Preliminary Draft Report

AIR QUALITY

IN THE

SOUTH COAST AIR BASIN

TRENDS, MODELING DATA BASE, AREAL DISTRIBUTION

In Partial Satisfaction of Conditions of
ARB Contract A6-164-70
(AQMP Tasks 407, 408, 409)

September 30, 1977

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PREFACE

This draft report is intended to provide air quality data in sufficient detail to permit definition of air quality in the South Coast Air Basin, in terms of both federal and state standards, and to provide a basis for formulation of a practical and effective Air Quality Management Plan.

Because of the urgency of making these data available for review, the present draft contains a limited analysis of the data. Section II, "Summary and Conclusions" must be considered as preliminary and incomplete. The SCAQMD staff is preparing a comprehensive analysis of the data and will prepare a final "Summary and Conclusions", which will reflect the results of review and comments by SCAG, ARB, and others.

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SECTION I. INTRODUCTION

This report is the second in a series of work plan documents prepared to develop strategies "to protect and enhance the quality of the nation's air resources so as to promote the public health and welfare and the productive capacity of its population"[1,2].

The first document in this series described the Air Quality Management Plan (AQMP) "Goals and Policies" and the "Aerometric Data". This second document will present air contaminant data for monitoring sites in the South Coast Air Basin in sufficient detail to define the air quality improvement needed to attain the air quality standards. To provide reader orientation, Tables I-I and I-II originally included in the "Goals and Policies" document are also included here. Table I (two pages) lists the various state and federal air quality standards and emergency criteria. Table I-II lists the "Class A" stations in the SCAQMD air monitoring network, which provide the bulk of data which follows.

SECTION II. SUMMARY AND CONCLUSIONS

Numerous graphs, maps, charts, tables, and texts which delineate the geographic, seasonal, and diurnal distribution of various air quality parameters for the base period 1972-1976 are presented and briefly discussed in Sections III and IV. Section V presents examples

of trends and projections for oxidant, carbon monoxide, and nitrogen dioxide obtained by treating the data to normalize the apparent trend for meteorological factors, or by treatment using standard statistical methods. These are exploratory methods of data treatment, not definitive at present, and clearly indicate that the method of data analysis will affect the conclusions drawn as to long- or short-term trends.

Section VI describes the aerometric data base to be used in the Stage II modeling process, and also the population exposure to the various contaminants for the different time-averaging periods.

Since this is a work plan document, and the output of the modeling process may ultimately define the dates of attainment of the standards and for the quantification of emission reductions required to achieve this goal, conclusions based on the untreated data are preliminary, and will require more intensive study.

Nevertheless, the data suggest the following tentative conclusions, regarding contaminant trends in the South Coast Air Basin:

General

- Meteorological effects must be considered in evaluating any trend based on ambient contaminant concentrations.

- Sufficient time (more than five years) must be considered before a reliable trend estimate can be made.

Oxidant

- Little change in oxidant, 1972-1976, in the South Coast Air Basin overall. Some stations have gone up, others down, and some have mixed results depending on criterion selected. These trends have not been weather-corrected, or modified for possible interferences such as sulfur dioxide (negative) or nitrogen dioxide (positive).

- Long-term trends, 1956-1976, indicated a downtrend of about 35% in annual average of "Los Angeles Basin Max 1-Hour". This criterion is the annual average of the highest one-hour average of each day measured at any station in the Los Angeles Basin (i.e. that part of Los Angeles County south of the San Gabriel Mountains). It represents a "worst case" of sorts, and has been documented over a twenty-year period.

- Individual stations vary, as indicated by the trends in annual average of daily maximum one-hour average shown below:

Location	Trend Direction	Approx. Percent $\frac{\text{Initial Yr.-'76}}{\text{Initial Yr.}} \times 100$	Period of Record
Los Angeles	Down	50%	1955-1976
Azusa	Down	13%	1956-1976
Azusa	Down	34%	1966-1976
Anaheim	Down	36%	1966-1976
Riverside	Up	15%	1963-1976
San Bernardino	Up	23%	1963-1976

- 1976 Oxidant concentrations (annual average of the daily maximum one-hour) are similar in San Bernardino, Riverside, and Azusa (about 0.10 ppm); less in Los Angeles (approximately 0.08 ppm) and still less in Anaheim (about 0.05 ppm).

Carbon Monoxide

- Carbon monoxide levels have dropped at those stations most directly affected by motor vehicle exhaust emissions (i.e. Lennox, Central Los Angeles).

- Meteorology may have accounted for a part of the observed downtrend, but control of motor vehicle emissions appears to be a most significant factor.

- Some stations in the eastern part of the South Coast Air Basin show an uptrend in carbon monoxide which may be due to shifts in population and concomitant increase in motor vehicle density.

- No definite basin-wide trend can be seen for the period 1972-1976.

Nitrogen Dioxide

- Attainment of the nitrogen dioxide standards is a problem mainly in densely populated Los Angeles County.

- From 1972 to 1976, no clear trend, either upward or downward, has occurred in the South Coast Air Basin. This is also true of the period 1956-1976.

Sulfur Dioxide

- Coastal areas of Los Angeles County have had the greatest number of violations of the state standard and the highest annual mean concentration of SO_2.

- The slight uptrend at the city of San Bernardino, still insufficient to cause violation of the state's stringent 24-hour standard, may be related to emissions in the Fontana area.

Total Suspended Particulate

- Highest concentrations of total suspended particulate (TSP) and the greatest number of violations of the state standard occur in an area extending from the East San Gabriel Valley into the Riverside-San Bernardino area.

- Overall concentrations have not changed much since 1972 in this high area.

- Azusa and the coastal and central areas of Los Angeles County show apparent downtrends.

Lead

- In the western portion of the South Coast Air Basin (Lennox, Los Angeles, Azusa) lead concentrations have decreased noticeably due to the phase-out of lead additives in gasolines. In the eastern portion of the basin the trend is indeterminate or slightly upward, probably due to the effect of increased motor vehicle population in these areas. The eastern portion of the basin, however, is still much below the western in lead concentrations.

Sulfate

- During 1976, violations of the state sulfate standard were most frequent in the Los Angeles County. The number of violations in that area has decreased since 1973.

  Sulfate data prior to 1976 was too spotty to allow a detailed analysis for the entire District.

Visibility

- Visibility has shown a downtrend in the Los Angeles Basin 1956-1976, and also in Central Los Angeles over the same averaging period.

  Insufficient data preclude analysis, at this time, of other parts of the South Coast Air Basin.

AIR QUALITY IN 1976

On virtually every day in 1976, one or more of the air quality standards--state or federal--was exceeded at some location in the South Coast Air Basin. The federal oxidant standard (0.08 ppm averaged over one hour) was exceeded on 252 days in 1976, and the state oxidant standard (0.10 ppm/ one-hour average) on 238 days.

Tables II-I and II-II, respectively, summarize the number of days on which state and federal short-period air quality standards were equalled or exceeded at each of the South Coast Air Quality Management District's air monitoring stations during 1976. Table II-III depicts the percentages by which the national standards for annual average air contaminant concentrations were exceeded in 1976. Table II-IV extends the data to include the incidence of the California State episode criteria.

These tables will help to establish the order of priority assigned to programs aimed at the attainment of the various standards. For example, the South Coast Air Quality Management District already complies with the federal standards for sulfur dioxide (Tables II-II and II-III) as well as the state standard for SO_2 of 0.50 ppm/one-hour (Table II-I).

However, the state standard of 0.04 ppm SO_2/24-hour average was exceeded on 56 days at Fontana, 12 days at Central Los Angeles, seven and six days, respectively, at Long Beach (SOCO) and Whittier (SOEA), two days at Lennox (SWCO) and one day at Los Alamitos (LSAL).

Carbon monoxide standards based on one-hour averages (35 ppm federal, and 40 ppm state) were exceeded on two days and one day, respectively, at only two stations--Lennox and La Habra. La Habra data reflect only ten months of operation, and the missing months (January and February) may have experienced additional violations.

The more stringent carbon monoxide standards (9 ppm/10 hours federal and 10 ppm/12 hours state) were exceeded on as many as 129 days and 107 days at Lynwood (SCLA) and Burbank (ESFV) (federal) and 90 and 93 days (state) at the same locations.

The federal oxidant standard (0.08 ppm/one hour) was exceeded on more than 100 days at 24 stations and on 204 and 201 days at Burbank and Chino, respectively. This standard is more stringent than the state standard of 0.10 ppm/one hour.

The federal primary particulate standard (260 ug/m^3, 24-hour average) was exceeded by 5% in Lancaster, located in the Antelope Valley part of the Southeast Desert Air Basin, (SEDAB), and Indio (also a SEDAB station), and by 2% at Los Alamitos, Riverside, and Victorville (also a SEDAB station). Other stations violating this standard were: Upland (4%), Fontana (6%), Barstow (SEDAB) (9%), and Chino (12%).

The federal secondary particulate standard (150 ug/m^3, 24-hour average) was exceeded nearly 50% of the time at the highest stations (48% at Riverside and 49% at Chino). The more stringent state standard (100 ug/m^3, 24-hour average) was exceeded 77% of the time at Riverside and 79% at Chino, with 14 of 28 stations exceeding this standard more than 50% of the time.

Although non-methane hydrocarbons exceeded the federal standard (0.25 ppm, three-hour average--6 to 9 a.m.) on 302

days at Lennox (SWCO) and 297 days at Newhall (SCRV), and on more than 200 days at all but two of the other stations at which this contaminant was monitored, this standard is intended as a guideline to help in attaining its oxidant standard, and is not directly health-related.

The federal standard for nitrogen dioxide was not exceeded in San Bernardino or Riverside Counties, and was exceeded (by 10%) only in Anaheim, Orange County. In Pasadena (WSGV) the standard was exceeded by 56%, and in Westwood (NWCO) by 52%. Most other Los Angeles County stations exceeded by 36 to 48%, with only Newhall and Lancaster being in compliance.

It is clear that priority should be placed on attainment of both federal and state air quality standards for oxidant, particulate, and nitrogen dioxide, as well as the state standards for SO_2 and sulfate, while maintaining compliance already attained at many stations with respect to these and other standards.

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SUMMARY

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SUMMARY OF NUMBER OF DAYS DURING 1976

SHORT-PERIOD AIR CONTAMINANT CONCENTRATION AVERAGES

AT VARIOUS LOCATIONS EQUALLED OR EXCEEDED THE STATE AIR QUALITY STANDARD

Air Contaminant	State Air Quality Standard And Averaging Time	Number of Days on Which Specified Air Contaminant Concentrations Were Equalled or Exceeded[a], By Zone and Station[b]																					
		Metropolitan Zone														Southern Zone							
		CENT	NWCO	SWCO	SOCO	SOEA	WSFV	ESFV	WSGV	ESGV	PWVA	SSGV[c]	SCLA	SCRV	ANVA	LAHB	SACN	ANAH	LSAL	COST	TORO	LGNA	SJCA
Oxidant (Ozone) O_3	0.10 ppm, 1-hour	125	75	19	5	116	171	187	180	172	160	106	38[d]	154	82	67	118	54	53	10	43	—	39
Carbon Monoxide CO	10 ppm, 12-hours	32	21	75	40	11	47	93	0	0	1	9	90	0	0	57[e]	—	28	—	29	—	0	—
	40 ppm, 1-hour	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1[e]	—	0	—	0	—	0	—
Nitrogen Dioxide NO_2	0.25 ppm, 1-hour	27	55	21	43	19	6	15	23	3	8	18	6	0	0	4	—	9	—	8	—	—	—
Sulfur Dioxide SO_2	0.04 ppm, 24-hours	12	0	2	7	6	0	0	0	0	0	0	0	0	0	0	IN	0	1	0	IN	—	—
	0.50 ppm, 1-hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IN	0	0	0	IN	—	—
Particulate[f] Matter	(Days Sampled)	(60)	(59)	(61)	—	—	(59)	—	(61)	(61)	—	—	(59)	—	(60)	(61)	(61)	(61)	(60)	(61)	(36)	(60)	(40)
	100 ug/m^3, 24-hours	34	7	31	—	—	24	—	32	36	—	—	36	—	27	40	29	34	38	17	12	16	15
(% of Days)		57%	12%	51%	—	—	41%	—	52%	59%	—	—	61%	—	45%	66%	48%	56%	63%	28%	33%	27%	38%
Visibility[g] Reducing Particulates	Any one observation during a day	166	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

a) "Equalled or Exceeded" is the method of tabulation used by the Air Resources Board.
b) For Station designations, see Table X. For Station locations, see the map at the end of this report.
c) Station initiated operations on June 22, 1976.
d) Oxidant instrument operated only eleven days in June and July.
e) Instrument was inoperative during January and February.
f) Particulates were measured every six days (nominally) at stations only where data are listed.
g) The State visibility standard as amended June 21, 1972, is exceeded when aerosols reduce the visibility to less than 10 miles when the relative humidity is less than 70%. Observations are made only at the Central Los Angeles Station (of the air monitoring stations) and are not made on weekends and holidays.
— Pollutant not measured at Station indicated.
IN - Insufficient data to report the figure involved.

Table II-1

SUMMARY OF NUMBER OF DAYS DURING 1976
SHORT-PERIOD AIR CONTAMINANT CONCENTRATION AVERAGES
AT VARIOUS LOCATIONS EQUALLED OR EXCEEDED THE STATE AIR QUALITY STANDARDS

Air Contaminant	State Air Quality Standard and Averaging Time	Number of Days on Which Specified Air Contaminant Concentrations Were Equalled or Exceeded[a], In the Eastern Zone, By Station[b]																				
		PRPK	RIVR	PERI	ELSN	TEME	HEME	BANN	PLSP	INDO	UPLA	CHIN	FONT	SNBD	REDL	YUCI	LKGR	BGBE	VCVL	BARS	TRON	NEED
Oxidant (Ozone) O_3	0.10 ppm, 1-hour	150	176	154	104	52	68	113	103	57	183	174	173	159	144	152	113	33	45	5	—	—
Carbon Monoxide CO	10 ppm, 12-hours	0	0	0	—	—	IN	0	0	0	0	0	0	0	0	0	0	0	0	0	—	—
	40 ppm, 1-hour	0	0	0	—	—	IN	0	0	0	0	0	0	0	0	0	0	0	0	0	—	—
Nitrogen Dioxide NO_2	0.25 ppm, 1-hour	—	0	—	—	—	—	—	—	0	3	0	2	0	1	—	—	—	0	2	—	—
Sulfur Dioxide SO_2	0.04 ppm, 24-hours	—	0	—	—	—	—	—	—	—	—	—	56[c]	0	—	—	—	—	—	—	—	—
	0.50 ppm, 1-hour	—	0	—	—	—	—	—	—	—	—	—	0	0	—	—	—	—	—	—	—	—
Particulate[d] Matter	(Days Sampled)	—	(53)	—	—	—	—	(61)	(61)	(60)	(53)	(57)	(47)	(58)	(56)	—	—	(59)	(55)	(55)	—	—
	100 ug/m^3, 24-hours	—	41	—	—	—	—	11	5	29	35	45	31	32	10	—	—	4	27	37	—	—
(% of Days)		—	77%	—	—	—	—	18%	8%	48%	66%	79%	66%	55%	18%	—	—	7%	49%	67%	—	—
Visibility[e] Reducing Particulates	Any one Observation During a Day	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

a) "Equalled or Exceeded" is the method of tabulation used by the Air Resources Board.
b) For Station designations, see Table X. For Station locations, see the map at the end of this report.
c) Approximate number of days standard was exceeded over approximately 265 days of valid data obtained.
d) Particulates were measured every six days (nominally) and only at stations where data are listed.
e) The State visibility standard as amended June 21, 1972, is exceeded when aerosols reduce the visibility to less than 10 miles when the relative humidity is less than 70%.
— Pollutant not measured at station indicated.
IN - Insufficient data to report the figure involved.

SUMMARY OF NUMBER OF DAYS DURING 1976 SHORT-PERIOD AIR CONTAMINANT CONCENTRATION AVERAGES AT VARIOUS LOCATIONS EXCEEDED THE NATIONAL AIR QUALITY STANDARDS

Air Contaminant	National Standards[a] Primary[b] and Secondary[c] Concentration And Averaging Time	Number of Days on Which Specified Air Contaminant Concentrations Were Exceeded, By Zone and Station[d]																				
		Metropolitan Zone														Southern Zone							
		CENT	NWCO	SWCO	SOCO	SOEA	WSFV	ESFV	WSGV	ESGV	PWVA	SSGV[e]	SCLA	SCRV	ANVA	LAHB	SACN	ANAH	LSAL	COST	TORO	LGNA	SJCA
Oxidant (Ozone) (O_3)	Primary & Secondary: 0.08 ppm, 1-hour	142	91	30	11	143	188	204	193	185	168	115	44[f]	165	108	89	134	68	66	17	55	—	47
Carbon Monoxide (CO)	Primary & Secondary: 9 ppm, 8-hours	72	54	94	64	36	67	107	32	4	5	34	129	0	1	71[g]	—	60	—	58	—	4	—
	35 ppm, 1-hour	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2[g]	—	0	—	0	—	0	—
Sulfur Dioxide (SO_2)	Primary: 0.14 ppm, 24-hours	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IN	0	—
	Secondary: 0.50 ppm 3-hours	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	IN	0	—
Non-Methane Hydrocarbons	Primary & Secondary: 0.24 ppm, 3-hours (6-9 a.m.)	213	211	302	152[h]	271	241	276	242	138	203	IN	IN	297	143	IN	—	—	IN	—	IN	—	—
	(Days Sampled)	(60)	(59)	(61)	—	—	(59)	—	(61)	(61)	—	—	(59)	—	(60)	(61)	(61)	(61)	(60)	(61)	(36)	(60)	(40)
Particulate[i] Matter	Primary: 260 ug/m^3, 24-hours	0 0	0 0	0 0	— —	— —	0 0	— —	0 0	0 0	— —	— —	0 0	— —	3 5%	0 0	0 0	0 0	1 2%	0 0	0 0	0 0	0 0
	Secondary: 150 ug/m^3 24-hours	11 18%	1 2%	5 8%	— —	— —	8 14%	— —	6 10%	19 31%	— —	— —	11 19%	— —	8 13%	16 26%	8 13%	14 23%	16 27%	2 3%	2 6%	3 5%	3 8%

a) Not to be exceeded more than once per year.
b) Primary Standard: To protect the public health.
c) Secondary Standard: To protect public welfare from known or anticipated adverse effects.
d) For Station designations, see Table X. For Station locations see the map at the end of this report.
e) Station initiated operations on June 22, 1976.
f) Instrument operated only eleven days in June and July.
g) Instrument was inoperative during January and February.
h) Based on approximately ten months of data.
i) Particulates were measured every six days (nominally) and only at stations where data are listed. Since particulates are not measured daily, the percentage of sampling days exceeding the standard are shown.
— Pollutant not measured at the station indicated.
IN - Insufficient data to report the figure involved.

SUMMARY OF NUMBER OF DAYS DURING 1976 SHORT-PERIOD AIR CONTAMINANT CONCENTRATION AVERAGES AT VARIOUS LOCATIONS EXCEEDED THE NATIONAL AIR QUALITY STANDARDS

Air Contaminant	National Standards[a] Primary[b] and Secondary[c] Concentration And Averaging Time	Number of Days on Which Specified Air Contaminant Concentrations Were Exceeded in the Eastern Zone, By Station[d]																				
		PRPK	RIVR	PERI	ELSN	TEME	HEME	BANN	PLSP	INDO	UPLA	CHIN	FONT	SNBD	REDL	YUCI	LKGR	BGBE	YCVL	BARS	TRON	NEED
Oxidant (Ozone) (O_3)	Primary & Secondary: 0.08 ppm, 1-hour	168	187	164	124	88	87	125	123	88	201	185	181	168	159	160	112	38	64	12	—	—
Carbon Monoxide (CO)	Primary & Secondary: 9 ppm, 8-hours	0	0	0	—	—	IN	0	0	0	0	5	0	1	0	0	0	0	0	0	—	—
	35 ppm, 1-hour	0	0	0	—	—	IN	0	0	0	0	0	0	0	0	0	0	0	0	0	—	—
Sulfur Dioxide (SO_2)	Primary: 0.14 ppm, 24-hours	—	0	—	—	—	—	—	—	—	—	—	0	0	—	—	—	—	—	—	—	—
	Secondary: 0.50 ppm, 3-hours	—	0	—	—	—	—	—	—	—	—	—	0	0	—	—	—	—	—	—	—	—
Non-Methane Hydrocarbons	Primary & Secondary: 0.24 ppm, 3-hours (6-9 a.m.)	—	—	—	—	—	—	—	—	—	207[e]	—	—	—	—	—	—	—	—	—	—	—
	(Days Sampled)	—	(53)	—	—	—	—	(61)	(61)	(60)	(53)	(57)	(47)	(58)	(56)	—	—	(59)	(55)	(55)	—	—
Particulate[f] Matter	Primary: 260 ug/m³	—	1	—	—	—	—	0	0	3	2	7	3	0	0	—	—	0	1	5	—	—
	24-hours	—	2%	—	—	—	—	0	0	5%	4%	12%	6%	0	0	—	—	0	2%	9%	—	—
	Secondary: 150 ug/m³	—	26	—	—	—	—	3	1	8	16	28	18	12	2	—	—	1	3	12	—	—
	24-hours	—	48%	—	—	—	—	5%	2%	13%	30%	49%	38%	21%	4%	—	—	2%	6%	22%	—	—

a) Not to be exceeded more than once per year.
b) Primary Standard: To protect public health.
c) Secondary Standard: To protect public welfare from known or anticipated adverse effects.
d) For Station designations, see Table X. For Station locations see the map at the end of this report.
e) Based on only nine months of data (July, August and September not available).
f) Particulates were measured every six days (nominally) and only at stations where data are listed. Since particulates are not measured daily, the percentage of sampling days exceeding the standard are shown.
— Pollutant not measured at station indicated.

SUMMARY OF PERCENTAGES BY WHICH NATIONAL STANDARDS

FOR ANNUAL AVERAGE AIR CONTAMINANT CONCENTRATIONS

WERE EXCEEDED DURING 1976

Air Contaminant	National Standard Primary[a] & Secondary[b]	Percentages By Which National Standards Were Exceeded, By Zone and Station[c]																					
		Metropolitan Zone														Southern Zone							
		CENT	NWCO	SWCO	SOCO	SOEA	WSFV	ESFV	WSGV	ESGV	PWVA	SSGV	SCLA	SCRV	ANVA	LAHB	SACN	ANAH	LSAL	COST	TORO	LGNA	SJCA
Nitrogen Dioxide (NO_2)	Primary & Secondary: 0.05 ppm AAM[d]	46	52	44	48	44	12	44	56	8	36	IN	6	0	0	0	--	10	--	0	—	—	—
Sulfur Dioxide (SO_2)	Primary: 0.03 ppm AAM	0	0	0	0	0	0	0	0	0	0	IN	0	0	0	0	0	0	0	0	0	—	—
Particulate Matter	Primary: 75 ug/m^3 AGM[e]	36	0	25	—	—	19	—	25	45	—	--	45	--	21	43	15	36	47	0	9	0	9
	Secondary: 60 ug/m^3 AGM[f]	70	7	57	—	--	48	—	57	82	—	—	82	—	52	78	43	70	83	22	37	23	37

a) Necessary to protect the public health.
b) Necessary to protect the public welfare from known or anticipated adverse effects of a pollutant.
c) For Station designations, see Table X. For Station locations, see the map at the end of this report.
d) AAM - Annual Arithmetic Mean.
e) AGM - Annual Geometric Mean.
f) This is also the California State Standard.
-- Pollutant not measured at Station indicated.
IN Insufficient data to report the figure involved.

SUMMARY OF PERCENTAGES BY WHICH NATIONAL STANDARDS

FOR ANNUAL AVERAGE AIR CONTAMINANT CONCENTRATIONS

WERE EXCEEDED DURING 1976

Air Contaminant	National Standard Primary[a] & Secondary[b]	Percentages By Which National Standards Were Exceeded, In the Eastern Zone, By Station[c]																					
		PRPK	RIVR	PERI	ELSN	TEME	HEME	BANN	PLSP	INDO	UPLA	CHIN	FONT	SNBD	REDL	YUCI	LKGR	BGBE	VCVL	BARS	ONTR[d]	RIAL[d]	CTLN[d]
Nitrogen Dioxide (NO_2)	Primary & Secondary: 0.05 ppm AAM[e]	—	0	—	—	—	—	—	—	0	IN	0	0	0	0	—	—	—	0	IN	—	—	—
Sulfur Dioxide (SO_2)	Primary: 0.03 ppm AAM	—	0	—	—	—	—	—	—	0	—	—	0	0	—	—	—	—	—	—	—	—	—
Particulate Matter	Primary: 75 ug/m^3 AGM[f]	—	75	—	—	—	—	0	0	36	57	99	53	36	0	—	—	0	25	52	121	35	0
	Secondary: 60 ug/m^3 AGM[g]	—	118	—	—	—	—	5	0	70	97	148	92	70	15	—	—	0	58	90	177	68	0

a) Necessary to protect the public health.

b) Necessary to protect the public welfare from known or anticipated adverse effects of a pollutant.

c) For Station designations, see Table X. For Station locations, see the map at the end of this report.

d) Ontario, Rialto and Crestline Stations monitor only Total Particulate Concentrations. They are not regular air monitoring stations.

e) AAM - Annual Arithmetic Mean.

f) AGM - Annual Geometric Mean.

g) This is also the California State Standard.

— Pollutant not measured at Station indicated.

IN - Insufficient data to report the figure involved.

Table II-III ctd.

1976 AIR QUALITY SUMMARY FOR THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT COMPARED TO STATE AIR QUALITY STANDARDS AND TO STATE EPISODE CRITERIA IN EFFECT DECEMBER 31, 1976

Contaminant and Averaging Time For Various Concentrations			Number of Days During 1976 Various Levels of Air Contamination Were Equalled or Exceeded, By Zone and Station[a]																						Notes Air Qua Standa And Epi:
			Metropolitan Zone														Southern Zone								
			CENT	NWCO	SWCO	SOCO	SOEA	WSFV	ESFV	WSGV	ESGV	PWVA	SSGV	SCLA	SCRV	ANVA	LAHB	SACN	ANAH	LSAL	COST	TORO	LGNA	SJCA	Stage
Photochemical Oxidants or Ozone 1-Hour Average, PPM		0.10[b]	125	75	19	5	116	171	187	180	172	160	106	38	154	82	67	118	54	53	10	43	NI	39	AQS
		0.20[c]	11	4	1	0	19	33	43	51	47	37	31	2	38	0	15	17	4	2	0	3	NI	2	Stage
		0.35[d]	0	0	0	0	1	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	NI	0	Stage
		0.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NI	0	
		0.50[e]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NI	0	Stage
Carbon Monoxide (CO)	1-Hour Average, PPM	10	130	98	143	97	85	103	123	99	9	43	50	162	3	8	86	NI	87	NO	96	NO	44	NI	
		20	10	11	36	0	2	11	20	3	0	0	0	45	0	0	48	NI	13	NO	15	NO	1	NI	
		35	0	0	2	0	0	0	0	0	0	0	0	0	0	0	3	NI	0	NO	0	NO	0	NI	AQS
		40[b,c]	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	NI	0	NO	0	NO	0	NI	Stage
		50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NI	0	NO	0	NO	0	NI	
		75[d]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NI	0	NO	0	NO	0	NI	Stage
		100[e]*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NI	0	NO	0	NO	0	NI	Stage
	12-Hour Average, PPM	10[b]	32	21	75	40	11	47	93	0	0	1	9	90	0	0	57	NI	28	NO	29	NO	0	NI	AQS
		20[c]	0	0	6	0	0	0	6	0	0	0	0	3	0	0	0	NI	1	NO	0	NO	0	NI	Stage
		35[d]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NI	0	NO	0	NO	0	NI	Stage
		50[e]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NI	0	NO	0	NO	0	NI	Stage
Sulfur Dioxide (SO_2)	1-Hour Average, PPM	0.10	2	0	17	14	22	0	0	0	1	0	0	0	1	0	2	0	4	57	5	0	NO	NI	
		0.30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NO	NI	AQS
		0.50[b,c]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NO	NI	Stage
		1.00[d]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NO	NI	Stage
		2.00[e]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NO	NI	Stage
	24-Hour Average, PPM	0.04[b]	12	0	2	7	6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	NO	NI	AQS
		0.10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NO	NI	
		0.20[c]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NO	NI	Stage
		0.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NO	NI	
		0.70[d]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NO	NI	Stage
		0.90[e]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NO	NI	Stage
Nitrogen Dioxide (NO_2) 1-Hour Average, PPM		0.10	228	228	107	212	96	83	219	243	176	98	117	126	7	2	121	NO	106	NO	71	NO	NI	NI	
		0.20	51	84	69	62	49	24	61	57	15	28	42	26	0	0	15	NO	22	NO	11	NO	NI	NI	
		0.25[b]	27	55	21	43	19	6	15	23	3	8	18	6	0	0	4	NO	9	NO	8	NO	NI	NI	AQS
		0.30	15	36	5	24	6	1	2	9	1	4	9	3	0	0	0	NO	4	NO	4	NO	NI	NI	
		0.40	5	5	0	3	1	0	0	0	0	0	1	0	0	0	0	NO	1	NO	0	NO	NI	NI	
		0.50	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	NO	0	NO	0	NO	NI	NI	

a) For Station designations, see Table . For Station locations, see the map at the end of this report. Figures underlined are based on less than 12 months of available d
b) State Air Quality Standard (AQS) - the goal for clean air is below this time-averaged concentration value.
c) ARB Episode Criterion Stage 1 (Health Advisory).
d) ARB Episode Criterion Stage 2 (Warning).
e) ARB Episode Criterion Stage 3 (Emergency). (In the case of carbon monoxide* - only if attained and predicted to persist for one additional hour.)
NI - No instrument installed at this station as yet. NO - Instrument not yet on line.

Table II-IV

1976 AIR QUALITY SUMMARY FOR THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT COMPARED TO STATE AIR QUALITY STANDARDS AND TO STATE EPISODE CRITERIA IN EFFECT DECEMBER 31, 1976

Contaminant and Averaging Time For Various Concentrations			Number of Days During 1976 Various Levels of Air Contamination Were Equalled or Exceeded, In the Eastern Zone, By Station[a]																					Notes re Air Quality Standards And Episode Stages
			PRPK	RIVR	PERI	ELSN	TEME	HEME	BANN	PLSP	INDO	UPLA	CHIN	FONT	SNBD	REDL	YUCI	LKGR	BGBE	YCYL	BARS	TRON	NEED	
Photochemical Oxidants or Ozone 1-Hour Average, PPM		0.10[b]	150	176	154	104	52	68	113	103	57	183	174	173	159	144	152	113	33	45	5	NI	NI	AQS
		0.20[c]	26	46	13	1	1	0	20	3	0	60	39	69	51	25	28	11	0	0	0	NI	NI	Stage 1
		0.35[d]	0	2	0	0	0	0	0	0	0	1	1	1	0	1	0	0	0	0	0	NI	NI	Stage 2
		0.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NI	NI	
		0.50[e]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NI	NI	Stage 3
Carbon Monoxide (CO)	1-Hour Average, PPM	10	0	3	0	NI	NI	0	0	0	18	1	13	0	12	32	0	0	0	0	0	NI	NI	
		20	0	0	0	NI	NI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NI	NI	
		35	0	0	0	NI	NI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NI	NI	
		40[b,c]	0	0	0	NI	NI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NI	NI	AQS Stage 1
		50	0	0	0	NI	NI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NI	NI	
		75[d]	0	0	0	NI	NI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NI	NI	Stage 2
		100[e]*	0	0	0	NI	NI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NI	NI	Stage 3*
	12-Hour Average, PPM	10[b]	0	0	0	NI	NI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NI	NI	AQS
		20[c]	0	0	0	NI	NI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NI	NI	Stage 1
		35[d]	0	0	0	NI	NI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NI	NI	Stage 2
		50[e]	0	0	0	NI	NI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NI	NI	Stage 3
Sulfur Dioxide (SO_2)	1-Hour Average, PPM	0.10	NI	0	NI	NI	NI	NI	NI	NI	0	NI	NI	43	0	NI	NI	NI	NI	NI	NI	NO	NO	
		0.30	NI	0	NI	NI	NI	NI	NI	NI	0	NI	NI	0	0	NI	NI	NI	NI	NI	NI	NO	NO	AQS
		0.50[b,c]	NI	0	NI	NI	NI	NI	NI	NI	0	NI	NI	0	0	NI	NI	NI	NI	NI	NI	NO	NO	Stage 1
		1.00[d]	NI	0	NI	NI	NI	NI	NI	NI	0	NI	NI	0	0	NI	NI	NI	NI	NI	NI	NO	NO	Stage 2
		2.00[e]	NI	0	NI	NI	NI	NI	NI	NI	0	NI	NI	0	0	NI	NI	NI	NI	NI	NI	NO	NO	Stage 3
	24-Hour Average, PPM	0.04[b]	NI	0	NI	NI	NI	NI	NI	NI	0	NI	NI	56	0	NI	NI	NI	NI	NI	NI	NO	NO	AQS
		0.10	NI	0	NI	NI	NI	NI	NI	NI	0	NI	NI	0	0	NI	NI	NI	NI	NI	NI	NO	NO	
		0.20[c]	NI	0	NI	NI	NI	NI	NI	NI	0	NI	NI	0	0	NI	NI	NI	NI	NI	NI	NO	NO	Stage 1
		0.50	NI	0	NI	NI	NI	NI	NI	NI	0	NI	NI	0	0	NI	NI	NI	NI	NI	NI	NO	NO	
		0.70[d]	NI	0	NI	NI	NI	NI	NI	NI	0	NI	NI	0	0	NI	NI	NI	NI	NI	NI	NO	NO	Stage 2
		0.90[e]	NI	0	NI	NI	NI	NI	NI	NI	0	NI	NI	0	0	NI	NI	NI	NI	NI	NI	NO	NO	Stage 3
Nitrogen Dioxide (NO_2) 1-Hour Average, PPM		0.10	NI	73	NI	NI	NI	NI	NI	NI	0	148	27	51	9	23	NI	NO	NI	1	108	NO	NO	
		0.20	NI	3	NI	NI	NI	NI	NI	NI	0	9	1	5	0	2	NI	NO	NI	0	9	NO	NO	
		0.25[b]	NI	0	NI	NI	NI	NI	NI	NI	0	3	0	2	0	1	NI	NO	NI	0	2	NO	NO	AQS
		0.30	NI	0	NI	NI	NI	NI	NI	NI	0	0	0	1	0	0	NI	NO	NI	0	1	NO	NO	
		0.40	NI	0	NI	NI	NI	NI	NI	NI	0	0	0	0	0	0	NI	NO	NI	0	0	NO	NO	
		0.50	NI	0	NI	NI	NI	NI	NI	NI	0	0	0	0	0	0	NI	NO	NI	0	0	NO	NO	

a) For Station designations, see Table X. For Station locations, see the map at the end of this report. Figures underlined are based on less than 12 months of available data.
b) State Air Quality Standard (AQS) - the goal for clean air is below this time-averaged concentration value.
c) ARB Episode Criterion Stage 1 (Health Advisory).
d) ARB Episode Criterion Stage 2 (Warning).
e) ARB Episode Criterion Stage 3 (Emergency). (In the case of Carbon Monoxide* - only if attained and predicted to persist for one additional hour.)
NI - No instrument installed at this station as yet. NO - Instrument not yet on line.

Table II-IV ctd.

SECTION III. DATA TREATMENT

Prior to the formation of the Southern California Air Pollution Control District, APCD, (now the South Coast Air Quality Management District, SCAQMD), air quality data for the South Coast Air Basin was collected and analyzed by five agencies. Four of the agencies, Los Angeles, Orange, Riverside, and San Bernardino County Air Pollution Control Districts are the predecessors of the SCAQMD. The fifth, the California State Air Resources Board (ARB), collected and analyzed its own data and, in addition, obtained and analyzed copies of raw data from some of the air monitoring stations run by the four local agencies.

Unfortunately, statistics compiled prior to the unification of the four county Districts cannot always be directly compared. In some cases analytical methods are not comparable. For example, in the case of oxidant measurements, Los Angeles County measurements were observed to be lower by 20% than measurements done by the three neighboring counties and the ARB. A study by a special committee appointed by the ARB showed the Los Angeles County data to be most nearly correct. The ARB ruled in 1975 that historical data for all but the Los Angeles County area of the South Coast Air Basin should be multiplied by a factor of 0.80. This meant that all

statistics for past years of record in these counties had to be redetermined.

Similar problems have arisen from variations in data reduction methods. One example is the sulfur dioxide data. In Los Angeles County, because of data reduction methods, the lowest reading reported was 0.01 ppm. In the three neighboring counties, the lowest value reported was 0.00 ppm. Hence, Los Angeles County data is not directly comparable to adjacent counties' data. Correction of this situation would require hand reprocessing of all of the original strip charts for all previous years of record, a horrendous task.

Another frequent problem involving data reduction methods is the variety of interpretations given to air quality standards by the various agencies. For example, is a 24-hour average SO_2 of 0.035 ppm a violation of the 0.04 ppm state standard for SO_2? The answer depends on the agency. The same is true for an average of 0.0395 ppm. All agencies will probably agree that 0.0400 ppm is a violation of the standard.

A similar problem exists with the federal 8-hour CO standard. If the 8 hours which constitute a violation occur on parts of two days, are there one or two days of violation? If one day is in violation, which day is it? Again, the answer depends on the agency, since the standard does not specifically address the problem.

Similar problems of interpretation are encountered in counting the number of hours in violation.

To provide the District-wide data needed to satisfy the requirements of the Air Quality Management Plan, AQMP, three possible lines of action suggested themselves. First, published statistics could be used when available. Second, raw data could be entered into the District's computer and programs written to process the data as desired. Third, raw data could be processed by hand. For this report, it was necessary to obtain statistics by all three of these methods.

As many as possible of the statistics desired for AQMP purposes were extracted from previously published material. When available, ARB data was used. This was done to eliminate differences due to variations in data reduction methods. Since this data was incomplete, use was also made of Annual Reports and other publications of county districts.[3-14]

At the outset, it was not certain whether the computer programs prepared by the District's Evaluation and Planning Division would be able to extract the desired statistics in time to meet the AQMP deadline. However, most of the information was finally obtained. For oxidant, nitrogen dioxide, carbon monoxide, and sulfur dioxide statistics obtained with the computer program have been preferentially used, since they are the most complete source available

and data has been reduced in a consistent fashion. Historical oxidant data outside Los Angeles County has been corrected by 0.80. Sulfur dioxide data could not be corrected and Los Angeles County data, prior to January 1, 1976, will be high relative to other areas.

The statistics generated by the computer were produced according to the following guidelines:

1. Validity of averages - a valid averaging period is a minimum of 75% of the possible hours. Thus, a 24-hour average requires a minimum of 18 hours of data, an 8-hour average requires 6 hours, and a 12-hour average requires a minimum of 9 hours.

2. Method of calculating averages - averages are calculated by summing the hourly average pollutant concentrations and dividing by the number of hours.

3. Validity of days for counting standard violations - a valid day for the purposes of counting violations requires a minimum of one valid averaging period. A day in which only one hour of O_3 at 0.11 ppm has been reported exceeds the state standard and one day and one hour of violation are reported. For the state 24-hour SO_2 standard, 18 hours of 0.04 ppm SO_2 would constitute one day and one period of violation, but 17 hours of 0.04 ppm is insufficient data and no violation is reported.

4. Method of counting violations for standards compared to moving averages - the standards compared to moving averages may occur during parts of two days. The final hour of the period is the day on which the violation occurs and this final hour is one hour in violation. Thus, if the seven hours before midnight on January 1, and the one hour after midnight on January 2 average 0.09 ppm, the result is one day and one averaging period in violation occurring on January 2. All measurements are on Pacific Standard Time.

5. Rounding of data compared to standards - standards are compared to the unrounded average for purposes of counting violations. For example, if 23 hours are at 0.04 ppm SO_2 and one hour at 0.03 ppm SO_2

giving a 24-hour average SO_2 of 0.03958 ppm (3.958 pphm) a violation is not counted. However, the daily average is rounded to 4.0 pphm on the District's monthly data summaries ("Tab A's").

At the present time the District does not have a computer file of particulate data (i.e., total suspended particulate, lead, and sulfate) or programs to process such data. The Air Resources Board has published statistics for total suspended particulate for a part of the District's stations and, where possible, this information was used. However, 1976 data is not yet available from the ARB and the data had to be hand reduced by District personnel. Other gaps were filled from county publications. Annual statistics for total suspended particulate were not reported if less than nine months of data were available. Data was rounded to the nearest unit before comparison to standards.

Lead statistics were derived from a variety of published sources, or by hand reduction of the raw data. In the case of lead, the information as to source is foot-nooted on Table IV.F-IV. Lead data from Los Angeles County is by the Direct Acid Extraction (DAE) method and will disagree with some of the earlier published data which had been corrected to the historical High Temperature Ashing Method that gives lower results (approximately 1/3 of the concentration by the currently used DAE method). Riverside County used cellulose filters through March, 1976, and this data has been corrected by a factor of 1.3

to make it comparable to data obtained by analysis of glass fiber filters. It will, therefore, disagree with previously published data. Annual lead statistics were not calculated if less than nine months of data were available. In counting violations of the state standard, data rounded to two places after the decimal was compared to the standard, except for San Bernardino County data which was only determined to one place after the decimal.

Prior to 1975, 24-hour average sulfate data was available on a regular basis only for Los Angeles County, and for 1975 only one other county has data. For this reason, contour maps are available only for 1976, and statistics on violations of the state sulfate standard for 1972-1976 are available only for Los Angeles County. As with TSP and lead, a minimum of nine months of data was required for a valid annual statistic. Data was rounded to one figure after the decimal before comparison to the standard.

For the purposes of determining trends, invalid statistics (less than nine months or 275 days of data) have been included, but are marked with an asterisk and are not connected by lines to valid statistics. The sites which were selected as representative for trends are those which had sufficient data and a long enough period of record. Stations which had the highest readings (of those with sufficient data and period of record)

were presented as well as a station from each county to provide adequate information for each geographical division of the Basin.

Treatment of data related to the computer modeling effort is included as part of Section VI of this report entitled, "Modeling".

SECTION IV. BASIC DATA PRESENTATION

The contaminants to be considered in this section are the gaseous contaminants oxidant (ozone), carbon monoxide, nitrogen dioxide, and sulfur dioxide, and the particulate contaminants lead, sulfate, and total suspended particulate. Hydrocarbons are not dealt with since the hydrocarbon standard is intended as "a guide in devising implementation plans to achieve oxidant standards" and the method for their determination is at best crude. For each of the contaminants, several questions are addressed:

1. How does the concentration of the contaminant vary from place to place in the South Coast Air Basin?
2. Does the contaminant concentration vary seasonally?
3. Does the concentration vary diurnally?
4. What is the frequency of occurrence of various concentrations?
5. Does the contaminant concentration show an upward or downward trend?

To answer these questions, we must examine the data collected by the District's air monitoring stations. Since it is impossible to examine every single hour of data for every location for the entire period 1972-1976, the data is summarized by means of various statistics. Statistics can be misleading, however. If a plot of the single highest hourly concentration of a contaminant

were to be made for a particular station and the values were seen to be progressively lower each year from 1972 to 1976, it might be assumed that a downtrend had been affected by some control strategy. Obviously, this assumption would not necessarily be valid, since meteorology on the worst day in 1975 may be considerably different than that for 1976. A statistic such as annual average would be of much greater value in determining whether a trend is present in contaminant concentration because there is much less possibility that a large difference in average weather will occur between two years than between two single hours within those years. On the other hand, an annual average tells nothing about the worst day that may be expected during the year. To answer the various questions posed, it was necessary to examine a variety of statistics, including:

Concentrations

Annual Maximum Hour or Day	-	Highest single value over averaging period (N=1)
Seasonal Average of Daily Max. 1-Hour	-	Monthly or seasonal average (N~31 or 92, depending on period selected)
Annual Average of Daily Max. 1-Hour	-	Average of highest 1-hour average each day for one year (N=365)
Annual Average	-	Average of all hours measured over one year (N=8760)

Violations

Number of Days or Months on Which Specified Standards Were Exceeded.

The geographical distribution of the contaminants has been presented by means of lines of equal concentration, or equal numbers of violations of standards, drawn on maps of the South Coast Air Basin. The cities indicated on the maps are the sites of air monitoring stations. Stations that had insufficient data have had a line drawn through the circle which indicates the location of the stations. Maps were prepared for each contaminant for 1972, 1974, and 1976 (except sulfate, 1976 only).

The seasonal variations of each contaminant have been shown by constructing bar graphs of the monthly average concentrations for 1976. For each contaminant, several representative locations have been presented, since differences in seasonal variation may occur over an area as large as South Coast Air Basin. Missing data has been indicated by a bar with diagonal upper boundary marked N/D.

For each contaminant, plots of seasonal averages of concentrations at a particular hour of the day are also given in order to show diurnal variation of the contaminants. The data presented is for the seasons summer of 1976 and winter 1976-1977. Several representive locations are plotted for each contaminant. Missing segments in a curve indicate insufficient data for a valid average.

Frequency distributions of contaminant concentrations have been plotted for 1972, 1974, and 1976 (other years if these weren't available) to show the frequency of

occurrence of different levels of concentration. Frequency distributions were not available at this time for lead data.

Plots of several annual statistics are given to show presence or absence of any short term trend during the period 1972-1976. Statistics followed by an asterisk were calculated from insufficient data and may not be representative of the year in question. Where a clear trend is present, it might also be expected to show up on the geographical distributions for 1972, 1974, and 1976 and on the frequency distributions for these years.

Because of the confounding effects of meteorology, a trend may be difficult to detect over a period as short as five years. Additional material has been provided for some contaminants to augment that specifically prepared for this report.

SECTION IV.A. OXIDANT

SOURCES

Ozone (oxidant is predominantly ozone) is a highly reactive triatomic form of oxygen. It is formed from hydrocarbons and oxides of nitrogen by a complex series of chemical reactions. Sunlight provides the photochemical energy required for the reaction to proceed at measurable rates. Both of these oxidant precursors are present in automobile exhaust. Combustion of fuels by stationary sources, such as power generating stations, contributes additional oxides of nitrogen. Atmospheric oxidant concentrations are elevated downwind of these large urban sources and should decrease as source emission rates are reduced.

Because the reactions which form oxidant require sunlight, oxidant concentrations vary diurnally and seasonally. In addition, annual averages also will exhibit variations from year to year because of changes in weather conditions as well as changes in emissions.

GEOGRAPHICAL DISTRIBUTION

The geographical distribution of the number of days in violation of the federal oxidant standard for 1972, 1974, and 1976 are presented in Figures IV.A-1 to IV.A-3. Also shown are similar data based upon 1976 violations of

the state standard (Figure IV.A-4), as well as on the annual arithmetic mean of daily maximum one-hour averages of oxidant concentrations (Figures IV.A-5 through IV.A-7). These figures reveal that there is a persistent pattern of low and high concentrations and of low and high numbers of days violating the federal standard.

Coastal areas tend to have relatively low oxidant concentrations and relatively few violations of the federal standard. The same is true of the mountain and desert areas north and east of the densely populated areas of the South Coast Air Basin. The highest oxidant concentrations and greatest number of violations of the federal standards occur in a strip extending from the San Fernando Valley eastward through the San Gabriel Valley and into the San Bernardino/ Riverside area.

Tables IV.A-I through IV.A-III present the data used for developing the isolines, as well as equivalent data for 1973 and 1975.

SEASONAL DISTRIBUTION

In general, oxidant concentrations are higher and violations of the oxidant standard are more frequent in summer than in winter. High concentrations and the highest monthly average may also occur in fall, as was the case at Los Angeles and La Habra in 1976.

In Figures IV.A-8 and IV.A-9, and Table IV.A-IV the average oxidant concentration for each month of 1976 at

several sites is shown. Azusa, Riverside, and San Bernardino attained their highest monthly average of the daily maximum one-hour average in July. In Central Los Angeles, the months of June and October tied for highest monthly average. Anaheim reached a peak in June and La Habra reached a peak in October.

Figure IV.A-9 also shows the number of days on which the state standard for ozone was violated at two air monitoring stations (Burbank and Central Los Angeles) during each month of 1976. As was observed with monthly average concentrations, a peak occurs during the summer months, and a low occurs during winter.

DIURNAL DISTRIBUTION

As can be seen in Figures IV.A-10 and IV.A-11, oxidant concentrations peak in the afternoon. This is because of the requirement for fairly intense sunlight for the ozone-forming reactions to proceed. The peak concentrations at most of the locations are higher and earlier in the day during the summer than in winter. This is because emission patterns change, daylight-saving time begins, and meteorology undergoes its seasonal changes. The peaks at Riverside and San Bernardino occur an hour or two later than in the western part of the basin, consistent with transport of the contaminant parcels from more heavily populated areas in adjacent counties.

FREQUENCY DISTRIBUTION

There is not a consistent pattern in the frequency distributions of the daily maximum one-hour average for 1972, 1974, and 1976 throughout the South Coast Air Basin (Figures IV.A-12 through IV.A-15). There appears to be a slight tendency for oxidant to increase from 1972 through 1976. However, no correction has been made for weather.

If a different criterion is selected, one may reach other conclusions. In Figure IV.A-16 and Table IV.A-V are shown the number of days on which the daily maximum one-hour ozone concentration exceeded specified levels in the Los Angeles Basin during the period 1955-1976. Figure IV.A-16 indicates that 1976 is one of the better years, especially in terms of the number of days exceeding higher concentrations, and 1975 was the first year during which the level of 0.35 ppm was not exceeded in the Los Angeles County portion of the SCAB.

TREND DATA

Short term trends (1972-1976) are shown in Figures IV.A-17 through IV.A-25 for selected stations (Los Angeles, Azusa, Pasadena, Anaheim, La Habra, Riverside, Fontana, San Bernardino, and Upland) and for several criteria. The criteria shown are: 1) single highest hour of each year, 2) annual average of daily maximum one-hour, 3) annual average of all hours, and 4) number of days violating the

federal standard (0.08 ppm/one-hour average). Table IV.A-VI presents the data used. (Note: Very small differences in numbers shown here compared to ARB or other SCAQMD data published elsewhere are probably due to differences in criteria used for data treatment as described in Section III).

In the South Coast Air Basin overall, there has been little change in oxidant concentration during the period 1972-1976 (Figures IV.A-17 through IV.A-25, Table IV.A-VI). Some stations appear to have gone up slightly, others down slightly. Some have mixed results depending upon the statistic examined.

To evaluate whether or not a trend is really present, it would be desirable to correct for meteorology or to consider a longer period of time.

Such a long-period trend is shown for the Los Angeles Basin in Figure IV.A-26, which depicts the oxidant concentration (average daily maximum one-hour, ppm) in two ways---the July-September average (N=92) and the annual average (N=365). The Los Angeles Basin is defined as that part of Los Angeles County south of the San Gabriel mountains. Los Angeles Basin data are used because they cover the longest period of continuous record. In both cases, a downtrend of about 35% is apparent, between 1956 and 1976, from 0.28 to 0.18 ppm (July-September) and from 0.23 to 0.14 ppm (annual). The "Basin max" represents a "worst case", since it is the highest one-hour

average measured at any station, in the Los Angeles Basin.

Similar data from a single station, Central Los Angeles, indicates an even greater downtrend in annual average daily maxima, from 0.16 in 1955 to 0.08 in 1976, approximately 50% (Figures IV.A-27). The July-September data exhibit much greater variation from year to year.

Many of the highest oxidant values in Los Angeles County have occurred at Azusa, and Figure IV.A-28 depicts the trend at that station, which is down 13% between 1956 and 1976. A decrease of 34% is indicated between 1970 and 1976.

Anaheim, in the Southern Zone (Orange County) has experienced lower oxidant values overall, and parallels the Los Angeles downtrend 1966-1976. Anaheim oxidant decreased by 36% during this period (Figure IV.A-29).

In the Eastern Zone, Riverside (Figure IV.A-30) and San Bernardino (Figure IV.A-31) indicate uptrends of about 15% and 23% between 1963 and 1976.

Oxidant concentrations (annual average of the daily maximum one-hour) in 1976 are similar in San Bernardino, Riverside, and Azusa (about 0.10 ppm), less in Los Angeles (approximately 0.08 ppm), and still less in Anaheim, (0.05 ppm).

These trends have not been corrected for weather (see Section V.A), or for possible interferences such as sulfur dioxide (negative) or nitrogen dioxide (positive).

Table IV.A-VII lists the annual maximum one-hour average oxidant, by station, for the period of record. Generally, the maximum one-hour has decreased over time in the western part of the South Coast Air Basin, and has shown either no significant trend or a slight uptrend in the eastern part of the South Coast Air Basin.

SUMMARY

Because of the dependency of the ozone forming reactions on sunlight, the formation of ozone takes place during the daylight hours, attaining the highest concentrations during the afternoon hours. This sunlight dependency also causes a seasonal peak during the summer months.

The portion of the South Coast Air Basin experiencing highest ozone concentrations is an area extending from San Fernando Valley through San Gabriel Valley into the San Bernardino-Riverside area.

Trends in oxidant data are dependent on the weather as well as on emissions. For this reason some long-term statistics have been added to the 1972-1976 statistics, in order to reduce the effect of weather. Overall there appears to have been a downtrend in the western part of the South Coast Air Basin and an uptrend in the eastern part, with the two areas approaching one another in ozone concentration.

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IV.A-5	Oxidant, Annual Arithmetic Mean of Daily Max. 1-Hr. Avg., ppm - 1972
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Oxidant

Con't.

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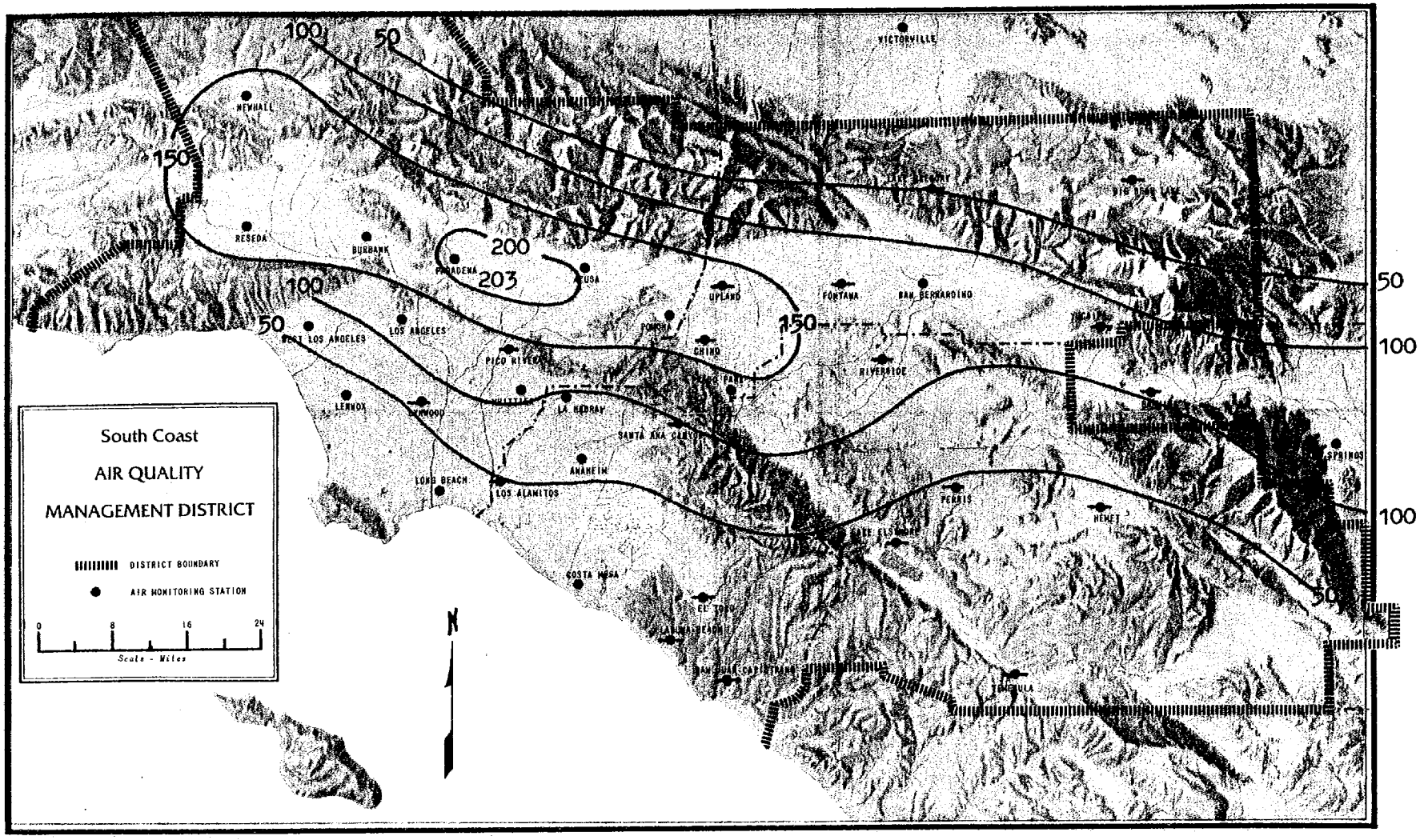
OXIDANT

NUMBER OF DAYS VIOLATING FEDERAL STANDARD (1-HR. AVG. O_3 > 0.08 PPM)

1972



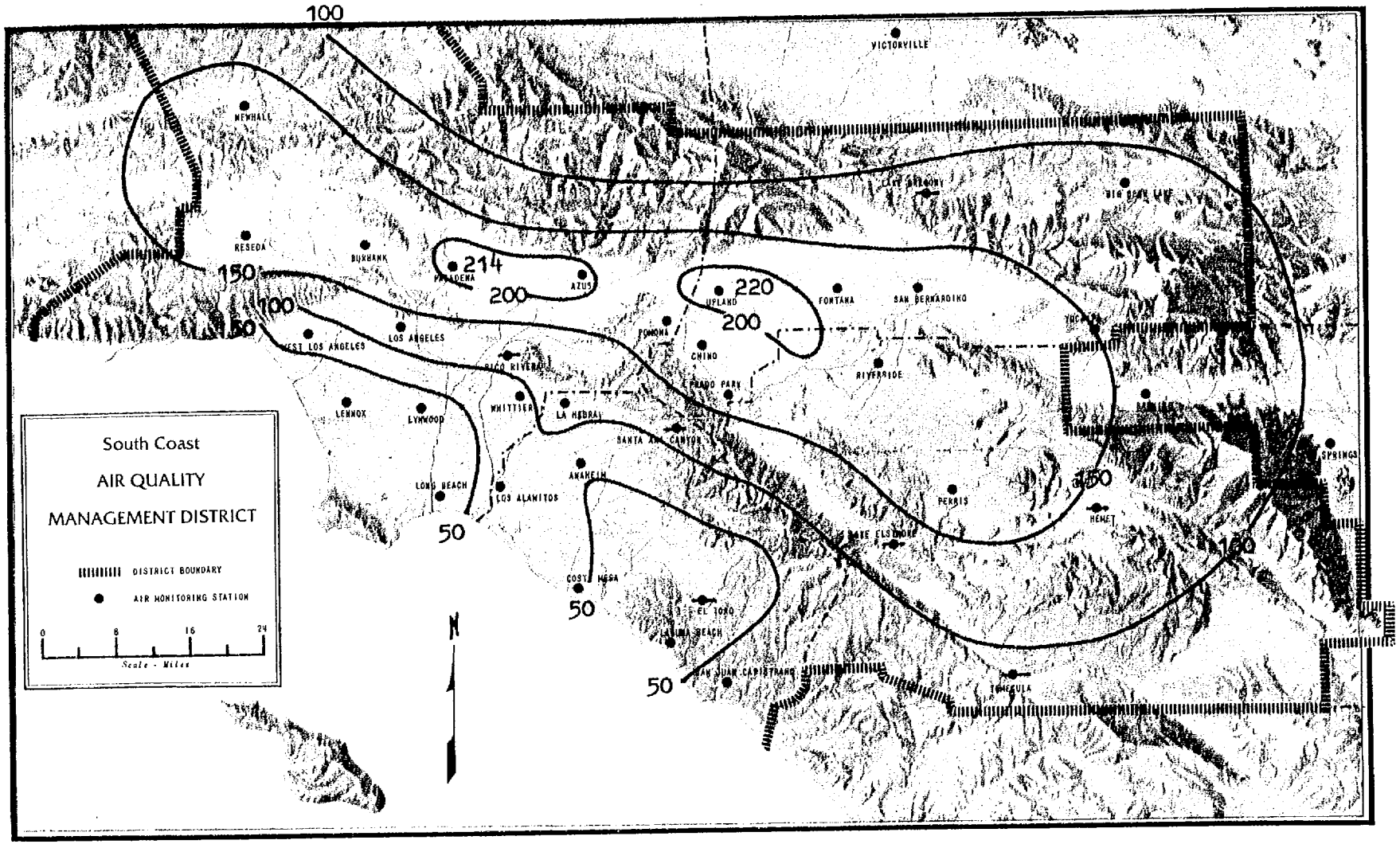
-●- Less than 9 months of data.

Figure IV.A-1

OXIDANT

NUMBER OF DAYS VIOLATING FEDERAL STANDARD (1-HR. AVG. O_3 > 0.08 PPM)

1974



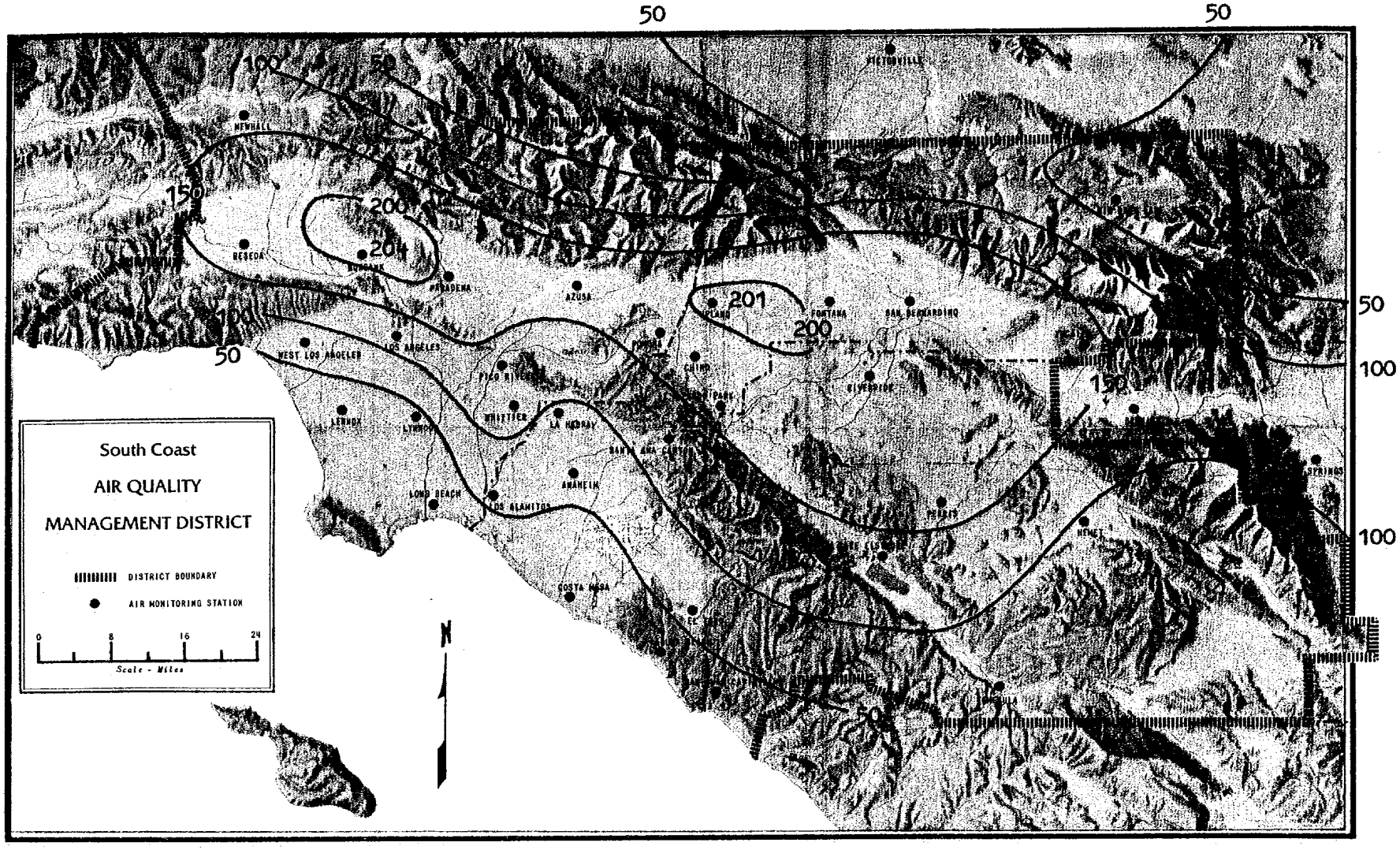
Less than 9 months of data.

Figure IV.A-2

OXIDANT

NUMBER OF DAYS VIOLATING FEDERAL STANDARD (1-HR. AVG. O_3 > 0.08 PPM)

1976



Less than 9 months of data.

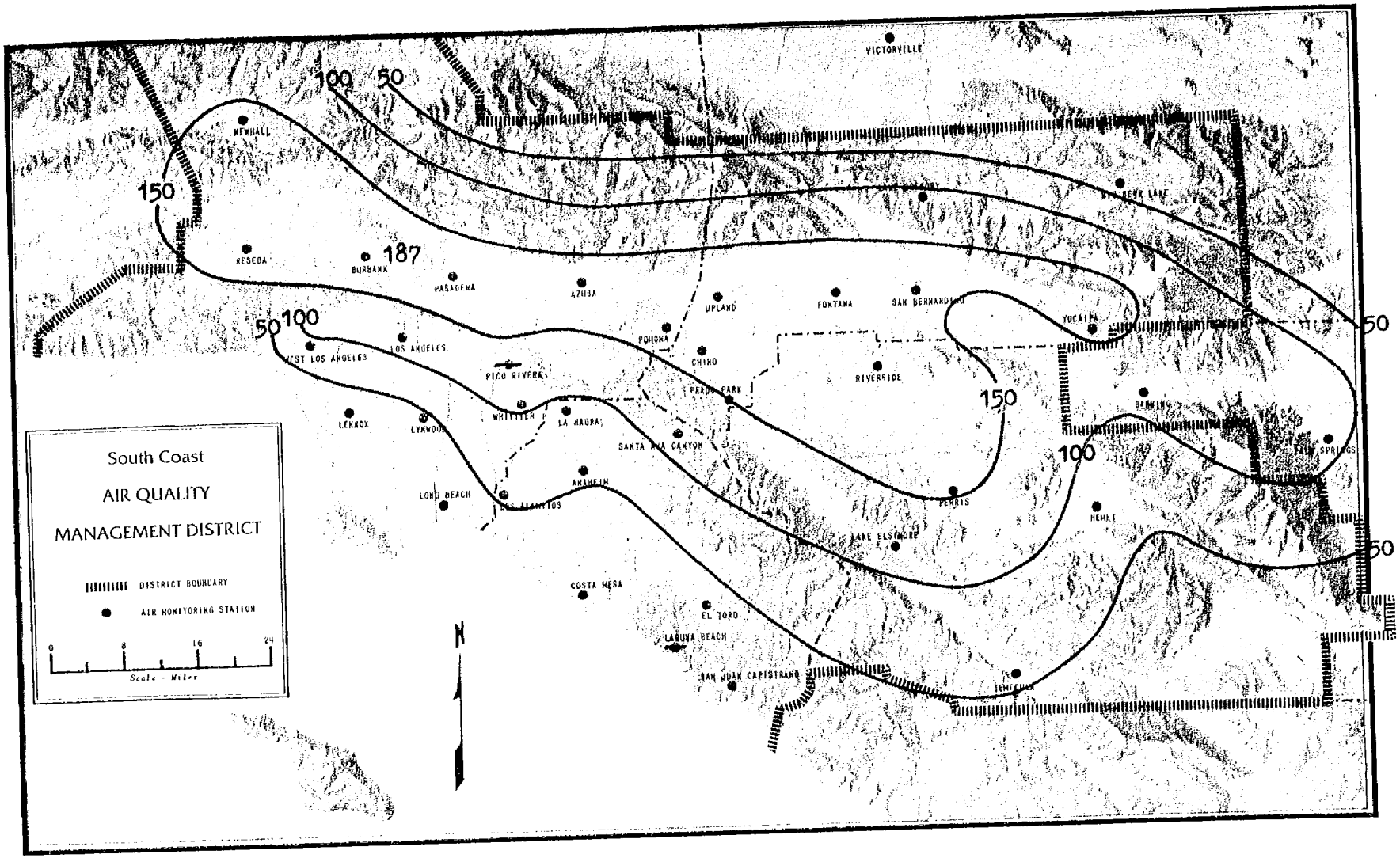
RPG 9/13/77

Figure IV.A-3

OXIDANT

NUMBER OF DAYS VIOLATING STATE STANDARD (1 HR. AVG. $O_3 \geq 0.10$ PPM)

1976



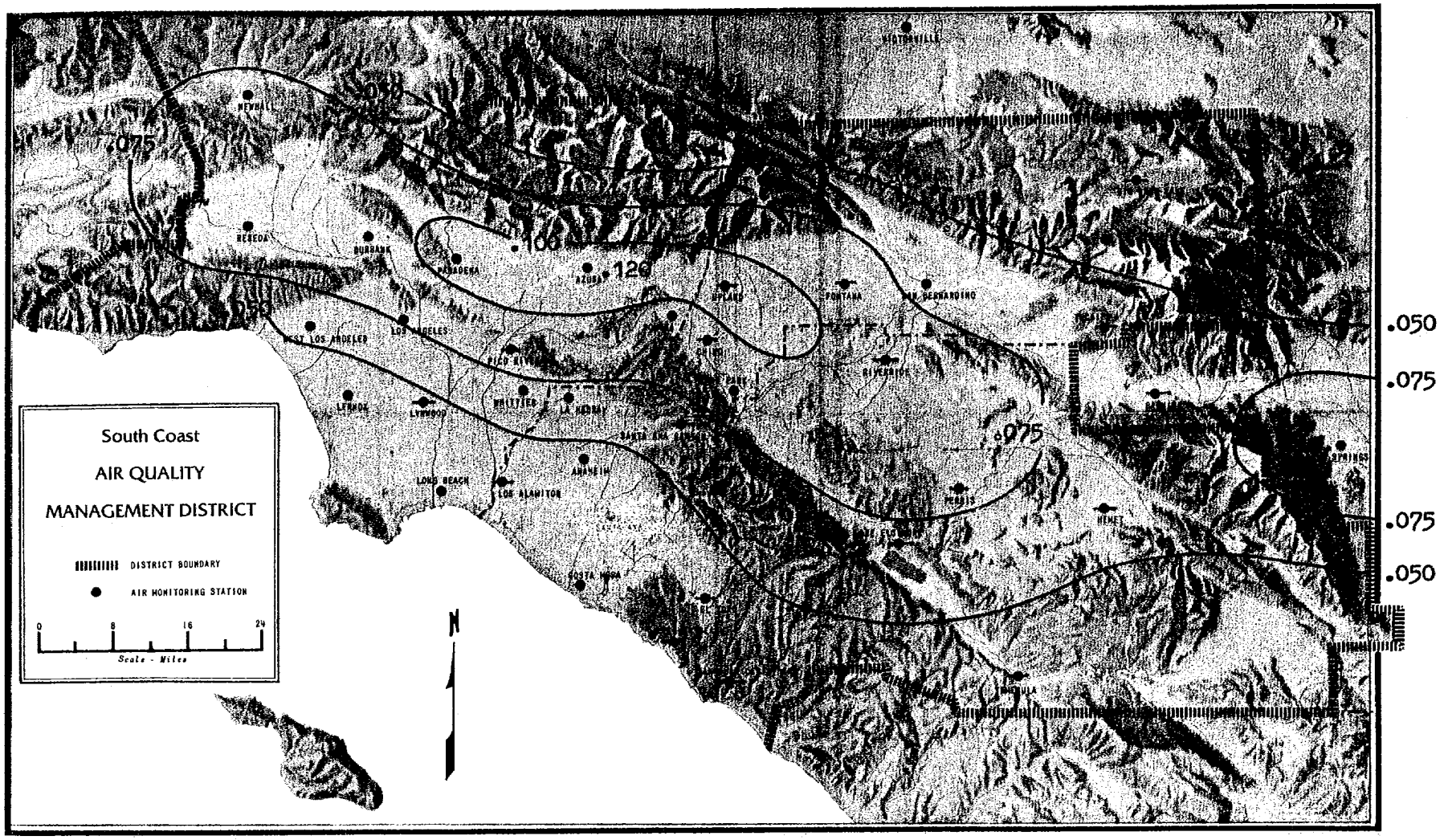
Less than 9 months of data.

Figure IV.A-4

OXIDANT

ANNUAL ARITHMETIC MEAN OF DAILY MAX. 1-HR. AVERAGE, PPM

1972



Less than 9 months of data.

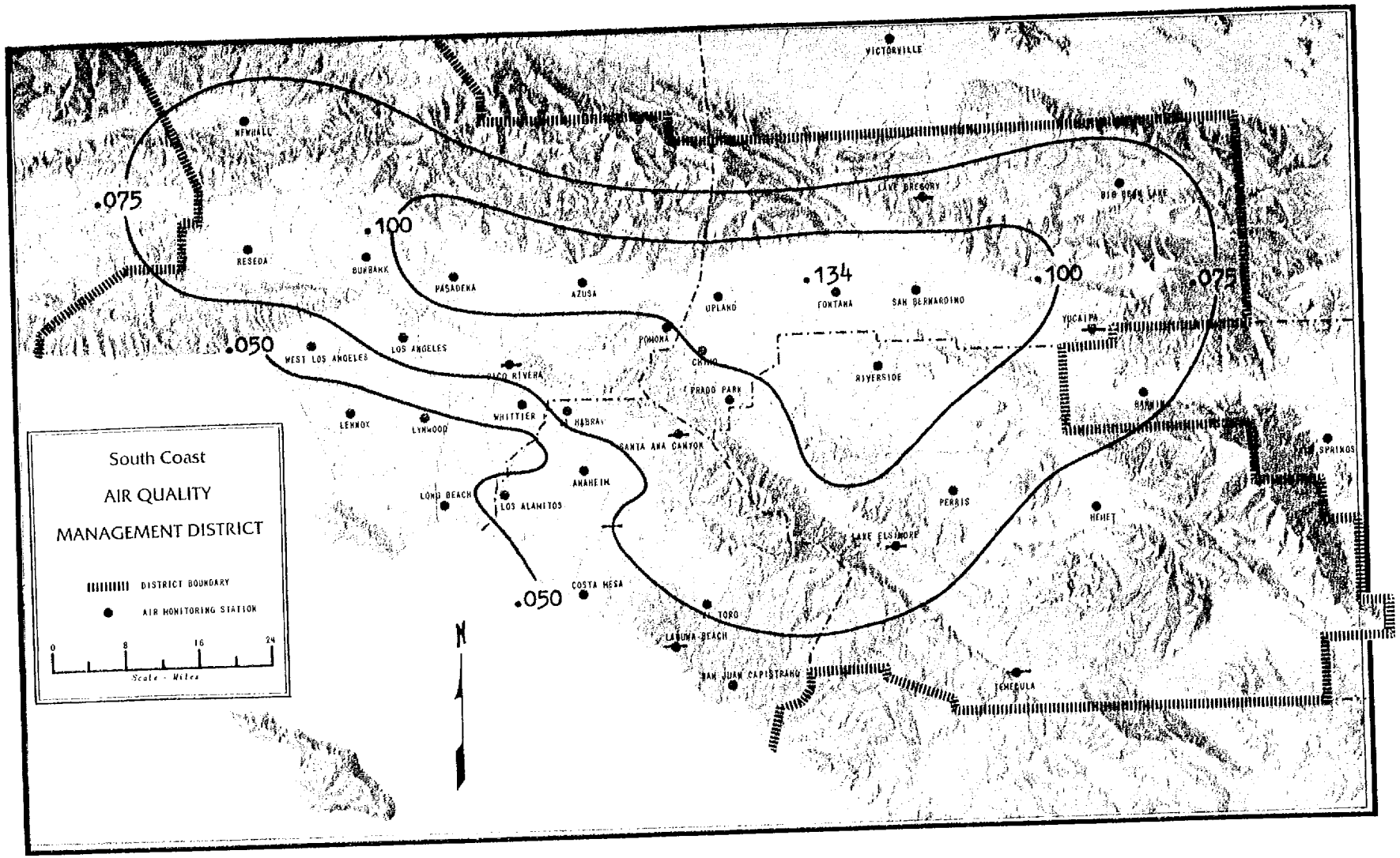
RPG 9/13/77

Figure IV.A-5

OXIDANT

ANNUAL ARITHMETIC MEAN OF DAILY MAX. 1-HR. AVERAGE, PPM

1974



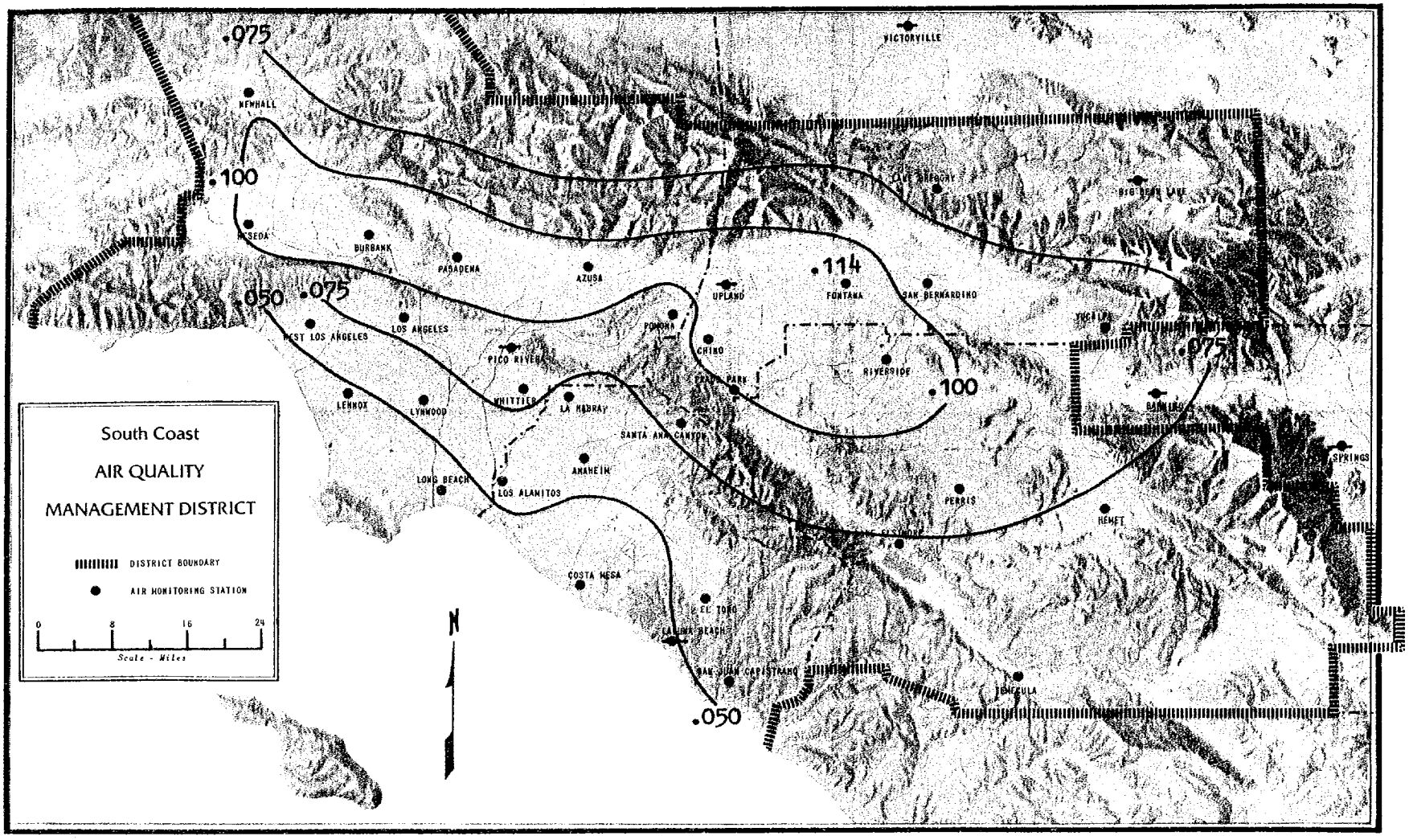
Less than 9 months of data.

Figure IV.A-6

OXIDANT

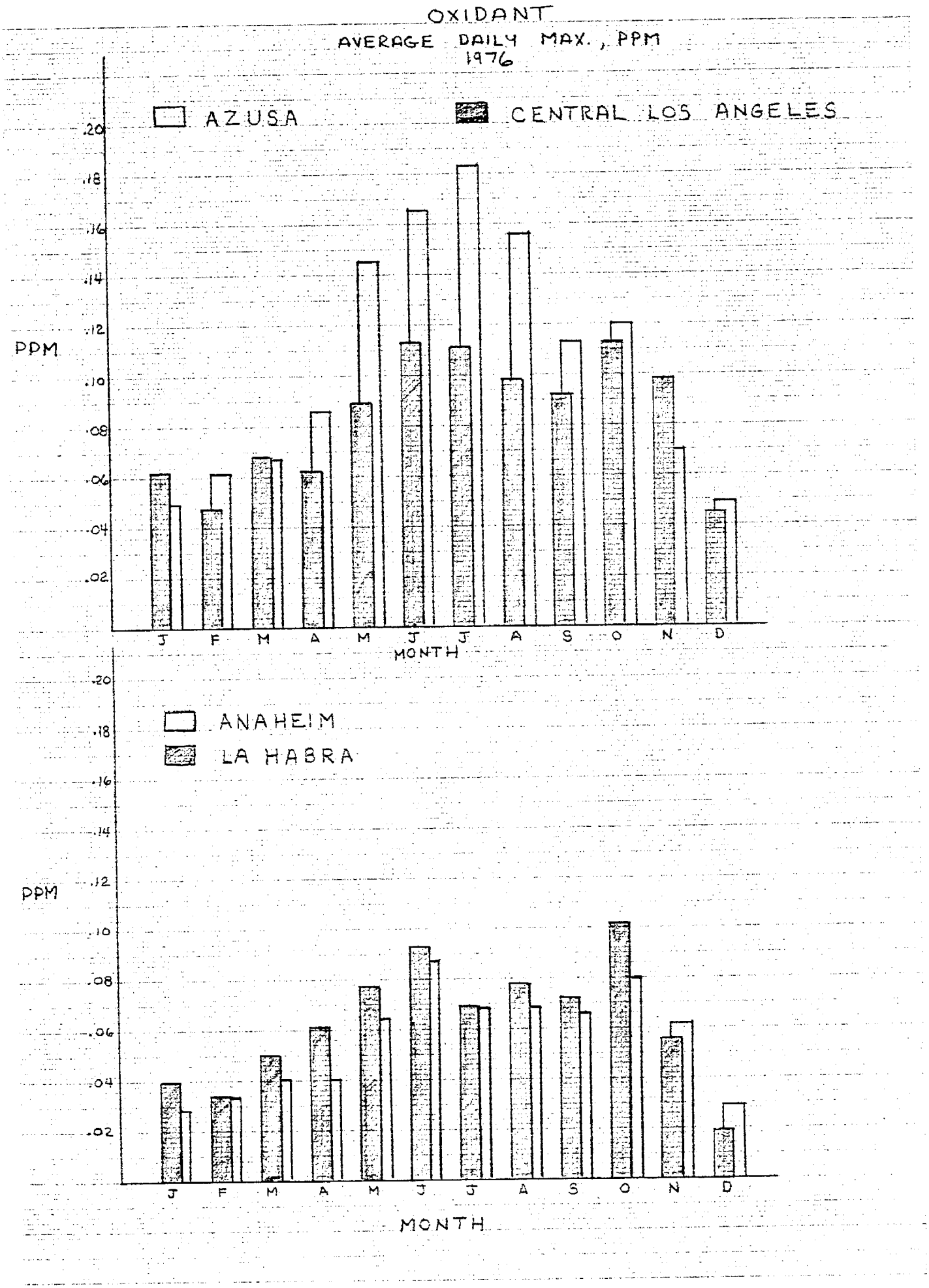
ANNUAL ARITHMETIC MEAN OF DAILY MAX. 1-HR. AVERAGE, PPM

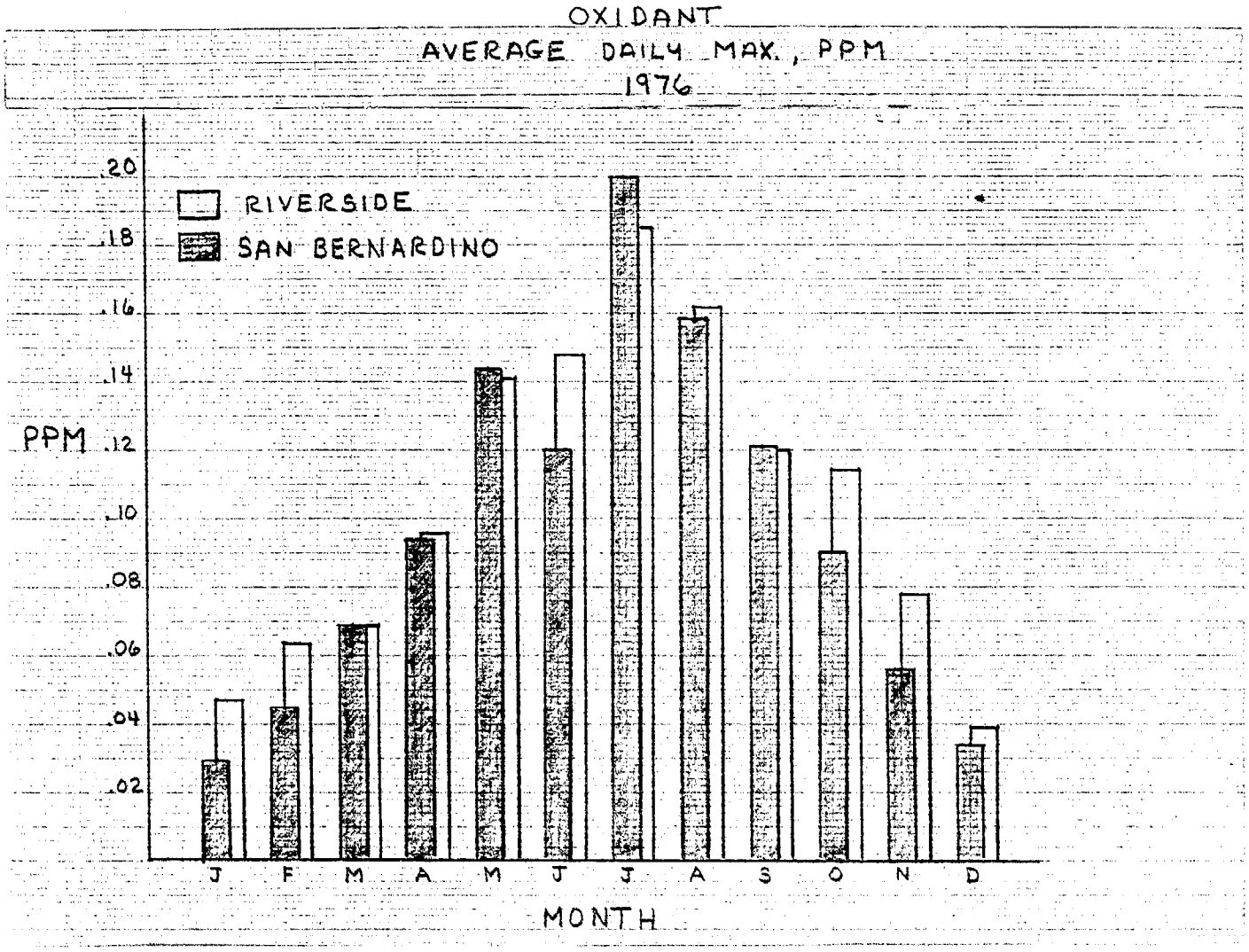
1976

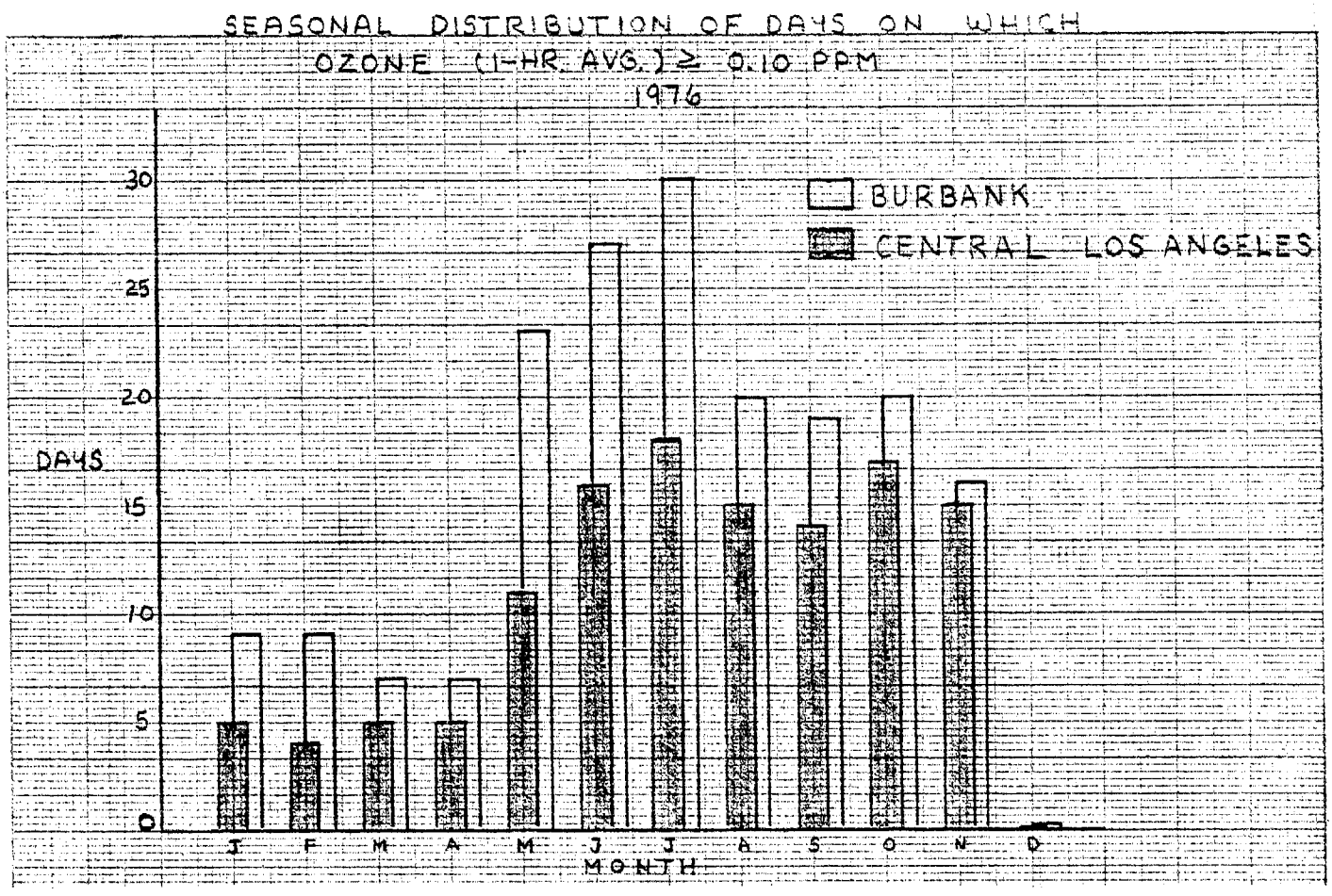


Less than 9 months of data.

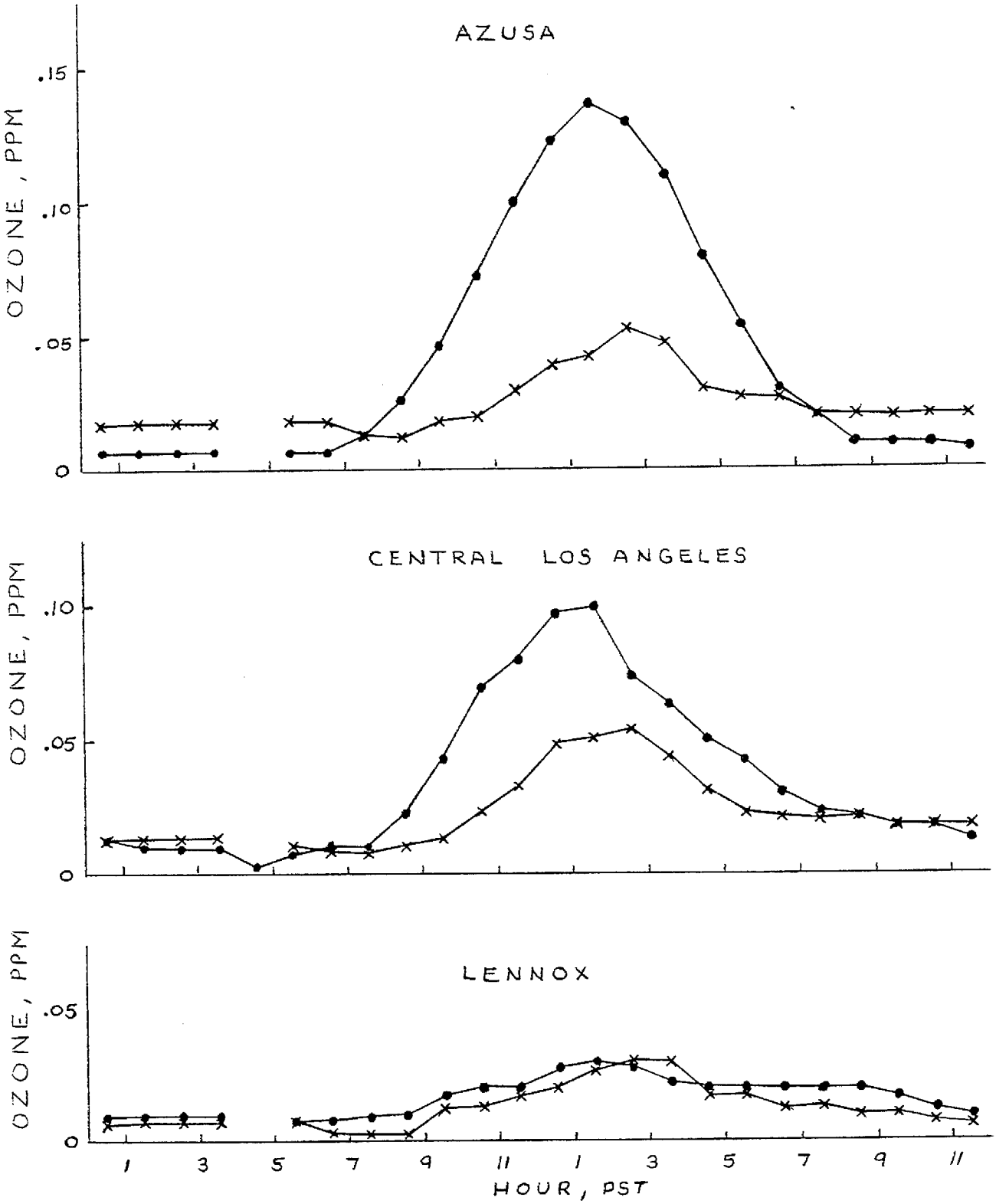
Figure IV.A-7


OXIDANT
AVERAGE DAILY MAX., PPM
1976
AZUSA
CENTRAL LOS ANGELES
PPM
.20
.18
.16
.14
.12
.10
.08
.06
.04
.02
J F M A M J J A S O N D
MONTH
ANAHEIM
LA HABRA
PPM
.20
.18
.16
.14
.12
.10
.08
.06
.04
.02
J F M A M J J A S O N D
MONTH


OXIDANT
AVERAGE DAILY MAX., PPM
1976
RIVERSIDE
SAN BERNARDINO
PPM
.20
.18
.16
.14
.12
.10
.08
.06
.04
.02
J F M A M J J A S O N D
MONTH


SEASONAL DISTRIBUTION OF DAYS ON WHICH
OZONE (1-HR. AVG.) ≥ 0.10 PPM
1976
BURBANK
CENTRAL LOS ANGELES
DAYS
30
25
20
15
10
5
0
J F M A M J J A S O N D
MONTH

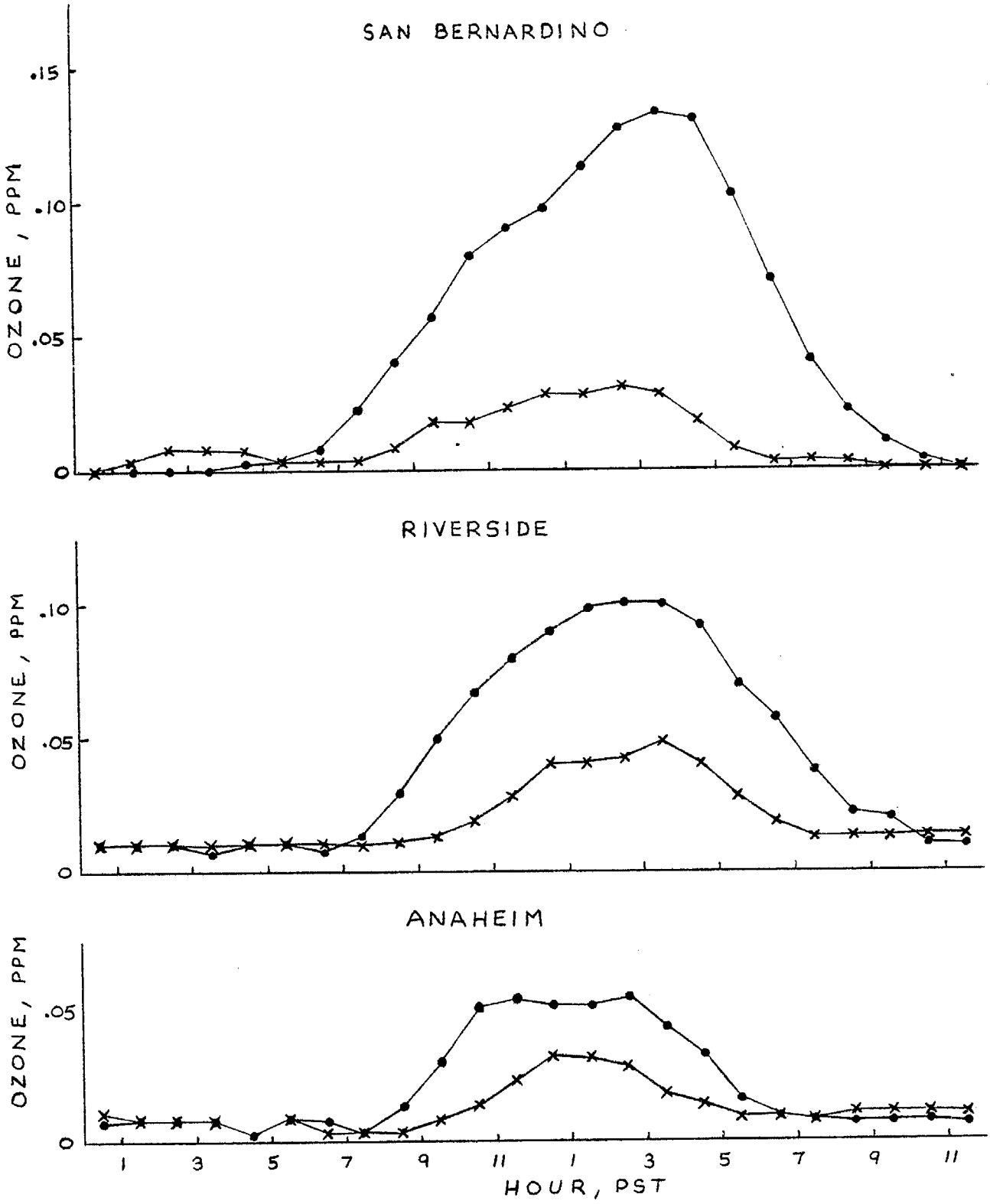
DIURNAL OZONE CONCENTRATIONS SUMMER[A] vs. WINTER[B]



A. JUL. - SEP. AVERAGE 1976 ●—●

B. NOV. - JAN. AVERAGE 1976-77 ×—×

DIURNAL OZONE CONCENTRATIONS SUMMER[A] vs. WINTER[B]



A. JULY - SEPT. AVERAGE 1976 •—•

B. NOV. - JAN. AVERAGE 1976-77 X—X

OXIDANT

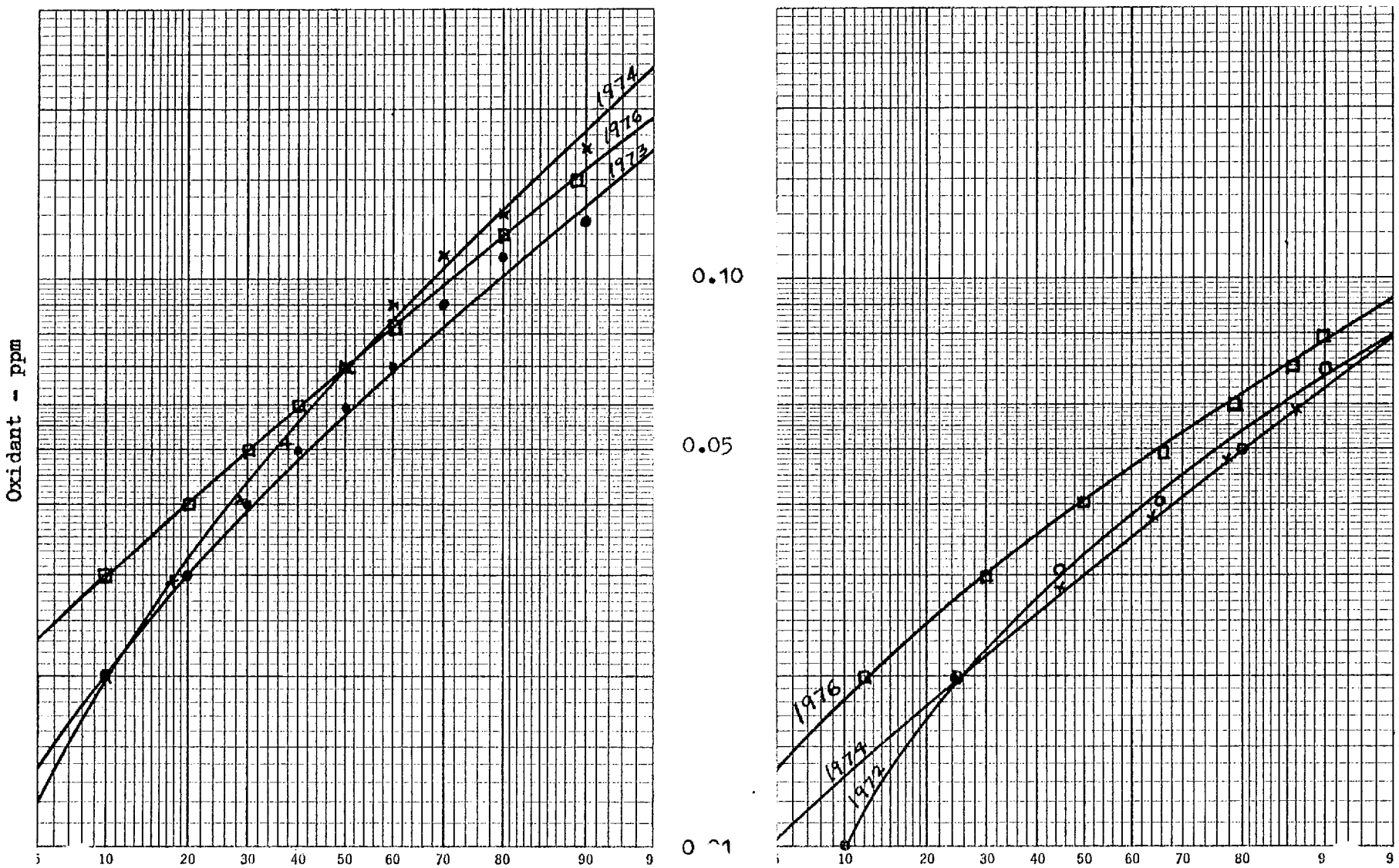
Daily Max. 1-Hour Average-ppm

DOWNTOWN L.A.

Year	N	Max. ppm	Min. ppm	Arithmetic Mean	Arithmetic Std.Dev.
1972	361	0.25	0.01	0.08	± 0.05
1973	365	0.52	0.01	0.07	± 0.06
1974	361	0.25	0.01	0.08	± 0.06
1975	364	0.25	0.01	0.08	± 0.05
1976	366	0.34	0.01	0.08	± 0.05

LENNOX

Year	N	Max. ppm	Min. ppm	Arithmetic Mean	Arithmetic Std.Dev.
1972	366	0.17	0.01	0.04	± 0.02
1973	365	0.24	0.01	0.04	± 0.03
1974	364	0.15	0.01	0.04	± 0.02
1975	365	0.18	0.01	0.04	± 0.02
1976	364	0.22	0.00	0.05	± 0.03



Concentration equal to or less than stated percentage

Figure IV.A-12

OXIDANT

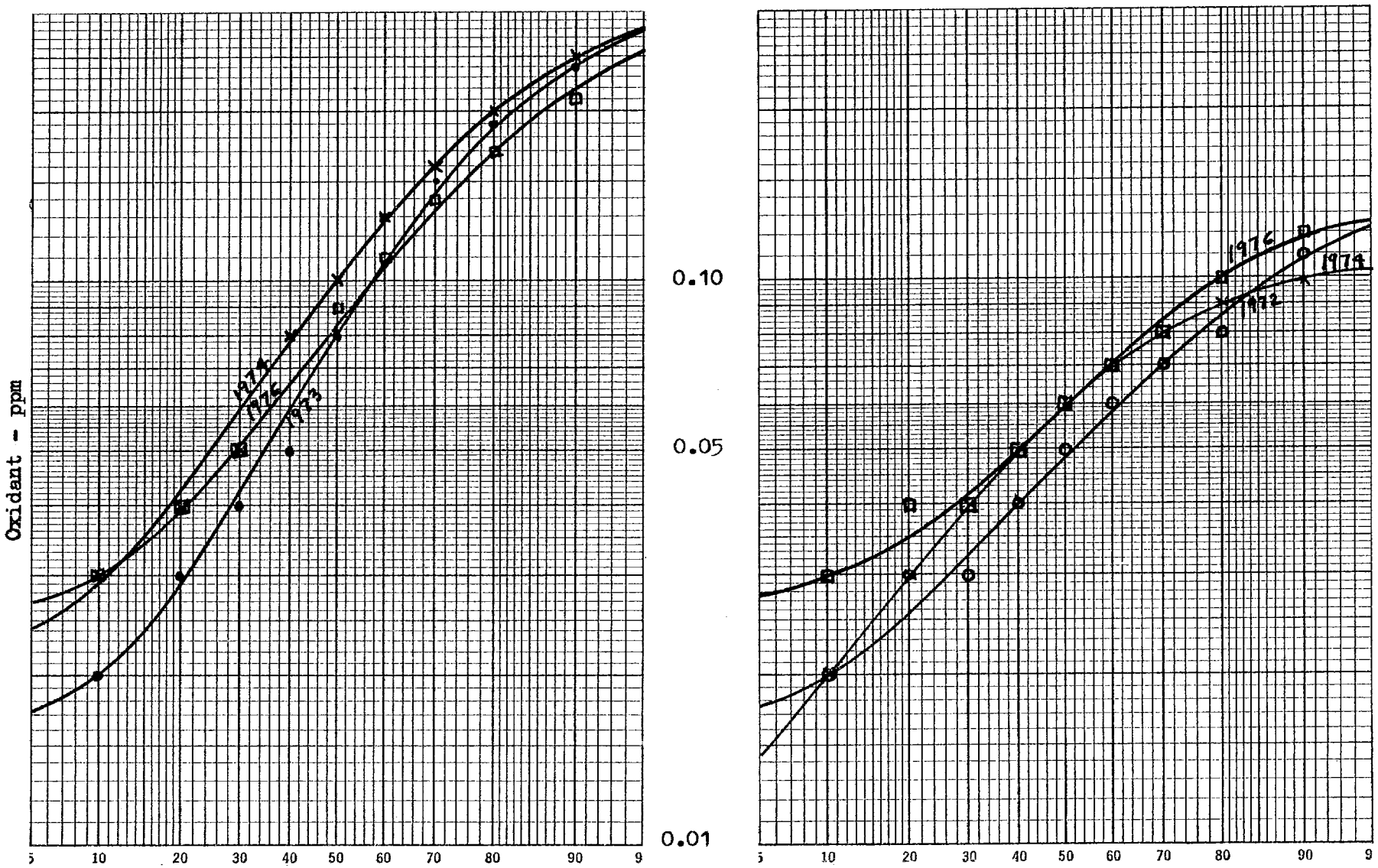
Daily Max. 1-Hour Average - ppm

AZUSA

Year	N	Max. ppm	Min. ppm	Arithmetic Mean	Arithmetic Std.Dev.
1972	362	0.49	0.01	0.12	± 0.09
1973	365	0.46	0.01	0.11	± 0.09
1974	365	0.38	0.01	0.12	± 0.08
1975	365	0.32	0.01	0.11	± 0.08
1976	366	0.38	0.01	0.11	± 0.07

WEST LOS ANGELES

Year	N	Max. ppm	Min.	Arithmetic Mean	Arithmetic Std.Dev.
1972	366	0.19	0.01	0.06	± 0.04
1973	364	0.39	0.01	0.06	± 0.04
1974	365	0.19	0.01	0.06	± 0.03
1975	365	0.19	0.01	0.06	± 0.03
1976	366	0.28	0.01	0.07	± 0.04



Concentration equal to or less than stated percentage

Figure IV.A-13

OXIDANT

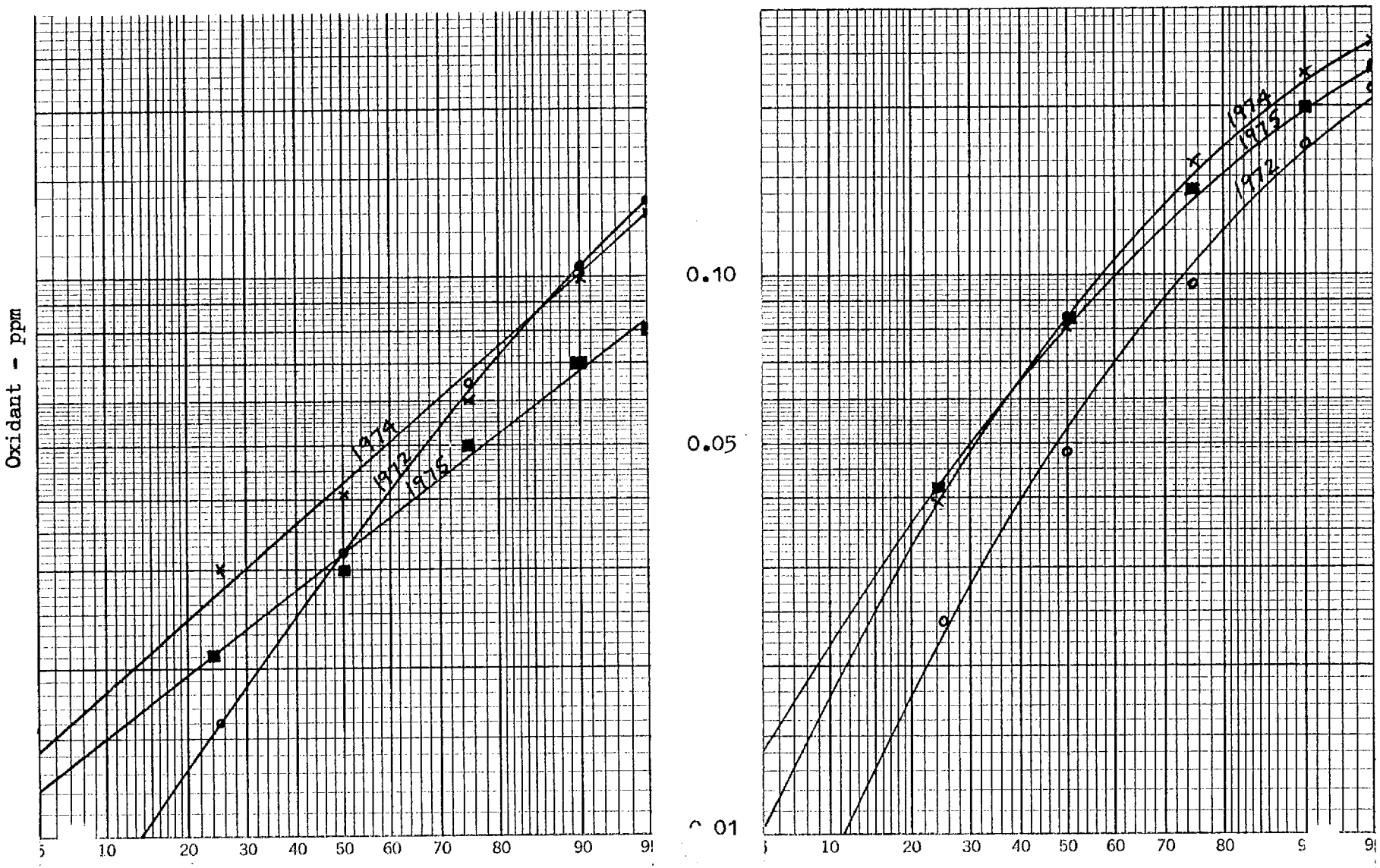
(Daily Max. 1-Hour Average - ppm)

ANAHEIM

Year	N	Max. ppm	Min. ppm	Arithmetic Mean	Arithmetic Std.Dev.
1972	359	0.35	-	0.06	± 0.05
1973	361	0.26	-	0.05	± 0.04
1974	363	0.24	-	0.05	± 0.04
1975	194	0.13	-	0.04	± 0.02

RIVERSIDE-RUBIDOUX

Year	N	Max. ppm	Min. ppm	Arithmetic Mean	Arithmetic Std.Dev.
1972	122	0.34	-	0.07	-
1973	365	0.31	-	0.10	± 0.07
1974	365	0.32	-	0.11	± 0.08
1975	365	0.35	-	0.10	± 0.07



Concentration equal to or less than stated percentage

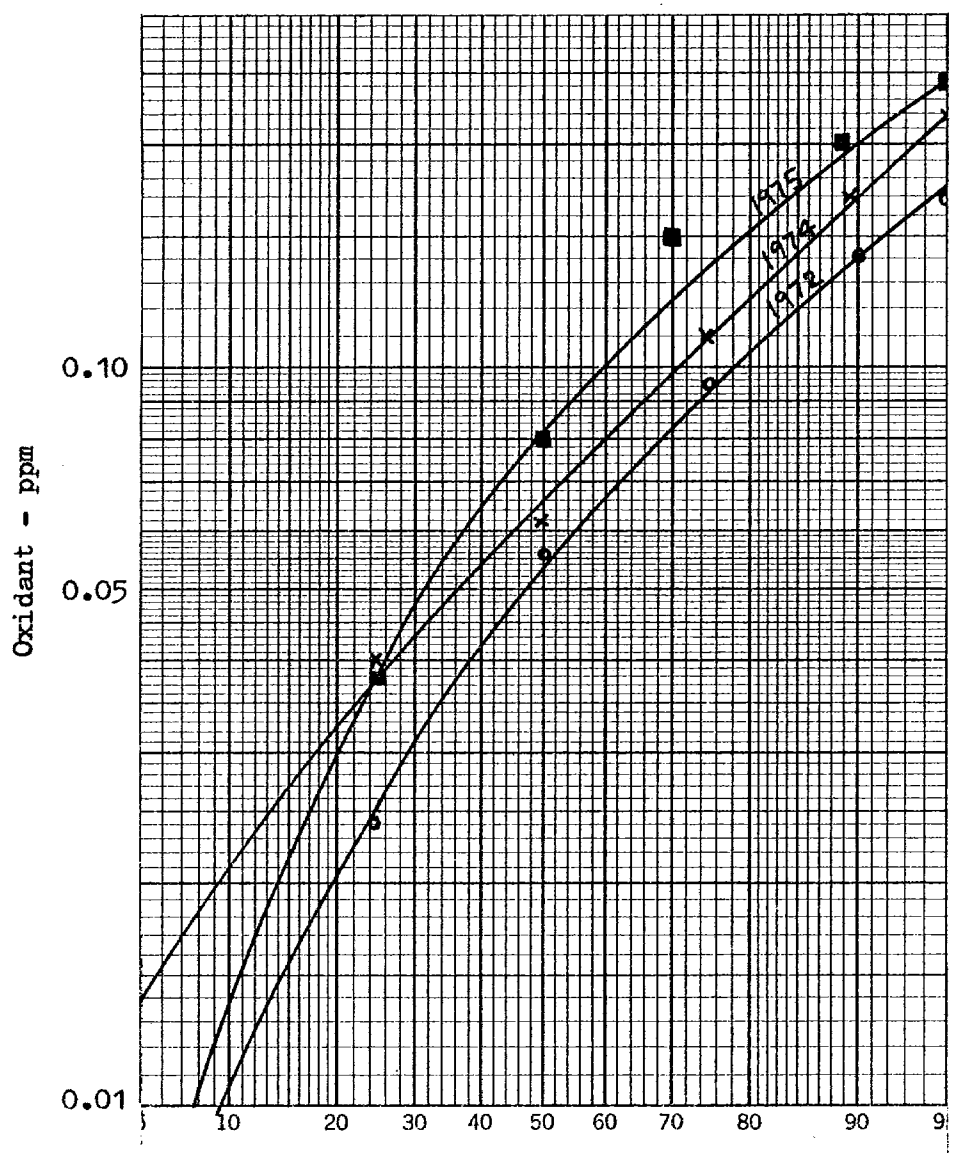
Figure IV.A-14

OXIDANT

(Daily Max. 1-Hour Average - ppm)

SAN BERNARDINO

Year	N	Max. ppm	Min. ppm	Arithmetic Mean	Arithmetic Std.Dev.
1972	363	0.34	-	0.07	-
1973	353	0.34	-	0.09	± 0.08
1974	193	0.27	-	0.08	± 0.06
1975	304	0.28	-	0.10	± 0.08



Concentration equal to or less than stated percentage

Figure IV.A-15

NUMBER OF DAYS MAXIMUM HOUR OZONE EXCEEDED SPECIFIED LEVEL BY YEAR

LOS ANGELES BASIN

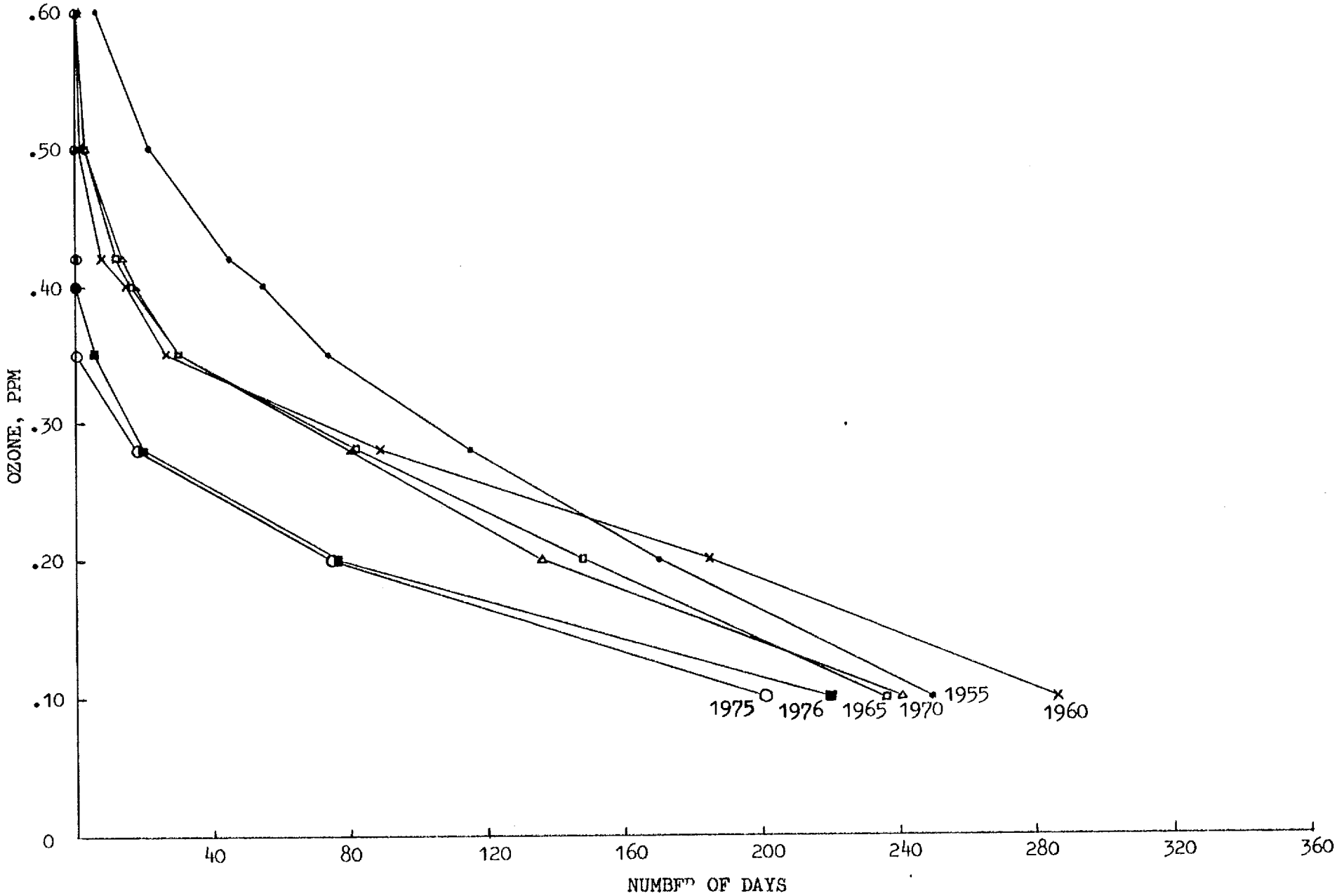
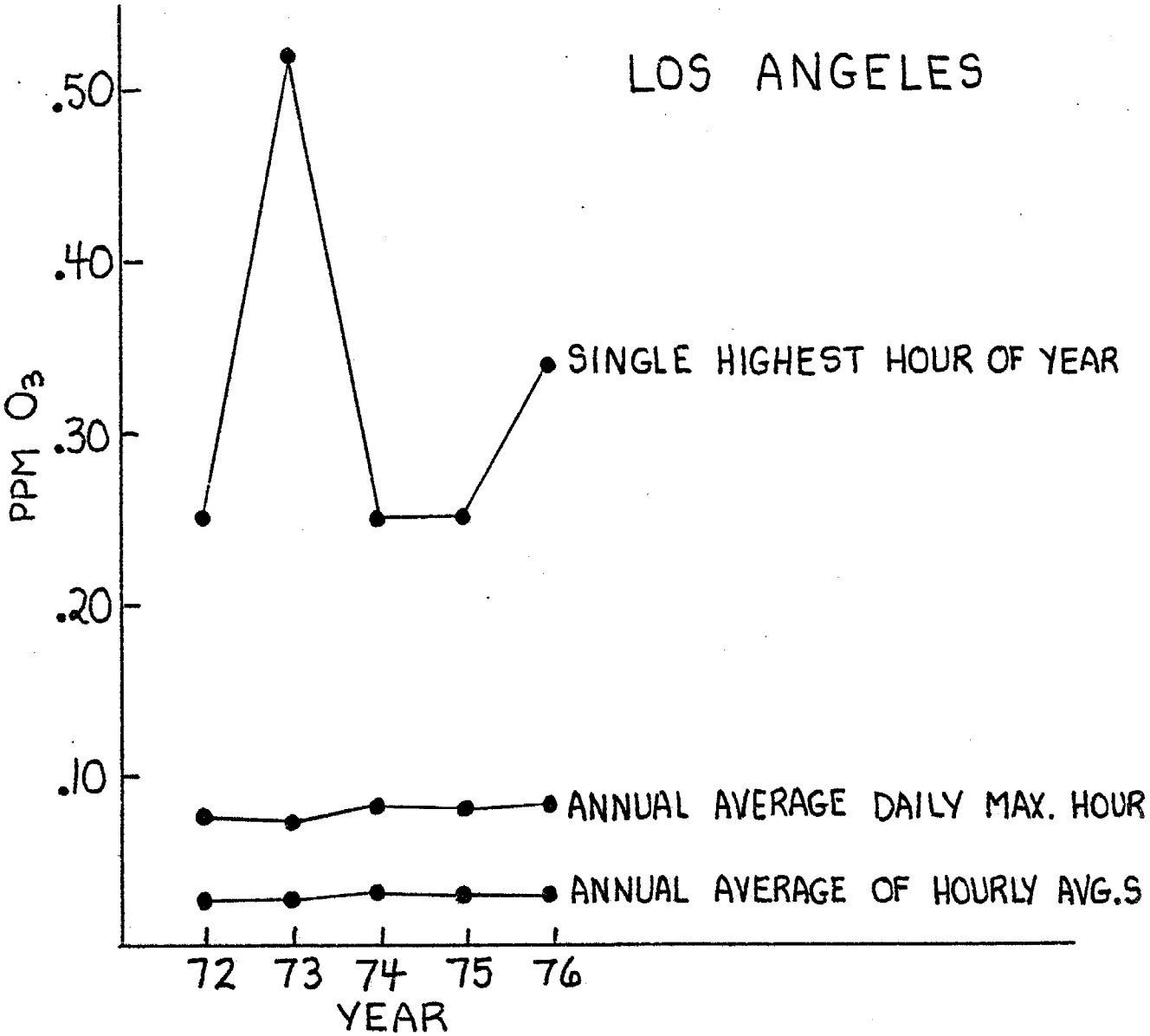


Figure IV.A-16

OXIDANT


LOS ANGELES
PPM O_3
.50
.40
.30
.20
.10
SINGLE HIGHEST HOUR OF YEAR
ANNUAL AVERAGE DAILY MAX. HOUR
ANNUAL AVERAGE OF HOURLY AVG.S
72
73
74
75
76
YEAR

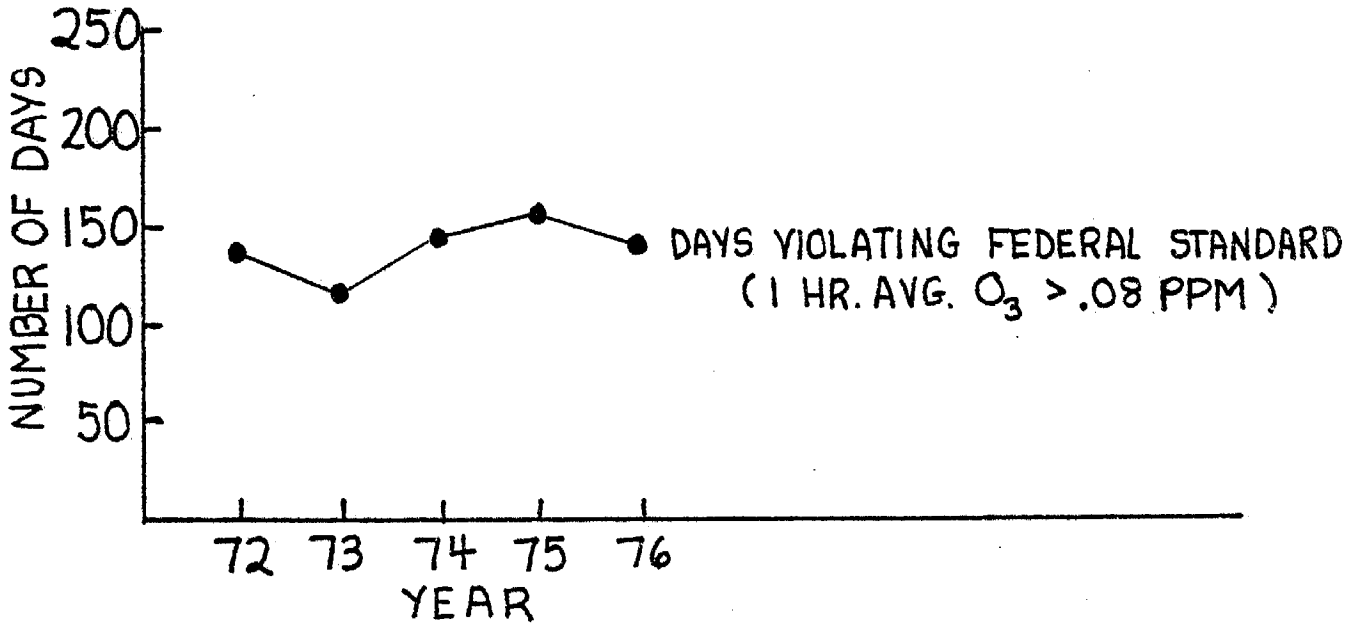
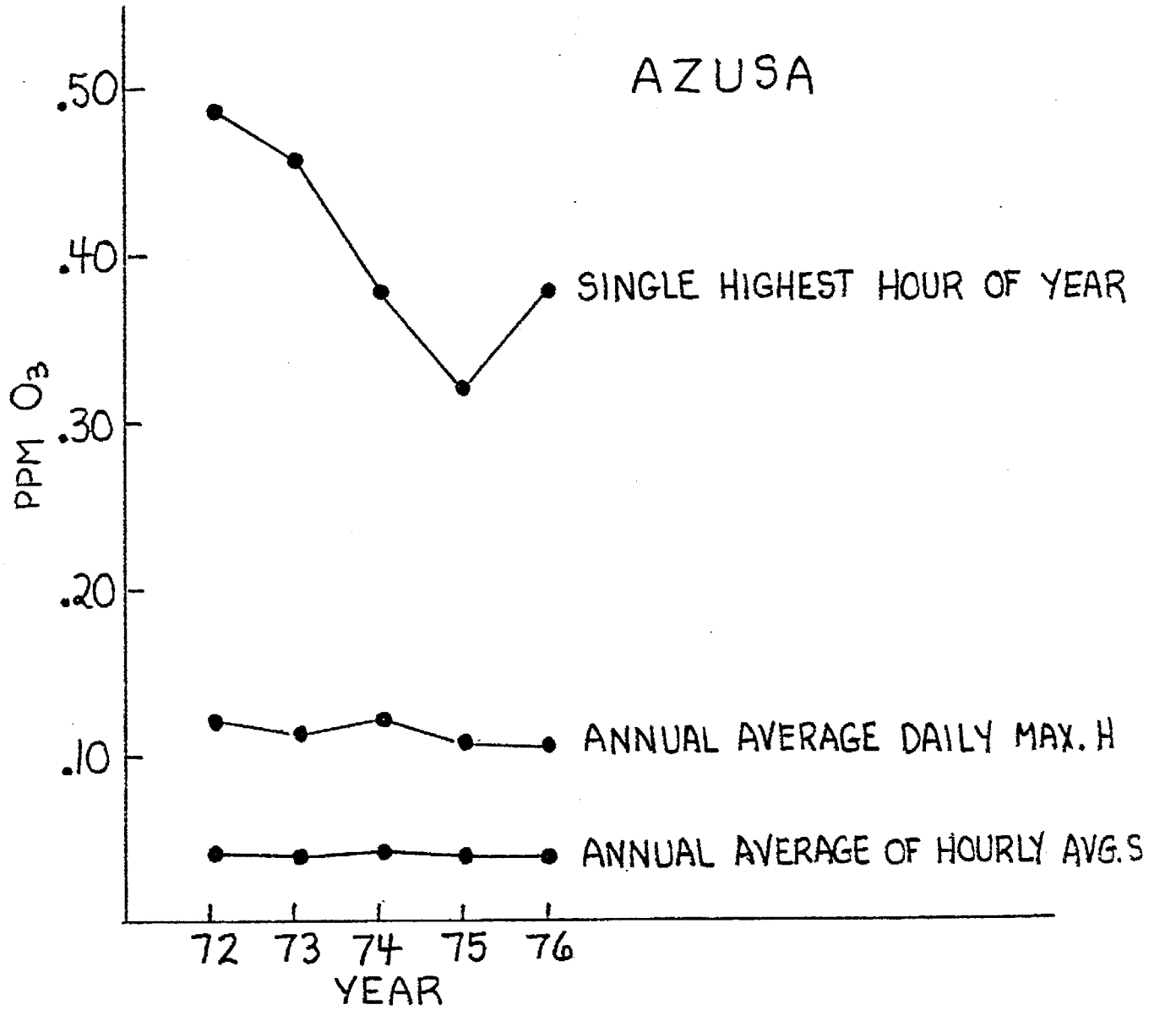
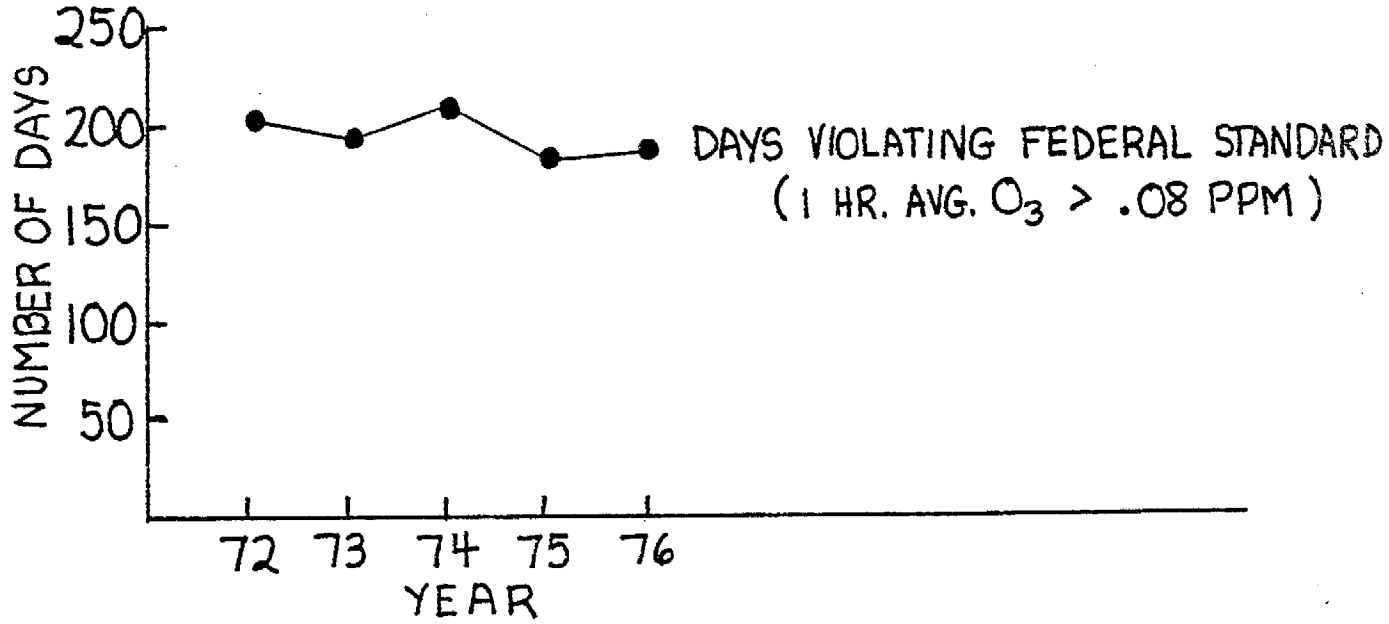

NUMBER OF DAYS
250
200
150
100
50
DAYS VIOLATING FEDERAL STANDARD
(1 HR. AVG. O_3 > .08 PPM)
72
73
74
75
76
YEAR

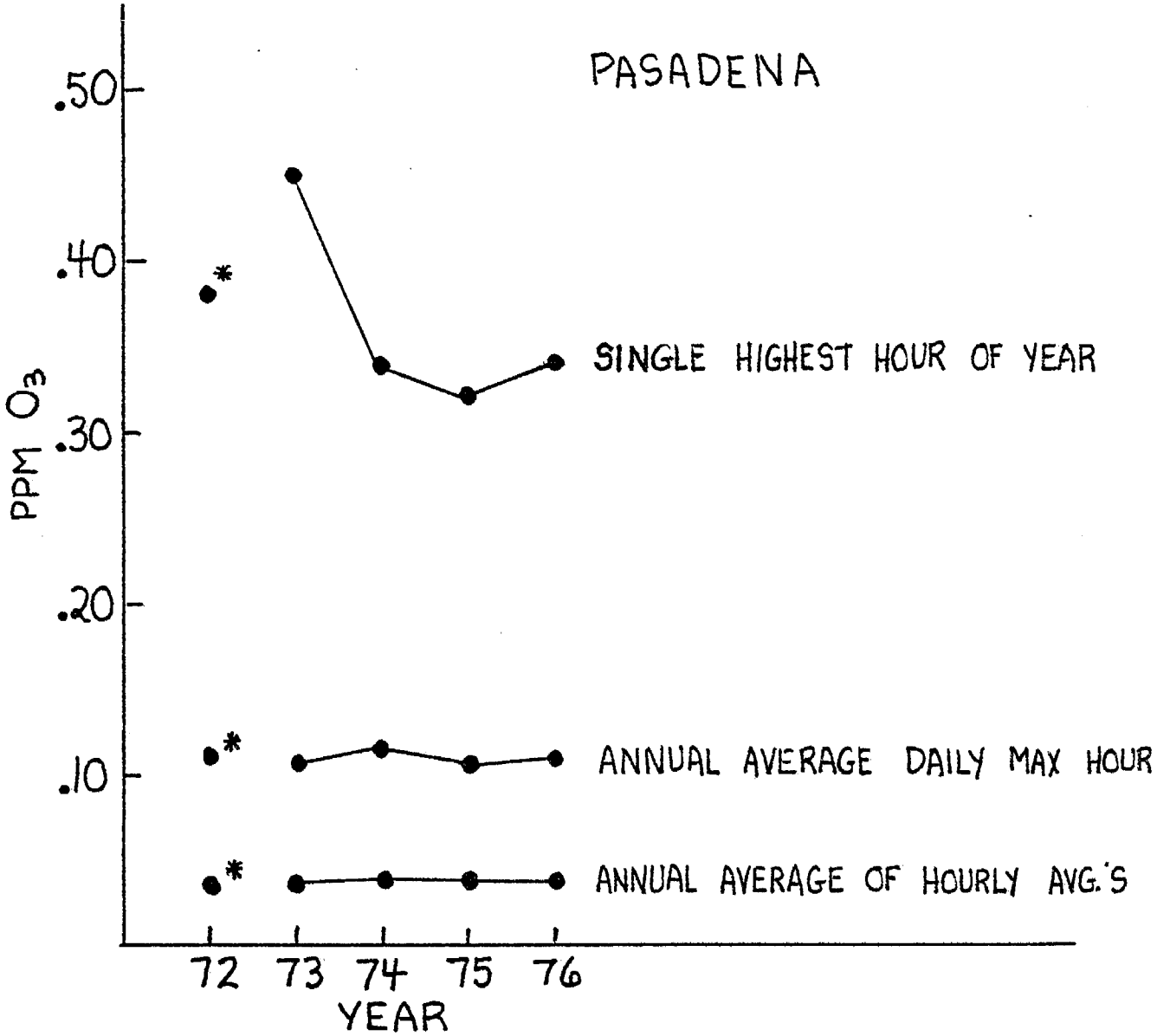
Figure IV.A-18

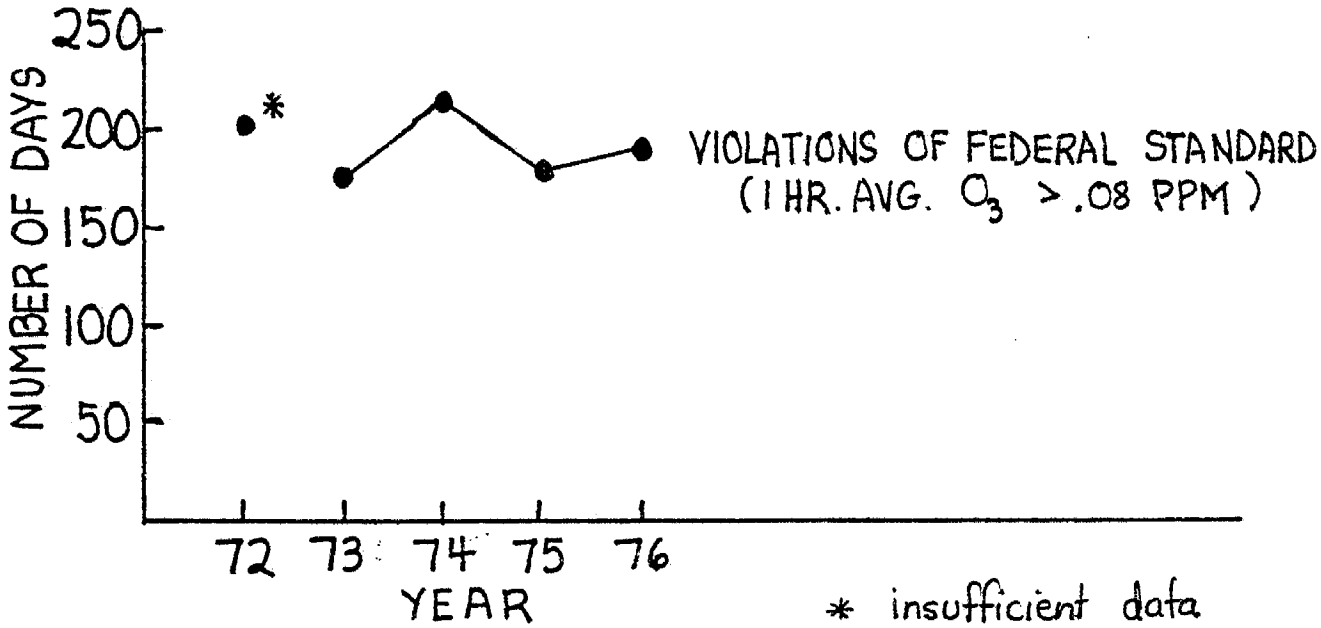
OXIDANT





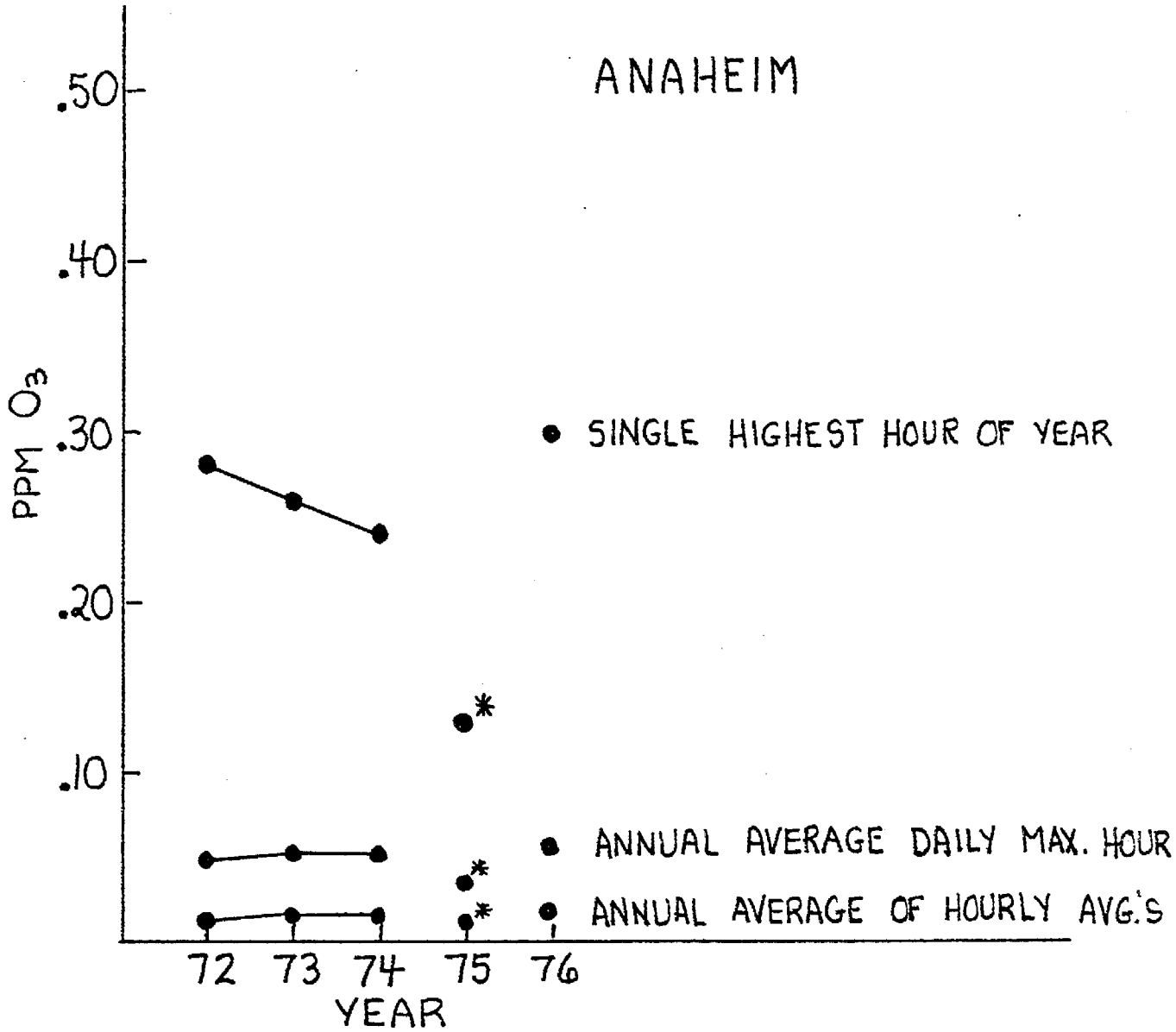
OXIDANT

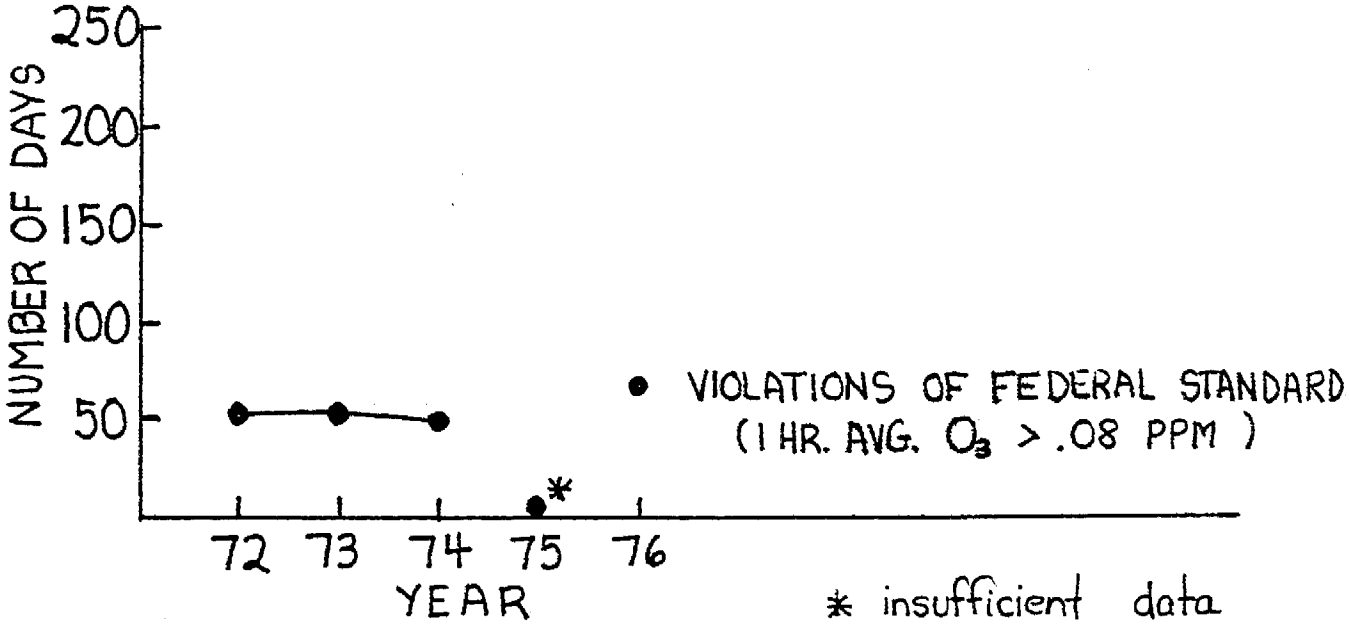




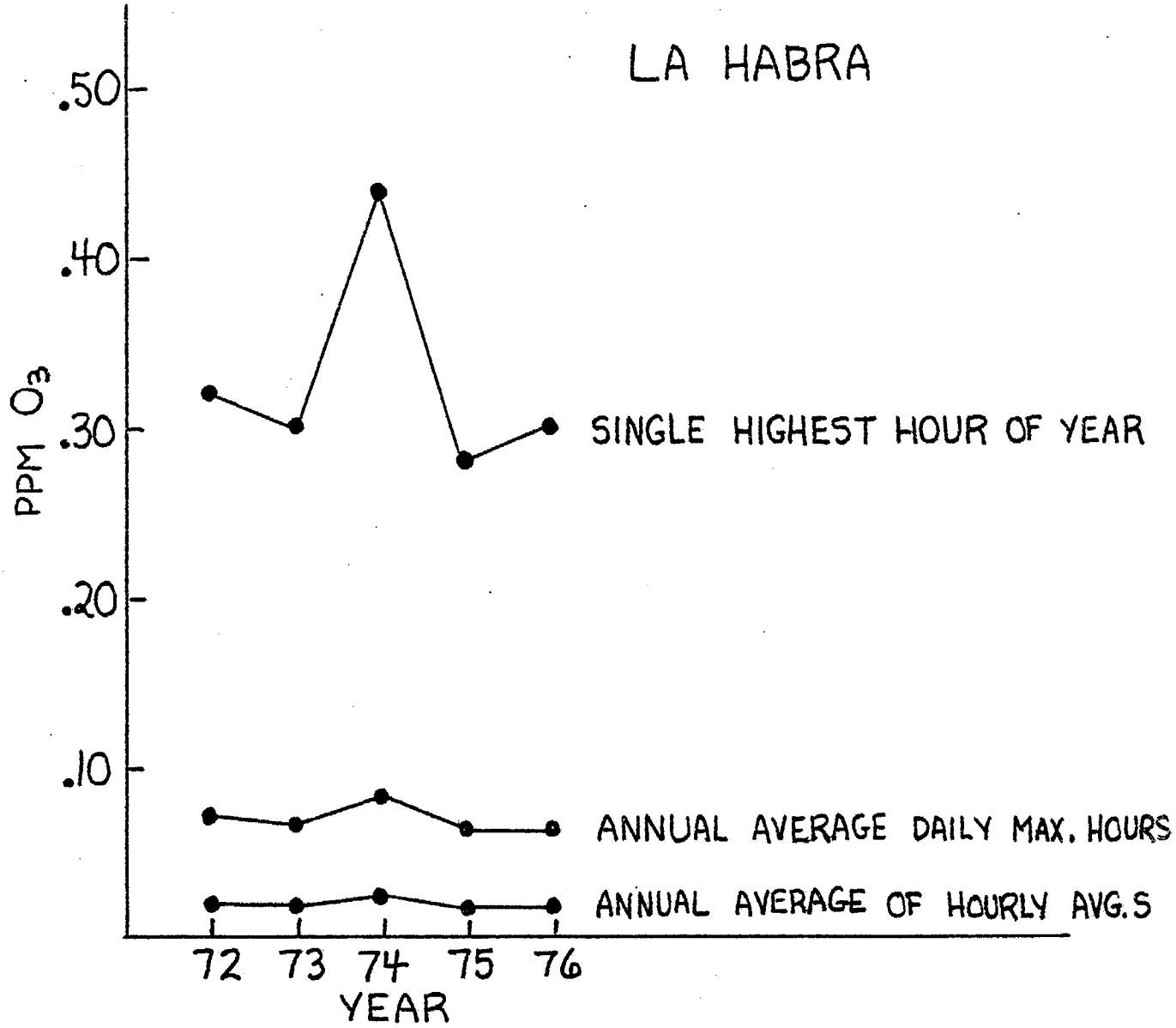
* insufficient data

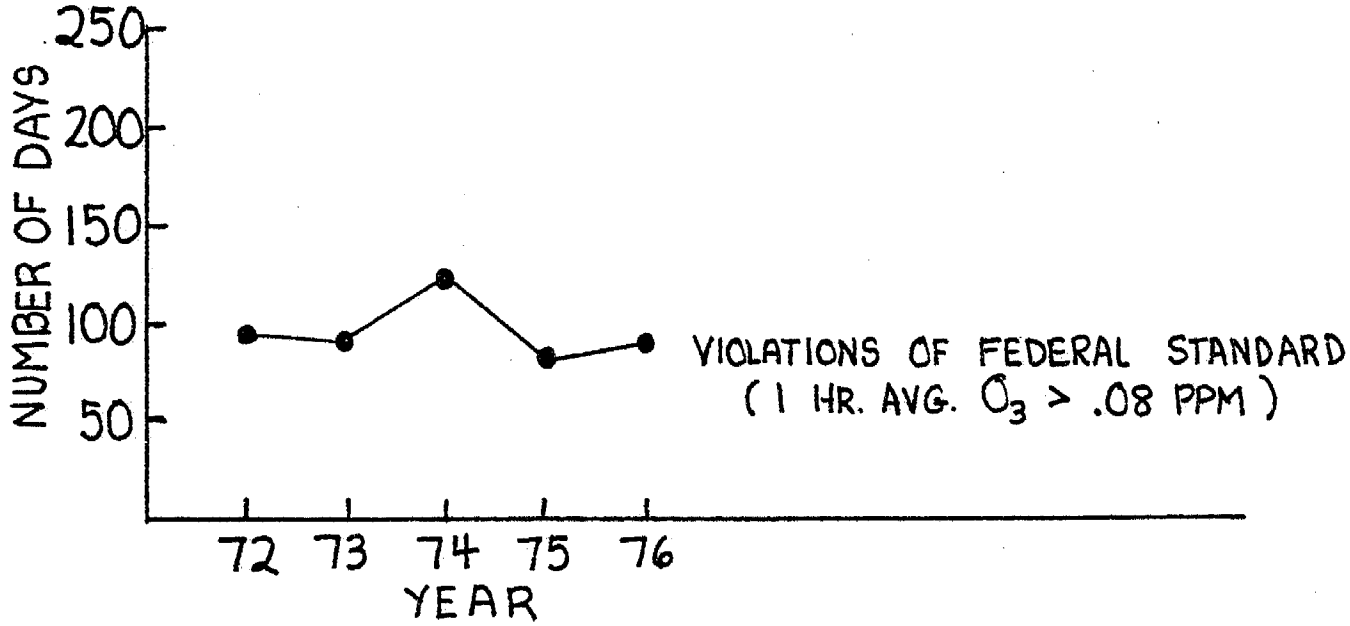
OXIDANT


ANAHEIM
.50
.40
.30
.20
.10
PPM O_3
SINGLE HIGHEST HOUR OF YEAR
ANNUAL AVERAGE DAILY MAX. HOUR
ANNUAL AVERAGE OF HOURLY AVG.'S
72 73 74 75 76
YEAR

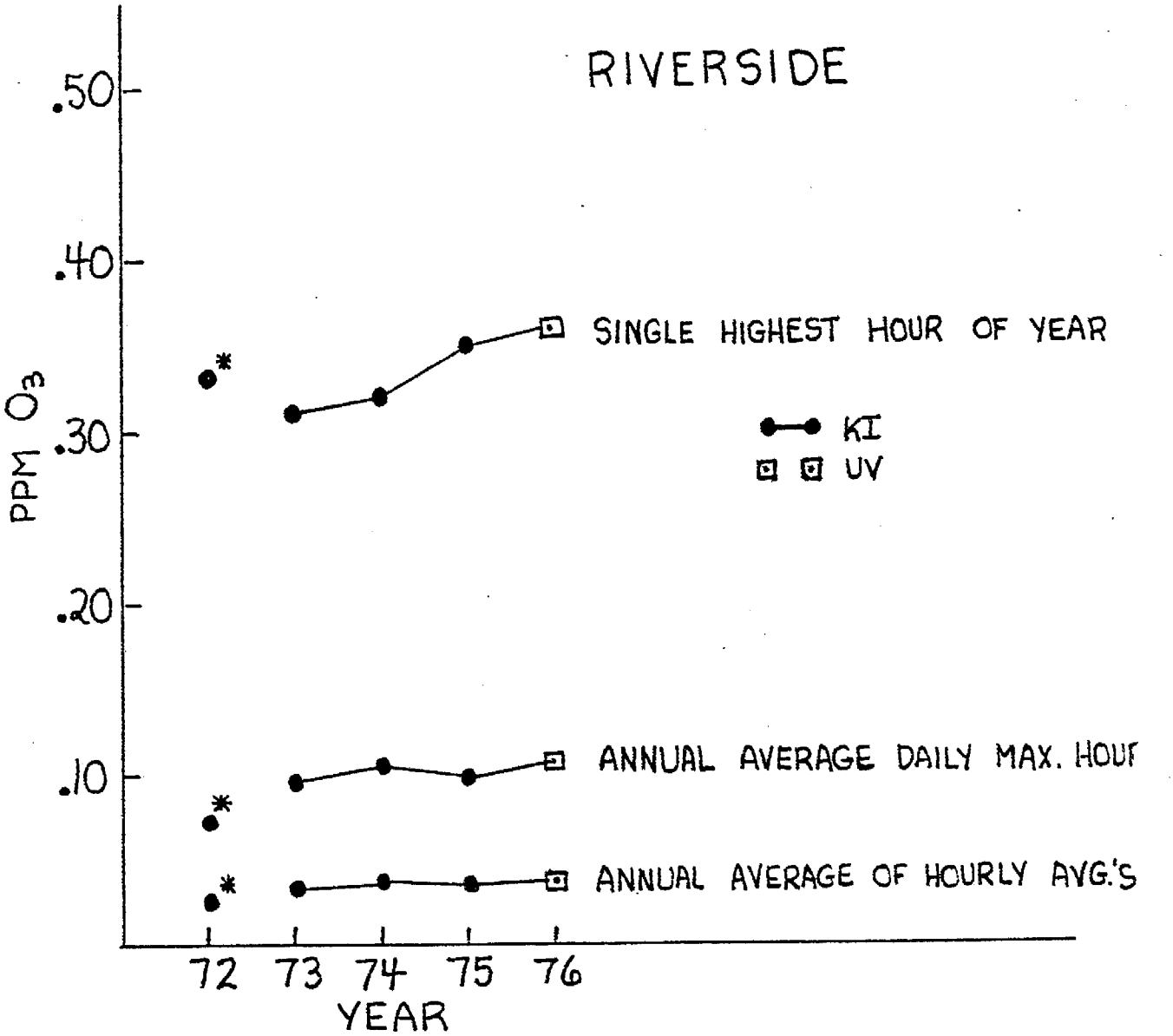

250
200
150
100
50
NUMBER OF DAYS
VIOLATIONS OF FEDERAL STANDARD
(1 HR. AVG. O_3 > .08 PPM)
72 73 74 75 76
YEAR
* insufficient data

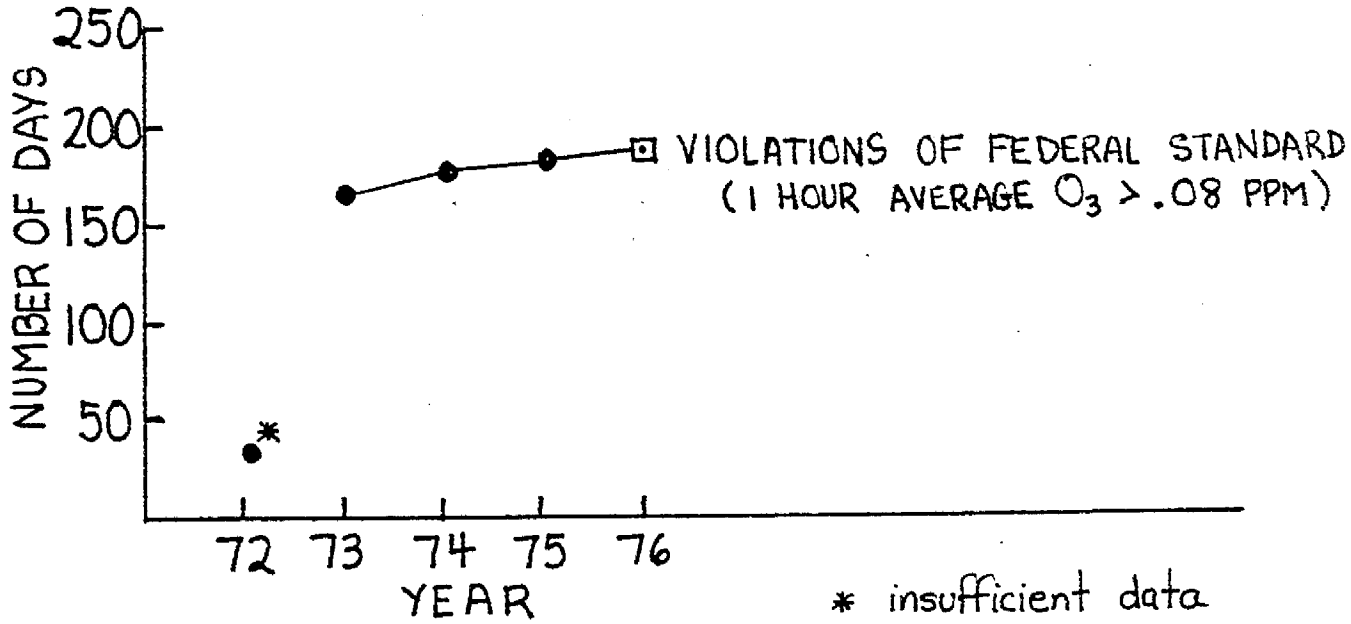
OXIDANT


LA HABRA
PPM O_3
.50
.40
.30
.20
.10
SINGLE HIGHEST HOUR OF YEAR
ANNUAL AVERAGE DAILY MAX. HOURS
ANNUAL AVERAGE OF HOURLY AVG.S
72 73 74 75 76
YEAR


NUMBER OF DAYS
250
200
150
100
50
VIOLATIONS OF FEDERAL STANDARD
(1 HR. AVG. O_3 > .08 PPM)
72 73 74 75 76
YEAR

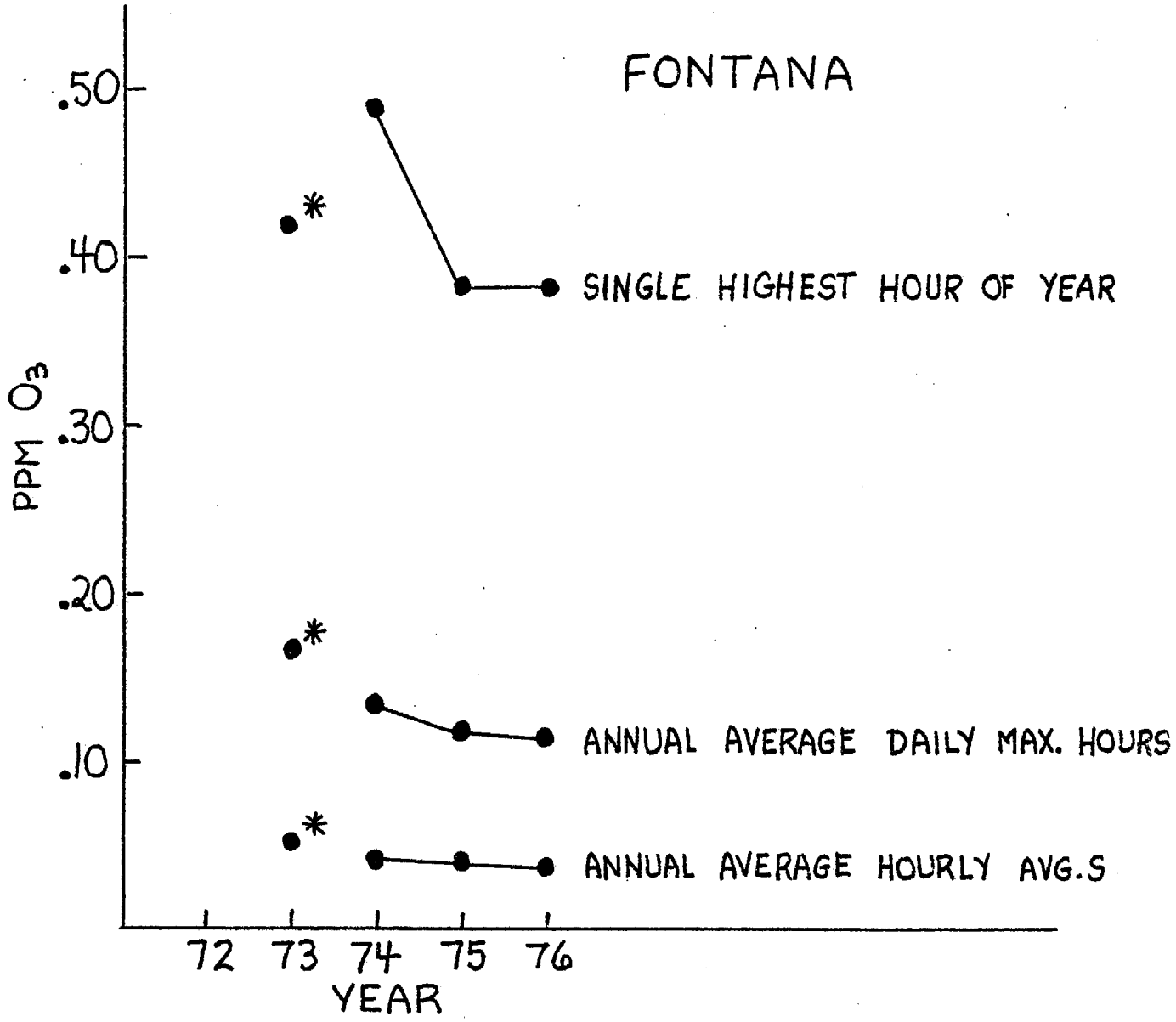
OXIDANT

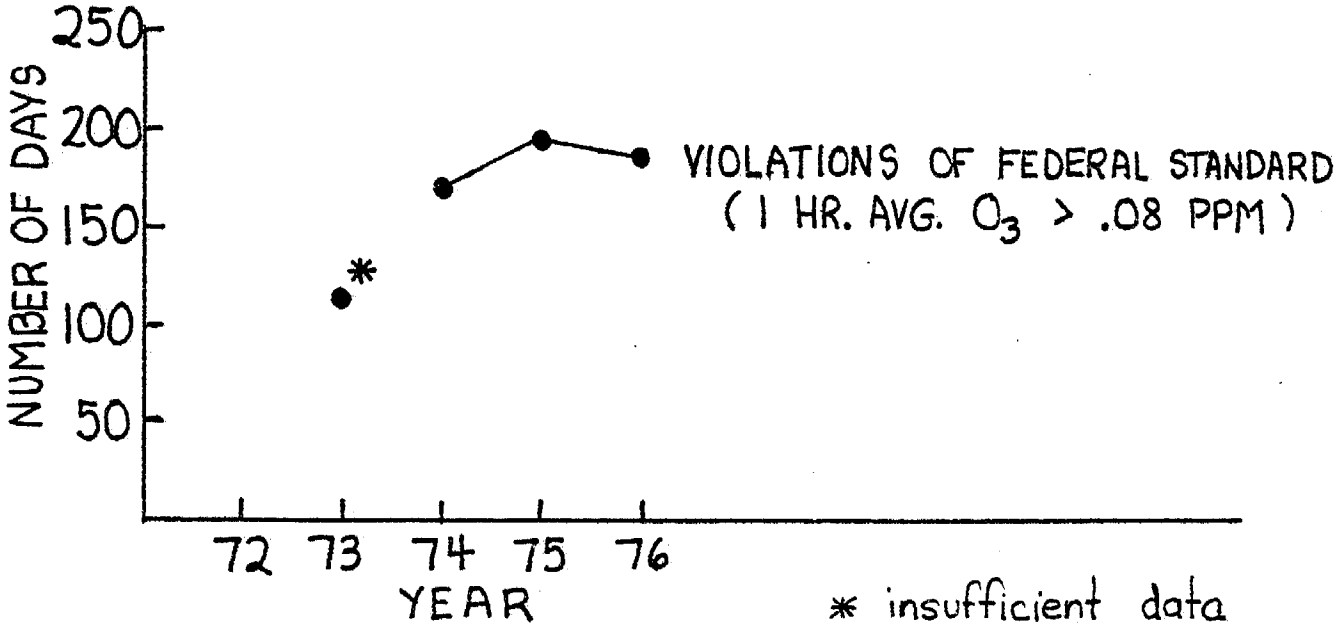




* insufficient data

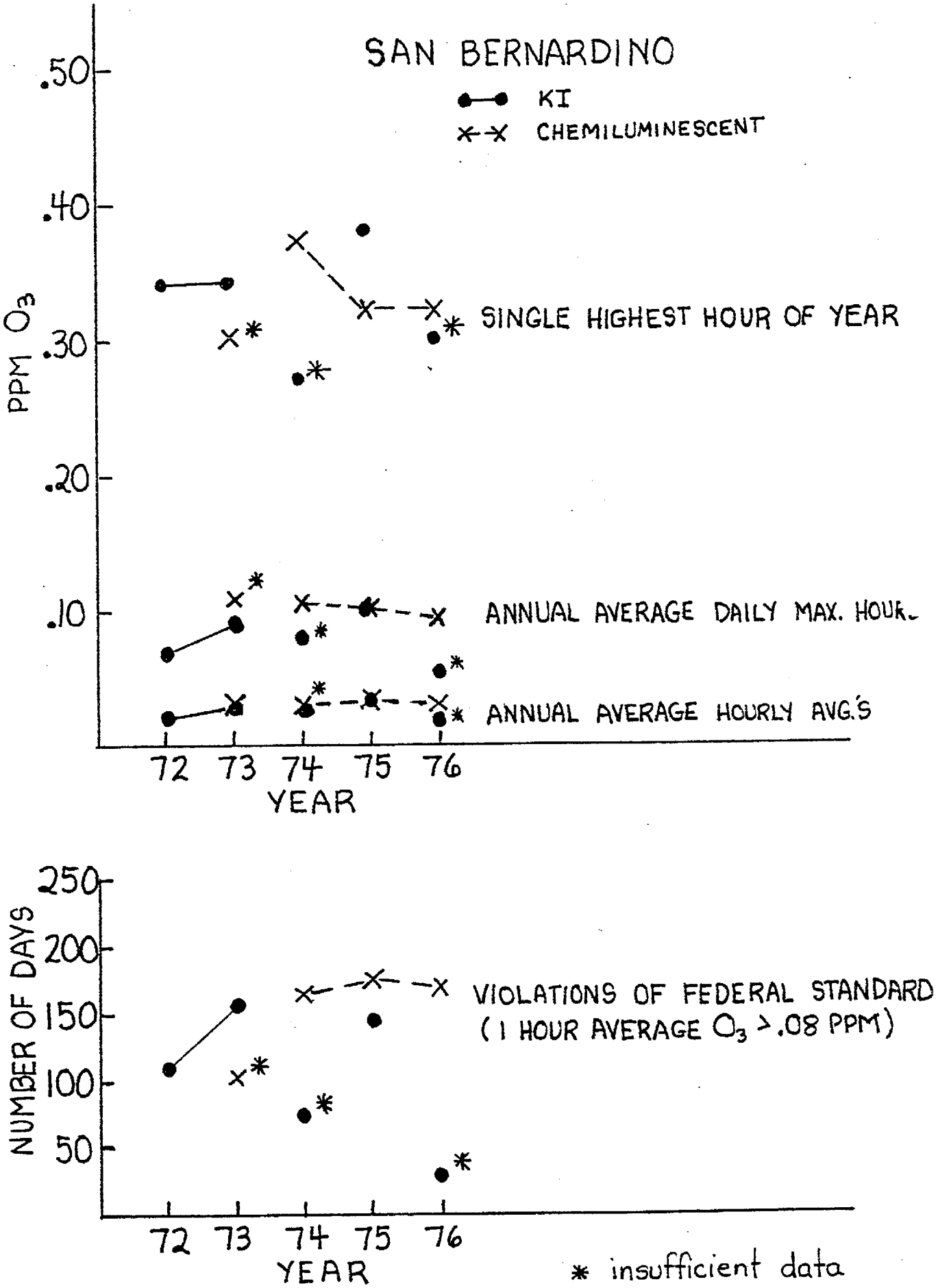
OXIDANT



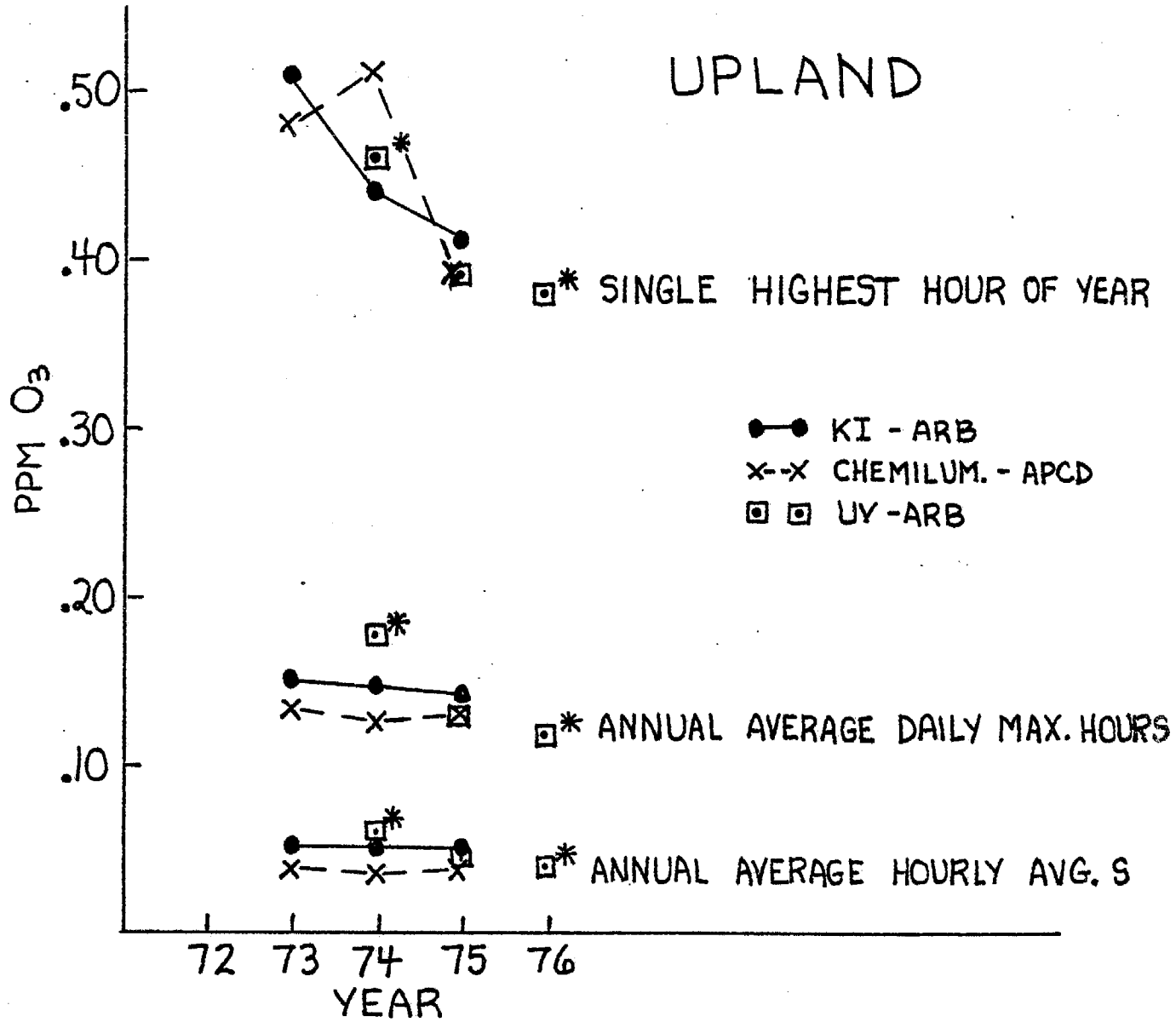


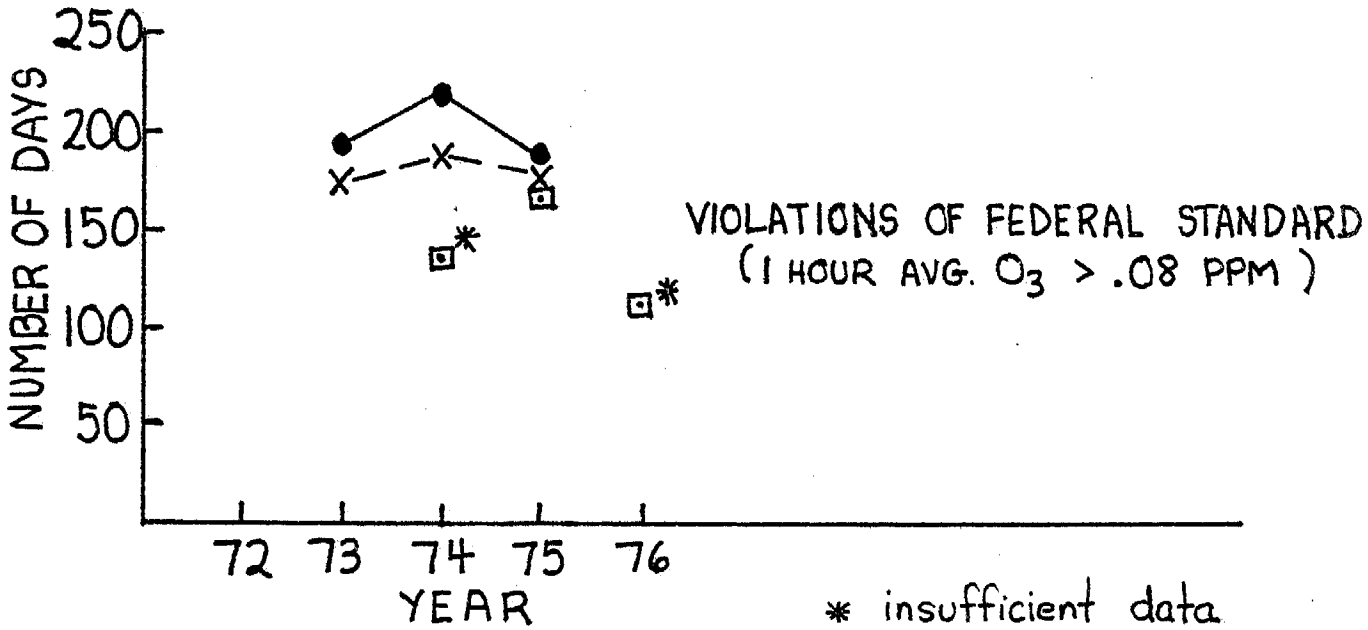
* insufficient data

OXIDANT


SAN BERNARDINO
KI
CHEMILUMINESCENT
PPM O_3
.50
.40
.30
.20
.10
SINGLE HIGHEST HOUR OF YEAR
ANNUAL AVERAGE DAILY MAX. HOUR
ANNUAL AVERAGE HOURLY AVG.'S
72 73 74 75 76
YEAR
NUMBER OF DAYS
250
200
150
100
50
VIOLATIONS OF FEDERAL STANDARD
(1 HOUR AVERAGE O_3 > .08 PPM)
72 73 74 75 76
YEAR
* insufficient data

OXIDANT


UPLAND
.50
.40
.30
.20
.10
PPM O_3
* SINGLE HIGHEST HOUR OF YEAR
KI - ARB
CHEMILUM. - APCD
UV - ARB
* ANNUAL AVERAGE DAILY MAX. HOURS
* ANNUAL AVERAGE HOURLY AVG. S
72 73 74 75 76
YEAR


250
200
150
100
50
NUMBER OF DAYS
VIOLATIONS OF FEDERAL STANDARD
(1 HOUR AVG. O_3 > .08 PPM)
72 73 74 75 76
YEAR
* insufficient data

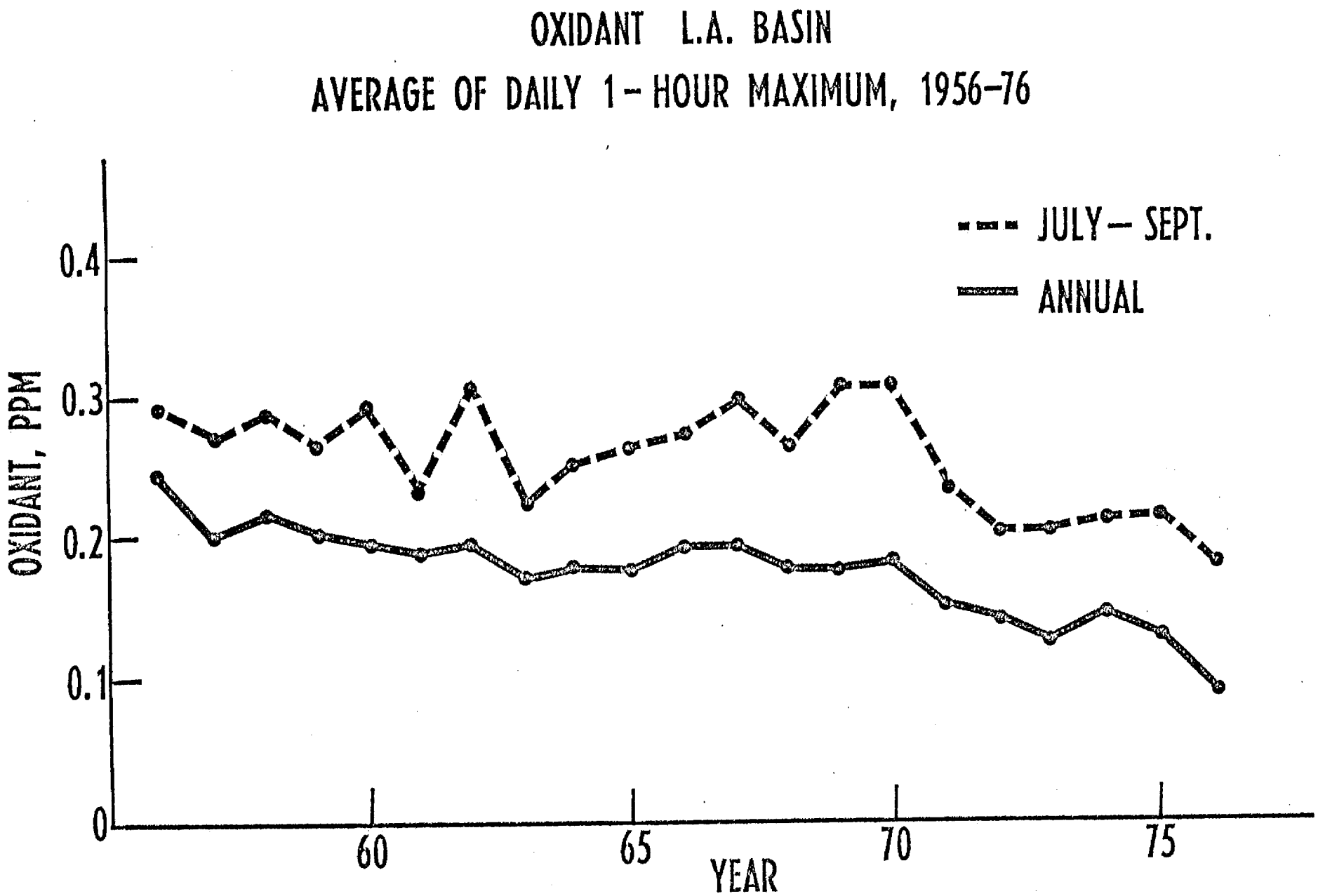


Figure IV.A-26

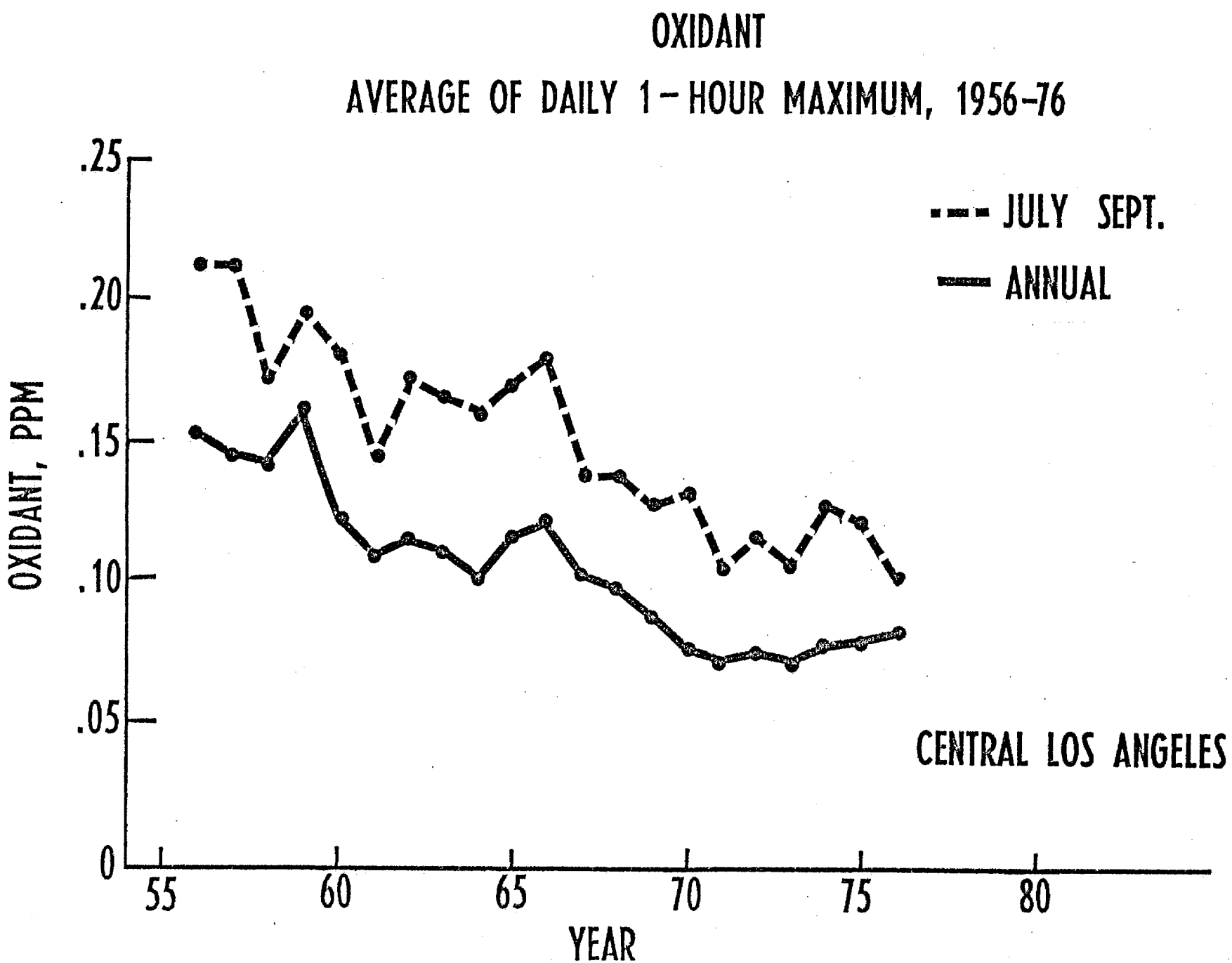


Figure IV.A-27

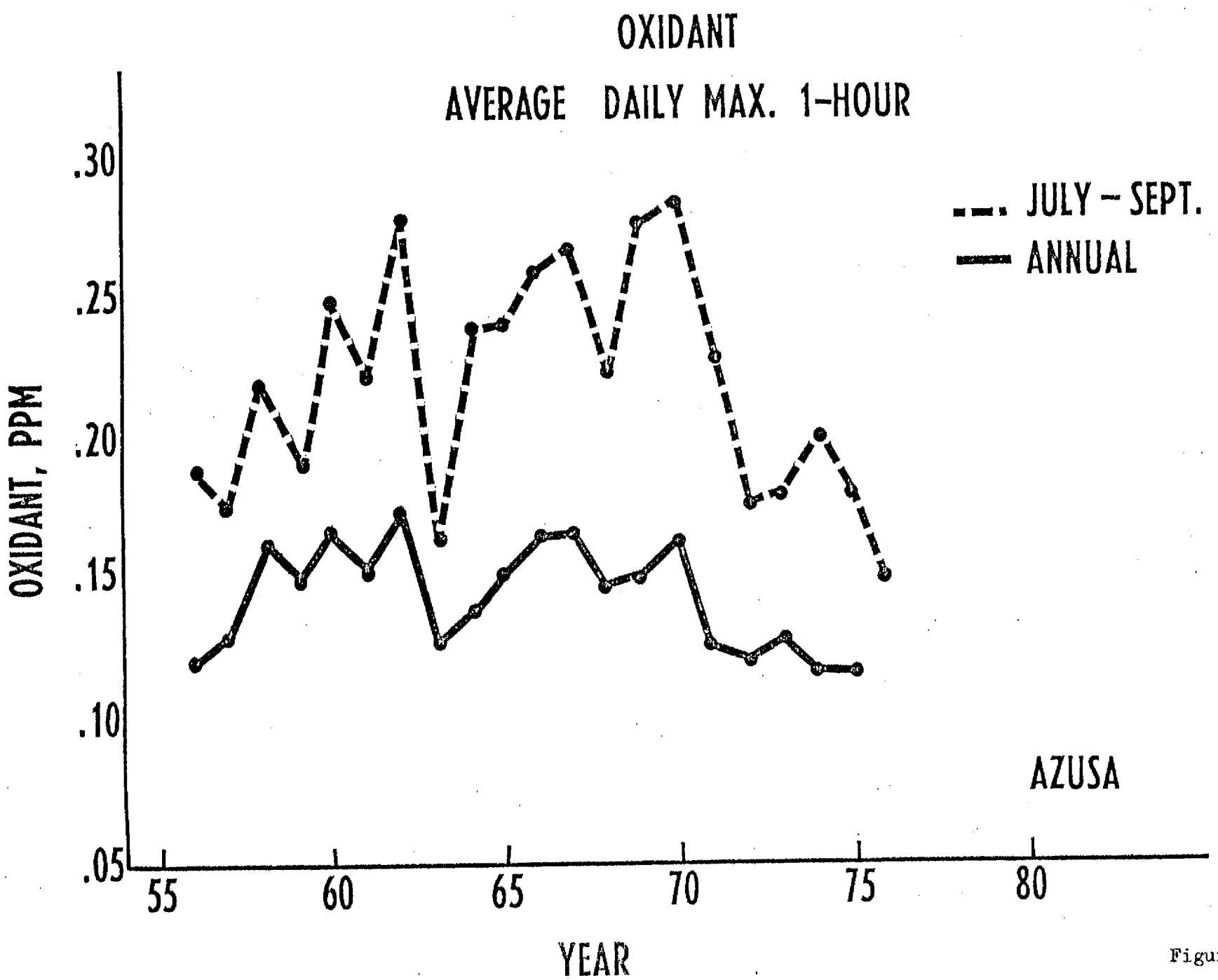


Figure IV.A-28

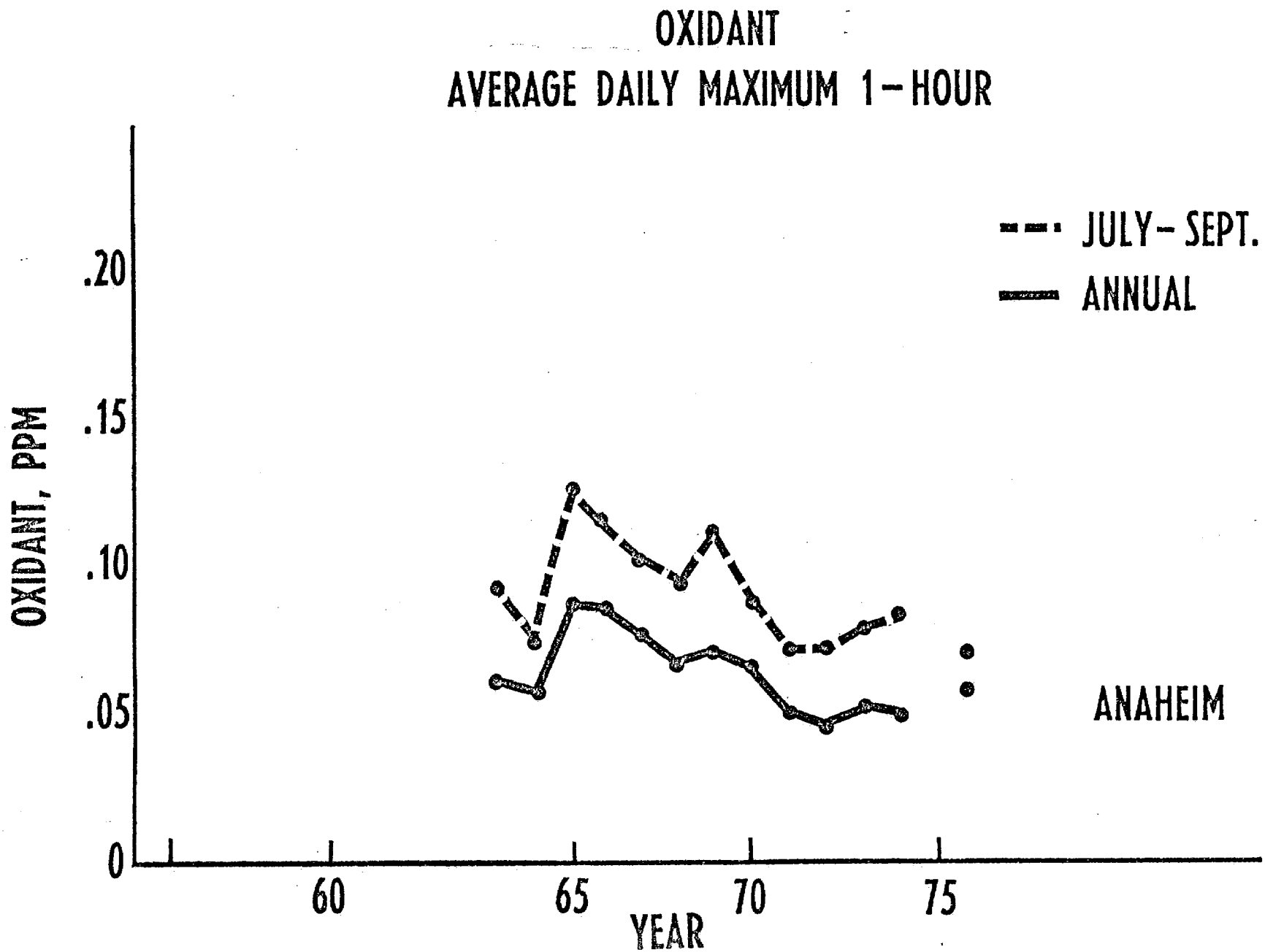


Figure IV.A-29

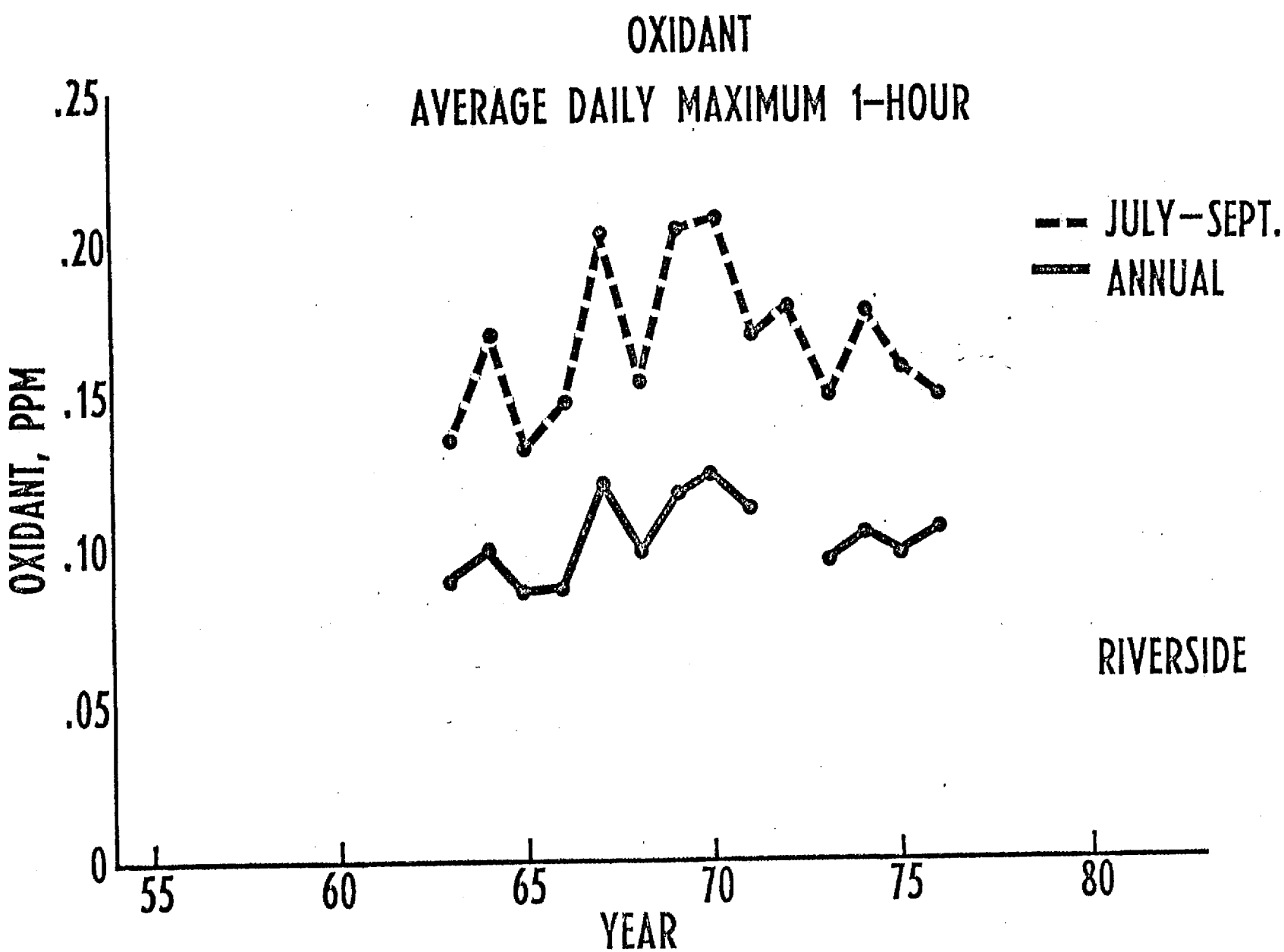


Figure IV.A-30

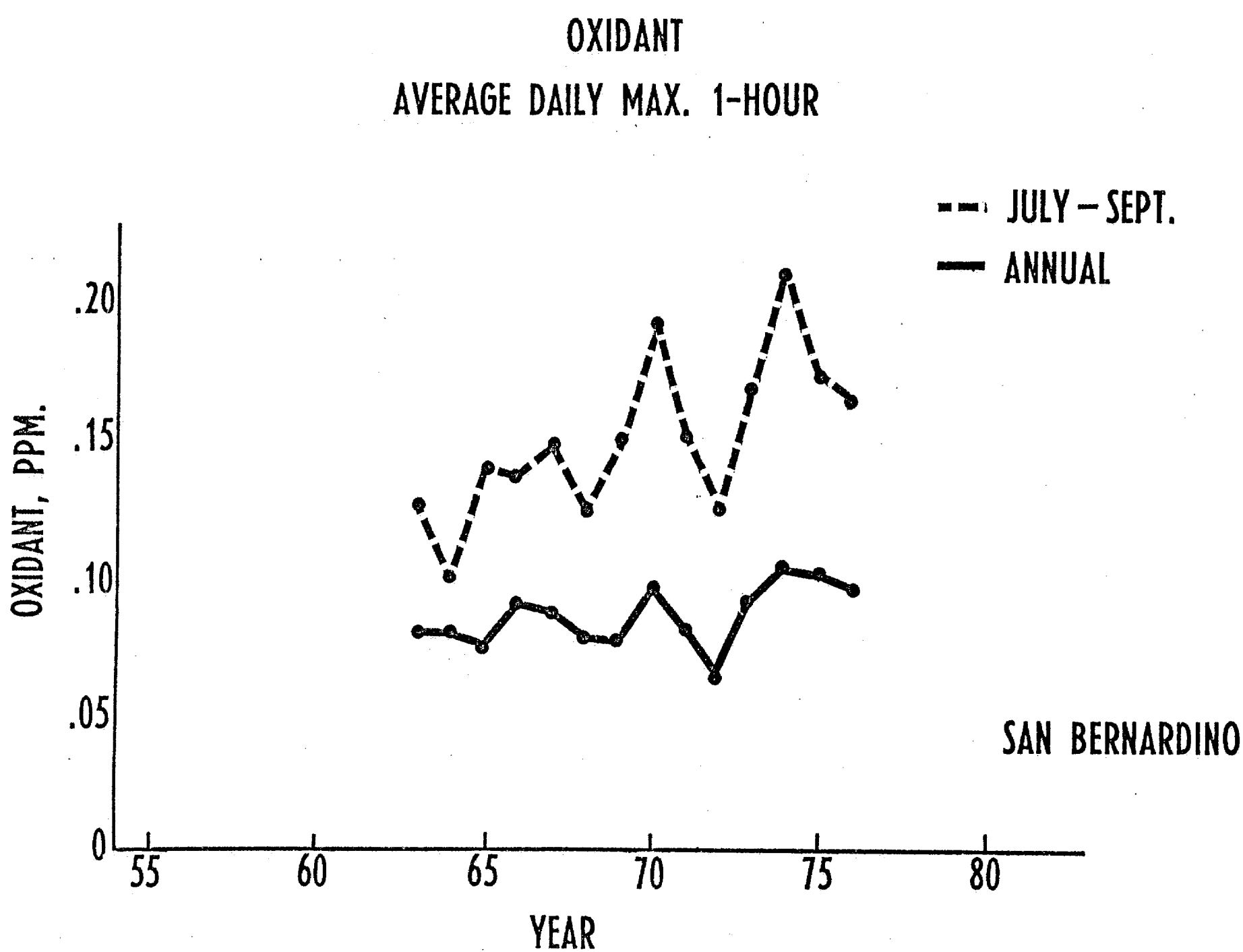


Figure IV.A-31

OXIDANT

Table IV.A-I

NUMBER OF DAYS VIOLATING FEDERAL STANDARD (1-HR. AVG. O_3 > 0.08 PPM)

ZONE STATION #	Area	1972	1973	1974	1975	1976
METROPOLITAN ZONE						
001	L. A.	138	117	144	157	142
060	Azusa	199	180	206	181	185
069	Burbank	155	143	168	158	204
071	WLA	66	90	75	65	91
072	L. B.	16	12	20	9	11
074	Reseda	157	160	175	182	188
075	Pomona	164	166	160	167	168
076	Lennox	20	18	9	15	30
080	Whittier	104	90	84	87	143
081	Newhall	161	152	167	160	165
082	Lancaster	92	134	75	80	108
083	Pasadena	203	178	214	183	193
084	Lynwood			37	34	44
085	Pico Rivera					115
SOUTHERN ZONE						
3176	Anaheim	54	56	52		68
3177	La Habra	96	94	123	82	89
3185	Costa Mesa		40	54	19	17
3186	El Toro		29		72	55
3188	San Juan Capistrano			58	39	47
3189	Laguna					
3190	Los Alamitos			93	64	66
3191	Santa Ana Canyon					134
EASTERN ZONE, RIVERSIDE						
4137	Palm Springs	122	136	91	98	123
4139	Indio	117	97	82	104	88
4140	Prado Park	128	132	154		168
4141	Hemet		59	72	82	87
4144	Riverside		166	179	182	187
4149	Perris			183	176	164
4150	Banning			130	120	125
4151	Temecula				73	88
4152	Elsinore				174	124
EASTERN ZONE, SAN BERNARDINO						
5151	San Bernardino	110	154	164	145	168
5155	Barstow			36	8	12
5165	Redlands	116	171	185		159
5168	Victorville	12	54	72	58	64
5173	Chino		148	163		185
5174	Upland		177	187		201
5175	Upland (ARB)		193	220	188	
5176	Fontana			169		181
5177	Big Bear			120		38
5181	L. Gregory					112
5182	Yucaipa					160
5187	Needles					
5188	Trona					

OXIDANT

Table IV.A-II

NUMBER OF DAYS VIOLATING STATE STANDARD (1-HR. AVG. $O_3 \geq 0.10$ PPM)
1976

ZONE STATION #	Area	
METROPOLITAN ZONE		
001	L. A.	125
060	Azusa	172
069	Burbank	187
071	WLA	75
072	L. B.	5
074	Reseda	171
075	Pomona	160
076	Lennox	19
080	Whittier	116
081	Newhall	154
082	Lancaster	82
083	Pasadena	181
084	Lynwood	39
085	Pico Rivera	
SOUTHERN ZONE		
3176	Anaheim	54
3177	La Habra	67
3185	Costa Mesa	10
3186	El Toro	43
3188	San Juan Capistrano	39
3189	Laguna	--
3190	Los Alamitos	53
3191	Santa Ana Canyon	118
EASTERN ZONE, RIVERSIDE		
4137	Palm Springs	103
4139	Indio	57
4140	Prado Park	150
4141	Hemet	68
4144	Riverside	176
4149	Perris	154
4150	Banning	113
4151	Temecula	52
4152	Elsinore	104
EASTERN ZONE, SAN BERNARDINO		
5151	San Bernardino	159
5155	Barstow	5
5165	Redlands	144
5168	Victorville	45
5173	Chino	174
5174	Upland	--
5175	Upland (ARB)	--
5176	Fontana	173
5177	Big Bear	33
5181	L. Gregory	113
5182	Yucaipa	152
5187	Needles	--
5188	Trona	--

OXIDANT

Table IV.A-III

ANNUAL ARITHMETIC MEAN OF DAILY MAX. 1-HR. AVG., PPM

ZONE #	STATION Area	1972	1973	1974	1975	1976
METROPOLITAN ZONE						
001	L. A.	.076	.072	.081	.080	.083
060	Azusa	.120	.111	.120	.107	.105
069	Burbank	.086	.077	.095	.086	.111
071	WLA	.057	.062	.061	.059	.067
072	L. B.	.040	.039	.037	.033	.033
074	Reseda	.083	.084	.091	.099	.101
075	Pomona	.095	.095	.098	.098	.096
076	Lennox	.037	.040	.036	.038	.045
080	Whittier	.072	.066	.065	.061	.083
081	Newhall	.089	.095	.088	.090	.096
082	Lancaster	.061	.078	.057	.058	.066
083	Pasadena	.110	.107	.114	.105	.109
084	Lynwood			.048	.042	.054
085	Pico Rivera					
SOUTHERN ZONE						
3176	Anaheim	.048	.052	.051	.037	.056
3177	La Habra	.071	.067	.082	.064	.063
3185	Costa Mesa	.043	.056	.059	.043	.037
3186	El Toro		.046	.075	.056	.057
3188	San Juan Capistrano			.059		.052
3189	Laguna					
3190	Los Alamitos			.073		.058
3191	Santa Ana Canyon					.078
EASTERN ZONE, RIVERSIDE						
4137	Palm Springs	.077	.081	.066	.070	
4139	Indio	.072	.064	.061	.067	
4140	Prado Park	.081	.078	.088	.054	
4141	Hemet		.048	.054		.064
4144	Riverside		.096	.105	.099	.106
4149	Perris			.097		.091
4150	Banning			.077	.074	
4151	Temecula					.064
4152	Elsinore					.074
EASTERN ZONE, SAN BERNARDINO						
5151	San Bernardino	.069	.092	.106	.102	.088
5155	Barstow			.047	.039	
5165	Redlands	.071	.107	.109	.097	.089
5168	Victorville	.036	.051	.053	.050	
5173	Chino		.083	.101	.104	.104
5174	Upland		.132	.124	.128	
5175	Upland (ARB)		.149	.146	.141	
5176	Fontana			.134	.116	.114
5177	Big Bear			.078		
5181	L. Gregory					.068
5182	Yucaipa				.074	.094
5187	Needles					
5188	Trona					

TABLE

OXIDANT

MONTHLY AVERAGE OF DAILY MAX. 1-HOUR, PPM

- 1976 -

MONTH	AREA					
	LOS ANGELES	AZUSA	ANAHEIM	LA HABRA	RIVERSIDE	SAN BERNARDINO
JAN.	.062	.049	.028	.040	.047	.030
FEB.	.047	.061	.033	.034	.064	.045
MAR.	.068	.067	.040	.050	.069	.069
APR.	.062	.086	.040	.061	.096	.094
MAY	.089	.145	.064	.077	.141	.144
JUNE	.113	.165	.087	.093	.148	.120
JULY	.111	.183	.068	.069	.185	.200
AUG.	.098	.156	.068	.078	.162	.158
SEPT.	.092	.113	.066	.072	.120	.121
OCT.	.113	.120	.080	.102	.114	.090
NOV.	.098	.070	.062	.056	.078	.056
DEC.	.045	.049	.029	.019	.039	.034

SCAQMD - E & P Div.

MFB 10/03/77

SUMMARY OF THE NUMBER OF DAYS EACH YEAR THE MAXIMUM HOURLY AVERAGE OZONE CONCENTRATION EQUALLED OR EXCEEDED SPECIFIC LEVELS IN THE LOS ANGELES BASIN, 1955-1976

Year	Number of Days Ozone Concentration (KI Method), Daily One-Hour Maxima, Equalled or Exceeded Various Levels, ppm							
	.10[a]	.20[b]	.28	.35[c]	.40	.42	.50[d]	.60
1955	249	170	115	74	55	45	22	6
1956	332	213	99	54	32	24	7	1
1957	305	169	76	29	12	10	4	0
1958	322	219	90	34	19	15	5	2
1959	316	182	86	34	19	13	2	1
1960	286	185	89	27	15	8	1	0
1961	283	140	58	13	6	5	0	0
1962	267	181	97	34	12	7	1	0
1963	258	131	44	8	4	2	1	0
1964	232	135	63	19	6	5	0	0
1965	236	148	82	30	16	12	3	0
1966	271	166	80	27	9	5	4	1
1967	259	157	87	38	15	9	4	1
1968	252	136	73	26	13	8	0	0
1969	246	139	70	33	15	9	3	0
1970	241	136	81	30	18	14	3	0
1971	218	100	37	10	2	2	1	0
1972	211	77	22	6	3	2	0	0
1973	185	79	25	8	4	3	1	0
1974	215	89	22	3	0	0	0	0
1975	201	75	18	0	0	0	0	0
1976	220	76	19	5	0	0	0	0
22 Year Average	255	141	65	25	12	9	3	1

a) State Air Quality Standard.
b) Stage 1 Episode (Health Advisory) after April 1, 1974.
c) Stage 2 Episode (Warning) in effect December 31, 1975.
d) Stage 3 Episode (Emergency) in effect December 31, 1975, only if attained and expected to persist one additional hour.

DATA SUMMARY - OXIDANT, ppm

STATION / YEAR	ANNUAL MAXIMUM	ANNUAL ARITHMETIC MEAN		NUMBER OF DAYS IN VIOLATION OF STANDARDS
	1-HOUR AVERAGE	HOURLY AVERAGE	DAILY MAXIMUM HOURLY AVERAGE	1-HOUR AVERAGE > 0.08 PPM
LOS ANGELES COUNTY				
AZUSA	KI[a)]	KI	KI	KI
1972	0.49	0.039	0.120	199
1973	0.46	0.037	0.111	180
1974	0.38	0.040	0.120	206
1975	0.32	0.036	0.107	181
1976	0.38	0.037	0.105	185
LOS ANGELES	KI	KI	KI	KI
1972	0.25	0.027	0.076	138
1973	0.52	0.027	0.072	117
1974	0.25	0.030	0.081	144
1975	0.25	0.030	0.080	157
1976	0.34	0.030	0.083	142
PASADENA	KI	KI	KI	KI
1972	0.38	0.037	0.110	203
1973	0.45	0.037	0.107	178
1974	0.34	0.038	0.114	214
1975	0.32	0.036	0.105	183
1976	0.34	0.037	0.109	193
ORANGE COUNTY				
ANAHEIM	KI	KI	KI	KI
1972	0.28	0.012	0.048	54
1973	0.26	0.015	0.052	56
1974	0.24	0.015	0.051	52
1975	0.13*	0.012*	0.037*	7*
1976	0.30	0.018	0.056	70

Table IV.A-VI

DATA SUMMARY - OXIDANT, ppm

STATION / YEAR	ANNUAL MAXIMUM 1-HOUR AVERAGE		ANNUAL ARITHMETIC MEAN HOURLY AVERAGE		ANNUAL ARITHMETIC MEAN DAILY MAXIMUM HOURLY AVERAGE		NUMBER OF DAYS IN VIOLATION OF STANDARDS 1-HOUR AVERAGE > 0.08 PPM	
LA HABRA	KI		KI		KI		KI	
1972	0.32		0.019		0.071		96	
1973	0.30		0.018		0.067		94	
1974	0.44		0.024		0.082		123	
1975	0.28		0.018		0.064		82	
1976	0.30		0.017		0.063		91	
RIVERSIDE COUNTY								
RIVERSIDE (RUBIDOUX)	KI	UV[b)]	KI	UV	KI	UV	KI	UV
1972	0.33*		0.025*		0.073*		36*	
1973	0.31		0.033		0.096		166	
1974	0.32		0.036		0.105		179	
1975	0.35		0.035		0.099		182	
1976		0.36		0.036		0.106		188
SAN BERNARDINO COUNTY								
FONTANA		CH[c)]		CH		CH		CH
1972								
1973		0.42*		0.052*		0.166*		129*
1974		0.49		0.044		0.134		169
1975		0.38[d)]		0.038[d)]		0.116[d)]		194[d)]
1976		0.38		0.036		0.113		184
SAN BERNARDINO	KI	CH	KI	CH	KI	CH	KI	CH
1972	0.34		0.021		0.069		110	
1973	0.34	0.30*	0.029	0.032*	0.092	0.110*	154	103*
1974	0.27*	0.37	0.028*	0.030	0.081*	0.106	74*	164
1975	0.38	0.32[d)]	0.035	0.033[d)]	0.102	0.102[d)]	145	174[d)]
1976	0.30*	0.32	0.020*	0.031	0.055*	0.097	31*	168

Table IV.A-VI

DATA SUMMARY - OXIDANT, ppm

STATION / YEAR	ANNUAL MAXIMUM 1-HOUR AVERAGE		ANNUAL ARITHMETIC MEAN HOURLY AVERAGE		ANNUAL ARITHMETIC MEAN DAILY MAXIMUM HOURLY AVERAGE		NUMBER OF DAYS IN VIOLATION OF STANDARDS 1-HOUR AVERAGE > 0.08 PPM	
UPLAND	CH		CH		CH		CH	
1972								
1973	0.48		0.038		0.132		177	
1974	0.51		0.035		0.124		187	
1975	0.39d)		0.039d)		0.128d)		178d)	
1976								
UPLAND (ARB)	KI	UV	KI	UV	KI	UV	KI	UV
1972								
1973	0.51		0.051		0.149		193	
1974	0.44	0.46*	0.050	0.061*	0.146	0.177*	220	137*
1975	0.41	0.39d)	0.050	0.045d)	0.141	0.130d)	188	167d)
1976		0.38*		0.038*		0.118*	201	113*

* Yearly statistics may not be representative, due to insufficient data.

a) Potassium iodide method. Los Angeles County unbuffered KI method. All other counties, neutral buffered KI, corrected.

b) Ultraviolet absorption method.

c) Chemiluminescent method.

d) From "Three Year Summary of California Air Quality Data 1973-1975", ARB, Jan. 1977.

OZONE - ANNUAL MAXIMUM 1-HOUR, PPM

STATION	- YEAR -																					
	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
LOS ANGELES	.68	.47	.53 /	.61	.61* /	.41	.45	.50	.50	.46	.58	.50	.36	.46	.30	.33	.24	.25	.52	.25	.25	.34
AZUSA	-	-	.42	.45	.56	.49	.45	.43	.34	.40	.54	.53	.65	.44	.54	.58	.48	.49	.46	.38	.32	.38
BURBANK	30*	.33	.43	.39	.47	.33	.33 /	.33	.38	.39	.40	.32	.47	.42	.38	.35	.31	.28	.29	.35	.27	.35
WEST LOS ANGELES	-	-	-	-	-	-	-	.40*	.40	.32	.39	.29	.36	.44	.30	.24	.26	.19	.39	.19	.19	.28
LONG BEACH	-	-	-	.37	.30	.37	.34	.33	.28	.27	.34	.27	.21	.33	.22	.18	.27	.17	.20	.17	.14	.16
RESEDA	-	-	-	-	-	-	-	-	-	-	.47	.44	.41	.34	.39	.37	.32	.29	.28	.28	.30	.27
POMONA	-	-	-	-	-	-	-	-	-	-	.44*	.44	.43	.49	.45	.48	.35	.37	.32	.31	.33	.36
LENNOX	-	-	-	-	-	-	-	-	-	-	.32	.37	.33	.23	.25	.23	.21	.17	.24	.15	.18	.22
WHITTIER	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.43*	.36	.39	.29	.28	.35	.25	.37
NEWHALL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.20*	.41	.30	.29	.36	.26	.30	.33
LANCASTER	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.06*	.20	.16	.21	.15	.19	.19
PASADENA	-	.46	.36 /	.44*	.47	.54	.44	.46	.41	.42	.46	.43	.40 /	.48*	.52	.51	.53	.38*	.45	.34	.32	.34
LYNWOOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.22*	.28	.19	.24
ANAHEIM	-	-	-	-	-	-	-	-	.27	.23	.41	.31	.30	.28	.30	.29	.34	.28	.26	.24	.13*	.30
LA HABRA	-	-	-	-	-	-	-	-	-	-	-	-	.23*	.26	.43	.30	.34	.32	.30	.44	.28	.30
COSTA MESA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.19	.21	.22	.18	.16
EL TORO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.19	.04*	-	-
SAN JUAN CAPISTRANO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LAGUNA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.16	.08*	-
LOS ALAMITOS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.14	-	-	-	-
SANTA ANA CANYON	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PALM SPRINGS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.31	.25	.25	.24	.03*	-
INDIO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.26	.20	.17	.18	.20	-
PRADO PARK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.05*	.30	.35	.31	.15*	-
HEMET	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RIVERSIDE	-	-	-	-	-	-	-	-	.28	.40	.29	.31	.40	.34*	.07*	.45	.40* /	.40* /	.36	.32	.35	-
PERRIS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BANNING	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.20	.25	-	-	-	-
TEMECULA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ELSINORE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAN BERNARDINO	-	-	-	-	-	-	-	-	.28	.32	.32	.31	.33	.28	.27	.36	.26	.34	.34	.27	.38	.30
BARSTOW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.10	.11*	.06*	.06*	-	-	-	-
REDLANDS	-	-	-	-	-	-	-	-	-	-	-	-	.12*	.32	.30	.42	.28	.31	.03*	-	-	-
VICTORVILLE	-	-	-	-	-	-	-	-	-	-	-	-	-	.09*	.14	.18*	.11	.12	.19	-	-	-
CHINO	-	-	-	-	-	-	-	-	-	-	-	.32*	.21	.21	.22	.08*	-	-	-	-	-	-
UPLAND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UPLAND-ARB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.51	.44	.41	-
FONTANA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIG BEAR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LAKE GREGORY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YUCAIPA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Data may not be representative. / Station location change.

Table IV.A-VII

SECTION IV.B. CARBON MONOXIDE

SOURCE

The major source of carbon monoxide is the automobile, which emits nearly 90% of the carbon monoxide (CO) found in the atmosphere. Since carbon monoxide is emitted directly, rather than being formed in the atmosphere as oxidant is, it is expected to be present in highest concentration near major sources. Major sources of CO are densely populated areas which have heavy motor vehicle traffic. High CO concentrations are also favored by meteorological conditions which limit dispersion.

GEOGRAPHICAL DISTRIBUTION

Figures IV.B-1 through IV.B-3 depict the geographical distribution of the number of days violating the federal CO standard of 9 ppm/8-hour average during 1972, 1974, and 1976. This is currently the most stringent air quality standard for carbon monoxide. Table IV.B-I presents supporting data for 1970-1976, as available.

The greatest number of violations of this federal standard have occurred in the densely populated portions of Los Angeles and Orange Counties during the period of study. In Riverside and San Bernardino Counties, the

number of violations in the cities of Riverside and San Bernardino have decreased since 1974. Earlier data (1970-1972) indicate that San Bernardino may have had three to four times greater number of violations than occurred in 1974. Currently, the violations in these cities are far less than in the heavily populated areas of Los Angeles and Orange Counties.

As shown in Figures IV.B-4 through IV.B-6, and Table IV.B-II federal standard CO standard of 35 ppm/ one-hour average was not exceeded in the eastern part of the Basin 1970-1976. The highest number of days in violation are at the Lennox station in Los Angeles County, and these have dropped from nine in 1970 to two in 1976. La Habra also experienced two days of violation in 1976.

Figure IV.B-7 and Table IV.B-III depict the number of days in 1976 on which the state standard for CO (10 ppm/12-hour average) was exceeded. Comparison with Figure IV.B-3 indicates the relative stringency of the state and federal standards. The overall geographic distribution shown is in good agreement.

Figures IV.B-8 to IV.B-10 show the variation of annual average carbon monoxide with location during 1972, 1974, and 1976. The highest annual average concentrations are found in the densely populated portions of the South Coast Air Basin. In 1972, the area with annual average CO greater than 4 ppm extended from the

southwest coastal area of Los Angeles County into Central Los Angeles, north into the San Fernando Valley and east past the Riverside-San Bernardino area. In 1974 and 1976 the area with annual average CO greater than 4 ppm had shrunk to include only the densely populated portions of Los Angeles and Orange Counties. Table IV.B-IV presents the supporting data 1970-1976, as available.

SEASONAL DISTRIBUTION

In the areas with the greatest number of violations of the federal standards for carbon monoxide (CO), there is a marked seasonal difference in CO concentrations. In Figure IV.B-11, monthly average daily maximum one-hour, CO concentrations for 1976 at four sites are shown. It can be seen that concentrations are generally higher in winter and lower in summer. The November through February concentrations run from roughly three to five times the May through August concentrations. Riverside shows a less exaggerated seasonal difference and San Bernardino shows no clear seasonal difference (Figure IV.B-12). Table IV.B-V summarizes the 1976 monthly CO concentrations at the several stations.

The number of violations of the state standard for carbon monoxide (CO) for each month of 1976 at two air monitoring stations are shown in Figure IV.B-12. As was seen with monthly average CO concentrations, there is a peak in late fall and winter and a low in summer.

Summaries of the number of days violating the federal standard (9 ppm/8-hour average) are given for Los Angeles County stations, 1970-1976, by month (Tables IV.B-VI through IV.B-XII). Tables IV.B-XIII through IV.B-XIX list similar data for the monthly average of daily maximum 8-hour average CO, and Tables IV.B-XX through IV.B-XXVI summarize the monthly maximum 8-hour average CO for the same set of stations and time period.

CO emissions from motor vehicles are reasonably constant throughout the year and one must therefore look to seasonal differences in meteorological conditions for an explanation. This is addressed in Section V.A. of this report.

DIURNAL DISTRIBUTION

In Figures IV.B-13 and IV.B-14, three month averages of concentrations for a given hour are plotted. In the Lennox, Central Los Angeles and Anaheim areas, there are sharp peaks in CO concentration at about 7 a.m. and for Lennox also at 5 p.m., corresponding to morning and evening rush hour motor vehicle traffic. Notice that in summer these peaks are shifted to an hour later due to daylight-saving time. The relative heights of the CO peaks in morning and evening vary with site. This occurs because of diurnal variations in wind direction and inversion height which determine where CO observed at a given

station is being transported from and the degree to which vertical dispersion is limited.

Concentrations usually reach a low in early afternoon. In summer, nighttime concentrations are also low. In winter, however, concentrations rise during the evening due to favorable meteorological conditions, then begin to drop off due to diminishing traffic during late night and early morning hours until the morning rush hour begins.

FREQUENCY DISTRIBUTIONS

In Figures IV.B-15 to IV.B-18, frequency distributions of the daily maximum hourly average are plotted for 1972, 1974, and 1976. Considering all of the selected stations, there is an overall tendency for CO to drop from 1972 to 1976.

To be certain that this is a result of changing emissions and not merely a product of weather conditions, it is necessary to consider the difference in meteorology for these years. This has been done for one station in Section V of this report and is discussed briefly below in the summary.

TRENDS

In Figures IV.B-19 to IV.B-25 and Table IV.B-XXVII, several statistics are given for the years 1972 through

1976, specifically the single highest hour of the year, the highest 8-hour average of the year, the annual average of the daily maximum hourly average, the annual average of all hourly averages, and the number of days in violation of two federal standards (one-hour average CO > 35 ppm and 8-hour average CO > 9 ppm).

At Lennox and San Bernardino, all statistics show a definite downward trend. Central Los Angeles and Riverside show less marked downtrends. The results at Burbank, La Habra, and Anaheim do not show any definite trend. Considering the entire Basin, there appears to have been a slight downtrend. How this has been influenced by meteorology is discussed in Section V.A of this report. The increasingly stringent controls on vehicle exhaust emissions that might account for downtrends observed may have been counteracted in some areas by the nearly continuous increase in gasoline consumption and by increases in population.

Historical data based on the annual maximum one-hour average CO are shown in Table IV.B-XXVIII. A change in the analytical method precludes comparison of Los Angeles County data prior to 1969 with that obtained since that year. However, a decrease in this statistic is indicated 1969-1976, the magnitude of which differs between the various areas, as indicated in the preceding discussion.

A summary of CO data, 12-hour average (ppm), for the Metropolitan area, is given in Table IV.B-XXIX. Here,

too, decreases in CO concentrations are evident, as indicated by other criteria. Table XXX presents a summary of data on 8-hour averages.

SUMMARY

As is explained in Section V.A of this report, analysis of meteorological data at Lennox suggests that CO concentrations should have dropped from 1972 to 1976, as indeed they did. However, there is a sharper decrease than would be predicted. The Lennox data indicate decrease of 22.7% between 1973 and 1976, even though the meteorological indices for these years were identical. This compares favorably with the estimated decrease in CO emissions from motor vehicles in that area of 29.5% (from 575 tons/day in 1973 to 405 tons/day in 1976). Since the other cities in the South Coast Air Basin should have somewhat similar meteorology, a part of any downtrends observed might be attributed solely to meteorology, but a significant decrease may be due to motor vehicle emission controls.

The population in Los Angeles County has remained relatively unchanged during the period 1972-1976, although gasoline consumption has risen. The same is not true of the neighboring counties, where population gains may be tending to counteract emission controls.

In conclusion, no definite basin-wide trend can be seen for the period 1972-1976.

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Con't.

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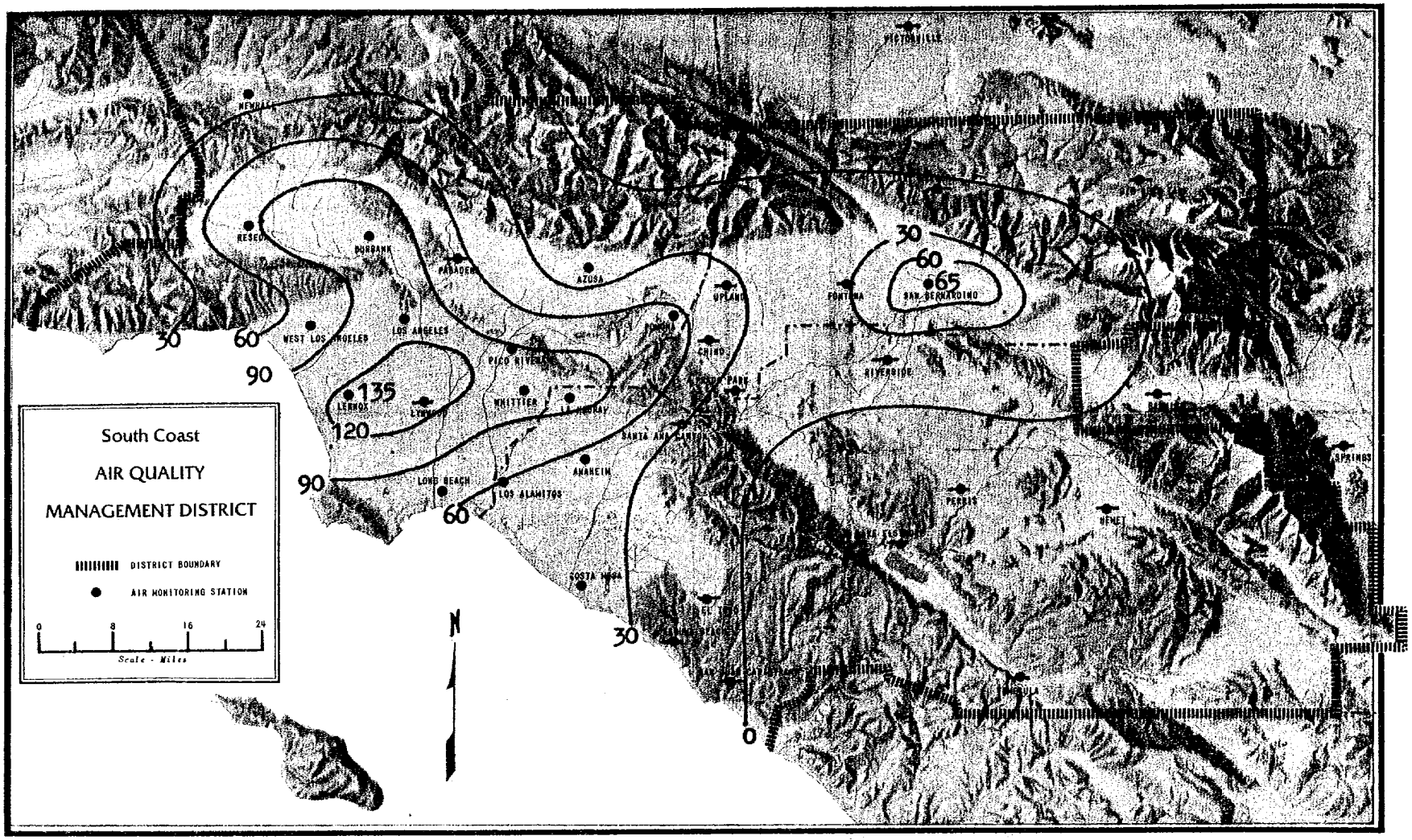
CARBON MONOXIDE

NUMBER OF DAYS VIOLATING FEDERAL STANDARD (8-HR. AVG. CO > 9 PPM)

1972



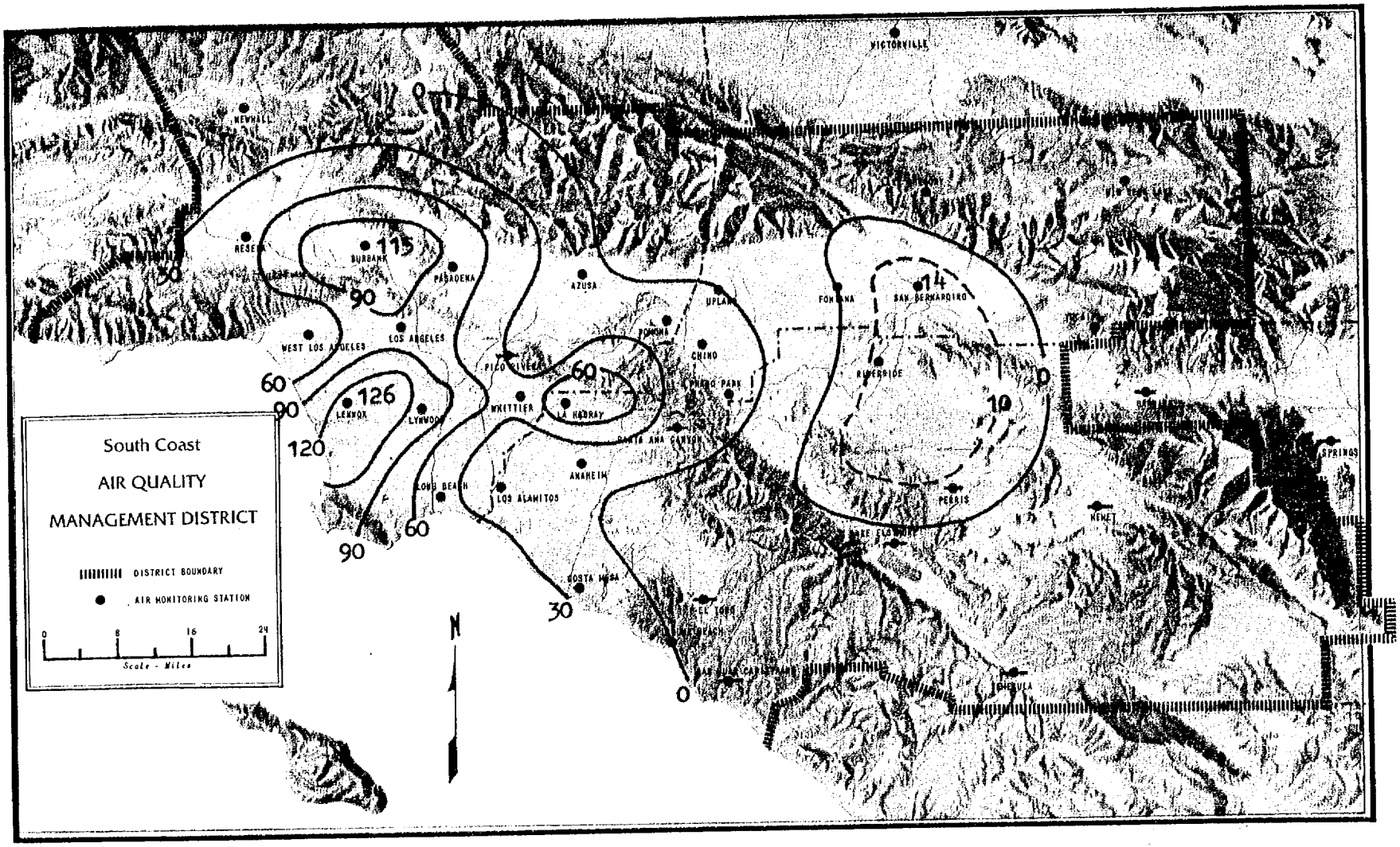
Less than 9 months of data.

RPG 9/07/77

CARBON MONOXIDE

NUMBER OF DAYS VIOLATING FEDERAL STANDARD (8-HR. AVG. CO > 9 PPM)

1974



Less than 9 months of data.

—— Solid lines are at intervals of 30 violations.

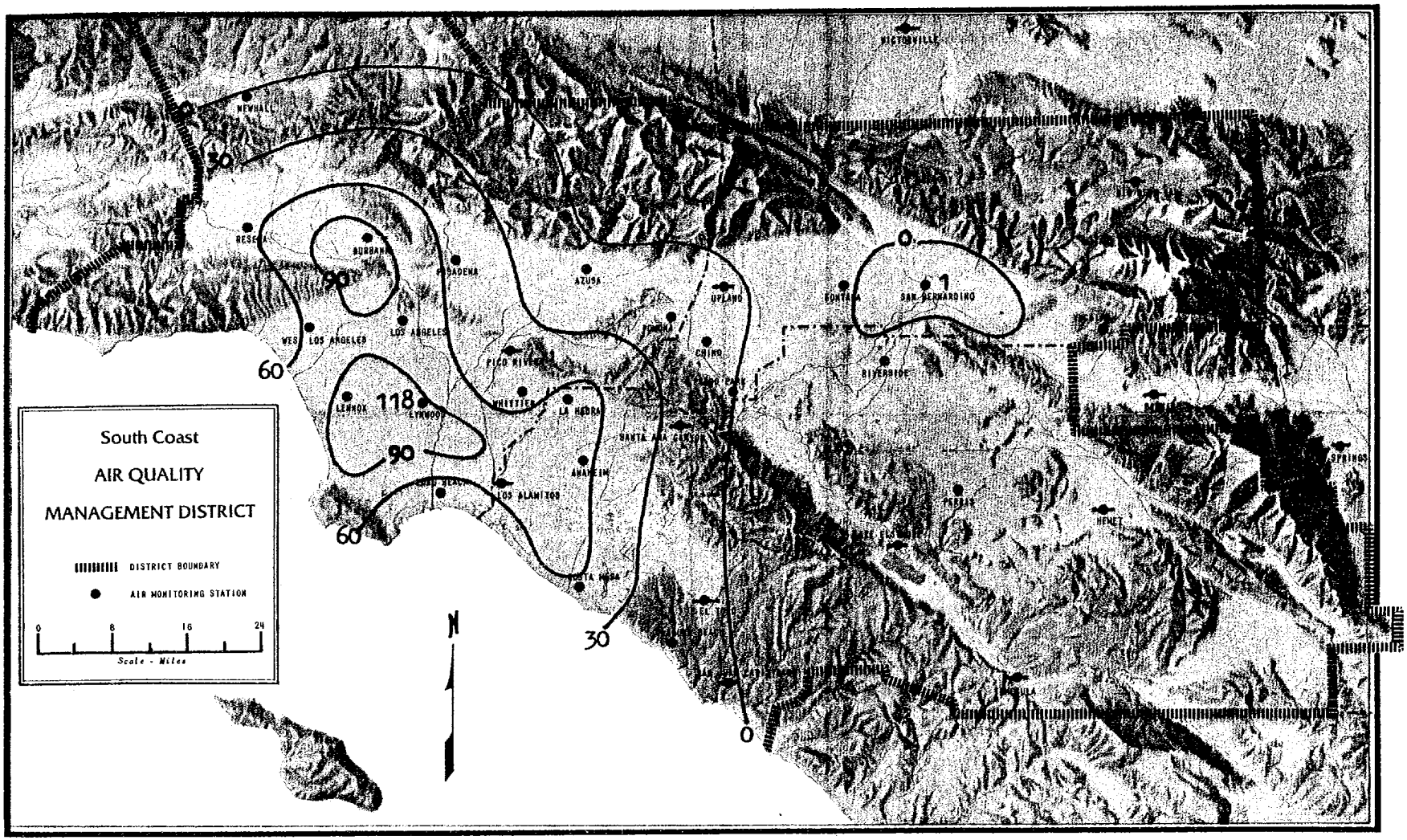
- - - Dashed lines are at intervals of 10 violations.

RPG 9/07/77

CARBON MONOXIDE

NUMBER OF DAYS VIOLATING FEDERAL STANDARD (8-HR. AVG. CO > 9 PPM)

1976



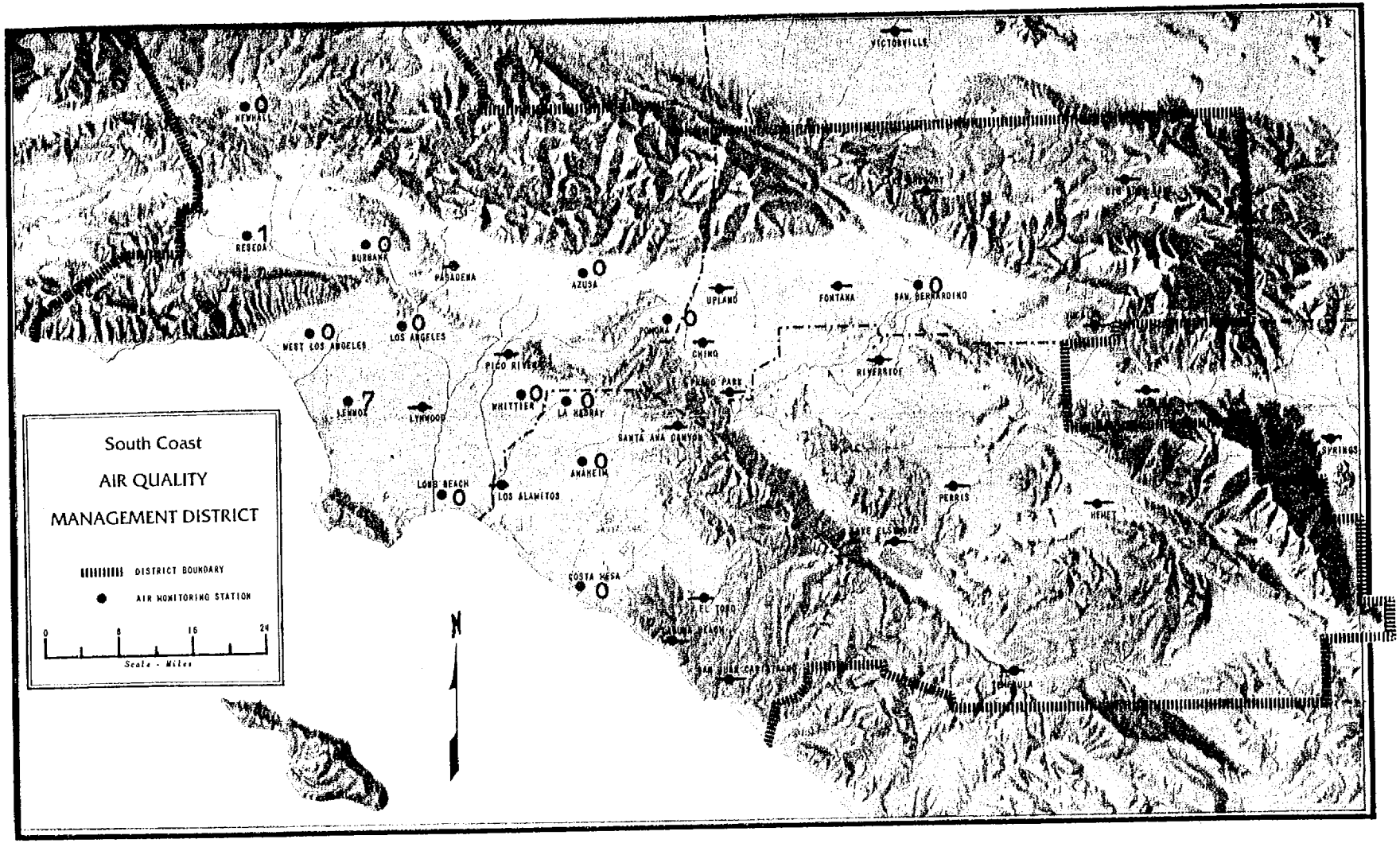
Less than 9 months of data

RPG 9/06/77

CARBON MONOXIDE

NUMBER OF DAYS VIOLATING FEDERAL STANDARD (1-HR. AVG. CO > 35 PPM)

1972



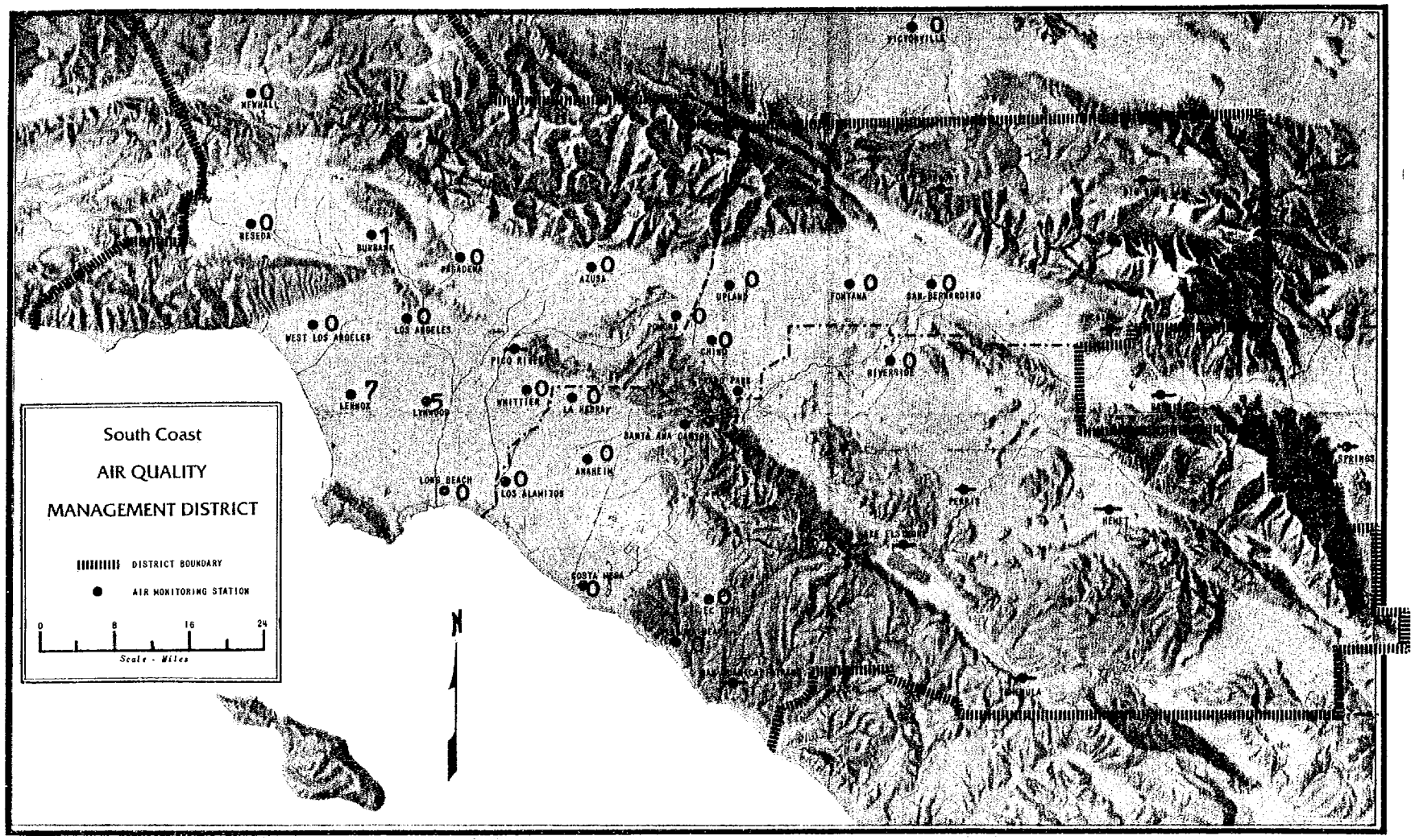
Less than 9 months of data.

RPG 9/06/77

CARBON MONOXIDE

NUMBER OF DAYS VIOLATING FEDERAL STANDARD (1-HR. AVG.CO > 35 PPM)

1974



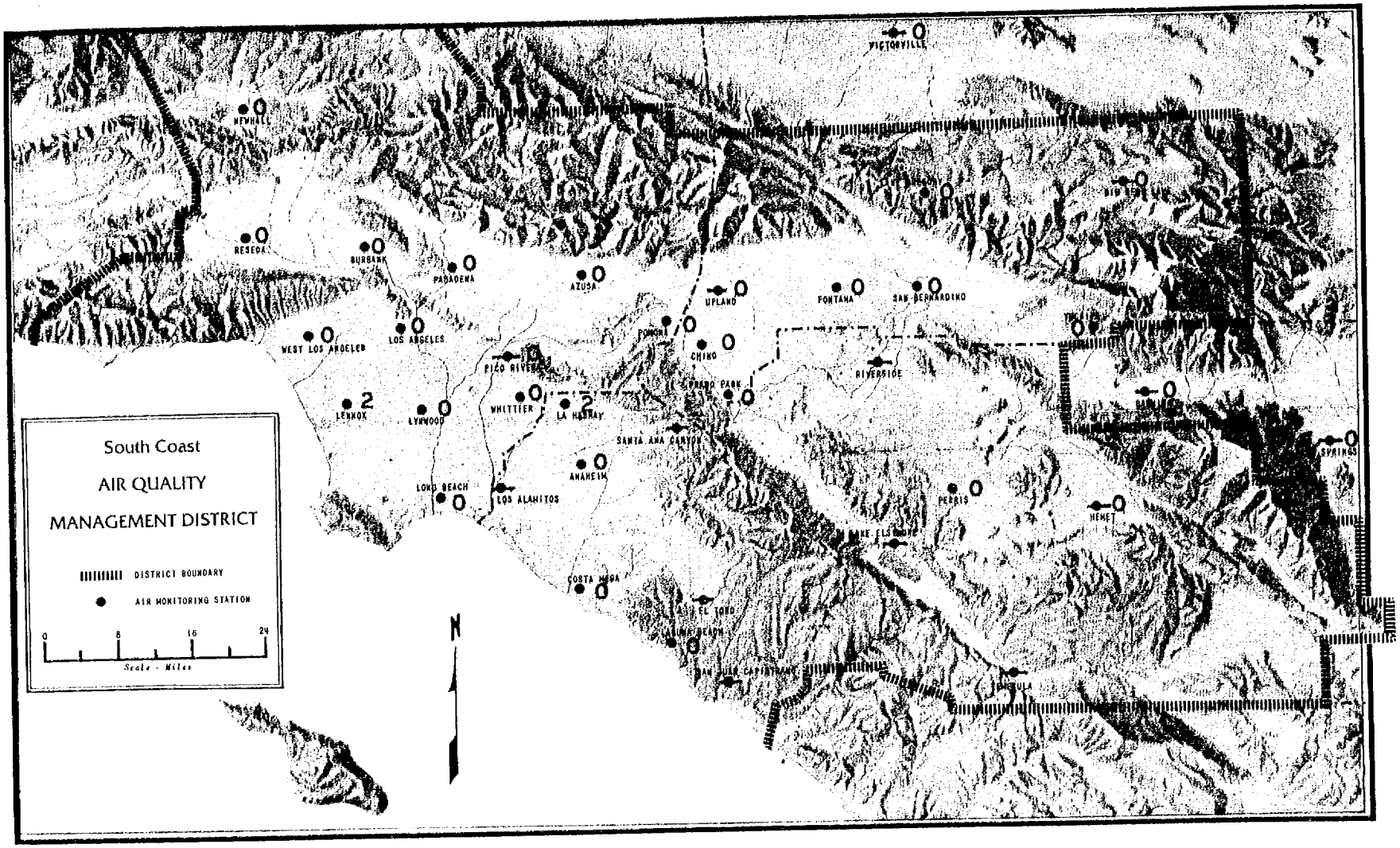
Less than 9 months of data.

RPG 9/06/77

CARBON MONOXIDE

NUMBER OF DAYS VIOLATING FEDERAL STANDARD (1-HR. AVG. CO > 35 PPM)

1976



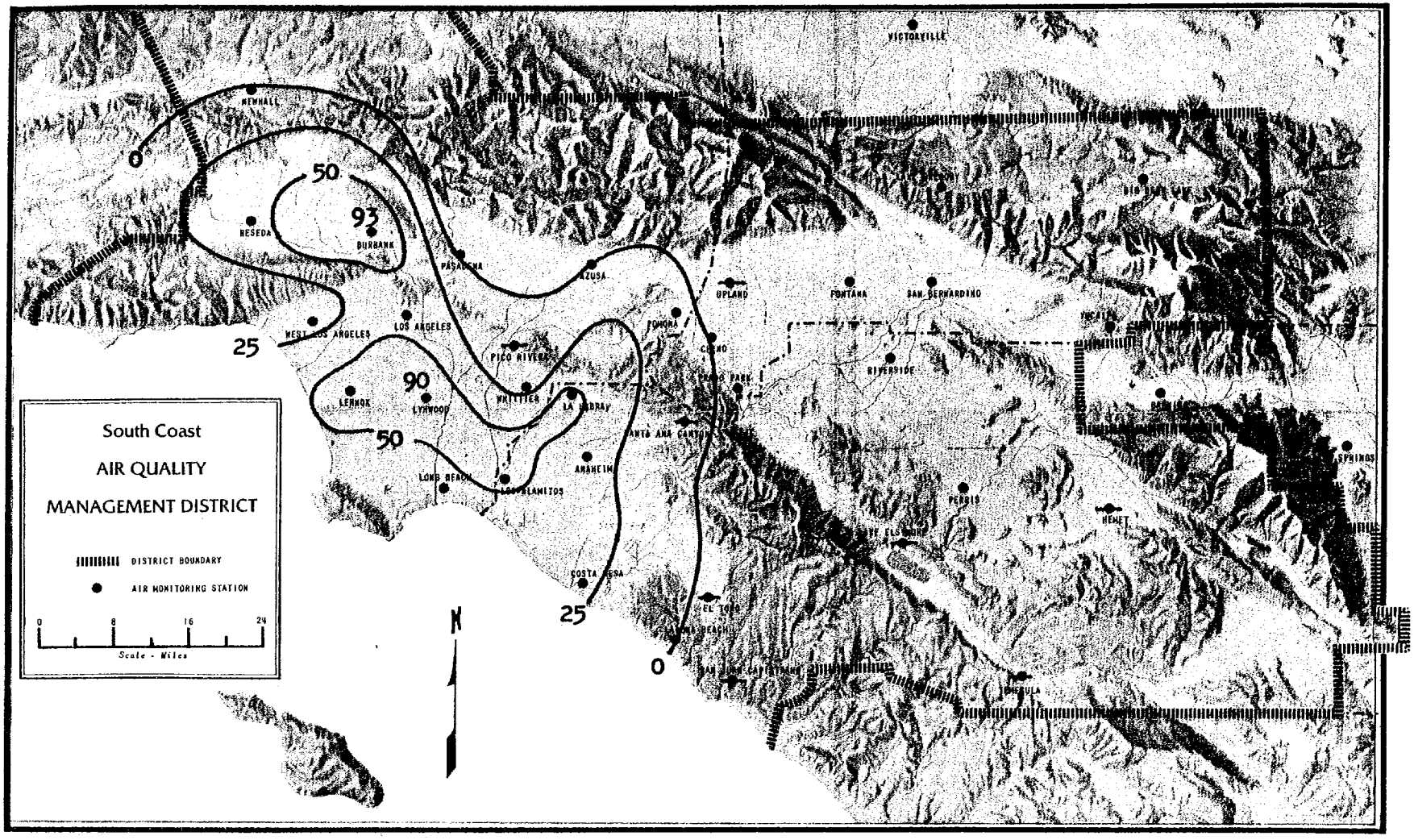
Less than 9 months of data.

RPG 9/06/77

CARBON MONOXIDE

NUMBER OF DAYS VIOLATING STATE STANDARD (12 HR. AVG. CO ≥ 10 PPM)

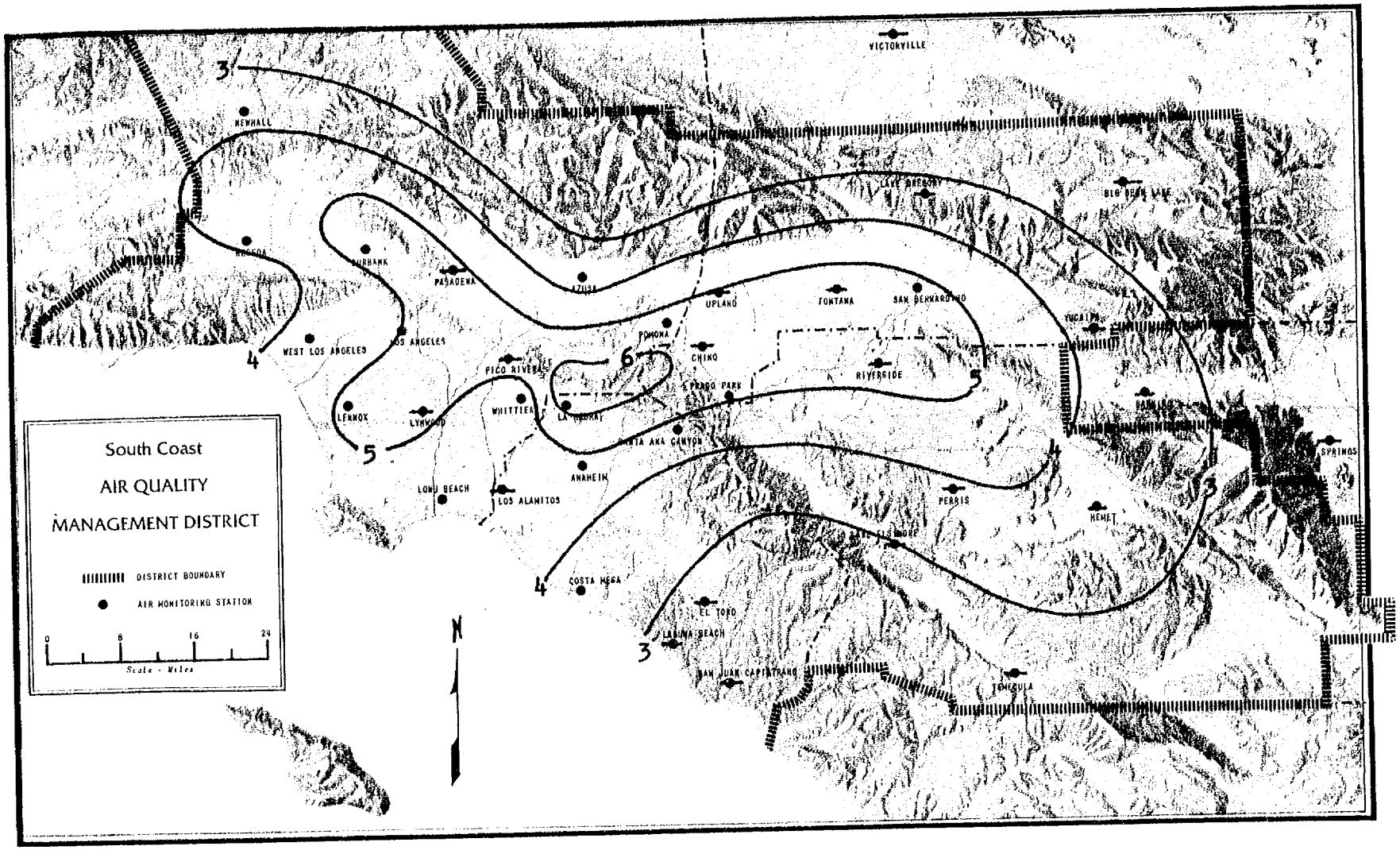
1976



Less than 9 months of data.

RPG 9/07/77

CARBON MONOXIDE
ANNUAL ARITHMETIC MEAN, PPM
1972



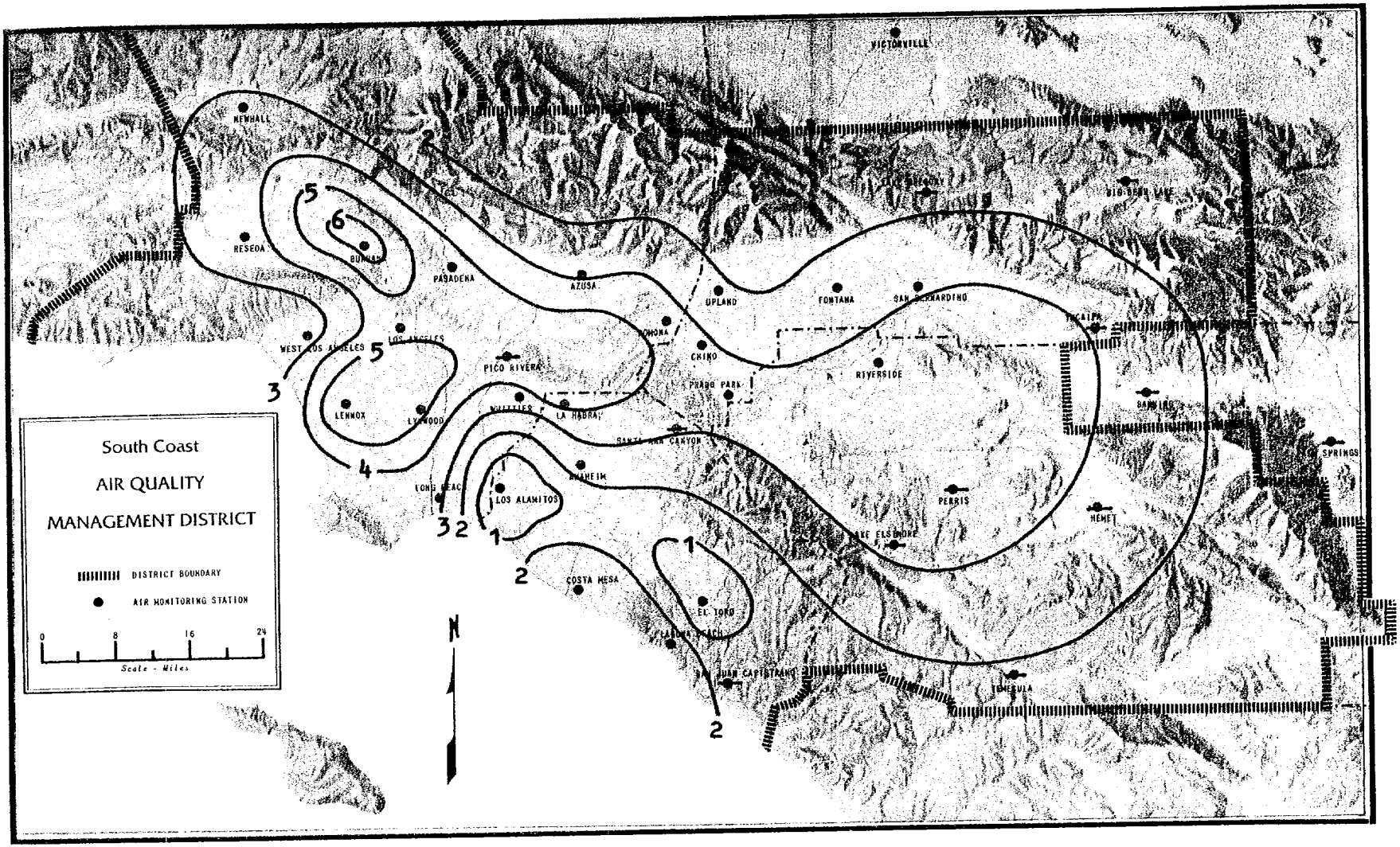
Less than 9 months of data.

RPG 9/07/77

CARBON MONOXIDE

ANNUAL ARITHMETIC MEAN, PPM

1974



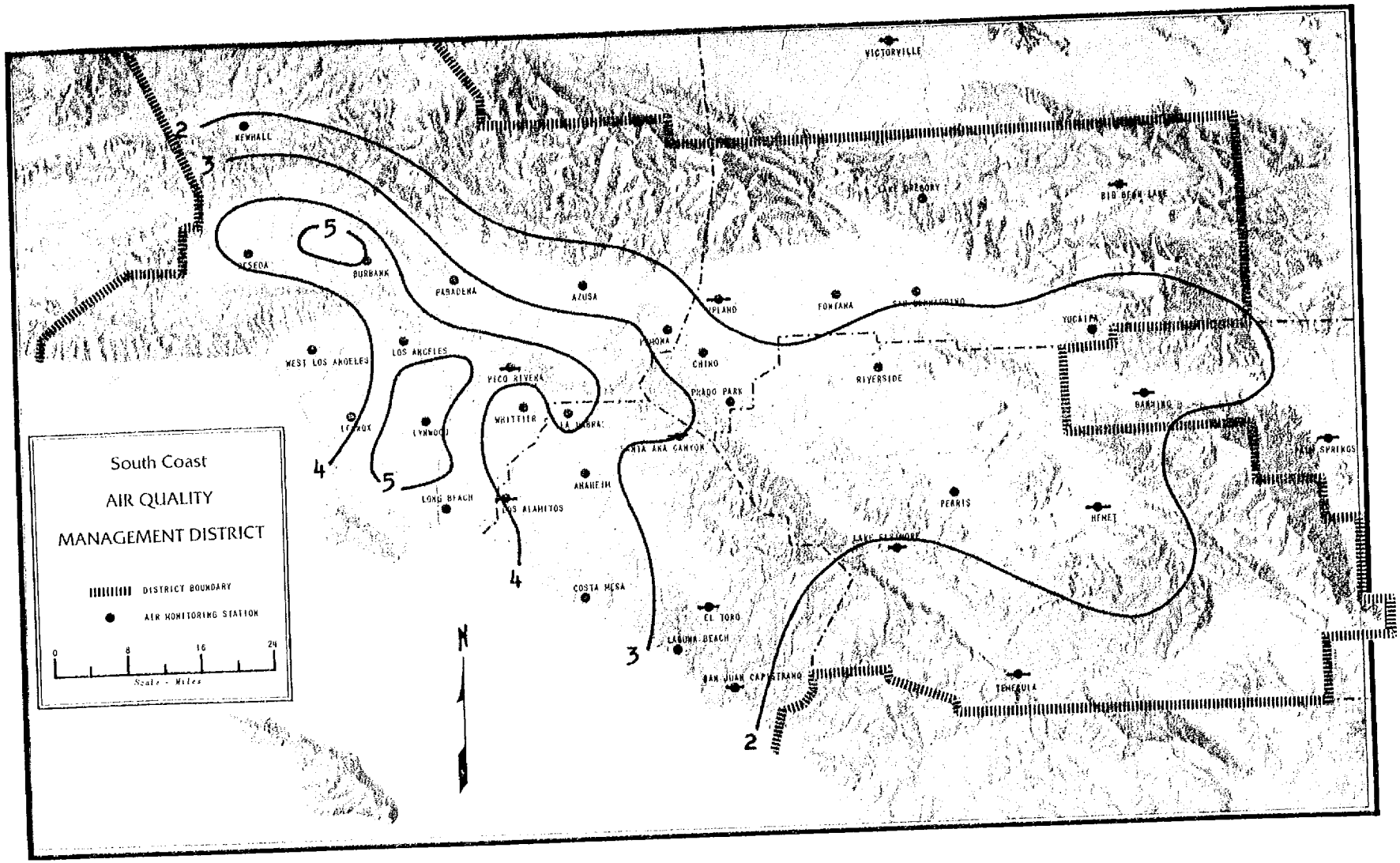
Less than 9 months of data.

RPG 9/15/77

CARBON MONOXIDE

ANNUAL ARITHMETIC MEAN, PPM

1976



Less than 9 months of data.

RPG 9/15/77

Figure IV.B-11

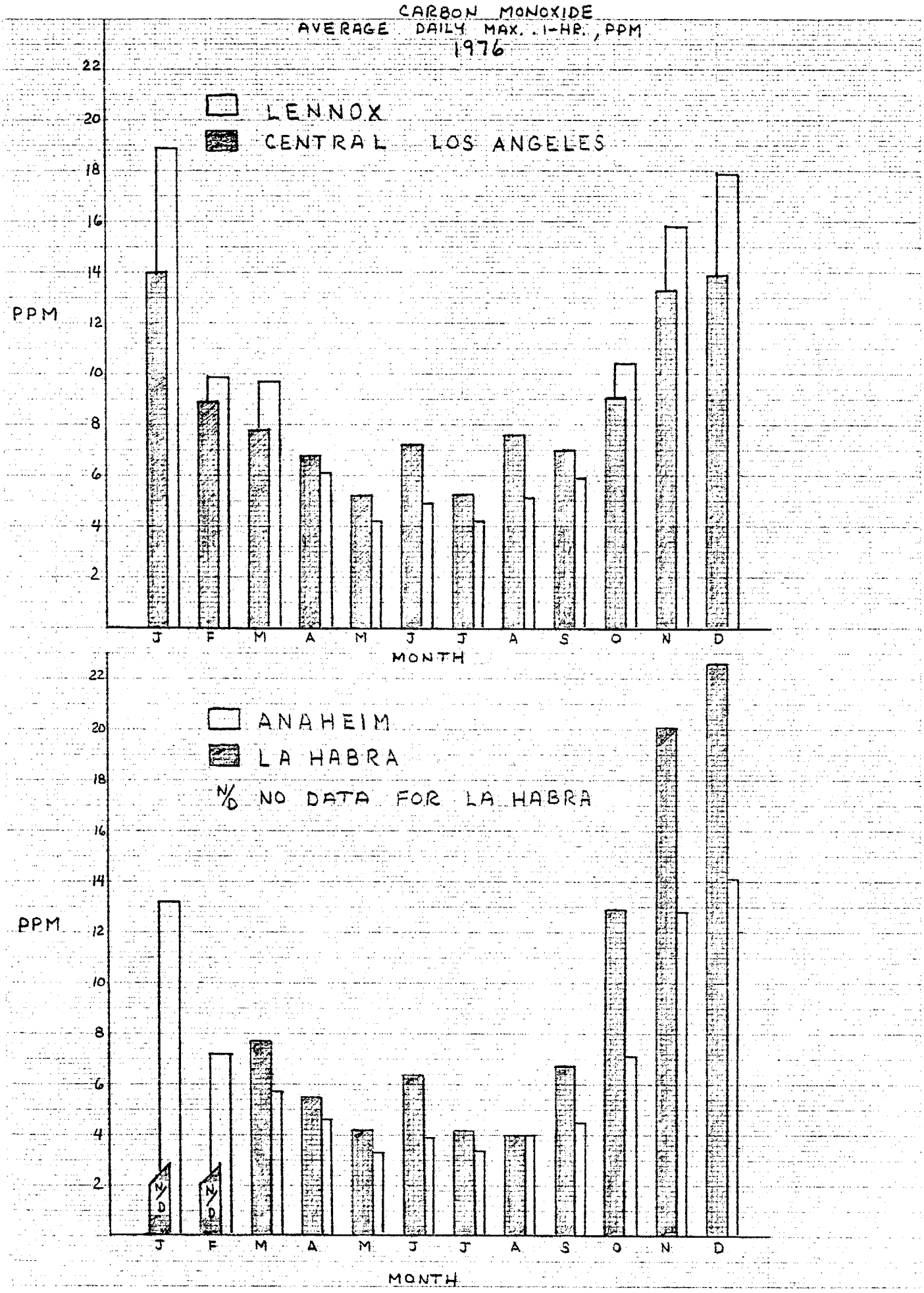
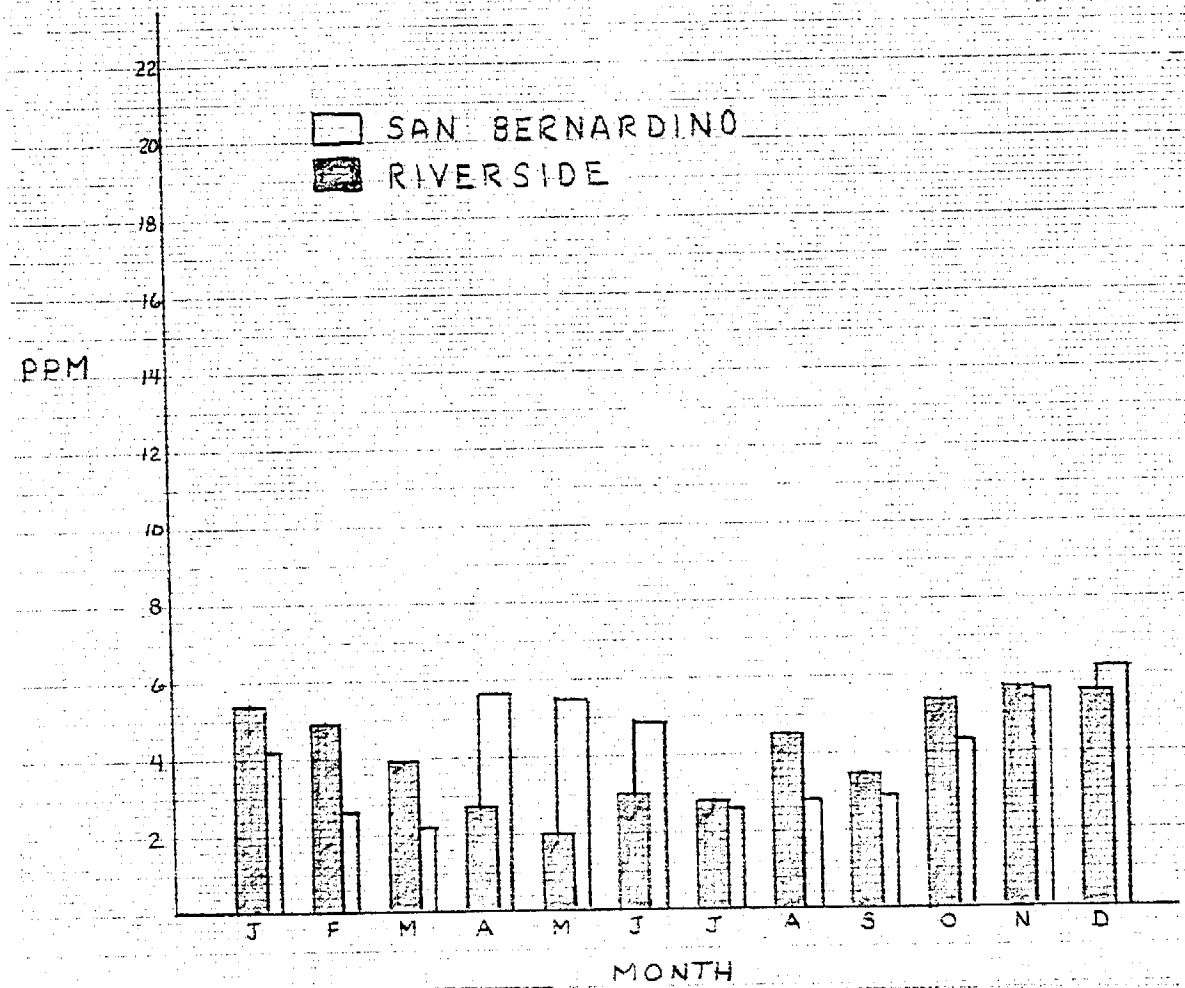
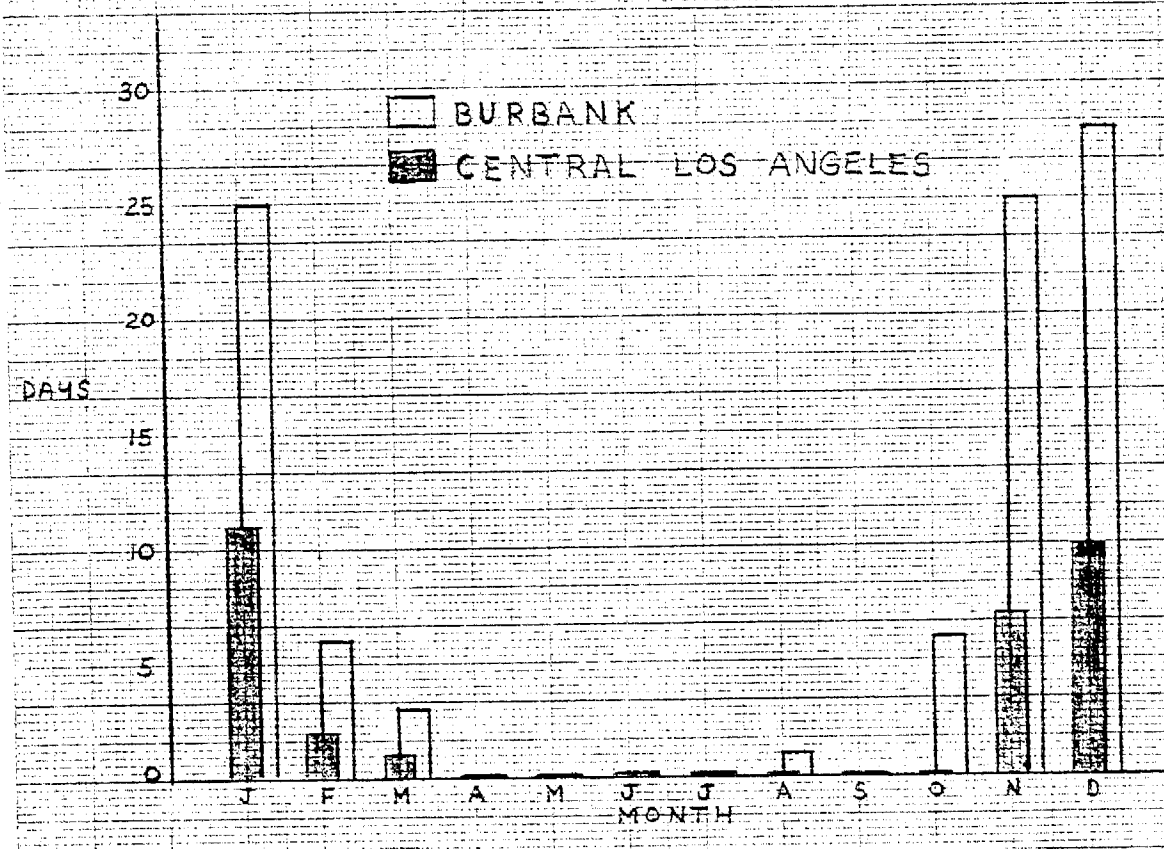


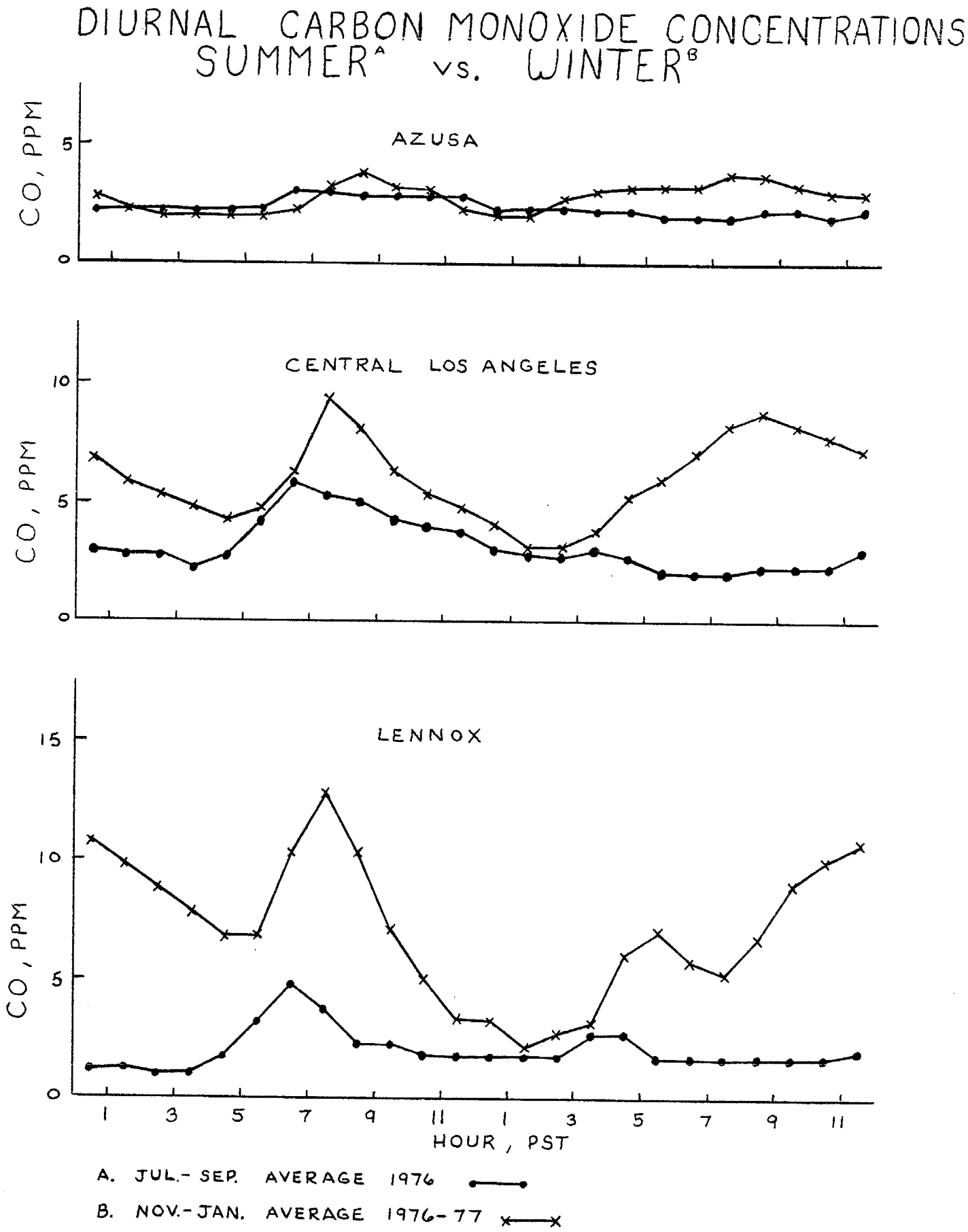
Figure IV.B-12

CARBON MONOXIDE
AVERAGE DAILY MAX. 1-HR. PPM
1976

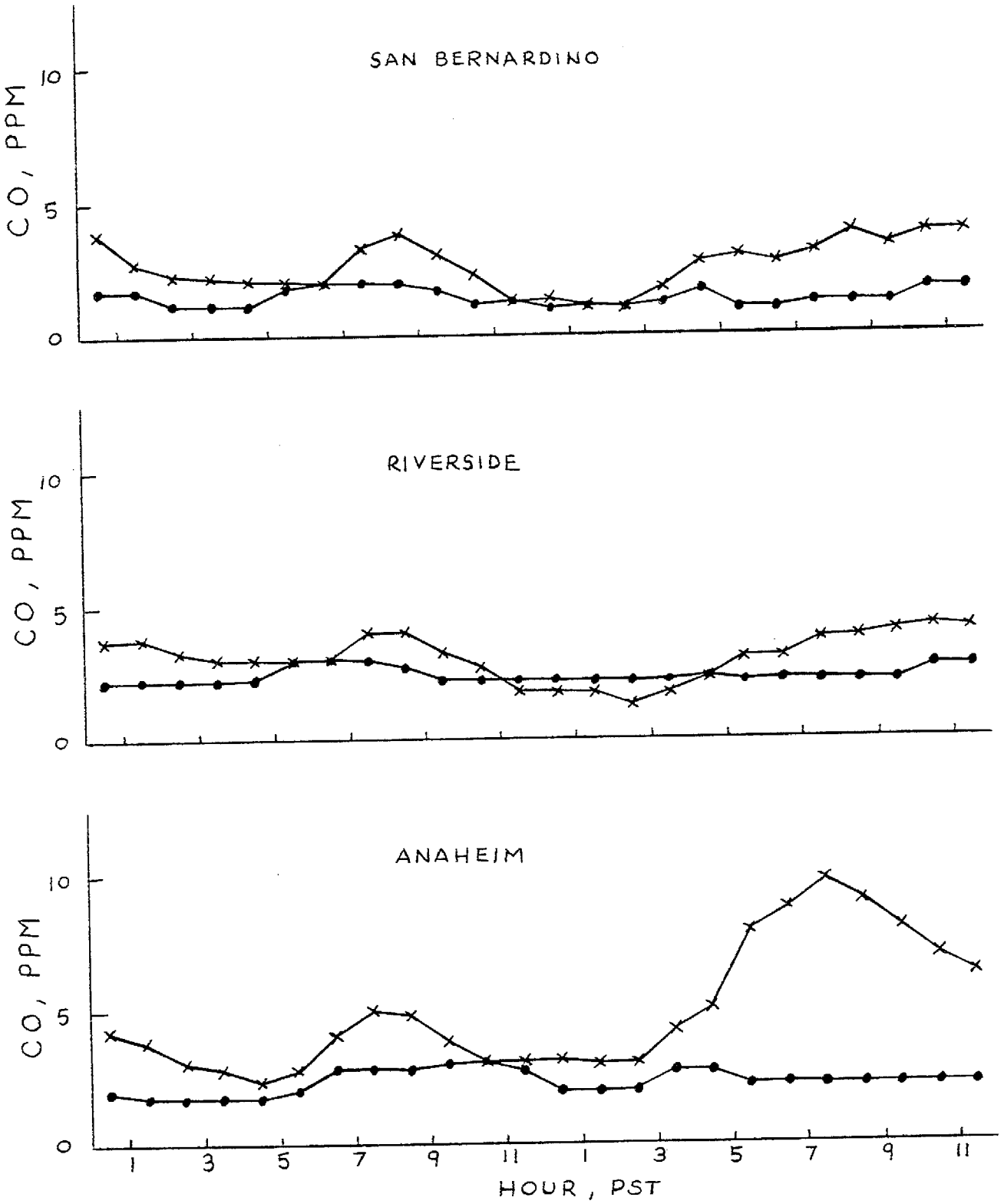


SEASONAL DISTRIBUTION OF DAYS ON WHICH
CARBON MONOXIDE (12-HR. AVG.) ≥ 10 PPM




DIURNAL CARBON MONOXIDE CONCENTRATIONS
SUMMER[A] vs. WINTER[B]
AZUSA
CENTRAL LOS ANGELES
LENNOX
CO, PPM
0
5
10
15
1
3
5
7
9
11
HOUR, PST
A. JUL.- SEP. AVERAGE 1976
B. NOV.- JAN. AVERAGE 1976-77

DIURNAL CARBON MONOXIDE CONCENTRATIONS SUMMER[A] vs. WINTER[B]



A. JUL. - SEP. AVERAGE 1976 ●——●

B. NOV. - JAN. AVERAGE 1976-77 ×——×

CARBON M XIDE

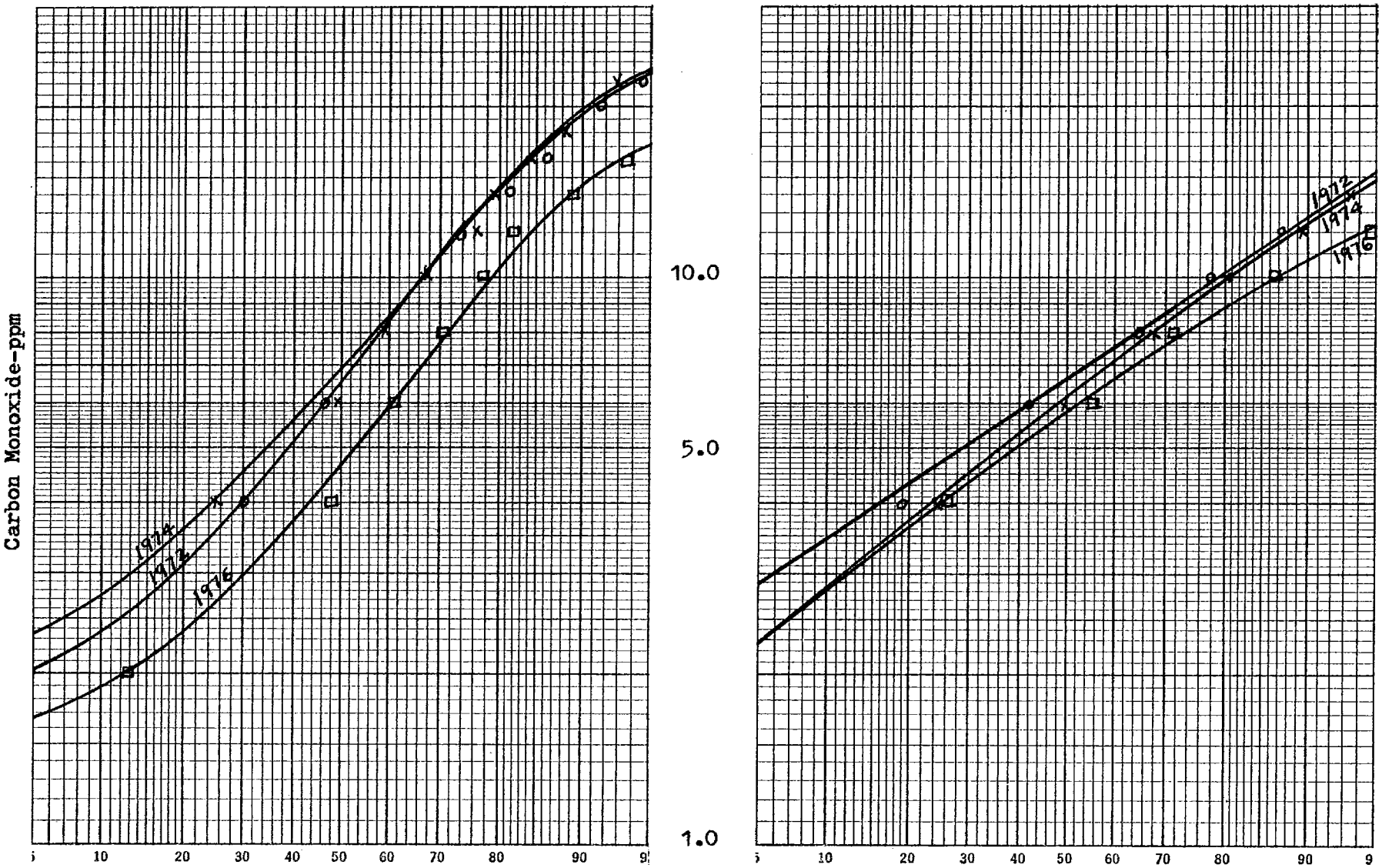
Daily Max. 8-Hour Average - ppm

LENNOX

Year	N	Max. ppm	Min. ppm	Arithmetic Mean	Std.Dev.
1972	362	33.1	1.0	8.57	± 6.55
1973	364	31.4	1.5	8.30	± 5.83
1974	363	30.3	1.6	8.80	± 6.40
1975	365	29.6	1.0	6.76	± 5.34
1976	366	25.3	0.8	6.42	± 5.10

DOWNTOWN L.A.

Year	N	Max. ppm	Min. ppm	Arithmetic Mean	Std.Dev.
1972	365	24.8	1.9	7.41	± 3.87
1973	365	22.0	1.5	6.87	± 3.08
1974	364	23.3	1.0	6.91	± 4.02
1975	353	21.9	1.4	7.04	± 3.98
1976	366	17.0	1.0	6.31	± 3.06



Concentration equal to or less than stated percentage.

Figure IV.B-15

CARBON MONOXIDE

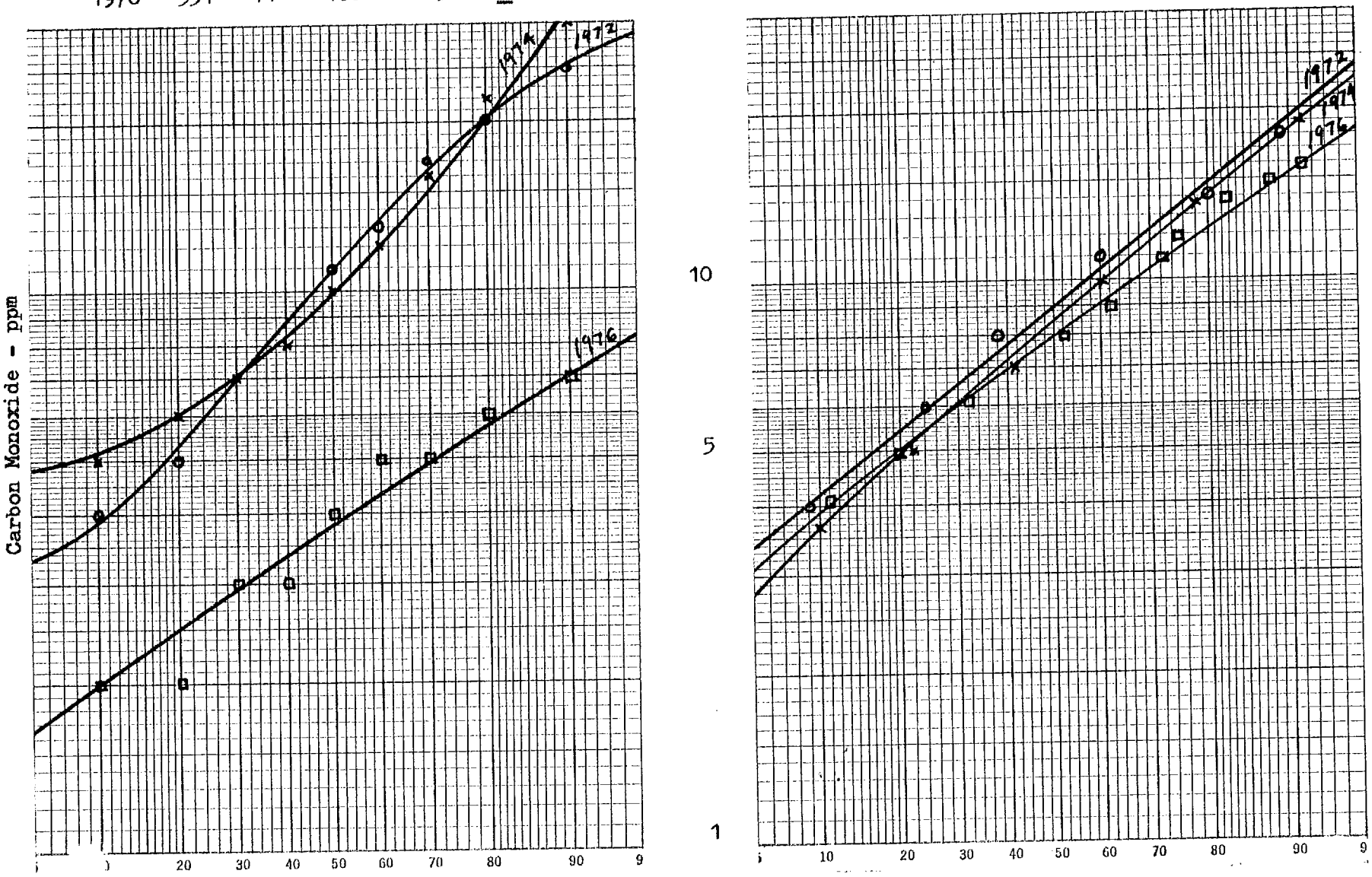
Daily Max. 1-Hour Average - ppm

AZUSA

Year	N	Max. ppm	Min. ppm	Arithmetic Mean	Std.Dev.
1972	363	49	1.0	13.0	± 8.9
1973	362	13	2.0	4.8	± 2.0
1974	363	46	1.0	13.3	± 9.3
1975	364	16	1.0	5.6	± 2.4
1976	351	14	1.0	4.3	± 2.2

DOWNTOWN L.A.

Year	N	Max. ppm	Min. ppm	Arithmetic Mean	Std.Dev.
1972	366	34	2.0	10.5	± 5.7
1973	365	29	2.0	9.5	± 4.7
1974	364	30	1.0	9.8	± 5.9
1975	353	40	2.0	10.0	± 6.0
1976	366	23	1.0	8.8	± 4.6



Concentration equal to or less than stated percentage

Figure IV.B-16

CARBON MONOXIDE

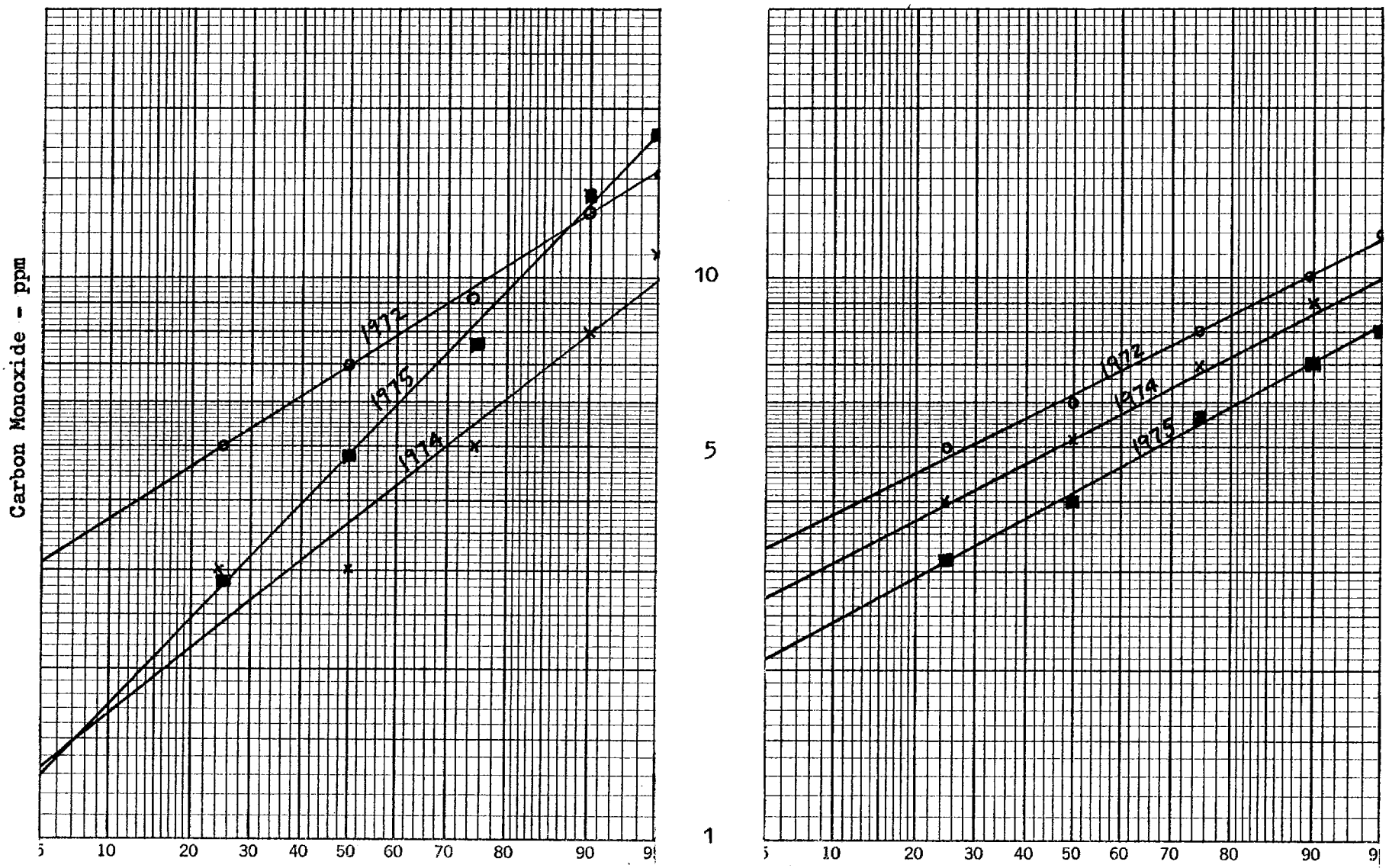
Daily Max. 1-Hour Average - ppm

ANAHEIM

Year	N	Max. ppm	Min. ppm	Arithmetic Mean	Arithmetic Std.Dev.
1972	362	34	-	8.0	4.0
1973	363	22	-	6.4	3.5
1974	353	17	-	4.4	2.9
1975	299	27	-	6.5	5.1

RIVERSIDE-RUBIDOUX

Year	N	Max. ppm	Min. ppm	Arithmetic Mean	Arithmetic Std.Dev.
1972	115	17	-	6.8	2.8
1973	361	13	-	5.1	2.3
1974	328	14	-	5.5	2.5
1975	355	14	-	4.4	2.3



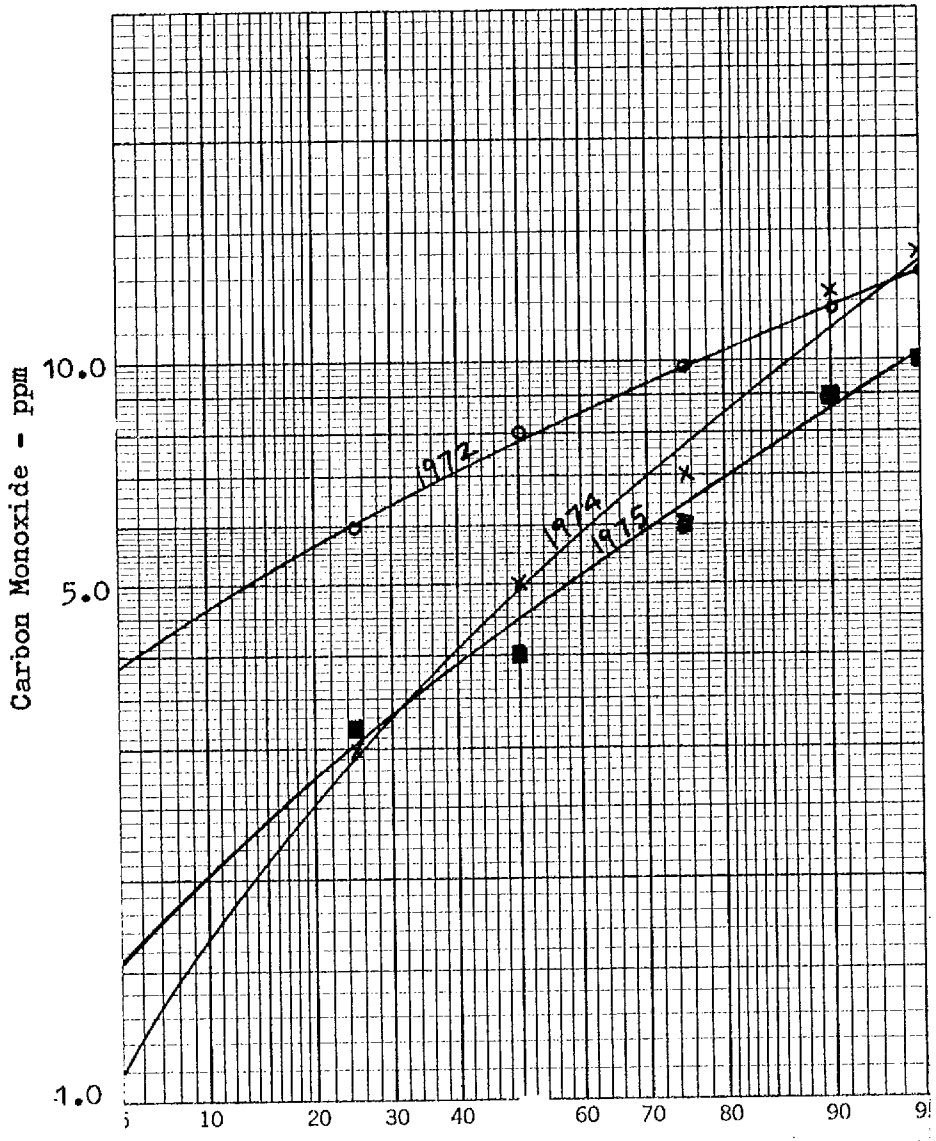
Concentration equal to or less than stated percentage.

CARBON MONOXIDE

(Daily Max. 1-Hour Average - ppm)

SAN BERNARDINO

Year	N	Max. ppm	Min. ppm	Arithmetic Mean	Arithmetic Std.Dev.
1972	365	17	-	8.0	± 2.9
1973	361	15	-	6.5	± 2.4
1974	343	20	-	5.5	± 3.4
1975	360	20	-	4.6	± 2.9



Concentration equal to or less than stated percentage

Figure IV.B-18

CARBON MONOXIDE

LOS ANGELES

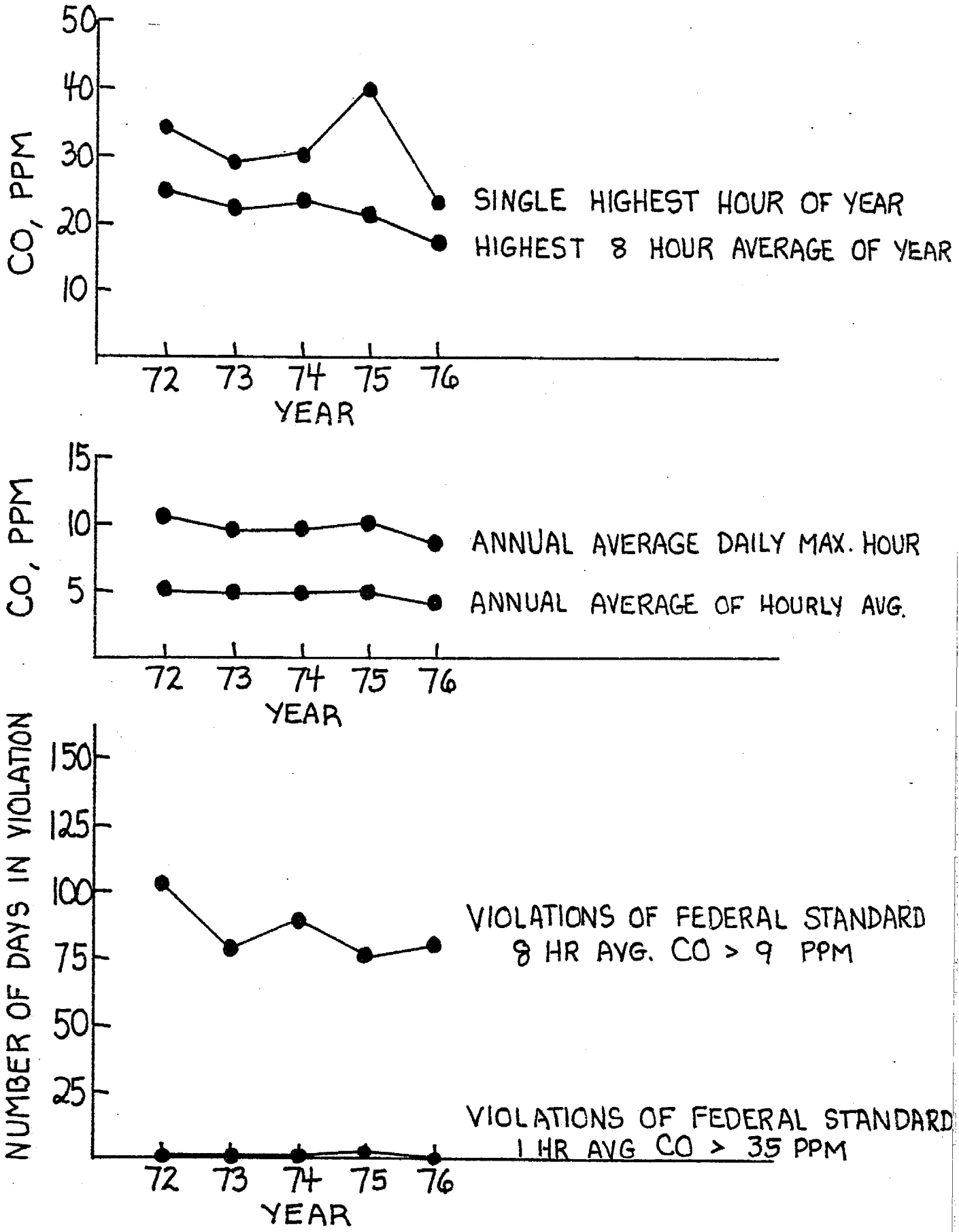
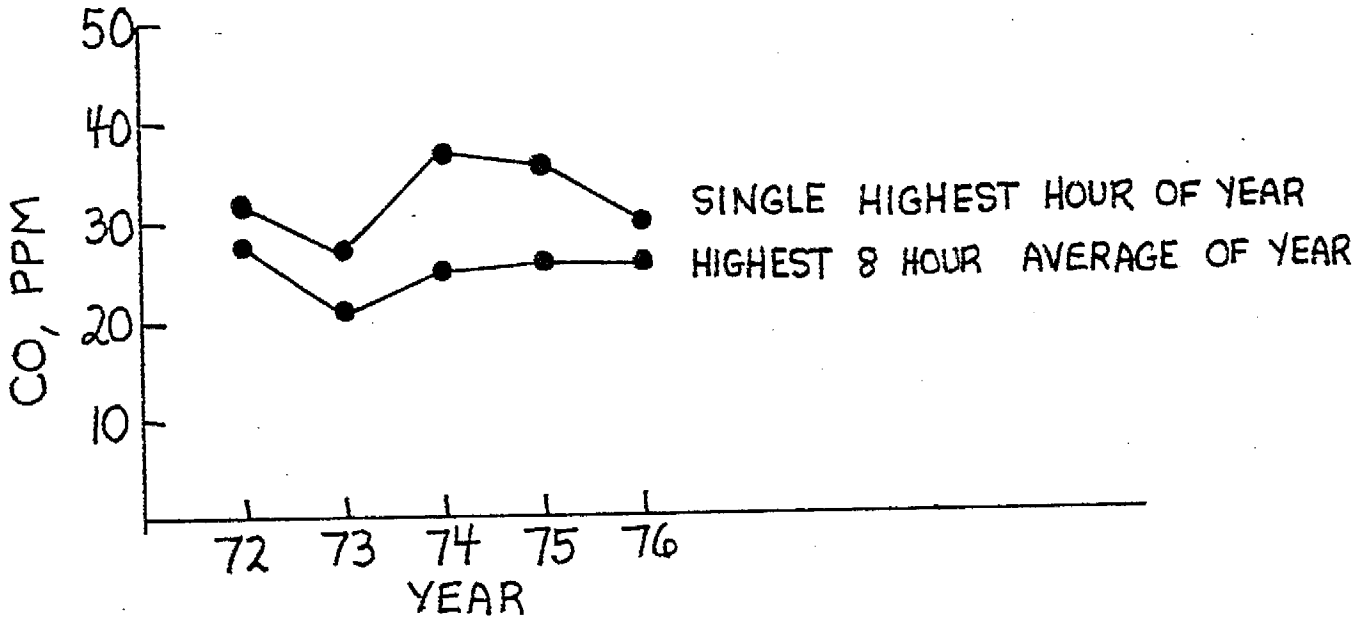
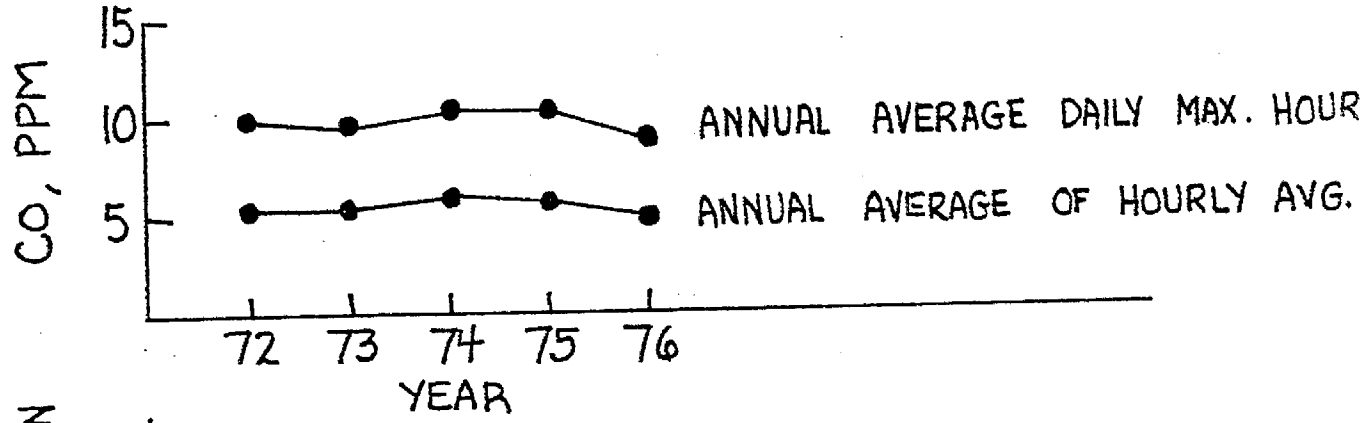


Figure IV.B-19

CARBON MONOXIDE

BURBANK





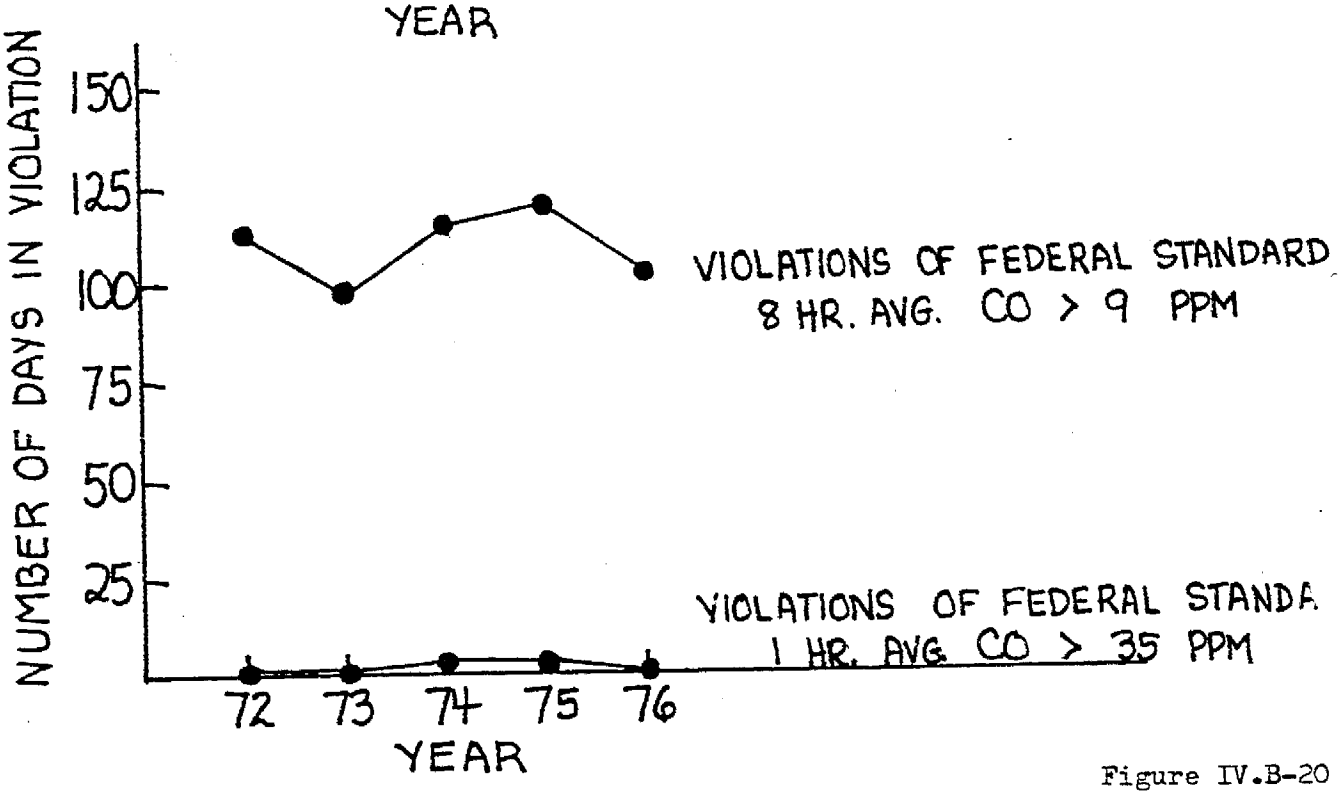


Figure IV.B-20

CARBON MONOXIDE

LENNOX

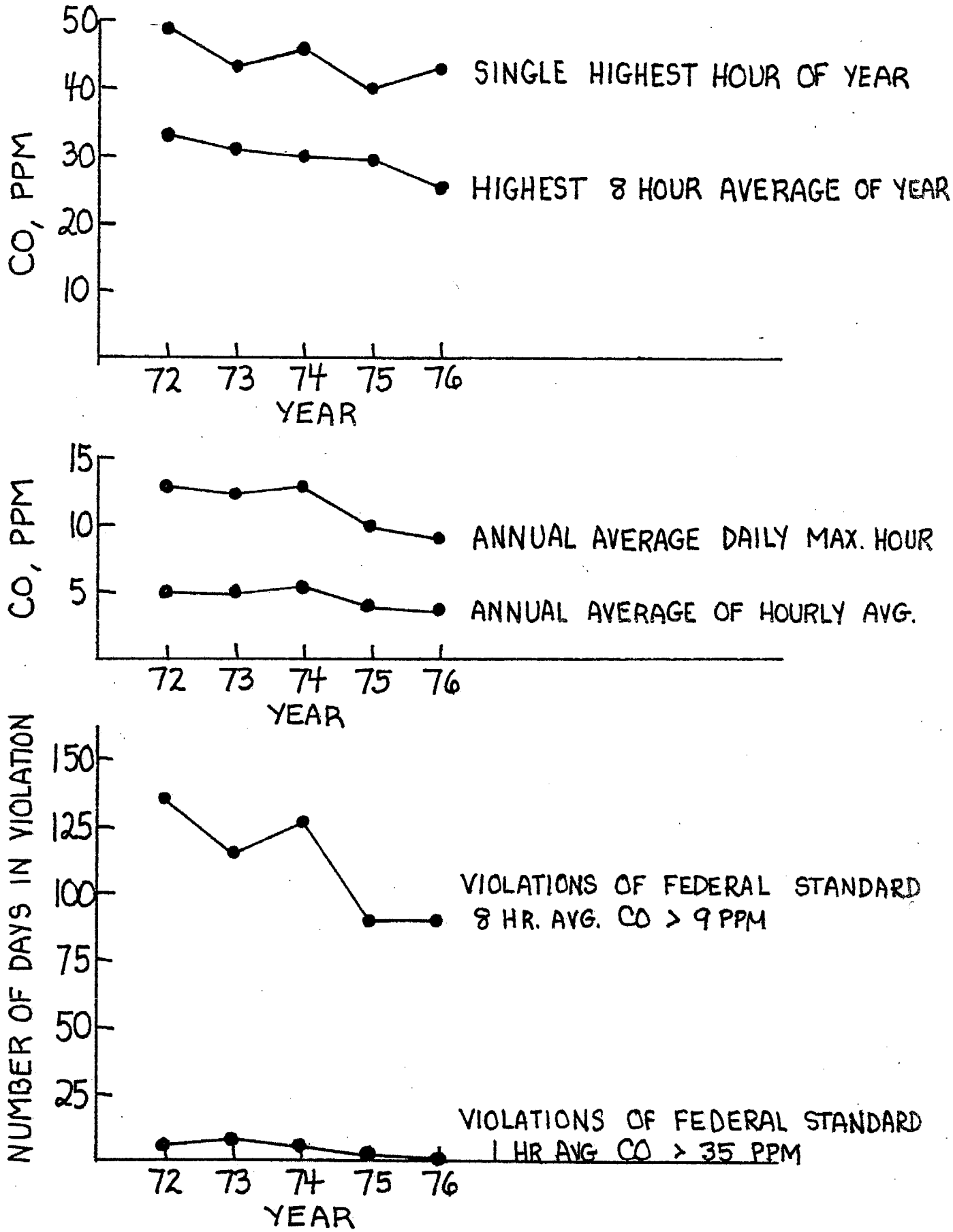
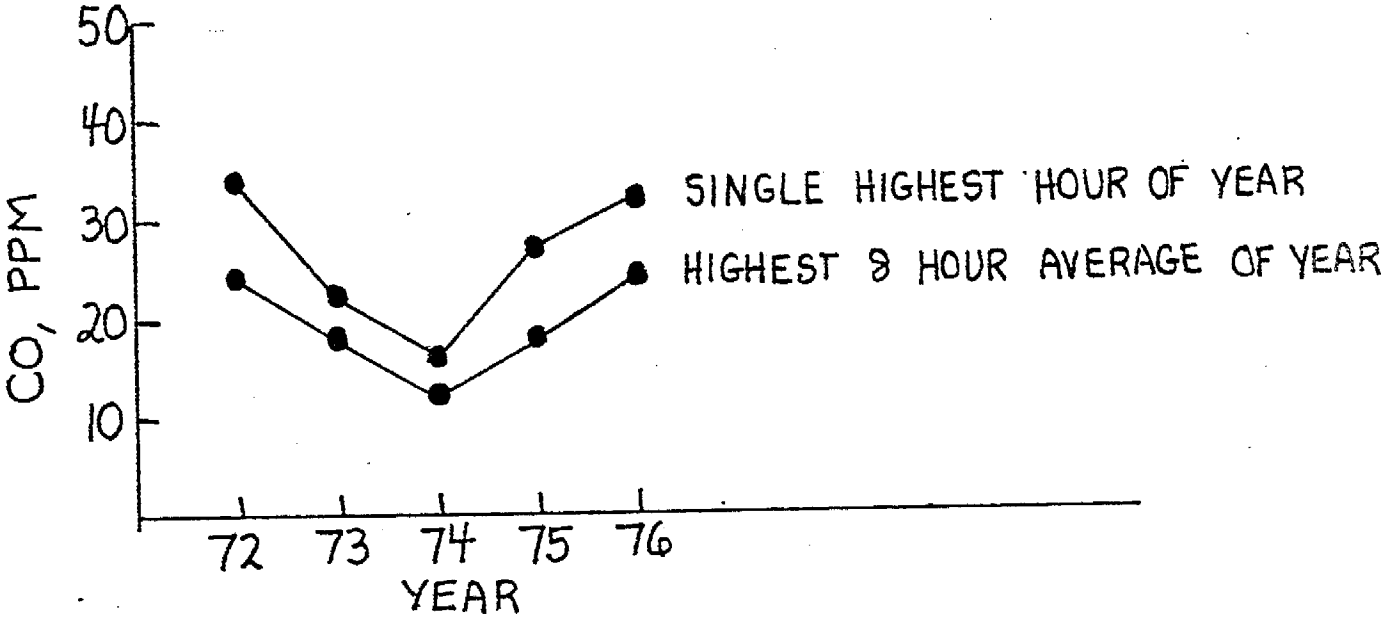
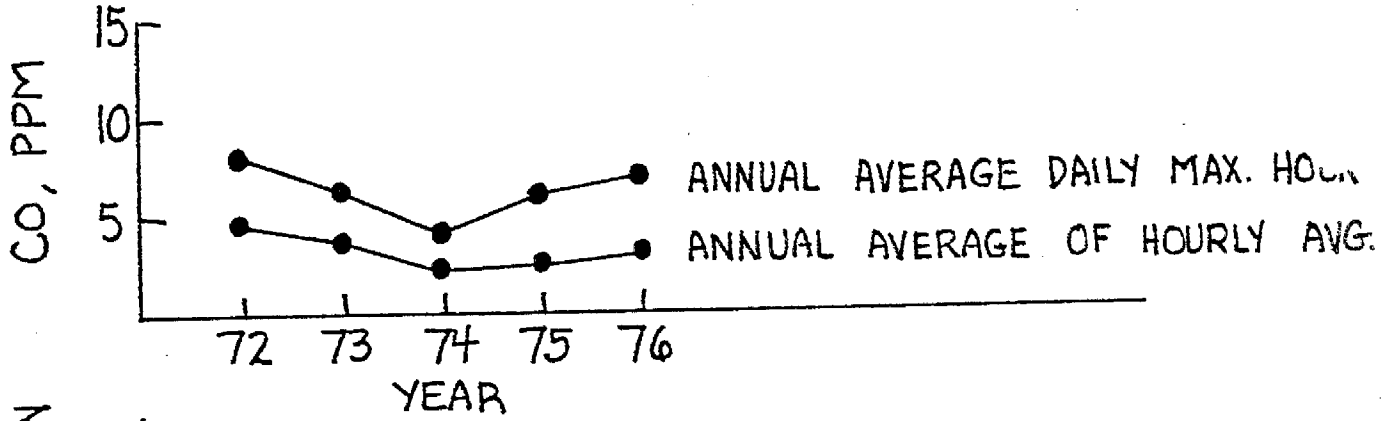


Figure IV.B-21

CARBON MONOXIDE

ANAHEIM





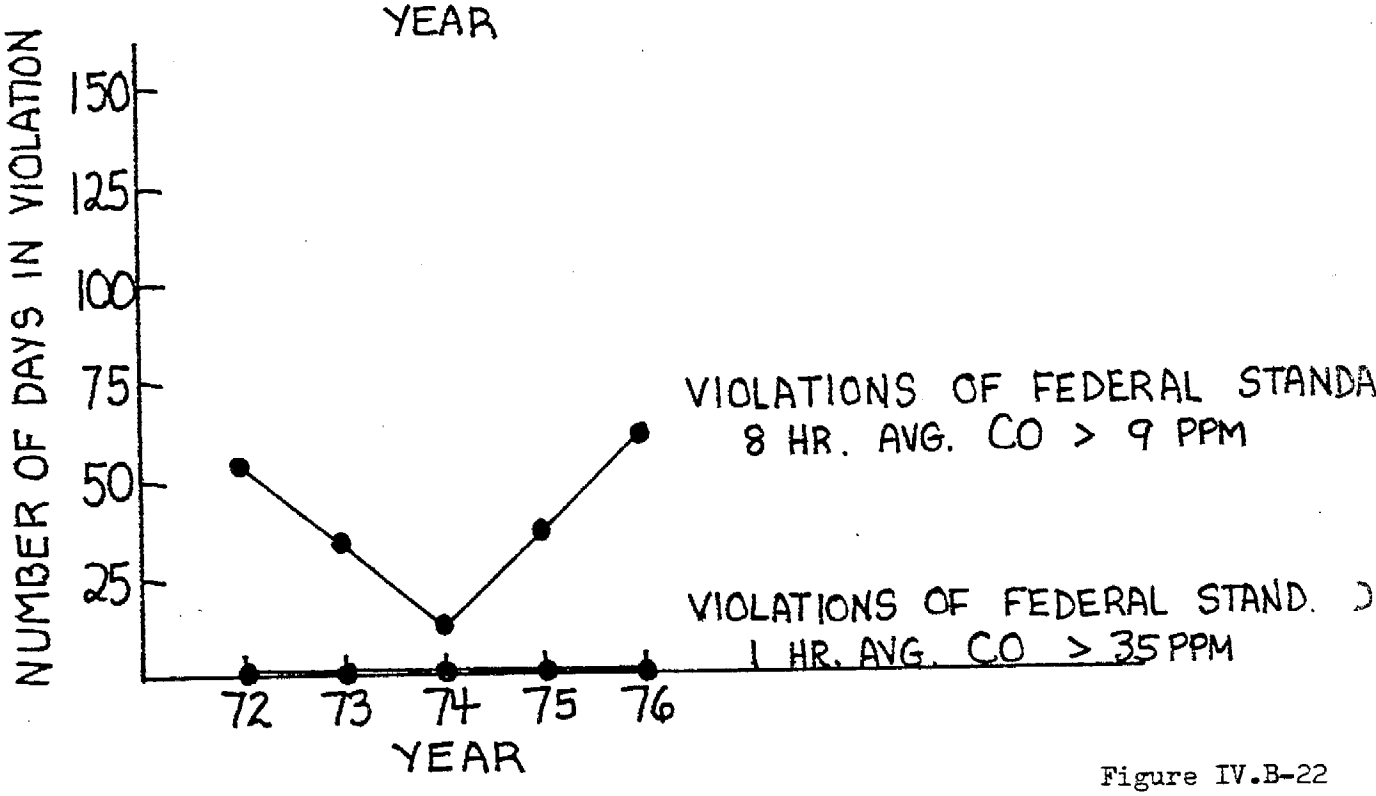


Figure IV.B-22

CARBON MONOXIDE

LA HABRA

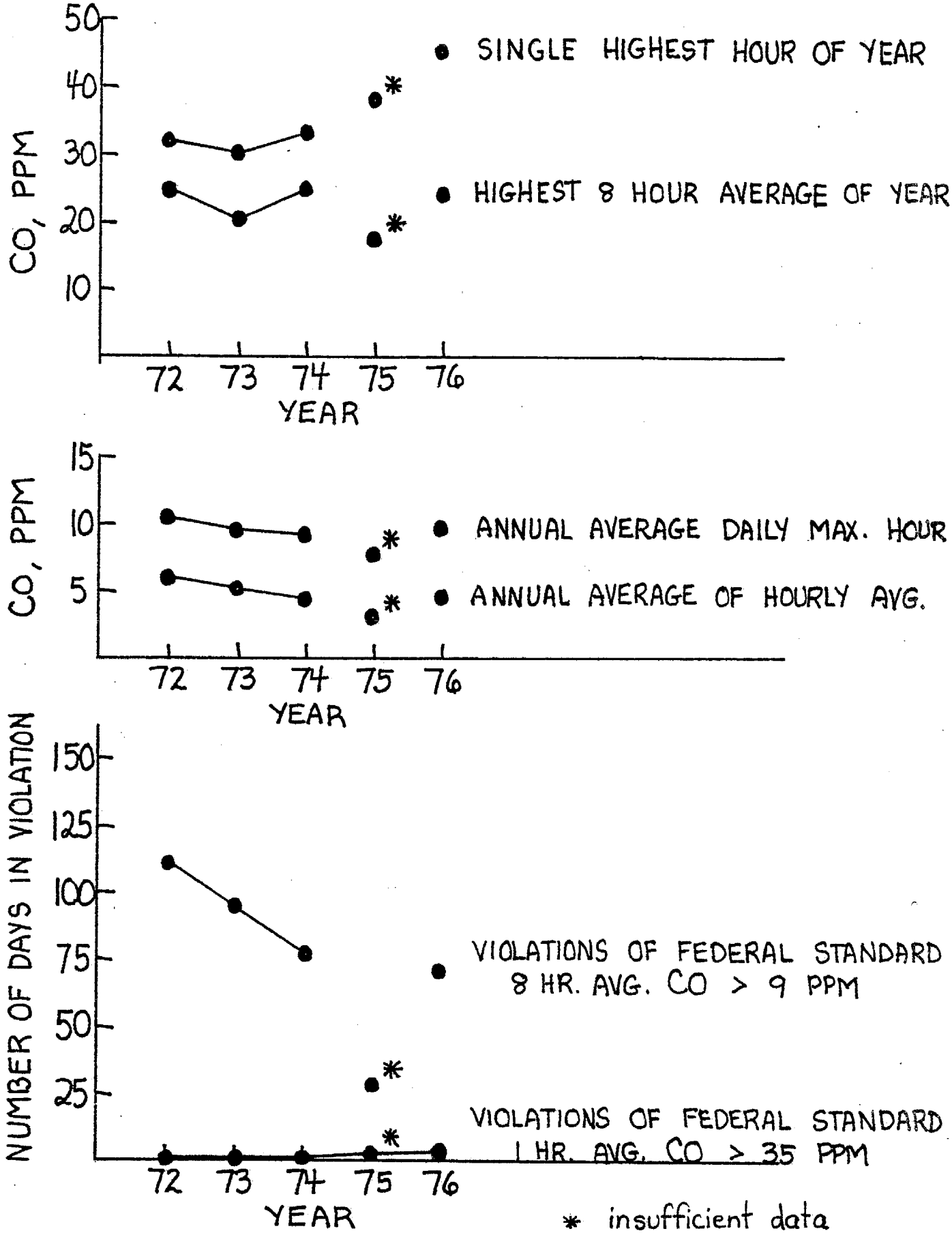
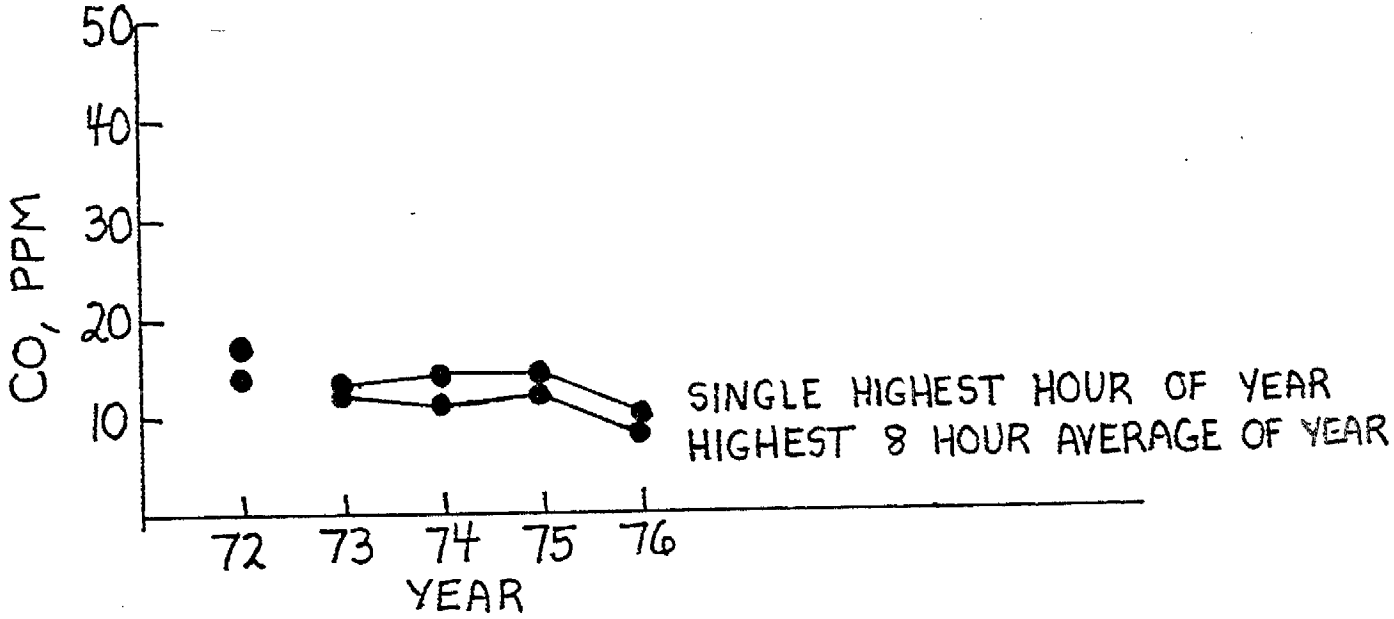
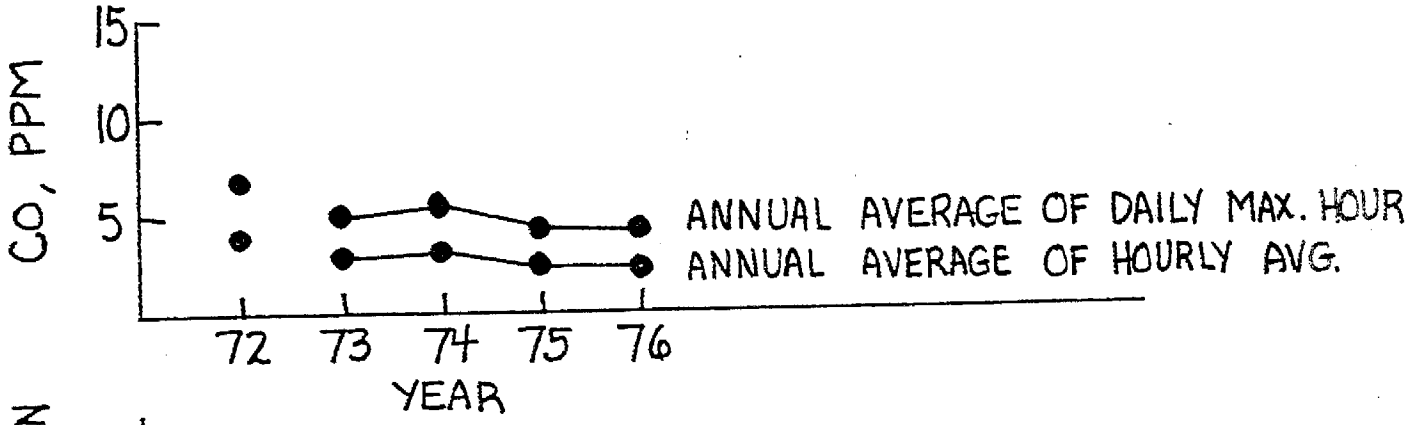


Figure IV.B-23

CARBON MONOXIDE

RIVERSIDE





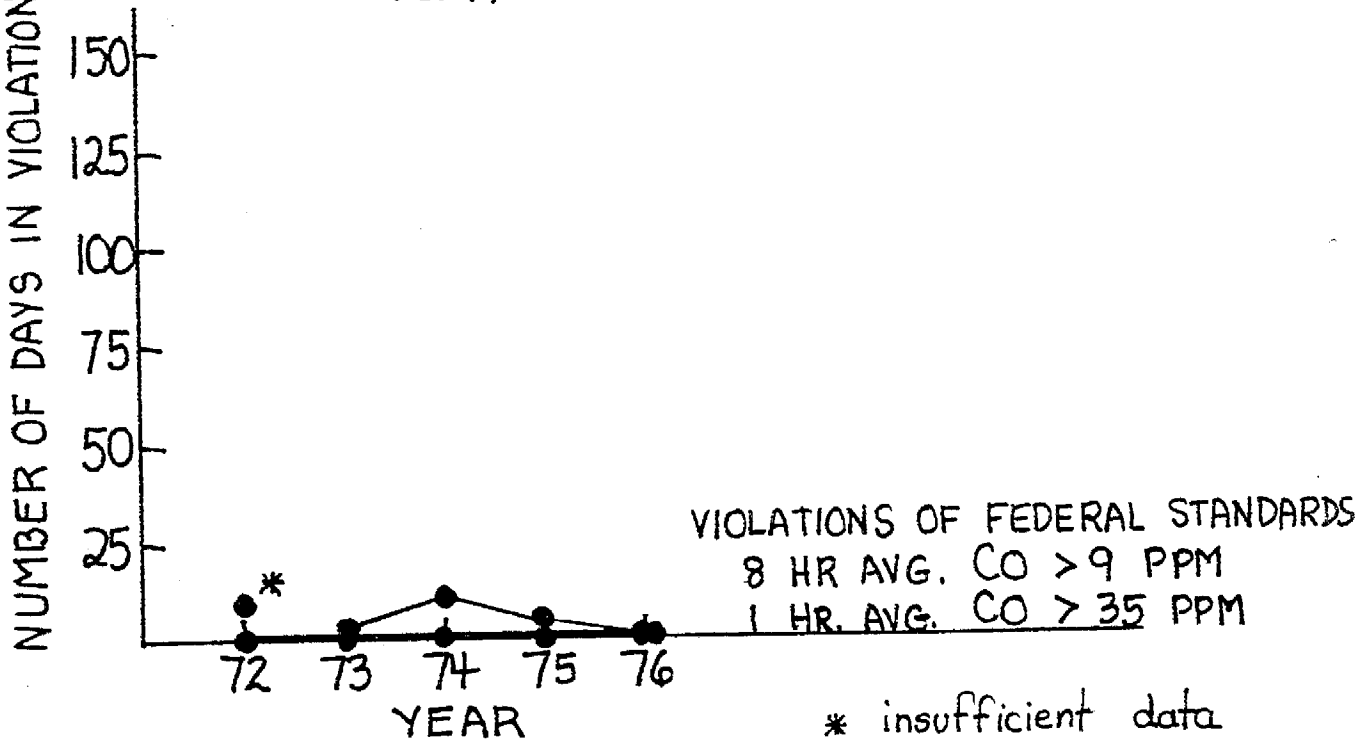
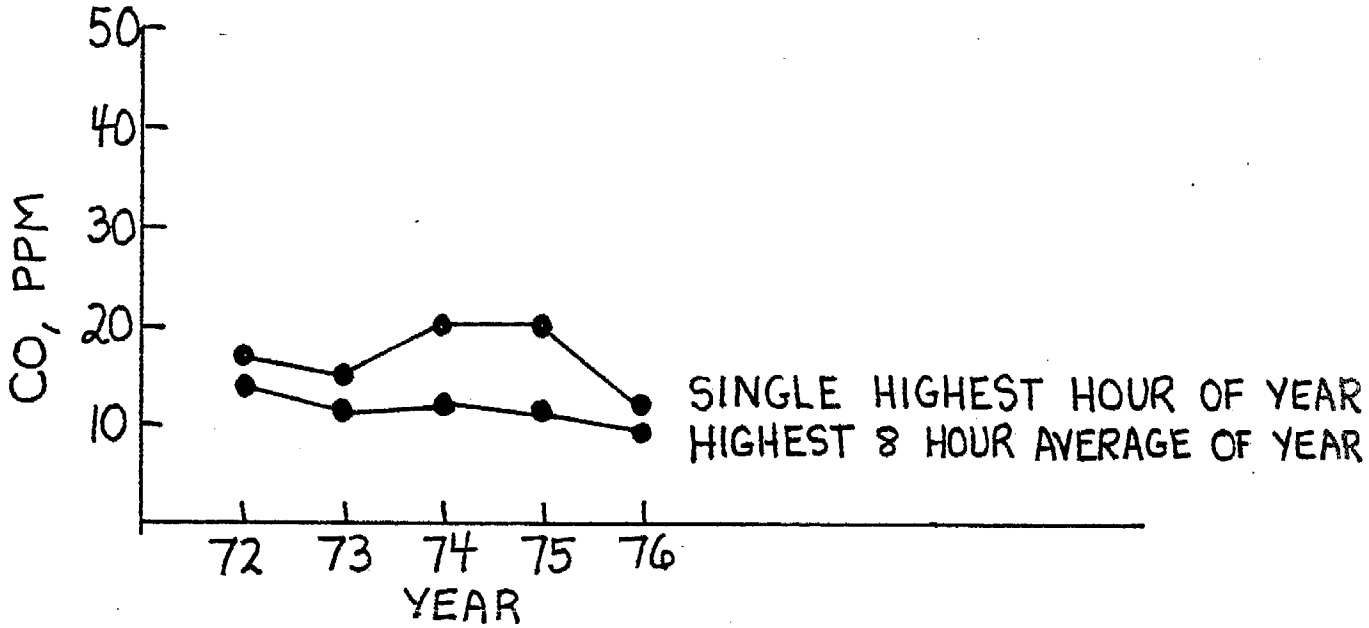
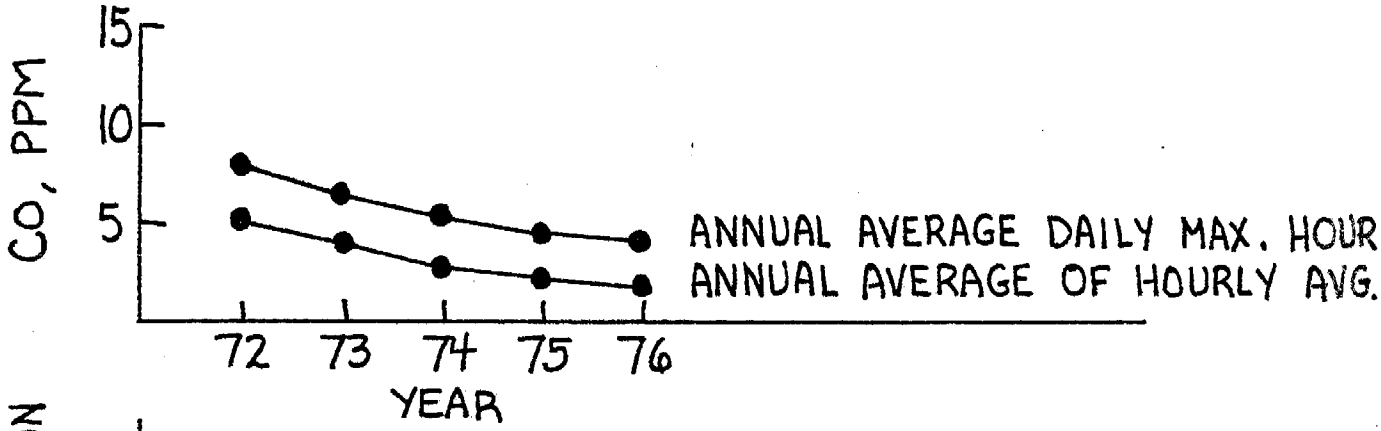


Figure IV.B-24

CARBON MONOXIDE

SAN BERNARDINO





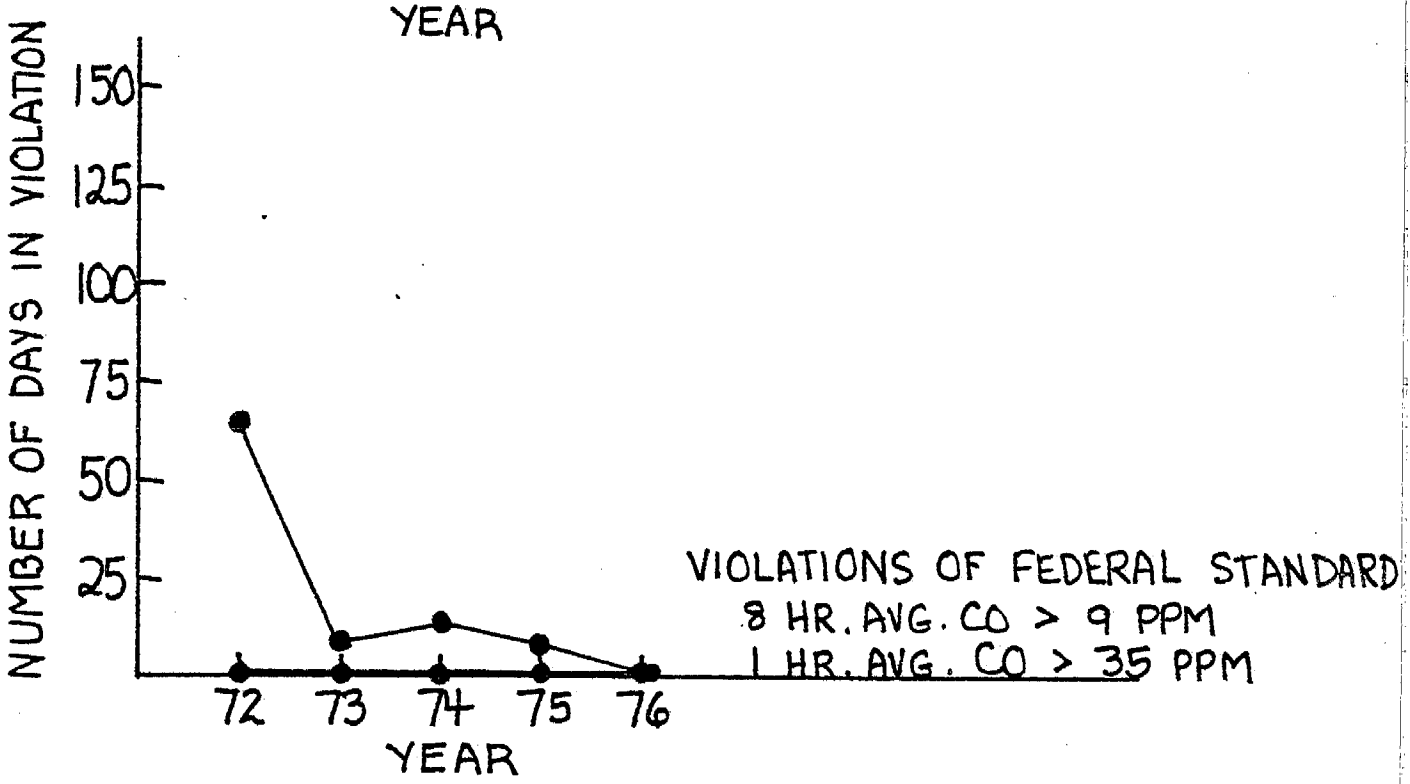


Figure IV.B-25

CARBON MONOXIDE

Table IV.B-I

NUMBER OF DAYS VIOLATING FEDERAL STANDARD (8-HR. AVG. CO >9 PPM)

ZONE STATION #	Area	1970	1971	1972	1973	1974	1975	1976
METROPOLITAN ZONE								
001	L. A.	148	105	103	76	89	75	80
060	Azusa	25	18	8	6	3	17	3
069	Burbank	173	107	113	98	115	119	102
071	WLA	121	74	71	50	48	43	60
072	L. B.	124	99	62	39	32	51	57
074	Reseda	133	113	85	64	56	54	58
075	Pomona	113	67	74	48	19	10	7
076	Lennox	175	131	135	115	126	91	90
080	Whittier	74	84	95	55	38	49	46
081	Newhall		14	11	5	4	1	0
082	Lancaster		5	2	0	0	1	1
083	Pasadena				95	87	89	43
084	Lynwood					112	106	118
085	Pico Rivera							
SOUTHERN ZONE								
3176	Anaheim	96		54	34	12	36	61
3177	La Habra			111	95	77		71
3185	Costa Mesa			53	36	29		58
3186	El Toro				0			
3188	San Juan Capistrano							
3189	Laguna					0	4	5
3190	Los Alamitos					8		
3191	Santa Ana Canyon							
EASTERN ZONE, RIVERSIDE								
4137	Palm Springs				0		0	
4139	Indio			49	1	0	2	
4140	Prado Park					1	2	0
4141	Hemet							
4144	Riverside				3	12	5	0
4149	Perris							0
4150	Banning							
4151	Temecula							
4152	Elsinore							
EASTERN ZONE, SAN BERNARDINO								
5151	San Bernardino	38	45	65	8	14	8	1
5155	Barstow					0	0	
5165	Redlands	27	24	19	4	2	0	1
5168	Victorville					0	0	
5173	Chino				45	15	2	5
5174	Upland				0	0	13	
5175	Upland (ARB)				2	0	0	
5176	Fontana				2	0	0	0
5177	Big Bear							
5181	L. Gregory							
5182	Yucaipa							0
5187	Needles							
5188	Trona							

CARBON MONOXIDE

NUMBER OF DAYS VIOLATING FEDERAL STANDARD (1-HR.AVG. CO > 35 PPM)

ZONE #	STATION Area	1970	1971	1972	1973	1974	1975	1976
METROPOLITAN ZONE								
001	L. A.	1	0	0	0	0	1	0
060	Azusa	0	0	0	0	0	0	0
069	Burbank	4	0	0	0	1	1	0
071	WLA	0	0	0	0	0	1	0
072	L. B.	1	1	0	0	0	0	0
074	Reseda	8	2	1	1	0	0	0
075	Pomona	0	0	0	0	0	0	0
076	Lennox	9	3	7	8	7	3	2
080	Whittier	0	3	0	0	0	0	0
081	Newhall	0	0	0	0	0	0	0
082	Lancaster		0	0	0	0	0	0
083	Pasadena				0	0	0	0
084	Lynwood					5	2	0
085	Pico Rivera							
SOUTHERN ZONE								
3176	Anaheim	0		0	0	0	0	0
3177	La Habra			0	0	0	1	2
3185	Costa Mesa			0	0	0		0
3186	El Toro				0	0		
3188	San Juan Capistrano							
3189	Laguna					0	0	0
3190	Los Alamitos					0		
3191	Santa Ana Canyon							
EASTERN ZONE, RIVERSIDE								
4137	Palm Springs				0		0	
4139	Indio			0	0	0	0	
4140	Prado Park					0	0	0
4141	Hemet							
4144	Riverside				0	0	0	
4149	Perris							0
4150	Banning							
4151	Temecula							
4152	Elsinore							
EASTERN ZONE, SAN BERNARDINO								
5151	San Bernardino	0	0	0	0	0	0	0
5155	Barstow					0	0	
5165	Redlands	0	0	0	0	0	0	0
5168	Victorville					0	0	
5173	Chino				0	0	0	0
5174	Upland				0	0	0	
5175	Upland (ARB)				0	0	0	
5176	Fontana					0	0	0
5177	Big Bear							
5181	L. Gregory							0
5182	Yucaipa							0
5187	Needles							
5188	Trona							

Analysis by non-dispersive infrared

RPG 8/25/77

Table IV.B-III

CARBON MONOXIDE

NUMBER OF DAYS VIOLATING STATE STANDARD (12 HR. AVG. CO ≥ 10 PPM)

ZONE STATION #	Area	1970	1971	1972	1973	1974	1975	1976
METROPOLITAN ZONE								
001	L. A.							32
060	Azusa							0
069	Burbank							93
071	WLA							21
072	L. B.							40
074	Reseda							47
075	Pomona							1
076	Lennox							75
080	Whittier							11
081	Newhall							0
082	Lancaster							0
083	Pasadena							0
084	Lynwood							90
085	Pico Rivera							
SOUTHERN ZONE								
3176	Anaheim							28
3177	La Habra							57
3185	Costa Mesa							29
3186	El Toro							--
3188	San Juan Capistrano							--
3189	Laguna							0
3190	Los Alamitos							--
3191	Santa Ana Canyon							--
EASTERN ZONE, RIVERSIDE								
4137	Palm Springs							0
4139	Indio							0
4140	Prado Park							0
4141	Hemet							
4144	Riverside							0
4149	Perris							0
4150	Banning							0
4151	Temecula							--
4152	Elsinore							--
EASTERN ZONE, SAN BERNARDINO								
5151	San Bernardino							0
5155	Barstow							0
5165	Redlands							0
5168	Victorville							0
5173	Chino							0
5174	Upland							--
5175	Upland (ARB)							--
5176	Fontana							0
5177	Big Bear							0
5181	L. Gregory							0
5182	Yucaipa							0
5187	Needles							--
5188	Trona							--

CARBON MONOXIDE

Table IV.B-IV

ANNUAL ARITHMETIC MEAN, PPM

ZONE STATION #	Area	1970	1971	1972	1973	1974	1975	1976
METROPOLITAN ZONE								
001	L. A.	6.0	5.4	5.0	4.9	4.8	4.7	4.2
060	Azusa	4.3	4.0	3.6	3.1	2.9	3.7	2.5
069	Burbank	6.8	5.5	5.5	5.5	6.0	5.8	5.0
071	WLA	5.5	4.4	4.2	3.7	2.9	2.9	3.4
072	L. B.	5.8	5.4	4.8	3.2	3.4	4.2	4.4
074	Reseda	6.1	5.4	4.1	3.4	3.6	3.6	4.1
075	Pomona	5.0	4.4	5.7	5.3	3.4	3.3	2.7
076	Lennox	7.3	6.1	5.1	5.1	5.5	4.2	3.9
080	Whittier	4.5	4.6	4.7	4.0	3.3	3.0	3.1
081	Newhall	4.5	3.8	3.7	3.5	3.3	2.7	2.2
082	Lancaster		1.8	2.3	2.3	1.5	1.5	1.5
083	Pasadena				4.8	4.4	3.9	3.1
084	Lynwood					5.1	5.9	5.9
085	Pico Rivera							
SOUTHERN ZONE								
3176	Anaheim	5.4		4.6	3.6	2.3	2.7	3.3
3177	La Habra			6.0	5.2	4.4	3.1	4.5
3185	Costa Mesa			3.9	3.7	2.9		3.5
3186	El Toro				1.8	0.4		
3188	San Juan Capistrano							
3189	Laguna					2.3	2.3	2.8
3190	Los Alamitos					0.6		
3191	Santa Ana Canyon							
EASTERN ZONE, RIVERSIDE								
4137	Palm Springs				1.2		0.7	
4139	Indio			3.7	2.5	1.8	1.4	
4140	Prado Park					3.2	3.4	2.8
4141	Hemet							
4144	Riverside				3.0	3.3	2.5	2.3
4149	Perris						1.4	2.7
4150	Banning							
4151	Temecula							
4152	Elsinore							
EASTERN ZONE, SAN BERNARDINO								
5151	San Bernardino	4.1	5.4	5.3	4.1	2.9	2.2	1.9
5155	Barstow					0.5	0.2	
5165	Redlands	3.5	4.7	4.3	2.9	4.2	2.1	2.5
5168	Victorville					0.8	0.3	
5173	Chino				3.9	3.2	2.3	2.1
5174	Upland				2.7	2.3	3.4	
5175	Upland (ARB)				2.4	3.0	3.1	
5176	Fontana					2.6	1.8	1.8
5177	Big Bear							
5181	L. Gregory							1.4
5182	Yucaipa							2.8
5187	Needles							
5188	Trona							

CARBON MONOXIDE

AVERAGE DAILY MAX. 1-HOUR, PPM

1976

MONTH	AREA					
	CENTRAL LOS ANGELES	LENNOX	ANAHEIM	LA HABRA	RIVERSIDE	SAN BERNARDINO
JAN.	14.0	18.9	13.2	ND	5.4	4.2
FEB.	8.9	9.9	7.2	ND	4.9	2.6
MAR.	7.8	9.7	5.7	7.7	3.9	2.2
APR.	6.4	6.1	4.6	5.5	2.7	5.7
MAY	5.2	4.2	3.3	4.2	2.0	5.5
JUNE	7.2	4.9	3.9	6.4	3.0	4.9
JULY	5.3	4.2	3.4	4.2	2.8	2.6
AUG.	7.6	5.1	4.0	4.0	4.5	2.8
SEPT.	7.0	5.9	4.5	6.7	3.5	2.9
OCT.	9.1	10.4	7.1	12.9	5.4	4.3
NOV.	13.3	15.8	12.8	20.5	5.7	5.6
DEC.	13.9	17.9	14.1	22.6	5.6	6.2

Table IV.B-V

NUMBER OF DAYS ON WHICH FEDERAL STANDARD FOR CARBON MONOXIDE WAS EXCEEDED ($\geq$ 9.1 ppm/8 Hr.)
METROPOLITAN ZONE
1970

MONTH	STATION														
	1	60	69	71	72	74	75	76	80	81	82	79	84	85	L.A.BASIN
JAN.	23	4	26	13	20	16	18	23	10	-	-	23	-	-	28
FEB.	21	1	18	18	12	14	10	22	8	-	-	13	-	-	26
MAR.	13	0	13	12	6	5	6	20	4	-	-	3*	-	-	22
APR.	6	4	9	11	4	5	4	17	0	0*	-	2*	-	-	20
MAY	9	0	9	4	2	5	5	9	1	0	-	3	-	-	12
JUNE	7	0	2	1	0	1	0	2	0	6	-	3	-	-	13
JULY	3	1	7	1	1	3	4	4	0	0	0	4	-	-	14
AUG.	2	1	14	4	3	6	3	10	0	0	0	3	-	-	22
SEPT.	10	5	20	9	14	22	11	12	3	0	0	10	-	-	24
OCT.	10	3	17	11	14	20	12	13	6	2	2	14	-	-	22
NOV.	21	2	21	18	23	23	17	17	17	4	2	23	-	-	27
DEC.	18	2	27	24	27	28	21	28	23	1	2	24	-	-	31
ANN.TOTAL	143	23	183	126	168	148	111	177	72	13	6**	125	-	-	261

* Less than 18 days of data.
** Six months of data.

SCAQMD - E & P Div.
MFB
8/77

NUMBER OF DAYS ON WHICH FEDERAL STANDARD FOR CARBON MONOXIDE WAS EXCEEDED (≧ 9.1 ppm/8 Hr.)
METROPOLITAN ZONE
1971

MONTH	STATION														
	1	60	69	71	72	74	75	76	80	81	82	79	84	85	L.A.BASIN
JAN.	18	5	26	20	26	24	17	24	23	4	2	27	-	-	29
FEB.	11	3	13	9	16	19	10	13	10	1	0	15	-	-	20
MAR.	2	0	5	0	12	13	0	12	3	0	0	3	-	-	17
APR.	4	0	0	2	5	1	0	8	4	0	0	2	-	-	9
MAY	0	0	0	0	4	0	0	1	0	0	0	0	-	-	4
JUNE	4	0	0	0	0	2	0	0	0	0	0	0	-	-	4
JULY	4	0	1	0	0	0	0	0	0	0	0	0	-	-	4
AUG.	4	0	4	0	1	1	0	2	0	0	0	0	-	-	8
SEPT.	8	0	6	3	0	6	2	5	0	0	0	1	-	-	12
OCT.	16	3	19	15	7	19	8	22	8	0	0	2	-	-	24
NOV.	20	6	20	17	12	19	18	22	15	6	2	15	-	-	26
DEC.	17	0	20	11	19	16	10	25	16	0	0	9	-	-	25
ANN.TOTAL	108	17	114	77	102	120	65	134	79	11	4	74	-	-	182

SCAQMD - E & P Div.
MFB
8/77

NUMBER OF DAYS ON WHICH FEDERAL STANDARD FOR CARBON MONOXIDE WAS EXCEEDED ($\geq$ 9.1 ppm/8 hr.)
METROPOLITAN ZONE
1972

MONTH	STATION														
	1	60	69	71	72	74	75	76	80	81	82	79/83	84	85	L.A.BASIN
JAN.	22	2	26	21	19	24	17	25	24	4	0	24	-	-	29
FEB.	19	5	22	11	9	18	14	15	15	0	0	10	-	-	23
MAR.	5	0	3	0	1	5	3	4	4	2	0	3	-	-	15
APR.	4	0	3	0	0	4	0	10	1	0	0	0	-	-	13
MAY	1	0	3	0	0	1	0	0	0	0	0	2	-	-	4
JUNE	1	0	0	0	0	0	0	0	0	0	0	0	-	-	1
JULY	4	0	1	0	1	0	0	1	0	1	0	2	-	-	7
AUG.	3	0	0	2	0	0	0	3	1	0	0	0	-	-	4
SEPT.	3	0	3	4	2	0	2	3	2	0	0	6	-	-	7
OCT.	7	0	13	5	3	6	4	21	6	0	0	13	-	-	24
NOV.	18	0	21	18	14	18	17	25	21	2	1	23	-	-	28
DEC.	16	0	20	11	16	22	14	24	19	0	0	23	-	-	28
ANN.TOTAL	103	7	115	72	65	98	71	131	93	9	1	106	-	-	183

SCAQMD-E & P Div.
MFB
8/77

NUMBER OF DAYS ON WHICH FEDERAL STANDARD FOR CARBON MONOXIDE WAS EXCEEDED (≥ 9.1 ppm/8 hr.)
METROPOLITAN ZONE
1973

MONTH	STATION														
	1	60	69	71	72	74	75	76	80	81	82	83	84	85	L.A.BASIN
JAN.	11	0	16	12	11	16	9	22	11	2	0	13	-	-	27
FEB.	5	0	6	1	7	6	3	14	5	0	0	4	-	-	16
MAR.	0	0	5	2	0	2	0	7	1	0	0	5	-	-	12
APR.	2	0	2	0	0	0	0	4	1	0	0	2	-	-	6
MAY	1	0	0	0	0	0	0	1	0	0	0	0	-	-	2
JUNE	3	0	3	2	0	0	2	2	0	0	0	0	-	-	7
JULY	1	0	2	0	0	0	0	0	0	0	0	0	-	-	2
AUG.	1	0	0	0	0	0	0	0	0	0	0	0	-	-	1
SEPT.	5	0	6	5	0	4	3	7	3	0	0	7	-	-	8
OCT.	16	3	22	12	8	12	10	20	13	1	0	20	16	-	24
NOV.	12	2	18	6	4	12	5	20	5	1	0	16	13	-	27
DEC.	19	0	25	13	16	19	11	26	14	0	0	22	25	-	28
ANN. TOTAL	76	5	105	53	46	71	43	123	53	4	0	89	(54)	-	160

SCAQMD - E & P Div.
MFB
8/77

NUMBER OF DAYS ON WHICH FEDERAL STANDARD FOR CARBON MONOXIDE WAS EXCEEDED (≥ 9.1 ppm/8 Hr.)
METROPOLITAN ZONE
1974

MONTH	STATION														
	1	60	69	71	72	74	75	76	80	81	82	83	84	85	L.A.BASIN
JAN.	15	0	18	14	6	14	2	22	11	1	0	16	19	-	24
FEB.	7	0	19	3	0	2	0	24	0	0	0	6	22	-	25
MAR.	2	0	9	3	0	0	0	12	0	0	0	2	5	-	14
APR.	0	0	5	0	0	0	0	5	0	0	0	0	3	-	8
MAY	1	0	0	0	0	0	0	1	0	0	0	0	1	-	2
JUNE	1	0	1	0	0	3	0	0	0	0	0	0	0	-	3
JULY	0	0	1	0	0	0	0	0	0	0	0	0	0	-	1
AUG.	0	0	0	0	0	1	0	0	0	0	0	2	0	-	2
SEPT.	10	0	8	0	0	3	0	2	0	0	0	3	0	-	13
OCT.	9	0	10	3	2	11	2	11	1	0	0	6	8	-	16
NOV.	19	0	27	14	12	14	2	26	8	2	0	24	27	-	29
DEC.	26	3	21	13	19	16	11	27	17	1	0	21	30	-	30
ANN.TOTAL	90	3	119	50	39	64	17	130	37	4	0	80	115	-	167

SCAQMD - E & P Div.
MFB
8/77

NUMBER OF DAYS ON WHICH FEDERAL STANDARD FOR CARBON MONOXIDE WAS EXCEEDED (≥ 9.1 ppm/8 Hr.)
METROPOLITAN ZONE
1975

MONTH	STATION														
	1	60	69	71	72	74	75	76	80	81	82	83	84	85	L.A.BASIN
JAN.	23	4	27	16	16	18	2	25	14	0	0	24	28	-	29
FEB.	9	2	19	2	2	8	0	11	3	0	0	12	13	-	20
MAR.	2	0	6	0	1	1	0	7	0	0	0	5	7	-	11
APR.	2	0	1	0	0	0	0	1	0	0	0	0	1	-	3
MAY	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0
JUNE	1	0	1	0	0	0	0	0	0	1	0	0	0	-	2
JULY	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0
AUG.	0	0	4	0	0	0	0	0	0	0	0	0	0	-	4
SEPT.	3	0	5	0	0	0	0	4	0	0	0	0	4	-	8
OCT.	5	2	14	0	1	3	0	7	0	0	0	4	12	-	17
NOV.	14	2	24	6	16	15	2	17	8	0	0	18	24	-	27
DEC.	18	7	24	18	21	16	2	24	18	0	1	21	27	-	28
ANN.TOTAL	77	17	125	42	57	61	6	96	43	1	1	84	116	-	149

SCAQMD - E & P Div.
MFB
8/77

NUMBER OF DAYS ON WHICH FEDERAL STANDARD FOR CARBON MONOXIDE WAS EXCEEDED (≥ 9.1 ppm/8 Hr.)
METROPOLITAN ZONE
1976

MONTH	STATION														
	1	60	69	71	72	74	75	76	80	81	82	83	84	85	L.A.BASIN
JAN.	18	3	28	14	24	20	1	23	6	0	0	15	30	-	31
FEB.	5	0	11	4	4	4	0	8	3	0	0	2	13	-	16
MAR.	2	0	3	0	1	1	0	7	0	0	0	0	10	-	12
APR.	1	0	0	0	0	0	0	0	0	0	0	0	5	-	5
MAY	0	0	0	0	0	1	0	0	0	0	0	0	1	-	2
JUNE	1	0	0	0	0	0	0	0	0	0	0	0	2	-	3
JULY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AUG.	3	0	0	0	0	2	0	0	0	0	0	0	1	0	4
SEPT.	1	0	0	0	0	0	0	0	0	0	0	0	2	0	3
OCT.	4	0	12	1	1	2	0	9	0	0	0	0	14	0	17
NOV.	17	1	25	16	11	17	1	22	13	0	1	10	23	15	27
DEC.	21	0	29	19	22	21	3	25	14	0	0	5	28	19 6	29
ANN.TOTAL	73	4	108	54	63	68	5	94	36	0	1	32	129	(34)*	149

* Six months of data.

SCAQMD - E & P. Div.
MFB
8/77

MONTHLY AVERAGE OF DAILY MAX. 8-HR AVERAGE CARBON MONOXIDE, PPM
METROPOLITAN ZONE
1970

MONTH	STATION														
	1	60	69	71	72	74	75	76	80	81	82	79	84	85	L.A.BASIN
JAN.	12.2	5.2	14.5	9.2	10.6	11.9	10.2	13.0	8.1	-	-	14.1	-	-	17.2
FEB.	12.2	3.9	13.7	9.9	9.4	8.9	9.0	15.9	8.6	-	-	14.4	-	-	17.5
MAR.	8.7	3.7	9.2	8.0	6.6	5.5	6.5	12.1	6.7	-	-	8.5*	-	-	12.6
APR.	7.1	5.2	7.3	8.2	5.4	6.9	5.7	10.0	5.1	3.8*	-	7.9*	-	-	10.8
MAY	7.7	4.8	6.7	6.3	4.9	6.3	5.5	9.6	4.3	4.9	-	6.1	-	-	10.3
JUNE	7.0	4.9	5.6	5.5	4.5	5.5	5.0	7.4	4.3	6.4	-	5.3	-	-	9.2
JULY	6.8	6.6	7.6	6.3	5.8	7.6	6.1	7.4	4.4	5.1	2.6	6.8	-	-	9.5
AUG.	5.9	7.1	9.0	5.9	6.7	8.2	5.9	8.5	4.8	6.3	2.2	7.4	-	-	10.4
SEPT.	7.3	7.5	11.8	7.6	9.0	11.3	8.6	10.2	6.4	5.6	3.3	8.2	-	-	14.0
OCT.	8.6	6.9	12.1	9.0	9.5	13.7	8.4	9.3	7.2	5.8	3.9	9.9	-	-	15.3
NOV.	12.1	6.3	14.8	12.2	13.1	17.4	10.5	12.5	10.4	6.3	4.9	13.9	-	-	20.3
DEC.	10.0	4.5	16.8	12.7	16.8	18.9	11.0	15.7	12.1	5.7	4.8	12.9	-	-	21.2
ANN. AVG.	8.80	5.60	10.80	8.40	8.52	10.17	7.70	11.00	6.90	5.54	3.61**	9.61	-	-	14.02

* Less than 18 days of data.
** Six months of data.

SCAQMD - E & P Div.
MFB
8/77

MONTHLY AVERAGE OF DAILY MAX. 8-HR. AVERAGE CARBON MONOXIDE, PPM
METROPOLITAN ZONE
1971

MONTH	STATION														
	1	60	69	71	72	74	75	76	80	81	82	79	84	85	L.A.BASIN
JAN.	10.9	7.3	14.6	12.8	15.1	15.8	9.4	15.7	13.8	6.5	5.3	14.1	-	-	20.2
FEB.	8.3	6.2	9.7	8.1	11.5	13.4	7.3	11.1	8.4	5.7	3.7	10.2	-	-	14.8
MAR.	6.7	5.6	6.6	5.3	8.4	8.6	5.8	7.8	6.6	4.4	2.1	6.9	-	-	10.4
APR.	6.1	4.4	4.9	5.5	7.4	4.9	3.7	7.4	5.7	4.7	1.9	5.5	-	-	8.4
MAY	4.8	3.9	4.1	3.6	6.3	3.9	3.4	4.8	4.0	4.5	1.6	3.7	-	-	6.9
JUNE	6.1	4.4	4.6	3.7	3.8	4.9	3.6	4.9	4.0	4.8	1.9	4.6	-	-	6.7
JULY	6.1	5.2	6.5	4.3	3.7	5.7	4.0	4.6	4.2	4.7	1.8	5.2	-	-	7.1
AUG.	6.8	4.7	7.2	4.8	4.0	6.2	4.2	5.7	4.3	4.2	2.0	4.6	-	-	7.9
SEPT.	7.9	4.8	6.7	5.9	4.6	7.3	6.1	6.8	4.3	4.7	2.4	5.4	-	-	9.3
OCT.	9.0	5.2	10.2	8.2	7.4	11.0	7.5	12.4	7.7	4.6	3.4	5.7	-	-	14.1
NOV.	11.1	6.7	13.3	9.7	8.7	14.0	9.8	14.0	10.0	6.4	4.2	9.6	-	-	17.4
DEC.	9.6	4.0	10.8	8.3	10.5	9.5	8.4	15.6	9.6	4.6	3.3	7.2	-	-	16.2
ANN. AVG.	7.80	5.20	8.30	6.70	7.61	8.80	6.10	9.23	6.90	5.00	2.80	6.90	-	-	11.61

SCAQMD - E & P Div.
MFB
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MONTHLY AVERAGE OF DAILY MAX. 8-HR. AVERAGE CARBON MONOXIDE, ppm
METROPOLITAN ZONE
1972

MONTH	STATION														
	1	60	69	71	72	74	75	76	80	81	82	79/83	84	85	L.A.BASIN
JAN.	12.1	6.0	13.2	11.4	11.4	14.8	9.7	16.2	12.3	5.3	3.8	11.0	-	-	19.0
FEB.	9.9	6.4	11.5	8.2	8.0	10.1	9.0	10.7	9.8	5.2	2.7	8.0	-	-	13.4
MAR.	7.1	5.1	6.5	5.2	5.8	6.0	7.3	6.0	6.4	4.8	2.2	5.8	-	-	9.0
APR.	6.2	4.9	6.5	5.7	6.0	6.6	6.9	7.9	5.7	4.4	1.7	5.2	-	-	9.0
MAY	5.0	3.8	5.2	4.0	4.6	4.4	5.9	3.3	4.4	4.0	2.7	4.6	-	-	6.4
JUNE	4.5	4.2	4.8	4.3	4.9	3.3	5.9	3.5	3.7	4.7	2.6	4.9	-	-	6.5
JULY	6.0	4.4	6.2	4.4	5.9	4.1	5.9	3.6	4.3	5.2	2.6	5.9	-	-	7.8
AUG.	5.4	3.7	5.3	4.8	4.6	3.8	5.7	4.6	4.3	4.4	3.2	5.6	-	-	6.8
SEPT.	5.5	4.0	6.0	5.2	4.4	5.0	6.4	5.2	5.2	5.2	3.5	6.6	-	-	7.9
OCT.	6.9	4.7	8.6	7.1	6.6	6.2	7.9	10.7	7.8	4.9	4.4	8.0	-	-	12.1
NOV.	10.1	4.4	12.3	10.3	10.1	11.7	9.4	15.6	11.0	6.1	4.9	11.1	-	-	17.6
DEC.	10.0	3.8	12.8	9.6	9.9	12.8	9.0	15.6	11.1	4.7	4.5	11.7	-	-	17.7
ANN. AVG.	7.39	4.62	8.24	6.68	6.85	7.40	7.42	8.57	7.17	4.91	3.23	7.37	-	-	11.10

SCAQMD - E & P Div.
MFB
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MONTHLY AVERAGE OF DAILY MAX. 8-HR. AVERAGE CARBON MONOXIDE, PPM
METROPOLITAN ZONE
1973

MONTH	STATION														
	1	60	69	71	72	74	75	76	80	81	82	83	84	85	L.A.BASIN
JAN.	8.3	3.6	10.6	8.6	8.3	9.6	8.0	12.6	9.4	4.9	4.5	9.4	-	-	14.1
FEB.	7.3	3.3	7.5	6.1	6.4	6.2	6.9	9.5	6.9	4.1	3.7	6.6	-	-	10.3
MAR.	5.1	3.0	5.8	5.9	3.9	4.4	6.1	6.8	5.7	4.2	2.9	6.1	-	-	8.1
APR.	5.7	3.3	5.4	4.9	3.8	4.0	6.0	5.5	5.1	4.3	2.5	5.4	-	-	7.4
MAY	5.4	4.0	5.0	4.2	2.9	3.4	5.7	4.6	3.4	4.8	2.9	4.9	-	-	6.4
JUNE	5.9	4.2	5.9	4.4	3.1	4.0	6.1	5.1	3.7	4.5	2.8	5.3	-	-	7.3
JULY	5.1	4.2	5.8	3.7	3.3	3.2	5.8	4.0	2.7	4.5	2.9	4.8	-	-	6.4
AUG.	5.4	4.0	5.8	3.3	3.2	3.9	5.9	4.5	3.5	4.1	3.0	5.2	-	-	6.4
SEPT.	6.2	4.0	6.7	4.2	3.5	4.6	6.8	6.5	4.6	4.0	3.4	6.9	-	-	8.5
OCT.	9.3	5.5	11.5	7.9	6.4	7.6	8.1	12.4	7.7	4.5	2.6	10.3	13.7	-	14.8
NOV.	8.3	4.7	11.5	6.9	6.5	10.0	7.5	11.3	7.8	5.5	2.5	9.7	9.8	-	14.5
DEC.	10.3	4.1	13.4	9.1	9.1	12.6	8.1	16.8	9.8	5.0	3.6	12.0	16.2	-	19.2
ANN. AVG.	6.86	3.99	7.91	5.77	5.03	6.12	6.75	8.30	5.86	4.53	3.11	7.22	(13.23)*	-	10.28

* 3 months of data.

SCAQMD - E & P Div.
MFB
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MONTHLY AVERAGE OF DAILY MAX. 8-HR. AVERAGE CARBON MONOXIDE, PPM
METROPOLITAN ZONE
1974

MONTH	STATION														
	1	60	69	71	72	74	75	76	80	81	82	83	84	85	L.A.BASIN
JAN.	9.0	3.8	10.1	8.4	6.4	7.9	5.7	12.9	7.0	5.3	3.0	8.3	11.3	-	14.2
FEB.	7.1	3.3	9.7	6.4	5.4	5.2	5.4	13.3	6.0	4.0	2.3	7.7	11.8	-	13.8
MAR.	4.9	3.6	7.7	4.4	3.4	3.7	3.9	7.3	5.0	3.7	1.6	5.0	6.4	-	8.8
APR.	4.2	2.6	6.8	3.7	2.8	4.1	3.8	6.9	3.8	3.2	1.4	4.8	5.6	-	7.7
MAY	3.5	2.9	4.9	2.3	2.5	2.9	3.1	4.1	2.4	3.9	1.1	3.5	4.6	-	5.4
JUNE	4.3	3.3	5.9	2.8	2.9	4.8	3.6	4.3	2.9	4.1	1.2	4.6	3.3	-	6.3
JULY	5.1	2.8	5.8	1.9	3.2	4.0	3.4	4.3	2.5	4.6	1.2	4.2	3.1	-	6.2
AUG.	4.9	3.1	5.4	2.0	3.3	4.0	3.7	3.6	2.6	5.2	2.2	5.2	3.0	-	6.4
SEPT.	7.8	4.8	7.7	3.3	4.3	6.1	4.9	6.0	4.1	5.3	2.1	6.7	5.5	-	8.8
OCT.	7.9	4.9	8.7	4.8	5.2	6.9	4.7	8.8	5.2	4.0	2.4	6.5	7.9	-	10.5
NOV.	11.0	5.0	14.0	8.2	8.5	11.4	6.9	16.3	7.9	5.3	3.6	11.4	14.0	-	17.9
DEC.	13.1	5.8	13.2	9.0	10.2	9.3	7.4	17.9	10.3	4.1	3.8	11.3	17.2	-	19.6
ANN.AVG.	6.90	3.82	8.32	4.77	4.84	5.86	4.71	8.81	4.97	4.39	2.16	6.60	7.81	-	10.47

SCAQMD - E & P Div.
MFB
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MONTHLY AVERAGE OF DAILY MAX. 8-HR. AVERAGE CARBON MONOXIDE, PPM
METROPOLITAN ZONE
1975

MONTH	STATION														
	1	60	69	71	72	74	75	76	80	81	82	83	84	85	L.A.BASIN
JAN.	12.7	5.3	15.2	9.3	9.7	10.9	6.8	15.5	9.0	4.1	3.2	11.9	15.6	-	17.7
FEB.	8.8	5.2	10.4	6.0	6.5	7.8	5.5	8.6	6.0	3.7	2.2	8.5	9.4	-	11.9
MAR.	6.3	4.8	6.1	3.7	5.0	4.8	3.9	6.1	3.8	3.5	1.4	6.0	7.0	-	8.3
APR.	5.1	3.9	5.1	3.0	3.3	3.9	3.4	5.2	3.6	3.4	1.5	4.4	5.8	-	6.4
MAY	4.8	4.0	5.1	2.4	3.2	3.8	3.7	3.9	2.2	4.7	1.4	4.1	5.2	-	6.4
JUNE	5.0	4.2	5.1	2.4	2.8	3.9	4.0	3.7	1.9	4.7	1.3	4.1	5.2	-	6.5
JULY	4.0	4.0	4.6	2.5	3.7	3.2	3.1	2.7	2.3	3.8	1.2	2.9	3.6	-	5.4
AUG.	4.7	4.1	6.1	2.4	4.1	3.9	3.4	2.5	2.8	3.4	1.8	3.2	4.9	-	6.3
SEPT.	6.0	4.7	6.7	3.7	5.1	4.8	4.3	4.2	3.4	3.3	2.0	4.2	6.4	-	7.9
OCT.	6.7	5.3	9.2	4.6	5.7	5.6	4.5	6.4	4.7	3.4	2.2	5.8	8.9	-	10.3
NOV.	9.4	5.3	14.4	8.2	9.2	9.9	6.5	10.9	7.5	3.6	3.4	9.8	14.7	-	16.9
DEC.	10.4	6.2	13.8	9.8	10.2	10.2	7.1	12.2	9.6	3.9	4.5	10.5	15.4	-	17.2
ANN.AVG.	6.99	4.75	8.48	4.83	5.71	6.06	4.68	6.82	4.73	3.79	2.17	6.28	8.51	-	10.10

SCAQMD - E & P Div.
MFB
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MONTHLY AVERAGE OF DAILY MAX. 8-HR. AVERAGE CARBON MONOXIDE, PPM
METROPOLITAN ZONE
1976

MONTH	STATION														
	1	60	69	71	72	74	75	76	80	81	82	83	84	85	L.A.BASIN
JAN.	9.6	5.8	12.6	9.1	10.3	9.7	6.4	12.9	7.8	3.3	3.7	8.9	14.3	-	15.8
FEB.	6.1	4.9	7.4	6.3	6.1	5.5	4.1	6.6	5.4	3.0	1.7	5.6	8.9	-	9.8
MAR.	5.6	2.8	6.1	5.1	6.0	5.4	4.0	6.5	4.6	2.3	1.7	5.0	7.4	-	8.4
APR.	4.8	2.2	4.5	3.7	4.1	4.7	2.6	3.7	3.1	2.3	1.4	4.0	6.2	-	6.9
MAY	3.8	2.3	3.6	2.7	3.9	4.6	2.5	2.4	2.5	2.5	1.2	3.1	5.6	-	5.9
JUNE	5.0	3.1	4.7	3.3	4.6	5.5	2.6	3.0	2.9	2.4	1.4	3.4	5.7	-	6.4
JULY	4.1	3.0	4.1	2.5	4.2	4.5	2.5	2.7	2.2	3.3	1.4	2.8	5.3	3.1	5.4
AUG.	5.1	2.4	4.6	3.3	4.4	6.1	2.6	2.8	2.7	2.6	1.6	3.1	5.7	3.5	6.8
SEPT.	5.0	3.7	5.0	3.8	4.4	3.7	3.1	3.7	3.4	2.9	2.1	3.8	6.8	4.3	7.1
OCT.	6.3	3.4	8.4	5.5	5.4	5.5	5.1	6.9	5.4	3.4	2.6	5.5	9.4	6.2	10.0
NOV.	9.4	4.1	13.6	9.6	8.5	10.9	6.5	11.7	8.3	3.6	4.5	8.0	12.5	8.4	16.0
DEC.	17.0	6.6	26.3	17.3	14.6	17.4	10.1	14.1	12.5	6.3	8.0	11.5	23.3	14.9	26.3
ANN.TOTAL	6.82	3.69	8.41	6.02	6.37	6.96	4.34	6.42	5.07	3.16	2.61	5.39	9.26	(6.73)*	10.40

* Six months of data.

SCAQMD - E & P Div.
MFB
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MONTHLY MAXIMUM 8-HR AVERAGE CARBON MONOXIDE, PPM
METROPOLITAN ZONE
1970

MONTH	STATION														
	1	60	69	71	72	74	75	76	80	81	82	79	84	85	L.A.BASIN
JAN.	23.1	15.4	34.5	16.1	16.0	30.4	21.6	26.5	12.8	-	-	29.9	-	-	34.5
FEB.	20.6	9.6	35.6	18.5	21.1	19.5	18.3	28.4	19.6	-	-	27.6	-	-	35.6
MAR.	15.4	7.6	20.8	19.0	10.6	10.9	11.1	20.9	14.3	-	-	14.5*	-	-	20.9
APR.	12.8	10.4	16.4	15.8	11.4	12.9	10.4	20.0	9.0	4.9*	-	10.6*	-	-	20.0
MAY	18.8	7.8	16.3	15.5	10.4	14.8	14.0	28.0	9.1	8.3	-	12.9	-	-	28.0
JUNE	15.8	8.0	9.5	9.1	7.6	10.4	8.6	10.9	7.3	14.0	-	9.5	-	-	15.8
JULY	16.0	9.9	12.9	10.1	10.6	12.4	10.0	11.0	8.9	7.8	5.3	16.4	-	-	16.4
AUG.	12.9	9.6	14.3	11.5	11.3	14.1	10.3	17.6	8.0	8.3	3.4	11.5	-	-	17.6
SEPT.	14.6	10.6	21.6	13.4	14.5	16.5	14.5	35.6	10.1	7.4	5.0	12.0	-	-	35.6
OCT.	17.9	11.6	27.1	23.8	21.9	41.4	18.3	18.6	16.0	11.5	12.4	24.6	-	-	41.4
NOV.	23.1	9.8	30.6	19.8	33.0	34.9	19.8	32.5	19.6	10.0	12.4	28.4	-	-	34.9
DEC.	19.1	10.3	31.3	22.5	25.4	32.0	17.9	28.1	20.6	10.9	11.1	25.9	-	-	32.0
ANN. MAX.	23.1	15.4	35.6	23.8	33.0	41.4	21.6	35.6	20.6	14.0	(12.4)**	29.9	-	-	41.4

* Less than 18 days of data.
** Six months of data.

SCAQMD - E & P Div.
MFB
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MONTHLY MAXIMUM 8-HR. AVERAGE CARBON MONOXIDE, PPM
METROPOLITAN ZONE
1971

MONTH	STATION														
	1	60	69	71	72	74	75	76	80	81	82	79	84	85	L.A.BASIN
JAN.	18.0	16.6	22.6	24.4	26.4	30.1	13.4	33.4	27.0	12.0	10.1	25.6	-	-	33.4
FEB.	17.4	13.3	22.1	19.0	22.4	29.3	11.0	22.4	15.9	9.3	7.3	16.8	-	-	29.3
MAR.	15.6	8.3	10.0	8.8	13.5	15.4	8.4	15.5	9.8	7.7	5.0	9.9	-	-	15.6
APR.	10.6	6.6	8.9	12.6	14.6	10.9	7.1	16.6	12.3	7.9	3.3	10.5	-	-	16.6
MAY	7.1	5.5	6.9	5.8	12.4	7.0	4.8	9.6	8.6	8.1	2.6	5.6	-	-	12.4
JUNE	11.3	6.0	8.6	6.5	5.5	9.9	6.0	7.4	6.3	6.5	3.5	8.1	-	-	11.3
JULY	10.6	6.5	9.3	7.6	5.9	9.0	5.8	8.6	8.1	7.1	2.6	7.3	-	-	10.6
AUG.	12.4	7.9	11.6	9.0	9.3	9.4	5.8	10.0	8.0	5.5	2.9	6.9	-	-	12.4
SEPT.	19.3	7.9	12.0	13.3	8.5	11.3	9.3	11.5	7.1	6.4	5.1	9.9	-	-	19.3
OCT.	17.0	9.9	16.5	15.1	12.5	20.5	13.1	24.5	15.8	8.8	8.0	12.3	-	-	24.5
NOV.	20.4	12.8	23.3	16.5	16.5	27.6	13.8	31.0	17.0	11.8	10.0	14.4	-	-	31.0
DEC.	19.9	6.3	21.9	19.1	18.8	18.1	12.5	34.0	18.8	8.0	9.0	17.1	-	-	34.0
ANN. MAX.	20.4	16.6	23.3	24.4	26.4	30.1	13.8	34.0	27.0	12.0	10.1	25.6	-	-	34.0

SCAQMD - E & P Div.
MFB
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MONTHLY MAXIMUM 8-HR. AVERAGE CARBON MONOXIDE, ppm
METROPOLITAN ZONE
1972

MONTH	STATION														
	1	60	69	71	72	74	75	76	80	81	82	79/83	84	85	L.A.BASIN
JAN.	24.8	10.0	27.3	22.0	19.1	28.5	14.6	31.6	21.0	12.9	8.0	17.6	-	-	31.6
FEB.	16.4	10.9	17.9	12.8	14.6	15.6	13.0	20.9	16.4	8.1	5.3	13.6	-	-	20.9
MAR.	11.9	8.0	10.5	8.0	9.8	13.6	9.9	13.6	10.8	9.8	4.9	9.9	-	-	13.6
APR.	14.1	8.1	11.1	8.1	8.4	10.8	8.9	16.1	9.4	7.6	3.5	8.4	-	-	16.1
MAY	9.6	7.5	9.1	7.8	7.3	9.5	8.1	7.4	8.8	5.8	5.0	11.0	-	-	11.0
JUNE	9.5	6.4	7.8	7.4	6.8	6.4	7.8	7.5	7.3	8.0	4.3	7.3	-	-	9.5
JULY	15.8	6.5	10.6	7.5	9.1	8.3	8.1	9.8	8.9	9.1	4.0	9.8	-	-	15.8
AUG.	10.6	5.4	8.9	12.5	8.1	6.5	7.3	9.5	10.3	5.9	6.0	9.0	-	-	12.5
SEPT.	11.3	7.3	10.6	10.9	11.4	9.0	13.0	17.3	10.3	8.0	5.4	10.3	-	-	17.3
OCT.	13.8	8.1	15.9	12.6	12.9	13.8	12.8	25.6	13.8	7.0	7.8	11.1	-	-	25.6
NOV.	21.1	9.0	22.8	17.6	15.4	25.8	13.9	24.3	20.1	12.8	10.8	21.3	-	-	25.8
DEC.	18.3	7.5	27.8	21.9	16.4	31.8	13.5	33.1	24.3	8.4	7.5	21.6	-	-	33.1
ANN.	24.8	10.9	27.8	22.0	19.1	31.8	14.6	33.1	24.3	12.9	10.8	21.6	-	-	33.1

SCAQMD - E & P Div.
MFB
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MONTHLY MAXIMUM 8-HR. AVERAGE CARBON MONOXIDE, ppm
METROPOLITAN ZONE
1973

MONTH	STATION														
	1	60	69	71	72	74	75	76	80	81	82	83	84	85	L.A.BASIN
JAN.	17.1	5.9	20.0	18.0	13.6	20.4	12.1	21.1	19.8	9.9	8.9	16.1	-	-	21.1
FEB.	11.3	5.4	13.0	14.5	12.1	14.5	10.1	16.6	12.3	5.8	5.1	9.8	-	-	16.6
MAR.	8.5	5.1	10.4	10.1	7.3	9.9	8.8	12.6	9.1	6.6	4.8	10.9	-	-	12.6
APR.	9.6	6.8	10.0	8.4	7.1	6.9	8.5	13.3	10.3	7.4	3.6	11.0	-	-	13.3
MAY	9.4	5.5	8.5	7.4	6.8	7.0	7.6	10.8	7.9	7.5	3.5	7.6	-	-	10.8
JUNE	11.4	6.6	10.9	10.6	7.3	7.3	9.9	15.9	7.4	8.8	3.6	8.3	-	-	15.9
JULY	10.5	5.8	10.3	7.9	6.4	6.1	8.3	7.3	5.8	7.0	4.1	8.5	-	-	10.5
AUG.	9.3	5.6	9.0	5.6	5.4	7.8	8.0	8.3	7.6	5.6	5.0	7.4	-	-	9.3
SEPT.	13.3	6.1	14.5	11.3	8.8	12.5	10.5	20.1	10.1	6.4	5.0	13.6	-	-	20.1
OCT.	22.0	10.3	19.8	13.9	16.1	17.1	11.9	29.0	14.4	10.3	6.0	19.8	27.0	-	29.0
NOV.	14.9	9.3	21.1	17.6	12.3	28.9	14.6	20.3	12.1	9.9	7.6	15.8	15.3	-	28.9
DEC.	15.4	8.8	21.4	17.5	17.0	28.8	13.1	31.4	20.0	8.3	8.6	23.1	28.5	-	31.4
ANN.TOTAL	22.0	10.3	21.4	18.0	17.0	28.9	14.6	31.4	20.0	10.3	8.9	23.1	-	-	31.4

SCAQMD - E & P Div.
MFB
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MONTHLY MAXIMUM 8-HR. AVERAGE CARBON MONOXIDE, PPM
METROPOLITAN ZONE
1974

MONTH	STATION														
	1	60	69	71	72	74	75	76	80	81	82	83	84	85	L.A.BASIN
JAN.	15.8	8.6	17.1	17.1	15.9	15.8	10.0	27.5	12.9	10.1	4.9	15.1	22.1	-	27.5
FEB.	11.8	5.9	15.3	10.0	8.6	10.4	7.6	24.9	8.1	7.5	3.8	10.5	20.6	-	24.9
MAR.	10.5	7.6	17.5	10.6	6.8	8.1	7.8	15.1	9.0	6.4	3.6	9.6	15.8	-	17.5
APR.	8.1	4.4	11.1	6.8	5.1	7.0	5.6	11.8	6.1	4.5	2.5	7.4	11.3	-	11.8
MAY	9.4	4.0	7.5	4.8	4.8	8.1	6.1	9.1	4.6	7.8	1.6	6.1	9.5	-	9.5
JUNE	9.4	4.5	10.1	5.4	5.4	11.8	5.4	8.4	5.3	5.6	2.1	7.5	5.6	-	11.8
JULY	8.3	6.8	9.3	4.3	5.0	6.6	4.6	7.4	5.8	6.0	2.0	5.6	6.5	-	9.3
AUG.	8.3	4.8	8.5	4.3	4.4	10.0	5.4	5.5	4.6	6.9	3.8	9.5	4.8	-	10.0
SEPT.	13.3	8.1	13.4	7.9	6.3	12.9	8.8	16.1	8.9	8.3	3.8	12.9	8.9	-	16.1
OCT.	18.6	9.0	16.8	15.8	10.5	12.4	9.8	21.4	11.6	5.5	5.4	10.8	17.6	-	21.4
NOV.	19.6	8.1	25.1	15.0	11.9	23.6	9.5	25.5	12.0	10.1	7.4	18.8	22.1	-	25.5
DEC.	23.3	13.9	25.6	21.3	16.1	19.0	12.6	30.3	24.9	9.5	9.0	22.0	28.4	-	30.3
ANN. MAX.	23.3	13.9	25.6	21.3	16.1	23.6	12.6	30.3	24.9	10.1	9.0	22.0	28.4	-	30.3

SCAQMD - E & P Div.
MFB
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MONTHLY MAXIMUM 8-HR. AVERAGE CARBON MONOXIDE, PPM
METROPOLITAN ZONE
1975

MONTH	STATION														
	1	60	69	71	72	74	75	76	80	81	82	83	84	85	L.A.BASIN
JAN.	21.9	11.1	26.6	18.9	15.6	27.3	11.3	29.6	15.6	7.4	8.0	23.5	29.4	-	29.6
FEB.	19.0	11.1	17.8	12.5	9.8	11.9	8.3	14.6	9.5	7.4	4.5	13.1	15.8	-	19.0
MAR.	13.6	8.8	12.8	9.0	10.6	11.0	7.0	11.5	7.6	8.0	3.4	13.0	13.5	-	13.6
APR.	11.3	7.9	9.5	5.5	6.3	5.9	4.5	11.3	5.5	6.5	2.3	7.3	10.0	-	11.3
MAY	7.8	7.8	8.5	4.1	4.8	6.0	5.5	6.5	3.9	8.4	2.6	7.3	7.6	-	8.5
JUNE	12.6	6.0	9.6	6.8	4.0	7.1	5.9	7.6	4.6	10.5	2.5	7.0	7.3	-	12.6
JULY	8.3	6.1	7.5	5.4	4.8	5.8	5.1	4.3	4.3	7.3	1.6	6.6	5.8	-	8.3
AUG.	8.3	6.0	9.9	5.5	6.3	6.8	4.9	6.9	6.0	5.1	4.6	5.4	7.5	-	9.9
SEPT.	13.8	7.5	10.3	7.4	8.5	8.5	6.6	12.5	7.4	4.9	2.9	7.1	14.9	-	14.9
OCT.	14.9	12.1	15.8	8.6	10.3	17.3	7.5	15.6	9.0	6.1	5.0	12.1	14.4	-	17.3
NOV.	20.4	9.4	26.6	24.6	17.1	26.9	10.6	25.0	13.9	7.4	7.1	15.3	29.0	-	29.0
DEC.	16.9	10.9	21.0	16.9	15.8	23.3	9.8	20.1	14.8	7.5	10.0	14.9	23.4	-	23.4
ANN. MAX.	21.9	12.1	26.6	24.6	17.1	27.3	11.3	29.6	15.6	10.5	10.0	23.5	29.4	-	29.6

SCAQMD - E & P Div.
MFB
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MONTHLY MAXIMUM 8-HR. AVERAGE CARBON MONOXIDE, PPM
METROPOLITAN ZONE
1976

MONTH	STATION														
	1	60	69	71	72	74	75	76	80	81	82	83	84	85	L.A.BASIN
JAN.	13.6	10.6	18.3	13.4	13.9	13.8	11.8	25.3	14.4	5.9	7.6	12.3	20.6	-	25.3
FEB.	12.0	7.3	13.3	11.5	11.1	10.4	6.5	13.8	11.3	5.0	4.0	9.9	16.9	-	16.9
MAR.	10.1	4.6	12.1	8.9	10.5	9.8	6.3	14.4	8.9	3.6	3.1	8.5	12.4	-	14.4
APR.	9.9	4.5	7.6	6.3	5.8	7.4	5.3	7.4	5.6	3.5	2.4	7.5	12.3	-	12.3
MAY	7.5	5.3	6.9	5.3	5.9	9.4	5.5	5.5	4.8	4.1	1.8	6.9	9.8	-	9.8
JUNE	9.6	5.3	7.6	6.4	6.6	8.8	4.9	6.6	4.9	3.4	2.8	5.5	9.5	-	9.6
JULY	6.5	4.6	6.9	4.4	5.9	8.0	4.5	4.3	3.9	5.1	2.1	4.9	7.3	4.8	8.0
AUG.	14.4	4.3	8.4	5.0	7.6	10.0	5.3	5.5	5.8	4.5	3.0	5.1	9.4	7.0	14.4
SEPT.	9.1	5.6	7.5	7.5	7.3	6.6	5.3	7.8	5.0	4.9	3.6	6.9	13.5	6.5	13.5
OCT.	10.6	5.5	14.8	10.3	9.1	13.5	7.4	13.1	8.4	5.1	4.6	8.8	15.5	8.1	15.5
NOV.	14.1	9.4	21.5	15.8	13.5	20.9	10.1	21.1	13.5	6.8	9.4	12.4	22.3	10.9	22.3
DEC.	10.5	3.7	15.3	9.7	10.8	11.1	7.1	14.1	9.0	3.6	4.9	7.6	15.3	10.9	17.9
ANN. MAX.	14.4	10.6	21.5	15.8	13.9	20.9	11.8	25.3	14.4	6.8	9.4	12.4	22.3	(10.9)*	25.3

* Six months of data.

SCAQMD - E & P Div.
MFB
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DATA SUMMARY - CARBON MONOXIDE, ppm

STATION YEAR	ANNUAL MAXIMUM			ANNUAL ARITHMETIC MEAN		NUMBER OF DAYS IN VIOLATION OF STANDARDS		
	1-HOUR AVERAGE	8-HOUR AVERAGE	12-HOUR AVERAGE	HOURLY AVERAGES	DAILY MAX. HOURLY AVERAGE	1-HR.AVERAGE > 35 PPM	8-HR.AVERAGE > 9 PPM	12-HR.AVERAGE > 10 PPM
LOS ANGELES COUNTY								
BURBANK								
1972	32	27.8	26.3	5.5	10.3	0	113	72
1973	27	21.4	20.2	5.5	9.8	0	98	74
1974	37	25.6	23.3	6.0	10.6	1	115	78
1975	36	26.6	24.4	5.8	10.7	1	119	81
1976	30	26.3	24.8	5.0	9.2	0	102	83
LENNOX								
1972	49	33.1	28.0	5.1	13.0	7	135	97
1973	43	31.4	28.5	5.1	12.6	8	115	79
1974	46	30.3	25.9	5.5	13.3	7	126	95
1975	40	29.6	30.2	4.2	10.4	3	91	63
1976	43	25.3	24.1	3.9	9.4	2	90	67
LOS ANGELES								
1972	34	24.8	21.3	5.0	10.5	0	103	54
1973	29	22.0	18.7	4.9	9.5	0	76	37
1974	30	23.3	21.5	4.8	9.8	0	89	46
1975	40	21.9	21.3	4.7	10.0	1	75	51
1976	23	17.0	14.4	4.2	8.8	0	80	31
ORANGE COUNTY								
ANAHEIM								
1972	34	24.3	21.7	4.6	8.0	0	54	25
1973	22	18.5	17.0	3.6	6.4	0	34	13
1974	16	12.3	11.3	2.3	4.3	0	12	2
1975	27	18.0	15.7	2.7	6.1	0	36	22
1976	32	24.8	21.5	3.3	7.0	0	61	29

DATA SUMMARY - CARBON MONOXIDE, ppm

STATION YEAR	ANNUAL MAXIMUM			ANNUAL ARITHMETIC MEAN		NUMBER OF DAYS IN VIOLATION OF STANDARDS		
	1-HOUR AVERAGE	8-HOUR AVERAGE	12-HOUR AVERAGE	HOURLY AVERAGES	DAILY MAX. HOURLY AVERAGE	1-HR.AVERAGE >35 PPM	8-HR.AVERAGE >9 PPM	12-HR.AVERAG >10 PPM
LA HABRA								
1972	32	24.5	23.3	6.0	10.4	0	111	66
1973	30	20.4	17.4	5.2	9.5	0	95	54
1974	33	24.5	22.0	4.4	9.1	0	77	40
1975	38*	17.1*	14.9*	3.1*	7.6*	1*	28*	13*
1976	45	24.0	19.8	4.5	9.5	2	71	57
RIVERSIDE COUNTY								
RIVERSIDE								
1972	17*	14.1*	13.1*	4.0*	6.8*	0*	9*	4*
1973	13	12.6	12.1	3.0	5.1	0	3	2
1974	14	11.1	9.8	3.3	5.5	0	12	0
1975	14	12.6	11.5	2.5	4.4	0	5	2
1976	10	8.6	7.6	2.3	4.1	0	0	0
SAN BERNARDINO COUNTY								
SAN BERNARDINO								
1972	17	14.0	13.2	5.3	8.0	0	65	23
1973	15	11.5	11.2	4.1	6.5	0	8	1
1974	20	12.0	11.3	2.9	5.5	0	14	2
1975	20	11.6	10.3	2.2	4.6	0	8	2
1976	12	9.3	8.0	1.9	4.1	0	1	0

* Yearly statistics may not be representative, due to insufficient data.

CARBON MONOXIDE - ANNUAL MAXIMUM 1-HOUR, PPM

STATION	- YEAR -																					
	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
LOS ANGELES	35*	41	47 /	52 /	55*	57	60	50	42	47	38	36	40	46	39	37	30	34	29	30	40	23
AZUSA	-	-	12	27	19*	18	24	25	27	25	20	19	21	20	19	16	20	14	13	15	16	14
BURBANK	29*	43	42	39	50	56	51 /	38	68	37	40	40	42	46	54	46	32	32	27	37	36	30
WEST LOS ANGELES	-	-	-	-	-	-	-	48*	44	45	52	45	44	40	42	33	34	34	29	35	37	25
LONG BEACH	-	-	-	37	33	35	36	32 /	37	35	34	33	35	33	37	44	41	27	20	24	21	19
RESEDA	-	-	-	-	-	-	-	-	-	-	44	44	42	41	45	54	37	37	36	31	33	26
POMONA	-	-	-	-	-	-	-	-	-	-	25*	30	23	22	27	29	23	22	17	17	15	15
LENNOX	-	-	-	-	-	-	-	-	-	-	59	50	51	54	65	48	49	49	43	46	40	43
WHITTIER	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29*	31	45	32	28	26	22	23
NEWHALL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	19	19	16	14	14	11
LANCASTER	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	21	15	17	18	17	14
PASADENA	-	40	40 /	48*	42	39	36	37	40	35	41	38	36	35* /	49	42	39 /	34*	33	33	32	23
LYNWOOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40*	40	41	33
ANAHEIM	-	-	-	-	-	-	-	-	26	22	32	35	30	28	54	20	24	34	22	16	27	32
LA HABRA	-	-	-	-	-	-	-	-	-	-	-	-	26*	27	28*	-	22*	32	30	33	38	45
COSTA MESA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	26	23	31*	27
EL TORO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	8	8*	-
SAN JUAN CAPISTRANO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LAGUNA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	16	20
LOS ALAMITOS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34 /	- /	19	19*	-
SANTA ANA CANYON	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PALM SPRINGS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16* /	16*	15* /	6*	5	7*
INDIO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21*	25	22	17	16	11*
PRADO PARK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12*	10*	10	10	8
HEMET	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8*
RIVERSIDE	-	-	-	-	-	-	-	-	17	16	24	22	22	23	24	30	30	25* /	13	14	14	10
PERRIS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12*	7*	9
BANNING	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6*	7*
TEMECULA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ELSINORE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAN BERNARDINO	-	-	-	-	-	-	-	-	21	24	35	33	27	26	22	20	18	17	15	20	20	12
BARSTOW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9*	9	7	3*
REDLANDS	-	-	-	-	-	-	-	-	-	-	-	-	23*	25	20	19	18	20	17	22	18	14
VICTORVILLE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12*	9	13	8*
CHINO	-	-	-	-	-	-	-	-	-	-	-	-	14	8	6* /	-	-	-	17	35	14	12
UPLAND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	20	16	-
UPLAND-ARB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	12	12	10*
FONTANA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15*	15	11	9
BIG BEAR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4* /	10*
LAKE GREGORY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8*	10*	8
YUCAIPA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5*	10*	9

* Data may not be representative. / Station location change.

Table IV.B-XXVIII

CARBON MONOXIDE DATA SUMMARY 12-HOUR AVERAGE, PPM
METROPOLITAN ZONE

CRITERION YEAR	STATION													
	1	60	69	71	72	74	75	76	79/83	80	81	82	84	L.A. BASIN
ANNUAL MAX.														
1970	21.9	14.6	30.8	20.0	31.1	33.8	18.6	30.7	27.4	18.1	13.3	10.4	-	33.8
1971	18.3	15.1	20.8	20.2	25.7	25.4	12.2	32.4	23.8	23.1	10.3	7.6	-	32.4
1972	21.3	9.4	26.3	19.0	17.2	27.3	12.3	28.0	17.7	19.5	11.3	8.3	-	28.0
1973	18.7	9.3	20.2	15.1	16.6	24.8	12.9	28.5	18.2	16.4	9.3	7.3	27.9[a]	28.5
1974	21.5	13.1	23.3	18.6	14.8	20.6	10.9	25.9	17.7	23.0	9.3	6.9	24.7	25.9
1975	21.3	11.8	24.4	20.6	15.7	23.8	9.7	30.2	19.0	13.2	9.8	7.8	29.3	30.2
1976	14.4	8.3	24.8	13.8	12.9	18.3	11.0	24.1	9.9	11.6	5.9	7.8	20.9	24.8
ANNUAL AVG. DAILY MAX.														
1970	8.0	5.2	9.8	7.5	7.8	9.2	6.9	10.0	8.6	6.2	5.4[b]	3.3[c]	-	12.7
1971	7.1	4.9	7.6	6.0	7.1	8.0	5.9	9.5	6.1	6.2	4.7	2.5	-	10.6
1972	6.7	4.4	7.6	6.0	6.3	6.6	6.9	7.7	6.5	6.5	4.6	3.0	-	10.0
1973	6.3	3.8	7.3	5.2	4.6	5.5	6.3	7.5	6.4	5.3	4.3	2.9	11.9[a]	9.3
1974	6.3	3.6	7.7	4.2	4.5	5.3	4.4	8.0	5.9	4.5	4.0	2.0	7.1	9.6
1975	6.3	4.5	7.9	4.3	5.3	5.5	4.3	6.2	5.5	4.4	3.5	2.0	7.8	9.2
1976	5.7	3.2	6.9	4.7	5.6	5.9	5.4	5.8	4.4	4.3	2.7	2.1	7.9	8.9
NO.OF DAYS ≥ 10 PPM														
1970	92	6	140	86	83	112	64	143	89	34	5[b]	3[c]	-	206
1971	63	6	90	54	76	90	20	106	44	45	1	0	-	146
1972	59	0	83	42	43	68	33	104	42	54	3	0	-	137
1973	42	0	80	28	26	48	5	93	44	28	0	0	44[a]	116
1974	49	2	87	21	19	46	9	95	31	18	0	0	87	128
1975	55	3	97	26	34	42	0	72	46	25	0	0	93	123
1976	32	0	93	21	40	47	1	75	0	11	0	0	90	116

a) 3 months of data
b) 8 months of data
c) 6 months of data

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MFB
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CARBON MONOXIDE DATA SUMMARY - 8-HOUR AVERAGE, PPM

METROPOLITAN ZONE

CRITERION	- STATION -														L.A.
YEAR	1	60	69	71	72	74	75	76	79/83	80	81	82	84	85	BASIN
ANNUAL MAX.															
1970	23.1	15.4	35.6	23.8	33.0	41.4	21.6	35.6	29.9	20.6	(14.0)[a]	(12.4)[b]	-	-	41.4
1971	20.4	16.6	23.3	24.4	26.4	30.1	13.8	34.0	25.6	27.0	12.0	10.1	-	-	34.0
1972	24.8	10.9	27.8	22.0	19.1	31.8	14.6	33.1	21.6	24.3	12.9	10.8	-	-	33.1
1973	22.0	10.3	21.4	18.0	17.0	28.9	14.6	31.4	23.1	20.0	10.3	8.9	-	-	31.4
1974	23.3	13.9	25.6	21.3	16.1	23.6	12.6	30.3	22.0	24.9	10.1	9.0	28.4	-	30.3
1975	21.9	12.1	26.6	24.6	17.1	27.3	11.3	29.6	23.5	15.6	10.5	10.0	29.4	-	29.6
1976	17.0	10.6	26.3	17.3	14.6	20.9	11.8	25.3	12.4	14.4	6.8	9.4	23.3	(10.9)[b]	26.3
ANNUAL AVG. DAILY MAX.															
1970	8.80	5.60	10.80	8.40	8.52	10.17	7.70	11.00	9.61	6.90	(5.54)[a]	(3.61)[b]	-	-	14.02
1971	7.80	5.20	8.30	6.70	7.61	8.80	6.10	9.23	6.90	6.90	5.00	2.80	-	-	11.61
1972	7.39	4.62	8.24	6.68	6.85	7.40	7.42	8.57	7.37	7.17	4.91	3.23	-	-	11.10
1973	6.86	3.99	7.91	5.77	5.03	6.12	6.75	8.30	7.22	5.86	4.53	3.11	(13.23)[c]	-	10.28
1974	6.90	3.82	8.32	4.77	4.84	5.86	4.71	8.81	6.60	4.97	4.39	2.16	7.89	-	10.47
1975	6.99	4.75	8.48	4.83	5.71	6.06	4.68	6.82	6.28	4.73	3.79	2.17	8.51	-	10.10
1976	6.82	3.69	8.41	6.02	6.37	6.96	4.34	6.42	5.39	5.07	3.16	2.61	9.26	(6.73)[b]	10.40
NO.OF DAYS 9.0 PPM															
1970	143	23	183	126	168	148	111	177	166	72	(13)[a]	(6)[b]	-	-	261
1971	108	17	114	77	102	120	65	134	74	79	11	4	-	-	182
1972	103	7	115	72	65	98	71	131	106	93	9	1	-	-	183
1973	76	5	105	53	46	71	43	123	89	53	4	0	(54)[c]	-	160
1974	90	3	119	50	39	64	17	130	80	37	4	0	115	-	167
1975	77	17	125	42	57	61	6	96	84	43	1	1	116	-	149
1976	73	4	108	54	63	68	5	94	32	36	0	1	129	(34)[b]	149

a) 9 months of data. b) 6 months of data. c) 3 months of data.

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Table IV.B-XXX