ENVIRON

Air Sciences

DRAFT FINAL
TECHNICAL MEMORANDUM
REGULATION VIII BACM ANALYSIS

Prepared for

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ABBREVIATIONS AND ACRONYMS

ADVT	Average daily vehicle trips
BLM	U.S. Department of Interior Bureau of Land Management
BMP	Best Management Practice (agriculture)
BP	Border Patrol
CAA	Federal Clean Air Act
CARB	California Air Resources Board
CMP	Conservation Management Practice (agriculture)
IC	Imperial County
ICAPCD	Imperial County Air Pollution Control District
IID	Imperial Irrigation District
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
PM	particulate matter
PM_{10}	particulate mater less than 10 μm in aerodynamic diameter
SCAQMD	South Coast Air Quality Management District
SIP	State Implementation Plan
SJV	San Joaquin Valley
SJVAPCD	San Joaquin Valley Unified Air Pollution Control District
TSP	total suspended particulates (less than 30 ∝m in aerodynamic diameter)
USEPA	United States Environmental Protection Agency
VDT	Vehicle daily trips
$\mu g/m^3$	microgram per cubic meter
μm	micron or micrometer

1. INTRODUCTION

Background

Imperial County is located in the southeastern portion of California and borders Mexicali, Mexico. The climate is hot and dry, ranging from lows in the mid 30's in January to highs of 110°F+ in July and August (mean annual temperatures: low-55.0°F; of high-89.6°F), with little moisture (average annual rainfall: 2.92 inches; 25 percent average relative humidity). Imperial County extends over 4,597 square miles, bordering Mexico to the south, Riverside County to the north, San Diego County to the west, and the State of Arizona to the east. The terrain varies from 235 feet below sea level at the Salton Sea to 4,548 feet above sea level at Blue Angel Peak. The population of all of Imperial County is about 149,300 people. The principal industries are farming and retail trade. Most of the population, farming, and retail trade exists in a band of land on average less than 1/4th the width of the county that stretches from the south shore of the Salton Sea to the Mexican border, where road network is densest, as shown in Figure 1.

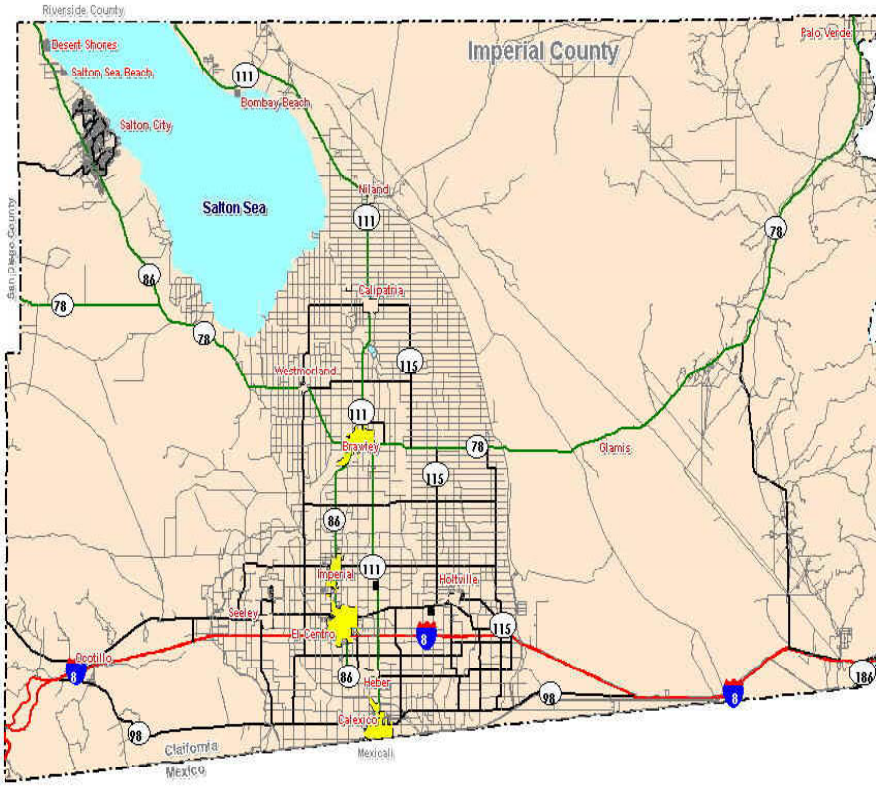

Figure 1-1: Imperial County

Much of the rest of Imperial County is desert or barren areas that are sparsely populated or unpopulated. In Imperial County, elevated PM_{10} levels can result from disturbance of soils by wind and human activity, and from transport from Mexico. Likely PM_{10} sources include the large desert areas (during high winds), unpaved roads, waste burning, agriculture, vacant lots, Immigration and Naturalization Service (Border Patrol) activities along the border, and Mexican sources.

Best Available Control Measure (BACM) Development and Assessment

USEPA issued a finding on August 3, 2004 that Imperial Valley failed to attain the PM_{10} NAAQS by the statutory deadline of December 31, 1994, and therefore reclassified the area from a moderate to a serious PM_{10} nonattainment area. Also on August 3, 2004, USEPA proposed to find that the Imperial Valley failed to attain by the serious area attainment date of December 31, 2001. The proposed rule generally described the necessary plan requirements and would require Imperial County submit its clean air plan, including BACM, within one year of the final action. As of the date of this report, USEPA has not taken final action. In addition, ICAPCD on August 9, 2005 approved a natural event action plan (NEAP) to support the exclusion of natural events from attainment determinations, as allowed by USEPA's Natural Event Policy (NEP). Although the final action by USEPA has not occurred, ICAPCD has proposed Regulation VIII BACM rules. EPA guidance recommends the following procedure for demonstrating the BACM has been implemented on all significant sources:

- Inventory sources of PM_{10} and PM_{10} precursors
- Determine a de minimis level for each pollutant
- Identify significant source categories
- Identify candidate control measures/technologies
- Evaluate alternative control technologies for:
  - Technical feasibility analysis
  - Economic feasibility analysis
  - Environmental impacts
  - Select and implement measures

Traditionally, BACM development and assessment would be based on the State Implementation Plan (SIP) and its technical analyses. Key technical issues concerning emission inventory and natural events have not been resolved at this time. Unlike other serious non-attainment areas, ICAPCD is preparing its fugitive dust BACM in advance of the development and approval of a SIP. ICAPCD has prepared proposed Regulation VIII BACM (based on other recent serious area BACM rules) to meet the requirements of the NEP and to expedite BACM emission reductions. In

March 2004, ICAPCD began a review and assessment of BACM in other areas, which it has used as the basis on its proposed Regulation VIII BACM amendments. In October 2004 it gave a BACM presentation to local stakeholders that initiated the BACM rule development. ICAPCD prepared and released proposed Regulation VIII BACM rules in December 2004. These rules are being developed through a public process that includes a local Technical Advisory Committee (TAC). Membership in the TAC group includes representatives from Coalition of Labor and Business (COLAB), Farm Bureau, farmers, private industry, Bureau of Land Management (BLM), Border Patrol, Imperial Irrigation District, County Public Works Department and APCD. The initial meeting was December 16, 2004, with subsequent meetings held on January 4, 2005, January 11th, January 24th, and March 22nd. For the first time, on March 23, 2005, the TAC held a meeting with EPA to review EPA's comments and receive information that would be useful in amending Regulation VIII rules. ARB participated by teleconference. The ICAPCD also conducted six public workshops to collect comments on Regulation VIII rules in Brawley, El Centro and Holtville. Workshop were held on May 31st, June 1st (two workshops) and June 2nd (two workshops), and August 4th. ICAPCD then re-submitted the Draft Regulation VIII Rules to EPA and ARB, for a second time, for informal comments. The EPA and ARB commented on these rules. On August 10, 2005, the district held a meeting with ARB and EPA at ARB's headquarters, in Sacramento, to discuss their comments. An agreement was reached with EPA if their comments were addressed, that Regulation VIII rules would be declared BACM. Informal comments on these rules were also submitted by US Marine Corps and the California Department of Transportation (Caltrans). The current schedule is for the ICAPCD Board to hold an adoption hearing in November 2005.

Purpose

This report presents the BACM determination based on proposed Regulation VIII amendments. It includes all elements of a BACM determination, including inventory assessment, calculation of the de minimis emission level, identification of significant sources (e.g. those sources which emit more than the de minimis level of emissions), a comparative analysis of proposed Regulation VIII amendments for significant sources with regulations adopted by serious PM_{10} non-attainment areas, and a presentation of the cost-effectiveness of individual dust control measures. The proposed Regulation VIII BACM amendments are based on BACM recently adopted by other serious non-attainment areas. As shown in this report, they apply to all significant fugitive dust sources in Imperial County and certain non-significant sources. This technical memorandum is based on USEPA's guidance on BACM development and assessment, including: 1) an inventory sources of PM_{10} and PM_{10} precursors, 2) determination a de minimis level for each pollutant, 3) identification of significant source categories, 4) a comparative analysis of proposed Regulation VIII amendments and BACM in other serious non-attainment areas, and 5) emission reductions and costs associated with proposed Regulation VIII rules, as well as the cost-effectiveness of Regulation VIII measures

based on previous BACM analyses. These elements of a BACM assessment traditionally done in a SIP are being developed outside of the traditional SIP process to meet the requirements and schedule of the NEP and accelerate BACM implementation.

Report Organization

This report is organized as follows:

- Section 2 presents a determination of PM_{10} De Minimis Levels for Imperial County based on the current emission inventory and ambient measurements.
- Section 3 assesses the current PM_{10} emission inventory and identifies the potentially significant sources of PM_{10}. This also includes an analysis of major stationary sources.
- Section 4 presents the comparative analysis of the proposed Regulation VIII amendments with BACM in other serious PM_{10} non-attainment areas.
- Section 5 presents the cost-effectiveness of proposed Regulation VIII amendments based on the cost-effectiveness analyses of previous BACM determinations.
- Section 6 presents the conclusions and recommendations of this report.
- Appendix A is an ENVIRON Technical Memorandum that presents the latest revisions of the Windblown Dust Study, which is used to calculate windblown from all sources except unpaved roads.
- Appendix B presents the updated entrained and windblown unpaved road emission estimates.
- Appendix C presents a detailed comparative analysis on a source-by-source basis for all proposed Regulation VIII rules for those sources with emissions above the de minimis emissions level.
- Appendix D presents a detailed comparative analysis on a source-by-source basis for all proposed Regulation VIII rules for those sources with emissions below the de minimis emissions level. A comparative analysis is not required for these sources and is presented for informational purposes only.
- Appendix E contains the version of the proposed Regulation VIII rules dated October 2005. This analysis is based upon this version of the proposed rules.
- Appendix F is the Environmental Assessment and Finding of No Significant Impact prepared by BLM in April 2002 for Road and Trail Maintenance related to Border Patrol activities in Imperial County.

2. DETERMINATION OF PM_{10} DE MINIMUS LEVELS

Background

USEPA has established de minimis (DM) criteria for source categories contributing to PM_{10}. Specifically, USEPA has established a source category contribution level of 1 $\mu g/m^3$ based on the annual average PM_{10} national ambient air quality standard (NAAQS) and 5 $\mu g/m^3$ based on the 24-hour PM_{10} NAAQS[1]. If a source category contributes more than these levels to measured ambient PM_{10} concentrations in a serious nonattainment area, then BACM and/or Best Available Control Technology (BACT) are required to be implemented for that source. (BACM applies to certain area sources and BACT applies to stationary, mostly point, sources). The purpose of this report is to determine the DM conditions, on an emission per $\mu g/m^3$ basis, for sources of primary PM_{10} in Imperial County. (Ambient PM_{10} in most of Imperial County (e.g., those areas which do not border Mexicali) is overwhelmingly primary PM_{10}, with little or no contribution from secondary aerosols). Once the DM levels are determined, then any source category which exceeds those limits would be subject to BACM/BACT. For individual stationary sources that meet the state and/or federal definition of PM_{10} major source, the last section of this chapter identifies those sources, whether BACT has been imposed (based on the date of the latest major modification permit), and, if BACT has not been applied, an assessment of the impact of the source's emissions on ambient concentrations, relative to the significance thresholds. The BACM/BACT requirement does not apply to mobile sources of emissions.

Ambient PM_{10} and Related Emission Inventories

The DM level is calculated using the ambient PM_{10} data and the related emission inventory. There are six PM_{10} stations in Imperial County; from north to south, Niland, Westmorland, Brawley, El Centro, Calexico-Grant, and Calexico-Ethel. The last two stations are located in Calexico, next to the greater Mexicali, Mexico area. As shown in previous 179B(d) submittals, measures in excess of the annual average PM_{10} standard at the Calexico stations would not have occurred but for Mexican PM_{10} sources[2]. Since BACM and BACT can only be applied to U.S. sources, the Calexico stations will be excluded from the DM level determination. It is expected and assumed that ambient PM_{10} at these non-border ambient air monitoring stations is overwhelmingly primary PM_{10}. (This is a conservative assumption when calculating the DM level, e.g., it produces the

[1] State Implementation Plans for Serious PM_{10} Non-Attainment Areas, and Attainment Date Waivers for PM_{10} Non-Attainment Areas Generally; Addendum to the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990, Federal Register, Vol. 59, No. 157, August 16, 1994.

[2] "Imperial County PM_{10} Attainment Demonstration," prepared by ENVIRON for the Imperial County Air Pollution District, July 2001.

smallest DM level.) The annual average PM_{10} levels for 2002 through 2004 for the non-Calexico stations are presented in Table 2-1, including the location of the maximum.

Table 2-1. Annual Average PM_{10} levels in µg/m3

	2002	2003	2004
Annual Average PM_{10}	57.1 (Westmorland)	73.5 (Westmorland) 60.3 without the flagged wildfire event	56.3 (Westmorland)

The peak 24-hour average values are not as straightforward. Table 2-2 reports the peak 24-hour average PM_{10} values for 2002 through 2004. The peak 24-hour average PM_{10} in 2003 was due to a wildfire event that has been flagged by USEPA as natural event. The more representative 2nd peak 24-hour average PM_{10} values have been provided as more representative of local emissions. It should be noted that ICAPCD has requested that the August 18, 2002 and August 19, 2003 PM_{10} readings be flagged as natural events; however, for the purposes of this analysis, these readings will be used in the calculation of the DM level. (Using lower 24-hour average readings would increase the DM level, so this is a conservative approach.)

Table 2-2. 24-Hour Average PM_{10} levels in µg/m3

	2002	2003	2004
Peak 24-Hour Average PM_{10}	297 (Westmorland 8/18)	840[1] (Westmorland 10/30) 2nd high: 162 (8/19)	354 (Brawley 2/18) 2nd high: 201 (Westmorland 8/13)

[1] Wildfire event on October 30, 2003

Except for the miscellaneous emissions category, emission data are from CARB 2004 emission inventory. The 2004 emissions inventory is used since this is the latest published inventory and there is little variation in the inventory over the 2002 through 2004 timeframe. The miscellaneous category includes fugitive dust sources such as windblown dust emissions, entrained unpaved and paved road emissions, construction emissions, and emissions from crop and cattle farming operations. A more detailed description of the emission inventory can be found in Chapter 3. Table 2-3 summarizes the Imperial County PM_{10} emissions, based on the CARB's published inventory and revisions to the miscellaneous source emissions described in Chapter 3:

Table 2-3. Annual Average PM_{10} Emission Inventories for Imperial County in tons/day (Only non-zero categories are reported)

Category	Year 2004
Fuel Combustion	0.41
Industrial	2.77
Miscellaneous[1]	279.98
On-Road Mobile	0.38
Other Mobile	0.69
Total	**284.23**

[1] Miscellaneous source emissions are based on 2004 CARB estimates or revisions to the CARB estimates. See Chapter 3 for details.

Since peak 24-hour emissions are not reported, our analysis relies on CARB's reported peak seasonal (e.g. summer) inventories. For miscellaneous source emission estimate, annual average emission estimates are used for all sources except that the 24-hour hour average windblown emissions during the highest emitting month are used for non-unpaved road area sources (e.g. agricultural fields, shrub land, barren desert areas and dunes). These emissions will underestimate the peak day emissions, since they do not reflect the highest wind days.

Table 2-4. Summer Average PM_{10} Emission Inventories for Imperial County in tons/day (Only non-zero categories are reported)

Category	Year 2004
Fuel Combustion	0.49
Industrial	2.76
Miscellaneous	543.33
On-Road Mobile	0.38
Other Mobile	0.74
Total	**547.7**

[1] Miscellaneous source emissions are based on 2004 CARB estimates or revisions to the CARB estimates. Windblown emissions from all areas except unpaved roads are based on highest emission month. See Chapter 3 for details.

Calculation of DM Levels

The DM level is calculated by determining the emissions that are proportional to either 1 $\mu g/m^3$ (annual average) or 5 $\mu g/m^3$ (24-hour average), based on the ambient data. The annual average DM level is derived from dividing the 2004 PM_{10} emissions of 284.23 tons/day by the average (2002

through 2004) ambient measurements of 57.9 $\mu g/m^3$; the annual average DM is thus 4.9 tons/day per $\mu g/m^3$. (The wildfire event was excluded from the 2003 annual average, since it is unrepresentative of the annual average emissions. On a year-by-year basis, changing only the annual average PM_{10} maximum concentrations, the DM level calculation would be 5.0 for 2002, 4.7 for 2003, and 5.0 for 2004.)

For the 24-hour average, the summer average emissions (547.2 tons/day) are divided by the average ambient 24-hour PM_{10} levels (271 $\mu g/m^3$) and then multiplied by 5 (the DM is set by emissions proportional to 5 $\mu g/m^3$). This is very conservative since the summer and/or monthly average inventory will be smaller than the peak 24-hour inventory. The calculations exclude the wildfire events (10/30/03) as unrepresentative of local emissions and unrelated to the emissions inventory. The DM level for the peak 24-hour average is thus 10.1 tons/day per 5 $\mu g/m^3$. (On a year-by-year basis, changing only the 24-hour average PM_{10} maximum concentrations, the DM level calculation would be 9.2, 16.9, and 7.7 for 2002, 2003, and 2004, respectively.)

Consistent with a conservative determination of the DM level, the DM level for PM_{10} in Imperial County is 4.9 tons/day. A further discussion of the DM level and emission source categories is presented in the next chapter.

Analysis of Major PM_{10} Stationary Sources

The previous analysis dealt with traditional fugitive PM_{10} sources and the assessment of their potential significance as it relates to BACM. The de minimis value was determined by comparing proportional ambient PM_{10} concentrations to average PM_{10} emissions. This analysis may not capture localized effects of major PM_{10} stationary sources. Stationary sources are required to implement Best Available Control Technology (BACT) to control PM_{10} emissions (Rule 207, New and Modified Stationary Source Review) and they are also required to comply with 20% opacity (Rule 403, Opacity of Emissions). In addition, stationary sources will be required to mitigate fugitive dust emissions from access roads, construction activities, handling and transferring of bulk materials and track-out and carry out according to the requirements on Regulation VIII. According to our 2004 stationary source emission inventory, there is only one PM_{10} major stationary source that operates in Imperial County. This source manufactures gypsum wallboard and related products and it is located approximately 20 miles west from the nearest PM_{10} monitoring site. In addition, it underwent an expansion within the last ten years, during which BACT was implemented on its major sources. Its impact on ICAPCD PM_{10} monitors is not significant. Regardless, this source is required to comply with all the above mentioned requirements and regulations; thus it meets the requirement for BACM and BACT, whether it is a significant source or not.

3. Significant and De Minimis Source Categories

Emission Inventory

As stated in the introduction, there is no existing SIP inventory for Imperial County. This analysis uses the CARB 2004 PM_{10} emission inventory, published on CARB's web site,[3] revised cattle emissions, revised windblown dust model results, and updated entrained and windblown unpaved road dust estimates. Table 3-1 is a summary of the 2004 PM_{10} inventory for Imperial County. Except where noted, the emission estimates are based on the published CARB data. The next section discusses the revisions to the published CARB data and provides additional information on emission sub-categories. This report follows the same procedures as those in the San Joaquin Valley BACM/T and RACM/T Demonstration[4]. The identification of significant and de minimis source categories can be found in the Conclusions section of this chapter.

Table 3-1. 2004 Annual Average PM_{10} Emission Inventories for Imperial County in tons/day

Source Category	PM_{10}	Comment
Fuel Combustion	0.41	
Waste Disposal	0.00	
Cleaning/Surface Coatings	0.00	
Petroleum Prod/Mktg	0.00	
Industrial Processes	2.77	Includes Food / Agriculture (0.16), Mineral Processes (2.61)
Solvent Evaporation	0.00	
Res Fuel Combustion	0.09	
Farming – Tilling	7.11	
Farming – Harvest	0.01	
Farming – Cattle	2.62	Revised based on latest cattle population, emission factors and implementation of Rule 420
Construction	1.91	
Paved Road Dust	4.09	
Unpaved Road Dust	61.00	Entrained. Revised based on latest road mileage, activity, and emission factor estimates.
Windblown –Unpaved Roads and Open Areas	188.30	Unpaved Roads: Revised based on latest road mileage and emission factor estimates (30.95) Open Areas: Windblown Dust Study results, including Grassland (98.75), Dunes (19.85), Other Barren Lands (38.74), and Urban (0.01)

[3] www.arb.ca.gov/app/emsinv/emssumcat_query.php?F_DIV=-4&F_DD=Y&F_YR=2004&F_SEASON=A&SP=2005&F_AREA=CO&F_CO=13

[4] Appendix G, BACM/T and RACM/T Demonstration for Sources of PM_{10} and PM_{10} Precursors in the San Joaquin Valley Air Basin. SJVAPCD 2003 PM_{10} SIP. SJVAPCD. April 2003.

Table 3-1. 2004 Annual Average PM_{10} Emission Inventories for Imperial County in tons/day

Source Category	PM_{10}	Comment
Windblown – Non-Pasture Ag Lands	10.81	Windblown Dust Study results
Windblown – Pasture	1.79	CARB estimate
Fires	0.00	
Waste Burning	2.19	
Cooking	0.06	
On-Road Mobile	0.38	
Other Mobile	0.69	
TOTAL	**284.23**	

Inventory Discussion

The inventory presented in the draft Regulation VIII BACM Analysis Report was based on 2003 CARB emission inventory estimates. Based on the latest emissions modeling for many windblown dust sources and comments from CARB and EPA, the emission inventory for certain categories highlighted in the draft Report have been reviewed and revised. The following sections discuss those categories that have been revised.

Windblown Dust (Except From Unpaved Roads)

In May 2004, ENVIRON prepared a report entitled "Development of a Windblown Fugitive Dust Model and Inventory for Imperial County," for ICAPCD (Windblown Dust Study). The results of that report indicated that windblown PM_{10} from agricultural lands in Imperial County were 10.8 tons/day, compared with the CARB estimate of 91.60 tons/day. This initial version of the Windblown Dust Study also estimated windblown annual average emissions from open barren lands to the east and west of the populated areas of Imperial County to be 792 tons/day; the model assumed that such lands were unvegetated and unstable. ICAPCD submitted this report to CARB and USEPA for their review and approval of the new emission inventory estimates. Based on those comments, ENVIRON has revised the windblown emissions model such that only the dune areas to the east are considered unvegetated and unstable, and that the remainder of the barren lands are stable and 9% vegetated (see Figure 3-1). Table 3-2 summarizes the results of the revised windblown dust estimates.

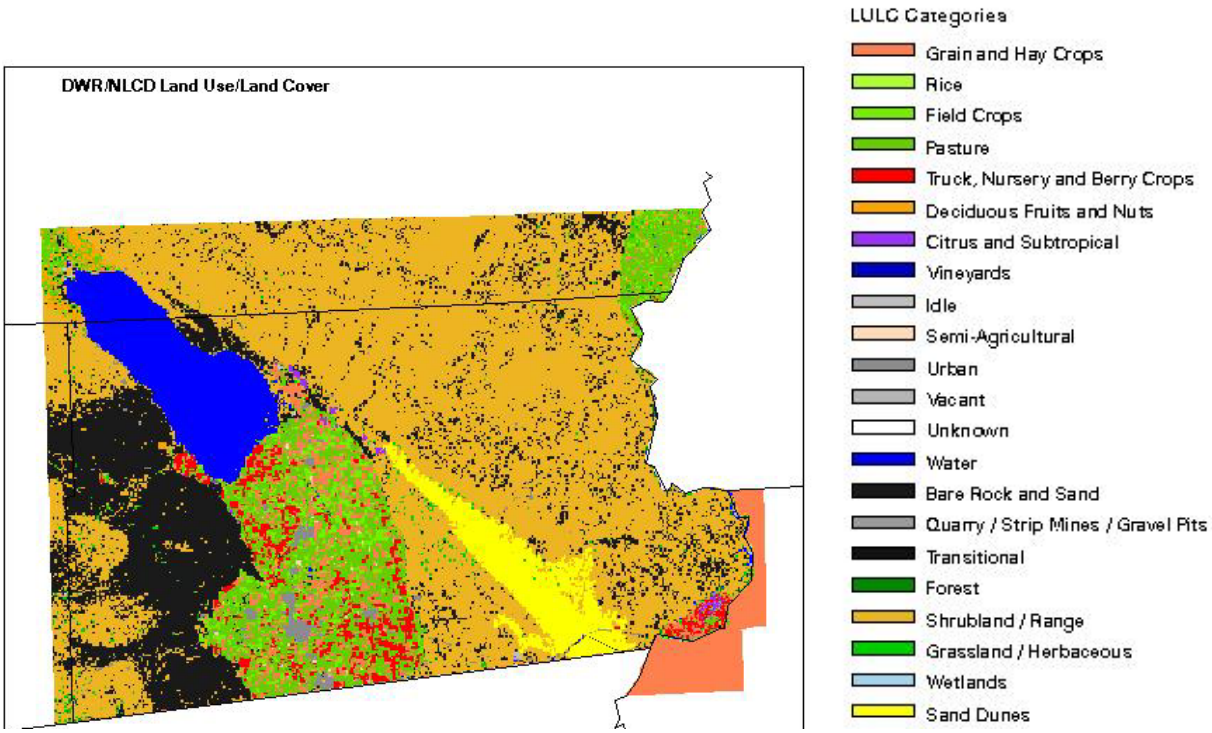

Figure 3-1: Land Use and Land Classification Categories in Imperial County

Table 3-2. Windblown Emissions from Lands by Month and Annual Average (tons/day)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Agriculture	8.59	11.32	19.93	28.48	12.95	16.26	7.37	4.33	9.76	0.38	6.60	4.42	**10.81**
Urban	0.07	0.00	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Desert - Other	20.55	38.09	52.04	97.31	57.09	71.84	15.77	43.16	29.29	6.36	22.05	13.37	**38.74**
Forest	0.07	0.06	0.07	0.15	0.06	0.11	0.02	0.07	0.03	0.00	0.04	0.02	**0.06**
Shub/Grassland	96.15	102.12	120.63	243.24	97.52	189.86	40.64	139.97	63.84	7.32	64.00	25.40	**98.75**
Desert - Dunes	21.77	31.88	36.23	62.37	24.77	4.59	16.73	11.98	8.22	0.00	9.32	11.64	**19.85**
TOTAL (TPD)	**147.20**	**183.45**	**228.91**	**431.57**	**192.40**	**282.67**	**80.53**	**199.52**	**111.14**	**14.06**	**102.00**	**54.84**	**168.22**

As noted, the original Windblown Dust Study estimate of emissions from barren lands was 792 tons/day. With the revised assumptions, windblown dust from barren lands is 58.6 tons/day, of which 19.9 tons/day is emitted from the dune area. Emissions from all other categories are the same as in the May 2004 Windblown Dust Study Report. CARB and USEPA have recently approved the use of the Windblown Dust Study for estimating windblown dust emissions for all areas except unpaved roads. (Windblown unpaved road dust is estimated using the CARB methodology described further below.)

Windblown Dust from Unpaved Roads

The CARB inventory web site references the August 1997 Windblown Dust – Unpaved Roads methodology. The 1993 windblown emissions from unpaved roads in that report are 5.90 tons/day. Based on discussion with CARB staff, it appears that the additional 73.5 tons/day was based on a previous estimate of windblown emissions from canal roads that assumed fewer canal road miles than current estimates and a much higher emission factor than currently recommended by CARB. ENVIRON has re-calculated the windblown emissions from all unpaved roads in Imperial County using the latest mileage information from Imperial County, the cities of Imperial County and the Imperial Irrigation District (IID) and the latest CARB emission factor. The results of that analysis are summarized in Table 3-3.

Table 3-3. Windblown Emissions from Unpaved Roads

Road Type	Current	CARB 2003	Comment
city/county	7.82	5.9	Consistent
canal	16.76	73.50	Updated emission factor
farm	6.01	--	Not in ARB inventory
BLM/USFS	0.37	--	Not in ARB inventory
Total (tons/day)	**30.95**	**79.40**	

The greatest difference between the current estimates and the previous CARB estimate is canal road windblown emissions. Previous estimates used a much higher emission factor for windblown dust related to the canals. Details of the calculation of windblown emissions from unpaved roads can be found in Appendix B.

Entrained Unpaved Road Dust

ICAPCD has collected updated information on the unpaved roads in its cities and in the county and along the canals. Previous CARB estimates were based on an emission factor of 2.27 lbs PM_{10} / VMT. The latest CARB-approved emission factor, used in the San Joaquin Valley PM_{10} BACM analysis, is 2.0 lbs PM_{10} / VMT. ICAPCD received information from the IC Public Works Department concerning miles of county roads with 50 or greater ADT. For this current estimated, ADT was set at the CARB default of 10 for all roads except high ADT county roads (assumed 70

ADT) and canal roads (assumed 5 ADT used in 1993 SIP). Table 3-4 summarizes the results of the entrained unpaved road emission estimates.

Table 3-4. Entrained Unpaved Road Emissions

	Current	CARB 2003	Notes
City/County	26.64	16.84	Assumes 70 ADT on high ADT county roads (if 10 ADT for all roads, ems = 13.62), consistent with the previous CARB estimate)
Canal	31.56	12.78	1993 SIP: 3,128 mi canals; 1,682 mi canal roads / Current: 3156 mi canal; 6,312 mi roads. Assumes 5 trips/day (1993 SIP)
Farm	1.41	1.41	Using new CARB method
BLM/USFS	1.39	2.28	Using CARB methodology and 1993 road mileage
Total (tons/day)	**61.00**	**33.31**	

The current estimate is about twice the previous CARB estimate. The difference is due to higher ADT estimates for certain county roads, and larger actual miles of canal roads. Information from the public works departments of Imperial County and its cities indicate that there are 7.5 miles of city roads and 1,354 miles of county roads, of which 217 miles have 50 or greater ADT. Entrained emissions from these city and county roads assumed the CARB default of 10 ADT for all roads, except the high ADT roads, where an ADT of 70 was assumed. As noted in the previous section, the 1993 SIP assumed 1,682 miles of canal roads, whereas the latest information from IID indicates that there are 6,312 miles of canal roads. The current estimate assumes 5 ADT for these roads, as assumed in the 1993 SIP. There is a discrepancy in the entrained emissions for farm roads that is probably due to an incorrect activity level in the previous estimate; the current estimate uses the latest CARB methodology and parameters.

Cattle Feedlot Dust

The previous emission inventory for this category was in error; cattle feedlot dust was reported in both categories Cattle Feedlot Dust (ID# 620-616-540-000) and Livestock Husbandry – Agricultural Waste – Feedlot Cattle (ID# 620-618-0262-0103). Also, CARB recently revised the emission factor for dust from cattle operations. After discussions with CARB staff, a revised PM_{10} inventory for cattle in Imperial County has been calculated (Table 3-5).

Table 3-5. Imperial County Cattle-Related PM_{10} Emissions

Livestock Category	2004 Animal Totals	Emission factor (lbs PM_{10}/1000 head/day)	Uncontrolled PM_{10} emissions (tons/day)	Baseline PM_{10} emissions (tons/day)
Feedlot Cattle	360,486	28.9	5.21	2.60
Heifers	21,452	see milk cows		
Milk cows	3,615	6.72	0.01	0.01
Pink Veal	4,514	NA		
TOTAL	**390,067**		**5.22**	**2.62**

The CARB emission factors are applied to feedlot and milk cows only, based on the current CARB methodologies. The CARB milk cow factor assumes the presence of young stock, such as heifers and calves. There is currently no approved CARB emission factor for heifers and calves separate from milk cows. It is assumed that veal calf emissions are minimal, since they are not in open corrals. The baseline emissions reflect the effect of ICAPCD Rule 420, which requires that feedlot manure moisture be maintained between 20 and 40% and other measures. (The analysis assumes that rule penetration is 100%, since Rule 420 applies to all feed yards with more than 10 animals, and that there is 100% compliance. Emissions are 3.26 tons/day if 80% rule compliance is assumed.)

Paved Road Dust

The CARB paved road dust estimate is based on previously assumed VMT levels of 4,569,000 VMT/day. The estimate in the latest version of the EMFAC model is 4,340,000 VMT/day, approximately 5% less. An updated inventory would result in a smaller emission estimate for paved road dust. Given the relatively small contribution from paved road dust and the fact that emissions from this source are below the DM level, the inventory estimate has not formally been updated.

Conclusions

Based on the DM level of 4.9 tons/day, there are four PM_{10} sources above the de minimis level and therefore are significant source categories in Imperial County (Table 3-6).

Table 3-6. Significant Source Categories of PM_{10} (2004 emissions in tons/day)

Source Category	Emissions (tons/day PM_{10})
Windblown – open non-crop-farm areas	159.14
Unpaved Roads (Entrained and Windblown)	91.95
Windblown – Non-pasture agricultural lands	10.81
Tilling dust	7.11

All other source categories are below the DM level. For information purposes only, Table 3-7 presents those sources below the DM level that emit more than 1 ton/day of PM_{10}. It should be noted that ICAPCD Rule 420 and proposed Regulation VIII amendments apply to these sources. However, based on this analysis, BACM is not specifically required for these sources.

Table 3-7. De Minimis Source Categories That Emit Greater than 1 ton/day of PM_{10} (These are NOT significant source categories)

Source Category	2004 Emissions (tons/day PM_{10})
Paved Road dust	4.09
Industrial (including Mineral) Processes	2.77
Cattle feedlot dust (with Rule 420)	2.62
Waste Burning	2.19
Construction	1.91
Agricultural Burning	1.59

Sources categories that are both below the DM level and contribute less than 1 ton/day of PM_{10} are listed in Table 3-8.

Table 3-8. De Minimus Source Categories That Emit Less than 1 ton/day of PM_{10}

Source Category	2004 Emissions (tons/day PM_{10})
Harvest Operations	0.01
Cooking	0.06
Fuel Combustion (All sources)	0.41
Waste Disposal (All sources)	0.00
Cleaning/Surface Coatings (All sources)	0.00
Petroleum Production / Mrkg (All sources)	0.00
On-Road Mobile* (All sources)	0.38
Other Mobile* (All sources)	0.69

* Not subject to a BACM/BACT analysis.

4. COMPARATIVE ANALYSIS

Introduction

This chapter presents the comparative analysis for proposed Regulation VIII rules compared to the fugitive dust rules in other PM_{10} serious non-attainment areas. The most recent comparative analysis was done by San Joaquin Valley as part of their 2003 PM_{10} SIP; this analysis is based directly on Appendix G of that SIP[5]. The serious non-attainment areas include San Joaquin Valley, Maricopa County (Phoenix area), Clark County (Las Vegas area), South Coast (Los Angeles Basin), and Coachella Valley (Palm Springs area). As noted in the San Joaquin Valley analysis, the comparison shows that control programs in the serious non-attainment areas are different based on local conditions and needs. For each of the fugitive dust control categories, comparisons are made between proposed Regulation VIII rules and similar rules or statutes applicable to the other serious non-attainment areas. For significant sources of PM_{10} (e.g. those with emissions above the DM level), the comparison will form the basis for evaluating the stringency of the proposed Regulation VIII measures compared to similar measures in other areas. Any thresholds and/or requirements for significant sources that are not as stringent as the most stringent in other areas will be justified based on local conditions, needs, and resources. Regulation VIII applies both to sources that are significant and require a stringency evaluation and to sources that are not significant and do not require a stringency evaluation.

This section summarizes the comparative analysis for sources above the DM level. For each significant category, the thresholds and requirements are evaluated for stringency compared to similar rules in the other serious non-attainment areas. In cases where the proposed Regulation VIII rule thresholds and/or requirements are not as stringent as the most stringent thresholds and/or requirements from other areas, a justification is presented. Appendix C presents a detailed comparative analysis for sources with emissions greater than the DM level, including a stringency analysis and justification of any measures not deemed as stringent as the most stringent in other serious non-attainment areas. Appendix D presents a comparative analysis for sources with emissions below the DM level, although this is not a requirement of a BACM analysis. The thresholds and requirements for these sources are not evaluated for stringency, as this is not required. Similarly, the thresholds and requirements for sources in this section do not need to be justified based on a stringency evaluation. For each of the key source categories, controls

[5] 2003 San Joaquin Valley PM_{10} SIP, Appendix G, "Best Available Control Measures / Technology and Reasonably Available Control Measures / Technology Demonstration for Sources of PM_{10} and PM_{10} Precursors in the San Joaquin Valley Air Basin," April 2004 (Final revised version).

implemented in the other serious PM_{10} non-attainment areas are given, along with the citations to the appropriate rule, statute, or referenced guidance. At the end of each segment, a discussion is provided which highlights the area or areas that have implemented the most stringent controls. As noted in the SJVAPCD BACM/T Determination, there is no statutory requirement that each control measure limit and/or requirement be as stringent as the most stringent limit and/or regulation adopted in any serious non-attainment area.

Comparative Analysis for Significant Sources

The following section presents a summary of the comparative analysis for sources above the DM level: unpaved roads and areas, disturbed areas, and agricultural sources. Appendix A presents a detailed comparative analysis of these sources, beginning with general requirements of the proposed Regulation VIII amendments related to visible dust emissions and stabilized surfaces for these sources (e.g., PAR 800, PR 804, PR 805, and PR 806). Next, the comparative analysis for each specific significant source is presented. Table 4-1 presents the rule source and control categories that are considered in the comparative analysis of the significant PM_{10} sources. Table 4-2 summarizes the comparative analysis in Appendix C, including a discussion of the comparative stringency of the thresholds and requirements for each significant source category and a justification if the proposed Regulation VIII thresholds and/or requirements are not as stringent as the most stringent thresholds and/or requirements from other serious non-attainment areas.

Table 4-1. Dust Control Source Categories for Sources above the DM Level

RULE SOURCE CATEGORY	CONTROL CATEGORY
General	Visible Dust Emissions
General	Definition of Stabilized Surface
Unpaved Road Dust	Applicability
Unpaved Road Dust	Control Requirements
Unpaved Lots/Staging Areas	Applicability
Unpaved Lots/Staging Areas	Requirements
Disturbed Open Areas	Applicability
Disturbed Open Areas	Control Measures
Disturbed Open Areas	Windblown
Agricultural Sources[1]	Conservation Management Practices (CMPs)

[1] Only tilling and windblown emissions from agricultural sources are above the DM level, but the full source category will be compared to BACM in other areas.

Sources on BLM Lands

In the preceding analysis, unpaved roads and disturbed open areas are considered significant sources of PM_{10} in Imperial County. There are unpaved roads in the lands administered by BLM and the USFS; entrained and windblown dust from these roads is 1.8 tons/day, less than 2% of the 92 tons/day for all unpaved roads. Almost all of the unpaved roads on BLM and USFS lands have

traffic levels under the Rule 805 threshold of 50 ADT. Of the over 2,666,600 acres comprising Imperial County over 77% is scrubland, barren land, or sand dunes. Most of this land is administered by BLM and the USFS. Except for areas used by the military or lands set aside for OHV use, most of the land is disturbed only by wind, water, and native animals. The lack of "destination" national or state parks, low County population density, general remoteness, and high summer temperatures minimizes man-made disturbances on most of this land. The exception to this is special off-roading events held in the dune areas. These special events occur 5 to 10 times per year, for a few days each. The BLM Dust Control Plan in PAR 800 requires control measures for these special events, even if annual or average day usage does not meet the thresholds in Rules 804 and 805.

The only Imperial County significant sources on BLM lands are unpaved roads and disturbed open areas. In addition, PAR 800 only exempts the recreational use of public lands (e.g., OHVs, all-terrain vehicles, trucks, cars, motorcycles, motorbikes or motorbuggies), not other dust-producing activities such as construction, etc. The BLM Dust Control Provisions make clear that any stationary source activity must meet all applicable SIP provisions, including project- or activity-specific BACM. Thus, the focus of the Dust Control Plan provisions are on unpaved road and disturbed open area sources related to the recreational use of public lands.

BLM sources are considered separate from the general dust source categories; this is in recognition of the special federal purposes of these agencies (e.g., habitat preservation and compliance with other area-specific environmental laws) and the inconsistency of requiring certain traditional dust control methods on these sources (e.g., vegetating disturbed dune areas approved for off-highway vehicle recreational use.). Many restrictions apply to actions on federal lands that have special purposes, such as habitats, national monuments and preserves. Common dust control measures, such as chemical stabilization and paving would not be allowed if it endangered native wildlife or impacted habitats. BLM is required to determine if a proposed dust control project conforms with the approved land use plan terms and conditions, as required by CFR 1610.5. Examples of such laws and plans include the federal Endangered Species Act, the California Desert Protection Act, the California Desert Conservation Area Plan and related tiered plans(e.g. the Yuha Basin ACEC Management Plan, Yuha Desert Habitat Management Plan, Yuha Desert Management Plan, Imperial San Dunes Recreation Area Management Plan (RAMP), Algodones Dunes Habitate Management Plan, Flat-tailed Horned Lizard Rangewide Strategy and Recovery Plan for Bighorn Sheep in the Peninsular Ranges, CA).

BLM also must meet the requirements of NEPA for its projects. BLM is the appropriate lead agency for both NEPA and conformity determinations for dust control projects on BLM lands; mandating Rule 804 and 805 requirements without consideration of NEPA and conformity issues could unnecessarily involve ICAPCD in these issues and potentially delay implementation of

proposed dust control programs. Mandating PR 804 and 805 could also put BLM in the position of either violating an ICAPCD rule or potentially requiring a finding of overriding concerns for a given Environmental Assessment. Furthermore, any action on the use of the BLM lands has been highly litigious. Were ICAPCD to unilaterally impose requirements on BLM, it is possible that litigation and a temporary suspension of those rules while the litigation is resolved will occur. Thus, proposed Regulation VIII establishes a separate control program for the BLM lands, rather than imposing general Regulation VIII requirements on them on a dust source by dust source basis. ICAPCD believes that this is the most appropriate and expeditious way to reduce emissions from federal sources.

ICAPCD and BLM have worked together on previous dust control programs, including the inclusion of PM_{10} control measures in the RAMP. BLM has also included PM_{10} prevention and mitigation measures based on its Environmental Assessment of its road and trail maintenance activities related to Border Patrol activities. Appendix F is the Environmental Assessment for this project. It is an example of the detailed environmental analysis required for projects on BLM lands and the use of the NEPA process to identify and implement PM_{10} prevention and mitigation measures.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
General: Visible Dust Emissions	• Limit visible emissions to not more than 20% opacity (PAR800) o All non-exempt sources (Ref: PAR 800) o Construction / demolition (de minimis source) (Ref : PR 802, Section E.1) o Bulk materials (de minimis source) (Ref : PR 802, Section E.1) o Open areas (significant source) (Ref : PR 804, Section E.1) o Unpaved roads and traffic areas (significant source) (Ref : PR 805, Section E.1) Test methods, including for unpaved road traffic in App. A and B (PAR800, G)	• Limit visible emissions to not more than 20% opacity (Ref: R8021, Sect. 5.0; R8031, Sect 5.0; R8041, Sect. 5.7.2; R8051, Sect. 5.0; R8061, Sect. 5.2; R8071, Sect. 5.1; and 8081, Sect. 5.0) • Opacity test methods, including for unpaved road traffic. (Ref: R8011, Appendix A, Sections 1 and 2)	• No visible emissions across property line. (Ref: R403(d)(1))	• Limit visible emissions to not more than 20% opacity (Ref R310, Sect. 301) • Opacity for dust generating activities based on minimum 12 observations, spaced 15 seconds apart (Ref: R310, Section 501.1(a)) • Opacity for unpaved parking lots and unpaved haul/access roads based on six vehicles, two readings per vehicle (Ref: R310, Section 501.1 (a) and (b))	• Limit visible emissions to not more than 20% opacity (Ref: AQR Section 91.2.1.4; AQR Section 92.2.1.3; AQR Section 93.2.1.5; AQR Section 94.5.3) • Opacity based on six vehicles, two readings per vehicle for unpaved surfaces And minimum 12 observations, spaced 15 seconds apart, for other sources. (Ref AQR Section 91.4.1.1 and AQR Section 94 AQR Section 94.5.3) • Limit construction visible emissions to not more than 100 yards (Ref: AQR Section 94.5.2(a))	Imperial County is proposing the same opacity limits and test methods used in other areas, except South Coast, which appears less stringent than other areas. Clark County requires both opacity limits and a 100-yard visible emission distance limit for construction activities. Construction emissions in Imperial County are below the DM level, and thus justification as "most stringent" is not required. Imperial County is proposing the same opacity limits and test methods used by San Joaquin Valley that have been accepted by EPA as "most stringent" in its May 26, 2004 approval of the San Joaquin Valley PM_{10} SIP[6].

[6] Federal Register Vol. 69, No. 102; p.30035; May 26, 2004.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
General: Definition of Stabilized Surface	• A surface is considered to be stabilized if it meets at least one of the following conditions specified in below or as determined by test methods outline in Appendix B. 1. Visible crust; or 2. Threshold frictional velocity of 100 cm/sec or greater; or 3. Flat vegetative cover of at least 50% that is attached or rooted vegetation; or unattached vegetative debris lying on the surface with a predominant horizontal orientation (not subject to wind movement); or 4. Standing vegetative cover over 30%	• Any disturbed surface that is resistant to wind blown fugitive dust and meets at least one of the following conditions: 1. A visible crust 2. A threshold friction velocity of 100 cm/sec or greater 3. A vegetative cover of at least 50% that is attached or rooted 4. Unattached horizontal vegetative cover of at least 50% and wind-movement resistant 5. Vertical, rooted vegetation with at least 30% cover, or 10% cover where the soil threshold	• Stabilized surface means any previously disturbed surface area or open storage pile which, through the application of dust suppressants, shows visual or other evidence of surface crusting and is resistant to wind driven • Fugitive dust and is demonstrated to be stabilized; (Ref: R403, (C)(28))	• Must meet at least one of the following standards: 1. Maintain a visible crust 2. Maintain a threshold friction velocity of 100 cm/sec or greater 3. Maintain standing (rooted, vertical) vegetative cover of at least 30%, or 10% cover where the soil threshold friction velocity is at least 43 cm/sec 4. Maintain flat (rooted or horizontal debris not subject to wind movement) of at least 50% 5. Maintain a cover of at least 10% with	• Stabilization standards: 1. Establish visible crust 2. Establish cover of at least 20% with non-erodible materials 3. Establish soil threshold friction velocity of at least 100 cm/sec 4. Comply with specially-approved alternative method	Imperial County is proposing the same stabilized surface definition and requirements as used in the San Joaquin Valley, which is comparable to the requirements used in all other areas, except South Coast. The exception is that Clark County has established a more stringent requirement if non-erodible materials are used to establish a stabilized surface, namely, that a more restrictive 20% minimum covering (compared to 10% in San Joaquin Valley, Maricopa County and proposed IC Regulation VIII) is required. However, inclusion of a 20% minimum non-erodible material coverage as a control option in Clark County does not mean its inclusion is necessary for Regulation VIII to be demonstrated as BACM for this category. Clark County's limit was based on local observations at areas where the soil was significantly pulverized as the result of significant amounts of traffic.[7] Imperial County does not have similar areas experiencing such high levels of growth and commuters

[7] September 26, 2005 telephone conversation with Rodney Langston, Clark County Department of Air Quality Management.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
	that is attached or rooted 5. A standing vegetative cover of at least 10% that is attached or rooted with a predominate vertical orientation where the TFV is at least 43 centimeters per second when corrected for non-erodible elements 6. A surface greater than or equal to 10% of non-erodible elements such as rocks, stones, or hard-packed clumps of soil (Ref: 800 C.28) Test methods: Test methods in Appendix A and B shall be used to determine compliance with the Regulation VIII rules (Ref PAR800, Section G)	friction velocity is at least 43 cm/sec 6. A surface that is at least 10% covered with non-erodible materials (Ref: R8011, Section 3.58)		non-erodible materials 6. Comply with specially-approved alternative method (Ref: R310, Section 302.3)		"trailblazing" unpaved roads across open areas. Thus, this limit was based on specific Clark County conditions and should not be applied to Imperial County. Taken together, the applicable limits and requirements in the definition of a stabilized surface provide equivalent stringency and can be considered as stringent as the most stringent limits and requirements. The exact same provisions in San Joaquin Valley were approved as BACM by EPA[8] in 2004.

[8] Federal Register Vol. 69, No. 102, p.30035, May 26, 2004.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
Unpaved Roads: Applicability	• Unpaved Haul/ Access Roads: All roads (Ref: PR805, Section E.1) • Unpaved Roads: 50 or more average daily vehicle trips (Ref: PR805, Section E.2) • Canal Roads: 20 or more ADT (Ref: PR805, Section E.4) (The implementation schedule for city and county roads is discussed in the next section, Unpaved Roads: Control Requirements.)	• 26 annual average vehicle daily trips or more (Ref: R8061, Section 5.2.1) (The implementation schedule for city and county roads is discussed in the next section, Unpaved Roads: Control Requirements.)	• For meeting standards of rule: o more than 50' wide at all points, or o are not within 25' of property line, or o more than 20 vehicle trips per day (Ref: R403(g)(2)(B)(iii)) • For treating unpaved roads: All roads greater than the average ADT of all unpaved roads within its jurisdiction, up to a set number of miles by 2006 (Ref: R1186(d)(4))	• 150 vehicles or more per day (Ref: R310.01, Section 304)	• For new unpaved roads, there is no VDT limit (Ref AQR Section 91.2.1) • For existing unpaved roads (prior to June 22, 2000), the control measures apply to roads with 150 or more vehicles per day.	Imperial County's limit is based on 50 or greater ADVT. The Imperial County 50 ADVT or more limit is more stringent than either Maricopa County of Clark County. Both Maricopa and Clark County have a significant number of unpaved roads with greater than 150 ADT; hence their rules target those roads. The provisions of the South Coast rule, tied to average levels of VDT, is generally less restrictive than in other jurisdictions. The proposed ADT limit for unpaved city and county roads in IC Regulation VIII is less stringent than SJV's limit of 26 ADVT. However, the percentage of unpaved city / county roads with greater than 26 ADT in San Joaquin Valley is 12% (90 out of 750 miles)[9] compared to 16% of Imperial County roads with greater than 50 ADT (217 out of 1361.5 miles). Thus, proposed Regulation VIII is the most stringent. (A comparison of implementation schedule requirements is presented in the next row, Unpaved Road Requirements.

[9] EPA's Technical Support Document for the San Joaquin Valley, California 2003 PM_{10} Plan and 2003 PM_{10} Plan Amendments., p. 31, January 27, 2004.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
						Only Imperial County sets a separate, lower threshold for canal roads, and 20 ADT is below any other unpaved road threshold. Proposed Regulation VIII is the most stringent.
Unpaved Roads: Control Requirements	• For roads with 50 ADVT or more and canal roads with 20 or greater ADVT, limit VDE to 20% opacity and comply with the requirements of a stabilized unpaved road surface by application and/or maintenance of at least one of the following control requirements (Ref: PR805, Section E.2, E.4): a) Pave (Section F.1.a) b) Apply chemical stabilization (, Section F.1.b) c) Apply and maintain gravel, asphalt, or other material of low	• For unpaved roads with greater than 26 annual average vehicle trips per day, limit VDE to 20% opacity and implement at least one of the following control measures: a) apply water b) apply uniform layer of washed gravel c) apply chemical/organic dust suppressant d) use vegetative materials e) pave f) use any other approved method to limit VDE to 20% opacity and meets the condition of a	• Annually treat unpaved public roads beginning in 1998 and continuing for each of 8 years thereafter by implementing one of the following (Ref: R1186(d)(4)): a) Pave at least one mile with typical roadway material (Ref: ibid, (d)(4)(A)) b) Apply chemical stabilizers to at least two miles to maintain stabilized surface (Ref: ibid, (B))	• For 150 vehicles or more per day, implement at least one of the following BACM (Ref: R310.01, Section 304): a) Pave b) Apply dust suppressants c) Uniformly apply and maintain surface gravel (Ref: ibid, Section 304.1) • For existing roads, BACM, as above, must be implemented by: a) June 10, 2000 for more than 250 vehicle trips b) June 10, 2004 for more than 150 vehicle trips	• Implement one control measure on 1/3 of unpaved roads with 150+ VDT by June 1, 2001 (Ref: AQR Section 91.2.1.1(a)) • Implement one control measure on 2/3 of unpaved roads with 150+ VDT by June 1, 2002 (Ref: ibid, (b)) • Implement one control measure on all unpaved roads with 150+ VDT by June 1, 2003 (Ref: ibid, (c)) • For any unpaved road with newly found levels of 150+ VDT, implement one control measure	Proposed Regulation VIII and rules in all areas except South Coast require compliance with the 20% opacity standard; Proposed Regulation VIII is as stringent as the most stringent for this requirement. In addition, all areas except South Coast specify the implementation of at least one control requirement to comply with the requirements of a stabilized surface. Clark and Maricopa County do not allow watering as a control option, but only require implementation on roads with greater than 150 ADT. As noted by EPA[10], the inclusion of a control option or requirement does not mean it is necessary for a proposed regulation to meet BACM, as long as other applicable limits combine provide adequate stringency. In this case, the applicability and control requirements combine provide adequate stringency.

[10] Federal Register Vol. 69, No. 102, p.30019, May 26, 2004.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
	silt content of a depth of 3 or more inches (Section F.1.c) d) Apply water one ore more times daily (Section F.1.d) e) Permanent road closure (Section F.1.e) f) Restrict unauthorized vehicle access (Ref: PR805, Section F.1.f) g) Any other method that limits VDE to 20% opacity and meets conditions of a stabilized unpaved road (Section F.1.g) • Within an urban area, construction of a new unpaved road is prohibited, unless it meets the definition of a Temporary Unpaved Road. • Cities and the	stabilized unpaved road (Ref: R8061, Section 5.2.1) • As option to above, obtain Fugitive PM_{10} Management Plan (Ref: ibid, Section 5.2.1) with specific requirements. • Within an urban area, construction of a new unpaved road is prohibited, unless it meets the definition of a temporary unpaved Road. • Cities and the County shall treat an average of 20% of applicable roads per year form 2006 through 2010, to a cap of 5 miles per year per jurisdiction. A statement of financial hardship can be submitted if a jurisdiction cannot afford to meet the requirements of this	c) Speed control (15 mph) on at least three miles of road surface:	(Ref: ibid, 304.2) • BACM must meet the following standards: a) Limit VDE to 20% opacity b) Do not equal or exceed 0.33 oz/ft2, or c) Do not exceed 6% silt content (Ref: ibid, 304.3)	within 365 days (Ref: ibid, (d)) • For unpaved roads with less than 150 VDT, maintain stabilized surface standards within 365 days of determination of non-stabilized surface (Note: not a SIP measure) • No new unpaved roads are to be constructed after June 22, 2000 (Ref: AQR Section 91.2.1.2) • Applicable control measures are as follows: a) Pave b) Apply dust palliatives to meet stab. standards • Stabilization standards: a) Limit VDE to 20% opacity b) Do not equal or exceed 0.33 oz/ft2, or c) Do not exceed 6% silt content	The control options for existing unpaved roads in Proposed Regulation VIII and in San Joaquin Valley's regulations are the same, and thus equally stringent (although as seen above, proposed Regulation VIII applies to a greater percentage and absolute mileage of unpaved roads). Although the compliance schedule for city and county roads appears more stringent for San Joaquin (20% per year), that only equates to 18 miles per year, compared to almost 22 miles per year for Imperial County (10% of 217 miles). In addition, San Joaquin caps at 5 the number of miles that require treatment per year per urban areas. San Joaquin also allows cities and/or counties to submit a statement of financial hardship if they cannot meet the rule requirements. The San Joaquin Valley regulations have been approved as BACM by EPA[11]. Proposed Regulation VIII is as stringent as the most stringent requirements in any serious non-attainment area.

[11] Federal Register Vol. 69, No. 102, p.30035, May 26, 2004.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
	County shall comply with Section E.2 by treating an average of 10% of applicable roads per year form 2006 through 2015.(Ref: PR805, Section E.7)	section. (Ref R8061, Section 5.2.3).			(Ref: ibid, 91.2.1.4)	Proposed Regulation VIII prohibits the construction of new unpaved roads in urban areas. This is as stringent as the San Joaquin Valley and Clark County regulations. (Clark County regulations are only in effect in the non-attainment area, which is predominantly urban, and not in the surrounding rural and federal lands. Hence, the prohibition on new unpaved roads is essentially a prohibition on new unpaved roads in urban areas.)
Unpaved Lots: Applicability	• Unpaved traffic areas larger than one (1) acre and with 75 or more average vehicle trips per day shall comply with one or more of the requirements of Section F.3 so as to limit VDE to 20% opacity (Ref: PR805, Section E.4)	• Areas with AADT of 50 or more (Ref: R8071, Section 4.1) • Agricultural sources exempt from Rule 8081 are also exempt from R8071.	(Note: South Coast does not have rule language specifying this category. It is presumed that Rule 403 provisions for either unpaved roads, or disturbed surface areas would apply.)	• Over 100 vehicles entering or parking (Ref: R310.01, Section 303)	• No minimum vehicle limit specified for parking lots. (Ref: AQR, Section 92.2.1) • No minimum vehicle limit specified for staging areas (Ref: AQR Section 94 Handbook, CST 17)	Clark County has no minimum vehicle limit for parking lots or staging areas. Maricopa has a 100 vehicle threshold. San Joaquin exempts traffic areas with less than 50 annual average daily trips and agricultural traffic area sources exempt from R8071 (e.g., traffic area less than 1.0 acre and more than one mile from an urban area, or with less than 50 AADT or less than 150 VDT if intermittently used). EPA has adjudged the San Joaquin rule as BACM[12] based on the adequacy of their cost-effectiveness analyses of potential lower thresholds. Proposed Regulation VIII has a

[12] EPA's Technical Support Document for the San Joaquin Valley, California 2003 PM_{10} Plan and 2003 PM_{10} Plan Amendments, p. 34-5, January 27, 2004

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
						higher threshold for ADVT than San Joaquin and a 1 acre size threshold. ICAPCD is conducting additional survey work and will prepare a cost-effectiveness analysis to justify the proposed thresholds. If the analysis indicates that more stringent thresholds are cost-effective, amendments to PR805 will be prepared. Please see Appendix C for more discussion about Imperial County unpaved traffic areas. (Although agricultural unpaved traffic areas are exempt from PR 805, any size traffic area for an agricultural operation with more than 40 acres total must implement controls, per PR 806.)
Unpaved Lots: Requirements	For unpaved traffic areas larger than one (1) acre and with 75 or more average vehicle trips per day shall comply with one or more of the requirements of Section F.3 (listed below) so as to limit VDE to 20% opacity: • Pave or (Ref: PR805, Section	• For days with 50 or more vehicle trips, limit VDE to 20% opacity and implement at least one of the following control measures: o apply water o apply uniform layer of washed gravel o apply	(No specific rule language for this category. See measures for "Unpaved Roads" for presumed applicable BACM.)	• If utilized less than 35 days per year, use one of following: a) Apply dust suppressants to maintain stabilized surface b) Apply and maintain gravel to maintain	• For unpaved parking lots, use one of following: a) Pave b) Apply dust palliatives to maintain stabilized surface c) Apply dust palliatives to travel lanes, and apply	Maricopa County requires the stabilization or paving of all traffic areas, regardless of usage. Watering is not an option. Clark County requires the paving or stabilization of unpaved traffic areas, unless the area is only used infrequently. In that case, stabilization only has to occur during use times. Watering is not an option.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
	F.3.a) • Apply chemical stabilizers (Ref: PR805, Section F.3.b) • Apply and maintain gravel, recrushed/recycled asphalt or other material of low silt content to a depth greater than 3 inches (Ref: PR805, Section F.3.c) • Wetting. Apply water one or more times daily (Ref: PR805, Section F.3.d)	chemical/organic dust suppressant o use vegetative materials o pave o use any other method to limit VDE to 20% opacity (Ref: R8071, Section 5.1.1) • For days with 100 or more vehicle trips, as above and comply with requirements for stabilized surface (Ref: ibid, Section 5.1.2) • On each day that 25 or more VDT with 3 or more axles will occur on an unpaved vehicle/equipment traffic area, special requirements (Ref: R8071, Section 5.1.3). • On each day when a special event will result in 1,000 or more vehicles, special requirements.		stabilized surface (Ref: R310.01, Section 303, and 303.1) • If utilized at least 35 days per year: a) Add option, to above, to pave (Ref: ibid; also R310, Table 1, 1B,2B,3B)	gravel to a depth of two inches in the parking areas to maintain stabilized surface (Ref: AQR Section 92.2.1 and 92.2.1.2) • If parking lot is used intermittently, less than 35 days per year, and the lot was in existence prior to June 22, then application may be limited to period of use (Ref; ibid, 92.2.1 and 92.2.1.1) • For staging areas: o Limit size of staging areas (Ref AQR, Section 94 Handbook, CST 17-1) o Apply water (Ref: ibid, CST 17-2) o Apply dust palliative (Ref: ibid, CST 17-3) o Limit vehicle speeds to 15	Proposed Regulation VIII and San Joaquin Valley rules allow the use of daily watering as a control option; thus, Regulation VIII includes an option that is less stringent, based on the relative control effectiveness of watering compared to stabilization, gravelling and paving. However, proposed Regulation VIII still requires compliance with the opacity limit However, in SJV for sites on days with more than 100 trips, the surface must comply with stabilized surface requirements, and for areas on days with more than 25 VDT from vehicles with 3 or more axles or if over 1000 vehicles are anticipated, there are special control requirements (generally re-application of stabilizers or water) for those days. Imperial County commits to assessing the need and cost-effectiveness of these specific single day provisions and preparing amendments to PR 805, if necessary.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
		(Ref: R8071, Section 5.1.4). • As option to above, obtain Fugitive PM_{10} Management Plan (Ref: ibid, Section 5.2.1, 5.2.2, and 5.2.3)			mph (Ref: ibid, CST 17-4) o Limit ingress and egress points (Ref: ibid, CST 17-5)	
Unpaved Roads: Canal Roads	• For Canal Roads with 20 or more ADT (Ref: PR805, Section E.3) a) Stock Triploid Grass carp in canals to reduce maintenance trips or (Ref: PR805, Section F.2.a) b) Install remote control delivery gates or (Ref: PR805, Section F.2.a) c) Implement Silt removal program to delay grading of spoil piles or (Ref: PR805, Section F.2.a) d) Permanent road closure or (Ref: PR805, Section	(No requirements specified.)	(No requirements specified.)	(No requirements specified.)	(No requirements specified.)	Canal roads are unpaved roads used by the Imperial Irrigation District to maintain the irrigation canal network. San Joaquin has identified private canal roads in its inventory but does not anticipate that these private canal roads have traffic levels that meet the 26 ADT threshold for unpaved road controls and does not specify additional canal road requirements such as the ones in proposed Regulation VIII. Thus, these requirements are the most stringent for this source. (NOTE: These requirements are in addition to the general unpaved road requirements for unpaved roads that canal roads are also subject to. See Unpaved Roads: Applicability and Unpaved Roads: Control Requirements above.)

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
	F.2.a) e) Convert open canals to pipeline or (Ref: PR805, Section F.2.a) f) Line canals to eliminate maintenance for silt/weed control or (Ref: PR805, Section F.2.a) g) Initiate canal bank surface maintenance (Ref: PR805, Section F.2.a)					

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
Disturbed Open Areas: Applicability	• 0.5 acres or larger in urban areas, or 3.0 acres or more in rural areas; and contains at least 1,000 square feet of disturbed surface area (Ref: PR804, Section B)	• This rule applies to any open area having 0.5 acres or more within urban areas, or 3.0 acres or more within rural areas; and contains at least 1000 square feet of disturbed surface area (R8051, Section 2.0).	• No limit	Rule 310, Section 102 exempts disturbed open areas which are not located at sources requiring "any permit under these rules." However, most open areas will not have need for permits. Section 303 requires a dust control plan (presumed to be what is referred to in Section 102 as a "permit"), for all sources that involve earthmoving operations of 0.10 acres or greater. Since soil disturbances can occur for reasons other than earthmoving, for example, off-road vehicle traverses, it appears that many disturbed open areas, vacant lots, etc, may be exempt under these rules.	• 5,000 square feet or larger (non-ag) (Ref: AQR Section 90.1.2 and 90.2.1)	The most stringent applicability is South Coast Rule 403, which has no minimal level (although the related control requirements are less stringent than other serious non-attainment areas) Clark County AQR Section 90 which has a 5,000 square foot (approx. 1/9 acre) minimum level for all types of open areas and vacant lots. Imperial County and SJV applicability thresholds are the same. EPA adjudged[13] the SJV thresholds as meeting the stringency test and qualifying for BACM since over 98% of the total parcel acreage is in parcels of 3 acres or greater. For Imperial County, more than 99.5% of the total parcel acreage is in parcels of 3 acres or greater.[14] Hence, proposed Regulation VIII applicability threshold is more stringent than SJV's applicability threshold, which has already been determined to be BACM.

[13] EPA's Technical Support Document for the San Joaquin Valley, California 2003 PM_{10} Plan and 2003 PM_{10} Plan Amendments., p. 37-38, January 27, 2004.
[14] Imperial County Assessors Office parcel data, 2001.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
Disturbed Open Areas: Control Measures	Use one or more of the following measures to comply with the stabilized surface requirements so as to limit open areas to VDE of 20% opacity (Ref: PR804, Section E.1) • Apply and maintain water or dust suppressant to all unvegetated areas (Ref: PR804, Section F.1.a) • Establish vegetation on all previously disturbed areas (Ref: PR804, Section F.1.b) • Pave, apply gravel, chemical stabilizers/suppressants (Ref: PR804, Section F.1.c) • Prevent unauthorized vehicle access by posting "No Trespassing" signs or installing physical barriers to prevent access (Ref: PR804,	Use one or more of the following measures to comply with the stabilized surface requirements so as to limit open areas to VDE of 20% opacity (Ref: Rule 8051, Section 5.0) • Apply water/dust suppressants to unvegetated areas sufficient to limit VDE to 20% opacity (Ref: R8051, Table 8051-1, A1) • Establish vegetation to limit VDE to 20% opacity (Ref: ibid, A2) • Pave, apply gravel, apply stabilizers to limit VDE to 20% opacity (Ref: ibid, A3) • Upon evidence of trespass, post "no trespass" signs or install barriers to prevent access to area (Ref: ibid, B)	• Apply chemical stabilizers (Ref: R403 Handbook, BACM (Q)) • Water with sufficient frequency to establish a surface crust (Ref: ibid, (R)) • Establish (drought-resistant) vegetation as quickly as possible (Ref: ibid, (T))	• Restore vegetative ground cover and soil characteristics similar to native Conditions (Ref: R310, Table 1, 1E) • Pave, apply gravel, apply stabilizer to meet stabilized standards (Ref: ibid, 2E) • Establish vegetation to meet stabilized standards (Ref: ibid, 3E) • Stabilized standards, one of the following (Ref: R310, Section 302.3):	• Upon evidence of soil disturbance by motor vehicles, prevent trespass, parking, and access by installing barriers, curbs, fences, gates, posts, signs, shrubs, and trees. (Ref: AQR Section 90.2.1.1(a)) • Apply gravel or chemical stabilizers to meet one of stabilization standards (Ref: ibid, (b)) • Stabilization standards – see General: Definition of a Stabilized Surface above (Ref: AQR Section 90.2.1.2)	Proposed Regulation VIII and SJV requirements are identical. Maricopa County and Clark County have established soil stabilization standards for determining the effectiveness of the control measures. (With respect to the stabilization standards, see General: Definition of a Stabilized Surface above.) EPA has approved the SJV regulations as BACM[15], and the proposed Regulation VIII requirements are as stringent as the most stringent requirements in other serious non-attainment areas.

[15] Federal Register Vol. 69, No. 102, p.30035, May 26, 2004.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
	Section E.2)					
Disturbed Open Areas: Windblown	There are no specific exemptions for wind events in the proposed Regulation VIII amendments, thus no requirements for windblown dust are specified. However, opacity and stabilized surface requirements remain, independent of wind speed.	(No specific requirements)	As contingency measures for a high-wind exemption from certain rule requirements: •If inactive, apply water or chemical stabilizers to maintain a stabilized surface for six months (Ref: R403, Table 3, 0B) •Apply chemical stabilizers prior to wind event (Ref: ibid, 1B) •Apply water 3 to 4 times per day (Ref: ibid, 2B) •Establish vegetative ground cover within 21 days after active operations have	•Apply gravel or dust suppressants (Ref: R310, Table 2, 1B) •Apply water 3 times per day; if evidence of wind driven fugitive dust, increase watering to 4 times per day (Ref: ibid, 2B)	(No specific wind requirements, however, the general requirements for disturbed surface areas include provisions which are intended to reduce windblown dust: • Prevent access to limit soil disturbance (Ref: AQR Section 94 Handbook, CST 11) • Stabilize soil, using dust palliative or vegetation to maintain stabilized surface (Ref: ibid, CST 11-4 and 11-5) • Pave or apply	There are no specific exemptions for wind events in the proposed Regulation VIII amendments. This is the most stringent requirement, since there are not exemptions from Regulation VIII provisions because of high winds. It should be noted that for construction activities (which are not a significant source), there is an exemption from the 20% opacity requirement (PR801, Section D.2). To qualify for the exemption, the operator must either cease operations, water or apply dust suppressants once per hour, or maintain a 12% soil moisture content by watering.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
			ceased (Ref: ibid, 3B)		surface rock to maintain stabilized surface (Ref: ibid, CST 11-6))	
Agricultural Sources: CMPs	For owner/operators of commercial farms on sites greater than or equal to 40 acres, implement at least one of the following in each category: • Land preparation and cultivation (Ref: PR806, Section E.1): a. alternative till b. bed/row size spacing c. chemical/fertigation d. combined operations e. conservation irrigation f. conservation tillage g. cover crops h. equipment changes i. fallowing land j. pest control k. mulching l. night farming m. non	SJVAPCD Rule 4550 requires the submittal of a conservation management plan for sites with more than 100 acres with 1 conservation management practice (CMP) for each category: • Land preparation and cultivation: same as Imperial County with addition of floor management (nut crops), time of planting and transplanting (some vegetable crops) options. • Harvest: same as Imperial County with addition of continuous tray/D.O.V. (dry fruit crops), fallowing land; and floor management (nut crops) options.	For agricultural operations within the South Coast Air Basin, with combined disturbed surface area of 10 acres or more, the standards of Rule 403 apply after July 1, 1999 unless Best Management Practices as delineated in the Rule 403 Agricultural Handbook are implemented. (Ref: R403(h)(1)) Best Management Practices as described in the Agricultural Handbook are as follows: a) Active conservation practices b) Inactive conservation practices c) Farm yard areas d) Trackout	In May 2000, the Agricultural BMP Committee adopted the agricultural PM_{10} general permit, which became effective by rule on May 12, 2000 (Arizona Administrative Code [AAC], R18-2- 610 and 611). The Committee identified 34 BMPs that focus on feasible, effective, and common sense practices while minimizing negative economic impacts on local agriculture. (These BMPs were based on the BMP's in the South Coast Agricultural Handbook). The general permit requires that a commercial farmer implement at least one BMP to control PM_{10} for each of the	(No requirements for this source)	ICAPCD CMPs apply to farm sites with 40 or more acres, which represent 90% of farm land in Imperial County. By comparison, San Joaquin Valley requires CMPs at site greater than 100 acres, which represents about 91% of farm land in San Joaquin Valley. Thus, the farm site limit is equally stringent compared to the most stringent threshold. The proposed ICAPCD CMP requirements are similar to the requirements in San Joaquin Valley, Maricopa County and South Coast, and are directly based on the San Joaquin Valley requirements that were approved by EPA[16] as meeting the BACM requirements. The Proposed Imperial County requirements are specifically based on the San Joaquin requirements and are of similar stringency; thus, they are as stringent as the most stringent requirements for this source.

[16] Federal Register Vol. 69, No. 102, p.30035, May 26, 2004.

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
	tillage/chemical tillage n. organic practices o. precision farming p. transgenic crops • Harvesting (Ref: PR806, Section E.2): a. bailing/large bails b. combined operations c. equipment changes d. green chop e. hand harvesting f. fallowing land g. nigh harvesting h. no burning i. pre-harvesting soil preparation j. shed packing k. shuttle system / large carrier • Unpaved farm roads and traffic areas (Ref: PR806, Section E.3,4): a. chips/mulches, organic materials, polymers, road oil and sand b. gravel	• Unpaved farm roads and traffic areas: same as Imperial County with the addition of mechanical pruning (tree and vine crops) option.	conservation practices e) Unpaved road conservation practices f) Storage pile conservation practices • (Ref: Guide to Agricultural PM_{10} Dust Control Practices, dated June 1999)	following three categories: tillage and harvest, non-cropland, and cropland. The general permit requires a commercial farmer to comply by December 31, 2001.		

Table 4-2. Dust Control Source Categories For Sources Above the DM Level

CONTROL CATEGORY	Imperial	San Joaquin Valley	South Coast	Maricopa County	Clark County	Discussion / Justification
	c. paving d. restricted access e. speed limit f. track-out control g. water h. wind barrier					

Comparative Analysis for Sources With Emissions Less Than the DM Level

Sources with emissions below the DM level do not need to be included in the BACM determination. Table 4-3 presents the rule source categories for these sources with emissions below the DM level. For information purposes only, Appendix D presents a comparative analysis for these sources.

Table 4-3. Dust Control Source Categories For Sources Below the DM Limit

RULE SOURCE CATEGORY	CONTROL CATEGORY
Construction	Visible Dust Emissions
Construction	Demolition
Construction	Pre-Earthmoving
Construction	Earthmoving
Construction	Demolition
Construction	Inactive Disturbed Land
Construction	Windblown
Construction	Dust Plan Applicability
Construction	Dust Plan Requirements
Bulk Materials	Handling/Storage
Bulk Materials	Transport
Bulk Materials	Outdoor Chute/Conveyor
Bulk Materials	Windblown
Carryout/Trackout	Removal
Carryout/Trackout	Prevention
Carryout/Trackout	Clean-Up Methods
Paved Road Dust	New/Modified Roads
Paved Road Dust	Erosion Clean-Up
Paved Road Dust	Street Sweeping
Cattle feedlots	Requirements
Weed Abatement	Requirements

5. IMPACT ANALYSIS

This section presents information about the emission reductions, cost and cost-effectiveness of the proposed to Regulation VIII amendments. This report relies on previous analysis of BACM effectiveness, costs, and cost-effectiveness prepared for the 1993 SIP for PM_{10} in the Imperial Valley[17] rule. It also relies on information is taken from the October 18, 2004 CARB staff report entitled "Proposed List of Measures to Reduce Particulate Matter – PM_{10} and $PM_{2.5}$," and the April 28, 2003 SJVAPCD Appendix G to their 2003 PM_{10} Plan, entitled "Best Available Control Measures / Technology and Reasonably Available Control Measures / Technology Demonstration for Sources of PM_{10} and PM_{10} Precursors in the San Joaquin Valley." (The CARB staff report summarizes PM_{10} control measures adopted in California and their reported cost-effectiveness.) Emission reduction and cost estimates are provided for all proposed Regulation VIII rules. As noted in Chapter 1, this BACM analysis has not been prepared as part of the SIP development process.

Control Effectiveness and Cost Information

As noted above, the control effectiveness of measures within proposed Regulation VIII are based on previously published estimates, including those used in the 1993 Imperial Valley PM_{10} SIP, the 2003 San Joaquin Valley PM_{10} SIP and, where necessary, other serious PM_{10} non-attainment area SIPs and related technical documents. Table 5-1 summarizes, for each proposed Regulation VIII rule, estimated emissions from sources covered by the proposed rule, the percentage of those emissions that are subject to control requirements, the composite control factor for those controls, and the estimated emission reductions at full implementation. Cost information is based on information from the 1993 Imperial Valley PM_{10} SIP, the 2003 San Joaquin Valley PM_{10} SIP[18] and the latest information from Imperial County public works department. The following subsections present the input information and assumptions used in Table 5-1

Table 5-1. Proposed Regulation VIII Emission Reduction Summary

Proposed Rule	Emissions (tons/day)	Applicability (percent)	Composite Control Factor	Emission Reductions
801 (Construction)	1.91	100	0.12	0.23
802(Bulk Materials)	2.61	10	0.5	0.13
803 (Track-out)	4.09	18.4	0.6	0.45

[17] ICAPCD, "State Implementation Plan for PM_{10} in the Imperial Valley," Final, adopted September 28, 1993.
[18] Appendix G, BACM/T and RACM/T Demonstration for Sources of PM_{10} and PM_{10} Precursors in the San Joaquin Valley Air Basin. SJVAPCD 2003 PM_{10} SIP. SJVAPCD. April 2003.

Table 5-1. Proposed Regulation VIII Emission Reduction Summary

Proposed Rule	Emissions (tons/day)	Applicability (percent)	Composite Control Factor	Emission Reductions
804 (Open Areas)	163.36	1	0.7	1.14
805 (Non-Farm Unpaved Roads)	84.53	20	0.6	10.09
805 (Paved Roads)	4.09	1	0.8	0.03
806 (CMPs)	25.35	see below	see below	4.16
TOTAL	**281.85**			**16.23**

There is no current information on which control options will be used by sources to comply with the proposed rules, so information on control options in each proposed rule is presented in the following subsections. The exception is the treatment of unpaved roads by Imperial County to comply with PR 805; specific cost information is provided for the treatment of applicable roads.

PR 801: Construction

PR 801 applies to any construction or other earth moving activities. Only construction at existing single family homes is exempt, so the rule applies to all new construction emissions. PR 801 upgrades the RACM controls in previous Rule 800 to BACM controls consistent with requirements in other serious non-attainment areas. Emission estimates for construction already include the effect of basic RACM controls, such as watering. BACM upgrades will require additional watering and/or stabilizing during and after construction activities. As noted in the South Coast 1997 AQMP, such BACM upgrades provide an additional control efficiency of approximately 12%, mostly from additional water and/or stabilizing during and after construction or other earthmoving activities. Overall reductions from PR 801 are estimated at 0.23 tons/day.

Estimated costs for certain construction-related controls include: additional use of water trucks ($3,152 per 40 acre project)[19]; water sprinkler ($30 per acre); and dust control plans and related costs ($112/acre)[20]; . Actual costs for compliance is subject to the control options used by the site and the level of dust control currently practiced.

PR 802: Bulk Materials

PR 802 applies to the handling, storage, and transport of bulk materials. There is not an explicit inventory category for bulk materials, although it can be assumed that the majority of handling, storage, and transport of these materials occur at mineral processing facilities and, to some extent, at

[19] Final BACM Technological and Economic Feasibility Analysis, SJVAPCD 2003 PM_{10} SIP, April 2003.
[20] SCAQMD, Rule 403 Final Staff Report, September 1992.

construction sites. It is assumed that 10% of the emissions from mineral processing facilities are related to bulk materials. Wetting of bulk material piles and transfer points has an estimated control efficiency of 50%. (San Joaquin estimated a 56 to 81% control efficiency.) Emission reductions from transfer controls have not been estimated, but most mineral processing plants are operating under ICAPCD permits that require control at major transfer points. Overall reductions from PR 801 are estimated at 0.23 tons/day.

Estimated costs for PR 802-related controls include: Truck covers ($900 per truck)[21]; and 3-sided enclosure ($830 per enclosure)[22].

PR 803: Carry-out and Track-out

PR 803 applies to material carried or tracked out onto paved roadways. There is not an explicit inventory category for track-out, although it can be assumed that a given percentage of the silt loading on paved road surfaces is from track-out. EPA guidance[23] indicates that 46% of paved road deposition is attributable to mud and dirt carry-out. In addition, many permanent facilities (e.g. mineral processing facilities) currently implement PR805 track-out controls. It is assumed that 40% of the track-out emissions originate from construction and other temporary sites that have not previously been using PR805 controls. Thus, the 18% of paved road dust will be affected by new PR 803 controls. Overall reductions from PR 803 are estimated at 0.45 tons/day.

Estimated costs for PR 803-related controls include: paving access points ($6,000 to $8,500 per access point)[24]; chemical stabilization ($984)[25]; gravelling ($680 to $1,360 per year per access point)[26]; and track-out control device ($3,500 to $4,800 plus maintenance costs)[27].

PR 804: Open Areas

PR 804 applies to non-agricultural rural open areas more than 3 acres (rural) or 0.5 acres (urban). Review of Imperial County parcel data indicates that over 99.5% of parcels are greater than 3 acres in size. However, 77.5% of Imperial County is desert and/or scrubland, much of which is under the control of BLM or other federal agencies. (BLM areas are exempt from Rule 804, but are subject to dust control plan requirements in PAR 800. Agricultural areas, which cover 21% of Imperial County, are subject to PR 806.) For purposes of estimating emission reductions, it is assumed that the non-BLM desert and scrubland areas are not disturbed by man due to their remoteness. It is assumed that most disturbed land will occur relatively near the urban areas, which represent 1.5% of Imperial County. Assuming that up to 2/3rds of that area could be disturbed, the applicability is estimated to be 1% or less. The composite control factor is estimated to be 70% (based on control efficiencies cited in San Joaquin Valley's 2003 PM_{10} SIP). Overall reductions from PR 804 are estimated at 1.07 tons/day. (It should be noted that the BLM dust control plan could result in additional reductions from this source, depending on the extent of BLM areas that are disturbed by

[21] ICAPCD, "State Implementation Plan for PM_{10} in the Imperial Valley," Final, adopted September 28, 1993.
[22] Final BACM Technological and Economic Feasibility Analysis, SJVAPCD 2003 PM_{10} SIP, April 2003.
[23] EPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, Document Number EPA-450/2-92-004, Office of Air Quality Planning and Standards, 1992.
[24] ICAPCD, "State Implementation Plan for PM_{10} in the Imperial Valley," Final, adopted September 28, 1993. and SCAQMD, Rule 403 Final Staff Report, Appendix G, February 1997.
[25] SCAQMD, Rule 403 Final Staff Report, Appendix G, February 1997.
[26] Final BACM Technological and Economic Feasibility Analysis, SJVAPCD 2003 PM_{10} SIP, April 2003.
[27].Final BACM Technological and Economic Feasibility Analysis, SJVAPCD 2003 PM_{10} SIP, April 2003, and SCAQMD, Rule 403 Final Staff Report, Appendix G, February 1997

illegal OHV use. There will also be reductions resulting from implementation of the BLM dust control plan of episodic emissions from legal OHV events.)

Estimated costs for PR 804-related controls include: dust suppressants ($3,340 per acre); and signage ($200 per sign).[28]

PR 805: Paved and Unpaved Roads

PR 805 applies to unpaved paved roads. Of the 7,813 miles of unpaved roads in Imperial County, 1362 miles are city and county roads, 6312 miles are canal roads, and 139 miles are federal roads (BLM and USFS). 25.5% of entrained emissions and 5% of windblown emissions are estimated to come from city and county roads over 50 ADT, which total 217 miles. Canal roads in total are estimated to contribute 67% of the windblown emissions and 53% of the entrained emissions. It is assumed that 0.5% of canal roads (31.5 miles) have 20 ADT or greater, and would thus be subject to PR 805. For the purposes of this analysis, no reductions are credited to federal roads, although there will be reductions based on the BLM dust control plan (PAR 800). Total applicability for non-farm roads is thus 5% for windblown and 26% for entrained dust, resulting in an overall applicability percentage of 20%. (See also "Determination of PR 805 Applicability" spreadsheet in Appendix B.) The composite control factor (entrained and windblown) is estimated to be 60%[29], assuming that both the County and IID will choose gravelling to meet the requirements of PR 805. (Emission reductions will increase if paving is chosen as the control option, but budget analysis indicates that paving an appreciable number of miles is not fiscally feasible.) Overall reductions from PR 805 are estimated at 10.09 tons/day.

Imperial County Public Works Department has provided the following cost information for the paving or gravelling of high ADT roads[30]. They estimate that it would cost $2,980 to apply dust suppressant to 1 mile of unpaved road, $8,950 to gravel, grade, compact and water 1 mile of unpaved road, and $131,200 to pave 1 mile of unpaved road. It is the County's current intention to comply with PR 805 by gravelling 10% of the applicable roads per year (~22 miles per year). The annual cost of complying with PR 805 is thus approximately $194,000 per year. (Paving those same roads would cost approximately $2,850,000.) The Imperial County Public Works Department has also provided additional budget information.[31] The Department has budgeted $316,000 for gravelling projects in FY2005-06.; this is based on a 1997 FEMA project that entailed four road improvement (e.g. graveling) contracts for 550 miles of unpaved roads at a cost of $9.5 million. The current budget for paved road maintenance is $2 million per year. In addition, the Department has purchased six traffic counters at a cost of $1,240, to conduct additional traffic counts on unpaved roads in the county.

PR 806: Conservation Management Practices

PR 806 requires CMPs at all farms over 40 acres, which includes over 90% of farm acreage in Imperial County. Thus, the applicability is 90%. San Joaquin Valley estimated emission reductions from Rule 4550, which is functionally equivalent to PR 806, by CMP and crop category. In addition to assuming an 80% rule compliance factor, information used to calculate the emission reductions included an estimate of which CMP options would be used for each crop type and CMP

[28] Both from Final BACM Technological and Economic Feasibility Analysis, SJVAPCD 2003 PM_{10} SIP, April 2003.
[29] Based on control efficiency cited in San Joaquin Valley's Final Draft Staff Report for Regulation VIII (May 2004).
[30] Imperial County Public Works cost estimate of compliance, August 1, 2005.
[31] Imperial County Public Works Department letter to ICAPCD, dated August 22, 2005.

category. That information is not available for Imperial County at this time. For purposes of estimating emission reductions for this report, it is assumed that a composite control factor derived from dividing Rule 4550 emission reductions by emissions for each source category can be applied to Imperial County. (The Rule 4550 staff analysis assumed that the rule applied 91% of San Joaquin Valley farms, compared to 90% of Imperial County farms subject to PR 805. That difference was accounted for in determining PR 806 emission reductions.) Overall reductions from PR 806 are estimated at 4.16 tons/day.

Costs for CMPs related to unpaved roads and traffic areas would be similar to control costs presented for PR 803 (track-out controls) and PR 805 (unpaved road / traffic area controls). Costs for CMPs for land preparation / cultivation and harvesting are highly dependent on crop type and the specific CMP option chosen. SJVAPCD[32] cites cost information was received from the University of California Cooperative Extension, UC Davis and ARB (various documents), Draft Regulation VIII Staff Report dated September 2001, the 2003 PM10 Plan, inputs from UC Davis Cooperative Extension, inputs from stakeholders, and NRCS/RCD, and internet research. SJVAPCD determined[33] that for San Joaquin Valley farmers that "(t)he cost effectiveness analysis demonstrates a savings when reducing the number of passes for the Land Preparation CMP Category. It also shows some potential savings in the Harvest CMP Category. For the other CMP categories, the analysis generally shows a net cost."

Cost-Effectiveness

The cost-effectiveness of the measures in each Regulation VIII rule is presented in Tables 5-2 though 5-7. These estimates of cost-effectiveness for the individual control measures in Regulation VIII are based on the 2004 CARB staff report[34] for SB 656 and the 2003 San Joaquin Valley PM_{10} SIP[35]. Actual cost-effectiveness estimates for controls in Imperial County are expected to be the same or less cost-effective than those listed in the tables. Based on the rural nature of Imperial County, it would be expected that the emission reductions associated with these measures will be the same or smaller than those assumed in San Joaquin Valley and other areas. For example, activity levels associated with emissions (e.g., VMT for paved roads, ADVT for unpaved roads) will be lower in Imperial County than other areas, resulting in less emissions (and emission reductions) for these sources. Control costs in Imperial County may also be higher in some cases. More current information is available for Rule 805 implementation on county roads. Based on information from Imperial County's Public Works Department,[36] assuming that 10% of the 217miles of applicable high ADT roads are treated per year for ten years, and a 4% interest rate, the cost-effectiveness of PR 805 for county roads is approximately $795/ton. (The cost-effectiveness of paving would be approximately $7,100/ton, but the absolute cost ($2,850,000) is greater than the entire paved and unpaved road maintenance budget for Imperial County). These estimates are comparable to estimates in the SB 656 staff report ($344/ton to $12,300/ton for stabilizing,

[32] Final BACM Technological and Economic Feasibility Analysis, SJVAPCD 2003 PM_{10} SIP, April 2003 and Appendix B, Rule 4550 Final Staff Report, SJVAPCD, April 15, 2004.
[33] Appendix B, Rule 4550 Final Staff Report, SJVAPCD, April 15, 2004.
[34] CARB Staff Report, Proposed List of Measures to Reduce Particulate Matter – PM10and PM2.5 (Implementation of Senate Bill 656, Sher 2003), October 18, 2004.
[35] SJVAPCD 2003 PM_{10} SIP, Appendix G, BACM/T and RACM/T Demonstration for Sources of PM_{10} and PM_{10} Precursors in the San Joaquin Valley Air Basin, SJVAPCD, April 2003.
[36] Imperial County Public Works cost estimate of compliance, August 1, 2005.

gravelling and paving)[37] and in other non-attainment area BACM analyses ($2,100/ton to $5,900/ton for paving in the San Joaquin Valley)[38].

Certain dust control measures, as identified in Senate Bill 656, are not included in proposed Regulation VIII amendments based on technical reasons such as the source is not present (e.g., winter non-skid sand) or the control cannot be applied effectively in Imperial County (e.g. PM_{10}-certified sweepers). These measures are identified in Table 5-8. No potential BACM measures have been excluded based on cost-effectiveness, although a cost-effectiveness analysis of PR 805 provisions for unpaved parking lots and other traffic areas is being conducted.

[37] CARB Staff Report, Proposed List of Measures to Reduce Particulate Matter – PM10and PM2.5 (Implementation of Senate Bill 656, Sher 2003), October 18, 2004.
[38] Final BACM Technological and Economic Feasibility Analysis, SJVAPCD 2003 PM_{10} SIP, April 2003.

Table 5-2. Cost-effectiveness of measures in Proposed Rule 801 – Construction and Demolition

NOTE: Construction and demolition source categories are below the DM level.

	PR 801	SB 656 Measure No.	SB 656 ($/ton)	SJVUAPCD ($/ton)
E.1.a-b	Limit VDE to 20% opacity for sites of > 1 acre	24-26.a	Watering $301/ton	See below
F1.a.	Pre-Activity: Pre-water site and phase work to reduce amount of distributed surface area	24-26.b, 39, and 40	RACM to BACM upgrade: $197/ton [NOTE: based on SCAQMD minor upgrades. Not appropriate comparison]	Apply water and/or dust suppressants at end of day: $7,222,000/ton Prohibit Demolition activities when wind>25 mph: $847,000/ton Dust Monitoring: $231,000-$339,000/ton 12% soil moisture for earthmoving: $21,600-$56,000/ton 15 mph speed limit $850/ton posting of speed limit $2,940-$74,600/ton Dust Control Plans:$17,2000-$31,500/ton Require notification for earthmoving operations $2,480-$14,800/ton
F1.b	During Active Operation: apply water or chemical stabilizer; or construct and maintain a wind barrier			
F.1.b.3	Apply water or chemical stabilizer to unpaved haul/access roads and unpaved vehicle/equipment traffic areas			
F.1.c	Periods of Inactivity: restrict vehicular access; and apply water or chemical stabilizer. If area > 0.5 acres of disturbed surface area remains unused for ³ 7 days, area must comply with conditions for stabilized surface area			

Table 5-3. Cost-effectiveness of measures in Proposed Rule 802 – Bulk Materials

NOTE: Bulk materials source categories are below the DM level.

	PR 802	SB 656 Measure No.	SB 656 ($/ton)	SJVUAPCD ($/ton)
E	Limit VDE to 20% opacity for bulk material handling, material transport, and haul trucks	28.a	$1,151/ton (handling) to $28,293/ton (storage)	None Reported
F.1.a	Spray with water prior	28.b and 41a.	RACM to BACM upgrade: $197/ton	Require Construction of 3-sided enclosures with 50% porosity: $659,000/ton
F.1.b	Apply and maintain chemical stabilizer			
F.1.c	Protect from wind erosion by sheltering or enclosing the operation and transfer line	28.a	See 28.a. above	
F.1.d	Cover bulk materials stored outdoors with tarps, plastic, or other material	28.a	See 28.a. above	
F.2.a	Completely cover or enclose all Haul Truck loads of Bulk Material	28.a	See 28.a. above	
F.2.b, c, d	Material transport: cover, freeboard, housekeeping	28.b	See 28.b. above	

Table 5-4. Cost-effectiveness of measures in Proposed Rule 803 – Track-out and Carry-out

NOTE: Track-out and carry-out source categories are below the DM level.

	PR 803	SB 656 Measure No.	SB 656 ($/ton)	SJVUAPCD ($/ton)
F.1.a	Rapidly clean up any bulk material tracked out or carried out onto a paved road surface by the end of the day	29-30	Manual Sweeping: $3,54/ton Control devices installed at access points to public roads: $13,700 to $322,000/ton Length of paved interior roads: $7,930 to $186,000/ton	Impose Rule 8041 Requirements: $44,100-$387,000/ton Require track-out control devices to be 25 ft long and road width: $13,700-$322,000/ton Require paved interior roads to be 100 ft long and full road width: $7,930-$186,000/ton Gravel pads: $27,000-$322,000/ton
	All sites with access to a paved road and with > 150 ADT, or > 20 ADT by vehicles with > 3 axles shall:	29.b	<$100/ton	
F.1.b	Install one or more Track-Out Prevention Devices or wash down system at access points; or			
F.1.c	Apply and maintain paving, chemical stabilization, or gravel for a distance of 50 or more consecutive feet at access points			

Table 5-5. Cost-effectiveness of measures in Proposed Rule 804 – Open Areas

NOTE: Open areas source categories are above the DM level.

	PR 804	SB 656 Measure No.	SB 656 ($/ton)	SJVUAPCD ($/ton)
E.1	Limit open areas to VDE of 20% opacity	31.a	Watering: $7020/ton	None Reported
E.2	Prevent unauthorized vehicle access by posting "No Trespassing" signs or installing physical barriers such as fences, gates, posts, and/or appropriate barriers to prevent access	31.a	Watering: $7,020/ton	
F.1.a	Apply and maintain water or dust suppressant to all undefeated areas	27, 31, and 42	27b. RACM to BACM upgrade: $197/ton 31a. Watering: $7,020/ton 31b. RACM to BACM upgrade: $197/ton 42. $697/ton	Impose Rule 8051 requirements on urban parcels of 0.5 acres or more that have a least 1,000 square feet of disturbed surface: $67,800/ton Impose Rule 8051 requirements immediately after cessation of disturbance: $6,450-$33,600/ton
F.1.b	Establish vegetation on all previously disturbed areas			
F.1.c	Pave, apply and maintain gravel or apply and maintain chemical stabilizers/suppressants			

Table 5-6. Cost-effectiveness of measures in Proposed Rule 805 – Paved and Unpaved Roads

NOTE: The unpaved roads source category is above the DM level.

	PR 805 – Unpaved Roads	SB 656 Measure No.	SB 656 ($/ton)	SJVUAPCD ($/ton)
F.1.a	Pave or	35-36	35. Apply water, gravel, chemical or dust suppressant, or pave: $344 to $12,293/ton 36a. -Apply water, dust suppressant, gravel, pave: $56 to $1,481/ton -Paving: $2,160 to $5,920/ton 36b. $958/ton	Limit speed to 25 mph: $1,080/ton Require roads in urban areas to be paved: $2,160-$5,920/ton Impose Rule 8071: $3,510/ton
F.1.b	Apply chemical stabilizers or			
F.1.c	Apply and maintain gravel, recrushed/recycled asphalt or other material of low silt content to a depth of > 3 inches or			
F.1.d	Apply water one or more time daily or			
F.1.F	Permanent road closure or			
F.1.f	Any other method to meet VDE of 20% opacity and meets conditions of a stabilized unpaved road			
F.2.a through g	Canal Roads measures	None	Not Estimated	None Reported
Unpaved Traffic Areas				
F.3.a	Pave or	35-36	See 35-36 above	See 35-36 above
F.3.b	Apply chemical stabilizers or			
F.3.c	Apply and maintain gravel, recrushed/recycled asphalt or other material of low silt content to a depth of ³ 3 inches or			
F.3.d	Apply water one or more time daily			

Table 5-6. Cost-effectiveness of Measures in Proposed Rule 805 – Paved and Unpaved Roads (continued)

NOTE: The paved road source category is below the DM level.

	PR 805 – New and Modified Paved Roads	SB 656 Measure No.	SB 656 ($/ton)	SJVUAPCD ($/ton)
F.4.1	New or modified paved roads with projected ADT > 500 vehicles shall construct paved shoulders of 4 ft (500-3000 vehicle trips) or 8 ft (> 3000 vehicle trips)	32	32a. 4 ft. Paved shoulder on 50% of highest ADT existing paved roads: $7,290-$11,300/ton 32b. Curb and Gutter road shoulder: $5577/ton	4ft paved shoulders on all new/modified paved roads: $13,800-$508,000/ton 4ft paved shoulder on 50% highest ADT existing paved roads: $7,290-$11,300/ton Require wind-or water-borne deposition to be cleaned up within 24 hrs: $2,850/ton
F.4.2	In lieu of F.4.1, a curbing adjacent to and contiguous with the travel lane or paved shoulder or road may be constructed	32		
F.4.3	In lieu of F.4.1, intersections, auxiliary entry lanes and auxiliary exit lanes may be constructed adjacent to and contiguous with the roadway	32		
F.4.4	Medians shall be constructed with paved shoulders having a minimum width of 4 ft. adjacent to traffic lanes for projects ADT > 500, unless speed limit < 45 mph with curbing or landscaped medians	32		
F.6	In lieu of paving or vegetation requirement, may apply oils or other chemical stabilizers	32		

Table 5-7. Cost-effectiveness of measures in Proposed Rule 806 – Conservation Management Practices

NOTE: Some agricultural operations source categories (eg. tilling and windblown) are above the DM level.

	PR 806	SB 656 Measure No.	SB 656 ($/ton)	SJVUAPCD ($/ton)
D.1	Shall implement at least one of the following practices if own/operate a commercial farm of > 40 acres: land preparation and cultivation; harvest activities; unpaved roads; or unpaved equipment operation yards.	43.b	Highwind tilling prohibition and stabilization of fallow fields: $134/ton	Overall: $8 to $2,500/ton
D.4	Prepare and submit a CMP application for each agricultural operation site			
E.1	Land Preparation and Cultivation	43.c	$8/ton	
E.2	Harvesting	43.b	None provided	
E.3	Unpaved Farm Roads	43.a and d	$958/ton	
E.4	Equipment Traffic Areas	43.d	$958/ton	

Table 5-8 Senate Bill 656 Measures Not in the Proposed Regulation VIII Amended Rules

SB656		Cost-Effectiveness	Comment
33	Requires use of certified PM_{10} efficient street	$1,119/ton (1996$) A Rule 1186-certified sweeper is $37,000 more expensive than a conventional sweeper.	As noted in the SJVUAPCD "BACM/BACT and RACM/RACT Demonstration for Sources of PM_{10} and PM_{10} Precursors in the San Joaquin Valley Air Basin," (dated April 28, 2003), "use of these units will result in safety problems on freeways and rural roads in flat terrain." The overwhelming majority of roads in Imperial County are freeways and rural roads in flat terrain. For maximum efficiency, sweepers must travel less than 5 mph.
34	Requires vacuum-street sweeping on roads to remove sand and cinders that are placed on the road during winter storms as an anti-skid material. .	$350/ton (1996$) (assumes 2,400 lb/day winter-day emission reductions)	This Great Basin Unified APCD measure does not apply to Imperial County, where anti-skid material is not used.
37a. and 37b.	**Weed Abatement Activities** Pre-activity Requirements: 1) Pre-watering to limit VDE opacity to 20%; or 2) phasing work to reduce amount of disturbed surface area. Apply water during active operations to limit VDE to 20% opacity. Apply water or chemical stabilizers to meet conditions of stabilized surface.	Not estimated	Emissions from this source are not quantified and considered de minimis.
38	Defines windblown dusts	NA	No specific requirements.
41b.	Additional bulk material control requirements for Coachella Valley source	$352 - $462 /ton (1992 $)	Controls specific to Coachella Valley blowsand zone, which does not exist in Imperial County.

6. CONCLUSIONS

This report presents the BACM determination based on proposed Regulation VIII amendments. It includes all elements of a BACM determination, including inventory assessment, calculation of the de minimis emission level, identification of significant sources (e.g. those sources which emit more than the DM level), a comparative analysis of proposed Regulation VIII amendments for significant sources with regulations adopted by serious PM_{10} non-attainment areas, and a presentation of cost-effectiveness of the dust control measures. The proposed Regulation VIII BACM amendments are based on BACM recently adopted by other serious non-attainment areas. This technical memorandum presented the existing inventory of primary PM_{10} sources and determined the de minimis level of primary PM_{10} for Imperial County, based on that inventory and recent ambient PM_{10} levels. Based on the calculated DM level of 4.9 tons/day of PM_{10}, significant sources of primary PM_{10} in Imperial County were identified. Those sources are unpaved road and surface dust, disturbed open areas, and certain agricultural sources. A comparative analysis of the proposed Regulation VIII amendments and other BACM rules in serious PM_{10} non-attainment areas was presented. This comparative analysis was done for both significant sources and sources below the DM level. For significant sources, a discussion of the stringency of threshold limits and requirements compared to the most stringent in other serious non-attainment areas was presented, including justification of less stringent thresholds and/or requirements, if necessary. Emission reductions and costs associated with each proposed rule were presented. Except for unpaved parking lots and staging areas, proposed Regulation VIII thresholds and requirements were demonstrated to be as stringent as the most stringent adopted in other serious PM_{10} non-attainment areas. Further cost-effectiveness analysis will be conducted for unpaved parking lots and staging areas. Imperial County will propose amendments to PR 805 reflecting more stringent threshold and requirements if they are shown to be cost –effective. Emission reduction, cost information, and cost-effectiveness estimates for the proposed Regulation VIII rules and/or control measures in the proposed Regulation VIII rules were presented. Cost-effectiveness estimates for control measures not included in Regulation VIII were also presented. No potential BACM measures were excluded based on cost-effectiveness. Except for unpaved traffic areas (for which the cost-effectiveness justification of thresholds and requirements has not been completed), Proposed Regulation VIII amendments for sources above the DM level have been determined to be BACM for Imperial County, based on comparative analysis with fugitive dust rules in serious non-attainment areas. Measures excluded from proposed Regulation VIII have been excluded for technical or implementation reasons, not cost-effectiveness.

A P P E N D I X A

Technical Memorandum: Latest Revisions of the Windblown Dust Study

Appendix A

Technical Memorandum: Latest Revisions of the Windblown Dust Study

Appendix A presents the September 20, 2005 Technical Memorandum from ENVIRON detailing the final revised results of ENVIRON's Imperial Valley Fugitive Dust Emissions Inventory. First, a brief background of the original study is presented, followed by a discussion of the issues and concerns associated with the results presented in the original Final Report (ENVIRON, 2004). Finally, the revised analyses and windblown dust emission results are presented.

ENVIRON

MEMORANDUM

To: Brad Poiriez, Imperial County Air Pollution Control District

From: Gerard Mansell

Date: 20 September 2005

Subject: Final Revision for the Imperial Valley Fugitive Dust Emission Inventory

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This memorandum presents the final revised results of ENVIRON's Imperial Valley Fugitive Dust Emissions Inventory. First, a brief background of the study is presented, followed by a discussion of the issues and concerns associated with the results presented in the Final Report (ENVIRON, 2004). Finally, the revised analyses and results are presented.

Introduction

Imperial County, located in the southeastern corner of California, has been designated as moderate nonattainment of the National Ambient Air Quality Standard (NAAQS) for particulate matter with a diameter less than ten microns (PM_{10}). The Federal PM_{10} standard includes both annual and 24-hour averages with thresholds of 50 and 150 $\mu g/m^3$, respectively.

In the PM_{10} emissions inventory prepared for Imperial County by the California Air Resources Board (ARB) for the year 2001, area sources represent more than 98% of the Imperial PM_{10} emissions: 235 tons/day (tpd) out of a total of 239 tpd (ARB, 2000). Within the area source category, the largest two sources are windblown fugitive dust and dust from unpaved roads, which are listed as 174 tpd and 40 tpd, respectively (i.e., 73% and 17% of the total PM_{10}). Thus, according to the ARB 2001 inventory, windblown fugitive dust emissions comprise more than two-thirds of the total Imperial County PM_{10} emissions. A majority of the ARB wind-blown dust estimate is from agricultural lands. The current inventory does not include windblown dust emissions from the barren and scrubland source areas (e.g., deserts, scrublands, sand dunes).

The Imperial Valley, which runs approximately northwest to southeast through the center of the county, is one of the most productive agricultural areas in the nation. Given the size of the agricultural industry in Imperial County, and the fraction of the inventory that is currently believed to result from agricultural operations, a thorough understanding of windblown agricultural dust generation will be essential to properly quantifying emissions from this source category.

Unlike emissions generated primarily by stationary sources or tailpipe exhaust from mobile sources, the emissions from area sources are difficult to accurately predict and to verify. In the case of windblown dust, emissions cannot be directly monitored, but rather must be derived

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using a combination of activity parameters (e.g., acres farmed per year, disturbed lots, etc.) and emission factors per unit of activity (e.g., tons per acre farmed, etc.).

For the reasons discussed above, the predicted emissions obtained using the modified USDA windblown dust equation, as currently used by the ARB, likely do not accurately reflect actual windblown dust emissions from disturbed lands in Imperial County. An approach to modifying the wind erosion equation was initially investigated; however, no information concerning the application of the equation for hot, arid regions could be obtained from the USDA. Therefore, ENVIRON implemented an alternative calculation methodology, based on recent efforts of the Western Regional Air Partnership (WRAP), to estimate wind blown fugitive dust in the Imperial Valley (ENVIRON, 2003; Mansell, 2003)

2002 Fugitive Dust Emission Inventory

A Fugitive Windblown Dust inventory of windblown dust emissions from agricultural lands in Imperial Valley was developed for 2002 and compared with the previous 2000 inventory prepared by ARB. The 2000 ARB inventory attributed nearly 173 tons per day (tpd) to dust emissions from wind erosion on agricultural lands but did not include any wind erosion emissions from barren and other non-agricultural lands. The new 2002 inventory estimated emissions for wind erosion from both agricultural lands and other lands in Imperial County. The new 2002 inventory estimated emissions from agricultural lands that were approximately one-seventeenth of that estimated by ARB for 2000, or, just over 10 tpd. Thus, whereas dust emissions from agricultural lands accounted for 75% of the inventory in the 2000 ARB inventory, wind erosion from agricultural lands accounted for just under 15% of the new 2002 inventory without accounting for emissions from barren and other lands.

Fugitive dust emissions for barren and other non-agricultural lands were also estimated with 792 tpd PM_{10} emissions attributed to barren lands. When included in the inventory, PM_{10} emissions from barren lands account for just over 92% of the total inventory, and windblown dust emissions from agricultural lands account for just over 1% of the total inventory.

The development of the 2002 Fugitive Windblown Dust inventory, including a summary and discussions of the resulting emission estimates, is documented in ENVIRON, 2004. Table 1 presents a summary of the 2002 PM10 fugitive dust emissions from wind erosion for Imperial County.

Table 1. 2002 PM_{10} fugitive dust emission estimates for Imperial County (tons)

Month	Total	Urban	Scrublands	Forest	Barren	Unspecified Crops	Agricultural Crops
Jan	10948.5	2.3	2980.7	1.9	7697.5	48.8	217.3
Feb	23763.4	0.0	2859.2	1.6	20586.1	41.9	274.6
Mar	53982.4	0.0	3739.4	2.3	49623	64.5	553.2
Apr	80077.8	1.0	7297.1	4.4	71921.1	107.6	746.6
May	42986.9	0.2	3023.3	1.9	39560.3	45	356.2
Jun	38076.2	0.0	5696	3.2	31889.4	52.6	435
Jul	11408	0.0	1259.8	0.7	9919.4	21.8	206.3
Aug	16710.2	0.0	4339	2.3	12234.3	26	108.6
Sep	16060.1	0.0	1915.3	0.8	13851.5	22.8	269.7

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Month	Total	Urban	Scrublands	Forest	Barren	Unspecified Crops	Agricultural Crops
Oct	2145.3	0.0	226.8	0.0	1906.8	0.9	10.8
Nov	18541.1	0.0	1919.9	1.0	16422.4	28.3	169.5
Dec	14277.5	0.0	787.5	0.5	13352.5	16.5	120.5
Annual	328977.4	3.5	36044	20.6	288964.3	476.7	3468.3
Winter	48989.4	2.3	6627.4	4	41636.1	107.2	612.4
Spring	177047.1	1.2	14059.8	8.6	161104.4	217.1	1656
Summer	66194.4	0	11294.8	6.2	54043.1	100.4	749.9
Fall	36746.5	0	4062	1.8	32180.7	52	450

In early 2005, ENVIRON received comments on the 2002 Fugitive Windblown Dust Final Report from the ARB and the EPA (ARB, 2004; EPA, 2004). Foremost among the various issues raised was the treatment of barren lands throughout the Imperial Valley. As described below, a number of assumptions are incorporated into the estimation methodology. The need for these assumptions is primarily the result of the lack of detail available in the land use and soils databases used to characterize vacant lands. To address these concerns, modifications to the various assumptions associated with barren lands were incorporated into the land use database and the windblown dust emission model was re-run. A summary description of the estimation methodology, the various assumptions used and the revised treatment of barren lands within the domain are presented below.

Summary of Emission Inventory Estimation Methodology

The emission estimation methodology involves several steps including the categorization of land types and soil characteristics, determined by the land type and stability, application of the dust flux relations for each soil texture group and adjustments to account for vegetation canopy cover. Finally, the emission factors for agricultural lands are adjusted based on non-climatic effects. Emission factors will vary spatially based on land and soil characteristics, and temporally based on hourly wind speeds and, in the case of agricultural lands, seasonal and/or monthly crop calendars. A complete discussion of the development of the land use and soils databases, as well as a discussion of the various assumptions regarding soil stability and reservoir characteristics was presented in ENVIRON, 2004.

Land use/land cover and soil texture used for the development of the 2002 Base inventory are displayed in Figures 1 and 2, respectively. Soil stability is assumed to depend on land use types as given in Table 2. Dust flux rates as a function of soil texture, soil stability and wind speed were presented in Figures 2-6 and 2-7 of ENVIRON, 2004. The assumed soil stability also determines the duration of windblown dust emissions; unstable soils can emit for up to 10 hrs during any single wind event; stable soils emit only for one hour. To account for vegetative canopy cover, the emission rates are reduced according to the assumed percent canopy cover. Table 3 presents these assumed percent vegetative canopy cover for each land use type. The reduction factors are given in Table 4.

Table 2. Stability of vacant land by LULC classification.

LULC Category	Stability
Urban	Stable/Unstable (see below)

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Agricultural	--
Shrubland	Stable
Grassland	Stable
Forest	Stable
Barren	Unstable
Desert	Unstable

Table 3. Default vegetation cover percentages for each land use type.

LULC Category	Vegetation Cover %
Urban	55(stable)/0(unstable)
Agricultural	--
Shrubland	11
Grassland	23
Mixed Shrub/Grassland	17
Forest	55
Barren	0
Desert	0

Table 4. Emission rates and attenuation factors by % vegetation cover.

Vegetation Cover %	ER by Formulation	Average Vertical Flux	ER by Raw Data	Reduction Factor based on Avg. Vert. Flux
0	2989.17	2185.98	2064.95	1
11	1739.34	1530.76	1460.54	0.700263
23	459.86	427.11	541.21	0.195386
55	230.02	153.23	288.4	0.070097

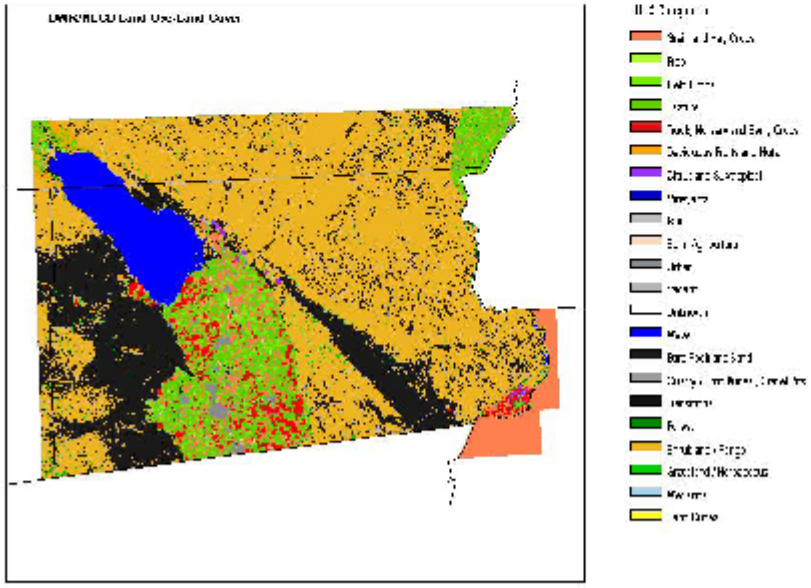

Figure 1. Landuse coverage for Imperial Valley emission inventory domain based on combined DWR and NLCD.

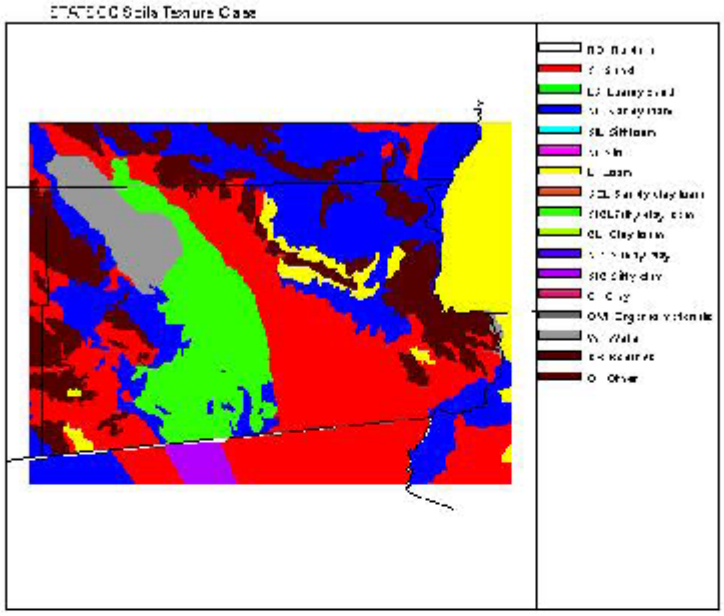

Figure 2. STATSGO soil texture class for the emissions inventory domain.

In summary, for each grid cell, the land use and soil type are determined for each land parcel based on the soils and LULC databases. Stability and reservoir characteristics are then determined using the assumption described above. Hourly wind speeds are evaluated from the CALMET data being used for the project. The appropriate emission factors as a function of wind speed, soil group and stability are determined and applied for each hour during the wind event. The emission factors are then adjusted based on the assumed vegetation density using the reduction factors given in Table 4. Based on the type of reservoir, i.e., limited or unlimited, dust emissions are generated for the duration of the wind event according to the assumptions described in ENVIRON, 2004. Non-climatic agricultural adjustments are then applied to the agricultural land types, by county, crop type and month/season using the crop specific calendars and agricultural information assembled for the project.

It should be noted that the estimation methodology used here, involves numerous assumption regarding the surface characteristics, including vegetative canopy cover, soil stability and dust reservoirs. Many of these assumptions are required due to the lack of detail in the databases used to characterize vacant lands, particularly non-agricultural lands. In addition, it has been shown that the dust estimation methodology is particularly sensitive to these assumptions (ENVIRON, 2004).

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Revised Treatment of Barren Lands

As noted above, barren lands were considered to be void of vegetation with unstable soils. Based on the land use database used for the project, barren lands comprise approximately 26% of the area within Imperial County (see Table 5, below). The land use database does not distinguish between barren desert lands, which likely include some amount of vegetative cover, and sand dunes, which are likely void of any vegetation. Within Imperial County, a significant area of sand dunes are present east of the agricultural regions. Because the land use databases do not differentiate between these land types, the 2002 windblown dust emission estimates published by ENVIRON in 2004 are potentially overestimated from these land types.

In order to address this shortcoming of the dust emission estimates, the assumptions regarding the vegetative canopy cover and the disturbance level, or stability, of barren lands were revised. Within the land use database, the area of sand dunes east of the agricultural regions of the county were identified and treated separately from other barren lands. The sand dunes in the revised model runs were considered to be unstable and void of any vegetation, as was assumed in the original model application. However, all other barren lands, primarily to the west of the agricultural areas were considered to be stable with a 9% vegetative canopy cover, as requested by ARB and EPA. These modifications affect the resulting emission estimates in two ways; the assumption of stable soils results in less wind erosion, lower dust flux rates, and a shorter possible wind event duration; and, an assumed 9% vegetative cover reduces the emissions rates further through the application of attenuation factors, as given in Table 4. For a 9% vegetative canopy cover, an attenuation factor of 0.7547 was assumed. The revised land use, with the distinction between sand dunes and other barren lands, is displayed in Figure 3. Table 5 presents a summary of the land use types in Imperial County for both the original model application and the revised treatment of barren lands. The sand dunes are seen to comprise approximately 5% of the total area in the county. The remaining barren lands make up approximately 20% of the total county area.

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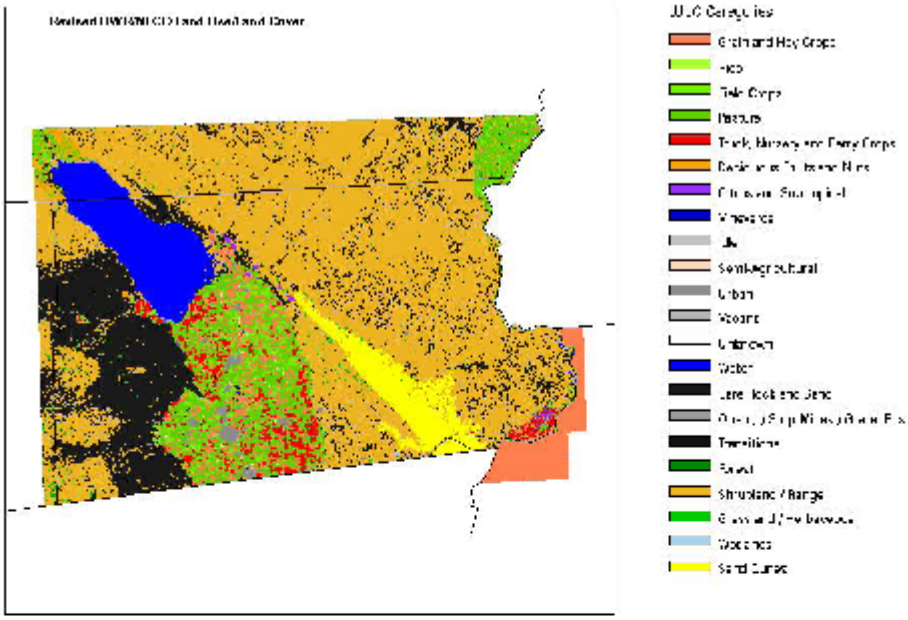

Figure 3. Revised landuse coverage for Imperial Valley emission inventory domain based on combined DWR and NLCD.

Table 5. Imperial County acreage by LULC

Land Use	Revised	Original	% of Total Area (Revised)	% of Total Area (Original)
Unknown	2436	2436	0.1%	0.1%
Water	194212	194212	6.8%	6.8%
Urban	39178	39178	1.4%	1.4%
DWR Crops	546947	546947	19.1%	19.1%
Shrub/Grasslands	1324889	1324889	46.3%	46.3%
Forest	6162	6162	0.2%	0.2%
Barren	585792	736514	20.5%	25.7%
Sand Dunes	150722	0	5.3%	0.0%
Unspecified Crops	12954	12954	0.5%	0.5%
Total	2863292	2863292	100.0%	100.0%

Revised Results

The Windblown Dust model was run with the revised land use and stability assumptions described above. All other inputs to the model were held constant. Table 6 presents the resulting PM_{10} dust emissions by month and land use type. Seasonal and annual PM_{10} emissions are also presented.

Total annual PM_{10} dust emissions in the revised inventory decreased from approximately

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329,000 tons per year to approximately 61,400 tons per year. Barren land emissions decreased from approximately 289,000 tons/year to 21,300 tons/year (of which approximately 7,200 tons/year was from sand dune areas). A comparison of the total PM_{10} windblown dust emissions by month is displayed in Figure 4.

Table 6. Revised 2002 PM_{10} fugitive dust emission estimates for Imperial County (tons)

Month	Total	Urban	Shrublands	Forest	Barren	Sand Dunes	Unspecified Crops	Agricultural Crops
Jan	4563.3	2.3	2980.7	2.0	637.2	674.7	48.9	217.4
Feb	5136.7	0.0	2859.3	1.6	1066.4	892.6	42.1	274.8
Mar	7096.1	0.0	3739.4	2.3	1613.2	1123.3	64.3	553.5
Apr	12947.1	1.0	7297.1	4.5	2919.2	1871.0	107.6	746.6
May	5964.4	0.2	3023.2	1.9	1769.9	767.8	45.1	356.3
Jun	8480.1	0.0	5695.9	3.3	2155.2	137.8	52.8	435.1
Jul	2496.6	0.0	1259.8	0.7	488.9	518.6	21.9	206.6
Aug	6185.2	0.0	4339.0	2.3	1338.1	371.4	26.0	108.4
Sep	3334.2	0.0	1915.3	0.9	878.6	246.7	22.9	269.8
Oct	436.0	0.0	226.8	0.1	197.3	0.0	0.9	10.9
Nov	3060.1	0.0	1919.9	1.1	661.6	279.6	28.6	169.4
Dec	1700.1	0.0	787.5	0.5	414.4	360.8	16.5	120.4
Annual	61399.9	3.7	36044.0	21.1	14140.0	7244.3	477.6	3469.3
Winter	11400.1	2.3	6627.5	4.1	2117.9	1928.1	107.6	612.6
Spring	26007.6	1.3	14059.7	8.6	6302.3	3762.1	217.1	1656.5
Summer	17161.9	0.0	11294.8	6.3	3982.3	1027.8	100.6	750.1
Fall	6830.3	0.1	4062.0	2.0	1737.5	526.3	52.3	450.1

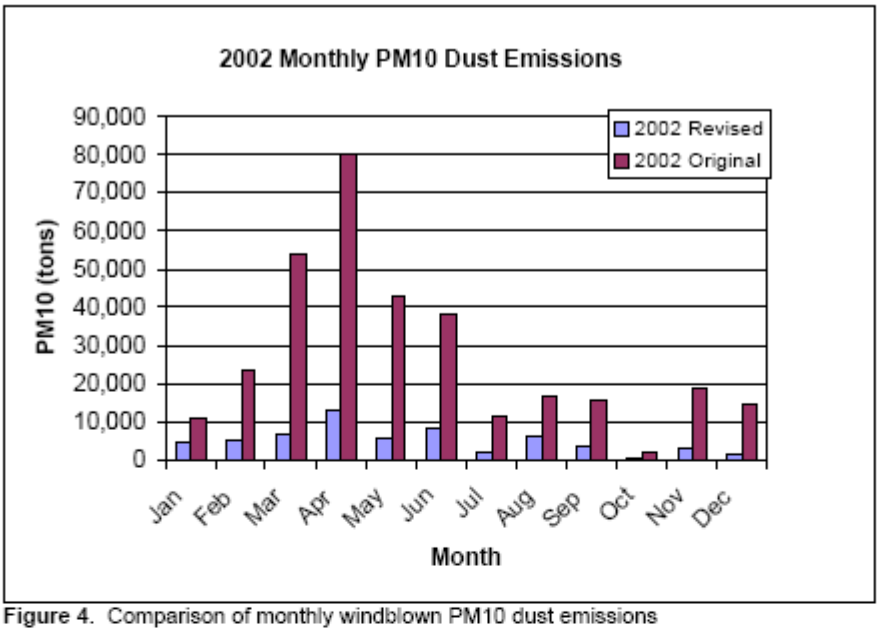

Figure 4. Comparison of monthly windblown PM10 dust emissions

The monthly variation of windblown dust emissions by land use type for the revised inventory is presented in Figure 5. The corresponding from the previous ENVIRON inventory is presented in Figure 6. While the previous inventory was dominated by the barren land dust emission, the revised inventory is now dominated by the shrub, range, and grassland dust emissions. Dust emissions from the sand dunes comprise about one-third of the total barren plus dune emissions, even though the total acreage of barren lands is nearly four times the total acreage of sand dunes within the county. The ratio of sand dune emissions to total barren area emissions varies by month. This is clearly the result of assuming a 9% vegetative canopy cover and stable soils for the barren lands. The sand dunes were considered unstable and void of vegetation, as discussed above.

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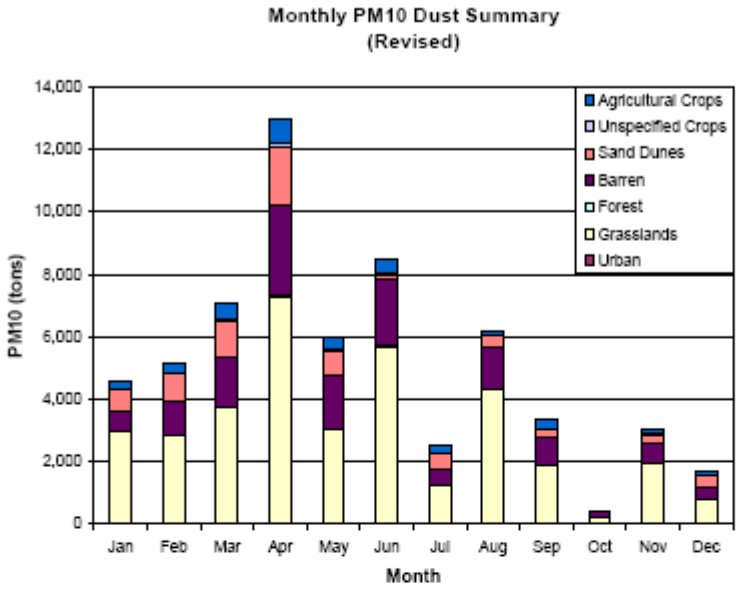

Figure 5. Revised 2002 monthly PM10 emissions by land use type.

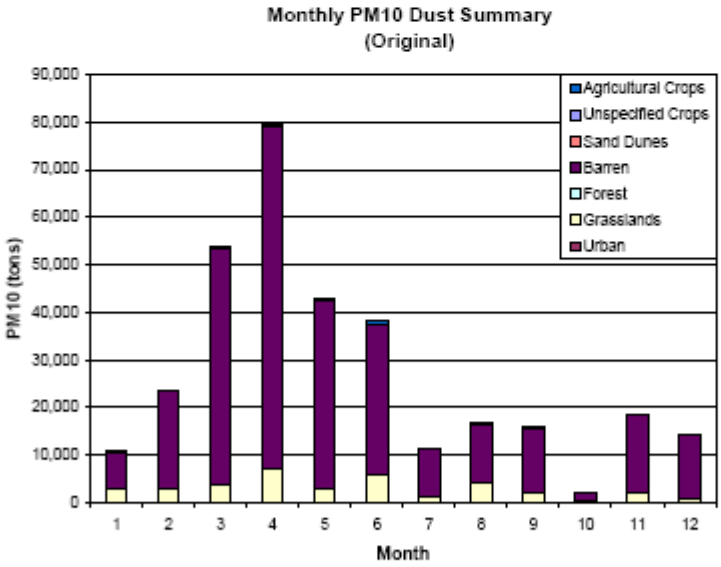

Figure 6. Original 2002 monthly PM10 emissions by land use type.

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The revised PM10 dust emissions for Imperial County are present4red in Table 6 on a per acre basis for each of the major landuse types within the county. It should be noted, however, that the emission per acre can vary independently by month, since emission factors are a different function of wind speed for different soil types and stability classifications.

Table 7. PM10 dust emissions per acre for major landuse categories (ton/yr-acre)

Landuse Category	Acres	PM10 (tons)	PM10 (tons/acre/yr)
Urban	39,178	4	0.0001
Grass/Shrublands	1,324,889	36,044	0.0272
Forest	6,162	21	0.0034
Barren	585,792	14,140	0.0241
Sand Dunes	150,722	7,244	0.0481
Agricultural	559,901	3,947	0.0070

Figure 7 displays the spatial distribution of 2002 annual PM_{10} windblown dust emissions for the revised inventory and the previous inventory. The effect of treating the barren lands with 9% vegetation cover and stable soils is seen in the greatly reduced emissions to the west of the agricultural regions and between the agricultural regions and the sand dunes. The spatial distribution of the revised windblown dust emissions by month is displayed in Figure 8.

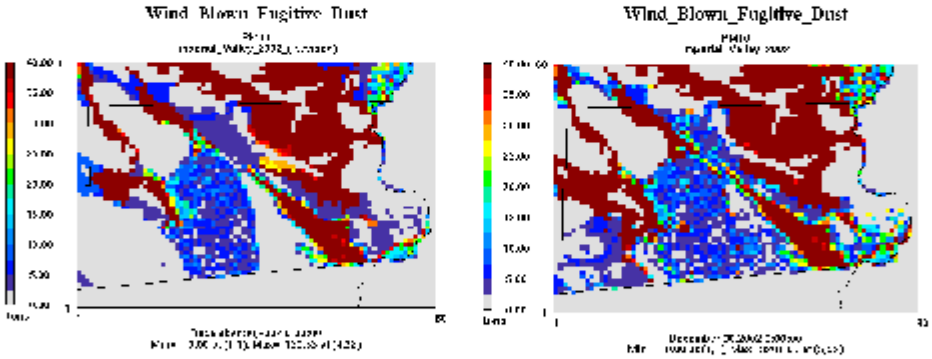

Figure 7. 2002 Annual PM10 fugitive dust emissions (tons); Left- Revised; Right - Original

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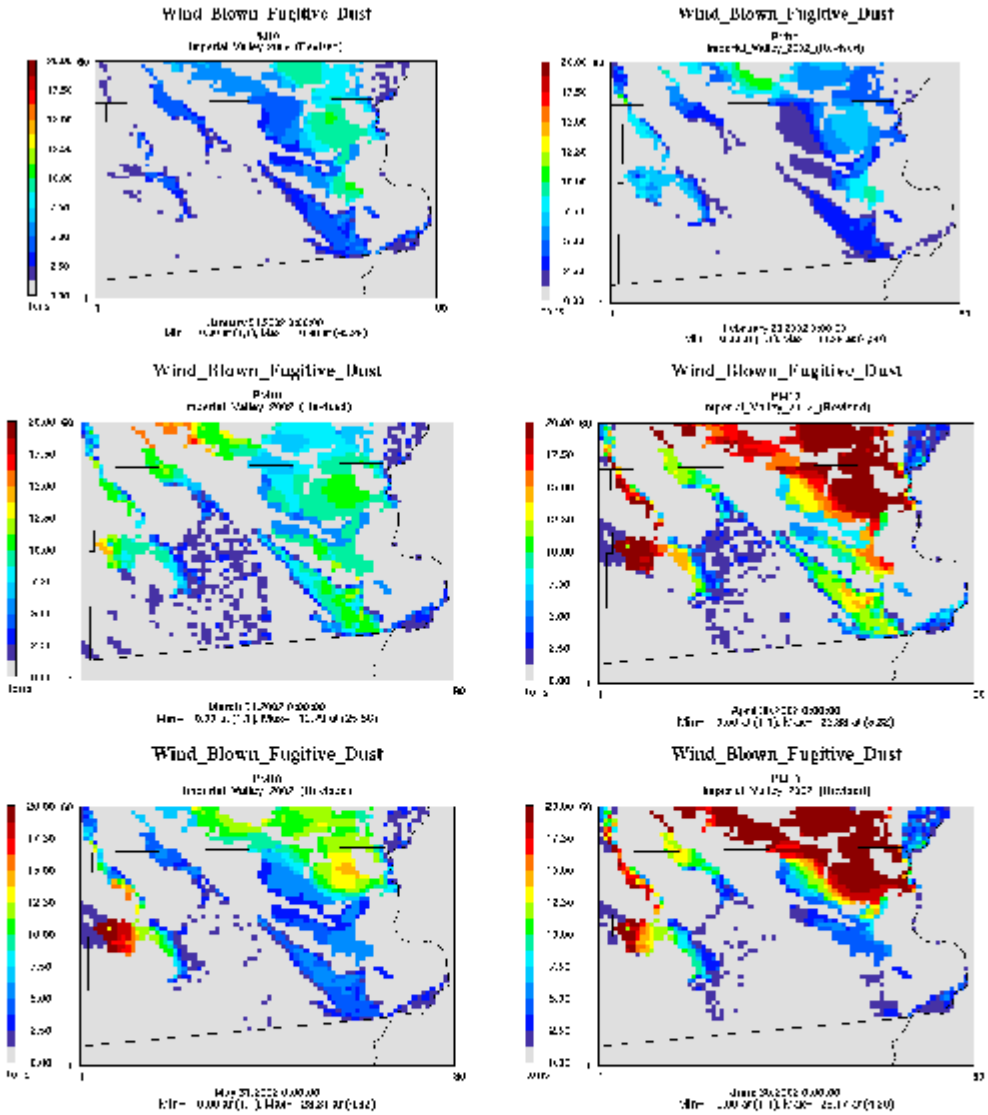

Figure 8. Spatial distribution of monthly PM10 dust emissions

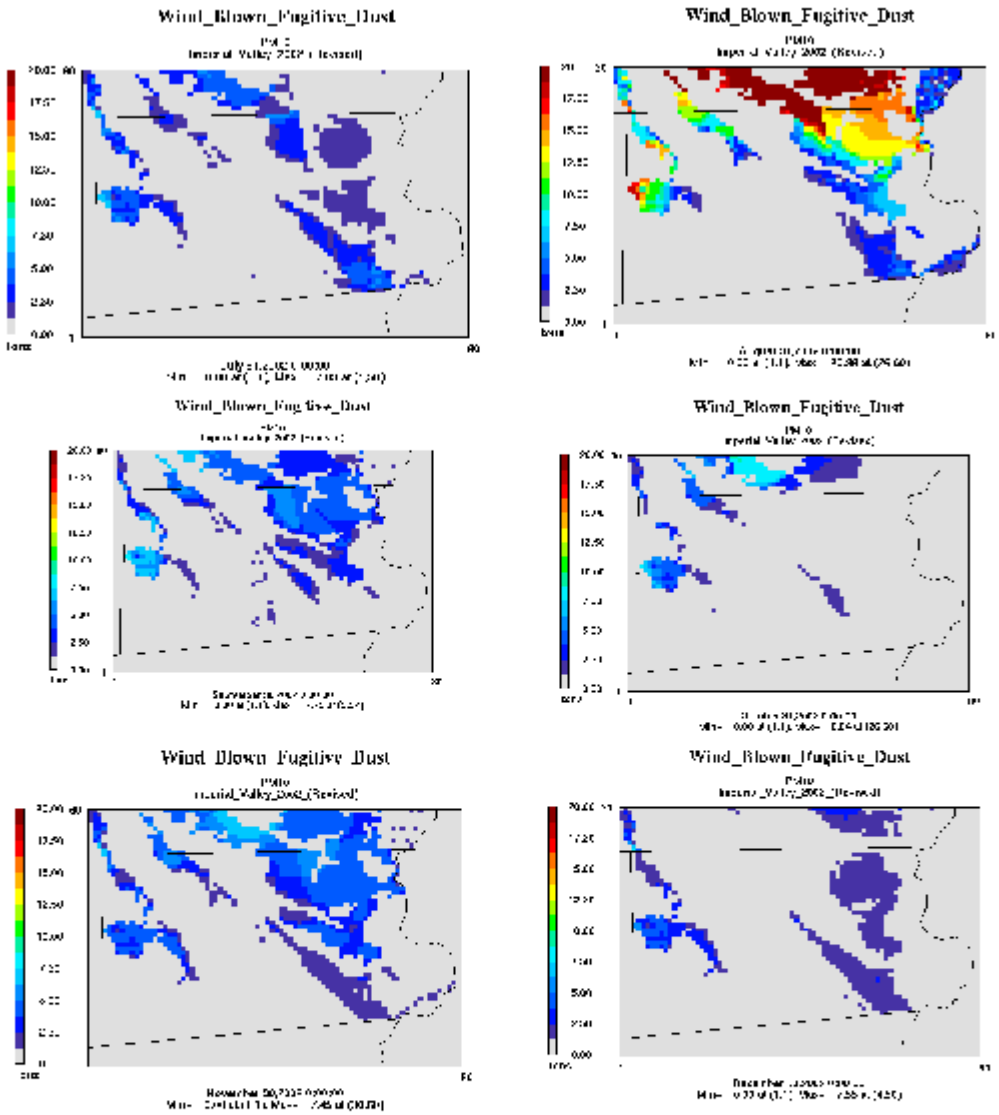

Figure 8 (concluded). Spatial distribution of monthly PM10 dust emissions

Summary

ENVIRON completed a windblown fugitive dust PM_{10} emission inventory for Imperial County in spring of 2004 for calendar year 2002. The inventory considered all land use types, including barren lands, grasslands and shrublands in addition to agricultural lands. The development of the inventory was documented in ENVIRON, 2004. In early 2005, ENVIRON received comments on the 2002 dust inventory from the California ARB and the U.S. EPA. The primary issue raised by both ARB and EPA was the treatment of barren lands throughout the Imperial Valley. As documented in ENVIRON, 2004, a number of assumptions are incorporated into the estimation methodology concerning the treatment of soil stability and vegetative canopy cover. The characterization of land types across the region was based on GIS data for Imperial County available from the California Department of Water. These data provide relatively high-resolution detailed information regarding agricultural lands. For non-agricultural lands, the model relies on regional land use data sets based on the 1992 National Land Cover Database (NLCD). The NCLD data, however does not adequately distinguish desert and barren lands with respect to varying degree of vegetation present. In addition, dune areas, of which there are significant amounts in Imperial County, were not represented.

To address these concerns, and the concerns raised by both the ARB and EPA, modifications to the various assumptions associated with barren lands were incorporated into the land use database. In addition, the sand dunes east of the agricultural regions of the county were identified and treated separately within the model. The revised data and assumptions incorporated into the model were discussed above. The windblown dust emission model was then applied with the modified data and assumptions. The resulting PM_{10} dust emissions for Imperial County were presented and discussed in this Technical Memorandum and are summarized below.

The 2000 ARB inventory attributed nearly 173 tons per day (tpd) to dust emissions from wind erosion on agricultural lands and did not including any wind erosion emissions from barren or other non-agricultural lands. Based on this final revision to the Windblown Dust Study, agricultural windblown emissions were estimated with 10.5 tpd PM_{10} emissions. Fugitive dust emissions for barren, scrub, grass, and range lands, including the sand dunes, were estimated with 157 tpd PM_{10} emissions. Estimates from the previous Windblown Dust Study (ENVIRON, 2004) were 792 tpd PM_{10} emissions from these lands. The reduced estimate is due to revised inputs for stability and vegetation cover on non-dune barren lands. Emissions from sand dunes were estimated with 19.9 tpd PM_{10} emissions, or 13% of emissions from non-agricultural lands. The revised 2002 annual PM_{10} dust estimates by land use type were presented in Table 6 above.

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A P P E N D I X B

Entrained and Windblown Emission From Unpaved Roads

Appendix B

Entrained And Windblown Emissions From Unpaved Roads

Appendix B presents the assumptions and calculations to determine the entrained and windblown dust emissions from unpaved roads in Imperial County, including city and County roads, canal roads that line the irrigation canals and drainage ditches, farm roads and roads on federal lands, such as BLM and USFS roads.

Summary of PM10 emissions - tons/day

Entrained

	Current	CARB 2003	Notes
city/county	26.64	16.84	higher ADT on high ADT county roads (if 10 ADT per CARB, ems = 13.62, ems consistent)
canal	31.56	12.78	1993 SIP: 3,128 mi canals; 1,682 mi canal roads / Current: 3156 mi canal; 6,312 mi roads
farm	1.41	1.41	Using latest but unpublished ARB method
BLM/USFS	1.39	2.28	Using 1993 road mileage; ARB may have grown road miles
Total	**61.00**	**33.31**	

Windblown

	Current	CARB 2003	Notes
city/county	7.82	5.9	Consistent
canal	16.76	73.50	Using ARB emission factor significantly reduces estimated emissions compared to 1993 SIP
farm	6.01	--	Not in ARB inventory
BLM/USFS	0.37	--	Not in ARB inventory
Total	30.95	79.40	

NOTES:
All entrained unpaved road dust estimates using new ARB emission factor of 2 lbs PM10/VMT (previous 2.27 or higher)
Canal road entrained dust assumes 5 ADT for all roads on an average day (as in 1993 SIP)..

Unpaved Road Emissions - From Vehicle Travel

Annual Emissions =VMT*EF= road miles* passes/day*day/year* lbPM10/VMT

Variables

EF	2	lbPM10/VMT
	365	day/year

REF (Emission Factor): CARB methodology, Section 7.10: Unpaved Road Dust (Non-Farm Roads); August 1997, p. 1

Unpaved Road Characteristics

	Length of roads with varying vehicle miles traveled (miles)	passes/day	Emissions (tons/day)
total county	1,354	--	--
< 50 vehicles/day	1,137	10	11.37
>50 vehicles/day	217	70	15.19
city roads	7.5	10	0.075
city and county total	1,361.5	--	--

REF: Imperial County Public Works and Imperial County Cities
Imperial County Public Works water and blade about 16 mi/day of unpaved roads

Estimated Emissions

	tons/day	tons/year
2004 PM10 emissions assuming 10 passes/day for all roads	13.62	4,969.48
2004 PM10 emissions adjusted for vehicle travel	26.64	9,721.78

REF: CARB methodology
***current emissions estimate (2002) for vehicle travel on CARB website is 6,147 tons/year or 16.84 tons/day**

Unpaved Road Emissions - From Windblown Dust

Annual Emissions (tons PM10/yr) = a*I*C*K*L*V*(PM10 ratio)*(acres of road)

Variables

a	Estimated quantity of the total eroded material actually suspended to air	0.038	dimensionless
I	Soil Erodibility	86	tons/acre/year
C	Climatic Factor	1.274	dimensionless
K	Surface Roughness Factor	1.0	
L	Unsheltered Field Width Factor	0.32	
V	Vegetative Cover Factor	1	
PM10 ratio	Ratio of PM10 to TSP	0.5	
		365	day/year
	Estimated emission factor	0.666	tons PM10/acre/yr

REF: CARB methodology, Section 7.13: Windblown Dust - Unpaved Roads; August 1997, p. 2 (definitions) & Table 2 (values)

Unpaved Road Characteristics

	Length of roads with varying vehicle miles traveled (miles)	Width of roads (ft)	Acreage of roads	Emissions (tons/day)
total county	1,354	26	4,267.2	--
< 50 vehicles/day	1,137	26	3,583.3	6.54
>50 vehicles/day	217	26	683.9	1.25
city roads	7.5	20	18.2	0.03
city and county total	1,361.5	--	4,285.3	--

REF (Road lengths): Imperial County Public Works and Imperial County Cities
REF (Road widths): State Implementation Plan for Imperial County, 1993, Table C-2: Unpaved Roads Data
Imperial County Public Works water and blade about 16 mi/day of unpaved roads

Estimated Emissions

	tons/day	tons/year
2004 PM10 emissions	7.82	2,854.67

REF: CARB methodology

***current emissions estimate (2002) for windblown dust on CARB website is 2,153.5 tons/year or 5.9 tons/day**

Unpaved Canal Road Emissions - From Vehicle Travel

Annual Emissions =VMT*EF= road miles* passes/day*day/year* lbPM10/VMT

Variables

EF	2	lbPM10/VMT
	365	day/year

REF (Emission Factor): CARB methodology, Section 7.10: Unpaved Road Dust (Non-Farm Roads); August 1997, p. 1

Mileage from Imperial Irrigation District Website

Lateral canals	1,438	mi
Main canals	230	mi
All-American Canal	82	mi
Drainage ditches	1,406	mi
Total	**3,156**	mi
Total assuming roads on both sides of the canals	6,312	mi

REF: Imperial Irrigation District
Assume that each canal road has the same passes per day

Estimated Emissions

passes/day	2004 county & city PM10 emissions	
	tons/day	tons/year
0.133	0.84	307
1	6.31	2,304
2	12.62	4,608
5	**31.56**	**11,519**
10	63.12	23,039

REF: CARB methodology
***current emissions estimate (2002) on CARB website is 4,664.7 tons/year or 12.78 tons/day**

Unpaved Canal Road Emissions - From Windblown Dust

Annual Emissions (tons PM10/yr) = a*I*C*K*L*V*(PM10 ratio)*(acres of road)

Variables

a	Estimated quantity of the total eroded material actually suspended to air	0.038	dimensionless
I	Soil Erodibility	86	tons/acre/year
C	Climatic Factor	1.274	dimensionless
K	Surface Roughness Factor	1.0	
L	Unsheltered Field Width Factor	0.32	
V	Vegetative Cover Factor	1	
PM10 ratio	Ratio of PM10 to TSP	0.5	
		365	day/year
	Estimated emission factor	0.666	tons PM10/acre/yr

REF: CARB methodology, Section 7.13: Windblown Dust - Unpaved Roads; August 1997, p. 2 (definitions) & Table 2 (values)

Mileage from Imperial Irrigation District Website

	Length (mi)	Width (ft)	Acreage
Lateral canals	1,438	12	2,092
Main canals	230	12	335
All-American Canal	82	12	119
Drainage ditches	1,406	12	2,045
Total	3,156	12	4,591
Total assuming roads on both sides of the canals	6,312	12	9,181

REF (Canal lengths): Imperial Irrigation District
REF (Road widths): State Implementation Plan for Imperial County, 1993, Table C-2: Unpaved Roads Data

Estimated emissions

	tons/day	tons/yr
Total assuming roads on both sides of the canals	16.76	6,116

Unpaved Farm Roads - From Vehicle Travel

Annual Emissions= VMT/acre*acre*(lbPM10/VMT/year)

Variables

EF	2	lbPM10/VMT/year
	4.375	VMT/acre
	365	days/year

REF: CARB methodology, Section 7.11: Unpaved Road Dust - Farm Roads; August 1997, p. 1 (EF) & Table 1 (VMT/acre)

NOTE: On 9/30/05, CARB indicated that this methodology has been replaced by a newer unpublished methodology. See note at bottom of page.

Farm Acreage for Imperial County

2003 Imperial County Agricultural Crop and Livestock Report	Field Crops	376,292	acres
	Veggie and Melon	94,602	
	Fruit and Nut	6,975	
	Seed and Nursery	64,252	
	Total	542,121	

REF: http://imperialcounty.net/ag/Crop%20&%20Livestock%20Reports/Crop%20&%20Livestock%20Report%202003.pdf

Estimated Emissions

	tons/day	tons/year
2003 estimate for unpaved farm road emissions	6.50	2,372

***2003 Emissions inventory on CARB website = 514.65 ton/year or 1.41 tons/day**

As agreed by CARB (Patrick Gaffney), the emissions from unpaved farm roads will be reported as 1.41 tons/day, until the new methodology for this source can be applied to the latest per crop acreage. 1.41 tons/day

Unpaved Farm Roads - From Windblown Dust

Annual Emissions (tons PM10/yr) = a*I*C*K*L*V*PM10*(acres of road)

Variables

a	Estimated quantity of the total eroded material	0.038	dimensionless
I	Soil Erodibility	86	tons/acre/year
C	Climatic Factor	1.274	dimensionless
K	Surface Roughness Factor	1.0	
L	Unsheltered Field Width Factor	0.32	
V	Vegetative Cover Factor	1	
PM10 ratio	Ratio of PM10 to TSP	0.5	
		365	day/year
	Estimated emission factor	0.666	tons PM10/acre/yr

REF: CARB methodology, Section 7.13: Windblown Dust - Unpaved Roads; August 1997, p. 2 (definitions) & Table 2 (values)

Estimated Area of Farm Roads

Total Area of Unpaved Roads	Total miles of farm roads	2,263	mi
	Width of Farm roads	12	ft
	Area of Unpaved Roads	3,292	acre

REF: State Implementation Plan for Imperial County, 1993, Table C-2: Unpaved Roads Data

Estimated Emissions

	tons/day	tons/yr
2004 PM10 emissions	6.01	2,192.72

Unpaved Roads in BLM and US Parks and Forests - From Vehicle Travel

Annual Emissions =VMT*EF= road miles* passes/day*day/year* lbPM10/VMT

Variables

EF	2	lbPM10/VMT
	365	day/year

REF (Emission Factor): CARB methodology, Section 7.10: Unpaved Roads (Non-Farm Roads); August 1997, p. 1

Miles of Road

BLM	114	mi
US Parks and Forests	26	mi
Total	139	mi

REF: CARB methodology, Section 7.10: Unpaved Roads (Non-Farm Roads); August 1997, Table 1

Estimated Emissions for BLM

passes/day	2004 PM10 emissions	
	tons/day	tons/year
10	1.14	414.28

REF: CARB methodology

***current estimation by CARB (2003) for BLM roads is 657 ton/year or 1.8 tons/day**

Estimated Emissions for US Parks and Forests

passes/day	2004 PM10 emissions	
	tons/day	tons/year
10	0.26	94.54

REF: CARB methodology

***current estimation by CARB (2003) for US Parks and Forest roads is 175.2 ton/year or 0.48 tons/day**

Estimated Emissions for BLM, US Parks and Forests

passes/day	2004 PM10 emissions	
	tons/day	tons/year
10	1.39	508.81

REF: CARB methodology

Unpaved Roads in BLM and US Parks and Forests - From Windblown Dust

Annual Emissions (tons PM10/yr) = a*I*C*K*L*V*PM10*(acres of road)

Variables

a	Estimated quantity of the total eroded material actually suspended to air	0.038	dimensionless
I	Soil Erodibility	86	tons/acre/year
C	Climatic Factor	1.274	dimensionless
K	Surface Roughness Factor	1.0	
L	Unsheltered Field Width Factor	0.32	
V	Vegetative Cover Factor	1	
PM10 ratio	Ratio of PM10 to TSP	0.5	
		365	day/year
	Estimated emission factor	0.666	tons PM10/acre/yr

REF: CARB methodology, Section 7.13: Windblown Dust - Unpaved Roads: August 1997, p. 2 (definitions) & Table 2 (values)

Acres of Road

	Miles of roads	Width (ft)	Acreage
BLM	114	12	165.09
US Parks and Forests	26	12	37.67
Total	139	12	202.76

REF (Road miles): CARB methodology, Section 7.10: Unpaved Roads (Non-Farm Roads); August 1997, Table 1
REF (Road widths): State Implementation Plan for Imperial County, 1993, Table C-2: Unpaved Roads Data

Estimated Emissions

	tons/day	tons/yr
BLM	0.30	109.98
US Parks and Forests	0.07	25.10
Total	0.37	135.07

Determination of PR 805 applicability

road type	miles	windblown emissions	% windblown emissions	entrained emissions	% entrained emissions
county < 50 vehicles/day	1,137	6.54	26.2	11.37	19.1
county >50 vehicles/day	217	1.25	5.0	15.19	25.5
city roads	7.5	0.03	0.1	0.075	0.1
canal roads	6,312	16.76	67.2	31.56	53.0
federal	139	0.37	1.5	1.39	2.3
TOTAL	**7,813**	**24.95**	**100.00**	**59.59**	**100.00**

Percent Applicable

Applicable Roads are county >50 & canal >20 ADT

Percent of canal roads with >20 ADT

canal >20 ADT	0.5%

A = (county >50 + 0.005*canal)/Total

% Applicable Road Emissions

	A
Windblown	5.3%
Entrained	26%

A P P E N D I X C

Detailed Comparative Analysis for Significant Sources

Appendix C

Detailed Comparative Analysis for Significant Sources

Appendix C presents a detailed comparative analysis for sources above the DM level: unpaved roads and areas, disturbed areas, and agricultural sources. It begins with general requirements of the proposed Regulation VIII amendments related to visible dust emissions and stabilized surfaces for these sources (e.g., PAR 800, PR 804, PR 805, and PR 806). Next, the comparative analysis for each specific significant source is presented. The analysis includes a discussion of the stringency of the applicability thresholds and requirements for each source, a comparison of that stringency to the most stringent thresholds and/or requirements adopted in other serious PM_{10} non-attainment areas, and if the threshold and/or requirement is not as stringent as the most stringent, a justification is presented based on Imperial County conditions.

FUGITIVE DUST CATEGORY: GENERAL

SUBCATEGORY: VISIBLE DUST EMISSIONS

Proposed Imperial Requirements:

- Limit visible emissions to not more than 20% opacity
  - All non-exempt sources (Ref: PAR 800)
  - Construction / demolition (de minimis source) (Ref : PR 801, Section E.1)
  - Bulk materials (de minimis source) (Ref : PR 802, Section E.1)
  - Open areas (significant source) (Ref : PR 804, Section E.1)
  - Unpaved roads and traffic areas (significant source) (Ref : PR 805, Section E.1)
- Test methods in Appendix A and B shall be used to determine compliance with the Reg VIII rules (Ref: PAR800, Section G)

SJV Requirements:

- Limit visible emissions to not more than 20% opacity (Ref: R8021,Sect. 5.0; R8031, Sect 5.0; R8041, Sect. 5.7.2; R8051, Sect. 5.0; R8061, Sect. 5.2; R8071, Sect. 5.1; and 8081, Sect. 5.0)
- Opacity based on six vehicles, two readings per vehicle for unpaved surfaces and minimum 12 observations, spaced 15 seconds apart, for other sources. (Ref: R8011, Appendix A, Sections 1 and 2)

South Coast Requirements:

- No visible emissions across property line. (Ref: R403(d)(1))

Maricopa County Requirements:

- Limit visible emissions to not more than 20% opacity (Ref R310, Sect. 301)
- Opacity for dust generating activities based on minimum 12 observations, spaced 15 seconds apart (Ref: R310, Section 501.1(a))
- Opacity for unpaved parking lots and unpaved haul/access roads based on six vehicles, two readings per vehicle (Ref: R310, Section 501.1 (a) and (b))

Clark County Requirements

- Limit visible emissions to not more than 20% opacity (Ref: AQR Section 91.2.1.4; AQR Section 92.2.1.3; AQR Section 93.2.1.5; AQR Section 94.5.3)
- Opacity based on six vehicles, two readings per vehicle for unpaved surfaces And minimum 12 observations, spaced 15 seconds apart, for other sources. (Ref AQR Section 91.4.1.1 and AQR Section 94 AQR Section 94.5.3)
- Opacity based on six vehicles, two readings per vehicle for unpaved surfaces And minimum 12 observations, spaced 15 seconds apart, for other sources. (Ref AQR Section 91.4.1.1 and AQR Section 94.9.1)
- Limit construction visible emissions to not more than 100 yards (Ref: AQR Section 94.5.2(a))
- Proposed: Limit VDE to 100 feet; and not cross property line

Discussion:

Imperial County is proposing the same opacity limits and test methods used in other areas, except South Coast, which appears less stringent than other areas. There are likely to be situations where opacity may be more stringent (especially in large construction sites where heavy dust plumes may no longer be visible by the time they reach the property line) and other circumstances where opacity may be less stringent (especially on smaller dust-producing sites, and with intermittent plumes.) For time-averaged situations (i.e., non-road/vehicle related dust emissions), to assure that most stringent conditions are in place, a combination of the two approaches is warranted. Clark County requires both opacity limits and a 100-yard visible emission distance limit for construction activities. Construction emissions in Imperial County are below the DM level, and thus justification as "most stringent" is not required.

Imperial County is proposing the same opacity limits and test methods used by San Joaquin Valley that have been accepted by EPA as "most stringent" in its May 26, 2004 approval of the San Joaquin Valley PM_{10} SIP[1].

[1] Federal Register Vol. 69, No. 102; p.30035; May 26, 2004.

FUGITIVE DUST CATEGORY: GENERAL

SUBCATEGORY: DEFINITION OF STABILIZED SURFACE

Proposed Imperial County Requirements:

- Any disturbed surface are or open bulk storage pile that is resistant to wind blown fugitive dust emissions. A surface is considered to be stabilized if it meets at least one of the following conditions specified in below or as determined by test methods outlined in Appendix B.
  1. Visible crust; or
  2. Threshold frictional velocity of 100 cm/sec or greater; or
  3. Flat vegetative cover of at least 50% that is attached or rooted vegetation; or unattached vegetative debris lying on the surface with a predominant horizontal orientation (not subject to wind movement); or
  4. Standing vegetative cover over 30% that is attached or rooted
  5. A standing vegetative cover of at least 10% that is attached or rooted with a predominate vertical orientation where the TFV is at least 43 centimeters per second when corrected for non-erodible elements
  6. A surface greater than or equal to 10% of non-erodible elements such as rocks, stones, or hard-packed clumps of soil
     (Ref: 800 C.28)

Test methods:

- Materials used for chemical/organic stabilization of soils, including petroleum resins, asphaltic emulsions, acrylics, and adhesives shall not violate State Water Quality Control Board standards for use as a soil stabilizer. Any material prohibited for use as dust suppressant by EPA, the ARB, or other applicable law, rule, or regulation is also prohibited under Regulation VIII. (Ref: PR801, Section F)
- Use of hygroscopic materials may be prohibited by the ICAPCD in areas lacking sufficient atmospheric moisture of soil for such materials to effectively reduce fugitive dust emissions. The atmospheric moisture of soil is considered to be sufficient if it meets the application specifications of the hygroscopic product manufacturer. Use of such materials may be approved in conjunction with sufficient wetting of the controlled area. (Ref: PR801, Section F)
- Any use of dust suppressants or gravel pads, and paving materials such as asphalt or concrete for paving, shall comply with other applicable District Rules. (Ref: PR801, Section F)
- Test methods in Appendix A and B shall be used to determine compliance with the Regulation VIII rules (Ref PAR800, Section G)

SJV Requirements:

- Any disturbed surface that is resistant to wind blown fugitive dust and meets at least one of the following conditions:
  1. A visible crust

2. A threshold friction velocity of 100 cm/sec or greater
3. A vegetative cover of at least 50% that is attached or rooted
4. Unattached horizontal vegetative cover of at least 50% and wind-movement resistant
5. Vertical, rooted vegetation with at least 30% cover, or 10% cover where the soil threshold friction velocity is at least 43 cm/sec
6. A surface that is at least 10% covered with non-erodible materials (Ref: R8011, Section 3.58)

South Coast Requirements:

- Stabilized surface means any previously disturbed surface area or open storage pile which, through the application of dust suppressants, shows visual or other evidence of surface crusting and is resistant to wind driven
- Fugitive dust and is demonstrated to be stabilized; (Ref: R403, (C)(28))

Maricopa County Requirements:

- Must meet at least one of the following standards:
  1. Maintain a visible crust
  2. Maintain a threshold friction velocity of 100 cm/sec or greater
  3. Maintain standing (rooted, vertical) vegetative cover of at least 30%, or 10% cover where the soil threshold friction velocity is at least 43 cm/sec
  4. Maintain flat (rooted or horizontal debris not subject to wind movement) of at least 50%
  5. Maintain a cover of at least 10% with non-erodible materials
  6. Comply with specially-approved alternative method
     (Ref: R310, Section 302.3)

Clark County Requirements:

- Stabilization standards:
  1. Establish visible crust
  2. Establish cover of at least 20% with non-erodible materials
  3. Establish soil threshold friction velocity of at least 100 cm/sec
  4. Comply with specially-approved alternative method

Discussion:

Imperial County is proposing the same stabilized surface definition and requirements as used in the San Joaquin Valley, which are comparable to the requirements used in all other areas, except South Coast.

The exception is that Clark County has established a more stringent requirement if non-erodible materials are used to establish a stabilized surface, namely, that a more restrictive 20% minimum covering (compared to 10% in San Joaquin Valley, Maricopa County and proposed IC Regulation VIII) is required. However, inclusion of a 20% minimum non-erodible material coverage as a control option in Clark County does not mean its inclusion is necessary for Regulation VIII to be demonstrated as BACM for this

category. Clark County's limit was based on local observations at areas where the soil was significantly pulverized as the result of significant amounts of traffic.[2] Imperial County does not have similar areas experiencing such high levels of growth and commuters "trailblazing" unpaved roads across open areas. Thus, this limit was based on specific Clark County conditions and should not be applied to Imperial County.

Taken together, the applicable limits and requirements in the definition of a stabilized surface provide equivalent stringency and can be considered as stringent as the most stringent limits and requirements. The exact same provisions in San Joaquin Valley were approved as BACM by EPA[3] in 2004

[2] September 26, 2005 telephone conversation with Rodney Langston, Clark County Department of Air Quality Management
[3] Federal Register Vol. 69, No. 102; p.30035; May 26, 2004.

FUGITIVE DUST CATEGORY: UNPAVED ROAD DUST

SUBCATEGORY: LIMITS FOR APPLICABILITY

Proposed Imperial County Requirements:

- Unpaved Haul/ Access Roads: All roads (Ref: PR805, Section E.1)
- Unpaved Roads: 50 or more average daily vehicle trips (Ref: PR805, Section E.2)
- New Unpaved Roads: All new unpaved roads except for those that meet the definition of a Temporary Unpaved Road (Ref: PR805, Section E.3)
- Canal Roads: 20 or more ADT (Ref: PR805, Section E.4)

SJV Requirements:

- 26 annual average vehicle daily trips or more (Ref: R8061, Section 5.2.1)

South Coast Requirements:

- For meeting standards of rule:
  - more than 50' wide at all points, or
  - are not within 25' of property line, or
  - more than 20 vehicle trips per day (Ref: R403(g)(2)(B)(iii))
- For treating unpaved roads:
  - All roads greater than the average ADT of all unpaved roads within its jurisdiction, up to a set number of miles by 2006 (Ref: R1186(d)(4))

Maricopa County Requirements:

- 150 vehicles or more per day (Ref: R310.01, Section 304)

Clark County Requirements:

- For new unpaved roads, there is no VDT limit (Ref AQR Section 91.2.1)
- For existing unpaved roads (prior to June 22, 2000), the control measures apply to roads with 150 or more vehicles per day.

Discussion:

Imperial County's proposed limit is 50 or greater ADVT. The Imperial County 50 ADVT or more limit is more stringent than either Maricopa County of Clark County. Both Maricopa and Clark County have a significant number of unpaved roads with greater than 150 ADT; hence their rules target those roads. The provisions of the South Coast rule, tied to average levels of VDT, is generally less restrictive than in other jurisdictions.

The proposed ADT limit for unpaved city and county roads in IC Regulation VIII is less stringent than SJV's limit of 26 ADVT. However, the percentage of unpaved city / county roads with greater than 26 ADT in San Joaquin Valley is 12% (90 out of 750 miles) compared to 16% of Imperial County roads with

greater than 50 ADT (217 out of 1361.5 miles).[4] Thus, proposed Regulation VIII is the most stringent. Proposed Regulation VIII will require the treatment of over 217 miles of unpaved city and county roads, compared with 90 miles of city and county roads that must be treated in San Joaquin Valley under their regulation 8061. (For comparison, the population in Imperial County is about 150,000 people, compared to over 3,200,000 in the San Joaquin Valley.) A discussion of the implementation schedule for PR 805 for county and city unpaved roads, compared to the implementation schedule of other serious non-attainment areas, is presented in the next section, Unpaved Road Dust / Control Requirements.

Only Imperial County has proposed a separate, lower threshold for canal roads, and 20 ADT is below any other unpaved road threshold. Proposed Regulation VIII is the most stringent.

[4] EPA's Technical Support Document for the San Joaquin Valley, California 2003 PM-10 Plan and 2003 PM-10 Plan Amendments., p. 31. January 27, 2004.

FUGITIVE DUST CATEGORY: UNPAVED ROAD DUST

SUBCATEGORY: CONTROL REQUIREMENTS

Proposed Imperial County Requirements:

- For road segments with 50 or more average daily vehicle trips (ADVT), limit VDE to 20% opacity and comply with the requirements of a stabilized unpaved road surface by application and/or maintenance of at least one of the following control requirements (Ref: PR805, Section E.2). AND For canal roads with 20 or more average daily vehicle trips (ADVT), limit VDE to 20% opacity and comply with the requirements of a stabilized unpaved road surface by application and/or maintenance of at least one of the following control requirements (Ref: PR805, Section E.4)
  a) Pave (Ref: PR805, Section F.1.a)
  b) Apply chemical stabilization as directed by product manufacturer to control dust on unpaved roads (Ref: PR805, Section F.1.b)
  c) Apply and maintain gravel, asphalt, or other material of low silt content of a depth of 3 or more inches (Ref: PR805, Section F.1.c)
  d) Apply water one ore more times daily (Ref: 805, section F.1.d)
  e) Permanent road closure (Ref: PR805, Section F.1.e)
  f) Restrict unauthorized vehicle access (Ref: PR805, Section F.1.f)
  g) Any other method that limits VDE to 20% opacity and meets conditions of a stabilized unpaved road (Ref: PR805, Section F.1.g)
- For city and county roads, implementation of E.2 shall be done on the schedule, and according to the requirements of Section E.7, which requires the treatment of 10% (on average) of applicable unpaved city and county roads per year for the year 2006 though 2015.
- Within an urban area, construction of any new unpaved road is prohibited unless it meets the definition of a "temporary unpaved road" and is stabilized in accordance with Rule 800 requirements. Temporary unpaved roads are for supporting temporary or periodic activity and cannot be used more than 6 months in any consecutive 3-year period. (Ref: PR805, Section E.3)

SJV Requirements:

- For unpaved roads with greater than 26 annual average vehicle trips per day, limit VDE to 20% opacity and implement at least one of the following control measures:
  a) apply water
  b) apply uniform layer of washed gravel
  c) apply chemical/organic dust suppressant
  d) use vegetative materials
  e) pave
  f) use any other approved method to limit VDE to 20% opacity and meets the condition of a stabilized unpaved road (Ref: R8061, Section 5.2.1)
- As option to above, obtain Fugitive PM_{10} Management Plan (Ref: ibid, Section 5.2.1)
  a) Must achieve at least 50% control efficiency (Ref: R8011, Section 7.0)
  b) Must specify location, length, and area of unpaved traffic areas (Ref: ibid, 7.5.2)

c) Description of traffic conditions (vehicle trips per unit time; types of vehicles) (Ref: ibid, 7.5.3)
d) Description of control measures used and application details (Ref: ibid, 7.5.4)
e) Description of expected resulting road surface condition (Ref: ibid, 7.5.5)

- Within an urban area, the construction of any unpaved road is prohibited unless the road meets the definition of a temporary unpaved road (Ref: ibid, Section 5.2.2)
- Cities and counties shall treat an average of 20% of applicable roads per year form 2006 through 2010, to a cap of 5 miles per year per jurisdiction. A statement of financial hardship can be submitted if a jurisdiction cannot afford to meet the requirements of this section.. (Ref R8061, Section 5.2.3).

South Coast Requirements:

- Annually treat unpaved public roads beginning in 1998 and continuing for each of 8 years thereafter by implementing one of the following (Ref: R1186(d)(4)):
  a) Pave at least one mile with typical roadway material (Ref: ibid, (d)(4)(A))
  b) Apply chemical stabilizers to at least two miles to maintain stabilized surface (Ref: ibid, (B))
  c) Take at least one of the following on at least three miles of road surface:
     i. Install signage at ¼ mile intervals limiting speed to 15 mph
     ii. Install speed control devices every 500 feet
     iii. Maintain roadway in a manner which limits speed to 15 mph (Ref:, ibid, (C))
- Apply at least one BACM to unpaved roads at active operations (Ref: R403(d)(2))
  a) Pave (Ref: R403 Handbook, BACM (F))
  b) Use chemical stabilizers (Ref: ibid, (G))
  c) Apply water (Ref: ibid, (H))
  d) Reduce speed limits to 15 mph (Ref: ibid (I))
  e) Reduce vehicular trips, target at least 60% (Ref: ibid, (J))
  f) Apply gravel to depth of 4 inches (Ref: ibid, (K))

Maricopa County Requirements:

- For 150 vehicles or more per day, implement at least one of the following BACM (Ref: R310.01, Section 304):
  a) Pave
  b) Apply dust suppressants
  c) Uniformly apply and maintain surface gravel (Ref: ibid, Section 304.1)
- For existing roads, BACM, as above, must be implemented by:
  a) June 10, 2000 for more than 250 vehicle trips
  b) June 10, 2004 for more than 150 vehicle trips (Ref: ibid, 304.2)
- BACM must meet the following standards:
  a) Limit VDE to 20% opacity

b) Do not equal or exceed 0.33 oz/ft2, or
c) Do not exceed 6% silt content
(Ref: ibid, 304.3)

Clark County Requirements:

- Implement one control measure on 1/3 of unpaved roads with 150+ VDT by June 1, 2001 (Ref: AQR Section 91.2.1.1(a))
- Implement one control measure on 2/3 of unpaved roads with 150+ VDT by June 1, 2002 (Ref: ibid, (b))
- Implement one control measure on all unpaved roads with 150+ VDT by June 1, 2003 (Ref: ibid, (c))
- For any unpaved road with newly found levels of 150+ VDT, implement one control measure within 365 days (Ref: ibid, (d))
- For unpaved roads with less than 150 VDT, maintain stabilized surface standards within 365 days of determination of non-stabilized surface (Note: this is not a SIP measure, Ref: ibid, (e))
- No new unpaved roads are to be constructed in public thoroughfares after June 22, 2000 (Ref: AQR Section 91.2.1.2)
- Applicable control measures are as follows:
  a) Pave
  b) Apply dust palliatives to meet stabilization standards
  (Ref: ibid, 91.2.1.3)
- Stabilization standards:
  a) Limit VDE to 20% opacity
  b) Do not equal or exceed 0.33 oz/ft^2, or
  c) Do not exceed 6% silt content
  (Ref: ibid, 91.2.1.4)

Discussion:

Proposed Regulation VIII and requirements in all serious non-attainment areas except South Coast require compliance with the 20% opacity standard for unpaved roads; Proposed Regulation VIII is as stringent as the most stringent for this requirement. In addition, all areas except South Coast specify the implementation of at least one control requirement to comply with the requirements of a stabilized surface. Clark and Maricopa County do not allow watering as a control option, but only require implementation on roads with greater than 150 ADT. As noted by EPA[5], the inclusion of a control option or requirement does not mean it is necessary for a proposed regulation to meet BACM, as long as other applicable limits combine provide adequate stringency. In this case, the applicability and control requirements combine provide adequate stringency.

[5] Federal Register Vol. 69, No. 102; p.30019; May 26, 2004.

Proposed Regulation VIII prohibits the construction of new unpaved roads in urban areas. This is as stringent as the San Joaquin Valley and Clark County regulations. (Clark County regulations are only in effect in the non-attainment area, which is predominantly urban, and not in the surrounding rural and federal lands. Hence, the prohibition on new unpaved roads is essentially a prohibition on new unpaved roads in urban areas.)

The control options in Proposed Regulation VIII and in San Joaquin Valley's regulations are the same, and thus equally stringent (although as seen in the discussion of Unpaved Roads: Limits of Applicability, proposed Regulation VIII applies to a greater percentage and absolute mileage of unpaved roads). Although the compliance schedule for city and county roads appears more stringent for San Joaquin (20% per year), that only equates to 18 miles per year, compared to almost 22 miles per year for Imperial County (10% of 217 miles). In addition, San Joaquin caps at 5 the number of miles that require treatment per year per urban areas. San Joaquin also allow cities and/or counties to submit a statement of financial hardship if they cannot met the rule requirements. The San Joaquin Valley regulations have been approved as BACM by EPA[6]. For all of these reasons, proposed Regulation VIII limits and requirements are as stringent as the most stringent in other serious non-attainment areas.

[6] Federal Register Vol. 69, No. 102; p.30035; May 26, 2004.

FUGITIVE DUST CATEGORY: UNPAVED PARKING LOTS/STAGING AREAS

SUBCATEGORY: APPLICABILITY

Proposed Imperial County Requirements:

- Unpaved traffic areas larger than one (1) acre and with 75 or more average vehicle trips per day shall comply with one or more of the requirements of Section F.3 so as to limit VDE to 20% opacity (Ref: PR805, Section E.4)

SJV Requirements:

- Areas with AVDT of 50 or more (areas with less than 50 AVDT are exempt) (Ref: R8071, Section 4.1)
- Agricultural sources exempt from Rule 8081 are also exempt from R8071.

South Coast Requirements:

(Note: South Coast does not have rule language specifying this category. It is presumed that Rule 403 provisions for either unpaved roads, or disturbed surface areas would apply.)

Maricopa County Requirements:

- Over 100 vehicles entering or parking (Ref: R310.01, Section 303)

Clark County Requirements:

- No minimum vehicle limit specified for parking lots. (Ref: AQR, Section 92.2.1)
- No minimum vehicle limit specified for staging areas (Ref: AQR Section 94 Handbook, CST 17)

Discussion:

Clark County has no minimum vehicle limit for parking lots or staging areas. Maricopa has a 100 vehicle threshold. San Joaquin exempts traffic areas with less than 50 annual average daily trips and agricultural traffic area sources exempt from R8071 (e.g., traffic area less than 1.0 acre and more than one mile from an urban area, or with less than 50 AADT or less than 150 VDT if intermittently used). EPA has adjudged the San Joaquin rule as BACM[7] based on the adequacy of their cost-effectiveness analyses of potential lower thresholds.

Proposed Regulation VIII has a higher threshold for ADVT than San Joaquin and a 1 acre size threshold. According to the 1993 Imperial Valley PM_{10} SIP, there are only 200 acres of non-farm traffic areas (compared to 13,700 acres of non-farm unpaved roads) and speed in these areas are significantly less than on the roads themselves.. There is no information at this time on the levels of usage (e.g. ADVT), size, or current controls for these unpaved traffic areas. Some

[7] EPA's Technical Support Document for the San Joaquin Valley, California 2003 PM-10 Plan and 2003 PM-10 Plan Amendments., p. 34-5. January 27, 2004

are subject to conditional use permits (CUPs) from local jurisdictions. Imperial County believes that, similar to San Joaquin, a detailed cost-effectiveness analysis will indicate that the coverage provide by proposed Regulation VIII meets BACM. ICAPCD is conducting additional survey work and will prepare a cost-effectiveness analysis to justify the proposed thresholds. If the analysis indicates that more stringent thresholds are cost-effective, amendments to PR805 will be prepared.

(Although agricultural unpaved traffic areas are exempt from PR 805, any size traffic area for an agricultural operation with more than 40 acres total must implement controls, per PR 806.)

FUGITIVE DUST CATEGORY: UNPAVED PARKING LOTS/STAGING AREAS

SUBCATEGORY: REQUIREMENTS

Proposed Imperial County Requirements (unpaved traffic areas):

For unpaved traffic areas larger than one (1) acre and with 75 or more average vehicle trips per day shall comply with one or more of the requirements of Section F.3 (listed below) so as to limit VDE to 20% opacity:

- Pave or (Ref: PR805, Section F.3.a)
- Apply chemical stabilizers (Ref: PR805, Section F.3.b)
- Apply and maintain gravel, recrushed/recycled asphalt or other material of low silt content to a depth greater than 3 inches (Ref: PR805, Section F.3.c)
- Wetting. Apply water one or more times daily (Ref: PR805, Section F.3.d)

SJV Requirements:

- For days with 50 or more vehicle trips, limit VDE to 20% opacity and implement at least one of the following control measures:
  - apply water
  - apply uniform layer of washed gravel
  - apply chemical/organic dust suppressant
  - use vegetative materials
  - pave
  - use any other method to limit VDE to 20% opacity (Ref: R8071, Section 5.1.1)
- For days with 100 or more vehicle trips:
  - limit VDE to 20% opacity
  - comply with requirements for stabilized surface
  - implement at least one of the following control measures:
    - apply water
    - apply chemical/organic dust suppressant
    - apply roadmix
    - pave
    - use any other method that results in stabilized surface (Ref: ibid, Section 5.1.2)
- On each day that 25 or more VDT with 3 or more axles will occur on an unpaved vehicle/equipment traffic area, the owner/operator shall limit VDE to 20% opacity and comply with the requirements of a stabilized unpaved road by the application and/or re-application/maintenance of at least one of the control measures specified sections 5.1.1.1 through 5.1.1.6 (Ref: R8071, Section 5.1.3).
- On each day when a special event will result in 1,000 or more vehicles that will travel/park on an unpaved area, the owner/operator of the unpaved area to be traveled/parked upon must notify the District at least 48 hours in advance when such a special event will occur. During the duration of the special event vehicle travel/parking, the owner/operator shall limit VDE to 20% opacity and comply with the requirements of a stabilized unpaved road by the application and/or reapplication/

maintenance of water or chemical/organic dust stabilizers/suppressants in accordance with the manufacturer's specifications (Ref: R8071, Section 5.1.4).

- As option to above, obtain Fugitive PM_{10} Management Plan (Ref: ibid, Section 5.2.1, 5.2.2, and 5.2.3)
  - Must achieve at least 50% control efficiency (Ref: R8011, Section 7.0)
  - Must specify location, length, and area of unpaved traffic areas (Ref, ibid, 7.5.2)
  - Description of traffic conditions (vehicle trips per unit time; types of vehicles) (Ref: ibid, 7.5.3)
  - Description of control measures used and application details (Ref: ibid, 7.5.4)
  - Description of expected resulting road surface condition (Ref: ibid, 7.5.5)

South Coast Requirements:

(No specific rule language for this category. See measures for "Unpaved Roads" for presumed applicable BACM.)

Maricopa County Requirements:

- If utilized less than 35 days per year, use one of following:
  a) Apply dust suppressants to maintain stabilized surface
  b) Apply and maintain gravel to maintain stabilized surface (Ref: R310.01, Section 303, and 303.1)
- If utilized at least 35 days per year:
  a) Add option, to above, to pave (Ref: ibid; also R310, Table 1, 1B,2B,3B)

Clark County Requirements:

- For unpaved parking lots, use one of following:
  a) Pave
  b) Apply dust palliatives to maintain stabilized surface
  c) Apply dust palliatives to travel lanes, and apply gravel to a depth of two inches in the parking areas to maintain stabilized surface (Ref: AQR Section 92.2.1 and 92.2.1.2)
- If parking lot is used intermittently, less than 35 days per year, and the lot was in existence prior to June 22, then application may be limited to period of use (Ref; ibid, 92.2.1 and 92.2.1.1)
- For staging areas:
  - Limit size of staging areas (Ref AQR, Section 94 Handbook, CST 17-1)
  - Apply water (Ref: ibid, CST 17-2)
  - Apply dust palliative (Ref: ibid, CST 17-3)
  - Limit vehicle speeds to 15 mph (Ref: ibid, CST 17-4)
  - Limit ingress and egress points (Ref: ibid, CST 17-5)

Discussion:

Maricopa County requires the stabilization or paving of all traffic areas, regardless of usage. Watering is not an option. Clark County requires the paving or stabilization of unpaved traffic areas, unless the area is only used infrequently. In that case, stabilization only has to occur during use times. Watering is not an option.

Proposed Regulation VIII and San Joaquin Valley rules allow the use of daily watering as a control option; thus, Regulation VIII includes an option that is less stringent, based on the relative control effectiveness of watering compared to stabilization, gravelling and paving. However, proposed Regulation VIII still requires compliance with the opacity limit

However, in SJV for sites on days with more than 100 trips, the surface must comply with stabilized surface requirements, and for areas on days with more than 25 VDT from vehicles with 3 or more axles or if over 1000 vehicles are anticipated, there are special control requirements (generally re-application of stabilizers or water) for those days. Imperial County commits to assessing the need and cost-effectiveness of these specific single day provisions and preparing amendments to PR 805, if necessary.

FUGITIVE DUST CATEGORY: UNPAVED ROADS

SUBCATEGORY: CANAL ROADS

Proposed Imperial County Requirements:

- For Canal Roads with 20 or more ADT (Ref: PR805, Section E.3)
  a) Stock Triploid Grass carp in canals to reduce maintenance vehicle trips along Canal Banks to mechanically remove aquatic weeds or (Ref: PR805, Section F.2.a)
  b) Install remote control delivery gates to eliminate manual gate operation by maintenance personnel or (Ref: PR805, Section F.2.b)
  c) Implement Silt removal program to delay grading of spoil piles deposited after cleaning operations or (Ref: PR805, Section F.2c)
  d) Permanent road closure or (Ref: PR805, Section F.2d)
  e) Convert open canals to pipeline or (Ref: PR805, Section F.2.e)
  f) Line canals to eliminate maintenance for silt/week control or (Ref: PR805, Section F.2.f)
  g) Initiate canal bank surface maintenance (Ref: PR805, Section F.2.g)

SJV Requirements:
(No requirements specified.)

South Coast Requirements:
(No requirements specified.)

Maricopa County Requirements:
(No requirements specified.)

Clark County Requirements:
(No requirements specified.)

Discussion:
Canal roads are unpaved roads used by the Imperial Irrigation District to maintain the irrigation canal network. San Joaquin has identified private canal roads in its inventory but does not anticipate that these private canal roads have traffic levels that meet the 26 ADT threshold for unpaved road controls and does not specify additional canal road requirements such as the ones in proposed Regulation VIII. Thus, these requirements are the most stringent for this source. (NOTE: These requirements are in addition to the general unpaved road requirements for unpaved roads that canal roads are also subject to. See also Unpaved Roads: Applicability and Unpaved Roads: Control Requirements.)

FUGITIVE DUST CATEGORY: DISTURBED OPEN AREAS

SUBCATEGORY: APPLICABILITY

Proposed Imperial County Requirements:

- 0.5 acres or larger in urban areas, or 3.0 acres or more in rural areas; and contains at least 1,000 square feet of disturbed surface area (Ref: PR804, Section B)

SJV Requirements:

- This rule applies to any open area having 0.5 acres or more within urban areas, or 3.0 acres or more within rural areas; and contains at least 1000 square feet of disturbed surface area (R8051, Section 2.0).

South Coast Requirements:

- No limit

Maricopa County Requirements:

Unclear: Rule 310, Section 102 exempts disturbed open areas which are not located at sources requiring "any permit under these rules." However, most open areas will not have need for permits. Section 303 requires a dust control plan (presumed to be what is referred to in Section 102 as a "permit"), for all sources that involve earthmoving operations of 0.10 acres or greater. Since soil disturbances can occur for reasons other than earthmoving, for example, off-road vehicle traverses, it appears that many disturbed open areas, vacant lots, etc, may be exempt under these rules.

Clark County Requirements:

- 5,000 square feet or larger (non-agricultural) (Ref: AQR Section 90.1.2 and 90.2.1)

Discussion:

The most stringent applicability is South Coast Rule 403, which has no minimal level (although the related control requirements are less stringent than other serious non-attainment areas) Clark County AQR Section 90 which has a 5,000 square foot (approx. 1/9 acre) minimum level for all types of open areas and vacant lots. Imperial County and SJV applicability thresholds are the same. EPA adjudged[8] the SJV thresholds as meeting the stringency test and qualifying for BACM since over 98%of the total parcel acreage is in parcels of 3 acres or greater. For Imperial County, more than 99.5% of the total parcel acreage is in parcels of 3 acres or greater[9]. Hence, proposed Regulation VIII applicability threshold is more stringent than SJV's applicability threshold, which has already been determined to be BACM.

[8] EPA's Technical Support Document for the San Joaquin Valley, California 2003 PM-10 Plan and 2003 PM-10 Plan Amendments., p. 37-38. January 27, 2004.
[9] Imperial County Assessors Office parcel data, 2001.

FUGITIVE DUST CATEGORY: DISTURBED OPEN AREAS

SUBCATEGORY: CONTROL MEASURES

Proposed Imperial County Requirements:

- Limit open areas to VDE of 20% opacity (Ref: PR804, Section E.1)
- Prevent unauthorized vehicle access by posting "No Trespassing" signs or installing physical barriers such as fences, gates, posts, and/or appropriate barriers to prevent access (Ref: PR804, Section E.2)
- Apply and maintain water or dust suppressant to all unvegetated areas (Ref: PR804, Section F.1.a)
- Establish vegetation on all previously disturbed areas (Ref: PR804, Section F.1.b)
- Pave, apply gravel, chemical stabilizers/suppressants (Ref: PR804, Section F.1.c)

SJV Requirements:

- Apply water/dust suppressants to unvegetated areas sufficient to limit VDE to 20% opacity (Ref: R8051, Table 8051-1, A1)
- Establish vegetation to limit VDE to 20% opacity (Ref: ibid, A2)
- Pave, apply gravel, apply stabilizers to limit VDE to 20% opacity (Ref: ibid, A3)
- Upon evidence of trespass, post "no trespass" signs or install barriers to prevent access to area (Ref: ibid, B)

South Coast Requirements:

- Apply chemical stabilizers (Ref: R403 Handbook, BACM (Q))
- Water with sufficient frequency to establish a surface crust (Ref: ibid, (R))
- Establish (drought-resistant) vegetation as quickly as possible (Ref: ibid, (T))

Maricopa County Requirements:

- Restore vegetative ground cover and soil characteristics similar to native Conditions (Ref: R310, Table 1, 1E)
- Pave, apply gravel, apply stabilizer to meet stabilized standards (Ref: ibid, 2E)
- Establish vegetation to meet stabilized standards (Ref: ibid, 3E)
- Stabilized standards, one of the following (Ref: R310, Section 302.3):
  - Maintain visible crust
  - Maintain threshold friction velocity of 100 cm/sec or greater
  - Maintain flat vegetation, not subject to wind movement, of at least 50%
  - Maintain standing (rooted, vertical) vegetation of at least 30%
  - Maintain standing (rooted, vertical) vegetation of at least 10% where the soil threshold friction velocity is 43 cm/sec or greater
  - Maintain cover of non-erodible elements of at least 10%

Clark County Requirements:

- Upon evidence of soil disturbance by motor vehicles, prevent trespass, parking, and access by installing barriers, curbs, fences, gates, posts, signs, shrubs, and trees. (Ref: AQR Section 90.2.1.1(a))
- Apply gravel or chemical stabilizers to meet one of stabilization standards (Ref: ibid, (b))
- Stabilization standards (Ref: AQR Section 90.2.1.2)
  - Establish visible crust
  - Establish cover of non-erodible elements of at least 20%
  - Establish threshold friction velocity of 100 cm/sec or higher

Discussion:

Proposed Regulation VIII and SJV requirements are identical. Maricopa County and Clark County have established soil stabilization standards for determining the effectiveness of the control measures. (With respect to the stabilization standards, see General: Definition of a Stabilized Surface above.) EPA has approved the SJV regulations as BACM[10], and the proposed Regulation VIII requirements are as stringent as the most stringent requirements in other serious non-attainment areas

[10] Federal Register Vol. 69, No. 102; p.30035; May 26, 2004.

FUGITIVE DUST CATEGORY: WINDBLOWN DUST

SUBCATEGORY: DEFINITIONS

Proposed Imperial County Requirements:
Not defined

SJV Requirements:
Reference to wind blown dust is only included within the definition of "stabilized surface: any disturbed surface area or open bulk storage pile that is resistant to wind blown fugitive dust." (Ref: R8011, Section 3.56). There is no specific definition of "wind blown fugitive dust."

South Coast Requirements:

- Includes a definition for "wind-driven fugitive dust" as being "any visible emissions from any disturbed surface area which is generated by wind action alone." (Ref: R403(c)(29)
- High wind conditions are specified as wind gusts in excess of 25 mph (Ref: R403(h)(2)(A)) and wind gust defined as maximum instantaneous wind speed (Ref: R403(c)(30))

Maricopa County Requirements:

- Includes a definition of wind blown dust as being "visible emissions from any disturbed surface area which are generated by wind action alone (Ref: R310, Section 233)
- Includes a definition of wind event: "when the 60-minute average wind speed is greater than 25 mph" (Ref: ibid, 234)

Clark County Requirements:
No definitions specified

Discussion:
This section is provided for information purposes, since the "definition" of wind blown dust is not a control measure.

FUGITIVE DUST CATEGORY: DISTURBED AREAS

SUBCATEGORY: WINDBLOWN DUST

Proposed Imperial County Requirements:

No specific requirements, except for construction and earthmoving activities during wind events. See description in Appendix B concerning Construction/Windblown Dust.

SJV Requirements:

No specific requirements, except for construction and earthmoving activities during wind events. See description in Appendix B concerning Construction/Windblown Dust.

South Coast Requirements:

For large operations, implementing one of the following contingency measures exempts the owner/operator from certain rule provisions:

- If operations remain inactive for not more than four consecutive days, apply water and chemical stabilizers in sufficient concentration to maintain a stabilized surface for six months (Ref: R403, Table 3, 0B)
- Apply chemical stabilizers prior to wind event (Ref: ibid, 1B)
- Apply water 3 times per day; if evidence of wind driven fugitive dust, increase watering to 4 times per day (Ref: ibid, 2B)
- Establish vegetative ground cover within 21 days after active operations have ceased (Ref: ibid, 3B)

Maricopa County Requirements:

- Apply gravel or dust suppressants (Ref: R310, Table 2, 1B)
- Apply water 3 times per day; if evidence of wind driven fugitive dust, increase watering to 4 times per day (Ref: ibid, 2B)

Clark County Requirements:

(No specific wind requirements, however, the general requirements for disturbed surface areas include provisions which are intended to reduce windblown dust:

- Prevent access to limit soil disturbance (Ref: AQR Section 94 Handbook, CST 11)
- Stabilize soil, using dust palliative or vegetation to maintain stabilized surface (Ref: ibid, CST 11-4 and 11-5)
- Pave or apply surface rock to maintain stabilized surface (Ref: ibid, CST 11-6))

Discussion:

There are no specific exemptions for wind events in the proposed Regulation VIII amendments. PR803 opacity and stabilization requirements apply regardless of wind speed. This is the most stringent requirement, since there are not exemptions from Regulation VIII provisions because of high winds

It should be noted that for construction activities (which are not a significant source), there is an exemption from the 20% opacity requirement (PR801, Section D.2). To qualify for the exemption, the operator must either cease operations, water or apply dust suppressants once per hour, or maintain a 12% soil moisture content by watering.

FUGITIVE DUST CATEGORY: AGRICULTURAL OPERATIONS – CROP FARMS

SUBCATEGORY: CONSERVATION (OR BEST) MANAGEMENT PRACTICES

Proposed Imperial County Requirements:

For owner/operators of agricultural operation sites greater than or equal to 40 acres, implement at least one of the following in each category:

- Land preparation and cultivation (Ref: PR806, Section E.1):
  a) alternative till
  b) bed/row size spacing
  c) chemical/fertigation
  d) combined operations
  e) conservation irrigation
  f) conservation tillage
  g) cover crops
  h) equipment changes/technological improvements
  i) fallowing land
  j) integrated pest control
  k) mulching
  l) night farming
  m) non tillage/chemical tillage
  n) organic practices
  o) precision farming
  p) transgenic crops
- Harvesting (Ref: PR806, Section E.2):
  a) bailing/large bails
  b) combined operations
  c) equipment changes/technological improvements
  d) green chop
  e) hand harvesting
  f) fallowing land
  g) nigh harvesting
  i) no burning
  j) pre-harvesting soil preparation
  k) shed packing
  l) shuttle system/large carrier
- Unpaved farm roads and traffic areas (Ref: PR806, Section E.3 and E.4):
  a) chips/mulches, organic materials, polymers, road oil and sand
  b) gravel
  c) paving
  d) restricted access
  e) speed limit

f) track-out control
g) water
h) wind barrier

SJV Requirements:

SJVAPCD Rule 4550 requires the submittal of a conservation management plan for sites with more than 100 acres with 1 conservation management practice (CMP) for each category:

- Land preparation and cultivation: same as Imperial County with addition of floor management (nut crops), time of planting and transplanting (some vegetable crops) options.
- Harvest: same as Imperial County with addition of continuous tray/D.O.V. (dry fruit crops) fallowing land; and floor management (nut crops) options.
- Unpaved farm roads and traffic areas: same as Imperial County with the addition of mechanical pruning (tree and vine crops) option.

South Coast Requirements:

For agricultural operations within the South Coast Air Basin, with combined disturbed surface area of 10 acres or more, the standards of Rule 403 apply after July 1, 1999 unless Best Management Practices as delineated in the Rule 403 Agricultural Handbook are implemented. (Ref: R403(h)(1))

Best Management Practices as described in the Agricultural Handbook are as follows:

a) Active conservation practices
   1) Ensure adequate soil moisture so that VDE do not exceed 100 feet
   2) Irrigate or bed fields as soon as feasible
   3) Utilize conservation tillage practices
   4) Apply mulch or other materials to help bind soil

b) Inactive conservation practices
   1) Comply with local dust ordinances relating to agricultural operations
   2) Establish cover crops that maintain a minimum 60% ground cover
   3) Maintain crop residues at a minimum 60% ground cover as determined by line-intersection method
   4) Conduct surface roughening by bedding, rough disking, or tillage that leaves stable clods
   5) Alternate strips of row crops with wind-resistant crops
   6) Establish tree or shrub windbreaks at right angles to prevailing winds
   7) Establish ridge plantings by normal tillage and planting equipment at a right angle to the prevailing winds
   8) Plant or maintain perennial or annual plants as a vegetative wind barrier by planting throughout a field at a right angle to the prevailing wind

c) Farm yard areas
   1) Establish or maintain sufficient vegetation to prevent wind driven dust

2) Use water or dust suppressants to bind soils
3) Apply surface improvements (gravel, paving, etc)
4) Reduce disturbed areas by at least 50%

d) Trackout conservation practices

1) Pave or apply dust suppressants on unpaved road connections with public paved roads, preferably to a distance of 100 feed from the paved road
2) Use trackout prevention devices
3) Avoid turning tractors and other farm machinery on public pave roads if soil will be dropped on the road. If material is dropped, clean the road at the conclusion of the activity

e) Unpaved road conservation practices

1) Reduce vehicle speeds to a maximum of 15 mph
2) Restrict public access to private roads by using signage or obstructions
3) Apply water, dust suppressants, mulch or other materials to unpaved roads prior to heavy use periods
4) Improve heavily used roads by paving, applying gravel or recycled road base material

f) Storage pile conservation practices

1) Enclose with a three-sided barrier equal to height of pile
2) Water sufficiently to prevent wind driven fugitive dust
3) Apply chemical stabilizers
4) Cover with tarps, plastic, or other materials

(Ref: Guide to Agricultural PM_{10} Dust Control Practices, dated June 1999)

Maricopa County Requirements:

In May 2000, the Agricultural BMP Committee adopted the agricultural PM_{10} general permit, which became effective by rule on May 12, 2000 (Arizona Administrative Code [AAC], R18-2- 610 and 611). The Committee identified 34 BMPs that focus on feasible, effective, and common sense practices while minimizing negative economic impacts on local agriculture. (These BMPs were based on the BMPs in the South Coast Agricultural Handbook). The general permit requires that a commercial farmer implement at least one BMP to control PM_{10} for each of the following three categories: tillage and harvest, non-cropland, and cropland. The general permit requires a commercial farmer to comply by December 31, 2001.

Clark County Requirements:

(No requirements for this source)

Discussion:

The South Coast Rule 403 subjects agricultural operations to a long list of best management practice choices, which encompass many of the requirements for non-agricultural sources. Although

implementation and documentation of BMP is considered "voluntary," failure to do so subjects the owners/operators to the basic standards of the rule, which include VDE beyond the property line, implementation of at least one BACM for each fugitive dust source, upwind-downwind limit of 50 $\mu g/m^3$ of PM_{10}, and trackout control requirements. The Arizona requirements were based on the South Coast BMPs. The San Joaquin requirements were developed after the BACM analysis performed for the SJVAPCD 2003 PM_{10} SIP and after extensive rule development.

ICAPCD CMPs apply to farm sites with 40 or more acres, which represent 90% of farm land in Imperial County. By comparison, San Joaquin Valley requires CMPs at site greater than 100 acres, which represents about 91% of farm land in San Joaquin Valley. Thus, the farm site limit is equally stringent compared to the most stringent threshold.

The proposed ICAPCD CMP requirements are similar to the requirements in San Joaquin Valley, Maricopa County and South Coast, and are directly based on the San Joaquin Valley requirements that were approved by EPA[11] as meeting the BACM requirements. The Proposed Imperial County requirements are specifically based on the San Joaquin requirements and are of similar stringency; thus, they are as stringent as the most stringent requirements for this source.

[11] Federal Register Vol. 69, No. 102; p.30035; May 26, 2004

A P P E N D I X D

Detailed Comparative Analysis for Sources Below the DM Level

Appendix D

Detailed Comparative Analysis for Sources Below the DM Level

Appendix D presents a detailed comparative analysis for sources below the DM level: construction / demolition activities, bulk material, track-out, paved roads, cattle feedlots, BLM and BP sources, and weed abatement. These sources do not require a comparative analysis and this material is presented for information purposes only.

FUGITIVE DUST CATEGORY: CONSTRUCTION

SUBCATEGORY: PRE-EARTHMOVING OPERATIONS

Proposed Imperial Requirements:

Construction and Earthmoving sites shall comply with the following requirements:

- Pre-water site sufficient to limit VDE to 20% opacity (Ref: PR801, Section F.1.a.1)
- Phase work to reduce the amount of disturbed surface area at any one time (Ref: PR801, Section F.1.a.2)

SJV Requirements:

- Pre-water in sufficient amount to limit VDE to 20% opacity (Ref: R8021, Table 8021-2, A1)
- Phase work to reduce disturbed surface area (Ref: R8021, Table 8021-2, A2)

South Coast Requirements:

- Apply water to increase soil moisture content to depth of proposed cut (Ref R403 Handbook, BACM Control Measure A)
- Grade each phase separately to coincide with construction phase (Ref: ibid,
- BACM A-2(1))
- If full grading, apply chemical stabilizers to graded areas where construction will not begin for more than 60 days after grading (Ref: ibid, BACM A-2(2))

Maricopa County Requirements:

- Pre-water to depths of cuts (Ref R310, Table 1, 1D)
- Phase work to reduce the amount of disturbed surface areas (Ref: ibid, Table 1, 2D)

Clark County Requirements:

- Presoak soils to depths of cuts (AQR Section 94 Handbook, CST 07)
- Presoak with water and surfactant mixture in soils with high emission potential (Ref: ibid, CST 07-7)
- Include phasing details as part of Dust Control Permit and Dust Control Mitigation Plan (Ref, ibid, GEN 01)

Discussion:

Imperial County and SJV are of similar stringency. Clark and Maricopa counties require pre-watering to the depth of the cut.

For phased earthmoving or construction, the requirements appear to be equally stringent. Emission reductions can be reduced by limiting the area of disturbed soils to the minimum necessary for the construction project. The success of such limitation is dependent upon the degree of specificity, i.e., it would be difficult to determine if the phasing is actually minimizing the disturbed surface conditions unless such information is provided in advance. The Clark County requirements for providing such

details are considered more stringent than the Imperial County and SJV requirements because such phasing details are not part of the Imperial County or SJV Dust Control Plan submittals.

The Clark County provision of using a mixture of water and chemical stabilizers for resoaking soils with high emissions potential is questionable regarding reducing emissions. Chemical stabilizers tend to help form surface soil crusts, which minimize dust emissions from activities on the surface. If grading is done to levels below the surface, there is unknown value as to the ability of such chemicals to have an effect on subsurface soils. Thus it cannot be determined if such measures have greater dust-reducing capabilities.

FUGITIVE DUST CATEGORY: CONSTRUCTION

SUBCATEGORY: EARTHMOVING OPERATIONS

Proposed Imperial Requirements:

- Construction and Earthmoving sites shall comply with the following requirements: Apply water or chemical stabilization as directed by product manufacturer to limit VDE to 20% opacity; or (Ref: PR801, Section F.1.b.1)
- Construct and maintain wind barriers to limit VDE to 20% opacity (Ref: PR801, Section F.1.b.2)
- Apply water or chemical stabilization to unpaved/haul access roads and unpaved vehicle equipment areas sufficient to limit VDE to 20% opacity (Ref: PR801, Section F.1.b.1)

SJV Requirements:

- Apply water or chemical stabilizers/dust suppressants, in conjunction with optional wind barriers, to limit VDE to 20% opacity (Ref: R8021, Table 8021-2, B1 and B2)

South Coast Requirements:

- General VDE conditions apply (See FD Category, Visible Dust Emissions)
- Maintain soil moisture content (by applicable ASTM Method D-2216) minimum of 12% (Ref: R403, Table 2, 1(a))
- Conduct watering to limit VDE from exceeding 100 feet (Ref, ibid, (1a-1) and (1c))

Maricopa County Requirements:

- Apply water or dust suppressants to limit VDE to 20% opacity (Ref: R310, Table 1, 3D)
- Apply water to maintain soil moisture at a minimum 12% (by applicable ASTM Method D-2216-98) (Ref: R310, Table 1, 4D)
- Construct 3-5 foot high wind barriers, with 50% or less porosity, adjacent to roadways or urban areas, and meet either VDE or soil moisture limits. (Ref: ibid, 5D)
- For one acre or larger, if water is used, operate water truck or similar water application system on disturbed surfaces (Ref: ibid, 1M)

Clark County Requirements:

(Note: Clark County does not have a specific section for earthmoving. Two activities which are specified include cut-and-fill operations and backfilling operations. Control measures are summarized from those activities.)

- General VDE conditions apply (See FD Category, Visible Dust Emissions)
- Apply water to maintain soil moisture (Ref: AQR Section 94 Handbook, CST 01)
- Apply water or dust suppressant immediately following activity (Ref, ibid, CST 01- 6, CST 07-5 and CST 07-6)
- When loading soils, minimize height from loader bucket, and empty bucket slowly (Ref: ibid, CST 01-7 and CST 01-8)

Discussion:

The South Coast and Maricopa 12% soil moisture content requirement option is deemed more stringent than the VDE limit alone because this is a distinct action to minimize emissions. The Proposed Imperial County requirements are as stringent as the SJV requirements.

FUGITIVE DUST CATEGORY: CONSTRUCTION

SUBCATEGORY: INACTIVE DISTURBED LAND

Proposed Imperial County Requirements:

- Restrict vehicle access (Ref: PR801, Section F.1.c.1)
- Apply water or chemical stabilization sufficient to comply with conditions of a stabilized surface. If an area ≥ 0.5 acres of disturbed surface area remains unused for ≥ 7 days, the area must comply with the conditions for a stabilized surface (Ref: PR801, Section F.1.c.2)

SJV Requirements:

- Restrict vehicle access (Ref: R8021, Table 8021-2, C1)
- Apply water/dust suppressants to meet stabilized surface definition; if area is greater than 0.5 acres and inactive more than 7 days, then must comply with definition of stabilized surface (Ref, ibid, C2)

South Coast Requirements:

- Apply chemical stabilizers within 5 days of completion of grading (Ref: R403, Table 2, (2c))
- Apply water to at least 80% of inactive disturbed area on a daily basis when there is evidence of windblown dust (Ref: ibid, (3a))
- Establish vegetative ground cover within 21 days after active operations cease.
- Must be of sufficient density within 90 days to expose less than 30% of the disturbed area (Ref: ibid, (3c))

Maricopa County Requirements:

- For weekends, holidays, and after-hours:
  - Apply water/dust suppressants to maintain stabilized surface (Ref, R310, Table 1, 6D)
  - Establish vegetative ground cover to maintain stabilized surface (Ref: ibid, 7D and 11D)
  - Restrict vehicle access (Ref: ibid, 8D)
- For longer-term stabilization (must be done within 8 months)
  - Restore vegetation similar to natural conditions to maintain stabilized surface (Ref: ibid, 9D)
  - Pave, apply gravel or dust suppressant (presumably to road surfaces) to maintain stabilized surface (Ref: ibid, 10D)

Clark County Requirements:

- Prevent access to limit soil disturbance (Ref: AQR Section 94 Handbook, CST 11)
- Stabilize soil, using dust palliative or vegetation to maintain stabilized surface (Ref: ibid, CST 11-4 and 11-5)
- Pave or apply surface rock to maintain stabilized surface (Ref: ibid, CST 11-6)

Discussion:

Although other approaches may have more specificity in control measures, the effect of maintaining a stabilized surface in the Imperial County and SJV rules is deemed equivalent to other rules. However, Maricopa County does not specify a de minimis acreage, and hence the requirement for longer-term stabilization is deemed more stringent than the Imperial County or SJV rules which establishes a de minimis level of 0.5 acres.

FUGITIVE DUST CATEGORY: CONSTRUCTION ACTIVITIES

SUBCATEGORY: DEMOLITION

Proposed Imperial Requirements:

- All persons who own or operate a Construction/Earthmoving Site shall comply with requirements of Section F.1 so as to limit VDE to 20% opacity (Ref: PR801, Section E.1.a)

SJV Requirements:

- Apply water to limit VDE to not more than 20% opacity (Ref: R8021,5.1.1, 5.1.2)
- Apply dust suppressants to limit VDE to not more than 20% opacity (Ref, ibid, 5.1.3)
- Handling, storage, and transport of bulk materials on-site or off-site resulting from the demolition or razing of buildings shall comply with the requirements specified in Rule 8031 (Bulk Materials) (Ref, ibid, 5.1.4)
- Movement/handling must meet requirements for bulk materials (Ref: ibid, 5.1.5)
- Trackout prevention must comply with Rule 8041 (Ref: ibid, 5.1.6)

South Coast Requirements:

- Demolition must meet same requirements as other applicable dust-producing operations
  1) No visible emissions beyond property line (Ref: R403(d)(1))
  2) Must apply one or more BACM (Ref: R403(d)(2)
  3) Upwind-downwind PM_{10} levels must not exceed 50μg/m^3 (Ref: R403(d)(4))
  4) Must meet trackout requirements (Ref: R403(d)(5))

Maricopa County Requirements:

- Demolition must meet same requirements as other applicable dust generating operations
  1) Visible dust emissions must not exceed 20% opacity (Ref: R310, Sect. 301)
  2) Must implement one primary and one contingency control measure (Ref: R310, Sect. 304.3(a))

Clark County Requirements

- For implosion:
  1) Limit blasting to time periods when wind direction is away from closest residential areas, occupied buildings, and major roadways.
  2) Limit blasting times to between 8:00 am and 4:30 pm
  3) Stabilize soils prior to blasting
  4) Stabilize soils and debris after blasting
  5) Do not blast when wind speeds occur or are forecast to occur
  6) Restrict vehicles to paved or stabilized surfaces
     (Ref: AQR Section 94 Handbook, CST 08)
- For mechanical/manual demolition:
  1) Stabilize erodible surfaces

2) Stabilize surfaces where support equipment will operate
3) Stabilize loose soil and demolition debris (Ref: AQR Section 94 Handbook, CST 09)
4) Stabilize surfaces where support equipment will operate
5) Stabilize loose soil and demolition debris (Ref: AQR Section 94 Handbook, CST 09)

Discussion:

These requirements vary from general restrictions, such as, South Coast and Maricopa County, to specific requirements, as in Imperial County, San Joaquin Valley, and Clark County. While the specifics of opacity limits are likely to be equivalent to the general restrictions of South Coast and Maricopa County, the specific measures in the Clark County regulations appear to be more stringent in preventing unintended violations of the opacity limit. For example, it may never be known until after a demolition blast has actually occurred that there is an opacity violation. By specifying actions, such as stabilizing surface before and after blasting, and not allowing blasting when wind speeds exceed 25 miles per hour, there is at least a more proactive effort to minimize dust generation. Limiting the hours and wind direction conditions for approved blasting does not result in lower emissions, but rather is responsive to potential public impacts. As such, from an emissions standpoint, these are not deemed to be more stringent control measures.

FUGITIVE DUST CATEGORY: CONSTRUCTION/EARTH MOVING

SUBCATEGORY: WINDBLOWN DUST

Proposed Imperial County Requirements:

For exemption from the 20% opacity limit requirements during wind events, an operation must implement one of the following:

- Cease dust generating activities for the duration of the wind event. If operations cease for the remainder of the day, stabilization measures must be implemented.(Ref: PR801, D.2.a)
- Apply water/dust suppressant once per hour (Ref: ibid, D.2.b)
- Apply water to maintain minimum 12% soil moisture content (Ref: ibid, Table D.2.c)
- Construct fences 3-5 feet high with 50% or less porosity, and must be done in conjunction with another measure, as above (Ref: ibid, D.2.d)

SJV Requirements:

- Cease all outdoor construction activities if fugitive dust exceeds 20% opacity (Ref: Rule 8021, Section 5.4.1)
- Continue to operate water trucks when outdoor construction halted unless unsafe to do so (Ref: ibid, Section 5.4.2)

South Coast Requirements:

For exemption from the visible dust over the property line and unwind / downwind monitoring requirements, during wind events an operation must:

- For earthmoving:
  - Cease all active operations (Ref R403, Table 1, 1A)
  - Apply water to soil not more than 15 minutes prior to moving such soil (Ref: ibid, 2A)
- For unpaved roads at construction sites:
  - Apply chemical stabilizers prior to wind event (Ref: R403, Table1, 1C)
  - Apply water twice per hour during active operations (Ref: ibid, 2C)
  - Stop all vehicular traffic (Ref: ibid, 3C)

Maricopa County Requirements:

As an affirmative defense for opacity exceedence enforcement action, during wind events an operation must do one of the following:

- Cease dust generating activities for the duration of the wind event. If operations cease for the remainder of the day, stabilization measures must be implemented. (Ref: R310, Table 20.a.1)
- Apply water/dust suppressant once per hour (Ref: ibid, Table 20.a.2)
- Apply water to maintain minimum 12% soil moisture content (Ref: ibid, Table 20.a.3)

- Construct fences 3-5 feet high with 50% or less porosity, and must be done in conjunction with another measure, as above (Ref: ibid, Table 20.a.4)

Clark County Requirements:

- Cease all construction activities if fugitive dust exceeds 20% opacity and visible plume caused by winds cannot be controlled (Ref: AQR Section 94 Handbook, Gen 03)
- Continue to operate water trucks unless hazardous to do so (Ref: ibid, Gen 03, 2)

Discussion:

The proposed Imperial County requirements are based on the South Coast and Maricopa County regulations. The South Coast rule creates an exemption for property line and upwind/downwind exceedences if wind event controls are implemented. The Maricopa County rule states that opacity violations in high winds are still violations, but that the imposition of wind event controls is an affirmative defense for the operator. In the proposed Imperial County regulations, there is an exemption from the 20% opacity requirement (PR801, Section D.2). To qualify for the exemption, the operator must either cease operations, water or apply dust suppressants once per hour, or maintain a 12% soil moisture content by watering. Imperial County requirements are as stringent as the rules in these two areas. (It should be noted that all other PR801 requirements, including stabilization, are in force during wind events also.) Clark County and SJV allow fewer control options, and thus could be considered more stringent. South Coast is the only agency to have specific requirements for unpaved roads at construction sites.

FUGITIVE DUST CATEGORY: CONSTRUCTION

SUBCATEGORY: DUST CONTROL PLAN: APPLICABILITY

Proposed Imperial County Requirements:
All persons who own or operate a construction site greater than 10 acres in a residential development or greater than 5 acres for a non-commercial development shall submit a Dust Control Plan to the APCO. (Ref: R801, Section E.2.c).

NOTE: All construction/demolition sites and earthmoving activities, except at existing single family homes, is required to comply with the BACM requirements of PR 801.
SJV Requirements:

- Size: 10 acres or larger for residential areas and 5 acres or larger for non-residential (Ref: R8021, Section 6.3.1)
- Earth movement: 2,500 cubic yards or more on at least 3 days (Ref: R8021, Section 6.3.1)

South Coast Requirements:
Prior to April 2004, South Coast Rule 403 required dust control plans for sites greater than 100 acres or more than 10,000 cubic yards of daily earth movement. In the April 2004 amendments, South Coast removed all plan limits and requirements, instead requiring that all sites greater than 50 acres or with daily earth movement of 5,000 cubic yards or more meet additional requirements for large operations. These sites do not need to submit a plan, but they must submit a large operation notification. (Ref: R403, (e))

Maricopa County Requirements:

- Size: 0.10 acres or larger (Ref: R310, Section 303)
- Certain permitted activities which have any dust generating activities (Ref: ibid, Section 303.3)

Clark County Requirements:

- Dust Control Permit
  - Size: 0.25 acres or smaller
  - Demolition projects 1000 square feet or greater
  - Trenching operations 100 feet in length or greater
- Dust Mitigation Plan
  - Size: 0.25 to 10 acres
- Site-Specific Dust Control Mitigation Plan
  - Size: 10 acres or larger
    (Ref: AQR Section 94 Handbook, DCP 01)

Discussion:

Dust control plans, *per se,* do not reduce emissions. However, to the extent that dust control management efforts on the part of the operator, and oversight and compliance efforts on the part of the agency are substantially enhanced, it can be presumed that a greater degree of dust control implementation and adherence to standards ultimately result in lower fugitive dust emissions. On that basis, dust control plans (permits) can be evaluated as a BACM.

As far as size is concerned, Maricopa County, and Clark County have much more stringent requirements than does SJV and the South Coast and the proposed Imperial County requirements. (It should also be noted that Clark County allows less detailed dust control permits/plans for sites less than 10 acres.) South Coast no longer requires dust control plans for large operations (>50 acres), but does require that such sites submit a large operation notification and meet specific rule standards. The effect of overall emissions reductions needs to include the elements of the plan in addition to size.

FUGITIVE DUST CATEGORY: CONSTRUCTION
SUBCATEGORY: DUST CONTROL PLAN: REQUIREMENTS

Proposed Imperial County Requirements:

- Retain a copy of the Dust Control Plan at the project site. (Ref: R801, Section F.2.a)
- Comply with the requirements of the approved Dust Control Plan. (Ref: R801, Section F.2.b)
- The Dust Control Plan shall include (Ref: R801, Section F.2.c):
  1. Name, address, phone numbers
  2. Plot Plan
  3. Total area of land surface disturbed, estimated daily throughput volume of earthmoving in cubic yards, and total area in acres of the entire project site
  4. The start and end dates of the project.
  5. Actual and potential sources of fugitive dust emissions on the site and the location of bulk material handling and storage areas, paved and unpaved roads, entrances and exits where Track Out/Carry Out may occur, and traffic areas
  6. Specifications of dust suppressants to be applied.
  7. Specific surface treatments and/or control measures utilized to control Track Out/Carry Out
  8. The Dust Control Plan should describe all fugitive dust control measures to be implemented before, during, and after any dust generating activity.

SJV Requirements:

- Information on owner/operator (Ref: R8021, Section 6.3.6.1)
- A location plot plan (Ref: ibid, Section 6.3.6.2)
- Project size (Ref: ibid, Section 6.3.6.3)
- Start and end dates of soil disturbing activities (Ref: ibid, Section 6.3.6.4)
- Identification of all sources of fugitive dust (Ref: ibid, Section 6.3.6.5)
- Information on dust suppressants to be used (Ref: ibid, Section 6.3.6.6)
- Details of measures to control trackout (Ref: ibid, Section 6.3.6.7)
- Description of all fugitive dust control measures to be implemented before, during, after any dust generating activity (Ref: ibid, Section 6.3.8)

South Coast Requirements:

Prior to April 2004, South Coast Rule 403 required dust control plans for sites greater than 100 acres or more than 10,000 cubic yards of daily earth movement. In the April 2004 amendments, South Coast removed all plan limits and requirements, instead requiring that all sites greater than 50 acres or with daily earth movement of 5,000 cubic yards or more meet additional requirements for large operations. These sites do not need to submit a plan, but they must submit a large operation notification. (Ref: R403, (e)) and comply with Table 2 and 3 dust control measures.

Large operation requirement includes:

- Large Operation Notification (not a Plan), with annual renewal submittal containing:
  - Information on owner/operator (Ref: R403 (f)(3)(A))
  - A description of site including a map (Ref: ibid, (f)(3)(B))
- Project signage with contact information
- Trained dust control supervisor is required and must be identified

Maricopa County Requirements:

- Information on person conducting dust generating operations (Ref: R310, Section 304.1)
- Project drawing (Ref: ibid, Section 304.2)
- Identification of one primary and one contingency control measure from Table 1 for each source of fugitive dust (Ref: ibid, Section 304.3a)
- Number of vehicles traveling on unpaved haul/access roads (Ref: ibid, Section 304.3c)
- Information on dust suppressants and frequency of application (Ref: ibid, Section 304.4)
- Details of measures to control trackout (Ref: ibid, Section 304.5)

Clark County Requirements:

- Complete application for permit
- Provide project vicinity and assessors parcel maps
- Include best management practices as detailed in Section 94 Handbook
- If greater than 50 acres, trained dust control monitor is required
- Key construction project class required to take dust control class
- Signage required
- Dust control plans must be provided to all contractors and subcontractors (Ref: AQR Section 94 Handbook, DCP 01)

Discussion:

The proposed Imperial County requirements are based on the SJV requirements and are of similar stringency. Clark County has the most detailed requirements in the sense that their Best Management Practices Handbook provides the most detailed set of dust control options for specified sources of dust generating activities. That is not to say that more options can result in fewer emissions, but the more options available, the more guidance is provided to dust generating activities in the selection of appropriate combinations of control measures. Clark County is also the most progressive in being proactive to control dust emissions by requiring training of key construction personnel and also requiring a trained dust monitor for operations, which are larger than 50 acres.

In April 2004, South Coast removed its large operation plan requirements, now requiring a simple notification and adherence to Table 1 and Table 2 dust control measures. For large operations, South Coast now requires an on-site trained monitor also.

FUGITIVE DUST CATEGORY: BULK MATERIALS

SUBCATEGORY: HANDLING/STORAGE

Proposed Imperial County Requirements:

Handling/Transfer

- Spray with water prior to handling and/or at transfer points; or (Ref: PR802, Section F.1.a)
- Apply and maintain chemical stabilizer; or (Ref: PR802, Section F.1.b)
- Protect from wind erosion by sheltering or enclosing the operation and transfer line (Ref: R02, Section F.1.c)

Storage

- Cover bulk materials stored outdoors with tarps, plastic, or other suitable material and anchor in a manner that prevents the cover from being removed; or (Ref: PRR802, Section F.2.a)
- Construct and maintain wind barriers with less than 50% porosity; or (Ref: PRR802, Section F.2.b)
- Utilize a 3-sided structure with a height at least equal to the height of the storage pile and with less than 50% porosity. (Ref: PRR802, Section F.2.c)

SJV Requirements:

- Water or stabilize to limit VDE to 20% opacity (Ref 8031, 5.3, A1)
- Store in accordance with definition for stabilized surface (Ref, ibid, B1)
- Cover outdoor materials with tarps, plastic, etc (Ref, ibid, B2)
- Use wind barriers to limit VDE to 20% plus water/stabilize (Ref, ibid, A2 and B3)
- Utilize a 3-sided structure with a height at least equal to the height of the storage pileand with less than 50% porosity (Ref, ibid, B4)

South Coast Requirements:

- Use chemical stabilizers (Ref R403, Table 2, 5a)
- Water 80% surface area on windy days (Ref, ibid, 5b)
- Use temporary coverings (Ref, ibid, 5c)
- Use 3-sided enclosures, less than 50% porosity to height of pile (Ref, ibid, 5d)
- Fully enclose (Ref R403 Handbook, pg 6-4, (L))
- Alter load-in, load-out procedures (Ref, ibid, (O))

Maricopa County Requirements:

- Water to limit VDE to 20% opacity (Ref R310, Table 1, 1F)
- Cover with tarps, plastic, etc. (Ref, ibid, 2F)
- Apply water to maintain minimum 12% soil moisture or
  - 70% optimum soil moisture content (Ref, ibid, 3F)
- Meet requirements for stabilized surface (Ref, ibid, 4F)
- Construct wind barriers (with less than 50% porosity), storage silos, or
  - 3-sided enclosures to height of pile and length, distance restrictions (Ref, ibid, 4F)

Clark County Requirements:

- Must stabilize stockpiles
- Must not be over 8 feet high if within 100 yards of occupied building
- Must have water access to top of pile if higher than 8 feet
- Avoid steep slopes
- Apply water during stocking, loading, unloading (high emission potential soils) (Ref Section 94 Handbook, CST-18)

Discussion:

The proposed Imperial County requirements are of similar stringency as the SJV requirements. Other items do not necessarily result in reduced emissions, such as Clark County's requirement for limiting pile height near an occupied building. The Maricopa County 12% minimum soil moisture content may be useful if opacity measurements are difficult to determine due to intermittent nature of dust plumes.

FUGITIVE DUST CATEGORY: BULK MATERIALS

SUBCATEGORY: TRANSPORT

Proposed Imperial County Requirements:

- Completely cover or enclose all Haul Truck loads of Bulk Material (Ref: PR802, Section F.3.a)
- Haul trucks transporting aggregates shall not be required to cover loads if loads remains six inches from upper area of container (Ref: PR802, Section F.3.b)
- Cargo compartments are to be constructed and maintained so that no spillage and loss of bulk material can occur (Ref: PR802, Section F.3.c)
- Cargo compartment should be cleaned and/or washed at delivery site after removal of bulk material (Ref: PR802, Section F.3.d)

SJV Requirements:

- Limit vehicle speed such that VDE does not exceed 20% (Ref: R8031, Table 8031-1, C1)
- Maintain at least 6 inches freeboard when crossing paved public access road (Ref: ibid, C2 and D3)
- Apply water to top of load to limit VDE to 20% opacity (Ref: ibid, C3)
- Cover haul trucks with tarps or other suitable cover (Ref: ibid, C4)
- Clean interior of truck before leaving site (Ref: R8031, Table 8031-1, D1)
- Prevent spillage from holes and openings in floor, side, or tailgate (Ref: ibid, D2)

South Coast Requirements:

- Cover haul vehicles (R403 Handbook, BACM, (D))
- Use bottom-dumping vehicles when feasible (Ref: ibid, (E))
- Maintain minimum 6 inches freeboard in high wind conditions (Ref: R403, Table 1, (2E))

Maricopa County Requirements:

- Maintain at least 3" freeboard (Ref: R310, Table 1, 1G and 7G)
- Prevent spillage from holes and openings in floor, side, or tailgate (Ref: ibid, 2G and 8G)
- Prevent trackout (Ref: ibid, 3G)
- Limit on-site vehicle speed to 15 mph (Ref: ibid, 4G)
- Apply water to top of load to limit VDE to 20% opacity (Ref: ibid, 5G)
- Cover haul trucks with tarps or other suitable closure (Ref: ibid, 6G)
- Clean interior of truck before leaving site (Ref: ibid, 9G)

Clark County Requirements:

- Use tarps or other suitable enclosures on haul trucks (Ref: AQR Section 94 Handbook, CST 13-1)
- Maintain 3-6 inches of freeboard (Ref: ibid, CST 13-2)
- Check belly-dump truck seals and remove trapped rocks to prevent spillage (Ref: ibid, CST 13-3)
- Clean wheels and undercarriage before leaving site (Ref: ibid, CST 13-4)

- Limit on-site vehicle speeds to 15 mph (Ref: ibid, CST 13-5)
- Keep optimum soil moisture when handling material (Ref: ibid, CST 13-6)
- When loading material:
- Stabilize to meet VDE requirements (Ref: ibid, CST 22
- Empty loader bucket slowly (Ref: ibid, CST 22-1)
- Minimize drop height (Ref: ibid, CST 22-2)

Discussion:

Proposed Imperial County requirements are very similar to Maricopa County and SJV, with the exceptions that the six-inch freeboard requirement is more stringent than the three-inch requirement of Maricopa County and Imperial County does not require a vehicle speed limit or require water to be applied to the top of the load. Imperial County is considered at least equally stringent as other BACM for this category with the exception that Clark County has specified BACM for loading material into the transport trucks.

FUGITIVE DUST CATEGORY: BULK MATERIALS

SUBCATEGORY: OUTDOOR CHUTE/CONVEYOR

Proposed Imperial County Requirements:

- Spray with water prior to handling and/or at transfer points; or (Ref: PR802, Section F.1.a)
- Apply and maintain chemical stabilizer; or (Ref: PR802, Section F.1.b)
- Protect from wind erosion by sheltering or enclosing the operation and transfer line (Ref: R02, Section F.1.c)

SJV Requirements:

- Fully enclose chute or conveyor (Ref: R8031, Table 8031, E1)
- Operate water spray to wet materials to limit VDE to 20% opacity (Ref: ibid, E2)
- Wash conveyed materials to remove PM_{10} to limit VDE to 20% opacity (Ref: ibid, E3)

South Coast Requirements:
(No equivalent requirements under Rule 403)

Rule 1157, PM_{10} Emission Reductions from Aggregate and Related Operations, requires that the operator of a facility/operation using a conveyor shall apply dust suppressants or other dust control methods at the conveyor including all transfer points where materials are released as necessary to meet the performance standards in subparagraph (d)(1)(A), which are opacity and plume requirements.

Maricopa County Requirements:
(No equivalent requirement under Rule 310)

Clark County Requirements:
(No equivalent requirement under AQR Section 94)

Discussion:
SJV and South Coast (aggregate operations only) are the only agency to specify requirements for conveyor/chute movement of bulk materials. Imperial County is proposing similar requirements.

FUGITIVE DUST CATEGORY: BULK MATERIALS/STORAGE PILES

SUBCATEGORY: WINDBLOWN DUST

Proposed Imperial County Requirements:
There are no specific exemptions for wind events in the proposed Regulation VIII amendments, thus no requirements are specified.

SJV Requirements:
(No specific requirements)

South Coast Requirements:

- Apply water twice per hour (Ref: R403, Table 1, 1D)
- Install temporary coverings (Ref: ibid, 2D)

Maricopa County Requirements:

- Apply water twice per hour (Ref: R310, Table 2, 3B)
- Cover with tarps, plastic, or other material to prevent wind from removing coverings (Ref: ibid, 4B)

Clark County Requirements:
(No specific requirements for windblown emissions.)

Discussion:
There are no specific exemptions for wind events in the proposed Regulation VIII amendments. This is the most stringent requirement. The measures for both South Coast and Maricopa County are basically identical. Thus, the most stringent measures for high-wind exemptions call for watering twice per hour or using appropriate coverings.

FUGITIVE DUST CATEGORY: CARRYOUT AND TRACKOUT

SUBCATEGORY: WHEN TO REMOVE TRACKOUT, CLEAN-UP METHODS

Proposed Imperial County Requirements:

All sites that are subject to Regulation VIII where carry-out or track-out has occurred on public roads or the paved shoulders of a paved public road.

- Rapidly clean up, by the end of each workday, any Bulk Material tracked out or carried out onto a Paved Road surface. (Ref: PR803, Section F.1.a)

SJV Requirements:

- Remove trackout at end of workday (non-urban areas and if trackout is less than 50 feet (Ref: R8041, Section 5.1)
- For all urban areas, construction projects greater than 10 acres in rural areas, remove immediately if trackout exceeds 50 feet. (Ref: R8041, 5.4 & 5.5)
- Methods:
  - Manual sweeping (Ref: R8041, Section 5.7.1)
  - Rotary brush/broom with sufficient wetting to limit VDE to 20% opacity (Ref: ibid, 5.7.2)
  - Operating PM_{10}-efficient street sweeper with 80% efficiency per SCAQMD R1186 (Ref: ibid, 5.7.3)
  - Flushing with water in areas without curbs and gutters and without violating NPDES requirements.

South Coast Requirements:

- Remove any trackout greater than 25 feet immediately and at the end of the work day (Ref R403(d)(4))
- For sites greater than 5 acres or 100 cubic yards import / export, a trackout device or other trackout prevention measure is required.

Maricopa County Requirements:

- Remove trackout at end of workday
- Remove ASAP if trackout exceeds 50 feet (Ref R308.3(b)(1) and (2))
- Methods
  - Operate street sweeper or wet broom with sufficient water at speeds recommended by manufacturer (Ref: R310, Table 1, 1H)
  - Manual sweeping (Ref: ibid, 2H)

Clark County Requirements:

- Clean trackout from streets daily
- Remove ASAP if trackout exceeds 50 feet (Ref Section 94 Handbook, CST 19)

Discussion:

South Coast's Rule 403 requires trackout cleanup immediately for any trackout greater than 25 feet; it is the most stringent requirement. SJV, Clark County and Maricopa are of similar stringency. SJV and Maricopa County specify measures to clean up trackout after it has occurred.

FUGITIVE DUST CATEGORY: CARRYOUT AND TRACKOUT

SUBCATEGORY: PREVENTION

Proposed Imperial County Requirements:

All sites with access to a paved road and with ≥ 150 vehicle trips per day, or ≥20 vehicle trips per day by vehicles with ≥ 3 axles shall:

- In addition to F.1.a, all sites shall install one or more Track-Out Prevention Devices or other APCO approved track out control devices or wash down system at access points where unpaved traffic surfaces adjoin paved roads; or (Ref: PR803, Section F.1.b)
- In addition to F.1.a, all sites shall apply and maintain paving, chemical stabilization, or at least 3 inch depth of gravel for a distances of 50 or more consecutive feet at access points where unpaved roads adjoin paved roads (Ref: PR803, Section F.1.c)

SJV Requirements:

For sites with more than 150 AVT or 20 or more AVT by vehicles with three or more axles:

- Install trackout control device at all access points to public roads (Ref: R8041, Section 5.8.1)
- Use approved procedure with equivalent or greater level of control (Ref: ibid, Section 5.8.2)

South Coast Requirements:

For sites greater than 5 acres or daily import/export greater than 100 cubic yards:

- Pave, gravel, or chemically stabilize road surface from point of intersection with public paved road to distance of at least 100 feet by 20 feet wide (Ref R403, Table 3, (1))
- Install trackout control device from point of intersection with public paved road to distance of at least 25 feet by 20 feet wide (Ref: ibid, (2))

Maricopa County Requirements:

- Install grizzly or wheel wash system at all access points (Ref: R310, Table 1, 1J)
- At all access points, install gravel pad at least 50’ long, 30’ wide, and 6” deep (Ref: ibid, 2J)
- Pave from point of intersection with public paved road to distance of at least 100 feet by 20 feet wide. (Ref: ibid, 3J)

Clark County Requirements:

- Pave construction roadways as early as possible (Ref: AQR Section 94 Handbook, (CST 19-1)
- Install gravel pads at least 3” deep by 30 feet wide by 50 feet long (or the length of (longest haul truck if greater than 50 feet). Use 1” to 3” rough diameter gravel
  - or crushed rock and maintain effectiveness (Ref: ibid, CST 19-2)
    Install wheel shakers if gravel pads are not effective (Ref: ibid, CST 19-3)
  - Install wheel washer if gravel pads and wheel shakers not effective (Ref: ibid, CST 19-4)
- All exiting traffic must be routed over selected track out controls (Ref, ibid, CST 19)

Discussion:

Proposed Imperial County requirements are similar to those of SJV, although less stringent than South Coast, Clark County and Maricopa County requirements.

FUGITIVE DUST CATEGORY: PAVED ROAD DUST

SUBCATEGORY: NEW/MODIFIED ROADS

Proposed Imperial County Requirements:

Applies to both public and private roads (Ref: PR805, Section F.4)

- New paved roads or modifications to existing paved roads with projected average daily vehicle trips > 500 vehicles shall construct paved shoulder of 4 ft (500-3000 vehicle trips) or 8 ft (> 3000 vehicle trips) (Ref: PR805, Section F.4.a)
- In lieu of F.4.1, a curbing adjacent to and contiguous with the travel lane or paved shoulder or road may be constructed (Ref: PR805, Section F.4.b)
- In lieu of F.4.1, intersections, auxiliary entry lanes and auxiliary exit lanes may be constructed adjacent to and contiguous with the roadway Ref: PR805, Section F.4.c)
- New paved road construction or modifications to an existing paved road that are required to comply with CEQA and NEPA determinations regarding environmental, cultural, archeological, historical, or other considerations adddressed in such documents, are exempt from the paved shoulder width requirements specified in Section F.4.a. (Ref: PR805, Section F.4.d)
- For Paved Roads with projected annual average daily vehicle trips of 500 or more are constructed, or modified with medians, the medians shall be constructed with paved shoulders having a minimum width of four feet adjacent to the traffic lanes unless: (Ref: PR805, Section F.4.e)
    - The medians of roads having speed limits set at or below 45 mph are constructed with curbing; or (Ref: PR805, Section F.4.e.1)
    - The medians are landscaped and maintained with grass or other vegetative ground cover to comply with the definition of Stabilized Surface. (Ref: PR805, Section F.4.e.2)

SJV Requirements:

Applies to both public and private paved roads (Ref: R8061, Section 5.1.1)

- Paved shoulders required for all roads with average daily vehicle trips (ADVT) of 500 or more.
- If ADVT is 500-3000, then average width is 4 feet. If ADVT is greater than 3000, then average width is 8 feet. (Ref: R8061, Section 5.1.1.1)
- Curbing adjacent to and contiguous with paved lane or shoulder can be used in lieu of shoulder width requirements (Ref: ibid, Section 5.1.1.2)
- Intersections, auxiliary entry and exit lanes may be constructed adjacent to and contiguous with paved roadway in lieu of shoulder requirements (Ref: ibid, Section 5.1.1.3)
- If ADVT is 500 or greater, and medians are part of the roadway, then medians are to be constructed with minimum 4-foot shoulder widths adjacent to traffic lanes (Ref: ibid, Section 5.1.1.5)
- Where speed limits are below 45 mph, medians are to be constructed with curbing (Ref: ibid, Section 5.1.1.5.1)
- Medians are to be landscaped to meet stabilized surface requirements (Ref: ibid, Section 5.1.1.5.2)

- As an option to shoulder paving or vegetation requirements, oils or chemical dust suppressants can be used, according to the specified widths, and must be maintained to limit VDE to 20% opacity (Ref: ibid, Section 5.1.2)

South Coast Requirements:

Applies to both public and private paved roads (Ref R1186(e)(1)):

- For ADVT of 500 or more, curbing or paved shoulders required:
  - For ADVT 500-3000, shoulder width of at least 4 feet
  - For ADVT greater than 3000, shoulder width of at least 8 feet
  - (Ref: ibid, (e)(1)(A))
- For medians with ADVT of 500 or more, pave median area with typical roadway materials, unless speed limits less than 45 mph; or medians are landscaped with ground cover and there is curbing; or medians are treated with chemical stabilizers to maintain stabilized surface (Ref: ibid, (e)(1)(B))

*Contingency notification pertains to certain findings by EPA regarding lack of attainment or rate of progress.

Maricopa County Requirements:

(Note: Maricopa County regulations do not specify requirements for new/modified paved roads; however this element is contained in State Legislation and specific commitments by local jurisdictions.)

- Applicability not specified, but appears to apply to public paved roads:
- A.R.S. 9-500.04(3) and 49-474.01(4), also known as SB1427 (1998) requires cities, towns and counties in a specified area to develop and implement plans to stabilize targeted unpaved roads, alleys, and unpaved shoulders on targeted arterials beginning January 1, 2000. The plans must address performance goals and reporting requirements.
- In addition, Maricopa County and 17 local jurisdictions have committed to additional measures to stabilize unpaved roads, including paving, graveling, curbs and gutters, and vegetation.

Clark County Requirements:

- Applies to both public and private paved roads (Ref: AQR Section 93.2.1):
- Paved travel section must have 4 feet of paved or stabilized shoulder on each side (Ref: AQR Section 93.2.1.1)
- If shoulder is not paved, it must be stabilized with dust palliative or gravel to prevent trackout onto paved road section (Ref: ibid)
- Adjacent, contiguous curbing can be used in lieu of shoulder requirements (Ref: ibid, 93.2.1.2)
- If medians are used, one of the following apply:
  - curbing
  - solid paving across medial
  - use of dust palliative to meet stabilization standards

- use of rock or landscaping on median to prevent trackout (Ref: ibid, 93.2.1.4)

- If roads are constructed not in conformance with these requirements, reconstruction must be completed within one calendar year. (Ref: ibid, 93.2.1.6)

Discussion:

The Maricopa County requirements appear to apply more toward the reduction of unpaved road surfaces than to specifications for construction of new/modified roads to minimize trackout from shoulders and medians. The Imperial County provisions are similar to the South Coast and SJV. Hence, Imperial County, SJV, and South Coast requirements appear to be more stringent than Maricopa County. As for Clark County, shoulder stabilization is set at four feet, whereas Imperial County and SJV have an 8-foot requirement for roads with ADVT greater than 3000. Thus, the Imperial County and SJV requirements are most stringent for paved roads with this level of ADVT. On the other hand, Clark County has no minimum level of ADVT for stabilizing shoulders, thus it is more stringent than the SJV requirements for ADVT levels less than 500. For ADVT of 500 to 3000, the stringency is equivalent.

FUGITIVE DUST CATEGORY: PAVED ROAD DUST

SUBCATEGORY: EROSION CLEAN-UP

Proposed Imperial County Requirements:
(No specific requirements for this category)

SJV Requirements:
(No specific requirements for this category)

South Coast Requirements:

- Remove material from public paved roads within 72 hours of being notified of such accumulation (Ref: R1186(d)(1))

Maricopa County Requirements:

- Remove deposits from any (public and private) roadway within 24 hours of identification of such condition, by using appropriate control measures to limit VDE to 20% opacity (Ref: R310.01 Section 306.1a and 306.2)
- Material disposal must not result in causing new source of fugitive dust (Ref: ibid, 306.1b)

Clark County Requirements:
(No specific requirements for this category)

Discussion:
The most stringent requirement (from a time standpoint) was established by Maricopa County with a requirement for treatment of such material on the paved road surface within 24 hours of identification.

FUGITIVE DUST CATEGORY: PAVED ROAD DUST

SUBCATEGORY: STREET SWEEPING

Proposed Imperial County Requirements:
(No specific requirements for this category)

SJV Requirements:
(No specific requirements for this category)

South Coast Requirements:

- Certified PM_{10}-efficient street sweepers must be used by governmental agencies or their street sweeping contractors where the contract date, purchase date, or lease date is after January 1, 2000. (Ref: R1186(d)(2))
- Certified sweepers are to be used for all routine street sweeping except those with curbs, paved road shoulders greater than 4 feet width, not within 1000 feet of an unpaved road, and provided documentation of such is provided. (Ref: R1186(d)(2) and (i)(3))
- Certified sweepers are to be maintained according to manufacturers specifications (Ref: ibid, (d)(3))

Maricopa County Requirements:
(No specific rule requirements for routine street sweeping, however the Revised Serious Area PM_{10} SIP [Feb, 2000] contains certain commitments to test the feasibility of using PM_{10}-efficient street sweepers, along with commitments from several local jurisdictions to utilize such sweepers according to a proposed implementation schedule.)

Clark County Requirements:

- Any operator who utilizes street sweeping equipment or contracts for street sweeping services must, after January 1, 2001, acquire or contact to acquire PM_{10}-efficient street sweeping equipment (Ref: AQR Section 93.2.2)

Washoe County
(Note: Regulation adopted on Feb 27, 2002)

- Any governmental agency which conducts street sweeping or contract for street sweeping services, must purchase or lease PM_{10}-efficient certified street sweepers on or after February 1, 2002. (Ref: R040.032, Section A2 and C1)
- Certified street sweepers must be operated and maintained according to manufacturer's specifications (Ref: ibid, C2)
  Routine street sweeping must be conducted a minimum of once per month (Ref: ibid, C4)

Discussion:

PM_{10}-efficient street sweepers, as determined by South Coast Rule 1186 test method, can capture the finer particles. Since South Coast, Washoe County, and Clark County have rule provisions to employ PM_{10}-efficient street sweepers for routine street sweeping, these are considered to be most stringent.

As noted in the SJVUAPCD "BACM/BACT and RACM/RACT Demonstration for Sources of PM_{10} and PM_{10} Precursors in the San Joaquin Valley Air Basin," (dated April 28, 2003), "use of these units will result in safety problems on freeways and rural roads in flat terrain." The overwhelming majority of roads in Imperial County are freeways or rural roads in flat terrain.

FUGITIVE DUST CATEGORY: FEEDLOTS AND RELATED OPERATIONS

SUBCATEGORY: CONTROL MEASURES

Proposed Imperial County Requirements:

ICAPCD Rule 420 requires any person using or operating a Livestock Feed Yard to acquire and maintain a "Livestock Feed Yard Certificate." Application, fee and renewal requirements for such a certificate are substantially the same as those set out in Regulation II for permits, except as provided. An application for a Livestock Feed Yard certificate shall include a written plan designed to effectively control Dust. Such Dust control plan shall contain the following:

- Procedures for assuring Manure at all times is maintained at a moisture factor
- between 20% and 40%, in the top three inches (3") in occupied pens.
- An outline of Manure management practices, including standards and time tables for manure removal, designed to effectively control Dust and to prevent adverse public health conditions.

SJV Requirements:

For feedlot operations with more than 190 cows, SJVAPCD Rule 4550 requires the submittal of a conservation management plan with 1 conservation management practice (CMP) for each category:

- Pens / Manure Handling:
  - Sprinkle
  - Frequent scraping and/or removal of manure
  - Fibrous layer in working areas
  - Pull-type manure harvesting equipment
  - Shade for animals
- Overall Management / Feeding:
  - Bulk materials control
  - Feeding near dusk
  - Wet feed during mixing
  - Place wet material in feedwagon first
  - Downwind shelterbelts / boundary trees
- Unpaved roads and traffic areas:
  - Dust suppressants
  - Gravel
  - Access restriction
  - Speed reduction
  - Pavement
  - Trackout control
  - Appropriate equipment and vehicles

South Coast Requirements:

For livestock operations of 10 acres or larger:

- Cease hay-grinding activities between 2 and 5 pm if visible emissions extend more than 50 feet from the source (Ref: R1186(d)(5))
- Treat all unpaved access connections and unpaved feed lane access areas with pavement, gravel to a depth of four inches, or asphaltic road base (Ref: R1186(d)(6))
- Rule 1127 requires choosing a best management practice for dust:
  - Scrape or harrow before 9 am only unless the moisture content of the manure is greater than 20% throughout the corral, as determined by an moisture meter in accordance with paragraph(h)(1); OR
  - Clear corrals such that an even surface of compacted manure remains on top of the soil and do not scrape down to soil level; OR
  - Water corral before manure removal to reduce dust through increased surface moisture. This measure is not required for lactating cows.

Maricopa County Requirements:

For commercial feedlots and commercial livestock areas:

- Apply dust suppressants to limit VDE to 20% opacity (Ref R310.01, Section 305.1a), or
- Apply and maintain surface gravel to limit VDE to 20% opacity (Ref: ibid, 305.1b), or
- Install shrubs and/or trees within 50 to 100 feet of animal pens to limit VDE to 20% opacity (Ref: ibid, 305.1c)

Clark County Requirements:

(No specific requirements for feedlots.)

Discussion:

For livestock and feedlots, Imperial County's requirements for the feedlots themselves can be considered most stringent since they require a specific moisture level be maintained in the feedlots. SJV, South Coast and Maricopa County have taken steps to reduce emissions, mainly from disturbed surfaces. South Coast has a de minimis size of 10 acres, whereas Maricopa County does not specify a minimum size. Hence the application of measures to control dust from unpaved roads and access areas is more stringent in Maricopa County. South Coast has provisions for hay grinding activity, which is not contained in Maricopa County.

FUGITIVE DUST CATEGORY: BUREAU OF LAND MANAGEMENT (BLM) AND BORDER PATROL (BP) AREAS AND ACTIVITIES

SUBCATEGORY: REQUIREMENTS

Proposed Imperial County Requirements:

The BLM shall prepare a Dust Control Plan that includes the following: (Ref: PAR800, Section F.5):

- Stipulate that all new authorizations for stationary emission sources obtain all necessary permits and satisfy all applicable SIP provisions, including project- or activity- specific BACM;
- A summary of: the total miles of BLM roads that are paved, paved with unpaved shoulders, and unpaved roads with 50 or more vehicle trips per day, including length and level of usage of each such road; the priority for control of road segments based on annual and episodic (e.g. event) usage; the plans for control of PM_{10} emissions from these roads; the location and extent (e.g. acreage) of open areas disturbed by legal and illegal recreational use; the priority for control of these open areas based on annual and episodic (e.g. event) usage; and the plans for control of PM_{10} emissions from these areas.
  - BLM must demonstrate in its Dust Control Plan that unpaved roads, parking, and open areas are controlled pursuant to the applicability and requirements of Rules 804 and 805 except where measures are demonstrated by BLM to be prohibited by federal or state laws, regulations, or approved plans concerning wilderness preservation and species management and recovery.
  - Where compliance with any control measure in Rules 804 and 805 is prohibited pursuant to F.5.b.1, the Dust Control Plan must discuss and commit to implement other possible control measures, such as vehicle speed limits.
  - The Dust Control Plan must describe all PM-10 control measures that will be implemented, such as restricted use areas, stabilization of unpaved traffic areas and current RAMP measures, to reduce PM10 emissions during off-road events and/or competitions on public land and include all those measures that are feasible and not prohibited by the laws, regulations and plans described in F.5.b.1
- Use BLM-standard road design and drainage specifications when maintaining existing roads or authorizing road maintenance and new road construction; and
- Include public educational information on PM_{10} emissions with BLM open area literature and on information signs in heavily used areas.

The BP shall prepare a Dust Control Plan that includes the following fugitive dust control measures (Ref: PAR800, Section F.5):

- Stipulate that all new authorizations for stationary emission sources obtain all necessary permits and satisfy all applicable SIP provisions, including project-or activity- specific BACM;
- Implement alternatives to tire-dragging for monitoring of immigration across the U.S.-Mexico border; and

- Control dust emissions from certain roads and routes as identified through general BP planning.

SJV Requirements:
(No specific requirements for this category)

South Coast Requirements:
(No specific requirements for this category)

Maricopa County Requirements:
(No specific requirements for this category)

Clark County Requirements:
(No specific requirements for this category)
Discussion:
Unpaved roads and disturbed open areas are considered significant sources of PM_{10} in Imperial County. There are unpaved roads in the lands administered by BLM and the USFS; entrained and windblown dust from these roads is 1.8 tons/day, less than 2% of the 92 tons/day for all unpaved roads. Almost all of the unpaved roads on BLM and USFS lands have traffic levels under the Rule 805 threshold of 50 ADT. Of the over 2,666,600 acres in Imperial County over 77% is scrubland, barren land, or sand dunes. Most of this land is administered by BLM and the USFS. Except for areas used by the military or lands set aside for OHV use, most of the land is disturbed only by wind, water, and native animals. The lack of "destination" national or state parks, low County population density, general remoteness, and high summer temperatures minimizes man-made disturbances on most of this land. The exception to this is special off-roading events held in the dune areas. These special events occur 5 to 10 times per year, for a few days each. The BLM Dust Control Plan in PAR 800 requires control measures for these special events, even if annual or average day usage does not meet the thresholds in Rules 804 and 805.

The only Imperial County significant sources on BLM lands are unpaved roads and disturbed open areas. In addition, PAR 800 only exempts the recreational use of public lands (e.g., OHVs, all-terrain vehicles, trucks, cars, motorcycles, motorbikes or motorbuggies), not other dust-producing activities such as construction, etc. The BLM Dust Control Provisions make clear that any stationary source activity must meet all applicable SIP provisions, including project- or activity-specific BACM. Thus, the focus of the Dust Control Plan provisions are on unpaved road and disturbed open area sources related to the recreational use of public lands.

BLM sources are considered separate from the general dust source categories; this is in recognition of the special federal purposes of these agencies (e.g., habitat preservation and compliance with other area-specific environmental laws) and the inconsistency of requiring certain traditional dust control methods on these sources (e.g., vegetating disturbed dune areas approved for off-highway vehicle recreational use.). Many restrictions apply to actions on federal lands that have special purposes, such as habitats, national monuments and preserves. Common dust control measures, such as chemical stabilization and

paving would not be allowed if it endangered native wildlife or affected habitats. BLM is required to determine if a proposed dust control project conforms with the approved land use plan terms and conditions, as required by CFR 1610.5. Examples of such laws and plans include the federal Endangered Species Act, the California Desert Protection Act, the California Desert Conservation Area Plan and related tiered plans(e.g. the Yuha Basin ACEC Management Plan, Yuha Desert Habitat Management Plan, Yuha Desert Management Plan, Imperial San Dunes Recreation Area Management Plan (RAMP), Algodones Dunes Habitate Management Plan, Flat-tailed Horned Lizard Rangewide Strategy and Recovery Plan for Bighorn Sheep in the Peninsular Ranges, CA).

BLM also must meet the requirements of NEPA for its projects. BLM is the appropriate lead agency for both NEPA and conformity determinations for dust control projects on BLM lands; mandating Rule 804 and 805 requirements without consideration of NEPA and conformity issues could unnecessarily involve ICAPCD in these issues and potentially delay implementation of proposed dust control programs. Mandating PR 804 and 805 could also put BLM in the position of either violating an ICAPCD rule or potentially requiring a finding of overriding concerns for a given Environmental Assessment. Furthermore, any action on the use of the BLM lands has been highly litigious. Were ICAPCD to unilaterally impose requirements on BLM, it is possible that litigation and a temporary suspension of those rules while the litigation is resolved will occur. Thus, proposed Regulation VIII establishes a separate control program for the BLM lands, rather than imposing general Regulation VIII requirements on them on a dust source by dust source basis. ICAPCD believes that this is the most appropriate way to reduce emissions from federal sources.

ICAPCD and BLM have worked together on previous dust control programs, including the inclusion of PM_{10} control measures in the RAMP. BLM has also included PM_{10} prevention and mitigation measures based on its Environmental Assessment of its road and trail maintenance activities related to Border Patrol activities. Appendix F is the Environmental Assessment for this project. It is an example of the detailed environmental analysis required for projects on BLM lands and the use of the NEPA process to identify and implement PM_{10} prevention and mitigation measures.

FUGITIVE DUST CATEGORY: WEED ABATEMENT ACTIVITIES

SUBCATEGORY: REQUIREMENTS

Proposed Imperial County Requirements:

(No specific requirements for this category)

SJV Requirements:

There are no specific requirements for weed abatement, other than in the definition for "earthmoving activities." However, in the "applicability" section of Rule 8021, weed abatement actions are not specifically identified. It can be presumed that the following actions apply:

- Pre-activity
  - Pre-water to limit VDE to 20% opacity (Ref 8021, Table 8021-2)
  - Phase work to reduce amount of disturbed surface area (Ref: ibid)
- During Active Operations
  - Apply water to limit VDE to 20% opacity (Ref: ibid)
- Stabilization During Periods of Inactivity
  - Restrict vehicle access to area
  - Apply water or chemical stabilizers to meet conditions of a stabilized surface (Ref: ibid)

South Coast Requirements:

- Such activities subject to standards of Rule 403, unless:
  a) Mowing or cutting is used, instead of discing, and maintains stubble at least three inches above the soil (Ref R403(h)(1)(H)(i))
  b) If discing is used, there is a determination of a potential fire hazard (Ref: ibid, (ii))
- After discing, requirement for taking action on disturbed surface areas apply (Ref: ibid)

Maricopa County Requirements:

- For weed abatement by discing or blading:
  - Pre-water and take post-discing actions (Ref: R310, Section 308.8 & Table 1, 1K)
  - Apply water during activity and take post-discing actions (Ref: ibid, 2K)
  - Post-discing/blading actions to meet requirement for stabilized surface:
    a) pave
    b) apply gravel
    c) apply water
    d) apply dust suppressant (Ref: ibid, 3K)
    e) establish vegetative ground cover (Ref: ibid, 4K)

Clark County Requirements:

- If discing or blading is used on lots greater than 5000 square feet, then all of the following apply:
  a) apply water before discing/blading
  b) apply water during activity
  c) implement one of the following for stabilized surface:
     i) pave
     ii) apply water
     iii) apply dust palliative
     (Ref: AQR Section 90.2.2 and 90.2.2.1)

Discussion:

The SJV requirements are somewhat vague in the sense that the only mention of weed abatement is in the definition of "earthmoving activities" without any further specificity for actions specific to weed abatement. In other approaches, Clark County and Maricopa County are very similar, except that Maricopa County does not have a de minimis area, and so it is considered to be more stringent in this case. South Coast goes one extra step in preventing soil disturbance by encouraging cutting or mowing in preference to discing.

A P P E N D I X E

Draft Regulation VIII Rules and Rule Amendments (dated October 2005)

RULE 800. GENERAL ~~FUGITIVE DUST~~ REQUIREMENTS FOR CONTROL OF FINE PARTICULATE MATTER (PM-10)
(Adopted 10/10/94; revised 11/25/96; revised ----------)

A. General Description

The purpose of this regulation is to reduce the amount of fine Particulate Matter (PM-10) entrained in the ambient air as a result of emissions generated from anthropogenic (man-made) Fugitive Dust (PM-10) sources generated from within Imperial County by requiring actions to prevent, reduce, or mitigate PM-10 emissions. ~~This Regulation contains EPA required Reasonably Available Control Measures (RACM) to be included in the Imperial County Air Pollution Control District (APCD) Non-Attainment Area Plan for attaining the National Ambient Air Quality Standards for PM-10.~~ The Rules contained within this Regulation have been developed pursuant to United States Environmental Protection Agency guidance for Serious PM10 Non Attainment Areas.

B. Applicability

The requirements of this rule ~~Regulation~~ shall apply to any Active Operation, and/or man-made or man-caused condition or practice capable of generating Fugitive Dust (PM-10) as specified in this Regulation except those determined exempt as defined in Part E of this Rule ~~Regulation~~. The definitions, exemptions, requirements, administrative requirements recordkeeping requirements, and test methods set forth in this rule are applicable to all the rules under Regulation VIII (Fugitive Dust Requirements) of the Rules and Regulations of the Imperial County Air Pollution Control District.

C. Definitions

For the purpose of this Regulation, the following terms are defined:

C.1 ACTIVE OPERATION: Activities capable of generating Fugitive Dust (PM-10) ~~conducted for industrial, commercial, state, federal, city, county or special district purposes and their contractors,~~ including but not limited to, Earthmoving Activities, Construction activities, Unpaved Roads, Track-Out/Carry-Out, Bulk Material storage and transport, Unpaved Haul/Access Roads.

C.2 AGGREGATE MATERIALS: Consists of sand, Gravel, quarried stone and/or rock fragments that are typically used in Construction. Aggregates may be natural, artificial or recycled.

C.3 ANEMOMETRS: Are devices used to measure wind speed and direction in accordance with manufacturer's performance standards, maintenance and calibration criteria.

C.4 ANNUAL AVERAGE DAILY VEHICLE TRIPS: annual average 24-hour total of all vehicles counted on a road.

C.~~2~~5 APCD: The Imperial County Air Pollution Control District.

C.~~3~~6 APCO: The Imperial County Air Pollution Control Officer.

C.7 AVERAGE VEHICLE TRIPS PER DAY: 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.

C.8 BLM: The Bureau of Land Management.

C.9 BP: The United States Border Patrol.

C.~~4~~10 BULK MATERIAL: Earth, rock, Silt, sediment, sand, Gravel, soil, fill, Aggregate, dirt, mud, debris, and other organic and/or inorganic material consisting of or containing Particulate Matter with five percent or greater Silt content. For the purpose of this Regulation, the Silt content level is assumed to be 5 percent or greater, unless the Person responsible for the Active Operation conducts the applicable laboratory tests and demonstrate that the Silt content is less than 5 percent. Active Operations seeking to determine if the Silt content is less than five percent are required to conduct the laboratory analysis in accordance with ASTM method C-136-a (Standard Test Method for Sieve analysis of Fine and Coarse Aggregates), or other equivalent test methods approved by EPA, ARB, and the APCD. ~~Attachment A is ASTM method C-136, attachment B is ASTM method D-75 for sampling aggregate material.~~

C.~~5~~11 CANAL BANK: A rise of land on either side of an irrigation canal.

C.~~6~~12 CHEMICAL STABILIZATION/SUPPRESSION: A means of Fugitive Dust (PM-10) control implemented to mitigate PM-10 emissions by applying petroleum resins, asphaltic emulsions, acrylics, adhesives, or any other materials approved for use by the California Air Resources Board (CARB), U.S. Environmental Protection Agency (U.S. EPA) and/or the APCO.

C.13 CONSTRUCTION: Any on-site mechanical activities preparatory to or related to the building, alteration, rehabilitation, or demolition of an improvement on real property, including, but not limited to, land clearing, excavation related to construction, land leveling, grading, cut and fill grading, and the erection or demolition of any structure. As used in Regulation VIII, a construction site may

encompass several contiguous parcels, or may encompass only a portion of one parcel, depending on the relationship of the property boundaries to the actual construction activities.

C.~~7~~14 DESIGNATED REPRESENTATIVE: The agent for a Person. The Designated Representative shall be responsible for and have the full authority to implement ~~R~~BACM on behalf of the Person.

C.15 EARTHMOVING ACTIVITIES: The use of any equipment for an activity that may generate Fugitive Dust emissions, including, but not limited to, cutting and filling, grading, leveling, excavation, trenching, loading or unloading of Bulk Materials, demolishing, drilling, adding to or removing bulk of materials from open storage piles, weed abatement through disking, and back filling.

C.~~8~~16 FUGITIVE DUST: The Particulate Matter entrained in the ambient air which is caused from man-made and natural activities such as, but not limited to, movement of soil, vehicles, equipment, blasting, and wind. This excludes Particulate Matter emitted directly in the exhaust of motor vehicles or other fuel combustion devices, from portable brazing, soldering, or welding equipment, pile drivers, and stack emissions from stationary sources.

C.~~9~~17 GRAVEL: Gravel travelways shall have a three (3) inch minimum depth Stabilized Surface. The travelway shall have a relative compaction of not less than ~~90%~~ 95% as determined by Test Method No. California 216 of State of California, Business and Transportation Agency Department of Transportation, and conforming to the following grading:

Sieve Designation	¾" Maximum Percent Passing
~~1 ½"~~ 1"	100
~~3/4"~~ ¾"	~~85-95~~ 90-100
#4	~~55-75~~ 35-60
#30	~~25-45~~ 10-30
#200	~~15-25*~~ 2-9

~~*(with <5% Silt)~~

Reference: ~~County of Imperial Department of Public Works Standard S-1101.~~ California Department of Transportation Standard Specification Section 26/class II Aggregate Base

C.~~10~~18 HAUL/ACCESS ROAD: Any on-site road used for commercial, industrial, institutional, and/or governmental traffic~~, excluding Haul/Access Roads used for agricultural operations~~.

C.~~11~~19 HAUL TRUCK: Any fully or partially open-bodied licensed motor vehicle used for transporting Bulk Material for industrial or commercial purposes.

C.~~12~~20 IMPLEMENT OF HUSBANDRY: An unlicensed vehicle which is used exclusively in the conduct of Agricultural Operations. An Implement of Husbandry does not include a vehicle if its existing design is primarily for the transportation of persons or property on a highway, unless specifically designated as such by some other provision of the Vehicle Code of California.

C.21 NON-RESIDENTIAL AREA: Any unpaved vehicle and equipment traffic area operated at any commercial, manufacturing or government sites.

C.22 MODIFIED PAVED ROAD: Any Paved Road that is widened or improved so as to increase traffic capacity. This term does not include road maintenance, repair, chip seal, pavement or roadbed rehabilitation that does not affect roadway geometrics, or surface overlay work.

C.23 OFF-FIELD AGRICULTURAL SOURCE: Any Agricultural Source or activity at an Agricultural Source that falls into one or more of the following categories:

C.23.a Outdoor handling, storage and transport of Bulk Material;

C.23.b Paved Road;

C.23.c Unpaved Road; or

C.23.d Unpaved Traffic Area.

C.~~13~~24 OFF-ROAD VEHICLE: Any nonstationary device, powered by an internal combustion engine or motor, used primarily off the highways to propel, move, or draw persons or property including any device propelled, moved, or drawn exclusively by human power, and used in, but not limited to, any of the following applications: marine vessels, construction/farm equipment, utility and lawn and garden equipment, off-road motorcycles, and off-highway vehicles.

C.25 ON-FIELD AGRICULTURAL SOURCE: Any Agricultural Source or activity at an Agricultural Source that is not an Off-Field Agricultural Source, including (but not limited to) the following:

C.25.a Activities conducted solely for the purpose of preparing land for the growing of crops or the raising of fowl or animals, such as brush or timber clearing, grubbing, scraping, ground excavation, land leveling, grading, turning under stalks, disking, or tilling;

C.25.b Drying or pre-cleaning of agricultural crop material on the field where it was harvested;

C.25.c Handling or storage of agricultural crop material that is baled, cubed, pelletized, or long-stemmed, on the field where it was harvested, and the handling of fowl or animal feed materials at sites where animals or fowl are raised;

C.25.d Disturbances of cultivated land as a result of fallowing, planting, fertilizing or harvesting.

C.26 OPEN AREA: Any of the following described in Subsection C.26.a through C.26.c of this rule. For the purpose 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. An open area does not include any Unpaved Traffic Area as defined in this rule.

C.26.a An un-subdivided or undeveloped land adjoining a developed (or partially developed) residential, industrial, institutional, governmental, or commercial area.

C.26.b A subdivided residential, industrial, institutional, governmental, or commercial lot, which contains no approved or permitted building or structures of a temporary or permanent nature.

C.26.c A partially developed residential, industrial, institutional, governmental, or commercial lot and contiguous lots under common ownership.

C.~~14~~27 PARTICULATE MATTER: Any material, except uncombined water, which exists in a finely divided form as a liquid or solid at 60 degrees F and one atmosphere pressure.

C.~~15~~28 PAVED ROADS: An improved street, highway, alley, public way, that is covered by concrete, asphaltic concrete, or asphalt.

C.~~16~~29 PERSON: Any individual, public or private corporation, partnership, association, firm, trust, estate, municipality, or any other legal entity whatsoever which is recognized by law as the subject of rights and duties, who is responsible for an Active Operation.

~~C.17 PHYSICAL STABILIZATION: A means of dust control implemented to mitigate PM-10 emissions by applying vegetation, Gravel, recrushed/recycled asphalt or any other materials or methods specified for use by U.S. EPA, CARB and/or the APCO~~.

C.~~18~~30 PM-10: Particulate Matter with an aerodynamic diameter smaller than or equal to a nominal 10 microns as measured by the applicable State and Federal reference test methods.

~~C.19. REASONABLY AVAILABLE CONTROL MEASURE (RACM): A technique, practice, or procedure as identified in Section I of this Regulation that is used to prevent or minimize the generation, emission, entrainment, suspension and/or airborne transport of Fugitive Dust (PM-10).~~

C.31 RECREATIONAL USE: the recreational use of public lands covered by the most recent BLM dust control plan.

C.~~20~~32 SILT: Any Aggregate Material with a particle size less than 75 micrometers in diameter as measured by a No. 200 sieve as defined in ASTM D-2487 ~~(attachment C, subsection 3.1.4~~ and as tested by ASTM-C-136 or other equivalent test methods approved by EPA, ARB, and the APCD. ~~(attachment A)~~.

C.33 STABILIZED SURFACE: Any disturbed surface area or open bulk storage pile that is resistant to wind blown Fugitive Dust emissions. A surface is considered to be stabilized if it meets at least one of the following conditions specified in this Section and as determined by the test methods specified in Appendix B of this rule:

C.33.a A visible crust; or

C.33.b A threshold friction velocity (TFV) for disturbed surface areas corrected for non-erodible elements of 100 centimeters per second or greater; or

C.33.c A flat vegetative cover of at least 50 percent that is attached or rooted vegetation; or unattached vegetative debris lying on the surface with a predominant horizontal orientation that is not subject to movement by wind; or

C.33.d A standing vegetative cover of at least 30 percent that is attached or rooted vegetation with a predominant vertical orientation; or

C.33.e A standing vegetative cover that is attached or rooted vegetative with a predominant vertical orientation that is at least 10 percent and where the TFV is at least 43 centimeters per second when corrected for non-erodible elements; or

C.33.f A surface that is greater than or equal to 10 percent of non-erodible elements such as rocks, stones, or hard-packed clumps of soil.

C.34 Stabilized Unpaved Road: Any Unpaved Road or unpaved vehicle/equipment traffic area surface which meets the definition of Stabilized Surface as determined by the test method in Appendix B, Section C of this rule, and where VDE is limited to 20% opacity.

C.35 TACTICAL TRAINING: Training conducted by the U.S. Department of Defense, the U.S. military services, or its allies for combat, combat support, combat service support, tactical or relief operations. Examples include but are not limited to munitions training.

C.36 TEMPORARY UNPAVED ROAD: Any Unpaved Road surface which is created to support a temporary or periodic activity and the use of such road surface is limited to vehicle access for a period of not more than six months during any consecutive three-year period.

C.37 THRESHOLD FRICTION VELOCITY (TFV): The corrected velocity necessary to initiate soil erosion as determined by the test method specified in Appendix B, Section D, of this rule. The lower TFV, the greater the propensity for fine particles to be lifted at relatively low wind speeds.

C.~~21~~38 TRACK-OUT/CARRY-OUT: Any and all Bulk Materials that adhere to and agglomerate on the exterior surfaces of motor vehicles and/or equipment (including tires) ~~and excluding Implements of Husbandry and~~ that may then fall onto the pavement.

C.~~22~~39 TRACK-OUT PREVENTION DEVICE: ~~A vibrating or tire spreading device to dislodge mud, dirt and/or debris from the tires and undercarriage of motor vehicles~~ A Gravel pad, grizzly, wheel wash system, or a paved area, located at the point of intersection of an unpaved area and a Paved Road that prevents or controls Track-Out.

C.~~23~~40 UNPAVED ROADS: Streets, alley ways, or roadways ~~that are improved and maintained and~~ that are not covered by one of the following: concrete, asphaltic concrete, asphalt, or other similar materials specified by the U.S.EPA, CARB and/or the APCO.

C.41 UNPAVED TRAFFIC AREA: Any nonresidential area that is:

C.41.a Not covered by asphalt, recycled asphalt, asphaltic concrete, concrete, or concrete pavement, and

C.41.b Used for fueling and servicing; shipping, receiving and transfer; or parking or storing equipment, haul trucks, vehicles, and any conveyances.

C.42 VDE: Visible dust emissions. Dust emissions that are visible to an observer.

C.~~24~~43 VMT: Vehicle miles traveled.

C.44 WIND GUST: Is the maximum instantaneous wind speed as measured by an anemometer.

D. Compliance Schedule

D.1 Existing sources subject to this Regulation shall comply with its requirements no later than 90 days after its adoption date.

D.2 New sources subject to this Regulation shall comply with its requirements prior to initiation of activity.

D.3 The BLM and BP shall each comply with the following compliance schedule:

D.3.a Submit a draft dust control plan addressing all applicable portions of this Regulation including section F.5 within three (3) months of the adoption date of this rule, to which the APCO shall respond within 60 days;

D.3.b Submit a final dust control plan addressing all APCO comments within two (2) months after receiving APCO's comments, which the APCO shall transmit to CARB and U.S. EPA for 45-day review and comment;

D.3.c Implement all final dust control plan elements within six (6) months of submittal; and

D.3.d Submit an updated dust control plan every two calendar years by the procedures described in D.3.a to D.3.c. The updated plans shall be transmitted to the District no later than 90 days after the end of the calendar year and, in addition to information required of the initial plan, shall include a summary of actions taken to prevent or mitigate PM10 emissions during the previous two years.

E. Exemptions

The following activities are exempt from provisions of this Regulation:

E.1 Actions required by the Federal or State Endangered Species Act or any order issued by a court or governmental agency.

E.2 Off-Field Agricultural Sources necessary to minimize or respond to adverse effects on agricultural crops caused during freezing temperatures as declared by the National Weather Service.
~~Any operation already under Air Pollution Control District permit with requirements for PM-10 control, provided the control of fugitive PM-10 emissions is at least as stringent as required by this Regulation.~~

~~E.3 Agricultural operations including the growing, harvesting, tilling, cultivating and post harvesting of crops, or the raising of animals, fowl, or bees excepting the vehicle transportation, and vehicle hauling or other movement of the crops, animals, fowl or bees resulting from such operations and ingress to and egress from Paved Roads.~~

E.~~4~~3 Non-routine or emergency maintenance of flood control channels and water spreading basins.

~~E.5 Paved and unpaved driveways serving single family residential dwellings.~~

E.~~6~~4 Any emergency operation ~~and/or law enforcement~~ activities performed to ensure public health and safety. Emergency activities lasting more than 30 days shall be subject to this Regulation, except where compliance would limit the effectiveness of the emergency activity performed to ensure public health and safety.

~~E.7 Outdoor storage or handling of organic or inorganic fertilizer, grains, seed and feed) which would be damaged by wetting.~~

E.~~8~~5 Blasting operations permitted by the California Division of Industrial Safety. Other activities performed in conjunction with blasting are not exempt from complying with the provisions of this rule.

E.~~9~~6 The Recreational Use of public lands covered by the most recent BLM dust control plan that complies with Rule 800, including but not limited to Off-Road Vehicles, all-terrain vehicles, trucks, cars, motorcycles, motorbikes or motorbuggies.

E.7 Military training activities conducted by the Department of Defense including but not limited to: (1) military Tactical Training, (2) maintenance, repair, and removal of targets and munitions associated with military Tactical Training, (3) open areas on active military ranges, including but not limited to designated impact areas, landing zones, and bivouac areas. Other activities performed in conjunction with military Tactical Training are not exempt from complying with the provisions of this rule.

F. General Requirements

F.1 Materials used for Chemical Stabilization of soils, including petroleum resins, asphaltic emulsions, acrylics, and adhesives shall not violate State Water Quality Control Board standards for use as a soil stabilizer. Materials accepted by the California Air Resources Board (ARB) and the United States Environmental Protection Agency (EPA), and which meet State water quality standards, shall be considered acceptable to the ICAPCD.

F.2 Any material prohibited for use as dust Suppressant by EPA, the ARB, or other applicable law, rule, or regulation is also prohibited under Regulation VIII.

F.3 Use of hygroscopic materials may be prohibited by the APCD in areas lacking sufficient atmospheric moisture of soil for such materials to effectively reduce Fugitive Dust emissions. The atmospheric moisture of soil is considered to be sufficient if it meets the application specifications of the hygroscopic product manufacturer. Use of such materials may be approved in conjunction with sufficient wetting of the controlled area.

F.4 Any use of dust Suppressants or gravel pads, and paving materials such as asphalt or concrete for paving, shall comply with other applicable District Rules.

F.5 Bureau of Land Management (BLM) Requirements

The BLM shall prepare a dust control plan to minimize PM10 emissions for sources under the control of BLM. The dust control plan shall include at a minimum the following:

F.5.a A stipulation that all new authorizations for point and area stationary emission sources obtain all necessary permits and satisfy all applicable SIP provisions, including project- or activity- specific BACM;

F.5.b A summary of: the total miles of BLM roads that are paved, paved with unpaved shoulders, and unpaved roads with 50 or more average vehicle trips per day, including length and level of usage of each such road; the priority for control of road segments based on annual and episodic (e.g. event) usage; the plans for control of PM-10 emissions from these roads; the location and extent (e.g. acreage) of open areas disturbed by legal and

illegal Recreational Use; the priority for control of these open areas based on annual and episodic (e.g. event) usage; the plans for control of PM-10 emissions from these areas;

F.5.c BLM must demonstrate in its dust control plan that Unpaved Roads, parking, and Open Areas are controlled pursuant to the applicability and requirements of Rules 804 and 805 except where measures are demonstrated by BLM to be prohibited by federal or state laws, regulations, or approved plans concerning wilderness preservation and species management and recovery.

F.5.d Where compliance with any control measure in Rules 804 and 805 is prohibited pursuant to F.5.c, the dust control plan must discuss and commit to implement other possible control measures, such as vehicle speed limits.

F.5.e The dust control plan must describe all PM-10 control measures that will be implemented, such as restricted use areas, stabilization of Unpaved Traffic Areas and current RAMP measures, to reduce PM10 emissions during off-road events and/or competitions on public land and include all those measures that are feasible and not prohibited by the laws, regulations and plans described in F.5.c;

F.5.f Use BLM-standard road design and drainage specifications when maintaining existing roads or authorizing road maintenance and new road construction; and

F.5.g Include public educational information on reducing PM-10 emissions with BLM open area literature (e.g. identification of restricted areas and/or applicable speed limits) and on related information signs in heavily used areas.

F.6. Border Patrol (BP) Requirements

The BP shall prepare a dust control plan designed to minimize PM10 emissions from sources under the control of the BP. The dust control plan shall include those dust control measures found in Rules 804 and 805 that are not inconsistent with the BP's authority and/or mission. The dust control plan shall include the following fugitive dust control measures:

F.6.a A stipulation that all new authorizations for point and area stationary emission sources obtain all necessary permits and satisfy all applicable SIP provisions, including project-or activity- specific BACM;

F.6.b Implement alternatives to tire-dragging that result in fewer PM10 emissions, when such alternatives are consistent with the monitoring of immigration across the U.S.-Mexico border; and

F.6.c Control dust emissions from certain Unpaved Roads and routes owned or operated by the BP as identified through general BP planning consistent with Rule 805 unless those dust control measures are demonstrated to be inconsistent with BP authority and/or mission.

~~F. Requirements~~

~~F.1 Any Person who engages in any Active Operations identified in Section F of this rule shall provide for the implementation and maintenance of applicable RACMs, unless the implementation of such RACM endangers or could endanger the health or safety of the public.~~

~~F.2 Track Out/Carry Out: Any Person who causes the deposition of Bulk Material by tracking out or carrying out onto a Paved Road surface shall apply one or more applicable RACM to prevent or mitigate such deposition.~~

~~F.3 Unpaved Haul/Access Roads: No Person shall cause, suffer or allow the operation, use, or maintenance of any Unpaved Haul/Access Road of more than ½ mile in length at any work site without applying one or more appropriate so as to affect at least 15% of the total road surface(s) or apply one or more RACM so as to achieve a level of control that is equivalent to 100% control of emissions from 15% of the total unpaved surface(s).~~

~~F.4 Unpaved Roads: All Persons who cause, suffer or allow the operation, use or maintenance of any Unpaved Road, greater than 3/4 mile in length, and with 20.0 or more average VMT per mile per day shall apply one or more appropriate RACM as to affect at least 15% of the total road surface(s) or apply one or more RACM so as to achieve a level of control that is equivalent to 100% control of emissions from 15% of the total unpaved surface(s).~~

~~F.5 Bulk Material Handling: No Person shall cause, suffer, allow or engage in any Bulk Material handling operation including, but not limited to, storage, stacking, loading, unloading, conveying and reclaiming of Bulk Material, for industrial or commercial purposes without applying one or more appropriate RACM.~~

~~F.6 Material Transport: No Person shall cause, suffer, allow or otherwise engage in the transportation of Bulk Materials for industrial or commercial purposes, without applying one or more appropriate RACM.~~

~~F.7 Haul Trucks: No Person shall cause, suffer, allow or otherwise engage in the use or operation of any Haul Truck, for industrial or commercial purposes, of transporting or storing Bulk Material without applying one or more appropriate RACM.~~

G. Administrative Requirements

G.1 Test Methods

G.1.a Determination of VDE Opacity

Opacity observations to determine compliance with VDE standards shall be conducted in accordance with the test procedures for "Visual Determination of Opacity" as described in Appendix A of this rule. Opacity observations for sources other than unpaved traffic areas (e.g., roads, parking areas) shall be conducted per Section B of Appendix A and shall require 12 readings at 15-second intervals.

G.1.b Determination of Stabilized Surface

Observations to determine compliance with the conditions specified for a stabilized surface, in any inactive disturbed surface area, whether at a work site that is under construction, at a work site that is temporarily or permanently inactive, or on an open area and vacant lot, shall be conducted in accordance with the test methods described in Appendix B of this rule. If a disturbed surface area passes any of the specified tests, then the surface shall be considered stabilized.

G.1.c Determination of Soil Moisture Content

Soil moisture content shall be determined by using ASTM Method D2216-98 (Standard Test Method for Laboratory Determination of Water [Moisture] Content of Soil and Rock by Mass), or other equivalent test methods approved by the EPA, ARB, and the APCO.

G.1.d Determination of Silt Content for Bulk Materials

Silt content of a Bulk Material shall be determined by ASTM Method C136a (Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates), or other equivalent test methods approved by EPA, ARB, and the APCD.

G.1.e Determination of Silt Content for Unpaved Roads and Unpaved Vehicle/Equipment Traffic Areas

Silt Content for Unpaved Roads and Unpaved Traffic Areas shall be determined by using Section C of Appendix B of this Rule or other equivalent test methods approved by EPA, ARB, and the APCO.

G.1.f Determination of Threshold Friction Velocity (TFV)

TFV shall be determined by using Section D of Appendix B of this Rule or other equivalent test methods approved by EPA, ARB, and the APCO.

~~G. Record of Control Implementation~~

~~Any Person engaged in any Active Operation subject to this Regulation VIII shall maintain records of RACM sufficient to establish location, type and date of treatment. Records shall be maintained and be readily accessible for two years after the date of each entry and shall be provided to the APCD upon request and shall be open for inspection during unscheduled audits during normal business hours.~~

~~Persons who opt for the equivalency control in sections F.3 and/or F.4 must keep records to include equivalency formulas or factors with at least one sample calculation.~~

H. Record of Control Implementation

Any Person subject to the requirements of this rule shall compile and retain records that provide evidence of control measure application and compliance with this rule (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. For control measures which require multiple daily applications, recording the frequency of application will fulfill the recordkeeping requirements of this rule (i.e., water being applied three times a day and the date) Records shall be maintained and be readily accessible for two years after the date of each entry and shall be provided to the APCD upon request.

~~H~~I. Violations

Failure to comply with any of the provisions of this Regulation shall constitute a violation of this Regulation. Failure to comply with the provisions of an APCO approved dust control plan shall also constitute a violation of this Regulation. Regardless of whether an APCO approved dust control plan is being implemented or not, or whether a Person responsible for an Active Operation(s) is complying with an approved dust control plan, the Person is still subject to the requirements of Regulation VIII at all times.

~~I. Reasonably Available Control Measures for Fugitive Dust (PM-10)~~

~~I.1 UNPAVED HAUL AND ACCESS ROADS:~~

~~I.1.a Pave.~~

~~I.1.b Apply Physical/Chemical Stabilization as directed by product manufacturer to control dust on Unpaved Roads.~~

~~I.1.c Apply Gravel, recrushed/recycled asphalt or other material of low Silt (<5%) content to a depth of three or more inches.~~

~~I.1.d Wetting. Apply water one or more times daily.~~

~~I.1.e Permanent road closure.~~

~~I.1.f Reduce vehicle speeds by 50%.~~

~~I.1.g Reduce vehicle trips by 50%.~~

~~I.2 UNPAVED ROADS:~~

~~I.2.a Pave.~~

~~I.2.b Apply Physical/Chemical Stabilization, as directed by product manufacturer to control dust on Unpaved Roads.~~

~~I.2.c Apply Gravel, recrushed/recycled asphalt or other material of low Silt (<5%) content to a depth of three or more inches.~~

~~I.2.d Reduce vehicle speeds by 50% .~~

~~I.2.e Reduce number of vehicle trips by 50%.~~

~~I.2.f Wetting. Apply water one or more times daily.~~
~~I.2.g Stocking of Triploid Grass Carp in canals to reduce maintenance vehicle trips along Canal Banks to mechanically remove aquatic weeds.~~

~~I.2.h Installation of remote control delivery gates to eliminate manual gate operation by maintenance personnel in vehicles along Canal Banks.~~

~~I.2.i Implement policies and training to emphasize:~~

~~I.2.i.1 regulated use of field-side Canal Banks for agricultural equipment parking/storage and agricultural commodity storage;~~

~~I.2.i.2 reduced speed along Canal Banks;~~

~~I.2.i.3 minimal use of Canal Banks for access to canal gate structures;~~

~~I.2.i.4 when feasible, restrict vehicle travel along Canal Bank to one side (opposite of field-side Canal Bank).~~

~~I.2.j Implement Silt removal program to emphasize delaying grading of spoil piles deposited on Canal Bank after cleaning operations until the next cleaning operation to eliminate vehicle access to Canal Bank.~~

~~I.2.k Permanent road closure~~.

~~I.2.l Conversion of open canals to pipeline.~~

~~I.2.m Lining canals to eliminate maintenance for Silt/weed control.~~

~~I.2.n Canal Bank surface maintenance.~~

~~I.3 TRACK OUT/CARRY OUT:~~

~~I.3.a Rapidly clean up, within 48 hours of deposition, any Bulk Material tracked out or carried out onto a Paved Road surface.~~

~~I.3.b Install one or more Track-Out Prevention Devices or other APCO approved track-out control device or wash-down system at access points where unpaved traffic surfaces adjoin Paved Roads.~~

~~I.3.c Pave, Chemically Stabilize, or Gravel (using Gravel or other low Silt (<5%) content material), 50 or more consecutive feet at access points where Unpaved Roads adjoin Paved Roads.~~

~~I.4 BULK MATERIAL HANDLING/TRANSFER:~~

~~I.4.a Spray with water 15 minutes prior to handling and/or at points of transfer.~~

~~I.4.b Chemical/Physical Stabilization.~~

~~I.4.c Protect from wind erosion by sheltering or enclosing the operation and transfer line.~~

~~I.5. MATERIAL TRANSPORT/HAULING:~~

~~I.5.a Completely cover or enclose all Haul Truck loads of Bulk Material.~~

~~I.5.b Haul Trucks transporting loads of Aggregate Materials shall not be required to cover their loads if the load, where it contacts the side, front, and back of the cargo container area remains six inches from the upper area of the container area, and if the load does not extend, at its peak, above any part of the upper edge of the cargo container area (As defined in Section 23114 of the California Vehicle Code for both public and private roads).~~

~~I.5.c The cargo compartment(s) of all Haul Trucks are to be constructed and maintained so that no spillage and loss of Bulk Material can occur from holes or other openings in the cargo compartment's floor, side, and/or tailgate. Seals on any openings used to empty the load including, but not limited to, bottom-dump release gates and tailgates to be properly maintained to prevent the loss of Bulk Material from those areas.~~

~~I.5.d The cargo compartment of all Haul Trucks are to be cleaned and/or washed at delivery site after removal of Bulk Material.~~

~~J. Calexico/Mexicali Cross-Border Source Apportionment Study~~

~~A PM-10 monitoring program was completed in 1993 along the border between Imperial Valley California and the Mexicali Valley, Baja California, Mexico to determine the major contributors to PM-10 and to determine how much was contributed by transport across the international boundary. This study was funded by the U.S. Environmental Protection Agency and conducted by the University of Nevada, Desert Research Institute Energy and Environmental Engineering Center. This study is expected to be published in final form by the end of the first quarter of 1995. The Imperial County Air Pollution Control District (ICAPCD) will conduct a workshop on the study within thirty days of the formal publication date for the purpose of receiving public input on the results and recommendations contained therein. The comments received at that workshop and this Regulation will be reviewed by APCD staff and recommendations forwarded to the ICAPCD Board of Directors.~~

~~K. RACM implementation~~

~~Reasonably Available Control Measure (RACM) implemented since the date of adoption of the State Implementation Plan (SIP) for PM-10 in the Imperial Valley (September 28, 1993) can be included as a portion of any amount of PM-10 control required in this Regulation.~~

APPENDIX A
Visual Determination of Opacity

SECTION A Test Method For Unpaved Roads and Unpaved Traffic Areas
SECTION B Test Method For Time-Averaged Regulations

SECTION A TEST METHOD FOR UNPAVED ROADS AND UNPAVED TRAFFIC AREAS

A. 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 Roads and Unpaved Traffic Areas. This method can only be conducted by an individual who has current certification as a qualified observer.

A.1 Step 1: 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.

A.2 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 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 form both when opacity readings are initiated and completed.

A.3 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 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 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.

A.4 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 the vehicles which generate dust plumes for which readings are taken (e.g. mid-size passenger car or heavy-duty truck.) and take the approximate speeds the vehicles are traveling when the readings are being taken.

A.5 Step 5: Repeat Step 3 (Section A.3. of this appendix) and Step 4 (Section A.4. of this appendix) 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.

A.6 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 the applicable rule.

SECTION B TEST METHOD FOR VISUAL DETERMINATION OF OPACITY OF EMISSIONS FROM SOURCES FOR TIME-AVERAGED REGULATIONS

B. Applicability. This method is applicable for the determination of the opacity of emissions from sources of visible emissions for time-averaged regulations. A time-averaged regulation is any regulation that requires averaging visible emission data to determine the opacity of visible emissions over a specific time period.

B.1 Principle. The opacity of emissions from sources of visible emissions is determined visually by a qualified observer who has received certification.

B.2 Procedures. A qualified observer who has been certified shall use the following procedures for visually determining the opacity of emissions.

B.2.a Position. Stand at a position at least 5 meters from the Fugitive Dust source n order to provide a clear view of the emissions with the sun oriented in the 140° sector to the back. Consistent as much as possible with maintaining the above requirements, make opacity observations from a position such that the line of sight is approximately perpendicular to the plume and wind direction. The observer may follow the Fugitive Dust plume generated by mobile earthmoving equipment, as long as the sun remains oriented in the 140° sector to the back. As much as possible, if multiple plumes are involved, do not include more than one plume in the line of sight at one time.

B.2.b Field Records. Record the name of the site, Fugitive Dust source type (i.e., pile, material handling (i.e., transfer, loading, sorting)), 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 relative to the fugitive dust source, and color of the plume and type of the background on the visible emission observation form when opacity readings are initiated and completed.

B.2.c Observations. Make opacity observations, to the extent possible, using a contrasting background that is perpendicular to the line of sight. For storage piles, make opacity observations approximately 1 meter above the surface from which the plume is generated. For extraction operations and the loading of haul trucks in open-pit mines, make opacity observations approximately one meter above the rim of the pit. The initial 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 momentarily at 15-second intervals. For Fugitive Dust from Earthmoving equipment, make opacity observations approximately 1 meter above the mechanical equipment generating the plume.

B.2.d Recording Observations. Record the opacity observations to the nearest 5% every 15 seconds on an observational record sheet. Each momentary observation recorded represents the average opacity of emissions for a 15-second period. If a multiple plume exists at the time of an observation, do not record an opacity reading. Mark an "x" for that reading. If the equipment generating the plume travels outside of the field of observation, resulting in the inability to maintain the orientation of the sun within the 140° sector or if the equipment ceases operating, mark an "x" for the 15 – second interval reading. Readings identified as "x" shall be considered interrupted readings.

B.2.e Data Reduction For Time-Averaged Regulations. For each set of 12 or 24 consecutive readings, calculate the appropriate average opacity. Sets must consist of consecutive observations, however, readings immediately preceding and following interrupted readings shall be deemed consecutive and in no case shall two sets overlap, resulting in multiple violations.

APPENDIX B
Determination of Stabilization

SECTION A Test Methods for Determining Stabilization
SECTION B Visible Crust Determination
SECTION C Determination of Silt Content for Unpaved Roads and Unpaved Vehicle/Equipment Traffic Areas
SECTION D Determination of Threshold Friction Velocity
SECTION E Determination of Flat Vegetative Cover
SECTION F Determination of Standing Vegetative Cover
SECTION G Rock Test Method

SECTION A TEST METHODS FOR DETERMINING STABLIZATION

The test methods described in Section B through Section G of this appendix shall be used to determine whether an area has a Stabilized Surface. Should a disturbed area 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 in Section B through Section G of this appendix, and include or eliminate it from the total size assessment of disturbed surface area(s) depending upon test method results.

SECTION B VISIBLE CRUST DETERMINATION

B.1 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 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 the visible crust test method is conducted. Blowsand is defined as thin deposits of loose uncombined grains covering less than 50% of a site which have not originated from the representative site surface being tested. If material covers a visible crust, which is not blowsand, apply the test method in Section D of this appendix to the loose material to determine whether the surface is stabilized.

B.2 A sufficient crust is defined under the following conditions: once a ball has been dropped according to section B.1 of this appendix, 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.

B.3 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 of the site. The survey area shall be considered to have passed the Visible Crust Determination Test if the results of at least two out of the three times that the ball was dropped, met the criteria in section B.2 of this appendix. Select at least two other survey areas that represent a random portion of the overall disturbed conditions of the site, and repeat this procedure. If the results meet the criteria of section B.2 of this appendix 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.

B.4 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 assessment.

SECTION C DETERMINATION OF SILT CONTENT FOR UNPAVED ROADS AND UNPAVED VEHICLE/EQUIPMENT TRAFFIC AREAS

The purpose of this test method is to estimate the silt content of the trafficked parts of Unpaved Roads and Unpaved vehicle/equipment Traffic Areas. The higher the Silt content, the more fine dust particles that are released when vehicles travel on Unpaved Roads and Unpaved vehicle/equipment Traffic Areas.

C.1 Equipment:

- C.1.a. A set of sieves with the following openings: 4 millimeters (mm), 2mm, 1mm, 0.5mm and 0.25 mm, a lid, and collector pan.
- C.1.b 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.)
- C.1.c A spatula without holes.
- C.1.d A small scale with half-ounce increments (e.g., postal/package scale.)
- C.1.e A shallow, lightweight container (e.g., plastic storage container.)
- C.1.f A sturdy cardboard box or other rigid object with a level surface.
- C.1.g A basic calculator.
- C.1.h Cloth gloves (optional for handling metal sieves on hot, sunny days.)
- C.1.i Sealable plastic bags (if sending samples to a laboratory.)
- C.1.j A pencil/pen and paper.

C.2 Step 1: 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 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 a 1cm 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. (Optional: 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.3 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. Transfer the entire sample collected in the dustpan to the container, minimizing escape of dust particles. Weigh the sample and record its weight.

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

C.5 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 vehicle as a wind barrier. Cover the stack with a lid. Lift up the sieve stack and shake it vigorously up and down and sideways for at least 1 minute.

C.6 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 require further sifting.

C.7 Step 6: 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 not 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 materials from the collector pan and record its weight.

C.8 Step 7: If the source is an unpaved road, multiply the resulting weight by 0.38. If the source is an Unpaved vehicle/equipment Traffic Area, multiply the resulting weight by 0.55. The resulting number is the estimated silt loading. Then, divide the total weight of the sample you recorded earlier in Step 2 (Section C.4) and multiply by 100 to estimate the percent Silt content.

C.9 Step 8: Select another two routinely traveled portions of the Unpaved Road or Unpaved vehicle/equipment Traffic Area 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.

C.10 Step 9: Examine Results. If the average silt loading is less than 0.33 oz/ft^2, the surface is STABLE. If the average silt loading is greater than or equal to 0.33 oz/ft^2, 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 (section C.2) and take them to an independent laboratory for Silt content analysis.

C.11 Independent Laboratory Analysis: You may choose to collect samples from the source, according to Step 1 (section C.2) 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: "Procedures For Laboratory Analysis for Surface/Bulk Dust Loading Samples," (Fifth Edition, Volume 1, 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.

SECTION D 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).

D.1 Obtain and stack a set of sieves with the following openings: 4 millimeters (mm), 2 mm, 1 mm, 0.5 mm, and 0.25 mm or obtain and stack a set of standard/commonly available sieves. Place the sieves in order according to size openings, beginning with the largest size opening at the top. Place a collector pan underneath the bottom (0.25 mm) sieve. Collect a sample of loose surface material from an area at least 30 cm by 30 cm in size to a depth of approximately 1 cm using a brush and dustpan or other similar device. Only collect soil samples from dry surfaces (i.e. when the surface is not damp to the touch). Remove any rocks larger than 1 cm in diameter from the sample. Pour the sample into the top sieve (4 mm opening) and cover the sieve/collector pan unit with a lid. Minimize escape of particles into the air when transferring surface soil into the sieve/collector pan unit. Move the covered sieve/collector pan unit by hand using a broad, circular arm motion in the horizontal plane. Complete twenty circular arm movements, ten clockwise and ten counterclockwise, at a speed just necessary to achieve some relative horizontal motion between the sieves and the particles. Remove the lid from the sieve/collector pan unit and disassemble each sieve separately beginning with the largest sieve. As each sieve is removed, examine it for loose particles. If loose particles have not been sifted to the finest sieve through which they can pass, reassemble and cover the sieve/collector pan

unit and gently rotate it an additional ten times. After disassembling the sieve/collector pan unit, slightly tilt and gently tap each sieve and the collector pan so that material aligns along one side. In doing so, minimize escape of particles into the air. Line up the sieves and collector pan in a row and visibly inspect the relative quantities of catch in order to determine which sieve (or whether the collector pan) contains the greatest volume of material. If a visual determination of relative volumes of catch among sieves is difficult, use a graduated cylinder to measure the volume. Estimate TFV for the sieve catch with the greatest volume using Table 1 of this appendix, which provides a correlation between sieve opening size and TFV.

Table 1. Determination of Threshold Friction Velocity (TFV)

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

D.2 Collect at least three soil samples which represent random portions of the overall conditions of the site, repeat the above TFV test method for each sample and average the resulting TFVs together to determine the TFV uncorrected for non erodible elements. Non-erodible elements are distinct elements, in the random portion of the overall conditions of the site, that are larger than 1 cm in diameter, remain firmly in place during a wind episode, and inhibit soil loss by consuming Section 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. 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:

Average Dimensions = (Average Length) x (Average Width)	Eq. 1
Overhead Area = (Average Dimensions) x (Number of Elements)	Eq. 2

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

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

Repeat this procedure on an additional two distinct survey areas that represent a random portion of the overall conditions of the site and average the results. Use Table 2 of this appendix to identify the correction factor for the percent cover of non-erodible elements. Multiply the TFV by the corresponding correction factor to calculate the TFV corrected for non-erodible elements.

Table 2. Correction Factors for Threshold Friction Velocity

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

SECTION E 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 conduction the line transect test method. Where flat vegetation exists conduct the following line transect test method.

E.1 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 vegetations 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%.

E.2 Conduct the line transect test method, as described in section E.1 of this appendix, an additional two times on areas that represent a random portion of the overall conditions of the site and average results.

SECTION F 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 Section D; "Determination Of Threshold Friction Velocity (TFV,) of this appendix 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 43cm/second.

F.1 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.

F.2 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 of this appendix. Also, use Equation 6 of this appendix 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 section F.3 of this appendix to calculate the frontal silhouette area. Then calculate the percent cover of standing vegetation according to Equations 7, 8, and 9 of this appendix.

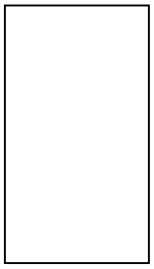
Frontal Silhouette Area = (Average Height) x (Average Width)	Eq. 6
Frontal Silhouette Area Of Group= (Frontal Silhouette Area Of Individual Vegetative Structure) x (Number Of Vegetation Structures Per Group)	Eq. 7
Total Frontal Silhouette Area = Frontal Silhouette Area Of Group 1 + Frontal Silhouette Area Of Group 2 (etc.)	Eq. 8
Percent Cover Of Standing Vegetation = (Total Frontal Silhouette Area/Survey Area) x 100	Eq. 9
Percent Open Space = [(Number Of Circled Gridlines Within The Outlined Area Counted That Are Not Covered By Vegetation/Total Number Of Gridline Intersections Within The Outlined Area) x 100]	Eq.10
Percent Vegetative Density = 100 – Percent Open Space	Eq. 11
Vegetative Density = Percent Vegetative Density/100	Eq. 12
Frontal Silhouette Area = [Max. Height x Max. Width] x [Vegetative Density/.04]o.5	Eq. 13

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

F.3. Vegetative Density Factor. Cut a single, representative piece of vegetation (or consolidated vegetative structure) to within 1cm of surface soil. Using a white paper grid or transparent grid over white paper, lay the vegetation flat on top of the grid (but do not apply pressure to flatten the structure.) Grid boxes of 1 inch or ½ inch squares are sufficient for most vegetation when conducting this procedure. Using a marker or pencil, outline the shape of the vegetation along its outer perimeter, according to Figure B, C, or D of this appendix, as appropriate. (Note: Figure C differs from Figure D primarily in

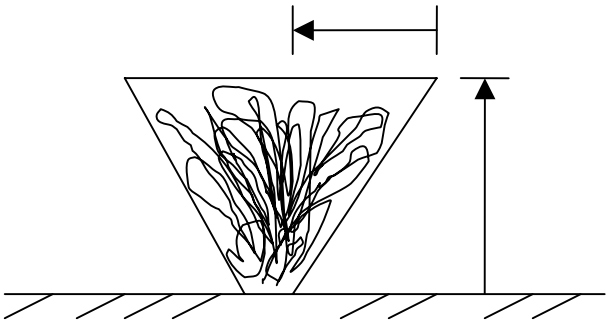
that the width of vegetation in Figure C is narrow at its base and gradually broadens to its tallest height. In Figure D, the width of the vegetation generally becomes narrower from its midpoint to its tallest height.) Remove the vegetation, count and record the total number of gridline intersections within the outlined area, but do not count gridline intersections that connect with the outlined shape. There must be at least 10 gridline intersections within the outlined area and preferably more than 20, otherwise, use smaller grid boxes. Draw small circles (no greater than a 3/32 inch diameter) at each gridline intersection counted within the outlined area. Replace the vegetation on the grid within its outlined shape. From a distance of approximately 2 feet directly above the grid, observe each circled gridline intersection. Count and record the number of circled gridline intersections that are not covered by any piece of the vegetation. To calculate percent vegetative density, use Equations 10 and 11 of this appendix. If percent vegetative density is equal to or greater than 30, use an equation (one of the equations-Equations 16, 17, or 18 of this appendix) that matches the outline used to trace the vegetation (Figure B, C, or D) to calculate its frontal silhouette area. If percent vegetative density is less than 30, use Equations 12 and 13 of this appendix to calculate the frontal silhouette area.

Figure B. Cylinder



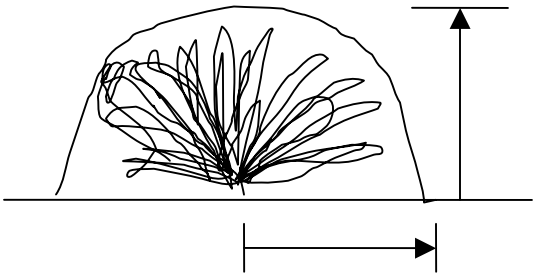
Frontal Silhouette Area = Maximum Height x Maximum Width Eq.16

Figure C. Inverted Cone



Frontal Silhouette Area = Maximum Height x ½ Maximum Width Eq. 17

Figure D. Upper Sphere



Frontal Silhouette Area = (3.14 x Maximum Height x ½ Maximum Width)/2 Eq.18

SECTION G ROCK TEST METHOD

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

G.1 Select a 1 meter by 1 meter survey area that represents the general rock distribution on the surface. A 1 meter by 1 meter area is slightly greater than a 3 foot by 3 foot area. 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.

G.2 Without moving any of the rocks or other elements, examine the survey area. Since rocks >3/8 inch (1cm) in diameter are of interest, measure the diameter of some of the smaller rocks to get a sense of which rocks need to be considered.

G.3 Mentally group the rocks >3/8 inch (1cm) 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.

G.4 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.

G.5 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.

G.6 Divide the total rock area, calculated in section G.5 of this appendix, by two (to get frontal area.) Divide the resulting number by the size of the survey area (make sure the units of measurement match,) and multiply by 100 for percent rock cover. For example, the total rock area is 1,400 square centimeters divide 1,400 by 2 to get 700. Divide 700 by 10,000 (the survey area is 1 meter by 1 meter, which is 100 centimeters by 100 centimeters or 10,000 centimeters) and multiply by 100. The result is 7% rock cover. If rock measurements are made in inches, convert the survey area from meters to inches (1 inch = 2.54 centimeters.)

G.7 Select and mark-off two additional survey areas and repeat the procedures described in section G.1 through section G.6 of this appendix. 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.

G.8 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 section G.9 of this appendix.

G.9 If the average rock cover is less than 10%, the surface may or may not be stable. Follow the procedures in Section D.3 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.

G.10 After completing the procedures described in Section G.9 of this appendix, use Table 2 of this appendix to identify the appropriate correction factor to the TFV, depending on the percent rock cover.

RULE 801. CONSTRUCTION AND EARTHMOVING ACTIVITIES
(Adopted ----------)

A. Purpose

The purpose of this rule is to reduce the amount of fine Particulate Matter (PM-10) entrained in the ambient air as a result of emissions generated from Construction and other Earthmoving Activities by requiring actions to prevent, reduce, or mitigate PM-10 emissions.

B. Applicability

This rule applies to any Construction and other Earthmoving Activities, including, but not limited to, land clearing, excavation related to construction, land leveling, grading, cut and fill grading, erection or demolition of any structure, cutting and filling, trenching, loading or unloading of bulk materials, demolishing, drilling, adding to or removing bulk of materials from open storage piles, weed abatement through disking, back filling, travel on-site and travel on access roads to and from the site.

C. Definitions

The definitions of terms found in Rule 800 (General Requirements for Control of Fine Particulate Matter (PM-10) shall apply to this rule.

D. Exemptions

In addition to the exemptions listed in Rule 800, Section E, the following exemptions are established for this rule:

D.1 Construction or demolition at existing single family residential dwellings.

D.2 The 20% opacity limit of Sections E.1.a and E.2.b shall not apply when Wind Gusts exceed 25 miles per hour, provided that at least one of the following control measures is implemented for each applicable Fugitive Dust source type:

D.2.a Cease dust generating activities for a period of one hour after Wind Gusts last exceed the threshold. If operations cease for the remainder of the day, stabilization measures must be implemented.

D.2.b Apply water or dust Suppressants once per hour.

D.2.c Apply water to maintain 12% soil moisture content.

D.2.d Construct fences 3-5 feet high with 50% or less porosity, and must be done in conjunction with another measure, as above.

E. Requirements

E.1 Construction sites and Earthmoving Activities:

E.1.a All Persons who own or operate a Construction site shall comply with the requirements of Section F.1 so as to limit VDE to 20% opacity and comply with the conditions for a Stabilized Surface when applicable.

E.1.b. All Persons who perform any Earthmoving Activities shall comply with the requirements of Section F.1 so as to limit VDE to 20% opacity.

E.1.c All Persons who own or operate a Construction site of 10 acres or more in size for residential developments or 5 acres or more for non-residential developments shall develop a dust control plan. The dust control plan shall be made available to the APCD upon request. The dust control plan shall comply with the requirements of Section F.

E.1.d The owner or operator required to develop a dust control plan shall provide written notification to the APCD within 10 days prior to the commencement of any Construction activities via fax or mail. The requirement to develop a dust control plan shall apply to all such activities conducted for residential and non-residential (e.g., commercial, industrial, or institutional) purposes or conducted by any governmental entity. Regardless of whether a dust control plan is in place or not the owner or operator is still subject to comply with all requirements of the applicable rules under Regulation VIII at all times.

F. Best Available Control Measures for Fugitive Dust (PM-10)

F.1 Construction and Earthmoving Activities shall comply with the following requirements:

F.1.a Pre-Activity:

F.1.a.1 Pre-water site sufficient to limit VDE to 20% opacity, and

F.1.a.2 Phase work to minimize the amount of disturbed surface area at any one time.

F.1.b During Active Operations:

F.1.b.1 Apply water or Chemical Stabilization as directed by product manufacturer to limit VDE to 20% opacity, or

F.1.b.2 Construct and maintain wind barriers sufficient to limit VDE to 20% opacity. If utilizing wind barriers, control measure F.1.b.1 above shall be implemented.

F.1.b.3 Apply water or Chemical Stabilization as directed by product manufacturer to unpaved haul/access roads and Unpaved Traffic Areas sufficient to limit VDE to 20% opacity and meet the conditions of a Stabilized Unpaved Road.

F.1.c Temporary Stabilization During Periods of Inactivity:

F.1.c.1 Restrict vehicular access to the area by fencing or signage; and

F.1.c.2 Apply water or Chemical Stabilization, as directed by product manufacturer, sufficient to comply with the conditions of a Stabilized Surface. If an area having 0.5 acres or more of disturbed surface area remains unused for seven or more days, the area must comply with the conditions for a Stabilized Surface area.

F.1.d Track Out/Carry Out of Bulk Materials at the site shall be mitigated in compliance with Rule 803.

F.1.e Unpaved Roads at the site shall comply with Rule 805.

F.1.f Bulk Material handling operations at the site shall comply with Rule 802.

F1.g Material transport of Bulk Material to, from, or around the site shall comply with Rule 802.

F.1.h Haul trucks transporting Bulk Material to, from, or around the site shall comply with Rule 802.

F.2 Dust Control Plan:

F.2.a Retain a copy of the dust control plan at the project site.

F.2.b Comply with the requirements of the approved dust control plan.

F.2.c A dust control plan shall contain all of the following information:

1. Name, address, and phone number of the Person responsible for the preparation, submittal, and implementation of the dust control plan and

responsible for the project site.

2. A plot plan which shows the type and location of each project.

3. The total area of land surface to be disturbed, estimated daily throughput volume of earthmoving in cubic yards, and total area in acres of the entire project site.

4. The expected start and completion dates of dust generating and soil disturbance activities to be performed on the site.

5. The actual and potential sources of Fugitive Dust emissions on the site and the location of Bulk Material handling and storage areas, Paved and Unpaved Roads, entrances and exits where Track Out/Carry Out may occur, and Unpaved Traffic Areas.

6. Dust Suppressants to be applied, including: product specifications; manufacturer's usage instructions (method, frequency, and intensity of application); type, number, and capacity of application equipment; and information on environmental impacts and approvals or certifications related to appropriate and safe use for ground application.

7. Specific surface treatment(s) and/or control measures utilized to control Track Out/Carry Out, and sedimentation where unpaved and/or access points join paved public access roads.

8. The dust control plan should describe all Fugitive Dust control measures to be implemented before, during, and after any dust generating activity.

G. Record of Control Implementation

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. For control measures which require multiple daily applications, recording the frequency of application will fulfill the recordkeeping requirements of this rule (i.e., water being applied three times a day and the date) Records shall be maintained and be readily accessible for two years after the date of each entry and shall be provided to the APCD upon request.

H. Violations

Failure to comply with any provisions of this rule shall constitute a violation of Regulation VIII.

RULE 802. BULK MATERIALS
(Adopted ----------)

A. Purpose

The purpose of this regulation is to reduce the amount of fine Particulate Matter (PM-10) entrained in the ambient air as a result of emissions generated from outdoor handling, storage, and transport of Bulk Material by requiring actions to prevent, reduce, or mitigate PM-10 emissions.

B. Applicability

This rule applies to the outdoor handling, storage, and transport of Bulk Material, including, but not limited to, earth, rock, silt, sediment, sand, gravel, soil, fill, Aggregate Materials, dirt, mud, debris, and other organic and/or inorganic material consisting of or containing Particulate Matter with five percent or greater silt content.

C. Definitions

The definitions of terms found in Rule 800 (General Requirements for Control of Fine Particulate Matter (PM-10) shall apply to this rule.

D. Exemptions

In addition to the exemptions listed in Rule 800, Section E, the following exemptions are established for this rule:

D.1 Outdoor storage, transport, or handling of Bulk Materials (including, but not limited to, organic or inorganic fertilizer, grains, seed, soil amendments, and feed) which would be damaged by wetting with water or by the application of Chemical Stabilization/Suppression, provided owners/operators demonstrate to the satisfaction of the APCO that none of the control measures required by this rule can be implemented to limit VDE to 20% opacity or provide a Stabilized Surface, as defined in Rule 800.

D.2 Outdoor storage or handling of any Bulk Material at a single site where no material is actively being added or removed at the end of the workday or overnight and where the total material stored is less than 100 cubic yards.

D.3 Transport of a Bulk Material in an outdoor area for a distance of twelve feet or less with the use of a chute or conveyor device.

D.4 Transport/hauling of Bulk Materials when conducted within the boundaries of a premises, are exempt from the requirements specified in Sections F.3.a and F.3.d.

E. Requirements

E.1 Bulk Material handling: no Person shall cause, suffer, allow or engage in any Bulk Material handling operation including, but not limited to stacking, loading, unloading, conveying and reclaiming of Bulk Material, for industrial or commercial purposes without complying with one or more of the requirements of Section F.1 so as to limit VDE to 20% opacity.

E.2 Bulk Material storage: no Person shall cause, suffer, allow or engage in any Bulk Material storage, for industrial or commercial purposes without complying with one or more of the requirements of Section F.2 so as to limit VDE to 20% opacity.

E.3 Material transport: no Person shall cause, suffer, allow or otherwise engage in the transportation of Bulk Materials for industrial or commercial purposes, without complying with all of the requirements of Section F.3 so as to limit VDE to 20% opacity.

E.4 Haul Trucks: no Person shall cause, suffer, allow or otherwise engage in the use or operation of any Haul Truck, for industrial or commercial purposes, of transporting or storing Bulk Material without complying with all of the requirements of Section F.3 so as to limit VDE to 20% opacity.

F. Best Available Control Measures for Fugitive Dust (PM-10)

F.1 BULK MATERIAL HANDLING/TRANSFER:

F.1.a Spray with water prior to handling and/or at points of transfer; or.

F.1.b Apply and maintain Chemical Stabilization, or

F.1.c Protect from wind erosion by sheltering or enclosing the operation and transfer line.

F.2 BULK MATERIAL STORAGE

F.2.a When storing Bulk Materials, comply with the conditions for a Stabilized Surface; or

F.2.b Cover Bulk Materials stored outdoors with tarps, plastic, or other suitable material and anchor in such a manner that prevents the cover from being removed by wind action, or

F.2.c Construct and maintain barriers with less than 50% porosity. If utilizing fences or wind barriers, apply water or chemical/organic

stabilizers/suppressants, or

F.2.d Utilize a 3-side structure with a height at least equal to the height of the storage pile and with less than 50% porosity.

F.3. MATERIAL TRANSPORT/HAULING:

F.3.a Completely cover or enclose all Haul Truck loads of Bulk Material.

F.3.b Haul Trucks transporting loads of Aggregate Materials shall not be required to cover their loads if the load, where it contacts the side, front, and back of the cargo container area remains six inches from the upper area of the container area, and if the load does not extend, at its peak, above any part of the upper edge of the cargo container area (As defined in Section 23114 of the California Vehicle Code for both public and private roads).

F.3.c The cargo compartment(s) of all Haul Trucks are to be constructed and maintained so that no spillage and loss of Bulk Material can occur from holes or other openings in the cargo compartment's floor, side, and/or tailgate. Seals on any openings used to empty the load including, but not limited to, bottom-dump release gates and tailgates to be properly maintained to prevent the loss of Bulk Material from those areas.

F.3.d The cargo compartment of all Haul Trucks is to be cleaned and/or washed at delivery site after removal of Bulk Material.

G. Record of Control Implementation

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. For control measures which require multiple daily applications, recording the frequency of application will fulfill the recordkeeping requirements of this rule (i.e., water being applied three times a day and the date) Records shall be maintained and be readily accessible for two years after the date of each entry and shall be provided to the APCD upon request.

H. Violations

Failure to comply with any provisions of this rule shall constitute a violation of Regulation VIII.

RULE 803. CARRY-OUT AND TRACK-OUT
(Adopted ----------)

A. Purpose

The purpose of this regulation is to reduce the amount of fine Particulate Matter (PM-10) entrained in the ambient air as a result of emissions generated from Track-Out and Carry-Out by requiring actions to prevent, reduce, or mitigate PM-10 emissions.

B. Applicability

This rule applies to all sites that are subject to Regulation VIII where Track-Out or Carry-Out has occurred or may occur on paved public roads or the paved shoulders of a paved public road.

C. Definitions

The definitions of terms found in Rule 800 (General Requirements for Control of Fine Particulate Matter (PM-10) shall apply to this rule.

D. Exemptions:

In addition to the exemptions listed in Rule 800, Section E, the following exemptions are established for this rule:

D.1 Agricultural Operation Sites defined in and subject to Rule 806, Conservation Management Practices, are exempt from the requirements specified in Sections F.1.b and F.1.c.

D.2 Any operation site that operates no more than 10 days within a 90 days period at each location is exempt from the requirements specified in Sections F.1.b and F.1.c.

E. Requirements

E.1 Track Out/Carry Out: any Person who causes the deposition of Bulk Material by tracking out or carrying out onto a Paved Road surface shall comply with the requirements of Section F.1, as specified, to prevent or mitigate such deposition.

F. Best Available Control Measures for Fugitive Dust (PM-10)

F.1 TRACK OUT/CARRY OUT:

F.1.a. Clean up any Bulk Material tracked out or carried out onto a Paved Road on the following time-schedule:

(1) Within urban areas, immediately, when Track-Out or Carry-Out extends a cumulative distance of 50 linear feet or more; and

(2) At the end of the workday, for all other Track-Out or Carry-Out.

F.1.b In addition to F.1.a, all sites with access to a Paved Road and with 150 or more Average Vehicle Trips per Day, or 20 or more Average Vehicle Trips per Day by vehicles with three or more axles shall install one or more Track-Out Prevention Devices or other APCO approved Track-Out control device or wash down system at access points where unpaved traffic surfaces adjoin Paved Roads; or

F.1.c In addition to F.1.a, all sites with access to a Paved Road and with 150 or more Average Vehicle Trips per Day, or 20 or more Average Vehicle Trips per Day by vehicles with three or more axles shall apply and maintain paving, Chemical Stabilization, or at least 3 inch depth of Gravel (using Gravel or other low Silt (<5%) content material), for a distance of 50 or more consecutive feet at access points where Unpaved Roads adjoin Paved Roads.

G. Record of Control Implementation

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. Records shall be maintained and be readily accessible for two years after the date of each entry and shall be provided to the APCD upon request.

H. Violations

Failure to comply with any provisions of this rule shall constitute a violation of Regulation VIII.

RULE 804. OPEN AREAS
(Adopted ----------)

A. Purpose

The purpose of this regulation is to reduce the amount of fine Particulate Matter (PM-10) entrained in the ambient air as a result of emissions generated from Open Areas by requiring actions to prevent, reduce, or mitigate PM-10 emissions.

B. Applicability

This rule shall apply to any open area having 0.5 acres or more within urban areas, or 3.0 acres or more within rural areas; and contains at least 1000 square feet of disturbed surface area.

C. Definitions

The definitions of terms found in Rule 800 (General Requirements for Control of Fine Particulate Matter (PM-10) shall apply to this rule.

D. Exemptions

In addition to the exemptions listed in Rule 800, Section E, the following exemptions are established for this rule:

D.1 Agricultural Operation Sites defined in and subject to Rule 806, Conservation Management Practices.

E. Requirements

E.1 Open Areas: all Persons who own or otherwise have jurisdiction over an Open Area shall comply with one or more of the requirements of Section F.1 to comply with the conditions of a Stabilized Surface at all times so as to limit VDE to 20% opacity.

E.2 Vehicle use in Open Areas: within 30 days following initial discovery of evidence of trespass, a Person who owns or otherwise has jurisdiction over an Open Area shall prevent unauthorized vehicle access by posting "No Trespassing" signs or installing physical barriers such as fences, gates, posts, and/or appropriate barriers to effectively prevent access to the area.

F. Best Available Control Measures for Fugitive Dust (PM-10)

F.1 OPEN AREAS

F.1.a Apply and maintain water or dust suppressant(s) to all unvegetated areas.

F.1.b Establish vegetation on all previously disturbed areas.

F.1.c Pave, apply and maintain Gravel, or apply and maintain Chemical Stabilizers/Suppressants.

G. Record of Control Implementation

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. For control measures which require multiple daily applications, recording the frequency of application will fulfill the recordkeeping requirements of this rule (i.e., water being applied three times a day and the date) Records shall be maintained and be readily accessible for two years after the date of each entry and shall be provided to the APCD upon request.

H. Violations

Failure to comply with any provisions of this rule shall constitute a violation of Regulation VIII.

RULE 805. PAVED AND UNPAVED ROADS
(Adopted ----------)

A. Purpose

The purpose of this regulation is to reduce the amount of fine Particulate Matter (PM-10) entrained in the ambient air as a result of emissions generated from new or existing public or private Paved or Unpaved Road, road construction project, or road modification project by requiring actions to prevent, reduce, or mitigate PM-10 emissions.

B. Applicability

This rule applies to any new or existing public or private Paved or Unpaved Road, road construction project, or road modification project.

C. Definitions

The definitions of terms found in Rule 800 (General Requirements for Control of Fine Particulate Matter (PM-10) shall apply to this rule.

D. Exemptions

In addition to the exemptions listed in Rule 800, Section E, the following exemptions are established for this Rule:

D.1 Paved and unpaved driveways serving one single family residential dwelling.

D.2 Agricultural Operation Sites defined in and subject to Rule 806, Conservation Management Practices.

E. Requirements

E.1 Unpaved Haul/Access Roads: No Person shall cause, suffer or allow the operation, use, or maintenance of any unpaved Haul/Access Road without complying with one or more of the requirements of Section F.1 so as to limit VDE to 20% opacity.

E.2 Unpaved Roads: On any Unpaved Road segment with 50 or more Average Vehicle Trips per Day, the owner/operator shall limit VDE to 20% opacity, as determined by the test methods for "Visual Determination of Opacity" in Rule 800, Appendix A, and comply with the requirements of a Stabilized Unpaved Road by application and/or maintenance of at least one of the requirements of Section F.1.

E.3 The construction of any new Unpaved Road is prohibited within any area with a population of 500 or more unless the road meets the definition of a Temporary Unpaved Road. The Temporary Unpaved Road shall meet the definition of a Stabilized Surface as determined by the test methods in Rule 800, Appendix B, Section C, and where VDE is limited to 20% opacity.

E.4 Canal Roads: all Persons who cause, suffer or allow the operation, use or maintenance of any Canal Road with 20 or more Average Vehicle Trips per Day shall comply with one or more of the requirements of Section F.1 to comply with the requirements of a Stabilized Unpaved Road so as to limit VDE to 20% opacity, as determined by the test methods in Rule 800, Appendix A, and shall also comply with one or more of the requirements of Section F.2.

E.5 Unpaved Traffic Areas: All Persons who cause, suffer or allow the operation, use or maintenance of any Unpaved Traffic Area larger than one (1) acre and with 75 or more Average Vehicle Trips per Day shall comply with one or more of the requirements of Section F.3 so as to limit VDE to 20% opacity.

E.6 Paved Roads: any new or Modified Paved Roads shall comply with the requirements of section F.4.

E.7 Requirements for Existing Unpaved Public Roads in City and Rural Areas:

Each city or county agency with primary responsibility for any existing Unpaved Road shall take the following actions:

E.7.a By January 1, 2006 provide the APCD with a list of all Unpaved Roads under its jurisdiction in any city or rural area(s), including data on length of, and Average Vehicle Trips per Day on, each Unpaved Road segment.

E.7.b By March 31, 2006 the County Public Works Department shall provide the APCD with a compliance plan. The compliance plan shall include a compliance schedule indicating that during the period 2006 through 2015 a 10% per each fiscal year, beginning July 1 and ending June 30, of all Unpaved Roads subject to the requirements of this rule will comply with a 20% VDE and comply with the requirements of a Stabilized Unpaved Road (Treatment in excess of the annual requirement can be credited toward future year requirements). The plan shall identify the control measures implemented or that will be implemented at each Unpaved Road segment with 50 or more Average Vehicle Trips per Day.

E.7.c By July 31 of each year, 2007 through 2016, the County Public Works Department shall submit to the APCD the total number of Unpaved Road miles which were mitigated during the previous fiscal year, and the percentage of cumulative miles relative to the list provided pursuant to Section E.7.b.

F. Best Available Control Measures for Fugitive Dust (PM-10)

F.1 UNPAVED ROADS, INCLUDING UNPAVED HAUL AND ACCESS ROADS:

F.1.a Pave.

F.1.b Apply Chemical Stabilization as directed by product manufacturer to control dust on Unpaved Roads.

F.1.c Apply and maintain Gravel, recrushed/recycled asphalt or other material of low Silt (<5%) content to a depth of three or more inches.

F.1.d Wetting. Apply water one or more times daily

F.1.e Permanent road closure

F.1.f Restrict unauthorized vehicle access.

F.1.g Any other method that effectively limits VDE to 20% opacity and meets the conditions of a Stabilized Unpaved Road.

F.2 CANAL ROADS:

F.2.a Stocking of Triploid Grass Carp in canals to reduce maintenance vehicle trips along Canal Banks to mechanically remove aquatic weeds.

F.2.b Installation of remote control delivery gates to eliminate manual gate operation by maintenance personnel in vehicles along Canal Banks.

F.2. c Implement Silt removal program to delay grading of spoil piles deposited on Canal Bank after cleaning operations until the next cleaning operation to eliminate vehicle access to Canal Bank.

F.2.d Permanent road closure.

F.2.e Conversion of open canals to pipeline.

F.2.f Lining canals to eliminate maintenance for Silt/weed control.

F.2.g Canal Bank surface maintenance.

F.3 UNPAVED TRAFFIC AREAS:

F.3.a Pave.

F.3.b Apply Chemical Stabilization as directed by product manufacturer to control dust on Unpaved Roads.

F.3.c Apply and maintain Gravel, recrushed/recycled asphalt or other material of low silt (<5%) content to a depth of three or more inches.

F.3.d Wetting. Apply water one or more times daily.

F.4. NEW OR MODIFIED PAVED ROADS

Any Person 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 Imperial County Public Works Department guidelines for width of shoulders and median shoulders as specified below:

F.4.a New arterial roads or streets or modifications to existing arterial roads or streets shall be constructed with paved shoulders that meet following widths:

Annual Average Daily Vehicle Trips	Minimum Paved or Stabilized Shoulder Width in Feet
1-2000	2
Greater than 2000	6

F.4.b New or modified collector roads or streets or local roads or streets shall be constructed with paved shoulders that meet following widths:

Annual Average Daily Vehicle Trips	Minimum Paved or Stabilized Shoulder Width in Feet
1-2000	2
Greater than 2000	4

F.4.c A curbing adjacent to and contiguous with the travel lane or paved shoulder or a road may be constructed, in lieu of meeting the paved shoulder width standard listed in Sections F.4.a and F.4.b. Any road paving projects constructing curbing in County road right of ways shall be approved by the Director of Public Works Department prior to construction.

F.4.d Intersections, auxiliary entry lanes, and auxiliary exit lanes may be constructed adjacent to and contiguous with the roadway, in lieu of meeting the paved shoulder width standard in Sections F.4.a and F.4.b.

F.4.e New Paved Road construction or modifications to an existing Paved Road that are required to comply with California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) determinations regarding environmental, cultural, archeological, historical, or other considerations addressed in such documents, are exempt from the paved shoulder width requirements specified in Section F.4.a.

F.4.f Whenever any Paved Road which has projected Annual Average Daily Vehicle Trips of 500 or more is constructed, or modified with medians, the medians shall be constructed with paved shoulders having a minimum width of four feet adjacent to the traffic lanes unless:

F.4.f1 The medians of roads having speed limits set at or below 45 miles per hour are constructed with curbing; or

F.4.f2 The medians are landscaped and maintained with grass or other vegetative ground cover to comply with the definition of Stabilized Surface.

F.4.g In lieu of complying with the paving or vegetation requirements a Person may apply oils or other Chemical Stabilizers/Suppressants to the required width of shoulder and median areas as specified in Sections F.4.a and F.4.b. The material shall be reapplied and maintained to limit VDE to 20% opacity and fulfill conditions for a Stabilized Surface.

G. Record of Control Implementation

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. For control measures which require multiple daily applications, recording the frequency of application will fulfill the recordkeeping requirements of this rule (i.e., water being applied three times a day and the date) Records shall be maintained and be readily accessible for two years after the date of each entry and shall be provided to the APCD upon request.

H. Violations

Failure to comply with any provisions of this rule shall constitute a violation of Regulation VIII.

RULE 806. CONSERVATION MANAGEMENT PRACTICES
(Adopted ----------)

A. Purpose

The purpose of this regulation is to reduce the amount of fine Particulate Matter (PM-10) entrained in the ambient air as a result of emissions generated from Agricultural Operation Sites by requiring Conservation Management Practices to prevent, reduce, or mitigate PM-10 emissions.

B. Applicability

This rule applies to Agricultural Operation Sites located within the Imperial County. Effective on and after January 1, 2006, an owner/operator shall implement the applicable CMPs selected for each Agricultural Operation Site.

C. Definitions

In addition to the definitions of terms in Rule 800 (General Requirements for Control of Fine Particulate Matter (PM-10), the following definitions shall govern the implementation of this rule:

C.1 AGRICULTURAL OPERATIONS: The growing and harvesting of crops for the primary purpose of earning a living.

C.2 AGRICULTURAL OPERATION SITE: One or more agricultural parcels that meet the following:

C.2.a. Are under the same or common ownership or operation, or which are owned or operated by entities which are under common control; and

C.2.b. Are located on one or more contiguous or adjacent properties wholly within Imperial County.

C.3 AGRICULTURAL PARCEL: A portion of real property used by an owner or operator for carrying out a specific agricultural operation. Roads, vehicle/equipment traffic areas, and facilities, on or adjacent to the cropland are part of the agricultural parcel.

C.4 ALTERNATIVE TILLING: Rotate tillage leaving residue on soil. Tilling alternative rows for weed management and wind blown dust allows for approximately 50% reduction in field activity in addition to stabilizing soil surface and reducing soil compaction.

C.5 BALING/LARGE BALES: Using balers to harvest crop. It reduces PM emissions from crops traditionally harvested by chopping, truck, passes and residue burning.

C.6 BED/ROW SIZE OR SPACING: Increase or decrease the size of the planting bed area (can be done for field and permanent crops). Spacing adjustments reduce the number of passes and soil disturbance by increasing plant density/canopy through reduction of row width to contain PM within the canopy.

C.7 CHEMIGATION/FERTIGATION: Application of chemicals through an irrigation system. Each application reduces the need to travel in the field for application purposes, thus reducing the number of passes and soil disturbance while increasing the efficiency of the application.

C.8 CHIPS/MULCHES, ORGANIC MATERIALS, POLYMERS, ROAD OIL & SAND: Application of any nontoxic chemical or organic dust suppressant that meets all specification required by any federal, state, or local water agency and is not prohibited for use by any applicable regulations.

C.9 COMBINED OPERATION: To combine equipment, to perform several operations during one pass. The reduction in the number of passes necessary to cultivate the land will result in fewer disturbances to the soil. Other benefits are reduction of soil compaction and time to prepare fields, both of which can be precursors to additional tillage requirements.

C.10 CONSERVATION IRRIGATION: To conserve the quantity of water use, e.g.: drip, sprinkler, buried/underground line. Conserving water reduces weed population, which in turn reduces the need for tillage as well as reduces soil compaction.

C.11 CONSERVATION MANAGEMENT PRACTICE (CMP): An activity or procedure that prevents, reduces, or mitigates PM-10 normally emitted by, or associated with, an agricultural activity.

C.12 CONSERVATION MANAGEMENT PRACTICES PLAN (CMP PLAN): A document prepared by the owner or operator of an Agricultural Operation site that lists the selected CMPs for implementation. The CMP Plan also contains, but is not limited to, contact information for the owner or operator, a description of the Agricultural Operation Site and locations of Agricultural Parcels, and other information describing the extent and duration of CMP implementation.

C.13 CONSERVATION TILLAGE (e.g.: no tillage, minimum tillage): Types of tillage that reduce loss of soil and water in comparison to Conventional Tillage. It reduces the number of passes and amount of soil disturbance. It improves soil because it retains plant residue and increases organic matter.

C.14 COVER CROPS: Use seeding or natural vegetation/regrowth of plants to cover soil surface. It reduces soil disturbance due to wind erosion and entrainment.

C.15 EQUIPMENT CHANGES/TECHNOLOGICAL IMPROVEMENTS: To modify the equipment such as tilling; increase equipment size; modify land planing and land leveling; matching the equipment to row spacing; granting to new varieties or other technological improvements. It reduces the number of passes during an operation, thereby reducing soil disturbance.

C.16 FALLOWING LAND: Temporary or permanent removal from production. Eliminates entire operation/passes or reduces activities.

C.17 GRAVEL: Placing a layer of Gravel with enough depth to minimize dust generated from vehicle movement and to dislodge any excess debris which can become entrained.

C.18 GREEN CHOP: The harvesting of a forage crop without allowing it to dry in the field. It reduces multiple equipment passes in-field as well as reduces soil disturbance and soil compaction.

C.19 HAND HARVESTING: Harvesting crop by hand. It reduces soil disturbance due to machinery passes.

C.20 INTEGRATED PEST MANAGEMENT: A decision process that uses a combination of techniques including organic, conventional and biological farming concepts to suppress pest problems. It creates beneficial insect habitat that reduces the use of herbicides/pesticides thereby reducing number of passes for spraying. It also reduces soil compaction and the need for additional tillage.

C.21 MECHANICAL PRUNING: Using a machine instead of hand labor to prune (Applies as an Unpaved Road CMP only). It reduces vehicle trips, thereby reducing PM emissions.

C.22 MULCHING: Applying or leaving plant residue or other material to soil surface. It reduces entrainment of PM due to winds as well as reduces weed competition thereby reducing tillage passes and compaction.

C.23 NIGHT FARMING: Operate at night, if practical, when moisture levels are higher and winds are lighter. It decreases the concentration of PM emissions during daytime and the increased ambient humidity reduces PM emissions during the night.

C.24 NIGHT HARVESTING: Implementing cultural practices at night, or at times or high humidity. It reduces PM by operating when ambient air is moist, thereby reducing PM emissions.

C.25 NO BURNING. Switching to a crop/system that would not require waste burning. It reduces emissions associated with burning.

C.26 NON TILLAGE/CHEMICAL TILLAGE: Use flail mower, low volume sprayers or heat delivery systems (as harvest pre-conditioner). It reduces soil compaction and stabilizes soil through elimination or reduction of soil tillage passes.

C.27 ORGANIC PESTICIDES: Use biological control methods or non-chemical control methods. It reduces chemical use, thereby reducing passes.

C.28 PAVING: To pave currently Unpaved Roads.

C.29 PRECISION FARMING (GPS): Using satellite navigation to calculate position in the field, therefore manage/treat selective area. It reduces overlap and allows operations to occur during inclement weather conditions and at night thereby generating less PM.

C.30 PRE-HARVEST SOIL PREPARATION: Applying a light amount of water or stabilizing material to soil prior to harvest (when possible). It reduces PM emissions at harvest.

C.31 RESTRICTED ACCESS: To restrict public access to private roads. It reduces vehicle traffic and thus reduces associated fugitive dust.

C.32 SHED PACKING: Packing commodities in a covered or closed area. It reduces field traffic, thereby reducing PM emissions.

C.33 SHUTTLE SYSTEM/LARGE CARRIER: Multiple bin/trailer. Haul multiple or larger trailers/bins per trip thereby reducing emissions through reduced passes.

C.34 SPEED LIMITS: Enforcement of speeds that reduce visible dust emissions. The dust emissions from unpaved roads are a function of speed meaning reducing speed reduces dust.

C.35 TRACK-OUT CONTROL: Minimize any and all material that adheres to and agglomerates on all vehicle and equipment from unpaved roads and falls onto a paved public road or the paved shoulder of a paved public road.

C.36. TRANSGENIC CROPS: Use of GMO or Transgenic crops such as “herbicide-ready.” It reduces need for tillage or cultivation operations, as well as reduces soil disturbance. It can also reduce the number of chemical applications.

C.37 WATER APPLICATION: Application of water to unpaved roads and traffic areas.

C.38 WIND BARRIER: Artificial or vegetative wall/fence that disrupts the erosive flow of wind over unprotected land.

D. Requirements for Agricultural Operation Sites:

D.1 All Persons who own or operate an Agricultural Operation Site of forty (40) acres or more in size shall implement in each Agricultural Parcel at least one of the Conservation Management Practices listed in Section E.1 for each of the following categories:

D.1a Land preparation and cultivation;

D.1.b Harvest activities;

D.1.c Unpaved Roads;

D.1.d Unpaved Traffic Areas

D.2 The owner or operator of an Agricultural Operation Site may implement more than one Conservation Management Practices for one or more of the categories.

D.3 The owner or operator of an Agricultural Operation Site shall ensure that the implementation of each selected Conservation Management Practices does not violate any other local, state, or federal law.

D.4 The owner or operator of an Agricultural Operation Site may develop alternative CMPs. The owner or operator shall submit to the APCD a technical evaluation of the alternative CMPs, demonstrating that the alternative CMP achieves PM-10 emission reductions that are at least equivalent to other CMPs available for the applicable operation. The APCD will review the technical evaluation, and the alternative CMP must receive approval by the APCD before being included in the CMP Plan.

D.5 The owner or operator shall prepare a CMP Plan for each Agricultural Operation Site. The CMP Plan shall be made available to the APCD upon request. The CMP Plan shall be provided to the APCD within 72 hours of notice to the owner or operator.

E. Conservation Management Practices for Fugitive Dust (PM-10)

E.1 The owner or operator of an Agricultural Operation Site shall implement at least one of the following CMPs in each Agricultural Parcel to reduce PM10 emissions from land preparation and cultivation:

E.1.a Alternate Till,
E.1.b Bed/Row Size Spacing,

E.1.c Chemical/Fertigation,
E.1.d Combined Operations,
E.1.e Conservation Irrigation,
E.1.f Conservation Tillage,
E.1g Cover Crops,
E.1.h Equipment Changes/Technological Improvements,
E.1.i Fallowing Land,
E.1.j Integrated Pest Control,
E.1.k Mulching,
E.1.l Night Farming,
E.1.m Non Tillage /Chemical Tillage,
E.1.n Organic Pesticides,
E.1.o Precision Farming (GPS), or
E.1.p Transgenic Crops.

E.2 The owner or operator of an Agricultural Operation Site shall implement at least one of the following CMPs in each Agricultural Parcel to reduce PM10 emissions from harvesting:

E.2.a Baling /Large Bales
E.2.b Combined Operations
E.2.c Equipment Changes/Technological Improvements
E.2.d Green Chop
E.2.e Hand Harvesting
E.2.f Fallowing Land
E.2.g Night Harvesting
E.2.h No Burning
E.2.i Pre-Harvesting Soil Preparation
E.2.j Shed Packing
E.2.k Shuttle System/Large Carrier

E.3 The owner or operator of an Agricultural Operation Site shall implement at least one of the following CMPs for each Unpaved Road to reduce PM10 emissions:

E.3.a Chips/Mulches, Organic Materials, polymers, road oil and sand,
E.3.b Gravel
E.3.c Paving,
E.3.d Restricted access
E.3.e Speed limit
E.3.f Track-out control
E.3.g Water
E.3.h Wind barrier

E.4 The owner or operator of an agricultural operation site shall implement at least one of the following CMPs for each unpaved traffic area to reduce PM10 emissions:

E.4.a Chips/Mulches, Organic Materials, Polymers, Road Oil and Sand,
E.4.b Gravel
E.4.c Paving,
E.4.d Restricted Access
E.4.e Speed Limit
E.4.f Track-Out Control
E.4.g Water
E.4.h Wind Barrier

F. CMP Plan Preparation

An owner or operator shall prepare a CMP Plan for each Agricultural Operation Site. Each CMP Plan shall include, but is not limited to, the following information:

F.1 The name, business address, and telephone number of the owner or operator responsible for the preparation and implementation of the CMP Plan.

F.2 The signature of the owner or operator and the date that the CPM Plan was signed.

F.3 The location of the Agricultural Operation Site: cross roads; canal and gate number.

F.4 The crop grown at each location covered by the CMP Plan, total acreage for each crop, the length (miles) of unpaved roads, and the total area (acres or square feet) of the unpaved equipment and traffic areas to be covered by the CMP Plan, and.

F.5 The CMPs implemented or planned for implementation.

F.6 Other relevant information as determined by the APCD.

G. Violations

Failure to comply with any provisions of this rule shall constitute a violation of Regulation VIII. Failure to comply with the provisions of a CMP Plan shall also constitute a violation of Regulation VIII.

H. Record of Control Implementation

Any Person subject to the requirements of this rule shall maintain a copy of the CMP Plan and any supporting documentation necessary to confirm implementation of the CMPs. An owner or operator implementing alterative CMPs shall maintain a copy of technical evaluation for alternative CMPs and documentation of APCD approval of alternative CMPs, Records shall be maintained for two years after the date of each entry and shall be provided to the APCD upon request.

CONSERVATION MANAGEMENT PRACTICES PLAN

Farm Name :_____ Owner/Operator: _____Telephone:_____
Total Farm Acreage:_____ Address:_____
Canal & Gate*:_____Crossroads*:_____

***List all canals & gates, as well as crossroads, associated to this agricultural operation site at the reverse of this page. In addition, the crop grown at each location covered by the CMP plan, total acreage for each crop, the length (miles) of unpaved roads, and the total area (acres or square feet) of the unpaved equipment and traffic areas to be covered by the CMP Plan.**

Select one or more CMPs from each category:

Land Preparation and Cultivation	Harvesting	Unpaved Roads	Unpaved Traffic Areas
☐ Alternative Till	☐ Bailing/Large Bales	☐ Dust Suppressants	☐ Dust Suppressants
☐ Bed/Row Size Spacing	☐ Combined Operations	☐ Gravel	☐ Gravel
☐ Chemical Fertigation	☐ Equipment Changes	☐ Paving	☐ Paving
☐ Combined Operations	☐ Green Chop	☐ Restricted Access	☐ Restricted Access
☐ Conservation Irrigation	☐ Hand Harvesting	☐ Speed Limit	☐ Speed Limit
☐ Cover Crops	☐ Fallowing Land	☐ Track-out Control	☐ Track-out Control
☐ Equipment Changes	☐ Night Harvesting	☐ Water	☐ Water
☐ Fallowing Land	☐ Pre-Harvesting Land Prep	☐ Wind Barriers	☐ Wind Barriers
☐ Integrated Pest Control	☐ Shuttle System/Large Carrier	☐ Other	☐ Other
☐ Mulching	☐ Shed Packing		
☐ Night Farming	☐ Other		
☐ Non-Tillage/Chemical Tillage			
☐ Organic Pesticides			
☐ Precision Farming (GPS)			
☐ Transgenic Crops			
☐ Other			

I hereby certify that: I am the owner or operator of the agricultural operation site on which this CMP Plan will be implemented; I have a copy of Rule 806 and I will comply with it.

Signature:_____Date:_____

CONSERVATION MANAGEMENT PRACTICES PLAN

Agricultural Parcel ID ____________________

Canal & Gate: ____________________
Crossroads: ____________________
Crop Grown: ____________________
Total Acreage: ____________________
Approx. Length (miles) of unpaved roads: ____________________
Approx. Unpaved Equipment Traffic Areas (acres or square feet): ____________________
CMPs Selected:____________________

Agricultural Parcel ID ____________________

Canal & Gate: ____________________
Crossroads: ____________________
Crop Grown: ____________________
Total Acreage: ____________________
Approx. Length (miles) of unpaved roads: ____________________
Approx. Unpaved Equipment Traffic Areas (acres or square feet): ____________________
CMPs Selected:____________________

Agricultural Parcel ID ____________________

Canal & Gate: ____________________
Crossroads: ____________________
Crop Grown: ____________________
Total Acreage: ____________________
Approx. Length (miles) of unpaved roads: ____________________
Approx. Unpaved Equipment Traffic Areas (acres or square feet): ____________________
CMPs Selected:____________________

Agricultural Parcel ID ____________________

Canal & Gate: ____________________
Crossroads: ____________________
Crop Grown: ____________________
Total Acreage: ____________________
Approx. Length (miles) of unpaved roads: ____________________
Approx. Unpaved Equipment Traffic Areas (acres or square feet): ____________________
CMPs Selected:____________________

A P P E N D I X F

BLM Environmental Assessment and Finding of No Significant Impact

Environmental Assessment & Finding of No Significant Impact

ENVIRONMENTAL ASSESSMENT **EA Number:**

El Centro Field Office, California Desert District, Bureau of Land Management
Lease/Serial/Case File No.:

Proposed Action Title/Type: Road and Trail Maintenance
Location of Proposed Action: Imperial County, CA.
Applicant (if any): United States Border Patrol

Conformance With Applicable Land Use Plans:
This proposed action is subject to the following land use plan:

California Desert Conservation Area Plan — Date Approved: 1980

The following plans are tiered from the above CDCA Plan:

Yuha Basin ACEC Management Plan	Date Approved: 1982
Yuha Desert Habitat Management Plan	Date Approved: 1983
Yuha Desert Management Plan	Date Approved: 1985
Imperial Sand Dunes Recreation Area Management Plan	Date Approved: 1987
Algodones Dunes Habitat Management Plan	Date Approved: 1987
Flat-tailed Horned Lizard Rangewide Strategy.	Date Approved: 1997
Recovery Plan for Bighorn Sheep in the Peninsular Ranges, CA	Date Approved: 2000

These plans have been reviewed to determine if the proposed action conforms with the land use plan terms and conditions as required by 43 CFR 1610.5.

Purpose And Need for Proposed Action:

Road repair and maintenance to the routes of travel is a normal operation of managing resources on the public lands of the El Centro resource area. Such maintenance is critical for the Border Patrol to perform its mission. Actions involved in the maintenance of the roads are included as maintaining administrative and public access for permitted actions on the public lands.

When the condition of roads and trails become degraded due to Border Patrol dragging and OHV use, Border Patrol and OHVs tend to create parallel routes in order to avoid small berms and moguls. This leads to route proliferation in limited areas, and the widening of routes that causes impacts to resources. Additionally, localized storms cause wind and rain erosion, causing damage to road shoulders and creating gullies where runoff occurs, promoting the need to repair roads for user safety. The proposed action will also decrease the impacts to resource values by channeling vehicle traffic, preventing washouts and associated detours, and maintaining the integrity of designated routes.

Description of Proposed Action:

The Border Patrol proposes to routinely use a road grader to level moguls on existing roads in the Yuha desert and on East Mesa and West Mesa adjacent to the Imperial Valley. Where no moguls exist, the grader will be used to fill in ruts, move rocks, and generally level the road surface. All of the roads identified are designated existing open routes on BLM's Route of Travel Inventory. Grading will be limited to the existing road width. The routes will not be widened.

Route maintenance will routinely be conducted on existing approved routes of travel within the limited and open vehicle classification areas of Imperial County south of State Highway 78 (areas defined in CDCA plan). All maintenance will be completed on an as needed basis, restricting disturbance to the minimal amount of area, depending on use, rainfall, wind, and other environmental and/or man caused impacts. Access will be restricted to existing designated routes. (SEE MAP 1.)

Description of Alternative Actions:

Alternative 1: No action. The roads will not be graded and maintained.

Alternative 2: All designated roads will be graded and maintained as described in the preferred action, except the roads in critical habitat for the Peninsular Ranges Bighorn Sheep. The roads in the critical habitat for the Peninsular Ranges Bighorn Sheep will not be graded or maintained in the Jacumba, Coyote and Fish Creek Mountains. (SEE MAP 2.) Off road travel and route proliferation is not as common in these areas as in other areas. In addition, these roads do not require grading as normal maintenance due to the hard packed nature of the soil and road material in these areas.

Affected Environment:

Common wildlife of the area include the flat-tailed horned lizard (federally proposed as threatened), desert iguana, whiptail lizard, fringe-toed lizard, side-blotched lizard, zebra-tail lizard, leopard lizard, banded gecko, sidewinder, patchnose snake, shovel- nosed snake, coachwhip, roundtail ground squirrel, kangaroo rat, blacktail jackrabbit, badger, kit fox, gray fox, coyote, bobcat, mule deer, mountain lion, loggerhead shrike, black-tailed gnatcatcher, sharp-shined hawk, Cooper's hawk, Swainson's hawk, ferruginous hawk, American Kestrel, white-winged dove, mourning dove, ground dove, burrowing owl, yellow warbler, desert cottontail and Gambel's quail. No federally or state listed animal species are known from the area, with the exception of the Desert Pupfish in San Felipe Creek, the Yuma Clapper Rail and Black Rail in the All-American Canal and the Peninsular Ranges Bighorn Sheep in the Jacumba, Coyote and Fish Creek Mountains.

The East Mesa area is dominated creosote bush scrub with an understory of *Schismus barbatus*, saltbush and burrobush (white bursage). In the Yuha and West Mesa, buoorbush tends to predominate. Spanish needle, wooly plantain and sand verbenia are common annual plants, especially abundant in springs following wet winters. Other plant associations found include salt-bush scrub and small areas of desert dry wash.

Environmental Impacts:

The proposed action and each of the alternatives have been analyzed to assess direct, indirect, and cumulative impacts to critical elements of the human environment listed below. Those critical elements that may be significantly affected by the action are marked 'yes' in the table below. However, if the action may be mitigated so that the critical element is not significantly affected the table is marked 'no'. Those critical elements that are not significantly affected by the action are marked 'no'. In addition, those elements that are not present are marked 'no' on the table below. Each of the critical elements is discussed in further detail following the table.

Critical Element	Preferred Alternative (full grading and maintenance)		Alternative 1 (no action)		Alternative 2 (limited grading and maintenance)		Subject Area expert
Significant Effect?	Yes	No	Yes	No	Yes	No	
Air Quality		X		X		X	
ACECs		X	X			X	
Cultural Resources		X	X			X	
Farmlands, Prime / Unique		X		X		X	
Floodplains		X		X		X	
Native American Relation Concerns		X	X			X	
T&E Wildlife	X		X			X	
T&E Vegetation		X	X			X	
Water Quality		X		X		X	
Wastes, Hazardous/solid		X		X		X	
Wetlands/Riparian Zones		X		X		X	
Wild and Scenic Rivers		X		X		X	
Wilderness		X		X		X	
Visual		X		X		X	

Description of Impacts:

Air Quality: *Preferred Alternative (full grading):* The Border Patrol currently drives on and drags the roads as a part of their routine operations. The grading of the roads will remove the washboards in the roads and reduce the particulate matter that is currently generated by driving on and dragging the roads. Although that grading action will disperse some particulate matter into the air, the long term affect from this action will be greatly offset by reduction in particulate matter that is dispersed by driving on and dragging the unmaintained roads.

Alternative 1 (No Action): Particulates would be released into the air due to the driving on and dragging of the roads as the roads continue to deteriorate.

Alternative 2 (limited grading): The Border Patrol currently drives on and drags the roads as a part of their routine operations. The grading of the roads will remove the washboards in the roads and reduce the particulate matter that is currently generated by driving on and dragging the roads. Although that grading action will disperse some particulate matter into the air, the long term affect from this action will be greatly offset by reduction in particulate matter that is dispersed by driving on and dragging the

unmaintained roads. For the areas in the critical sheep habitat that will not be graded in this alternative, particulates would be released into the air due to driving on the roads as the roads continue to deteriorate. (The Border Patrol does not drag the roads in critical sheep habitat.)

Area Critical Environmental Concern (ACEC): *Preferred Alternative (full grading):* The roads pass through ACECs. If the roads are not graded and maintained, Bordor Patrol vehicles and other vehicles that use the roads are more likely to drive off the roads and into the habitat areas. Grading the roads could have a slight impact on the ACEC due to the use of the heavy equipment, although this impact would not be significantly greater than that of other vehicles using the roads. The impact itself, would be an increase in noise, and increase in exhaust emissions, a change in the road surface to a smoother surface, and a change in the road bank to a more uneven surface due to material being deposited on the road bank from the road.

Alternative 1 (No Action): The impact to the ACECs would be significant if this alternative in implemented. As the roads deteriorate, more vehicles would travel off road. A new illegal road network would be established in the ACECs. The off road travel and new road system would change the characteristics of the ACECs and deteriorate their value. The management strategies for these areas would not be achieved.

Alternative 2 (limited grading): The roads pass through ACECs. If the roads are not graded and maintained, Border Patrol vehicles and other vehicles that use the roads are more likely to drive off the roads and into the habitat areas. Grading the roads could have a slight impact on the ACEC due to the use of the heavy equipment, although this impact would not be significantly greater than that of other vehicles using the roads. The impact itself, would be an increase in noise, and increase in exhaust emissions, a change in the road surface to a smoother surface, and a change in the road bank to a more uneven surface due to material being deposited on the road bank from the road.

Cultural Resources: *Preferred Alternative (full grading):* Cultural resources will not be significantly affected due to grading of the roads with the mitigations identified in this document. There are two small areas with cultural resources that could be significantly impacted if these areas were graded. The mitigation requires that these areas receive no grading. In addition, if the grading activities increased the size of the road or berm, cultural resources could be loss. The mitigation will ensure that these resources are not lost.

Alternative 1 (No Action): Cultural resources may be significantly affected if this alternative is selected. As the roads continue to deteriorate, vehicles will travel off road and create new roads. The off road travel and new routes could significantly impact fragile cultural resources. Many of the areas around these roads have not been surveyed, so the cultural resources are not surveyed, identified or inventoried. Vehicles driving over cultural resources could destroy the resources. The loss of the cultural resources and the knowledge gained by studying the cultural resources would be significant.

Alternative 2 (limited grading): Cultural resources will not be significantly affected due to grading of the roads with the mitigation identified in this document. There are two small areas with cultural resources that could be significantly impacted if these areas were graded. The mitigation requires that these areas receive no grading. In addition, if the grading activities increased the size of the road or berm, cultural resources could be loss. The mitigation will ensure that these resources are not lost.

Farmlands, Prime / Unique: *Preferred Alternative (full grading):* This alternative does not involve prime or unique farmlands.

Alternative 1 (No Action): This alternative does not involve prime or unique farmlands.

Alternative 2 (limited grading): This alternative does not involve prime or unique farmlands.

Floodplains: *Preferred Alternative (full grading):* This alternative does not impact floodplains.

Alternative 1 (No Action): This alternative does not impact floodplains.

Alternative 2 (limited grading): This alternative does not impact floodplains.

Native American Relations: Concerns *Preferred Alternative (full grading):* Many Native American tribes have expressed concerns that cultural resources in this area are fragile and can be destroyed by off highway vehicle use. The Native American tribes have expressed a desire to preserve the cultural resources in the project area. Native Americans generally support efforts to encourage users to stay on designated roads. Grading the roads, as described in this alternative, would support Native American relationships: the impact would be positive.

Alternative 1 (No Action): The impact of this alternative could be significant. Native American tribes would be concerned about the off road travel and new roads that could develop if the designated roads are not maintained. The off road travel and new roads could impact cultural resources which the Native Americans desire to protect.

Alternative 2 (limited grading): Many Native American tribes have expressed concerns that cultural resources in this area are fragile and can be destroyed by off highway vehicle use. The Native American tribes have expressed a desire to preserve the cultural resources in the project area. Native Americans generally support efforts to encourage users to stay on designated roads since this protects the cultural resources. In addition, Native Americans have been supportive of protecting the bighorn sheep and their habitat. Grading the roads, as described in this alternative, would support Native American relationships: the impact would be positive.

T&E Wildlife: *Preferred Alternative (full grading):* The grading of routes could result in death, injury or disturbance to wildlife, especially basking lizards and snakes. Especially, vulnerable to death would be the flat-tailed horned lizard during the active season (mid-February to mid- November) in areas of high relative abundance (Management Areas). Mitigation will be required to reduce to potential affects to this species. Beneficial indirect impacts could occur from the reduction in route proliferation parallel to well graded routes. Such proliferation increases mortality, devegetation and soil compaction, all of which adversely impacts wildlife populations.

Disturbance to the sheep, pupfish or rails is unlikely due the distance of most routes from populations of these species. Some small positive impact might occur to the pupfish from adequate maintenance of the Harper's Well Road that would discourage route proliferation in the watershed of this species. Off road travel and illegal roads could have an adverse affect on the bighorn sheep as this species is shy and does not reproduce well when its habitat is disturbed.

Alternative 1 (No Action): Significant impacts could occur due to route proliferation and off road travel. Such proliferation and off road travel increases mortality, devegetation and soil compaction, all of which adversely impacts wildlife populations.

Disturbance to the pupfish or rails is unlikely due the distance of most routes from populations of these species, although off road travel around Harper's Well Road could have a significant impact on the watershed for the pupfish. Off road travel and illegal roads could have an adverse affect on the bighorn sheep as this species is shy and does not reproduce well when its habitat is disturbed.

Alternative 2 (limited grading): The grading of routes could result in death, injury or disturbance to wildlife, especially basking lizards and snakes. Especially, vulnerable to death would be the flat-tailed horned lizard during the active season (mid-February to mid- November) in areas of high relative abundance (Management Areas). Mitigation is required in to avoid significant impacts to the flat tailed horned lizard. Beneficial indirect impacts could occur from the reduction in route proliferation parallel to well graded routes. Such proliferation increases mortality, devegetation and soil compaction, all of which adversely impacts wildlife populations.

Disturbance to the pupfish or rails is unlikely due the distance of most routes from populations of these species. Some small positive impact might occur to the pupfish from adequate maintenance of the Harper's Well Road that would discourage route proliferation in the watershed of this species. This alternative does not grade the roads in critical bighorn sheep habitat, to avoid impact on that species.

T&E Vegetation: *Preferred Alternative (full grading):* No significant impacts are expected from route grading, as long as grading is limited to the existing route. In areas of washouts, vegetation may be impacted from use of the material washed out. Vegetation has the potential to be crushed or bladed within the proposed 100 foot impact area downstream of a washout. In the general Hyduke Road area, the Fairy Duster (*Calliandra eriophylla*), is the only sensitive species known. Its status with the California Native Plant Society (CNPS) is rare, but common outside of California. Fairy Dusters do not have a Federal or State status. Habitat for this species is typically in rocky washes containing some sand.

Shoulder maintenance within the Imperial Sand Dunes may impact vegetation established along the road way. Wiggin's Croton (*Croton wigginsii*) is the most likely sensitive species to be affected by this activity, as it prefers disturbed areas. Its status with the State of California is proposed threatened. It has no Federal status.

The following sensitive species are present within the Imperial Sand Dunes:

Species	Fed. Status	CA Status	BLM
Astragalus magdalenae var. personii	Proposed	Endangered	Sensitive
Helianthus nevius ssp. tephrodes	Category 2	Proposed Endangered	Sensitive
Palofoxia arida var. gigantea	Category 3C	CNPS List 1B	Sensitive
Pholisma sonorae	Category 2	CNPS List 1B	Sensitive
Cryptantha costata	none	CNPS List 4	none
Lyrocarpa coulteri	none	CNPS List 4	none
Larrea tridentata var. arenaria	none	CNPS List 3	none
Astragalus lentiginosus var. borreganus	none	CNPS List 4	none

There are no known threatened or endangered plants in the Yuha and West Mesa areas, located west of El Centro. However, one rare plant, formerly listed as a Category 3C candidate, is found within the project area. *Pilostyles thurberi* is a rare inconspicuous parasite on several species of *Dalea* shrubs. Indigo bush (*D. emoryi*), is common throughout the project area, and could be a potential host for *P. thurberi*. Two other sensitive CNPS species are found in the Yuha. They are the Baja California gilia, (*Ipomopsis effusa*) and Crucifixion Thorn (*Castela emoryi*).

Alternative 1 (No Action): Significant impacts may occur if this alternative is selected. As the designated roads deteriorate, vehicles will travel off road. Eventually, illegal roads are created. The off road activity and illegal roads impact all vegetation in the area as vehicles will crush vegetation in the pathway.

In the general Hyduke Road area, the Fairy Duster (*Calliandra eriophylla*), is the only sensitive species known. Its status with the Calif6rnia Native Plant Society (CNPS) is rare, but common outside of California. Fairy Dusters do not have a Federal or State status. Habitat for this species is typically in rocky washes containing some sand. Travel off road in this area may significantly impact the Fairy Duster. Within the Imperial Sand Dunes, off road travel may impact Wiggin's Croton (*Croton wigginsii*), but to a lesser extent than the other alternatives as this species prefers a disturbed habitat. Its status with the State of California is proposed threatened. It has no Federal status.

The following sensitive species also have the potential to be affected by this alternative within the Imperial Sand Dunes:

Species	Fed. Status	CA Status	BLM
Astragalus magdalenae var. personii	Proposed	Endangered	Sensitive
Helianthus nevius ssp. tephrodes	Category 2	Proposed Endangered	Sensitive
Palofoxia arida var. gigantea	Category 3C	CNPS List 1B	Sensitive
Pholisma sonorae	Category 2	CNPS List 1B	Sensitive
Cryptantha costata	none	CNPS List 4	none
Lyrocarpa coulteri	none	CNPS List 4	none
Larrea tridentata var. arenaria	none	CNPS List 3	none
Astragalus lentiginosus var. borreganus	none	CNPS List 4	none

There are no known threatened or endangered plants in the Yuha and West Mesa areas, located west of El Centro. However, one rare plant, formerly listed as a Category 3C candidate, is found within the project area. *Pilostyles thurberi* is a rare inconspicuous parasite on several species of *Dalea* shrubs. Indigo bush (*D. emoryi*), is common throughout the project area, and could be a potential host for *P. thurberi*. Two other sensitive CNPS species are found in the Yuha. They are the Baja California gilia, (*Ipomopsis effusa*) and Crucifixion Thorn (*Castela emoryi*). Each of these plants could be significantly impacted by off road travel.

Alternative 2 (limited grading): No significant impacts are expected from route grading, as long as grading is limited to the existing route. In areas of washouts, vegetation may be impacted from use of the material washed out. Vegetation has the potential to be crushed or bladed within the proposed 100 foot impact area downstream of a washout. In the general Hyduke Road area, the Fairy Duster (*Calliandra eriophylla*), is the only sensitive species known. Its status with the Calif6rnia Native Plant Society (CNPS) is rare, but common

outside of California. Fairy Dusters do not have a Federal or State status. Habitat for this species is typically in rocky washes containing some sand.

Shoulder maintenance within the Imperial Sand Dunes may impact vegetation established along the roadway. Wiggin's Croton (*Croton wigginsii*) is the most likely sensitive species to be affected by this activity, as it prefers disturbed areas. Its status with the State of California is proposed threatened. It has no Federal status.

The following sensitive species are present within the Imperial Sand Dunes:

Species	Fed. Status	CA Status	BLM
Astragalus magdalenae var. personii	Proposed	Endangered	Sensitive
Helianthus nevius ssp. tephrodes	Category 2	Proposed Endangered	Sensitive
Palafoxia arida var. gigantea	Category 3C	CNPS List 1B	Sensitive
Pholisma sonorae	Category 2	CNPS List 1B	Sensitive
Cryptantha costata	none	CNPS List 4	none
Lyrocarpa coulteri	none	CNPS List 4	none
Larrea tridentata var. arenaria	none	CNPS List 3	none
Astragalus lentiginosus var. borreganus	none	CNPS List 4	none

There are no known threatened or endangered plants in the Yuha and West Mesa areas, located west of El Centro. However, one rare plant, formerly listed as a Category 3C candidate, is found within the project area. *Pilostyles thurberi* is a rare inconspicuous parasite on several species of *Dalea* shrubs. Indigo bush (*D. emoryi*), is common throughout the project area, and could be a potential host for *P. thurberi*. Two other sensitive CNPS species are found in the Yuha. They are the Baja California gilia, (*Ipomopsis effusa*) and Crucifixion Thorn (*Castela emoryi*). These plants could be non-significantly affected by this alternative.

Water Quality: *Preferred Alternative (full grading):* Water quality will not be affected by this alternative.

Alternative 1 (No Action): Water quality will not be affected by this alternative.

Alternative 2 (limited grading): Water quality will not be affected by this alternative.

Wastes, Hazardous / Solid: *Preferred Alternative (full grading):* The proposed action does not involve the generation of hazardous or solid waste. The proposed action does not involve land that contains hazardous or solid waste. Waste is occasionally encountered in the area of the project due to illegal dumping. Typical waste that is found in the area is general domestic trash and tires. If waste is found during this project, the Border Patrol will arrange for legal disposal.

Alternative 1 (No Action): This alternative does not involve the generation of hazardous or solid waste. This alternative does not involve land that contains hazardous or solid waste. Waste is occasionally encountered in the area to illegal dumping. Typical waste is found in the area is general domestic trash and tires.

Alternative 2 (limited grading): This alternative does not involve the generation of hazardous or solid waste. The alternative does not involve land that contains hazardous or solid waste. Waste is occasionally encountered in the area of the project due to illegal dumping. Typical waste that is found in the area is general domestic trash and tires. If waste is found during this project, the Border Patrol will arrange for legal disposal.

Wetlands/Riparian Zones: *Preferred Alternative (full grading):* There are no wetlands or riparian zones in the project area.

Alternative 1 (No Action): There are no wetlands or riparian zones in the project area.

Alternative 2 (limited grading): There are no wetlands or riparian zones in the project area.

Wild and Scenic Rivers: *Preferred Alternative (full grading):* The proposed action does not involve designated wild and Scenic Rivers or waters being considered for designation as Wild and Scenic.

Alternative 1 (No Action): The proposed action does not involve designated wild and Scenic Rivers or waters being considered for designation as Wild and Scenic.

Alternative 2 (limited grading): The proposed action does not involve designated wild and Scenic Rivers or waters being considered for designation as Wild and Scenic.

Wilderness: *Preferred Alternative (full grading):* The proposed action does not involve lands within designated wilderness or lands being considered for designation as wilderness.

Alternative 1 (No Action): This alternative does not involve lands within designated wilderness or lands being considered for designation as wilderness.

Alternative 2 (limited grading): This alternative action does not involve lands within designated wilderness or lands being considered for designation as wilderness.

Visual Resources: The degree to which an action affects the visual quality of the landscape can be measured in terms of the impacts to the elements of form, line, color, and texture of the landscape. The landscape is a focal one, with a limited central focus point and which has a repetitive creosote vegetation sequence. The overall texture is a medium one, with patchy and broken vegetation dominant. The desert colors are muted shades ranging from desert brown and sand beige to juniper green (Munsell Soil Color Charts).

The VRM Objective class for the involved BLM lands is Class 3. Visual resource management objectives for Class 3 lands are to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Conducting the proposed action would not raise the contrast rating.
Preferred Alternative (full grading): The proposed action will help reduce route proliferation, which will help maintain the visual integrity of this resource area.

Alternative 1 (No Action): This alternative will adversely affect the visual integrity of this resource area because, if routes are not maintained, alternative routes may form, causing further degradation.

Alternative 2(limited grading): The proposed action will help reduce route proliferation, which will help maintain the visual integrity of this resource area.

Coordination with other Agencies:

California State Historic Preservation Office -Archaeology: Pursuant to Section 5 of the State Protocol Agreement (1998) between the California State Historic Preservation Office (SHPO) and the Bureau of Land Management - California (BLM), and in accordance with 36 CFR Part 800, this memorandum documents BLM's efforts to identify, evaluate and assess effects for historic properties that might be affected by this undertaking as required by Section 106 of the National Historic Preservation Act.

The BLM has determined that this project is an exempt undertaking under the State Protocol Agreement Appendix C: General Program Exemption Number One, Routine Maintenance. BLM did allow this activity in the year 2001 and the potential impacts were mitigated by working with the driver of the grader to minimize the amount of disturbance to the road berms and having the grader not grade in the areas where the route goes through known archaeological sites. This years proposed activity will be mitigated in the same manor (see the mitigation section).

This activity would also help to protect cultural sites located along or near open routes. Because of constant use and dragging, many of the routes the US BP habitually use degrade very quickly and become dangerous to travel on at fast speeds. So the agents tend to create parallel routes. The grading of these roads will make travel on the roads easier for the BP agents, thus they will tend to remain on the routes.

United States Fish & Wildlife Service: The preferred alternative would require consultation with the United States Fish and Wildlife Service for possible affects to the Peninsular Ranges Bighorn Sheep. Alternatives 2 and 3 would not require formal consultation. Although Pierson's Milk-Vetch occurs in the region of this activity, it would not suffer impacts from alternative 2, and the proposed action, because these areas do not include habitat for this species, making formal consultation unnecessary.

Description of Mitigation Measures and Residual Impacts:

Archaeology: ROAD GRADING STIPULATIONS:
1) Two following two segments of road must be left undisturbed. Absolutely no grading is to be conducted in these areas. The grader operator must lift the blade above the ground surface. These two areas are shown on the attached map number 3 in red and will be flagged on ground with orange ribbon tied to bushes prior to grading in the general area.

A. ALPHA road 1.4 miles from junction with drag road (at Mexico border). This is a route segment of about 10 yards.

B. EXIT 6 road just to east of LITTLE SUNRISE. This is a route segment of several hundred yards.

2) Narrow roads marked in GREEN on map number 3 must not be made wider. They need to stay about 10-12' feet wide. Do not undercut banks with blade.

3) Drag roads (Marked in blue on map) must not be increased to include all previous drag marks. They must be only wide enough to accommodate the width of two drags plus a narrow travel lane in the middle. DO NOT grade the sides of the route just because the sides show some previous disturbance because of dragging or driving.

4) When several parallel routes exist, choose only one. Choose the most heavily traveled/disturbed route.

5) Grade only the roads or routes indicated on the map attached to this document.

Botany: ROAD GRADING STIPULATIONS:

Avoidance of vegetation outside construction zones whenever possible is necessary. Work crews should be able to recognize Wiggin's Croton within the Imperial Sand Dunes. Restricted disturbance can be beneficial to Croton as a species, however, individual plants should be avoided outside the construction zones where possible to maintain a reproductive stock.

Equipment operators should be aware of vehicle use that may try to pass during the project. Pointing users to wide areas, and areas of disturbance, will aid in avoiding vegetation and corresponding wildlife habitat. No woody trees (e.g. Palo Verde, Ironwood, Mesquite, Acacia, etc.) will be removed from washes (e.g. during operations repairing washouts) without prior clearance from the Resource Area Biologist or Botanist.

Wildlife: ROAD GRADING STIPULATIONS:

Within Management Areas (MA) only, a Border Patrol agent would walk in front of the grader, moving any flat-tailed horned lizards out of harm's way during the activity season (15 February to 15 November). No such clearance would be required from 16 November to 14 February within MA's or at any time outside of MA's.

Residual Impacts: Impacts to cultural and biological resources would be reduced substantially by the mitigations, however, wildlife mortality could still occur.

Cumulative Impacts: Road and route proliferation is widespread in the desert of Imperial County and has led to substantial degradation of natural habitats through soil compaction, devegetation, disturbance, injury, mortality and exotic plant vectoring. The implementation of this action would probably have a net beneficial effect because motorists are more likely to stay on a well-graded route, reducing the adverse effects associated with parallel route proliferation.

Other impacts in the project area include paved roads, power lines, geothermal plants, off-road vehicle travel, irrigation berms, mining, military impacts and sundry other activities. These actions have also degraded natural habitats and their associated biota to a wide extent in Imperial County. The impacts will likely increase as the human population of the County grows leading to increased detrimental impacts. However, adequate maintenance of an existing route network and alleviate these impacts somewhat.

Preparer(s): Chris Knauf, Natural Resource Specialist

Gavin Wright, Senior Wildlife Biologist
Margaret Hangan, Archaeologist
Patrick Whipple, Senior Border Patrol Agent

Date: 04/18/2002

Reviewer: Lynnette Elser
Lynnette Elser, Environmental Coordinator

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FINDING OF NO SIGNIFICANT IMPACT/DECISION RECORD.

I have reviewed this environment assessment including the explanation and resolution of any potentially significant environmental impacts. I have determined that the proposed action is unacceptable due to its potential impact on the Peninsular Ranges Bighorn Sheep. I have determined that alternative 2, limited grading, with the mitigation measures described below will not have any significant impacts on the human environment and that an EIS is not required. I have determined that alternative 2 is in conformance with the approved land use plan. It is my decision to implement alternative 2 with the mitigation measures identified below.

Mitigation Measures/Remarks:

Archaeology: ROAD GRADING STIPULATIONS:

1) Two following two segments of road must be left undisturbed. Absolutely no grading is to be conducted in these areas. The grader operator must lift the blade above the ground surface. These two areas are shown on the attached map number 3 in red and will be flagged on ground with orange ribbon tied to bushes prior to grading in the general area.

B. ALPHA road 1.4 miles from junction with drag road (at Mexico border). This is a route segment of about 10 yards.

B. EXIT 6 road just to east of LITTLE SUNRISE. This is a route segment of several hundred yards.

2) Narrow roads marked in GREEN on map number 3 must not be made wider. They need to stay about 10-12' feet wide. Do not undercut banks with blade.

3) Drag roads (Marked in blue on map) must not be increased to include all previous drag marks. They must be only wide enough to accommodate the width of two drags plus a narrow travel lane in the middle. DO NOT grade the sides of the route just because the sides show some previous disturbance because of dragging or driving.

4) When several parallel routes exist, choose only one. Choose the most heavily traveled/disturbed route.

5) Grade only the roads or routes indicated on the map attached to this document.

Botany: ROAD GRADING STIPULATIONS:

Avoidance of vegetation outside construction zones whenever possible is necessary. Work crews should be able to recognize Wiggin's Croton within the Imperial Sand Dunes. Restricted disturbance can be beneficial to Croton as a species; however, individual plants should be avoided outside the construction zones where possible to maintain a reproductive stock.

Equipment operators should be aware of vehicle use that may try to pass during the project. Pointing users to wide areas, and areas of disturbance, will aid in avoiding vegetation and corresponding wildlife habitat. No woody trees (e.g. Palo Verde, Ironwood, Mesquite, Acacia, etc.) will be removed from washes (e.g. during operations repairing washouts) without prior clearance from the Resource Area Biologist or Botanist.

Wildlife: ROAD GRADING STIPULATIONS:

Within Management Areas (MA) only, a Border Patrol agent would walk in front of the grader, moving any flat-tailed horned lizards out of harm's way during the activity season (15 February to 15 November). No such clearance would be required from 16 November to 14 February within MA's or at any time outside of MA□s.

Field Manager: Greg Thompson Date: 4/23/02