient Crust]* A sufficient crust is defined under the following conditions: once a ball has been dropped according to the Appropriate Testing Conditions of §B.1.a, the ball does not sink into the surface, so that it is partially or fully surrounded by loose grains and, upon removing the ball, the surface upon which it fell has not been pulverized, so that loose grains are visible.

c. *[Characterization of Crust Across Entire Site]* Drop the ball three times within a survey area that measures 1 foot by 1 foot and that represents a random portion of the overall disturbed conditions at the site. The survey area shall be considered to have

passed the Visible Crust Determination Test if at least two out of the three times that the ball was dropped, the results met the Definition of Sufficient Crust in §B.1.b. 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 Definition of Sufficient Crust in §B.1.b for all of the survey areas tested, then the site shall be considered to have passed the Visible Crust Determination Test and shall be considered sufficiently crusted.

d. *[Characterization of Crust Across Entire Site]* 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 visible crust test as often as necessary on each random portion of the overall conditions of the site for an accurate measurement.

2. Determination of Threshold Friction Velocity (TFV): For disturbed surface areas that are not crusted or vegetated, determine threshold friction velocity (TFV) according to the following sieving field procedure (based on a 1952 laboratory procedure published by W. S. Chepil).

a. *[Equipment & Procedure]* 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 counter-clockwise, 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, 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	5	135
9	10	2	100
16	18	1	76
32	35	0.5	58

60	60	0.25	43
Collector Pan	-	-	30

b. *[Characterization of TFV Across Entire Site]* Collect at least three soil samples which represent random portions of the over-all 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 §B.5 - the Rock Test Method. 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:

$$\text{Average Length} \times \text{Average Width} = \text{Average Dimensions} \dots \dots \dots \text{Eq. 1}$$

$$\text{Average Dimensions} \times \text{Number of Elements} = \text{Overhead Area} \dots \dots \dots \text{Eq. 2}$$

$$\text{Overhead Area of Group 1} + \text{Overhead Area of Group 2 (etc.)} = \text{Total Overhead Area} \dots \dots \dots \text{Eq. 3}$$

$$\text{Total Overhead Area} \div 2 = \text{Total Frontal Area} \dots \dots \dots \text{Eq. 4}$$

$$(\text{Total Frontal Area} \div \text{Survey Area}) \times 100 = \text{Percent Cover of Non-Erodible Elements} \dots \dots \dots \text{Eq. 5}$$

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 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 Factor	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

3. Determination of Flat Vegetative Cover: Flat vegetation includes attached (rooted) vegetation or unattached vegetative debris lying on the surface with a predominant horizontal orientation that is not subject to movement by wind. Flat vegetation, which is dead but firmly attached, shall be considered equally protective as live vegetation. Stones or other aggregate larger than 1 centimeter in diameter shall be considered protective cover in the course of conducting the line transect test method. Where flat vegetation exists, conduct the following line transect test method.

a. Line Transect Test Method: Stretch a 100-foot measuring tape across a survey area that represents a random portion of the overall conditions of the site. Firmly anchor both ends of the measuring tape into the surface using a tool such as a screwdriver, with the tape stretched taut and close to the soil surface. If vegetation exists in regular rows, place the tape diagonally (at approximately a 45° angle) away from a parallel or perpendicular position to the vegetated rows. Pinpoint an area the size of a 3/32 inch diameter brazing rod or wooden dowel centered above each 1-foot interval mark along one edge of the tape. Count the number of times that flat vegetation lies directly underneath the pinpointed area at 1-foot intervals. Consistently observe the underlying surface from a 90° angle directly above each pinpoint on one side of the tape. Do not count the underlying surface as vegetated if any portion of the pinpoint extends beyond the edge of the vegetation underneath in any direction. If clumps of vegetation or vegetative debris lie underneath the pinpointed area, count the surface as vegetated, unless bare soil is visible directly below the pinpointed area. When 100 observations have been made, add together the number of times a surface was counted as vegetated. This total represents the percent of flat vegetation cover (e.g., if 35 positive counts were made, then vegetation cover is 35%). If the survey area that represents a random portion of the overall conditions of the site is too small for 100 observations,

make as many observations as possible. Then multiply the count of vegetated surface areas by the appropriate conversion factor to obtain percent cover. For example, if vegetation was counted 20 times within a total of 50 observations, divide 20 by 50 and multiply by 100 to obtain a flat vegetation cover of 40%.

b. *[Required Number of Observations]* Conduct the line transect test method, as described above, an additional two times on areas that represent a random portion of the overall conditions of the site and average results.

4. **Determination of Standing Vegetative Cover:** Standing vegetation includes vegetation that is attached (rooted) with a predominant vertical orientation. Standing vegetation, which is dead but firmly rooted, shall be considered equally protective as live vegetation. Conduct the following standing vegetation test method to determine if 30% cover or more exists. If the resulting percent cover is less than 30% but equal to or greater than 10%, then conduct the test in §B.2 (Determination of Threshold Friction Velocity [TFV]) in order to determine if the site is stabilized, such that the standing vegetation cover is equal to or greater than 10%, where threshold friction velocity, corrected for non-erodible elements, is equal to or greater than 43 cm/second.

a. *[Define Survey Area]* For standing vegetation that consists of large, separate vegetative structures (e.g., shrubs and sagebrush), select a survey area that represents a random portion of the overall conditions of the site that is the shape of a square with sides equal to at least 10 times the average height of the vegetative structures. For smaller standing vegetation, select a survey area of three feet by three feet.

b. *[Calculate Frontal Silhouette Area]* Count the number of standing vegetative structures within the survey area. Count vegetation, which grows in clumps as a single unit. Where different types of vegetation exist and/or vegetation of different height and width exists, separate the vegetative structures with

similar dimensions into groups. Count the number of vegetative structures in each group within the survey area. Select an individual structure within each group that represents the average height and width of the vegetation in the group. If the structure is dense (e.g., when looking at it vertically from base to top there is little or zero open air space within its perimeter), calculate and record its frontal silhouette area, according to Equation 6. Also, use Equation 6 to estimate the average height and width of the vegetation if the survey area is larger than nine square feet. Otherwise, use the procedure in §B.4.c (Vegetative Density) to calculate the frontal silhouette area. Then calculate the percent cover of standing vegetation according to Equations 7, 8, and 9.

$$\text{(Average Height)} \times \text{(Average Width)} = \text{Frontal Silhouette Area} \dots \dots \dots \text{Eq. 6}$$

$$\text{(Frontal Silhouette Area of Individual Vegetative Structure)} \times \text{(Number of Vegetation Structures Per Group)} = \text{Frontal Silhouette Area of Group} \dots \dots \dots \text{Eq. 7}$$

$$\text{Frontal Silhouette Area of Group 1} + \text{Frontal Silhouette Area of Group 2 (etc.)} = \text{Total Frontal Silhouette Area} \dots \dots \dots \text{Eq. 8}$$

$$\text{(Total Frontal Silhouette Area} \div \text{Survey Area)} \times 100 = \text{Percent Cover of Standing Vegetation} \dots \dots \dots \text{Eq. 9}$$

$$[(\text{Number of Circled Gridlines within the Outlined Area Counted that are not Covered by Vegetation} \div \text{Total Number of Gridline Intersections within the Outlined Area}) \times 100] = \text{Percent Open Space} \dots \dots \dots \text{Eq. 10}$$





covered by any piece of the vegetation. To calculate percent vegetative density, use Equations 10 and 11. If percent vegetative density is equal to or greater than 30, use an equation (one of the Equations 16, 17, or 18) that matches the outline used to trace the vegetation (Figure B, C, or D) to calculate its frontal silhouette area. Outline the shape of the vegetation along its outer perimeter, as either a cylinder; an inverted cone; or the upper portion of a sphere, as appropriate. For classification purposes, vegetation that generally flares with increasing height should be considered an inverted cone. Vegetation that generally narrows in width above a midpoint should be considered as the upper portion of a sphere. If percent vegetative density is less than 30, use Equations 12 and 13 to calculate the frontal silhouette area.

Figure B. Cylinder - See MaricopaAppendixC (pdf, 2132 KB), page 10, available on-line at <http://yosemite.epa.gov/R9/r9sips.nsf/AgencyProvision/0A50F4E53BD113898825735B0065A8D6?OpenDocument>.

Frontal Silhouette Area = Maximum Height × Maximum Width .....  
 .... Eq. 16

Figure C. Inverted Cone. See MaricopaAppendixC (pdf, 2132 KB), page 11, available on-line at <http://yosemite.epa.gov/R9/r9sips.nsf/AgencyProvision/0A50F4E53BD113898825735B0065A8D6?OpenDocument>.

Inverted Cone Frontal Silhouette Area = Maximum Height × ½ Maximum Width  
 .....  
 .. ..... Eq. 17

Figure D. Upper Sphere. See MaricopaAppendixC (pdf, 2132 KB), page 12, available on-line at <http://yosemite.epa.gov/R9/r9sips.nsf/AgencyProvision/0A50F4E53BD113898825735B0065A8D6?OpenDocument>.

$$\text{Upper Sphere - Frontal Silhouette Area} = (3.14 \times \text{Maximum Height} \times \frac{1}{2} \text{Maximum Width}) \div 2 \dots \dots \dots \text{Eq. 18}$$

5.      **Rock Test Method:** The Rock Test Method 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 hard-packed 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.      *[Test Area]* Select a 1-meter × 1-meter survey area that represents the general rock distribution on the surface. (A 1-meter × 1-meter area is slightly greater than a 3-foot × 3-foot 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.      *[Initial Surface Characterization]* Without moving any of the rocks or other elements, examine the survey area. Since rocks >3/8 inch (1 cm) in diameter are of interest, measure the diameter of some of the smaller rocks to get a sense for which rocks need to be considered.

c.      *[Grouping Characterization of Rocks]* Mentally group the rocks >3/8 inch (1 cm) diameter lying in the survey area into small, medium, and large size categories. Or, 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. *[Determination of Average Individual Rock Area]* 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. *[Calculation of Aggregate Total Rock Area]* 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. *[Calculation of Total Rock Area]* Divide the total rock area by two (to get frontal area). Divide the resulting number by the size of the survey area (making 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 square 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. *[Characterization of Rock Cover Across Entire Site]* Select and mark off two additional survey areas and repeat the procedures described above in subsections a. through f. 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. *[Initial Rock Cover Stabilization Determination]* If the average rock cover is greater than or equal to 10%, the surface is

stable. If the average rock cover is less than 10%, follow the procedures in the following subsection i.

i. *[Combined Rock Cover/TFV Stabilization Determination]* If the average rock cover is less than 10%, the surface may or may not be stable. Follow the procedures in Subsection B.2 (Determination of Threshold Friction Velocity [TFV]) of this rule 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 TFV to be stable without even accounting for rock cover.

j. *[TFV Correction Based on Partial Rock Cover]* After completing the procedures to calculate the TFV as described in the preceding subsection, use Table 2 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.

C. TEST METHODS ADOPTED BY REFERENCE: The following test methods are adopted by reference. These adoptions by reference include no future editions or amendments. Copies of the test methods listed in this section are available for review at Pinal County Air Quality, 31 North Pinal St., Florence, AZ 85232.

1. ASTM Method C136-06 ("Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates"), 2006 edition.

2. ASTM Method D2216-05 ("Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass"), 2005 edition.

3. ASTM Method D1557-02e1 (“Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>))), 2002 edition.

[ Adopted June 3, 2009, effective August 26, 2009]

#### **4-9-340. Visual Opacity Test Methods**

##### **A. General Provisions**

1. Applicability: These methods apply to the determination of opacity of visible emissions under this Chapter 4.
2. Principle: the opacity of emissions from sources of visible emissions is determined visually by an observer qualified according to the procedures of §G of this rule.
3. Procedures: An observer qualified, in accordance with §G of this rule shall use the procedures set forth in this Article for visually determining the opacity of emissions.

##### **B. Procedures for Determining Opacity from Emissions From Stationary Sources**

1. Opacity from stationary point sources shall be determined in accord with EPA Method 9, as adopted by reference herein.
2. Adoption by Reference

The following test methods are adopted by reference. These adoptions by reference include no future editions or amendments. Copies of the test methods listed in this section are available for review at Pinal County Air Quality, 31 North Pinal St., Florence, AZ 85232.

- a. EPA Reference Method 9, 40 CFR Part 60, Appendix A (7/1/08).

#### C. Procedures for Determining Time-Averaged Opacity from Intermittent Operations

##### 1. *[Applicability - Intermittent Plume Average Opacity Determination for Operations]*

The purpose of this method is determine the opacity of non-continuous dust plumes caused by activities including, but not limited to, bulk material loading/unloading, non-conveyorized screening, or trenching with backhoes.

##### 2. Opacity Determination Process

- a. Position: Stand at least 25 feet from the dust-generating operation in order to provide a clear view of the emissions with the sun oriented in the 140° sector to the back. Choose a discrete portion of the operation for observation, such as the unloading point, not the whole operation. Following the above requirements, make opacity observations so that the line of vision is approximately perpendicular to the dust plume and wind direction. If multiple plumes are involved, do not include more than one plume in the line of sight at one time.

- b. Initial Fallout Zone: The initial fallout zone within the plume must be identified. Record the distance from the equipment or path that is your identified initial fallout zone. The initial fallout zone is that area where the heaviest particles drop out of the entrained fugitive dust plume. Opacity readings should be taken at the maximum point of the entrained fugitive dust plume that is located outside the initial fallout zone.
- c. Field Records: Note the following on an observational record sheet:
- i. Location of dust-generating operation, type of operation, type of equipment in use and activity, and method of control used, if any;
  - ii. Observer's name, certification data and affiliation, a sketch of the observer's position relative to the dust-generating operation, and observer's estimated distance and direction to the location of the dust-generating operation;
  - iii. Time that readings begin, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds); and
  - iv. Color of the plume and type of background.
- d. Observations. Make opacity observations, to the extent possible, using a contrasting background that is perpendicular to the line of vision. Make two observations per discrete activity, beginning with the first reading at zero seconds and the second reading at five seconds. The zero-second observation should begin



immediately after a plume has been created above the surface involved. Do not look continuously at the plume but, instead, observe the plume briefly at zero seconds and then again at five seconds.

e.     Recording Observations: Record the opacity observations to the nearest 5% on an observational record sheet. Each momentary observation recorded represents the average opacity of emissions for a five-second period. Repeat observations until you have recorded at least a total of 12 consecutive opacity readings. The 12 consecutive readings must be taken within the same period of observation but must not exceed one hour. Observations immediately preceding and following interrupted observations can be considered consecutive (e.g., vehicle traveled in front of path, plume doubled over).

f.     Data Reduction: Average 12 consecutive opacity readings together. If the average opacity reading is equal to or less than the numerical standard in the underlying rule, the dust-generating operation is in compliance.

D.     *Procedures for Determining Average Opacity from Vehicle Movement*

1.     *[Applicability - Intermittent Plume Average Opacity Determination for Vehicular Movement]*. The purpose of this test method is to estimate the percent opacity of fugitive dust plumes caused by vehicle movement on unpaved roads and unpaved parking lots. This method can only be conducted by an individual who has received certification as a qualified observer. Qualification and testing requirements can be found in Section G of this Rule.

2.     Opacity Determination Process

a. Step 1 [- *Position*]: Stand at least 16.5 feet from the fugitive dust source in order to provide a clear view of the emissions with the sun oriented in the 140° sector to the back. Following the above requirements, make opacity observations so that the line of vision is approximately perpendicular to the dust plume and wind direction. If multiple plumes are involved, do not include more than one plume in the line of sight at one time.

b. Step 2. [- *Field Records*]: Record the fugitive dust source location, source type, method of control used, if any, observer's name, certification data and affiliation, and a sketch of the observer's position relative to the fugitive dust source. Also, record the time, estimated distance to the fugitive dust source location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), observer's position to the fugitive dust source, and color of the plume and type of background on the visible emission observation from both when opacity readings are initiated and completed.

c. Step 3 [- *Observations*]: Make opacity observations, to the extent possible, using a contrasting background that is perpendicular to the line of vision. Make opacity observations approximately 1 meter above the surface from which the plume is generated. Note that the observation is to be made at only one visual point upon generation of a plume as opposed to visually tracking the entire length of a dust plume as it is created along a surface. Make two observations per vehicle, beginning with the first reading at zero seconds and the second reading at five seconds. The zero-second observation should begin immediately after the plume has been created above the surface involved. Do not look continuously at the plume but, instead, observe the plume briefly at zero seconds and then again at five seconds.

d. Step 4 [- *Recording Observations - #1*]: Record the opacity observations to the nearest 5% on an observational record sheet. Each momentary observation recorded represents the average opacity of emissions for a 5-second period. While it is not

required by the test method, EPA recommends that the observer estimate the size of vehicles which generate dust plumes for which readings are taken (e.g. mid-size passenger car or heavy-duty truck) and the approximate speeds the vehicles are traveling when the readings are taken.

e. Step 5 [- *Recording Observations - #2*]: Repeat Step 3 and Step 4 until you have recorded a total of 12 consecutive opacity readings. This will occur once six vehicles have driven on the source in your line of observation for which you are able to take proper readings. The 12 consecutive readings must be taken within the same period of observation but must not exceed 1 hour. Observations immediately preceding and following interrupted observations can be considered consecutive.

f. Step 6 [- *Data Reduction*]: Average the 12 opacity readings together. If the average opacity reading is equal to or less than the numerical standard in the underlying rule, the source is in compliance.

#### E. Procedures for Determining Time-Averaged Opacity from Continuous Operations

##### 1. [*Applicability - Continuous Plume Average Opacity Determination for Operations*]

The purpose of this method is to determine the opacity of continuous dust plumes caused by equipment and activities including but not limited to graders, trenchers, paddlewheels, blades, clearing, leveling, and raking.

##### 2. Opacity Determination Process

a. Position: Stand at least 25 feet from the dust-generating operation to provide a clear view of the emissions with the sun oriented in the 140° sector to your back. Following the above requirements, make opacity observations so that the line of vision is approximately perpendicular to the dust plume and wind direction.

b. Dust Plume: Evaluate the dust plume generation and determine if the observations will be made from a single plume or from multiple related plumes.

i. If a single piece of equipment is observed working, then all measurements should be taken off the resultant plume as long as the equipment remains within the 140° sector to the back.

ii. If there are multiple related sources or multiple related points of emissions of dust from a particular activity, or multiple pieces of equipment operating in a confined area, opacity readings should be taken at the densest point within the discrete length of equipment travel path within the 140° sector to the back. Readings can be taken for more than one piece of equipment within the discrete length of travel path within the 140° sector to the back.

c. Initial Fallout Zone: The initial fallout zone within the plume must be identified. Record the distance from the equipment or path that is your identified initial fallout zone. The initial fallout zone is that area where the heaviest particles drop out of the entrained fugitive dust plume. Opacity readings should be taken at the maximum point of the entrained fugitive dust plume that is located outside the initial fallout zone.

sheet:

d. Field Records: Note the following on an observational record

i. Location of the dust-generating operation, type of operation, type of equipment in use and activity, and method of control used, if any;

ii. Observer's name, certification data and affiliation, a sketch of the observer's position relative to the dust-generating operation, and observer's estimated distance and direction to the location of the dust-generating operation; and

iii. Time that readings begin, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds).

e. Observations: Make opacity observations, to the extent possible, using a contrasting background that is perpendicular to the line of vision. Make opacity observations at a point beyond the fallout zone. The observations should be made at the densest point. Observations will be made every 10 seconds until at least 12 readings have been recorded. Do not look continuously at the plume, but observe the plume momentarily at 10-second intervals. If the equipment generating the plume travels outside the field of observation or if the equipment ceases to operate, mark an "X" for the 10-second reading interval. Mark an "X" when plumes are stacked or doubled, either behind or in front, or become parallel to line of sight. Opacity readings identified as "X" shall be considered interrupted readings.

f. Recording Observations: Record the opacity observations to the nearest 5% on an observational record sheet. Each momentary observation recorded represents the average opacity of emissions for a 10-second period.

g. Data Reduction: Average 12 consecutive opacity readings together. If the average opacity reading is equal to or less than the numerical standard in the underlying rule, the dust-generating operation is in compliance.

F. Procedures for Determining the Frequency of Visible Emissions; Time Aggregation Method

1. *Applicability - Aggregate Quantification of Visible Emission Duration*

The purpose of this method is to determine the amount of time that visible emissions occur during the observation period (*i.e.*, the accumulated emission time).

2. Adoption by Reference

The following test methods are adopted by reference. These adoptions by reference include no future editions or amendments. Copies of the test methods listed in this section are available for review at Pinal County Air Quality, 31 North Pinal St., Florence, AZ 85232.

a. EPA Reference Method 22 (“Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Flares”), 2000 edition.

G. Qualification and Testing

1.     **Certification Requirements:** To receive certification as a qualified observer, a candidate must be tested and demonstrate the ability to assign opacity readings in 5% increments to 25 different black plumes and 25 different white plumes, with an error not to exceed 15% opacity on any one reading and an average error not to exceed 7.5% opacity in each category. Candidates shall be tested according to the procedures described in this subsection. Any smoke generator shall be equipped with a smoke meter, which meets the requirements of this subsection. Certification tests that do not meet the requirements of this subsection are not valid. The certification shall be valid for a period of 6 months, and after each 6-month period the qualification procedures must be repeated by an observer in order to retain certification.

2.     **Certification Procedure:** The certification test consists of showing the candidate a complete run of 50 plumes, 25 black plumes and 25 white plumes, generated by a smoke generator. Plumes shall be presented in random order within each set of 25 black and 25 white plumes. The candidate assigns an opacity value to each plume and records the observation on a suitable form. At the completion of each run of 50 readings, the score of the candidate is determined. If a candidate fails to qualify, the complete run of 50 readings must be repeated in any retest. The smoke test may be administered as part of a smoke school or training program, and may be preceded by training or familiarization runs of the smoke generator, during which candidates are shown black and white plumes of known opacity.

3.     **Smoke Generator Specifications:** Any smoke generator used for the purpose of this subsection shall be equipped with a smoke meter installed to measure opacity across the diameter of the smoke generator stack. The smoke meter output shall display in-stack opacity, based upon a path length equal to the stack exit diameter on a full 0% to 100% chart recorder scale. The smoke meter optical design and performance shall meet the specifications shown in Table 3 of this appendix. The smoke meter shall be calibrated as prescribed in this subsection prior to conducting each smoke reading test. At the completion of each test, the zero and span drift shall be checked, and if the drift exceeds plus or minus 1% opacity, the condition shall be corrected prior to conducting any subsequent test runs. The smoke meter shall be demonstrated, at the time of installation, to meet the specifications listed in Table 3 of this appendix. This demonstration shall be repeated following any subsequent

repair or replacement of the photocell or associated electronic circuitry, including the chart recorder or output meter, or every 6 months, whichever occurs first.

a. Calibration: The smoke meter is calibrated after allowing a minimum of 30 minutes warm-up by alternately producing simulated opacity of 0% and 100%. When stable response at 0% or 100% is noted, the smoke meter is adjusted to produce an output of 0% or 100%, as appropriate. This calibration shall be repeated until stable 0% and 100% readings are produced without adjustment. Simulated 0% and 100% opacity values may be produced by alternately switching the power to the light source on and off while the smoke generator is not producing smoke.

b. Smoke Meter Evaluation: The smoke meter design and performance are to be evaluated as follows:

i. Light Source: Verify, from manufacturer's data and from voltage measurements made at the lamp, as installed, that the lamp is operated within plus or minus 5% of the nominal rated voltage.

ii. Spectral Response of Photocell: Verify from manufacturer's data that the photocell has a photopic response (i.e., the spectral sensitivity of the cell shall closely approximate the standard spectral-luminosity curve for photopic vision which is referenced in (b) of Table 3 of this appendix).

iii. Angle of View: Check construction geometry to ensure that the total angle of view of the smoke plume, as seen by the photocell, does not exceed 15°. Calculate the total angle of view as follows:



$$\text{Total Angle of View} = 2 \tan^{-1} d/2L$$

where:

$d$  = The photocell diameter + the diameter of the limiting aperture; and

$L$  = The distance from the photocell to the limiting aperture.

The limiting aperture is the point in the path between the photocell and the smoke plume where the angle of view is most restricted. In smoke generator smoke meters, this is normally an orifice plate.

iv. Angle of Projection: Check construction geometry to ensure that the total angle of projection of the lamp on the smoke plume does not exceed  $15^\circ$ . Calculate the total angle of projection as follows:

$$\text{Total Angle of Projection} = 2 \tan^{-1} d/2L$$

Where:

$d$  = The sum of the length of the lamp filament + the diameter of the limiting aperture; and

$L$  = The distance from the lamp to the limiting aperture.

v. Calibration Error: Using neutral-density filters of known opacity, check the error between the actual response and the theoretical linear response of the smoke meter. This check is accomplished by first calibrating the smoke meter, according to subsection G.3.a , and then inserting a series of three neutral-density filters of nominal opacity of 20%, 50%, and 75% in the smoke meter path length. Use filters calibrated within plus or minus 2%. Care should be taken when inserting the filters to prevent stray light from affecting the meter. Make a total of five nonconsecutive readings for each filter. The maximum opacity error on any one reading shall be plus or minus 3%.

vi. Zero and Span Drift: Determine the zero and span drift by calibrating and operating the smoke generator in a normal manner over a 1-hour period. The drift is measured by checking the zero and span at the end of this period.

vii. Response Time: Determine the response time by producing the series of five simulated 0% and 100% opacity values and observing the time required to reach stable response. Opacity values of 0% and 100% may be simulated by alternately switching the power to the light source off and on while the smoke generator is not operating.

Table 3. Smoke Meter Design and Performance Specifications

Parameter	Specification
-----------	---------------

1. Light source	Incandescent lamp operated at nominal rated voltage
2. Spectral response of photocell	Photopic (daylight spectral response of the human eye)
Angle of view	5° maximum total angle
Angle of projection	5° maximum total angle
Calibration error	Plus or minus 3% opacity maximum
Zero and span drift	Plus or minus 1% opacity 30 minutes
3. Response time	Less than or equal to 5 seconds