



Great Basin Unified Air Pollution Control District

CONSERVATION MANAGEMENT PRACTICES FOR FARMS IN INYO, MONO AND ALPINE COUNTIES

PROGRAM DESCRIPTION AND PLAN APPLICATION FORMS

December 19, 2008

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**CONSERVATION MANAGEMENT PRACTICES
FOR FARMS IN INYO, MONO AND ALPINE COUNTIES
PROGRAM DESCRIPTION AND PLAN APPLICATION FORMS**

The very nature of producing food and fiber crops generates dust and small particulate matter, commonly referred to as PM-10 (Particulate Matter with an average size of 10 microns or less—about one-seventh the diameter of a human hair). For many years farmers have worked to reduce the amount of dust generated from agricultural practices as a means of preserving topsoil, controlling certain dust-loving pest populations and maintaining good neighbor relations.

In California, over the last few years attention has been focused on reducing dust and PM-10 emissions from on-farm activities as part of the effort to help improve the state's air quality. Many areas of the state will never attain the federal or state PM-10 standards unless agricultural activities implement additional dust control measures. In addition, as more land is developed next to and within agricultural areas, dust that in the past did not impact people in their homes or at their jobs, is now having a direct impact on people's health. In 2004, the state passed a law known as SB 700 that makes agricultural operations subject to the same air pollution requirements as other commercial and industrial operations and requires farm activities to implement additional measures to control air pollution.

The Great Basin Unified Air Pollution Control District (serving all of Alpine, Inyo and Mono Counties) has adopted rules to control dust emissions from agricultural practices in an effort to attain and maintain the federal and state standards for PM-10. The rules, Rule 502 (Conservation Management Practices) and Rule 307 (Conservation Management Practices Plan Fee), require farmers to implement and document an annual plan to reduce dust and PM-10 emissions from on-farm sources, such as from unpaved roads and equipment yards, during land preparation, harvest activities and from other cultural practices. These plans are known as Conservation Management Practices (CMP) Plans. In order to recover the cost of plan processing and field inspections, the Air District will collect fees from those farms that must comply with the CMP requirement.

► What is required?

Farm operators with **40 acres or more outside of residential areas or 10 acres or more within residential areas** (5 or more residences within ¼ mile of farm boundaries) of contiguous, or adjacent, farmland are required to prepare and implement CMP Plans for each crop they farm.

► Conservation Management Practices Plan

A Conservation Management Practice is an activity or practice that farmers will implement on their farms to help reduce dust emissions. Examples of CMPs include activities that reduce or eliminate the need to move or disturb the soil; activities that protect the soil from wind, such as wind breaks and wetting the soil; equipment modifications that physically produce less dust; application of dust suppressants; speed reductions on unpaved roads and

yards; and activities that reduce agricultural chemical applications through use of integrated pest management practices.

This packet identifies the currently accepted, crop-specific practices to reduce PM-10 emissions in each type of farming activity. The CMPs were developed by Air Districts throughout the state, representatives from the USDA-Natural Resources Conservation Service, Resource Conservation Districts, agricultural organizations and commodity groups, and other state and federal agencies. The latest list of CMPs can also be found on the California Air Pollution Control Officer's Association (CAPCOA) Agricultural Sources Clearinghouse of Air Pollution Reduction Methods at: www.capcoa.org/Agclearinghouse/index.html

In order to assist farm operators with the preparation of CMP Plans, the District has prepared forms for Alfalfa (CMP 1) and Field and Row Crops (CMP 2). Additional forms for other crops or operations will be prepared as needed or upon request. The use of these forms is optional. Any CMP plan that meets the requirements of District Rule 502 may be submitted. Blank forms are included in this handout and may be photocopied as needed. The forms can also be downloaded from the Air District website located at www.gbuapcd.org/farm and filled in electronically.

Depending on the crop, farmers are required to implement five CMPs, including one from each of the following categories:

- Land preparation and cultivation
- Harvest activities
- Unpaved roads
- Unpaved equipment yards
- Other cultural practices

Confined animal feed operations (CAFOs) are also subject to the requirements of Rule 502. CAFO operators should contact the District before preparing a plan to discuss these requirements.

Each farmer with 40 or more contiguous acres outside residential areas or 10 or more acres near residential areas must complete a CMP Plan. Residential areas are defined as five or more residences within one-quarter mile of the farms boundaries. CMP Plans must include the following information:

- 1) a map of the operation that designates where each CMP is being implemented;
- 2) the General Information form (CMP A);
- 3) the Unpaved Roads and Unpaved Vehicle/ Equipment Areas form (CMP B); and
- 4) a form for each crop farmed (numbered CMP forms)

A list of approved dust suppressants available for use to help reduce PM-10 emissions from unpaved roads and equipment yards is available upon request from the District or from our website at: www.gbuapcd.org/farm/Dustsuppressantproducts.pdf.

The CMPs were designed to reduce air pollution and to provide farmers with flexibility in selecting measures. If a CMP in a category can't be implemented, then a grower may select an alternate CMP from another category. To allow flexibility and innovation, there is an "Other" practice in each category, which may be used if the new practice can show equal or greater emission reductions than the currently approved practice, and is approved by the District's Air Pollution Control Officer (APCO).

► Deadlines

The CMP program phases in over a three year period. For agricultural operations in the Owens Valley PM-10 Planning Area (the southern Owens Valley between Tinemaha and Haiwee reservoirs, requirements begin in January 2006. For the Mono Basin, Coso Junction and Mammoth Lakes areas, requirements go into effect in January 2007. For the balance of the District, the CMP Plan rule is effective in January 2008. Please contact the District to determine which area your operation falls into.

► Costs and fees

There is a **flat fee (call the District to get the current fees quoted)** for initial review and approval of a CMP Plan. This covers the cost of District personnel reviewing the plan and the first year of field inspections. The fee must be paid upon submittal of the CMP plan for review.

Every year a CMP Plan **annual renewal fee (call the District to get the current fees quoted)** must be submitted to the Air District. The District will invoice approved plan holders for the annual fee. After five years, if there has been no change in the CMP plan and no CMP plan violations, the annual renewal fee will be reduced.

A CMP Plan may be modified and resubmitted to the Air District at no cost anytime a practice or crop has changed. No CMP plan fees will be required if a District Permit to Operate is required for the operation (this would apply to very large operations only).

► Contact information

District staff can assist anyone that needs help with the preparation of a CMP plan. Plans and inquiries should be directed to the District's Bishop office. Contact information is:

Great Basin APCD
157 Short Street
Bishop, CA 93514
Tel: 760-872-8211
Fax: 760-872-6109
E-mail: farm@gbuapcd.org
Website: www.gbuapcd.org/farm

CONSERVATION MANAGEMENT PRACTICES PLAN APPLICATION FORMS

The following forms are provided to assist agricultural operators in the Great Basin Air Pollution Control District with the preparation of Conservation Management Practices Plans.

The use of these forms is optional. Any Conservation Management Practices plan that meets the requirements of District Rule 502 may be submitted. Operators with crops other than alfalfa, field crops or row crops should contact the District. Confined Animal Feed Operations should also contact the District before preparing a plan.

Great Basin Unified Air Pollution Control District CONSERVATION MANAGEMENT PRACTICES PLAN APPLICATION

GENERAL INFORMATION

A Conservation Management Practices (CMP) plan is a requirement for all agricultural operation sites as specified in Section 5.0 of District Rule 502. The goal of this CMP plan is to reduce sources of PM₁₀ emissions from agricultural operations. Attach CMP-A, B, C and all other applicable CMP Supplemental Application Forms to this sheet. By signing below, the applicant agrees to implement all Conservation Management Practices checked on the attached sheets. **A fee of (call the District to get the current fees quoted) is due with submittal of this plan** to cover the District's cost of plan processing and field inspection for the first year.

Name of Facility: _____

Facility Location: _____

Total Farm Acreage: _____

Mailing Address: _____

City/State/Zip code: _____

Phone: _____ Fax: _____

Other (Cell): _____ E-mail: _____

Person Responsible: _____ Title: _____

Signature: _____ Date: _____

Please list the following information for the persons responsible for:

Plan Preparation:

Same as Person Responsible Above?

Name: _____

Title: _____

Address: _____

City/State/Zip code: _____

Phone: _____

Fax: _____

Other (Cell): _____

Plan Implementation:

Same as Person Responsible Above?

Name: _____

Title: _____

Address: _____

City/State/Zip code: _____

Phone: _____

Fax: _____

Other (Cell): _____

FOR DISTRICT USE ONLY

This CMP plan application has been verified to contain all supporting information required by the APCO to evaluate the application. CMP-A, B and C attached. All other appropriate CMPs attached. Fee paid. Date: _____

Reviewer: _____ Initials: _____ Date: _____

APCO approval: _____ Date: _____

**Great Basin Unified Air Pollution Control District
Supplemental Application Form**

**CMP
B**

**Conservation Management Practices:
UNPAVED ROADS AND UNPAVED VEHICLE/ EQUIPMENT AREAS**

Farm Name: _____ CMP Plan Years: _____ to _____

Unpaved Road Mileage: _____ Unpaved Vehicle/Equipment Areas Acreage: _____

**Unpaved
Roads**

If daily vehicle trips are greater than or equal to 75 on unpaved roads, select at least one of the following:

- | | |
|---|---|
| <input type="checkbox"/> Dust suppressant, _____ mi | <input type="checkbox"/> Washed gravel, _____ mi |
| <input type="checkbox"/> Paving, _____ mi | <input type="checkbox"/> Water, _____ mi |
| <input type="checkbox"/> Road oil, _____ mi | <input type="checkbox"/> Other (special approval reqd.), _____ mi |

Please describe the specifics of the practice(s) chosen above: _____

If daily vehicle trips are less than 75 on unpaved roads, select at least one of the following controls:

- | | |
|--|---|
| <input type="checkbox"/> Access restriction (public access) _____ mi | <input type="checkbox"/> Road oil, _____ mi |
| <input type="checkbox"/> Chips/mulches, _____ mi | <input type="checkbox"/> Speed limit posted, _____ mi |
| <input type="checkbox"/> Dust suppressant, _____ mi | What speed? _____ mph (15 mph or less) |
| <input type="checkbox"/> Less than 10 vehicle trips on any day, _____ mi | <input type="checkbox"/> Track out control, _____ mi |
| <input type="checkbox"/> Organic materials, _____ mi | <input type="checkbox"/> Water, _____ mi |
| <input type="checkbox"/> Paving, _____ mi | <input type="checkbox"/> Washed gravel, _____ mi |
| <input type="checkbox"/> Polymers, _____ mi | <input type="checkbox"/> Wind barrier, _____ mi |
| | <input type="checkbox"/> Other (special approval reqd.), _____ mi |

Please describe the specifics of the practice(s) chosen above: _____

**Unpaved
Vehicle/
Equipment
Areas**

If average daily vehicle trips (on an annual basis) are ≥ 50 on unpaved equipment yards, or if average daily trips (on an annual basis) are ≥ 25 by three or more axle vehicles, or if maximum daily trips on any day ≥ 150 during a 30 day period or less, select at least one of the following controls.

- | | |
|---|---|
| <input type="checkbox"/> Dust suppressant, _____ ac | <input type="checkbox"/> Vegetative material, _____ ac |
| <input type="checkbox"/> Paving, _____ ac | <input type="checkbox"/> Washed gravel, _____ ac |
| <input type="checkbox"/> Road oil, _____ ac | <input type="checkbox"/> Water, _____ ac |
| | <input type="checkbox"/> Other (special approval reqd.), _____ ac |

Please describe the specifics of the practice(s) chosen above: _____

If average daily vehicle trips (on an annual basis) are < 50 on unpaved equipment yards, or if average daily trips (on an annual basis) are < 25 by three or more axle vehicles, or if maximum daily vehicle trips on any day are < 150 during a 30 day period or less, select at least one of the following controls:

- | | |
|--|--|
| <input type="checkbox"/> Chips/mulches, _____ ac | <input type="checkbox"/> Speed limit posted, _____ ac |
| <input type="checkbox"/> Less than 10 vehicle trips on any day, _____ ac | What speed? _____ mph (15 mph or less) |
| <input type="checkbox"/> Organic material, _____ ac | <input type="checkbox"/> Paving, _____ ac <input type="checkbox"/> Water, _____ ac |
| <input type="checkbox"/> Polymers, _____ ac | <input type="checkbox"/> Washed gravel, _____ ac |
| <input type="checkbox"/> Restricted access, _____ ac | <input type="checkbox"/> Wind barrier, _____ ac |
| <input type="checkbox"/> Road oil, _____ ac | <input type="checkbox"/> Other (special approval reqd.), _____ ac |

Please describe the specifics of the practice(s) chosen above: _____

Great Basin Unified Air Pollution Control District Supplemental Application Form

**CMP
1**

Conservation Management Practices: ALFALFA

Farm Name: _____ CMP Plan Years: _____ to _____

Maximum Crop Acreage: _____

Fallow Acreage Last Planted in Alfalfa: _____

Land Preparation/ Cultivation	<p>Select at least one additional of the following CMPs. Note: 100% of the maximum crop acreage must be covered by the selected CMPs.</p> <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Cessation of activities during high winds, _____ ac</td> <td><input type="checkbox"/> Multiple CMPs in another category</td> </tr> <tr> <td><input type="checkbox"/> Chemigation/Fertigation, _____ ac</td> <td><input type="checkbox"/> Night farming, _____ ac</td> </tr> <tr> <td><input type="checkbox"/> Combined operations, _____ ac</td> <td><input type="checkbox"/> Non-tillage/chemical tillage, _____ ac</td> </tr> <tr> <td><input type="checkbox"/> Conservation irrigation, _____ ac</td> <td><input type="checkbox"/> Soil moisture management</td> </tr> <tr> <td><input type="checkbox"/> Equipment change/tech. improvements, _____ ac</td> <td><input type="checkbox"/> Other (special approval reqd.), _____ ac</td> </tr> </table> <p>Please describe the specifics of the practice(s) chosen above: _____</p> <p>_____</p> <p>_____</p>	<input type="checkbox"/> Cessation of activities during high winds, _____ ac	<input type="checkbox"/> Multiple CMPs in another category	<input type="checkbox"/> Chemigation/Fertigation, _____ ac	<input type="checkbox"/> Night farming, _____ ac	<input type="checkbox"/> Combined operations, _____ ac	<input type="checkbox"/> Non-tillage/chemical tillage, _____ ac	<input type="checkbox"/> Conservation irrigation, _____ ac	<input type="checkbox"/> Soil moisture management	<input type="checkbox"/> Equipment change/tech. improvements, _____ ac	<input type="checkbox"/> Other (special approval reqd.), _____ ac
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<input type="checkbox"/> Conservation irrigation, _____ ac	<input type="checkbox"/> Soil moisture management										
<input type="checkbox"/> Equipment change/tech. improvements, _____ ac	<input type="checkbox"/> Other (special approval reqd.), _____ ac										
Harvest	<p>Select at least one of the following CMPs. Note: 100% of the maximum crop acreage must be covered by the selected CMPs.</p> <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Combined operations, _____ ac</td> <td><input type="checkbox"/> Multiple CMPs in another category, _____ ac</td> </tr> <tr> <td><input type="checkbox"/> Equipment change/tech. improvements, _____ ac</td> <td><input type="checkbox"/> Night harvesting, _____ ac</td> </tr> <tr> <td><input type="checkbox"/> Green chop, _____ ac</td> <td><input type="checkbox"/> Shuttle system, _____ ac</td> </tr> <tr> <td><input type="checkbox"/> Large bales, _____ ac</td> <td><input type="checkbox"/> Other (special approval reqd.), _____ ac</td> </tr> </table> <p>Please describe the specifics of the practice(s) chosen above: _____</p> <p>_____</p> <p>_____</p>	<input type="checkbox"/> Combined operations, _____ ac	<input type="checkbox"/> Multiple CMPs in another category, _____ ac	<input type="checkbox"/> Equipment change/tech. improvements, _____ ac	<input type="checkbox"/> Night harvesting, _____ ac	<input type="checkbox"/> Green chop, _____ ac	<input type="checkbox"/> Shuttle system, _____ ac	<input type="checkbox"/> Large bales, _____ ac	<input type="checkbox"/> Other (special approval reqd.), _____ ac		
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<input type="checkbox"/> Green chop, _____ ac	<input type="checkbox"/> Shuttle system, _____ ac										
<input type="checkbox"/> Large bales, _____ ac	<input type="checkbox"/> Other (special approval reqd.), _____ ac										
Other	<p>Select at least one of the following CMPs. Note: 100% of the maximum crop acreage must be covered by the selected CMPs.</p> <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Conservation tillage, _____ ac</td> <td><input type="checkbox"/> Organic practices, _____ ac</td> </tr> <tr> <td><input type="checkbox"/> Cover crop, _____ ac</td> <td><input type="checkbox"/> Surface roughening, _____ ac</td> </tr> <tr> <td><input type="checkbox"/> Fallowing land, _____ ac</td> <td><input type="checkbox"/> Time of disturbance/planting _____ ac</td> </tr> <tr> <td><input type="checkbox"/> Multiple CMPs in another category</td> <td><input type="checkbox"/> Other (special approval reqd.), _____ ac</td> </tr> </table> <p>Please describe the specifics of the practice(s) chosen above: _____</p> <p>_____</p> <p>_____</p>	<input type="checkbox"/> Conservation tillage, _____ ac	<input type="checkbox"/> Organic practices, _____ ac	<input type="checkbox"/> Cover crop, _____ ac	<input type="checkbox"/> Surface roughening, _____ ac	<input type="checkbox"/> Fallowing land, _____ ac	<input type="checkbox"/> Time of disturbance/planting _____ ac	<input type="checkbox"/> Multiple CMPs in another category	<input type="checkbox"/> Other (special approval reqd.), _____ ac		
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<input type="checkbox"/> Cover crop, _____ ac	<input type="checkbox"/> Surface roughening, _____ ac										
<input type="checkbox"/> Fallowing land, _____ ac	<input type="checkbox"/> Time of disturbance/planting _____ ac										
<input type="checkbox"/> Multiple CMPs in another category	<input type="checkbox"/> Other (special approval reqd.), _____ ac										

Great Basin Unified Air Pollution Control District Supplemental Application Form

Conservation Management Practices: FIELD AND ROW CROPS

Farm Name: _____ CMP Plan Years: _____ to _____

Maximum Crop Acreage: _____

Fallow Acreage Last Planted in Field/Row Crops: _____

Land Preparation/ Cultivation	<p>Select at least one of the following CMPs. Note: 100% of the maximum crop acreage must be covered by the selected CMPs.</p> <table style="width: 100%;"> <tr> <td><input type="checkbox"/> Bed/row size or spacing, _____ ac</td> <td><input type="checkbox"/> Equipmt change/tech. imprvmnts, _____ ac</td> </tr> <tr> <td><input type="checkbox"/> Cessation of activities, _____ ac</td> <td><input type="checkbox"/> Multiple CMPs in another category</td> </tr> <tr> <td><input type="checkbox"/> Chemigation/fertigation, _____ ac</td> <td><input type="checkbox"/> Mulching, _____ ac</td> </tr> <tr> <td><input type="checkbox"/> Combined operations, _____ ac</td> <td><input type="checkbox"/> Night farming, _____ ac</td> </tr> <tr> <td><input type="checkbox"/> Conservation irrigation, _____ ac</td> <td><input type="checkbox"/> Non-tillage/chemical tillage, _____ ac</td> </tr> <tr> <td><input type="checkbox"/> Conservation tillage, _____ ac</td> <td><input type="checkbox"/> Transplanting, _____ ac</td> </tr> <tr> <td><input type="checkbox"/> Cross wind stripcropping, _____ ac</td> <td><input type="checkbox"/> Other (special approval reqd.), _____ ac</td> </tr> </table> <p>Please describe the specifics of the practice(s) chosen above: _____</p> <p>_____</p> <p>_____</p>	<input type="checkbox"/> Bed/row size or spacing, _____ ac	<input type="checkbox"/> Equipmt change/tech. imprvmnts, _____ ac	<input type="checkbox"/> Cessation of activities, _____ ac	<input type="checkbox"/> Multiple CMPs in another category	<input type="checkbox"/> Chemigation/fertigation, _____ ac	<input type="checkbox"/> Mulching, _____ ac	<input type="checkbox"/> Combined operations, _____ ac	<input type="checkbox"/> Night farming, _____ ac	<input type="checkbox"/> Conservation irrigation, _____ ac	<input type="checkbox"/> Non-tillage/chemical tillage, _____ ac	<input type="checkbox"/> Conservation tillage, _____ ac	<input type="checkbox"/> Transplanting, _____ ac	<input type="checkbox"/> Cross wind stripcropping, _____ ac	<input type="checkbox"/> Other (special approval reqd.), _____ ac
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Harvest	<p>Select at least one of the following CMPs. Note: 100% of the maximum crop acreage must be covered by the selected CMPs.</p> <table style="width: 100%;"> <tr> <td><input type="checkbox"/> Combined operations, _____ ac</td> <td><input type="checkbox"/> Pre-harvest soil preparation, _____ ac</td> </tr> <tr> <td><input type="checkbox"/> Equipment change/tech. improvements, _____ ac</td> <td><input type="checkbox"/> Shed packing, _____ ac</td> </tr> <tr> <td><input type="checkbox"/> Hand harvesting, _____ ac</td> <td><input type="checkbox"/> Shuttle system, _____ ac</td> </tr> <tr> <td><input type="checkbox"/> Multiple CMPs in another category</td> <td><input type="checkbox"/> Other (special approval reqd), _____ ac</td> </tr> <tr> <td><input type="checkbox"/> Night harvesting, _____ ac</td> <td></td> </tr> </table> <p>Please describe the specifics of the practice(s) chosen above: _____</p> <p>_____</p> <p>_____</p>	<input type="checkbox"/> Combined operations, _____ ac	<input type="checkbox"/> Pre-harvest soil preparation, _____ ac	<input type="checkbox"/> Equipment change/tech. improvements, _____ ac	<input type="checkbox"/> Shed packing, _____ ac	<input type="checkbox"/> Hand harvesting, _____ ac	<input type="checkbox"/> Shuttle system, _____ ac	<input type="checkbox"/> Multiple CMPs in another category	<input type="checkbox"/> Other (special approval reqd), _____ ac	<input type="checkbox"/> Night harvesting, _____ ac					
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<input type="checkbox"/> Night harvesting, _____ ac															
Other	<p>Select at least one of the following CMPs. Note: 100% of the maximum crop acreage must be covered by the selected CMPs.</p> <table style="width: 100%;"> <tr> <td><input type="checkbox"/> Cover crops, _____ ac</td> <td><input type="checkbox"/> Soil moisture management, _____ ac</td> </tr> <tr> <td><input type="checkbox"/> Fallowing land, _____ ac</td> <td><input type="checkbox"/> Surface roughening, _____ ac</td> </tr> <tr> <td><input type="checkbox"/> Multiple CMPs in another category</td> <td><input type="checkbox"/> Time of disturbance/planting, _____ ac</td> </tr> <tr> <td><input type="checkbox"/> Non-tillage/chemical tillage, _____ ac</td> <td><input type="checkbox"/> Wind barrier, _____ ac</td> </tr> <tr> <td><input type="checkbox"/> Organic practices, _____ ac</td> <td><input type="checkbox"/> Other (special approval reqd), _____ ac</td> </tr> </table> <p>Please describe the specifics of the practice(s) chosen above: _____</p> <p>_____</p> <p>_____</p>	<input type="checkbox"/> Cover crops, _____ ac	<input type="checkbox"/> Soil moisture management, _____ ac	<input type="checkbox"/> Fallowing land, _____ ac	<input type="checkbox"/> Surface roughening, _____ ac	<input type="checkbox"/> Multiple CMPs in another category	<input type="checkbox"/> Time of disturbance/planting, _____ ac	<input type="checkbox"/> Non-tillage/chemical tillage, _____ ac	<input type="checkbox"/> Wind barrier, _____ ac	<input type="checkbox"/> Organic practices, _____ ac	<input type="checkbox"/> Other (special approval reqd), _____ ac				
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<input type="checkbox"/> Non-tillage/chemical tillage, _____ ac	<input type="checkbox"/> Wind barrier, _____ ac														
<input type="checkbox"/> Organic practices, _____ ac	<input type="checkbox"/> Other (special approval reqd), _____ ac														



Great Basin Unified Air Pollution Control District

LIST OF CONSERVATION MANAGEMENT PRACTICES FOR AGRICULTURAL OPERATIONS

**Including Best Available Control Measures (BACM) and
Best Available Retrofit Control Technology (BARCT)
for Agricultural Practices**

Adapted from the
California Air Pollution Control Officer's Association (CAPCOA)
Agricultural Sources Clearinghouse of Air Pollution Reduction Methods
<http://www.capcoa.org/ag.php>

December 19, 2008

**Great Basin Unified Air Pollution Control District
BACM/BARCT List of Conservation Management Practices for Agricultural
Operations**

The CMP operation types include:

- A. Crop Farming (field/row crops and orchard/vineyard crops)
- B. Confined Animal Facilities (dairy, feedlot and poultry operations)
- C. Other Agricultural Activities

The CMP categories for each CMP operation type are:

A. Crop Farming

- 1. Field/row crops
 - a. Disking, tilling and land preparation
 - b. Harvesting
- 2. Orchard/vineyard crops
 - a. Disking, tilling and land preparation
 - b. Harvesting
- 3. Land application of fertilizers and pesticides

B. Confined Animal Facilities

- 1. Feed preparation, storage and handling
- 2. Manure storage and handling
- 3. Waste management practices

C. Other Agricultural Activities

- 1. Storage piles (piles of bulk materials such as dirt, aggregate, etc, excluding manure)
- 2. Unpaved roads
- 3. Unpaved traffic areas (parking lots, staging areas, etc.)
- 4. Open burning
- 5. Internal combustion engines

A. CROP FARMING

I. FIELD/ROW CROPS

a. DISKING/TILLING/LAND PREPARATION

Alternate Till:	Tilling alternate rows for weed management allows for approximately a 50% reduction in field activity.
Bed/Row Size or Spacing:	Spacing adjustments reduce the number of passes and soil disturbances by increasing plant density/canopy through reduction of row width.
Cessation of Activities:	No disking, tilling or other land preparation activities shall take place when active wind erosion is observed on a field and visible particulate matter leaves the property from which it originates.
Chemigation/Fertigation	Application of chemicals through an irrigation system reduces the need to travel in-field for application purposes.
Combined Operations:	Combine equipment to perform several operations during one pass, thereby reducing the number of passes necessary to cultivate the land.
Conservation Irrigation:	Conserving water through drip, sprinkler, underground lines, conserves water and reduces weed population and need for tillage.
Conservation Tillage (no tillage or minimum tillage):	Reduces the number of passes and the amount of soil disturbance. Improves soil because it retains plant residue and increases organic matter.
Cover Crops:	Use seeding or natural vegetation/regrowth of plants to cover soil surface and reduce wind erosion of soil.
Cross Wind Stripcropping:	Establish crops in strips across the prevailing wind direction and arranged so that strips susceptible to wind erosion are alternated with strips resistant to wind erosion.
Equipment Changes/Technological Improvements:	Use larger equipment, modify land planing and land leveling, matching the equipment to row spacing to reduce the number of passes.
Fallowing Land:	Temporary or permanent removal from production eliminates entire operation/passes or reduces soil disturbing activities.
Mulching/Crop Residue Management:	Applying or leaving plant residue or other material on the soil surface. Reduces wind entrainment of dust, and reduces weed competition.

A.1.a. CROP FARMING: FIELD/ROW CROPS: DISKING/TILLING/LAND PREPARATION (CONTINUED)

Night Farming:	Operate at night when moisture levels are higher and winds tend to be lighter, thereby reducing dust emissions.
Non-tillage/Chemical Tillage:	Use flail mower, low volume sprayers, or heat delivery systems (as harvest pre-conditioner). Reduces or eliminates number of soil tillage passes.
Organic Practices:	Use biological control methods or non-chemical control methods. Reduces chemical use and number of application passes.
Ridge Roughness:	Establish ridges by normal tillage and planting equipment as close as perpendicular as possible to the direction of erosive winds.
Soil Amendments:	Apply organic or chemical materials to soil (e.g., gypsum, lime, polyacrylamide) to improve soil, increase moisture retention.
Soil Moisture Management:	Ensure adequate soil moisture levels at the time of tillage or soil maintenance to reduce dust emissions.
Surface Roughening:	In wind-prone areas, conduct surface roughening by bedding, rough disking, or tillage that leaves the surface covered with stable clods.
Time of Disturbance/Planting:	Time planting to coincide with the time of year when PM concentrations are less.
Transplanting:	Planting plants already in the growth state reduces number of passes and soil disturbances compared to seeding operations.
Wind Barriers:	Plant or maintain perennial or annual plants interspersed throughout a crop field as close to perpendicular as practical to the direction of prevailing winds.

A. CROP FARMING

I. FIELD/ROW CROPS

b. HARVESTING

Baling/Large Bales:	Use balers to harvest crop, reducing PM10 emissions from crops traditionally harvested by chopping, truck passes, and residue burning.
Combined Operations:	Combine equipment to perform several operations during one pass.
Equipment Changes/Technological Improvements:	Modify equipment such as combines or cotton pickers, and harvesting equipment; increase equipment size to reduce number of passes; other technological improvements.
Fallowing Land:	Temporary or permanent removal from production (e.g., vineyard pull-out, wildlife wetlands conservation program) eliminates entire operation or substantially reduces activities.
Green Chop:	Harvest a forage crop without allowing it to dry in the field; reduces multiple equipment passes.
Hand Harvesting:	Harvest crop by hand thereby reducing soil disturbances by equipment.
Night Harvesting:	Implement cultural practices at night or when the humidity is high.
Pre-Harvest Soil Preparation:	Apply a light amount of water or other stabilizing material to soil prior to harvest.
Shed Packing:	Pack commodities in a covered or closed area.
Shuttle System/Larger Carrier:	Haul multiple or larger trailers/bins per trip thereby reducing the number of trips.

A. CROP FARMING

2. ORCHARD/VINEYARD CROPS

a. DISKING/TILLING/LAND PREPARATION

Bed/Row Size or Spacing:	Spacing adjustments reduce the number of passes and soil disturbances by increasing plant density/canopy through reduction of row width.
Cessation of Activities:	No disking, tilling or other land preparation activities shall take place when active wind erosion is observed on a field and visible particulate matter leaves the property from which it originates.
Cover Crops:	Use seeding or natural vegetation/regrowth of plants to cover soil surface and reduce wind erosion of soil.
Equipment Changes/Technological Improvements:	Use larger equipment, modify land planing and land leveling, matching the equipment to row spacing to reduce the number of passes.
Fallowing Land:	Temporary or permanent removal from production eliminates entire operation/passes or reduces soil disturbing activities.
Floor Management:	Smoothing and flattening the soil surface after nut harvest to remove post-harvest residue. Reduces number of passes through elimination of disking.
Grinding/ Chipping/ Shredding:	Grind/chip/shred orchard prunings and incorporate into the soil. Reduces PM from burning crop residues.
Mulching/Crop Residue Management:	Applying or leaving plant residue or other material on the soil surface. Reduces wind entrainment of dust, and reduces weed competition.
Night Farming:	Operate at night when moisture levels are higher and winds tend to be lighter, thereby reducing dust emissions.
Organic Practices:	Use biological control methods or non-chemical control methods. Reduces chemical use and number of application passes.

B.2.a. CROP FARMING: ORCHARD/VINEYARD CROPS: DISKING/TILLING/LAND PREPARATION (CONTINUED)

Reduced Pruning:	Reduce frequency of pruning to one time a year, or once every two years.
Ridge Roughness:	Establish ridges by normal tillage and planting equipment as close as perpendicular as possible to the direction of erosive winds.
Soil Amendments:	Apply organic or chemical materials to soil (e.g., gypsum, lime, polyacrylamide) to improve soil, increase moisture retention.
Soil Moisture Monitoring:	Ensure adequate soil moisture levels at the time of tillage or soil maintenance to reduce dust emissions.
Surface Roughening:	In wind-prone areas, conduct surface roughening by bedding, rough disking, or tillage that leaves the surface covered with stable clods.
Time of Planting:	Time planting to coincide with the time of year when PM concentrations are less.

A. CROP FARMING

2. ORCHARD/VINEYARD CROPS

b. Harvesting

Combined Operations:	Combine equipment to perform several operations during one pass.
Equipment Changes/Technological Improvements:	Modify equipment such as combines or cotton pickers, and harvesting equipment; increase equipment size to reduce number of passes; other technological improvements.
Fallowing Land:	Temporary or permanent removal from production (e.g., vineyard pull-out, wildlife wetlands conservation program) eliminates entire operation or substantially reduces activities.
Floor Management:	Smoothing and flattening the soil surface after nut harvest to remove post-harvest residue. Reduces number of passes through elimination of disking.
Hand Harvesting:	Harvest crop by hand thereby reducing soil disturbances by equipment.
Night Harvesting:	Implement cultural practices at night or when the humidity is high.
Pre-Harvest Soil Preparation:	Apply a light amount of water or other stabilizing material to soil prior to harvest.
Shed Packing:	Pack commodities in a covered or closed area.
Shuttle System/Larger Carrier:	Haul multiple or larger trailers/bins per trip thereby reducing the number of trips.

A. CROP FARMING

3. LAND APPLICATION OF FERTILIZERS/PEST CONTROL

Chemigation/ Fertigation:	Application of chemicals through the irrigation system reduces the need to travel in the field for application purposes.
Integrated Pest Management:	A decision process that uses a combination of techniques including organic, conventional, and biological farming practices to suppress pest problems and thereby reducing the number of passes for spraying.
Non-tillage/Chemical Tillage:	Use flail mower, low volume sprayers, or heat delivery systems (as harvest pre-conditioner). Reduces or eliminates number of soil tillage passes.
Organic Practices:	Use biological control methods or non-chemical control methods. Reduces chemical use and number of application passes.
Soil Amendments:	Apply organic or chemical materials to soil (e.g., gypsum, lime, polyacrylamide) to improve soil, increase moisture retention.

B. CONFINED ANIMAL FACILITIES

1. FEED PREPARATION, STORAGE AND HANDLING

Boot or Sock:	Load feed into storage bins using a sock or boot in the feed delivery truck auger.
Feeding Near Dusk:	Reduces dust generating behaviors of animals.
Restrict Hay Grinding Activities:	Avoid hay grinding activities during the windiest times of the day, which are typically in the afternoons.
Wet Feed During Mixing:	Increase moisture feed levels to reduce excessive dust.
Wet Material in Feedwagon:	Avoid placing only dry material in feedwagons; rather mix wet feed with dry feed material.

2. MANURE STORAGE AND HANDLING

Fibrous Layer in Dusty Areas:	Add fibrous material to working areas.
Freestall Housing:	Use freestall housing with cement floor to allow for manure cleaning with a flushing system.
Frequent Scraping and Manure Removal:	Remove manure from open corrals. Conditions of removal, and frequency of removal may be specified.
Pull-Type Manure Harvesting Equipment:	Use a pull-type piece of equipment to leave an even corral surface.
Removing Excess Water:	Eliminate water leaks from troughs and trough piping, and comply with corral drainage standards.
Shaded Areas in Open Corrals:	Make available shaded areas in open corrals, which increases animal density and reduces animal movement.
Sprinkling of Open Corrals:	Ensure adequate corral surface moisture levels to prevent visible dust emissions or meet specified moisture conditions.
Time-of-Day Scraping/Harrowing:	Scrape/harrow in morning hours when moisture is typically higher.

B. CONFINED ANIMAL FACILITIES

3. WASTE MANAGEMENT PRACTICES

Frequent Scraping and/or Manure Removal:	Remove manure from open corrals. Conditions of removal and frequency of removal may be specified.
Manure Disposal:	Dispose of manure in accordance with prescribed procedures. This could include approved manure processing operations or other lands approved for the spreading of manure.

C. OTHER AGRICULTURAL ACTIVITIES

1. STORAGE PILES (PILES OF BULK MATERIALS SUCH AS DIRT, AGGREGATE, ETC., EXCLUDING MANURE)

Chemical Stabilization:	Apply an approved dust suppressant at a sufficient quantity and frequency to prevent windblown dust.
Covering:	Install tarps, plastic or other material as a temporary covering. (Coverings should be anchored to prevent wind from removing the cover).
Watering:	Apply water at a sufficient quantity and frequency to maintain moist surface under windy conditions.
Wind Sheltering:	Enclose material in a three-sided barrier equal to or greater in height than the height of the material.

2. UNPAVED ROADS

Access Restriction:	Restrict public access to unpaved roads using signage or physical access restrictions (e.g., access barrier) and/or limit total trips to less than 10 per day.
Paving:	Pave unpaved roads. (Gives maximum PM-10 emissions reductions as long as paved surface is kept clean.)
Road Treatments:	Apply water, washed gravel, mulch, organic materials, polymers, dust suppressants, road oil or wood chips to the unpaved road surface area.
Speed Limits:	Control speed limits to 15 mph on unpaved roads through worker behavior modification, signage, or any other necessary means.
Surface Modification:	Cover unpaved road surfaces with a low silt-content material, such as gravel or recycled road base.
Track-Out Area Improvements:	Minimize dirt material tracked out onto public roadways by paving or chemically stabilizing, or applying gravel to the unpaved road surface for a distance of at least 100 feet from the public roadway.
Track-Out Prevention:	Check or clean the underside of all haul trucks before leaving the parking or staging area.
Vegetation:	Establish natural vegetation on unpaved surfaces no longer being used.

C. OTHER AGRICULTURAL ACTIVITIES (continued)

3. UNPAVED TRAFFIC AREAS (PARKING LOTS, STAGING AREAS, ETC.)

Access Restriction:	Restrict public access to unpaved traffic areas using signage or physical access restrictions (e.g., access barrier).
Paving:	Pave unpaved traffic areas. (Gives maximum PM-10 emissions reductions as long as paved surface is kept clean.)
Road Treatments:	Apply water, mulch, organic materials, polymers, dust suppressants, or wood chips to the unpaved traffic surface area.
Speed Limits:	Control speed limits to 15 mph on unpaved areas through worker behavior modification, signage, or any other necessary means.
Surface Modification:	Cover unpaved surfaces with a low silt-content material, such as gravel or recycled road base.
Track-Out Prevention:	Check or clean the underside of all haul trucks before leaving the parking or staging area.
Vegetation:	Establish natural vegetation on unpaved surfaces no longer being used.
Wind Barrier:	Plant trees or establish other barriers on the typically upwind side of the traffic area to minimize windblown dust from the unpaved surface.

4. OPEN BURNING

Eliminate Burning:	Switch to a crop/system that would not require waste burning. Also, use practices such as shredding and chipping instead of burning.
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5. INTERNAL COMBUSTION ENGINES

Note: CAPCOA is still in the process of developing appropriate BARCT/RACM for Internal Combustion Engines (ICE). Information will be provided when it becomes available.