

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

**Final Staff Report for:
Proposed Amended Rule 403 - Fugitive Dust and
Proposed Rule 1186 - PM₁₀ Emissions from Paved and Unpaved Roads, and
Livestock Operations**

December 13, 1996

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LIST OF ACRONYMS AND TERMS

AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
BACM	Best Available Control Measures
Basin	South Coast Air Basin
CAA	Federal Clean Air Act
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
District	South Coast Air Quality Management District
NAAQS	National Ambient Air Quality Standard
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service - a division of the USDA
PAR	Proposed Amended Rule
PM ₁₀	Particulate matter with aerodynamic diameter less than 10 microns
PR	Proposed Rule
RACM	Reasonably Available Control Measures
RFP	Reasonable Further Progress
SIP	State Implementation Plan
SSAB	Salton Sea Air Basin
U.S. EPA	Environmental Protection Agency
USDA	U.S. Department of Agriculture

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PREFACE

On October 1, 1996 the South Coast Air Quality Management District (District) released a preliminary draft staff report for Proposed Amended Rule (PAR) 403 and Proposed Rule (PR) 1186. The preliminary draft staff report was distributed to interested parties and included background information, the rationale for PAR 403 and PR 1186, an estimate of the anticipated emissions reductions, a cost-effectiveness analysis, and draft rule language. Subsequent to release of the staff report, the District held a Public Consultation meeting on October 8, 1996, two Public Workshops, on October 29, 1996 and December 6, 1996, and a public consultation meeting on January 8, 1997. The purpose of the meetings was to inform affected businesses and agencies of Federal Clean Air Act requirements for controlling PM₁₀ and to solicit comments on the draft rule language. In response comments received during the rule development process, the District has revised the rule text, where appropriate, and some of the preliminary draft staff report text including the cost-effectiveness analysis. (Note: Revisions to the November 12, 1996, draft staff report are denoted with underline and strikeout)

EXECUTIVE SUMMARY

The South Coast Air Basin (Basin) exceeds state and federal air quality standards for PM_{10} (defined as particulate matter with an aerodynamic diameter of 10 microns or less). As a result of these exceedances, the Basin is currently designated as a "serious nonattainment area" for PM_{10} . Under the Federal Clean Air Act (CAA), the South Coast Air Quality Management District (District) is required to implement best available control measures (BACM) for fugitive dust sources by February 8, 1997. The District is also required to adopt contingency measures in regulatory form by February 8, 1997 to be implemented only if the area does not achieve sufficient progress towards attainment. In 1994, the District prepared and adopted a "serious nonattainment area" PM_{10} State Implementation Plan revision (1994 BACM SIP, Appendix I-D of 1994 AQMP) that identified candidate BACM for fugitive dust sources. The 1994 BACM SIP committed the District to adopt all candidate BACM by February 8, 1997, except any measure that does not meet the established technical and cost-feasibility criteria.

District staff has completed the BACM technical and cost-feasibility analysis and has incorporated the BACM that meet or exceed the 1994 BACM SIP criteria into proposed amendments to District Rule 403 (PAR 403) and proposed Rule 1186 (PR 1186). A discussion of the BACM technical and cost-feasibility analysis is included in the body of this staff report under the BACM Selection discussion (see Table of Contents). BACM that do not meet the established criteria are proposed in the PAR 403/PR 1186 as contingency measures to be implemented only if required by the U.S. Environmental Protection Agency (U.S. EPA). The following is a summary of the BACM requirement as contained in PAR 403 and PR 1186. Appendix A contains the complete version of PAR 403 and Appendix B contains the complete version of PR 1186.

Proposed Amended Rule 403

- Upgrades the existing requirement to implement reasonably available control measures (RACM) to establish a requirement to implement best available control measures (BACM) in the Basin.
- Establishes new standards to reduce the track-out of material onto paved public roadways.
- Creates a soil erosion control plan review process in conjunction with the U.S. Department of Agriculture Natural Resource Conservation Service that would allow agricultural operations to maintain their existing exemption from the Rule.

- Establishes a contingency requirement that would increase the number of facilities required to file a fugitive dust control plan or notify the District that the appropriate Table 1 and 2 control actions would be implemented.

Proposed Rule 1186

- Establishes requirements for the rapid removal of soil or other particulate matter deposited onto paved public roadways.
- Requires the future procurement of "PM₁₀-efficient" street sweepers.
- Establishes treatment options for unpaved roads (e.g., paving, chemical stabilization, speed control) and requires an annual treatment requirements for of ten percent of the unpaved road mileage that experiences greater than 50 average daily trips.
- Requires the cessation of hay grinding activities when visible emissions extend more than 50 feet from the source.
- Establishes treatment options for unpaved access roads and feed lane access areas used by livestock operations.
- Establishes a contingency requirement that would require curb and gutter or minimum paved shoulder widths or landscaping for new road construction and road widening projects.
- Establishes a contingency requirement that would require that moving for weed abatement operations unless that moving would conflict with the endangered species act or with fire protection requirements.

Emissions Reductions

Emissions reductions are typically calculated for specific emission control devices. As indicated above, many of the proposed rule requirements allow various control options (e.g., paving, chemical stabilization, or speed control for unpaved roads). Actual emissions reductions will vary according to the control option selected. District staff has, therefore, calculated a range of emissions reductions, based on various scenarios. Mid-range emissions reductions estimates were then used for the cost-effectiveness analysis. The mid-range emissions reductions were estimated for PAR 403 at 42.9 tons of PM_{10} per average annual day by the year 2006. For PR 1186, the emissions reductions were estimated at 43.5 44.5 tons of PM_{10} per average annual day by the year 2006. These estimates do not include the emissions reductions associated with the

Executive Summary

contingency measures. A complete discussion of the emissions reductions methodology is included in Appendix F.

California Environmental Quality Act

The proposed action to amend Rule 403 and adopt Rule 1186 is a "project" as defined by the California Environmental Quality Act (CEQA). CEQA requires that the potential environmental impacts of proposed projects be evaluated and that feasible methods to reduce or avoid identified significant adverse environmental impacts of these projects be identified.

Pursuant to CEQA Guidelines Section 15153, a CEQA Lead Agency may use an Environmental Impact Report (EIR) prepared in connection with an earlier project to apply to a later project if the circumstances of the project are essentially the same. District staff has determined that the Environmental Impact Report (EIR) prepared for the 1997 Air Quality Management Plan (AQMP) (SCH#96011062) adequately analyzes the potential adverse environmental impacts from the proposed project. The EIR for the 1997 AQMP includes a detailed analysis of the PM_{10} BACM from which PAR 403 and PR 1186 are directly derived.

INTRODUCTION

The South Coast Air Basin (Basin) exceeds Federal and State ambient air quality standards for PM_{10} (defined as particulate matter with an aerodynamic diameter of 10 microns or less). These microscopically fine particles can originate from a variety of sources, both natural and man-made, and from several stationary source processes, including direct emission (referred to as primary PM_{10}) and atmospheric chemical reactions that convert gases to particles (referred to as secondary PM_{10}). Studies have indicated that approximately one-third of the PM_{10} in the Basin, and over three-quarters of the PM_{10} in the desert portions of the District are a result of soil dust entrainment, commonly referred to as fugitive dust.¹ Adoption of Proposed Amended Rule (PAR) 403 and Proposed Rule (PR) 1186 and their subsequent implementation will result in a reduction of fugitive dust and corresponding PM_{10} emissions from construction/demolition projects, paved and unpaved roads, landfills, and other industrial and commercial sources.

RATIONALE FOR CURRENT AMENDMENTS AND NEW RULE

Under the federal Clean Air Act (CAA), the Basin and the Coachella Valley were initially designated as "moderate nonattainment areas" for PM_{10} . The Antelope Valley was initially unclassified for PM_{10} due to a lack of ambient air quality data. The Antelope Valley remains unclassified and is not subject to the same regulatory requirements as the Basin or the Coachella Valley. In response to the moderate area designation, the District prepared a State Implementation Plan (1991 PM_{10} SIP) as part of the 1991 Air Quality Management Plan that identified "reasonably available control measures" (RACM) for implementation prior to January 1993. Implementation of RACM was achieved through the adoption of amendments to Rule 403 (Fugitive Dust) in November of 1992. Key Rule 403 amendments included deletion of the high wind exemption and establishment of new requirements for "large operations."

Section 188(b) of the CAA specifies that any area which cannot attain the air quality standards by December 1994 would subsequently be redesignated as a "serious nonattainment area". The 1991 PM_{10} SIP demonstrated attainment of the federal PM_{10} standards by 2006, the last year allowable under federal law (including the 5-year extension from the 2001 attainment year). In January 1993, EPA completed its redesignation process, and included the Basin and the Coachella Valley among five areas nationwide redesignated as "serious nonattainment areas" for PM_{10} . The

redesignation became effective February 8, 1993 and a SIP revision was due within 18 months of the redesignation date (August 8, 1994).²

Under the CAA, the 1994 BACM SIP revision had to indicate that "best available control measures" (BACM) for fugitive dust sources would be implemented within four years of the redesignation date (February 8, 1997). The CAA also requires that contingency measures be adopted by February 8, 1997 to become enforceable if the area does not achieve sufficient progress toward attainment within the mandated timeframes. The District's Governing Board adopted the 1994 BACM SIP revision, which identified candidate BACM. These candidate BACM were updated with new information, where appropriate, in Appendix IV-A of the 1997 AQMP. The following is a list of the candidate BACM as contained in Appendix IV-A of the 1997 AQMP.

- BCM 1a - Minimal Track-Out
- BCM 1b - Routine Street Cleaning
- BCM 1c - Post-Event Street Cleaning
- BCM 1d/e - Curb and Gutter/Chemical Stabilization
- BCM 2 - Wider Use of Dust Control Plans
- BCM 3 - Unpaved Road Treatment
- BCM 4 - Agriculture
- BCM 5 - Weed Abatement
- BCM 6 - RACM to BACM Upgrades

The 1994 BACM SIP committed to adopt all candidate BACM that met the following technical and cost-feasibility criteria:

Technological feasibility: A control measure will be considered technically feasible if the control technology is currently available and has been demonstrated to achieve a minimum control efficiency of at least 10 percent.

Cost-feasibility: A control measure will be considered cost feasible if the cost-effectiveness is less than \$5,300 per ton of PM_{10} reduced on an annual basis.

¹South Coast Air Quality Management District, " PM_{10} Technical Enhancement Program, Special PM_{10} Air Quality Monitoring, 1995."

² Federal Clean Air Act, Section 189(b).

District staff has completed the BACM technical and cost-feasibility analysis and has incorporated the BACM that meet or exceed the 1994 BACM SIP criteria into proposed amendments to PAR 403 and PR 1186 as follows:

Rule Reference	Standard Requirements	Contingency Requirements
PAR 403	BCM 1a - Minimal Track-Out	BCM 2 - Wider Use of Dust Control Plans
	BCM 4 - Agriculture	
	BCM 6 - RACM to BACM Upgrades	
PR 1186	BCM 1b - Routine Street Cleaning	BCM 1d/e - Curb and Gutter/Chemical Stabilization
	BCM 1c - Post-Event Street Cleaning	BCM 5 - Weed Abatement
	BCM 3 - Unpaved Road Treatment	

An expanded discussion of the BACM technical and cost-feasibility criteria is included under the BACM Selection discussion (see Table of Contents).

PAR 403 and PR 1186 are intended to meet federal requirements for implementation of BACM and contingency measure requirements in the Basin. These requirements are not, however, proposed for implementation in the desert portions of the District, as control requirements are different in these desert areas. Specifically, the Coachella Valley has experienced three years without an exceedance of the PM_{10} NAAQS³ and is, therefore, eligible for redesignation as an "attainment area" for PM_{10} . The District has prepared an attainment redesignation request and maintenance plan for the Coachella Valley that is to be submitted to the U.S. EPA prior to February 8, 1997. The Antelope Valley remains unclassified, and also is not subject to CAA requirements for implementation of BACM.

³ Based on application of the U.S. EPA Natural Events Policy.

LEGISLATIVE AUTHORITY

The California Legislature created the District in 1977⁴ as the agency responsible for developing and enforcing air pollution control rules and regulations in the Basin and portions of the Los Angeles and Riverside county desert. By statute, the District is required to adopt rules and regulations intended to ensure that all areas under District jurisdiction come into compliance with all State air quality standards and Federal NAAQS [Health and Safety Code Section 40440(a)].

RULE DEVELOPMENT ASSESSMENT

Current and Projected Emissions

Primary PM_{10} emissions in the Basin were estimated in the 1997 AQMP revision. Based on revised emission factors for fugitive dust sources, the PM_{10} emissions inventory estimates decreased by approximately fifty percent from the level reported in the 1994 AQMP. Nevertheless, fugitive dust sources account for more than three-quarters of the primary PM_{10} inventory. The following is a summary of the existing PM_{10} emissions inventory as contained in the 1997 AQMP.

TABLE 1
 PM_{10} Emissions Inventory (tons/average annual day)

Source Category	1993	2010
Fuel Combustion	9.73	10.29
Waste Burning	2.43	12.21
Solvent Use	0.59	0.90
Petroleum Process, Storage, &	2.48	2.49
Industrial Processes	15.20	17.95
Miscellaneous Processes		
Farming Operations	15.69	14.23
Construction and Demolition	44.26	60.85
Entrained Road Dust - Paved	168.87	192.53
Entrained Road Dust - Unpaved	52.44	52.44
Unplanned Fires	0.90	1.00
Fugitive Windblown Dust	54.24	54.24
Waste Disposal	4.26	3.93
Other	3.02	4.06
On-Road Vehicles	27.47	13.86
Other Mobile	14.17	15.95
Total	415.75	456.93

⁴ The Lewis-Presley Air Quality Management Act, Health and Safety Code Section 40400 et. seq.

As indicated in Table 1, the 1997 AQMP estimates that primary PM_{10} sources generated 415.8 tons of PM_{10} per average annual day (1993 baseline year). Of this amount, stationary sources contribute 374.2 tons per day which includes 168.9 tons per day from entrained road dust. The remaining 41.6 tons per day were directly emitted from on-road and other mobile sources. Without implementation of additional control measures, this amount is projected to increase (due to growth) to 456.9 tons of PM_{10} per average annual day by 2010. In the future, the majority of the primary PM_{10} emissions will continue to be attributable to stationary sources and entrained road dust.

Air Quality

The Basin currently exceeds both federal and state ambient air quality standards for PM_{10} . Tables 2 and 3 summarize the PM_{10} air quality data for 1995 on a 24-hour and average annual basis. As shown in Tables 2 and 3, PM_{10} levels are typically higher in the eastern portion of the Basin.

TABLE 2
1995 Maximum 24-Hour Average PM_{10} Concentrations by Basin and County

Basin/County	Maximum 24-Hr Avg. $\mu g/m^3$	Percent Federal Standard	Area
South Coast Air Basin			
Los Angeles	157	104%	East San Gabriel Valley
Orange	172	114%	Central Orange Co.
Riverside	219	145%	Metropolitan Riverside Co.
San Bernardino	178	118%	Cent. San Bernardino Valley
Mojave Desert/Saltion Sea Area Basins			
Los Angeles	61	40%	Antelope Valley
Riverside	199	132%	Coachella Valley
Riverside, adjusted*	133*	88%*	Coachella Valley

* Excludes one high wind day as permitted under the U.S. EPA Natural Events Policy.

TABLE 3
1995 Maximum Annual Average PM_{10} Concentrations by Basin and County

Basin/County	Annual Average $\mu g/m^3$	Percent Federal Standard	Area
South Coast Air Basin			
Los Angeles	49.1	98%	East San Gabriel Valley
Orange	43.5	86%	Central Orange Co.
Riverside	69.0	138%	Metropolitan Riverside Co.
San Bernardino	61.0	122%	Cent. San Bernardino Valley
Mojave Desert/Saltion Sea Area Basins			
Los Angeles	25.6	52%	Antelope Valley
Riverside	52.0	104%	Coachella Valley
Riverside, adjusted*	49.5*	99%*	Coachella Valley

* Excludes one high wind day as permitted under the U.S. EPA Natural Events Policy.

PROPOSED RULE REQUIREMENTS

The following paragraphs describe the specific requirements of PAR 403 and PR 1186. For PAR 403, only the proposed changes to the existing rule are discussed. Complete versions of the draft rules are included as Appendices A and B.

PAR 403 - Fugitive Dust

Paragraph (c)(3)

A definition has been added for Best Available Control Measures (BACM). A complete listing of the BACM are described in the updated Rule 403 Implementation Handbook. These BACM were developed based on the U.S. EPA's serious area guidance document.⁵ Appendices C, D, and E contain the revised sections of the Rule 403 Implementation Handbook.

Paragraph (c)(7)

A definition has been added to describe the conditions that would necessitate implementation of the contingency measures listed in subdivision (e). As described in the definition, the contingency measures would only become effective if the U.S. EPA made a finding that: (1) PM_{10} and PM_{10} precursor emissions reductions were less than required at any three-year milestones reporting interval, or (2) the region

⁵ U.S. EPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, Office of Air and Radiation, September 1992, EPA-450/2-92-004.

failed to attain the PM_{10} standards within the time frames allotted under the Federal CAA, or (3) if as part of an Attainment/Maintenance Plan, the region is no longer in attainment of the PM_{10} standards.

Paragraph (c)(15)

A definition has been added for medium operations. As described in subdivision (c), medium operations would become subject to the existing requirements for large operations in the event of a contingency notification.

Paragraph (c)(19)

A definition has been added for paved roads that excludes access roads that are not open to through traffic.

Paragraph (c)(22)

The existing definition for reasonably available control measures (RACM) has been revised to reflect that RACM are appropriate for implementation outside the Basin. RACM are appropriate for sources outside the Basin because: 1) the Antelope Valley is currently classified as undesignated and is not subject to the serious area requirements; and 2) the Coachella Valley has attained the PM_{10} NAAQS, and the District is requesting that the U.S. EPA redesignate the area as attainment for PM_{10} . Figure 1 identifies the boundaries of the Basin.

Paragraph (c)(25)

For clarity, a definition has been added for the Basin.

Paragraph (d)(2)

Under the provisions of existing Rule 403, RACM are required for each fugitive dust source. PAR 403 would require implementation of the BACM at all active operations within the Basin. RACM would remain applicable for active operations conducted outside the Basin. All other rule references for RACM have been changed to "the required" control measures.

Paragraph (d)(3)

This paragraph has been added to indicate that fugitive dust sources outside the Basin are allowed to implement RACM in lieu of BACM.

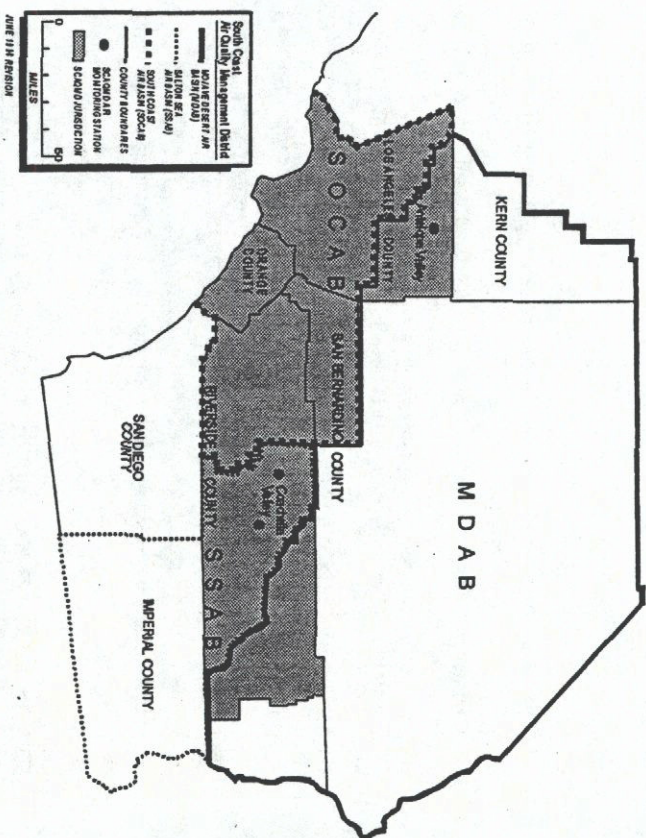


FIGURE 1
Boundaries of the South Coast Air Basin and District

Paragraph (d)(5)

This paragraph requires owner/operators to prevent or immediately or remove within one hour the track-out of material onto paved public roads (d)(5)(A). As an alternative, owner/operators can choose from the track-out control options proposed in Table 3 of PAR 403 and remove track-out at any time it extends more than a cumulative distance of greater than 50 feet from any property access road during active operations (d)(5)(B)(i) and remove all visible roadway dust deposited on public paved roadways as a result of active operations at the conclusion of each work day (d)(5)(B)(ii).

Subdivision (e) - Contingency Requirements

In the event that contingency measures are required to be implemented, subdivision (e) would require activities defined as medium operations, as well as large operations, to comply with the special requirements listed in subdivision (f). Medium operations are defined as active operations conducted on property that contains between 50 and 100 acres of disturbed surface area; or any daily earth-moving operation of between 3,850 cubic meters (5,000 cubic yards) and 7,700 cubic meters (10,000 cubic yards) three times during the most recent 365-day period. Subdivision (e) also describes that the contingency requirements would become effective 60 days after the first contingency notification publication.

Subdivision (f) - Special Requirements for Large Operations and Medium Operations Under a Contingency Notification

This subdivision has been amended to reflect that the special requirements for large operations would also apply to medium operations under a contingency notification.

Subdivision (g) - Compliance Schedule

An effective date of February 1, 1997 has been added for all the newly amended provisions of the Rule. The contingency requirements contained in subdivision (e) would, however, only become effective after a contingency notification by the U.S. EPA for conditions specified in the 1990 Clean Air Act Amendments.

Subparagraph (h)(1)(A)

The existing exemption for agricultural activities has been amended to apply only to agricultural operations conducted outside the boundaries of the Basin or those within the Basin provided that the combined disturbed surface area is less than 10 acres.

Subparagraph (h)(1)(B)

An additional exemption has been added to agricultural operations with a combined disturbed surface area greater than 10 acres conducted within the Basin, provided that the owner/operator submits a soil erosion control plan to the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) for approval. Specifically, owner/operators of agricultural operations that receive plan approval by February 1, 1998 would maintain the existing Rule 403 exemption. Those that do not file a plan would become subject to all the requirements of PAR 403. Recognizing that the NRCS may have difficulty approving the plans prior to February 1, 1998, item (h)(1)(B)(i)(b) permits the owner/operator of agricultural operations to file a letter of intent no later than February 1, 1998 which demonstrates the intent to file a plan. Under this item, the owner/operator must receive NRCS plan approval by

December 31, 1998 to maintain the existing exemption from Rule 403. Appendix D contains a sample letter of intent to file a plan with the USDA NRCS. Additional procedural requirements for plan filing, approval, and notification are specified in items (h)(1)(B)(ii) through (h)(1)(B)(iv).

Tables 1 and 2

Several of the control actions specified in Tables 1 and 2 are proposed to be upgraded in accordance with U.S. EPA guidance. The proposed upgrades were first described in Appendix I-D to the 1994 AQMP. Text provided in brackets would be applicable to sources outside the Basin and the remainder would be applicable to activities conducted within the Basin. It should be noted that the Table 1 control actions are applicable when wind conditions exceed 25 miles per hour. Table 2 control action (2a/b) has been amended based on a public comment. The proposed revision is for clarity only and would not affect emissions or compliance costs.

In order to provide greater compliance flexibility, provisions have been added to Tables 1 and 2 to permit the use of any other control measure provided that it is approved by the Executive Officer and the U.S. EPA and achieves an equivalent emission reduction.

Table 3

Table 3 has been developed to provide control options for the prevention of track-out of material onto public paved roads.

Other control options are permitted provided that they are approved by the Executive Officer and the U.S. EPA and achieve an equivalent emission reduction.

Rule 403 Implementation Handbook

The existing Rule 403 Implementation Handbook list of RACM has been upgraded to reflect BACM. Appendix C contains the revised list of BACM with changes denoted in strike-out and underline. The proposed upgrades were developed in accordance with U.S. EPA guidance and were first described in Appendix I-D of the 1994 AQMP. The Rule 403 Implementation Handbook maintains the existing description of RACM and these provisions will remain appropriate for fugitive dust sources outside the Basin.

A sample letter of intent for agricultural activities has been added to Rule 403 Implementation Handbook (see Appendix D).