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CONTRACT WITH NATIONAL ADVERTISING COMPANY FOR BILLBOARDS ON HIGHWAY 12 ENTRANCE TO CITY RENEWED

COUNCIL AUTHORIZED THE RENEWING OF A CONTRACT WITH 3-M NATIONAL ADVERTISING COMPANY FOR 1982 OUTDOOR ADVERTISING AT HIGHWAY 12 (WEST ENTRANCE TO THE CITY OF LODI) AT A COST OF $250.00 PER MONTH PLUS COST OF POSTERS, WHICH CHARGES ARE TO BE MADE TO THE CITY'S BEAUTIFICATION FUND.

SAN JOAQUIN COUNTY

1982

AIR QUALITY

MANAGEMENT PLAN

Prepared by

The San Joaquin County Planning Department
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With Assistance From

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SPRING, 1982

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List of Air Quality Acronyms

Legislative Terminology

CAA - 1977 Clean Air Act Amendments
NAAQS - National Ambient Air Quality Standards (federal standards)
AQMP - 1982 Air Quality Management Plan
SIP - California State Implementation Plan
NAP - Non-attainment Area Plan
RFP - Reasonable Further Progress
TCP - Transportation Control Plan
RACT - Reasonably Available Control Technology
BACT - Best Available Control Technology
I/M - Inspection and Maintenance
NSR - New Source Review
CEQA - California Environmental Quality Act

Government Agencies

EPA - U.S. Environmental Protection Agency
ARB - California Air Resources Board
APCD - San Joaquin County Air Pollution Control District
COG - San Joaquin County Council of Governments
SMTD - Stockton Metropolitan Transit District

Technical Terminology

ROG - Reactive organic gases or reactive hydrocarbons (precursors to ozone formation)
NO_x - Nitrogen oxides (precursors to ozone formation)
CO - Carbon monoxide
ppm - part per million (concentration)
EKMA - Empirical Kinetic Modeling Approach (ozone reduction model)
VMT - Vehicle Miles Traveled

RFP Definition

The CAA requires each revised air quality plan to assume gradual improvement of air quality each year prior to the attainment deadline (December 31, 1987). These incremental gains are referred to as Reasonable Further Progress. EPA policy states that the annual emission reductions must at least equal the emission reductions that would be achieved through a linear attainment program.

SECTION I

SUMMARY

1. Introduction

San Joaquin County does not attain federal air quality standards for three criteria air contaminants, namely ozone, carbon monoxide and total suspended particulates. The 1977 Clean Air Act Amendments require areas that will not meet federal air quality standards by 1982 prepare air quality plans that show how the standards will be met as expeditiously as possible before or by December 31, 1987. The San Joaquin County Board of Supervisors has been designated lead agency to develop air quality plans for reducing ozone and carbon monoxide concentrations to federal standards, and the California Air Resources Board is to develop plans for reducing particulates.

The air quality planning effort in San Joaquin County began with development of the 1979 Air Quality Maintenance Plan which contained an attainment goal of 1982. It soon became clear that the 1979 plan could not bring about attainment of the federal standards by that time and so the current effort was begun to revise the air quality plan for meeting attainment by 1987.

With new baseline air quality and emissions inventory (inventory of emission sources) data, the San Joaquin County Planning Department, with assistance from the County Air Pollution Control District and Council of Governments, has spent nearly a year and a half revising the County air quality plan. This effort has included input from numerous citizen meetings, staffs of other local governmental agencies, as well as assistance from Caltrans, the Air Resources Board, and the U.S. Environmental Protection Agency.

2. Air Quality in San Joaquin County

Air quality for ozone and carbon monoxide has shown steady improvement since 1978. However, ozone standards are still occasionally violated each ozone season (May through October). The County is very close to meeting the carbon monoxide standard and should be able to show attainment well before 1987, assuming continued and increasing effectiveness of the County's carbon monoxide control strategy. The federal ozone standard allows for no more than one hour of exceedance of the 0.12 ppm concentration per year. Several federal carbon monoxide standards exist (for one hour and eight hour average concentrations), and San Joaquin County has occasionally violated the 8-hour standard (which requires that the 8-hour average not exceed 9.0 ppm carbon monoxide).

3. Population and Growth Projections

Population projections and business and industrial growth projections are vital to forecasting air pollution and emissions in future years. Consistency between various projections is also vital. Reasonably accurate projections are required before

charting programs to reduce emissions so that the County can meet federal clean air standards.

The preliminary draft AQMP used the population projections of local jurisdictions for the 1980-1990 period and this resulted in the following ten year growth rates: San Joaquin County - 23.0%, Stockton urban area - 16.4%, Manteca - 54.25%, Lodi - 13.6%, and Tracy - 25.5%. Population growth projections will be reviewed and updated in annual Reasonable Further Progress (RFP) reports by comparing changes in each local government's 1)building permit data and 2)January 1st population report pursuant to Section 2227, Revenue & Taxation Code. It is anticipated that the 1980's will see slower growth rates for population and industrial development. Also, a slow decline in fossil fuel use is anticipated during the decade. Industrial growth is estimated to be about one percent annually during the planning period.

4. Air Quality Analysis: Emissions Inventory and Modeling

A complete and accurate emissions inventory is the first important piece of data needed in determining the nature of the County's emission reduction program. The San Joaquin County emissions inventory was developed using 1979 data and adjusted to 1980. Table 8 shows 1980 emissions for reactive organic gases (ROG, or reactive hydrocarbons), carbon monoxide (CO)and nitrogen oxides (NO_x) in tons per day. Figure 2 also shows the 1980 emissions inventory for ROG and CO. ROG and NO_x are precursors to the formation of ozone.

Emission sources have been categorized into mobile, stationary, and area sources. Table 9 shows 1980 emissions by these three classifications:

Table 9

1980 Emissions by Classification
Tons/Day

Classification	ROG	CO	NO_x
Mobile Sources	28.60	216.87	32.81
Stationary Sources	23.60	.05	.01
Area Sources	50.10	127.67	22.54
Total 1980	102.30	344.59	55.36

Based on the AQMP's growth projections, emission projections for 1987 are shown in the following table:

Table 10

1987 Projected Emissions by Classification
Tons/Day

Classification	ROG	CO	NO_x
Mobile Sources	16.90	171.18	25.70
Stationary Sources	23.86	.06	.01
Area Sources	50.70	130.83	23.32
Total 1980	91.46	302.07	49.03

Table 8

San Joaquin County
1980 Emissions Inventory
Tons/Day

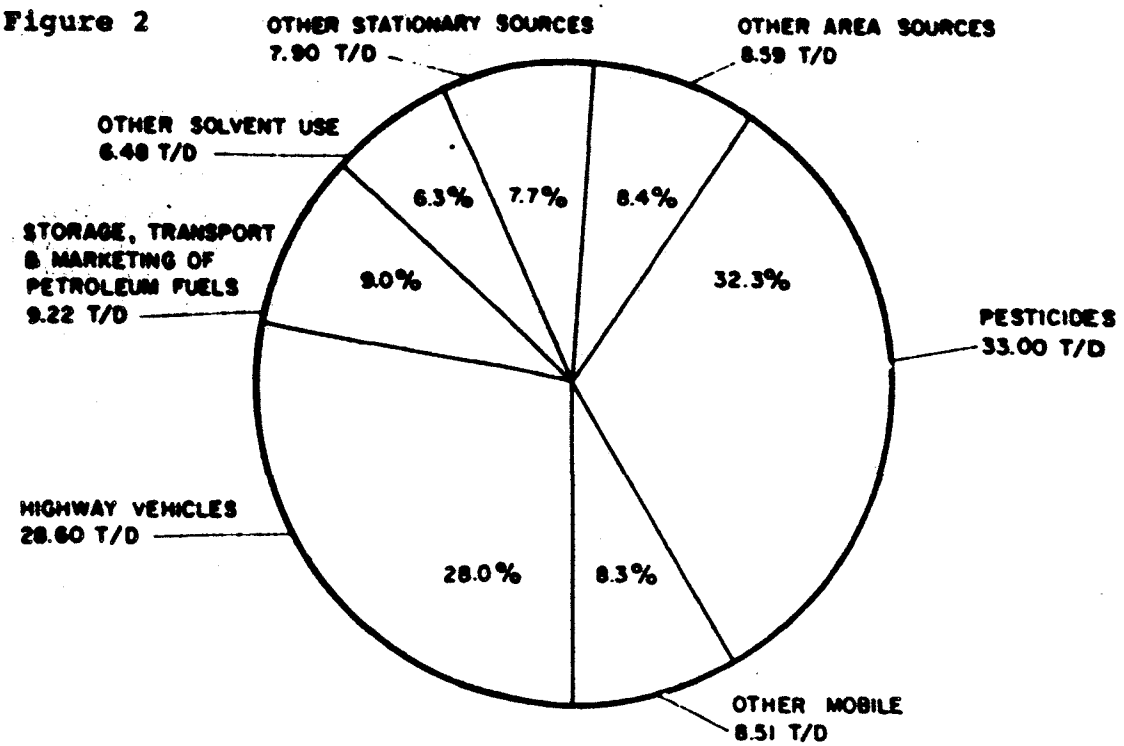
Major Category / Source Category	ROG	CO	NO_x
Storage, Transport, Marketing of Petroleum Fuels (Stationary Sources)			
Bulk Gasoline Terminals (Tank, Truck and Cars)	.70	.00	.00
Gasoline and Crude Oil Storage	.00	.00	.00
Gasoline Bulk Plants	4.11	.00	.00
Oil and Gas Production and Processing	.55	.00	.00
Service Station Loading	.13	.00	.00
Service Station Vehicle Refueling	2.92	.00	.00
Ship and Barge Transfer	.01	.00	.00
Other Storage, Transfer, and Marketing	.79	.00	.00
Total Storage, Transport, Marketing of Petroleum Fuels	9.22	.00	.00
Industrial Process (Stationary Sources)			
Fermentation Processes	.65	.00	.00
Petroleum Refining Processes	.00	.00	.00
Plastic Products Manufacture	.00	.00	.00
Misc. Chemical Manufacture	1.56	.00	.00
Polymers and Resin Manufacture	.00	.00	.00
Synthetic Rubber Manufacture	.19	.00	.00
Other Industrial Processes	.11	.05	.01
Total Industrial Processes	2.52	.05	.01
Industrial Surface Coatings (Stationary Sources)			
Fabric	.00	.00	.00
Misc. Metal Products	.08	.00	.00
Wood Furniture and Wood Products	.08	.00	.00
Marine Vessels	.00	.00	.00
Other Industrial Surface Coatings	.94	.00	.00
Total Industrial Surface Coatings	1.10	.00	.00
Non-Industrial Surface Coatings (Stationary Sources)			
Architectural Coatings	4.18	.00	.00
Auto Refinishing	.10	.00	.00
Total Non-Industrial Surface Coatings	4.28	.00	.00
Other Solvent Uses (Stationary Sources)			
Cutback Asphalt	.87	.00	.00
Degreasing	.83	.00	.00
Dry Cleaning	.41	.00	.00
Graphic Arts	.35	.00	.00
Non-Industrial Solvent Use	3.10	.00	.00
Other Industrial Solvent Use	.92	.00	.00
Total Other Solvent Uses	6.48	.00	.00

Major Category Source Category	ROG	CO	NO_x
Other Miscellaneous Sources (Area Sources)			
Forest, Ag and Other Open Burning	6.38	39.50	.00
Fuel Combustion	2.16	42.61	11.47
Pesticide Application	33.00	.00	.00
Waste Incineration	.00	.04	.01
Wildfires and Structural Fires	.05	.45	.01
Total Other Miscellaneous Sources	41.59	82.59	11.49
Highway Vehicles (Mobile Sources)			
On-Road Motor Vehicles	Modeled by ARB, Caltrans		
Total Highway Vehicles	28.60	216.87	32.81
Other Mobile Sources (Area Sources)			
Aircraft	.82	6.75	.08
Mobile Equipment	2.56	20.87	6.92
Off-Road Motor Vehicles	4.24	16.22	.84
Ships	.00	.00	.00
Trains	.89	1.23	3.16
Total Other Mobile Sources	8.51	45.07	11.00
Miscellaneous Non-ROG Sources (Area Sources)			
Miscellaneous Non-ROG Sources	.00	.01	.05
Total Miscellaneous Non-ROG Sources	.00	.01	.05
TOTAL 1980 INVENTORY	102.30	344.59	55.36

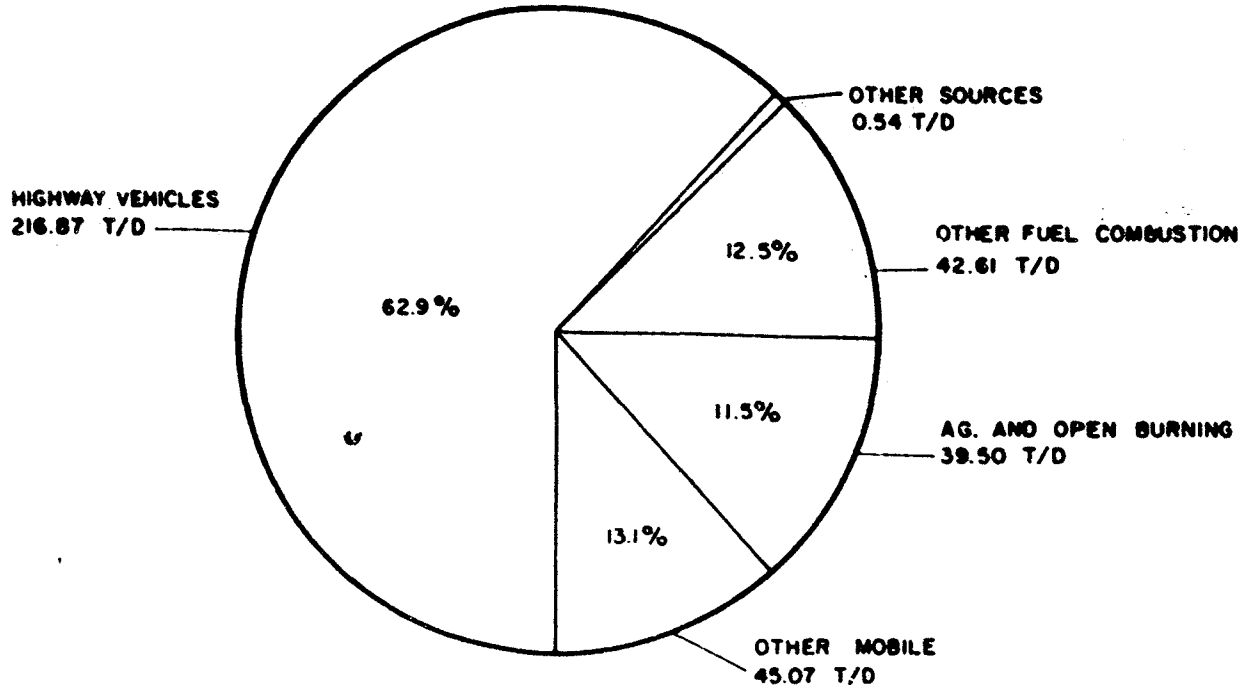
Sources: 1)ARB Emission Inventory Division.
2)1979 data adjusted to 1980 by the San Joaquin County Planning Department.

1980 EMISSIONS INVENTORY

Figure 2



REACTIVE HYDROCARBONS 102.30 T/D



CARBON MONOXIDE 344.59 T/D

The 1982 AQMP used modeling techniques to determine 1) the emission reductions effected by California's vehicle emission control program to 1987 and 2) the percentage ROG and/or nitrogen oxide reduction (EKMA model) needed to meet federal ozone standards during worst case weather conditions by 1987. The EKMA model showed that in order for San Joaquin County to meet federal ozone standards that there would have to be a 38.8% reduction in the 1980 ROG inventory. Efforts to reduce NO_x would do little to reduce ozone. A proportional rollback determined that 1980 CO emissions would have to be reduced 31.1% in order to meet federal CO standards by 1987. However, San Joaquin County may meet the CO standard before a 31.1% reduction occurs and this is reflected in the CO strategy.

5. Strategy for Attaining Federal Standards for Ozone and Carbon Monoxide

The AQMP emission reduction strategy is divided into three parts including 1) emission reductions from existing and new strategies, 2) contingency strategies that will be implemented if existing and new strategies fail to reduce emissions fast enough to meet the federal ozone standard by 1987, and 3) those strategies for which further study is needed before proposing as new or contingency strategies. Also, additional programs which involve the development of long term land use tactics are included in the plan. Table 11 shows a summary of projected emission reductions and is followed by Figure 3 which shows the projected 1987 emissions inventory. Figures 4 and 5 show respective planned emission reductions for reactive hydrocarbons (ROG) and carbon monoxide from 1980 to 1987.

6. Implementation

The plan's implementation will require certain actions by a number of governmental agencies and these responsibilities are described for each agency. Also, this section outlines the role of the San Joaquin County Planning Department, APCD, and Council of Governments in preparing annual reports (Reasonable Further Progress reports) on progress towards implementing the air quality plan. Responsibilities for ensuring conformity, showing that basic transportation needs are met, and for seeking re-designation to an attainment area are also outlined in this section.

7. Recommendations to the State and Federal Government

The air quality plan makes eight recommendations to the state and federal government involving issues that have an impact on efforts to clean the air in San Joaquin County and chief among these are that the Congress maintain a strong Clean Air Act.

Table 11

Summary of Projected Emission Reductions
Tons/Day

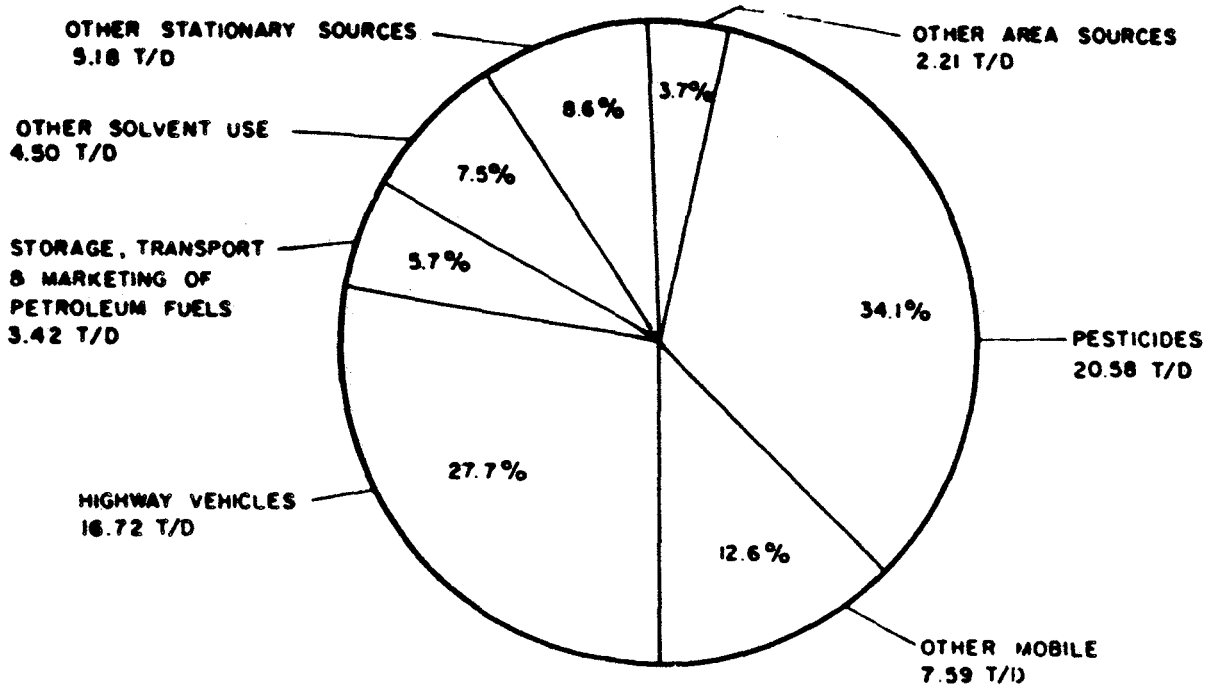
No.	Tactic Name	Hydrocarbons (ROG) 1980	1982	1985	1987	Carbon Monoxide 1980	1982	1985	1987
Mobile Sources									
M-1	Emission Controls on Motor Vehicles	-	3.34	8.36	11.70	-	13.05	32.64	45.69
M-2	Anti-Tampering	0	0.04	0.04	0.04	0	2.70	2.70	2.70
TCP-1	Improved Public Transit	0.07	0.05	0.04	0.04	0.38	0.36	0.40	0.42
TCP-2	Voluntary Ridesharing Program	0.02	0.01	0.01	0.01	0.10	0.04	0.09	0.11
TCP-3	Park and Ride Lots		insignificant			0.01	0.01	0.02	0.02
TCP-4	Bicycle Programs	0.04	0.03	0.03	0.03	0.20	0.19	0.19	0.20
TCP-5	Traffic Flow Improvements	0.01	0.04	0.05	0.06	0.06	0.26	0.32	0.39
TCP-6	Controls on Extended Vehicle Idling		insignificant			0	0	0	0.01
	Total Mobile Sources	0.14	3.51	8.53	11.88	0.75	16.61	36.36	49.55
Stationary Sources									
Rule 409.1	Architectural Coatings	0.82	0.98	1.64	1.64				
Rule 409.3	Organic Solvent Degreasing Operations	0.58	0.58	0.58	0.58				
Rule 409.4	Surface Coatings of Manufactured Metal Parts and Products	0	0.77	0.79	0.80				
Rule 409.5	Cutback Asphalt Paving Materials	0	0	0.57	0.57				
Rule 409.6	Can and Coil Coating Operations	0	0	0.08	0.08				
Rule 409.7	Graphic Arts	0	0	0.13	0.26				
Rule 409.8	Perchlorethylene Dry Cleaning Systems	0	0.37	0.37	0.37				
Rule 411.1	Transfer of Gasoline into Stationary Storage Containers	2.75	2.75	2.75	2.75				
Rule 411.2	Transfer of Gasoline into Vehicle Fuel Tanks	0	2.77	2.77	2.77				
SCM-1	Wood Furniture Manufacturing	0	0	0.04	0.06				
SCM-2	Automobile Refinishing	0	0	0.01	0.03				
SCM-3	Synthetic Rubber Manufacturing	0	0	0	0.01				
SCM-4	Alcohol Beverage Production-Wineries	0	0	0.15	0.30				
SCM-5	Roofing Tar Pots	0	0	0.02	0.05				
SCM-6	Natural Gas Production, Fugitive Emissions from Pumps, Compressors, and Pressure Relief Valves	0	0	0.14	0.28				
	Total Stationary Sources	4.15	8.22	10.04	10.55				

Summary of Projected Emission Reductions (Cont.)

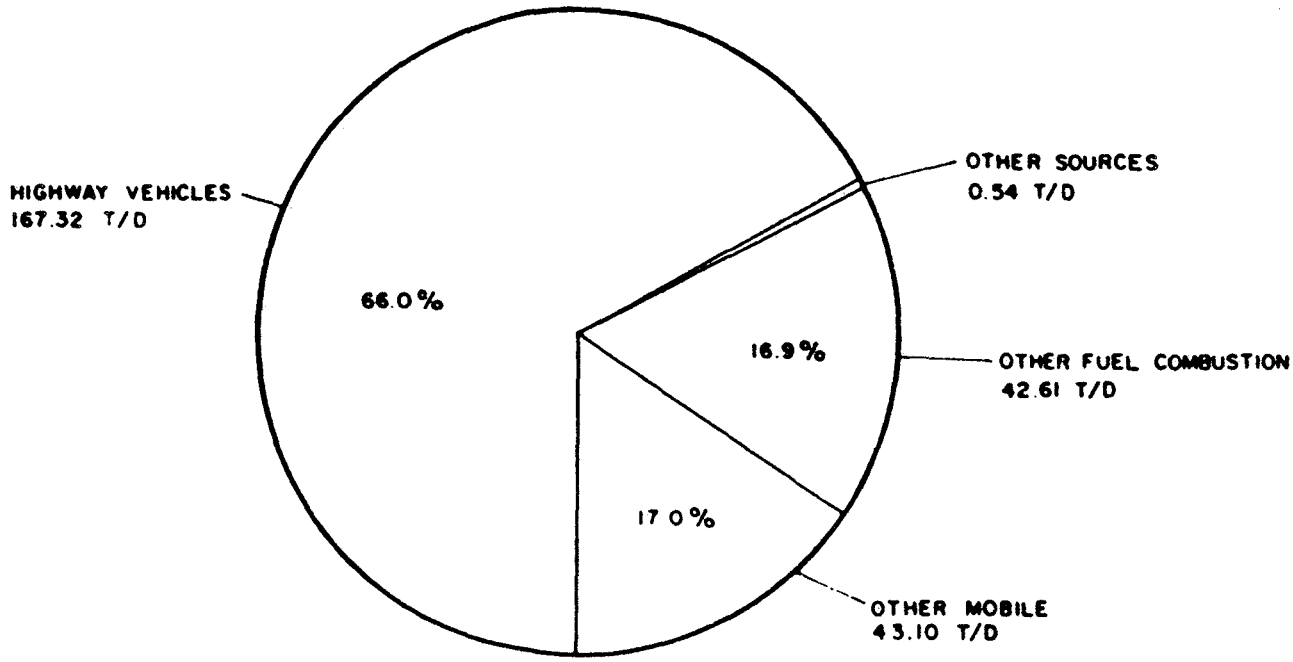
No.	Tactic Name	Hydrocarbons (ROG) 1980	1982	1985	1987	Carbon Monoxide 1980	1982	1985	1987
Area Sources									
M-3	Emission Standards for New Off-Road Motorcycles	0	0	0.18	0.95	0	0	0.31	1.63
M-4	Emission Standards for New Lawn, Garden, and Home Utility Equipment	0	0	0.09	0.25	0	0	0.82	2.35
M-5	Emission Standards for New Boats	0	0	0	0.19	0	0	0	0.80
M-6	Emission Standards for New Off-Road Heavy Duty Non-Farm Equipment	0	0	0.03	0.14	0	0	0.07	0.36
SCM-7	Pesticides	0	0	4.97	12.42				
Rule 416.1	Agricultural Burning	6.38	6.38	6.38	6.38	39.50	39.50	39.50	39.50
Total Area Sources		6.38	6.38	11.65	20.33	39.50	39.50	40.70	44.64
Total Emission Reductions		10.67	18.11	30.22	42.76	40.25	56.11	77.06	94.19

PROJECTED 1987 EMISSIONS INVENTORY
(WITH AQMP EMISSION CONTROLS)

Figure 3



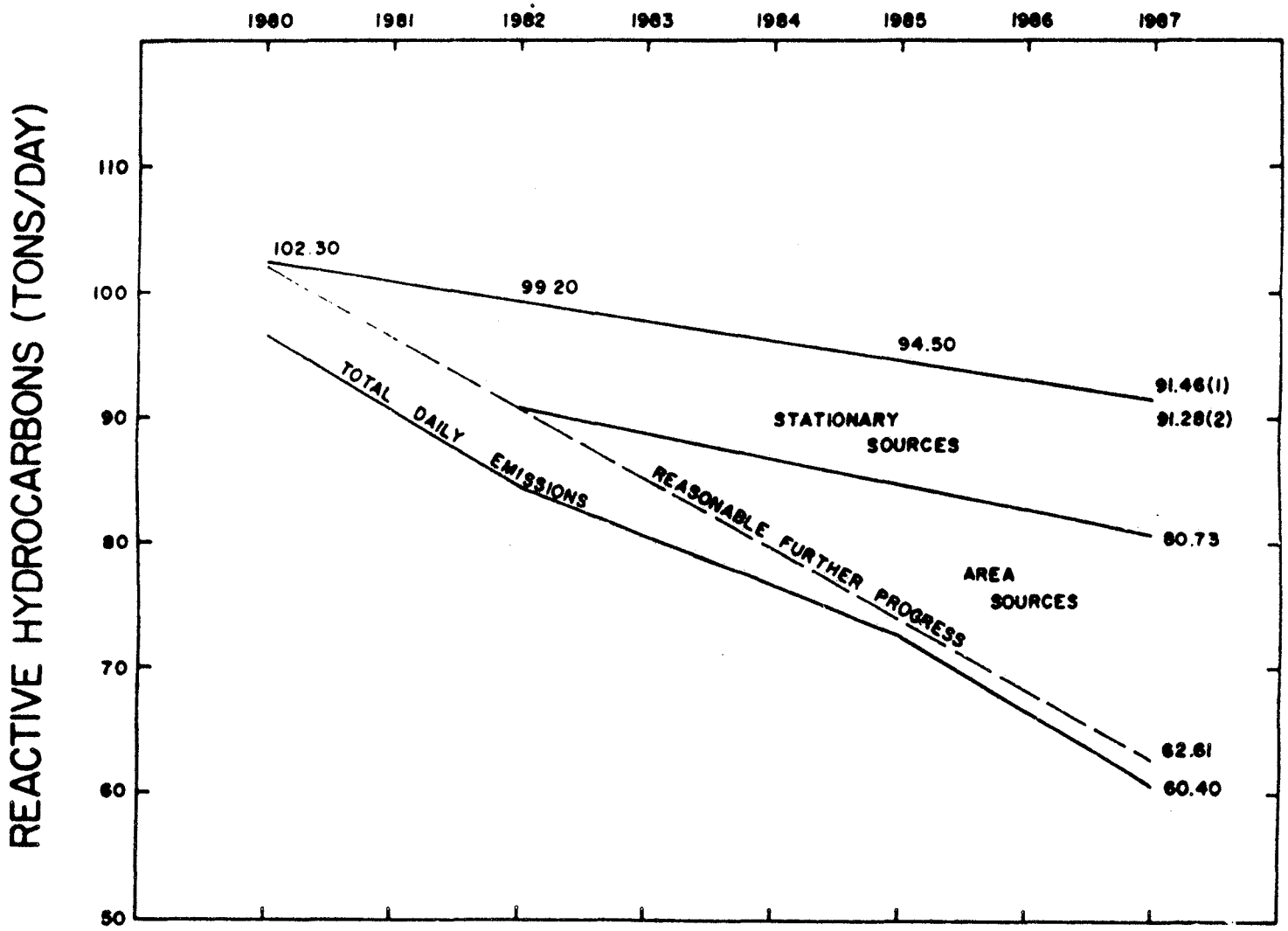
REACTIVE HYDROCARBONS 60.40 T/D



CARBON MONOXIDE 253.57 T/D

Figure 4

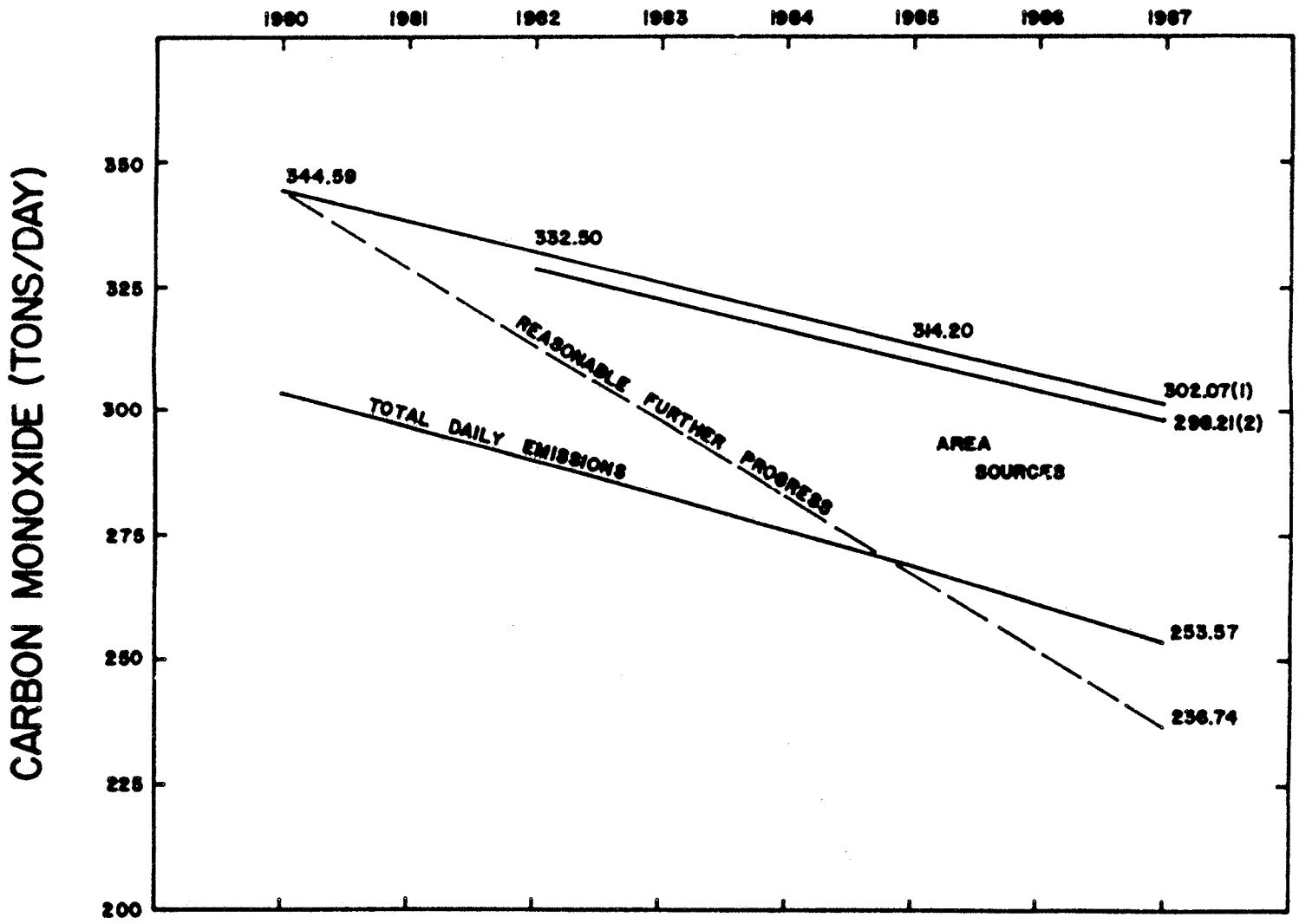
SUMMARY OF PLANNED HYDROCARBON EMISSION REDUCTIONS
1980-1987



(1) INCLUDES VEHICLE EMISSION CONTROLS
(2) TRANSPORTATION CONTROL PLAN

Figure 5

SUMMARY OF PLANNED CARBON MONOXIDE EMISSION REDUCTIONS
1980-1987



(1) INCLUDES VEHICLE EMISSION CONTROLS

(2) TRANSPORTATION CONTROL PLAN

SECTION II

INTRODUCTION

In San Joaquin County, three national ambient air quality standards (NAAQS) are being exceeded. The Clean Air Act Amendments of 1977 require areas that will not meet federal air quality standards by 1982 to prepare air quality plans that show how the standards will be met as expeditiously as possible before or by December 31, 1987. The San Joaquin County Board of Supervisors has been designated the lead planning agency for attaining two of these air pollution standards, namely those for ozone and carbon monoxide. Planning a reduction program for the third air pollutant, total suspended particulates, is a responsibility of the California Air Resources Board (ARB).

The major focus of the San Joaquin County 1982 Air Quality Management Plan (AQMP) is to show plans and specific tactics which reduce reactive organic gases (ROG). ROG, or reactive hydrocarbons, are the principal precursors in photochemical reactions which create ozone.[1] Nitrogen oxides (NO_x) are also significant ozone precursors, however, control of NO_x emissions in San Joaquin County beyond control of motor vehicle emissions would do little to reduce overall ozone levels. Strategies for attainment of the carbon monoxide (CO) standard parallel strategies to reduce ROG.

A. Clean Air Planning Legislation

The Clean Air Act Amendments of 1977 (Public Law 95-95) mandate that areas not attaining the NAAQS be required to prepare non-attainment area plans (NAP). NAAQS are set to protect the public health and welfare. The Act clearly states criteria and timetables by which a NAP must be prepared.[2] San Joaquin County was designated a non-attainment area for ozone, carbon monoxide, and particulates in late 1977 and a NAP was prepared. Since this plan did not show attainment of the NAAQS by 1982, according to the requirements of the Clean Air Act, certain actions including this 1982 NAP revision are required.[3] This planning approach recognizes that long term controls for attaining air quality standards must go beyond existing technological controls and become integrated with social, economic, and political processes.

This San Joaquin County NAP will be integrated with other local plans to become part of the California State Implementation Plan (SIP) revision, which must be submitted to the EPA by June 30, 1982.

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[1]Photochemical reactions occur when reactive hydrocarbon gases and nitrogen oxides are subjected to intense sunlight and heat. As sunlight and heat increase during the day, higher levels of ozone and related oxidants are produced. Consequently the greatest photochemical activity rate occurs during summer afternoons and the lowest rate occurs during the winter months.

[2]See Appendix A, Non-Attainment Area Planning Requirements.

[3]San Joaquin County 1979 Air Quality Maintenance Plan.

The Clean Air Act provides for sanctions in the form of withholding federal funds against areas which have not submitted approved SIPs. California's largest metropolitan areas are currently under these sanctions, principally because of failure to implement a motor vehicle Inspection/Maintenance Program This program is required by the Clean Air Act for non-attainment areas of California, including San Joaquin County, which could not show attainment of the NAAQS by the statutory deadline (1982).

B. Past Air Quality Planning Efforts

The San Joaquin County Planning Department prepared the County's first air quality plan, which was adopted by the Board of Supervisors in December, 1978. This effort (1979 NAP) contained five reports with four supplemental documents and was submitted to the ARB and EPA as part of the 1979 California SIP in order to meet clean air planning requirements. The San Joaquin County portion of the 1979 SIP included plans for attainment of federal air quality standards for ozone and carbon monoxide. The federal ozone standard was 0.08 ppm in 1979 but has since been raised by the EPA to 0.12 ppm. The carbon monoxide standard violated by San Joaquin County is the federal eight hour standard which is an average of 9.0 ppm.

The 1979 NAP developed plans for emission reductions based on a peak ozone reading of 0.16 ppm. The amount of hydrocarbon reduction needed to achieve the 0.08 ppm ozone standard was determined to be 47 percent of the reactive hydrocarbon inventory. The inventory was based on 1975 data and totaled 64.6 tons/day of reactive hydrocarbons (ROG). Mobile sources accounted for 60.4 percent, stationary sources 32.5 percent, and other sources 7.1 percent of the 1975 ROG inventory.

The 1979 NAP proposed 15 tactics for control of stationary sources and 26 emission reduction tactics for mobile sources. The rate and success of implementation of the air pollution control tactics proposed in the NAP were varied and are reported in annual progress reports.

The need for a California SIP revision was clear in 1979 and consequently, advanced preparation of this air quality plan began late 1979.

C. Planning for the 1982 AQMP

This AQMP has been prepared by the San Joaquin County Planning Department with technical assistance from the Air Pollution Control District (stationary and area emission sources) and the Council of Governments (on-road vehicle sources). The ARB provided technical assistance regarding air quality modeling, emission inventory review, new suggested control measures, and other general assistance. The EPA provided general policy guidance and resource documents.

Citizen input from San Joaquin County residents was facilitated by a series of informal citizen participation meetings from April to August, 1981. There were four active citizen participation subcommittees which were organized according to topic.[4]

The cities of San Joaquin County were kept informed of work program progress and citizen participation. The cities were consulted regarding plans for upgrading analysis of air quality impacts caused by proposed development projects, sewer treatment plant capacity, growth projections, and other planning criteria that relate to air quality planning.

In October, 1981 a preliminary draft AQMP was reviewed by members of the citizen participation subcommittees, staffs of local government agencies, and staff of the ARB and EPA.[5] Comments on the preliminary draft provided valuable input for preparing the AQMP.

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[4]The agendas and brief minutes of the citizen participation meetings are hereby incorporated by reference and are on file at the San Joaquin County Planning Department.

[5]Written comments on the October, 1981 preliminary draft AQMP are on file at the San Joaquin County Planning Department.

SECTION III

AIR QUALITY IN SAN JOAQUIN COUNTY

San Joaquin County is located at the northern end of the eight county San Joaquin Valley Air Basin, as shown in Figure 1. The San Joaquin Valley is the largest air basin in California and its air pollution potential is one of the highest in the United States. Topographic and meteorological conditions often allow air pollutants to concentrate, resulting in reduced carrying capacity of the air shed and air pollution problems throughout the air basin.

Prior to extensive industrial, urban, and agricultural development of the region, air in the San Joaquin County area was relatively clean. Natural sources of air pollution consisted mostly of particulates from seasonally wind blown dust and lightning caused fires. Also, hydrocarbons were emitted from biologically active natural vegetation. Indians and early settlers added to the particulates level by man-made fires. The present air quality problem came as a result of industrial and agricultural growth, as well as ever increasing numbers of motor vehicles.

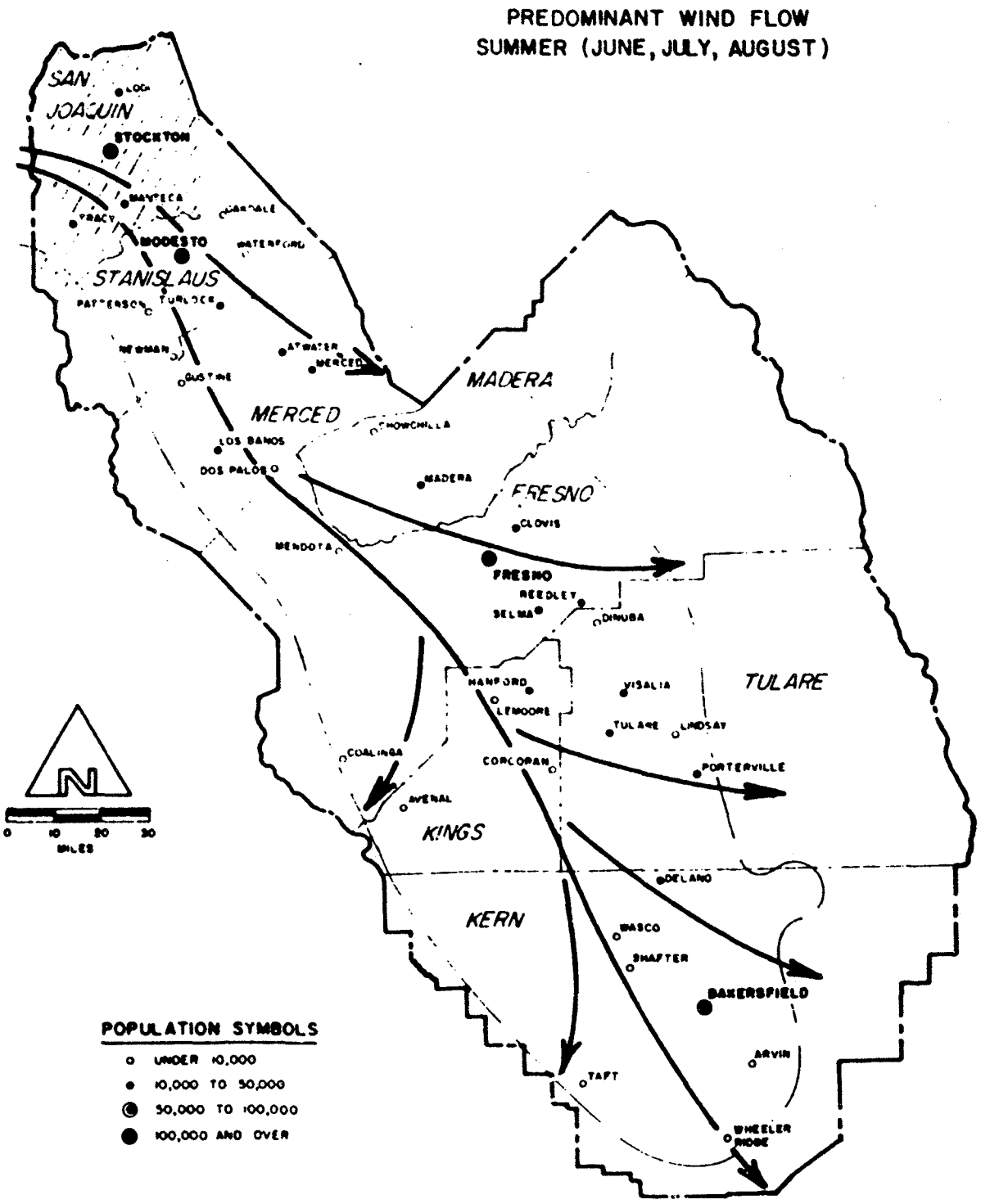
San Joaquin County's main air quality problems occur during the late spring through early winter period. During the late spring to early fall period (May through October) high ozone levels are a recurring problem. The region's intense heat and sunlight are ideal for creating ozone during this period and reactive hydrocarbon (ROG) and nitrogen oxide gases are able to reach photochemically to form ozone. ROG results from incomplete combustion of fossil fuels in engines and evaporation of hydrocarbon-based liquids and compounds. Nitrogen oxides are a result of burning fossil fuels at high temperatures.

Between early fall and early winter (October through January) frequent strong temperature inversions trap pollutants near the earth's surface and these stagnant air conditions can last for weeks at a time. It is during these periods that carbon monoxide levels rise and that the federal CO standard has been occasionally exceeded. Carbon monoxide also results from incomplete combustion of fossil fuels in combustion processes. During this period the County's highest nitrogen oxide levels are recorded because of the low level of photochemical reactivity. The County does not violate the nitrogen oxide standard, however.

Visibility reducing particulates are a problem much of the year in the region. Dust from spring winds and agricultural operations account for a vast portion of the area's particulates, although particulates from agricultural burning are often most noticable.

Figure 1

SAN JOAQUIN VALLEY AIR BASIN



1-19-82

A. Federal and State Air Quality Standards

Table 1 shows pollution concentration limits for California and national ambient air quality standards for ozone, carbon monoxide, and particulate.[1] Both California and federal air quality standards are set to protect the public health (primary standards) and welfare (secondary standards). San Joaquin County's air quality planning efforts are concerned primarily with the national standard for ozone (0.12 ppm) and carbon monoxide (9 ppm average for an 8 hour period). The federal ozone standard level cannot be exceeded for more than one hour per year for the most recent three year period. The federal carbon monoxide standard must not be exceeded more than once during each of the most recent three years. A non-attainment area can be redesignated if it can demonstrate that for each particular pollutant the NAAQS has not been exceeded for the last eight consecutive quarters.

B. Transport

Prevailing air flows over San Joaquin County are from the west to northwest and from the Delta-Carquinez Straits region. This leads to the issue of accounting for air pollution transported into the County from portions of the San Francisco Bay Area region and the effect San Joaquin County has on downwind San Joaquin Valley Air Basin counties.

The general summertime air flow through the Carquinez Straits area splits as it enters the Central Valley over the Delta and flows north into the Sacramento Valley and south into the San Joaquin Valley. The assumption has been that a significant portion of San Joaquin County's summertime air quality problem is a result of pollutants transported from the heavily populated Bay Area. To an undetermined extent this assumption is correct.[2] But because of San Joaquin County's northerly location in relation to the Bay Area, it is assumed that much less transported air pollution crosses this county than counties to the south which are located in the San Joaquin Valley Air Basin. Air quality generally worsens as one moves south in the San Joaquin Valley.

This AQMP takes transported air pollution into account in its ozone reduction model (EKMA) which is found in the Appendix. EKMA includes in its calculation data on transported ozone aloft and at the surface for the day of violation analyzed (July 24, 1979) and also for future years when upwind air quality should have improved to meet federal air quality standards.

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[1]Pollutants covered by NAAQS include photochemical oxidant (ozone) carbon monoxide (CO), total suspended particulates (TSP), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2). California also sets standards on sulfates, lead, hydrogen sulfide, ethylene, and visibility reducing particulate.

[2]The ARB has conducted "tracer studies" which confirm that Bay Area pollution is transported into San Joaquin County, however more study is needed to determine exactly how much transported Bay Area pollution reduces San Joaquin County and Valley air quality. Tracer studies have also been conducted on air flows in the San Joaquin Valley Air Basin.

Table 1

SAN JOAQUIN COUNTY

NON-ATTAINMENT AREA

AMBIENT AIR QUALITY STANDARDS

POLLUTANT	AVERAGING TIME	CALIFORNIA STANDARDS[1]	NATIONAL STANDARDS[2]	
		CONCENTRATION	PRIMARY[3]	SECONDARY[4]
Oxidant (Ozone)	1 hour	0.10 ppm (200 ug/m^3)	160 ug/m^3 (0.12 ppm)	Same as Primary Std
Carbon Monoxide	12 hour	10 ppm (11 mg/m^3)	--	Same as Primary Standards
	8 hour	--	10 mg/m^3 (9 ppm)	
	1 hour	40 ppm (46 mg/m^3)	40 mg/m^3 (35 ppm)	
Suspended Particulate Matter	Annual Geometric Mean	60 ug/m^3	75 ug/m^3	60 ug/m^3
	24 hour	100 ug/m^3	260 ug/m^3	150 ug/m^3

NOTES:

[1]California standards are values that are not to be equaled or exceeded.

[2]National standards, other than those based on annual averages or annual geometric means, are not to be exceeded more than once per year.

[3]National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health. Each state must attain the primary standards no later than three years after the state's implementation plan is approved by the Environmental Protection Agency (EPA).

[4]National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within a "reasonable time" after implementation plan is approved by the EPA.

C. General Health Effects of Major Pollutants

The Clean Air Act Amendments (Section 109(b)(1)) require that primary air quality standards be based on criteria that allow an adequate margin of safety to protect the public health, including the health of those groups sensitive to air pollution. The Act also established secondary standards to protect the public welfare from any known or anticipated adverse effects associated with air pollution. Secondary standards are set to protect such resources as soil, crops, water, wildlife, vegetation and other similar considerations. The following information provides general health information on the three air pollutants for which San Joaquin County does not meet the primary federal standard.

Oxidant-Ozone

The primary body areas affected by inhaling ozone, the largest component of the photochemical oxidant complex, are the respiratory tract and the lungs region.[1] Experimental exposure to ozone in the range of 0.10 to 0.50 parts per million (ppm) induces structural changes in lung tissue and increased susceptibility to respiratory pathogens. In rats and mice, mortality occurs with continuous exposure to ozone of 1 ppm or more. Morphologic changes induced at lower concentrations are not fully reversible. Epidemologic studies in the Los Angeles basin and in Japan have reported associations between ambient ozone or oxidant concentrations in the range of 0.10 to 0.30 ppm in the presence of other pollutants and eye irritation, cough, and chest discomfort, especially in exercising groups. Also, increased rates of asthma attacks have been noted during episodes of photochemical oxidant air pollution.

Carbon Monoxide

Health effects of carbon monoxide (CO) are caused primarily by a reduction in the ability of the blood to transport oxygen (O_2) and a consequent interference with biochemical utilization of O_2 in tissues. The toxicity of CO is due to strong coordination bonds formed between CO and iron atoms in the blood's hemoglobin (Hb). Carbon monoxide and Hb interact in the blood, to form carboxyhemoglobin (COHb). Since the attraction of CO to Hb is more than 200 times stronger than the attraction between O_2 and Hb, the capacity for Hb to carry normal levels of O_2 are reduced, depending upon the intensity and duration of the CO episode. Persons with circulatory diseases who are unable to compensate for oxygen deprivation by increased blood flow to affected organs are particularly likely to experience adverse effects from exposure to relatively low concentrations of carbon monoxide. Persons with cornary heart disease can experience chest pain significantly earlier during exertion when COHb concentrations increase from baseline (usually 0.5%) to 2.5 to 3.0%, an effect that can be induced by 1-hour exposures to CO at concentrations 70-85 ppm or by 8-hour exposures to concentrations of 15-18 ppm. Carbon monoxide has also been shown to have an effect on

[1]Discussion adopted from Health Effects of Air Pollution, American Thoracic Society/Medical Section of the American Lung Association, 1978, pg. 9.

the function of the central nervous system.

Suspended Particulate Matter

Concentrations of particulates in excess of 100 micrograms per cubic meter are generally associated with the augmentation of respiratory systems, lung function changes, and increased risk of acute and chronic respiratory disease. Increased rates of asthma attacks have been noted during episodes of particulate air pollution.

The Pollution Standard Index

The Pollution Standard Index (PSI) is a uniform national index for reporting air quality. The PSI (see Table 2) is based on the variation of ambient air quality from NAAQS as it relates to general health effects. For example, a peak daily ozone value of 0.10 ppm would have a PSI value of near 85 and air quality considered moderate. A 0.20 ppm ozone value would translate to a 200 PSI value and trigger an air pollution alert for the duration when ozone concentrations were 0.20 ppm or greater. The PSI is used by the APCD to forecast the next day's expected air quality and is often printed with weather data in local newspapers.

D. Air Quality Data for San Joaquin County

The collection of ambient air quality data is the single most important tool for developing a plan to meet NAAQS. Air quality data determines the level and degree to which an air pollution control program should be enacted. Air quality data is a very important barometer in measuring an area's progress towards cleaning its air. California's air quality monitoring is conducted by the APCDs with assistance from the ARB.

EPA regulations require that air quality data for three consecutive years be analyzed for the purpose of determining if an area meets air pollution standards. Therefore, air quality data from 1979, 1980, and 1981 have been analyzed for ozone and carbon monoxide.

Air Quality Data for Ozone

Air quality monitoring in San Joaquin County shows that all stations recorded exceedances and violations of the 0.12 ppm federal ozone standard between 1979 and 1981.[1] The greatest amount of ozone monitoring occurred during the 1979 ozone season with five stations: 1)Lodi (Hamm Street) in the north portion of the County, 2)Stockton (APCD), 3)Union Island just west of the Stockton urban area, 4)Stockton (CYA) just south of the Stockton urban area, and 5)Ripon (fire station) at the southern end of the County. Ozone monitoring during 1980 and 1981 included the Lodi and Stockton APCD stations, only.

[1]The California ozone standard of 0.10 ppm is not to be equaled or exceeded.

TABLE 2

Pollutant Standards Index and General Health Effects

Index Value	Air Quality Level	POLLUTANT LEVELS TSP (24-hour), $\mu g/m^3$	SO_2 (24-hour), $\mu g/m^3$	CO (8-hour), mg/m^3	O_3 (1-hour), $\mu g/m^3$	NO_2 (1-hour), $\mu g/m^3$	Health Effect Descriptor	General Health Effects	Cautionary Statements
500	SIGNIFICANT HARM	1000	2620	57.5	1200	3750			
								Premature death of ill and elderly Healthy person will experience adverse symptoms that affect their normal activity.	All persons should remain indoors, keeping windows and doors closed. All persons should minimize physical exertion and avoid traffic.
400	EMERGENCY	875	2100	46.0	1000	3000	HAZARDOUS		
								Premature onset of certain diseases in addition to significant aggravation of symptoms and decreased exercise tolerance in healthy persons	Elderly and persons with existing diseases should stay indoors and avoid physical exertion. General population should avoid outside activity.
300	WARNING	625	1600	34.0	800	2260			
							VERY UNHEALTHFUL	Significant aggravation of symptoms and decreased exercise tolerance in persons with heart or lung disease, with widespread symptoms in the healthy population.	Elderly and persons with existing heart or lung disease should stay indoors and reduce physical activity.
200	ALERT	375	800	17.0	400[c]	1130			
							UNHEALTHFUL	Mild aggravation of symptoms in susceptible persons, with irritation symptoms in the healthy population.	Persons with existing heart or respiratory ailments should reduce physical exertion and outdoor activity.
100	NAAQS	250	365	10.0	235	a			
							MODERATE		
50	50% OF NAAQS	75[b]	80[b]	5.0	120	a			
							GOOD		
0		0	0	0	0	a			

[a] No index values reported at concentration levels below those specified by "Alert Level" criteria.
[b] Annual primary NAAQS.
[c] 400 $\mu g/m^3$ was used instead of the O_3 Alert Level of 200 $\mu g/m^3$

Source: U.S. Environmental Protection Agency

TABLE 3

Air Quality Data for Ozone
1979-1981

1979 Summary

Station	May	Jun	Jul	Aug	Sept	Oct	Total
Days greater than 0.12 ppm							
Lodi	0	0	3	1	1	-	5
Ripon FS	0	0	3	0	1	-	4
Stockton (APCD)	0	0	1	0	0	-	1
Stockton (CYA)	0	0	5	1	1	-	7
Union Island	1	1	1	0	0	0	3
County Total							11 Days
Hours greater than 0.12 ppm							
Lodi	0	0	4	1	1	-	6
Ripon FS	0	0	7	0	1	-	8
Stockton (APCD)	0	0	2	0	0	-	2
Stockton (CYA)	0	0	11	1	1	-	13
Union Island	1	2	1	0	0	0	4
County Total							22 Hours

1979 1st Highest 0.15 ppm
1979 2nd Highest 0.14 ppm

1980 Summary

Station	May	Jun	Jul	Aug	Sept	Oct	Total
Days greater than 0.12 ppm							
Lodi	0	1	1	0	1	3	6
Stockton (APCD)	-	1	0	0	0	0	1
County Total							6 Days
Hours greater than 0.12 ppm							
Lodi	0	1	2	0	1	3	7
Stockton (APCD)	-	5	0	0	0	0	5
County Total							11 Hours

1980 1st Highest 0.14 ppm
1980 2nd Highest 0.14 ppm

1981 Summary

Station	May	Jun	Jul	Aug	Sept	Oct	Total
Days greater than 0.12 ppm							
Lodi	0	1	0	0	0	0	1
Stockton (APCD)	0	2	1	1	0	0	4
County Total	0	2	1	1	0		4 Days
Hours greater than 0.12 ppm							
Lodi	0	1	0	0	0	0	1
Stockton (APCD)	0	2	1	2	0	0	5
County Total	0	2	1	2	0	0	5 Hours

1981 1st Highest 0.14 ppm
1981 2nd Highest 0.14 ppm

Source: California Air Quality Data, Summaries for 1979, 1980, ARB.
Hourly Data Summary Report, 1981, San Joaquin County APCD.

Ozone data from 1979 to 1981 shows that fewer exceedance of the standard occurred each successive year. One can speculate, inconclusively, that San Joaquin County ozone levels are improving and certainly not getting worse. Seasonal variations in meteorology cause an element of uncertainty in basing air quality improvements on observed yearly data. Peak ozone readings were fairly constant during the period, though, with 1979 having a 0.15 ppm high ozone reading and both 1980 and 1981 having a 0.14 ppm ozone peak. Table 3 shows air quality data for ozone between 1979 and 1981 in San Joaquin County.

Air Quality Data for Carbon Monoxide

Federal standards for carbon monoxide are slightly higher than state standards. The federal NAAQS for CO is 9 ppm for an eight hour average or 35 ppm for one hour. The 9 ppm/8 hour average standard is occasionally violated in San Joaquin County.

Exceedances of CO usually occur during periods when shallow temperature inversions are strong. The Central Valley is notorious for strong temperature inversions during the fall and early winter, and all San Joaquin County CO violations have occurred during this period.

The 1979-1981 air quality data period shows a total of three CO exceedences. The two which occurred in 1979 constituted a violation and cause the County to hold non-attainment status. There were no exceedances of the federal CO standard during 1981, as indicated by the following table.

Table 4

Carbon Monoxide Exceedances in San Joaquin County
1979-1981

Year	Station	Month	Exceedances	8-Hour Average
1979	Stockton	Dec.	2	10.1, 10.5
	Lodi	-	0	
1980	Stockton	Oct.	1	13.1
	Lodi	-	0	
1981	Stockton	-	0	
	Lodi	-	0	

Source: Air Quality Data, various reports 1979, ARB and San Joaquin County Air Pollution Control District, 1980, 1981.

Yearly peak hourly CO readings in San Joaquin County have all occurred in Stockton they were 18 ppm in 1979 and 1980 and 14 ppm in 1981.

On a daily basis, CO levels usually track with increasing and decreasing traffic flows during shallow and persistant inversion

periods. Typically, morning and early evening rush hour traffic levels correspond closely to elevation of CO levels. The morning CO peak usually dissipates as the inversion weakens and/or is broken by solar heating at the surface. The evening peak normally persists into the later evening and CO levels decline to pre-rush hour levels at approximately midnight.

During early 1981 two Stockton area intersections were monitored for isolated high concentrations of CO. These "hot spots" were found to potentially exceed the 8-hour CO standard during certain meterological conditions (during late fall or early winter evenings) and high traffic periods. However, the 8-hour standard was not exceeded during the 1981 CO hot spots monitoring.

Air Quality for Total Suspended Particulates

As mentioned, the federal primary particulates (TSP) standard is 75 micrograms per cubic meter. San Joaquin County does not attain the federal or state TSP standards. The ARB is to prepare the state's TSP non-attainment plan for the 1982 SIP revision.

Particulates are monitored periodically by use of high volume samples. TSP data from 1979 and 1980 show that the standards were violated frequently in the Stockton area. The particulates are, in fact, a Central Valley wide problem and violations of the standards are observed yearly at all location in the San Joaquin Valley Air Basin.

The following table shows TSP data for San Joaquin County during 1979 and 1980.

Table 5

Particulate Data for San Joaquin County
1979-1980

Station	Number of Observations	High	2nd High	Geometric Mean
1979				
Stockton (APCD)	55	150	143	75.0
1980				
Stockton (Hammer Ln.)	3	272	122	114.0
Stockton (APCD)	53	298	236	84.6
Stockton (Pacific Ave.)	16	325	277	125.6

Source: California Air Quality Data, 1979, 1980, ARB.

SECTION IV

POPULATION AND GROWTH PROJECTIONS

Population projections and business and industrial growth projections are vital to forecasting air pollution emissions for future years. Reasonably accurate projections are required before charting programs to reduce emissions so that the County can meet federal clean air standards. Also, the Clean Air Act (Section 316) requires that population growth allowed by federally financed additions to wastewater treatment plants be consistent with the air quality plan in that the increased emissions caused directly and indirectly by such plant additions be accounted for and mitigated, as necessary, in the plan and by the local agency seeking such expansion.

A. Population Projections

The AQMP used the population projections of local jurisdictions for the 1980-1990 period and this resulted in the following ten year growth rate in the County's largest jurisdictions: San Joaquin County overall - 23.0%, Stockton urban area - 16.4%, Lodi - 13.6%, Manteca - 54.25%, and Tracy - 25.5%.

Table 6 shows that the Stockton urban area accounts for well over a majority of the population in San Joaquin County. It is expected that urban Stockton's portion of County population will slowly decline through the forecast period due to faster growth elsewhere in the County. However, it is expected that most of San Joaquin County's industrial growth, which will create most stationary sources of air pollution, will occur in the Stockton area due to the proximity of the Port of Stockton and the economic inertia created by Stockton's existing industrial base. Manteca's population growth is expected to be a product of increasing movement of electronics firms to that city and continued "bedroom community" attractions, but the projections need to be better documented in future years.

Accurate forecasting of future economic conditions is dependent on numerous and hard to predict variables, and because the 'state of the economy' has much to do with construction and population growth, the above population growth projections will be reviewed and updated in annual Reasonable Further Progress (RFP) reports by comparing changes in each local government's 1)new building permit data and 2)January 1st population reports pursuant to Section 2227, Revenue and Taxation Code.

Both the cities of Stockton and Lodi have passed initiatives that restrict urban growth. Stockton's initiative limits the city's outward expansion to specifically designated areas in the city general plan and allows about a five year holding capacity, depending upon the density of the new development.

Table 6

Population Projections for San Joaquin County and Its Cities
1980-1990

Jurisdiction	1980	1985	1990
County of San Joaquin[1]	349,600	389,500	430,100
City of Stockton[2]	149,779	-	-
Stockton Urban Area[3]	200,463	218,124	233,385
City of Manteca[4]	24,925	31,713	38,448
City of Lodi[5]	35,221	37,580	40,000
City of Tracy[6]	18,438	20,714	23,207
City of Ripon[7]	3,509	3,925	4,338
City of Escalon[8]	3,127	3,483	3,845

Sources:

[1]Department of Finance Report 81 P-1, April, 1981

[2]1980 Census

[3]City of Stockton, draft Housing Element, May, 1981, Fig. 2 (Urban Area means area in the Stockton General Plan)

[4]City of Manteca, Comprehensive Update of the General Plan, Spring, 1981

[5]City of Lodi, Development Information

[6]Draft EIR for Wastewater Treatment Plant Improvements, December, 1980

[7]Assumes County rate of growth; 2.3% annual growth 1980-85, 2.1% annual growth 1985-90.

[8]Assumes County rate of growth; 2.3% annual growth 1980-85, 2.0% annual growth 1985-90.

The Lodi initiative requires that a citywide election occur before any new land can be annexed to the city. Lodi's current undeveloped and annexed land inventory allows for about five years of development, a rate likewise dependent on the density of new development. Other growth rate measures in San Joaquin County include a City of Escalon ordinance which restricts new dwelling units to no greater than 70 per year and limitations on new sewer hookups in the City of Tracy until that city's wastewater treatment plant is improved to meet state clean water standards.

These AQMP population projections do not account for development of all or any portion of the proposed community of Carnegie, to be located south of Tracy in the Coast Range foothills. Also, direct and indirect emissions growth caused by any Carnegie project is not accounted forin this plan. The project as currently proposed by its proponents, would cover more than 5,700 acres and provide residences for more than 35,000 people. The effects of this project on San Joaquin County's efforts to attain federal clean air standards are not considered in this AQMP.

B. Consistency of Growth Caused by Expansion of Federally Funded Wastewater Treatment Plants and the AQMP

As mentioned, CAA Section 316 requires that federally funded (or partially funded) wastewater treatment plants (WTP) not induce growth which would exceed population and emission projections in the AQMP, unless mitigation of these air quality impacts occurs. The table following shows WTP data for each San Joaquin County city, except the small cities of Ripon and Escalon.

Except for the City of Manteca, all San Joaquin County cities have ample wastewater treatment capacity beyond the AQMP planning period. Manteca will require additional capacity by the late 1980's if past growth rates continue. As mentioned, the City of Tracy now restricts sewer hookups due to failure to meet water quality standards at the Tracy WTP. Tracy has ample capacity through the AQMP planning period. Both Stockton and Lodi have adequate wastewater treatment capacity through the planning period and this capacity can be substantially extended by water conservation practices, as have been included in calculating WTP holding capacity for Lodi.

C. Growth Projections for Major Industrial Divisions

Employment forecasts for major industrial divisions have assisted the AQMP in forecasting future emissions from stationary and area sources. However, employment forecasts do not directly correlate to emissions forecasts and their purpose is to establish relationships between various kinds of economic activity expected to have impacts on future emissions in San Joaquin County. The following projections for major industrial divisions in San Joaquin County utilized California Employment Development Department information.[1]

[1]Projections of Employment by Industry and Occupation 1980-1985, California EDD, Sept., 1979.

Table 7

Wastewater Treatment Plant Planning Data for Cities
in San Joaquin County
(Million Gallons Per Day)

Jurisdiction	WTP Design Capacity	Existing Flows	Current Capacity
City of Stockton[1]	55 MGD	45 MGD peak	Adequate to past year 2000. Additional 7.7 MGD expected to be used by year 2000.
City of Lodi[2]	5.8 MGD	3.9 MGD peak	Capacity for 52,246 population. Adequate capacity.
City of Manteca[3]	2.8 MGD	2.6 MGD peak	Adequate to sometime between 1985 and 1990, depending on wastewater growth rate.
City of Tracy[4]	5.5 MGD	3.3 MGD peak	Adequate for planning period but facility must be upgraded to meet RWQCB standards.
City of Ripon[5]			
City of Escalon[5]			

NOTES:

[1]Approximately 170,000 persons are currently connected to the Stockton Regional Water Quality Control Plant. Canning season flows (peak) are normally 50% greater than spring low flows.

[2]It is estimated that Lodi's White Slough Plant has sufficient capacity to serve an additional 16,800 persons. This assumes 80% of the actual capacity will be needed for residential uses (industrial and commercial uses are expected to require the other 20%), and that post 1976-1977 drought water conservation will continue. If water usage returns to pre 1976-1977 levels it is estimated that only 8,400 additional people can be served.

[3]Manteca's WTP is nearing capacity and occasionally exceeds capacity during canning serson. The city is preparing to apply for a federal Clean Water Grant that would increase capacity to 4.05 MGD by sometime in the mid 1980's in order to service population growth to 1994. Manteca's projected growth would exceed the current WTP's capacity sometime between 1985 and 1990. Section 316 consistency is not yet clear after that date for planned additional capacity.

[4]The Tracy WTP has been ordered to cease and desist by the Regional Water Quality Control Board for violation of discharge requirements, particularly during canning season. Expansion of capacity was not required by the RWQBC order.

[5]Data for Ripon and Escalon are not included.

Agriculture - Agriculture is the economic base of San Joaquin County. Many industries such as food processing, transportation and wholesale trade, depend heavily upon the production of primary farm commodities in order to carry on their activities. Agricultural employment is expected to remain fairly stable throughout the planning period and no emissions growth factor has been assigned to agriculturally related air pollution because overall acreage levels are expected to remain fairly constant.

Construction - Construction employment gained at a rate of 12.5 percent annually to the end of the 1970's, in large part due to rapid urban growth in north Stockton and the Manteca area. However, the growth rate declined considerably in the early 1980's. It is assumed that construction related industry will grow proportional to countywide population growth of approximately 2 percent per year. Net emissions increase from construction should be near zero.

Manufacturing - Manufacturing will have the highest annual industrial growth rate of any San Joaquin industry between 1980-1985. Durable goods employment is expected to grow steadily and non-durable goods employment is expected to grow slightly slower. The electrical machinery industry will grow at a high rate during this period, primarily due to the movement of several new electronics firms to the Manteca area. Emissions growth from the manufacturing sector is assumed to be less than the employment growth rate for manufacturing, approximating one percent annual growth.

Transportation, Communications, and Utilities - Assuming no drastic increases in oil prices and no destabilizing cutbacks in foreign oil delivered to California refineries, transportation will remain strong with vehicle miles traveled relating closely to population growth (about 2 percent annually). Communications and utilities employment will grow at an annual rate of 2 percent. Emission growth is expected to be near zero due to energy conservation tactics.

Trade - Wholesale trade is expected to grow at an annual rate of 2.5 percent. Little emissions impact is expected.

Services - The service sector is the largest employer in San Joaquin County. The major source of services growth will be in business services. The overall rate of services growth employment will be 2.9 percent annually. Little emissions impact is expected due to energy conservation tactics.

Public Administration and Government - Due to local, state, and federal government cutbacks no growth is anticipated in this sector during the planning period.

Summary of Industrial Growth in San Joaquin County

Manufacturing of durable goods will lead San Joaquin County industrial growth during the 1980's. More than half of this

growth is expected to occur in urban Stockton largely due to that city's existing industrial infrastructure, advantageous location, and port facilities. The probability of several large mineral refining firms locating at or near the Port of Stockton during the 1980's is considered likely. Emissions growth from these kinds of large industries will occur, but will be substantially mitigated by new source review and offset regulations.

D. AQMP Growth Factors

The following discussion is intended to relate the previous discussions regarding population and employment projections to actual categories of emissions found in the 1980 Emissions Inventory (see Section V). The emission inventory is divided so that major emission categories can be classified as either 1)mobile sources, 2)stationary sources, or 3)area sources. Mobile sources include all motor vehicle emissions on public streets and highways. Stationary sources include emissions from particular point sources and include industrial activities. Area sources account for a variety of emission sources including agriculture, off-road vehicles and equipment, and many combustion sources not included as mobile or stationary sources.

The AQMP's emission forecast for mobile sources was developed by Caltrans (California Department of Transportation) and the ARB. Such factors as population growth, present and future vehicle miles traveled (VMT), vehicle mix and emission factors, types of driving conditions, and effects of the California vehicle emission control program were utilized to project San Joaquin County's mobile source emissions to 1987.[1] Because of the vehicle emission control program, reductions in vehicle emitted hydrocarbons, nitrogen oxide, and carbon monoxide were found to occur to 1987, dispite continued population growth and increased VMT in the County.

Stationary source emissions include the following categories in the 1980 Emissions Inventory:

1)Storage, Transportation, and Marketing of Petroleum Fuels (VOC)
2)Industrial Processes
3)Industrial Surface Coatings
4)Non-Industrial Surface Coatings
5)Other Solvent Uses

Utilizing the correlation between employment growth and emissions from the discussion on previous pages and growth factors developed by the ARB,[1] the following estimates are made

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[1]The ARB utilized the BURDEN model approach to forecast future mobile source emissions in San Joaquin County.
[2]Growth Profile printout for San Joaquin County, January 8, 1982, ARB.

for each category of stationary source emissions:

1) Storage, Transportation, and Marketing of Petroleum Fuels - No emissions growth is forecast. Peak gasoline use in California occurred in 1978 and has declined or remained stable yearly since that time. It is very possible that petroleum fuel use will decline slowly throughout the planning period due mainly to increasing prices. A California Energy Commission energy price forecast is included in the Appendix. Biennal assessment of petroleum use and updating of the emission inventory are part of this plan's RFP.

2) Industrial processes and 3) Industrial Surface Coatings - A one percent per year emissions increase is forecast for these categories. Chemical manufacturing is expected to be responsible for a great majority of this increase.

4) Non-Industrial Surface Coatings - No emissions growth is forecast. Declining construction rates and reformulation of most architectural coatings will effectively reduce emissions from this category.

5) Other Solvent Use - No emissions growth is forecast. This classification of emissions is derived as a petroleum product and is therefore subject to price-demand relationships similar to those found with petroleum fuels. Increasing prices will reduce demand and encourage conservation and resource recovery practices.

Forecasts for area source emissions are as follows:

1) Miscellaneous Sources - No emissions growth is forecast. This category includes agricultural burning, general fuel combustion, and pesticide application. Acreage and crop type in San Joaquin County is expected to remain stable through the planning period resulting in little change in overall emissions from agricultural burning or pesticide applications. However, increasing petroleum costs could be a factor significant enough to reduce certain pesticide uses, particularly for weed and spray oils. Such potential reductions will be monitored biennially in RFP reports. Due to fuel conservation practices, emissions from general combustion should remain stable.

2) Other Mobile Sources - A one percent per year emissions increase is forecast for this category. Increases are expected due to increasing use of utility equipment, off-road motorcycles, and trains. Train emissions are likely to increase due to increased shipments of Utah coal to the port of Stockton for overseas export.

SECTION V

AIR QUALITY ANALYSIS: EMISSIONS INVENTORY AND MODELING

A complete and accurate emissions inventory is the first important piece of data needed to determining the specific nature of San Joaquin County's emissions reduction program. The next step is to analyze air quality and meteorological data to determine how much of a reduction is needed to meet federal air quality standards. After emission reduction targets are determined, specific reduction strategies can be developed, as found in Section VI-A and VI-B for ozone and carbon monoxide, respectively.

A. 1980 Emission Inventory

The emissions inventory used for the 1982 AQMP differs substantially from the inventory used in the 1979 air quality plan. This difference is due to significant improvements in accounting of emissions, which has resulted in enlarging the current inventory. Also, a different reporting format is used in the current inventory.

The base year for the AQMP's inventory was 1979 and this data was adjusted to 1980 so to beter match air quality conditions found from 1979 to 1981, the three year period for which air quality data was analyzed. The 1980 Emissions Inventory is summarized in Table 8 following, and Figure 2 which follows Table 8 .

In comparison, the 1979 air quality plan emissions inventory totaled 64.6 tons/day of ROG emissions and these were categorized into stationary sources (32.5 percent), mobile sources (60.4 percent), and miscellaneous sources (7.1 percent). For carbon monoxide, the 1979 plan's inventory totaled 263.30 tons/day, 74.8 percent which was attributed to mobile sources. The year 1975 was the base inventory year for the 1979 plan.

As mentioned at the end of the previous section, the 1980 Emissions Inventory categorized sources into three general classifications, including mobile sources, stationary sources, and area sources. These classifications include the major categories contained in Table 8 in the following way:

Mobile Sources -
- Highway Vehicles

Stationary Sources -
- Storage, Transportation, Marketing of Petroleum Fuels
- Industrial Processes
- Industrial Surface Coatings
- Non-Industrial Surface Coatings
- Other Solvent Uses

Area Sources -
- Miscellaneous Sources
- Other Mobile Sources

Table 8

San Joaquin County
1980 Emissions Inventory
Tons/Day

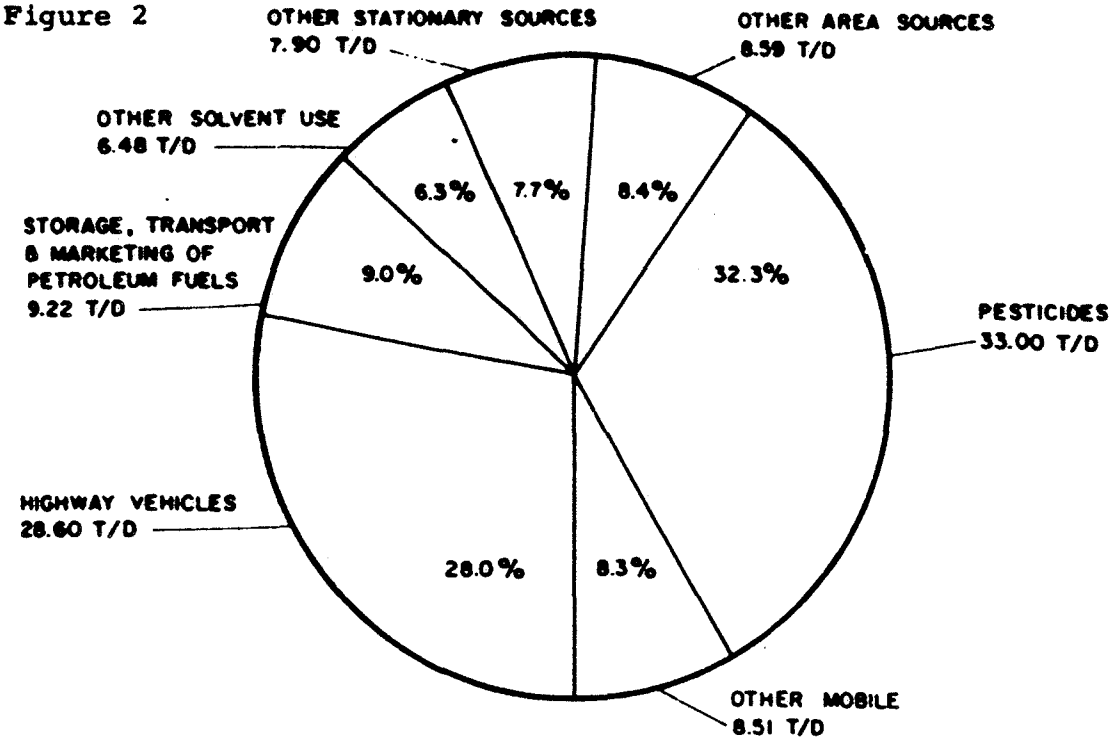
Major Category / Source Category	ROG	CO	NO_x
Storage, Transport, Marketing of Petroleum Fuels (Stationary Sources)			
Bulk Gasoline Terminals (Tank, Truck and Cars)	.70	.00	.00
Gasoline and Crude Oil Storage	.00	.00	.00
Gasoline Bulk Plants	4.11	.00	.00
Oil and Gas Production and Processing	.55	.00	.00
Service Station Loading	.13	.00	.00
Service Station Vehicle Refueling	2.92	.00	.00
Ship and Barge Transfer	.01	.00	.00
Other Storage, Transfer, and Marketing	.79	.00	.00
Total Storage, Transport, Marketing of Petroleum Fuels	9.22	.00	.00
Industrial Process (Stationary Sources)			
Fermentation Processes	.65	.00	.00
Petroleum Refining Processes	.00	.00	.00
Plastic Products Manufacture	.00	.00	.00
Misc. Chemical Manufacture	1.56	.00	.00
Polymers and Resin Manufacture	.00	.00	.00
Synthetic Rubber Manufacture	.19	.00	.00
Other Industrial Processes	.11	.05	.01
Total Industrial Processes	2.52	.05	.01
Industrial Surface Coatings (Stationary Sources)			
Fabric	.00	.00	.00
Misc. Metal Products	.08	.00	.00
Wood Furniture and Wood Products	.08	.00	.00
Marine Vessels	.00	.00	.00
Other Industrial Surface Coatings	.94	.00	.00
Total Industrial Surface Coatings	1.10	.00	.00
Non-Industrial Surface Coatings (Stationary Sources)			
Architectural Coatings	4.18	.00	.00
Auto Refinishing	.10	.00	.00
Total Non-Industrial Surface Coatings	4.28	.00	.00
Other Solvent Uses (Stationary Sources)			
Cutback Asphalt	.87	.00	.00
Degreasing	.93	.00	.00
Dry Cleaning	.41	.00	.00
Graphic Arts	.35	.00	.00
Non-Industrial Solvent Use	3.10	.00	.00
Other Industrial Solvent Use	.92	.00	.00
Total Other Solvent Uses	6.48	.00	.00

Major Category Source Category	ROG	CO	NO_X
Other Miscellaneous Sources (Area Sources)			
Forest, Ag and Other Open Burning	6.38	39.50	.00
Fuel Combustion	2.16	42.61	11.47
Pesticide Application	33.00	.00	.00
Waste Incineration	.00	.04	.01
Wildfires and Structural Fires	.05	.45	.01
Total Other Miscellaneous Sources	41.59	82.59	11.49
Highway Vehicles (Mobile Sources)			
On-Road Motor Vehicles	Modeled by ARB, Caltrans		
Total Highway Vehicles	28.60	216.87	32.81
Other Mobile Sources (Area Sources)			
Aircraft	.82	6.75	.08
Mobile Equipment	2.56	20.87	6.92
Off-Road Motor Vehicles	4.24	16.22	.84
Ships	.00	.00	.00
Trains	.89	1.23	3.16
Total Other Mobile Sources	8.51	45.07	11.00
Miscellaneous Non-ROG Sources (Area Sources)			
Miscellaneous Non-ROG Sources	.00	.01	.05
Total Miscellaneous Non-ROG Sources	.00	.01	.05
TOTAL 1980 INVENTORY	102.30	344.59	55.36

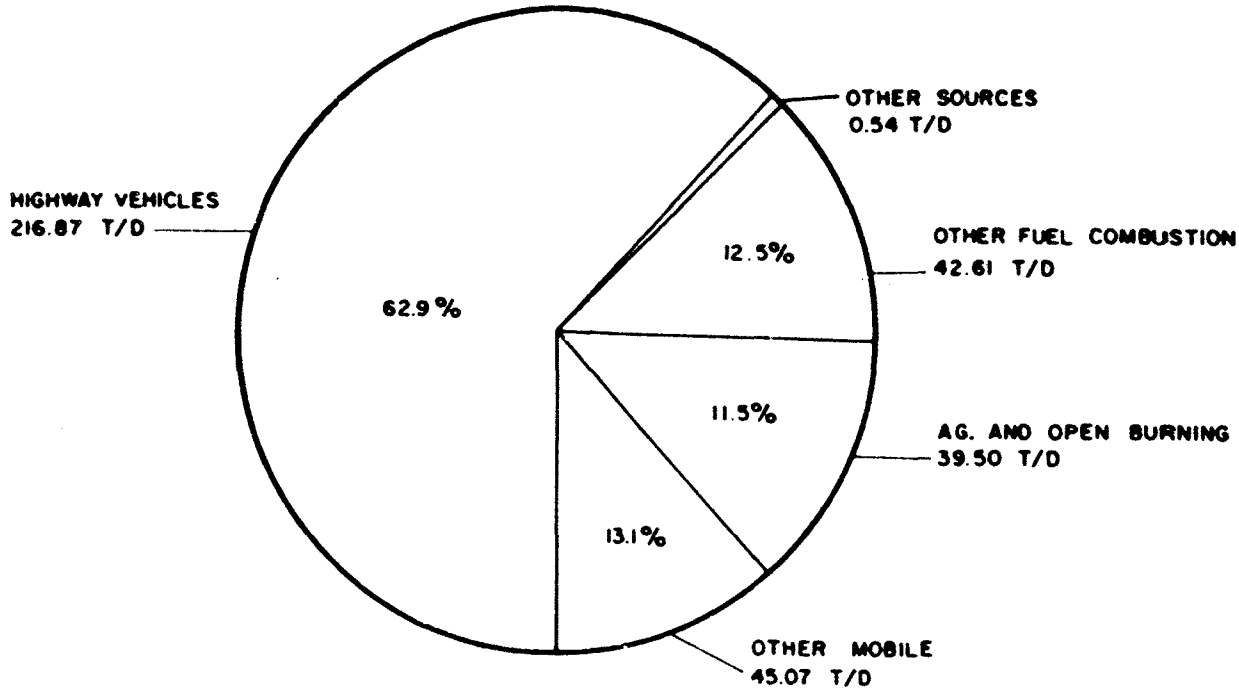
Sources: 1)ARB Emission Inventory Division.
2)1979 data adjusted to 1980 by the San Joaquin County Planning Department.

1980 EMISSIONS INVENTORY

Figure 2



REACTIVE HYDROCARBONS 102.30 T/D



CARBON MONOXIDE 344.59 T/D

The following table shows ROG, CO, and NO_x emissions by classification:

Table 9

1980 Emissions by Classification
Tons/Day

Classification	ROG	CO	NO_x
Mobile Sources	28.60	216.87	32.81
Stationary Sources	23.60	.05	.01
Area Sources	50.10	127.67	22.54
Total 1980	102.30	344.59	55.36

Mobile source emissions account for 28.0% of the County's reactive hydrocarbon inventory, 62.9% of carbon monoxide, and 59.3% of nitrogen oxides. Stationary sources account for 23.0% of the County's 1980 reactive hydrocarbon output. Area sources are the County's largest source of reactive hydrocarbons, accounting for 49.0% of the 1980 inventory. Alone, pesticide hydrocarbons accounted for 32.3% of the 1980 inventory and are the largest single source of ROG in the County. Area sources accounted for 37.1% of the carbon monoxide inventory.

Emission totals for ROG have been seasonally adjusted to reflect the May through October ozone season for pesticide applications, but not for agricultural burning, farm machinery, and orchard heaters. Since reactive hydrocarbon emissions from pesticide applications are the largest source in the ROG Emission Inventory, these emissions have been seasonally adjusted to better reflect emissions during the ozone season. The result is to increase pesticide emissions by slightly over four tons/day from 28.95 tons/day (daily average for year) to 33.00 tons/day (seasonally adjusted).

Based on projections contained in Section IV, emission projections for 1987 are shown by the following table:

Table 10

1987 Projected Emissions by Classification
Tons/Day

Classification	ROG	CO	NO_x
Mobile Sources	16.90	171.18	25.70
Stationary Sources	23.86	.06	.01
Area Sources	50.70	130.83	23.32
Total 1987	91.46	302.07	49.03

Because of continued effectiveness of the California vehicle emission control program, 1987 emissions from mobile sources are expected to decline from 1980 levels by 40.9 percent for ROG, 21.1 percent for CO, and 21.7 percent for NO_x. The above table has projected stationary and area source emissions by using the AQMP growth factors from Section IV and does not include any post 1979 emission control strategies.

B. Determining the Reduction of Ozone Precursors

As mentioned, ozone is produced by photochemical reactions of reactive hydrocarbons and nitrogen oxides. The main reason for high ozone levels is related to high ROG and/or NO_x levels. Therefore, reduction of either ROG, NO_x, or both simultaneously will effectively help to reduce ozone levels.[1]

The The Emperical Kinetics Modeling Approach (EKMA) was used to determine reductions of ROG (called non-methane hydrocarbons in EKMA) and/or NO_x necessary to meet federal air quality standards. This modeling procedure combines air quality data, meteorological data, transported pollution data, and the non-methane hydrocarbon - NO_x ratio to plot estimated emission reductions needed to reduce peak ozone values downwind from a city. More simply, city specific EKMA is designed to measure the evolution of ozone from precursor pollutants within a uniformly mixed column of air migrating downwind from a city.

The ARB performed an EKMA analysis for all large non-attainment areas, including San Joaquin County. The San Joaquin model utilized data upwind (to consider transported pollutants) and downwind of the Stockton urban area. The model indicated that if ambient NO_x levels were held constant, a 38.8 percent reduction in ROG would be required from base-year levels (1980) to insure attainment of the federal ozone standard. It was determined that because of San Joaquin County's relatively small NO_x inventory, that reduction of ROG emissions would be the most effective method to reduce ozone levels. The EKMA analysis is included in the Appendix of this plan.

The 38.8 percent ROG emission reduction results from "worst case" air quality exceedences occurring downwind from Stockton at Modesto on July 24, 1979. A 38.8 percent reduction in ROG means that the 1982 AQMP must plan for at least a 39.69 tons/day (38.8% of 102.30 tons/day) reduction of ROG before 1987 in order to meet the federal ozone standard.

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[1]It should be noted that the general chemical relationship of ROG and NO_x is related to temperature. With warm temperatures NO_x tends to react with ROG to form ozone. With cooler temperatures NO_x tends to prevail and if ozone and NO_x levels are both high enough, NO_x can consume some ozone. Simultaneously high levels of ozone and NO_x occur in large urban areas where NO_x levels are high. Simultaneously high levels are not found in San Joaquin County.

C. Determining the Reduction of Carbon Monoxide

Since carbon monoxide is a very localized air pollutant which does not transport and is easily dissipated by wind movement, the method of determinig how much of a reduction is needed to meet federal carbon monoxide standards is much more straightforward than for ozone.

A proportional rollback was used to determine San Joaquin County's carbon monoxide reduction. Since the highest CO reading during the three year air quality period used in this plan was in 1980, the same year as the Emissions Inventory, no adjustments were needed. The 1980 peak exceedance was 13.1 ppm (8-hour standard) and the 1980 Emissions Inventory totaled 344.59 tons/day of CO. A proportional calculation as follows determined the CO reduction needed to ensure meeting federal standards:

$$\frac{\text{9.0 ppm standard}}{\text{13.1 ppm exceedance}} = \frac{\text{X (attainment baseline)}}{\text{344.59 tons/day}}$$

X (attainment baseline) = 236.74 tons/day

344.59 tons/day - attainment baseline = 107.85 tons/day reduction

The proportional rollback determined that a 31.1 percent reduction of 1980 CO emissions is needed to meet the federal 8-hour standard by 1987. This equals a 107.85 tons/day reduction.

SECTION VI

STRATEGY FOR ATTAINING FEDERAL STANDARDS FOR OZONE AND CARBON MONOXIDE

This section outlines individual emission reduction strategies which will be utilized by San Joaquin County to meet federal air quality standards for ozone and carbon monoxide before or by December 31, 1987. The AQMP emission reduction strategy is divided into three parts including 1)emission reductions from existing and new strategies, 2)contingency strategies that will be implemented if existing and new strategies fail to reduce emissions fast enough to meet the federal ozone and carbon monoxide standard by 1987 and 3)those strategies for which further study is needed before proposing them as new or contingency strategies.

A. Existing and New Strategies

Emission reductions from existing and new strategies are divided into strategies for mobile sources, stationary sources, and area sources. The mobile source strategy includes emission reductions primarily from direct control of on-road motor vehicle emissions. The Transportation Control Plan (TCP) strategy deals with methods to reduce automobile emissions by encouraging people to use less polluting transportation forms such as public transit, bicycles, car pooling, ridesharing and so forth. The mobile source strategy is most effective in reducing vehicle related reactive hydrocarbons (41.5 percent by 1987) and carbon monoxide (22.9 percent by 1987).

The stationary source strategy involves emission sources from industrial, manufacturing, and business concerns that are found in a fixed location. All stationary source controls focus on reducing reactive hydrocarbons (ROG) and are administered and enforced by the San Joaquin County APCD.

Area sources consist of a wide variety of emission sources that include non-highway mobile sources such as utility and construction equipment, off-road vehicles, aircraft, and trains. Area sources include emissions from agriculture and various combustion processes such as boilers and gas generators.

1. Strategy to Reduce Mobile Source Emissions

The mobile source strategy includes: 1)California's existing and on-going vehicle emission control program, 2)a new anti-tampering tactic for vehicle exhaust systems, and 3)a Transportation Control Plan for encouraging individuals to use less polluting forms of transit. The San Joaquin County Council of Governments (COG) prepared the background data and discussion on the vehicle emission control program and transportation control plan.[1,2]

M-1 Emission Controls on Motor Vehicles

California's vehicle emission standards limit the amount of pollutants that can be emitted from highway vehicles sold and registered in the state. This existing program is currently the single most effective method in reducing emissions in San Joaquin County.

	1980	1982	1985	1987
ROG Reductions(T/D):	-	3.34	8.36	11.70
CO Reductions(T/D):	-	13.05	32.64	45.69

Implementation: The Air Recources Board has set emission standards for California motor vehicles through the 1985 model year.

M-2 Anti-Tampering

This tactic requires the ARB to work with repair facilities and fleet operators as well as manufacturers to prevent tampering with emission control equipment. Some reductions can be obtained in carbon monoxide. These regulations have been adopted by the ARB and take effect with the 1982 model year.

	1980	1982	1985	1987
ROG Reductions(T/D):	-	0.04	0.04	0.04
CO Reductions(T/D):	-	2.70	2.70	2.70

Implementation:	Agency	Development	Adoption	Implementation
	ARB	1981	adopted	1982

Cost: Unknown

Impacts: No adverse impacts are identified for this tactic. There should be a net energy savings because today's engines run most efficient when all control equipment is operating properly. This tactic will probably be accepted by most of the public and should have little organized opposition.

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[1] Transportation Control Measures Plan for the 1982 Air Quality Maintenance Plan, San Joaquin County Council of Governments, October 1, 1981.

[2] Transportation Control Measures Technical Analysis Report, San San Joaquin County Council of Governments, October, 1981.

Transportation Control Plan

As mentioned, the AQMP's transportation control measure strategy is intended to reduce vehicle emissions by encouraging citizens to use transportation alternatives other than the private automobile. Numerous kinds of transportation alternatives were reviewed and analyzed by the San Joaquin County COG and there was overwhelming consensus to encourage transportation measures which are non-regulatory and rely on a combination of: 1)voluntary public use and 2)active governmental encouragement through building and improvement of alternative transportation facilities and programs.

Two major considerations for determining which transportation measures should be encouraged as tactics to improve air quality were: 1)economic feasibility and 2)public acceptance. Transportation tactics not meeting favorably to these standards and also not able to show a clear air quality benefit are not included for implementation in this plan.[1] Based on these criteria, the following transportation measures are included for implementation:

1. Improved Public Transit
2. Voluntary Ridesharing Program
3. Park-and-Ride Lots
4. Bicycle Programs
5. Traffic Flow Improvements
6. Controls on Extended Vehicle Idling

It should be noted that this plan's contingency program includes additional transportation measures that could be implemented in the event that San Joaquin County's progress towards reducing emissions does not occur rapidly enough to meet the 1987 air quality standards.

The following discussion details the air quality aspects of the six transportation measures listed above, including a tactic description, air quality impact, implementation data, and commitment and cost. More information on these tactics is contained in the referenced COG reports.

1. Improved Public Transit

The objective of this tactic is to improve the quality and efficiencies of public transit service in order to encourage and increase transit patronage. Transit service improvements would involve the following: bus acquisitions, service expansions, commuter express bus service, use of small buses efficiently, passenger information service, public transit marketing, provide bus passenger shelters, and review of community development designs for public transit provision.

The Stockton Metropolitan Transit District (SMTD) would be responsible for implementing this tactic. This tactic incorporates

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[1]Transportation control tactics analyzed by the San Joaquin County COG are found in the Transportation Control Measure Plan for the 1982 AQMP.

the SMTD's recommended development plan and program for fiscal years 1982 through 1986. The measures under this tactic are subject to continuous implementation. SMTD plans to invest nearly $12.0 million in bus acquisitions and $5.7 million in service expansion through fiscal year 1986. Emission reductions from this tactic are expected to be 0.042 tons/day of ROG and 0.422 tons/day of CO in 1987.

2. Voluntary Ridesharing Program

The purpose of this tactic is to ensure that commuters are informed about the benefits of ridesharing, are offered an opportunity to participate, and are encouraged to participate in a ridesharing program. This would be accomplished by use of a public marketing program, by developing and promoting ridesharing incentives at employment sites, and by encouraging vanpool formation. The San Joaquin ridesharing program will promote coordinating activities with other transportation measures such as use of park-and-ride list and employer incentives.

Employers can benefit from this measure through California Senate Bill 321 (effective January 1, 1982) which provides employers with 20 percent credit for costs incurred for the purchase, lease or contracting of vehicles provided as part of an employer-sponsored ridesharing program. Business expenses related to subsidizing ridesharing may also be deducted.

The California Department of Transportation (Caltrans) will be responsible for implementing San Joaquin County's ridesharing program. Caltrans proposes to fund the program with $35,000 in FY 1982, with yearly increases to FY 1986 when $45,878 is proposed. Emission reductions from this tactic are projected to be 0.012 tons/day of ROG and 0.113 tons/day of CO in 1987.

3. Park-and-Ride Lots

This tactic would provide for the construction of more park-and-ride lots and encourage the use of existing "fringe" parking lots for the same purpose, rather than the development of new single-occupant vehicle parking facilities in downtown areas. The objective would be to help consolidate single-occupant auto trips into ridesharing arrangements by providing safe, central locations for meeting to form carpools and/or vanpools.

Caltrans, SMTD, the City of Stockton, and parking lot owners are responsible for implementing this tactic. Caltrans has constructed three park-and-ride lots in San Joaquin County and two more could be provided by 1987. SMTD, Caltrans (Rideshare Program) and the City of Stockton are to work with parking lot owners, particularly where informal park-and-ride lots already exist and are currently being used by commuters everyday, to increase the effectiveness of park-and-ride lots by providing commuter express bus service between these parking lots and employment destinations. The use of existing parking facilities will keep the cost of implementing this tactic to a minimum.

Caltrans has proposed $62,000 during FY 1982 for park-and-ride construction. Promotion of park-and-ride use is included in the Caltrans Rideshare Program. SMTD's cost of transit improvements to encourage park-and-ride is included in its service expansion budget. Emission reductions from this tactic are projected to be 0.001 tons/day of ROG and 0.015 tons/day of CO in 1987.

4. Bicycle Programs

The objective of this tactic is to provide a basic framework for the development of bicycle system improvements on the part of local government. Bicycle system improvements would include the following measures: providing continuous and convenient bicycle routes, improving bicycle parking facilities and security, and promoting bicycle use.

San Joaquin County COG, Caltrans, the cities of San Joaquin County, and San Joaquin County are responsible for implementing this tactic. Most bicycle programs are low cost, so even a small number of new bicycle trips resulting from this tactic may justify the expenditure. Currently, two percent of Transportation Development Act (TDA) funds are set aside for non-motorized facilities, unless the claimants make a determination that there are presently no needs. A total of $97,804 could be allocated for non-motorized facilities throughout San Joaquin County during FY 1982.

The City of Stockton has an approved bikeway plan which recommends a priority list for phased development. The San Joaquin County COG will complete a bicycle plan for the County in 1982. This plan will promote regional coordination of bicycling efforts and provides smaller cities with technical assistance in developing bicycle plans and facilities. In the past few years, Caltrans has been the most active government agency promoting bicycle use in San Joaquin County. The recent efforts have been geared toward the commuter bicyclist and identify potential bike routes, so as to establish bicycle commuter maps.

Each local jurisdiction should encourage bicycle use by including bicycle plans as part of their circulation elements. Also, local code amendments should require bike storage facilities on all public buildings and larger industrial and commercial establishments in urban areas. The City of Stockton has provided $42,000 per year from 1982 to 1986 for all phases of its bicycle program. Caltrans proposes $460,000 for FY 1985 to construct a bicycle shoulder on State Route 4. Emission reductions from this tactic are projected to be 0.025 tons/day of ROG and 0.200 tons/day of CO in 1987.

5. Traffic Flow Improvements

This tactic would rely upon various traffic engineering techniques to improve vehicle operating conditions by decreasing idling time and increasing the speed of traffic. Traffic flow improvements include signal synchronization, use of one-way streets,

STOP
BUS

traffic channelization, computerized traffic control, removal of unnecessary signalization and stop signs, and traffic engineering improvements. Traffic flow improvements can work against air quality and energy conservation objectives in the long run by enhancing the mobility and attractiveness of single-occupant vehicles. It is recommended that each local jurisdiction encourage the use of alternative modes of travel to offset potential increases in vehicle miles traveled, emissions and fuel consumption by single occupancy vehicles.

Caltrans, the cities of San Joaquin County, and San Joaquin County are responsible for implementing this tactic where financial resources allow. The City of Lodi has proposed $168,000 for signal synchronization in FY 1983 and the City of Tracy has proposed $101,000 for traffic channelization in FY 1982. It is estimated that 0.055 tons/day of ROG and 0.388 tons/day of CO can be reduced by this tactic in 1987.

6. Controls on Extended Vehicle Idling

This tactic would encourage facility design improvements and operational changes that minimize the concentration of harmful pollutants from extended vehicle idling. Measures include developing a signing system at all urban area railroad grade crossings informing drivers to turn off the engine of their vehicle if the wait is expected to be greater than one minute. Also, site design improvements during the project planning stage to mitigate circumstances where excessive idling could occur would help reduce situations where high concentrations of carbon monoxide are possible. Considerations would be given to the arrangement of buildings, setbacks, landscaping, and parking areas that can affect air pollution on a micro-scale level.

Cost of this tactic is minimal and air quality related site design improvements can be integrated into the existing local government planning process. Implementing agencies would include San Joaquin County and its six cities. Emission reductions of CO are projected to be 0.017 tons/day in 1987.

Summary of Transportation Control Plan

Total emission reductions expected from implementation of the Transportation Control Plan are very small when compared to reductions occurring from controlled source strategies such as vehicle emissions controls and controls on stationary and area sources. The principle reasons for this small reduction are two fold:

1)The TCP targets reducing motor vehicle trips between the home and work place only and this accounts for only 16.4 percent of all vehicle miles traveled in San Joaquin County.

2)The sizes of the urban areas in San Joaquin County are not large enough to induce large amounts of voluntary demand for using alternative forms of transportation. However, this may change in the future as the cost of driving single occupancy vehicles increases.

Emission reductions resulting from the six TCP measures outlined above amount to 0.135 tons/day of ROG and 1.155 tons/day of CO in 1987.

Summary of Mobile Source Reductions

Emission reductions resulting from the AQMP's mobile source strategy amount to 11.88 tons/day of ROG and 49.55 tons/day of CO in 1987.

2. Strategy to Reduce Stationary Source Emissions

This AQMP's stationary source control strategy includes emission reductions from the implementation of existing and new control strategies. Stationary source control measures presented in this plan involve reducing reactive hydrocarbons (ROG), only. The San Joaquin County APCD is responsible for administering and enforcing stationary source controls.

New Source Review

All non-attainment areas must have a new source review-offset program which is to be applied to large new or modified stationary emission sources in the area. Stationary sources which emit more than 15 pounds per hour or 150 pounds per day of any ozone precursor are required to apply the best available control technology (BACT) when newly constructed or modified.[1] Also, such new stationary source or modification(s) which receives a permit to construct and emits more than 25 pounds per hour or 250 pounds per day of any criteria pollutant shall mitigate (offset) net emissions increases of all pollutants for which there is a national standard sufficiently to offset any new emissions increase.

Existing Stationary Source Strategies

The vast majority of San Joaquin County's stationary source emissions result from sources less than the limits established by APCD Rule 209.1 (new source review rule). These strategies are applicable to smaller sources and are contained in APCD Regulation IV - Prohibitions. The adoption of the existing APCD rules for reducing ROG were developed from suggested model rules suggested by the San Joaquin Valley Coordinating Council.[2] These rules utilize the most reasonably available control technology (RACT) to reduce reactive hydrocarbons from stationary sources.

The following rule by rule analysis shows expected ROG emission reductions as a result of adopted APCD rules which are implemented starting in 1980 through 1987. Full compliance is assumed. Social-economic impacts are referenced in the County's 1979 Air Quality Maintenance Plan.

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[1]San Joaquin County APCD Rule 209.1 - Standards for Authority to Construct.

[2]The Valley Coordinating Council is composed of one Air Pollution Control Board member from each of the eight San Joaquin Valley Air Basin counties. The Council reviews and develops proposals for new rules that can be applied in San Joaquin Valley counties. A major purpose of the Council is to encourage uniform rule development in the San Joaquin air shed.

Rule 409.1 - Architectural Coatings

	1980	1982	1985	1987
ROG Reduction (T/D)	0.82	0.98	1.64	1.64

Full Compliance Date: various to Sept., 1982

Discussion and Calculations:

Source Description: Architectural coatings

This tactic calls for substitution of oil and solvent based materials by water based materials. A 61% emissions reduction in oil and solvent based materials is assumed to 1987 (ARB). Emissions growth in water based substitutes is expected to be 38% to 1987 (ARB). No overall change in the total application is expected.

Emissions in 1980: 4.19 T/D (oil based - 2.0 T/D, water based - 0.9 T/D, solvent based - 1.3 T/D)

Emissions in 1987: 2.54 T/D (oil based - 0.78 T/D, water based - 1.25 T/D, solvent based - 0.51 T/D)

Rule 409.2 - Disposal and Evaporation of Solvents

Rule 409.2 limits the disposal of all photochemically reactive solvents into the atmosphere to no more than 1.5 gallons per day. No emission reduction was calculated because this tactic was implemented previous to 1980.

Rule 409.3 - Organic Solvent Degreasing Operations

	1980	1982	1985	1987
ROG Reduction (T/D)	0.58	0.58	0.58	0.58

Full Compliance Date: Jan. 1, 1980

Discussion and Calculations:

Source Description: Degreasing

Assumes 70% reduction. Assumes no growth in degreasing.

Emissions in 1980: 0.83 T/D

(0.83 T/D)(70%) = 0.58 T/D

Emissions in 1987: 0.25 T/D

Rule 409.4 - Surface Coatings of Manufactured Metal Parts and Products

	1980	1982	1985	1987
ROG Reduction (T/D)	0	0.77	0.79	0.80

Full Compliance Date: Jan. 1, 1982[1]

Discussion and Calculations:

Source Description: Other industrial surface coatings

Assumes 80% reduction. Assumes 1% annual growth

Emissions in 1980: 0.94 T/D

(0.94 T/D)(80%) = 0.75 T/D

Emissions in 1987: 0.20 T/D

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[1]Rule 409.4 is proposed to be amended to revise its compliance date to 1983.

Rule 409.5 - Cutback Asphalt Paving Materials

	1980	1982	1985	1987
ROG Reduction (T/D)	0	0	0.57	0.57

Full Compliance Date: Jan. 1, 1985

Discussion and Calculations:

Source Description: Cutback asphalt

Assumes 65% reduction. Assumes no growth in cutback asphalt use

Emissions in 1980: 0.87 T/D

(0.87 T/D)(65%) = 0.57 T/D

Emissions in 1987: 0.30 T/D

Rule 409.6 - Can and Coil Coatings Operations

	1980	1982	1985	1987
ROG Reduction (T/D)	0	0	0.08	0.08

Full Compliance Date: Jan. 1, 1985

Discussion and Calculations:

Source Description: Miscellaneous metal products

Assumes 85% reduction. Assumes 1% annual growth

Emissions in 1985: 0.09 T/D

(0.09 T/D)(85%) = 0.08 T/D

Emissions in 1987: 0.01 T/D

Rule 409.7 - Graphic Arts

	1980	1982	1985	1987
ROG Reduction (T/D)	0	0	0.13	0.26

Full Compliance Date: Variable to Jan., 1986

Discussion and Calculations:

Source Description: Graphic arts

Assumes 75% reduction and no growth in emissions

Emissions in 1980: 0.35 T/D

(0.35 T/D)(75%) = 0.26 T/D

Emissions in 1987: 0.09 T/D

Rule 409.8 - Perchloroethylene Dry Cleaning Systems

	1980	1982	1985	1987
ROG Reduction (T/D)	0	0.37	0.37	0.37

Full Compliance Date: Jan. 1, 1982

Discussion and Calculations:

Source Description: Dry Cleaning

Assumes 90% reduction and no growth in emissions

Emissions in 1980: 0.41 T/D

(0.41 T/D)(90%) = 0.37 T/D

Emissions in 1987: 0.04 T/D

Rule 411.1 - Transfer of Gasoline into Stationary Storage Containers

	1980	1982	1985	1987
ROG Reduction (T/D)	2.75	2.75	2.75	2.75

Full Compliance Date: 1980

Discussion and Calculations:

Source Descriptions: Bulk gasoline terminals, Gasoline bulk plants Service station loading

Assumes 95% reduction which is a 5% increase in addition to the 90% control factor previous to Rule 411.1. Assumes no growth in gasoline use.

Emissions in 1980: 5.49 T/D

(5.49 T/D)/(1-0.9) = 54.90 T/D uncontrolled

(54.90 T/D)(5%) = 2.75 T/D

Emissions in 1987: 2.74 T/D

Rule 411.2 - Transfer of Gasoline into Vehicle Fuel Tanks

	1980	1982	1985	1987
ROG Reduction (T/D)	0	2.77	2.77	2.77

Full Compliance Date: Dec., 1980

Discussion and Calculations:

Source Description: Service station vehicle refueling

Assumes 95% reduction. Assumes no growth in gasoline use

Emissions in 1980: 2.92 T/D

(2.92 T/D)(95%) = 2.77 T/D

Emissions in 1987: 0.15 T/D

Rule 412 - Organic Liquid Loading

Rule 412 was implemented previous to 1980.

The San Joaquin County APCD has adopted (on May 29, 1979) rules for:

1) Refinery Oil Water Separators (Rule 413)
2) Valves and Flanges at Petroleum Refineries and Chemical Plants (Rule 413.1)
3) Refinery Vacuum Producing Devices or Systems (Rule 413.2)
4) Refinery Process Unit Turnaround (Rule 413.3)

Summary of Reductions by Existing Rules

With full compliance, existing APCD rules with compliance dates after 1979 are projected to reduce ROG by 9.82 tons/day by 1987.

New Stationary Source Strategies

EPA policy requires that each air quality plan include a commitment to adopt control measures that are reasonably available and for which there are sources in the non-attainment area. The goal of this policy is to aid meeting the federal air quality standards as expeditiously as possible, as required by the Clean Air Act Amendments.

The EPA has suggested measures using reasonably available control technology (RACT) which could reduce ROG emissions. These proposals for new emission control measures are now being developed by various California air pollution districts and the ARB as suggested control measures (SCMs) to be included in 1982 air quality plans throughout the state.

Seven SCMs have been identified for emission sources in San Joaquin County. These SCMs, now under study, are expected to be ready for local adoption prior to 1987. At that time, the Board of Supervisors will hold public hearings on each proposed new rule before accepting, rejecting, or modifying the proposal.

The following pages discuss six SCMs that involve emission controls on stationary sources.

SCM-1 - Wood Furniture Manufacturing

This category consists of pressure treating of wood and wood processing facilities. Sources of hydrocarbons include adhesives, solvents, surface coatings, stains, and preservatives. This tactic would require the use of low-solvent coatings and add-on control equipment.

Source Description: Wood furniture and wood products
Emissions in 1980: 0.08 T/D
Potential Reduction: 75% by 1987
Development: Current
Implementing Agency: APCD
Implementation Date: 1984

	1980	1982	1985	1987
ROG Reduction (T/D)	0	0	0.04	0.06

Cost: Unknown

Impacts: Net petroleum savings expected.

SCM-2 - Automobile Refinishing

Emissions from automotive refinishing are directly attributed to the evaporation of solvents used in vehicle coatings. Reduction in ROG emissions can be achieved either by use of low solvent coatings or by use of control equipment.

Source Description: Auto refinishings
Emissions in 1980: 0.10 T/D
Potential Reduction: 30% by 1987
Development: Current
Implementing Agency: APCD
Implementation Date: 1984

SCM-2 (Cont.)

	1980	1982	1985	1987
ROG Reduction (T/D)	0	0	0.01	0.0

Cost: Unknown

Impacts: Net petroleum savings expected

SCM-3 - Synthetic Rubber Manufacturing

This tactic will reduce ROG emissions from a broad spectrum of industries involved in producing several rubber-based products. Many of these manufacturers have common emission problems associated with compounding, milling, extruding, curing, calendaring, spraying, and rubber coating products. Control measures include filter collectors, thermal incenerators and scrubbers.

Source Description: Synthetic Rubber Manufacturing
Emissions in 1980: 0.19 T/D
Potential Reduction: 5% by 1987
Development: 1982
Implementing Agency: APCD
Implementation Date: 1985

	1980	1982	1985	1987
ROG Reduction (T/D)	0	0	0	0.01

Cost: Unknown

Impacts: Unknown

SCM-4 - Alcohol Beverage Production - Wineries

This measure concerns the reduction of ethanol emissions occurring during the fermentation process at wineries and from the storage of brandy. Controls currently being considered center on carbon absorption. Winery emissions are currently undergoing investigation to determine the reactivity of ethanol as well as the feasibility of emission controls.

Source Description: Fermentation process
Emissions in 1980: 0.65 T/D
Potential Reduction: 50% by 1987
Development: Current
Implementing Agency: APCD
Implementation Date: 1984

	1980	1982	1985	1987
ROG Reduction (T/D)	0	0	0.15	0.30

Cost: Unknown

Impacts: Unknown

SCM-5 - Roofing Tar Pots

Up to 50% reductions in emissions can be obtained by improving heating techniques, i.e., better flame control, keeping lids on kettles down except when necessary, and requiring that roofing tar be kept below 400° F where dense white emissions begin to occur. Reductions of 90% can be achieved with use of tar tankers that use heating coils to keep the tar at a constant temperature (below 400° F).

Source Description: Other industrial surface coatings
Emissions in 1980: 0.10 T/D
Potential Reduction: 50% by 1987
Development: 1981
Implementing Agency: APCD
Implementation Date: Not scheduled

	1980	1982	1985	1987
ROG Reduction (T/D)	0	0	0.02	0.05

Cost: Unknown

Impacts: Unknown

SCM-6 - Natural Gas Production, Fugitive Emissions from Pumps, Compressors, and Pressure Relief Valves

This tactic is designed to reduce ROG emissions from natural gas well vents and field storage, pumping, and other fugitive points in the production field.

Source Description: Oil and Gas Production and Processing
Emissions in 1980: 0.55 T/D
Potential Reductions: 50% by 1987
Development: Current
Implementing Agency: APCD
Implementation Date: 1984

	1980	1982	1985	1987
ROG Reduction (T/D)	0	0	0.14	0.28

Cost: Unknown

Impacts: This tactic would save natural gas through recovery of ROG.

Summary of Reductions by Suggested Control Measures of Stationary Sources

If implemented with emission reductions and schedules indicated in this plan, new stationary source rules are projected to reduce ROG by 0.73 tons/day by 1987.

Summary of Stationary Source Reductions

Emission reductions resulting from the AQMP's stationary source strategy amount to 10.55 tons/day of ROG in 1987.

3. Strategy to Reduce Area Source Emissions

Area sources of reactive hydrocarbons (ROG) account for nearly half (49.0 percent) of the 1980 Emissions Inventory. Emissions from agricultural operations account for slightly over four fifths of area source ROG. Area sources account for 37.0 percent of the carbon monoxide (CO) in the 1980 inventory.

Control strategies for area sources involve: 1)recommending that the ARB continue developing controls for certain off-road mobile sources and utility equipment, 2)implementation of a suggested control measure (SCM) for pesticides, and 3)utilizing San Joaquin County's existing agricultural burning rule. These measures are discussed below.

M-3 - Emission Standards for New Off-Road Motorcycles

This tactic requires that the ARB develop emissions standards for off-road motorcycles presently uncontrolled. Emission reductions would be accomplished by the manufacturers placing emission control devices on new off-road motorcycles. Projected uncontrolled 1987 emissions from this source are expected to be 1.82 tons/day of ROG and 3.14 tons/day of CO.[1]

	1980	1982	1985	1987
ROG Reduction (T/D)	0	0	0.18	0.95
CO Reduction (T/D)	0	0	0.31	1.63

Development: Current
Implementing Agency: ARB
Implementation Date: 1985

Cost: This measure would increase the cost and maintenance of new off-road motorcycles by a yet undetermined amount.

Impacts: Emission control devices could cause slightly more fuel to be consumed. Manufacturers are likely to oppose standards but public support is anticipated.

M-4 - Emission Standards for New Lawn, Garden, and Home Utility Equipment

This tactic requires the ARB to develop emission standards for new home utility equipment such as lawn mowers, leaf blowers, garden tractors, tillers, auxiliary pumps and generators. Projected uncontrolled 1987 emissions from this source are expected to be 1.75 tons/day of ROG and 16.48 tons/day of CO.

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[1]All projected emissions data and information on the ARB's efforts to develop emission controls for certain off-road vehicles and utility equipment are contained in the ARB's June 24, 1980 letter to non-attainment area planning agencies and APCDs regarding ARB study of technical controls for mobile sources. Tactics M-3 to M-6, and M-8 were calculated by using San Joaquin County's proportion of population in the San Joaquin Valley Air Basin.

M-4 (Cont.)

	1980	1982	1985	1987
ROG Reduction (T/D)	0	0	0.09	0.25
CO Reduction (T/D)	0	0	0.82	2.35

Development: Current
Implementing Agency: ARB
Implementation Date: 1985

Cost: This tactic potentially includes many different kinds of small engine utility equipment and no overall cost information is yet available. Manufacturers would pass any additional cost of emission control equipment on to purchasers.

Impacts: Emission control devices could cause slightly more fuel consumption.

M-5 - Emission Standards for New Boats

This tactic would require the ARB to develop emission standards for new pleasure craft with outboard or inboard engines. Projected uncontrolled 1987 emissions from this source are expected to be 1.31 tons/day of ROG and 5.59 tons/day of CO.

	1980	1982	1985	1987
ROG Reduction (T/D)	0	0	0	0.19
CO Reduction (T/D)	0	0	0	0.80

Development: Current
Implementing Agency: ARB
Implementation Date: 1986

Cost: This tactic would increase the purchase price and maintenance cost of new gasoline-powered pleasure craft by an unknown amount.

Impacts: Unknown

M-6 - Emission Standards for New Off-Road Heavy Duty Non-Farm Equipment

This tactic would require the ARB to develop emission standards for off-road heavy duty construction equipment. Projected uncontrolled emissions in 1987 from this source are expected to be 0.51 tons/day of ROG and 1.35 tons/day of CO.

	1980	1982	1985	1987
ROG Reduction (T/D)	0	0	0.03	0.14
CO Reduction (T/D)	0	0	0.07	0.36

Development: Current
Implementing Agency: ARB
Implementation Date: 1985

M-6 (Cont.)

Cost: This measure would increase the purchase price and maintenance cost of new heavy duty construction equipment by an unknown amount.

Impacts: Fuel consumption may increase slightly due to this tactic.

SCM-7 - Pesticides

This tactic calls for a 50% reduction of ROG emissions from hydrocarbon based weed control materials. Weed control hydrocarbons account for slightly over 75% of ROG emissions emitted by all pesticide uses in San Joaquin County, according to data furnished by the ARB. Considerable background data is needed before advancing this measure for adoption. Additional considerations regarding a pesticide emission reduction tactic are outlined in the AQMP's discussion of further study of a voluntary "spray, no spray" program on days when a ozone exceedance is forecast.

	1980	1982	1985	1987
ROG Reduction (T/D)	0	0	4.97	12.42

Development: Current
Implementing Agency: APCD/ARB
Implementation Date: 1985

Cost: Unknown

Impacts: Most impacts are unknown because the exact nature of a pesticide emission reduction program is not known.

Rule 416.1 - Agricultural Burning

San Joaquin County's existing agricultural burning rule bans all agricultural burning on no-burn days when an exceedence of ambient air quality standards is forecasted by the ARB. The effectiveness of this provision of the rule relies on the accuracy of the ARB in predicting potential exceedences of the ozone and carbon monoxide clean air standards.

	1980	1982	1985	1987
ROG Reduction (T/D)	6.38	6.38	6.38	6.38
CO Reduction (T/D)	39.50	39.50	39.50	39.50

Summary of Area Source Reductions

Emission reductions resulting from the AQMP's area source strategy amount to 20.33 tons/day of ROG and 44.64 tons/day of CO in 1987.

Summary of Emission Reductions

Emission reduction strategies for mobile, stationary, and area sources together amount to 42.76 tons/day of ROG and 94.19 tons/day of CO in 1987. Table 11 on the following page summarizes these projected 1987 reductions and Figure 3 shows the projected 1987 Emission Inventory based on the projected reductions.

If the ozone reduction program is implemented as scheduled, San Joaquin County can meet the federal ozone standard before the end of 1987, as shown in Figure 4 , on the following pages. Figure 4 shows that if the reactive hydrocarbon reductions contained in this AQMP occur as scheduled, annual ROG reductions will be ample to maintain RFP to 1987.

The AQMP's CO reduction program shows RFP only to 1984 (or 1985 at the latest). However, it is likely that further reduction programs will not be needed if air quality data for CO continues to show improvement as shown in Section III. San Joaquin County exceeded the 8-hour CO standard only once in 1980 and did not exceed it in 1981. After eight consecutive quarters where the NAAQS is not exceeded, a non-attainment area may seek redesignation and become an attaining area. This means that if there are no exceedences of the federal CO standards during 1982, San Joaquin County can seek redesignation for CO.

Table 11

Summary of Projected Emission Reductions
Tons/Day

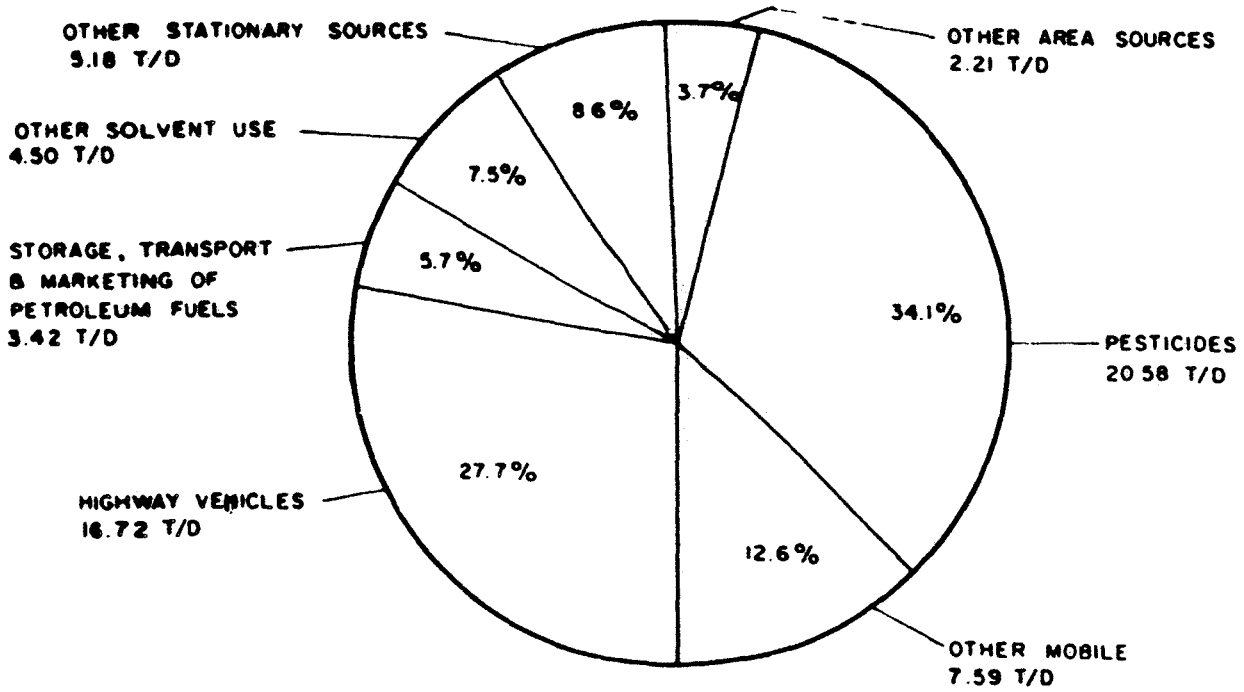
No.	Tactic Name	Hydrocarbons (ROG) 1980	1982	1985	1987	Carbon Monoxide 1980	1982	1985	1987
Mobile Sources									
M-1	Emission Controls on Motor Vehicles	-	3.34	8.36	11.70	-	13.05	32.64	45.69
M-2	Anti-Tampering	0	0.04	0.04	0.04	0	2.70	2.70	2.70
TCP-1	Improved Public Transit	0.07	0.05	0.04	0.04	0.38	0.36	0.40	0.42
TCP-2	Voluntary Ridesharing Program	0.02	0.01	0.01	0.01	0.10	0.04	0.09	0.11
TCP-3	Park and Ride Lots		insignificant			0.01	0.01	0.02	0.02
TCP-4	Bicycle Programs	0.04	0.03	0.03	0.03	0.20	0.19	0.19	0.20
TCP-5	Traffic Flow Improvements	0.01	0.04	0.05	0.06	0.06	0.26	0.32	0.39
TCP-6	Controls on Extended Vehicle Idling		insignificant			0	0	0	0.01
Total Mobile Sources		0.14	3.51	8.53	11.88	0.75	16.61	36.36	49.55
Stationary Sources									
Rule 409.1	Architectural Coatings	0.82	0.98	1.64	1.64				
Rule 409.3	Organic Solvent Degreasing Operations	0.58	0.58	0.58	0.58				
Rule 409.4	Surface Coatings of Manufactured Metal Parts and Products	0	0.77	0.79	0.80				
Rule 409.5	Cutback Asphalt Paving Materials	0	0	0.57	0.57				
Rule 409.6	Can and Coil Coating Operations	0	0	0.08	0.08				
Rule 409.7	Graphic Arts	0	0	0.13	0.26				
Rule 409.8	Perchlorethylene Dry Cleaning Systems	0	0.37	0.37	0.37				
Rule 411.1	Transfer of Gasoline into Stationary Storage Containers	2.75	2.75	2.75	2.75				
Rule 411.2	Transfer of Gasoline into Vehicle Fuel Tanks	0	2.77	2.77	2.77				
SCM-1	Wood Furniture Manufacturing	0	0	0.04	0.06				
SCM-2	Automobile Refinishing	0	0	0.01	0.03				
SCM-3	Synthetic Rubber Manufacturing	0	0	0	0.01				
SCM-4	Alcohol Beverage Production-Wineries	0	0	0.15	0.30				
SCM-5	Roofing Tar Pots	0	0	0.02	0.05				
SCM-6	Natural Gas Production, Fugitive Emissions from Pumps, Compressors, and Pressure Relief Valves	0	0	0.14	0.28				
Total Stationary Sources		4.15	8.22	10.04	10.55				

Summary of Projected Emission Reductions (Cont.)

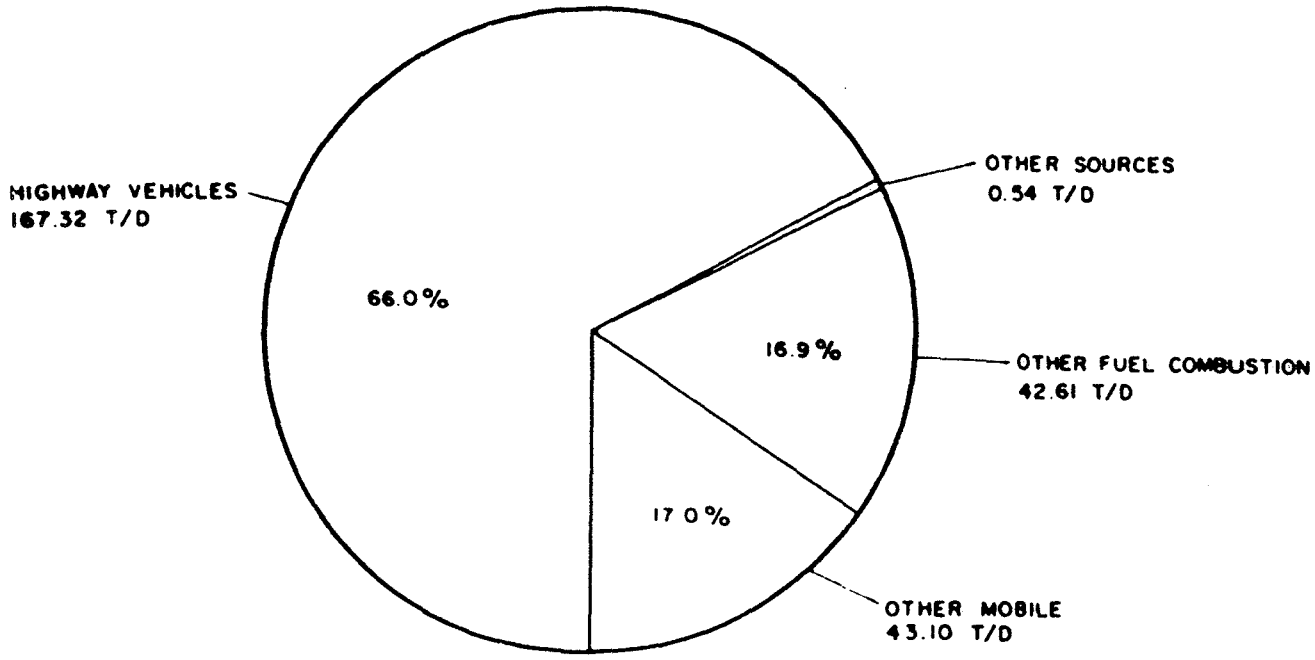
No.	Tactic Name	Hydrocarbons (ROG) 1980	1982	1985	1987	Carbon Monoxide 1980	1982	1985	1987
Area Sources									
M-3	Emission Standards for New Off-Road Motorcycles	0	0	0.18	0.95	0	0	0.31	1.63
M-4	Emission Standards for New Lawn, Garden, and Home Utility Equipment	0	0	0.09	0.25	0	0	0.82	2.35
M-5	Emission Standards for New Boats	0	0	0	0.19	0	0	0	0.80
M-6	Emission Standards for New Off-Road Heavy Duty Non-Farm Equipment	0	0	0.03	0.14	0	0	0.07	0.36
SCM-7	Pesticides	0	0	4.97	12.42				
Rule 416.1	Agricultural Burning	6.38	6.38	6.38	6.38	39.50	39.50	39.50	39.50
Total Area Sources		6.38	6.38	11.65	20.33	39.50	39.50	40.70	44.64
Total Emission Reductions		10.67	18.11	30.22	42.76	40.25	56.11	77.06	94.19

PROJECTED 1987 EMISSIONS INVENTORY
(WITH AQMP EMISSION CONTROLS)

Figure 3



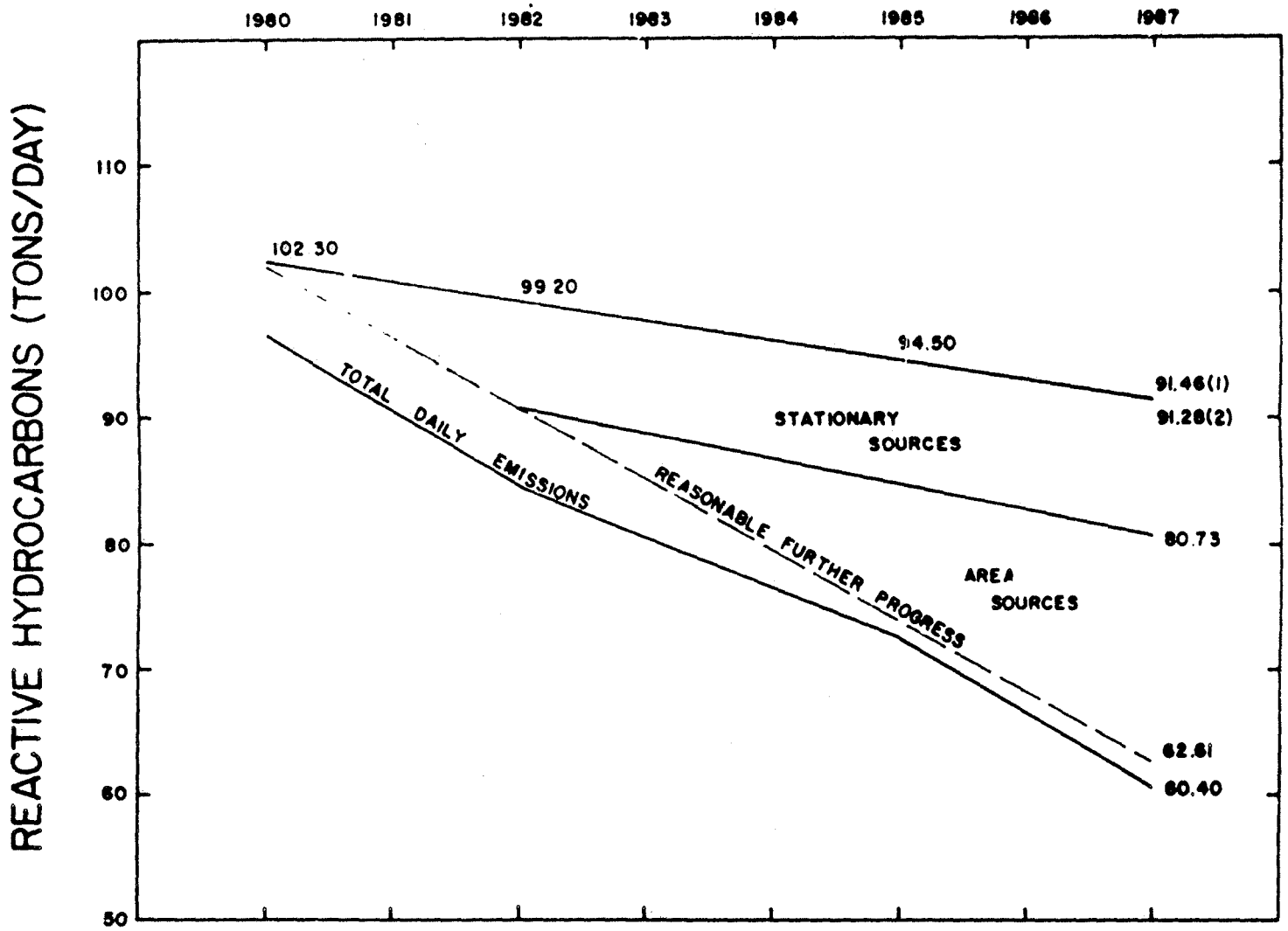
REACTIVE HYDROCARBONS 60.40 T/D



CARBON MONOXIDE 253.57 T/D

Figure 4

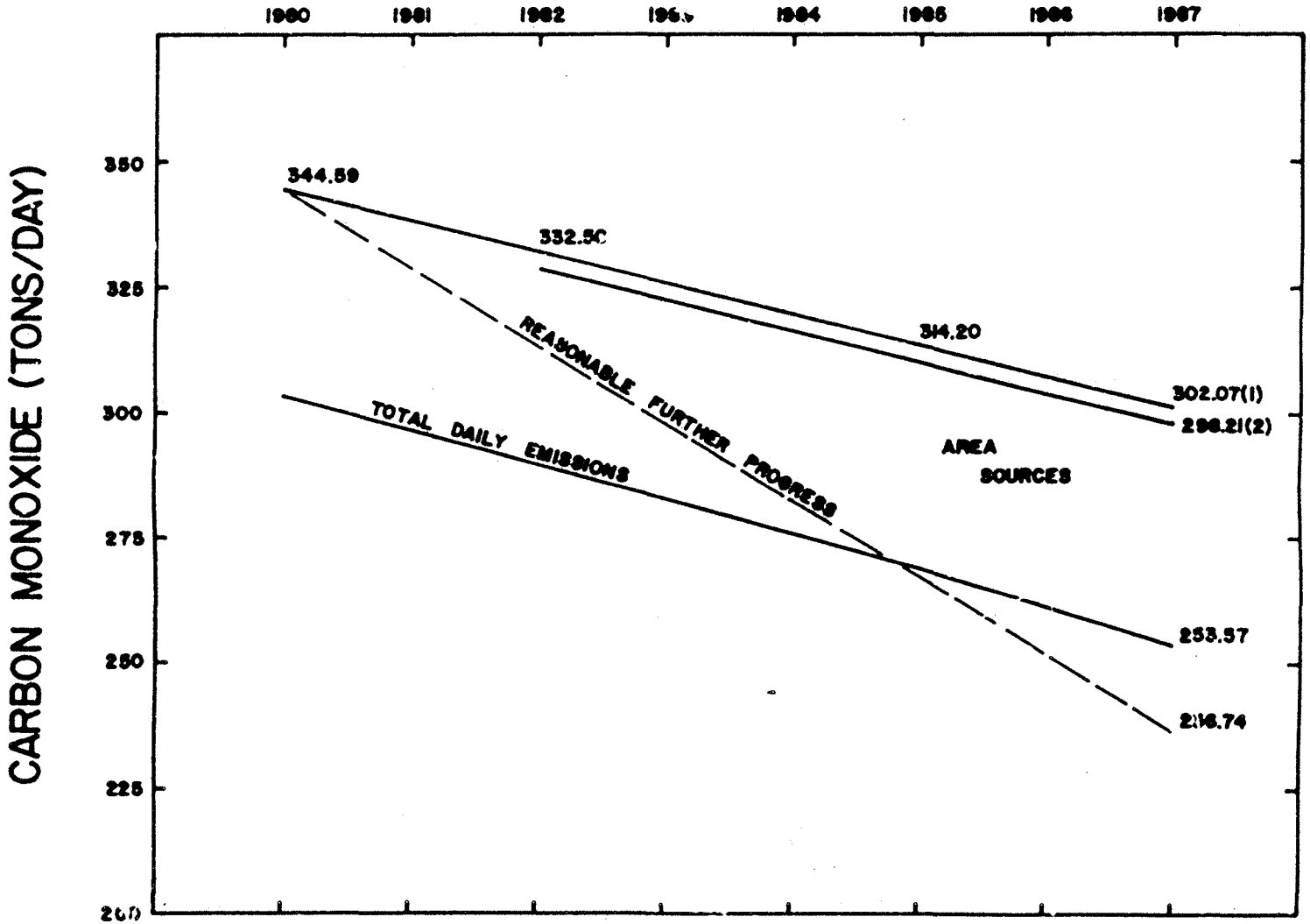
SUMMARY OF PLANNED HYDROCARBON EMISSION REDUCTIONS
1980-1987



(1) INCLUDES VEHICLE EMISSION CONTROLS
(2) TRANSPORTATION CONTROL PLAN

Figure 5

SUMMARY OF PLANNED CARBON MONOXIDE EMISSION REDUCTIONS 1980-1987



(1) INCLUDES VEHICLE EMISSION CONTROLS

(2) TRANSPORTATION CONTROL PLAN

B. Contingency Strategy

The Clean Air Act Amendments require that air quality plans contain contingency plans that shall be implemented in case existing and new strategies are not realized fast enough to bring steady improvement of air quality as expeditiously as possible before or by December 31, 1987. Such short falls are likely to result from: 1)failing development and/or adoption schedules and/or 2)lack of compliance with existing and newly adopted air pollution control tactics.

Annual Reasonable Further Progress (RFP) reports will determine if there is need to implement portions or all of the AQMP's contingency plan. Emission reduction short falls in either the AQMP's ozone or carbon monoxide strategy could cause a need to implement this contingency plan. Further discussion of the relationship between RFP reports and the contingency plan are found in this plan's implementation section.

In case the situation arises that the contingency program is needed, the tactics have been prioritized for implementation. Priority is based on the effectiveness of each tactic to reduce emissions in the shortest reasonable time and each is discussed below in order of priority.

Priority One:

M-7 - Inspection/Maintenance of Light Duty Motor Vehicles

Inspection/maintenance (I/M) of motor vehicles to identify and repair autos with faulty emission control devices and poor tuning would help greatly to reduce ROG and CO emissions. The large amount of emissions reduction caused by a fully implemented I/M program would go far to offset any shortfalls occurring in implementing the main portion (existing and new strategies) of the AQMP.[1]

It should be noted that post 1982 non-attainment areas such as San Joaquin County are required by the Clean Air Act Amendments to show commitment towards implementing an I/M program. However, an I/M program has to be authorized by the California Legislature before it is implemented locally. The State Legislature's failure to enable an I/M program in California has caused the EPA to withhold $850 million of federal monies for federally supported highway and clean water grants in the state's larger metropolitan counties and regions. Other states have also been subject to these kinds of sanctions.

A determination whether to proceed towards implementing a I/M program in San Joaquin County would be contingent on: 1)a

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[1]Analysis of an I/M program is contained in the Transportation Control Measures Plan for the 1982 Air Quality Maintenance Plan, San Joaquin County Council of Governments, October 1, 1981.

demonstration in a annual RFP report that the ozone or carbon monoxide reduction strategy was not progressing rapidly enough to meet 1987 air quality standards and 2)that state legislation authorizing an I/M program in California's larger metropolitan counties and regions had been passed. If these two conditions were met, the County would seek similar enabling legislation after holding public hearings.

It is projected that a fully implemented I/M program in San Joaquin County could reduce motor vehicle emissions by 3.38 tons/day of ROG and 34.24 tons/day of CO in 1987.[1]

Priority Two:

M-8 - Emission Standards for New Farm Equipment

Hydrocarbon emissions from farm machinery contribute substantially to the County's ROG and CO inventory. According to the ARB, uncontrolled emissions from farm equipment are estimated to be 2.30 tons/day of ROG. The ARB is currently working to develop emission standards for new farm equipment and could implement standards as early as 1985. Emission controls on farm equipment would probably be similar to those applied to heavy duty construction equipment. Since this tactic would be implemented statewide by the ARB, its contingency status is directly related to actions taken by the ARB. It is projected that emission standards for new farm machinery could reduce ROG emissions 0.98 tons/day and CO by 9.29 tons/day in 1987.[2]

Priority Three:

More Transportation Control Measures

The following list identifies possible contingency measures which would supplement the AQMP's Transportation Control Plan in case RFP cannot be shown after implementation of measures M-7 and M-8. Analysis of the transportation measures listed below is found in the San Joaquin County COG's Transportation Control Measure Plan. These measures would be implemented as expeditiously as possible in case of a severe RFP shortfall.

-Inspection/Maintenance Program for Heavy Duty Gasoline Vehicles
-Retrofit of Heavy Duty Gasoline Vehicles with Emission Controls
-Integrated Transit Mode Development
-Pedestrian Orientation Development and Policies
-More Controls on Extended Vehicle Idling (drive-up windows)
-Institute Special Parking Taxes

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[1]Ibid.
[2]Calculated from ARB letter of 6/24/80 to lead air quality planning and APCD in non-attainment areas.

Summary of Contingency Strategy

Contingency priorities one and two, if implemented are projected to reduce ROG emissions by 4.36 tons/day and CO emissions by 43.53 tons/day in 1987.

C. Further Study Strategies

The following emission reduction strategies are not suggested control measures and need significant further study before they could be given new or contingency strategy status.

50% Reduction of Hydrocarbon Based Pesticide Use on Days with a Ozone Exceedence Forecasted

Many questions must be answered before any emission reduction program for pesticides can be adopted. Major issues yet to be resolved include: 1)the accuracy of the data used to determine the total amount of ROG from pesticide use and 2)what the details of a emission reduction strategy for pesticide would likely include.

Some significant factors that must be considered in developing any pesticide emission reduction strategy include:

a. Pesticide use, which includes herbicide use, varies greatly during the course of the year. Significant variations occur from crop type to crop type. Consequently, emissions data varies greatly, even within the six-month seasonally adjusted ozone period and between growing areas.
b. A vast amount (75.2 percent according to ARB inventory data) of the County's pesticide emissions result from use of hydrocarbon based chemicals for weed control. These herbicides are used most heavily during spring and early summer field preparations, on alfalfa, and on certain field crops. Much of the remaining hydrocarbon emissions result from the use of petroleum distillates and solvents during the growing season. Water based insecticides contribute very little to the inventory.
c. An unknown and probably low level of accuracy is achieved in measuring hydrocarbon based pesticide emissions by using only Pesticide Use Reports (PURs) from each county agricultural commissioner. PURs report only a limited (unknown) fraction of all pesticides used. ARB's emission inventory for pesticide emissions relies mostly on PURs and volatility rates for different chemicals.
d. Further study of the relationship between ozone levels and emissions from use of pesticides, particularly herbicides and petroleum solvents, is needed before a daily or overall strategy can be adequately evaluated. Better information on daily evaporation rates is needed.
e. The California Department of Food and Agriculture (land), the ARB (air), and the Water Quality Control Board (water) should work together to find a reasonable and comprehensive strategy to reduce pesticide use, including the use of hydrocarbon based pesticides, without impairing farm productivity in the Central Valley region. ARB will have to work closely with local agricultural groups throughout such a process. Local approval of such a strategy would be essential.

f. Current unknowns and variables in pesticide use data and actual pesticide use make extensive and mandatory control programs extremely difficult. Voluntary cooperation is the only reasonable course of action until much more data on the subject is produced.

As mentioned, pesticide emissions vary greatly, including within the six-month ozone season as shown in Table 12 below:

Table 12

Monthly Reactive Hydrocarbon Emissions from Pesticide Use During the 1979 Ozone Season (Tons/Day)

	May	June	July	Aug	Sept	Oct	Monthly Average
Weed Control Hydrocarbons	38.90	44.21	26.34	26.10	8.30	5.15	24.83
Other Pesticides	5.98	4.96	12.62	10.94	6.56	7.84	8.17
Total Pesticides	44.88	49.17	38.96	37.04	14.86	12.99	33.00
Percentage of Monthly Average	136	149	118	112	45	39	100

Source: Calculated from data furnished by the ARB.

The above table shows that emissions from weed control materials accounted for June having the highest average daily emissions during the 1970 ozone season. October emissions were the lowest during the period for both weed control emissions and total emissions. Pesticide emissions other than weed control materials were highest in July and June, respectively. It is assumed that these emission patterns prevail from one ozone season to the next. Also, it is assumed that considerable daily variations occur due to daily variations in the amount of pesticides applied.

The 1979-1981 ozone data for San Joaquin County show that exceedences of the federal ozone standard occurred at least once during each month during the three year period. The greatest number of exceedences occurred in July, and was followed by June. The fewest number of exceedences occurred in May during the three year period. The relationship between the number of ozone exceedences and pesticide emissions is therefore inconclusive at the present time.

Since a comprehensive emission reduction program for pesticides faces a number of difficult questions before implementation, it is suggested that the best available strategy would rely on the voluntary cooperation of pesticide users to reduce, on a county-wide basis, the use of hydrocarbon based pesticides by 50 percent on days in which an exceedence of the ozone standard is forecasted. Such a "spray-no spray" strategy would require that the ARB provide early and accurate forecasts of ozone exceedences to allow ample

time for the APCD, agricultural commissioner, and media to announce the forecast exceedence. Such a voluntary program, if successful, could account for at least a 4.08 tons/day ROG reduction if the SCM for pesticides was implemented. In the event that the pesticide SCM was not implemented, a successful exceedence related 50% reduction of hydrocarbon based pesticide use could achieve substantially greater daily reductions.

The impact of an exceedence related 50% voluntary reduction needs greater study before it is implemented. The major issues are impacts to farming operations. This plan commits the San Joaquin APCD to work with local farming groups in preparing a plan to begin a voluntary reduction program by 1984. Progress towards such a program will be reported in annual RFP reports.

Strategies to Reduce the Need for Agricultural Burning

San Joaquin County's Agricultural Burning Task Force explored alternative methods and practices to reduce the need to burn agricultural crop residue. Most concepts, some of which are being used on a limited scale, involved collection and removal of residue materials from the field for use as an energy feed stock in industrial processes or in the production of ethanol. The key issue for greater utilization of agricultural crop residue as alternative energy sources involve measuring the energy use and cost balance between retrieval and shipment of residue materials versus the cost of using conventional fuel.

Emissions Banking Program

An emissions banking program would provide for the "banking" of emissions credits to be used and traded to offset future emissions increases or emission reduction requirements in the non-attainment area. Any applicant for such banked emissions credits would have to show that all required control programs were applied and that additional controls or measures were implemented and reduced emissions below the level required.

Restriction or Banning of Drive-Up Window Establishments

This further study program is related to reducing situations where unusually high levels of CO can occur. The CO "hot spots" occur in areas where extended vehicle idling and restricted air movement combine. Further study of this concept involved recommending the ARB to conduct CO "hot spots" monitoring at several drive-up establishments in the Central Valley during adverse CO weather periods (fall-winter). In case it is found that the federal 1-hour CO standard (35 ppm) is frequently exceeded at such "hot spots," San Joaquin County local governments should adopt ordinances banning or restricting drive-up window establishments.

Program to Reduce CO from Fireplaces and Wood Stoves

As the cost of electricity, oil and natural gas have risen, the use of cheaper wood fuel in fireplaces and wood stoves has

increased. In several communities in the western United States wood fuel use has increased enough to be singled out as the cause for much of their air pollution problem, particularly for CO and particulate. In Fresno County, in the San Joaquin Valley Air Basin, the Fresno APCD has noted that wood burning may be causing part of the CO problem in the Fresno urban area and has begun to study the problem potential. These kinds of shifts in energy use, with potentially new pollution problems, should be monitored and reported in future RFP reports.

Agricultural Burning Fees Based on Acreage

The development of an agricultural burning fee schedule based on the number of acres that were to be burned could help reduce agricultural burning in some cases. A per acre fee assessment would provide a more equitable method of charging for agricultural burning permits. The APCD should study the development of such a schedule and report on it in future RFP reports.

San Joaquin Valley Air Basin District

The concept of a valley wide air pollution control district has been discussed for some time and numerous issues are still to be resolved. Because of these numerous unresolved issues, and the potential importance a valley wide district would have to air quality in the region, the annual RFP reports should update and inform the public on actions and activities regarding the formation of a valley wide district.

Emphasis on Energy Conservation Tactics which Bring About Air Quality Benefits

The potential air quality benefits for such tactics are numerous and should be reported in future RFP reports.

D. Additional Programs to Help Clean San Joaquin County's Air

The air pollution control strategies so far discussed and proposed in this section can have a direct and fairly immediate impact towards improving San Joaquin County air quality to federal clean air standards before or by the end of 1987. However, concern for maintenance (post 1987) of the clean air standards as population growth continues, has lead to consideration of several long term strategies that affect indirect sources of emissions. Indirect sources are land uses that generate emissions primarily through motor vehicle use or through the growth accommodated or induced by the land use. Some indirect sources include residential projects, shopping centers, recreational facilities, sewage treatment facilities, etc.

Long term maintenance of air quality standards can best occur by employing land use techniques that minimize indirect source emissions at early stages of a project's development. Because long term maintenance is a vital part of the County's air quality program, the AQMP commits that the County work closely with other San Joaquin County local government agencies in developing air quality impact analyses guidelines during 1982. These guidelines will be advisory to local governments. The major goals of the guidelines will be: 1)to monitor and control projects which have negligible impact in and of themselves which accumulatively may produce a significant air quality impact and hinder attainment, and 2)to minimize the vehicle travel associated with growth.

Some of the items to be included in the guidelines are: 1)development of threshold criteria for the initial study phase of environmental review to determine project significance, 2)a summary of recommended techniques to be employed in estimating the air quality impact of projects, 3)methods for analysis of direct and indirect air quality impacts, 4)clarification of consistency between direct and indirect emissions growth and the AQMP projections and 5)a summary of recommended land use and general plan strategies which can help maintain long term air quality.

SECTION VII

IMPLEMENTATION

The Clean Air Act Amendments and EPA national policy requires that the AQMP contain certain commitments for implementing the plan. The EPA will not consider the air quality plan adequate unless minimum commitments are shown for each emission reduction tactic or strategy. Commitment means that the AQMP must show for each ozone and carbon monoxide emission reduction tactic the following details, as necessary:

1. The name of the responsible agency (usually either the state, the APCD, or local government agency, local transit district, or combination).
2. The time-table for implementing the tactic.
3. That funds and necessary governmental approvals have been obtained to implement the tactic or that the responsible agency formally endorses the tactic, as scheduled, by a resolution supporting it specifically in the AQMP.
4. That monitoring of the success of transportation measures occur periodically.
5. That the conformity of programs and projects in the planning area be noted.
6. That the AQMP contain contingency provisions in the event reasonable further progress will not be shown.
7. A showing that basic transportation needs are met by applicable public transportation measures.

The EPA also requires that annual reports be developed for each non-attainment area which describe the progress of the air pollution reduction program during the previous calendar year. These annual Reasonable Further Progress (RFP) reports are to indicate how each non-attainment area is reducing emissions so as to show "reasonable further progress" as defined by the Clean Air Act Amendments.[1]

Annual RFP reports will be used to report and update the implementation status of the programs and tactics contained in the AQMP. Annual RFP reports will include the minimum following information:

1. A report and updating of required commitments as related to new stationary source and the transportation plan tactics.

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[1]Section 171(1) defines the term "reasonable further progress" to mean annual incremental reductions in emissions of the applicable air pollutant (including substantial reductions in the early years following approval or promulgation of air quality plan provisions and regular reductions thereafter) which are sufficient in the judgement of the EPA Administrator, to provide for attainment of the applicable NAAQS by December 31, 1987.

2. A report by the APCD on compliance and enforcement of its rules and regulations.
3. An estimate of emission reductions achieved by implementation of tactics included in the AQMP.
4. Annual determinations whether to implement an I/M program (contingency strategy).
5. Biennial assessment of 1)petroleum use and 2)population trends in San Joaquin County to determine the accuracy of related emission projections and to readjust those projections as necessary.
6. A report and updating of efforts regarding general plan revisions, CEQA and the AQMP.

The remainder of this section outlines the specific commitments that are needed to implement the AQMP. Included are 1)the responsibilities of each government jurisdiction, 2)details to be included in the annual RFP reports, 3)conformity and consistency issues, 4)how basic transportation needs are met, and 5)how and when to seek redesignation.

A. Responsibilities of Governmental Agencies

The following governmental agencies are responsible for implementing specific tactics and strategies contained in the AQMP.

1. Air Pollution Control District

Besides implementing and ensuring compliance with existing air pollution rules, the APCD will adopt the seven suggested control measures (SCMs) discussed in Section VI as they become feasible and after public hearings before the San Joaquin County Board of Supervisors. The Board of Supervisors approval of this AQMP, including these SCMs, will constitute the commitment needed for these potential new rules.

The APCD will coordinate the further study of the voluntary pesticide reduction tactic, with the goal of beginning a voluntary program by 1984. The APCD will also be involved with other further study issues, as mentioned in Section VI-C.

The APCD will be involved in showing progress towards implementing the AQMP, as described in subsection B below, which discusses specific details to be included in annual RFP reports. The APCD will work in conjunction with the County Planning Department in the development of each annual RFP report.

2. City of Stockton

This AQMP commits the City of Stockton to the following actions as discussed in the Transportation Control Plan (TCP):

a. The City is to continue working with SMTD and Caltrans regarding expansion and improved efficiency of transit and ridesharing in the Stockton metropolitan area.
b. The City is to investigate and implement "informal" park and ride lots, when feasible, in the urban area. Informal lots are meant to utilize existing facilities, thus reducing costs to nearly insignificant levels.

c. The City is to continue implementation of its bicycle plan and provide annual financing for the program, as described in the TCP.
d. The City is to continue to construct traffic flow improvements as they become feasible. No specific traffic flow improvements are listed in the TCP, however any traffic flow improvement constructed to 1987 will be reported in annual RFP reports.
e. The City is to consider and attempt to reduce unnecessary vehicle idling during the design phase of development projects. The principle purpose of this tactic is to reduce situations where localized carbon monoxide levels can become elevated and potentially harmful. The City should also consider implementing a signing system at major railroad crossings, as suggested in the TCP.

The City of Stockton will also work towards implementing long-term tactics which are intended to help maintain air quality once federal standards are attained. Section VI-D commits San Joaquin County and other local government agencies, including Stockton, to work towards developing air quality impact analysis guidelines during 1982.

3. Council of Governments

The Council of Governments (COG) will be responsible for developing a bicycle plan for the County during 1982, with COG adoption during 1983. The COG plan will coordinate with city plans and should include a capital improvement program and suggested implementation schedule.

COG will be involved in showing progress towards implementing the AQMP, as described in subsection B, below, which discusses specific details to be included in annual RFP reports.

4. Caltrans

Caltrans will be responsible for implementing the following portions of the the transportation plan:

a. Caltrans will coordinate the San Joaquin County ridesharing program, as discussed in the TCP.
b. Caltrans will continue maintenance and construction of park-and-ride lots throughout the County and work with the cities, County and SMTD to develop "informal" park-and-ride lots, where feasible.
c. Caltrans will work with the COG and the cities of San Joaquin County in preparing and implementing their bicycle plans during the AQMP's planning period.

5. County of San Joaquin

The County Planning Department will continue to prepare annual Reasonable Further Progress reports in conjunction with the APCD and COG, as provided for in subsection B, below, which discusses

TABLE 13

Summary of Commitments Needed for the Transportation Control Plan

Tactic	Major Agency Involved	Commitment Needed
Improved Public Transit	SMTD	Board Resolution
Ridesharing	Caltrans	District 10 letter
Park-and-Ride Lots	Caltrans SMTD City of Stockton	District 10 letter Board Resolution Council Resolution
Bicycle Programs	All cities Council of Governments Caltrans	Council Resolutions Resolution District 10 letter
Traffic Flow Improvements	Cities of Stockton, Lodi, Manteca, Tracy	Council Resolutions
Extended Vehicle Idling	All cities County of San Joaquin	Council Resolutions Board Resolution

the details to be included in annual RFP reports. The Board of Supervisors will review and approve each annual RFP report. The County Planning Department will also be responsible for preparing air quality analysis guidelines during 1982, as provided in Section VI-D.

6. Stockton Metropolitan Transit District

The SMTD is responsible for implementing improvements in Stockton area public transit that would help to improve air quality. SMTD will cooperate in planning with the City of Stockton and Caltrans for "informal" park-and-ride lots in the Stockton urban area.

7. City of Lodi

The City of Lodi will continue to implement traffic flow improvements through its signal synchronization program.

8. All San Joaquin County Cities, Including Lodi, Manteca, Tracy, Escalon, and Ripon

All San Joaquin County cities, including Lodi, Manteca, Tracy, Escalon, and Ripon are to include a bicycle plan in their circulation element, preferably by 1984. The bicycle plans should include approximate schedules for implementation. It is recommended that the Council of Governments and Caltrans work with the cities, as needed, in preparation of these bicycle plans.

The cities of Manteca and Tracy will also seek to improve traffic flow, as feasible. San Joaquin County and its cities are encouraged to reduce situations where extended vehicle idling can occur, particularly by site design improvements which reduce the chance of concentrated idling and where localized carbon monoxide levels can rise to potentially harmful levels.

Also, all San Joaquin County cities will work towards implementing long term tactics which are intended to help maintain air quality once the federal standards are met. As mentioned, Section VI-D commits San Joaquin County to preparing air quality impact guidelines, in cooperation with the cities in the County.

9. Air Resources Board

The ARB will be responsible for implementing the following AQMP tactics:

M-1 Emission Controls on Motor Vehicles
M-2 Anti-Tampering
M-3 Emission Standards for Off-Road Motorcycles
M-4 Emission Standards for New Lawn, Garden, and Home Utility Equipment
M-5 Emission Standards for New Boats
M-6 Emission Standards for New Off-Road Heavy Duty Non-Farm Equipment

Also, ARB and the County APCDs will, through a technical review group, work to develop the Suggested Control Measures contained

in this plan for possible adoption by the San Joaquin County APCD. ARB will continue to participate in San Joaquin County's air quality monitoring program.

B. Annual Reasonable Further Progress Reports

Annual air quality progress (RFP) reports will be required of San Joaquin County until it attains the federal ozone and carbon monoxide standard. The main purpose of these annual RFP reports are to state the previous year's progress towards implementing the provisions contained in the AQMP. They are due for submittal to the ARB by the end of June each year. ARB then submits the RFPs to the EPA, as progress reports on the entire California State Implementation Plan.

As mentioned, the Clean Air Act clearly defines reasonable progress so as to assure attainment of federal air quality standards by the end of 1987. Failure to maintain or show annual progress towards meeting these standards can lead to the need to implement the AQMP's contingency plan, so that 1987 attainment can be ensured. For the purposes of this plan, reasonable progress will be determined to mean that at least 80 percent of the annual emission reductions projected in Figures 4 and 5 have occurred during each year through 1984. At least 90 percent of the annual projected emissions reductions are to occur beginning in 1985 in order to show enough progress to meet 1987 air quality deadlines.

The San Joaquin County Planning Department will continue to prepare the County's annual RFP reports, with technical and informational preparation by the APCD and the Council of Governments. The Board of Supervisors will review and approve annual RFP reports before they are submitted to the ARB and EPA. The specific role of each of these County agencies is discussed below.

1. Role of the Air Pollution Control District

The APCD should submit its portion of the annual RFP report to the Planning Department by April 1st of each year beginning in 1983. The APCD will participate in reviewing the final RFP report before it is forwarded to the ARB and EPA.

The most important role of the APCD will be to discuss, calculate, and assure that compliance and implementation of existing APCD rules are advancing in a timely fashion so as to assure progress towards meeting 1987 attainment. The District shall report if any shortfalls exist or are projected to exist within the year and shall recommend appropriate actions to make up any emission reduction shortfalls. This submittal should document emission reductions adequately to provide the ARB and EPA with necessary data and calculations to justify the RFP findings. The submittal should contain adequate documentation to help evaluate and determine whether there is need for AQMP's contingency plan. Progress towards the development of new control measures (SCMs) should also be reported, as well as information on the development of a voluntary pesticide reduction program for days with ozone exceedences predicted. Progress of other APCD related further study measures should also be reported.

Enforcement and compliance with APCD rules will be critical to San Joaquin County's effort to successfully meet federal ozone and carbon monoxide standards by 1987. Although implementation of air pollution control programs are dependent on a great deal of voluntary cooperation, a certain amount of implementation must be backed by various levels of enforcement action in order to help in meeting NAAQS in a timely fashion and to avoid the possibliity of having to consider new additional air pollution control tactics, assuming that existing programs are adequate to reduce air pollution by the necessary amount to achieve the standards.

The APCD enforcement procedure instituted in mid 1981 will be reviewed periodically during the first year and performance standards and goals will be developed by the District which can both measure the success of the program and help to meet RFP goals. If it is found that compliance with the APCD rules is falling short of meeting RFP goals, then the APCD will increase its enforcement activity to include utilization of Rule 112 which authorizes the issuance of Notices to Appear.

The APCD should also prepare, beginning with calendar year 1982, an annual report on District activities, including but not limited to data on the activity of 1)new source review and offsets, 2)variances and compliance with variances, 3)permits data as applicable to each 409 (ROG) rule, 4)enforcement activity, including notices of violation broken into general classifications and general actions taken, 5)source test data, and 6)shut down by breakdown data. The District should also note any substantial emission changes (increase or decrease) due to changing industrial and business activity that could affect progress towards meeting clean air standards. It should be noted that much of this information is the kind of data needed to prepare the APCD's portion of the RFP submittal. Most importantly, such annual APCD reports would have a public education value and act as a means to educate the community regarding air pollution control activity.

2. Role of the Council of Governments

The COG, as with the APCD, should submit its portion of the annual RFP report to the Planning Department by April 1st of each year, beginning in 1983. The COG's principle RFP function will be to report on implementation of the Transportation Control Plan. COG will monitor and report the implementation and success of the transportation plan by reporting annual activities of each TCP responsible agency. Annual emission reductions should be quantified periodically, as feasible. The COG should actively encourage responsible agencies to expand voluntary ridesharing and bicycle programs beyond the level projected in the AQMP.

Also, the COG will prepare and submit an annual report for the RFP report showing that basic transportation needs are met and that the San Joaquin County Transportation Plan is consistent with the air quality plan.

3. Role of the County Planning Department

The San Joaquin County Planning Department will prepare the County's annual RFP reports by June 30th of each year and then

submit them to the Board of Supervisors for review and approval. The RFP reports will contain information from the APCD and COG submittals and also report on the following:

a. Trends from the past three years of air quality data.
b. Changes in emission forecasts and projections, including revision of population and gasoline use projections and adjustment of the emissions inventory to reflect any changes in the 1982 AQMP projections.
c. Section 316 consistency guidelines between federally funded clean water facilities and the air quality plan. Such guidelines should be prepared for submittal in the 1983 RFP report.
d. Annual determinations whether to implement the AQMP's contingency plan based on a yearly 20 percent emission reduction shortfall for any year to 1984 and a yearly 10 percent emission reduction shortfall for any year from 1985 through 1987. If yearly emission reductions fail by greater than these margins, then the RFP report will propose tactics to assure a return to the reasonable progress path during that year. If these assurances are found to be not feasible or are impractical, the County will seek to implement the AQMP's contingency plan.
e. The County Planning Department, in cooperation with the cities of San Joaquin County, will prepare air quality analysis guidelines, including air quality guidelines for general plan revisions during 1982 for submittal in the 1983 RFP report. Subsequent RFP reports should report any updating or refinement of these guidelines.

C. Consistency With Other Plans

The Clean Air Act requires that consistency of local, state, and federal plans be noted in the air quality plan. Also, Sections 176(c) and 316(b) of the Act require that federal actions be consistent with the plan.

Population projections contained in the AQMP utilized general plan projections from each of the cities in San Joaquin County. California Department of Finance projections are used for the County general plan and reflect growth estimates contained in the respective city general plans. The development of the vehicle emissions forecast by ARB and Caltrans utilized these Department of Finance population projections.

Section 176(c) of the Clean Air Act requires all federal projects, licenses, permits, financial assistance and other activities to conform to the air quality plan. Federal agencies are to provide this assurance. Also, as mentioned, Section 316(b) of the Act requires that direct and indirect emissions associated with any wastewater treatment facility funded under the Clean Water Act be accommodated in the air quality plan.

D. Basic Transportation Needs

As a result of requirements to show that unmet transportation

needs are met in San Joaquin County, the Council of Governments has adopted a transportation development plan which serves as a policy document for determining future unmet transportation needs and the reasonableness of meeting such needs.[1] Additionally, in response to the Social Service Transportation Improvement Act (AB 120 of 1979), an inventory of existing transportation systems was developed that provides a description of all existing public and private transportation services within San Joaquin County, the amount and source of funds utilized by each service, and the number and type of clients being served.[2]

E. Redesignation to an Attainment Area

San Joaquin County can apply to be redesignated to an attainment area for a particular pollutant after eight consecutive quarters with no exceedences of that pollution standard. If there are no exceedences of the carbon monoxide standard in the County during calendar year 1982, then the County will have not had an exceedence for eight consecutive quarters (the last CO exceedence in San Joaquin County occurred on October 31, 1980). If there are not CO exceedences during 1982, the San Joaquin County APCD and Planning Department will prepare a document for the Board of Supervisors so they can request that the County be redesignated as an attainment area for CO.

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[1] Transportation Development Plan, Volume I, San Joaquin County Council of Governments, May, 1981.

[2] Specialized Transportation Services Study for SJ Co.: Alternative Plan Proposals and Social Service Transportation Inventory, San Joaquin County Council of Governments, May, 1979 and January, 1980.

SECTION VIII

RECOMMENDATIONS TO THE STATE AND FEDERAL GOVERNMENT

The following recommendations are provided to the State of California and the U.S. Environmental Protection Agency. Implementation of these recommendations would be beneficial to San Joaquin County's effort to meet federal air quality standards.

1. The federal government should maintain a strong Clean Air Act with the current level of funding so that the EPA can carry out its entire range of programs.
2. The federal and state government should maintain stringent auto emission standards.
3. An effort should be made to make the Clean Air Act easier to understand, particularly efforts to reduce the use of air quality jargon.
4. The State of California should authorize a vehicle inspection and maintenance program.
5. EPA policy requires that each air quality plan review and document the acceptance or rejection of 18 transportation measures. Local planning agencies would better spend their resources if they were required to develop plans only for transportation measures that are reasonably and locally applicable and/or which significant air quality and energy conservation benefits could occur.
6. EPA policy requires that emission reduction strategies be continuous and will not allow emission reduction credit for day or seasonal specific strategies. This policy does not recognize the daily and seasonal variations that occur in agriculturally based non-attainment areas such as San Joaquin County and should be corrected to do so.
7. The ARB must work to improve information about the relationship between pesticides and air quality. The ARB should work closely with farm groups on this issue.
8. The ARB should continue to study and better define inter and intra basin transport of air pollution.

APPENDIX A

NON-ATTAINMENT AREA PLANNING REQUIREMENTS

APPENDIX A

Non-Attainment Area Planning Requirements

REASONABLY AVAILABLE CONTROL MEASURES for both vehicular and stationary sources to be implemented as soon as practicable (Section 172(b)(2)).

DEMONSTRATION OF "REASONABLE FURTHER PROGRESS" toward attaining the national primary ambient air quality standards in the interim period prior to the projected date for achievement of the standards (Section 172(b)(3)).

EMISSIONS INVENTORY of pollutants for areas not meeting the national ambient air quality standards (emissions inventory was previously subsumed within "control strategies" prior to 1977). (Section 172(b)(4)).

EMISSIONS PROJECTIONS for new stationary sources (Section 172 (b)(5)).

STATIONARY SOURCE PERMITS for major new or modified sources (Section 172(b)(6)).

STATEMENT DESCRIBING FUNDING AND PERSONNEL necessary to carry out the nonattainment area plans and commitment to use these resources as outlined (Section 172(b)(7)).

EMISSION LIMITATIONS and enforcement programs necessary to implement the plans (Section 172(b)(8)).

CONSULTATION PROCESS concerning planning procedures with regional and local governments (Section 172(b)(9)).

ANALYSIS OF THE AIR QUALITY, health, welfare, economic, energy, and social effect of the nonattainment plans (Section 172(b)(9)).

EVIDENCE OF LOCAL AND REGIONAL LEGAL ENFORCEABILITY AND COMMITMENT to implement appropriate parts of the plans (Section 172(b)(10)).

The following elements apply to areas seeking extensions beyond December 31, 1982, for attainment of oxidant and carbon monoxide standards:

PROGRAM TO ANALYZE AND SELECT ALTERNATIVE SITES AND DESIGN for new major stationary sources (Section 172(b)(11)(A)).

MOTOR VEHICLE INSPECTION AND MAINTENANCE PROGRAM (Section 172 (b)(11)(B)).

COMMITMENT TO EXPAND PUBLIC TRANSIT by responsible government officials (Section 110(a)(3)(D)) (Technical Amendments to Clean Air Act, November 1, 1977).

COMMITMENT TO USE FUNDS FOR EXPANSION OF PUBLIC TRANSIT from federal, state, and local sources insofar as available (Section 110(a)(3)(D)) (Technical Amendments to Clean Air Act, November 1, 1977).

APPENDIX B

EKMA ANALYSIS FOR SAN JOAQUIN COUNTY

EKMA/OZONE ISOPLETH ANALYSIS FOR SAN JOAQUIN COUNTY

The Air Resources Board (ARB) Research Division (Air Quality Modeling Section) has generated site-specific ozone isopleths for San Joaquin County. The analysis was completed using data from the monitoring sites identified in Table 1. Based on air quality data from special monitoring studies, the ARB Technical Services Division recommended that an NMHC/NOx ratio of 9.5 be used for all days for the San Joaquin County EKMA analysis.

Ozone isopleths were generated for all sites identified by meteorological analysis as receptors to the Stockton metropolitan source area located in San Joaquin and Stanislaus Counties. The level of NMHC reductions was calculated using the ozone isopleths for the days with five highest ozone levels. The required level of NMHC emission reduction for each receptor site was determined following U.S. Environmental Protection Agency procedures. (Workshop on Procedures to Demonstrate Attainment of the NAAQS for Ozone in the 1982 SIPs. San Francisco, California. Sponsored by U.S. EPA Office of Air Quality Planning, Research Triangle Park, N.C. 27711, April 21-23, 1981.) The required level is based on a ranking of the calculated percentage reductions and the number of years of representative ozone air quality data for the receptor site, as shown below:

Number of Years of Representative Ozone Air Quality Data For Site	Rank of Required NMHC Reduction for Site
1	2
2	3
3	4

The representativeness criteria of EPA was used to determine the temporal coverage of the data at each site. Monitoring data at a site is considered complete for a year if valid daily maximum hourly concentrations exist for at least 60 days during the ozone season.

A summary of NMHC reduction for each of the five highest ozone concentration days at each site is given in Table 2. The highest level of reduction for all sites impacted by the source area of interest is selected as the required reduction level for the county. This level is indicated by (*). The EKMA/isopleth analysis indicates a 39 percent reduction in NMHC emissions in San Joaquin County is required to meet the 0.12 ppm ozone NAAQS at the Modesto J Street (S50557) receptor site.

Input Data

The input data to generate isopleths for the site and day with the highest levels of NMHC reduction for San Joaquin County are presented below:

Site - Modesto J Street (S50557)

Date - July 24, 1979

Latitude (37.65)

Longitude (120.95)

Initial Inversion Height (600 feet at 0500 PDT)

Final Inversion Height (6000 feet at 1500 PDT)

(NO_2/NOx) averaged from 6 a.m. to 9 a.m. = 0.25

Concentration of O_3 transported in the surface layer -

0.06 for the base year
0.04 for the future year

Concentration of O_3 transported aloft -

0.08 for the base year
0.07 for the future year

Maximum O_3 value for site and date - 0.14 ppm

Post-0900 PDT emissions were not considered.

Concentrations of NMHC and NOx in the surface layer and aloft were assumed to be zero, as recommended in EPA guidelines.

Initial propylene and aldehyde fractions were 0.25 and 0.05 respectively, as recommended in EPA guidelines.

The base surface layer ozone concentration of .06 ppm is an estimated background concentration. The 0.04 ppm ozone level is the global background concentration and is based on the assumption that upwind areas will have attained the ozone NAAQS.

The base year ozone aloft value is the previous day's maximum surface ozone value measured at an upwind station. Analysis of wind data identifies Union Island as the upwind station. The future year ozone aloft value is calculated using a proportional relationship between the ozone NAAQS, the design day ozone value, and the base year ozone aloft value.

Mixing heights are given for 0500 and 1500. These represent the times of the morning minimum and the afternoon maximum mixing heights for the design day.

The ozone isopleths for these input data are attached. The NMHC/NOx ratio line of 9.5 has been drawn on these isopleths.

Calculation of the Percentage Reduction in NMHC Needed to Attain the 0.12 ppm O_3 Standard

The "initial" base state (point A in Figure 1) is determined from the design ozone value of 0.14 ppm and the (NMHC/NOx) ratio of 9.5. These values are based on the measured data, described earlier. Transported O_3 concentrations for the base year in surface layer and aloft are equal to 0.06 ppm and 0.08 ppm respectively.

The point A is located as A' in Figure 2. A' has the same coordinates as A and lies on a lower O_3 isopleth than the design O_3 value of 0.14 ppm. This is due primarily to the lower O_3 value aloft (0.07 ppm) for the future year.

Percentage reduction in non-methane hydrocarbon emissions to meet 0.12 ppm O_3 standard (Figure 2).

$$= \frac{A' - B'}{A'} \times 100$$

$$= \frac{1.29 - .79}{1.29} \times 100$$

$$= 38.8\%$$

Table 1

RECEPTOR SITES FOR SAN JOAQUIN COUNTY
SOURCE AREA

Receptor Site and Site Number	County	Source Area (NO_2/NOx)	Number of Years of Representative Data Based on EPA Criteria
Lodi (S39260)	San Joaquin	Bay Area	3
Union Island (S39261)	San Joaquin	Bay Area	1
Stockton 4SE (S39262)	San Joaquin	Stockton	1
Ripon (S39263)	San Joaquin	Stockton	1
Modesto-J Street (S50557)	Stanislaus	Stockton	2
Stockton-Hazelton (S39252)	San Joaquin	Stockton	3

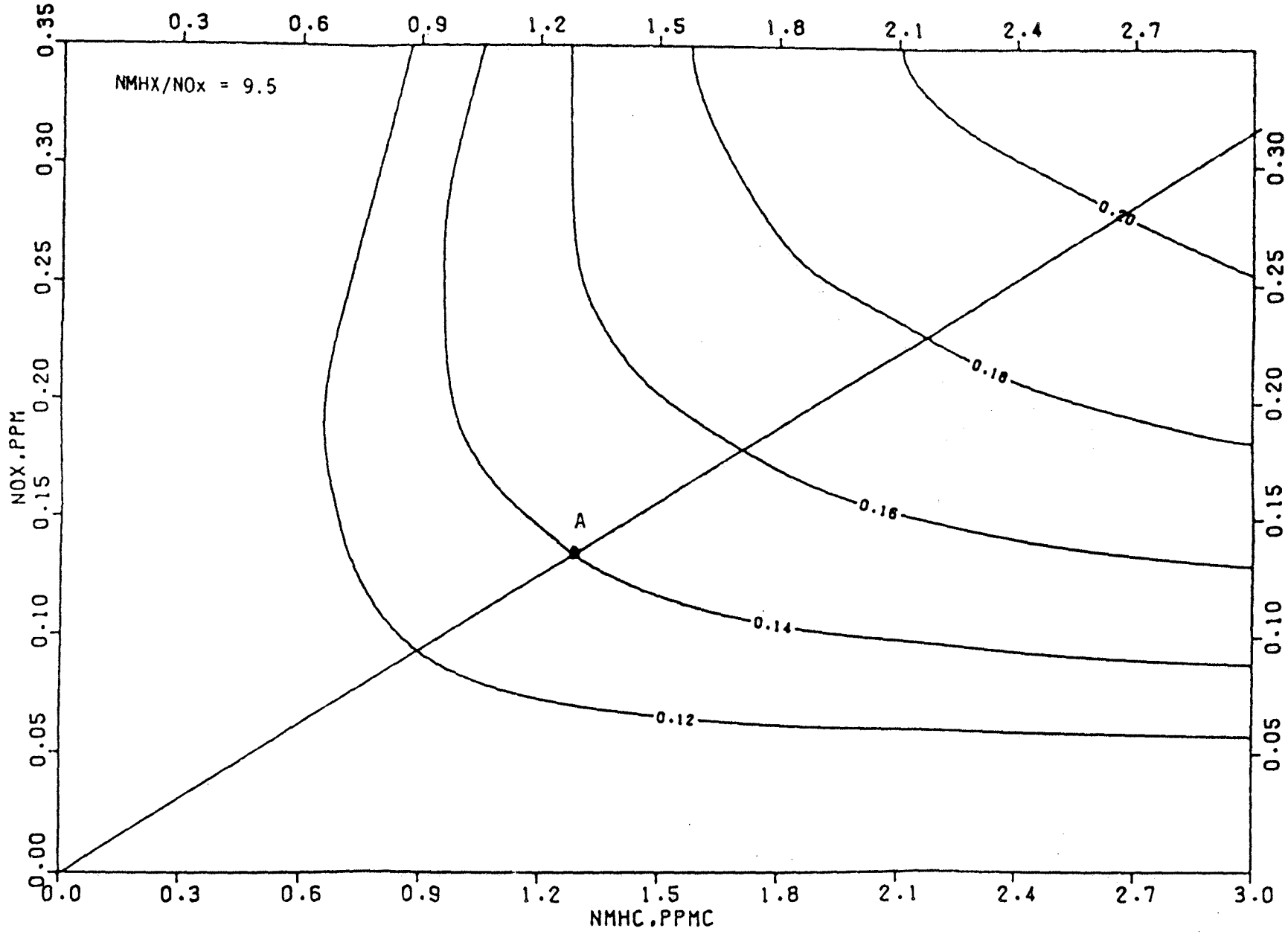
The Valley Home site (S50566) was not analyzed because this site was in compliance with the ozone NAAQS.

Table 2

SUMMARY OF HYDROCARBON EMISSION REDUCTIONS

		Lodi		Stockton 4SE		Ripon		Modesto J Street		Stockton-Hazleton	
Year	Day	O_3(ppm)	% NMHC Reduction	O_3(ppm)	% NMHC Reduction	O_3(ppm)	% NMHC Reduction	O_3(ppm)	% NMHC Reduction	O_3(ppm)	% NMHC Reduction
1979	7/14					.14	33				
	7/18			.13	12						
	7/19			.15	41	.14	32	.17	55	.14	32
	7/20							.14	40		
	7/24			.14	34			.14	39*		
	7/25			.13	5	.13	5	.15	37		
	8/10			.13	14						
1980	6/28									.14	30
	7/26							.14	28		
	9/30							.14	27		
1981	6/24									.14	20
	6/26									.14	30
	7/19									.13	9
	8/28									.13	11

*Required Reduction.



MODESTO J ST (S50557) (7/24/79) O3(SU)=0.06 PPM O3(AL)=0.08 PPM

Figure 1
Base Year

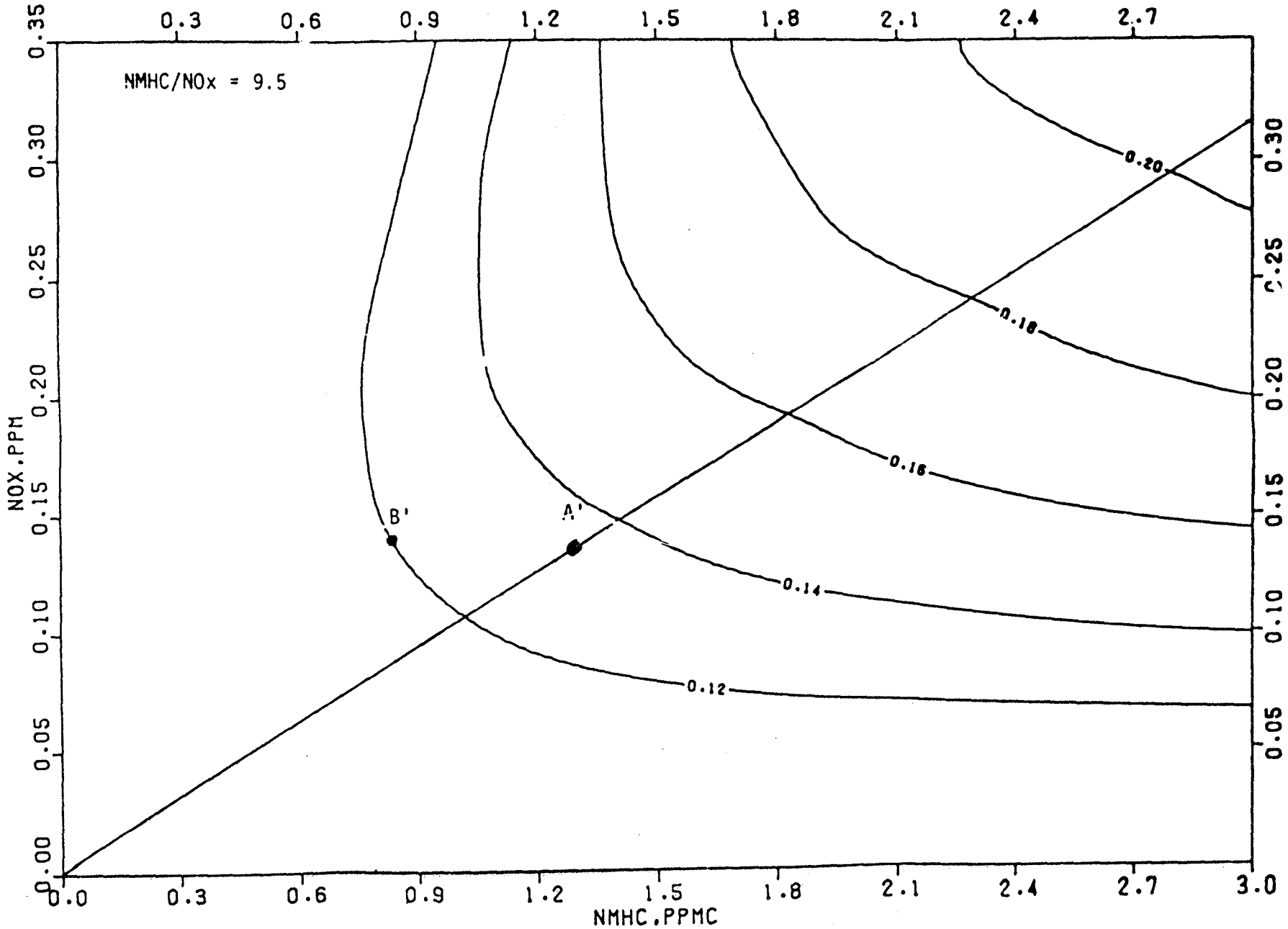


Figure 2 - Future Year

MODESTO J ST (S50557) (7/24/79) O3(SU)=0.04 PPM O3(AL)=0.07 PPM

APPENDIX C

ACID RAIN IN CALIFORNIA

ACID RAIN IN CALIFORNIA

Acid rain may be one of the most significant environmental problems of the coming decade in regions of concentrated industrial and vehicle activity at temperate latitudes throughout the world. The following discussion of acid rain in upper California is provided for information purposes and also is an attempt to help better understand any potential San Joaquin County role in the acid rain question in California.

Fundamental Acid Rain Chemistry - The acidity of normal rainfall is pH 5.6 on a pH scale of 0 to 14 (pH 1.0 is very acidic and pH 13.0 is very alkaline). Airborne acid particles are formed from sulfur and nitrogen oxide air pollution which can be chemically converted in the atmosphere into sulfuric and nitric acid. These acids can then be precipitated downwind from the pollution source with moisture during rain and snow storms (wet deposition) or as particulate fallout (dry deposition). The vast majority of acid forming air pollution in California is from nitrogen oxides (precursors to nitric acid) which come largely from motor vehicles. As a result, acid deposition problems in California effect areas downwind of large urban areas and where soils have poor acid buffering capacity, such as the Sierra Nevada and the state's northern mountains. The effects of acid deposition on poorly buffered mountain soils and lakes is well documented in Norway, which has soil conditions similar to Central and Northern California mountains and therefore a concern in our region. Most notable environmental effects of acid deposition are the increased mortality and even complete die-off of aquatic life, including fish, in lakes and waterbodies downwind from large acid forming sources such as, for example, in the north central United States which affects the downwind northeastern United States and eastern Canada.[1]

The California Situation - Problems with acid deposition in Central and Northern California have been minor to date. Several studies indicate that acid deposition is most concentrated in the immediate region of a large urban area (Bay Area, Sacramento) during the first hour of a rainstorm.[2] The effect of acid deposition on Sierra Nevada lakes in inconclusive, as acidity has increased over time at some lakes but not in others.[3] The ability of acid rain to fall from the source of nitrogen oxides pollution has been shown by measuring the greatest amount of acid forming ionic constituents in foothill areas in both Napa County and the Butte-Yuba County area.[4] This evidence indicates that wet acid deposition can be transported a great distance and

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[1]An informative article on the subject is found in An American Tragedy, Sports Illustrated, Volume 55, No. 13, Sept. 21, 1981.

[2]Acid Rain in Northern California," John C. McColl, Fremontra, Jan., 1981, p. 3.

[3]See "Acid Rain in California? Unfortunately, Yes." California Environment, U.S. Cooperative Extension, March-April, 1981 and "Are Sierra Lakes Becoming Acid?," California Agriculture, U.C. Division of Agricultural Science, May-June, 1981.

[4]Ibid, Fremontra, Jan., 1981, p.5.

that total acid ions to fall at a particular point is related to increased amounts of rainfall. San Joaquin County's role in acid deposition is also inconclusive. However, the County's emission inventory shows that a significant amount of nitrogen oxides are emitted by mobile and other combustion sources and it must be assumed that downwind locations receive some acid deposition from nitrogen oxides originating in the County. However, the effects on Central Valley locations are probably minimal because of the acid buffering capabilities of Valley soils. San Joaquin County's role with respect to acid deposition is better perceived if included in the regionwide concerns over nitrogen oxide emissions and their potential negative affects on the poorly buffered Sierra Nevada soils.

Continued Monitoring and Research - Both wet and dry acid deposition should be monitored with objectives similar to California's current air pollution monitoring program. Both NO_x and SO_x based acid air pollution should be systematically monitored, particularly since sulfur air pollution is the primary cause of acid rain problems in the northeast U.S. and increased sulfur pollution is anticipated with increased use of coal, geothermal, and tertiary oil recovery activities.

APPENDIX D

CALIFORNIA AVERAGE ENERGY PRICE FORECASTS
1980 - 2000

Table 4

California Average Energy Price Forecasts

1980 $*

	1978**	1979**	1980***	1985	1990	1995	2000
Electricity ¢/kWh	4.89	4.39	5.50	6.02	6.45	6.97	7.92
Electricity $/mmBtu	14.32	12.86	16.13	17.63	18.89	20.41	23.19
Natural Gas $/mmBtu****	2.46	2.68	3.45	4.80	6.79	8.33	9.30
Petroleum							
Crude Oil ($/mmBtu)	2.20	2.80	4.40	6.20	8.30	9.20	10.20
Crude Oil($/Bbl)	13.00	16.40	25.40	36.00	48.00	53.20	59.00
Distillate ($/mmBtu)	3.50	3.00	6.74	8.50	11.30	12.50	13.90
Residual ½% sulfur($/mmBtu)	3.10	3.50	5.10	6.20	8.30	9.20	10.20
Residual ¼% sulfur($/mmBtu)	3.10	3.40	5.10	6.50	8.60	9.60	10.60
Gasoline($/gallon)*****	0.87	1.03	1.27	1.96	2.56	2.65	2.81
Coal******							
Existing Power Plants($/mmBtu)	.52	.67	.64	.70	.73	.76	.78
New Power Plants ($/mmBtu)	-	-	-	-	2.12	2.22	2.34
Cement Industry ($/mmBtu)			1.77	2.34	2.74	2.94	3.15
Other Industry ($/mmBtu)			4.20	4.54	4.93	5.14	5.36

*Constant 1980 dollar figures may be converted to current dollars using estimates of growth in the Gross National Product Implicit Deflator listed in Table C-1.

**Actual.

***Actual except for electricity; 1980 distillate price is as of August.

****Generally mid-year actual prices.

*****Average all grades.

******New power plants assumed to begin operation in 1987. Industrial coal use costs include cost of coal boiler and pollution control equipment for non-cement industr

Source: California Energy Prices 1980-2000, Staff Report, California Energy Commission, July, 1981.

Table 5

California Average Energy Price Forecasts

Current $

	1978*	1979*	1980**	1985	1990	1995	2000
Electricity ¢/kWh	4.11	4.02	5.50	9.31	14.31	21.38	33.45
Electricity $/mmBtu	12.04	11.77	16.13	27.27	41.92	62.62	97.95
Natural Gas $/mmBtu***	2.07	2.45	3.45	7.43	15.07	25.56	39.28
Petroleum							
Crude Oil ($/mmBtu)	1.90	2.60	4.40	9.60	18.40	28.20	43.10
Crude Oil ($/Bbl)	10.90	15.00	25.40	55.70	106.50	163.20	249.20
Distillate ($/mmBtu)	2.90	2.70	6.74	13.20	25.10	38.40	58.70
Residual ½% sulfur ($/mmBtu)	2.60	3.20	5.10	9.60	18.40	28.20	43.10
Residual ¼% sulfur ($/mmBtu)	2.60	3.10	5.10	10.10	19.10	29.50	44.80
Gasoline ($/gallon)****	0.73	0.94	1.27	3.03	5.68	8.13	11.87
Coal*****							
Existing Power Plants ($/mmBtu)	.44	.61	.64	1.08	1.62	2.33	3.29
New Power Plants ($/mmBtu)	-	-	-	-	4.70	6.81	9.88
Cement Industry ($/mmBtu)			1.77	3.62	6.08	9.02	13.26
Other Industry ($/mmBtu)			4.20	7.02	10.94	15.77	22.64

*Actual.

**Actual except for electricity; 1980 distillate is as of August.

***Generally mid-year actual prices.

****Average all grades.

*****New power plants assumed to begin operation in 1987. Industrial coal use costs include cost of coal boiler and pollution control equipment for non-cement industry.

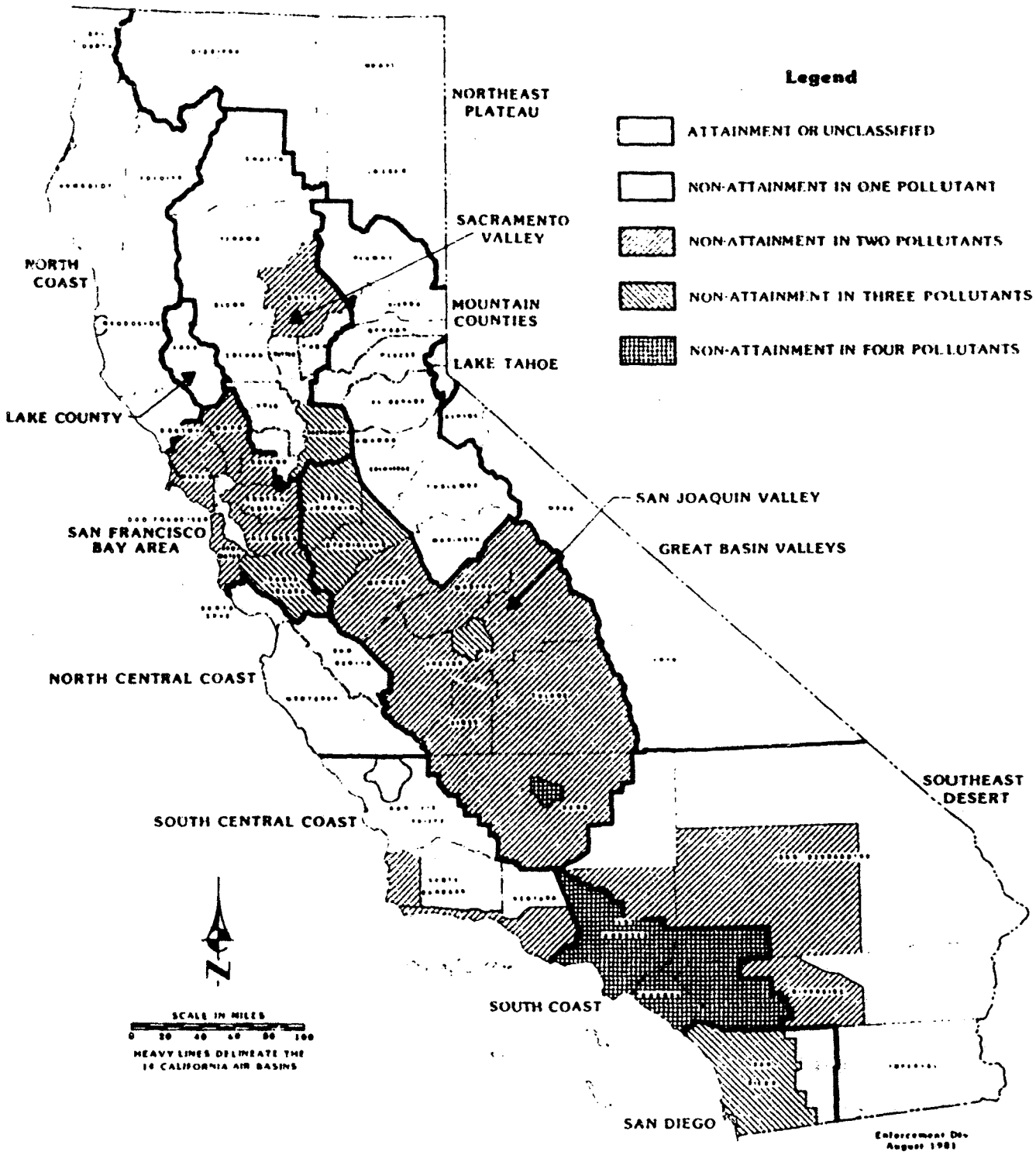
Source: California Energy Prices 1980-200, Staff Report, California Energy Commission, July, 1981.

APPENDIX E

ATTAINMENT AND NON-ATTAINMENT AREAS IN CALIFORNIA

FIGURE I - 1

ATTAINMENT AND NON-ATTAINMENT AREAS IN CALIFORNIA



APPENDIX F

ENVIRONMENTAL STATEMENT

The San Joaquin County 1982 Air Quality Management Plan has been prepared in order to meet requirements of the Clean Air Act Amendments of 1977. The AQMP proposes tactics which are intended to improve air quality in the County be reducing peak ozone and carbon monoxide concentrations so that National Ambient Air Quality Standards are not violated. In other words, the AQMP is a project intended to improve the quality of the environment.

In order to comply with provisions of the California Environmental Quality Act, an Initial Study has been prepared with findings that implementation of the AQMP will not significantly effect or impact the environment. Therefore, a Negative Declaration has been prepared and filed with the State Clearinghouse.

INITIAL STUDY

ASSESSMENT OF ENVIRONMENTAL IMPACTS

WILL THE PROJECT HAVE A SIGNIFICANT EFFECT THROUGH ANY OF THE FOLLOWING IMPACTS?	Yes	Maybe	No
a. Contaminate public water supplies	☐	☐	☒
b. Conflict with existing, established, conforming land uses	☐	☐	☒
c. Have a substantial, demonstrable, negative aesthetic effect	☐	☐	☒
d. Substantially degrade surface or ground water quality	☐	☐	☒
e. Substantially deplete surface or ground water resources	☐	☐	☒
f. Substantially interfere with ground water flow or recharge	☐	☐	☒
g. Conflict with adopted plans, goals or policies of San Joaquin County	☐	☐	☒
h. Cause a significant effect related to flooding, erosion or siltation	☐	☐	☒
i. Substantial alteration of natural topography, soil or subsoil features	☐	☐	☒
j. Disrupt or divide the physical arrangement of an established community	☐	☐	☒
k. Cause or allow substantial increase in consumption of natural resources	☐	☐	☒
l. Induce substantial growth, concentration or displacement of population	☐	☐	☒
m. Substantially increase the ambient noise or glare levels for adjoining areas	☐	☐	☒
n. Substantially affect rare or endangered species of animal or plant or their habitat	☐	☐	☒
o. Breach published national, state, or local standards relating to solid waste or litter control	☐	☐	☒
p. Substantially interfere with the movement or habitat of any species of fish, wildlife or plant	☐	☐	☒
q. Encourage activities which will result in the use of large amounts or waste of fuel or energy	☐	☐	☒
r. Necessitate major extensions of sewer, water, electrical, gasoline or telephone lines or public roads	☐	☐	☒
s. Except as part of a scientific study, disrupt or alter an archaeological, historic, or paleontological site	☐	☐	☒
t. Increase exposure of individuals or property to geological, public health, traffic, flooding related, or other hazards	☐	☐	☒
u. Violate any ambient air quality standard, substantially contribute to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentration	☐	☐	☒
v. Substantially increase demand for, or utilization of existing public facilities or services such as schools, or fire or police protection	☐	☐	☒
w. Substantially change transportation patterns related to existing traffic load, street capacity, parking availability, mode of travel or traffic safety	☐	☐	☒

EVALUATION OF PROJECT

Adverse impacts of project and their magnitude: _____

Mitigation measures offered by developers to reduce adverse impacts: _____

Compatibility of project with existing or proposed General Plan, zoning or land uses: Section VIII states that the AQMP and each city and the County general plans are consistent regarding population growth trends.

☐ Accept Negative Declaration on the following basis:

☐ Require Environmental Impac. Report for following reasons:

DETERMINATION OF IMPACT

Based on this initial study, and any supplemental information attached, any possible significant effects have been identified and are attached with mitigation measures. From this information, it has been determined that:

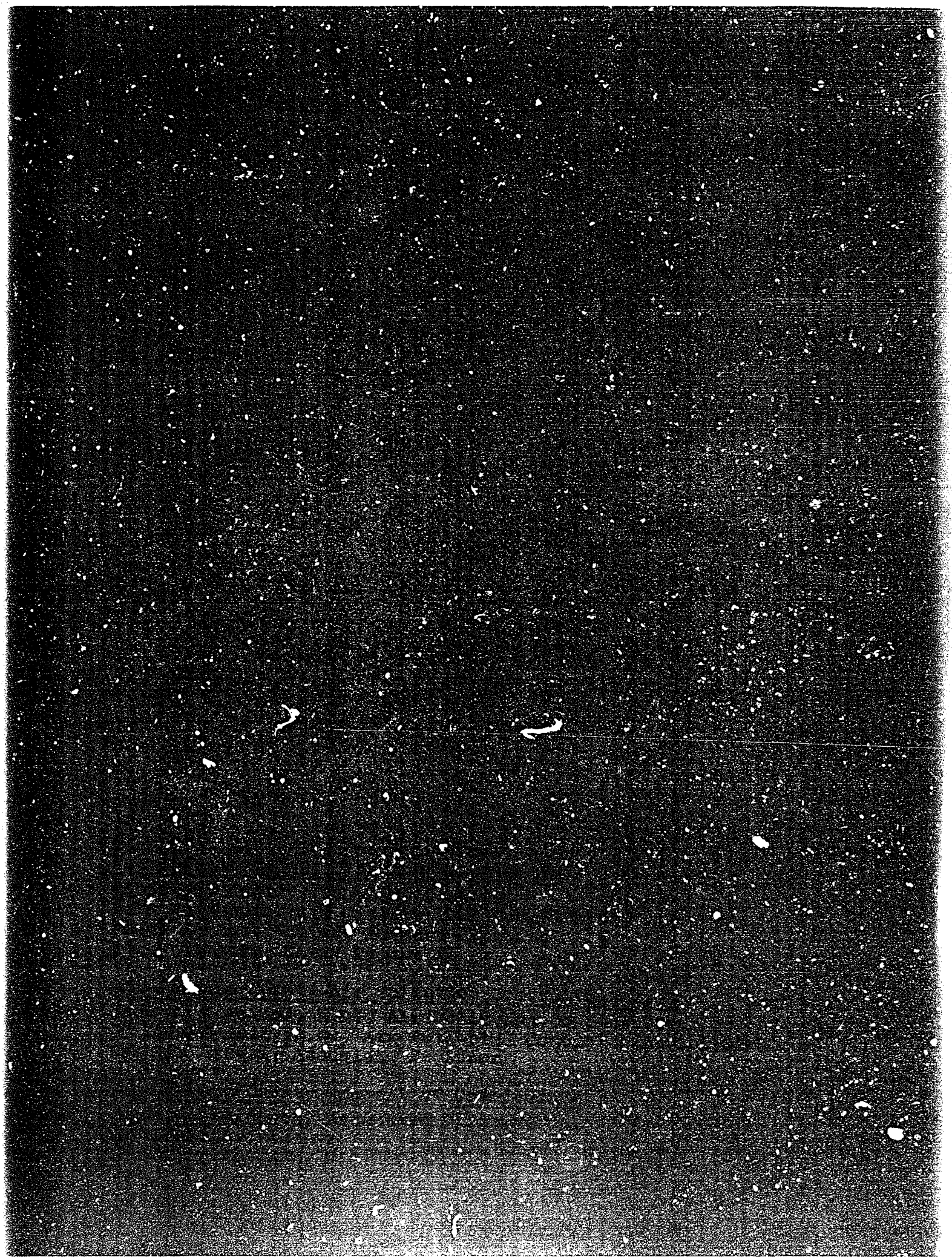
☐ This project is exempt.

☒ On the basis of this initial study, we find that the proposed project could not have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ Although the proposed project could have a significant effect on the environment, there will not be a significant effect when the mitigation measures described above, or on the attached sheets, have been added to the project. A NEGATIVE DECLARATION WILL BE PREPARED.

☐ The proposed project MAY have a significant effect on the environment and an ENVIRONMENTAL IMPACT REPORT will be prepared.

☐ ENVIRONMENTAL IMPACT REPORT # E.I.R. _____ HAS BEEN PREPARED FOR THIS PROJECT.

ROBERT S. HUNTER, Environmental Review Officer

By [signature] Date 2 24 82