CHAPTER 4

MAINTENANCE PLAN

BACKGROUND

Section 107(d)(3)(E) of the CAA specifies that for an area to be redesignated as attainment, the U.S. EPA must approve a maintenance plan that meets the requirements of Section 175A. The purpose of the maintenance plan is to provide for the maintenance of the PM_{10} NAAQS for at least ten years after the redesignation (not ten years after the redesignation submittal). CAA Section 107 (d)(3)(D) allows the U.S. EPA Administrator up to 18 months from receipt of a complete submittal to process a redesignation request. To accommodate the U.S. EPA's review time and to be consistent with other District planning timelines, the maintenance plan will cover the period 1997 through 2010. The maintenance plan requires a maintenance demonstration, commitment to a future monitoring network, verification of continued attainment, a contingency plan, and provisions for contingency plan implementation.

MAINTENANCE DEMONSTRATION

According to U.S. EPA guidance, a maintenance plan may demonstrate future maintenance of the NAAQS by either showing that future emissions will not exceed the level of the attainment inventory or by modeling to show that the future mix of sources and emissions rates will not cause a violation of the NAAQS. The District will use the second approach to demonstrate future maintenance of the PM_{10} standards. As in previous CVSIPs, the District will be using the CMB (Chemical Mass Balance) model with rollback, with an updated emissions inventory. The UAM/LC (Urban Airshed Model) was used in the 1997 AQMP for the South Coast Air Basin. It is more specifically designed for projecting secondary particulates which are more prevalent in the South Coast Air Basin, as opposed to the dominance of fugitive dust in the Coachella Valley. Additionally, the UAM/LC model requires an intensive aerometric data base which is currently not available for the Coachella Valley. Note, however, that the input of transported secondary particulates into the Coachella Valley from the South Coast Air Basin has been projected using the UAM/LC. Details of the UAM/LC model and results can be found in Appendix V, Section 2 of the 1997 AQMP.

Estimating Source Contributions

The following source apportionment information is based on speculated data from the Coachella Valley, which was used in the 90-CVSIP and the 94-CVSIP. It has been updated with new data and analysis, where appropriate and/or possible.

Receptor modeling, or source apportionment, is a technique for determining the emission sources that contribute to the PM_{10} air quality at specific receptor sites. Unlike complex mathematical models that require detailed simulations of physics, chemistry, meteorology, and other processes, receptor models are relatively simple statistical models that require only the availability of measurement data. Using receptor models, emission sources can be identified and quantified. With this information, future-year PM_{10} air quality can be estimated from future-year emission inventories using either the speciated or total emission rollback methodology.

The receptor model used for source apportionment in the Coachella Valley is known as the Chemical Mass Balance (CMB) Model. This U.S. EPA-approved method matches the measured chemical components of the PM_{10} samples with known chemical profiles, or signatures, of individual sources of PM_{10} particles. The District has collected a library of chemical profiles for more than 170 sources of PM_{10} emissions. The District also conducted special 1989 field studies to obtain the chemical speciation of ambient PM_{10} data at two receptor sites in the Coachella Valley: Palm Springs and Indio. After collection, the samples were sent to the laboratory for a complete chemical analysis, including trace metals, inorganic compounds, and organic and elemental carbon.

The CMB Model was applied to each available sample at each of two receptor sites. Both annual average and worst-case 24-hour statistics were compiled for comparison with the annual and 24-hour federal PM_{10} standards.

Results of the Coachella Valley Source Apportionment

The CMB receptor model has been applied to Coachella Valley PM_{10} concentrations measured at Palm Springs and Indio. The two sampling sites are located within 15 miles; however, PM_{10} concentrations and source contributions to PM_{10} mass are quite different.

Annual Average PM_{10}

Annual average source contributions to PM_{10} at the two sites in the Coachella Valley are presented in Table 4-1 and in Figures 4-1 and 4-2. Seven different source categories contribute to PM_{10} concentrations at Palm Springs and Indio: geological (road dust, soil dust), motor vehicle, secondary (ammonium nitrate and ammonium sulfate), vegetative burning, limestone, marine, and residual oil sources. The geological source is the major source contributing to the PM_{10} mass at both sites.

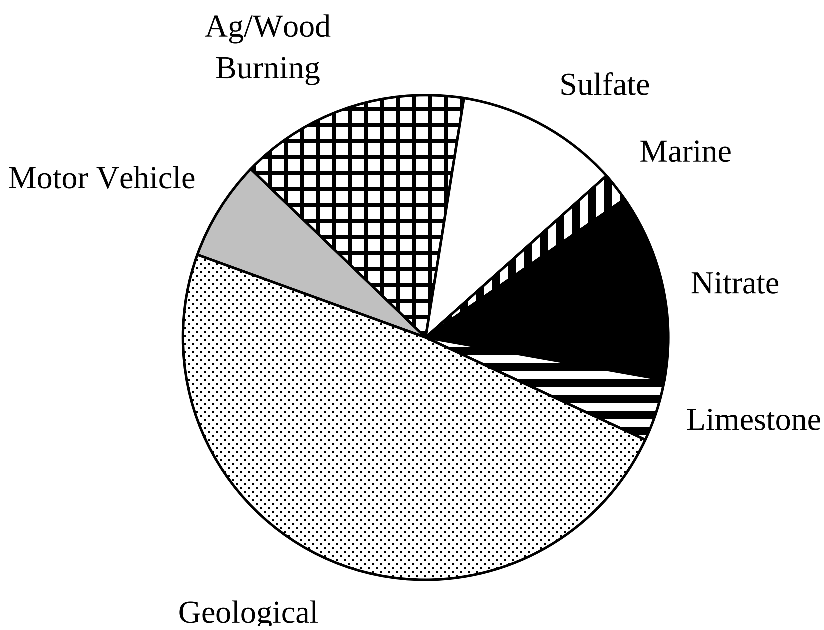
Annual average PM_{10} concentrations in 1989 were higher at Indio (58 $\mu g/m^3$) than at Palm Springs (35 $\mu g/m^3$) as is also seen in 1995. The CMB analyses reveal that soil dust (as indicated by the "geological" component) represents about 59 percent of the PM_{10} at Indio and 49 percent at Palm Springs. The differences between the two sites are likely due to the greater effect of urbanization at Palm Springs.

TABLE 4-1

Annual Average Source Contributions for the Coachella Valley

Source Type	Palm Springs	Indio
Ammonium Sulfate	3.7 ± 0.3 (11.0)*	3.6 ± 0.3 (6.4)
Ammonium Nitrate	4.2 ± 0.5 (12.4)	4.1 ± 0.4 (7.3)
Motor Vehicle	2.3 ± 0.2 (6.8)	4.4 ± 0.4 (7.8)
Geological	16.4 ± 1.4 (48.6)	33.0 ± 2.3(58.6)
Limestone	1.4 ± 0.2 (4.3)	3.0 ± 0.2 (5.3)
Vegetative Burning	5.1 ± 0.4 (15.1)	7.1 ± 0.4(12.7)
Marine	0.5 ± 0.1 (1.4)	1.0 ± 0.2 (1.7)
Residual Oil	0.1 ± 0.0 (0.4)	0.2 ± 0.0 (0.3)
Total Mass predicted	33.8 ± 1.6	56.2 ± 2.4
Total Mass observed	35.1 ± 2.3	58.0 ± 3.3

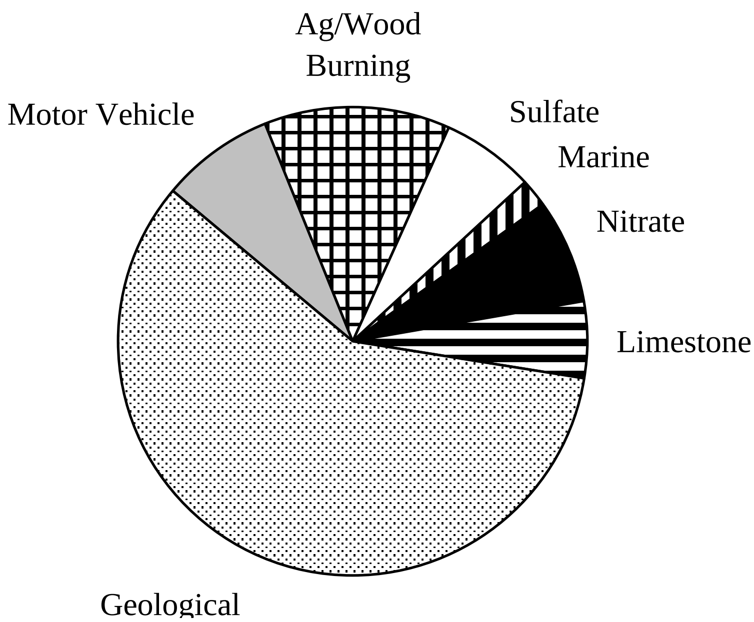
* Mean ± standard error (% of total mass predicted)



Palm Springs (35.1.0 μg/m³)

FIGURE 4-1

Source Contributions to the Annual Average PM_{10} Concentrations at Palm Springs



Indio (58.0 µg/m³)

FIGURE 4-2

Source Contributions to the Annual Average PM_{10} Concentrations at Indio

Sulfate and nitrate comprise about 23 percent of the PM_{10} at Palm Springs, and 14 percent at Indio. Due to documented persistent daily summertime transport of ozone from the South Coast Air Basin to the Coachella Valley, it is assumed that virtually all of the measured sulfate and nitrate represents the amount of secondary PM_{10} (i.e., due to atmospheric chemical reactions) transported via the same processes as ozone. Other components of the Coachella Valley PM_{10} include about 12 to 15 percent from agricultural or wood burning sources, 7 percent from motor vehicles, and about one percent from a marine source, probably the Salton Sea.

24-Hour PM_{10}

Table 4-2 and Figure 4-3 show the estimated source contributions at Indio on the peak 24-hour PM_{10} day, with 198 µg/m³ measured on August 14, 1989. This table shows that 76 percent of the PM_{10} concentration is from the geological source, 11 percent from the secondary source, 8 percent from the vegetative burning source, and 3 percent from the motor vehicle source.

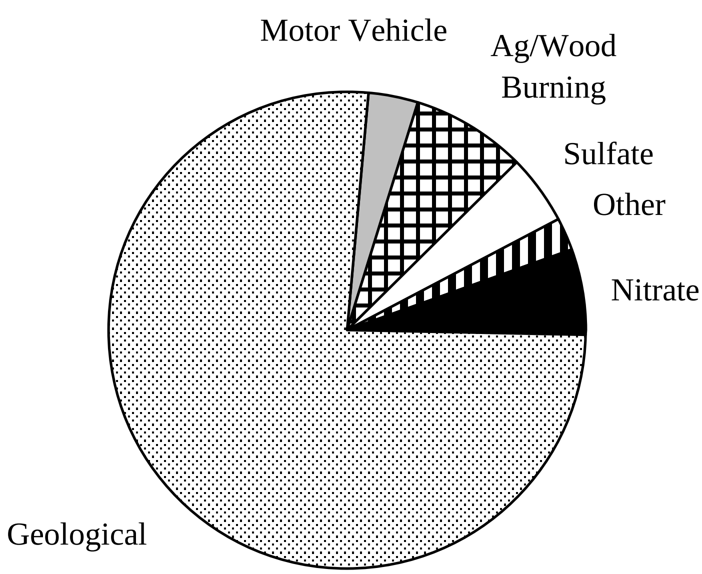
The Coachella Valley study reveals that the components of PM_{10} are considerably different than those measured in the Basin. In particular, the contribution of soil dust is the dominant component of PM_{10} in the desert.

TABLE 4-2

Estimated Source Contributions for August 14, 1989 at Indio

Ammonium Sulfate	9.3 (4.7)*
Ammonium Nitrate	11.5 (5.8)
Motor Vehicle	6.4 (3.2)
Geological	150.8 (76.2)
Vegetative Burning	15.8 (8.0)
Other	4.2 (2.1)
TOTAL	198.0 (100.0)

* Percentage of total mass



Indio (198.0 µg/m^3)

FIGURE 4 -3

Source Contributions to the 24-Hour PM_{10} Concentrations at Indio (August 14, 1989)

1995 Design Value and Source Apportionment

Since the year 1995 was the third year the Coachella Valley did not experience an exceedance of the PM_{10} standards (with one natural events day excluded), the design values for the maintenance plan were selected from the 1995 ambient PM_{10} concentrations. The design values determined for this analysis were 49.5 µg/m^3 for an annual average and 133 µg/m^3 for the maximum 24-hour average PM_{10} concentration. Note that the concentrations reflect the implementation of the Natural Events Policy, as described in Chapter 2.

Base-year and future-year source contribution estimates are summarized in Table 4-3. The year 1995 was chosen as the base year; however, 1989 PM_{10} data is the only chemically speciated PM_{10} data base available at this time. Therefore, the 1995 source contributions were estimated using a proportionality approach that involves multiplying the fractions of the 1989 source contributions, as estimated by the CMB model, to the 1995 annual and 24-hour design values. The analysis presumes a similar source contribution in 1995 as in 1989. Analysis of emission changes from 1989 to 1995 and the implementation of the Natural Events Policy indicate use of the 1989 speciation provides a conservative estimate of the impact of future growth on the maintenance demonstration. In addition, source contributions from the fugitive dust category were divided into five sub-categories based on the 1995 emissions contribution for each of the fugitive dust sources. Base-year emissions presented in Table 4-3 include the emissions reductions associated with all control measures adopted through December 31, 1994.

Future-year PM_{10} concentrations were estimated using a linear rollback approach for each primary source (such as mobile, fugitive dust, vegetative burning, and other sources). This involves multiplying the ratio of future (2010) to base-year (1995) emissions to the 1995 base-year source contributions. In the linear rollback approach, it is presumed that future-year PM_{10} contributions from each source category are a linear function of emission rates for each source category.

Source contribution from the transport source category is the amount of PM_{10} transported from the Basin. For the purposes of this analysis, it was presumed that all secondary particles (such as ammonium, nitrate, and sulfate) were a result of transport from the Basin. In addition, a portion of the motor vehicle contribution was assumed to be a result of transport from the Basin. Since the emissions inventory indicates that motor vehicle sources in the Coachella Valley account for 3.1 percent of the PM_{10} emissions, the motor vehicle contribution above the 3.1 percent level is attributed to transport.

Future-year annual average transported secondary PM_{10} levels were estimated by an annual PM_{10} model (UAM/LC). The transported motor vehicle source contribution was estimated by a linear rollback using South Coast Air Basin motor vehicle PM_{10} emissions. Details of the UAM/LC model and results can be found in Appendix 5, Section 2 of the 1997 AQMP.

TABLE 4-3

Base-Year and Future Ambient PM_{10} Concentrations in the Coachella Valley

	1995 Base	**Year**	**2010 PM10**	**Levels**	**2010 PM10**	**Levels**
	Design	**Values**	**Without**	**Control**	**With**	**Control**
	Annual	**24-**	**Annual**	**24-Hour**	**Annual**	**24-Hour**
Background	3.0	3.0	3.0	3.0	3.0	3.0
Transport	8.8	14.2	6.1	14.2	6.0	13.7
Mobile	1.3	3.6	0.9	2.7	0.9	2.7
Fugitive Dust:						
Construction	0.8	2.7	1.2	4.5	1.2	4.5
Paved Roads	5.2	19.0	7.2	26.2	6.6	24.1
Unpaved Roads	3.1	11.1	3.1	11.1	3.1	11.1
Agriculture	0.6	2.1	0.5	1.8	0.5	1.8
Windblown	17.6	64.1	17.6	64.1	17.6	64.1
Veg. Burning	5.9	10.4	5.1	8.9	5.1	8.9
Others	3.4	2.8	4.7	3.9	4.7	3.9
Totals	**49.5**	**133.0**	**49.4**	**140.5**	**48.7**	**137.7**

Since the UAM/LC is an annual PM_{10} model, it cannot be used to estimate the future-year 24-hour average transported secondary PM_{10} concentrations. For the purposes of this analysis, it was presumed that the future-year transported secondary PM_{10} concentration is the same as the 1995 base-year transported secondary PM_{10} concentration. Under this worse-case presumption, the estimated future-year 24-hour transported secondary PM_{10} contribution is an upper bound of the transported secondary PM_{10}. Therefore, if the estimated future-year 24-hour average PM_{10} air quality meets the 24-hour average PM_{10} standard, one would be confident that the 24-hour average standard will be met in the future years.

Projected 2010 Air Quality

Using the approach described above, the future-year projected PM_{10} concentrations are presented in Table 4-3. As indicated in columns 3 and 4 of Table 4-3, without future controls, the annual average PM_{10} concentration would decrease slightly to 49.2 µg/m^3 by the year 2010. The 24-hour concentration would increase to 140.2 µg/m^3 by 2010.

Table 4-3 also presents the projected 2010 ambient concentrations based on implementation of the enhanced street sweeping program and additional reductions in the transport of secondary particles based on additional controls in the South Coast Air Basin. Chapter 3 presents a discussion of the emissions reductions associated with the enhanced street sweeping program and the reductions in secondary transport. With these measures in place, the annual average is projected to be 48.5 µg/m^3, and the 24-hour value is projected to be 137.6 µg/m^3 by the year 2010. As Table 4-3 indicates, both of the future values (e.g., both without and with controls) are below the standards, indicating that the Coachella Valley will be able to maintain attainment of the standards through the year 2010.

Although it appears that the enhanced street sweeping program is not necessary to attain the standard, the District believes that program will ensure less reliance on the reduction of transported secondary particulates from the South Coast Air Basin. Additionally, the enhanced street sweeping program will occur mainly in urban areas and will reduce public exposure to PM_{10}. The program will also increase the approvability of the Maintenance Plan and would forestall other future local controls due to an anticipated increase in growth-related emissions.

FUTURE MONITORING NETWORK

U.S. EPA guidance states that once an area has been redesignated, the State should continue to operate an appropriate air quality monitoring network in accordance with 40 CFR Part 58, to verify the attainment status of the area. As discussed in Chapter 2, the District presently operates two PM_{10} air quality monitoring stations in the Coachella Valley in accordance with 40 CFR part 58. To assure the quality of the collected samples, operational procedures for data collection include routine calibrations, pre-run and post-run test procedures, and routine service checks. An annual review of the District's entire air quality monitoring network, including the Coachella Valley sites, is required by federal regulations as a means to determine if the network is effectively meeting the objectives of the monitoring program. If a relocation or a closure is recommended in the annual network review, reports are submitted to the U.S. EPA and the ARB to document compliance with siting criteria. The data collection procedures already in place in conjunction with the annual review program will ensure that future PM_{10} ambient concentrations are monitored in the Coachella Valley.

VERIFICATION OF CONTINUED ATTAINMENT

U.S. EPA guidance requires the District to periodically review the assumptions and data for the attainment inventory and demonstration. This guidance further suggests that the reevaluation take place every three years and include a complete review of the modeling assumptions and input data. The purpose of the reevaluation is to determine the effectiveness of the control strategy and the possibility of contingency measure implementation. The District will conduct a reevaluation of the Coachella Valley Maintenance Plan in June of 2001 and 2004. In accordance with U.S. EPA guidance, planning for the subsequent ten year maintenance planning period will begin in 2005, with adoption scheduled for 2006.

In addition to the verification actions listed above, the District will analyze the PM_{10} air quality data collected on a quarterly basis. Specifically, quarterly PM_{10} averages will be compared to averages for the same quarter in previous years to determine if the observed data are within the expected ranges. The 24-hour values can be compared directly with the 24-hour PM_{10} NAAQS. If the quarterly limits are exceeded, or if a "non-high wind" 24-hour violation occurs[*], one or more of the contingency measures listed below in the Contingency Plan will be implemented in conjunction with the procedures listed in the Contingency Plan Implementation section.

CONTINGENCY PLAN

CAA Section 175A(d) requires maintenance plans to include contingency measures necessary to assure prompt correction of any violation of the standard that may occur after redesignation. The District has developed the following measures that could be implemented if required by the U.S. EPA. It should be noted that U.S. EPA guidance does not require that the Maintenance Plan contingency measures be in regulatory format.[1] However, most of the BACM measures are scheduled to be adopted for the South Coast Air Basin by January 1997. Based on this, it is clear that extension of these regulations to the Coachella Valley, if necessary, could be done in the expedient fashion required under the CAA. (See the succeeding Contingency Plan Implementation section.)

CONTINGENCY MEASURES

The contingency measures are as follows:

- CVCTY 1A - Minimal Track-Out
- CVCTY 1B - Curb and Gutter/Storm Drain Improvements
- CVCTY 1C - Chemical Stabilization of Unpaved Road Shoulders
- CVCTY 2 - Control of Emissions from Agricultural Activities
- CVCTY 3 - Control of Emissions from Turf Overseeding Activities

Each of these measures is described more specifically in the following pages.

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[*] At the present time, the U.S. EPA is considering the promulgation of new fine particulate ($PM_{2.5}$) standards. The U.S. EPA may, along with this action eliminate or modify the PM_{10} 24-hour standard. If U.S. EPA takes such action, these commitments would no longer apply.

[1] U.S. EPA, Memorandum from John Calcagni, Director of Air Quality Management, to Directors, Subject - Procedures for Processing Requests to Redesignate Areas to Attainment, Section 5e, September 5, 1992.

CVCTY 1A, B, C - CONTROL EMISSIONS FROM PAVED ROADS
(Formerly 94-CVSIP Measures 1a, b, c)

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	PAVED ROADS
CONTROL METHODS:	CVCTY 1A - MINIMAL TRACK-OUT CVCTY 1B - CURBS AND GUTTERS/STORM DRAIN IMPROVEMENTS CVCTY 1C - CHEMICAL STABILIZATION OF UNPAVED ROAD SHOULDERS
EMISSIONS (TONS DAY):	TO BE DETERMINED
CONTROL COST:	TO BE DETERMINED
IMPLEMENTING AGENCY:	AQMD/CALTRANS/LOCAL GOVERNMENTS

Description of Source Category

Background

Based on existing emission estimate methodologies, paved roads are one of the largest anthropogenic sources of geologic PM_{10} in the Coachella Valley. Many sources contribute to paved road silt loadings, which in turn contribute to PM_{10} emissions. In the document Compilation of Air Pollution Emission Factors (AP-42), U.S. EPA identifies the following as potential sources for deposition of material onto paved roadways: 1) pavement wear and decomposition, 2) vehicle-related deposition, 3) dustfall, 4) litter, 5) mud and dirt carryout, 6) erosion from adjacent areas, 7) spills, 8) biological debris, and 9) ice control compounds.[2] Some of the paved road PM_{10} emissions are a result of vehicles resuspending PM_{10}-sized or smaller material that had previously been deposited onto the paved surface. Other paved road PM_{10} emissions are generated from vehicles traveling over paved surfaces and crushing larger sized particles into material PM_{10}-sized or less.

Presently there are two methods to reduce the amount of material deposited onto paved roadways; preventive measures and mitigative measures. Preventive measures attempt to prevent deposition of material onto roadway surfaces; mitigative measures seek to remove material which has been previously deposited into driving lanes. U.S. EPA guidance strongly recommends implementation of preventive measures rather than mitigative measures for a variety of reasons. First, preventive measures are more

[2] U.S. Environmental Protection Agency (U.S. EPA), 1985. Compilation of Air Pollutant Emission Factors, AP-42, Section 11.2.5-1 4th edition.

reliable and require less effort for surveillance, enforcement, and administration. Secondly, in the long term, prevention is considered to be more economically and environmentally beneficial when compared to mitigation.[3] The remaining paragraphs will describe the three contingency control measures intended to reduce PM_{10} emissions from paved roads.

CVCTY 1A - Minimal Track-Out

Proposed Method of Control

This control measure specifies three "preventive" and one "mitigative" control option(s) that would be required for all non-exempted unpaved road connections with paved public roads. Owner/operators would have the opportunity to select the control option that is most cost-effective for the specific site. An exemption may be provided for certain low-use unpaved road connections with paved roads. The four control options under consideration include:

- Paving the last 100 feet from an unpaved roadway connection with a paved road;
- Chemical stabilization of the last 100 feet from an unpaved roadway connection with a paved road at sufficient frequency and concentration to maintain a stabilized surface at all times;
- Installation of dirt removal devices (e.g., tire cleaning device, grizzlies, etc.);
- Cleaning of public paved road surface at any time visible track-out occurs.

Emission Reductions

All of the control options listed above represent existing technologies that are presently available to owner/operators of unpaved road connections with paved roads. In fact, some local jurisdictions presently require similar track-out control requirements on construction sites and unpaved parking areas. By providing a range of control options, the control measure permits owner/operators to choose the control option or options that are most feasible and cost-effective for their specific operation. Anticipated emissions reductions would be calculated in conjunction with rule development, if required.

[3] U.S. Environmental Protection Agency (U.S. EPA), 1992. Fugitive Dust Background Technical Information Document for Best Available Control Measures, 1992. U.S. EPA-450/2-92-004, Research Triangle Park, N.C.

Rule Compliance

This control measure would likely be implemented in conjunction with amendments to AQMD Rule 403 (Fugitive Dust), Rule 403.1 (Wind Entrainment of Fugitive Dust) or adoption of a new rule. Compliance determinations could be made through visual inspections of subject facilities or in response to complaints. The AQMD presently maintains an inventory of facilities which may have unpaved access road connections with paved roads.

Cost Effectiveness

Estimates of costs for the four control options are presented below. Street paving is considered a one-time cost that, depending on site conditions, may need to be repeated. The other control actions represent annual costs.

Control Option	Costs
Paving	\$8,496/access connection[4]
Chemical stabilization	\$984/access connection[5]
Track-clean system	\$4,800/access connection[6]
Street cleaning	\$29,970/facility[7]

Although there are many types of facilities which have unpaved access road connections with paved public roads, future regulations would likely target activities that experience high traffic volumes. Examples of such activities include landfills, aggregate facilities, construction projects, and nurseries. Many of these facilities may already implement vehicular track-out prevention programs that may satisfy future rule requirements.

Implementing Agency

The District has the authority to regulate facilities that have unpaved access road connections with paved roadways. Local jurisdictions and transportation agencies could assist in the implementation of this control measure by informing the AQMD of non-compliant activities and by requiring new land uses to implement one or more of the mandatory control options. As previously mentioned, local Coachella Valley jurisdictions have played a major role in control measure implementation.

[4] Muetzel, Mike, Mission Paving, Staff communication, January 10, 1994.
[5] Elswick, Frank, Midwest Industrial Supply, Staff communication, January 10, 1994.
[6] Grace, Jim, Material Transport Service, Staff communication, January 10, 1994.
[7] Berry, Jack, Chandlers Sand and Gravel, Staff communication, January 25, 1994. Includes labor costs and maintenance costs for street cleaning equipment.

CVCTY 1B - Curb and Gutter/Storm Drain Improvements

Proposed Method of Control

In the southwestern United States, a major source of roadway silt loadings is from exposed soil areas adjacent to paved roadways. Material can be transported to the street in a variety of ways, including turbulence from passing vehicles, wind erosion, vehicular track-out, and water runoff. The majority of vehicular miles traveled in an area, and consequently, the majority of paved road PM_{10} emissions, are typically concentrated within the urban core. Because of this, urban street improvements will have a greater impact on reducing PM_{10} levels than improvements in rural areas.[8] This contingency control measure would, therefore, target urban infrastructure improvements (e.g., curb and gutter, strom drain improvements) that can prevent material from being deposited onto roadways from wind or water erosion.

Emission Reductions

Installation of curbs has been identified as one street improvement that can reduce roadway silt loadings. Installation of curbs is frequently combined with construction of gutters and storm water sewers for street water runoff. The effectiveness of this improvement can also be increased through the stabilization of adjacent soils (e.g., construction of sidewalks). The only information regarding the effectiveness of this control measure is a study that concluded that silt loadings for streets with uncurbed shoulders have been estimated to be four times greater than that observed for curbed streets.[9] The actual emissions reductions associated with this control measure would be calculated at the time of rule development.

Rule Compliance

Compliance with this control measure could be assured through a rule that requires reports prepared by agencies responsible for road maintenance. A similar approach has been implemented in the San Joaquin Valley through Regulation 8060, which establishes minimum standards for new roadway construction. Required contents of the reports may include an inventory of unpaved roadway shoulders, measures to ensure curb and gutter installation on future roadways and development sites, and a prioritization of areas that need curb and gutter installation or storm drain improvements. AQMD compliance staff could conduct visual inspections to ensure that the information provided by the jurisdictions is accurate.

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[8] U.S. Environmental Protection Agency (U.S. EPA), 1992. Fugitive Dust Background Technical Information Document for Best Available Control Measures, 1992. U.S. EPA-450/2-92-004, Research Triangle Park, N.C

[9] American Public Works Association (APWA), 1969. Water Pollution Aspects of Urban Runoff.

Cost Effectiveness

Curb and gutter installation and storm drain improvements are typically required of new development projects. Construction costs for installation of a curb and gutter have been estimated at $15 per lineal foot.[10] Costs associated with storm drain improvements have not been provided due to the variability in potential improvements that could be necessary. A minor storm drain improvement, such as redirecting sheet flow, may be relatively inexpensive while construction of a sediment control basin may be much more costly.

Implementing Agency

The District has the authority to require construction of infrastructure improvements and submittal of reports such as outlined above. Actual control measure implementation could be accomplished through District or local government requirements for new construction, as well as special projects to improve existing deficiencies.

CVCTY 1C - Chemical Stabilization of Unpaved Road Shoulders

Proposed Method of Control

This contingency control measure is proposed to reduce the amount of material deposited onto paved roadways through the application of chemical stabilizers to unpaved road shoulders. This control measure would target areas in which installation of curbs and gutters is not feasible.

Emission Reductions

Presently there are many chemical stabilization products available that have been demonstrated to be effective in stabilizing disturbed surfaces. Vendors can supply information as to the appropriate concentrations for these products as well as the required frequencies for reapplication. Because chemical stabilizers are most effective when they are not subject to disturbances, the overall effectiveness of this measure can be improved by painting a roadway shoulder stripe one to two feet from the edge of the pavement and installation of parking restriction signs. Possible alternatives to chemical stabilization include application of material with a low silt content or revegetation. Asphaltic road base has a low silt content and may be very effective in treating unpaved roadway shoulders because one application would likely stabilize the area for a number of years. Revegetation would only be effective in areas that receive sufficient rainfall or where there is an irrigation system in place.

[10] Muetzel, Mike, Mission Paving, Staff communication, January 10, 1994.

Rule Compliance and Test Methods

This control measure could be implemented by developing a rule that would require agencies responsible for roadway maintenance to stabilize unpaved road shoulders. Emphasis would be placed on road shoulders that are adjacent to high volume roadways. Agencies could be required to file annual reports that describe stabilization efforts. Compliance determinations could be made through visual inspections of subject roadways. If a rule required submittal of annual reports these inspections could also verify reported information.

Cost Effectiveness

Costs for treatment of disturbed surfaces adjacent to paved surfaces follow. Chemical stabilization is an annual cost while application of recycled road base represents a one-time cost.

Control Option	Cost per Mile
Chemical stabilization	$2,980[11]
Asphaltic road base	$8,500[12]

Implementing Agency

The District has the authority to require agencies to stabilize road shoulders. Actual implementation of this control measure would be accomplished by local jurisdictions and transportation agencies.

[11] Elswick, Frank, Midwest Industrial Supply, Staff communication, January 10, 1994.
[12] Andrews, John, Diversified Asphalt, Staff communication, January 10, 1994.

CVCTY 2 - Control of Emissions from Agricultural Activities
(Formerly 94-CVSIP Measure 2)

CONTROL MEASURE SUMMARY	
SOURCE CATEGORY:	AGRICULTURE
CONTROL METHODS:	REQUIREMENTS TO IMPLEMENT SOIL CONSERVATION PLANS
EMISSIONS (TONS DAY):	TO BE DETERMINED
CONTROL COST:	TO BE DETERMINED
IMPLEMENTING AGENCY:	AQMD/U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCE CONSERVATION SERVICE (NRCS)

Description of Source Category

Continued growth in the Coachella Valley has resulted in conversion of many agricultural parcels to urban development. In some areas, however, agriculture remains a significant land use activity. This control measure utilizes the provisions of the Resource Conservation Act to encourage farmers and farmland owners to develop soil conservation plans with the assistance of the U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS). Under this approach, agricultural activities could maintain the existing exemption from AQMD Rule 403 provided that the agricultural operation developed a plan that was approved by the local NRCS office. Activities that did not comply with the requirements of an approved plan or those without an approved plan would be subject to applicable AQMD Rule 403 requirements. As part of the alternative compliance conditions, the AQMD could specify minimum criteria for acceptable plans.

Based on the recent Field Office Technical Guidance (FOTG) prepared by the USDA, plan control actions could include:

- establishment of rows of vegetation across the prevailing wind
- cessation of tilling on high-wind days
- establishment of snow (sand) fences
- establishment of end-of-row turn-around areas
- deep furrowing of fallow parcels
- prohibition of disking
- improved tillage practices

The draft FOTG contains specifications for the control options.

Emission Reductions

All of the guidance contained in the USDA FOTG is based on existing technologies that are presently implemented by many agricultural operations. The USDA has indicated that the FOTG will also be periodically updated to ensure that the most current information is made available.[13]

Because this control measure proposes development of customized plans for each individual operation, there would be many different control variations implemented throughout the Coachella Valley. Accordingly, the anticipated emissions reductions will be calculated during the rule development process.

Rule Compliance

Recordkeeping could be developed as part of the plan development process. Recordkeeping forms typically consist of an inventory of the control actions with an implementation schedule and checklist. The AQMD could require that copies of plans be submitted to the AQMD upon request as a condition of the exemption. The AQMD would review the plans to assure that minimum criteria were satisfied. Compliance determinations with future regulations could be made through verification and field inspection of information provided to the NRCS.

Cost Effectiveness

The uncertainties associated with the types of controls that would ultimately be included in the plans as well as in the number of facilities that would elect to implement plans make cost estimates difficult. However, control costs associated with wind erosion prevention requirements are estimated at $100 per acre.[14]

Implementing Agency

State law prohibits air districts from issuing permits to agricultural activities. Agricultural operations can, however, be subject to prohibitory rules, such as District Rule 403 - Fugitive Dust. The District could, therefore, delete the agricultural exemption from Rule 403. In order to obtain a future exemption from Rule 403 the

[13] Herndon, Lee, U.S. Department of Agriculture, Natural Resource Conservation Service, Staff communication, January 6, 1994.
[14] Grantz, David, University of California Agricultural and Natural Resources Cooperative Extension, Personal communication with Mike Laybourn, April 26, 1996.

operator could submit an alternative compliance plan to the NRCS thereby making NRCS an implementing agency as well.

CVCTY 3 - Control of Emissions from Turf Overseeding
(Formerly 94-CVSIP Measure 3)

In 1995 a study was conducted to determine the effectiveness of a high-pressure misting system to reduce PM_{10} emissions from turf vacuuming activities.[15] The study determined that the misting system was ineffective in reducing PM_{10} due to the velocity of the vented material. Other control options (e.g., rapid removal of thatch material) can be explored if contingency measure implementation is required.

CONTINGENCY PLAN IMPLEMENTATION

As described previously, the District has committed to a formal review of the Coachella Valley Maintenance Plan in 2001 and 2004, and will also review ambient PM_{10} data on a quarterly basis. If either of these mechanisms indicates an exceedance of the PM_{10} NAAQS not due to a natural event, the District will initiate rule development to adopt one or more of the contingency measures necessary to maintain attainment. The staff report prepared for the contingency measures would contain an assessment of the resulting emission reductions and the impact on ambient air quality. This analysis would also include a demonstration that the additional emission reduction achieved would be sufficient to maintain the standards, and would be submitted to the ARB and the U.S. EPA as a SIP revision. Typically, the rule development process can take up to one year or longer, however, as the contingency measures will have been adopted as part of this plan, and subject to public review, the District will adopt the appropriate measures in regulatory format as expeditiously as possible.

Authority

The California Legislature created the District in 1977[16] as the agency responsible for developing and enforcing air pollution control rules and regulations in the South Coast Air Basin and portions (including the Coachella Valley) of the Salton Sea Air Basin. By statute, the District is required to adopt rules and regulations intended to ensure that all areas under District jurisdiction are in compliance with all state and federal AAQS [Health and Safety Code Section 40440(a)].

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[15] UC Riverside College of Engineering - Center for Environmental Research and Technology (CE-CERT), Evaluation of a High Pressure Misting System in Controlling Emissions From Turf Vacuum Sweepers, December, 1995.
[16] The Lewis-Presley Air Quality Management Act, Health and Safety Code Section 40400 et. seq.