1976

AIR QUALITY DATA

FOR ARIZONA

July 1977

ARIZONA DEPARTMENT OF HEALTH SERVICES
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1976

AIR QUALITY DATA

FOR ARIZONA

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Governor
State of Arizona

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Grand Canyon	Sandy Nichols
Hayden	Jim Montaque
Joseph City	Dennis Hunt
Kingman	Mike Charette
Lake Havasu City	Bob Anderson
Miami (S)	Norman Groves
Mohave Valley	Bob Metcalf
Montezuma Castle National Monument	Lu Snider
Morenci	Cecil McCullar
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Show Low	William Puzz
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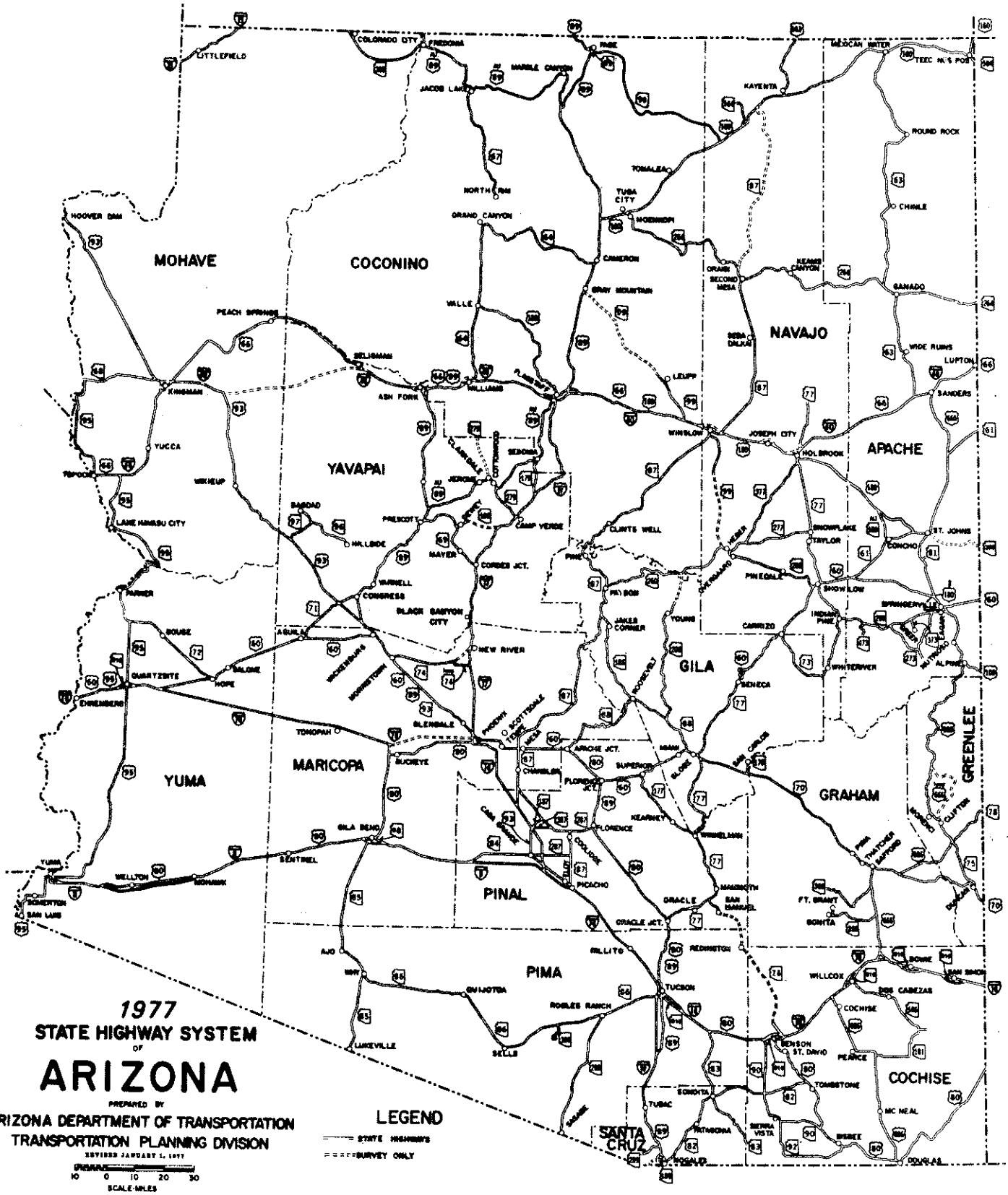
1. INTRODUCTION

Figure 1-1


MOHAVE
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NAVAJO
YAVAPAI
APACHE
GILA
GREENLEE
GRAHAM
YUMA
MARICOPA
PINAL
PIMA
COCHISE
SANTA CRUZ
1977
STATE HIGHWAY SYSTEM
OF
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PREPARED BY
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TRANSPORTATION PLANNING DIVISION
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SCALE-MILES
LEGEND
STATE HIGHWAYS
SURVEY ONLY

1. INTRODUCTION

This report is written in the same manner as the 1975 report. All 1976 air quality data regardless of source, is listed in one section. Data trends are presented in another section of this report. They are based on governmental agency data.

1.1 Cities and Towns Monitored

Arizona cities and towns monitored for air quality, the operators of the monitoring sites, and the pollutants monitored are listed in Table 1. Sites not located in a city or town are given the name of the nearest city or town that can be located on most maps. The operators of the monitoring sites are abbreviated as follows:

APS	Arizona Public Service Company
Clark	Clark County Nevada District Health Department
CONOCO	Continental Oil Company
Greenlee	Greenlee County, Air Pollution Control
Hecla	Hecla Mining Company
JCC	Joint Control Center - A Jointly owned system operated by ASARCO Incorporated and Kennecott Copper Corporation
Magma	Magma Copper Company
Maricopa	Maricopa County Department of Health Services, Bureau of Air Pollution Control
PD	Phelps Dodge Corporation
P-G	Pinal-Gila Counties Air Quality Control District
Pima	Pima County Health Department, Air Quality Control District
SCE	Southern California Edison Company
SRP	Salt River Project
State	Arizona Department of Health Services, Bureau of Air Quality Control
Ute	Ute Research Labs

Figure 1-1, a road map of Arizona, is included for reference purposes.

The Bureau would appreciate contacts from any organization which is monitoring air quality in Arizona but is not mentioned in this report.

Table 1-1

Cities and Towns Monitored

City or Town	Carbon Monoxide	Hydrocarbons (Non-Methane)	Nitrogen Dioxide	Oxidants	Particulates	Sulfur Dioxide
Ajo					PD State	PD State
Apache Junction					P-G	
Bacobi					Ute	
Bodaway					Ute	
Boys Ranch					PD	PD
Buckeye				PD	PD	PD
Bullhead City			SCE		SCE	SCE
Carefree					Maricopa	
Casa Grande					State	
Chloride					State	
Clarkdale					State	
Clifton					Greenlee	Greenlee
Coolidge			PD	PD	PD	PD
Corona de Tucson					Pima	
Davis Dam			SCE State		SCE State	SCE State
Douglas					PD State	PD State
Eagar					State	
Flagstaff	State				State	
Florence		CONOCO			CONOCO	
			State		State	State
Glendale	Maricopa			Maricopa	Maricopa	Maricopa
Grand Canyon			State		State	State
Green Valley					PD Pima	PD
Gu Komelik					Hecla	

Table 1-1

Cities and Towns Monitored

City or Town	Carbon Monoxide	Hydrocarbons (Non-Methane)	Nitrogen Dioxide	Oxidants	Particulates	Sulfur Dioxide
Hayden					State	JCC State
Hereford					PD	PD
Joseph City			APS		APS State	APS
Kaibeto					Ute	
Katherine's Landing			SCE		Clark SCE	SCE
Kearney						JCC
Kingman					State	
Lake Havasu City					State	
Lee's Ferry					Ute	
Mammoth					P-G	Magma
Maricopa	PD	PD	PD	PD	PD	PD
Meadows						JCC
Mesa	Maricopa				Maricopa	Maricopa
Mescal					PD	PD
Miami					State	State
Montezuma Castle National Monument					State	
Morenci					PD State	PD State
Nogales					State	
Oracle						Magma
Oracle Junction					PD	PD
Organ Pipe Cactus National Monument					State	
Page			SRP State	SRP	SRP State	SRP State
Paul Spur					State	
Payson					P-G	

Table 1-1

Cities and Towns Monitored

City or Town	Carbons Monoxide	Hydrocarbons (Non-Methane)	Nitrogen Dioxide	Oxidants	Particulates	Sulfur Dioxide
Petrified Forest National Park			APS		APS	APS
Phoenix	Maricopa PD State	Maricopa PD State	Maricopa PD State	Maricopa PD State	Maricopa PD State	Maricopa PD State
Piute					Ute	
Prescott					State	
Redington						Magma
Redrock					P-G Ute	
Rillito					State	
Riviera			SCE		SCE	SCE
Roosevelt Dam					P-G	
Safford					State	
St. David			State			
San Manuel					Magma State	Magma State
Scottsdale	Maricopa		Maricopa	Maricopa	Maricopa	
Show Low					State	
Sierra Vista					State	
Stanfield					P-G	
Superior					State	
Teec Nos Pos					Ute	
Topack					State	
Tsa Schizzi					Ute	
Tuba City					Ute	
Tucson	PD Pima	PD Pima	PD Pima State	PD Pima	PD Pima State	PD Pima State

Table 1-1

Cities and Towns Monitored

City or Town	Carbon Monoxide	Hydrocarbons (Non-Methane)	Nitrogen Dioxide	Oxidants	Particulates	Sulfur Dioxide
Twin Butte					State	State
Vail					PD	PD
Winkelman						JCC
Wintersburg					APS	
Yuma	State			State	State	

2. 1976 DATA

Table 2-1
Abbreviations

General

NA	Not applicable
NR	Not reported
IDR	Insufficient data recovery
SSP	Short sampling period, usually associated with annual means
No response	Operator did not respond to request for data

Operators

JCC	Joint Control Center - A jointly owned system operated by ASARCO Incorporated and Kennecott Copper Corporation
APS	Arizona Public Service Company
Clark	Clark County Nevada District Health Department
CONOCO	Continental Oil Company
Greenlee	Greenlee County, Air Pollution Control
Hecla	Hecla Mining Company
Magma	Magma Copper Company
Maricopa	Maricopa County Department of Health Services, Bureau of Air Pollution Control
PD	Phelps Dodge Corporation
Pima	Pima County Health Department, Air Quality Control District
P-G	Pinal-Gila Counties Air Quality Control District
SCE	Southern California Edison Company
SRP	Salt River Project
State	Arizona Department of Health Services, Bureau of Air Quality Control
Ute	Ute Research Laboratory

Equipment Type

Carbon Monoxide	
NDIR	Non-dispersive infrared, continuous
GC	Gas chromatograph, continuous
Hydrocarbons - Non-Methane	
GC	Gas chromatograph, continuous
Nitrogen Dioxide	
Color	Colorimetric, continuous
Chem	Chemiluminescent, continuous
Bubbler	Bubbler sampler, 24-hour, arsenite method
Oxidants	
Coul	Coulometric, continuous
Color	Colorimetric, continuous
Chem	Chemiluminescent, continuous
UV	Ultraviolet absorption, continuous
Particulates	
Hi-vol	High-volume air sampler, 24-hour
Sulfur Dioxide	
Coul	Coulometric, continuous
Cond	Conductimetric, continuous
Flame	Flame photometric, continuous total sulfur
Bubbler	Bubbler sampler, 24-hour, pararosaniline method
Color	Colorimetric, continuous
Spec	Spectrometric, continuous

Table 2-2

1976 Carbon Monoxide Data Summary
(In mg/m^3)

Nearest City or Town	Site Location	Operator	Method	Annual Averages	1-Hr. Avgs. Max.	1-Hr. Avgs. 2nd High	8-Hr. Avgs. Max.	8-Hr. Avgs. 2nd High	Number of Samples
Flagstaff	216 N. Agassiz Street	State	NDIR	1.4	17	17	6	6	6006
Glendale	6000 W. Olive Ave.	Maricopa	NDIR	1.4	17	14	9	8	7326
Mesa	3rd Place & Center	Maricopa	NDIR	2.2	29	27	17	16	6987
Maricopa	Approx. 6.5 mi. N83°W of Maricopa	PD	G.C.	<1	2	1	1	1	7169
Phoenix	4732 S. Central	Maricopa	NDIR	1.8	19	17	10	9	6632
Phoenix	8531 N. 6th St.	Maricopa	NDIR	1.9	27	23	11	11	6319
Phoenix	1845 E. Roosevelt	Maricopa	G.C.	3.0	29	28	21	21	7363
Phoenix	15 E. Monroe, Valley Bank Annex	PD	G.C.	3	41	41	23	21	8464
Phoenix	1740 W. Adams	State	G.C.	3.0	35	32	25	23	7619
Scottsdale	2857 N. Miller Rd.	Maricopa	NDIR	1.8	32	30	14	13	7452
Scottsdale	13665 N. Scottsdale Rd.	Maricopa	NDIR	.9	7	7	4	4	7609
Tucson	151 West Congress	Pima	NDIR	1.9	20	19	12	10	8695
Tucson	22nd/Craycroft	Pima	NDIR	1.2	16	16	7	7	7640
Tucson	22nd/Alvernon	Pima	NDIR	3.8	31	31	17	15	8610
Tucson	32 N. Stone, Home Federal Savings Tower, 3rd Floor	PD	G.C.	2	17	16	12	10	8120
Yuma	201 S. Second Ave.	State	NDIR	.8	7	7	5	4	3020

State and Federal Standards: 1-Hr. Avg.: 40 mg/m^3 8-Hr. Avg: 10 mg/m^3

Table 2-3

1976 Hydrocarbons (Non-Methane) Data Summary
(in ug/m^3)

Nearest City or Town	Site Location	Operator	Method	Annual Average	3-Hr. Avgs. (6-9 a.m.) Max.	3-Hr. Avgs. (6-9 a.m.) 2nd High	Number of 1-Hr. Samples
Maricopa	Approx. 6.5 mi., N83°W of Maricopa	PD	G.C.	11	133	90	7110
Phoenix	1845 E. Roosevelt	Maricopa	G.C.	629	3149	2886	6290
Phoenix	15 E. Monroe	PD	G.C.	513	4017	3406	8466
Phoenix	1740 W. Adams	State	G.C.	*	6060	5500	*
Tucson	32 N. Stone	PD	G.C.	230	2293	1354	8114
Tucson	151 West Congress	Pima	G.C.	116	820	576	7030

* Initial emphasis in data reduction placed on 3-Hr. avgs., 6-9 a.m.

State and Federal Standard: 3-Hr. Avg. (6-9 a.m.): 160 ug/m^3

Table 2-4

1976 Nitrogen Dioxide Data Summary
(in ug/m^3)

Nearest City or Town	Site Location	Operator	Method	Ann. Avg.	Maximum 1-Hr.	Maximum 24-Hr.	Number of Samples 1-Hr.	Number of Samples 24-Hr.
Bullhead City	224 Main Street	SCE	Bubbler	< 16	NA	39	0	60
Coolidge	2 mi. N. of Coolidge	PD	Chem.	2[a]	17	7	4370	N.A.
Davis Dam	Dri Mountain (1 mi. NE)	SCE	Bubbler	< 10	NA	14	0	57
Davis Dam	Tokyo Bay (5 mi. N)	SCE	Bubbler	< 13	NA	22	0	31
Davis Dam	U.S. Bureau of Reclamation	State	Bubbler	14	NA	46	NA	58
Florence	22nd St. & Willow	State	Bubbler	17	NA	24	NA	45
Grand Canyon	Grand Canyon Village	State	Bubbler	19	NA	34	NA	37
Joseph City	Laboratory	APS	Bubbler	6	NA	72	NA	293
Joseph City	Woodruff Substation, 16 mi. SE of Joseph City	APS	Bubbler	3	NA	47	NA	295
Joseph City	Leroux Substation, 9.5 mi. SE of Joseph City	APS	Bubbler	3	NA	42	NA	296
Joseph City	3.25 mi. SE of Joseph City	State	Bubbler	18	NA	43	NA	32
Katherine Landing	Water Treatment Area	SCE	Bubbler	< 12	NA	19	0	62
Maricopa	Approx. 6.5 mi. N83°W of Maricopa	PD	Chem.	15[b]	150	61	7260	NA
Page	Airport	SRP	Bubbler	9	NA	33	NA	68
Page	Airport	State	Bubbler	12	NA	24	NA	40
Petrified Forest	National Park Visitor Center	APS	Bubbler	3	NA	42	NA	292
Phoenix	1845 E. Roosevelt	Maricopa	Chem.	60	452	232	7167	NA
Phoenix	15 E. Monroe, Valley Bank Annex, 3rd Floor	PD	Chem.	73	564	212	8557	NA
Phoenix	1740 W. Adams	State	Color	108[c] [d]	720	307	1954	NA
Phoenix	1740 W. Adams	State	Chem.	75	320	135	1550	NA
Phoenix	1740 W. Adams	State	Bubbler	82	NA	199	NA	38
Phoenix	1845 E. Roosevelt	State	Bubbler	83	NA	181	NA	51

(a) July-Dec. 1976
(b) Feb.-Dec. 1976
(c) For period 1/76 to 4/76
(d) For period 10/76 to 12/76

Table 2-4 (cont'd)

1976 Nitrogen Dioxide Data Summary
(in ug/m^3)

Nearest City or Town	Site Location	Operator	Method	Ann. Avg.	Maximum 1-Hr.	Maximum 24-Hr.	Number of Samples 1-Hr.	Number of Samples 24-Hr.
Rivera	Camera Site	SCE	Bubbler	<11	NA	19	0	60
Rivera	Fort Mohave (4 mi. S)	SCE	Bubbler	<13	NA	54	0	47
Rivera	Riverbend	SCE	Bubbler	<14	NA	41	0	63
Scottsdale	2857 N. Miller Rd.	Maricopa	Chem.	41	301	128	3656	NA
St. David	1.8 mi. SW of St. David	State	Bubbler	27[e]	NA	59	NA	17
St. David	3.5 mi. W of St. David	State	Bubbler	13[f]	NA	29	NA	36
Tucson	632 W. Flores	PD	Chem.	44	282	108	8554	NA
Tucson	32 N. Stone, Home Federal Savings Tower, 6th Floor	PD	Chem.	45	470	128	8243	NA
Tucson	151 West Congress	Pima	Chem.	51	357	150	8608	NA
Tucson	22nd/Craycroft	Pima	Color.	50	244	112	7900	NA
Tucson	University of Arizona	State	Bubbler	47	NA	127	NA	49

(e) For period 1/76 to 3/76 and 9/76 to 12/76
(f) For period 4/76 to 7/76

State and Federal Standard: $\frac{\text{Ann. Avg}}{100\ \text{ug/m}^3}$

Table 2-5

1976 Oxidants Data Summary
(in ug/m^3)

Nearest City or Town	Site Location	Operator	Method	Annual Avgs.	1-Hr. Avgs. Max.	1-Hr. Avgs. 2nd High	Number of Samples
Buckeye	Approx. 30 mi. W. of Phoenix	PD	Coul	31	165	157	8059
Coolidge	2 mi. N. of Coolidge	PD	Coul	40	135	128	8131
Glendale	6000 W. Olive Ave.	Maricopa	UV	21	243	224	5719
Maricopa	Approx. 6.5 mi. N83°W of Maricopa	PD	Coul	40	196	157	7858
Page	Airport	SRP	Bubbler	30	63	62	117
Phoenix	4732 S. Central	Maricopa	UV	18	224	159	6398
Phoenix	1845 E. Roosevelt	Maricopa	UV	16	259	240	7116
Phoenix	8531 N. 6th St.	Maricopa	UV	18	196	196	6155
Phoenix	15 E. Monroe	PD	Coul	29	190	173	8578
Phoenix	1740 W. Adams	State	UV	41	265	245	8297
Scottsdale	2857 N. Miller Rd.	Maricopa	UV	14	130	116	6274
Tucson	32 N. Stone	PD	Coul	56	194	190	7663
Tucson	151 West Congress	Pima	UV	39	216	216	8700
Tucson	22nd/Craycroft	Pima	UV	39	176	176	7030
Yuma	201 S. Second	State	UV	47	224	193	7496

State and Federal Standard: $\frac{\text{1-Hr. Avg.}}{160\ \text{ug/m}^3}$

Table 2-6 (cont'd)
1976 Particulates Data Summary
High Volume Sampler
(in ug/m^3)

Nearest City or Town	Site Location	Operator	Annual Geom. Mean	24-Hr. Avg. Max.	24-Hr. Avg. 2nd High	Number of Samples
Flagstaff	Birch & San Francisco	State	79	212	151	58
Florence	2½ Miles NNW of Florence	Conoco	67	780	457	109
Florence	22nd St. & Willow	State	107	246	224	43
Glendale	6000 W. Olive Ave.	Maricopa	101	342	248	50
Grand Canyon	Grand Canyon Village	State	14	69	58	36
Green Valley	245 W. Esperanza	Pima	54	130	121	50
Green Valley	2 mi. N. of Townsite	PD	52	182	153	181
Gu Komelik	3 miles W. of Hecla Mining Co.	Hecla	55	637	38	6
Hayden	Old Town Jail, Canyon Drive	State	119	476	423	46
Hereford	11 miles W. of Bisbee	PD	35	270	254	361
Joseph City	Laboratory	APS	53	531	406	291
Joseph City	Leroux Substation, 9.5 mi. SE of Joseph City	APS	36	290	227	294
Joseph City	Woodruff Substation, 16 mi. SE of Joseph City	APS	30	364	152	292
Joseph City	3.25 miles SE of Joseph City	State	46	260	173	38
Kaibeto[a]	NR	Ute	43	253	216	NR
Katherine's Landing	NR	CCHD	55	212	172	58
Katherine's Landing	Water Treatment Area	SCE	35	107	106	63
Kingman	305 W. Beale Street	State	56	126	111	54
Lake Havasu	Lake Havasu Community Hosp.	State	37	154	103	49
Lee's Ferry[a]	NR	Ute	18	481	45	NR
Mammoth	Court Building	P-G	74	105	104	11
Maricopa	Approx. 6.5 mi. N83°W of Maricopa	PD	92	1949	552	177
Mesa	3rd Place & Center	Maricopa	91	264	233	57
Mescal	El Paso Natural Gas Co. Station, 9 mi. West of Benson	PD	59	225	211	181
Miami	Jones Ranch	State	38	140	111	56
Montezuma Castle	Park Maint. Building	State	30	64	59	53
Morenci	Cadillac Point - 5500, 2.75 mi. N51°W of smelter stack	PD	41	150	130	355
Morenci	Clifton Fina, 1.75 mi. S69°E of smelter stack	PD	48	160	158	351
Morenci	East Plantsite, 2.5 mi. S35°E of smelter stack	PD	51	965	307	347

(a) For period Nov. 1, 1976 to Jan 31, 1977

Table 2-6

1976 Particulates Data Summary
High Volume Sampler
(in ug/m^3)

Nearest City or Town	Site Location	Operator	Annual Geom. Mean	24-Hr. Avg. Max.	24-Hr. Avg. 2nd High	Number of Samples
Ajo	Camelback Mtn., Approx. 1.2 mi. N88°W from smelter stack	PD	39	354	330	355
Ajo	Oxidation Pond, approx. 1.2 mi. N8°E from smelter stack	PD	103	9249	4260	359
Ajo	South Tailings Dam, approx. 1.3 mi. N85°E from smelter stack	PD	86	6903	2805	354
Ajo	Town Square, approx. 0.5 mi. N54°W from smelter stack	PD	101	3325	940	357
Ajo	AZ DOT, Well Rd.	State	92	1107	317	56
Apache Junction	Pinal County Maintenance Yard	P-G	72	141	139	12
Bacobi[a]	NR	Ute	20	155	150	NR
Bodaway[a]	NR	Ute	38	129	112	NR
Boys Ranch	General Motors Proving Grounds	PD	94	912	475	185
Buckeye	Approx. 30 mi. W. of Phoenix	PD	178	849	788	180
Bullhead City	224 Main Street	SCE	99	660	378	62
Casa Grande	401 N. Marshall Rd.	State	122	321	279	59
Chloride	Duval Mineral Park Mine	State	57	134	98	25
Clarkdale	High School Football Stadium	State	48	139	121	49
Clifton	Greenlee Court House	Greenlee	43	142	133	61
Copper Mine[a]	NR	Ute	23	90	63	NR
Coolidge	2 mi. N. of Coolidge	PD	97	560	463	176
Corona de Tucson	15 mi. SE of Tucson	Pima	28	98	57	53
Davis Dam	Dri Mountain (1 mi. NE)	SCE	26	104	85	60
Davis Dam	Tokyo Bay (5 mi. N)	SCE	58	237	206	34
Davis Dam	U.S. Bureau of Reclamation	State	38	92	90	56
Douglas	0.75 mi. N15°E of smelter stack	PD	65	240	213	358
Douglas	1012 G. Avenue (Mercantile)	PD	92	456	257	354
Douglas	Pirtleville, 1.3 mi. N22.5°E of smelter stack	PD	69	463	386	358
Douglas	U.S. 666, 2 km NNE of stack	State	43	129	111	45
Douglas	15th Street Park	State	74	309	169	46
Eagar	Town Hall	State	73	157	132	53

(a) For period Nov 1, 1976 to Jan 31, 1977

Table 2-6 (cont'd)
1976 Particulates Data Summary
High Volume Sampler
(in ug/m^3)

Nearest City or Town	Site Location	Operator	Annual Geom. Mean	24-Hr. Avg. Max.	24-Hr. Avg. 2nd High	Number of Samples
Morenci	Fairbanks, approx. 2.1 mi. S26°E of smelter stack	PD	77	817	504	324
Morenci	Stargo, 1.5 mi. N63°W of smelter stack	PD	47	171	141	347
Morenci	Stargo, Highway 666	State	50	100	98	57
Nogales	Nogales High School - Plum Street	State	122	515	338	34
Oracle Junction	Near Oracle Junction, approx. 21 mi. North of Tucson	PD	29	184	127	168
Organ Pipe	Visitor's Center	State	33	139	83	49
Page	Airport	SRP	47	556	394	77
Page	Airport	State	41	156	151	42
Paul Spur	NACO Highway	State	80	331	306	39
Payson	Gila Court Building	P-G	278	549	425	12
Petrified Forest	National Park, Visitor Center	APS	24	178	103	292
Phoenix	1845 E. Roosevelt	Maricopa	121	284	222	55
Phoenix	4732 S. Central	Maricopa	120	235	214	51
Phoenix	8531 N. 6th Street	Maricopa	127	318	279	56
Phoenix	241 N. Central, Valley Bank Center, Roof	PD	71	448	339	364
Phoenix	15 E. Monroe, Valley Bank Annex, 3rd Floor	PD	104	483	449	366
Phoenix	1740 W. Adams	State	151	346	297	50
Phoenix	1845 E. Roosevelt	State	98	239	158	42
Piute[a]	NR	Ute	24	193	134	NR
Prescott	500 S. Marina Street	State	50	192	121	61
Red Rock[a] (Navajo Co.)	NR	Ute	26	128	125	NR
Red Rock (Pinal Co.)	Marana Air Park	P-G	63	138	93	8
Rillito	T G & E North Loop Substation	State	68	157	140	27
Rillito	Miller Market	State	112	280	253	48
Rivera	Camera Site	SCE	43	118	110	63
Rivera	Fort Mohave (4 mi.S)	SCE	64	314	179	49
Rivera	Riverbend	SCE	93	615	334	65
Roosevelt	Ranger Station	P-G	41	77	55	10
Safford	521 10th Ave.	State	158	418	369	51
San Manuel	Golf Course, 3 km WNW of Smelter Stacks	Magma	35	110	87	56
San Manuel	LDS Church	State	43	108	79	58
Scottsdale	2857 N. Miller Rd.	Maricopa	124	341	237	57

(a) For period Nov. 1, 1976 to Jan. 31, 1977

Table 2-6 (cont'd)
1976 Particulates Data Summary
High Volume Sampler
(in ug/m^3)

Nearest City or Town	Site Location	Operator	Annual Geom. Mean	24-Hr. Avg. Max.	24-Hr. Avg. 2nd High	Number of Samples
Scottsdale	13665 N. Scottsdale Rd.	Maricopa	118	295	274	57
Show Low	City Hall, Deuce of Clubs	State	61	255	216	55
Sierra Vista	1st Street & Bartow Drive	State	59	209	148	51
Stanfield	Court Building	P-G	197	345	328	14
Superior	AZ DOT, 951 Main Street	State	101	257	255	55
Teec Nos Pos[a]	NR	Ute	34	473	171	NR
Topock	Mohave Valley - Bermuda Water Company	State	163	3447	1495	49
Tsa Schizzi[a]	NR	Ute	17	57	36	NR
Tuba City[a]	NR	Ute	31	102	91	NR
Tucson	151 W. Congress	Pima	71	262	205	165
Tucson	Alvernon/Ft. Lowell	Pima	168	485	463	56
Tucson	1970 W. Ajo Way	Pima	76	311	159	54
Tucson	Davis Monthan AFB	Pima	72	264	151	60
Tucson	Florence Hwy/McGee Road	Pima	54	161	104	59
Tucson	Golf Links - Harrison	Pima	57	116	114	52
Tucson	Hughes Access - Nogales Highway	Pima	51	195	135	59
Tucson	7920 E. Tanque Verde	Pima	59	121	116	59
Tucson	1019 W. Prince	Pima	94	200	175	48
Tucson	Orange Grove - El Camino de Terra	Pima	85	285	229	59
Tucson	7901 E. Scarlett	Pima	93	228	199	61
Tucson	1810 S. 6th Avenue	Pima	118	286	231	59
Tucson	32 N. Stone, Home Fed. Savings Tower, Roof	PD	57	202	187	344
Tucson	University of Arizona	State	73	163	145	55
Twin Butte	Duval Sierrita Mine - Change room	State	162	571	521	57
Twin Butte	Duval Sierrita Mine - Water tower	State	310	1018	784	36
Vail	El Paso Natural Gas Co. Station	PD	35	154	138	175
Wintersburg[b]	Palo Verde Nuclear Generating Station Site	APS	82	4709	2178	194
Yuma	201 S. Second Ave.	State	142	334	298	61

(a) For period Nov. 1, 1976 to Jan 31, 1977
(b) For period Jan. 1 - Sept. 23, 1976

STANDARDS:

	Annual Geometric Mean	24-Hour Average
State	75 ug/m^3	150 ug/m^3
Federal Primary	75 ug/m^3	260 ug/m^3
Federal Secondary	60 ug/m^3	150 ug/m^3

Table 2-7

1976 Sulfur Dioxide Data Summary
(in ug/m^3)

Site	Location	Operator	Method	Ann. Avg.	3-Hr. Avgs. Max.	3-Hr. Avgs. 2nd High	24-Hr. Avgs. Max.	24-Hr. Avgs. 2nd High	No. of Samples 1-Hr.	No. of Samples 24-Hr.
Ajo	Town Square, approx. 0.5 mi, N54°W from smelter stack	PD	Coul	12	1227	1039	275	251	8480	NA
Ajo	Oxidation Pond, approx. 1.2 mi, N8°E from smelter stack	PD	Coul	33	1493	1312	801	484	8403	NA
Ajo	S. Tailings Dam, approx. 1.3 mi, N85°E from smelter stack	PD	Coul	11	2479	1160	615	296	8082	NA
Ajo	Camelback Mtn., Approx. 1.2 mi, N88°W from smelter stack	PD	Coul	7	1712	744	327	319	8583	NA
Ajo	Gibson, approx. 1.6 mi, N63°W from smelter stack	PD	Coul	8[a]	983	536	135	117	3000	NA
Ajo	Shelton, approx. 2.1 mi, N37°W from smelter stack	PD	Coul	4[b]	417	346	95	52	2835	NA
Ajo	Miller, approx. 4.0 mi, N14°W from smelter stack	PD	Coul	1[a]	166	163	21	13	2914	NA
Ajo	Well No. 1, approx. 6.2 mi, N9°E from smelter	PD	Coul	1[a]	195	89	24	11	3027	NA
Ajo	AZ DOT Well Rd.	State	Coul	21	1367	1242	356	345	7388	NA
Boys Ranch	General Motors Proving Grounds	PD	Coul	6	94	113	40	32	7946	NA

(a) Aug - Dec. 1976
(b) Sept. - Dec. 1976

Table 2-7 (cont'd)
1976 Sulfur Dioxide Data Summary
(in ug/m^3)

Site	Location	Operator	Method	Ann. Avg.	3-Hr. Avgs. Max.	3-Hr. Avgs. 2nd High	24-Hr. Avgs. Max.	24-Hr. Avgs. 2nd High	No. of Samples 1-Hr.	No. of Samples 24-Hr.
Buckeye	Approx. 30 mi. West of Phoenix	PD	Coul	4	114	67	27	23	7967	NA
Bullhead City	224 Main St.	SCE	Bubbler	<13	68	66	<13	<13	NA	60
Clifton	Court House	Greenlee	Coul	11	464	401	32	28	8712	NA
Coolidge	2 mi. North of Coolidge	PD	Coul	8	269	233	155	117	7243	NA
Davis Dam	Tokyo Bay (5 mi. N)	SCE	Bubbler	<13	100	86	<13	<13	NA	34
Davis Dam	Dri Mtn. (1 mi. NE)	SCE	Bubbler	<13	107	100	<13	<13	NA	57
Davis Dam	U.S. Bureau of Reclamation	State	Bubbler	6	NA	NA	33	18	NA	52
Douglas	North, 0.75 mi. N15°E of Smelter Stack	PD	Coul	39	1677	1415	430	282	8729	NA
Douglas	Curtis, approx. 2.65 mi, N32°W of smelter stack	PD	Coul	31	1546	1258	261	228	8704	NA
Douglas	Fairgrounds, approx. 3 mi. N55°E of smelter stack	PD	Coul	17	1188	1048	181	164	8754	NA
Douglas	Fir, approx. 14 mi. N47°E of smelter stack	PD	Coul	33	1100	1074	247	205	8741	NA
Douglas	1012 G. Avenue (Mercantile)	PD	Coul	31	1768	1319	382	258	8754	NA
Douglas	Martin, approx. 4.2 mi. N20°E of smelter stack	PD	Coul	14	1039	900	183	153	8737	NA

Table 2-7 (cont'd)
1976 Sulfur Dioxide Data Summary
(in ug/m^3)

Site	Location	Operator	Method	Ann. Avg.	3-Hr. Avgs. Max.	3-Hr. Avgs. 2nd High	24-Hr. Avgs. Max.	24-Hr. Avgs. 2nd High	No. of Samples 1-Hr.	No. of Samples 24-Hr.
Hereford	11 mi. West of Bisbee	PD	Coul	8	581	491	173	150	8442	NA
Joseph City	Laboratory	APS	Bubbler/ flame[c]	0	35	35	21	10	4977	295
Joseph City	Leroux Substation 9.5 mi. SE of Joseph City	APS	Bubbler/ flame[c]	0	25	25	27	9	96	297
Joseph City	Woodruff Substation, 16 mi. SE of Joseph City	APS	Bubbler/ flame[c]	0	35	35	27	21	4718	294
Joseph City	3.25 mi SE of Joseph City	State	Bubbler	6	NA	NA	19	17	NA	39
Katherine Landing	Water Treatment Area	SCE	Bubbler	< 13	123	97	< 13	< 13	NA	62
Kearny	Crescent Ranch - Hy 177	JCC	Coul	34	1823	1773	577	220	8393	NA
Kearny	Rear of 304 Hartford	JCC	Coul	34	1099	1052	336	222	8466	NA
Mammoth	Court house, 11.8 km N of smelter stacks	Magma	Coul	6	763	693	95	90	8455	NA
Maricopa	Approx. 6.5 mi. N83°W of Maricopa	PD	Coul	3	226	81	63	42	8050	NA
Meadows	Approx. ½ mi. South of the junction of Hgwy 77 and 177	JCC	Coul	28	1797	1792	240	226	8293	NA
Mesa	3rd Place & Center	Maricopa	Coul	7	NA	NA	40	36	5965	NA
Mescal	El Paso Natural Gas Co. Station 9 mi W of Benson	PD	Coul	1	111	93	35	27	6804	NA

(c) Bubbler data was reported for annual and 24-Hr. averages and flame data was reported for 3-Hr. average.

Table 2-7 (cont'd)
1976 Sulfur Dioxide Data Summary
(in ug/m^3)

Site	Location	Operator	Method	Ann. Avg.	3-Hr. Avgs. Max.	3-Hr. Avgs. 2nd High	24-Hr. Avgs. Max.	24-Hr. Avgs. 2nd High	No. of Samples 1-Hr.	No. of Samples 24-Hr.
Douglas	Northwest, approx. 1.22 mi. N30°W of smelter stack	PD	Coul	51	1406	1231	262	243	8738	NA
Douglas	Pirtleville, 1.3 mi N22.5°E of smelter stack	PD	Coul	43	1511	1214	308	289	8729	NA
Douglas	2 Km. NNW of Stack	State	Coul	43	1233	1200	221	196	5373	NA
Douglas	U.S. 666, 2 km NNE of stack	State	Coul	39	1767	1517	377	232	6654	NA
Florence	22nd St. & Willow	State	Bubbler	16	NA	NA	108	90	NA	47
Glendale	6000 W. Olive Ave.	Maricopa	Coul	10	NA	NA	67	41	5364	NA
Grand Canyon	Grand Canyon Village	State	Bubbler	6	NA	NA	17	13	NA	39
Green Valley	2 mi N of townsite	PD	Coul	<1	62	49	31	14	8462	NA
Hayden	Approx. 1 mi. North of the junction of Highway 77 and 177.	JCC	Coul	135	4069	3375	752	585	8655	NA
Hayden	Hayden Fire Station, 640 Canyon Drive	JCC	Coul	105	2710	2678	834	615	8402	NA
Hayden	Hayden Jct. - Hy. 177	JCC	Coul	57	1754	1533	344	337	8570	NA
Hayden	Montgomery Ranch	State	Coul	127	2167	2133	724	597	8013	NA
Hayden	Montgomery Ranch	JCC	Coul	183	3275	3214	1058	862	8443	NA
Hayden	Old Town Jail - Canyon Drive	State	Coul	113	3350	2908	940	581	8125	NA

Table 2-7 (cont'd)
1976 Sulfur Dioxide Data Summary
(in ug/m^3)

Site	Location	Operator	Method	Avg.	3-Hr. Avgs. Max.	3-Hr. Avgs. 2nd High	24-Hr. Avgs. Max.	24-Hr. Avgs. 2nd High	No. of Samples 1-Hr.	No. of Samples 24-Hr.
Miami	Jones Ranch	State	Coul	56	4450	3950	767	577	8044	NA
Miami	Lower Miami School	State	Coul	21	1767	1642	367	347	7833	NA
Morenci	Cadillac Point -5500 1.75 mi, N51°W of smelter stack	PD	Coul	105	8079	5170	2131	1128	8518	NA
Morenci	Clifton Fina, 1.75 mi. S69°E of smelter stack	PD	Coul	34	1589	1526	510	427	8214	NA
Morenci	East Plantsite, 2.5 mi, S35°E of smelter stack	PD	Coul	7	966	552	140	88	8438	NA
Morenci	Metcalf, approx. 3.9 mi. N28°W from smelter stack	PD	Coul	83	2472	2367	736	692	8221	NA
Morenci	Oroville, approx. 2.75 mi N48°E of smelter stack	PD	Coul	9	1984	591	313	96	8349	NA
Morenci	Silver Basin, approx. 1.9 mi S51°W from smelter stack	PD	Coul	282[d]	2375	2088	814	743	570	NA
Morenci	Stargo, 1.5 mi. N63°W of smelter stack	PD	Coul	109	4555	3989	1091	910	8538	NA
Morenci	Eagle Creek Road, approx. 4.75 mi. S84°W of smelter stack	PD	Coul	16	1003	838	173	137	8257	NA
Morenci	Fairbanks, approx. 2.1 mi. S26°E of smelter stack	PD	Coul	13	1262	935	187	143	8004	NA

(d) Jan. 1976

Table 2-7 (cont'd)
1976 Sulfur Dioxide Data Summary
(in ug/m^3)

Site	Location	Operator	Method	Ann. Avg.	3-Hr. Avgs. Max.	3-Hr. Avgs. 2nd High	24-Hr. Avgs. Max.	24-Hr. Avgs. 2nd High	No. of Samples 1-Hr.	No. of Samples 24-Hr.
Morenci	Stargo, Hwy 666	State	Coul	130	11450	7650	2739	1213	8366	NA
Morenci	U.S. 666 4.5 km NW of stack	State	Coul	108	6925	4833	1211	947	7651	NA
Oracle	New Court house, 13.2 km W of smelter stacks	Magma	Coul	12	846	736	189	123	8405	NA
Oracle Jct.	Near Oracle Junction, app. 21 mi. North of Tucson	PD	Coul	7	796	310	171	120	7713	NA
Page	Airport	SRP	Bubbler	1	NA	NA	35	16	NA	69
Page	Airport	State	Bubbler	6	NA	NA	35	20	NA	56
Petr. Forest	National Park Visitor Center	APS	Bubbler/ flame[c]	0	30	30	18	10	1971	297
Phoenix	4732 S. Central	Maricopa	Coul.	13[e]	NA	NA	64	61	3773	NA
Phoenix	1845 E. Roosevelt	Maricopa	Coul.	7	NA	NA	57	43	5697	NA
Phoenix	241 N. Central, Valley Bank Center, 29th Floor	PD	Coul	8	113	93	50	39	8256	NA
Phoenix	15 E. Monroe, Valley Bank Annex, 3rd Floor	PD	Coul	8	85	79	57	40	8286	NA
Phoenix	1740 W. Adams	State	Bubbler	7	NA	NA	27	23	NA	31
Phoenix	1845 E. Roosevelt	State	Bubbler	7	NA	NA	29	22	NA	51
Redington	East of main ranch, 25.2 km SSE of smelter stacks	Magma	Coul	6	517	439	145	100	8285	NA
Rivera	Riverbend	SCE	Bubbler	<13	81	71	<13	<13	NA	63

(c) Bubbler data was reported for annual and 24-hr. averages and flame data was reported for 3-Hr. average.
(e) From Jan. 6, 1976 to Aug. 9, 1976

Table 2-7 (cont'd)
1976 Sulfur Dioxide Data Summary
(in ug/m^3)

Site	Location	Operator	Method	Ann. Avg.	3-Hr. Avgs. Max.	3-Hr. Avgs. 2nd High	24-Hr. Avgs. Max.	24-Hr. Avgs. 2nd High	No. of Samples 1-Hr.	No. of Samples 24-Hr.
Rivera	Camera Site	SCE	Bubbler	< 13	NA	NA	< 13	< 13	NA	61
Rivera	Ft. Mohave (4 mi. S)	SCE	Bubbler	<13	76	73	< 13	< 13	NA	48
San Manuel	Upper Shopping Center, 2 km SSW of smelter stacks	Magma	Coul	45	2901	2006	455	312	8714	NA
San Manuel	Golf Course, 3 km WNW of smelter stacks	Magma	Coul	75	2773	2108	467	423	8699	NA
San Manuel	East Peppersauce Wash, 5.8 km ESE of smelter stacks	Magma	Coul	17	888	805	215	144	8310	NA
San Manuel	LDS Church	State	Coul	42	3117	2083	471	316	8002	NA
San Manuel	Mine site, 10.5 km NW of smelter stacks	Magma	Coul	42	2434	1910	398	345	8568	NA
Tucson	32 N. Stone, Home Federal Tower, 6th Floor	PD	Coul	7	113	108	47	45	8013	NA
Tucson	151 W. Congress	Pima	Flame	7	183	157	60	55	7990	NA
Tucson	Florence Hwy/McGee Rd.	Pima	Coul	8	367	349	146	129	6325	NA
Tucson	Sahuaro Monument	Pima	Coul	4	131	131	87	81	7020	NA
Tucson	1721 N. Tanque Verde Loop	Pima	Coul	6	262	218	111	53	7060	NA
Tucson	22nd/Craycroft	Pima	Coul	5	140	139	40	39	7990	NA
Tucson	University of Arizona	State	Bubbler	6	NA	NA	18	16	NA	51
Twin Butte	Duval Sierrita Mine	State	Bubbler	7	NA	NA	16	16	NA	34

Table 2-7 (cont'd)
1976 Sulfur Dioxide Data Summary
(in ug/m^3)

Site	Location	Operator	Method	Ann Avg	3-Hr. Avgs. Max.	3-Hr. Avgs. 2nd High	24-Hr. Avgs. Max.	24-Hr. Avgs. 2nd High	No. of Samples 1-Hr.	No. of Samples 24-Hr.
Vail	El Paso Natural Gas Co. Station	PD	Coul	4	689	185	135	48	7275	NA
Winkelman	North of Winkelman School property off of Highway 77 (north of hwy. 77 & 177)	JCC	Coul	36	1369	1230	207	178	8490	NA

Standards:	Annual Avg.	3-Hr. Avg.	24-Hr. Avg.
State	80 ug/m^3	1300 ug/m^3	365 ug/m^3
Federal Primary	80 ug/m^3	---	365 ug/m^3
Federal Secondary	---	1300 ug/m^3	---

3. DATA TRENDS

3. DATA TRENDS

This discussion of data trends is based on governmental agency data. Maricopa and Pima Counties were the sources of data for Phoenix and Tucson. State data were used to evaluate trends in other areas of Arizona.

Long-term trends are determined by considering variations in annual mean concentrations. Annual mean data should be the better indicator of trends because they are less affected by measurement errors and by unusual meteorology and emissions than are the number of violations of air quality standards.

However, in evaluating compliance with air quality standards, the number of violations of standards per year must be considered. Therefore, data on the number of violations is included. It will be noted in the following discussions that in some cases the trends in violations parallel the trends in annual means. In other cases, there is no similarity in trends.

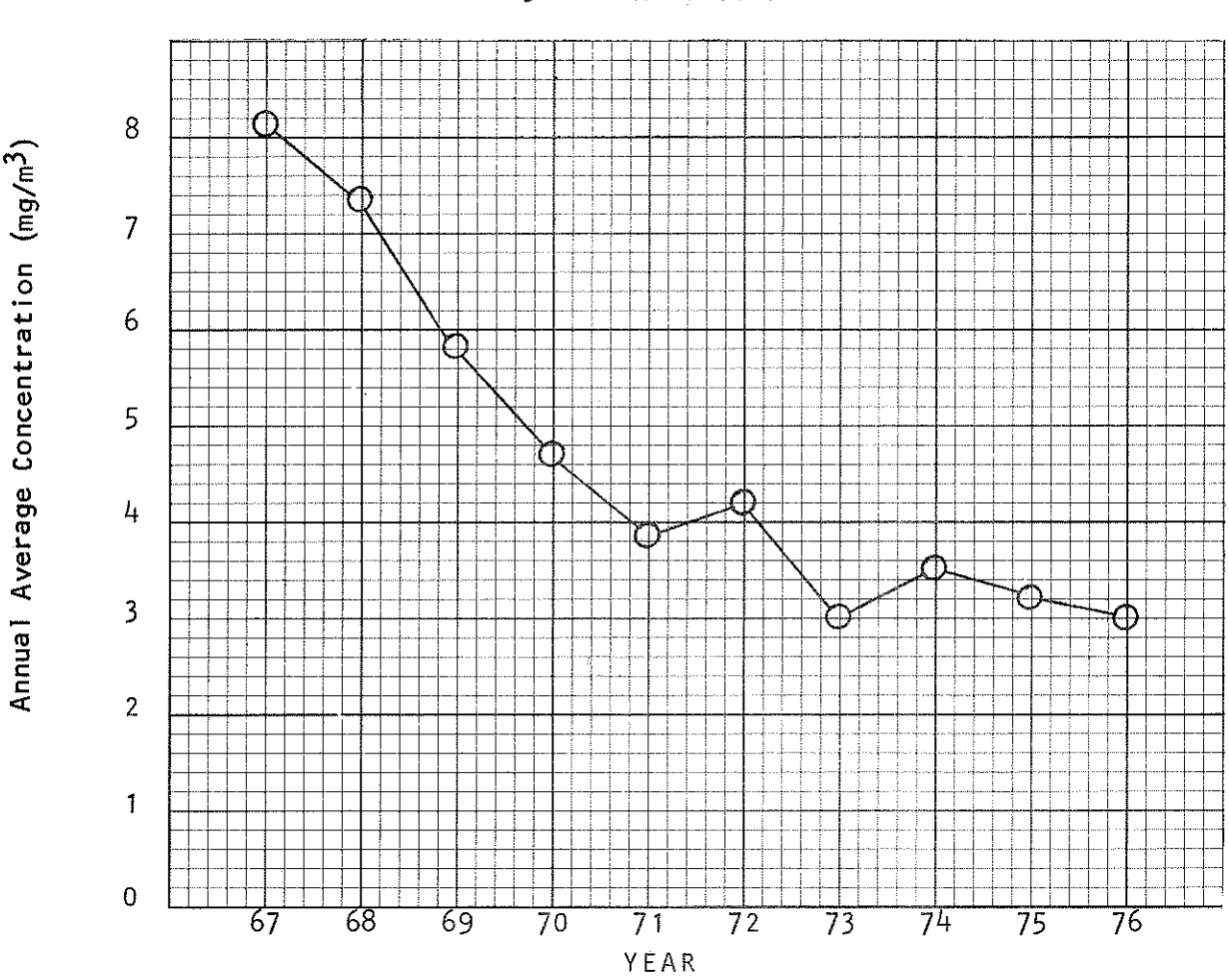
3.1 Carbon Monoxide

3.1.1 Phoenix

Long-term trends in CO concentrations are shown in Figure 3-1, a plot of annual average concentrations from 1967 through 1976 at 1845 E. Roosevelt Street. A downward trend, from 8 mg/m^3 in 1967 to 3 mg/m^3 in 1973, is evident. This is a decrease of 63%. The only exception to this trend was in 1972 when concentrations increased.

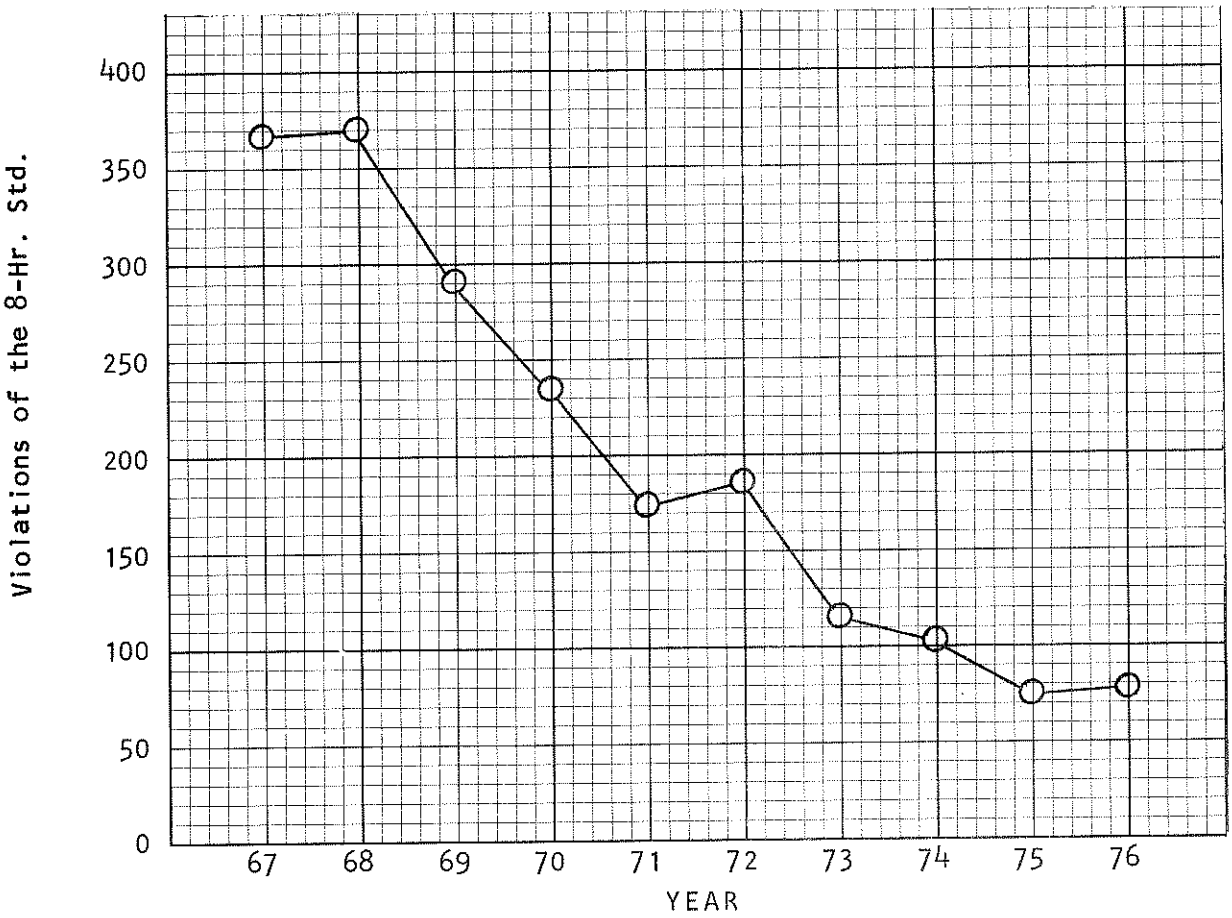
However, from 1973 through 1976 concentrations leveled out.

Figure 3-1
CO Annual Average Concentrations
Phoenix, 1967-76



The number of violations of the 8-hour standard also reflect a downward trend, as shown in Figure 3-2. An 80% decrease is noted in the number of violations, 370 in 1967 down to 75 in 1975. Exceptions to the trend occurred in 1968 and 1972. In 1976, the number of violations increased slightly to 78.

Figure 3-2
CO Violations, 8-Hr. Standard
Phoenix, 1967 - 76
1845 E. Roosevelt

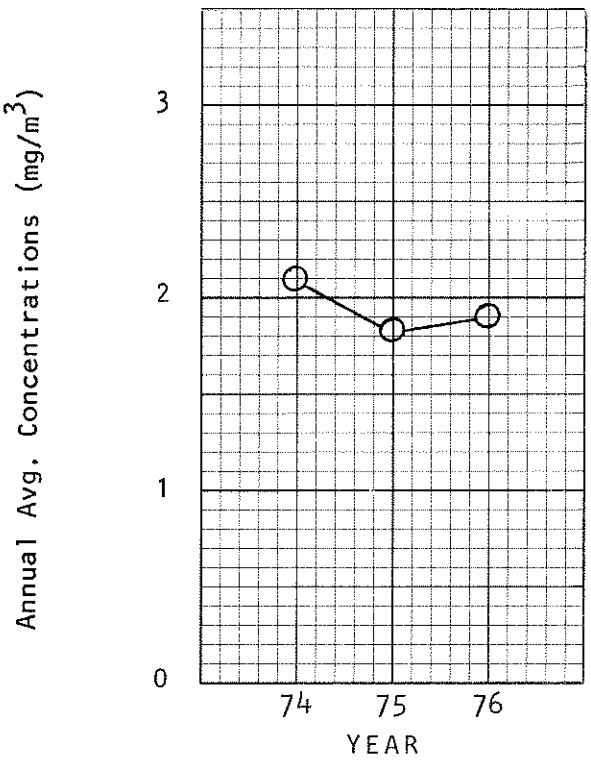


The monitoring station at 1740 W. Adams Street, recorded 97 violations in 1975 and 79 in 1976.

3.1.2 Tucson

CO trend data for Tucson are plotted in Figure 3-3. In 1974 through 1976, the trend in Tucson was similar to that for Phoenix; that is, no appreciable change in concentrations.

Figure 3-3
CO Annual Average Concentrations
Tucson, 1974-76
151 W. Congress



The number of violations of the 8-hour standard at 151 W. Congress from 1974 through 1976 were so few (1,0, and 2) that it is impossible to discern any trend.

It should be noted that a newer monitoring station, at Alvernon Way and 22nd Street, detected more violations, 39 in 1975 (9 months only) and 48 in 1976. These data indicate little change.

3.2 Hydrocarbons

Extensive monitoring for non-methane hydrocarbons did not begin until 1975. Hence, there is insufficient data to distinquish any tendency.

3.3 Nitrogen Dioxide

3.3.1 Phoenix

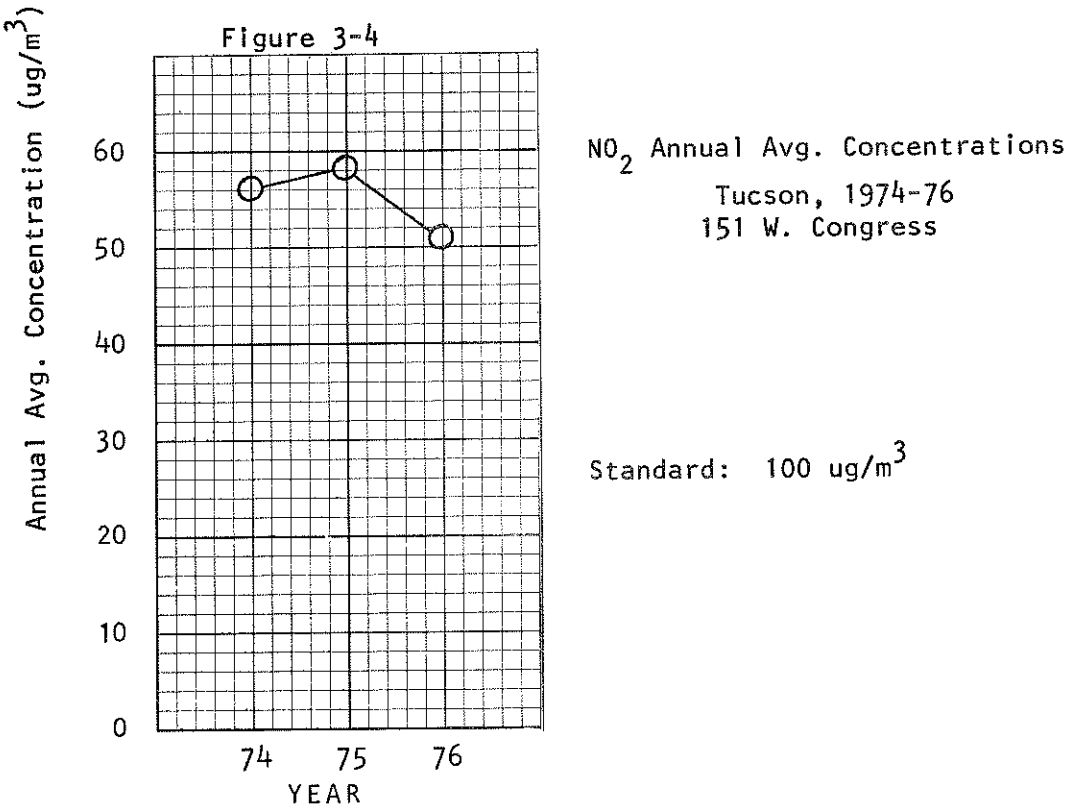
Trend data for NO_2 are restricted to annual average concentrations for 1975 and 1976 which were 62 and 60 ug/m^3 at 1845 E. Roosevelt. Data for previous years were obtained by a different sampling method and instrumentation.

It is interesting to note a similarity with CO concentrations in 1975 and 1976, that is, no significant change.

3.3.2 Tucson

Annual average data for the 151 W. Congress site are shown in Figure 3-4. There was a slight drop in concentrations in 1976, down to 51 ug/m^3 in 1975.

Figure 3-4

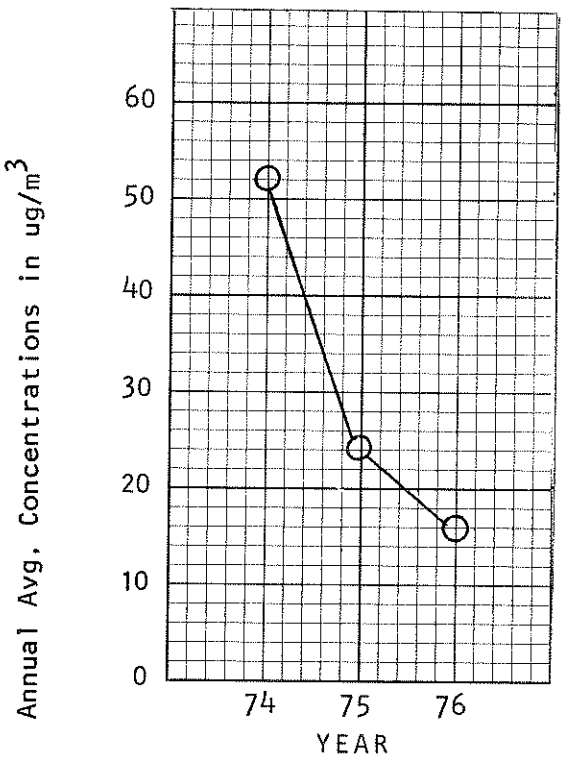


3.4 Oxidants

3.4.1 Phoenix

The long-term trend in oxidants concentrations is displayed in Figure 3-5. A 69% reduction in the annual average is indicated from 1974 through 1976. Most of the reduction occurred in 1975.

Figure 3-5
Oxidants Annual Average Concentrations
Phoenix, 1974-76
1845 E. Roosevelt



A similar trend is observed in the number of violations of the 1-hour standard in 1974 and 1975, but 1976 data varied little from 1975.

Monitoring Site: 1845 E. Roosevelt

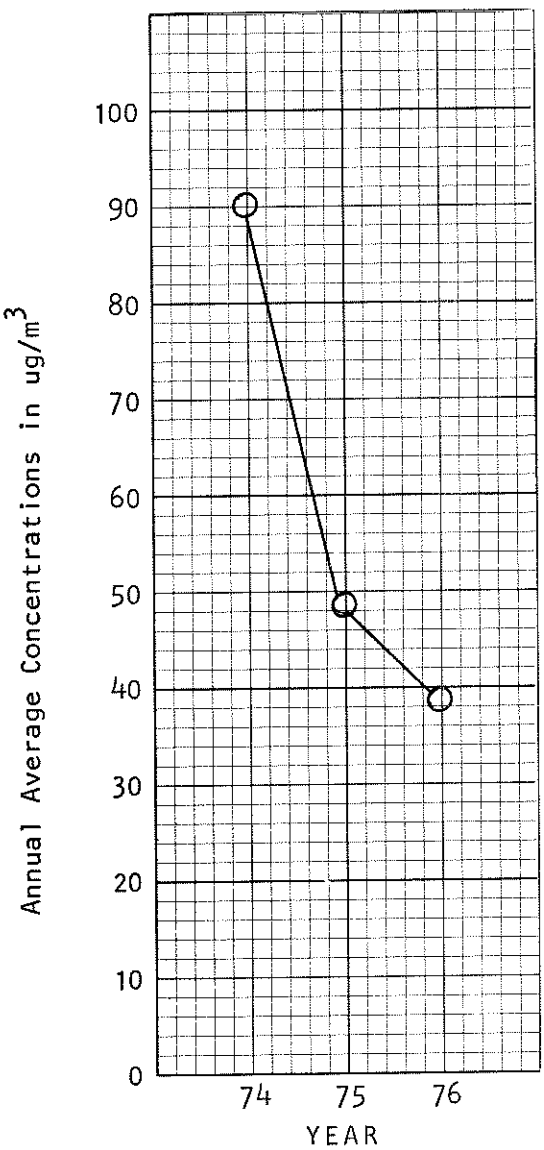
	1974	1975	1976
Violations of the 1-hour standard (160 ug/m^3)	187	26	24

It should be noted that there were 65 violations of the standard in 1976 at the 1740 W. Adams site.

3.4.2 Tucson

Oxidants concentrations for 1974 through 1976 in Tucson also reflect a downward tendency, especially in 1975 relative to 1974. Figure 3-6 below illustrates the data.

Figure 3-6
Oxidants Annual Average Concentrations
Tucson, 1974-76
151 W. Congress



However, Tucson data differ from Phoenix in that the number of violations of the standard varied little in 1975 but increased extensively in 1976.

Monitoring Site: 151 W. Congress St.	1974	1975	1976
Violations of the 1-hour standard	7	9	15

3.5 Particulates

3.5.1 Phoenix

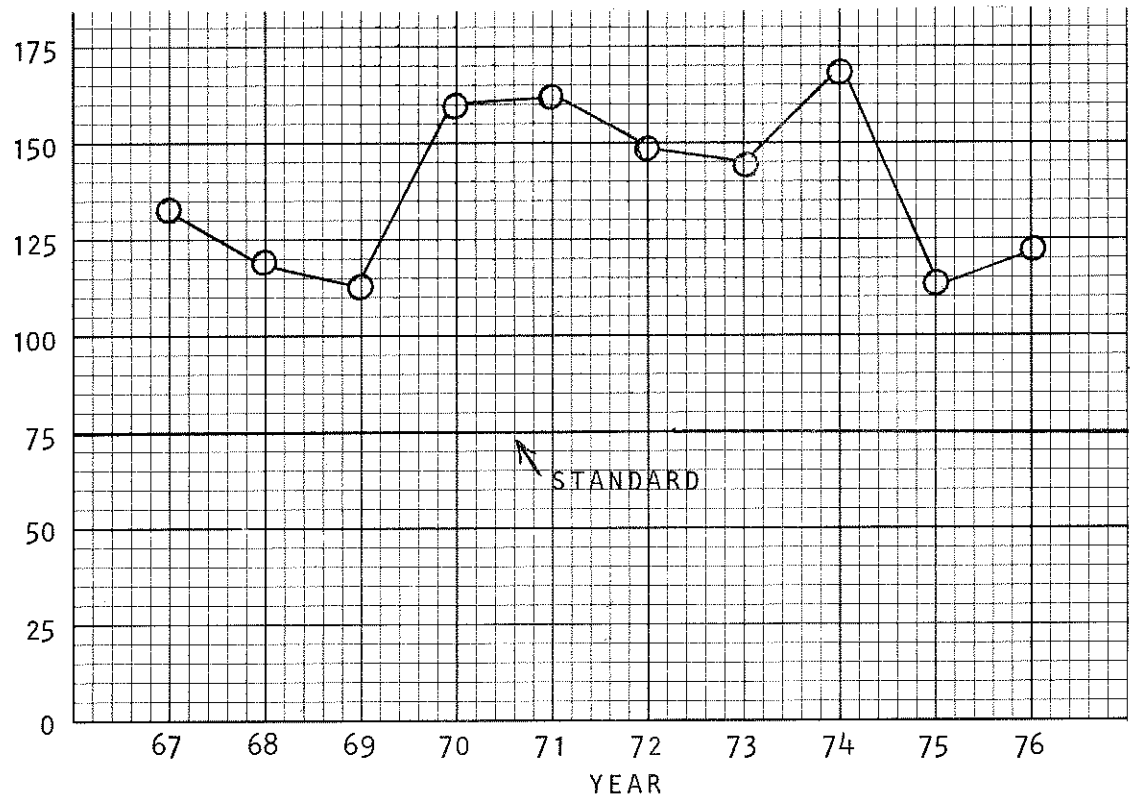
For 1967 through 1976, annual geometric mean concentrations are compared with the State standard, 75 ug/m^3, in Figure 3-7. During this period, the lowest and highest mean concentrations were 112 ug/m^3 and 168 ug/m^3, in 1975 and 1974 respectively. Overall, concentrations have fluctuated between these two extremes.

Figure 3-7

Particulates Annual Geometric Mean Concentrations

Phoenix, 1967-76

1845 E. Roosevelt

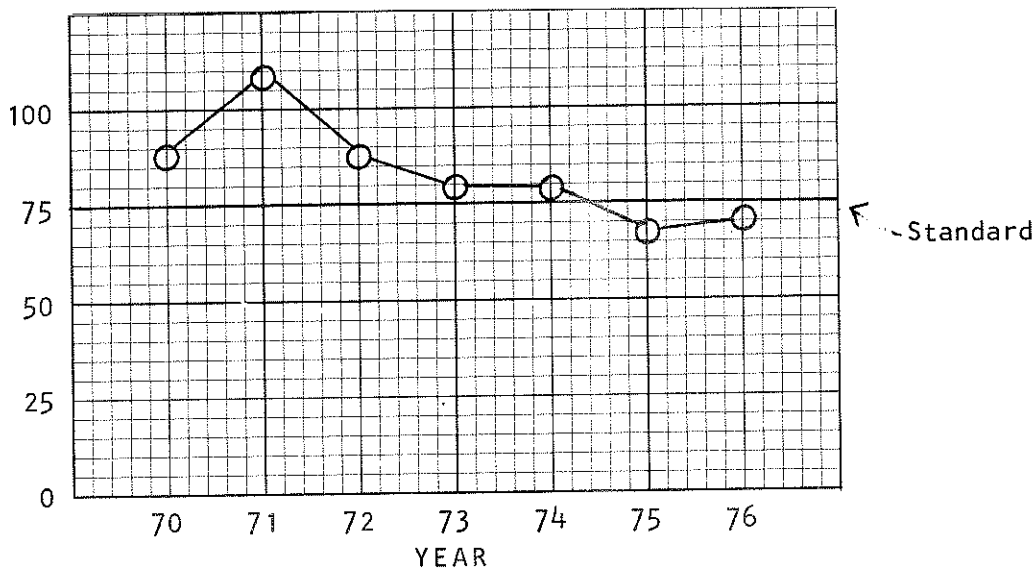


3.5.2 Tucson

For 1970 through 1976, annual geometric mean data are compared with the State standard in Figure 3-8. The values ranged from 67 ug/m^3 in 1975 to 107 ug/m^3 in 1971. A gradual declining trend developed through 1975, except for 1971. In 1976 there was a slight increase in concentrations.

Figure 3-8

Particulates Annual Geometric Mean Concentrations
Tucson, 1970-76
151 W. Congress



3.4.3 Other Areas

Table 3-1 lists data for 1969 through 1976 in other areas of Arizona. At some sites a trend appears within the past two or three years.

In Hayden, a significant decrease in the annual mean occurred in 1976.

A decline in concentrations at the Douglas - 15th Street Park site is indicated in 1974 through 1976.

The 1975 Florence data is suspect due to sample collection problems.

On the other hand, concentrations in Show Low and Superior rose in 1976.

In Yuma, concentrations increased appreciably in 1975 to 147 ug/m^3 and remained close to that level in 1976.

Table 3-1

Long-Term Trends in Particulates
1969 - 1976
(Annual geometric means in ug/m^3)

Site	69	70	71	72	73	74	75	76
Ajo	87	83	75	70	71	59	83	92
Clarkdale	--	64	63	55	96	54	53	48
Davis Dam	29	31	33	36	32	30	37	38
Douglas (15th St. Park)	--	--	--	--	--	100	86	74
Douglas (NNE)	--	--	--	--	61	43	49	43
Flagstaff	--	74	50	42	73	53	67	79
Florence	149	153	124	124	120	85	180	107
Grand Canyon	15	21	40	12	18	17	14	14
Hayden	224	--	--	--	185	181	165	119
Kingman	--	--	--	--	--	58	57	56
Lake Havasu City	--	--	--	--	--	54	42	37
Montezuma Castle Nat'l Monument	--	--	21	26	28	27	27	30
Morenci	--	--	--	--	--	56	60	50
Organ Pipe National Monument	26	37	34	29	34	23	28	33
Page	17	9	--	31	52	48	44	41
Phoenix (Roosevelt)	113	160	162	148	144	168	112	121
Prescott	--	--	--	--	--	45	48	50
Show Low	--	--	--	--	--	49	48	61
Sierra Vista	--	--	--	--	--	61	54	59
Superior	139	204	144	99	101	84	84	101
Tucson (Congress)	--	87	107	87	78	77	67	71
Yuma	--	98	94	97	110	111	147	142

3.6 Sulfur Dioxide

Annual average data for monitoring stations with complete data for 1974 through 1976 are displayed in Figures 3-9 through 3-12. Ajo, Douglas NNE, and Douglas NNW data exhibit a decreasing trend, especially in 1976.

In Hayden, the values declined extensively in 1973 and 1974, moderately in 1975, and then increased gradually in 1976.

Figure 3-9

AJO (DOT Highway Yard)

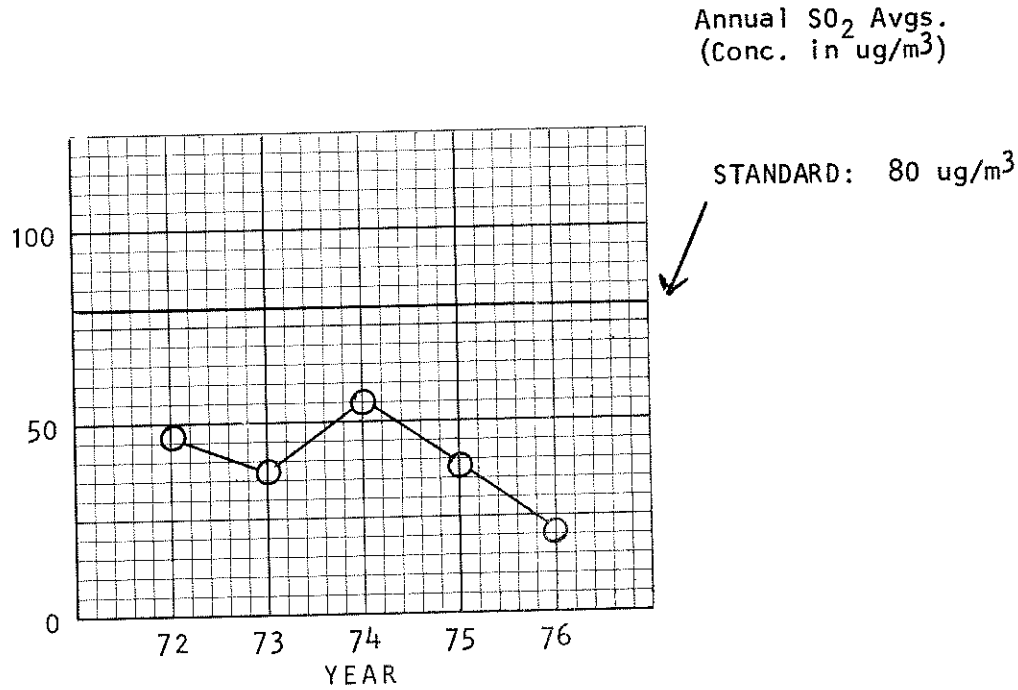
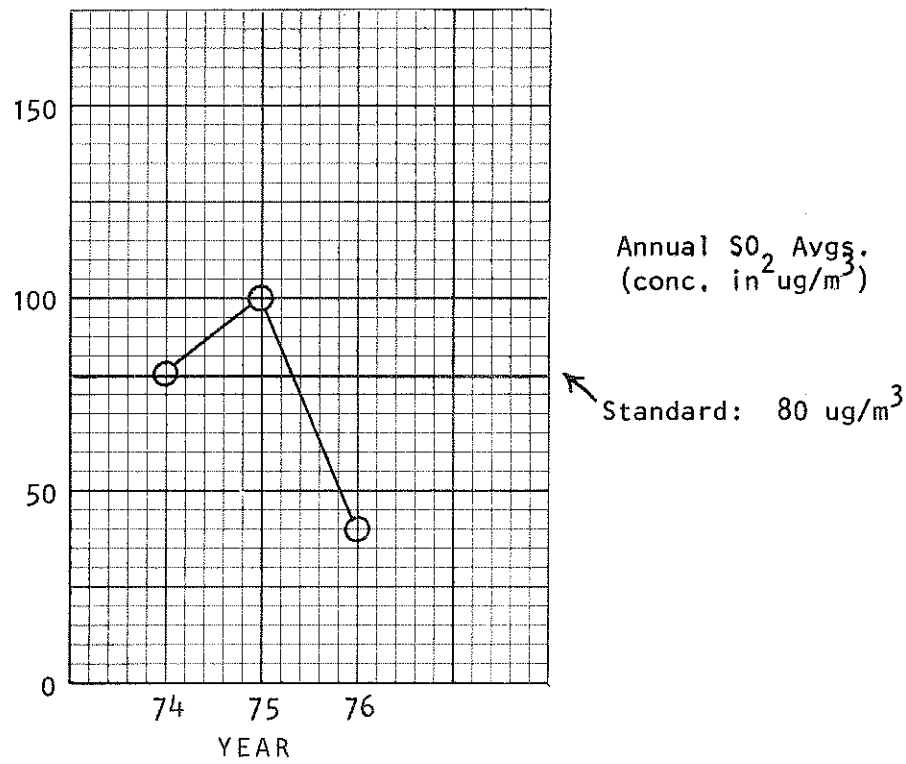


Figure 3-10

Douglas NNE (Rt. 666 NE of Smelter)



For San Manuel there is insufficient data to compare 1976 with 1975 because the station was moved in July, 1975.

Figure 3-11

Douglas NNW (Cochise Hospital)

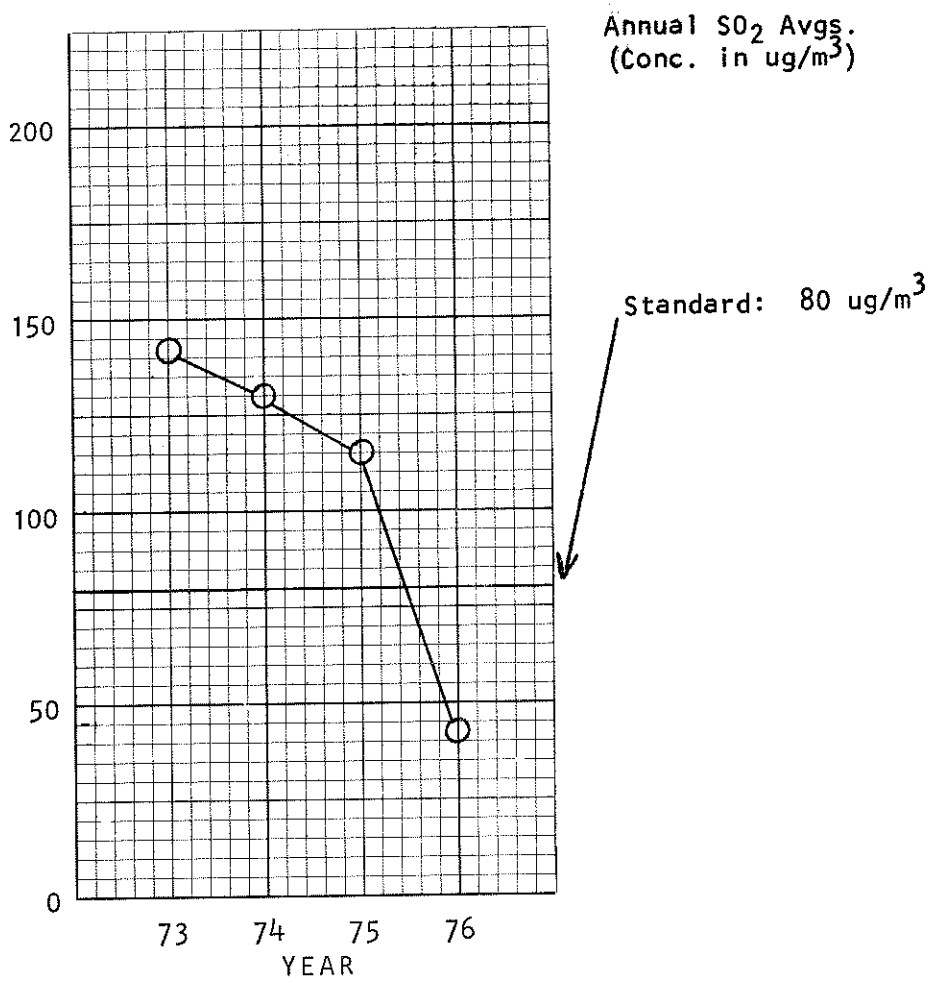
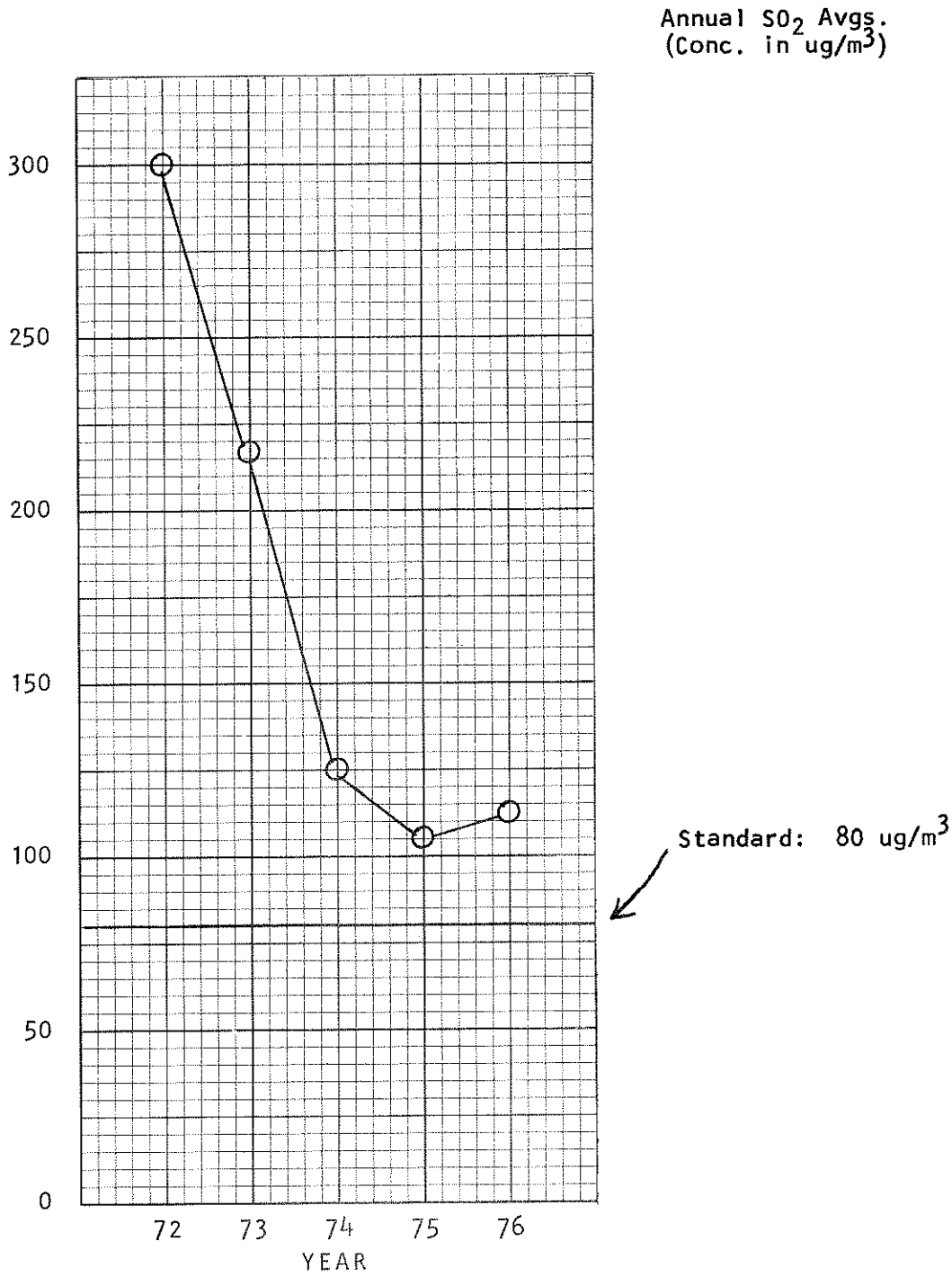


Figure 3-12

Hayden (Jail)



For monitoring stations with complete data for 1975 and 1976, annual averages are listed below.

SO_2 ANNUAL AVGS. (conc. in ug/m^3)

Monitoring Site	1975	1976
Hayden NW	134	127
Miami S	51	56
Morenci	210	130
Morenci NW	237	108

At Hayden NW and Miami S there was little change whereas at both Morenci sites concentrations decreased significantly in 1976.

4. CHEMICAL COMPOSITION OF PARTICULATES

4. CHEMICAL COMPOSITION OF PARTICULATES

This section includes data for three significant components of particulate matter, benzene soluble organics, lead, and sulfates. Benzene soluable organics are emitted during incomplete fuel combustion in manufacturing, motor vehicular traffic, open burning, etc. For lead and sulfates, air quality standards are being considered.

Table 4-1

1976 Benzene Soluble Organics Data Summary
High Volume Sampler
(in ug/m^3)

Nearest City or Town	Site Location	Operator	Annual Average	Max. 24-Hr. Average	Number of Samples
Eagar	Town Hall	State	7.0	25.6	52
Flagstaff	Birch & San Francisco	State	6.7	25.1	57
Glendale	6000 W. Olive Ave.	Maricopa	2.8	10.9	49
Hayden	Old Town Jail, Canyon Dr.	State	2.6	6.8	45
Mesa	3rd Place & Center	Maricopa	3.0	10.2	54
Nogales	Nogales High School-Plum St.	State	5.4	24.1	33
Organ Pipe	Visitor's Center	State	1.0	4.7	48
Phoenix	1845 E. Roosevelt	Maricopa	7.8	32.2	55
Phoenix	4732 S. Central	Maricopa	4.1	12.9	50
Phoenix	8531 N. 6th St.	Maricopa	6.1	23.2	56
Phoenix	1740 W. Adams	State	8.4	27.9	50
Scottsdale	2857 N. Miller Rd.	Maricopa	6.0	20.1	57
Scottsdale	13665 N. Scottsdale Rd.	Maricopa	1.5	5.5	56

Table 4-2

1976 Lead Data Summary
High Volume Sampler
(in ug/m^3)

Nearest City or Town	Site Location	Operator	Annual Average	Max 24-Hr. Average	Number of Samples
Glendale	6000 W. Olive Ave	Maricopa	.8	2.6	50
Green Valley	245 W. Esperanza	Pima	.2	.5	3
Hayden	Old Town Jail, Canyon Dr.	State	.1	.2	8
Mesa	3rd Place & Center	Maricopa	.7	2.5	56
Phoenix	1845 E. Roosevelt	Maricopa	2.3	7.8	57
Phoenix	4732 S. Central	Maricopa	1.0	3.4	50
Phoenix	8531 N. 6th St.	Maricopa	1.6	5.6	56
Phoenix	1740 W. Adams	State	1.6	5.7	9
Scottsdale	2857 N. Miller Rd.	Maricopa	1.9	6.2	57
Scottsdale	13665 N. Scottsdale Rd.	Maricopa	.6	1.9	56
Tucson	151 W. Congress	Pima	.5	1.3	23
Tucson	Alvernon/Ft. Lowell	Pima	.5	1.4	23
Tucson	Davis Monthan AFB	Pima	.3	.8	24
Tucson	Golf Links - Harrison	Pima	.2	.4	21
Tucson	Orange Grove - El Camino de Terra	Pima	.4	1.4	22
Tucson	7901 E. Scarlett	Pima	.4	.9	24
Tucson	1810 S. 6th Avenue	Pima	.8	2.1	23

Table 4-3

1976 Sulfates Data Summary
High Volume Sampler
(in ug/m^3)

Nearest City or Town	Site Location	Operator	Annual Average	Max 24-Hr. Average	Number of Samples
Ajo	AS DOT, Well Road	State	7.3	23.5	56
Douglas	US 666, 2 km NNE of Stack	State	7.5	13.9	45
Florence	22nd St & Willow	State	5.4	12.1	43
Glendale	6000 W. Olive Ave.	Maricopa	5.7	10.4	46
Green Valley	245 W. Esperanza	Pima	3.8	5.9	17
Hayden	Old Town Jail, Canyon Dr.	State	11.0	20.1	46
Mesa	3rd Place & Center	Maricopa	3.7	8.5	56
Miami	Jones Ranch	State	8.9	26.4	55
Morenci	Stargo, Highway 666	State	11.2	26.9	57
Organ Pipe	Visitor's Center	State	4.1	11.1	49
Paul Spur	NACO Highway	State	6.7	14.4	39
Phoenix	1845 E. Roosevelt	Maricopa	5.7	13.7	54
Phoenix	4732 S. Central	Maricopa	4.9	9.3	49
Phoenix	8531 N. 6th St.	Maricopa	4.9	19.4	56
Phoenix	1740 W. Adams	State	5.7	14.5	50
Safford	521 10th Ave.	State	6.1	18.2	49
San Manuel	LDS Church	State	9.3	19.4	57
Scottsdale	2857 N. Miller Rd.	Maricopa	4.8	17.6	57
Scottsdale	13565 N. Scottsdale Rd.	Maricopa	4.1	10.0	56
Sierra Vista	1st Street & Bartow Dr.	State	6.1	13.3	51
Superior	AS DOT 951 Main Street	State	6.4	27.1	55
Tucson	151 W. Congress	Pima	4.5	9.5	23
Tucson	Alvernon/Ft. Lowell	Pima	4.8	6.9	23
Tucson	Davis Monthan AFB	Pima	4.6	8.1	24

Table 4-3 (cont'd)

1976 Sulfates Data Summary
High Volume Sampler
(in ug/m^3)

Nearest City or Town	Site Location	Operator	Annual Average	Max 24-Hr. Average	Number of Samples
Tucson	Golf Links-Harrison Rd.	Pima	4.2	7.9	21
Tucson	Orange Grove- El Camino de Terra	Pima	4.8	8.0	22
Tucson	7901 E. Scarlett	Pima	4.4	8.2	24
Tucson	1810 S. 6th Avenue	Pima	4.6	6.2	8
Twin Butte	Duval Sierrita Mine-Change Room	State	21.3	102.3	57
Twin Butte	Duval Sierrita Mine-Water tower	State	31.1	104.5	36

SO_4