

**SACRAMENTO VALLEY SMOKE MANAGEMENT PROGRAM
REPORT TO BASINWIDE CONTROL COUNCIL
December 5, 2008**

The 2007 fall burn program began on September 15 and concluded on November 30. Daily information on particulate air quality (PM_{2.5}), both midnight to 6:00 a.m. and 24-hour county and basinwide averages, came from the network of Valley air monitoring sites. Weather information included hourly meteorological readings from the AMOS stations and discussions on Valley weather conditions such as forecast surface and transport winds and atmospheric stability. The local air districts provided daily ready to burn acreage numbers and burning by zone and residue type as well as any smoke complaints received. Fife Environmental, the CCO, collected the daily data and produced an acreage distribution table with program comments and county-by-county summary burning information.

The following table shows the final Smoke Management Program information for the fall season:

CCO COMMENTS: DATE: 01-Dec 09:07 AM
 Rainfall: 0.00 TODAY CHANGE TREND
 0-6AM avg PM2.5 21.6 3.2 increased
 500 MB height 583 -4 decreased
 6AM inversion degF 18.0 -7.0 decreased
 ARB wind speed mph 4.0 -1.0 decreased

High particulate air pollution levels with several counties reduced.
 FOG everywhere with high humidity, light wind and stable atmosphere.
 Again this is a POOR burn day. Best to burn orchard waste today.
 LAST DAY OF FALL BURN PROGRAM - call ARB tomorrow for burn decision.

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BASIN DISTRIBUTION Date: Monday 12/01 Dec-08

	Today's Distribution	00-06AM		Ventilate Ready		Yesterday's Distribution
		PM2.5	Ratings	Acres	Acres	
Butte	80	32.0	1.67	28432.0	200	
Colusa	200	15.0	2.00	38750.0	200	
Glenn	200	24.0	2.00	21967.0	200	
Placer	200	16.0	1.00	200.0	200	
Sacramento	200	20.0	1.33	200.0	0	
Sutter	160	27.0	1.50	9908.0	200	
Yolo-Solano	200	13.0	1.50	5091.0	200	
Yuba	160	27.0	1.67	793.0	200	
Shasta	120	30.0	2.50	200.0	200	
Tehama	120	30.0	2.00	200.0	200	
BASIN	1640	23.4	1.72	105741.0	1800	

Historical Synopsis Ventilation ratings 1 (poor) to 5 (best)

	Yesterday			Season-to-Date			
	Complaints		Acres Burned	Complaints		Total	Acres Burned
	ARB	APCD		ARB	APCD		
Butte	0	0	53.0	0	19	19	9876.5
Colusa	0	0	0.0	0	0	0	9142.5
Glenn	0	0	7.0	0	0	0	8473.0
Placer	0	0	0.0	0	5	5	739.0
Sacramento	0	0	0.0	0	1	1	1008.4
Sutter	0	0	13.0	0	13	13	7126.0
Yolo-Solano	0	0	26.0	0	2	2	2944.2
Yuba	0	0	2.0	0	4	4	2232.0
Shasta	0	0	0.0	0	23	23	1190.0
Tehama	0	0	140.0	0	0	0	1943.0
BASIN	0	0	241.0	0	67	67	44674.6

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BURNING AROUND THE SVAB TODAY: Prescribed Burn/Wildfire: no
 Bay Area: no SJValley: no Mountain Counties: yes

Fall Smoke Management Program conditions:

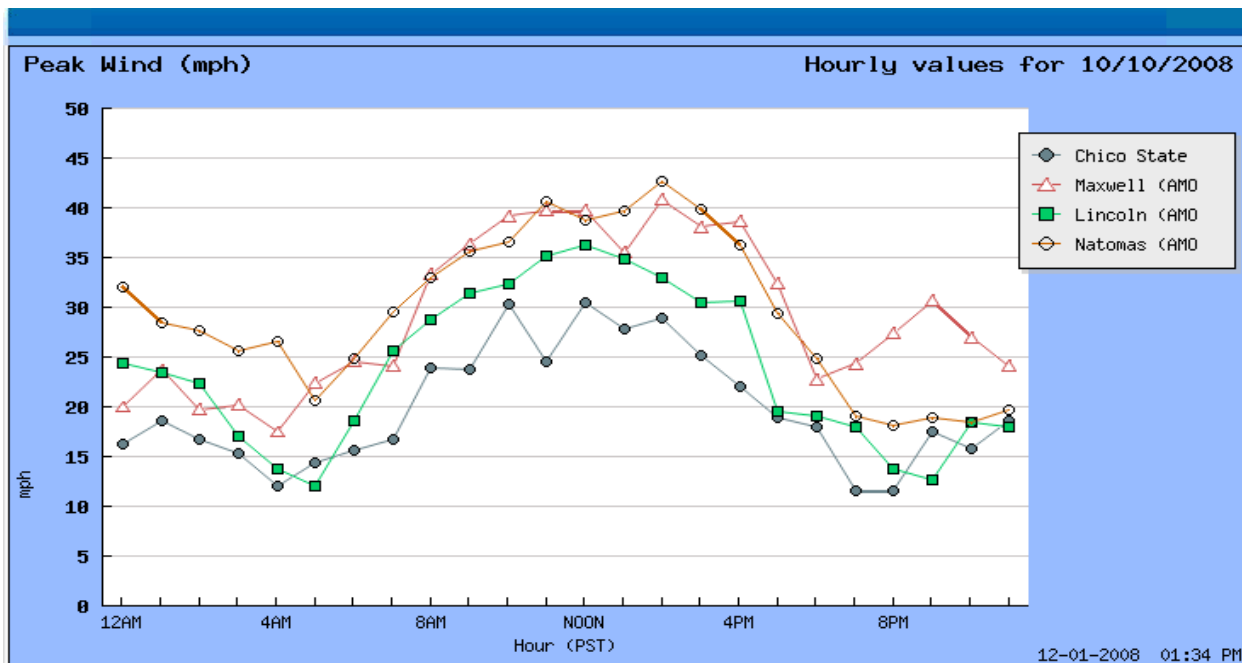
The 2008 fall burn season was characterized by a dry September, moderate rainfall early in October then significant rainfall the first day of November. Winds were light in September but much stronger through the first two weeks of October. Three days with gusty north winds were declared no burn days. Minimal burning was conducted due to a late rice harvest, wet fields and strong winds. Air quality conditions in the Valley were good until the last few days in October (a separate report was prepared describing October 30). Colder temperatures, poor meteorological dispersion conditions and wood heating emissions caused higher PM_{2.5} particulate levels in November. Many counties experienced reduced burn acreage allocations due to elevated particulate readings during this month.

Types of Days: There were five no burn days declared by the Air Resources Board. The October 9, 10 & 11 and November 14 no burn decisions were because of north winds greater than 20 miles per hour. The November 24 decision was because of a strong inversion of 21 degrees and poor air quality at many air monitoring sites. The midnight to 6:00 a.m. average Valley PM_{2.5} particulate level was 21.2 micrograms per cubic meter of air however three counties were at 33 to 38 micrograms. These conditions combined dictated a no burn day.

Restricted field burning days (limiting field residue burning to 50 acres per county) are called when north winds of 15 mph or greater occur. High morning stability (inversions) equal to or exceeding 25 degrees Fahrenheit also trigger restricted field days. Fifteen restricted field day decisions were made. Seven days were restricted due to wind speed, seven to strong inversions and one for a combination of factors. No prunings only days occurred.

There was one day in September when the acreage was shifted to the northern end of the Valley. South acreage shifts occurred on two days in October. On two days, burning hours were extended. Early burning was authorized on October 3. Late burning was allowed on October 30.

Weather: The first rain event was on October 3 and continued the following day. Rainfall was recorded in the Sacramento Valley on four days in October. On October 30 and 31 a stronger storm system hit the Valley. November 1 recorded the highest average rainfall amount of 1.25 inches. On days following significant storms “wet days” are called with a reduced daily allocation of 2,000 acres. After sufficient drying, as determined by the formula in the Smoke Management Program plan, normal acreage allocations resume. Twelve wet days were called during the fall program. As is typical of the fall, several days with strong north wind were recorded. Good south winds were infrequent even prior to approaching storm fronts. See graph below of north winds on October 10.



Toward the end of November with colder temperatures and high humidity many areas developed morning fog. See the table below showing fog with calm wind and low visibilities:

NORTHERN SACRAMENTO VALLEY

CITY	SKY/WX	TMP	DP	RH	WIND	PRES	REMARKS
REDDING	PTCLDY	38	37	97	CALM	30.18S	
RED BLUFF	MOCLDY	42	40	92	NW5	30.19R	FOG
OROVILLE	PTCLDY	43	42	97	CALM	30.19S	

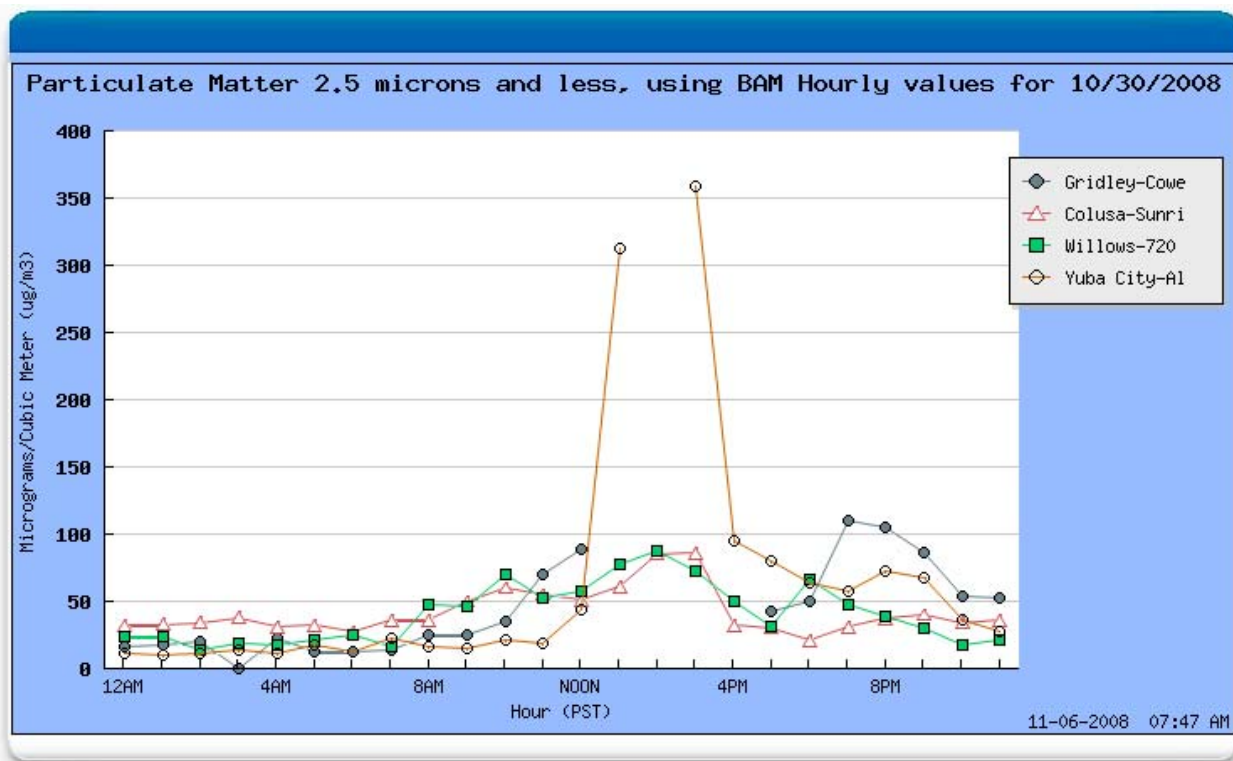
SOUTHERN SACRAMENTO VALLEY

CITY	SKY/WX	TMP	DP	RH	WIND	PRES	REMARKS
BEALE AFB	PTCLDY	39	39	100	CALM	30.18S	
MARYSVILLE	FOG	42	41	96	E3	30.18S	VSB<1/4
SAC INTL	FOG	45	45	100	NE3	30.18S	VSB 1/8
MATHER AIRPORT	CLOUDY	41	41	100	CALM	30.18R	VSB 1/8
DOWNTOWN SAC	N/A	43	MM	MM	MISG		
SAC EXEC	FOG	45	43	93	CALM	30.19R	VSB 1/8
VACAVILLE	CLEAR	43	40	89	CALM	30.17R	FOG
TRAVIS AFB	FOG	39	39	100	CALM	30.18S	VSB 1/8

Air Quality: Fall air quality levels of particulate PM_{2.5} both the 24-hour average and the midnight to 6:00 a.m. average were generally good. From September 15 through the end of October most 0-6 a.m. PM_{2.5} readings averaged in the single digits. September and October averages were 6.8 and 9.4 micrograms respectively. As expected, the trend from September through October was gradually increasing numbers. The PM_{2.5} particulate levels became seriously elevated only during the later part of November. On those November days smoke from agricultural burning and more importantly residential fireplace emissions impacted many air districts. See the table below for Sacramento Valley stations with daily particulate maximums mostly occurring during the evening and early morning hours.

Sacramento Valley Air Basin Hourly Particulate Matter 2.5 microns and less, using BAM 11/23/2008 ALL Micrograms/Cubic Meter (ug/m3)																														
				Hours 00-07							Hours 08-15							Hours 16-23												
Bas	Cnty	Site Name	Day's Max	Day's Avg	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	00	Graphit
SV	BUT	Chico-Manzanita Avenue	98	45.3	62	74	69	59	59	41	43	40	35	39	36	17	6	7	8	8	8	31	86	98	88	61	37	75		<input type="checkbox"/>
SV	BUT	Gridley-Cowee Avenue	73	33.6	29	21	25	32	20	24	19	21	22	21	40	34	23	20	18	17	23	23	73	67	55	38	71	70		<input type="checkbox"/>
SV	COL	Colusa-Sunrise Blvd	23	14	16	20	21	16	14	12	11	20	6	10	12	8	10	9	8	7	8	13	13	21	20	21	18	23		<input type="checkbox"/>
SV	GLE	Willows-720 N Colusa Street	31	11.6	17	15	10	5	6	11	19	10	8	3	4	6	3	3	5	11	14	25	31	27	12	20	9	4		<input type="checkbox"/>
SV	FLA	Roseville-N Sunrise Blvd	65	44.2	60	53	49	42	43	42	28	26	29	25	41	48	43	40	35	38	38	47	49	60	50	60	65	49		<input type="checkbox"/>
SV	SAC	Elk Grove-Bruceville Road	55	37.3	24	20	18	12	22	27	35	31	34	30	35	39	49	51	51	54	51	55	52	55	49	39	33	29		<input type="checkbox"/>
SV	SAC	Folsom-Natoma Street	54	44.9	46	50	49	54	50	53	54	52	43	33	47	53	48	39	31	32	41	42	39	46	39	49	46	42		<input type="checkbox"/>
SV	SAC	Sacramento-Del Paso Manor	84	60.7	55	53	54	60	68	74	66	55	61	60	58	50	58	63	49	54	57	60	48	63	62	77	84	67		<input type="checkbox"/>
SV	SAC	Sacramento-T Street	53	39.3	19	25	20	29	23	26	38	32	35	45	44	41	46	52	44	48	43	50	52	53	50	49	40	40		<input type="checkbox"/>
SV	SHA	Anderson-North Street	43.4	25.2	36.8	43.4	22.3	31.5	26	16.9	22.8	32.4	38	28.8	23.9	17.1	38.7	21.3	6.7	7.1	8.6	9.8			23.3	31	28.5	38.5		<input type="checkbox"/>
SV	SOL	Vacaville-Ulatis Drive	47	20.7	20	15	25	23	20	18	15	12	9	7	7	17	1	1	6	11	21	28	37	40	47	35	43	39		<input type="checkbox"/>
SV	SUT	Yuba City-Almond Street	65	33.8	45	32	32	28	20	19	20	20	18	23	30	24	27	34	30	26	35	40	39	65	60	46	48	51		<input type="checkbox"/>
SV	YOL	Davis-UCD Campus	35	19.8	20	19	17	18	12	13	16	13	18	20	15	17	14	20	24	27	35	32	31	29	28	16	11	10		<input type="checkbox"/>
SV	YOL	Woodland-Gibson Road	70	24.2	18	9	11	18	14	13	8	8	9	11	19	12	13	23	27	31	33	35	36	70	65	39	31	27		<input type="checkbox"/>

There were also afternoon hours with high PM_{2.5} values that are solely attributable to agricultural burning. These spikes in PM_{2.5} levels are due to burning placed in incorrect locations relative to wind direction, smoke transport, over concentration of burning in an area or unfavorable vertical smoke dispersal conditions. See the following graph for October 30 (overcast sky, north wind and moderate inversion).



The graph above compares PM_{2.5} data for four Sacramento Valley air monitoring sites with the federal EPA 24-hour ambient air quality standard (35 micrograms per cubic meter of air).

The maximum average, basin wide midnight to 6:00 a.m. PM_{2.5} value was 30.7 on October 31. Only six other days exceeded 20 micrograms all during the last ten days of November. The average, basin wide midnight to 6:00 a.m. PM_{2.5} value was 11.2 micrograms per cubic meter for the entire fall season.

In the Smoke Management Program Plan the provisions below restrict acreage allocations to individual counties based upon their midnight to 6:00 a.m. particulate readings.

When any district's midnight to 6:00 a.m. average PM_{2.5} is ≥ 27 micrograms per cubic meter (ug/m³) increasing concentrations will result in increasing reductions in allocated acres (e.g., 27-28 is 20%, 29-30 is 40%, 31-32 is 60% and 33-34 is 80%). When any district's midnight to 6:00 a.m. average PM_{2.5} is ≥ 35 ug/m³ a no burn day will be declared in that district.

The first air quality reduction occurred on October 15 for two counties. There were 17 days with air quality reductions to one or more counties in the Valley. On November 23 multiple counties received reduced allocations because of high morning particulate levels and two counties were declared no burn.

The reduction factor column in the table below shows the number (fraction) from zero to one that is multiplied with the allocation acres to produce the final allocation. Counties with a zero reduction factor get zero acres and those with a fraction get a correspondingly reduced acreage allocation. See the ARB table for November 23.

The right side of the table shows the average midnight to 6:00 a.m. (0-6 PST) PM_{2.5} concentration (Conc) for the counties listed on the left side and also shows the monitoring stations (Stn) from which the data are collected. For example the Butte County stations are Chico (CIC) and Gridley (GRD).

District	Yesterday's	Yesterday's	Reduction	Yesterday's	Hour of	Avg PM _{2.5}	
	24-Hr Avg	PM _{2.5}		PM _{2.5}	Yesterday's	(0-6 PST)	Conc
	PM _{2.5}	(0-6 PST)	Factor		MAX		
Colusa	19	12	1	34	17	17.0	COL
Butte	29	27	0	115	21	43.0	CIC-GRD
Glenn	13	10	1	31	18	11.0	WLW
Placer	33	26	0	72	23	48.0	ROS
Sacramento	29	27	1	50	11	24.0	SAC
Sutter	28	24	0.6	40	19	29.0	YUB
Yolo/Solano	22	12	1	37	17	16.0	DAV-WOO
Yuba	28	24	0.6	40	19	29.0	YUB
Tehama	25	21	0.6	49	21	29.0	AND
Shasta	25	21	0.6	49	21	29.0	AND

Burning data: The total ARB theoretical acreage allocation for burning from September 15th through November 30th was approximately 397,000 acres. The initial acreage allocation was 143,969 acres. The average daily allocation was 1,870 acres. Total acres burned as of November 30th was 44,674.6 with 578 acres the average daily burning. Air districts requested burn acreage increases or updates on 13 days for an additional 2,800 acres. The tables below show burning by county zone and crop residue for the entire fall burn season.

ZONES CCO - ZONE/CROP SUMMARY FILE 30-Nov

ZONES - SEASON TO DATE

COUNTY	1	2	3	4	5	6	TOTAL
Butte	2455.0	3138.5	4283.0				9876.5
Colusa	3478.8	2097.2	595.0	1808.2	1163.3		9142.5
Glenn	1926.0	2332.0	1803.0	2412.0			8473.0
Placer	232.0	462.0	45.0				739.0
Sacramento	19.0	115.4	874.1				1008.4
Shasta	10.0	1180.0					1190.0
Sutter	774.0	2421.0	289.0	1786.0	445.0	1411.0	7126.0
Tehama	1943.0						1943.0
Yolo-Solano	294.0	402.8	1404.7	476.4	71.7	294.8	2944.2
Yuba	1594.0	560.0	78.0				2232.0
							44674.6

CROPS - SEASON TO DATE

COUNTY	Rice	Other Field	Orchard Waste	Prescribed	Misc.	TOTAL
Butte	6568.0	467.0	2749.3	42.5	49.8	9876.5
Colusa	8876.3	4.0	25.2	170.0	67.0	9142.5
Glenn	5228.0	1871.0	928.0	383.0	63.0	8473.0
Placer	739.0	0.0	0.0	0.0	0.0	739.0
Sacramento	0.0	831.0	137.1	0.0	40.3	1008.4
Shasta	0.0	40.0	0.0	1025.0	125.0	1190.0
Sutter	4707.0	1113.0	879.0	0.0	427.0	7126.0
Tehama	0.0	23.0	1587.0	310.0	23.0	1943.0
Yolo-Solano	272.5	149.0	1997.5	14.0	511.3	2944.2
Yuba	1324.0	186.0	190.0	466.0	66.0	2232.0
						44674.6
	27714.8	4684.0	8493.0	2410.5	1372.3	44674.6

During the fall of 2008 the agricultural burning in the Valley was divided into the following percentages.

Crop Residue	Rice	Other Field	Orchard	Prescribed	Miscellaneous	Total %
	62.04%	10.48%	19.01%	5.40%	3.07%	100.00%

Program operations proceeded smoothly with only minor problems when ARB computers were shutdown or PM_{2.5} values were missing for certain counties. The Western Weather Group operations worked well in providing meteorological services and hosting web files. Overall, air district ready files were provided promptly and without significant problems.

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Sacramento Valley Air Basin SMP Coordinator