

Concept Conservation Management Practice Program for the San Joaquin Valley

San Joaquin Valley Air Pollution Control District

May 9, 2003

I. Background information

The San Joaquin Valley Air Basin is classified as a serious nonattainment area for fine particulate matter of 10 microns and less in diameter (PM10). Because of this classification, the San Joaquin Valley Air Pollution Control District (District) is required to implement emission controls known as best available control measures (BACM) for all significant PM10 sources. Significant sources are defined in United States Environmental Protection Agency (EPA) guidance documents as those contributing 5 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) to a violation of the 24-hour standard or 1 $\mu\text{g}/\text{m}^3$ to the annual standard. Source categories contributing less than this amount are considered de minimis and are not required to implement BACM.

The most recent inventory for PM10 indicates that agriculture related sources produce over half of all directly emitted PM10 emissions. Samples collected at Valley air monitoring sites over the last three years indicate that geologic material comprises as much as 95 $\mu\text{g}/\text{m}^3$ on the worst days. Data from the California Regional Particulate Air Quality Study (CRPAQS) indicates that geologic material comprises nearly 46 percent of the mass on an annual basis. Although agriculture is only responsible for a portion of these geologic emissions, there is reasonable certainty that it contributes greater than de minimis amounts. Therefore, the District is required to implement BACM for fugitive dust from agricultural sources. Another opportunity to reduce emissions is from agricultural burning. Although this source has BACM in place through Rule 4301 some growers could further reduce burning under some circumstances.

Although the primary purpose of the CMP Program is to comply with PM10 requirements, the program is being structured to allow practices that reduce other important pollutants such as VOCs from pesticide application and concentrated animal feeding operations (CAFO) that impact the Valley's ozone problem. It seems appropriate to include other pollutants besides fugitive PM10 in the CMP Program instead of developing an entirely separate program for each pollutant. As the CMPs for VOC sources are developed and their emissions are better quantified, they will be added to the program. No VOC emission reductions will be claimed from this program in the PM10 Plan, but may be added as commitments in the upcoming Ozone Plan. In addition, ammonia controls may be considered based on the results from the CRPAQS

and if there are no other feasible BACM rules that could be applied to that source category.

The need to reduce emissions from agricultural sources was identified in the District's 1991 Moderate Area PM10 Plan, the 1994 Serious Area PM10 Plan, and the 1997 PM10 Attainment Demonstration Plan, but with the caveat that additional research was needed to better characterize the emissions and to identify feasible controls. Even though an intensive research program has been conducted during the last decade and great improvements in the emission inventory and our understanding of control effectiveness has been made, we are still far from where we would like to be. However, progress is sufficient to move ahead with a program based on what we know today using measures agreed upon by all parties to be effective.

II. Identifying BACM for Agricultural Fugitive PM10 Sources

Two other regions have adopted measures for agriculture approved as BACM by EPA. They are the South Coast Air Quality Management District (SCAQMD) and Maricopa County, Arizona. Both areas rely on agricultural best management practices (BMP) to meet the BACM requirement. The District is not required to adopt a program identical to these existing programs, but it must consider them as an indication of feasibility. The District program is being designed to account for differences in commodities grown, farming practices, climate, soils, and economics in the San Joaquin Valley.

Based on review of the existing programs, EPA BACM guidance, and conversations with EPA, staff believes that the components of an approvable BMP program are as follows:

- Achieves real, quantifiable emission reductions.
- Includes an enforcement mechanism to ensure participation.
- Has a backstop in place that is automatically implemented if the program is not effective.
- Any implementation phase-in must be based on valid logistical requirements and not on the need to identify measures or to study the program. (i.e. time to process thousands of plans, resource constraints in assisting growers, etc.)

III. Program Development Principles

The District identified a number of basic principles that were thought to be important for developing a fair and workable program for the San Joaquin Valley. They are:

- Provide growers flexibility in selecting measures.
- Allow growers to opt out of measure categories if they can demonstrate that no measures are technologically or economically feasible for their operation.
- Allow credit toward the CMP requirement for measures currently implemented by a grower.

- Program reporting should be as streamlined and easy as possible, but still provide adequate documentation to calculate emission reductions and program effectiveness.
- Utilize United States Department of Agriculture – Natural Resource Conservation Service (USDA-NRCS)/Resource Conservation Districts (RCD) for gathering reporting data and providing assistance in selecting measures.
- Provide an outreach component to promote the most effective measures.
- Recognize that agriculture has very limited ability to recover the costs of implementing controls due to participation in a competitive world market.
- Provide incentives for growers to implement measures when funding is available.
- Growers complying with Regulation VIII off-field requirements would also meet any CMP requirement for unpaved roads and equipment parking and staging areas.
- Although the program’s main focus is fugitive PM10 emissions, conservation management practices that reduce other pollutants should be encouraged.

IV. Program Basics

Source categories requiring CMPs:

The emission inventory includes the following source categories applicable to this program:

Table 1
Emissions and Potential Emissions Reductions
San Joaquin Valley Agricultural CMP Program

CMP Category	2010 Emissions (tpd)	2010 Emissions Reductions (tpd)	%
PM10			
Unpaved Roads (Ag)*	10.6	2.3	21.7
Unpaved Traffic Areas (Ag)*	6.3	0.6	9.5
Harvest	35.6	13.2	37.1
Land Prep	35.2	9.2	26.1
Windblown Dust	40.1	7.9	19.7
Ag Burning -	9.5	0.5	5.3
CAFO PM10**	7.0	0.1	-
TOTAL PM10	144.3	33.8	23.4

* The % reduction listed is only for the Ag CMP Program.

** CAFO PM10 inventory currently only includes cattle feedlot and dairy emissions.

The emission reduction estimates are based on very limited information on the expected extent of implementation and effectiveness of each measure. As the program is implemented, more reliable statistics will become available regarding practices being adopted in the field. Some practices will need field studies to determine actual effectiveness. The program does not currently include NOx sources such as agriculture

internal combustion engines. The District's Heavy-Duty Engine Program currently provides incentives for the replacement of these and other farm equipment engines. The EQIP program is expected to provide additional funds to accelerate the replacement of old high emitting engines with new emission certified engines. Requirement: select at least one measure for each fugitive dust source category or other category (5):

- Unpaved roads
- Parking and equipment storage areas
- Land preparation
- Harvest
- Other (such as burning, wind blown dust, etc.)

CAFOs would be required to select measures from a special list applicable only to those operations. Categories for CAFOs may include:

- Entrained dust from animal movement
- Manure and waste handling
- Unpaved roads
- Unpaved parking and equipment storage areas
- Other

Program operation:

At the beginning of the year, growers would be required to select measures for the coming year. Growers would be provided with a guidebook describing the measures available and a simple form to fill out that would constitute their CMP Plan. They would submit a copy of the CMP Plan to the NRCS/RCD and maintain a copy on site. NRCS and RCD staff would be available to provide assistance in completing the form. RCDs are encouraged to work with grower members on identifying and developing CMPs representing the conditions unique to their district. The next year, the grower could select the same measures, re-sign and date last years form or fill out a new form with new measures. The growers would need to provide the extent of the CMP implementation expected. For example, how many feet or miles of road were treated with dust suppressant and how many times it was applied or how many acres were involved with no till practices. In the second and later years they would need to describe any problems encountered implementing their CMPs.

Reviewing CMP Plans for all farms in the San Joaquin Valley and providing assistance to hundreds or thousands of growers in the first year of program operation is not feasible. There are several ways to reduce the administrative burden, but maintain program effectiveness at a high level. The San Joaquin Valley has many small farms, but also many large farms that cover vast amounts of land. Table 2 shows the breakdown of farm numbers compared to acreage.

Table 2
Distribution of Numbers of Farms and Based on Harvested Acreage
in the San Joaquin Valley

Potential Exemption Levels	Farms Excluded	Farms Included	Percent Farms Covered	Percent Acreage Covered
Under 10 Acres	4,891	17,629	78 %	99.5 %
Under 50 Acres	13,237	9,283	41 %	95 %
Under 100 Acres	16,159	6,361	28 %	91 %

Source of information: 1997 Census of Agriculture

If the CMP Program exempted farms under 50 acres, 41 percent of the farms would be required to prepare a plan, but the program would still cover 95 percent of the land area. If the exemption level is set at 100 acres, 28 percent of the farms would be required to participate in the program, but 91 percent of the land area would be covered. If 100 acres were chosen as the exemption level, NRCS/RCD would need to review 6,361 CMP Plans in the first year compared to 17,629 in the first year if the exemption level is set at 10 acres. Based on this information, the District proposes that participation by farms under 100 acres will be voluntary. If the exemption level were set at 50 instead of 100 acres, the administrative burden would increase by 46 percent to gain only 4 percent more acres covered. That would not be a wise use of resources. Therefore, the District has concluded that only farms 100 acres and larger should be required to submit a CMP Plan to NRCS/RCD.

Criteria for including a CMP on the CMP list:

The District's Agricultural Technical Advisory Committee (AgTech) which includes participation by USDA, NRCS, RCD, California Department of Food and Agriculture (CDFA), University of California, Agricultural Extension Services, agricultural organizations, individual growers, District, and ARB, will identify measures expected to reduce emissions for inclusion in the CMP Program. Several commodity-based subcommittees of the AgTech Committee have been working over the last year to identify potential CMPs. District and ARB staff will analyze the measures obtained from all sources for emission reduction potential. The AgTech Committee could use the following information as factors to consider when determining acceptability:

1. Reasonable certainty that the practice will reduce emissions
2. Acceptability of the practice to growers
3. Economic feasibility of the practice or funding availability
4. Extent of current use of the practice compared to potential use
5. Availability and quality of research demonstrating effectiveness
6. Potential negative impacts of the practice on the environment or animal health

The CMPs should make sense to the growers. If CMPs on the list are not acceptable to at least some growers, the program will not be credible.

Economic feasibility will differ from farm to farm. Program guidance documents should describe the costs and benefits of the various CMPs. The individual growers will need to decide whether a measure is economically feasible for their operation. There are some CMPs that are expected to result in cost savings. Incentive money from programs such as EQIP may be available to help with certain higher cost measures. Certain practices that require large capital investment such as replacing 2-row cotton pickers with 5-row pickers may take more than one year to fully implement. Phased implementation for these equipment change-outs should count as meeting the requirement for that category.

As technology advances, new practices will become available. The District will conduct a major review of the CMPs as part of Reasonable Further Progress reports that are prepared every three years. Existing CMPs will be reviewed to ensure that they are still appropriate. New CMPs suggested by growers or other parties will need to be reviewed by AgTech and added to the CMP Handbook on an annual basis.

Research on the effectiveness of some CMPs will be needed to demonstrate the benefit of adopting a practice and to accurately account for emission reductions in PM10 progress reports. The AgTech Committee and its subcommittees will be tasked with prioritizing needed research. Manufacturers claims that a piece of equipment or practice will result in emission reductions must be backed up by data demonstrating effectiveness.

Certain practices may result in indirect environmental effects such as increased water use, changes in runoff, or reduction in one pollutant and increase in another pollutant. The program should identify potential impacts to allow the growers to weigh the costs and benefits of the practice. These impacts may also provide justification for not providing a measure for growers that cannot identify suitable alternatives.

Multi-year crops and cover crops:

The CMP program will consider the growing of certain crops as complying with one or more of the CMP categories. Some crops are inherently low fugitive dust producers or prevent fugitive dust emissions during some or all of their growing cycle. For example, alfalfa cultivation does not result in much land preparation activity and it provides long term soil cover to prevent wind blown dust. The SCAQMD exempts orchards, vine crops, nurseries, rangeland and irrigated pasture from all on field requirements. Maricopa allows multi-year crops (alfalfa, citrus, roses, livestock pastures, nuts (pecans), and sod) as a BMP for their tillage and harvest category and their cropland category.

The CMP program will identify in the handbook the crops that qualify as a CMP for land preparation, harvest, and wind blown emissions. Growers that raise these crops would meet their CMP requirement for the applicable source categories. For example, a peach grower would meet the requirement for land preparation, harvesting, and open areas just by keeping the orchard in operation. That same grower may be required to include practices for unpaved roads and burning of ag waste. Perhaps the grower treats the main unpaved access road during harvest season and participates in a biomass burning program for some of the pruning waste.

Justification required for not providing a CMP for a source category

Some growers may be unable to identify a CMP feasible for their operation for one or more source categories. For example, a tomato grower who is looking for a land preparation practice may have recently invested in equipment that cannot be used for any equipment related CMP, he is trying to clear up a soil fungus and must make more fungicide applications than normal, and the field is due for deep ripping to improve soil drainage and cannot implement a low till practice. If a grower is in this position, he will need to justify why a category is not feasible as part of the CMP Plan. One way to ensure that the grower has considered all measures is for the NRCS or RCD representative to contact growers who submit plans with an empty category. The representative could learn about the grower's unique situation and attempt to identify a feasible practice that the grower may not have considered. The representative may be able to suggest low cost equipment modifications or to influence future equipment purchases. The number of growers that will be unable to identify a measure is unknown. If the number is high, NRCS/RCD resource constraints may come into play.

Additional CMP program details:

The CMP list will be crop specific to the extent possible. The types of crops will be placed into several categories with all recommended CMPs for those categories. With hundreds of different crops and varieties grown in the San Joaquin Valley it is not possible to evaluate all crops individually. A CMP Applicability Matrix (attached) is being developed to indicate the CMPs applicable to each crop category.

The trust and cooperation of the growers is critical to the success of this program. The NRCS and RCDs have built up trust over the years in their advisory role. These agencies have no regulatory authority and so will only fill an information gathering and assistance role in the CMP Program. The District will have program enforcement responsibilities that will be detailed in the CMP Program Rule. The District has authority to adopt regulations for area-wide sources (e.g.: agricultural sources) under California Health and Safety (H&S) Code 40716(a)(1).

Upon program implementation, growers will submit their proposed CMP Plan to their designated local Resource Conservation District (RCD) or NRCS for evaluation and data compilation.

- Most growers are expected to complete their CMP Plan without assistance and will submit them to the RCD/NRCS for data entry.
- The RCD and NRCS will assist the growers having difficulty in selecting CMPs and will review the practices in each CMP Plan. The RCD/NRCS would also consolidate the statistics and transmit them to the District.
- The RCD and NRCS will have no program enforcement responsibilities.
- The RCD/NRCS will maintain a database containing the names and address of participating growers that will remain confidential unless one of the program backstop provisions is triggered.
- The RCD/NRCS will provide technical assistance in implementing CMP plans, and will help identify incentive funds.

A CMP Handbook will be published that contains a list of CMPs that will be accepted in CMP Plans. The handbook will need to be available well before the first CMP Plan is due. The CMP Handbook is expected to have sections for each major crop category. For example, tree fruit, almonds, other nuts, vines, field crops, and vegetables may have their own sections. Under each crop category, specific crops or varieties in some cases will be listed to enable the grower to easily identify suitable practices. Specific crops that already have CMPs identified in the CMP Applicability Matrix include the following: alfalfa, almonds/walnuts, cotton, citrus, dry beans, field corn, grapes, lettuce, melons, onions/garlic, safflower, sugar beets, tomatoes, wheat/barley, and vegetables. If during the program development and review process additional crops are identified that have unique CMPs that require a separate category, they will be added to the CMP Handbook. The CMP Handbook will be updated annually to reflect new CMPs and revised information regarding existing CMPs.

V. CMP Program Requirements

- a. **Applicability:** All agricultural operations engaged in the growing and harvesting of crops or the raising of fowl or animals located within the San Joaquin Valley Air Basin.
- b. **Exemptions:** Farms less than 100 acres in size will not be required to participate, but will be provided with the CMP Handbook and outreach materials to encourage implementation of CMPs. Growers exceeding the activity thresholds of Regulation VIII (Rule 8081 Agricultural Sources) must currently implement a fugitive PM management plan or be subject to the enforcement provision of the regulation. Those growers submitting a Regulation VIII Fugitive PM Management Plan (FPMP) would meet the CMP requirements for the off-field road and vehicle equipment traffic areas categories of the program. However, the CMP program will require practices where feasible for unpaved agricultural roads and vehicle and traffic equipment parking and traffic areas exempt from Regulation VIII daily trip exemption threshold.

c. CMP substitution justification: Growers may use CMPs other than those included on the CMP List. If a grower identifies a practice that has a reasonable basis to expect it will result in emission reductions, the practice will satisfy the requirement for that source category. The grower must contact the RCD/NRCS representative to discuss the substitute practice and to get prior approval prior to submitting the CMP Plan. RCDs are encouraged to work with grower members in identifying and developing CMPs that recognize conditions unique to their district that may not be reflected in the CMP Handbook. Measures will be presented to the District and Agriculture Technical Advisory Committee for approval and to consider adding the measure to the next update of the CMP Handbook.

d. CMP categories:

Off-field:

- Unpaved roads
- Unpaved vehicle/equipment traffic areas

On-field:

- Land preparation
- Harvesting
- Other activities (includes preventing windblown emissions, and waste burning reductions)

e. Number of CMPs identified for each category:

Growers must select one (1) CMP for each of the five (5) CMP categories from the CMP list. One option being considered is for growers to be able to select two measures from one category that would result in emission reductions greater than or equal to that obtained from one practice from each category. There will be no specific emission reduction requirement for an individual farm. The CMP program will be judged on its effectiveness as a whole and not on a farm-by-farm basis. As long as the program makes reasonable further progress toward meeting its emission reduction goals, it will be an overall success.

The minimum number of CMPs required is listed below:

- 3 CMPs for on-field activities: land preparation (1), harvesting (1), and other (1); such as agricultural waste disposal, windblown dust, and other crop activities such as planting and cultivating.
- 2 CMP for off-field activities: unpaved roads (1), and unpaved vehicle/equipment traffic area (1).

The minimum number of CMPs for CAFOs is listed below:

- 1 CMP for entrained PM10 from animal movement
- 1 CMP for manure decomposition

- 1 CMP for off-field activities: unpaved roads
 - 1 CMP for off-field activities: unpaved vehicle/equipment traffic areas.
- f. Record Keeping: Growers will be required to maintain a CMP Plan onsite and to submit a copy to the RCD. CMP plans will be based on the calendar year. The grower will review the plan each year and either indicate that the same measures are being implemented in the coming year or that new CMPs are planned. The CMP Plan will remain confidential unless one of the backstop measures requiring District program management is implemented.

The CMP Plan must include the following information:

- Point of contact, name, address, and telephone number.
 - The type of crop(s) grown, and the total crop(s) acreage of the farm.
 - The selected CMP for each category and the months of the year that CMPs are anticipated to be implemented.
 - The total area (acres or miles) and the general location where the CMPs are to be implemented.
 - Justification (and prior approval from RCD) for implementing a CMP not included on the CMP list.
 - Justification for not providing a CMP from any of the five categories.
- g. Compliance assurance: The program must include a mechanism to ensure that program participants actually implement the CMPs committed to in their CMP Plan. An independent auditing agency/consultant contracted by the District would take a random sample of CMP Plans and schedule a site visit with the grower to verify compliance. No enforcement action will be taken against growers that have not implemented their CMPs. If the results of the audit show that a predetermined percentage of growers are not implementing their measures, the first backstop measure of having all plans submitted to the District will be imposed. The results of the survey will be used to identify the reasons for not complying and to improve outreach efforts.

A certain number of growers can be expected to not submit CMP Plans to the NRCS/RCD. A predetermined percentage of growers not submitting CMP Plans to the NRCS/RCD would be placed in the CMP program rule. If that predetermined percentage is reached, the District will begin tracking CMP Plan submittals and imposing penalties on growers that fail to submit a plan or fail to carry out CMPs agreed to in their CMP Plan. Any penalties would likely start with a warning, and escalate to compliance classes and fines if the grower does not comply. In the event that District management of the program is required, the District may adopt a schedule of fees to cover the estimated reasonable costs of

evaluating plans and monitoring and enforcing activities in accordance with H&S 41512.5.

- h. Implementation schedule: July 1, 2004 begin collecting CMP plans.
- i. Backstop provision: The following actions will trigger the imposition of backstop provisions:

Trigger 1: The CMP Program fails to achieve a compliance rate of 80 percent or greater by December 31, 2006. If compliance rates are not on target in 2005, the RCD and NRCS could increase outreach or use other methods to promote the program and achieve greater compliance.

Backstop 1: San Joaquin Valley Air Pollution Control District will assume program management duties, and will increase outreach to growers.

Trigger 2: The field support agencies (RCD/NRCS) are unable to provide resources sufficient to collect CMP implementation data that is adequate to calculate emission reductions for the 2005 growing season. The RCDs and NRCS will be given an opportunity to demonstrate that resources are in the pipeline to manage the program prior to implementing the backstop.

Backstop 2: San Joaquin Valley Air Pollution Control District will assume program management duties.

Trigger 3: The CMP Program fails to achieve projected emission reduction targets by December 31, 2005 by a substantial margin (TBD) (the first PM10 RFP date for new the PM10 Plan).

Backstop 3: Increase the number of CMPs that each grower must implement in the next CMP Plan cycle.

Trigger 4: The District receives a complaint from a neighbor regarding excessive fugitive dust emissions from an agricultural source or District compliance staff witnesses the excessive emissions.

Backstop 4: The District would send a staff person to the site to investigate. The District would request to see the grower's CMP Plan. If the grower does not have a CMP Plan in place, the District would provide the grower with program forms and with contact information at the RCD or NRCS in case the grower needed assistance in developing a plan. If the problem was created due to failure to follow an adopted CMP, the District would write a letter to the grower indicating failure to comply and would recommend contacting the RCD or NRCS for implementation assistance. If the problem was due to an activity not subject to a CMP, the RCD or NRCS representative would attempt to identify a practice that would

reduce or solve the problem. If a cost-effective solution were identified, the grower would be required to amend his CMP Plan to include the measure. If a grower fails to participate in the program after notification, the District would initiate enforcement action. Details of enforcement will be worked out during rule development. See Table 2 for schedule of Rule development.

VI. Proposed steps and timeline to develop the CMP program

The District and the Agricultural Technical Advisory Committee and its subcommittees will continue to identify CMPs and work jointly in developing the CMP program. The District and ARB will be responsible for quantifying the emission reduction achieved by the program. The CMP Program will be included as a commitment in the 2002 PM10 Plan now under development. A District rule must be adopted to meet enforceability criteria. The CMP Handbook describing the practices needs to be in place well in advance of the first plan submittal deadline. Table 2 describes the program development and implementation schedule.

Table 2
CMP Program Development Schedule

	2002		2003			2004		2005
	Jul-Sept	Oct-Dec	Jan-Mar	Apr-Sept	Oct-Dec	Jan-Jun	Jun-Dec	Jan-Mar
Continue meetings with stakeholders on all program issues	→							
Develop a final list of CMPs and CMP Handbook.		→						
Amend the Memorandum of Understanding between NRCS, CDFA, and the District			→					
Introduce the CMP program in the draft PM10 Plan for public review		→						
District's Governing Board to adopt PM10 Plan containing CMP Program commitment, and submittal of Plan to ARB			→					
Rule development and measure identification complete				→				
Send CMP Handbooks and forms to growers and start implementation of						→		

Conservation Management Practice
Program for the San Joaquin Valley

CMP program								
Receive first reports from growers						➔		

VII. Funding availability

The Environmental Quality Incentives Program (EQIP) is a potential funding source for certain practices included in this program. The USDA-NRCS is continuing to provide cost sharing on conservation practices that benefit air quality within the San Joaquin Valley. Under EQIP, cost sharing is available for application of a dust suppressant on unpaved farm roads. There are new funding opportunities with the 2002 Farm Bill. In addition, other funding source as such as federal, state, and District will be investigated.

Funding sources to cover program administration costs are to be determined prior to program adoption.

- Attachments:**
- Conservation Management Practice Crop Applicability Matrix
 - Confined Animal Facility Operation (CAFO) CMP List (under development)
 - Preliminary Conservation Management Practices (under development)

